



# Shenzhen Asia Test Technology Co., Ltd.

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## FCC RADIO TEST REPORT FCC ID: BOOKP-21TL

**Product :** Mini Wireless Keyboard

**Trade Name :** N/A

**Model Name :** KP-810-21TL

**Addition Model :** KP-810-21T

### Prepared for

Unisen Limited

Room 907, Fook Hong Industrial Bldg., 19 Sheung Yuet Road, Kowloon  
Bay, Kowloon, Hong Kong

### Prepared by

Shenzhen Asia Test Technology Co.,Ltd.

7 / F, Xinwei Building, Gushu Village, Xixiang Town, Baoan District,  
Shenzhen, China



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## TEST RESULT CERTIFICATION

**Manufacturer's Name** ..... : Unisen Limited

**Address** ..... : NO.1, Wuwu Road, BanShi Wuwu Village, Changping Town,  
Dongguan City Guangdong Prov. China

### Product description

**Product name** ..... : Mini Wireless Keyboard

**Model and/or type reference** : KP-810-21TL, KP-810-21T

**Rating(s)** ..... : DC 3.7V

**Standards** ..... : FCC Part15.249

**Test procedure** ..... ANSI C63.10-2013

This device described above has been tested by ATT, 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.

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**Date of Test** ..... :

**Date (s) of performance of tests** ..... : 10 Apr. 2017 ~18 Apr. 2017

**Date of Issue** ..... : 18 Apr. 2017

**Test Result** ..... : **Pass**

Testing Engineer : Eric Wang

(Eric Wang)

Technical Manager : Jerry You

(Jerry You)

Authorized Signatory : Jack Yu

(Jack Yu)



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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Test	Test Requirement	Standard Paragraph	Result
Field Strength of Fundamental	FCC PART 15 C section 15.249 (a)	ANSI C63.10: Clause 6.6	PASS
Field Strength of Unwanted Emissions	FCC PART 15 C section 15.249 (a) section 15.249 (d)	ANSI C63.10: Clause 6.4, 6.6 and 6.7	PASS
Band Edges	FCC PART 15 C section 15.249 (d)	ANSI C63.10: Clause 6.9.2	PASS
Occupied Bandwidth	FCC PART 15 C section 15.215(c)	ANSI C63.10: Clause 6.9.1	PASS
Conducted Emissions at Mains Terminals	FCC PART 15 C section 15.207	ANSI C63.10: Clause 6.2	PASS
Antenna Requirement	FCC PART 15 C section 15.203	FCC PART 15 C section 15.203	PASS



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## 1.1 TEST FACILITY

Shenzhen Asia Test Technology Co.,Ltd.  
7 / F, Xinwei Building, Gushu Village, Xixiang Town, Baoan District, Shenzhen, China  
FCC Registration No.: 348715; IC Registration No.: 12198A

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded 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	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$



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## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

EUT Name:	Mini Wireless Keyboard
Model No.:	KP-810-21TL
Addition Model:	KP-810-21T
Model Differences:	All models are identical except model name and colors.
Operation frequency:	2402 MHz to 2480 MHz
Number of channel:	79 channels
Modulation Type and Antenna Type:	GFSK PCB antenna
H/W No.:	1.1
S/W No.:	00
Antenna Gain:	0 dBi
Brand Name:	N/A
Derivative model No.:	N/A
Power Supply Range:	DC 3.7V by Li-battery, DC 5V for charge via USB
Power Cord:	N/A
Signal Cable:	N/A

Description of Channel:					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2402	39	2440	76	2478
02	2403	40	2441	77	2479
03	2414	41	2442	78	2480
04	...	42	...		
05	...	43	...		
06	...	44	...		



## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH1
Mode 2	CH40
Mode 3	CH78
Mode 4	Link

For Conducted Emission	
Final Test Mode	Description
Mode 4	Link

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH1
Mode 2	CH40
Mode 3	CH78
Mode 4	Link

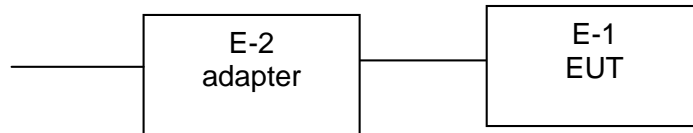
Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The EUT use Full charge battery.
- (3) For Conducted Emission EMI test. We test powered by PC and powered by charger, record the worst case powered by charger in the report. The charger provided by test lab. And the information as below:  
M/N: MS05001000US, INPUT:AC 100-240V,50/60Hz, 0.35A, OUTPUT:DC 5V, 1A

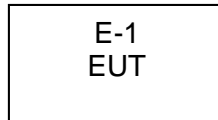


**2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED**

Conducted Spurious Emission Test



Radiated Spurious Emission Test







**2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)**

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Mini Wireless Keyboard	N/A	KP-810-21TL	N/A	EUT
E-2	Adapter	N/A	MS05001000US	N/A	

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



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## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Equipment No.	Instrument	Manufacturer	Model Name	Serial Number	Specification	Cal. Data
1	Semi-anechoic chamber	Changzhou Chengyu	EC3088	N/A	9*6*6m	10/25/2016
2	Broadband antenna	R&S	VULB 9160	VULB91 60-516	30MHz-1500 MHz	10/25/2016
3	Horn antenna	R&S	BBHA 9120D	10087	1GHz-18GHz	06/05/2016
4	Test receiver	R&S	ESCI	101686	9KHz-3GHz	10/25/2016
5	EMI Measuring Receiver	R&S	ESR	101660	9KHz-40GHz	10/25/2016
6	Multi-device controller	MF	MF-7868	MF78680 8762	N/A	10/25/2016
7	Amplifier	EM	EM-30180	060538	1GHz-18GHz	10/25/2016
8	Amplifier	Schwarzbeck	BBV 9475	BBV 9475-663	1GHz-18GHz	06/05/2016
9	Spectrum Analyzer	agilent	E4440B	US44300368	1GHz-26.5GHz	06/05/2016
10	Test receiver	R&S	ESCI	101689	9KHz-3GHz	10/25/2016
11	LISN	R&S	NSLK81 26	8126466	9k-30MHz	10/25/2016
12	LISN	Narda	L2-16B	5589756	9k-30MHz	10/25/2016
13	Power Meter	Anritsu	ML2495A	N/A	40MHz	10/25/2016
14	Power sensor	Anritsu	MA2411B	N/A	40MHz	10/25/2016
15	Radiated Cable 1#	FUJIKURA	5D-2W	01	30MHz-1GHz	10/25/2016
16	Radiated Cable 2#	FUJIKURA	10D2W	02	1GHz -25GHz	10/25/2016
17	Conducted Cable 1#	FUJIKURA	1D-2W	01	9KHz-30MHz	10/25/2016



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18	SMA Antenna connector	Dosin	Dosin-SMA	N/A	N/A	10/25/2016
Note: The SMA antenna connector is soldered on the PCB board in order to perform conducted tests and this SMA antenna connector is listed in the equipment list. The Cal.Interval was one year						



### **3. ANTENNA REQUIREMENT**

#### **3.1 STANDARD REQUIREMENT**

15.203 requirement: For intentional device, according to 15.203: 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.

#### **3.2 EUT ANTENNA**

The EUT antenna is PCB Antenna. It comply with the standard requirement.



