



FCC TEST REPORT

On Behalf of

HDC YOUNG CHANG CO., LTD.

Portable PA SYSTEM

Model No.: KST300A

FCC ID: 2AQIZ-KST300A

Prepared for : HDC YOUNG CHANG CO., LTD.
Address : 2FL, Bongsu-daero 196, Gajwa-Dong, Seo-gu, Incheon, Korea

Prepared By : Shenzhen Alpha Product Testing Co., Ltd.
Address : Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,
518103, Shenzhen, Guangdong, China

Report Number : T1880885 06
Date of Receipt : June 11, 2018
Date of Test : June 11, 2018 - July 30, 2018
Date of Report : July 31, 2018
Version Number : REV0

TABLE OF CONTENTS

Description	Page
1. Summary of Standards And Results.....	5
1.1. Description of Standards and Results	5
2. General Information	6
2.1. Description of Device (EUT).....	6
2.2. Tested Supporting System Details	7
2.3. Block Diagram of connection between EUT and simulators.....	7
2.4. Accessories Details	7
2.5. Test Mode Description.....	7
2.6. Test Conditions	8
2.7. Test Facility	8
2.8. Measurement Uncertainty	8
2.9. Test Equipment List	9
3. Test Results and Measurement Data	11
3.1. Radiated RF Power Output	11
3.2. Frequency Stability	13
3.3. Operating bandwidth.....	16
3.4. Radiated Spurious Emission	18
4. Photograph	25
4.1. Photos of Radiated Emission Test (In Semi Anechoic Chamber)	25
5. Photos of The EUT	26

TEST REPORT DECLARATION

Applicant : HDC YOUNG CHANG CO., LTD.
 Address : 2FL, Bongsu-daero 196, Gajwa-Dong, Seo-gu, Incheon, Korea
 Manufacturer : JOYO TECHNOLOGY CO., LTD
 Address : 2/F, Lushi Industry Building, 28th District, Baoan, Shenzhen, 518101 China.
 EUT Description : Portable PA SYSTEM

(A) Model No. : KST300A



(B) Trademark :

KURZWEIL®

Measurement Standard Used:

FCC Rules and Regulations Part 74 Subpart H: 2017, Part 2: 2017, ANSI C63.26:2015

The device described above is tested by Shenzhen Alpha Product Testing Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Shenzhen Alpha Product Testing Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the FCC Part 74 requirements.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen Alpha Product Testing Co., Ltd.

Tested by (name + signature).....:	Reak Yang Test Engineer <i>Reak Yang</i>
Approved by (name + signature).....:	Simple Guan Project Manager <i>Simple Guan</i>
Date of issue.....:	July 31, 2018	

Revision History

Revision	Issue Date	Revisions	Revised By
00	July 31, 2018	Initial released Issue	Simple Guan

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Requirement	CFR 47 Section	Result
Radiated RF Power Output	§74.861(e)	PASS
Frequency Stability	§74.861(e)	PASS
Operating bandwidth	§74.861(e)	PASS
Spurious Emissions(Radiated)	§74.861(e)	PASS

Note: 1. P is an abbreviation for Pass.
2. F is an abbreviation for Fail.
3. N/A is an abbreviation for Not Applicable.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description : Portable PA SYSTEM

Model Number : KST300A

Diff : N/A

Test Voltage : DC 3V From AAA Battery

Operation frequency : 195.1MHz, 204.05MHz

Channel No. : 2

Modulation type : FM

Antenna Type : PCB Antenna, Max. gain is 1 dBi

Software version : N/A

Hardware version : ZL-22R

Trademark :



KURZWEIL®

Sample Type : Prototype production

Accessories1 Adapter

Model FJ-SW1504000D

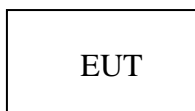
Input 100-240V~50/60Hz, 1.5A MAX

Output 15V, 4000Ma

2.2. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or DOC
1	N/A	N/A	N/A	N/A	N/A

2.3. Block Diagram of connection between EUT and simulators



2.4. Accessories Details

No.	Description	Manufacturer	Model	Serial Number	Certification or DOC
1.	Adapter	FUJIA	FJ-SW1504000D	N/A	N/A
2.	Speaker	JOYO	KST 300A	N/A	Sdoc

2.5. Test Mode Description

Test mode:

Mode	Channel	Frequency (MHz)
FM	CH1	195.1
FM	CH2	204.05

Note: 1. EUT work in Continuous TX mode, and select test channel, wireless mode
 2. The EUT has been tested as an independent unit. And Continual Transmitting in maximum power.
 3. For the relevant Conducted Measurement, the temporary antenna connector is used during the measurement. Antenna Connector Impedance: 50Ω, Cable Loss: 1.0 dB

2.6. Test Conditions

Temperature range	21-25°C
Humidity range	40-75%
Pressure range	86-106kPa

2.7. Test Facility

Shenzhen Alpha Product Testing Co., Ltd.

Building i, No.2, Lixin Road, Fuyong Street, Bao'an District,
518103, Shenzhen, Guangdong, China

June 21, 2018 File on Federal Communication Commission

Registration Number: 293961

July 25, 2017 Certificated by IC

Registration Number: 12135A

2.8. Measurement Uncertainty

(95% confidence levels, k=2)

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.74dB
Uncertainty for Radiation Emission test (<1G)	3.77 dB (Distance: 3m Polarize: V)
	3.80 dB (Distance: 3m Polarize: H)
Uncertainty for Radiation Emission test (>1G)	4.16 dB (Distance: 3m Polarize: V)
	4.13 dB (Distance: 3m Polarize: H)
Uncertainty for conducted RF Power	0.37dB

