TEST REPORT

FCC ID	: VOU90-0143-001
Applicant	: Freshloc Technologies
Address	: 15443 Knoll Trail Tr15443 Knoll Trail Drive,Suite 100,Dallas,Texas,75248,United States
Manufacturer	: RDI Technology (Shenzhen) Co., Ltd.
Address	: Building C1, Xintang Industrial Park,East Baishixia, Fuyong, Baoan, Shenzhen, PRC

Equipment Under Test (EUT) :

Product Name	: Schneider Temperature Sensor
Model No.	: 90-0143-001
Rules	: FCC CFR47 Part 15 Section 15.249: 2010,

Date of Test	: September 16~21,2012
Date of Issue	: September 21,2012

Test Result	**: PASS***
Remark:	
* The sample described above has been tested to be in compliance with the requirements of ANSI C63.4-2003. The test results have been reviewed and comply with the rules listed above and found to meet their essential requirements.	

PERPARED BY:

Waltek Services (Shenzhen) Co., Ltd.

1/F, Fukangtai Building, West of Baima Road., Songgang Street, Bao'an District, Shenzhen, China

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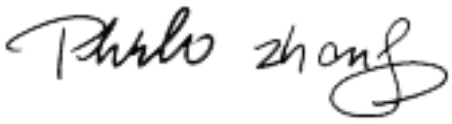
Compiled by:

Zero Zhou / Project Engineer

Approved by:



Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Restricted Band	15.205	PASS
Occupied Bandwidth	15:249(d)	PASS
Conducted Emissions	15.207	PASS
Radiated Emission	15.205(a) 15.209 15.249(a)	PASS
Antenna Requirement	15.203	PASS

Note : denote that for more details of the EUT , please refer to the relating test items as below.

3 Contents

4 General Information

4.1 General Description of E.U.T.

Product Name	: Schneider Temperature Sensor
Model No.	: 90-0143-001
Model Description	: N/A
Type of Modulation	: FSK
Note	: N/A
Frequency Range	: 916 MHz, 1Channels in total
Oscillator	: 32.768 KHz for CPU CY27C243,14.756MHz for Transmiter CC1070
Antenna Gain	: 0dBi
Antenna installation	: Integrated Antenna
Max. Power	: -2.0 dBm

4.2 Details of E.U.T.

Technical Data	: Battery 3.6V DC
Adapter manufacturer	: N/A
M/N	: N/A

4.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC – Registration No.: 880581**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

- **IC – Registration No.:IC 7760A**

  Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration IC7760A, July 10, 2012.

4.4 Test Location

All Emissions testswere performed at:-
1/F, Fukangtai Building,West Baima Rd.,Songgang Street, Baoan District, Shenzhen 518105, Guangdong,China.

4.5 General condition

Ambient Condition: 25.5 ℃ 58 %RH

4.5.1 Environmental condition of test site

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

The follow condition is not applicable

Test Voltage	Input voltage
Rated voltage-15%	
normal	
Rated voltage+15%	

The follow condition is applicable.

Test voltage	Test Voltage
Rated voltage	New Battery 3.6V DC

4.5.2 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test mode	Lower channel	Middle channel	Upper channel
Transmitting	MHz	916MHz	MHz
Receiving	MHz	MHz	MHz

5 Equipment Used during Test

5.1 Equipments List

Conducted Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMI Test Receiver	R&S	ESCI	101178	Aug. 13,2012	Aug. 13,2013
2.	LISN	R&S	ENV216	101215	Aug. 13,2012	Aug. 13,2013
3.	Cable	HUBER+SUHNER	CBL2-NN-3M	2230300	Aug. 13,2012	Aug. 13,2013
4.	Switch	---	RSU/M2	---	Aug. 13,2012	Aug. 13,2013
3m Semi-anechoic Chamber for Radiation Emissions						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1.	EMC Analyzer	Agilent	E7405A	MY45114943	Aug. 13,2012	Aug. 13,2013
2.	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Aug. 13,2012	Aug. 13,2013
3.	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Aug. 13,2012	Aug. 13,2013
4.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Aug. 13,2012	Aug. 13,2013
5.	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	399	Aug. 13,2012	Aug. 13,2013
6.	Broadband Preamplifier	SCHWARZBECK	BBV 9719	9719-254	Aug. 13,2012	Aug. 13,2013
7.	Broadband Preamplifier	SCHWARZBECK	BBV 9718	9718-148	Aug. 13,2012	Aug. 13,2013
8.	10m Coaxial Cable with N- plug	SCHWARZBECK	AK 9515 H	-	Aug. 13,2012	Aug. 13,2013
9.	10m 50 Ohm Coaxial Cable with N-plug	SCHWARZBECK	AK 9513	-	Aug. 13,2012	Aug. 13,2013
10.	Positioning Controller	C&C LAB	CC-C-IF	-	Aug. 13,2012	Aug. 13,2013
11.	Color Monitor	SUNSPO	SP-14C	-	Aug. 13,2012	Aug. 13,2013

5.2 Measurement Uncertainty

Parameter	**Uncertainty**
Radio Frequency	± 1 x 10^{-6}
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (Bilog antenna 30M~1000MHz)
	± 4.74 dB (Horn antenna 1000M~25000MHz)
Conducted Spurious Emissions test	± 2.46 dB (AC mains 150KHz~30MHz)

5.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

6 Conducted Emission Test

Test Requirement:	FCC Part15 Paragraph 15.207
Test Method:	ANSI C63.4-2003
Frequency Range:	150kHz to 30MHz
Class:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)
	Quasi-Peak & Average if maximised peak within 6dB of Average Limit
Test Result:	N/A

Remark:This device powered by battery,this test is not applicable.

