I-Test Laboratory
Total 35 pages

TEST REPORT

Report No. :	**15050811-1**
Product description:	**Doorbell Transmitter**
Model/Type :	**SIGNOLUXDTX-A, SIGNOLUXDTX-B**
Applicant's name:	**Adec & Partner AG**

Lab: I-Test Laboratory
Add: 1-2 floor, South Block, Building A2, No 3 Keyan Lu, Science City, Guangzhou, Guangdong Province, P.R. China
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TEST REPORT

FCC Part 15.231: 2014

FCC ID: U94SIGNOLUXDTX

Report Reference No. .....:	15050811-1	
Tested by (+ signature) .....:	Jumy qiu	Jumy Qiu
Review by (+ signature) .....:	Sunway Zeng	Sunway Zeng
Approved by (+ signature).....	Pauler Li	Pauler Li
Date of issue .....:	Jun. 4, 2015	
Total number of pages .....:	35 Pages	
Testing Laboratory……..:	I-Test Laboratory (Accredited by CNAS, Accredited Number: L4957) FCC- Registration No: 935596 Renewal on April. 19, 2012 IC Assigned Code: 8368A	
Address .....:	1-2 floor, South Block, Building A2 No3 Keyan Lu, Science City, Guangzhou, Guangdong, China	
Applicant's name .....:	Adec & Partner AG	
Address .....:	Staldenbachstrasse 30 CH-8808 pfaffikon, Switzerland	
Manufacturer's name .....:	Dtech audio company limited	
Address .....:	No. B1 Enping District Zone II, Jiangmen Industrial Transfer District, Guangdong, China	
Test specification……:	Entrusted testing	
Standard.....:	FCC PART 15.231: 2014	
Non-standard test method……...:	N/A	
Date of Sample Receive ..... …...:	Mar. 15, 2015	
Date of Test.....:	Mar. 18, 2015 to Jun. 4, 2015	
Test item description.....:	Doorbell Transmitter	
Trade Mark.....:	Humantechnik	
Model/Type reference .....:	SIGNOLUXDTX-A	
Ratings .....:	3.0Vdc 1*CR2030 Battery	

TABLE OF CONTENT

1 TEST SUMMARY

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (9kHz to 25GHz)	FCC Part 15.231b)	ANSI C63.10:2013	FCC Part 15.231b)	PASS
Occupied Bandwidth	FCC PART 15.215c)	ANSI C63.10:2013	In FCC PART 15.215c)	PASS
Dwell Time	FCC Part 15.231a)	ANSI C63.10:2013	FCC Part 15.231a)	PASS
Conducted Emissions at Mains Terminals	FCC PART 15.207	ANSI C63.10: 2013: Clause 6.2 & DA 00-705	In FCC PART 15.207	N/A
Frequency Stability	FCC Part 15.231d)	FCC CFR 47 Part 2.1055	±0.01% for devices operating within the frequency band 40.66 - 40.70 MHz	N/A
Radiated Emission (9kHz to 25GHz)	FCC Part 15.231e)	ANSI C63.10:2013	FCC Part 15.231e)	N/A

Remark:

Model: **SIGNOLUXDTX-A, SIGNOLUXDTX-B**

Only tested **SIGNOLUXDTX-A**, since the other models listed above are electric identical with only difference being the model name and appearance (buttom's shape and location setting).

2 GENERAL INFORMATION

2.1 **Client Information**

Applicant:	Adec & Partner AG
Address of Applicant:	Staldenbachstrasse 30 CH-8808 pfaffikon, Switzerland

2.2 **General Description of E.U.T.**

EUT Name:	Doorbell Transmitter
Item No.:	SIGNOLUXDTX-A, SIGNOLUXDTX-B
Serial No.:	Not supplied by client

2.3 **Details of E.U.T.**

Power Supply:	3.0Vdc 1*CR2030 Battery
Main Function:	Copied from the SIGNOLUXDTX-A's manual A "signolux" light signal system consists of at least one transmitter (e.g. doorbell pushbutton) ad a "signolux" receiver. Up to 8 transmitters can be integrated. If e.g. the doorbell pushbutton is pressed, a radio signal (radio impulses with 915 MHz) are transmitted to the " signolux " receiver. This one signals the receiver signals acoustically and visually with sounds and light signals. Copied from the SIGNOLUXDTX-A's manual A "signolux" light signal system consists of at least one transmitter (e.g. call-pushbutton) ad a "signolux" receiver. Up to 8 transmitters can be integrated. If e.g. the doorbell pushbutton is pressed, a radio signal (radio impulses with 915 MHz) are transmitted to the " signolux " receiver. This one signals the receiver signals acoustically and visually with sounds and light signals.
Oscillating Frequency:	RF module IC (TH72031)(@U3), crystal (@Y2) frequency: 28.59 MHz; CPU(MCV14A)(@U1), crystal (@Y1) frequency: 12.0 MHz

Frequency Range: 915 MHz

Modulation: FSK; Emission designator: 600KF1D

Occupied bandwidth (99 % BW): 600kHz

Antenna Number & Type: One & Fixed on PCB; Gained: 2 dBi; Antenna length: 20mm; Impedance: 50-Ohm; Antenna min distance to the shell: 10mm.

Types of Momentary Signals : (a) A manually operated transmitter shall be equipped with a push-to-operate switch and be under manual control at all transmission times. When released, the transmitter shall cease transmission (holdover time of up to 5 seconds is permitted).

1	Product SW/HW version	N/A
2	Radio SW/HW version	N/A
3	Test SW Version	push_door. hex
4	RF power setting in TEST SW	1.0 mW

2.4 Description of Support Units

/

2.5 Standards Applicable for Testing

The standard used was FCC PART 15.231.

The EUT belongs to low power communication device transmitter, and it's an unlicensed low power auxiliary device.

2.6 Test Location

I-Test Laboratory

Address: 1-2 floor, South Block, Building A2 No3 Keyan Lu, Science City, Guangzhou, Guangdong, China

Accredited by CNAS, Accredited Number: L4957

FCC- Registration No: 935596 Renewal on April. 19, 2012

IC Assigned Code: 8368A

2.7 Deviation from Standards

None.

2.8 Abnormalities from Standard Conditions

None.

3 TEST RESULTS

3.1 **Radiation Interference**

Test Requirement:	FCC Part15.231b) & FCC Part15.209
Test Method:	ANSI C63.10:2013
Detector:	Peak for pre-scan (The resolution bandwidth was 100KHz and the video bandwidth was 300KHz up to 1.0GHz and 1.0MHz with a video BW of 3.0MHz above 1.0GHz.) Average detector if maximised peak within 6dB of limit

3.1.1 **E.U.T. Operation**

Operating Environment:

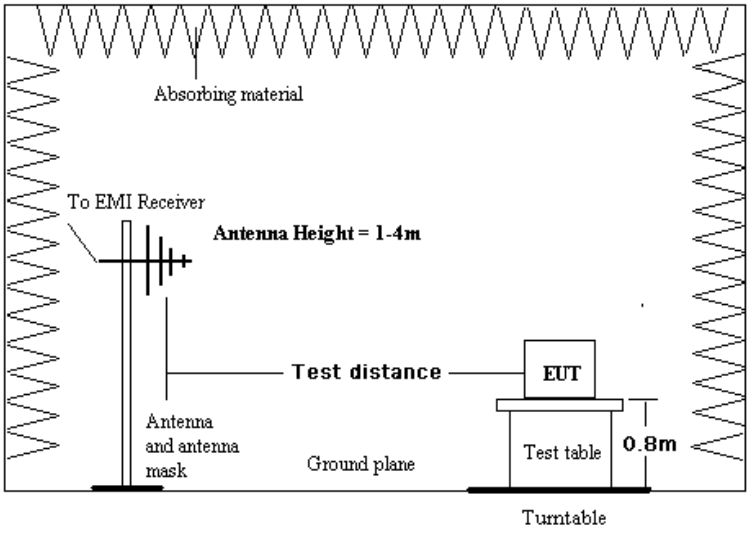
Temperature: 20°C Humidity:50% RH Atmospheric Pressure: 103 kPa

EUT Operation:

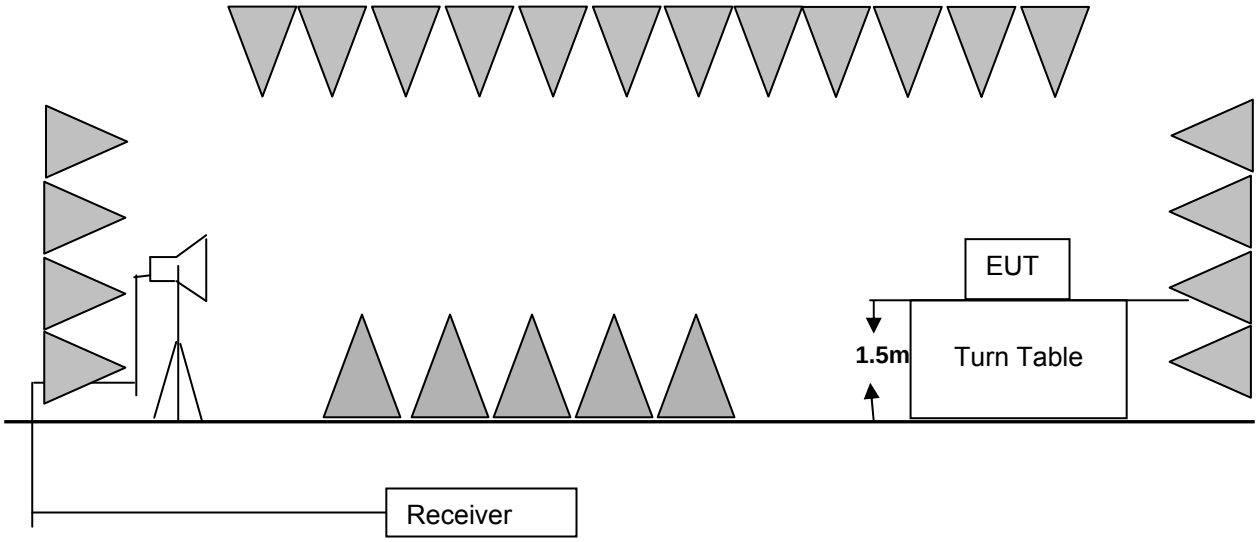
In the fundamental test, connecting the EUT to peripheral devices.