2.9. Test Equipment List

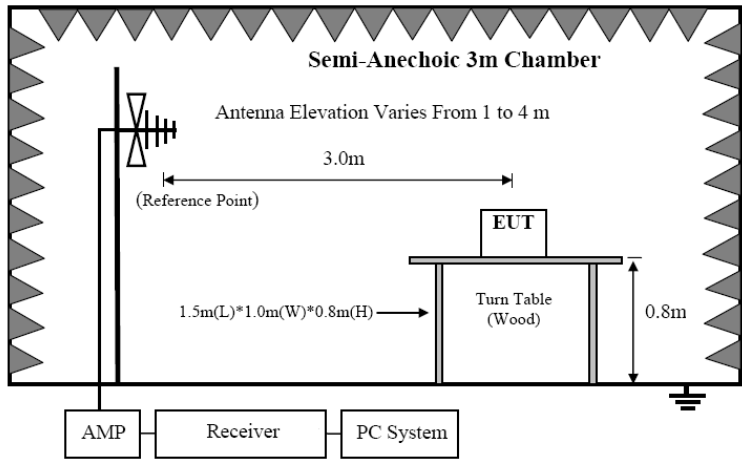
Equipment	Manufacturer	Model No.	Serial No.	Last cal.	Cal. Due day
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-4 38	2016.09.30	2018.09.29
Test Receiver	ROHDE&SCHWARZ	ESCI	101165	2017.09.22	2018.09.21
Spectrum analyzer	Agilent	E4407B	MY49510055	2017.09.23	2018.09.22
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	2016.09.30	2018.09.29
Filter	KANGMAI	ZLPF-LDC-1000- 1959	1209002075	2017.09.22	2018.09.21
Filter	WAINWRIGHT	WHKX2.80 /18G- 12SS	SN1	2017.09.22	2018.09.21
RF Cable	Resenberger	Cable 4	N/A	2017.09.22	2018.09.21
CMU200	ROHDE&SCHWARZ	CMU200	116785	2017.09.22	2018.09.21
Signal Analyzer	Agilent	N9020A	MY499100060	2017.09.23	2018.09.22
vector Signal	Agilent	N5182A	MY49060042	2017.09.22	2018.09.21
vector Signal	Agilent	E4438C	US44271917	2017.09.28	2018.09.27
Amplifier	HP	HP8347A	2834A00455	2017.09.23	2018.09.22
Amplifier	Teseq	LNA6901	72718	2017.09.23	2018.09.22
Amplifier	Agilent	8449B	3008A02664	2017.09.23	2018.09.22
Filter	WAINWRIGHT	WHKX1.0G/ 15G- 10SS	SN40	2017.09.22	2018.09.21
Test Receiver	ROHDE&SCHWARZ	ESR	1316.3003K03-102082-Wa	2017.09.23	2018.09.22
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	2016.09.30	2018.09.29
9*6*6 anechoic	CHENYU	9*6*6	N/A	2016.07.21	2020.07.20
RF Cable	Resenberger	Cable 1	N/A	2017.09.22	2018.09.21
RF Cable	Resenberger	Cable 2	N/A	2017.09.22	2018.09.21
RF Cable	Resenberger	Cable 3	N/A	2017.09.28	2018.09.27
Power Sensor	Power Radio	RPR3006W	15100041SNO91	2017.09.23	2018.09.22
Power Sensor	Power Radio	RPR3006W	15100041SNO92	2017.09.23	2018.09.22
CMW500	ROHDE&SCHWARZ	CMW500	1201.0002K50-117239-sM	2017.09.22	2018.09.21
Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2016.09.29	2018.09.28
Audio Analyzer	ROHDE&SCHWARZ	UPL	100689	2017.06.15	2018.06.15
Attenuator	HP	8494B	DC-18G	2017.10.22	2018.10.23

Attenuator	HP	8496B	DC-18G	2017.10.22	2018.10.23
Temperature & Humidity test	GZGONGWEN	GDS-250	080821	2017.10.22	2018.10.23
20dB Attenuator	ICPROBING	IATS1	82347	2017.09.22	2018.09.21

3. TEST RESULTS AND MEASUREMENT DATA

3.1. Radiated RF Power Output

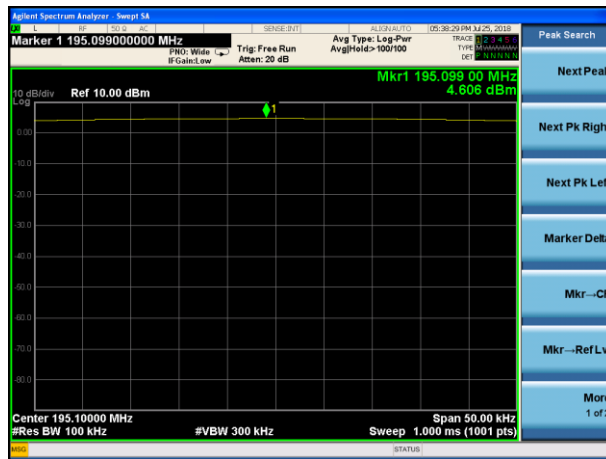
3.1.1. Test Specification

Test Requirement:	Part 74.861(e)
Test Method:	FCC part 2.1046
Limits:	50mW
Test Setup:	 <p style="text-align: center;">Semi-Anechoic 3m Chamber</p> <p style="text-align: center;">Antenna Elevation Varies From 1 to 4 m</p> <p style="text-align: center;">3.0m (Reference Point)</p> <p style="text-align: center;">1.5m(L)*1.0m(W)*0.8m(H) → Turn Table (Wood) 0.8m</p> <p style="text-align: center;">AMP — Receiver — PC System</p>
Test Procedure:	<ol style="list-style-type: none"> a) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber b) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions. c) Change work frequency or channel of device if practicable. d) the Spectrum Analyzer RBW is set at 100KHz, VBW is set at 300KHz for Peak measure e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions f) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded.
Test Result:	PASS

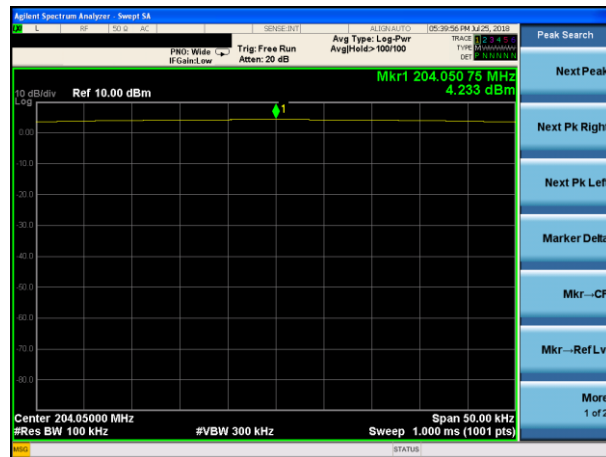
3.1.2. Test Results

FM mode				
Test channel	Maximum Output Power (dBm)	Maximum Output Power (mW)	Limit (mW)	Result
1	4.606	2.89	50	PASS
2.	4.233	2.65	50	PASS