7 Radiation Emission Test

Test Requirement: FCC Part15 Paragraph 15.249

Test Method: ANSI C63.4-2003

Frequency Range: 9KHz to 10GHz

Measurement Distance: 3m

Detector: Peak for pre-scan (120kHz resolution bandwidth)

Quasi-Peak if maximised peak within 6dB of limit

Test Result: PASS

15.247(a)Limit:

Fundamental frequency	Field strength of fundamental		Field strength of harmonics	
	mV/m	dBuV/m	uV/m	dBuV/m
902-928 MHz	50	94	500	54
2400-2483.5 MHz	50	94	500	54
5725-5875 MHz	50	94	500	54
24.0-24.25 GHz	250	108	2500	68

15.209 Limit:

Frequency(MHZ)	Distance(m)	Field strength	
		uV/m	dBuV/m
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

Note: RF Voltage(dBuV)=20 $\log_{10}$ RF Voltage(uV)

7.1 EUT Operation:

Operating Environment:

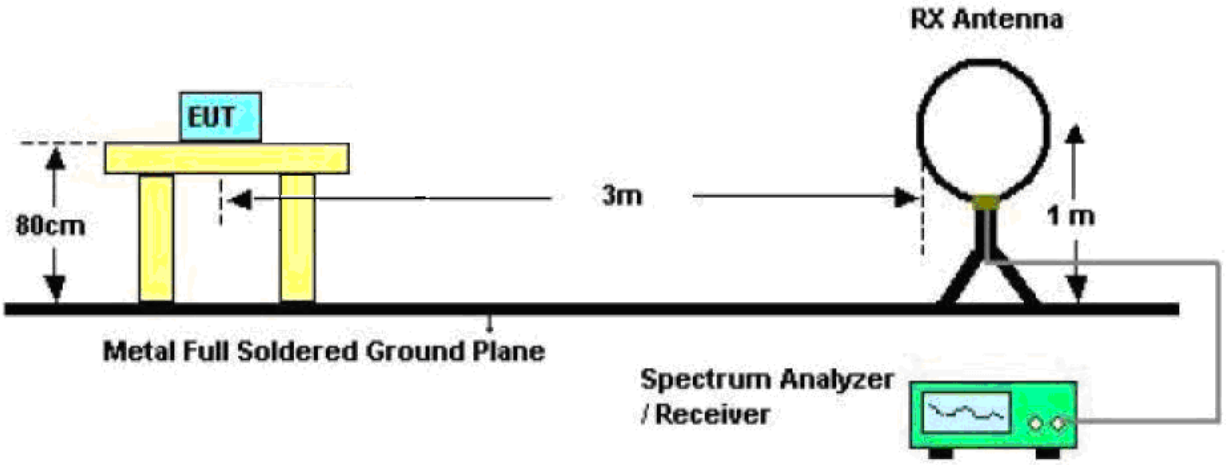
Temperature: 25.5 °C
Humidity: 51 % RH
Atmospheric Pressure: 1012 mbar

Operation Mode:

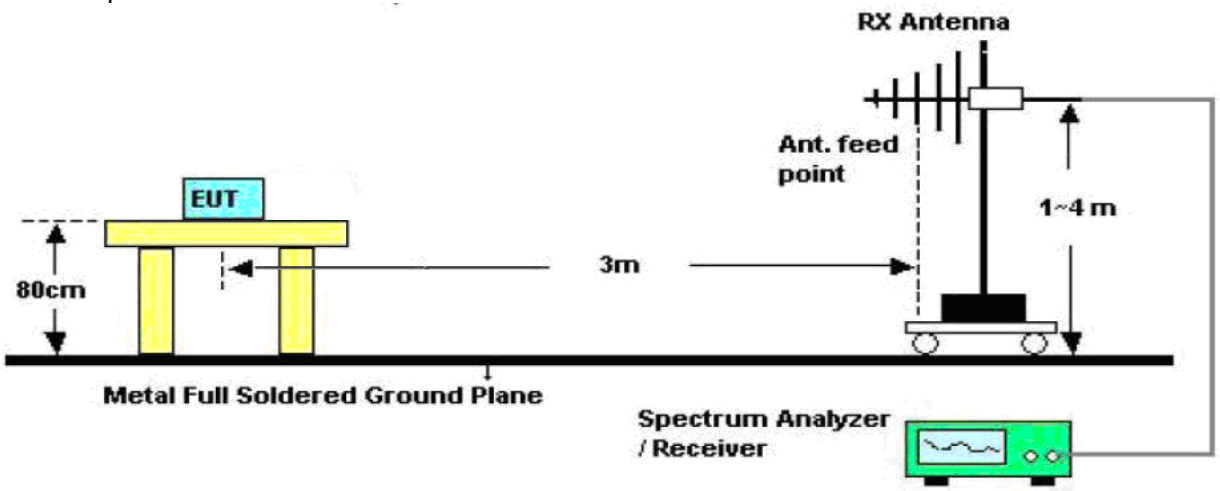
The EUT was tested in transmitting mode. The worst data were shown as follow.

7.2 Test Setup

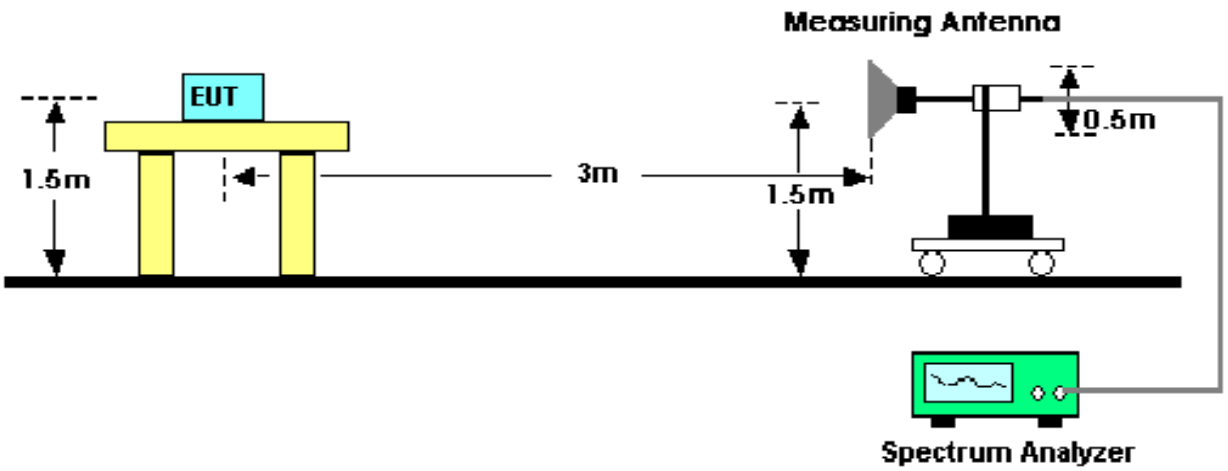
The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4-2003.
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

According to FCC Part15 Rules, the system was tested from 9KHz to 10GHz.