## 3.3 CONDUCTED EMISSION MEASUREMENT

### 3.3.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	(dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



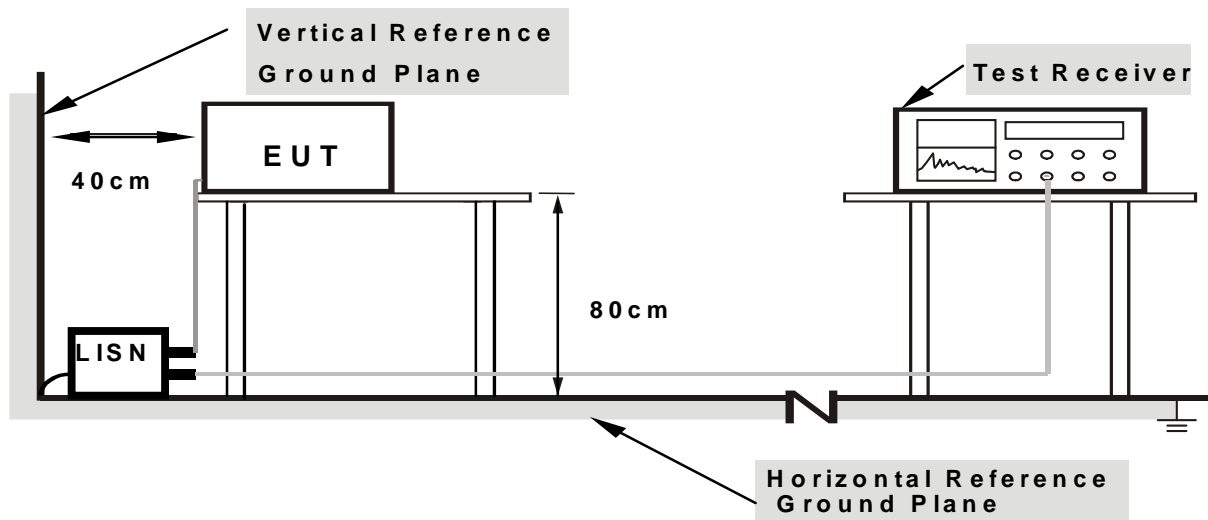
### 3.3.2 TEST PROCEDURE

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.3.3 DEVIATION FROM TEST STANDARD

No deviation

### 3.3.4 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 cm from other units and other metal planes**



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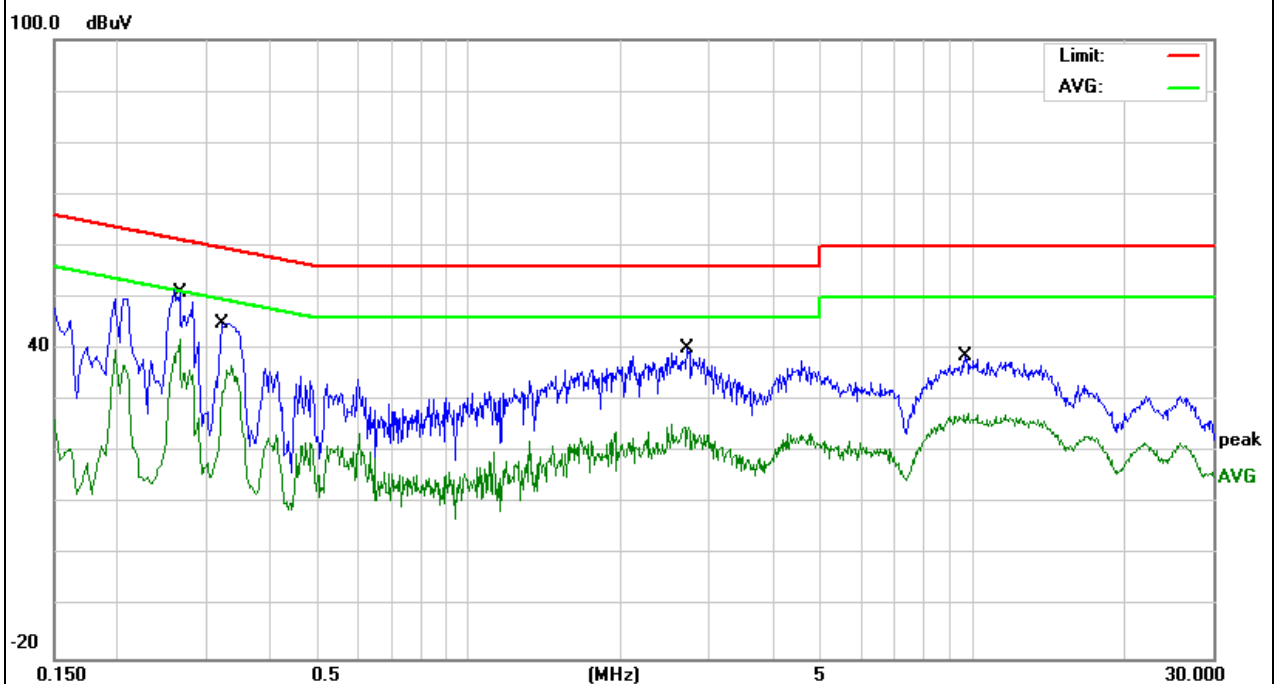
## 3.2.5 TEST RESULT

EUT :	Mini Wireless Keyboard	Model Name. :	KP-810-21TL
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2017-04-14
Test Mode :	Link	Phase :	L
Test Voltage :	DC 5V from charger AC 120V/60Hz		

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.2660	44.89	10.43	55.32	61.24	-5.92	QP	
2		0.2660	31.61	10.43	42.04	51.24	-9.20	AVG	
3		0.3220	34.67	10.42	45.09	59.65	-14.56	QP	
4		0.3220	26.43	10.42	36.85	49.65	-12.80	AVG	
5		2.7100	29.59	10.46	40.05	56.00	-15.95	QP	
6		2.7100	14.43	10.46	24.89	46.00	-21.11	AVG	
7		9.6659	28.06	10.58	38.64	60.00	-21.36	QP	
8		9.7699	16.99	10.59	27.58	50.00	-22.42	AVG	

Remark:

Factor = Insertion Loss + Cable Loss.





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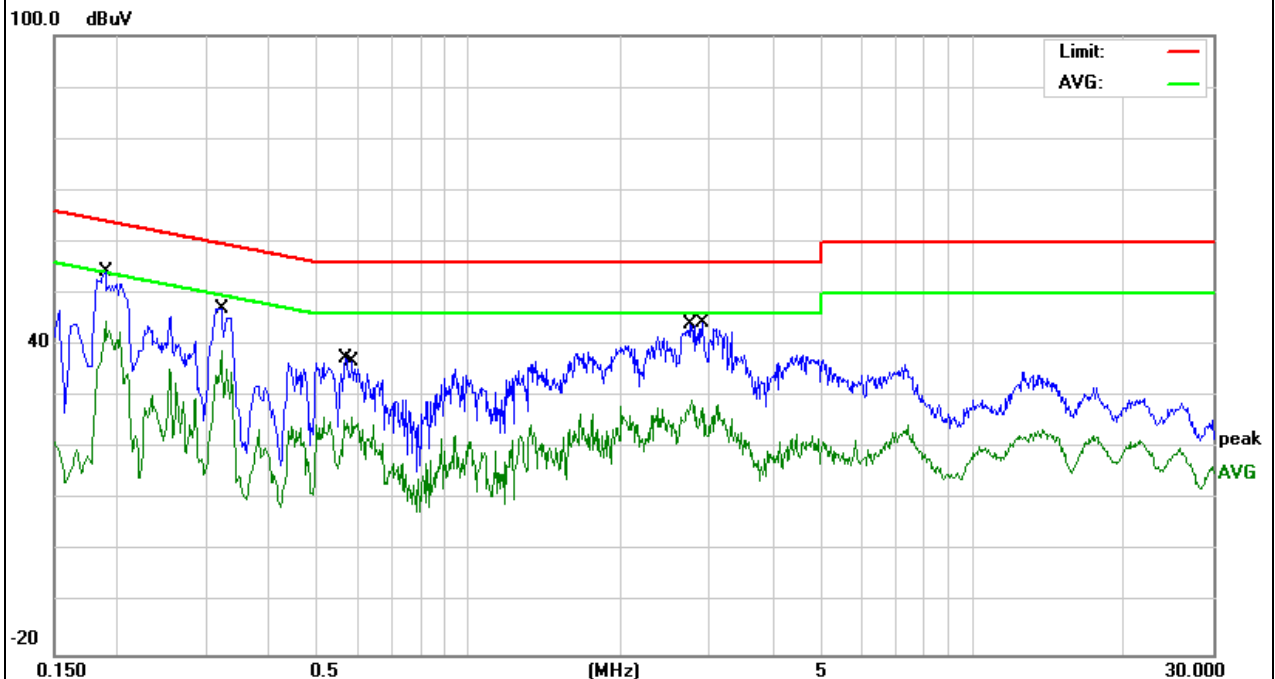
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EUT :	Mini Wireless Keyboard	Model Name. :	KP-810-21TL
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2017-04-14
Test Mode :	Link	Phase :	N
Test Voltage :	DC 5V from charger AC 120V/60Hz		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1900	43.93	10.40	54.33	64.03	-9.70	QP	
2	*	0.1900	34.23	10.40	44.63	54.03	-9.40	AVG	
3		0.3220	36.77	10.42	47.19	59.65	-12.46	QP	
4		0.3220	28.43	10.42	38.85	49.65	-10.80	AVG	
5		0.5700	27.00	10.41	37.41	56.00	-18.59	QP	
6		0.5860	15.74	10.41	26.15	46.00	-19.85	AVG	
7		2.7659	19.00	10.46	29.46	46.00	-16.54	AVG	
8		2.9100	33.88	10.45	44.33	56.00	-11.67	QP	

