FCC COMPLIANCE REPORT

for

SHENZHEN CHUANGJIENG ELECTRONICS LTD.

Transmitter for Wireless Door Chime

Model Number: 00405T

Prepared for : SHENZHEN CHUANGJIEXING ELECTRONICS LTD.
Address : 3F, BLDG. A6, Laodong 1st Industial Zone. XiXiang, BaoAn, Shen Zhen, China

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Report Number : NSE-F09032949
Date of Test : Mar.1~5, 2009
Date of Report : Mar. 6, 2009

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NS Technology Co., Ltd.

Applicant: **Address:**	SHENZHEN CHUANGJIEXING ELECTRONICS LTD. 3F, BLDG. A6, Laodong 1st Industial Zone. XiXiang, BaoAn, Shen Zhen, China		
Manufacturer: **Address:**	SHENZHEN CHUANGJIEXING ELECTRONICS LTD. 3F, BLDG. A6, Laodong 1st Industial Zone. XiXiang, BaoAn, Shen Zhen, China		
E.U.T:	Transmitter for Wireless Door Chime		
Model Number:	00405T		
Trade Name:	-----	**Operating Frequency:**	433.92MHz
Date of Receipt:	Feb.27, 2009	**Date of Test:**	Mar.1~5, 2009
Test Specification:	FCC Part 15 Subpart C: July. 10, 2008 ANSI C63.4:2003		
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: Mar. 6,2009**		

Tested by:	Reviewed by:	Approved by:
David	Iceman Hu	Steven Lee
David / Engineer	Iceman Hu / Supervisor	Steven Lee / Manager

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

1. GENERAL PRODUCT INFORMATION

1.1. Product Function

The EUT is used to transmit control command only. The operation frequency is 433.92MHz. Press the button on remote transmitter, Please refer to the user's manual for the details.

1.2. Description of Device (EUT)

E.U.T.	:	Transmitter for Wireless Door Chime
Model No.	:	00405T
Operating Frequency	:	433.92MHz
Number of Channels	:	1 Channels
Type of Modulation	:	ASK
Antenna Type	:	Integral
System Input Voltage	:	Nominal Voltage: DC 3V(Battery)
Temperature Range(Operating)	:	0 ~+ 40℃

1.3. Difference between Model Numbers

None.

1.4. Independent Operation Modes

The basic operation modes are: TX mode

2. TEST SITES

2.1. Test Facilities

EMC Lab **:** Certificated by TUV Rheinland, Germany.
Date of registration: July 28, 2003

Certificated by FCC, USA
Registration No.: 897109
Date of registration: October 10, 2003

Certificated by VCCI, Japan
Registration No.: R-1798 & C-1926
Date of registration: January 30, 2004

Certificated by CNAL, CHINA
Registration No.: L1744
Date of registration: November 25, 2004

Certificated by Intertek ETL SEMKO
Registration No.: TMP-013
Date of registration: June 11, 2005

Certificated by TUV/PS, Hong Kong
Date of registration: December 1, 2005

Certificated by Industry Canada
Registration No.: 5936
Date of registration: March 24, 2006

Certificated by ATCB, America
Date of registration: August 03, 2006

Name of Firm **:** NS Technology Co., Ltd.

Site Location **:** Chenwu Industrial Zone, Houjie Town, Dongguan City, Guangdong, China

2.2. List of Test and Measurement Instruments

2.2.1. For radiated emission test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Test Receiver	R&S	ESCS30	100340	May 25,08	May 25,09
Spectrum Analyzer	HP	8593E	3448U00806	May 25,08	May 25,09
Amplifier	HP	8447D	2944A10488	May 2,08	May 2,09
Amplifier	BURGEON	PEC-38-30M18G-12-SEF	B001	Jun.02,08	Jun.02,09
Bilog Antenna	Teseq	CBL 6111D	25758	Oct. 15,08	Oct. 15,09
Horn Antenna	EMCO	3117	00062558	May 02,08	May 2,09

2.2.2. For 20dB Occupied Bandwidth test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	R/S	ESPI	1142.8007.03	Mar.20,08	Mar.20,09
Bilog Antenna	Teseq	CBL 6111D	25758	Oct. 15,08	Oct. 15,09

2.2.3. For Deactivate time test

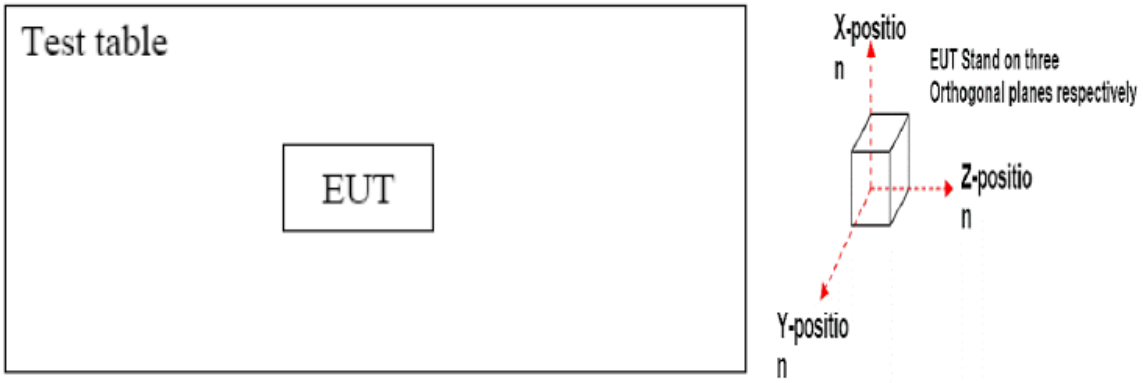
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Spectrum Analyzer	R/S	ESPI	1142.8007.03	Mar.20,08	Mar.20,09
Bilog Antenna	Teseq	CBL 6111D	25758	Oct. 15,08	Oct. 15,09

3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its highest possible radiated level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2. Block Diagram of Test Set-up



(EUT: Transmitter for Wireless Door Chime*)*

Note: We test X-axis, Y-axis, and Z-axis,. The Y-axis is the worst mode, so only the worst mode test data was included in the report.