Below 30MHz

Sweep Speed .....Auto
IF Bandwidth 10KHz
Video Bandwidth 10KHz
Resolution Bandwidth.....10KHz

30MHz ~ 1GHz

Sweep Speed .....Auto
IF Bandwidth 120 KHz
Video Bandwidth 100KHz
Quasi-Peak Adapter Bandwidth .....120 KHz
Quasi-Peak Adapter Mode .....Normal
Resolution Bandwidth 100KHz

Above 1GHz

Sweep Speed .....Auto
IF Bandwidth 120 KHz
Video Bandwidth 3MHz
Quasi-Peak Adapter Bandwidth .....120 KHz
Quasi-Peak Adapter Mode .....Normal
Resolution Bandwidth 1MHz

7.4 Test Procedure

1. The new battery was used in the equipment under test for radiated emissions test.
2. This is a handhold device,The radiation emission should be tested under 3-axes(X,Y,Z) position(X denotes lying on the table,Y denotes side stand and Z denotes vertical stand),After pre-test,It was found that the worst radiation emission was get at the X position.So the data shown was the X position only.
3. Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.
4. All data was recorded in the peak and average detection mode.
5. The EUT was under working mode during the final qualification test and the configuration was used to represent the worst case results.

7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor – Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – Class B Limit

7.6 Radiated Emissions Test Result

Formula of conversion factors:the field strength at 3m was egtablished by adding
The meter reading of the spectrum analyzer (which is set to read in units of dBuV/m)
To the antenna correction factor supplied by the antenna manufacturer. The antenna
Correction factors are stared in terms of dB.The gain of the pressletor was accounted
For in the spectrum analyser meter reading.

Example:

Freq(MHz) Meter Reading +ACF=FS

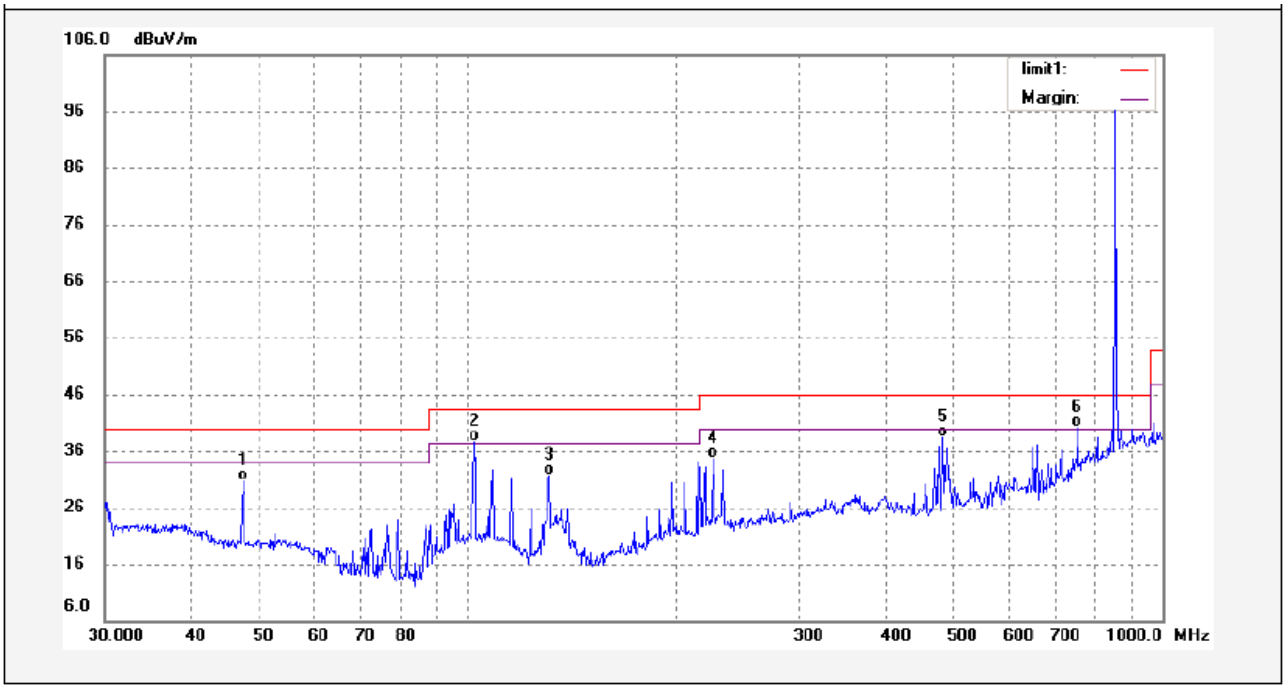
33 20dBuV+10.36dB=30.36dBuV/m @3m

7.7 Radiated Emission Data

Remarks: Because the emissions below 30MHz are more than 20dB below the limit, the data is not shown in the report.