Remark:

Factor = Insertion Loss + Cable Loss.







## 3.4 RADIATED EMISSION MEASUREMENT

### 3.4.1 Radiated Emission Limits ( FCC 15.209 )

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 tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

### LIMITS OF RADIATED EMISSION MEASUREMENT ( FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
2400 - 2483.5	50	500

Notes:

- (1) 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.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



## 3.4.2 TEST PROCEDURE

### 1) 9 kHz to 30 MHz emissions:

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT, During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

### 2) 30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360°, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

### 3) 1 GHz to 25 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360°, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

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.

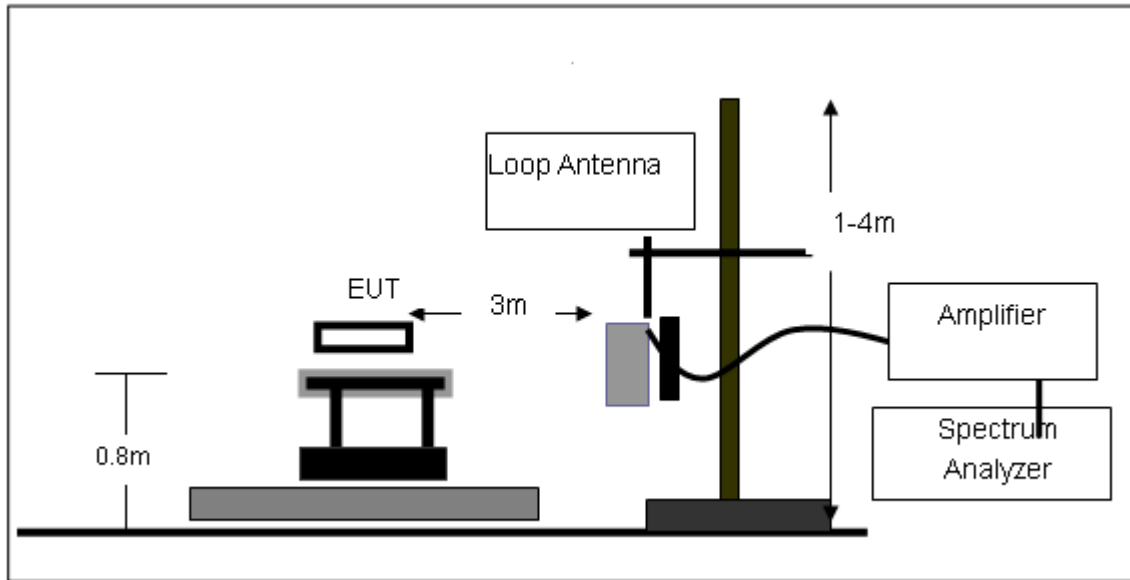
## 3.4.3 DEVIATION FROM TEST STANDARD

No deviation

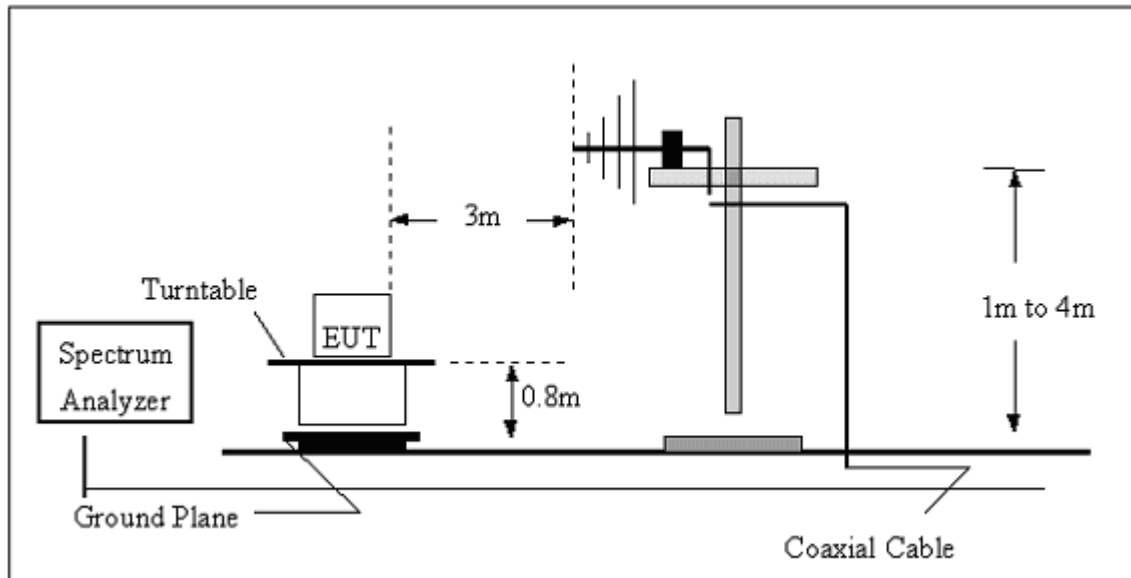


### 3.4.4 TEST SETUP

#### (A) Radiated Emission Test-Up Frequency Below 30MHz

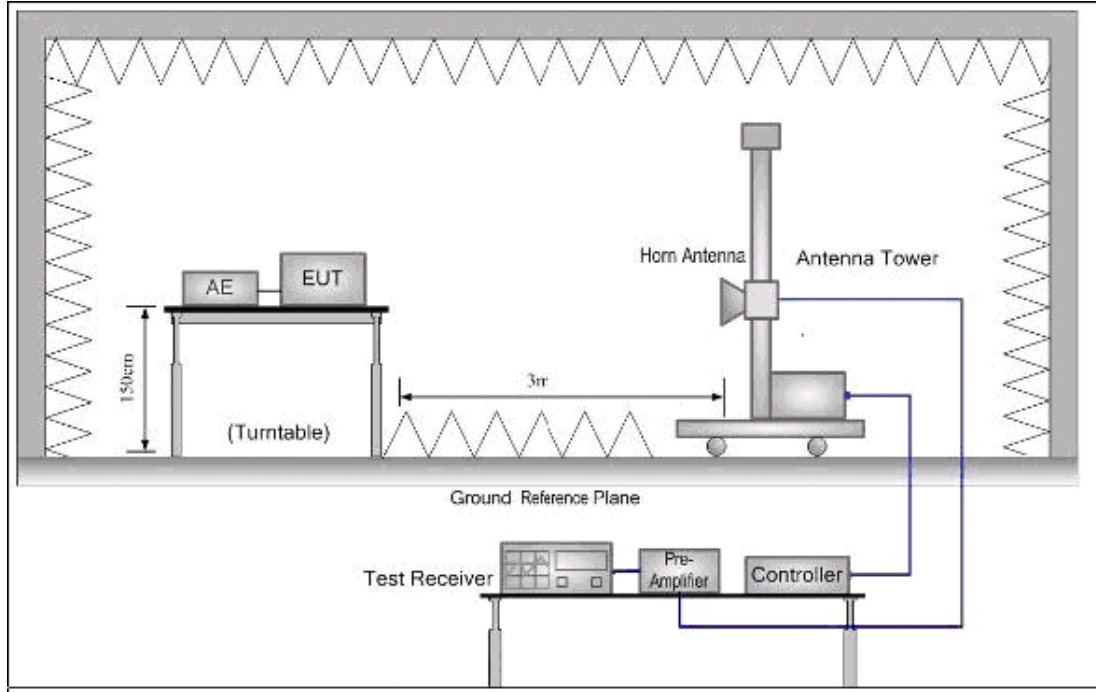


#### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz





(C) Radiated Emission Test-Up Frequency Above 1GHz