Test the EUT work normally in on mode during the whole test.

3.1.2 **Test Setup**



1 GHz to 40 GHz emissions:



3.1.3 **Test Procedure**

ANSI STANDARD C63.10-2013 6.5 Radiated emissions from unlicensed wireless devices in the frequency range of 30 MHz to 1000 MHz

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical polarities. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X/ Y/ Z orthogonal planes for the final measurement.

3.1.4 **Measurement Data**

Copy from FCC Part 15.231b)

(b) In addition to the provisions of Section 15.205, the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of the Fundamental (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	1,250 to 3,750**	125 to 375**
174-260	3,750	375
260-470	3,750 to 12,500**	375 to 1,250**
Above 470	**12,500**	**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 130-174 MHz, μV/m at 3 meters = 56.81818(F) - 6136.3636; for the band 260-470 MHz, μV/m at 3 meters = 41.6667(F) - 7083.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.]

Average measurement of carrier

Frequency	Level		Transducer	Limit	Margin	
MHz	dBuV/m		dB	dBuV/m	dB	
	V	H			V	H
915.0	77.9	78.4	24.0	81.94	4.04	3.54

Peak measurement of carrier

Frequency	Level		Transducer	Limit	Margin	
MHz	dBuV/m		dB	dBuV/m	dB	
	V	H			V	H
915.0	90.8	91.4	24.0	101.94	11.14	10.54

Note:

Fundamental: 12500uV/m (81.94 dBuV/m) for AV limit in band (Above 470MHz).
The transducer factor = antenna factor + cable loss - preamplifier.

The Level = Read level + transducer factor.

H: Antenna polarization horizontal direction. V: Antenna polarization vertical direction.

The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X orthogonal plane for the final measurement.

The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Average measurement of harmonics and spurious emission at 915.0 MHz

Frequency		Level		Transducer	Limit	Min. Margin	
MHz		dBuV/m		dB	dBuV/m	dB	
		V	H			V	H
2nd	1830.0	32.2	33.4	27.4	61.94	29.74	28.54
3rd	2745.0	31.8	33.2	27.9		30.14	28.74
4th	3660.0	32.4	34.4	30.3		29.54	27.54
5th	4575.0	33.2	34.3	34.1		28.74	27.64
6th	5490.0	33.1	34.7	31.0		28.84	27.24
7th	6405.0	34.0	34.4	35.1		27.94	27.54
8th	7320.0	34.2	34.8	35.0		27.74	27.14
9th	8235.0	34.5	35.2	36.0		27.44	26.74
10th	9150.0	34.7	35.8	37.3		27.24	26.14

Peak measurement of harmonics and spurious emission at 915.0 MHz

Frequency		Level		Transducer	Limit	Min. Margin	
MHz		dBuV/m		dB	dBuV/m	dB	
		V	H			V	H
2nd	1830.0	40.3	40.4	27.4	81.94	41.64	41.54
3rd	2745.0	43.2	43.5	27.9		38.74	38.44
4th	3660.0	43.1	44.8	30.3		38.84	37.14
5th	4575.0	43.2	44.7	34.1		38.74	37.24
6th	5490.0	44.2	44.6	31.0		37.74	37.34
7th	6405.0	44.3	44.6	35.1		37.64	37.34
8th	7320.0	44.2	44.9	35.0		37.74	37.04
9th	8235.0	44.5	45.6	36.0		37.44	36.34
10th	9150.0	44.1	45.8	37.3		37.84	36.14

Note:

Unwanted Emissions: 1250μV/m (61.94dBuV/m) for AV limit.
The transducer factor = antenna factor + cable loss - preamplifier.
The Level = Read level + transducer factor.
H: Antenna polarization horizontal direction. V: Antenna polarization vertical direction.

The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X orthogonal plane for the final measurement.

The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

Note:

The EUT's transmitting frequency range belonged to 915MHz, and it is complied with the requirements of FCC Part 15.231b).

3.1.5 **Radiated outside of the specified frequency bands**

Copy from FCC Part 15.209: Radiated emission limits, general requirements

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency	Field Strength	Measurement Distance
MHz	microvolts/meter(uV/m)	(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

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Copy from FCC Part 15.231b)

(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this Section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in Section 15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of Section 15.205 shall be demonstrated using the measurement instrumentation specified in that section.

(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in Section 15.209, whichever limit permits a higher field strength.

Note:

Since the fundamental emissions peak and average values are shown on section 3.1.6 of this report, the general radiated emission limits in Section 15.209 is the tighter limits apply at the band edges.

Limits for the frequency bands of 902MHz - 928 MHz

Frequency	FCC Part 15.209 General Radiated limits	
MHz	dBuV/m@3m	
	QP	AVG
30 - 88	40	/
88 - 216	43.5	/
216 - 960	46	/
960 - 1000	54	/
Above 1000	74(PK)	54

Frequency	FCC Part 15.231.b) limits	
MHz	dBuV/m@3m	
	QP	AVG
30 - 88	40	/
88 - 216	43.5	/
216 - 902	46	/
928-960	46	/
960 - 1000	54	/
1000-9150	74(PK)	54

Remark:
1. RF line voltage (dBuV)= 20 log RF line voltage (uV)
2. In the above table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

Detector:

Resolution bandwidth for Peak and Quasi-Peak value:
200 Hz for 9 kHz to 150 kHz
9 kHz for 150 kHz to 30 MHz
120 kHz for 30 MHz to 1GHz
1 MHz for above 1 GHz,
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For AV value:
Average = Peak value + 20log (Duty cycle)

The average correction factor is computed by analyzing the on time in one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds, therefore the average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle), where the duty factor is calculated from following formula:

The duration of one cycle = 3.17 ms

Effective period of the cycle=Σtn
=(200+40+200+300+40+40+40+150+90+100+50+40+40+90+40)us= 1460 us = 1.46 ms

DC =1.46/3.17=0.46057 or 46.057%

Therefore, the averaging factor is found by 20lg(0.46057) = -6.7341

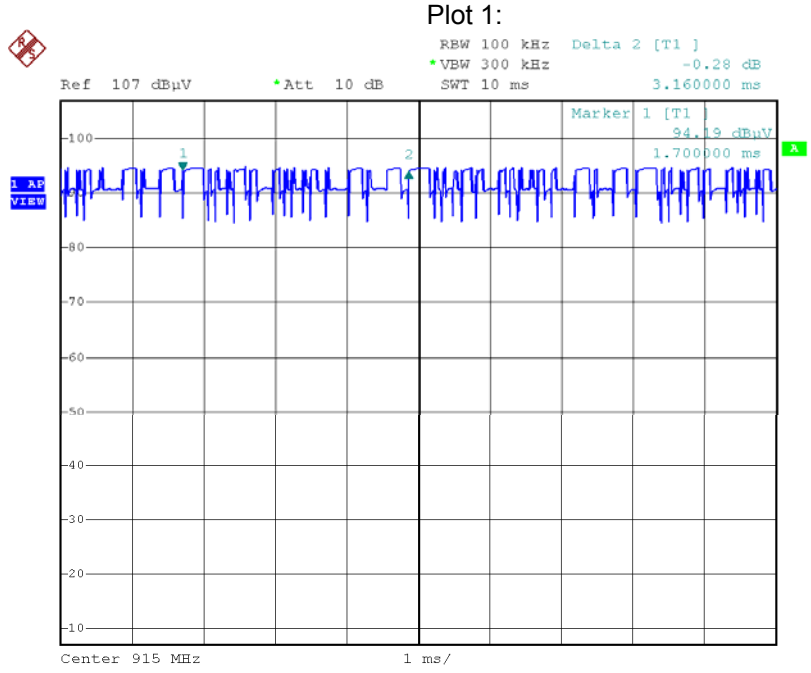
And we choose averaging factor = -6.7

Please refer to below plots for more details.

