TEST REPORT N°: (5209)306-0263

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:	-
Fax:	+86-10-68889905	Fax:	-
E-mail:	helen@alarmsources.com	E-mail:	-
Offer No.:	BJA-09NO002ETHP-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 Controler** **MODEL: T421**

Sample No:	(5209)306-0263
Test date:	November 2, 2009 to November 5, 2009
Test Requested:	FCC Part 15 - 2008
Test Method:	ANSI C63.4 – 2003
FCC ID:	VVJ-T421S434

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: Eric Wong	Approved by: Steven Tsang
Date: November 6, 2009	Date: November 6, 2009

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Location of the test site

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	24-AUG-2010
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	12-MAY-2010
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	31-MAY-2010
OPEN AREA TEST SITE	BVCPS	N/A	N/A	03-JULY-2010
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	07-JULY-2010
COAXIAL CABLE	SUHNER	N/A	N/A	11-MAY-2010
SPECTRUM ANALYZER	ADVANTEST	R3127	111000909	02-DEC-2009

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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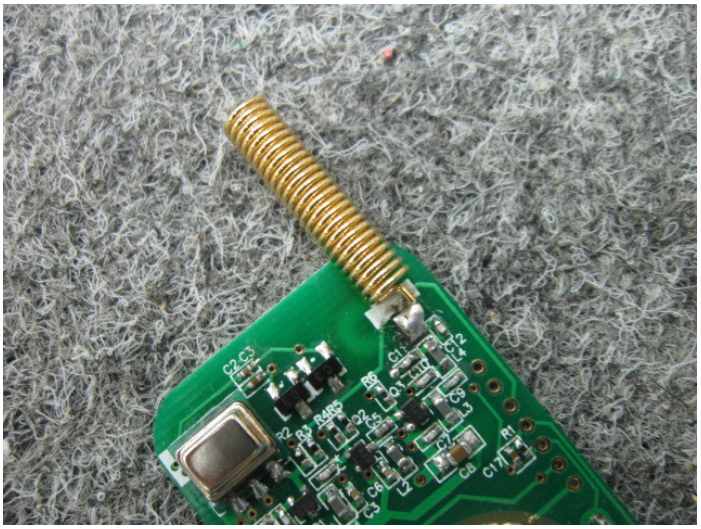
Equipment Under Test [EUT]
Description of Sample:
Model Name: Remote Controler
Model Number: T421
Rating: 3Vd.c. (“CR2032” size battery x 1)

Description of EUT Operation:
The Equipment Under Test (EUT) is a BEIJING JIA AN ELECTRONIC TECHNOLOGY CO., LTD. of Remote Controller. The transmitter is a 4 buttons transmitter and operating at 433MHz. The EUT continues to transmit while buttons is being pressed. Modulation by IC, and type is pulse modulation. Orthogonal plane (X/Y/Z-plane) are pre-scanned and worst case (Y-plane) is reported.
The transmitter has different control:
1. Lock/panic button
2. Unlock button
3. Option button
4. Start button

Antenna Requirement (Section 15.203)
The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna is not replaceable or user serviceable. The requirement of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna



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TEST REPORT N°: (5209)306-0263

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.231(a)

Test Method: ANSI C63.4

Test Date(s): 2009-11-05

Mode of Operation: Transmission mode

Test Procedure:

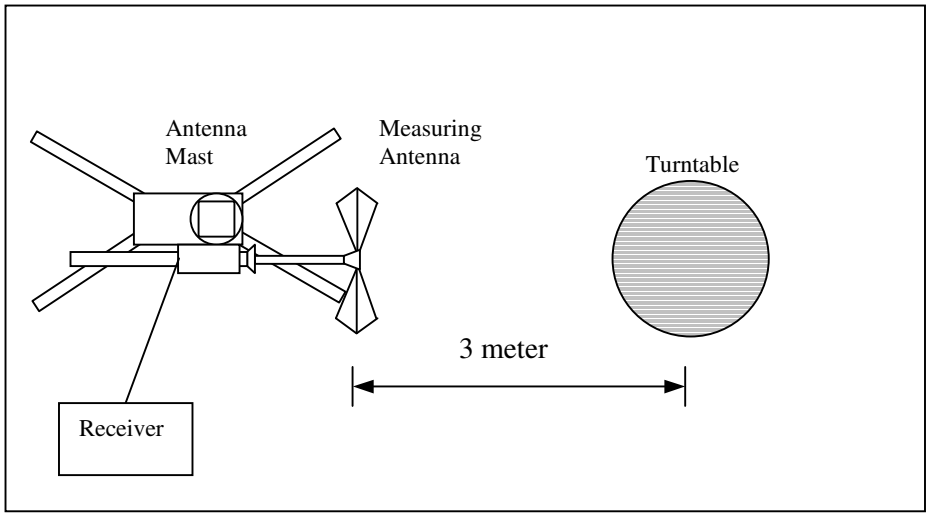
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2003.

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 [Fundmental] [μV/m]	Field Strength of Fundamental Emission [Spurious] [μV/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, μV/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 (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
433.88	H	18.6	85.3	100.8	-15.5

Detection mode: Average

Frequency (MHz)	Polarity (H/V) and degree	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
433.88	H	18.6	76.1	80.8	-4.7

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.345) =-9.2dB

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz
VBW = 300KHz

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TEST REPORT N°: (5209)306-0263

Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.209

Test Method: ANSI C63.4

Test Date(s): 2009-11-05

Mode of Operation: Transmission mode

Measurement Data

Test Result of (Transmission mode): PASS

Detection mode: Peak / Average

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength (PK) at 3m (dBµV/m)	Field Strength (AV) at 3m (dBµV/m)	Limit (PK) at 3m (dBµV/m)	Limit (AV) at 3m (dBµV/m	Margin (PK) (dB)
867.76	V	24.6	63.4	54.2	80.8	60.8	-17.4
1301.64	V	-7.1	60.5	51.3	74.0	54.0	-13.5
1735.52	V	-6.3	54.8	45.6	80.8	60.8	-26.0
2169.40	V	-3.6	58.4	49.2	80.8	60.8	-22.4
2603.28	V	-3.4	59.0	49.8	80.8	60.8	-21.8
3037.16	V	-2.2	55.7	46.5	80.8	60.8	-25.1
3471.04	V	-1.2	59.4	50.2	80.8	60.8	-21.4
3904.92	V	0.0	47.0	37.8	74.0	54.0	-27.0
4338.80	V	1.2	53.2	44.0	74.0	54.0	-20.8

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

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

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

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Radiated Emissions (30MHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209

Test Method: ANSI C63.4

Test Date(s): 2009-11-05

Mode of Operation: Standby mode

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [µV/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 (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
199.20	H	11.6	23.4	43.5	-20.1
265.44	H	14.4	24.2	46.0	-21.8
368.08	H	17.5	28.4	46.0	-17.6
323.08	V	16.2	27.5	46.0	-18.5
420.16	V	18.6	29.9	40.0	-10.1
232.52	V	12.9	24.7	46.0	-21.3

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:	2009-11-02
Mode of Operation:	Transmission mode