### 3.4.5 TEST RESULTS (BELOW 30MHz)

EUT :	Mini Wireless Keyboard	Model Name. :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

#### NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $20 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



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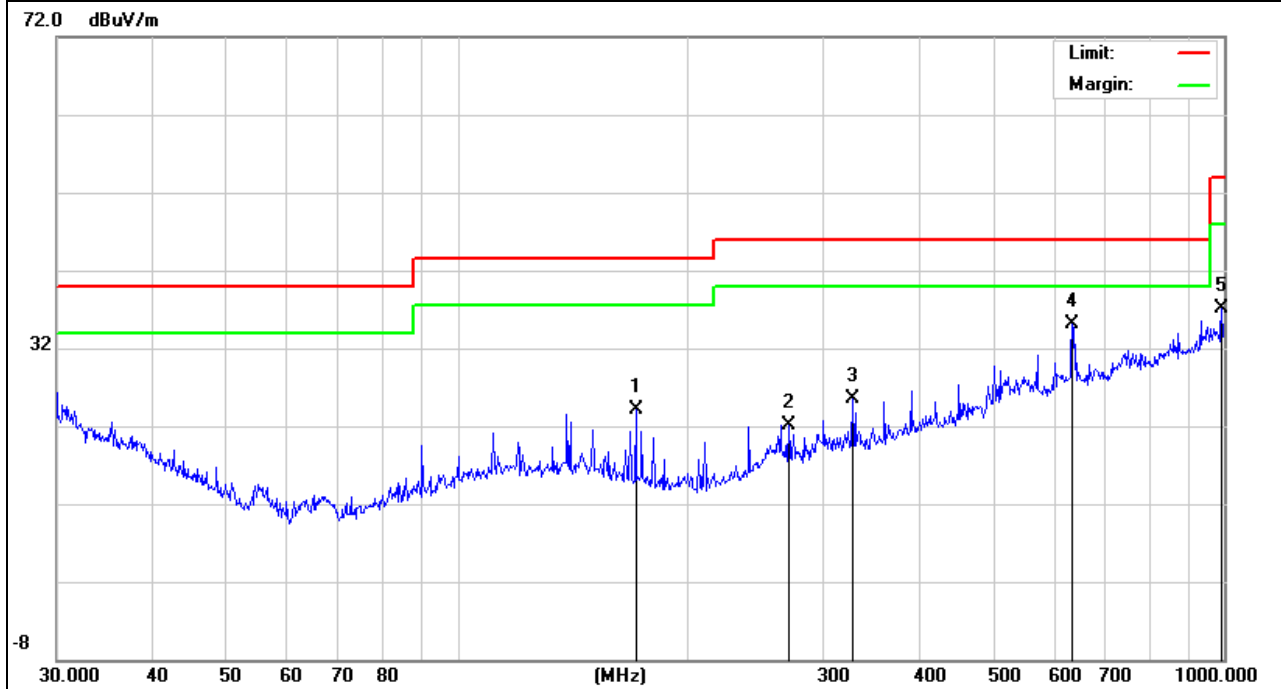
## 3.4.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX	Polarization :	Vertical

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1		170.7923	14.16	9.96	24.12	43.50	-19.38	QP			
2		270.3748	8.69	13.44	22.13	46.00	-23.87	QP			
3		327.8873	10.50	14.91	25.41	46.00	-20.59	QP			
4	*	633.9073	13.14	21.88	35.02	46.00	-10.98	QP			
5		993.0113	9.92	27.26	37.18	54.00	-16.82	QP			

Remark:

Factor = Antenna Factor + Cable Loss.





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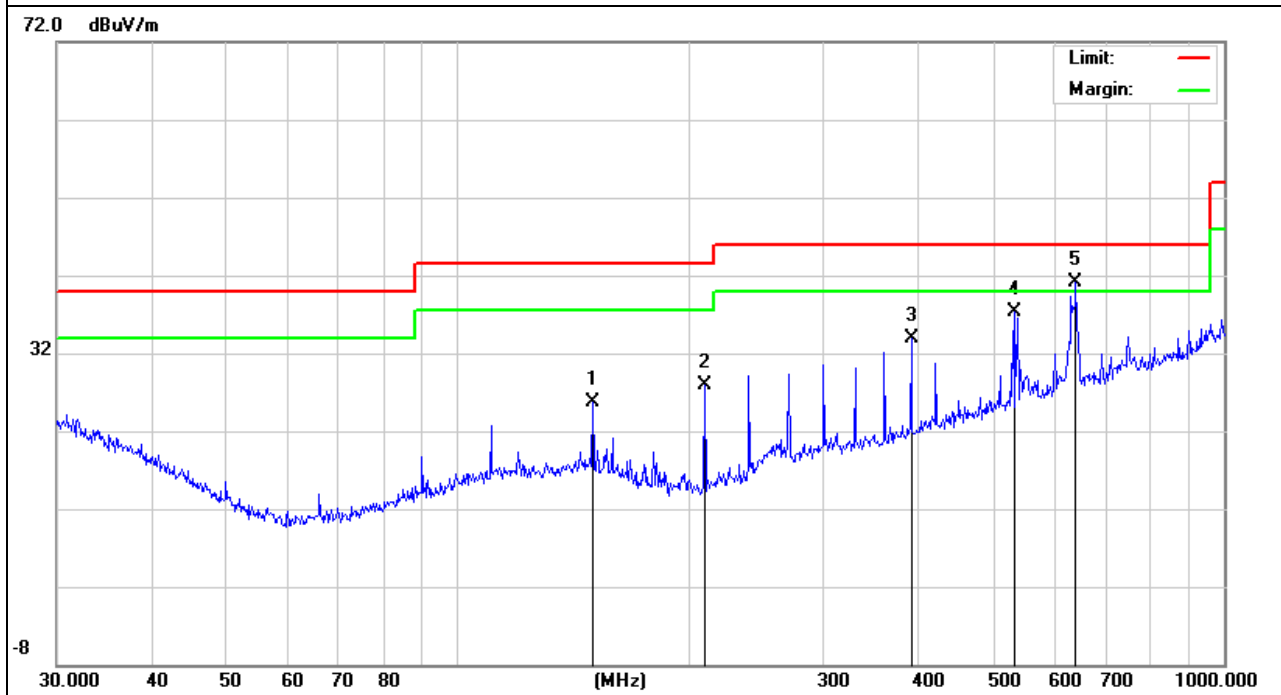
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EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX	Polarization :	Horizontal

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	150.0107	13.94	11.78	25.72	43.50	-17.78	QP			
2	210.0482	18.56	9.31	27.87	43.50	-15.63	QP			
3	390.7225	16.95	16.89	33.84	46.00	-12.16	QP			
4	533.8321	17.42	19.92	37.34	46.00	-8.66	QP			
5 *	640.6110	19.31	21.76	41.07	46.00	-4.93	QP			

Remark:

Factor = Antenna Factor + Cable Loss.