3.3. Test Operation Mode and Test Software

Refer to clause 1.4

3.4. Special Accessories and Auxiliary Equipment

None.

3.5. Countermeasures to Achieve EMC Compliance

None.

4. TEST SUMMARY

Test Items and Result Lists

No.	Item	Specification	Results
1	Conducted emissions	FCC Part15.207	N/A
2	Radiated emissions	FCC Part 15.231(b)	PASS
3	20dB Occupied Bandwidth	FCC Part 15.231(c)	PASS
4	Deactivate time	FCC Part 15.231(a)	PASS

5. EMISSION TEST RESULTS

5.1. Conducted Emissions

According to paragraph(f) of FCC Part 15 Section 15.207, measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation, and which do not operate from the AC power lines or contain provision for operation while connected to the AC power.

5.2. Radiated emissions

5.2.1. Applied Standard

According to 15.231(b), the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Fundamental Frequencies (MHz)	Field strength of Fundamental (uV/meter at 3m)	Unwanted emissions (uV/meter at 3m)
40.66-40.70	2250	225
70-130	1250(470nW)	125
130-174	1250 to 3750**	125 to 375**
174-260	3750(4.2uW)	375
260-470	3750 to 12500**	375 to 1250**
Above470	12500(47uW)	1250

**Linear interpolation with frequency F in MHz
For the band 130-174MHz: Field strength=56.81818(F)-6136.3636
For the band 260-470MHz: Field strength=41.6667(F)-7083.3333
The maximum permitted unwanted emissions level is 20dB below the maximum permitted fundamental level

The field strength of spurious emissions which appear outside of this band shall not exceed the general radiated emission limits in Section 15.209 as following:

Frequencies (MHz)	Field strength uV/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

According to 15.35(b), for frequencies above 1000MHz,the field strength limits are based on average detector, however,the peak field strength of any emission shall not exceed the maximum permitted average limits,specified above by more than 20dB under any condition fo modulation.

5.2.2. Test procedure

The EUT was placed on a turn table which was 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. At the frequency band of 30MHz to 1GHz,The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 to 4 m for horizontal and vertical polarizations. The broadband antenna (calibrated by dipole antenna) was used as a receiving antenna. At the frequency band of 1GHz to 5GHz,The measuring antenna moved from 1 to 4 m for horizontal and vertical polarization. The horn antenna was used as a receiving antenna.

The resolution bandwidth and video bandwidth of the test receiver was 120 KHz and 300KHz for Quasi-peak detection at frequency below 1GHz.

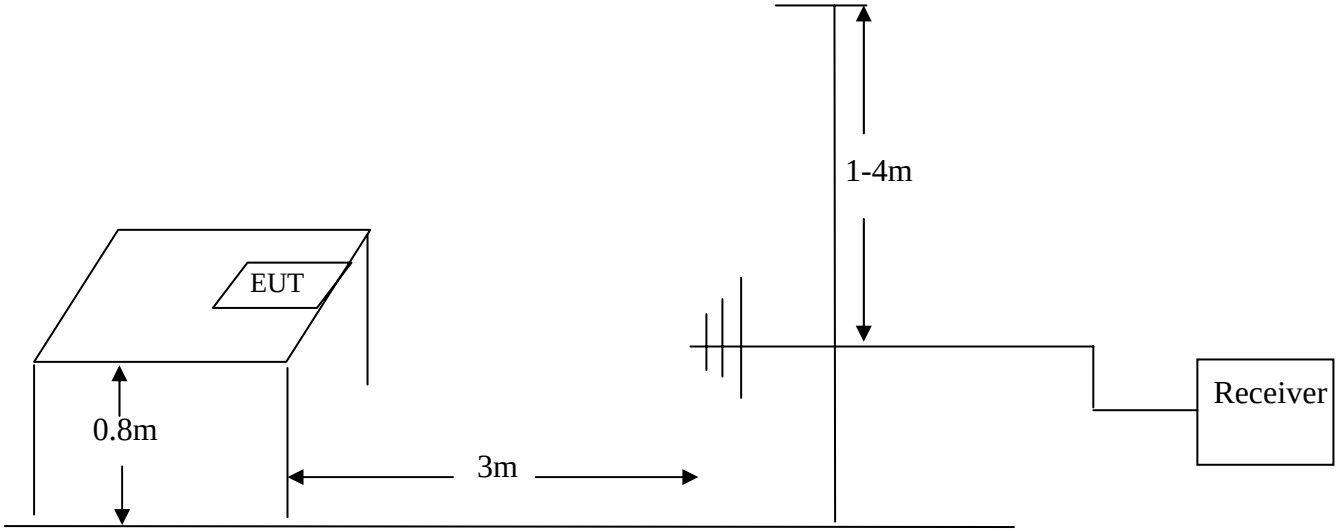
The resolution bandwidth and video bandwidth of the test receiver was1MHz and 1MHz for Peak detection at frequency above 1GHz.