Channel 1

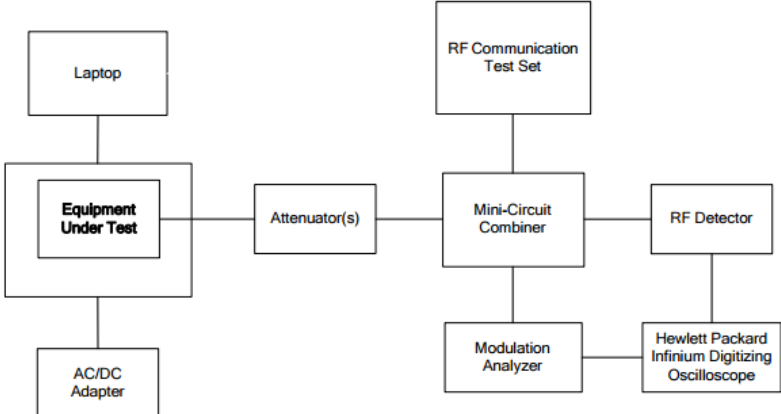


Channel 2



3.2.Frequency Stability

3.2.1.Test Specification

Test Requirement:	FCC Part 74.861(e)
Test Setup:	 <pre> graph TD Laptop[Laptop] --- EUT[Equipment Under Test] EUT --- ACDC[AC/DC Adapter] EUT --- Att[Attenuator(s)] Att --- MC[Mini-Circuit Combiner] MC --- RFCT[RF Communication Test Set] MC --- MA[Modulation Analyzer] MA --- HPO[Hewlett Packard Infinium Digitizing Oscilloscope] MC --- RF[RF Detector] RF --- HPO </pre>
Test Procedure:	<p>The output of the EUT was connected to a power meter in order to get a reference power measurement. And the reference level is -20dBm. Once the reference power measurement was determined, an external signal source was connected to the Modulation Domain Analyzer in order to set the trigger level.</p> <p>The EUT was connected to the Modulation Domain Analyzer. In order to capture a single-shot turn-on of the transmitter signal, the modulation domain analyzer was set to trigger on the rising edge of the waveform. Plots were taken.</p> <p>The modulation domain analyzer was then adjusted to trigger on the falling edge of the transmitter waveform in order to capture a single-shot turn-off transient of the transmitter signal. Plots were taken.</p>
Test Result:	PASS

3.2.2. Test data

Channel 1


Conclusion: PASS			
Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
FM	2.8V	-27	-0.138391
	2.7V	-27	-0.138391
	2.6V	-27	-0.138391
	2.5V	-27	-0.138391
Limit	± 50ppm		
Mode	Temperature (°C)	Frequency error (Hz)	frequency error (ppm)
FM	-30	-35	-0.179395
	-20	-27	-0.138391
	-10	-54	-0.276781
	0	-29	-0.148642
	10	-31	-0.158893
	20	-43	-0.220400
	30	-26	-0.133265
	40	-19	-0.097386
	50	-28	-0.143516
Limit	± 50ppm		

Channel 2

Conclusion: PASS			
Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
FM	2.8V	-24	-0.11761
	2.7V	-24	-0.11761
	2.6V	-24	-0.11761
	2.5V	-24	-0.11761
Limit	$\pm 50\text{ppm}$		
Mode	Temperature (°C)	Frequency error (Hz)	frequency error (ppm)
FM	-30	-31	-0.150689
	-20	-19	-0.092111
	-10	-47	-0.228166
	0	-21	-0.102754
	10	-22	-0.108722
	20	-38	-0.184493
	30	-24	-0.118621
	40	-17	-0.081884
50	-20	-0.100343	
Limit	$\pm 50\text{ppm}$		

3.3. Operating bandwidth

3.3.1. Test Specification

Test Requirement:	FCC Part 74.861(e)
Test Setup:	 <p style="text-align: center;"> Spectrum Analyzer EUT </p>
Test Procedure:	The resolution bandwidth of the spectrum analyzer was set at 5KHz and the spectrum was recorded in the Frequency band ± 50 KHz from the carrier frequency.
Test Result:	PASS

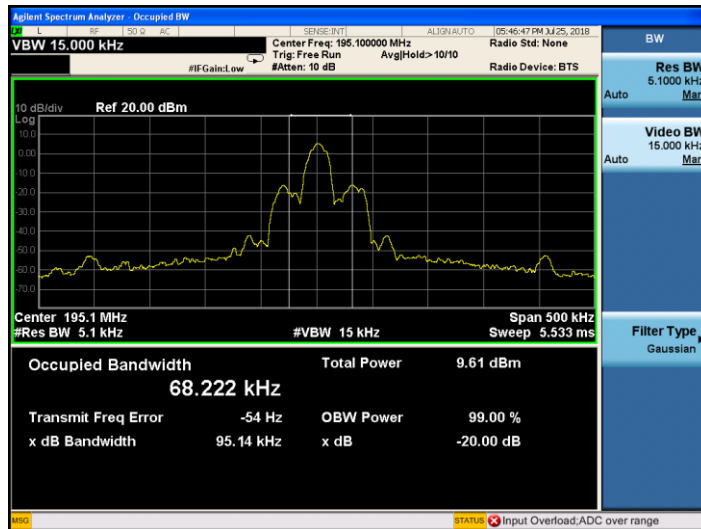
3.3.2. Test data

Occupied Bandwidth:

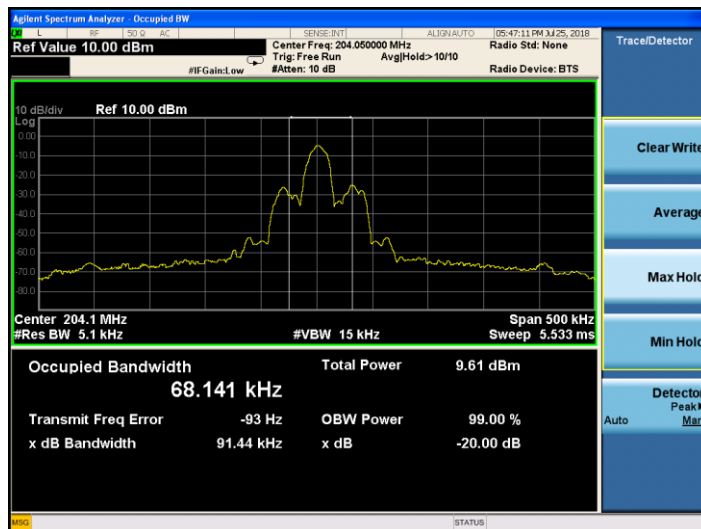
Channel	Frequency (MHz)	26dB Bandwidth (KHz)	99% Occupied Bandwidth (KHz)	Limit (KHz)	Result
1	195.1	/	68.222	200	PASS
2.	204.05	/	68.141	200	PASS

