

FCC PART 15 SUBPART C TEST REPORT

for

Wireless Electronic Lock

Model No.: SR9

FCC ID: RDWSCGPTDL0002

of

Applicant: Sun Castle Global Precision Technology Co, Ltd.

**Address: No.1-3, Ln. 1010, Zhongshan Rd., Shengang Dist.,
Taichung City 429, Taiwan (R.O.C.)**

Tested and Prepared

by

Worldwide Testing Services (Taiwan) Co., Ltd.

FCC Registration No.: 930600

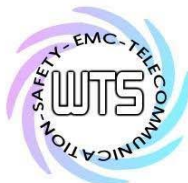
Industry Canada filed test laboratory Reg. No. IC 5679A-1

A2LA Accredited No.: 2732.01



Report No.: W6M21209-12720-P-15

6F, NO. 58, LANE 188, RUEY-KUANG RD., NEIHU TAIPEI 114, TAIWAN, R.O.C.
TEL: 886-2-66068877 FAX: 886-2-66068879 E-mail: wtst@wtst-lab.com



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

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1 General Information

1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.

The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

The test report may only be reproduced or published in full.

Reproduction or publication of extracts from the report requires the prior written approval of the Worldwide Testing Services(Taiwan) Co., Ltd.

Tester:

November 26, 2012

Rick Chen

Rick Chen.

Date

WTS-Lab.

Name

Signature

Technical responsibility for area of testing:

November 26, 2012

Danny Sung

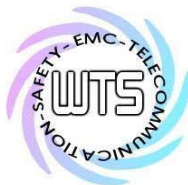
Danny Sung

Date

WTS

Name

Signature



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1.2 Testing laboratory

1.2.1 Location

OATS

No.5-1, Lishui, Shuang Sing Village,
Wanli Dist., New Taipei City 207,
Taiwan (R.O.C.)

3 meter semi-anechoic chamber

No.35, Aly. 21, Ln. 228, Ankang Rd., Neihu Dist., Taipei City 114, Taiwan (R.O.C.)

TEL:886-2-6613-0228

FAX:886-2-2791-5046

Company

Worldwide Testing Services(Taiwan) Co., Ltd.

6F, NO. 58, LANE 188, RUEY-KUANG RD.

NEIHU, TAIPEI 114, TAIWAN R.O.C.

Tel : 886-2-66068877

Fax : 886-2-66068879

1.2.2 Details of accreditation status

Accredited testing laboratory

A2LA accredited number: 2732.01

FCC filed test laboratory Reg. No. 930600

Industry Canada filed test laboratory Reg. No. IC 5679A-1



Test location, where different from Worldwide Testing Services (Taiwan) Co., Ltd. :

Name: ./.

Accredited number: ./.

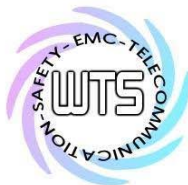
Street: ./.

Town: ./.

Country: ./.

Telephone: ./.

Fax: ./.



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1.3 Details of approval holder

Name:	Sun Castle Global Precision Technology Co, Ltd.
Street:	No.1-3, Ln. 1010, Zhongshan Rd., Shengang Dist.,
City:	Taichung City 429,
Country:	Taiwan (R.O.C.)
Telephone:	+ 886-4-25629136
Fax:	+ 886-4-25624697

1.4 Application details

Date of receipt of test item:	October 18, 2012
Date of test:	from October 18, 2012 to November 23, 2012

1.5 General information of Test item

Description of test item:	Wireless Electronic Lock
Type identification:	SR9
Multi-listing model number:	SH9
Transmitting frequency:	13.56 MHz
Operation mode:	duplex
Voltage supply:	Battery 6 Vdc (1.5Vdc*4)

(If the device is using battery, please check if the device is tested under fresh battery condition.)

Antenna type:	Loop antenna
Photos:	see Annex

Manufacturer: (if applicable)

Name:	./.
Street:	./.
Town:	./.
Country:	./.
Additional information:	./.



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1.6 Test standards

Technical standard : FCC RULES PART 15 SUBPART C § 15.225 (2011-10)

2 Technical test

2.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.



or

The deviations as specified in 3 were ascertained in the course of the tests performed.



2.2 Test environment

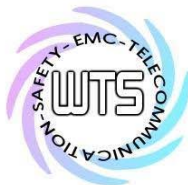
Temperature: 23 °C

Relative humidity content: 20 ... 75 %

Air pressure: 86 ... 103 kPa

Details of power supply: Battery 6 Vdc (1.5Vdc*4)

Extreme conditions parameters:. /.



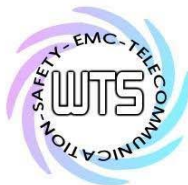
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2.3 Test Equipment List

No.	Test equipment	Type	Serial No.	Manufacturer	Cal. Date	Next Cal. Date
ETSTW-CE 001	EMI TEST RECEIVER	ESHS10	842121/013	R&S	2012/9/5	2013/9/4
ETSTW-CE 003	AC POWER SOURCE	APS-9102	D161137	GW	Function Test	
ETSTW-CE 004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ESH3-Z5	840731/011	R&S	2011/12/28	2012/12/27
ETSTW-CE 005	Line-Impedance Stabilisation Network	NNBM 8126D	137	Schwarzbeck	2012/9/26	2013/9/25
ETSTW-CE 006	IMPULSBEGRENZER PULSE LIMITER	ESH3-Z2	100226	R&S	2012/3/5	2013/3/4
ETSTW-CE 007	SPECTRUM ANALYZER 5GHz	FSB	849670/001	R&S	Pre-test Use	
ETSTW-CE 008	HF-EICHLEITUNG RF STEP ATTENUATOR 139dB DPSP	334.6010.02	844581/024	R&S	Function Test	
ETSTW-CE 009	TEMP.&HUMIDITY CHAMBER	GTH-225-40-1P-U	MAA0305-009	GIANT FORCE	2012/7/3	2013/7/2
ETSTW-CE 013	CISPR 22 TWO BALANCED TELECOM PAIRS IMPEDANCE STABILIZATION NETWORK	FCC-TLISN-T4-02	20242	FCC	2012/9/6	2013/9/5
ETSTW-CE 024	IMPEDANCE STABILIZATION NETWORK	ISN T800	29454	TESEQ	2012/1/4	2013/1/3
ETSTW-CS 004	COUPLING AND DECOUPLING NETWORK	CDN M016	20053	SCHAFFNER	2012/8/10	2013/8/09
ETSTW-CS 005	RF Power Amplifier	100A250A	306547	AR	Function Test	
ETSTW-CS 010	6 dB Attenuator	SA3N1007-06	None	AISI	Function test	
ETSTW-RE 003	EMI TEST RECEIVER	ESI 26	831438/001	R&S	2012/8/10	2013/8/09
ETSTW-RE 004	EMI TEST RECEIVER	ESI 40	832427/004	R&S	2012/9/5	2013/9/4
ETSTW-RE 005	EMI TEST RECEIVER	ESVS10	843207/020	R&S	2012/9/5	2013/9/4
ETSTW-RE 010	ABSORBING CLAMP	MDS 21	3469	Schwarzbeck	2012/9/5	2013/9/4
ETSTW-RE 012	TUNABLE BANDREJECT FILTER	D.C 0309	146	K&L	Function Test	
ETSTW-RE 013	TUNABLE BANDREJECT FILTER	D.C 0336	397	K&L	Function Test	
ETSTW-RE 018	MICROWAVE HORN ANTENNA	AT4560	27212	AR	2012/10/12	2013/10/11
ETSTW-RE 019	MICROWAVE HORN ANTENNA	22240-25	121074	FM	2012/4/03	2013/4/02
ETSTW-RE 020	MICROWAVE HORN ANTENNA	AT4002A	306915	AR	Function Test	
ETSTW-RE 027	Passive Loop Antenna	6512	00034563	ETS-Lindgren	2012/8/01	2013/7/31
ETSTW-RE 028	Log-Periodic Dipole Array Antenna	3148	34429	EMCO	Function Test	
ETSTW-RE 029	Biconical Antenna	3109	33524	EMCO	Function Test	
ETSTW-RE 030	Double-Ridged Guide Horn Antenna	3117	00035224	EMCO	2012/2/21	2013/2/20
ETSTW-RE 032	Millivoltmeter	URV 55	849086/013	R&S	2012/10/5	2013/10/4
ETSTW-RE 033	WaveRunner 6000A Serie Oscilloscope	WAVERUNNER 6100A	LCRY0604P1450 8	LeCroy	Function Test	
ETSTW-RE 034	Power Sensor	URV5-Z4	839313/006	R&S	2012/10/5	2013/10/4
ETSTW-RE 042	Biconical Antenna	HK116	100172	R&S	2012/1/10	2013/1/9
ETSTW-RE 043	Log-Periodic Dipole Antenna	HL223	100166	R&S	2012/4/13	2013/4/12
ETSTW-RE 044	Log-Periodic Antenna	HL050	100094	R&S	2012/4/06	2013/4/05

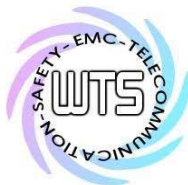


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ETSTW-RE 045	ESA-E SERIES SPECTRUM ANALYZER	E4404B	MY45111242	Agilent	Pre-test Use	
ETSTW-RE 048	Triple Loop Antenna	HXYZ 9170	HXYZ 9170-134	Schwarzbeck	2012/8/28	2013/8/27
ETSTW-RE 049	TRILOG Super Broadband test Antenna	VULB 9160	9160-3185	Schwarzbeck	2012/3/23	2013/3/22
ETSTW-RE 050	Attenuator 10dB	50HF-010-1	None	JFW	2012/3/3	2013/3/2
ETSTW-RE 051	Attenuator 6dB	50HF-006-1	None	JFW	2012/3/3	2013/3/2
ETSTW-RE 053	Attenuator 3dB	50HF-003-1	None	JFW	2012/3/3	2013/3/2
ETSTW-RE 055	SPECTRUM ANALYZER	FSU 26	200074	R&S	2012/5/29	2013/5/28
ETSTW-RE 060	Attenuator 30dB	5015-30	F651012z-01	ATM	2012/3/3	2013/3/2
ETSTW-RE 061	Amplifier Module	CHC 1	None	ETS	2012/5/17	2013/5/16
ETSTW-RE 062	Amplifier Module	CHC 2	None	KMIC	2011/11/29	2012/11/28
ETSTW-RE 064	Bluetooth Test Set	MT8852B-042	6K00005709	Anritsu	Function Test	
ETSTW-RE 065	Amplifier	AMF-6F-18002650- 25-10P	941608	MITEQ	2012/4/6	2013/4/5
ETSTW-RE 069	Double-Ridged Guide Horn Antenna	3117	00069377	EMCO	Function Test	
ETSTW-RE 072	CELL SITE TEST SET	8921A	3339A00375	HP	2012/10/5	2013/10/4
ETSTW-RE 073	Power Meter	N1911A	MY45100769	Agilent	2012/1/4	2013/1/3
ETSTW-RE 074	Power Sensor	N1921A	MY45241198	Agilent	2012/1/4	2013/1/3
ETSTW-RE 088	SOLID STATE AMPLIFIER	KMA180265A01	99057	KMIC	2012/10/12	2013/10/11
ETSTW-RE 099	DC Block	50DB-007-1	None	JFW	2012/3/5	2013/3/4
ETSTW-RE 105	2.4GHz Notch Filter	NO124411	39555	MICROWAVE CIRCUITS, INC.	2012/3/5	2013/3/4
ETSTW-RE 106	Humidity Temperature Meter	TES-1366	091011113	TES	2011/12/1	2012/11/30
ETSTW-RE 111	TRILOG Super Broadband test Antenna	VULB 9160	9160-3309	Schwarz beck	2011/12/27	2012/12/26
ETSTW-RE 112	AC POWER SOURCE	TFC-1005	None	T-Power	Function test	
ETSTW-RE 115	2.4GHz Notch Filter	N0124411	473874	MICROWAVE CIRCUITS	2012/1/12	2013/1/11
ETSTW-RE 120	RF Player	MP9200	MP9210-111022	ADIVIC	Function test	
ETSTW-RE 122	SIGNAL GENERATOR	SMF100A	102149	R&S	2012/7/3	2013/7/2
ETSTW-RE 125	5GHz Notch filter	5NSL11- 5200/E221.3-O/O	1	K&L Microwave	2012/8/18	2013/8/17
ETSTW-RE 126	5GHz Notch filter	5NSL11- 5800/E221.3-O/O	1	K&L Microwave	2012/8/18	2013/8/17
ETSTW-RE 127	RF Switch Box	RFS-01	None	WTS	2012/3/3	2013/3/2
ETSTW-EMI 001	HARMONICS 1000	HAR1000-1P	093	EMC-PARTNER	2012/8/10	2013/8/09
ETSTW-EMS 001	BASELSTRASSE 160 CH- 4242 LAUFEN	CN-EFT1000	354	EMC-PARTNER	Function Test	
ETSTW-EMS 002	Frequency Converter	YF-6020	0308014	None	Function Test	
ETSTW-EMS 003	EMC Immunity Test System	TRA2000IN6	579	EMC-PARTNER	2012/11/6	2013/11/5
ETSTW-EMS 009	Magnetic Field Antenna	MF1000-1	104	EMC-PARTNER	Function Test	
ETSTW-EMS 010	Coupling De-coupling Network	CDN-UTP8	014	EMC-PARTNER	Function Test	
ETSTW-EMS 012	EM Injection Clamp	F-203I-23MM	476	FCC	2012/5/29	2013/5/28
ETSTW-EMS 016	EMF Tester	1390	071208732	TES	2012/10/5	2013/10/4
ETSTW-EMS 017	Multimeter	DM-1220	518614	HOLA	2012/8/10	2013/8/09