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]
433.92	429	1084.8

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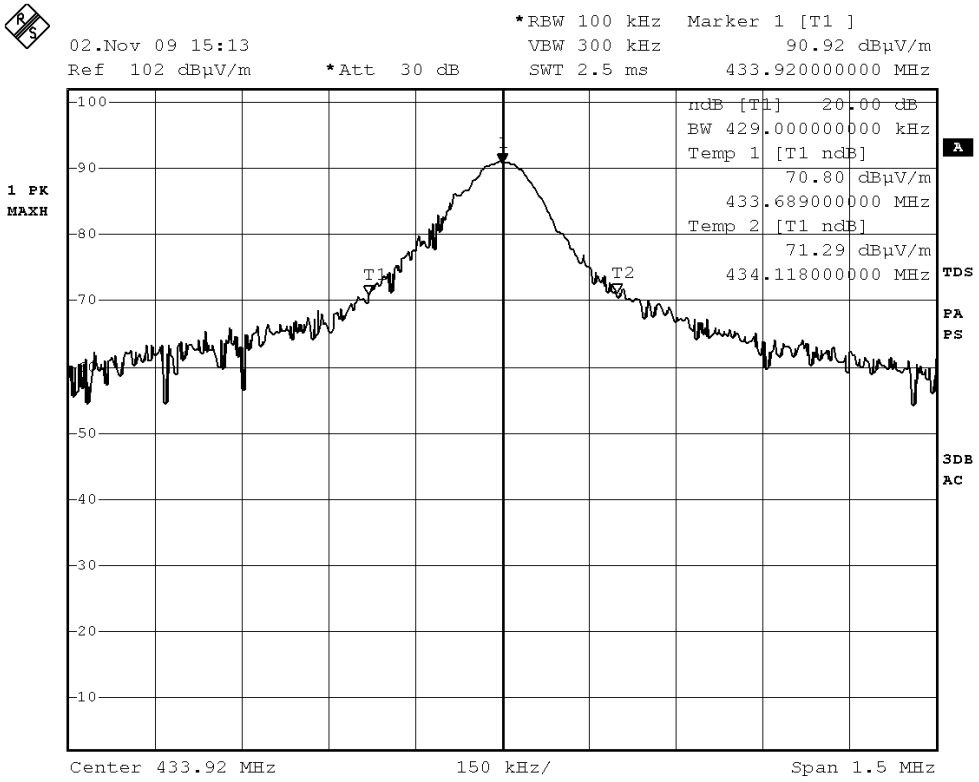
Measurement Data :

Test Result of 20dB Bandwidth of Fundamental Emission: PASS



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Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (51.0msec) never exceeds a series of 20 short (0.4msec) pulses and 6 long (1.6msec) pulses. Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered (20*0.4)+(6*1.6) per 51.0msec = 34.5% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log(0.345) = -9.2dB

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

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Figure A [Pulse Train]

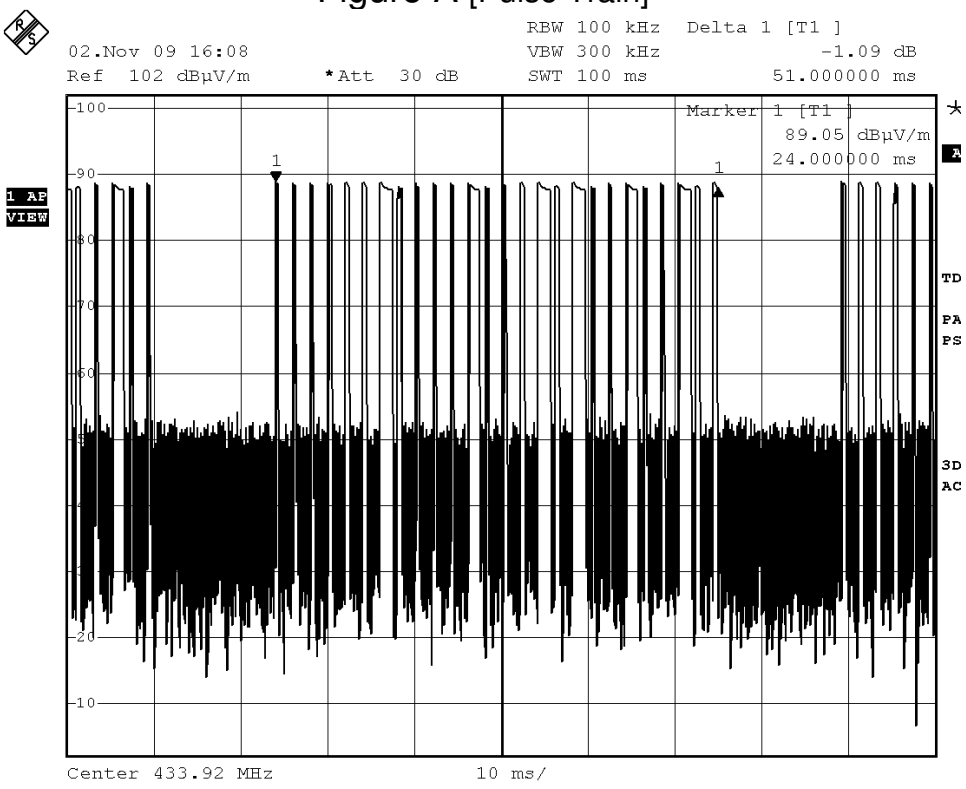

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Figure B [Short Pulse]

