

TEST REPORT No.: (5210)174-0373

TEST REPORT

To:	BEIJING JIA AN ELECTRONIC TECHNOLOGY CO., LTD.	To:	-
Attn:	Helen Ban	Attn:	-
Address:	No. 19 Gu Cheng West Street, Shi Jing Shan District, Beijing 100043, CHINA	Address:	-
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E-mail:	helen@alarmsources.com	E-mail:	-
Folder No.:	BJA-10JU272ETHP-B		

Factory name:	BEIJING JIA AN ELECTRONIC TECHNOLOGY CO., LTD.
Location:	No. 19 Gu Cheng West Street, Shi Jing Shan District, Beijing 100043, CHINA
Product:	Remote Transmitter MODEL: T106


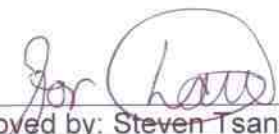


Sample No:	HK100913/007
Test date:	September 16, 2010 to September 20, 2010
Test Requested:	FCC Part 15 – 2008
Test Method:	ANSI C63.4 – 2003
FCC ID:	VVJ-T106S434

The results given in this report are related to the tested specimen of the described electrical apparatus.

CONCLUSION: The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart C.

Authorized Signature:

	
Reviewed by: Keith Yeung	Approved by: Steven Tsang
Date: October 26, 2010	Date: October 26, 2010

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Location of the test laboratory

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003. An Open Area Test Site and Full Anechoic Chamber (FCC Listed Site, Registration No. 642151) are set up for investigation and located at :

BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE

No. 2106-2107, 21/F., Westin Centre,
26 Hung To Road,
Kwun Tong, Kowloon,
Hong Kong

List of measuring equipment

Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	06-SEP-2011
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	17-MAY-2011
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	02-AUG-2011
OPEN AREA TEST SITE	BVCPS	N/A	N/A	05-JULY-2011
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	06-JULY-2011
COAXIAL CABLE	SUHNER	N/A	N/A	07-DEC-2010

Remarks:-

N/A : Not Applicable or Not Available

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

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Equipment Under Test [EUT]

Description of Sample:

Model Name: Remote Transmitter
Model Number: T106
Rating: 6Vd.c. ("CR2016" size battery x 2)
Remark: --

Description of EUT Operation:

The Equipment Under Test (EUT) is a **BEIJING JIA AN ELECTRONIC TECHNOLOGY CO., LTD.** of RF Remote Transmitter. It is a 1-button transmitter and operating at 433.87MHz. The EUT transmit while button is being pressed. Modulation by IC, and type is OOK modulation.

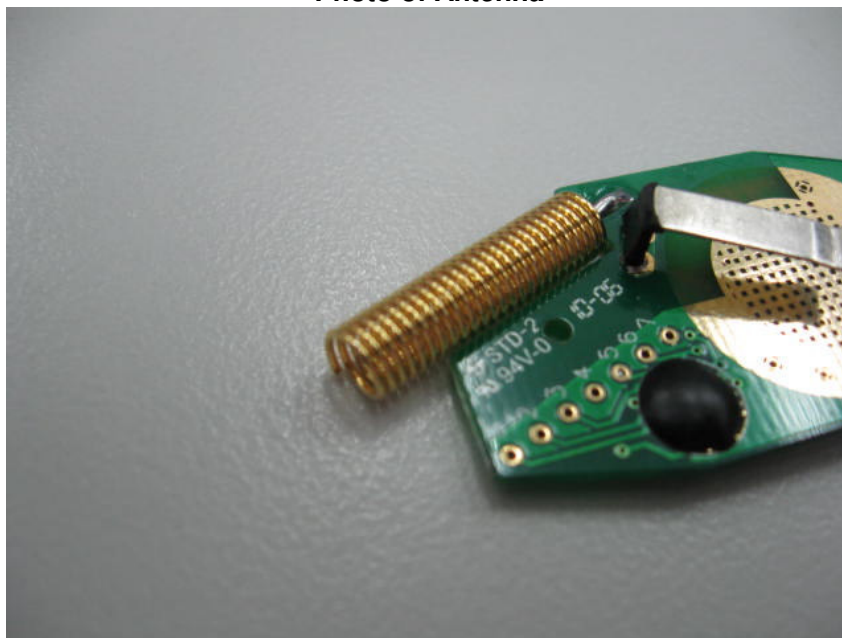
The transmitter has different control:

1. Remote start button – Transmission on (push-to-operate)

Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 18mm long metal spring antenna. The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna



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Test Results

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.231(a)
 Test Method: ANSI C63.4
 Test Date(s): 2010-09-20
 Temperature: 25.0 °C
 Humidity: 69.0 %
 Atmospheric Pressure: 100.3 kPa
 Mode of Operation: Transmission mode
 Tested Voltage: 6Vd.c. ("CR2016" size battery x 2)

Test Method:

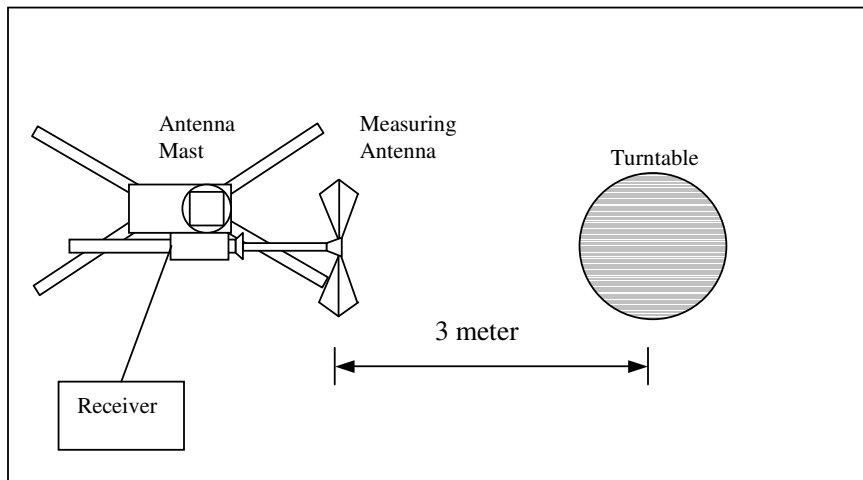
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. 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, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

Location: The Roof, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test Setup: Open Area Test Site



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Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.231(a)]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [$\mu\text{V/m}$]	Field Strength of Spurious Emission [$\mu\text{V/m}$]
260-470	3,750 to 12,500**	375 to 1,250**

**linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 260-470MHz, $\mu\text{V/m}$ at 3 meters = $41.6667(F) - 7083.3333$. The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level]

Measurement Data

Test Result of (Transmission mode): PASS

Detection mode: Peak

Frequency (MHz)	Polarity (H/V) and degree	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu\text{V/m}$)	Limit at 3m (dB $\mu\text{V/m}$)	Margin (dB)
433.87	H	18.6	63.6	100.8	-37.2

Detection mode: #Average

Frequency (MHz)	Polarity (H/V) and degree	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu\text{V/m}$)	Limit at 3m (dB $\mu\text{V/m}$)	Margin (dB)
433.87	H	18.6	**59.0	80.8	-21.8

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\text{Log}(0.59) = -4.6\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz
VBW = 300KHz



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Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.209
 Test Method: ANSI C63.4
 Test Date(s): 2010-10-20
 Temperature: 25.0 °C
 Humidity: 69.0 %
 Atmospheric Pressure: 100.3 kPa
 Mode of Operation: Transmission mode
 Tested Voltage: 6Vd.c. ("CR2016" size battery x 2)

