

TEST REPORT

Reference No. : WTS15S0832314E
FCC ID : 2ADLSWLSP-MT01
Applicant : Nanjing IOT Sensor Technology Co., Ltd.
Address : No. 12, Mozhou East Road, Nanjing, China
Manufacturer : Nanjing IOT Sensor Technology Co., Ltd
Address : B11 Software Valley, No.15, Fengji Avenue, Yuhuatai District, Nanjing, China
Product Name : Smart Contact Sensor
Model No. : WL-ZSPDBPW-MT-01, WL-ZSPDBPW-MT-xx (xx denotes 95~99), WH-ZSPDBPW-MT-01, WG-ZSPDBPB-MT-01, SH-ZSPDBPW-MT-01, YJ-ZSPDBPW-MT-01
Brand : Wulian, SmartRoom
Standards : FCC CFR47 Part 15 C Section 15.247:2014
Date of Receipt sample : Aug. 20, 2015
Date of Test : Aug. 21, 2015 – Aug. 31, 2015
Date of Issue : Nov. 03, 2015
Test Result : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.

The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:

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Approved by

Philo Zhong / Manager

2 Test Summary

Test Items	Test Requirement	Result
Maximum Permissible Exposure (Exposure of Humans to RF Fields)	1.1307(b)(1)	PASS

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4 General Information

4.1 General Description of E.U.T.

Product Name:	: Smart Contact Sensor
Model No.:	: WL-ZSPDBPW-MT-01, WL-ZSPDBPW-MT-xx (xx denotes 95~99), WH-ZSPDBPW-MT-01, WG-ZSPDBPB-MT-01, SH-ZSPDBPW-MT-01, YJ-ZSPDBPW-MT-01
Model Difference:	: These models are identical in interior structure, electrical circuits and components, and just product brands, shapes, color and models are different for the marketing requirement.
Operation Frequency:	2405MHz ~ 2480MHz
The Lowest Oscillator:	32.768KHz
Antenna Gain:	1.0dBi

4.2 Details of E.U.T.

Technical Data:	DC 3V powered by CR2 Lithium Battery
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4.3 Channel List

Channel No.	Frequency (MHz)						
1	2405	2	2410	3	2415	4	2420
5	2425	6	2430	7	2435	8	2440
9	2445	10	2450	11	2455	12	2460
13	2465	14	2470	15	2475	16	2480

4.4 Test Facility

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A-1**

Waltek Services(Shenzhen) Co., Ltd. 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 number 7760A-1, October 15, 2015.

- **FCC Test Site 1#– 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, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

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 328995, December 3, 2014.

5 Equipment Used during Test

5.1 Equipments List

3m Semi-anechoic Chamber for Radiation Emissions Test site 1#						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1	EMC Analyzer	Agilent	E7405A	MY45114943	Sep.15,2014	Sep.14,2015
2	Active Loop Antenna	Beijing Dazhi	ZN30900A	-	Sep.15,2014	Sep.14,2015
3	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	Apr.18,2015	Apr.17,2016
4	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	Sep.15,2014	Sep.14,2015
5	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	Apr.18,2015	Apr.17,2016
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9170	335	Apr.18,2015	Apr.17,2016
7	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	Mar.16,2015	Mar.15,2016
8	Coaxial Cable (above 1GHz)	Top	1GHz-25GHz	EW02014-7	Apr.09,2015	Apr.08,2016

RF Conducted Testing

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Calibration Date	Calibration Due Date
1.	EMC Analyzer (9k~26.5GHz)	Agilent	E7405A	MY45114943	Sep.15,2014	Sep.14,2015
2.	Spectrum Analyzer (9k-6GHz)	R&S	FSL6	100959	Sep.15,2014	Sep.14,2015
3.	Signal Analyzer (9k~26.5GHz)	Agilent	N9010A	MY50520207	Sep.15,2014	Sep.14,2015

5.2 Description of Support Units

Equipment	Manufacturer	Model No.
Wireless Gateway	Wulian	WL-ZGWMDPB-G110-01
Mobile phone	ZTE	NX507J
Computer	Lenovo	T4900V

5.3 Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-6}$
RF Power	± 1.0 dB
RF Power Density	± 2.2 dB
Radiated Spurious Emissions test	± 5.03 dB (30M~1000MHz)
	± 5.47 dB (1000M~25000MHz)
Conducted Spurious Emissions test	± 3.64 dB (AC mains 150KHz~30MHz)

5.4 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 RF Exposure

Test Requirement:	FCC Part 1.1307
Evaluation Method:	FCC Part 2.1091
	KDB 447498 D01 General RF Exposure Guidance v05r02

6.1 Requirements

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

6.2 The procedures / limit

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

6.3 MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

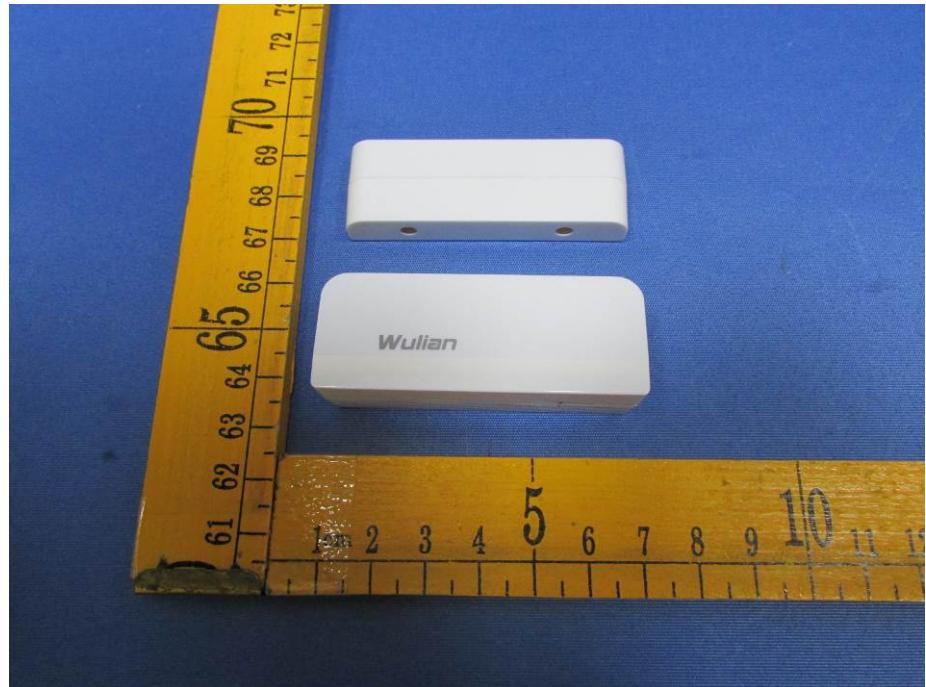
From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained

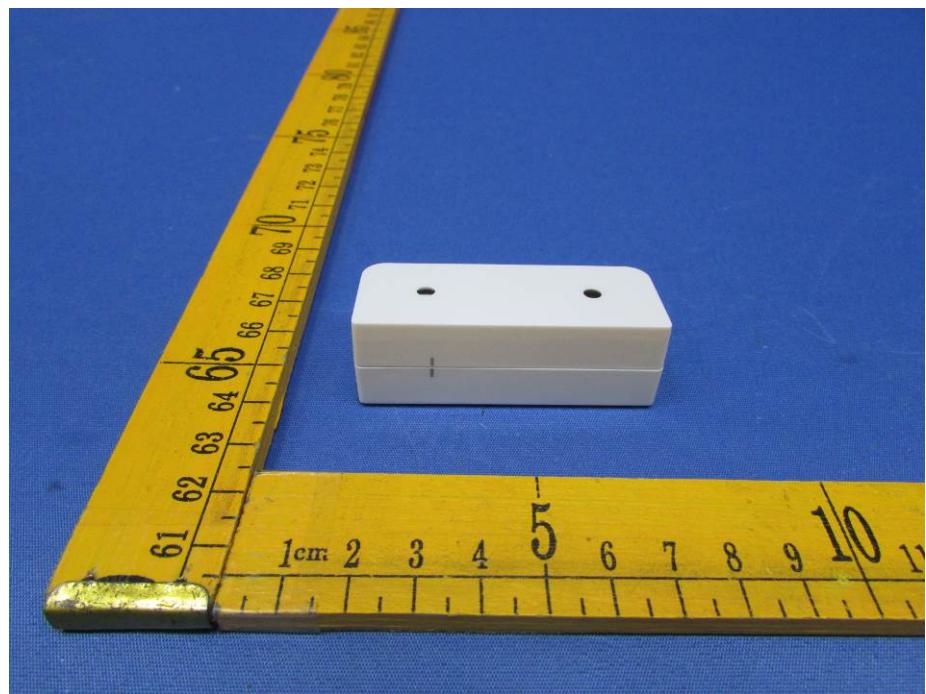
Antenna Gain (numeric)	Max. Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (mW/cm ²)	Limit of Power Density (mW/cm ²)
1.259	2.99	1.99	0.000499	1