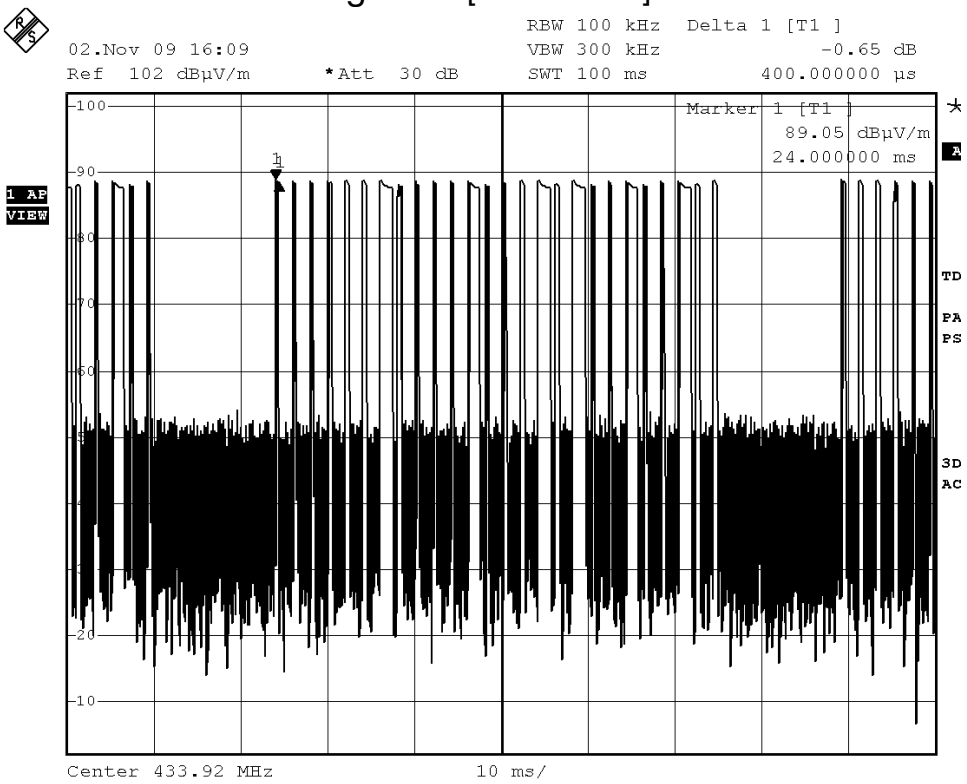

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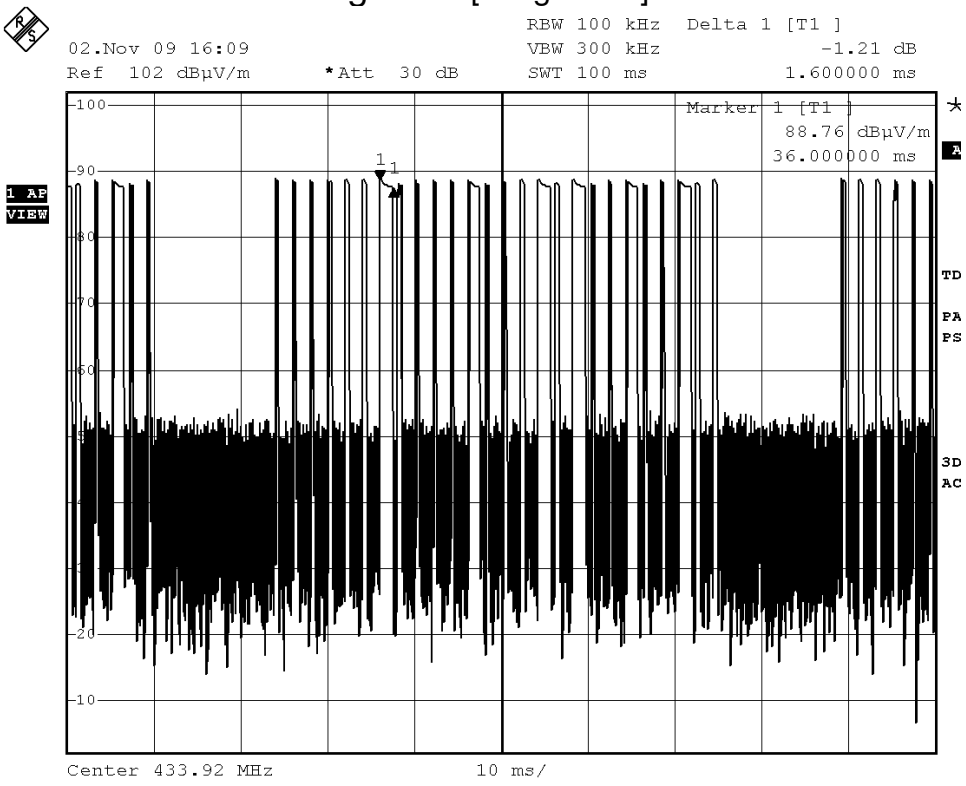
Figure C [Long Pulse]