Test plots as follows:
FM mode: Occupied Bandwidth

Channel 1



Channel 2



3.4. Radiated Spurious Emission

3.4.1. Test Specification

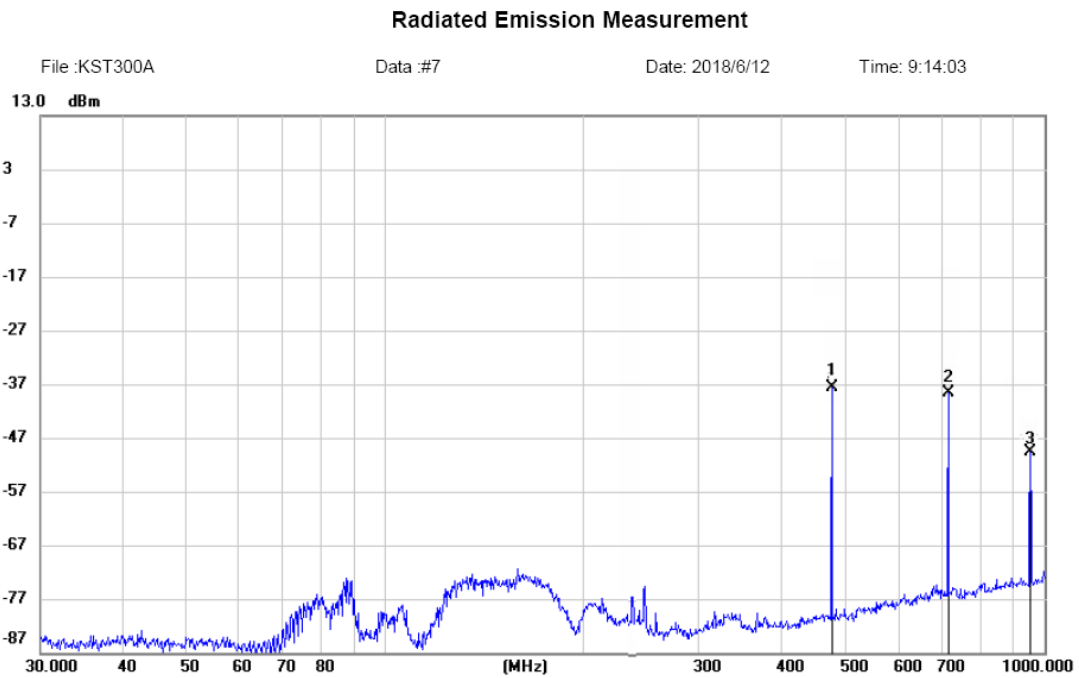
Test Requirement:	FCC Part 74.861(e)											
Measurement Distance:	3 m											
Antenna Polarization:	Horizontal & Vertical											
Operation mode:	Refer to item 4.1											
Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>RBW</th> <th>VBW</th> </tr> </thead> <tbody> <tr> <td>30MHz-1GHz</td> <td>100KHz</td> <td>300KHz</td> </tr> <tr> <td rowspan="2">Above 1GHz</td> <td>1MHz</td> <td>3MHz</td> </tr> <tr> <td>1MHz</td> <td>10Hz</td> </tr> </tbody> </table>	Frequency	RBW	VBW	30MHz-1GHz	100KHz	300KHz	Above 1GHz	1MHz	3MHz	1MHz	10Hz
Frequency	RBW	VBW										
30MHz-1GHz	100KHz	300KHz										
Above 1GHz	1MHz	3MHz										
	1MHz	10Hz										
Limit:	<p>The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:</p> <p>(iii) On any frequency removed from the operating frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: at least 25 dB;</p> <p>(ii) On any frequency removed from the operating frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: at least 35 dB;</p> <p>(iii) On any frequency removed from the operating frequency by more than 250 percent of the authorized bandwidth: at least $43 + 10\log_{10}$ (mean output power in watts) dB.</p>											
Test setup:	<p>The diagram illustrates the test setup. A signal generator (Sig Gen) is connected to a turn table. A substitution antenna (Substitution Ant) is mounted on the turn table. The turn table is positioned at a distance of 0.8m or 1.5m from a ground plane. A measurement antenna (Ant) is mounted on a vertical stand at a height of 4m. The measurement distance between the substitution antenna and the measurement antenna is 3m. The measurement antenna is connected to an RF test receiver.</p>											
Test Procedure:	1) Measurements of all significant broadband and narrowband signals from 25MHz to 1GHz were made											

	<p>using a quasi-peak detector and a Bilog antenna. Measurements above 1GHz were made using an average detector and a horn waveguide antenna.</p> <p>2) To ensure that maximum or worst case, emission levels were measured, the following steps were taken:</p> <ol style="list-style-type: none"> i. The EUT was rotated so that all of its sides were exposed to the receiving antenna. ii. Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured. iii. The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings. <p>3) Once the significant narrowband emissions were defined and their measurements maximized, the measurements were confirmed by matching the field strength of the maximized signal from the EUT by substituting the EUT with a dipole antenna below 1GHz and a waveguide horn antenna above 1GHz and reproducing the field strength measurement.</p> <ol style="list-style-type: none"> i. The substitution antenna was positioned in the same orientation as the EUT. ii. The output of a signal generator set at the same frequency as the significant narrow band emission was fed into the substitution antenna. iii. The test antenna was raised or lowered as necessary to ensure that the maximum signal was still received. iv. The output power level (in dBm) of the signal generator was increased until the corresponding reading on the test receiver matched the maximized field strength measurement. v. The output power level of the signal generator was recorded as the absolute level of the spurious radiated emission in dBm taking into account any cable loss and antenna gain inherent in the substitution test setup.
Test results:	PASS

3.4.2. Test Data

Test result
Test Mode : Channel 1
Note: All the emissions detected are belonging to narrowband emissions.
This report only list the worst case mode data.