Measurement Data

Test Result of (Transmission mode): PASS

Detection mode: Peak

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
867.74	V	24.6	52.6	80.8	-28.2
1301.61	V	-7.1	43.1	74.0	-30.9
1735.48	V	-6.3	51.0	80.8	-29.8
2169.35	V	-3.6	58.1	80.8	-22.7
2603.22	H	-3.4	47.8	80.8	-33.0
3037.09	V	-2.2	50.6	80.8	-30.2
3470.96	H	-1.2	51.2	80.8	-29.6
3904.83	H	0.2	56.5	74.0	-17.5
4338.70	V	1.3	54.8	74.0	-19.2
4772.57	V	2.5	56.9	74.0	-17.1

Note: Field Strength includes Antenna Factor, Cable Loss and Pre-amplifier gain (0.5-18GHz)

Receiver setting (30-1000MHz) :RBW = 100KHz
 :VBW = 300KHz

Receiver setting (1-18GHz) :RBW = 1MHz
 :VBW = 1MHz



TEST REPORT No.: (5210)174-0373
Measurement Data

Test Result of (Transmission mode): PASS

Detection mode: #Average

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
867.74	V	24.6	**48.0	60.8	-12.8
1301.61	V	-7.1	**38.5	54.0	-15.5
1735.48	V	-6.3	**46.4	60.8	-14.4
2169.35	V	-3.6	**53.5	60.8	-7.3
2603.22	H	-3.4	**43.2	60.8	-17.6
3037.09	V	-2.2	**46.0	60.8	-14.8
3470.96	H	-1.2	**46.6	60.8	-14.2
3904.83	H	0.2	**51.9	54.0	-2.1
4338.70	V	1.3	**50.2	54.0	-3.8
4772.57	V	2.5	**52.3	54.0	-1.7

Note: Field Strength includes Antenna Factor, Cable Loss and Preamplifier gain (0.5-18GHz)

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

**Duty Cycle Correction = $20\text{Log}(0.59) = -4.6\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting (30-1000MHz) :RBW = 100KHz
 :VBW = 300KHz

Receiver setting (1-18GHz) :RBW = 1MHz
 :VBW = 1MHz



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Radiated Emissions (1.705MHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209
 Test Method: ANSI C63.4
 Test Date(s): 2010-10-20
 Temperature: 25.0 °C
 Humidity: 69.0 %
 Atmospheric Pressure: 100.3 kPa
 Mode of Operation: Transmission mode
 Tested Voltage: 6Vd.c. ("CR2016" size battery x 2)

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [$\mu\text{V/m}$]
1.705-30	300
30-88	100
88-216	150
216-960	200
Above960	500

Measurement Data

Test Result of (Standby mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu\text{V/m}$)	Limit at 3m (dB $\mu\text{V/m}$)	Margin (dB)
37.28	V	15.1	23.2	40.0	-16.8
212.44	H	11.9	21.6	43.5	-21.9
248.08	V	13.8	21.9	46.0	-24.1
391.96	H	17.9	27.1	46.0	-18.9
416.06	V	18.6	25.8	46.0	-20.2
640.36	H	22.1	32.6	46.0	-13.4

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
 VBW = 120KHz



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20dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.231(a)(1)
Test Method: ANSI C63.4:2003 (Section 13.1.7)
Test Date(s): 2010-10-16
Temperature: 25.0 °C
Humidity: 69.0 %
Atmospheric Pressure: 100.3 kPa
Mode of Operation: Transmission mode
Tested Voltage: 6Vd.c. ("CR2016" size battery x 2)

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

Limits for 20dB Bandwidth of Fundamental Emission:

Frequency [MHz]	20dB Bandwidth [kHz]	Limits [kHz]
433.87	184	1085



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Measurement Data :

Test Result of 20dB Bandwidth of Fundamental Emission: PASS



16.Sep 10 11:16

RBW 30 kHz Marker 1 [T1]