The EUT position(X.-axis, Y-axis, Z-axis) were checked and worse case was happened in Y-axis position.So Y-axis position was chose for find measurement.

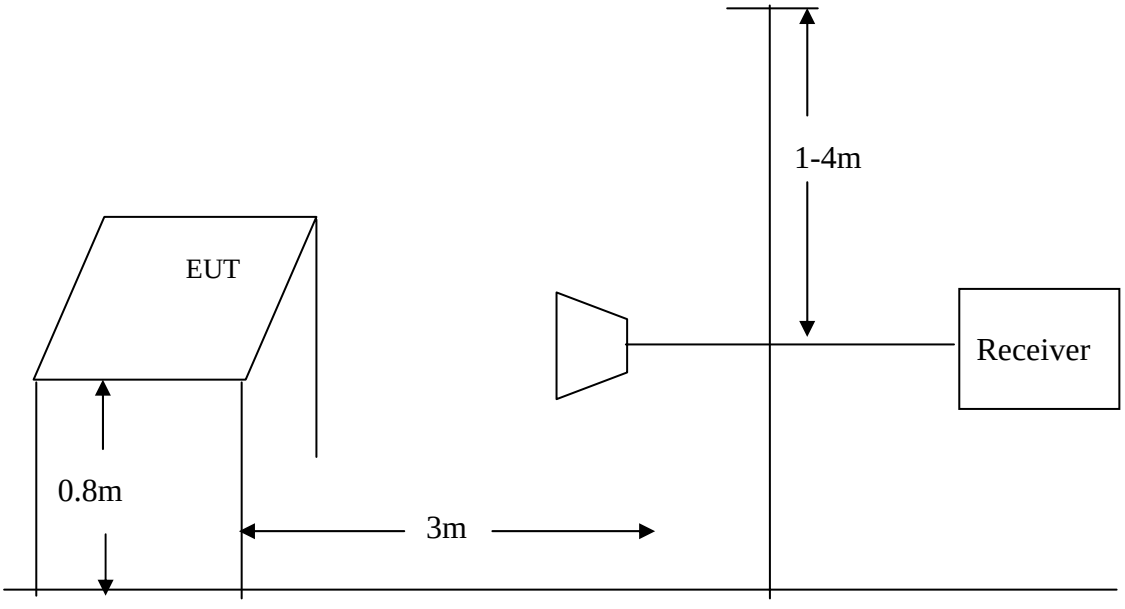
The EUT was tested in Chamber Site.

5.2.3. Test Setup Diagram

For frequency range: 30MHz-1000MHz



For frequency range: 1 GHz -5GHz



5.2.4. Test result

Pass.

Test Data (worst mode: Y-axis)

EUT	:	Transmitter for Wireless Door Chime	Temperature:		25.4℃
Model No.	:	00405T	Humidity	:	55%
Test Mode	:	TX mode	Test Engineer	:	David

For Frequency range: 30MHz-1000MHz

Frequency MHz	Antenna Factor dB	Cable Loss dB	Meter Reading dBμV	Emission Level dBμV/m	Over Limits dB	Limits @3m dBμV/m	Polarity	Detector
35.82	14.63	0.54	3.61	18.78	-21.22	40.0	H	QP
96.93	11.55	0.68	3.61	15.84	-27.66	43.5	H	QP
189.08	8.04	0.86	11.24	20.14	-23.36	43.5	H	QP
584.84	22.14	1.35	6.20	29.69	-16.31	46.0	H	QP
433.92	17.92	1.19	54.21	73.33	-27.47	100.8	H	Peak
433.92	17.92	1.19	43.69	62.81	-17.99	80.8	H	Average
867.84	24.26	1.70	35.28	61.24	-19.56	80.8	H	Peak
867.84	**24.26**	**1.70**	**23.75**	**49.71**	**-11.09**	**60.8**	**H**	**Average**
31.94	15.20	0.53	3.75	19.48	-20.52	40.0	V	QP
96.93	11.55	0.68	3.65	15.88	-27.62	43.5	V	QP
159.98	10.06	0.81	5.12	15.99	-27.51	43.5	V	QP
613.94	22.26	1.38	5.63	29.27	-16.73	46.0	V	QP
433.92	17.92	1.19	46.79	65.90	-34.90	100.8	V	Peak
433.92	17.92	1.19	36.27	55.38	-25.42	80.8	V	Average
867.84	24.26	1.70	35.32	61.28	-19.52	80.8	V	Peak
867.84	**24.26**	**1.70**	**22.81**	**48.77**	**-12.03**	**60.8**	**V**	**Average**

Remark: The worst emission was detected at **867.84MHz** with corrected signal level of **49.71dBμV/m**(Limit is **55.6 dBμV/m**) when the antenna was at **Horizontal** polarization and at **2.2m** high and the turn table was at **172°**

Remark: The worst emission was detected at **867.84MHz** with corrected signal level of **48.77dBμV/m** (Limit is **55.6dBμV/m**) when the antenna was at **Vertical** polarization and at **1.1m** high and the turn table was at **36°**.