Below 1GHz(Horizontal)



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree
		MHz	dBm	dB	dBm	dBm	dB	cm	degree
1	*	475.4991	-54.67	17.04	-37.63				
2		714.1734	-59.52	20.84	-38.68				
3		952.0937	-73.21	23.58	-49.63				

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Below 1GHz(Vertical)

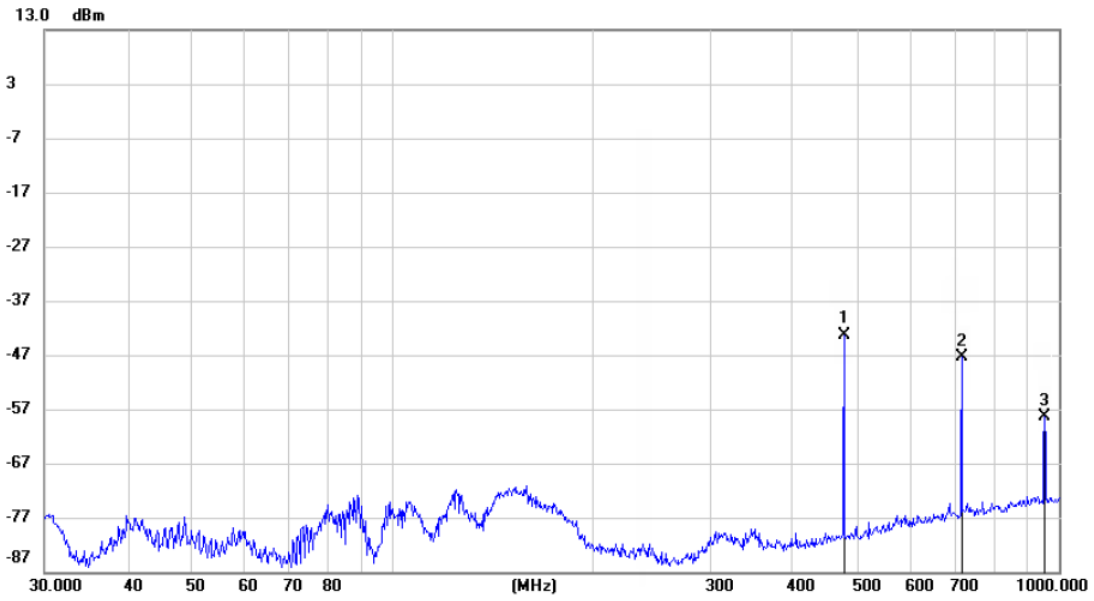
Radiated Emission Measurement

File :KST300A

Data :#8

Date: 2018/6/12

Time: 9:12:13



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBm	dB	dBm	dBm	dB	cm	degree	Comment
1	*	475.4990	-60.52	17.04	-43.48					peak
2		714.1734	-68.09	20.84	-47.25					peak
3		952.0937	-81.86	23.58	-58.28					peak

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Above 1GHz(Vertical)

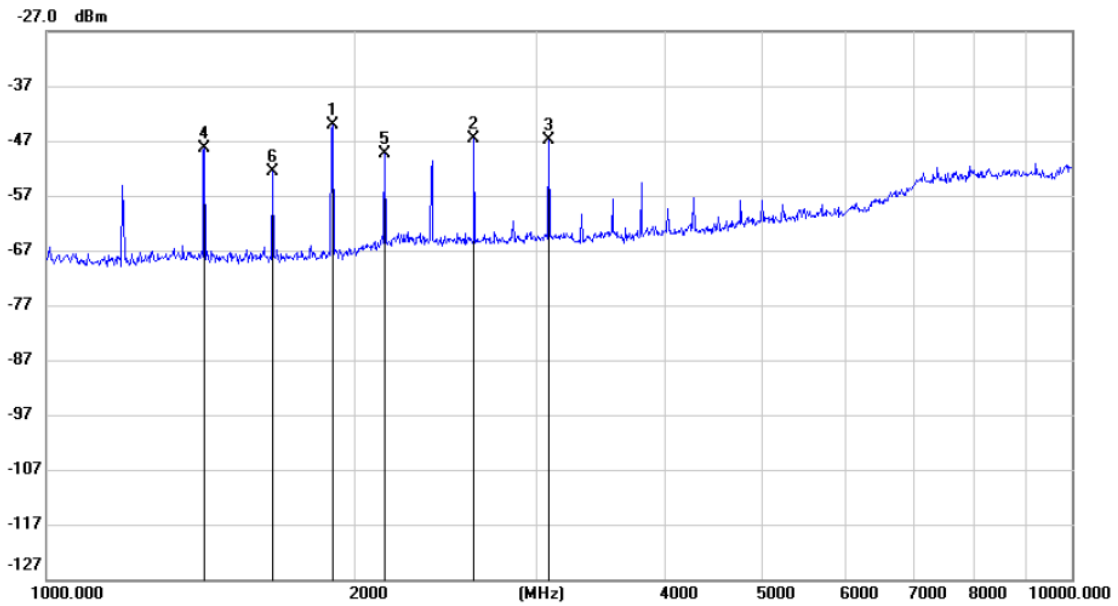
Radiated Emission Measurement

File :KST300A

Data :#9

Date: 2018/6/12

Time: 8:58:03



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBm	dB	dBm	dBm	dB	cm	degree	Comment
1	*	1901.078	-38.02	-6.01	-44.03					peak
2		2612.161	-43.62	-3.10	-46.72					peak
3		3090.295	-44.87	-2.07	-46.94					peak
4		1425.608	-41.42	-7.00	-48.42					peak
5		2137.962	-45.55	-3.83	-49.38					peak
6		1659.587	-45.76	-6.84	-52.60					peak

Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Below 1GHz(Horizontal)