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Duration of Transmission

Test Requirement:	FCC 47 CFR 15.231(a)(1)
Test Date:	2009-11-02
Mode of Operation:	Transmission mode

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 transmit while button is being pressed and it has been deactivated immediately of being released within 5 second as shown in Figure A

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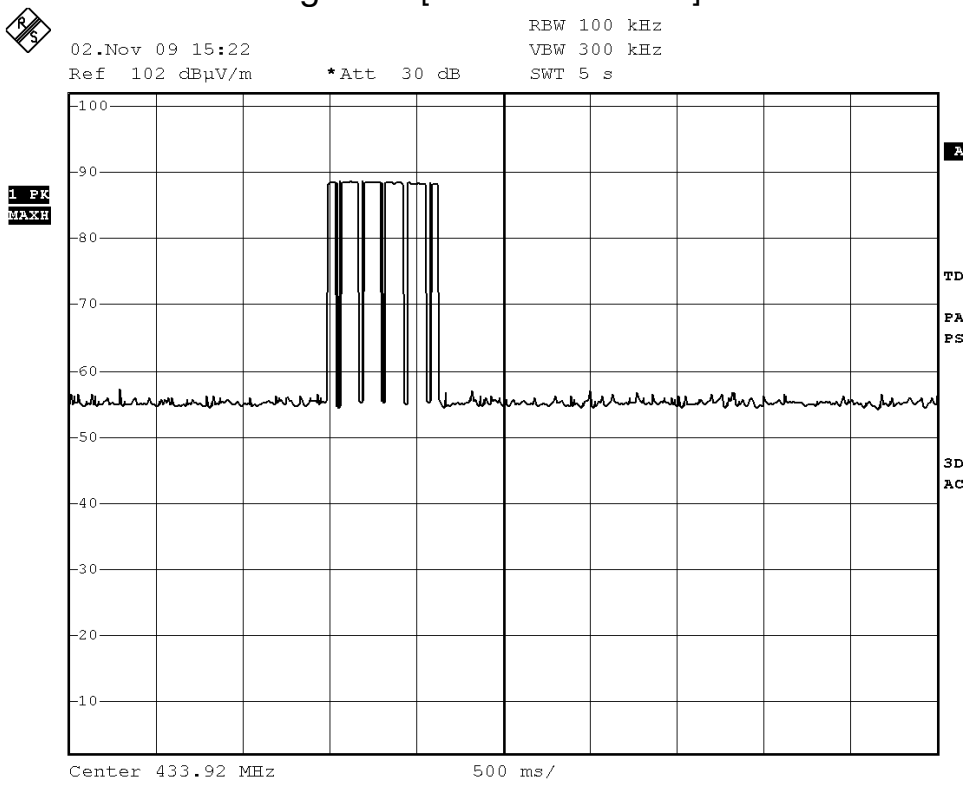
Figure A [Each transmission]