Remark:

1. Emission Level = Antenna Factor + Cable Loss + Meter Reading
2. Peak Limit=Average Limit+20dB
3. Test uncertainty: ±4.76dB at a level of confidence of 95%.
4. The average value of fundamental frequecy is :

Average value = Peak value +20log(Duty cycle)

20log(Duty cycle) = 20log(29.78%)= -10.52dB

Please see page 17 for Attached Duty Cycle Test

Test Data (worst mode: Y-axis)

EUT	:	Transmitter for Wireless Door Chime	Temperature:		25.4℃
Model No.	:	00405T	Humidity	:	55%
Test Mode	:	TX mode	Test Engineer	:	David

For Frequency range: 1000MHz-5000MHz

Frequency MHz	Antenna Factor dB	Cable Loss dB	Meter Reading dBμV	Emission Level dBμV/m	Over Limits dB	Limits @3m dBμV/m	Polarity	Detector
1301.76	27.51	2.13	34.18	63.82	-10.18	74.0	H	Peak
1301.76	27.51	2.13	18.66	48.30	-5.7	54.0	H	Average
2603.52	31.67	2.24	30.85	64.76	-16.04	80.8	H	Peak
2603.52	31.67	2.24	15.33	49.24	-11.56	60.8	H	Average
3421.60	32.31	2.25	26.01	60.57	-13.43	74.0	H	Peak
3421.60	32.31	2.25	10.14	44.70	-9.30	54.0	H	Average
3762.04	33.05	2.31	30.46	65.82	-8.18	74.0	H	Peak
3762.04	**33.05**	**2.31**	**13.98**	**49.34**	**-4.66**	**54.0**	**H**	**Average**
1301.76	27.51	2.13	23.56	53.20	-20.80	74.0	V	Peak
1301.76	27.51	2.13	13.04	42.68	-11.32	54.0	V	Average
2603.52	31.67	2.24	15.41	49.32	-31.48	80.8	V	Peak
2603.52	31.67	2.24	4.89	38.80	-22.00	60.8	V	Average
3421.60	32.31	2.25	29.37	63.93	-10.07	74.0	V	Peak
3421.60	**32.31**	**2.25**	**12.33**	**46.89**	**-7.11**	**54.0**	**V**	**Average**
3762.04	33.05	2.31	25.30	60.66	-13.34	74.0	V	Peak
3762.04	33.05	2.31	11.01	46.37	-7.63	54.0	V	Average

Remark: The worst emission was detected at **3762.04MHz** with corrected signal level of **49.34μV/m**(Limit is **54.00 dBμV/m**) when the antenna was at **Horizontal** polarization and at **3.2m** high and the turn table was at **165°**

Remark: The worst emission was detected at **3421.60MHz** with corrected signal level of **46.89dBμV/m** (Limit is **54.00 dBμV/m**) when the antenna was at **Vertical** polarization and at **1.2m** high and the turn table was at **41°**.

Remark:

1. Emission Level = Antenna Factor + Cable Loss + Meter Reading
2. Peak Limit=Average Limit+20dB
3. Test uncertainty: ±4.76dB at a level of confidence of 95%.
4. The average value of fundamental frequecy is :

Average value = Peak value +20log(Duty cycle)

20log(Duty cycle) = 20log(29.78%)= -10.52dB

Please see page 17 for Attached Duty Cycle Test

5.3. 20dB Occupied Bandwidth

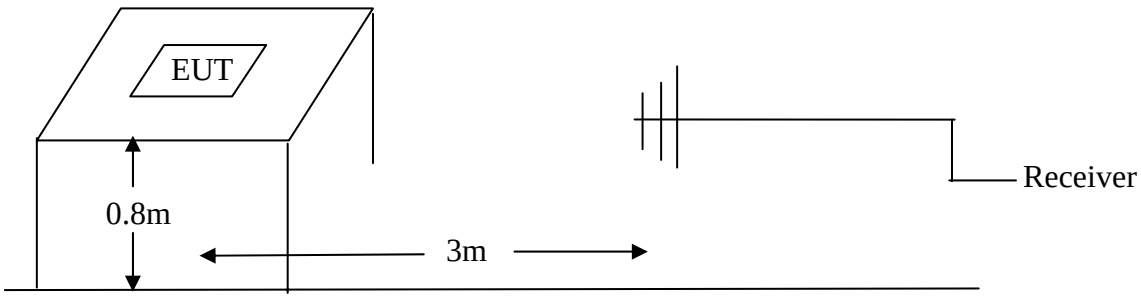
5.3.1. Applied Standard

According to 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

5.3.2. Test procedure

Step 1: The EUT was placed on a turntable which is 0.8m above ground plane.
Step 2: Set EUT as normal operation.
Step 3: Set SA Center Frequency = fundamental frequency , RBW=100kHz,VBW=300kHz
Step 4:. Set SA trace max hold, then view.

5.3.3. Test Setup Diagram



5.3.4. Test Result

Pass.