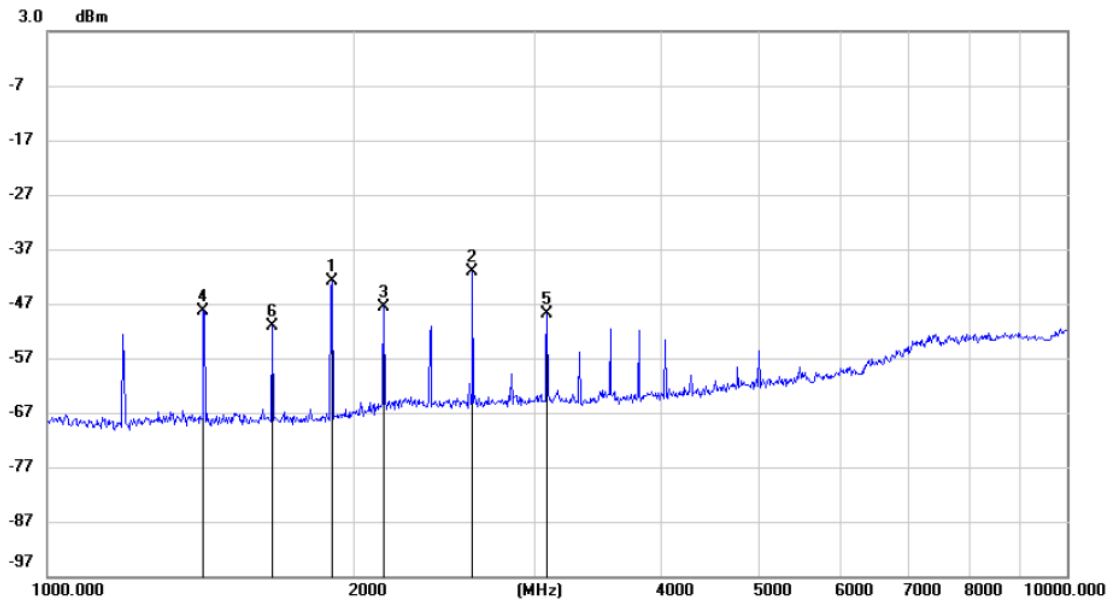
Radiated Emission Measurement

File :KST300A

Data :#10

Date: 2018/6/12

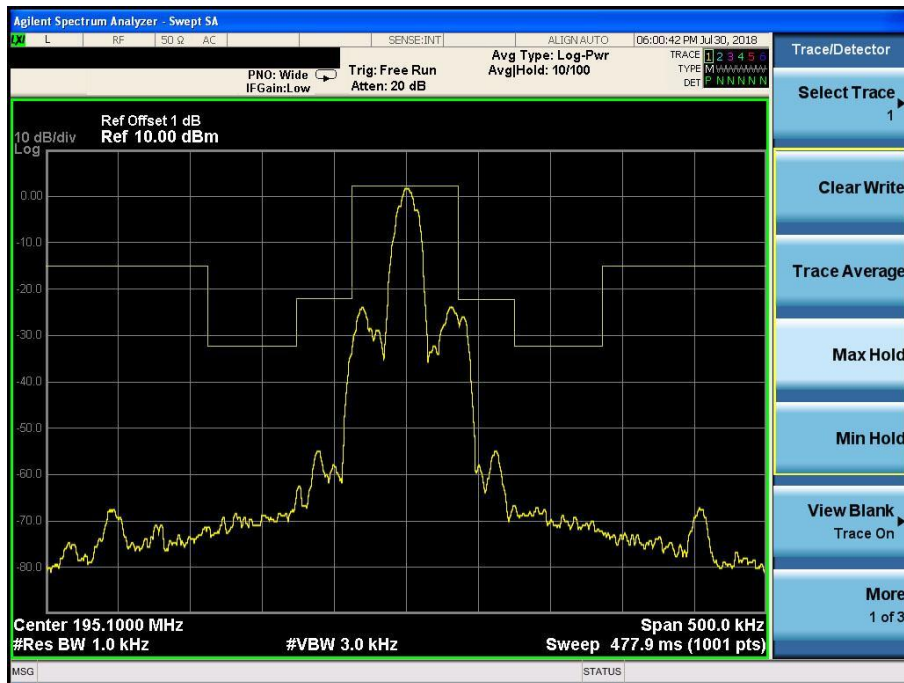
Time: 9:01:42



No.	Mk.	Freq. MHz	Reading Level dBm	Correct Factor dB	Measure- ment dBm	Limit dBm	Margin dB	Antenna Height cm	Table Degree degree	Comment
1	*	1901.078	-36.92	-6.01	-42.93					peak
2		2612.161	-37.91	-3.10	-41.01					peak
3		2137.962	-43.76	-3.83	-47.59					peak
4		1422.329	-41.25	-7.00	-48.25					peak
5		3090.295	-46.74	-2.07	-48.81					peak
6		1663.413	-44.33	-6.84	-51.17					peak

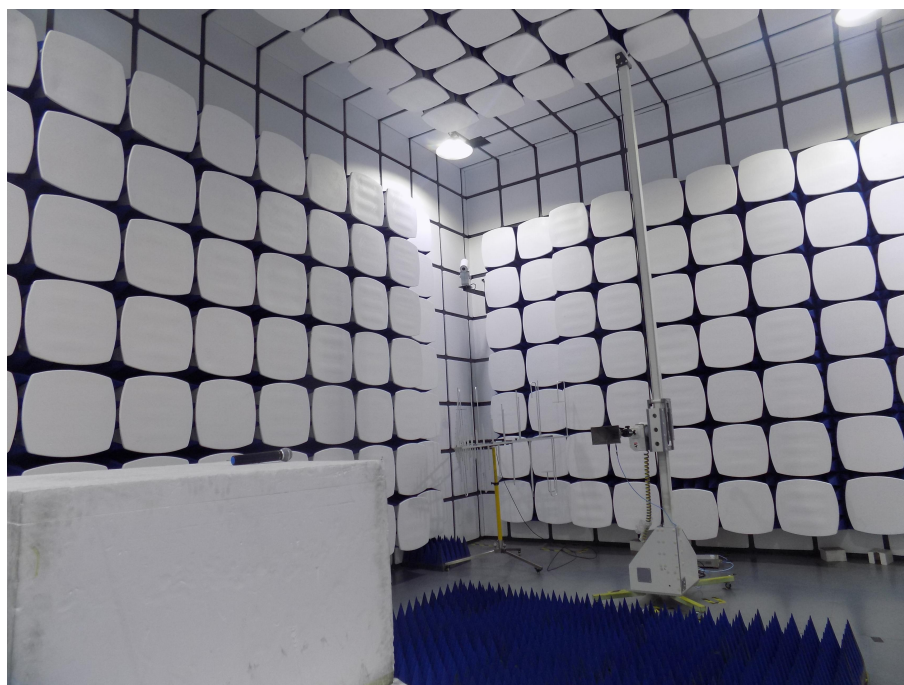
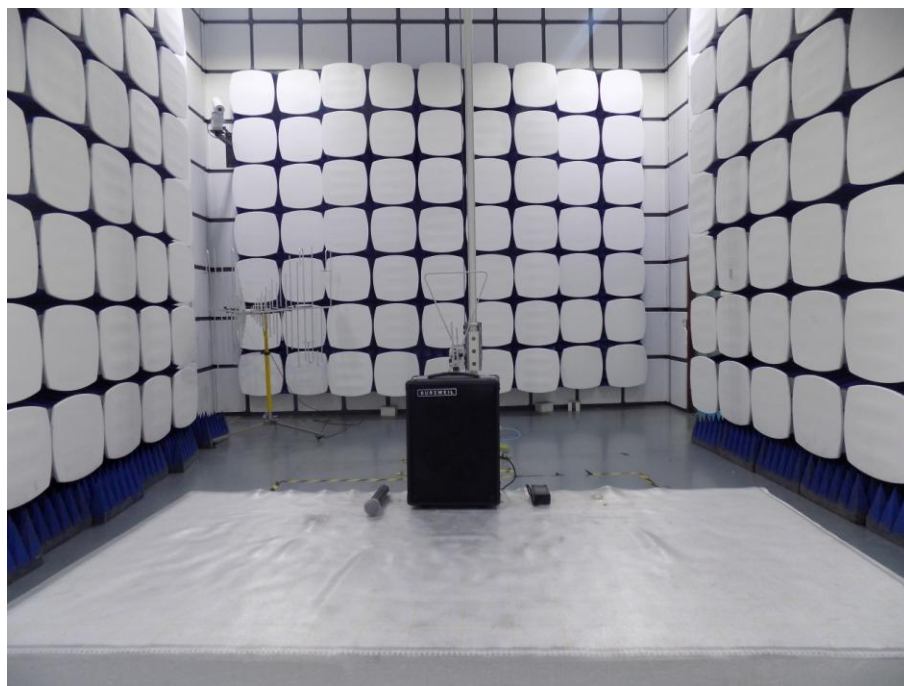
Note:1. *:Maximum data; x:Over limit; !:over margin.