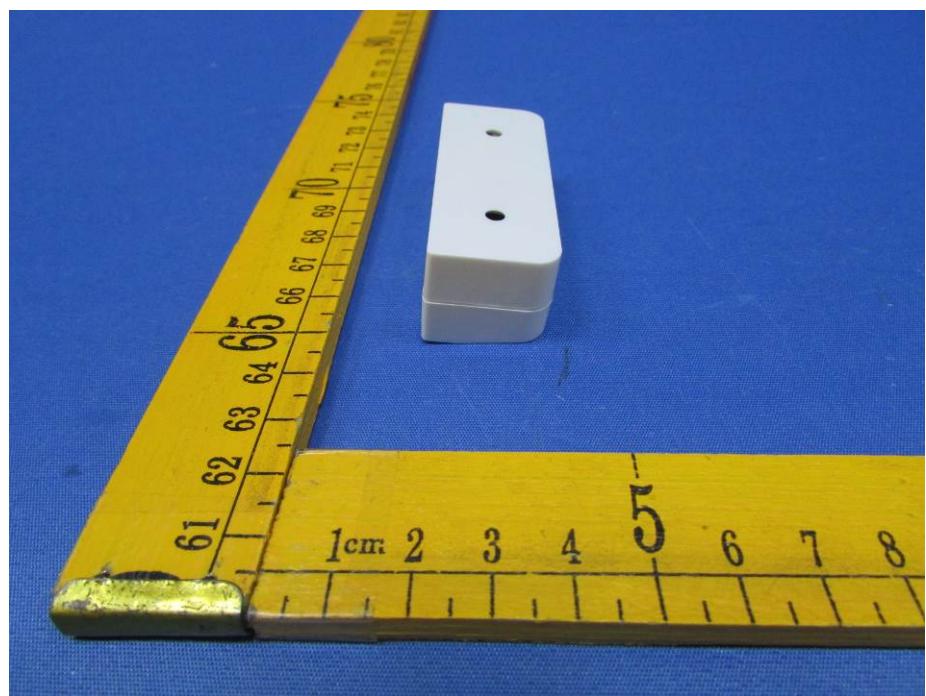
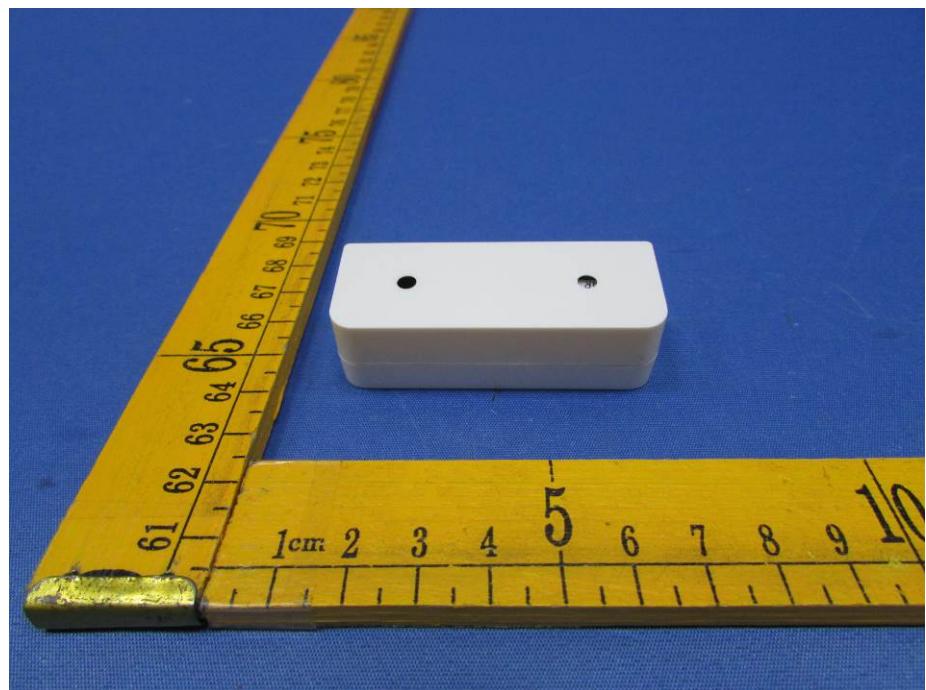
7 Photographs - Constructional Details

7.1 External Photos

Model WL-ZSPDBPW-MT-01





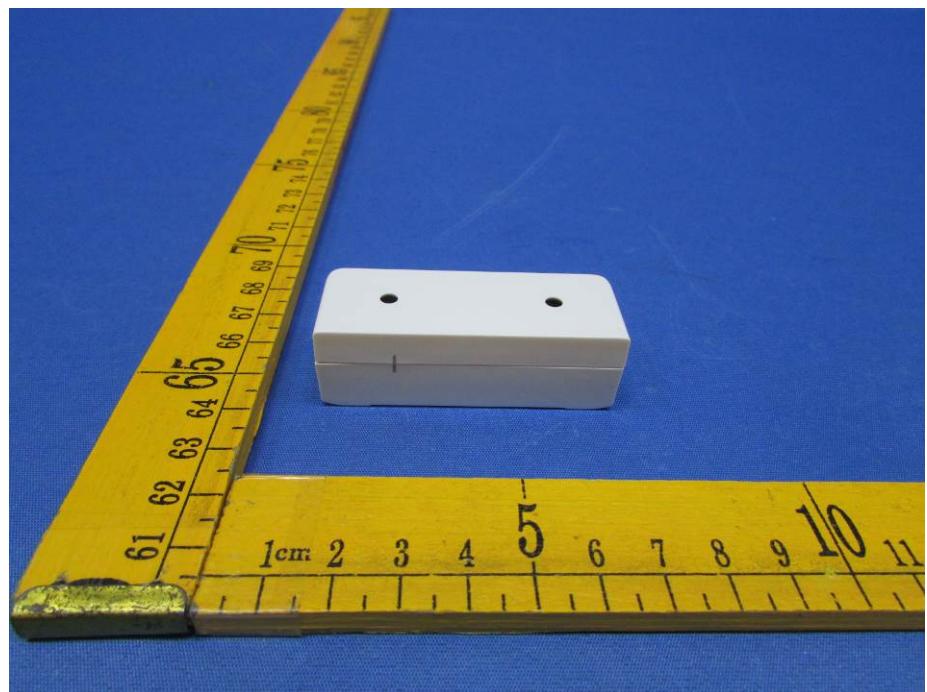
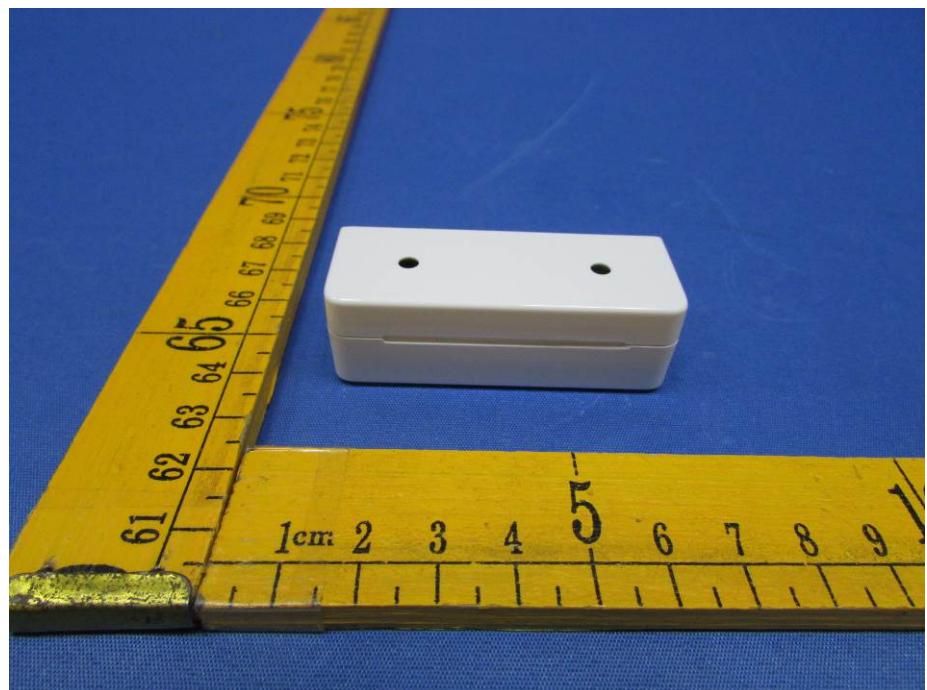


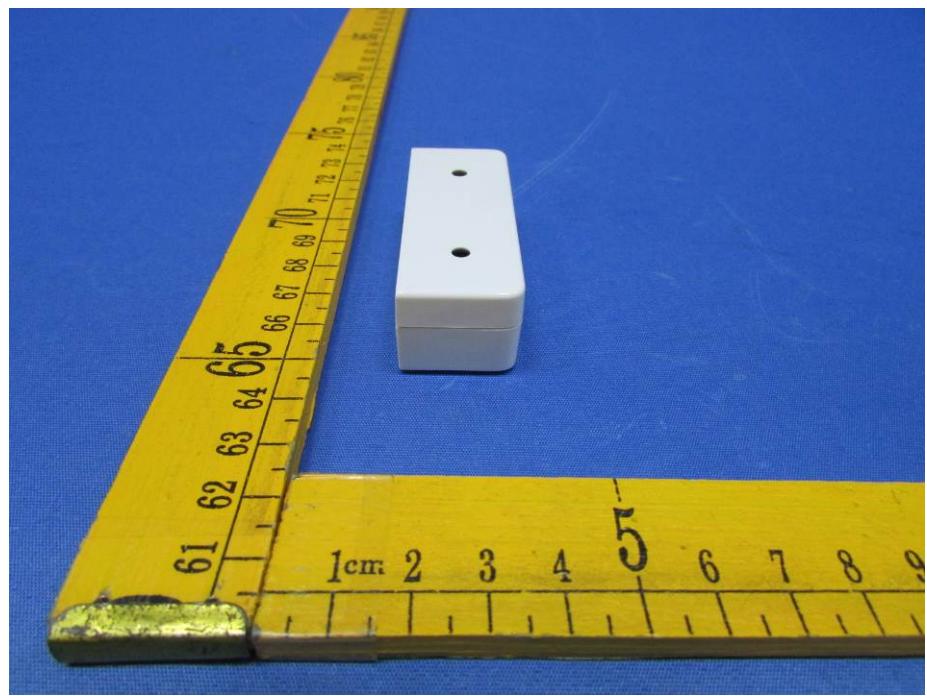
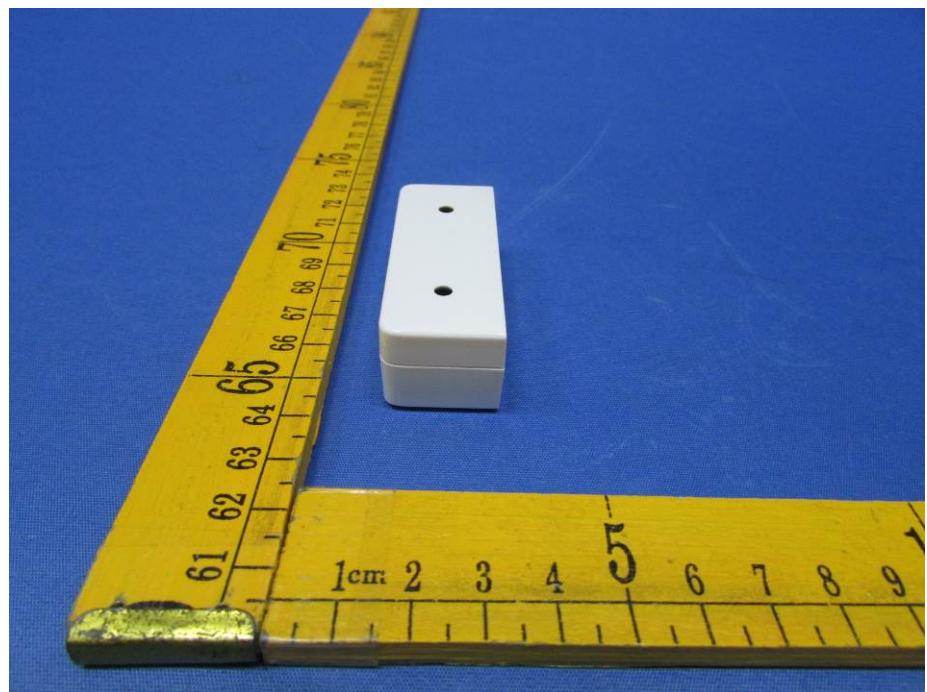