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ETSTW-EMS 019	Electrostatic Discharge Simulator	ESS-2002	ESS06Y6300	NoiseKen	2012/10/5	2013/10/4
ETSTW-EMS 020	Humidity Temperature Meter	TES-1366	091011116	TES	2011/12/20	2012/12/19
ETSTW-RS 003	RF Power Amplifier	30S1G3	306933	AR	Function Test	
ETSTW-RS 004	RF Power Amplifier	150W1000	307009	AR	Function Test	
ETSTW-RS 006	SIGNAL GENERATOR	SML03	101551	R&S	2012/2/29	2013/2/28
ETSTW-RS 007	14" COLOR VIDEO MONITOR	HS-CM145A	0512011548	None	Function Test	
ETSTW-RS 009	SIGNAL GENERATOR	8648C	3642U01656	HP	2012/2/20	2013/2/19
ETSTW-RS 010	Broadband Field Meter	NBM-520	C-0195	Narda	2012/9/24	2013/9/23
ETSTW-GSM 002	Universal Radio Communication Tester	CMU 200	109439	R&S	2012/10/5	2013/10/4
ETSTW-GSM 019	Band Reject Filter	WRCTF824/849-822/851-40/12+9SS	3	WI	2012/1/13	2013/1/12
ETSTW-GSM 020	Band Reject Filter	WRCD1747/1748-1743/1752-32/5SS	1	WI	2012/1/13	2013/1/12
ETSTW-GSM 021	Band Reject Filter	WRCD1879.5/1880.5-1875.5/1884.5-32/5SS	3	WI	2012/1/13	2013/1/12
ETSTW-GSM 022	Band Reject Filter	WRCT901.9/903.1-904.25-50/8SS	1	WI	2012/1/13	2013/1/12
ETSTW-GSM 023	Power Divider	4901.19.A	None	SUHNER	2012/9/18	2013/9/17
ETSTW-Cable 002	Microwave Cable	SUCOFLEX 104 (S_Cable 7)	238093	HUBER+SUHNER	2012/5/17	2013/5/16
ETSTW-Cable 003	Microwave Cable	SUCOFLEX 104 (S_Cable 11)	209953	HUBER+SUHNER	2012/5/17	2013/5/16
ETSTW-Cable 010	BNC Cable	5 M BNC Cable	None	JYE BAO CO.,LTD.	2012/3/5	2013/3/4
ETSTW-Cable 011	BNC Cable	BNC Cable 1	None	JYE BAO CO.,LTD.	Pre-test Use NCR	
ETSTW-Cable 012	N TYPE To SMA Cable	Cable 012	None	JYE BAO CO.,LTD.	2012/3/5	2013/3/4
ETSTW-Cable 013	Microwave Cable	SUCOFLEX 104 (S_Cable 5)	232345	HUBER+SUHNER	Function Test	
ETSTW-Cable 016	BNC Cable	Switch Box	B Cable 1	Schwarz beck	2012/3/3	2013/3/2
ETSTW-Cable 017	BNC Cable	X Cable	B Cable 2	Schwarz beck	2012/3/3	2013/3/2
ETSTW-Cable 018	BNC Cable	Y Cable	B Cable 3	Schwarz beck	2012/3/3	2013/3/2
ETSTW-Cable 019	BNC Cable	Z Cable	B Cable 4	Schwarz beck	2012/3/3	2013/3/2
ETSTW-Cable 022	N TYPE Cable	5006	0002	JYE BAO CO.,LTD.	2012/4/6	2013/4/5
ETSTW-Cable 026	Microwave Cable	SUCOFLEX 104	279075	HUBER+SUHNER	2012/3/5	2013/3/4
ETSTW-Cable 027	Microwave Cable	SUCOFLEX 104	279083	HUBER+SUHNER	2012/3/5	2013/3/4
ETSTW-Cable 028	Microwave Cable	FA147A0015M2020	30064-2	UTIFLEX	2012/10/12	2013/10/11
ETSTW-Cable 029	Microwave Cable	FA147A0015M2020	30064-3	UTIFLEX	2012/10/12	2013/10/11
ETSTW-Cable 030	Microwave Cable	SUCOFLEX 104 (S_Cable 9)	279067	HUBER+SUHNER	2012/3/5	2013/3/4
ETSTW-Cable 031	Microwave Cable	SUCOFLEX 104 (S_Cable 10)	238092	HUBER+SUHNER	2011/11/29	2012/11/28
ETSTW-Cable 032	Microwave Cable	SUCOFLEX 104 (S_Cable 12)	237301	HUBER+SUHNER	Function Test	
ETSTW-Cable 039	Microwave Cable	SUCOFLEX 104 (S_Cable 19)	316739	HUBER+SUHNER	2012/5/17	2013/5/16
ETSTW-Cable 040	Microwave Cable	SUCOFLEX 104 (S_Cable 20)	316738	HUBER+SUHNER	Function Test	
ETSTW-Cable 043	Microwave Cable	SUCOFLEX 104	317576	HUBER+SUHNER	2011/11/29	2012/11/28
ETSTW-Cable 047	Microwave Cable	SUCOFLEX 104	325518	HUBER+SUHNER	2011/11/29	2012/11/28



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ETSTW-Cable 051	BNC Cable	BNC Cable 6	None	JYE BAO CO.,LTD.	2012/3/30	2013/3/29
ETSTW-Cable 052	BNC Cable	Clamp Cable	None	Schwarz beck	2012/3/30	2013/3/29
ETSTW-Cable 053	N TYPE To SMA Cable	RG142	None	JYE BAO CO.,LTD.	2012/4/6	2013/4/5
ETSTW-Cable 054	BNC To SMA Cable	RG142	None	JYE BAO CO.,LTD.	2012/4/6	2013/4/5
ETSTW-Cable 055	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.1	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 056	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.0	JYE BAO CO.,LTD.	Function Test	
ETSTW-Cable 057	N TYPE Cable	N30N30-JBY240-80CM	20110621-1.1	JYE BAO CO.,LTD.	Function Test	
WTSTW-SW 001	EMI TEST SOFTWARE	Harmonics-1000	None	EMC PARTNER	HARCS Version 4.16 Firmware Version 2.18	
WTSTW-SW 002	EMI TEST SOFTWARE	EZ EMC	None	Farad	Version ETS-03A1	
WTSTW-SW 003	EMS TEST SOFTWARE	i2	None	AUDIX	Version 3.2007-8-17b	



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2.4 General Test Procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2009 5.2 using a 50μH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was according to ANSI STANDARD C63.4-2009 6.4 employing a spectrum analyzer. For investigated frequency is equal to or below 1GHz, the RBW and VBW of the spectrum analyzer was 100 kHz and 100kHz respectively with an appropriate sweep speed. For investigated frequency is above 1GHz, both of RBW and VBW of the spectrum analyzer were 1 MHz with an appropriate sweep speed. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBμV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

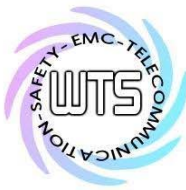
Freq (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBμV + 10.36 dB + 6 dB = 36.36 dBμV/m @3m

The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table) and arranged according to ANSI C63.4-2009 Section 6.3.1. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to the frequency specified as follows:

- (1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
- (2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
- (3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.
- (4) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a)(1)-(a)(3) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this Section, whichever is the higher frequency range of investigation.

For hand-held devices, a exploratory test was performed with three (3) orthogonal planes to determine the highest emissions.

Measurements were made by Worldwide Testing Services(Taiwan) Co., Ltd. at the registered open field test site located No.5-1, Lishui, Shuang Sing Village, Wanli Dist., New Taipei City 207, Taiwan (R.O.C.). The Registration Number: **930600**.



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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 planes.

When the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value.

The formula is as follows:

Average = Peak + Duty Factor

Duty Factor = $20 \log (\text{dwell time}/T)$

$T = 100\text{ms}$ when the pulse train period is over 100 ms or the period of the pulse train.

Modified Limits for peak according to 15.35 (b) = Max Permitted average Limits + 20dB

ANSI STANDARD C63.4-2009 10.2.7: Any measurements that utilize special test software shall be indicated and referenced in the test report. During testing, test software 'EZ EMC' was used for setting up different operation modes.

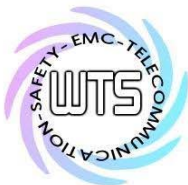


Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

3 Test results (enclosure)

TEST CASE	Para. Number	Required	Test passed	Test failed
Output Power Field Strength	15.225 (a) (b) (c)	☒	☒	☐
Out of Band Radiated Emissions	15.225 (d)	☒	☒	☐
Band Edge	15.225 (d)	☒	☒	☐
Occupied Bandwidth	2.1049	☒	☒	☐
Frequency Stability	15.225 (e)	☒	☒	☐
Power Line Conducted Emission	15.207 (a)	☐	☐	☐

The following is intentionally left blank.