2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.



4. PHOTOGRAPH

4.1.Photos of Radiated Emission Test (In Semi Anechoic Chamber)



5. PHOTOS OF THE EUT



EUT View



EUT View



EUT View



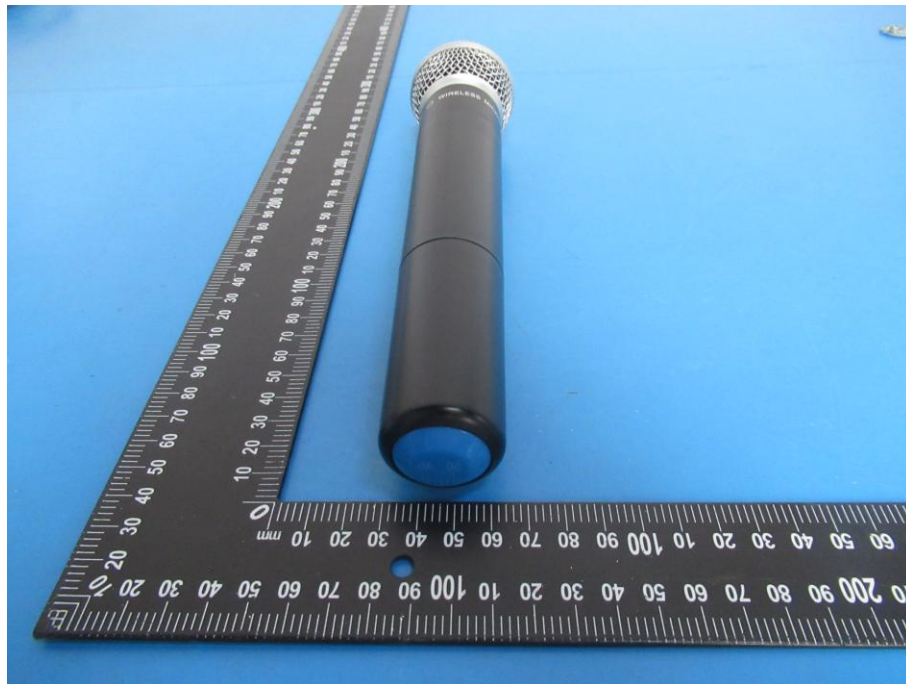
EUT View



EUT View



EUT View