Model SH-ZSPDBPW-MT-01

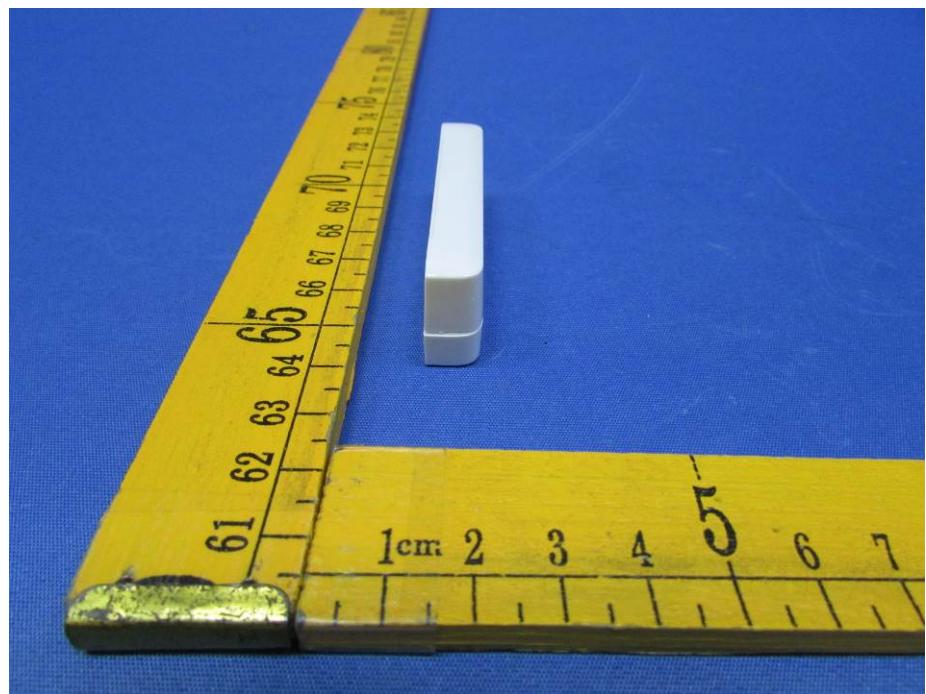








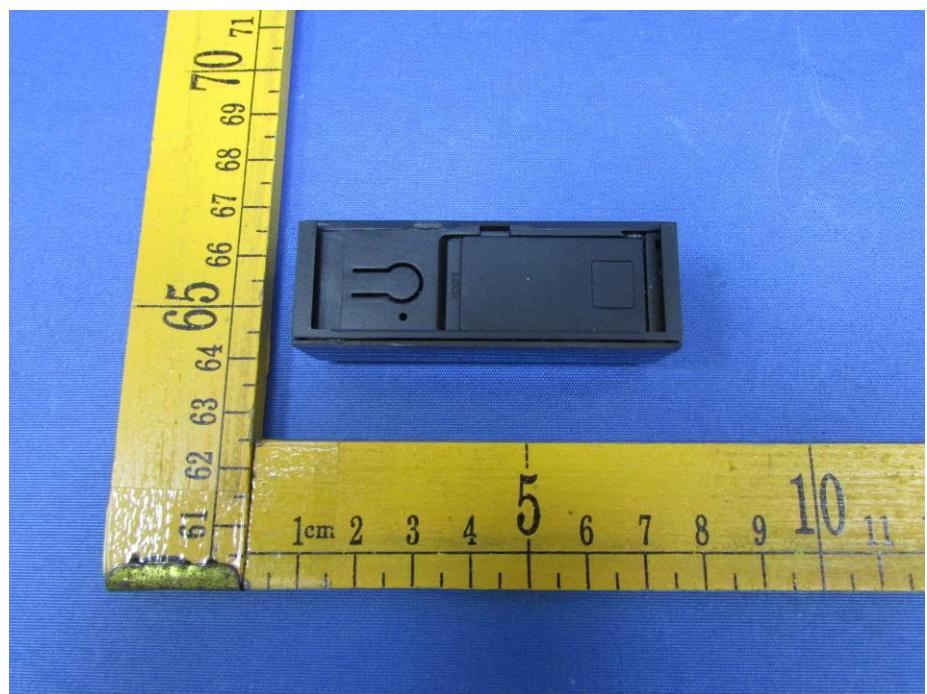


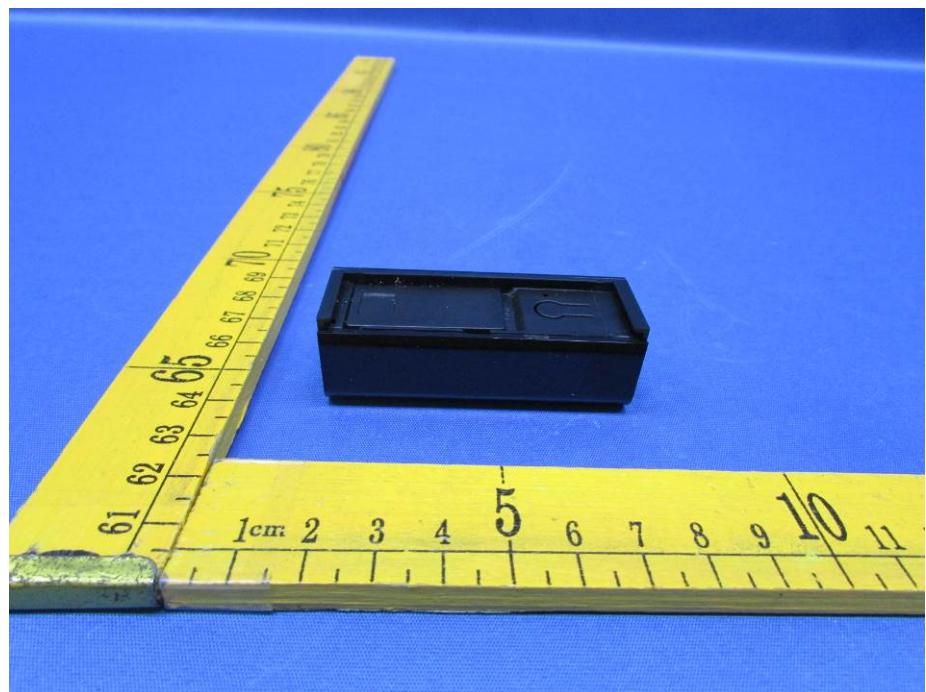
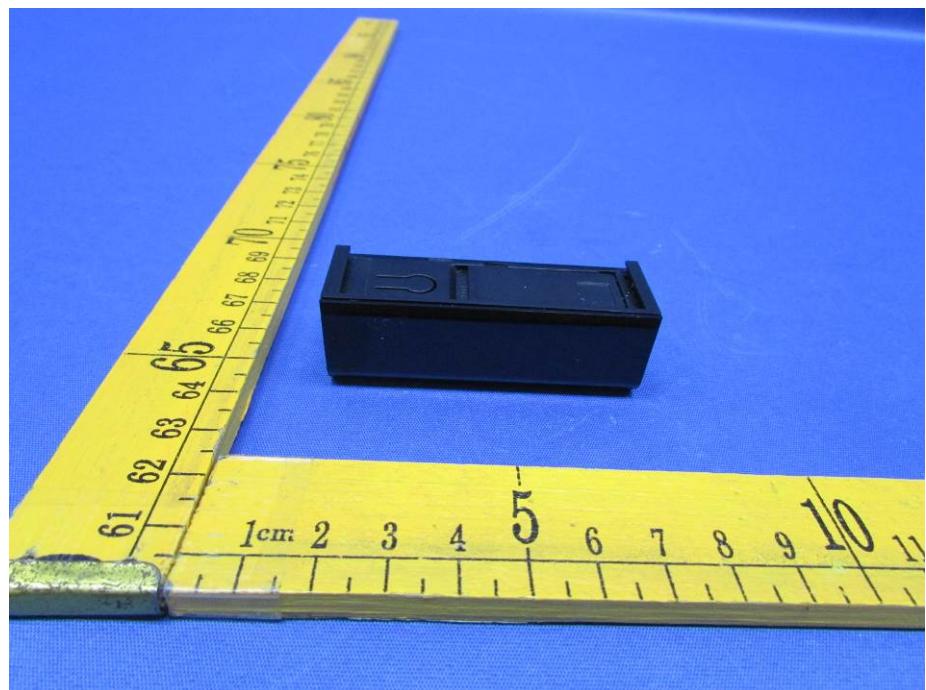