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

3.1 Output Power (Field Strength)

FCC Rules: 15.225 (a) (b) (c), 15.205, 15.209, 15.35
Operation within the band 13.110 - 14.010 MHz
Limit

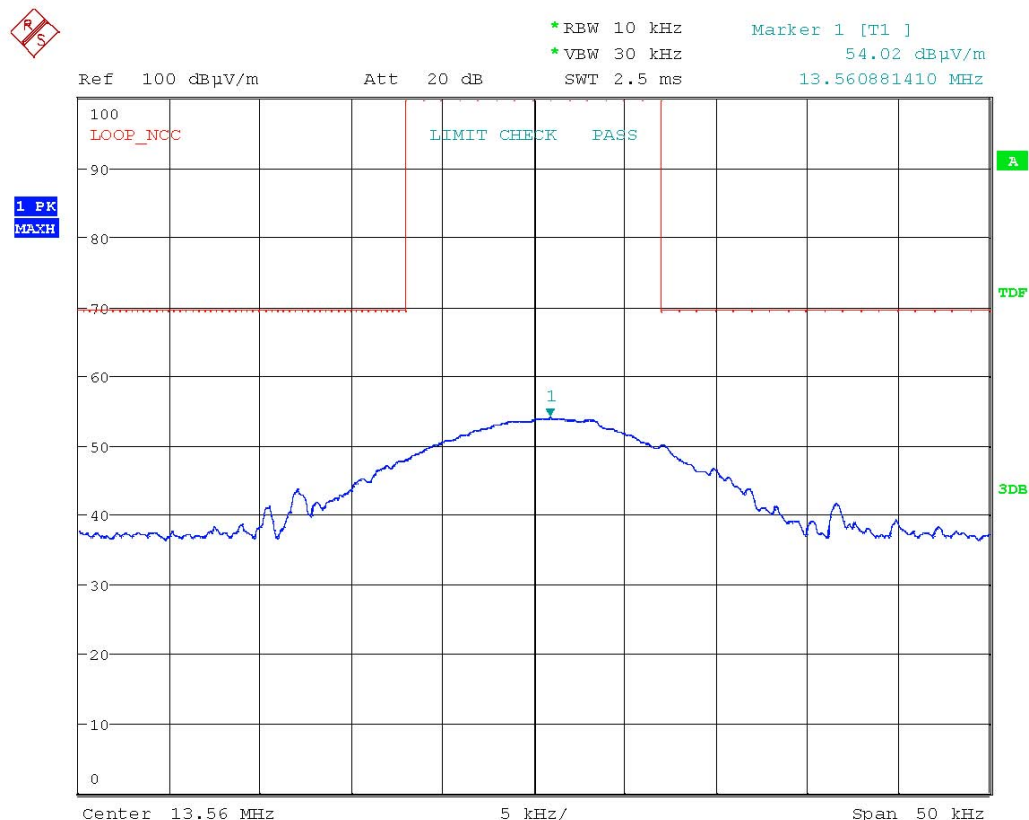
(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

Measurement Results:

The field strength at 3 meter distance as 54.02 dB μ V/m. Extrapolated with 40dB to 30 meter distance it would be 14.02dB μ V/m.



POWER

Date: 23.NOV.2012 06:43:06

Test equipment used: ETSTW-RE 027, ETSTW-RE 055

Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

3.2 Out of Band Radiated Emissions

(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

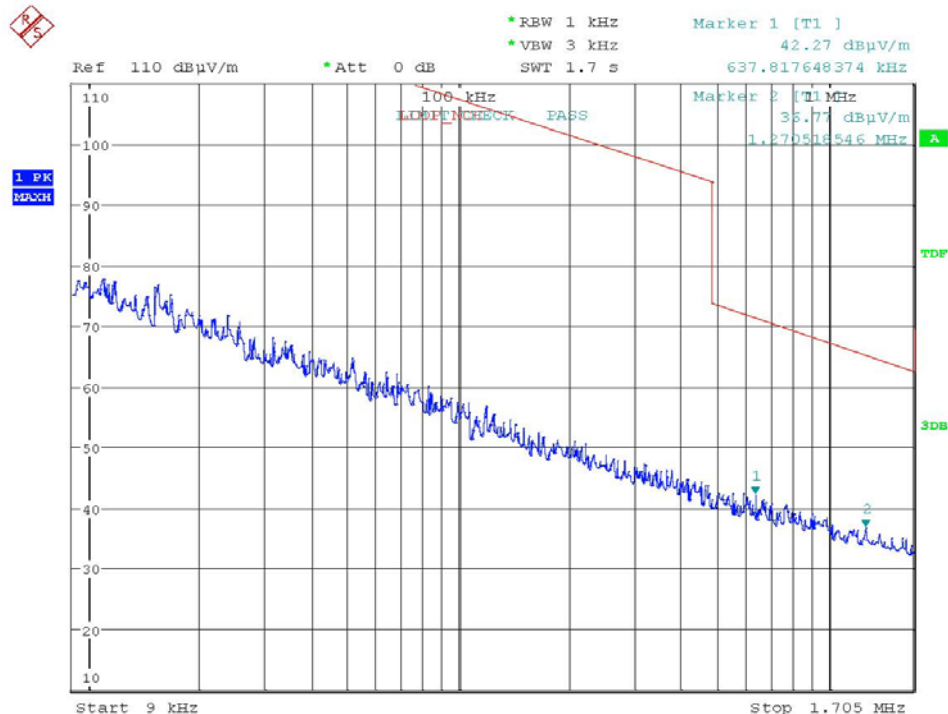
Frequency of Emission (MHz)	Limit	Measurement distance
0.009 – 0.490	2400 / f (KHz)	300
0.49 – 1.705	24000 / f (KHz)	30
1.705 – 30	30	30
30 – 88	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

Calculation of test results:

Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results. This is done by using validated test software and calibrated test system according the accreditation requirements.

Summary table with radiated data of the test plots

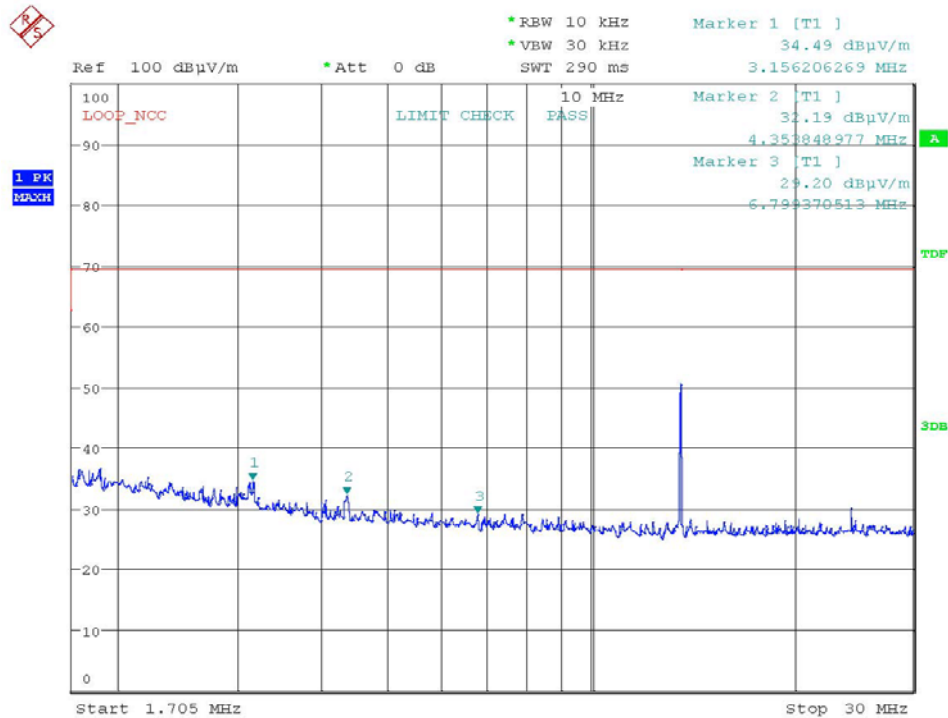
Operating: TX mode



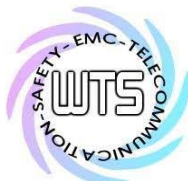
Date: 22.OCT.2012 19:21:51



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002



Date: 22.OCT.2012 19:27:47



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

Radiated Emission Measurement

Operator: Leon

File :TX

Data :#1

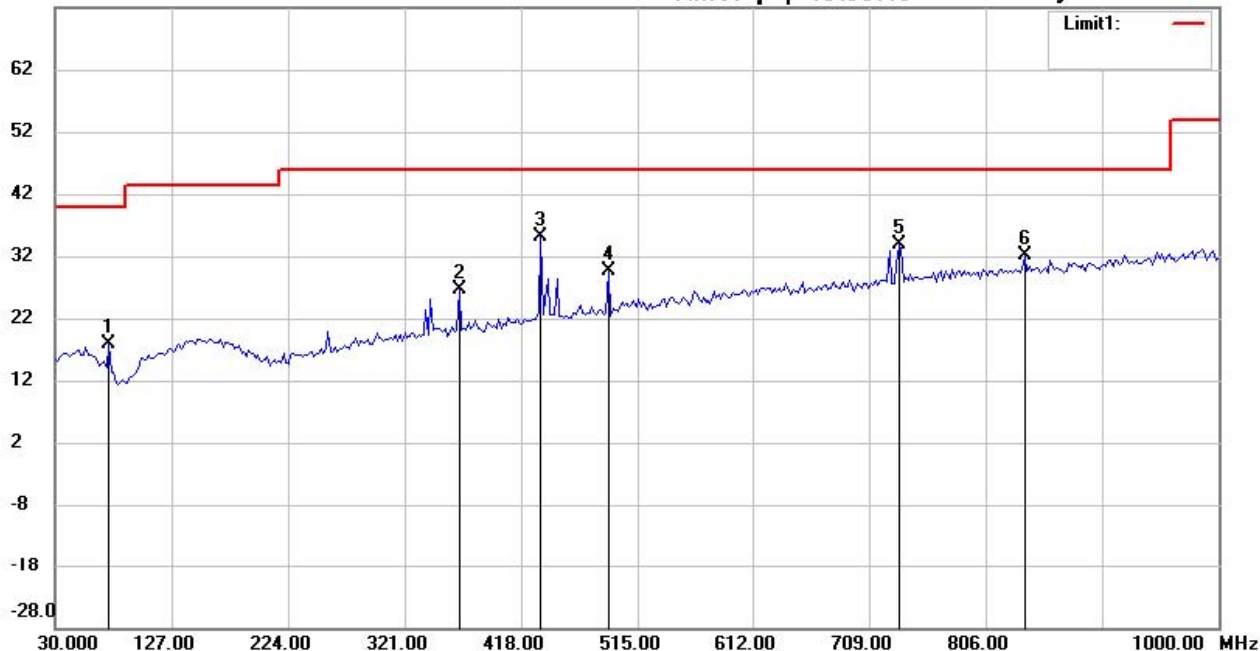
Date: 2012/10/18

Temperature:24 °C

72.0 dBuV/m

Time: 下午 10:53:46

Humidity:60 %



Site : 966 Chamber

Condition : FCC_part 15 RE-Class B_30-1000MHz

Polarization: *Horizontal*

EUT : W6M21209-12720

Power : 6VDC

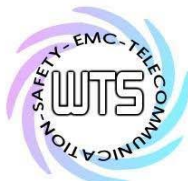
M/N: SR9

Distance: 3m

Test Mode : TX

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	74.7094	7.58	peak	10.30	17.88	40.00	100	250	-22.12	
	366.2926	9.32	peak	17.36	26.68	46.00	100	135	-19.32	
*	434.3287	15.92	peak	19.17	35.09	46.00	100	260	-10.91	
	490.7014	9.56	peak	20.07	29.63	46.00	100	140	-16.37	
	733.6874	9.59	peak	24.38	33.97	46.00	100	110	-12.03	
	838.6573	6.26	peak	25.80	32.06	46.00	100	220	-13.94	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