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## 3.4.7 TEST RESULTS (ABOVE 1000 MHZ)

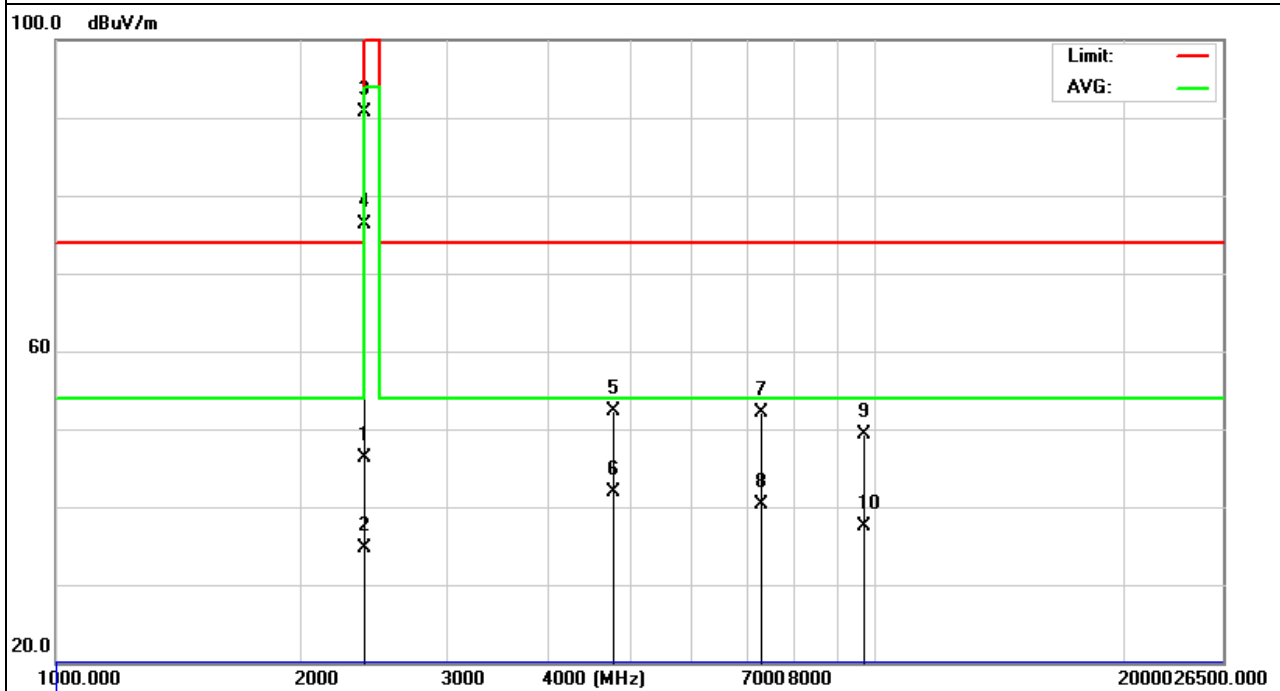
GFSK

EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX-CH1	Polarization :	Horizontal

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2400.000	54.65	-8.42	46.23	74.00	-27.77	peak			
2		2400.000	43.12	-8.42	34.70	54.00	-19.30	AVG			
3		2402.000	99.15	-8.42	90.73	114.0	-23.27	peak			
4		2402.000	84.63	-8.42	76.21	94.00	-17.79	AVG			
5		4804.000	57.14	-4.86	52.28	74.00	-21.72	peak			
6	*	4804.000	46.72	-4.86	41.86	54.00	-12.14	AVG			
7		7206.000	52.67	-0.58	52.09	74.00	-21.91	peak			
8		7206.000	40.78	-0.58	40.20	54.00	-13.80	AVG			
9		9608.000	44.57	4.81	49.38	74.00	-24.62	peak			
10		9608.000	32.76	4.81	37.57	54.00	-16.43	AVG			

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.







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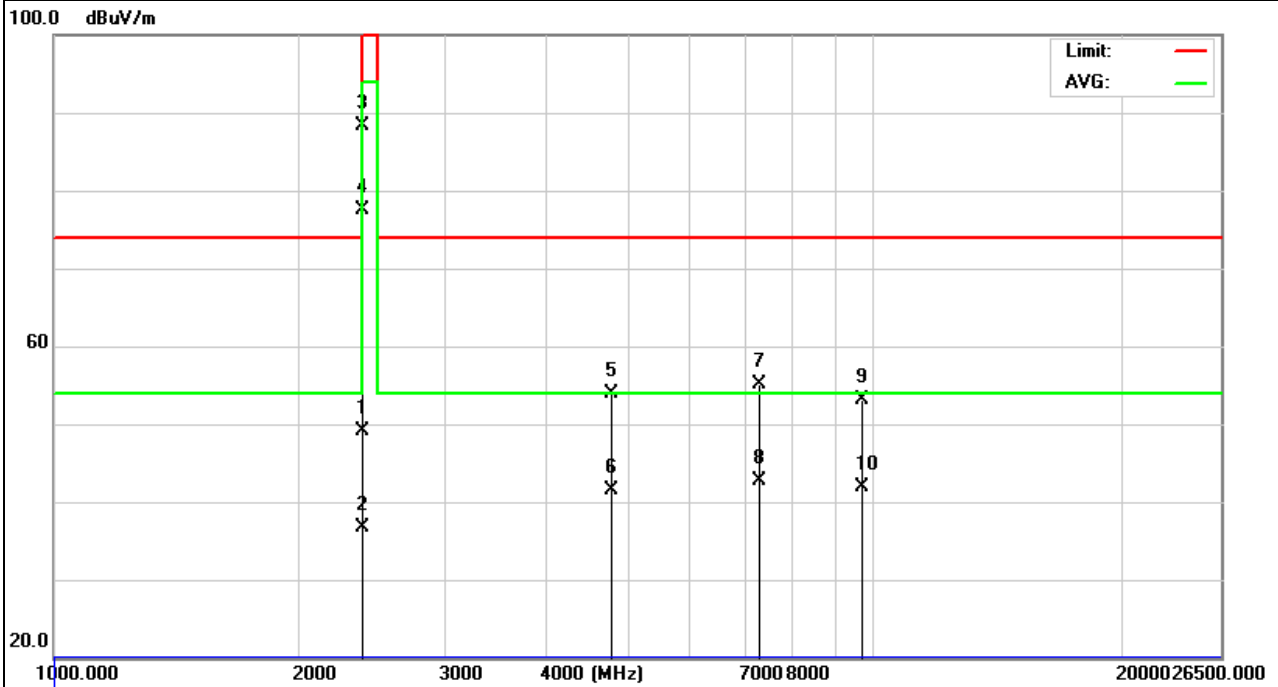
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EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX-CH1	Polarization :	Vertical

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2400.000	57.45	-8.42	49.03	74.00	-24.97	peak			
2		2400.000	45.22	-8.42	36.80	54.00	-17.20	AVG			
3		2402.000	96.72	-8.42	88.30	114.0	-25.70	peak			
4		2402.000	85.84	-8.42	77.42	94.00	-16.58	AVG			
5		4804.000	58.72	-4.86	53.86	74.00	-20.14	peak			
6		4804.000	46.35	-4.86	41.49	54.00	-12.51	AVG			
7		7206.000	55.77	-0.58	55.19	74.00	-18.81	peak			
8	*	7206.000	43.29	-0.58	42.71	54.00	-11.29	AVG			
9		9608.000	48.35	4.81	53.16	74.00	-20.84	peak			
10		9608.000	37.18	4.81	41.99	54.00	-12.01	AVG			

**Remark:**

Factor = Antenna Factor + Cable Loss – Pre-amplifier.