Test mode:normal working

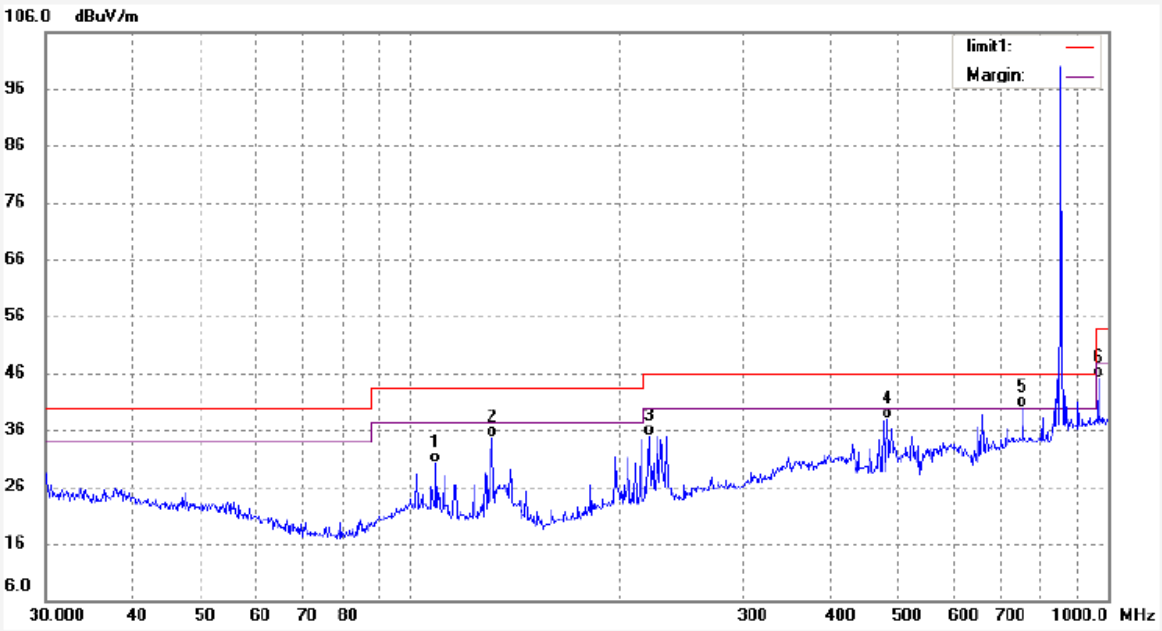
Antenna Polarization:Vertical



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	47.5355	16.08	14.62	30.70	40.00	-9.30	QP	
2	102.2518	23.41	14.11	37.52	43.50	-5.98	QP	
3	131.2235	19.69	12.01	31.70	43.50	-11.80	QP	
4	225.4267	18.40	16.34	34.74	46.00	-11.26	QP	
5	483.2060	14.60	23.68	38.28	46.00	-7.72	QP	
6	754.9627	12.15	27.98	40.13	46.00	-5.87	QP	

Test mode:normal working

Antenna Polarization:Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	108.9274	16.35	13.85	30.20	43.50	-13.30	QP	
2	131.2235	22.51	12.01	34.52	43.50	-8.98	QP	
3	219.9499	18.83	16.13	34.96	46.00	-11.04	QP	
4	483.2060	14.21	23.68	37.89	46.00	-8.11	QP	
5	754.9627	11.81	27.98	39.79	46.00	-6.21	QP	
6	968.8722	13.52	31.54	45.06	54.00	-8.94	QP	

The below are the Fundamental and Harmonics .

Frequency (MHz)	Detector	Antenna Polarization	Emission Level (dBuV/m)	FCC 15 Subpart C Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Turntable Angle (°)
916	-	Vertical	-	-	-	-	-
1832	AV	Vertical	38.00	54.00	16.00	1.2	100
2748	AV	Vertical	33.01	54.00	20.99	1.8	60
3664	AV	Vertical	31.21	54.00	22.79	1.5	120
4580	AV	Vertical	31.12	54.00	22.88	1.5	120
5496	AV	Vertical	30.24	54.00	23.76	1.2	90
6412	AV	Vertical	30.28	54.00	23.72	1.8	10
7328	AV	Vertical	29.99	54.00	24.01	1.8	120
8244	AV	Vertical	30.59	54.00	23.41	1.5	100
9160	AV	Vertical	29.89	54.00	24.11	1.2	135
916	-	Horizontal	-	-	-	-	-
1832	AV	Horizontal	40.25	54.00	13.75	1.6	10
2748	AV	Horizontal	34.02	54.00	19.98	1.8	60
3664	AV	Horizontal	32.03	54.00	21.97	1.0	40
4580	AV	Horizontal	34.21	54.00	19.79	1.8	135
5496	AV	Horizonta	30.36	54.00	23.64	1.0	60
6412	AV	Horizontal	30.74	54.00	23.26	1.8	0
7328	AV	Horizontal	31.22	54.00	22.78	1.5	90
8244	AV	Horizontal	31.53	54.00	22.47	1.5	60
9160	AV	Horizontal	32.75	54.00	21.25	1.0	0
916	OP	Vertical	91.32	114.00	22.68	1.1	360
1832	PK	Vertical	46.00	74.00	28.00	1.1	10
2748	PK	Vertical	38.01	74.00	35.99	1.4	120
3664	PK	Vertical	37.42	74.00	36.58	1.7	120
4580	PK	Vertical	35.63	74.00	38.37	1.0	180
5496	PK	Vertical	36.22	74.00	37.78	1.5	0
6412	PK	Vertical	35.89	74.00	38.11	1.0	120
7328	PK	Vertical	38.67	74.00	35.33	1.8	0
8244	PK	Vertical	38.78	74.00	35.22	1.5	0

9160	PK	Vertical	33.02	74.00	40.98	1.2	50
916	QP	Horizontal	89.15	114.00	24.85	1.3	0
1832	PK	Horizontal	41.26	74.00	32.74	1.2	40
2748	PK	Horizontal	36.25	74.00	33.75	1.5	100
3664	PK	Horizontal	37.33	74.00	36.67	1.0	90
4580	PK	Horizontal	33.19	74.00	40.81	1.0	60
5496	PK	Horizontal	33.62	74.00	40.38	1.5	60
6412	PK	Horizontal	30.73	74.00	43.27	1.8	110
7328	PK	Horizontal	33.57	74.00	40.43	1.8	180
8244	PK	Horizontal	34.00	74.00	40.00	1.8	0
9160	PK	Horizontal	35.81	74.00	38.19	1.0	20

8 Occupied Bandwidth

Test Requirement: FCC Part15.249(d)