For AV value: Average = Peak value + 20log (Duty cycle) = Peak value -6.7

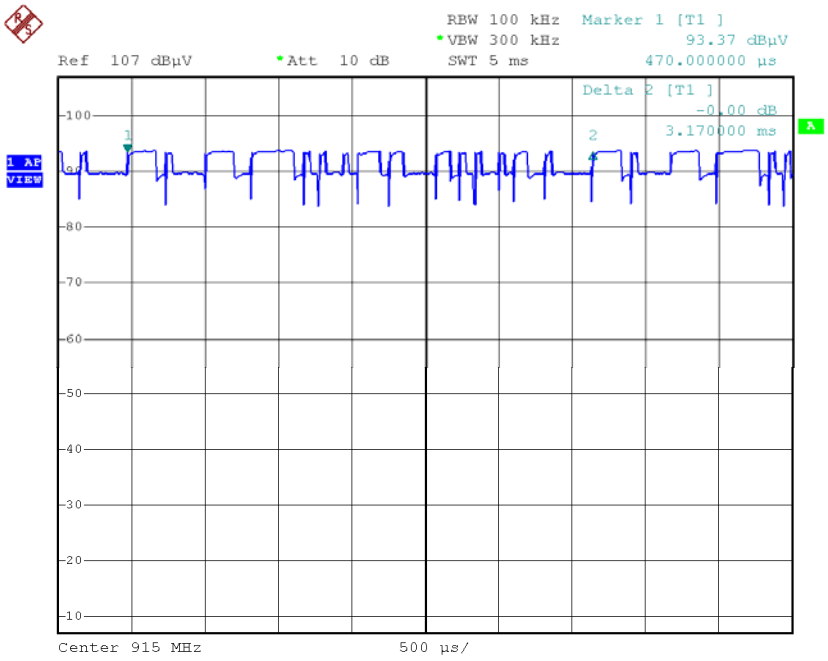
Test mode: keep the EUT work continuously.

Plot 1:



Date: 4.JUN.2015 11:56:14

Plot 2:



Note: From the plot 1 and plot 2, we find:

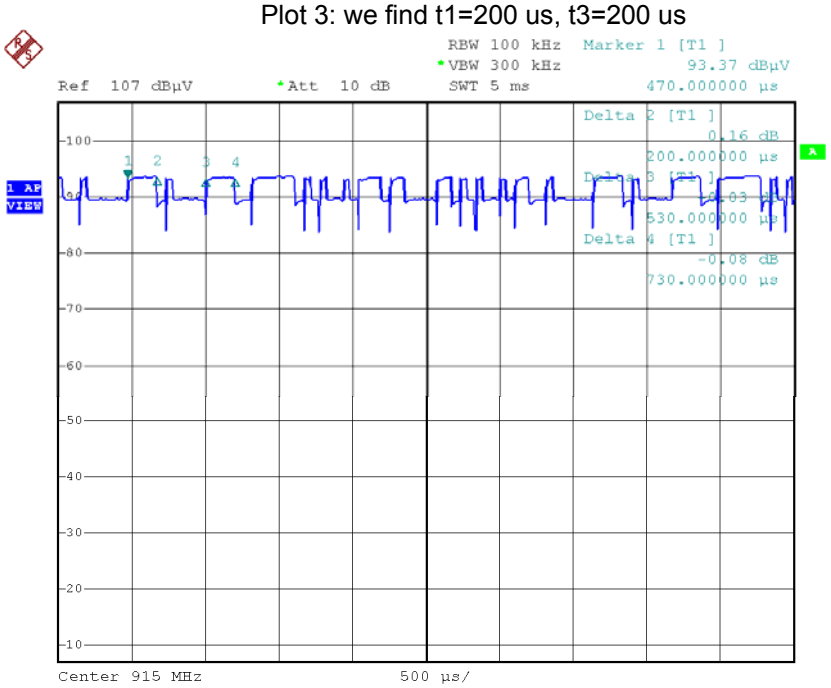
The duration of one cycle = 3.16 ms (SWT=10ms),

The duration of one cycle = 3.17 ms (SWT=5ms),

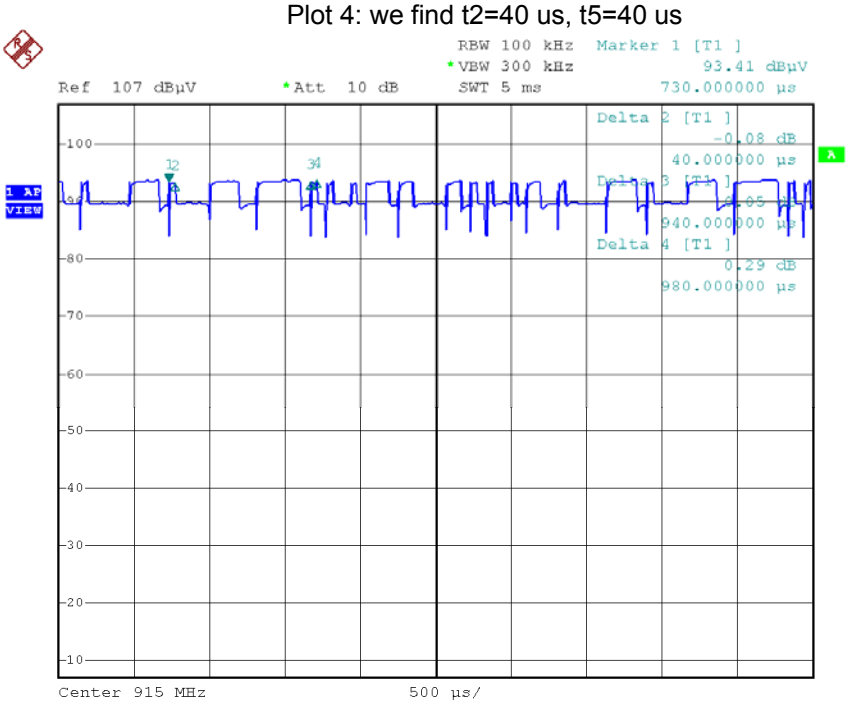
And we choose: The case of SWT=5ms, and the duration of one cycle = 3.17 ms.

There are 15 pulses in one cycle with marker 1 to 2 in plot 2, and the 15 pulses' widths are shown in plot 3 to 10 as followings. And we define that "tn" = pulse width, n=pulse number.