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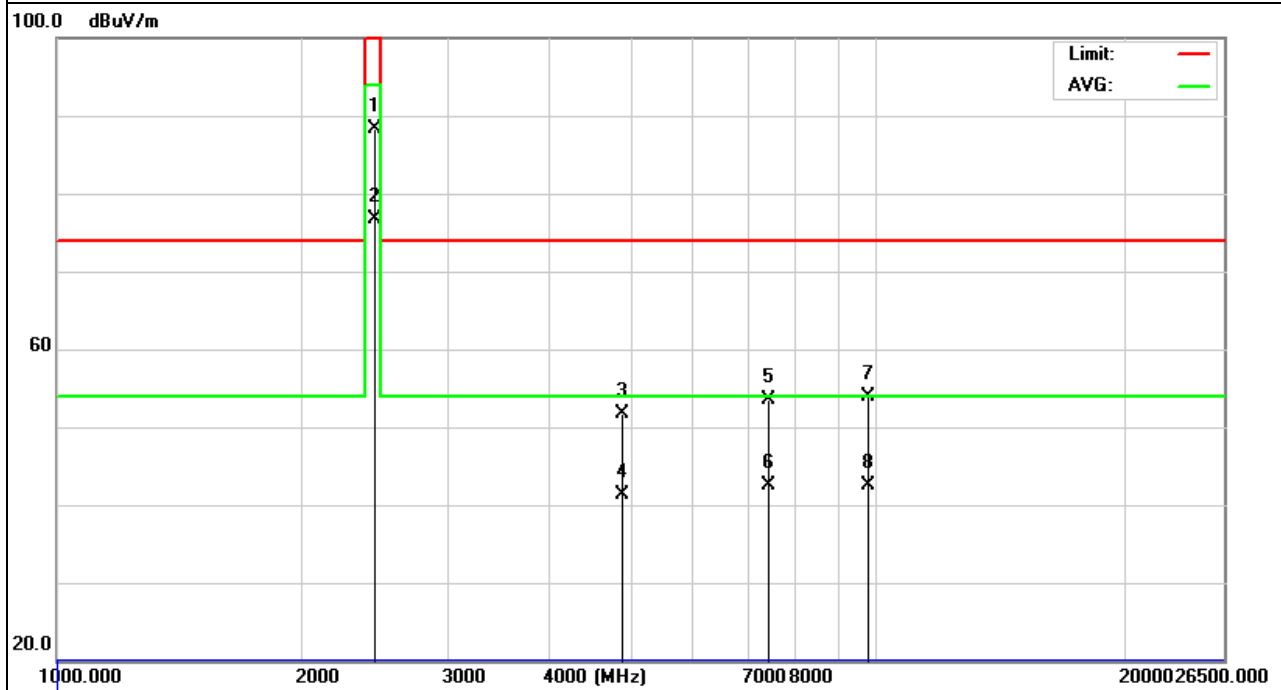
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EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX-CH40	Polarization :	Horizontal

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2441.000	96.72	-8.35	88.37	114.0	-25.63	peak		0	
2		2441.000	85.13	-8.35	76.78	94.00	-17.22	AVG		0	
3		4882.000	56.37	-4.73	51.64	74.00	-22.36	peak			
4		4882.000	45.93	-4.73	41.20	54.00	-12.80	AVG			
5		7323.000	53.72	-0.30	53.42	74.00	-20.58	peak			
6	*	7323.000	42.75	-0.30	42.45	54.00	-11.55	AVG			
7		9764.000	48.63	5.26	53.89	74.00	-20.11	peak			
8		9764.000	37.17	5.26	42.43	54.00	-11.57	AVG			

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.





# Shenzhen Asia Test Technology Co., Ltd.

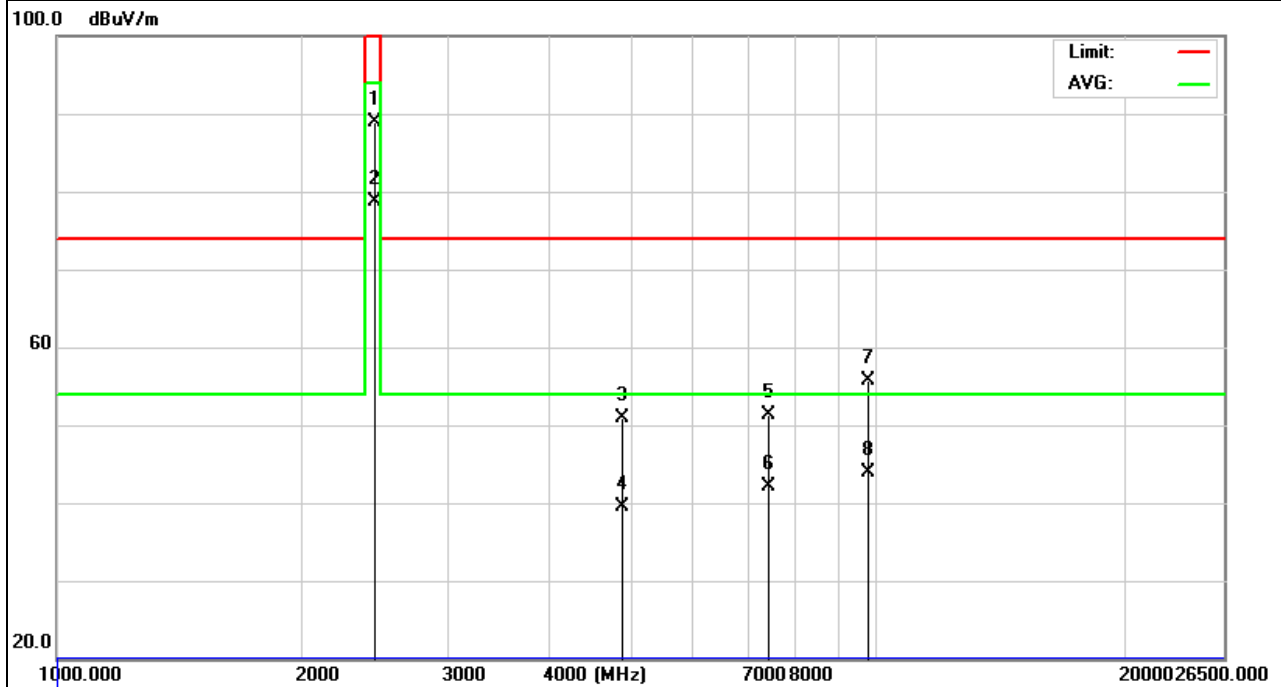
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EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX-CH40	Polarization :	Vertical

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2441.000	97.17	-8.35	88.82	114.0	-25.18	peak		0	
2		2441.000	87.02	-8.35	78.67	94.00	-15.33	AVG		0	
3		4882.000	55.69	-4.73	50.96	74.00	-23.04	peak			
4		4882.000	44.16	-4.73	39.43	54.00	-14.57	AVG			
5		7323.000	51.57	-0.30	51.27	74.00	-22.73	peak			
6		7323.000	42.33	-0.30	42.03	54.00	-11.97	AVG			
7		9764.000	50.37	5.26	55.63	74.00	-18.37	peak			
8	*	9764.000	38.65	5.26	43.91	54.00	-10.09	AVG			

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.