EUT View



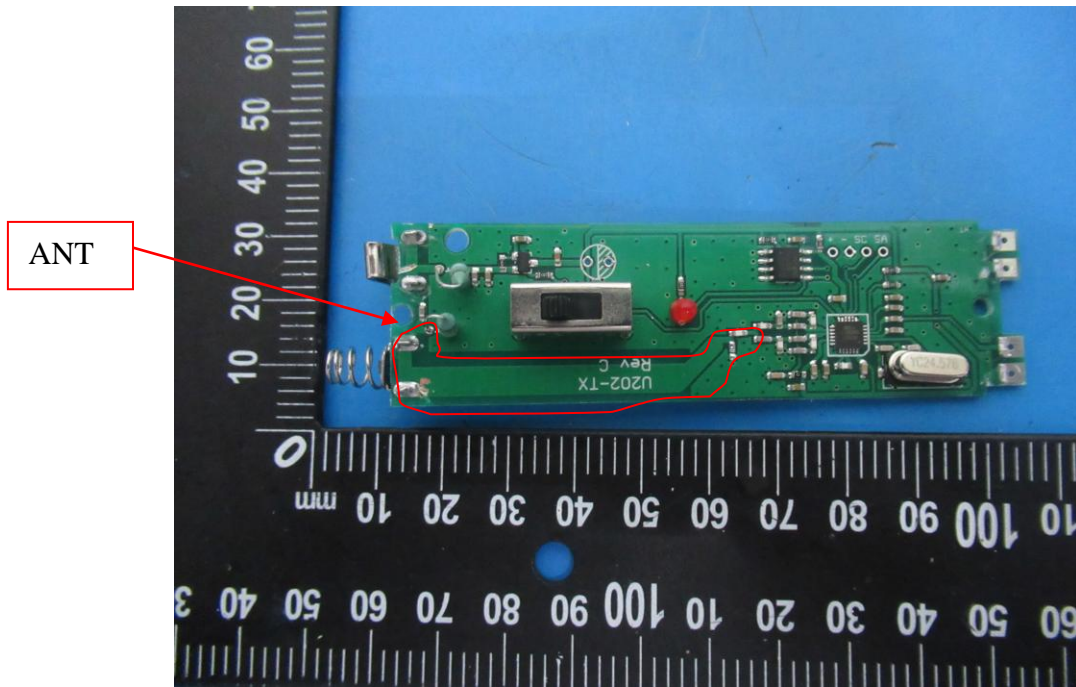
EUT View



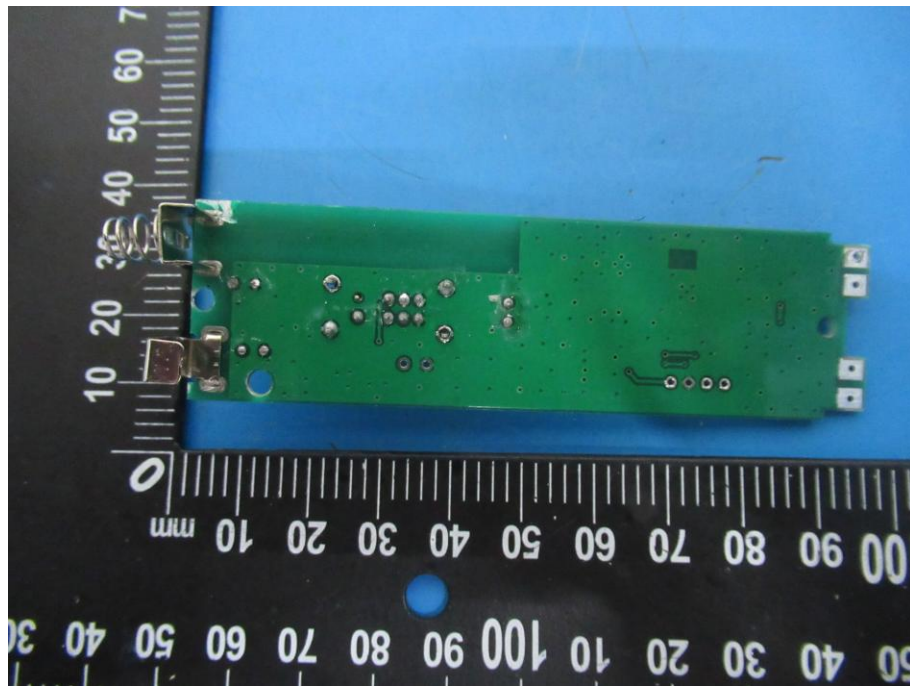
EUT View



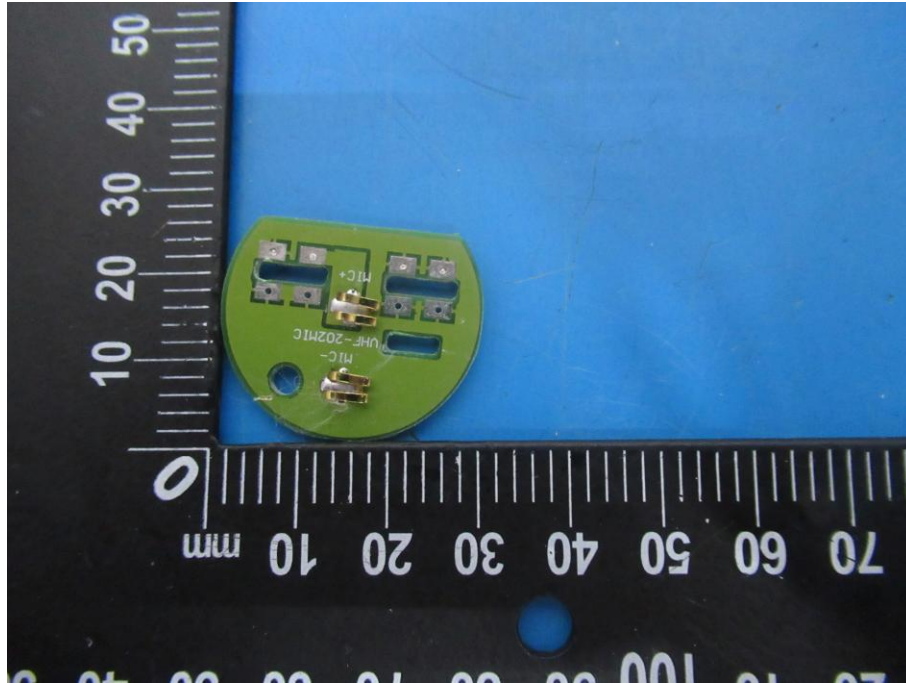
EUT View



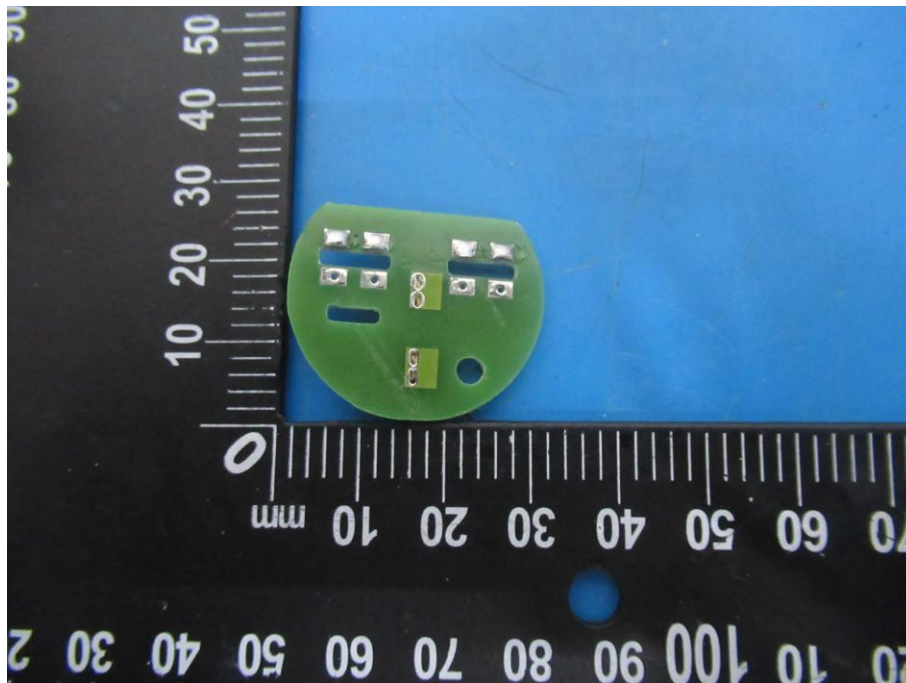
EUT View



EUT View



EUT View



EUT View

----END OF REPORT----