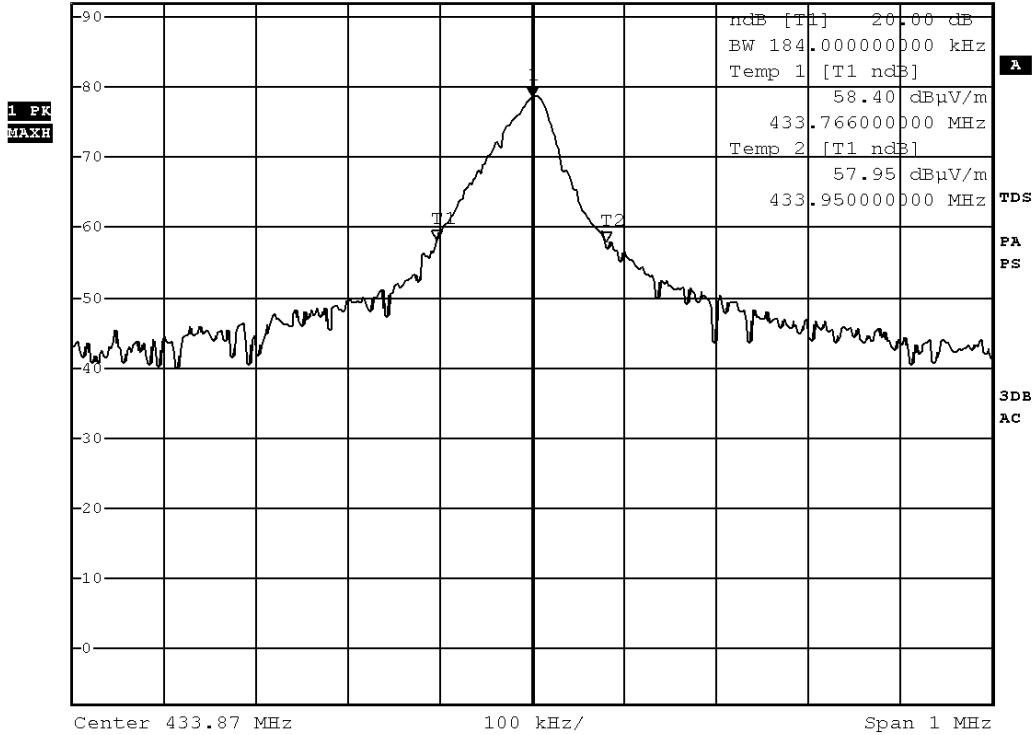
VBW 100 kHz 78.63 dBµV/m

Ref 92 dBµV/m

*Att 20 dB

SWT 2.5 ms

433.870000000 MHz



Date: 16.SEP.2010 11:16:59

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Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (57.5msec) never exceeds a series of 21 short (0.5msec) pulses and 18 long (1.3msec) pulses. Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered $(21 \times 0.5) + (18 \times 1.3)$ per 57.5msec = 59.0% duty cycle. Figure A and C show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = $20 \log(0.59) = -4.6\text{dB}$

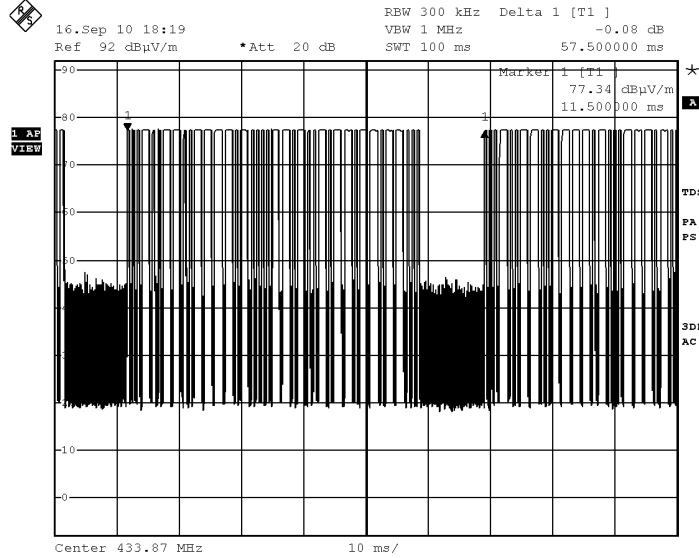
The following figures [Figure A to Figure C] show the characteristics of the pulse train for one of these functions.