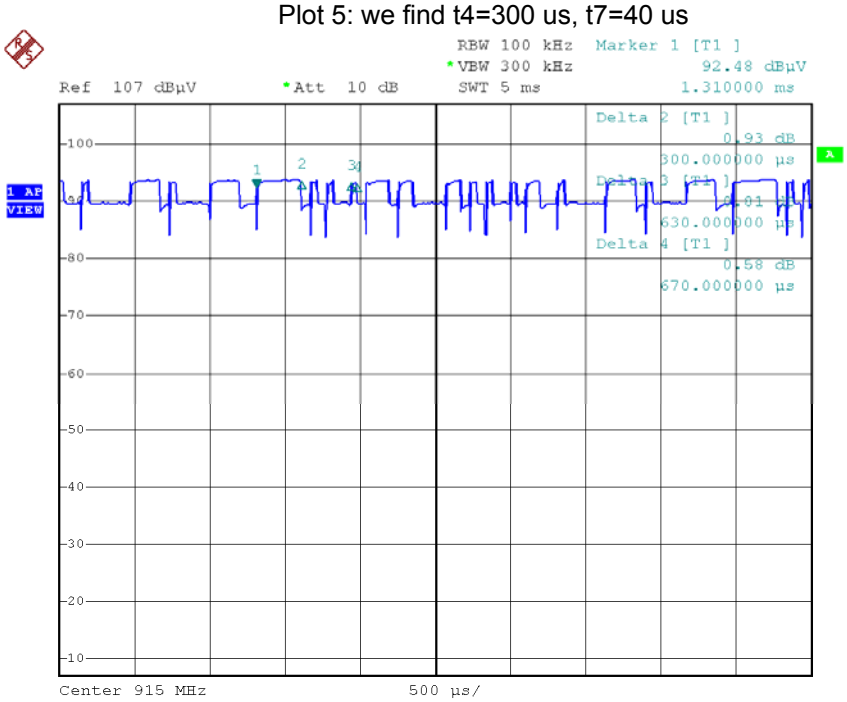
Plot 3: we find t1=200 us, t3=200 us



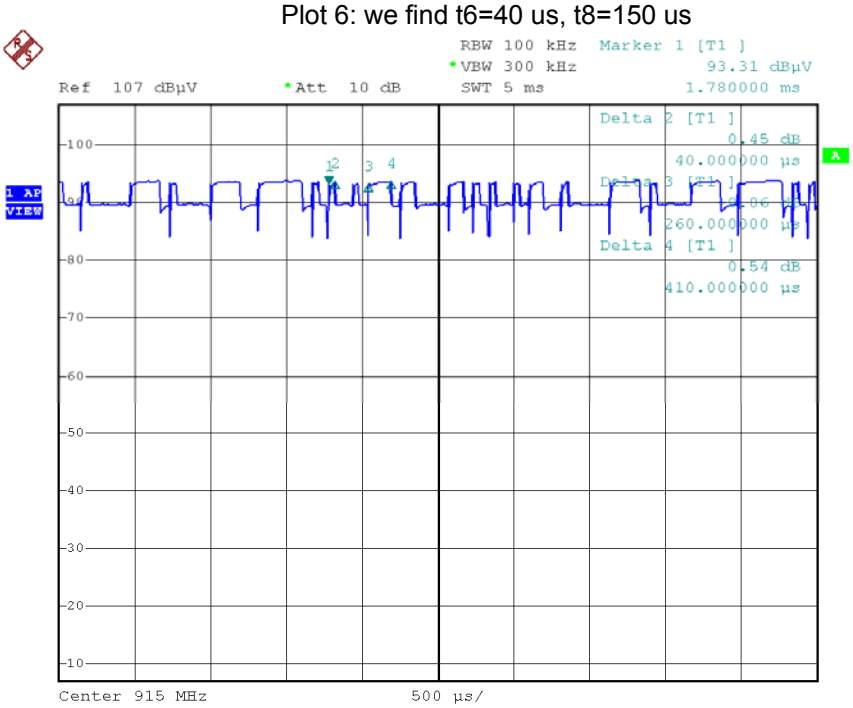
Plot 4: we find t2=40 us, t5=40 us



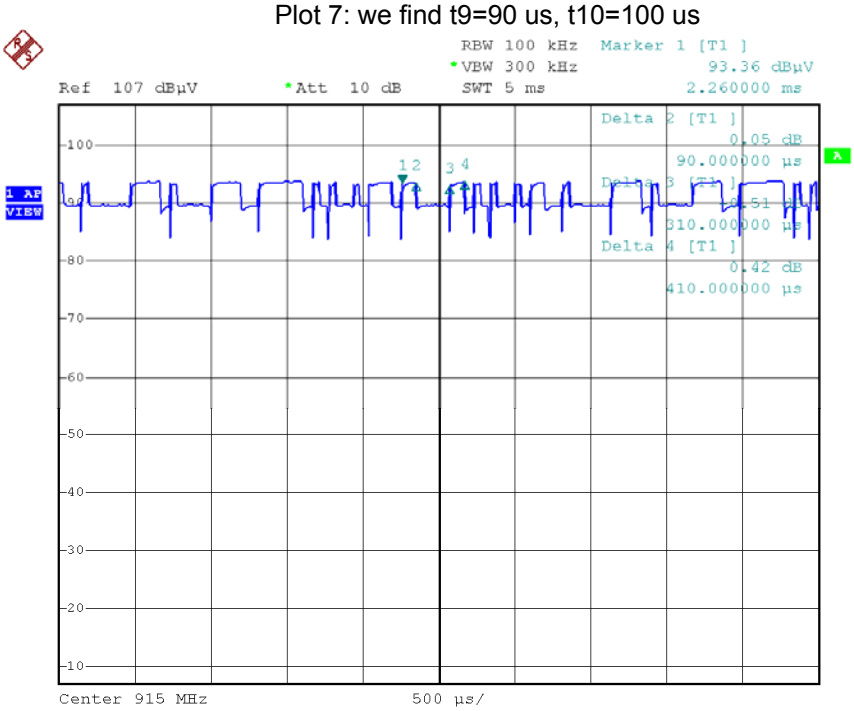
Plot 5: we find t4=300 us, t7=40 us



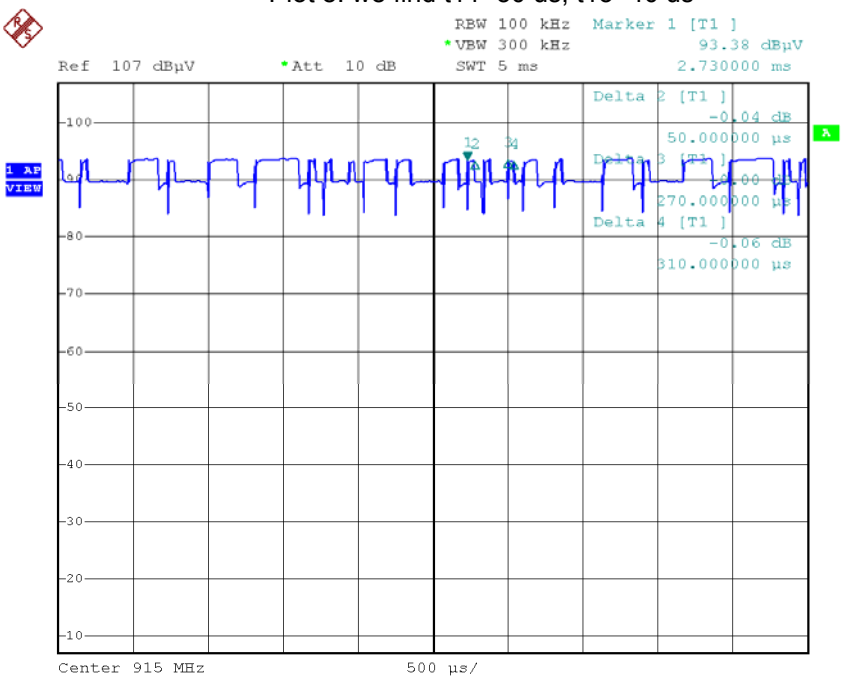
Plot 6: we find t6=40 us, t8=150 us



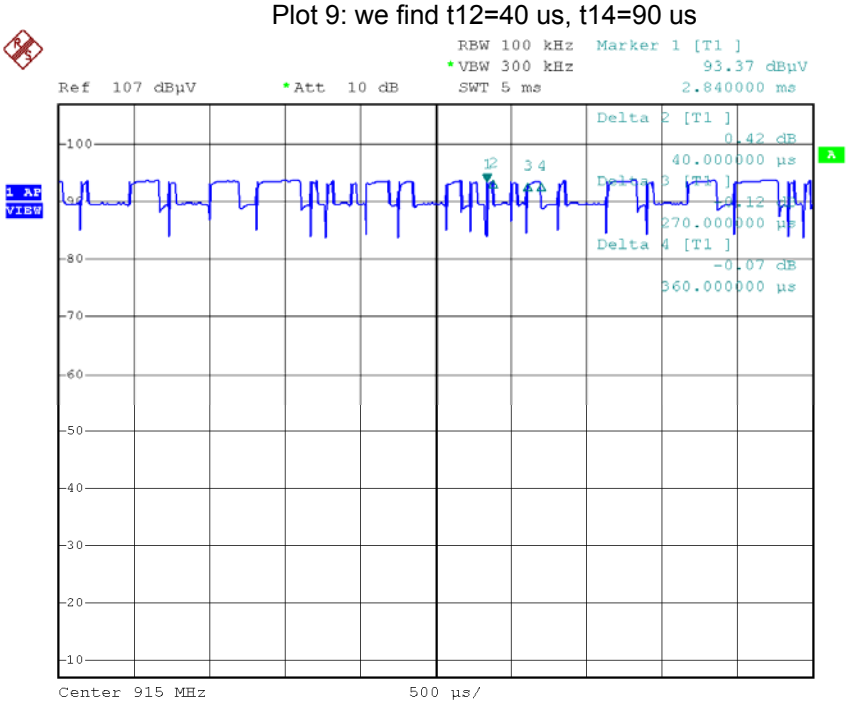
Plot 7: we find t9=90 us, t10=100 us



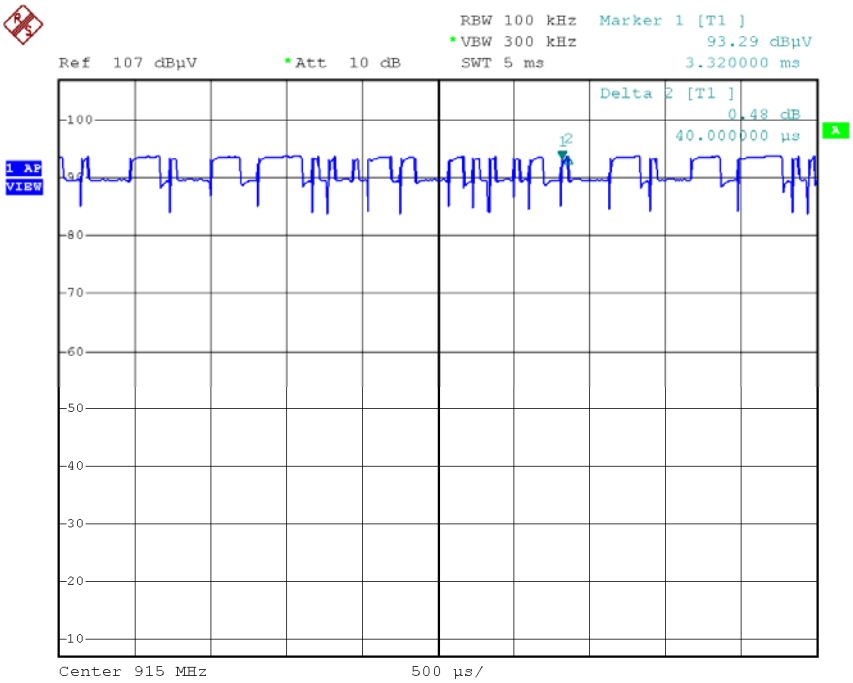
Plot 8: we find t11=50 us, t13=40 us



Plot 9: we find t12=40 us, t14=90 us



Plot 10: we find t15=40 us



When RBW=10kHz,

In page 13, we find PW=Σtn
=(200+40+200+300+40+40+40+150+90+100+50+40+40+90+40)us
= 1460 us
= 1.46 ms,

2/PW = 2/ 1.46 ms = 1.37 kHz < 10 kHz = RBW, So PDCF is not needed.

3.1.6 **Measurement Data for FCC Part 15.231.b)**

Test the EUT work normally in transmitting mode in mains.