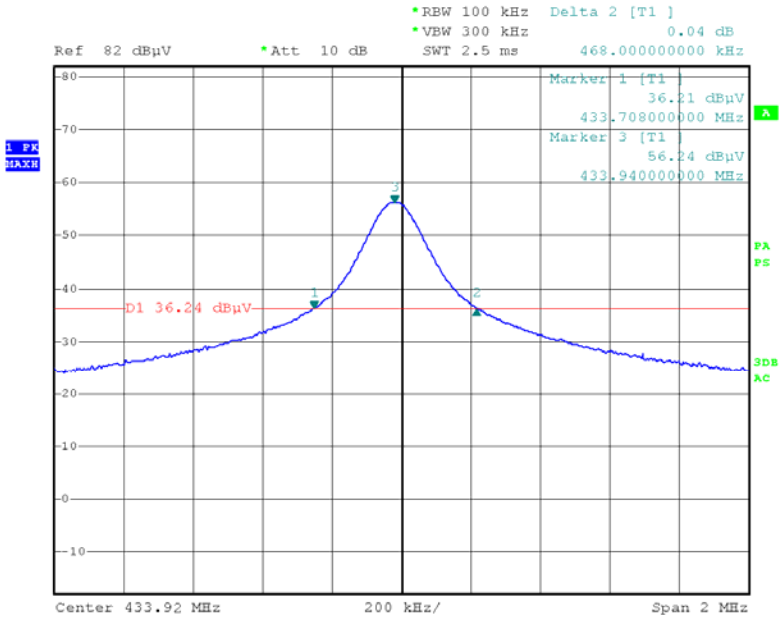
Test Data

EUT	:	Transmitter for Wireless Door Chime	Temperature:		25.4℃
Model No.	:	00405T	Humidity	:	55%
Test Mode	:	TX mode	Test Engineer	:	David

Fundamental frequency (MHz)	Bandwidth Measurement (kHz)	Limit (kHz)	Result
433.92MHz	468.0kHz	1084.8kHz	PASS

Note: Limit= Fundamental frequency×0.25%=433.92×0.25%=1084.8kHz

The test plots as following:



5.4. Deactivation time

5.4.1. Applied Standard

According to 15.231(a), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. A transmitter activated automatically shall cease transmission within 5 seconds after activation.

5.4.2. Test procedure

Step 1: The EUT was placed on a turntable which is 0.8m above ground plane.
Step 2: Set EUT as normal operation.
Step 3: Set SA Center Frequency = fundamental frequency , RBW=100kHz,VBW=300kHz
Step 4:. Set SA trace max hold, then view.

5.4.3. Test Setup Diagram

Refer to clause 5.3.3

5.4.4. Test Result

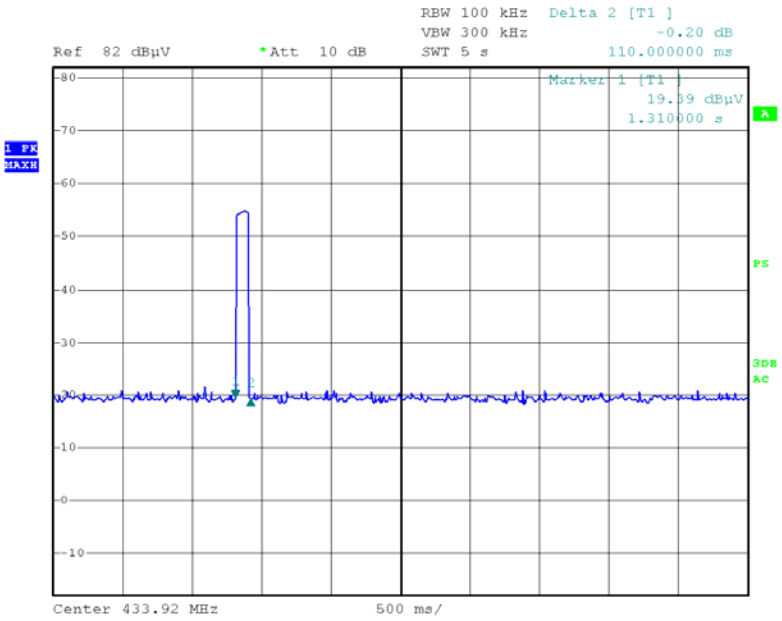
Pass.

Test Data

EUT	:	Transmitter for Wireless Door Chime	Temperature:		25.4℃
Model No.	:	00405T	Humidity	:	55%
Test Mode	:	TX mode	Test Engineer	:	David

Fundamental frequency (MHz)	Transmission time (ms)	Limit (s)	Result
433.92MHz	110ms	5s	PASS

The test plots as following:



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Attached Duty Cycle Test

The duty cycle was determined by the following equation :

$$\text{Duty Cycle}(\%) = \frac{\text{(Total On Interval in a Complete Pulse Train)}}{\text{(Length of a Complete Pulse Train)}} \times 100\%$$

Test Data

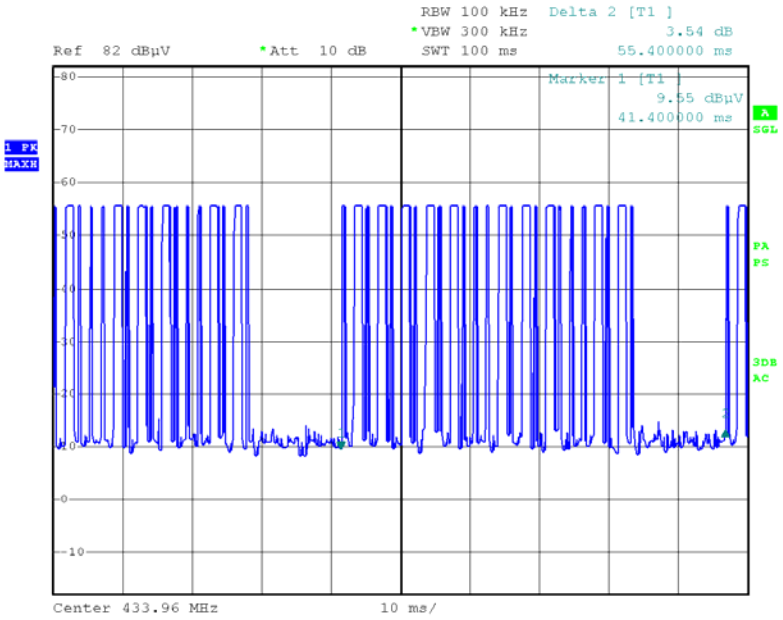
EUT	:	Transmitter for Wireless Door Chime	Temperature:		25.4℃
Model No.	:	00405T	Humidity	:	55%
Test Mode	:	TX mode	Test Engineer	:	David