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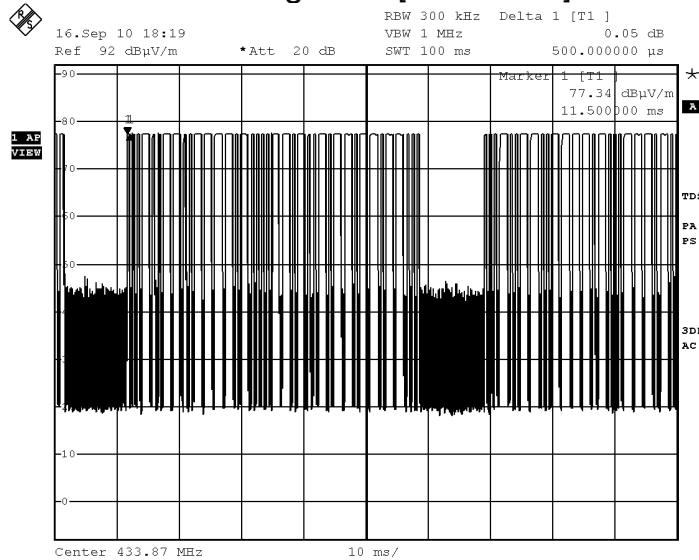
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Figure A [Pulse Train]



Date: 16.SEP.2010 18:19:14

Figure B [Short Pulse]



Date: 16.SEP.2010 18:19:39

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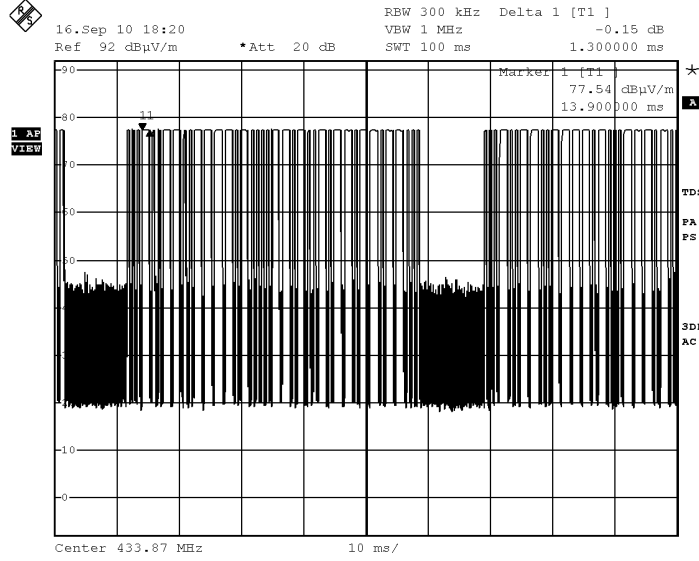
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Figure C [Long Pulse]



Date: 16.SEP.2010 18:20:01



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Duration of Transmission

Test Requirement: FCC 47 CFR 15.231(a)(1)

Test Date(s): 2010-10-16
Temperature: 25.0 °C
Humidity: 69.0 %
Atmospheric Pressure: 100.3 kPa

Mode of Operation: Transmission mode
Tested Voltage: 6Vd.c. ("CR2016" size battery x 2)

Test requirement: 15.231(a)(1)

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 second of being released.