Radiated Emission Measurement

Operator: Leon

File :TX

Data :#2

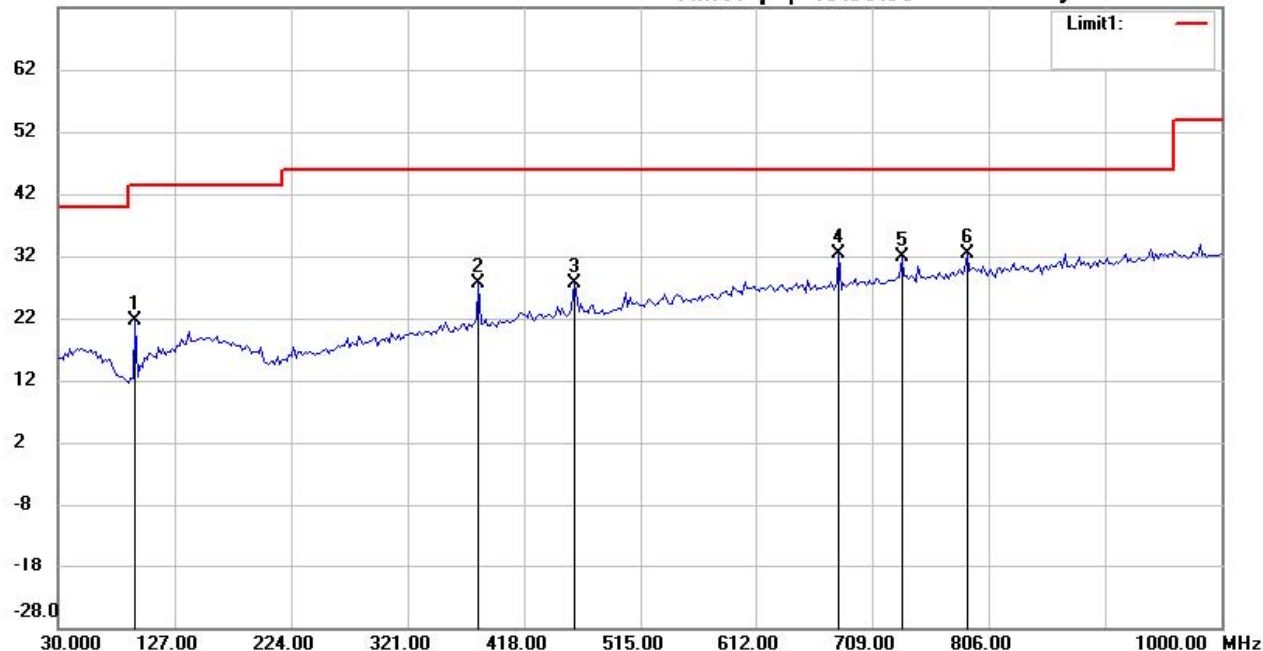
Date: 2012/10/18

Temperature:24 °C

72.0 dBuV/m

Time: 下午 10:58:35

Humidity:60 %



Site : 966 Chamber

Condition : FCC_part 15 RE-Class B_30-1000MHz

Polarization: *Vertical*

EUT : W6M21209-12720

Power : 6VDC

M/N: SR9

Distance: 3m

Test Mode : TX

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	94.1483	12.08	peak	9.62	21.70	43.50	100	125	-21.80	
	379.8998	9.94	peak	17.70	27.64	46.00	100	260	-18.36	
	459.5992	7.88	peak	19.74	27.62	46.00	100	110	-18.38	
*	681.2024	8.92	peak	23.51	32.43	46.00	100	270	-13.57	
	733.6874	7.49	peak	24.38	31.87	46.00	100	150	-14.13	
	788.1162	7.14	peak	25.21	32.35	46.00	100	330	-13.65	

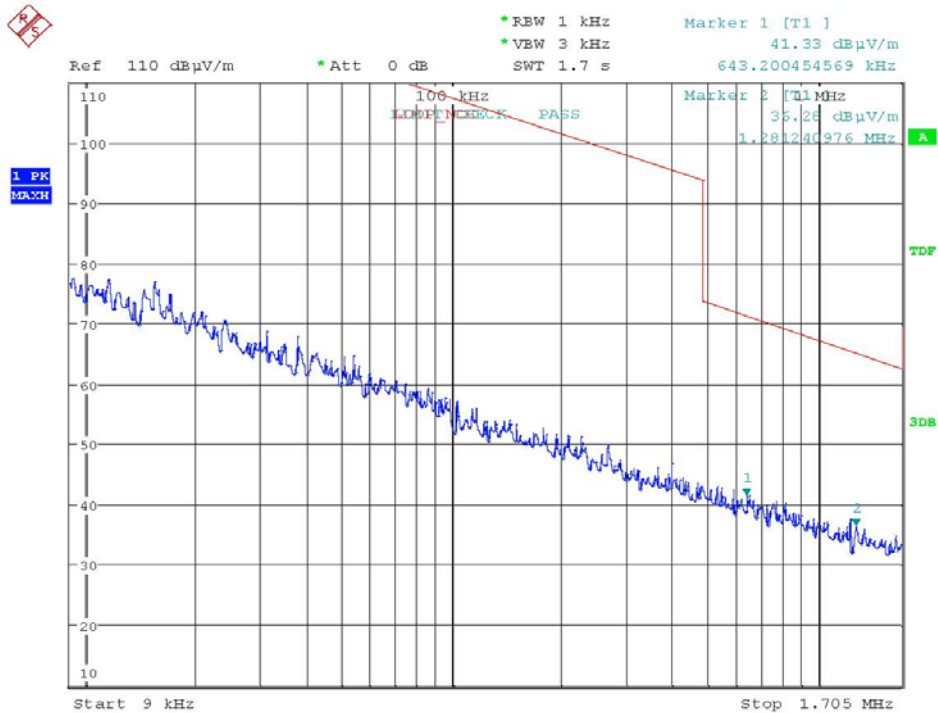


Worldwide Testing Services(Taiwan) Co., Ltd.

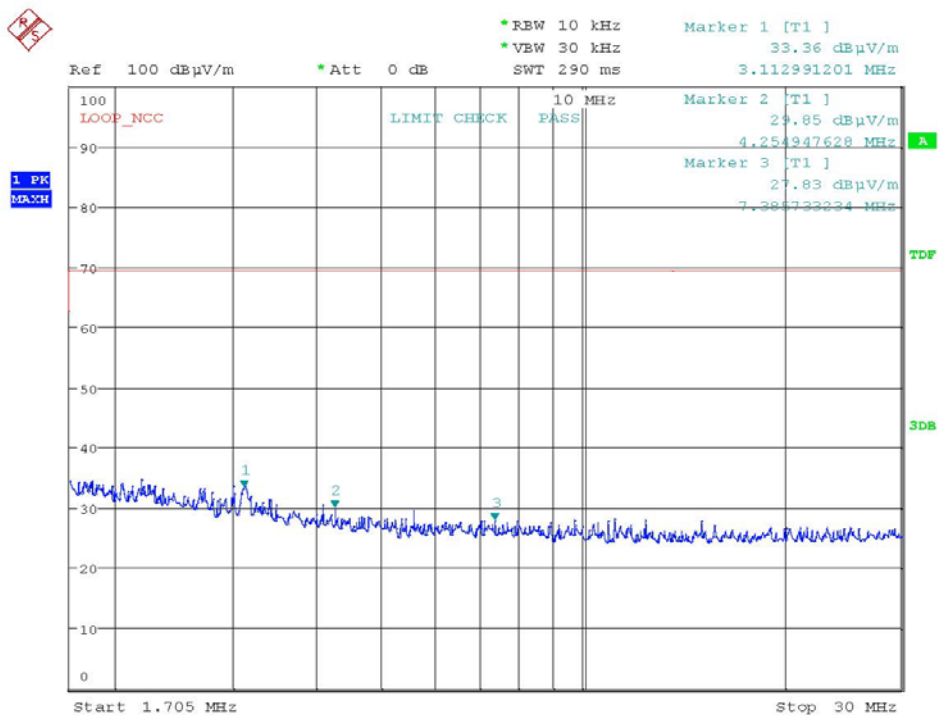
Registration number: W6M21209-12720-P-15

FCC ID: RDWSCGPTDL0002

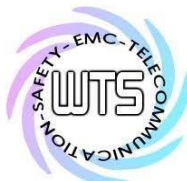
Operating: RX mode



Date: 22.OCT.2012 19:22:38



Date: 22.OCT.2012 19:28:10



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

Radiated Emission Measurement

Operator: Leon

File :RX

Data :#1

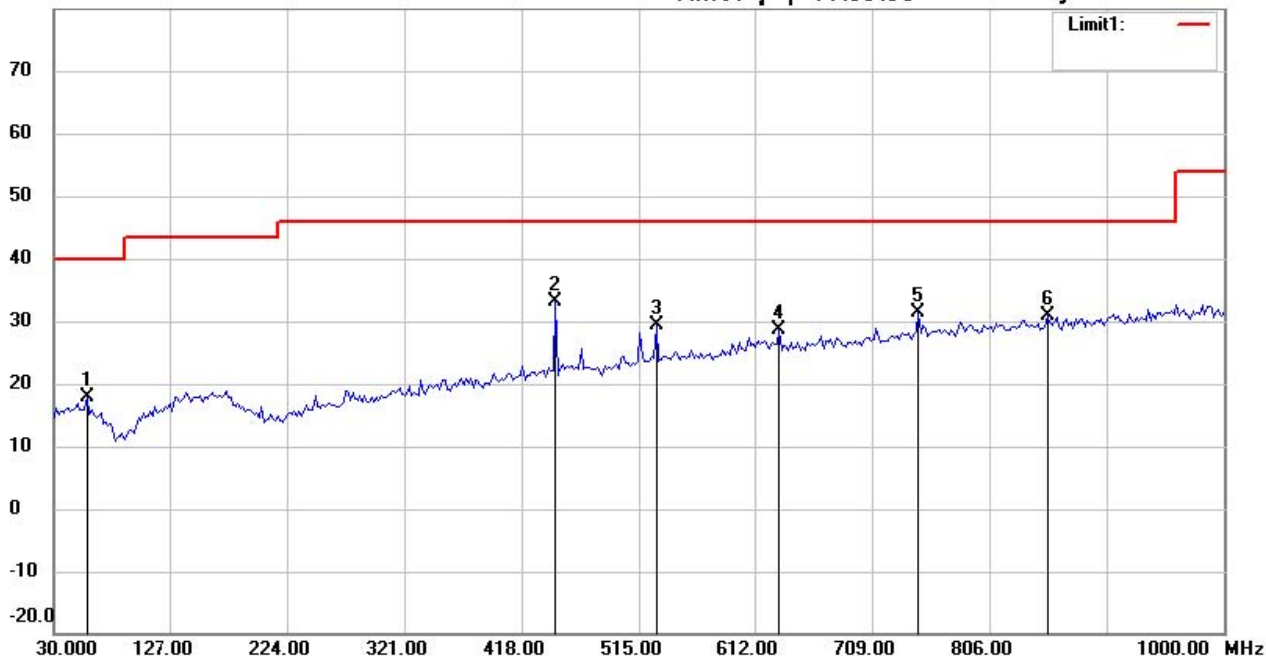
Date: 2012/10/18

Temperature:24 ℃

80.0 dBuV/m

Time: 下午 11:00:05

Humidity:60 %



Site : 966 Chamber

Condition : FCC_part 15 RE-Class B_30-1000MHz

Polarization: *Horizontal*

EUT : W6M21209-12720

Power : 6VDC

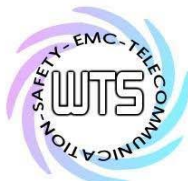
M/N: SR9

Distance: 3m

Test Mode : RX

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	57.2143	4.44	peak	13.52	17.96	40.00	100	205	-22.04	
*	445.9920	13.60	peak	19.48	33.08	46.00	100	165	-12.92	
	529.5792	8.50	peak	20.93	29.43	46.00	100	130	-16.57	
	632.6051	5.63	peak	22.92	28.55	46.00	100	85	-17.45	
	747.2945	6.75	peak	24.63	31.38	46.00	100	60	-14.62	
	854.2083	4.83	peak	25.97	30.80	46.00	100	330	-15.20	



Worldwide Testing Services(Taiwan) Co., Ltd.

Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

Radiated Emission Measurement

Operator: Leon

File :RX

Data :#2

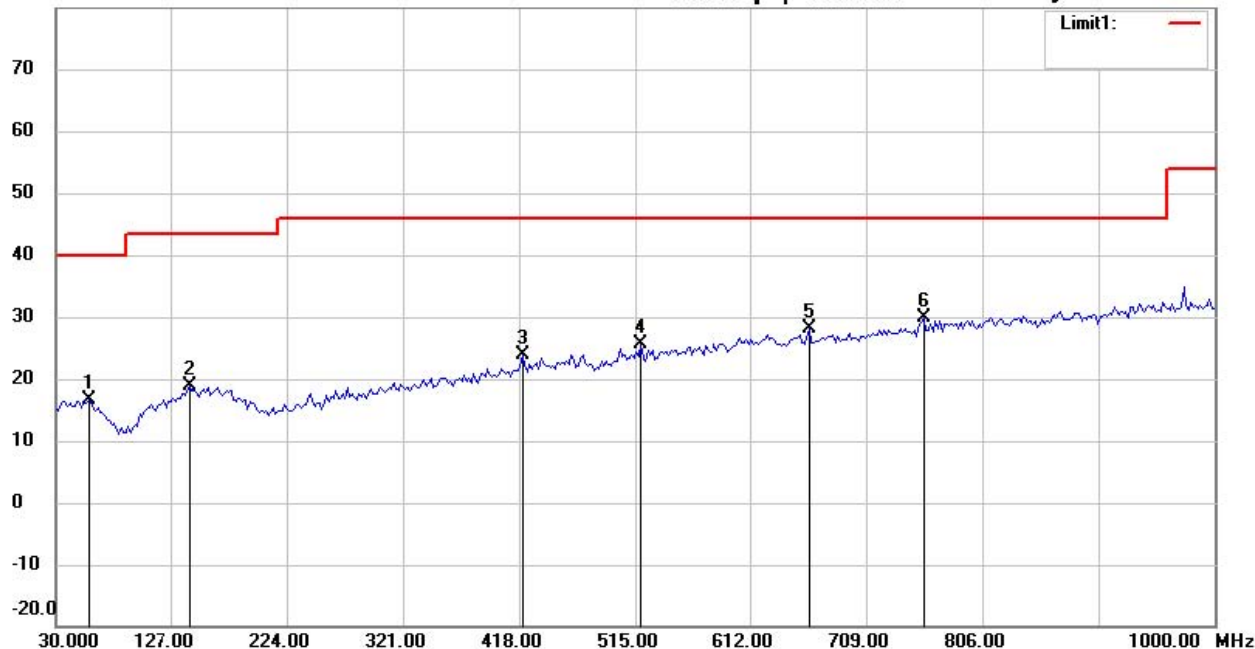
Date: 2012/10/18

Temperature:24 ℃

80.0 dBuV/m

Time: 下午 11:00:50

Humidity:60 %



Site : 966 Chamber

Condition : FCC_part 15 RE-Class B_30-1000MHz

Polarization: *Vertical*

EUT : W6M21209-12720

Power : 6VDC

M/N: SR9

Distance: 3m

Test Mode : RX

Note :

Mk.	Frequency (MHz)	Reading (dBuV)	Detector	Corr. factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Ant.Pos (cm)	Tab.Pos (deg.)	Margin (dB)	Comment
	57.2143	3.23	peak	13.52	16.75	40.00	100	65	-23.25	
	142.7453	3.91	peak	14.88	18.79	43.50	100	180	-24.71	
	420.7214	4.89	peak	18.87	23.76	46.00	100	145	-22.24	
	519.8595	5.02	peak	20.61	25.63	46.00	100	130	-20.37	
	661.7635	4.86	peak	23.25	28.11	46.00	100	120	-17.89	
*	757.0140	5.15	peak	24.78	29.93	46.00	100	250	-16.07	

Note

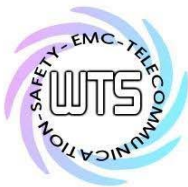
1. Correction Factor = Antenna factor + Cable loss - Preamplifier
2. The formula of measured value as: Test Result = Reading + Correction Factor
3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
4. All not in the table noted test results are more than 20 dB below the relevant limits.
5. Measurement uncertainty for 10m measurement: 0.009-30MHz $\pm$ 6.81 dB
Measurement uncertainty for 3m measurement: 30-1000 MHz : $\pm$ 3.72 dB
; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

All other not noted test plots do not contain significant test results in relation to the limits

Test results: The unit meet the FCC requirements.

Explanation: ./.

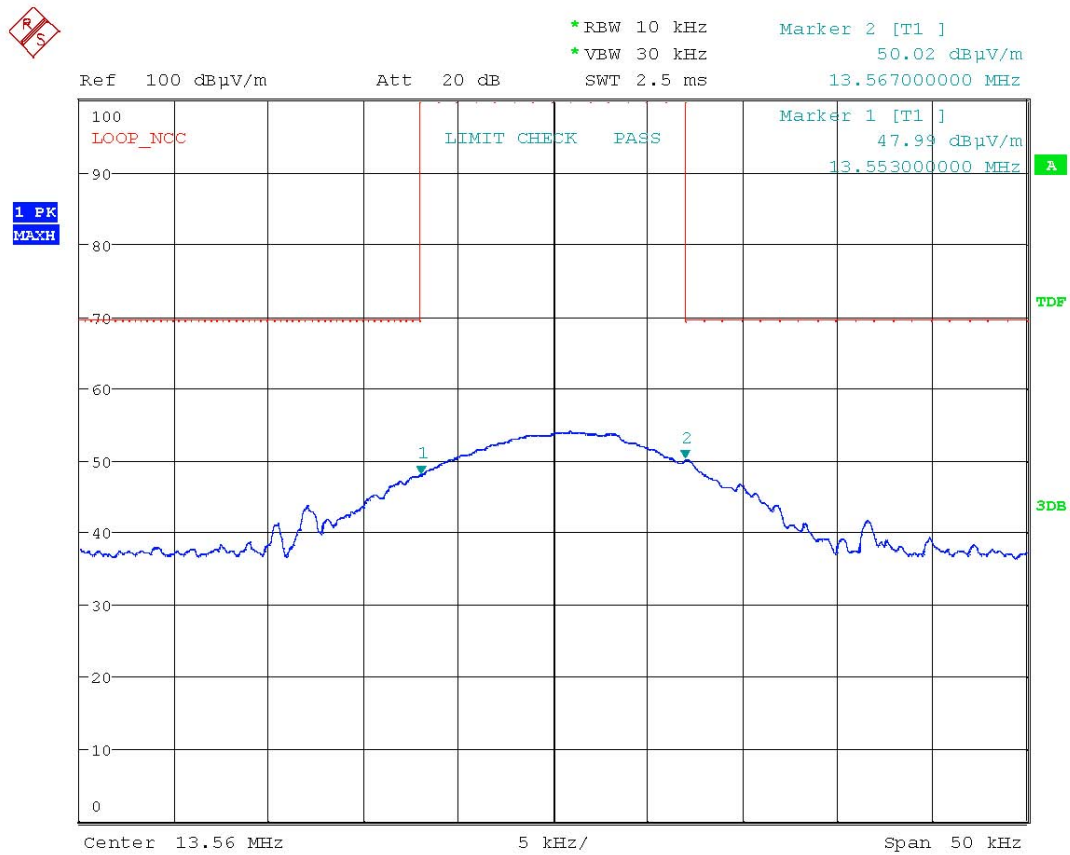
Test equipment used: ETSTW-RE 003, ETSTW-RE 004, ETSTW-RE 027, ETSTW-RE 111



Registration number: W6M21209-12720-P-15

FCC ID: RDWSCGPTDL0002

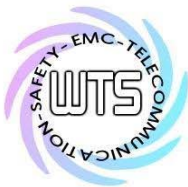
Test result of Band Edge



BANDEDGE

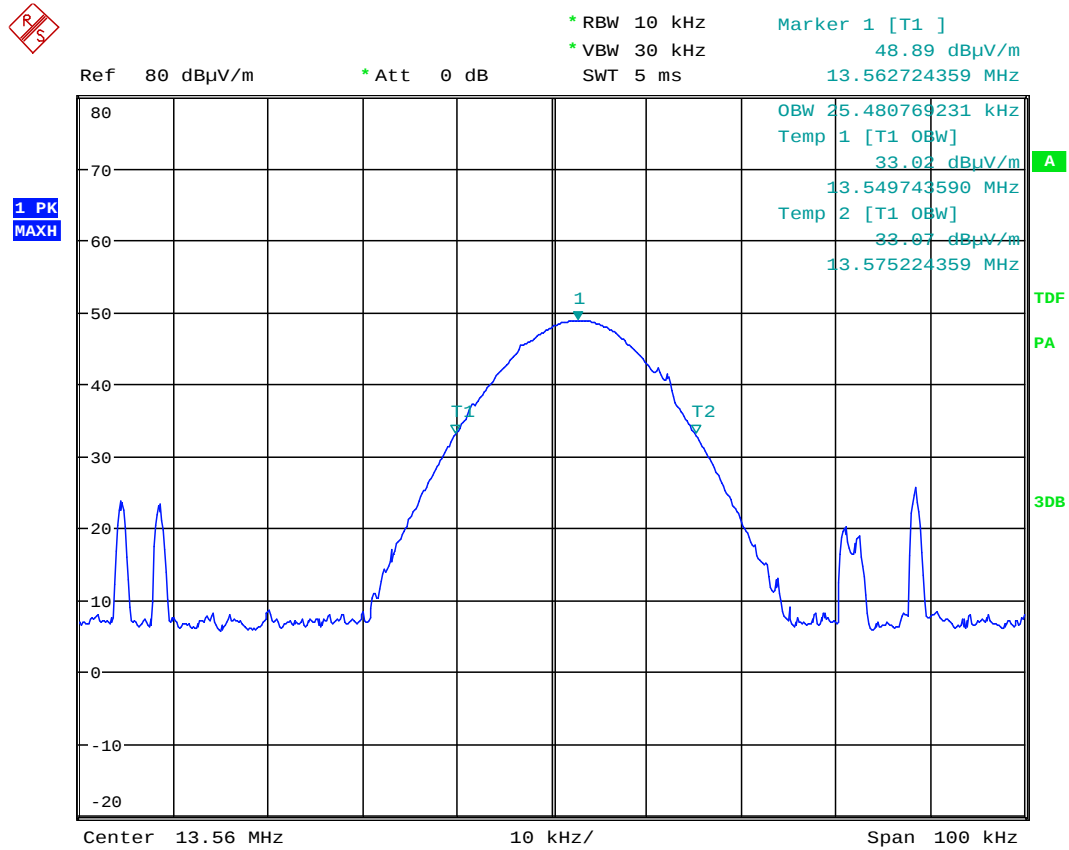
Date: 23.NOV.2012 06:45:25

Test equipment used: ETSTW-RE 055



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

3.3 Occupied Bandwidth



BANDWIDTH

Date: 22.OCT.2012 19:13:23

Test equipment used: ETSTW-RE 055, ETSTW-RE 064

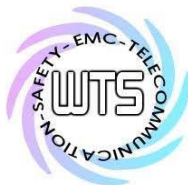
3.4 Frequency tolerance

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20°C to +50°C C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20°C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Measurement Results:

Temperature Degrees °C	Voltage	Frequency MHz	Frequency deviation kHz	Limit kHz (0.01%)
20°C	5.1	13.560609	-0.080	1.356
20°C	6.9	13.560544	-0.015	1.356
50°C	6	13.560529	0.000	1.356
40°C	6	13.560545	-0.016	1.356
30°C	6	13.56056	-0.031	1.356
20°C	6	13.560529	0.000	1.356
10°C	6	13.560569	-0.040	1.356
0°C	6	13.560617	-0.088	1.356
-10°C	6	13.560593	-0.064	1.356
-20°C	6	13.560577	-0.048	1.356

Test equipment used: ETSTW-RE 055, ETSTW-CE 009



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

3.5 Power Line Conducted Emission

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the table bellows with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Frequency	Level (dBμV)	
	quasi-peak	average
150 kHz	lower limit line	Lower limit line

Model: SR9 Date: --
Mode: -- Temperature: -- °C Engineer: --
Polarization: N Humidity: -- %

Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV)		Limit (dBuV)	Margin	Position	Note
	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	(dB)	(cm)
--	--	--	--	--	--	--	--	--	--

Polarization: L1

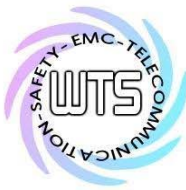
Frequency (MHz)	Reading (dBuV)		Factor (dB)	Result (dBuV)		Limit (dBuV)	Margin	Position	Note
	QP	Ave.	Corr.	QP	Ave.	QP	Ave.	(dB)	(cm)
--	--	--	--	--	--	--	--	--	--

- Note:**
1. The formula of measured value as: $\text{Test Result} = \text{Reading} + \text{Correction Factor}$
 2. The Correction Factor = Cable Loss + LISN Insertion Loss + Pulse Limit Loss
 3. Detector function in the form : PK = Peak, QP = Quasi Peak, AV = Average
 4. All not in the table noted test results are more than 20 dB below the relevant limits.
 5. Measurement uncertainty = ± 1.10 dB; Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.
 6. This test is not required due to the EUT is battery back-up.