Pulse Train	Number of Pulse	T(ms)	Total Time
Lone Pulse	10	1.2ms	12ms
Short Pulse	15	0.3ms	4.5ms

Total ON interval in a complete pulse train(ms)	16.5ms
Length of a complete Pulse train(ms)	55.4ms
Duty Cycle(%)	29.78%

The test plots as following:

Length of A Complete Pulse Train



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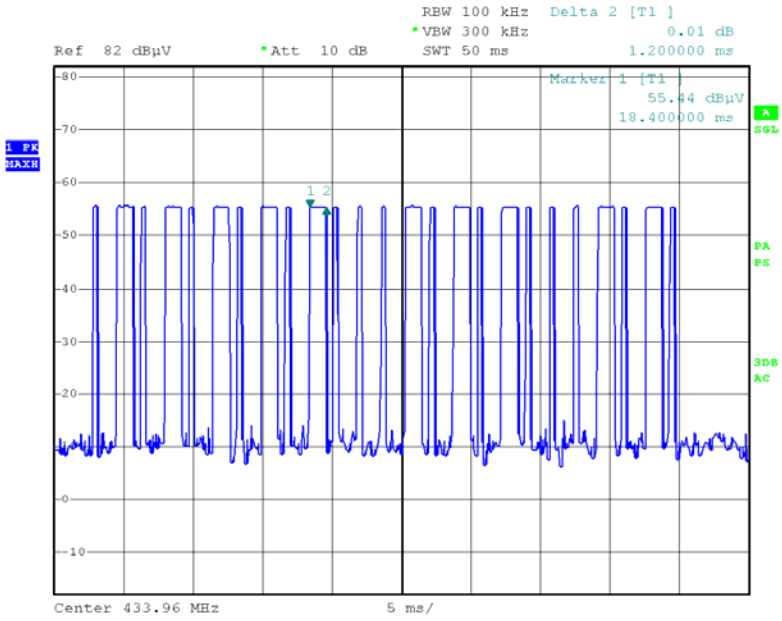
Long Pulse



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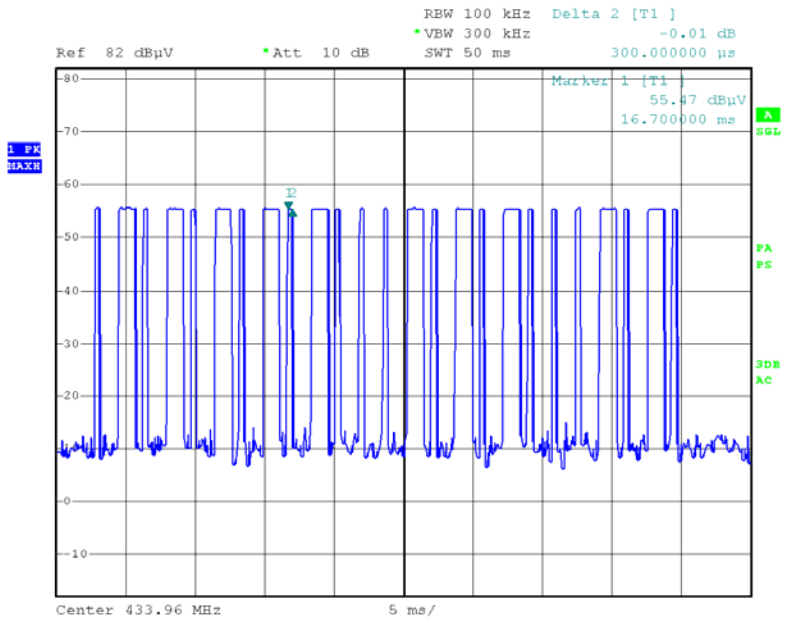
Short Pulse



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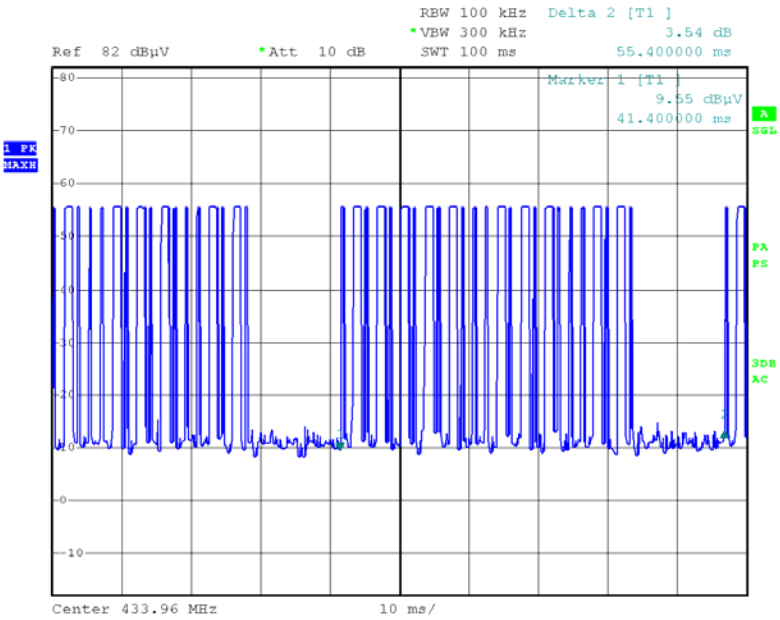
Long Pulse & Short Pulse (Number of Pulse)