Test Method: ANSI C63.4-2003

Test mode: Transmitting

Test Result: PASS

15.249(d)

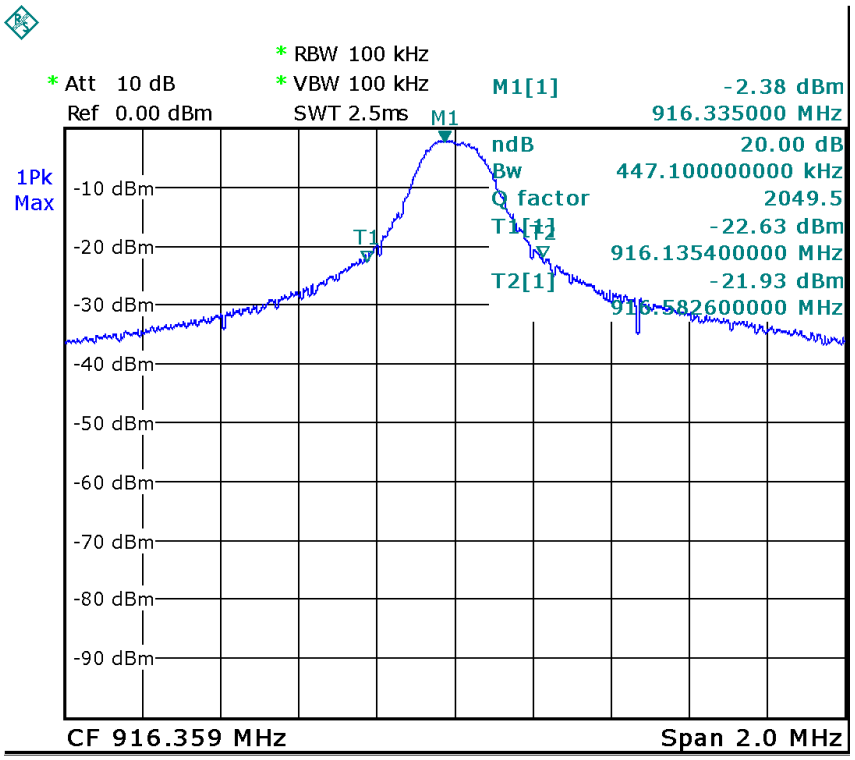
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the funda-mental or to the general radiated emis-sion limits in §15.209, whichever is the lesser attenuation.

8.1 Test Procedure

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. The bandwidth of the fundamental frequency was measure by spectrum analyser with 100KHz RBW and 100KHz VBW.

8.2 Test Result

Please refer the graph as below:



9 Restricted band

Test Requirement:	FCC Part15 Paragraph 15.205
Test Method:	ANSI C63.4-2003
Test Result:	PASS

Requiments:

emissions that fall in the restricted bands(15.205).Above 1000MHz, compliance with the emissions limits in section 15.209 shall be demonstrated based on the average value of the measured emissions,The provisions in section 15.35 apply to these measurements.

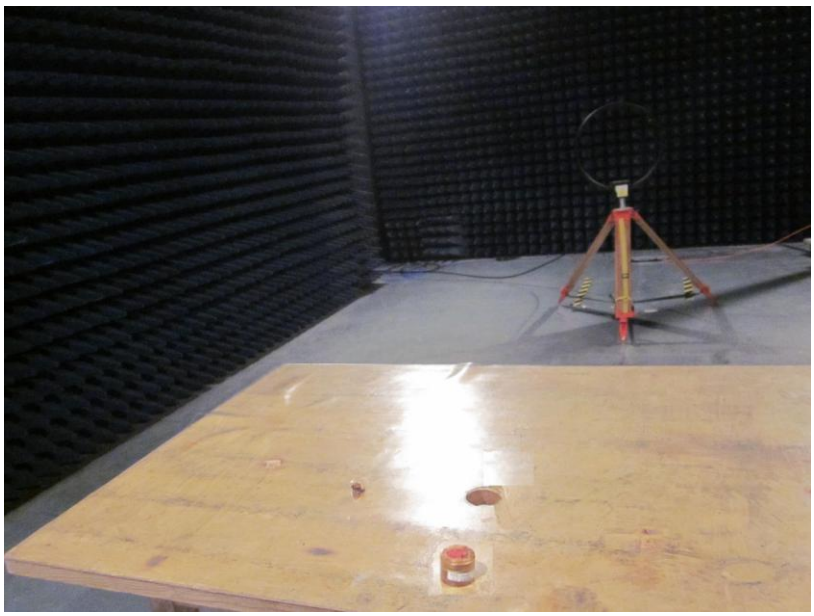
Remark:Transmitter operates only at 916MHz,center of band.

10 Antenna Requirement

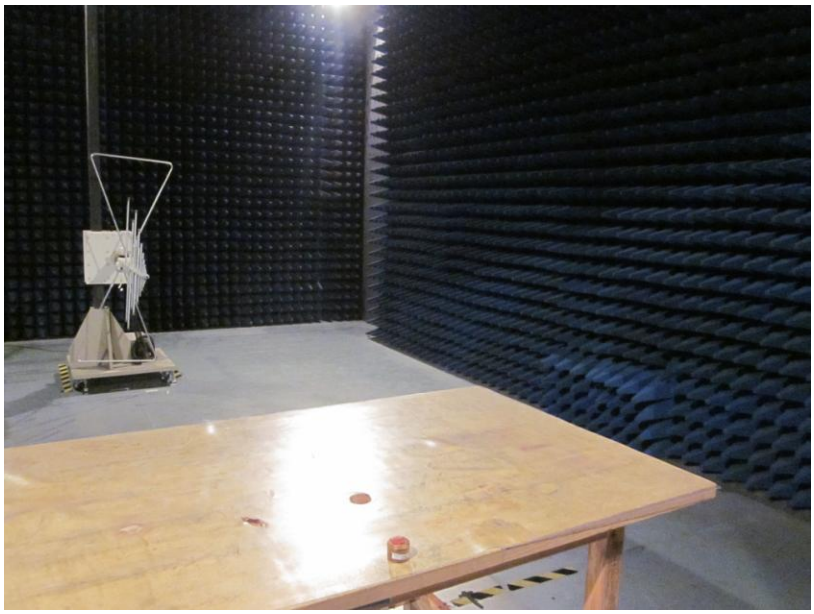
According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product has a integrated antenna, fulfil the requirement of this section.