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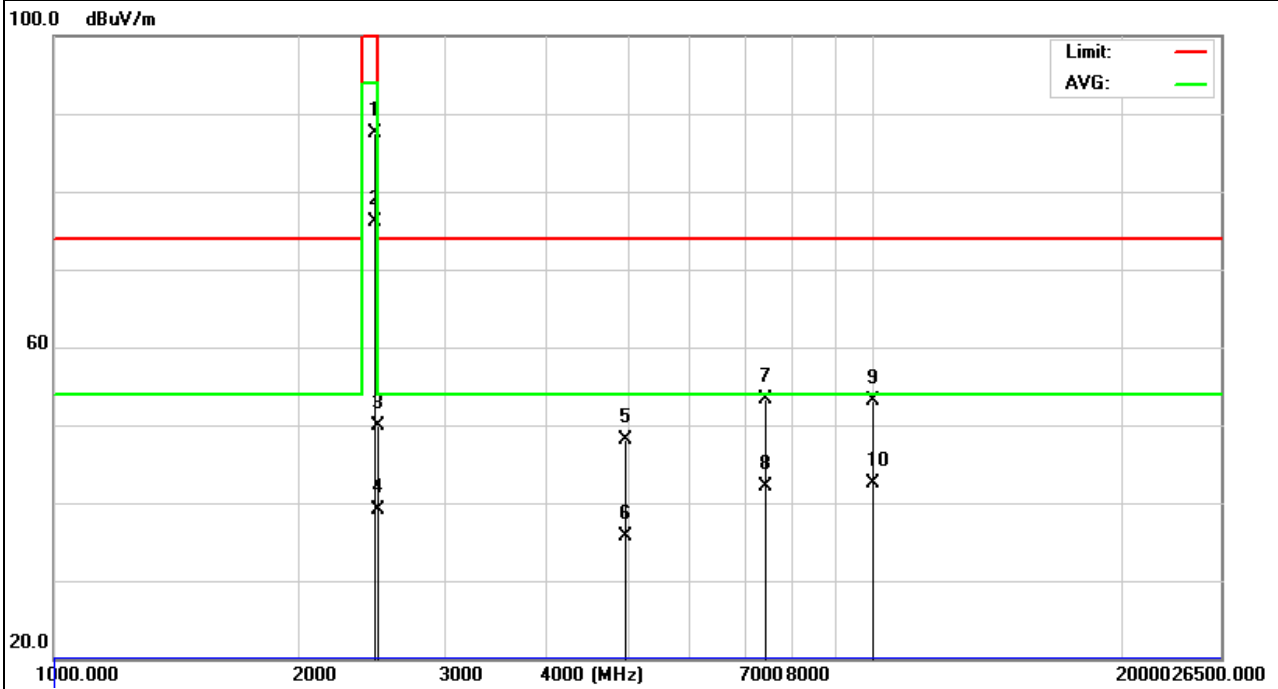
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EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX-CH78	Polarization :	Horizontal

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		2480.000	95.72	-8.27	87.45	114.0	-26.55	peak			
2		2480.000	84.35	-8.27	76.08	94.0	-17.92	AVG			
3		2483.500	58.16	-8.27	49.89	74.00	-24.11	peak			
4		2483.500	47.33	-8.27	39.06	54.00	-14.94	AVG			
5		4960.000	52.67	-4.60	48.07	74.00	-25.93	peak			
6		4960.000	40.35	-4.60	35.75	54.00	-18.25	AVG			
7		7440.000	53.42	-0.02	53.40	74.00	-20.60	peak			
8		7440.000	42.19	-0.02	42.17	54.00	-11.83	AVG			
9		9920.000	47.38	5.66	53.04	74.00	-20.96	peak			
10	*	9920.000	36.92	5.66	42.58	54.00	-11.42	AVG			

**Remark:**

Factor = Antenna Factor + Cable Loss – Pre-amplifier.





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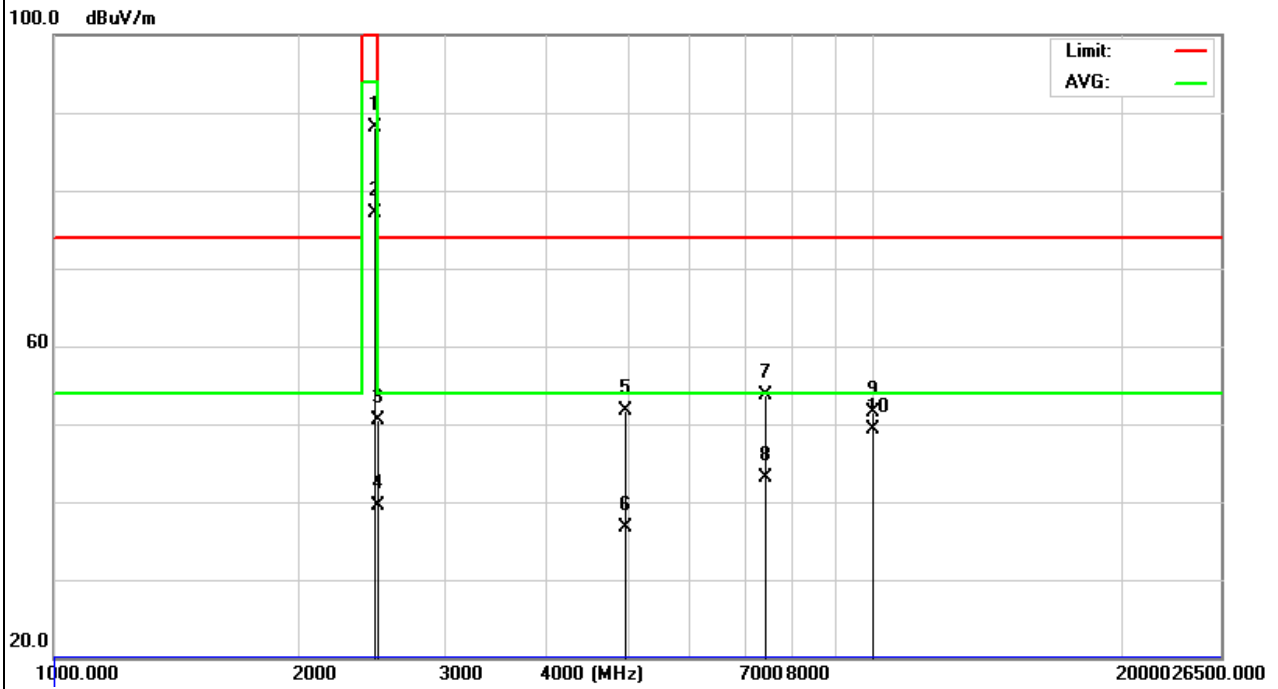
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EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX-CH78	Polarization :	Vertical

No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1	2480.000	96.37	-8.27	88.10	114.0	-25.90	peak			
2	2480.000	85.33	-8.27	77.06	94.0	-16.94	AVG			
3	2483.500	58.76	-8.27	50.49	74.00	-23.51	peak			
4	2483.500	47.69	-8.27	39.42	54.00	-14.58	AVG			
5	4960.000	56.24	-4.60	51.64	74.00	-22.36	peak			
6	4960.000	41.37	-4.60	36.77	54.00	-17.23	AVG			
7	7440.000	53.65	-0.02	53.63	74.00	-20.37	peak			
8	7440.000	43.11	-0.02	43.09	54.00	-10.91	AVG			
9	9920.000	45.76	5.66	51.42	74.00	-22.58	peak			
10 *	9920.000	43.62	5.66	49.28	54.00	-4.72	AVG			

**Remark:**

Factor = Antenna Factor + Cable Loss – Pre-amplifier.