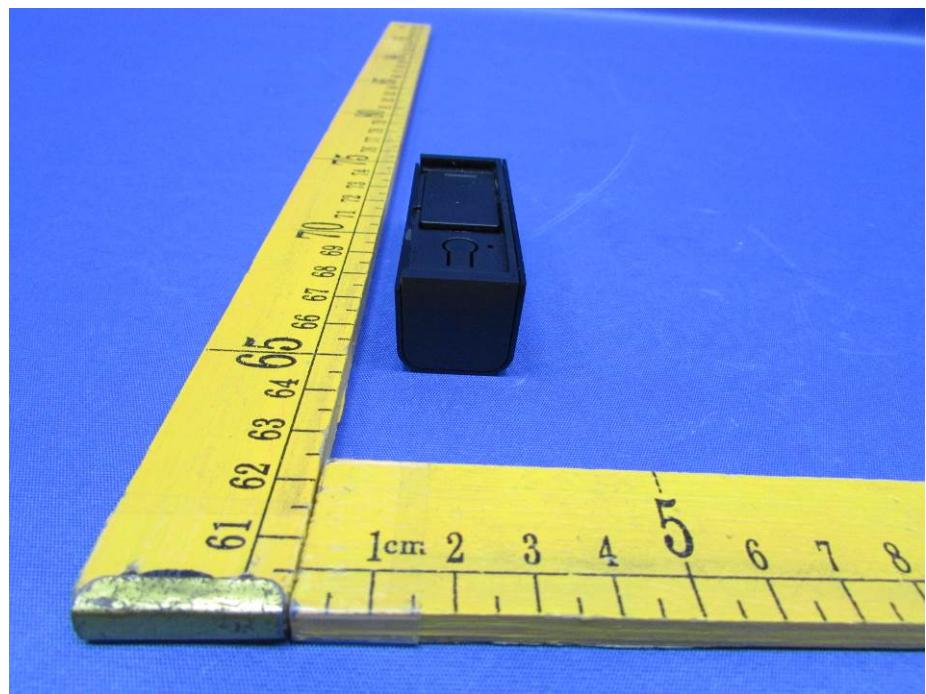
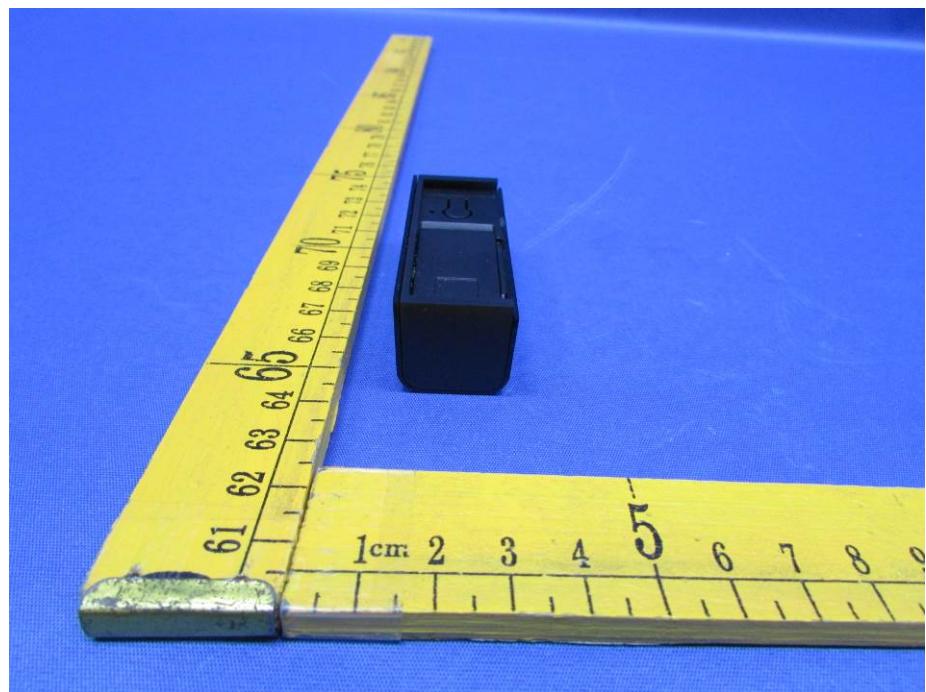


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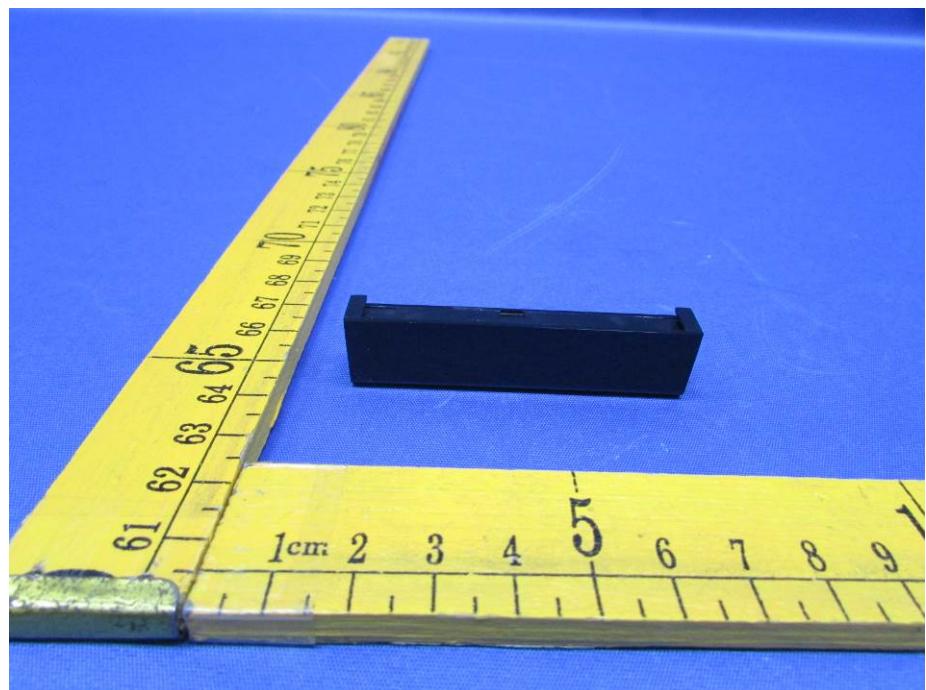






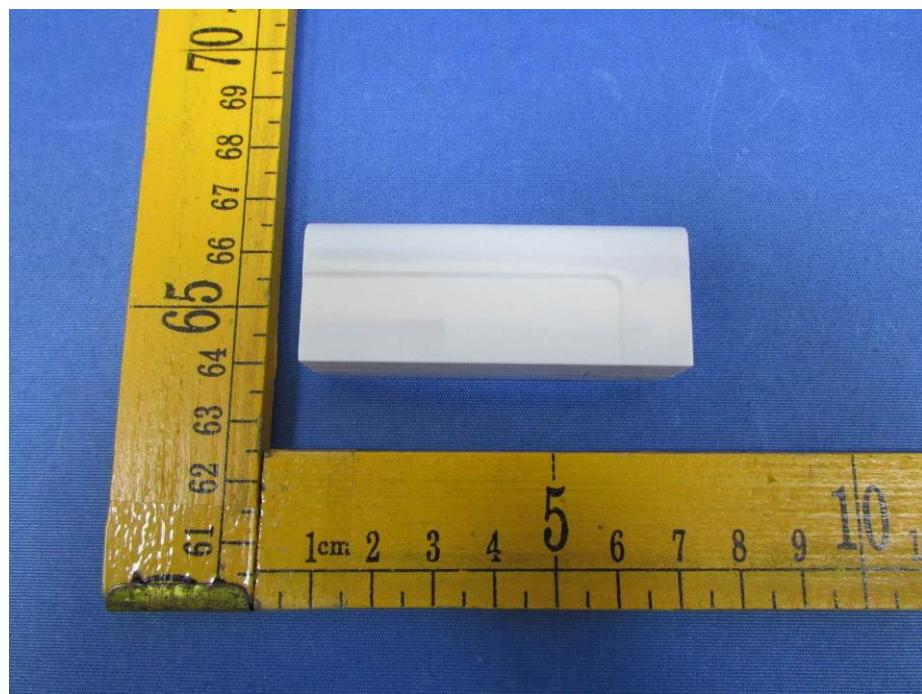
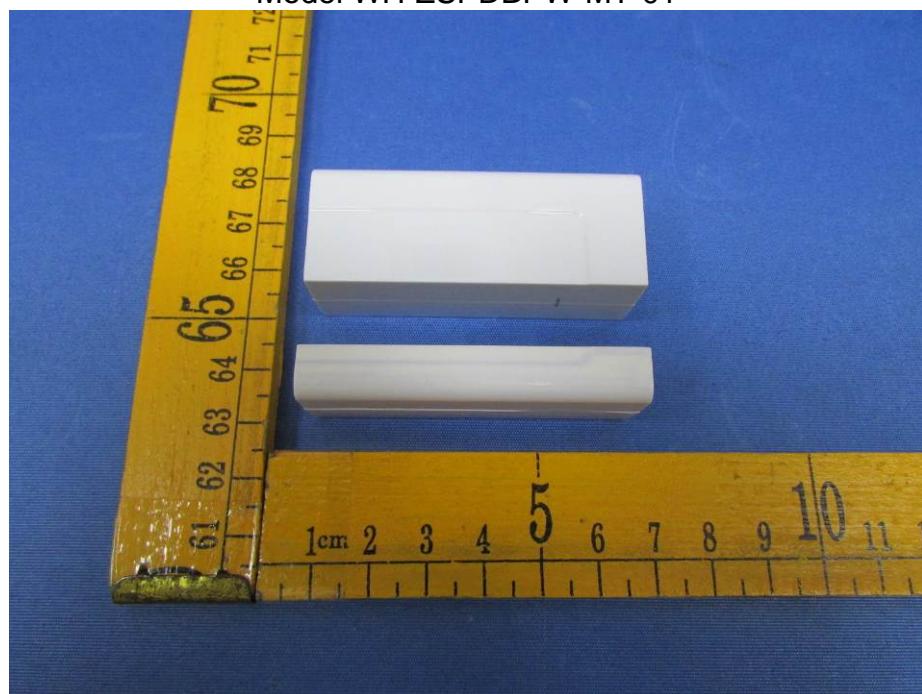