11 Photographs of Testing

Radiation Emission Below 30MHz



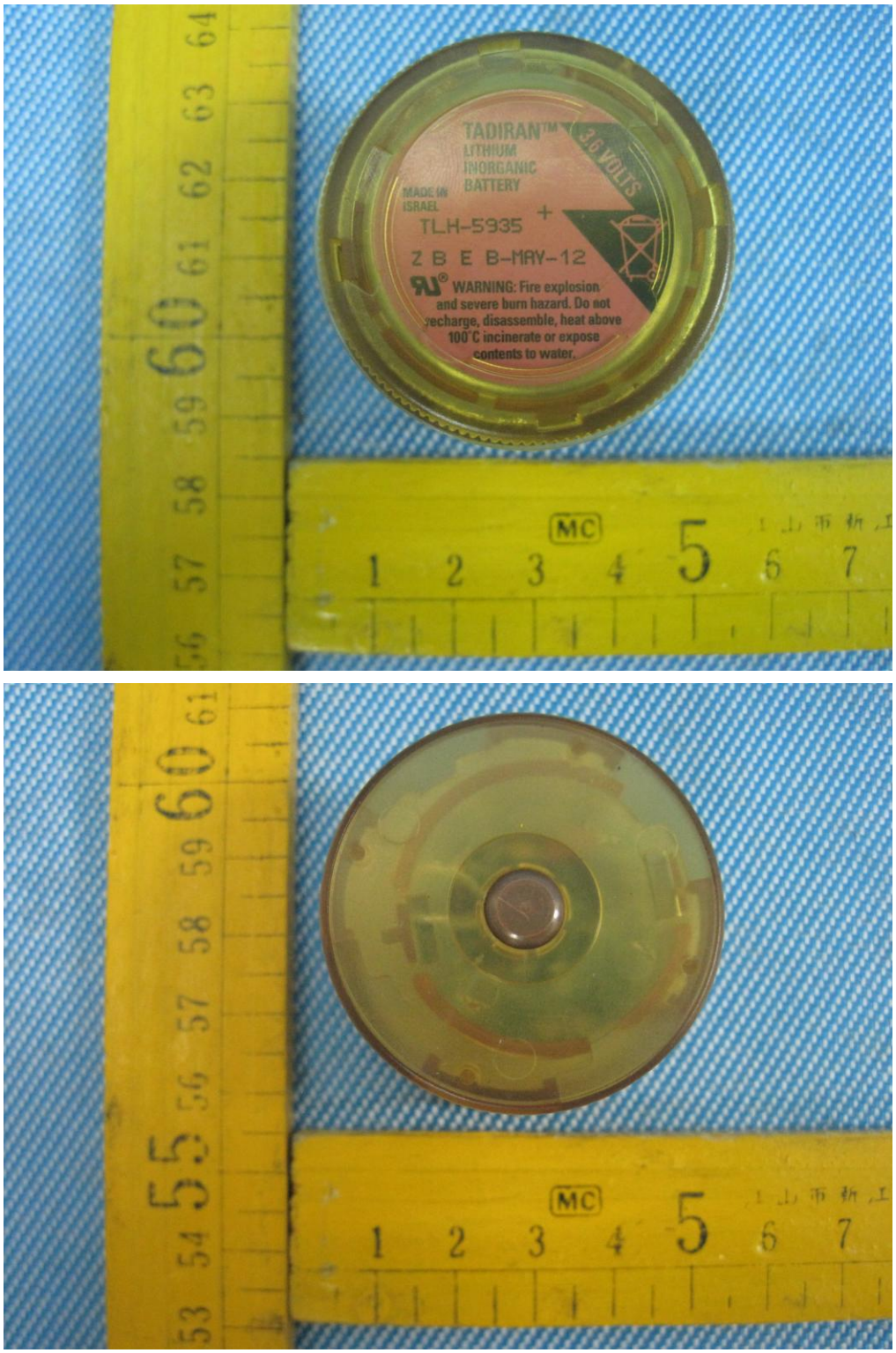
Radiation Emission From 30MHz-1GHz

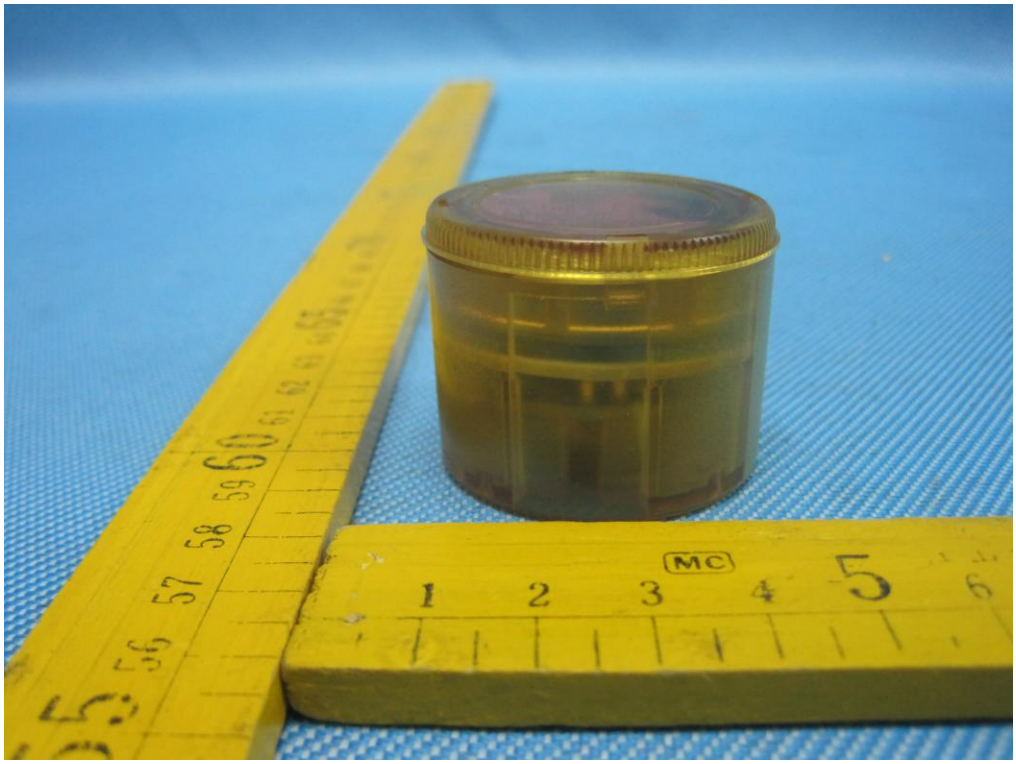


Radiation Emission Above 1GHz

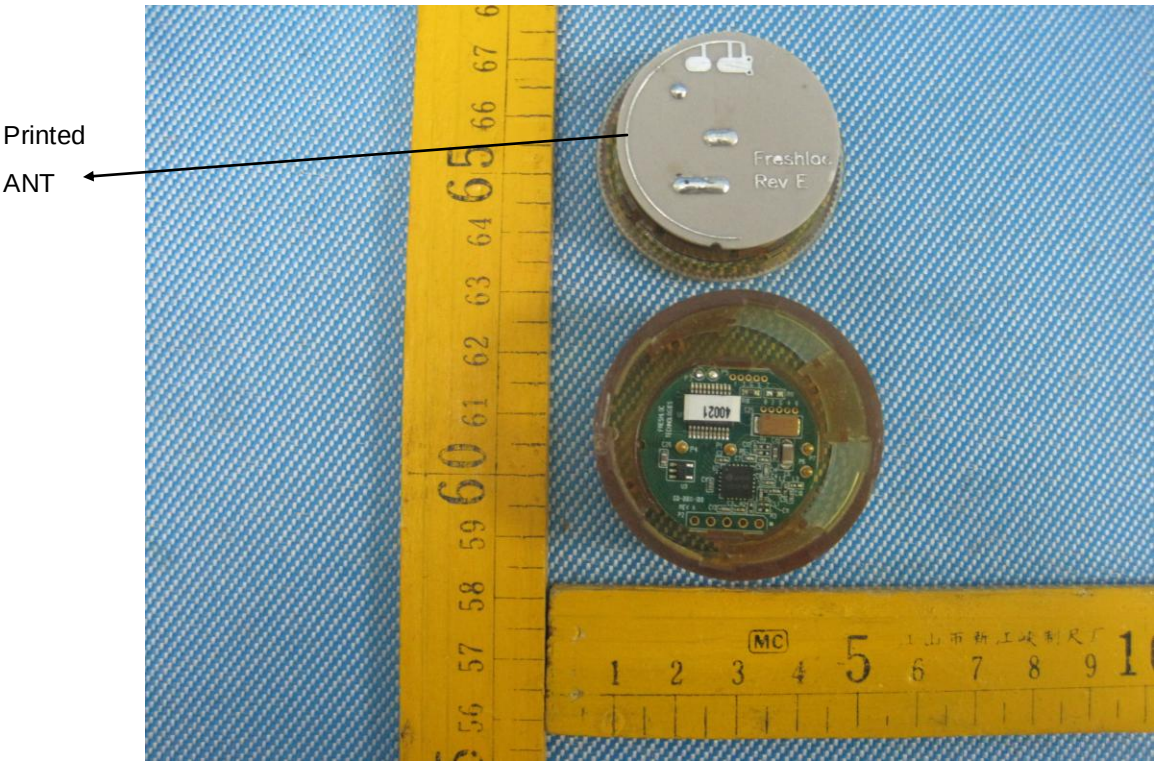
12 Photographs - Constructional Details