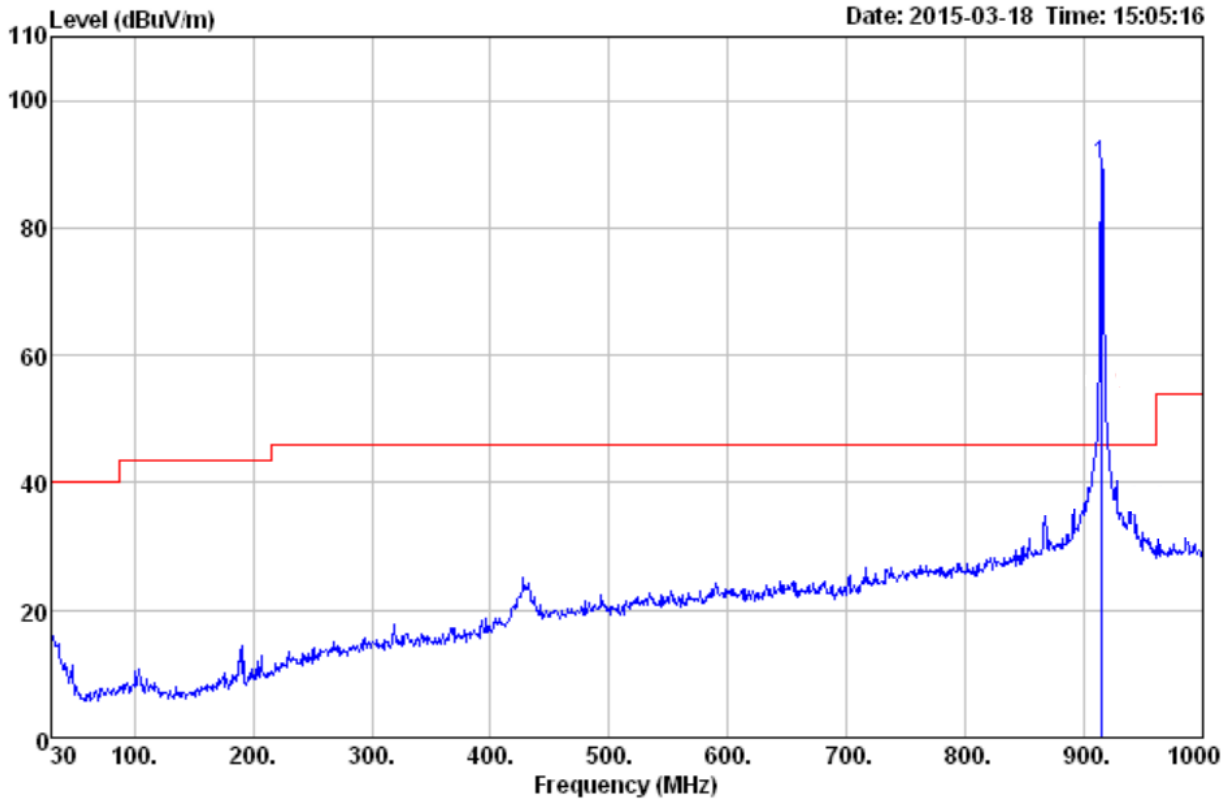
1) 9kHz~30MHz Test result

The Low frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not report.

2) 30 MHz~1 GHz Spurious Emissions. Quasi-Peak Measurement

Test curves (with the Quasi-peak measurement and QP limit), 30M-1GHz, Horizontal & Vertical:

Horizontal



Quasi-peak measurement

Frequency	Level	Transducer	Limit	Margin
MHz	dBuV/m	dB	dBuV/m	dB
30.0	17.3	17.9	40	22.7
184.2	16.6	8.9	43.5	26.9
423.4	24.4	16.6	46	21.6
860.1*	35.4	23.0	46	10.6
936.2*	35.8	24.2	46	10.2
972.6	33.3	23.9	54	20.7

Note:

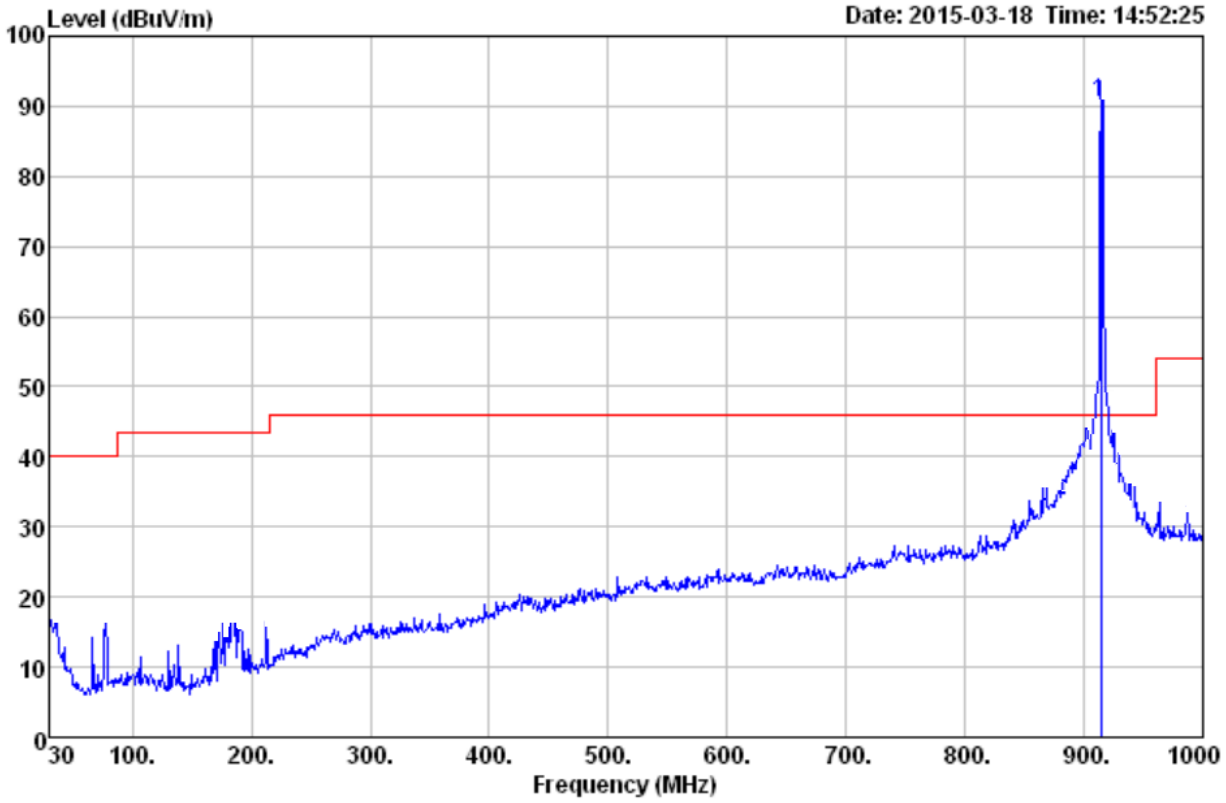
The transducer factor includes antenna factor and cable loss.

* means the max Quasi peak value for band-edge (frequency range of 802 MHz to 902MHz, except for harmonics) is the plot measurement at 860.1 MHz.

* means the max Quasi peak value for band-edge (frequency range of 928 MHz to 1000 MHz, except for harmonics) is the plot measurement at 936.2 MHz.

The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X orthogonal plane for the final measurement.

Vertical



Quasi-peak measurement

Frequency	Level	Transducer	Limit	Margin
MHz	dBuV/m	dB	dBuV/m	dB
30.0	15.5	17.9	40	24.5
184.1	15.4	8.9	43.5	28.1
524.2	22.4	18.8	46	23.6
900.4*	41.5	23.9	46	4.5
935.2*	37.5	24.2	46	8.5
981.7	33.3	23.7	54	20.7

Note:

The transducer factor includes antenna factor and cable loss.

* means the max Quasi peak value for band-edge (frequency range of 802 MHz to 902MHz, except for harmonics) is the plot measurement at 900.4 MHz.

* means the max Quasi peak value for band-edge (frequency range of 928 MHz to 1000 MHz, except for harmonics) is the plot measurement at 935.2 MHz.

The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X orthogonal plane for the final measurement.

3) 1 GHz~9.30 GHz Spurious Emissions .Average & PK Measurement

Horizontal & Vertical:

Average measurement at 915 MHz

Frequency	Level		Transducer	Limit	Margin	
GHz	dBuV/m		dB	dBuV/m	dB	
	Horizontal	Vertical			Horizontal	Vertical
1.218	32.3	33.6	24.8	54	21.7	20.4
2.393	31.1	33.6	26.6		22.9	20.4
2.562	32.3	34.2	26.8		21.7	19.8
5.243	33.3	34.6	33.1		20.7	19.4
7.458	33.2	34.9	35.9		20.8	19.1
9.217	34.1	34.6	37.5		19.9	19.4

Peak measurement at 915 MHz

Frequency	Level		Transducer	Limit	Margin	
GHz	dBuV/m		dB	dBuV/m	dB	
	Horizontal	Vertical			Horizontal	Vertical
1.218	40.6	40.5	24.8	74	33.4	33.5
2.393	43.1	43.7	26.6		30.9	30.3
2.562	43.4	44.8	26.8		30.6	29.2
5.243	43.2	44.8	33.1		30.8	29.2
7.458	44.3	44.7	35.9		29.7	29.3
9.217	44.4	44.7	37.5		29.6	29.3

Note:

The transducer factor includes antenna factor and cable loss.

The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes and choose the worst case of X orthogonal plane for the final measurement.

3.2 Occupied Bandwidth

Test Requirement:	FCC Part15.215c)
Test Method:	ANSI C63.10: 2013
Detector:	Peak for scan (The resolution bandwidth was 10kHz and the video bandwidth was 30kHz, span was 2MHz) maximised peak hold

3.2.1 E.U.T. Operation

Operating Environment:

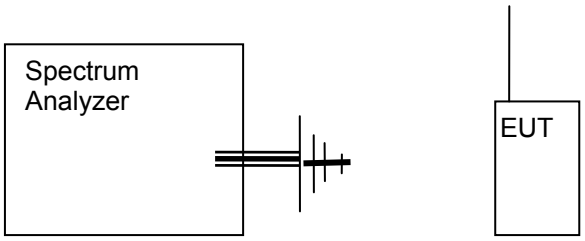
. Humidity:45% RH Atmospheric Pressure: 1020mBar

Temperature: 25°C

EUT Operation:

Test the EUT work normally in on mode during the whole test.