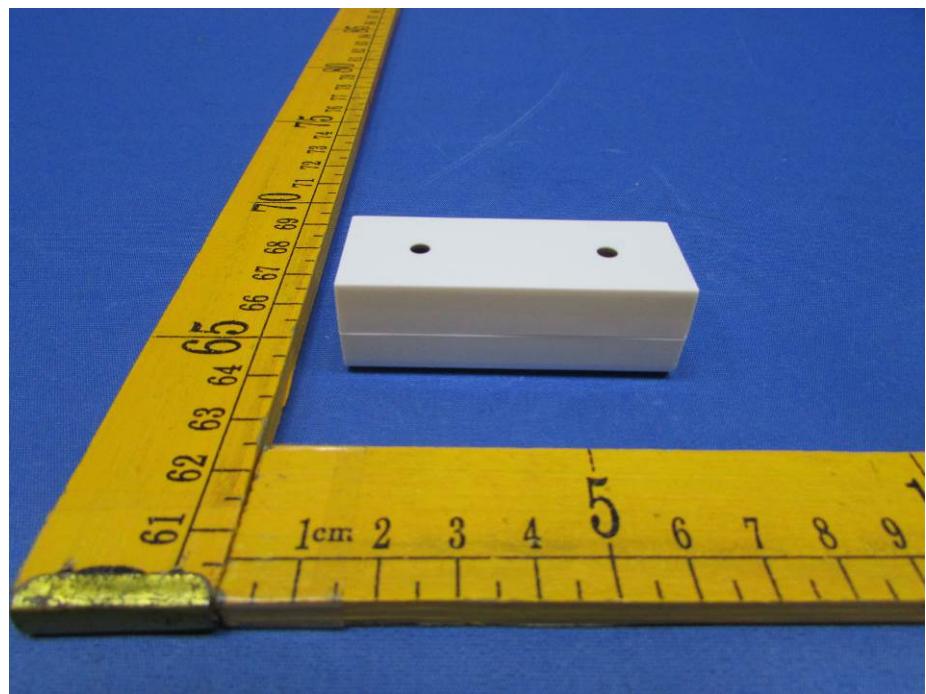
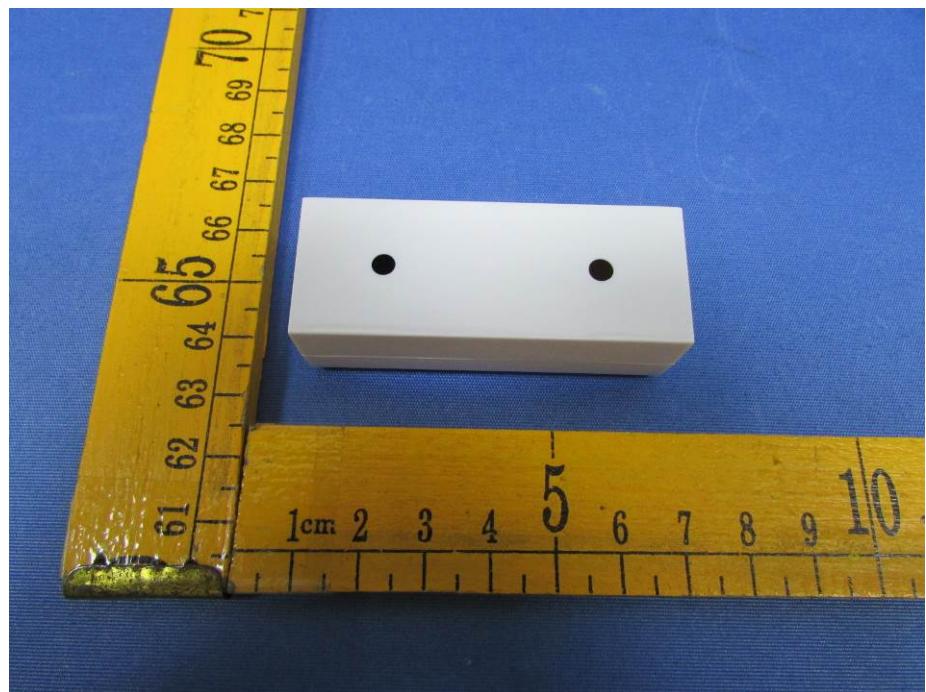