12.1 EUT - Appearance View

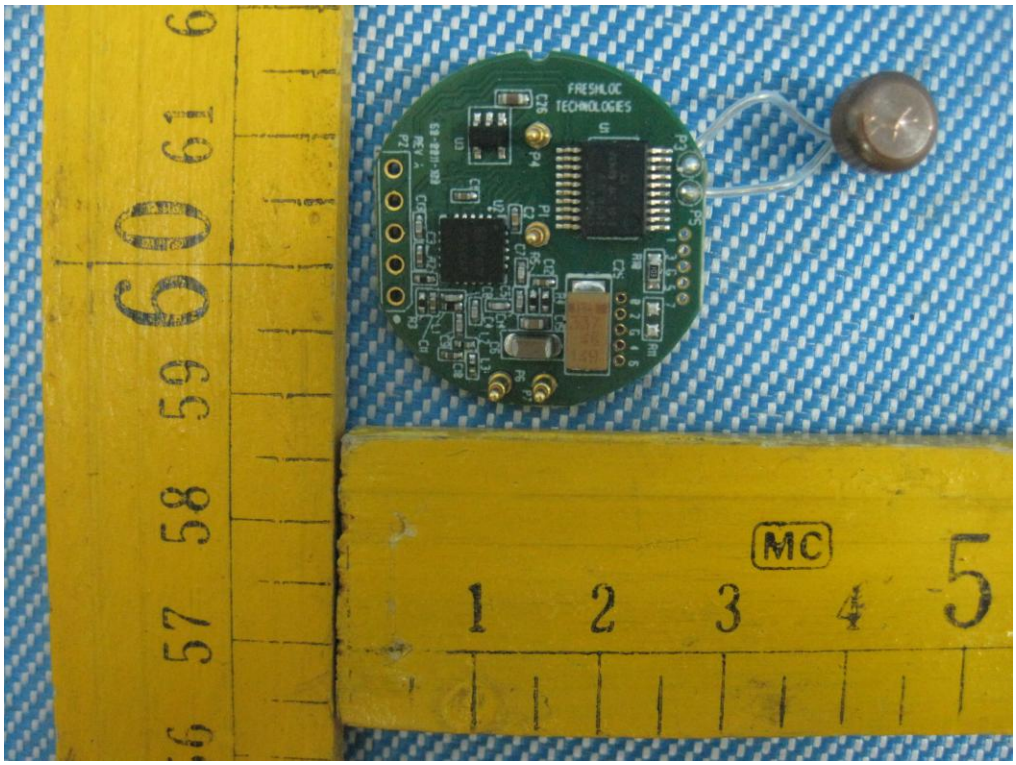



MC
1 2 3 4 5 6
56 57 58 59 60

12.2 EUT - Open View



12.3 PCB - View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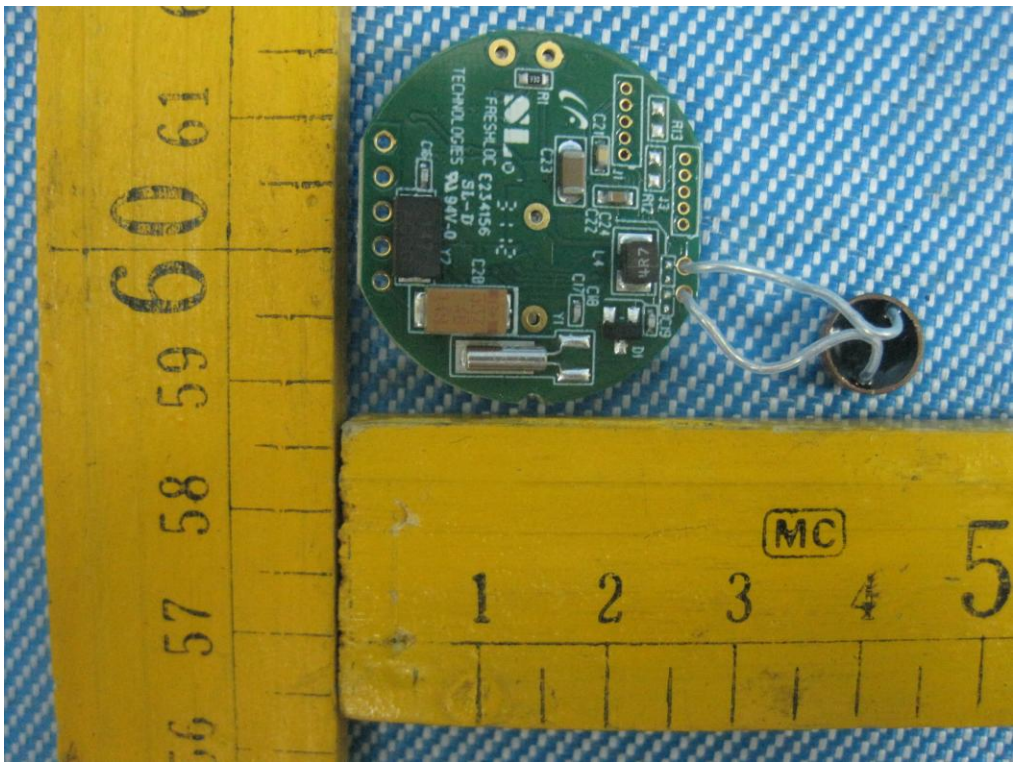
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13 FCC ID Label