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6. PHOTOGRAPHS OF TEST SET-UP

Figure 1

Set-up for radiated measurements（30MHz to 1000MHz）

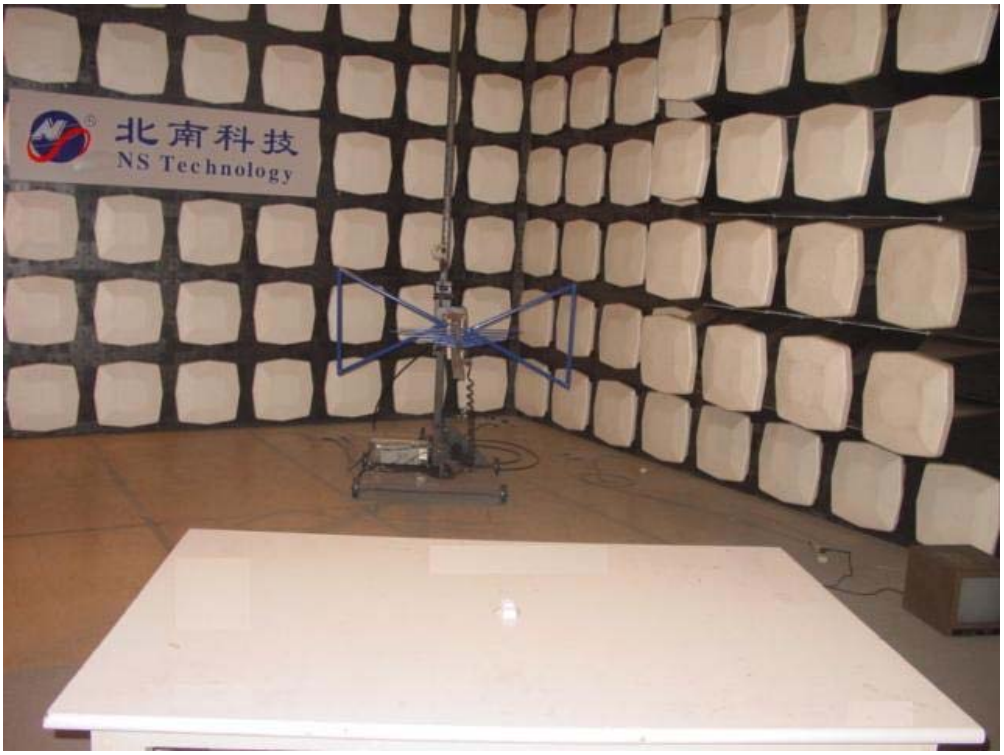

Figure 2

Set-up for radiated measurements（1000MHz to 5000MHz）

7. PHOTOGRAPHS OF THE EUT