3.2.2 Test Setup



3.2.3 Test Procedure

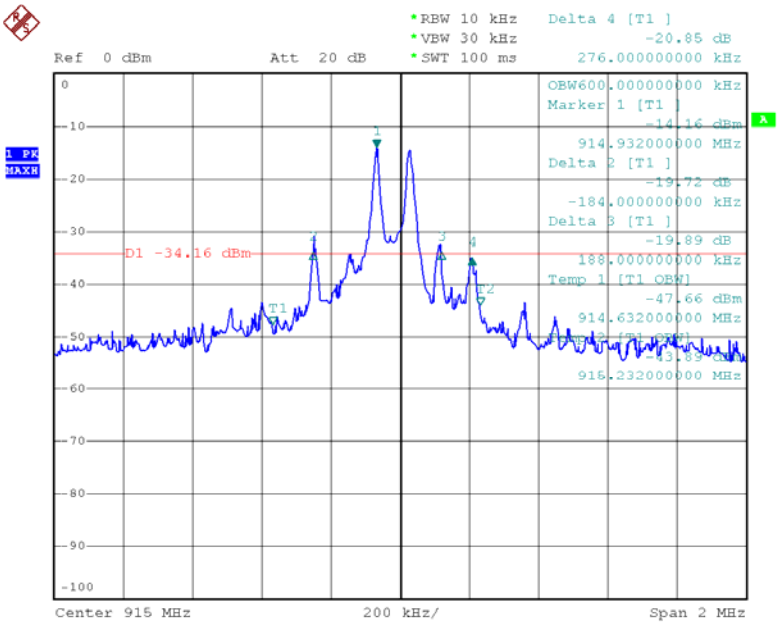
ANSI STANDARD C63.10-2013 6.9 Occupied bandwidth tests:

An initial pre-scan was performed in the 3m chamber using the spectrum analyzer in peak detection mode. Average measurements were conducted based on the peak sweep graph. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical polarities.

3.2.4 Measurement Data

Test for the EUT with switch ON.

Maximum Peak hold measurement for 915.0 MHz



Date: 16.MAY.2015 08:27:17

Center Frequency	ΔFL- / kHz	ΔFL+ / kHz	-20dB Bandwidth/ kHz
915MHz	-184	188	372

Limit:
Copied from FCC Part 15.231c)
(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.

Note:
-20dB bandwidth = 372 kHz
Limit: 0.5% of the centre frequency = 0.5%*915 MHz=4575kHz
-20dB bandwidth < 0.5% of the centre frequency

The EUT's transmitting frequency range belonged to 915MHz, and it is complied with the requirements of FCC Part 15.231c).

3.3 Dwell Time

Test Requirement: FCC Part15.215a)

Test Method: ANSI C63.10: 2013

Detector: Peak for scan (The resolution bandwidth was 3MHz and the video bandwidth was 10MHz, span was 0Hz)
maximised peak view

3.3.1 E.U.T. Operation

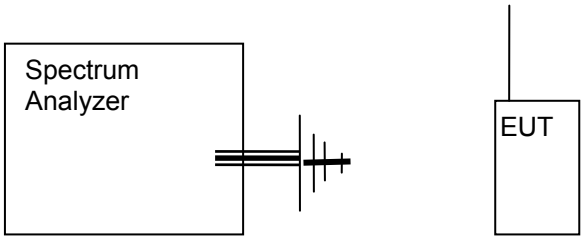
Operating Environment:

Temperature: 25°C Humidity:45% RH Atmospheric Pressure: 1020mBar

EUT Operation:

Test mode: test the EUT within switching on singly.

3.3.2 Test Setup



3.3.3 Test Procedure

/

3.3.4 Test Requirements

Copied From FCC Part 15.231a）

(a) The provisions of this Section are restricted to periodic operation within the band 40.66 - 40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this Section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

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

(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

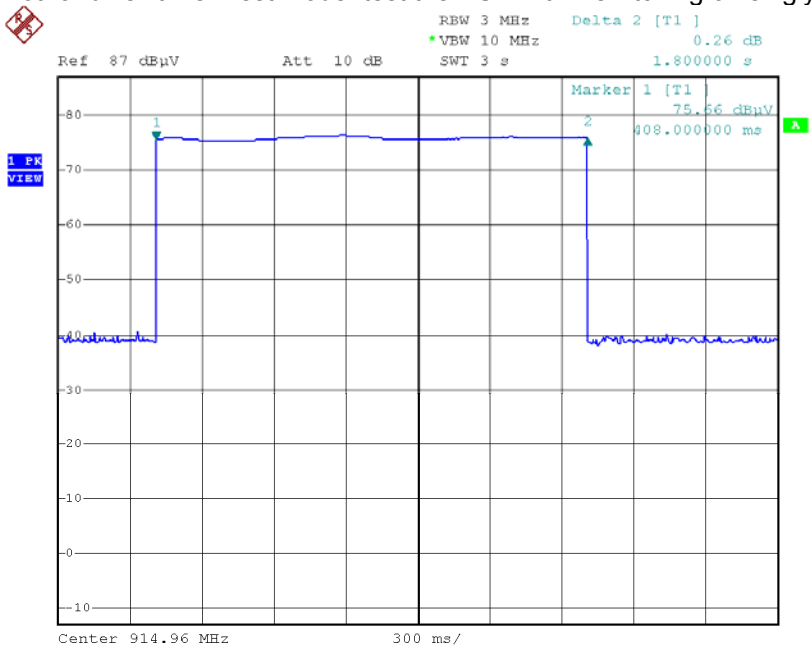
(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

(4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

(5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmission are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

3.3.5 Measurement Data

Plot for dwell time: Test mode: test the EUT within switching on singly.



Date: 18.MAY.2015 13:08:41

Shutdown Time = 408 ms+1.800 s = 2.208 s, limit: 5s

Note:

The EUT does not have automatic transmission, and it does not employ periodic transmission. The EUT does not employ for radio control purposes during emergencies involving fire, security, and safety of life.

Result:

The EUT's dwell time test complied with the requirements of FCC Part 15.231a)(1). And the EUT was Not Applicable to the section a(2)/a(3)/a(4)/a(5) of FCC part 15.231.