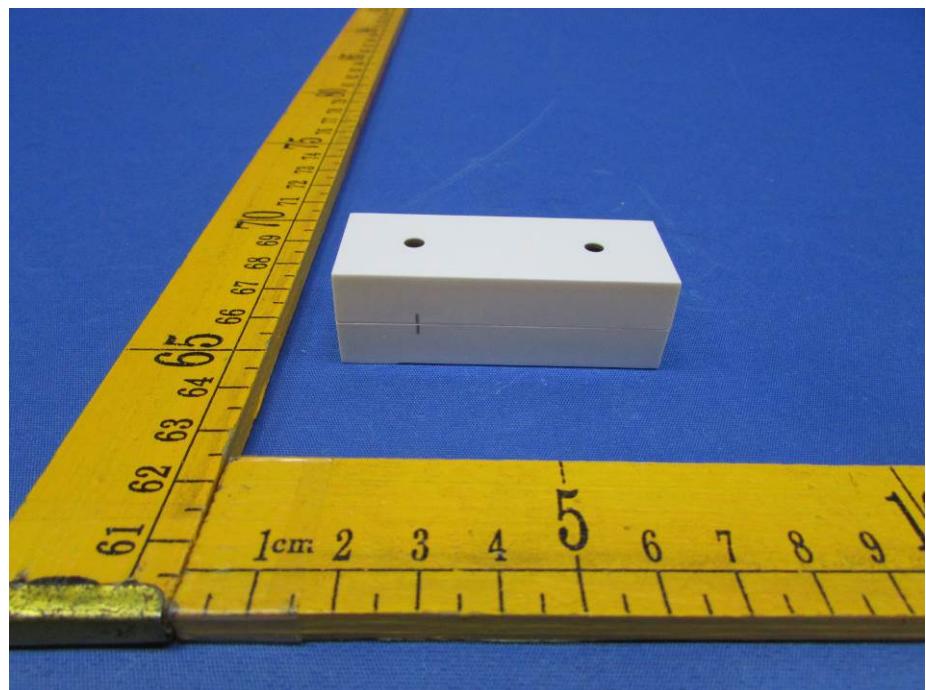


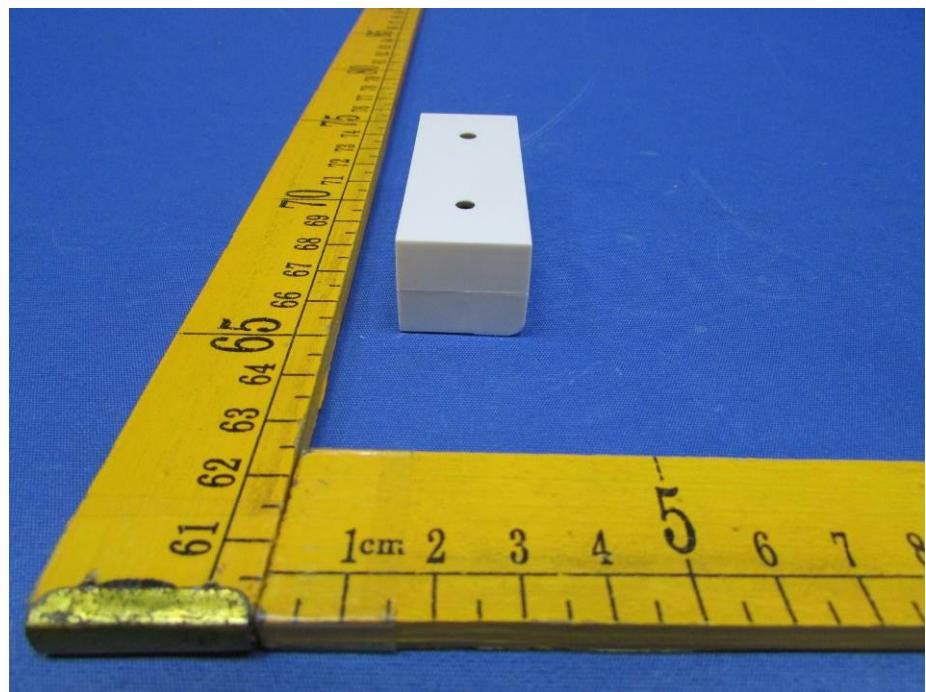


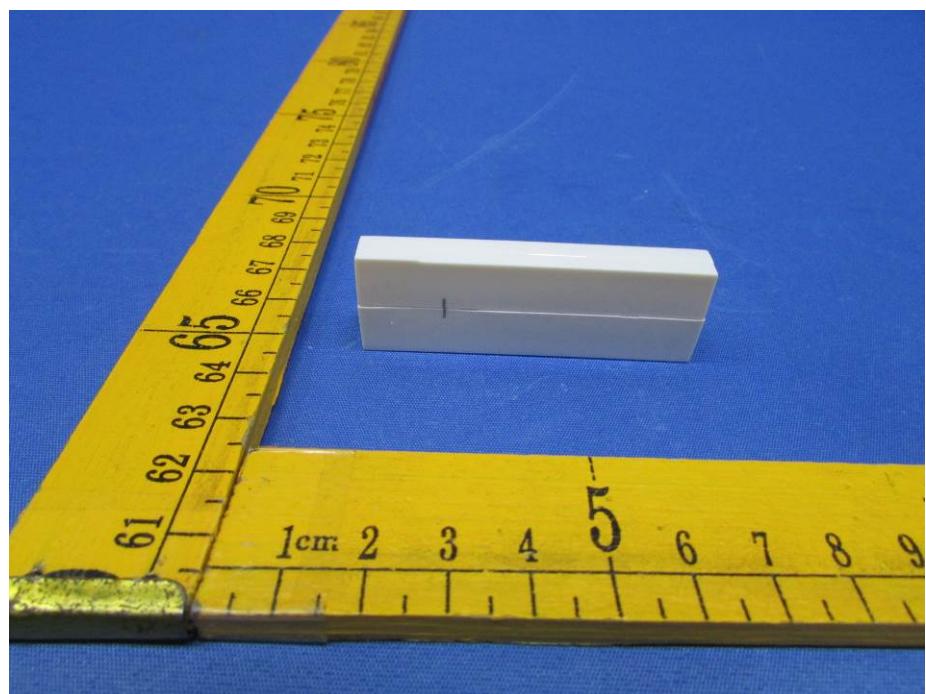
Model WH-ZSPDBPW-MT-01

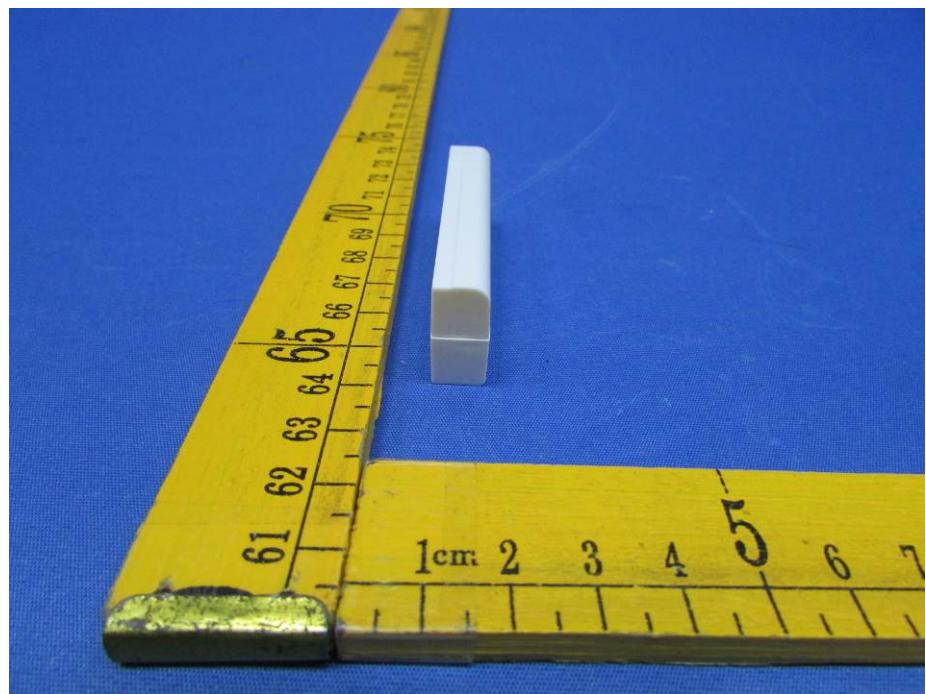




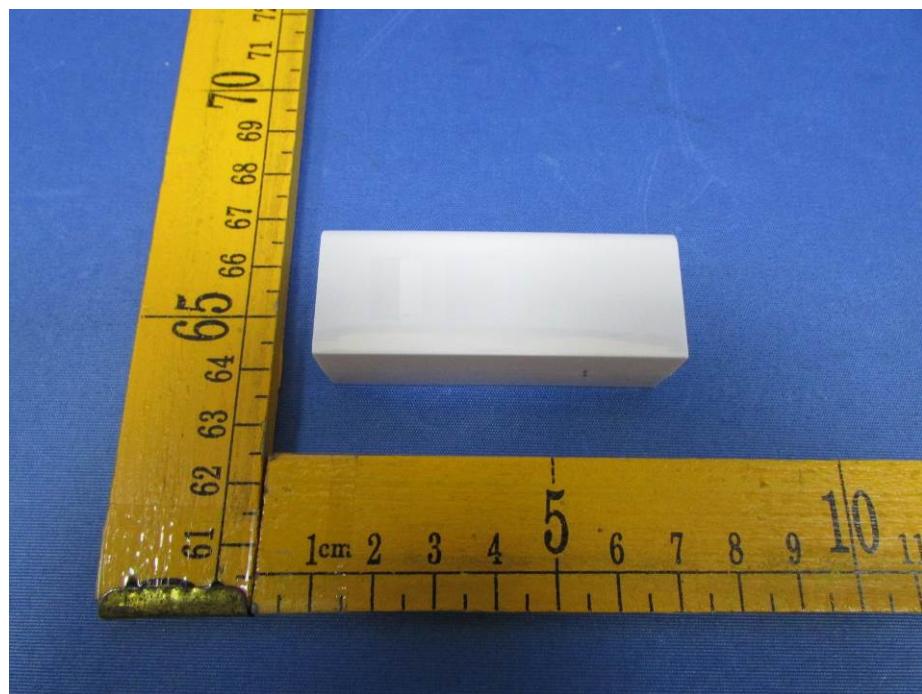
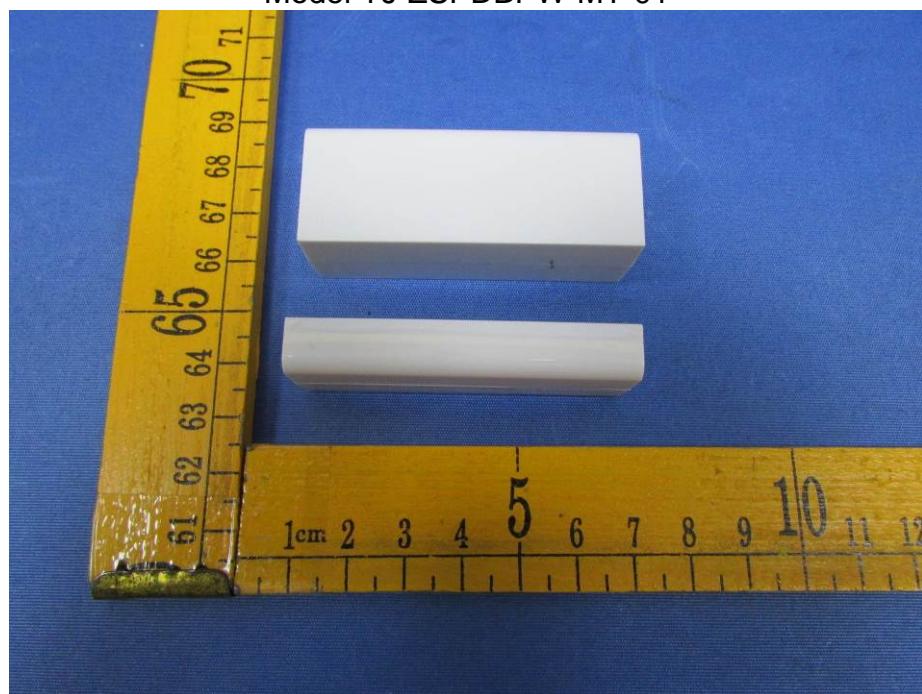