Limits:

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Test equipment used: ETSTW-CE 001, ETSTW-CE 004, ETSTW-CE 006 , ETSTW-RE 045



Appendix

Photos

1. External Photos
2. Internal Photos
3. Set Up Photo of Radiated Emission



Registration number: W6M21209-12720-P-15

FCC ID: RDWSCGPTDL0002

External Photos





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002



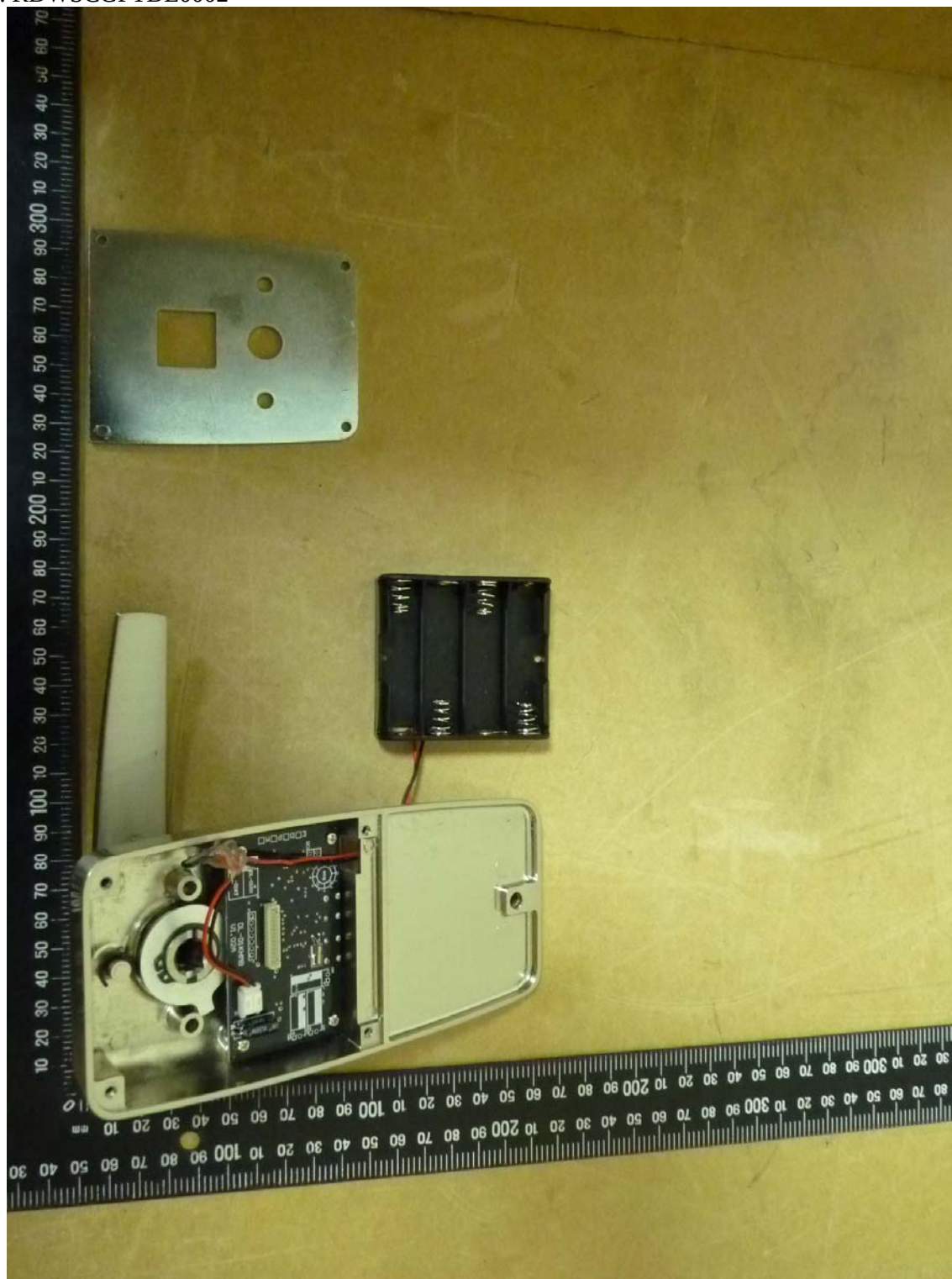
Registration number: W6M21209-12720-P-15

FCC ID: RDWSCGPTDL0002

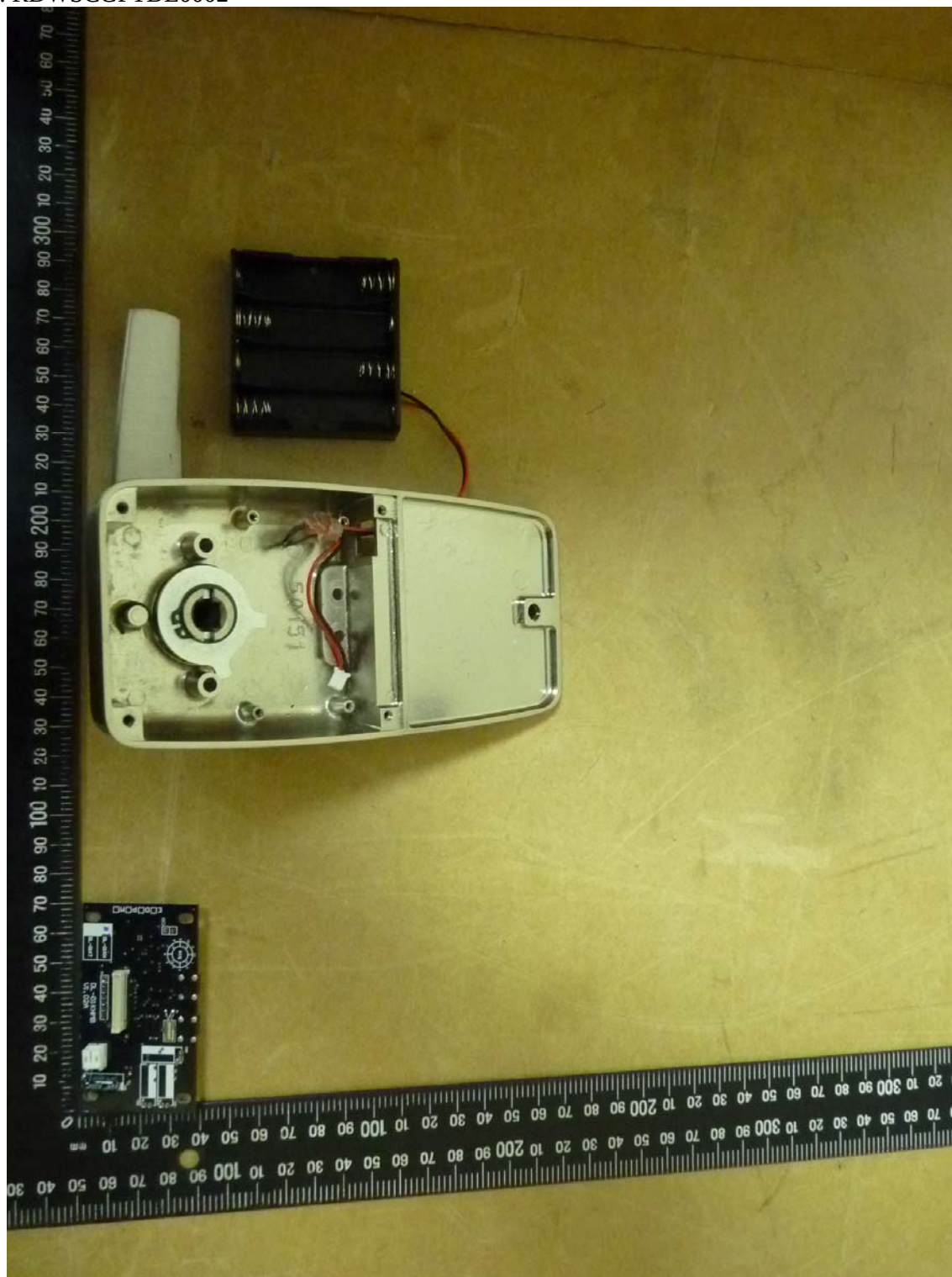
Internal Photos



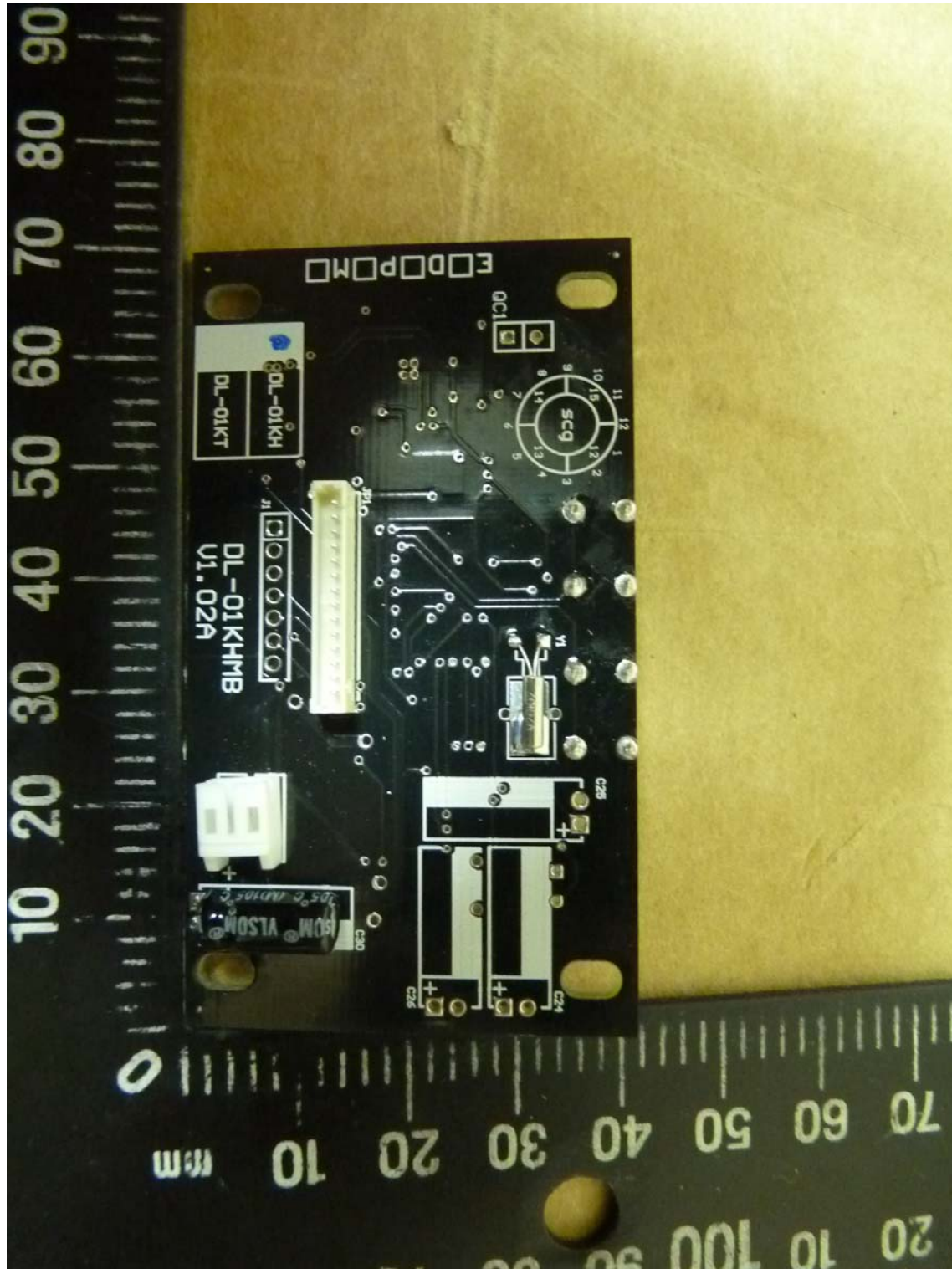
Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