#### **4. BANDWIDTH TEST**

##### **4.1 TEST PROCEDURE**

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 100KHz, VBW $\geq$ RBW, Sweep time = Auto.

##### **4.2 DEVIATION FROM STANDARD**

No deviation.

##### **4.3 TEST SETUP**





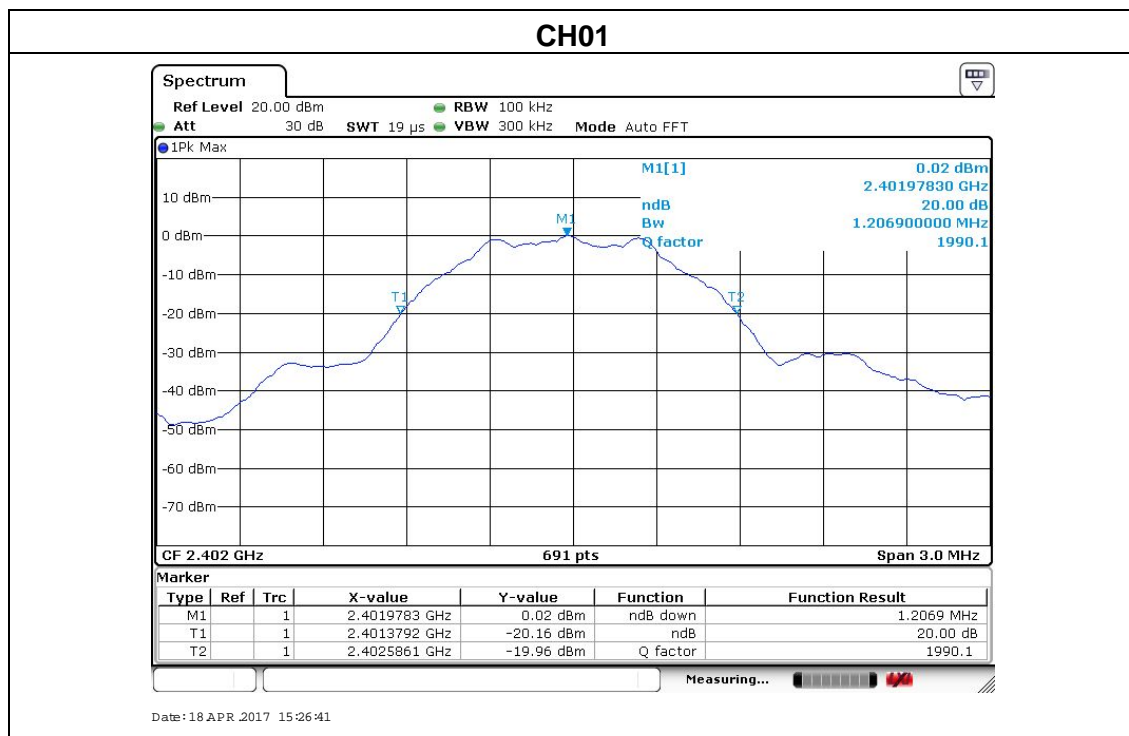
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## 4.4 TEST RESULTS

EUT :	Mini Wireless Keyboard	Model Name :	KP-810-21TL
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	CH01 / CH39 /CH78		

Frequency	20dB Bandwidth (kHz)	Result
2402 MHz	1.2069	<b>PASS</b>
2440 MHz	1.2069	<b>PASS</b>
2480 MHz	1.2069	<b>PASS</b>









5. EUT TEST PHOTO

Radiated Measurement Photos





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## Conducted Measurement Photos





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## APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS





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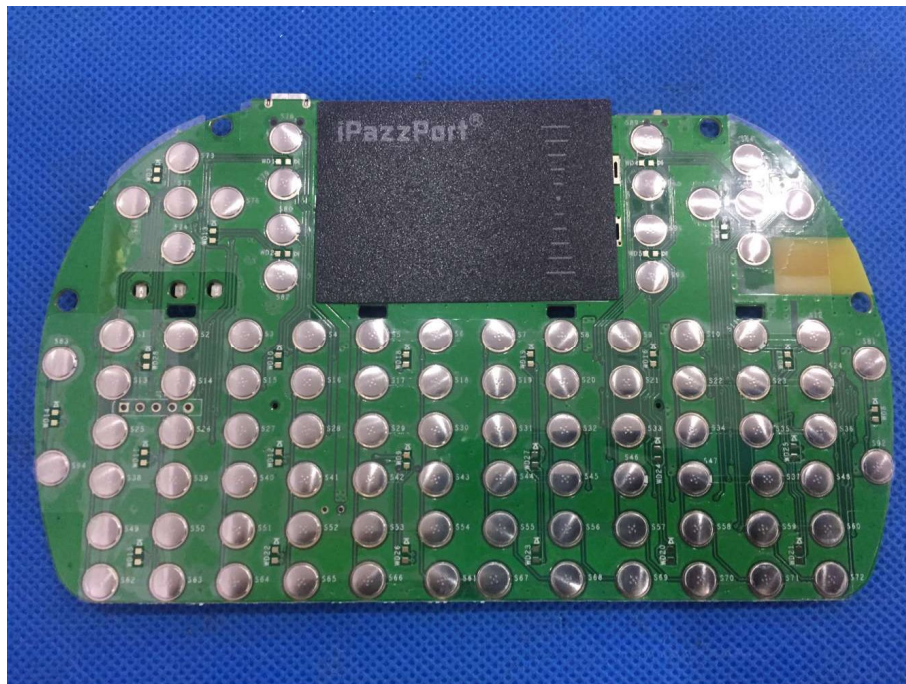
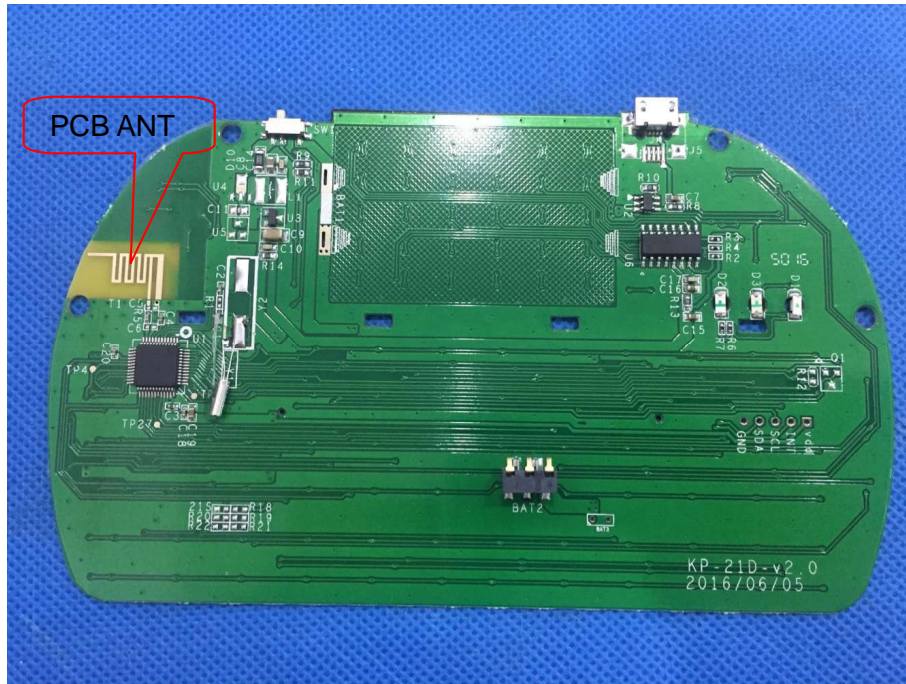
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