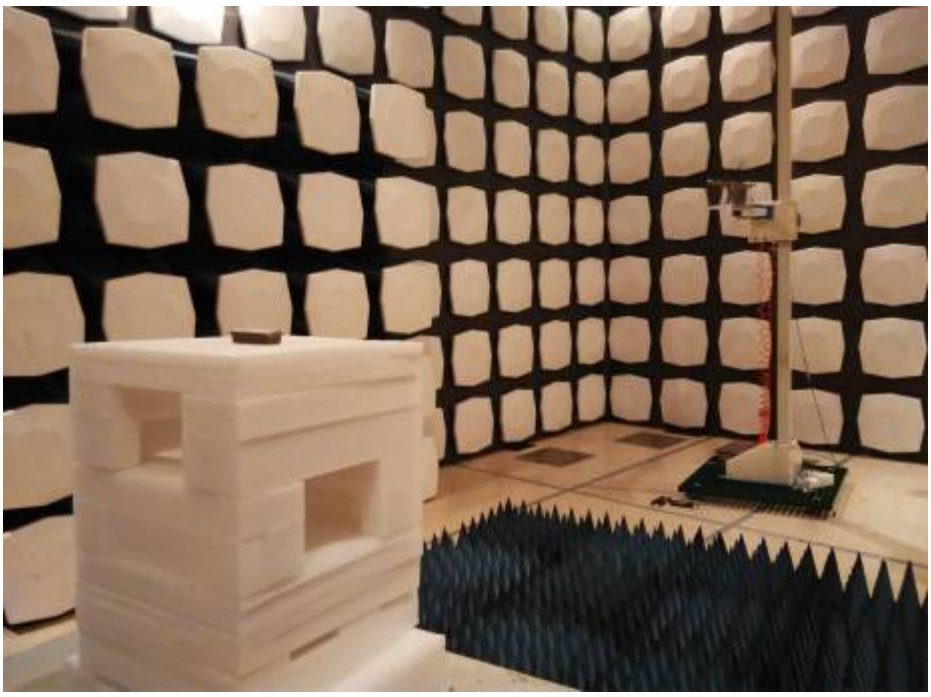
4 PHOTOGRAPHS

4.1 **Radiated Emission Test Setup**

9kHz - 30MHz

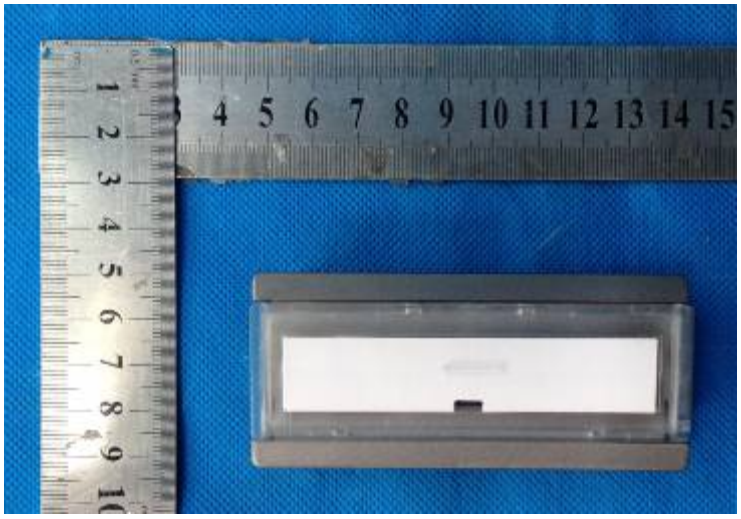
30MHz – 1GHz

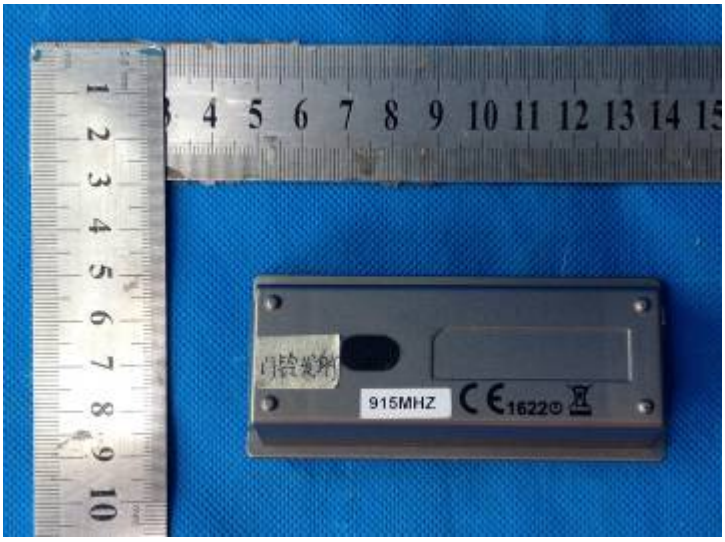
1GHz – 9.3GHz

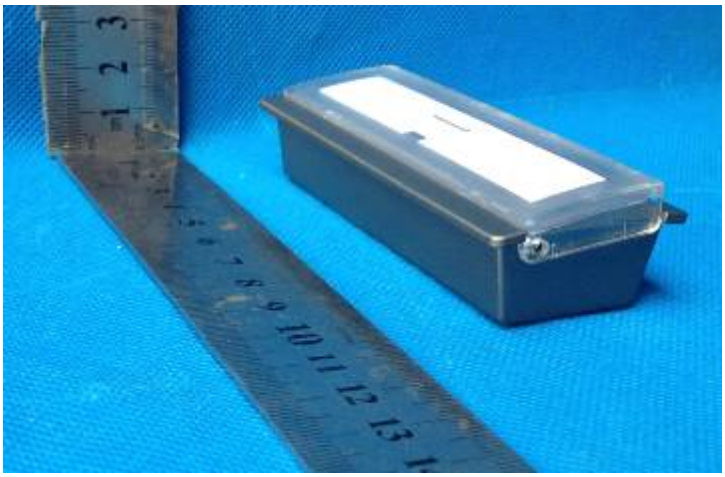


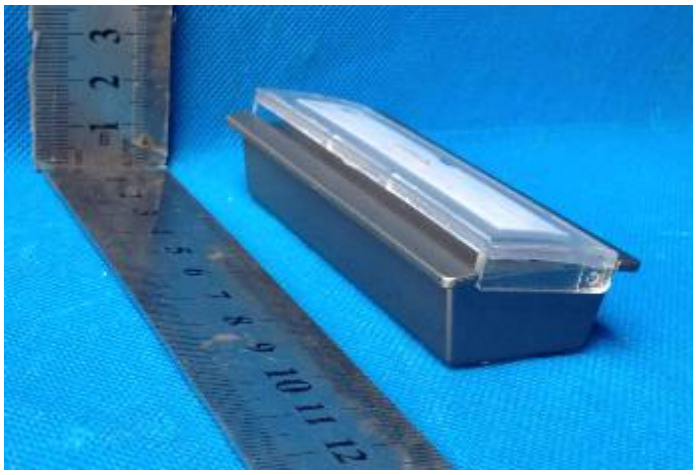
4.2 **EUT Constructional Details**

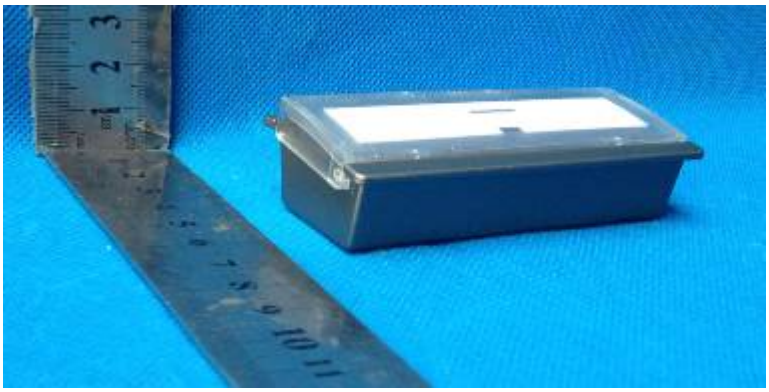
SIGNOLUXDTX-A

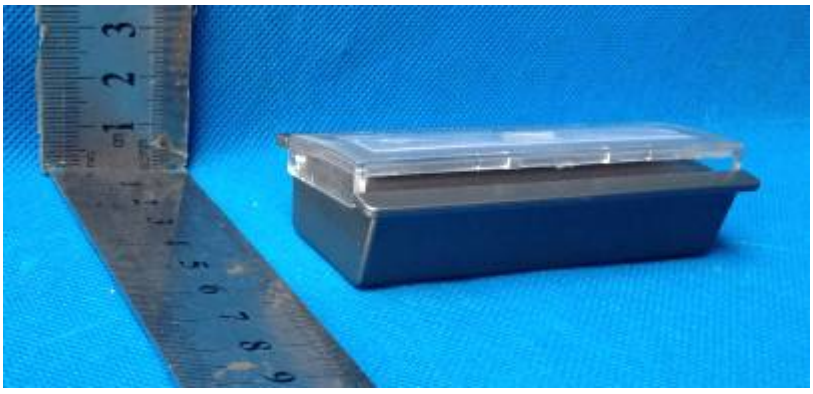


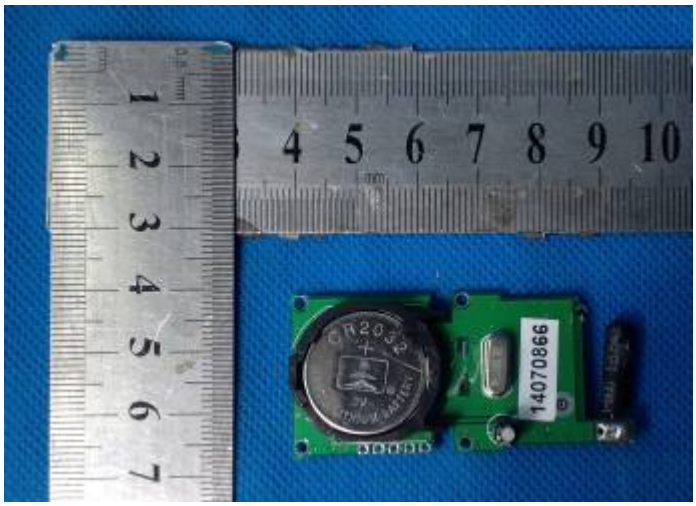


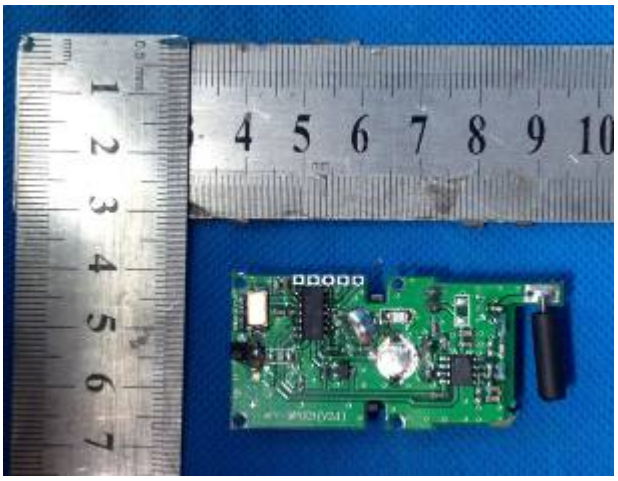


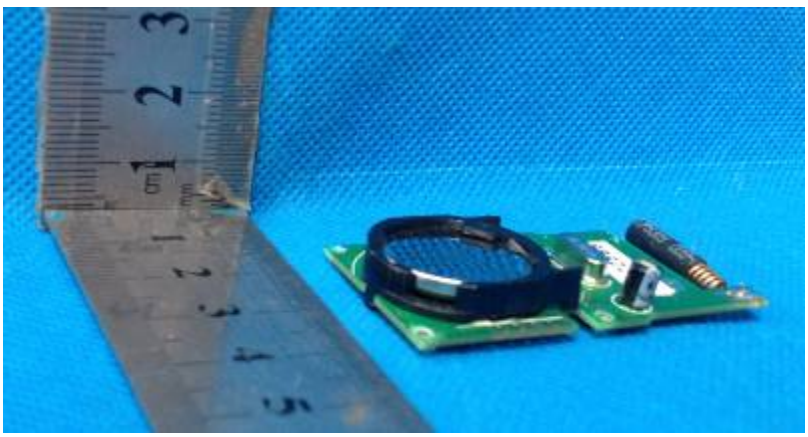


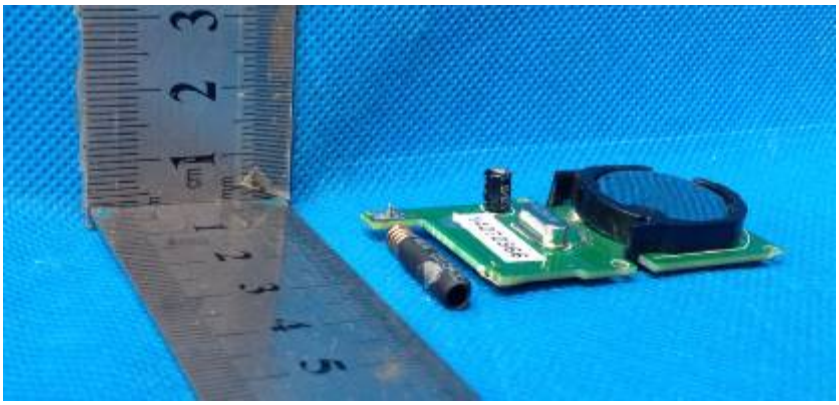


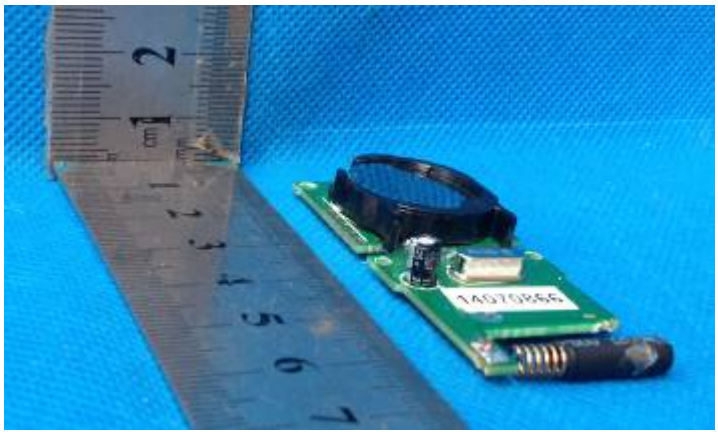


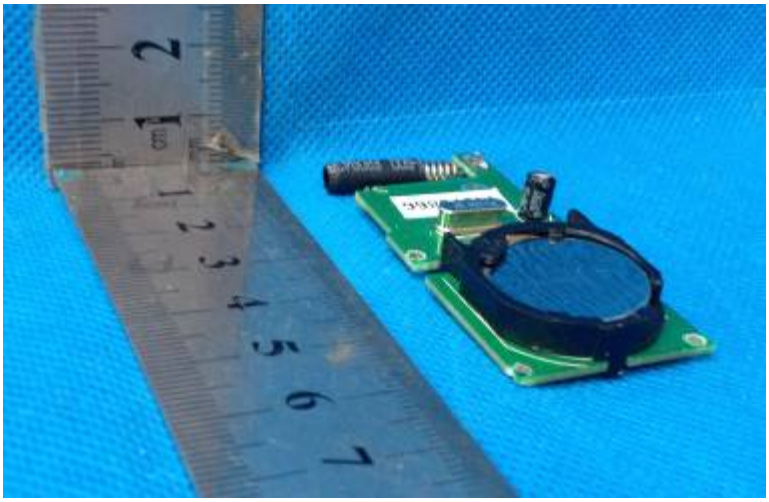

CR2032
14070866

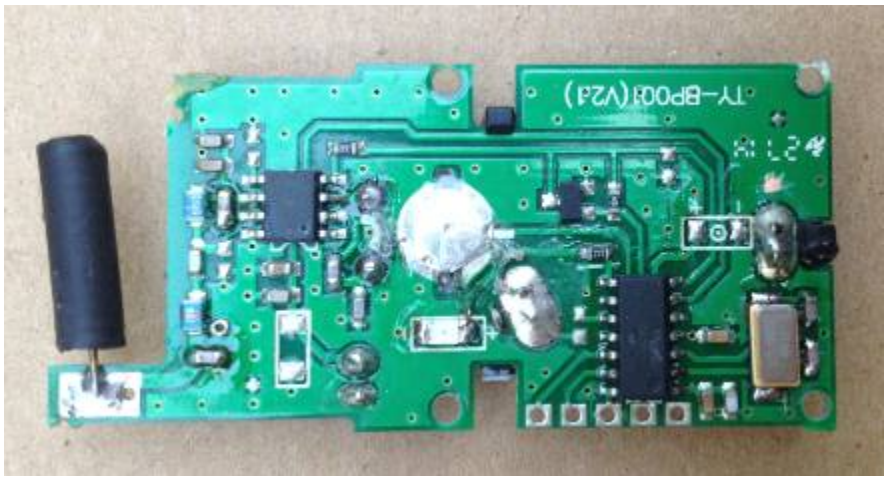










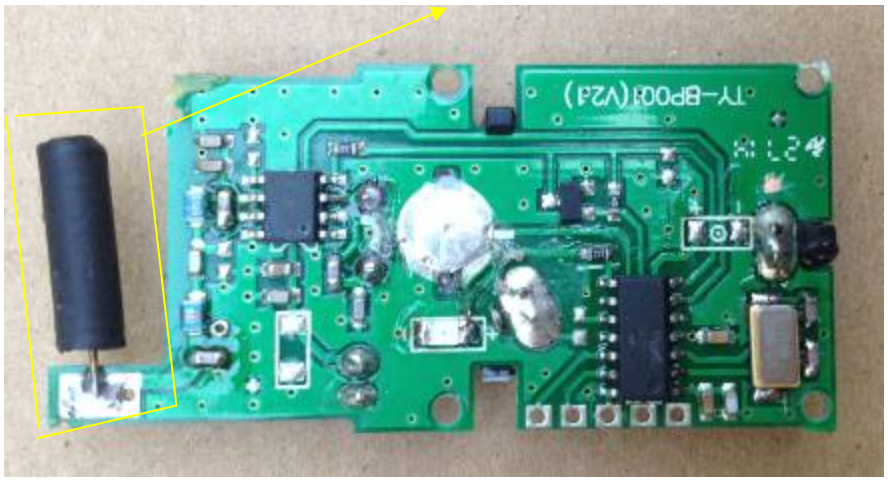

TY-BP003(V24)


14070866

4.3 **Antenna Photo**

SIGNOLUXDTX-A

Antenna



Note:

The EUT was used permanently attached antenna, and it's complied with the requirements of section 15.203: antenna requirement.

5 EQUIPMENTS USED DURING TEST

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date
1	RF Generator	Rohde & Schwarz	SMB100A-B106	1.031	2014-5-10	2015-5-10
					2015-5-10	2016-5-10
2	Spectrum Analyzer	Rohde & Schwarz	FSP30	EMC0001	2015-3-24	2016-3-24
3	EMI Test Receiver	Rohde & Schwarz	ESCI	EMC1002	2015-3-24	2016-3-24
4	2-Channel Power Meter	Rohde & Schwarz	NRP2	1.033	2014-5-10	2015-5-10
					2015-5-10	2016-5-10
5	Audio Analyzer	Hewlett Packard	8903B	EMC0011	2014-11-5	2015-11-5