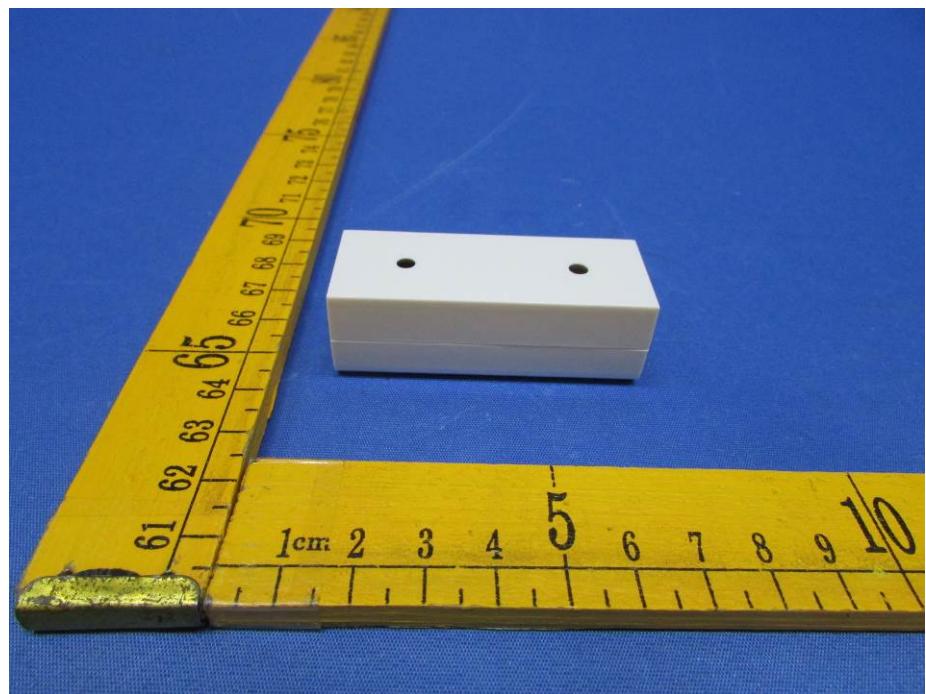
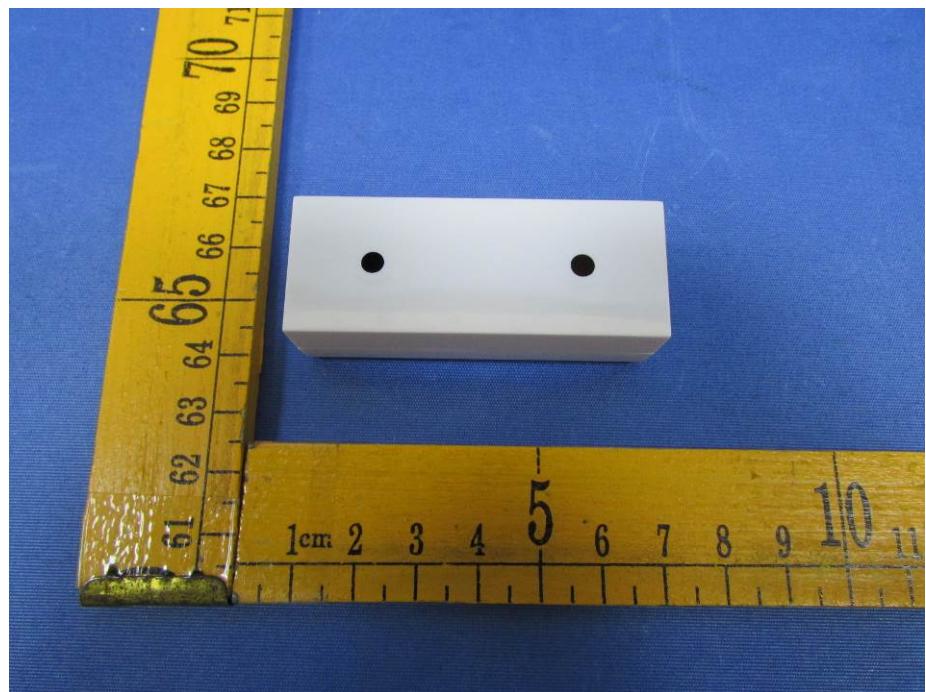


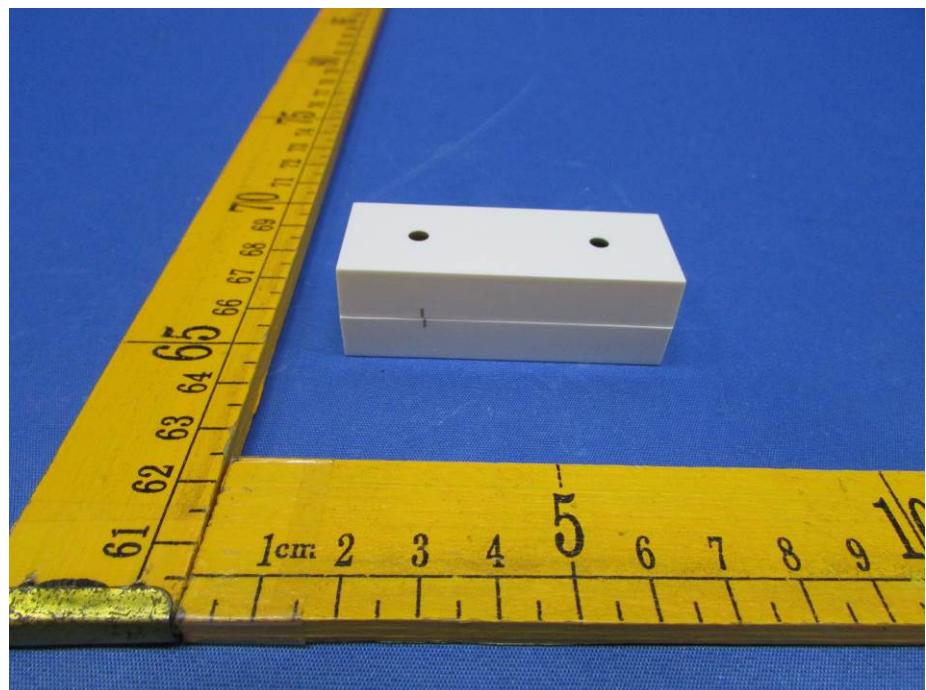


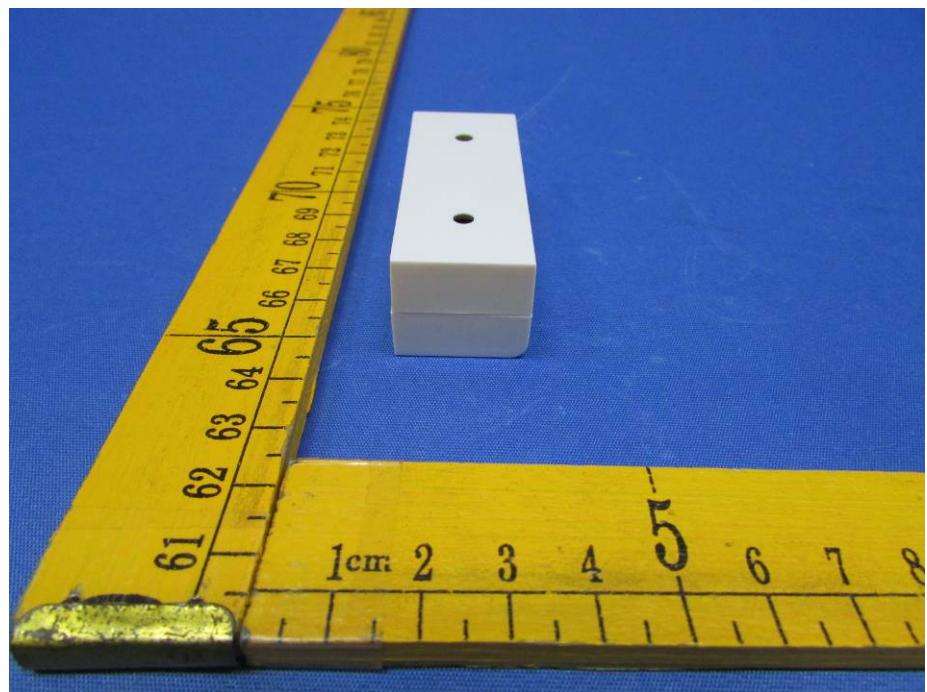


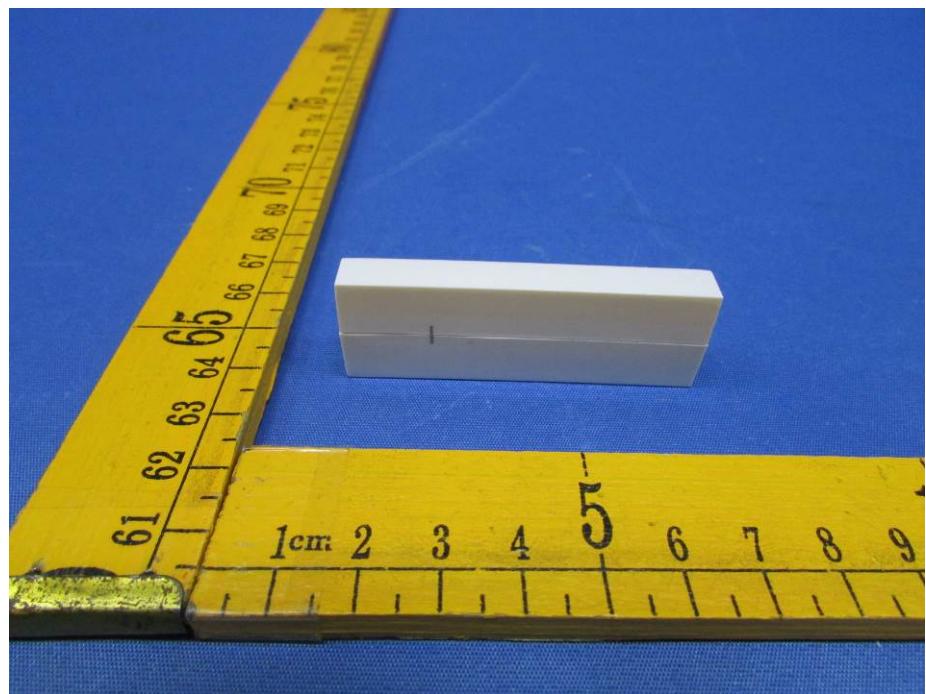
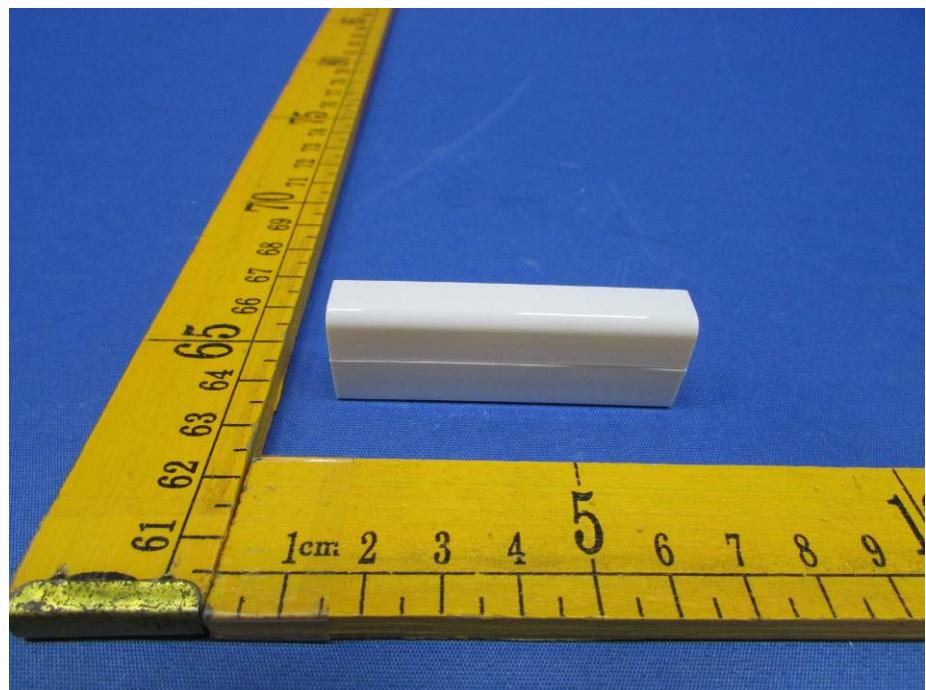
Model YJ-ZSPDBPW-MT-01