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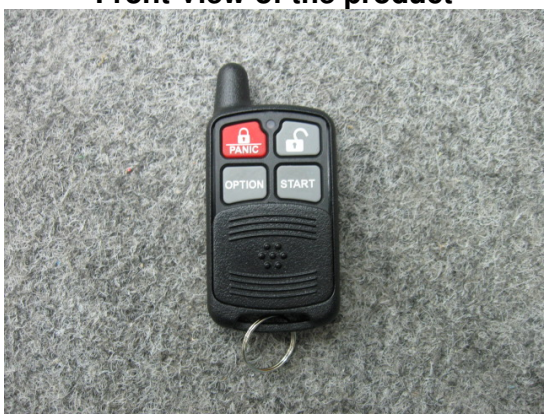
Photographs of EUT

Front View of the product



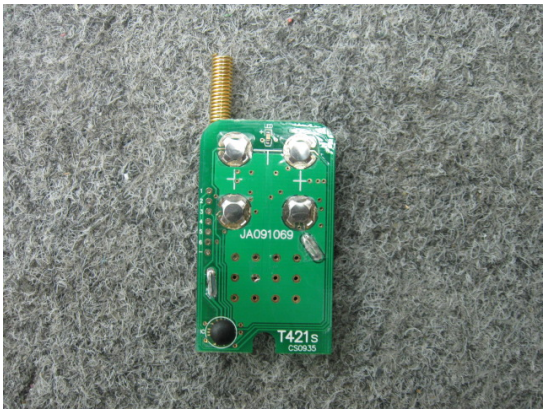
Rear View of the product

Left View of the product

Right View of the product

Inner Circuit Top View

Inner Circuit Bottom View



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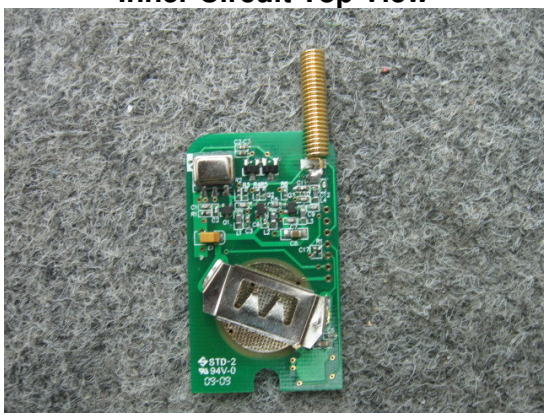
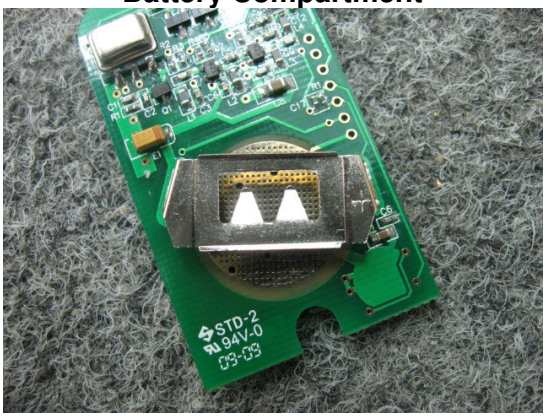
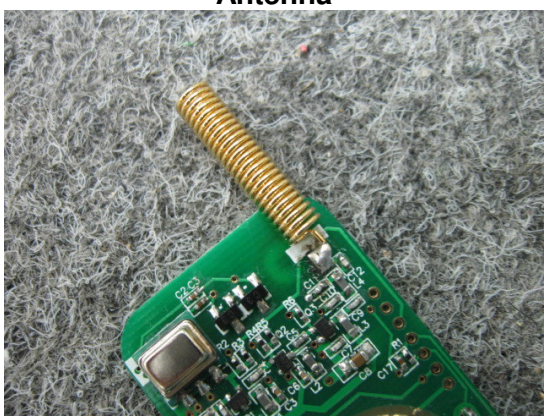
Inner Circuit Top View



Battery Compartment



Antenna



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Measurement of Radiated Emission Test Set Up

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

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