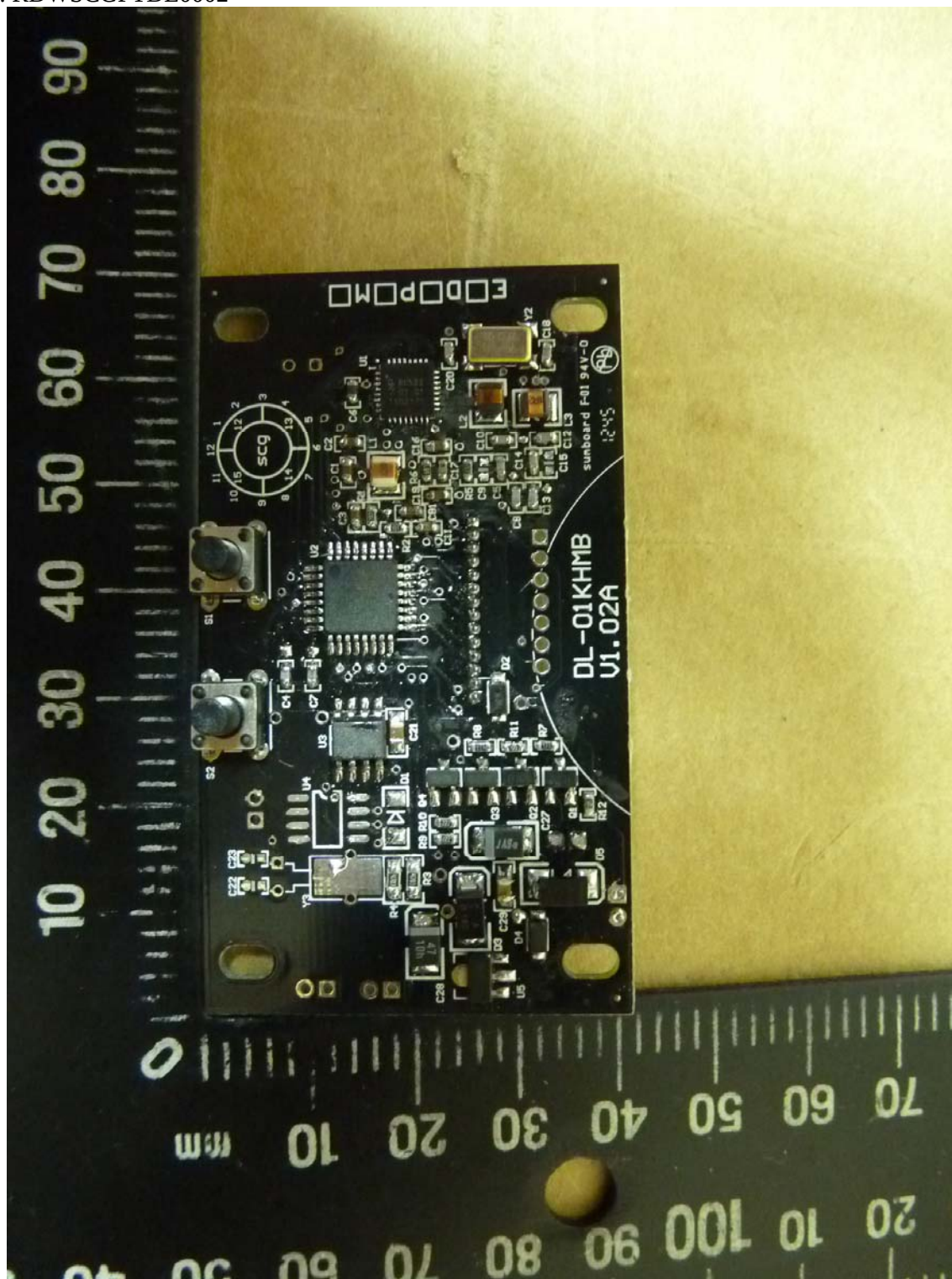


Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

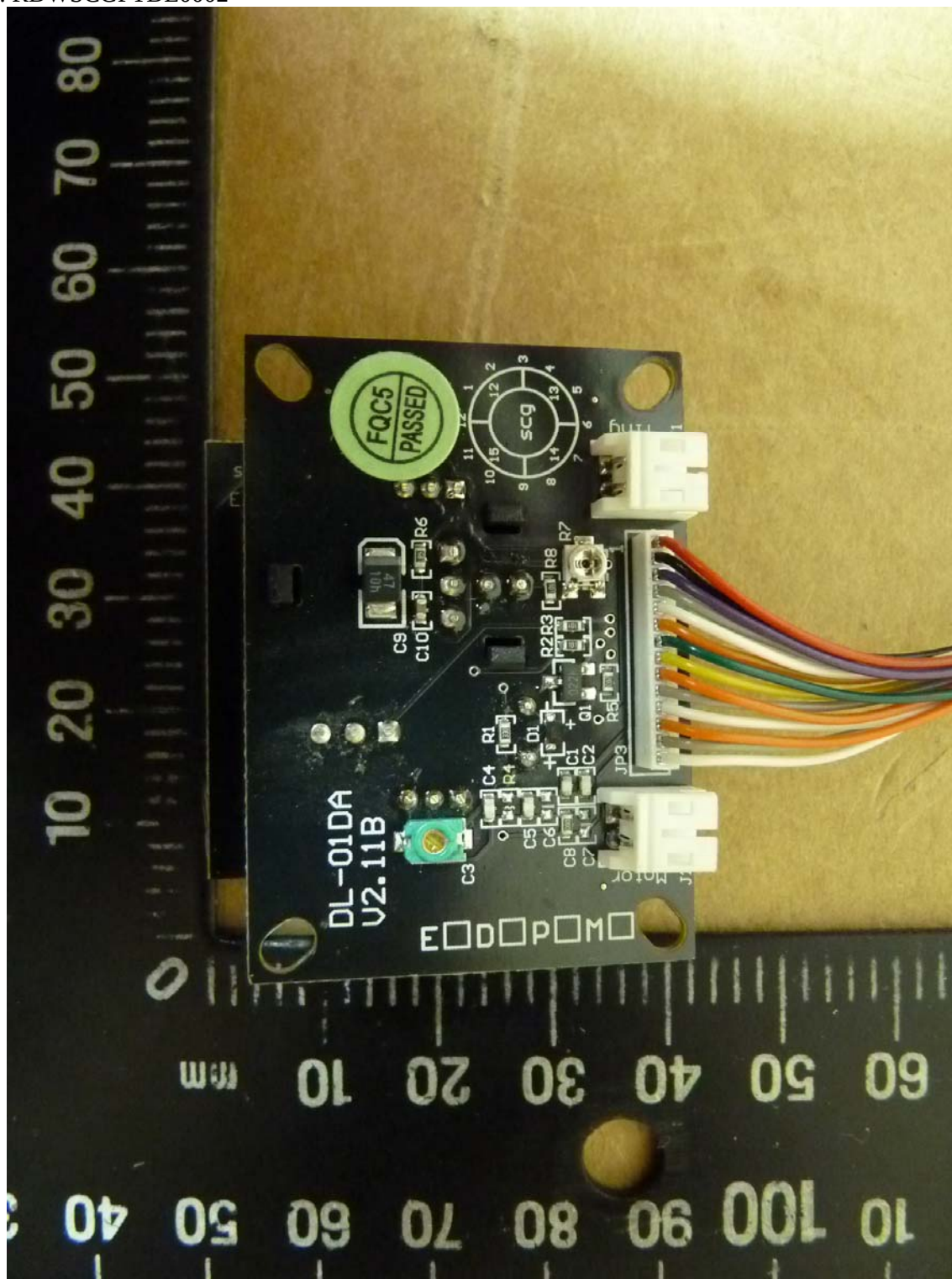




Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

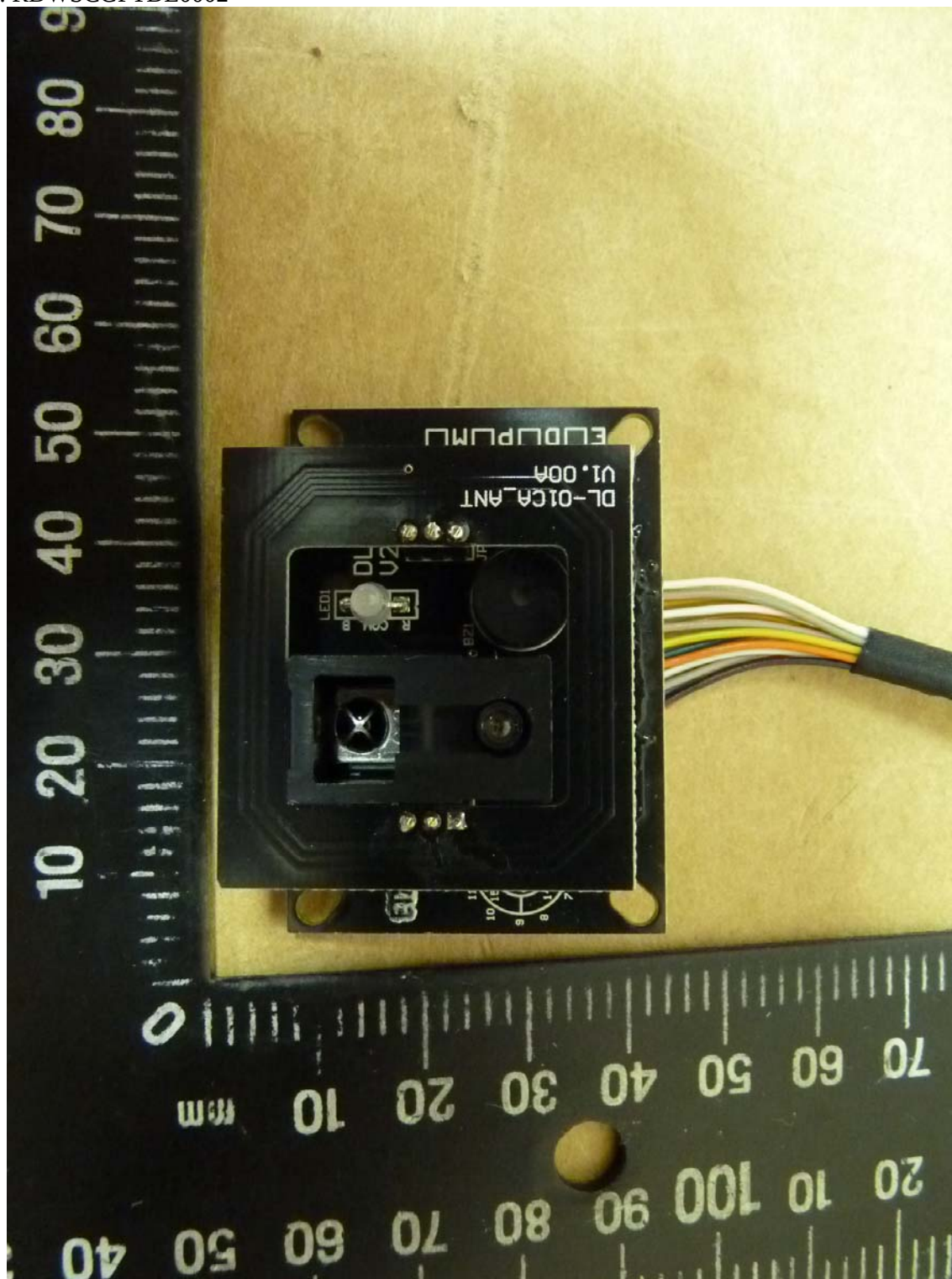


Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





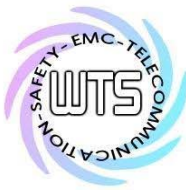
Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Worldwide Testing Services(Taiwan) Co., Ltd.