Figure 3
General Appearance of the EUT

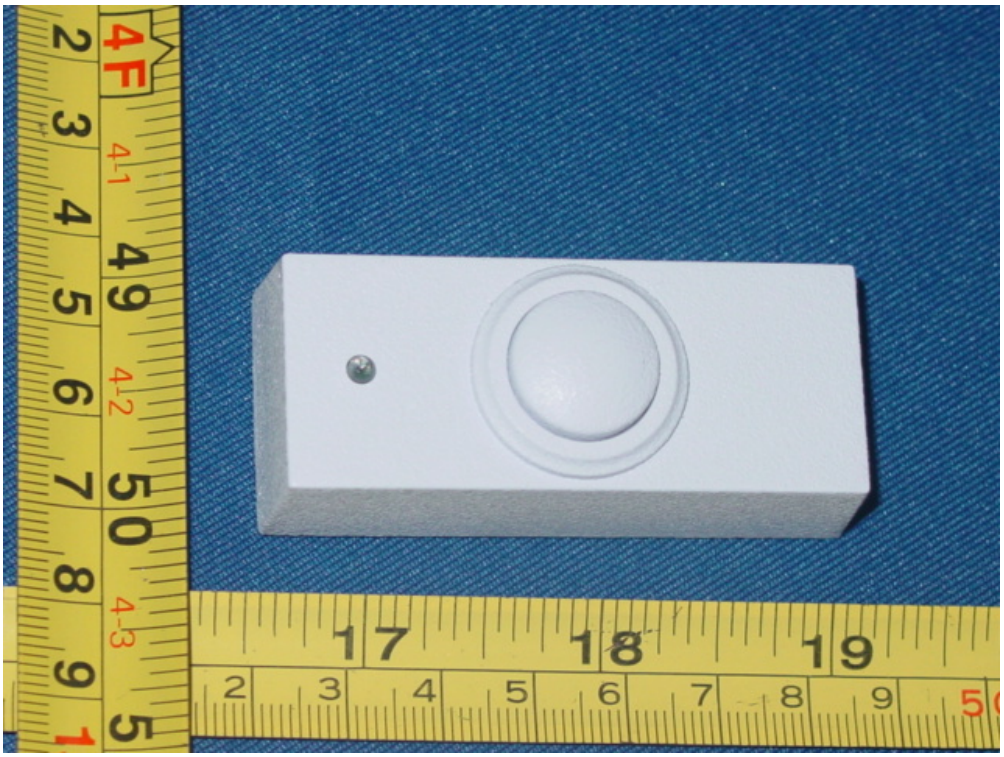

Figure 4
General Appearance of the EUT

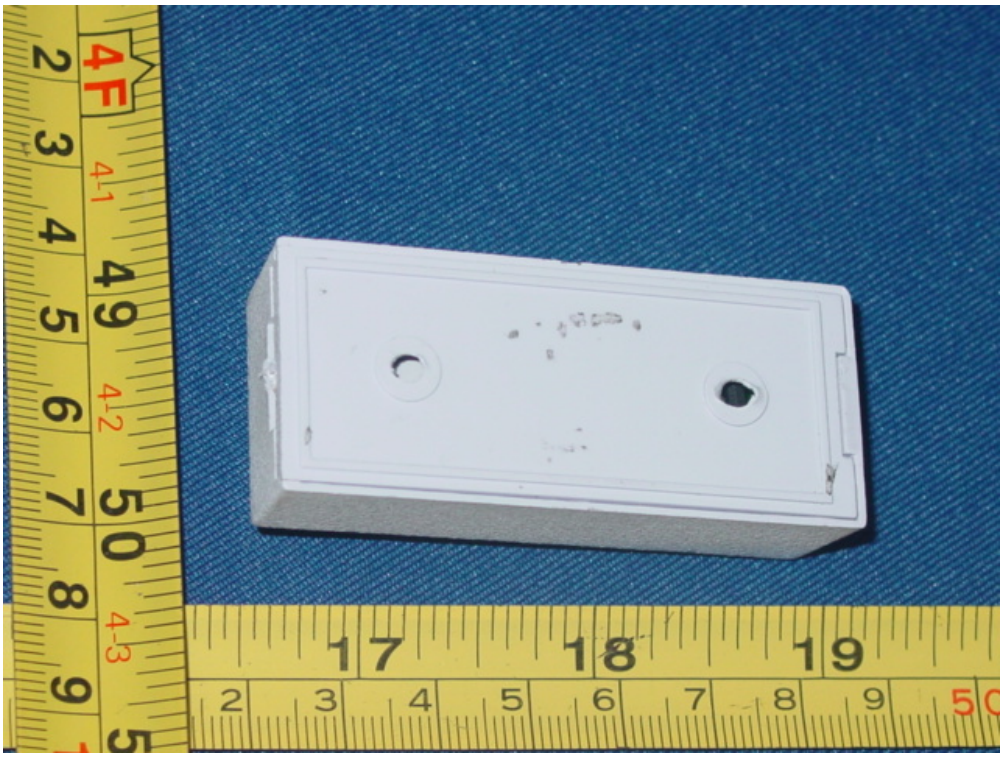

Figure 5
General Appearance of the PCB

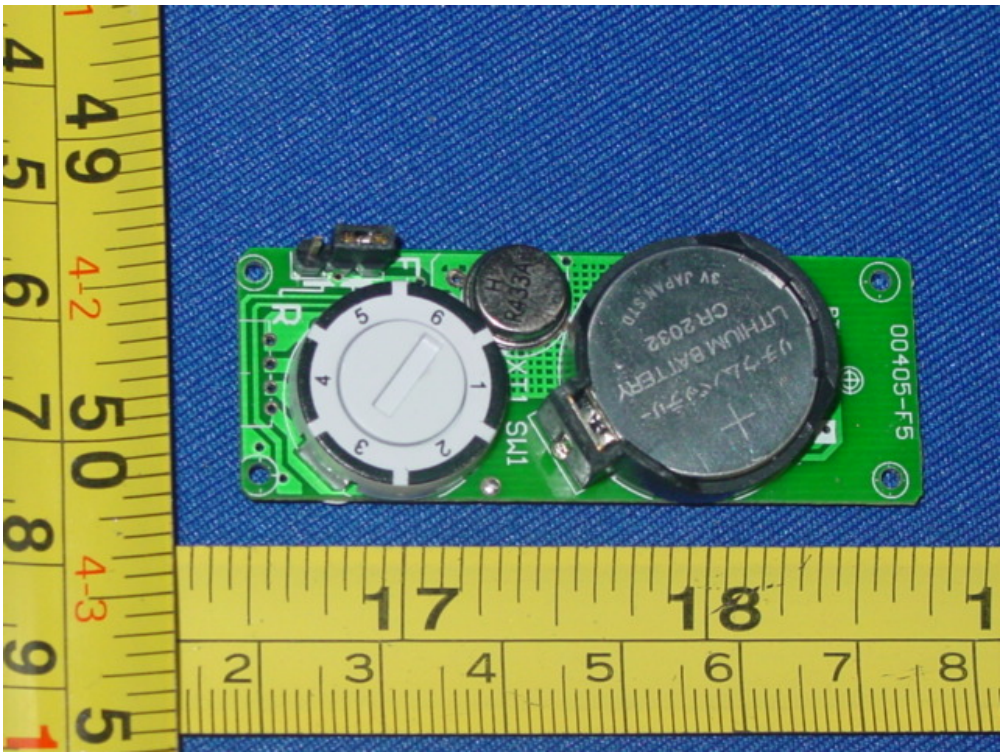

Figure 6
General Appearance of the PCB