6	Power Sensor	Rohde & Schwarz	NRP-Z91	1.034	2014-5-10	2015-5-10
					2015-5-10	2016-5-10
7	Power Sensor	Rohde & Schwarz	NRP-Z91	1.035	2014-5-10	2015-5-10
					2015-5-10	2016-5-10
8	Temperature Chamber	Gongwen	GDS-250	SFT0009	2014-11-5	2015-11-5
9	D.C. Power Supply	KIKUSUI	PAN35-10A	SFT0319	2014-11-5	2015-11-5
10	Temperature Chamber	Gongwen	GDS-250	SFT0009	2014-11-5	2015-11-5
11	D.C. Power Supply	KIKUSUI	PAN35-10A	SFT0319	2014-11-5	2015-11-5
12	Humidity/ Temperature Meter	Anymetre	TH101B	SFT0063	2014-11-5	2015-11-5
13	Barometer	ChangChun	DYM3	SEL0088	2014-6-8	2015-6-8
14	Multimeter	UNI-T	UT70A	EMC0017	2014-11-5	2015-11-5
15	Monopole Antenna	HST	N/A	EMC0089	2014-11-5	2015-11-5
16	Low loss coaxial cable	HST	2 m	EMC1008	2014-11-5	2015-11-5
17	Monopole Antenna	HST	N/A	N/A	2014-11-5	2015-11-5
18	Noise Generaror	Ningbo Zhongce	DF1681	EMC0009	2014-11-5	2015-11-5
19	Semi-Anechoic chamber	ETS•Lindgren	FACT3 2.0	ITL-100	2013-6-17	2016-6-17
20	EMI Test receiver	R&S	ESVS10	ITL-111	2015-1-19	2016-1-19
21	EXA Spectrum Analyzer	Agilent Technologies	N9010A	ITL-114	2015-1-19	2016-1-19
22	Biconilog Antenna	ETS•Lindgren	3142D	ITL-105	2015-1-24	2018-1-24
23	Pre Amplifier	HP	8447F	ITL-116	2015-1-19	2016-1-19
24	Wideband Amplifier Super Ultra	Mini-circuits	ZVA-183-S+	ITL-117	2015-1-19	2016-1-19
25	Horn Antenna	A-INFOMW	JXTXLB-10180-N	ITL-110	2015-1-24	2018-1-24
26	Software	Audix	E3	ITL-109	/	/
27	Loop Antenna	BJ 2nd Factory	ZN30900A	EMC6001	2013-7-29	2016-7-29

End of report