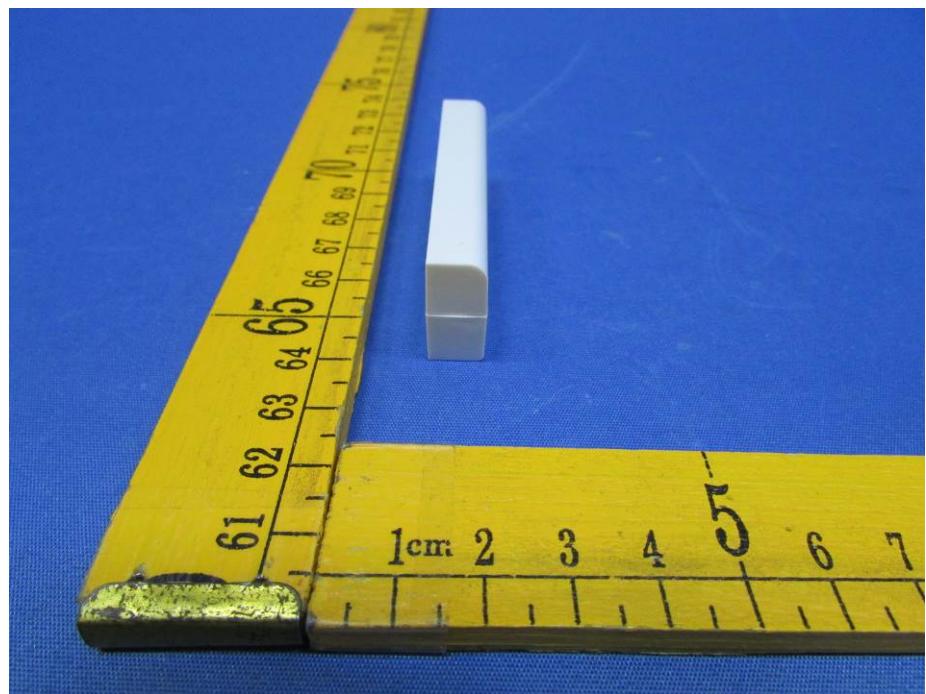
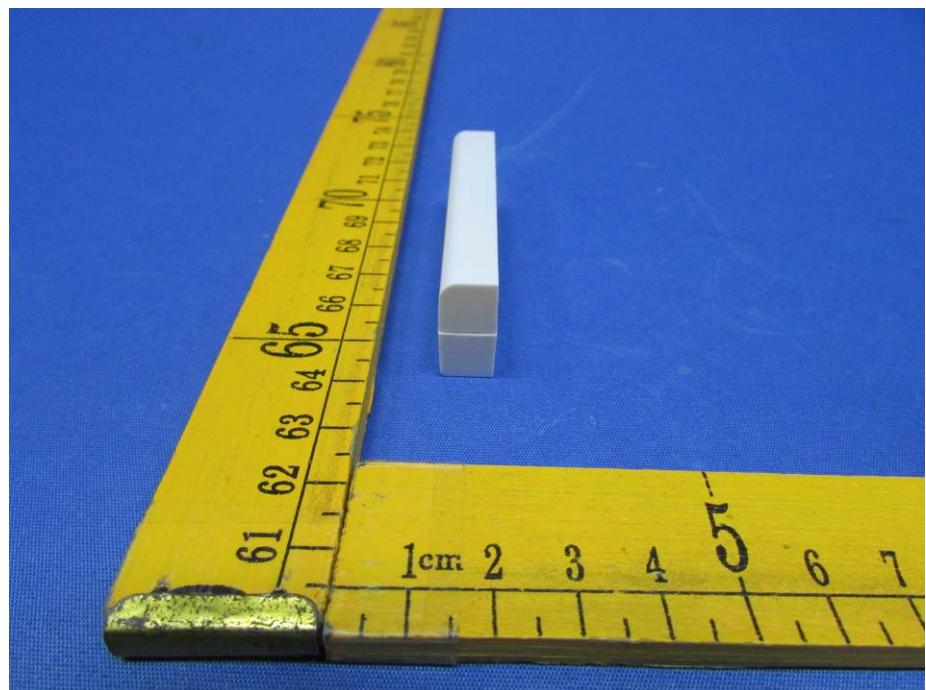










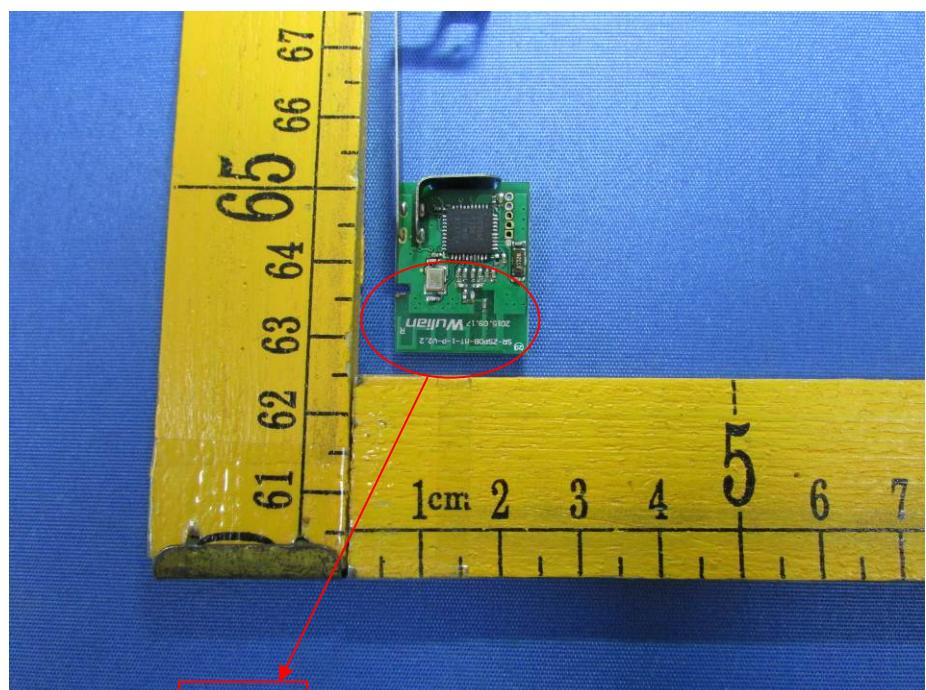
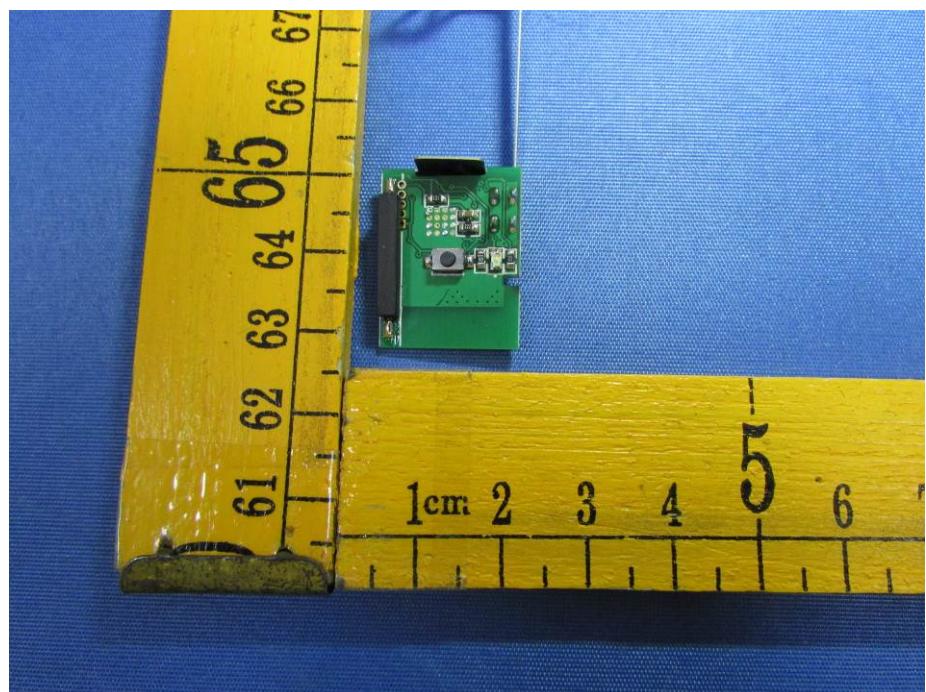




7.2 Internal Photos

Model WL-ZSPDBPW-MT-01





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