Result: Pass

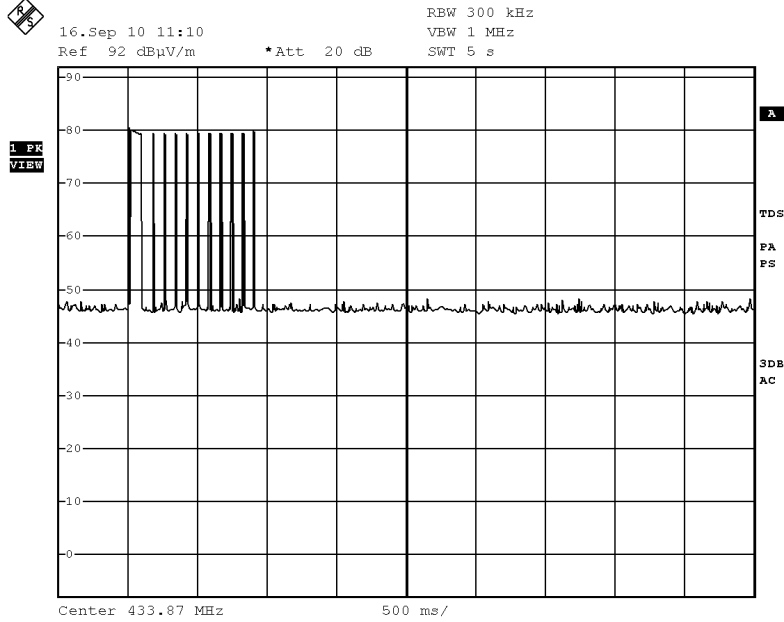
The EUT is manually operated employing a push-to-operate switch and Figure D show that it has been deactivated immediately of being released.



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Figure D [Each transmission]



Date: 16.SEP.2010 11:10:08

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Photographs of EUT

Front View of the product



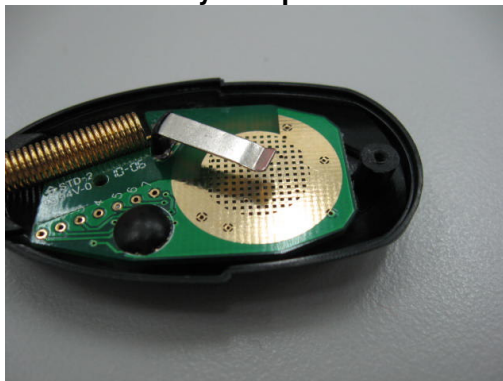
Rear View of the product



Battery Cover



Battery Compartment





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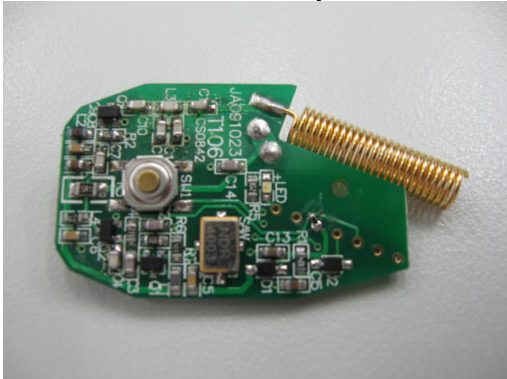
Inner View of the Product



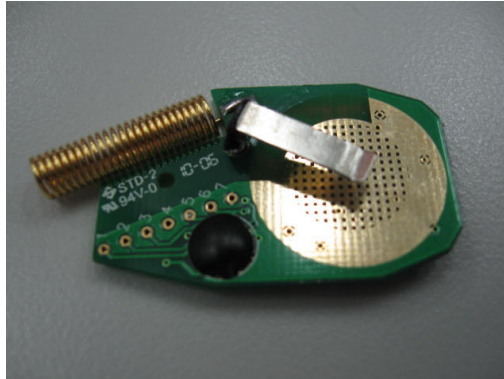
Inner View of the Product



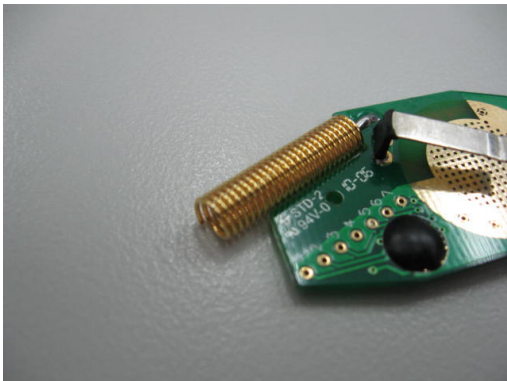
Inner Circuit Top View



Inner Circuit Bottom View



Antenna





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Measurement of Radiated Emission Test Set Up



******* End of Report *******