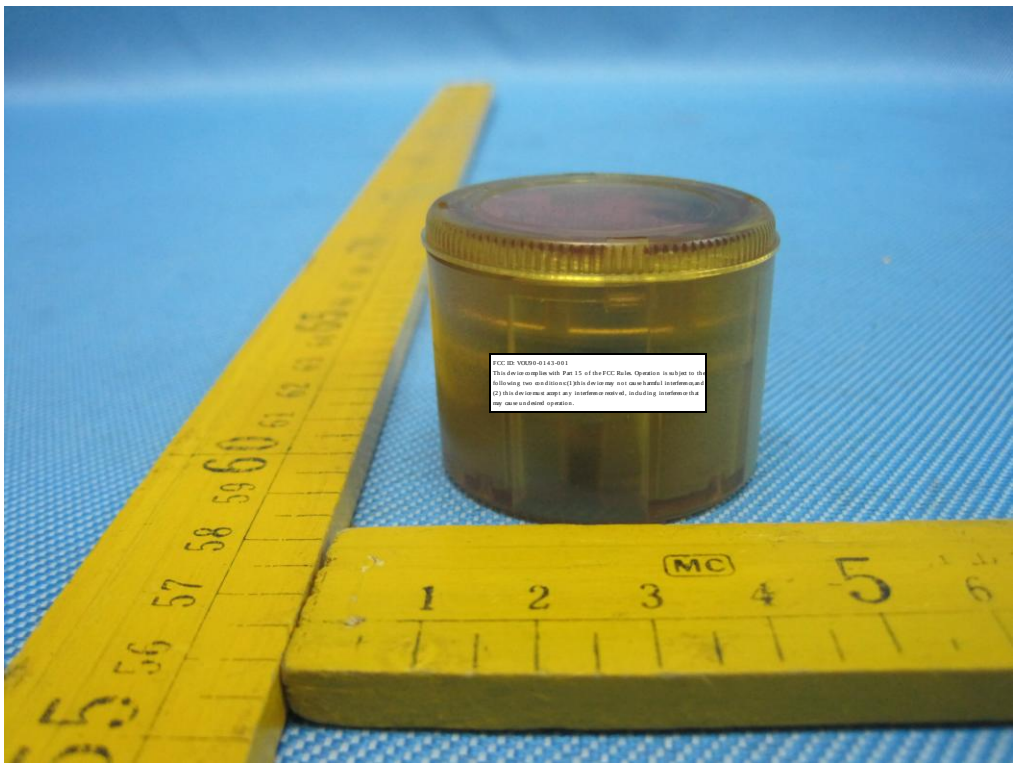
13.1 Label sample

Label sample for model: 90-0143-001

FCC ID: VOU90-0143-001
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

13.2 Label Location

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.



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