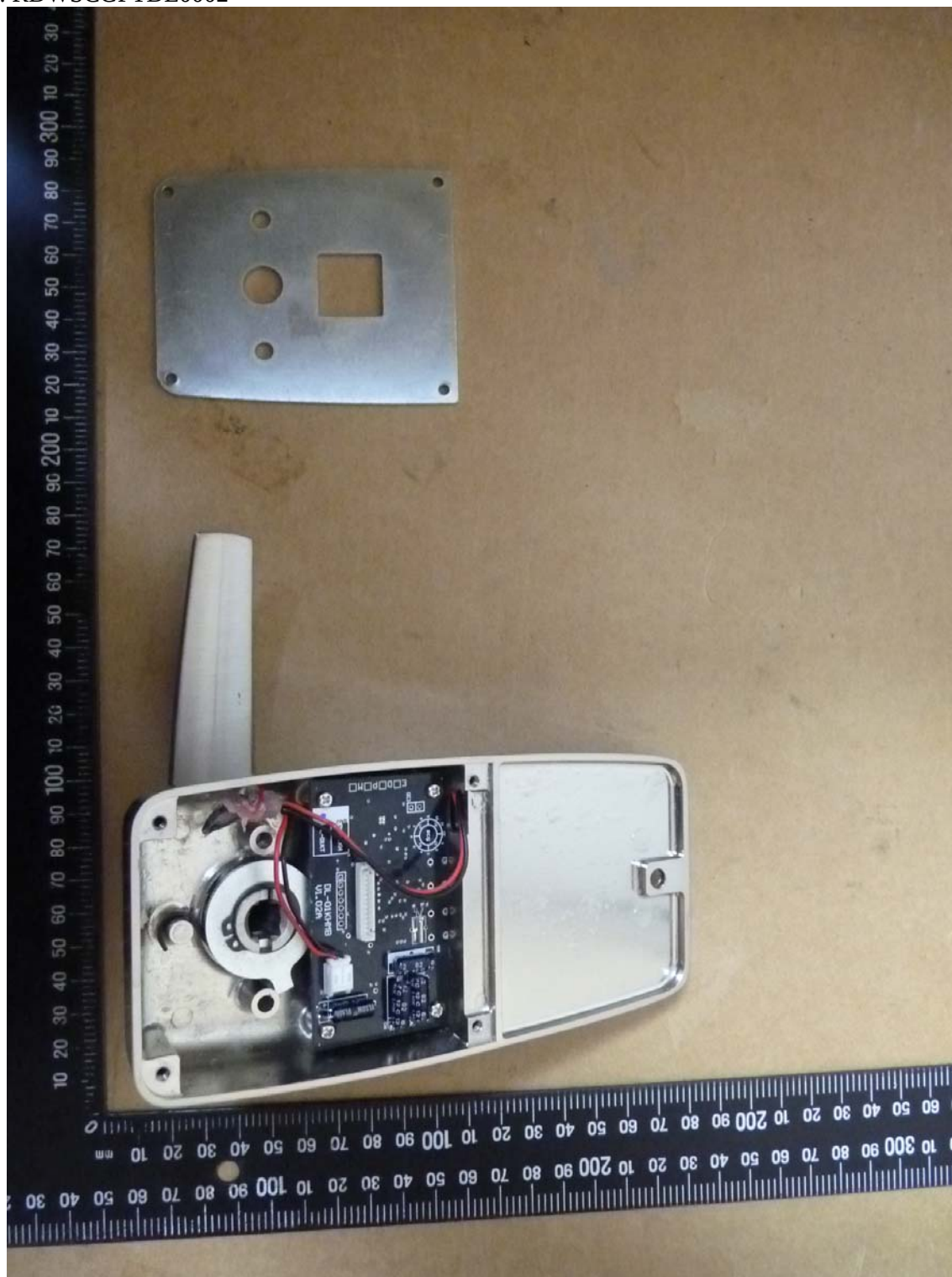
Registration number: W6M21209-12720-P-15

FCC ID: RDWSCGPTDL0002

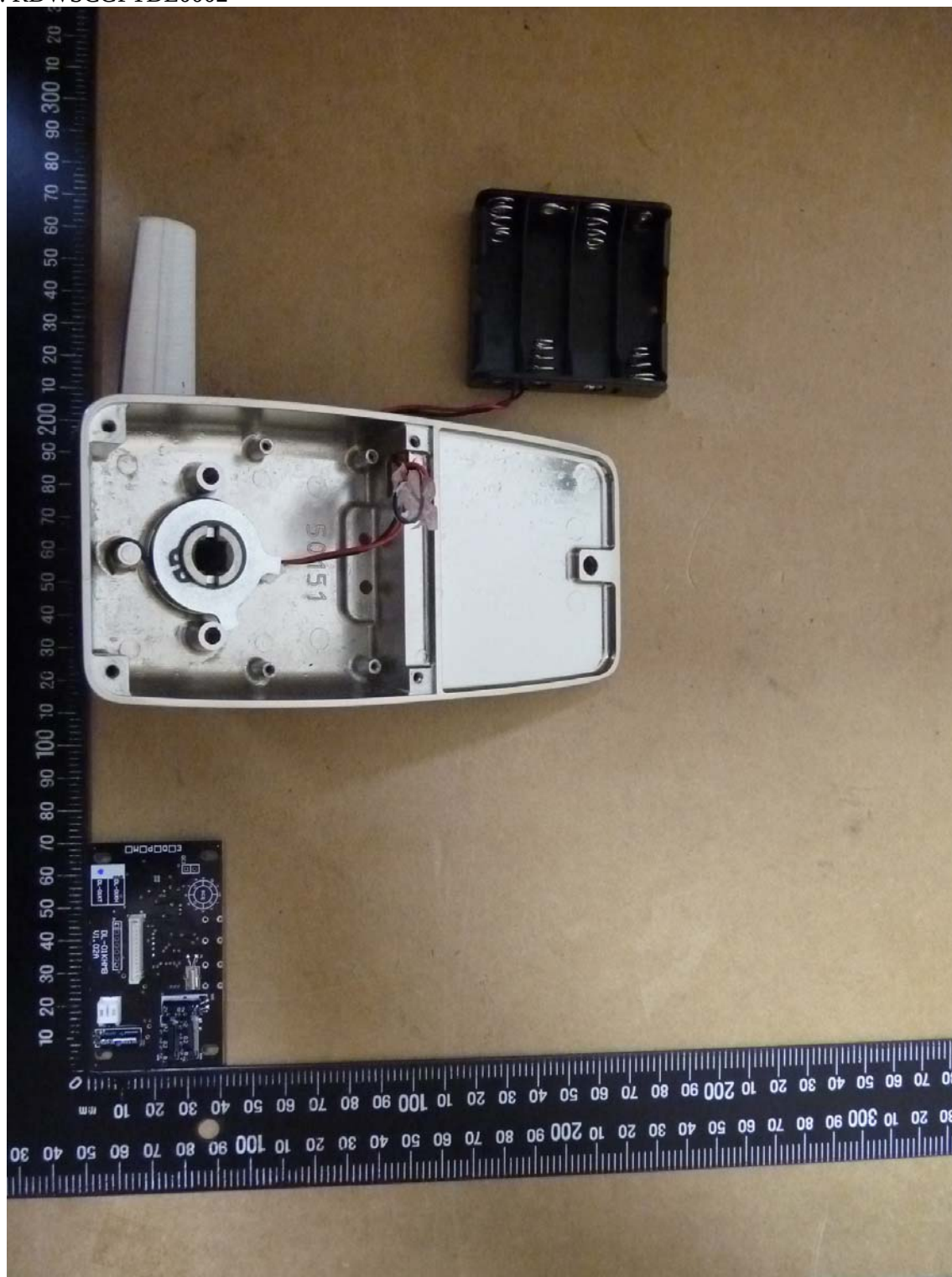
Multi-listing Photos



Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

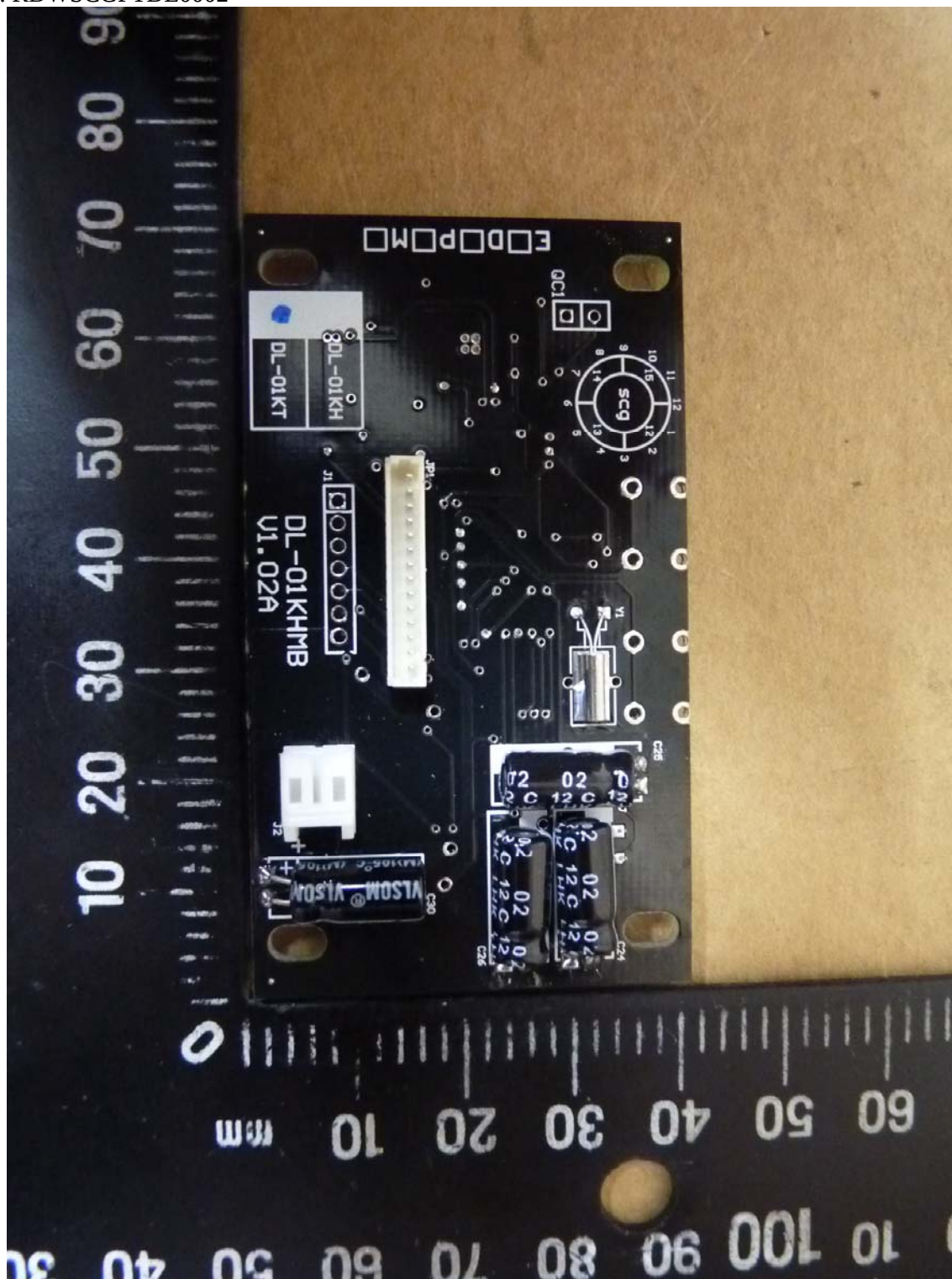


Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

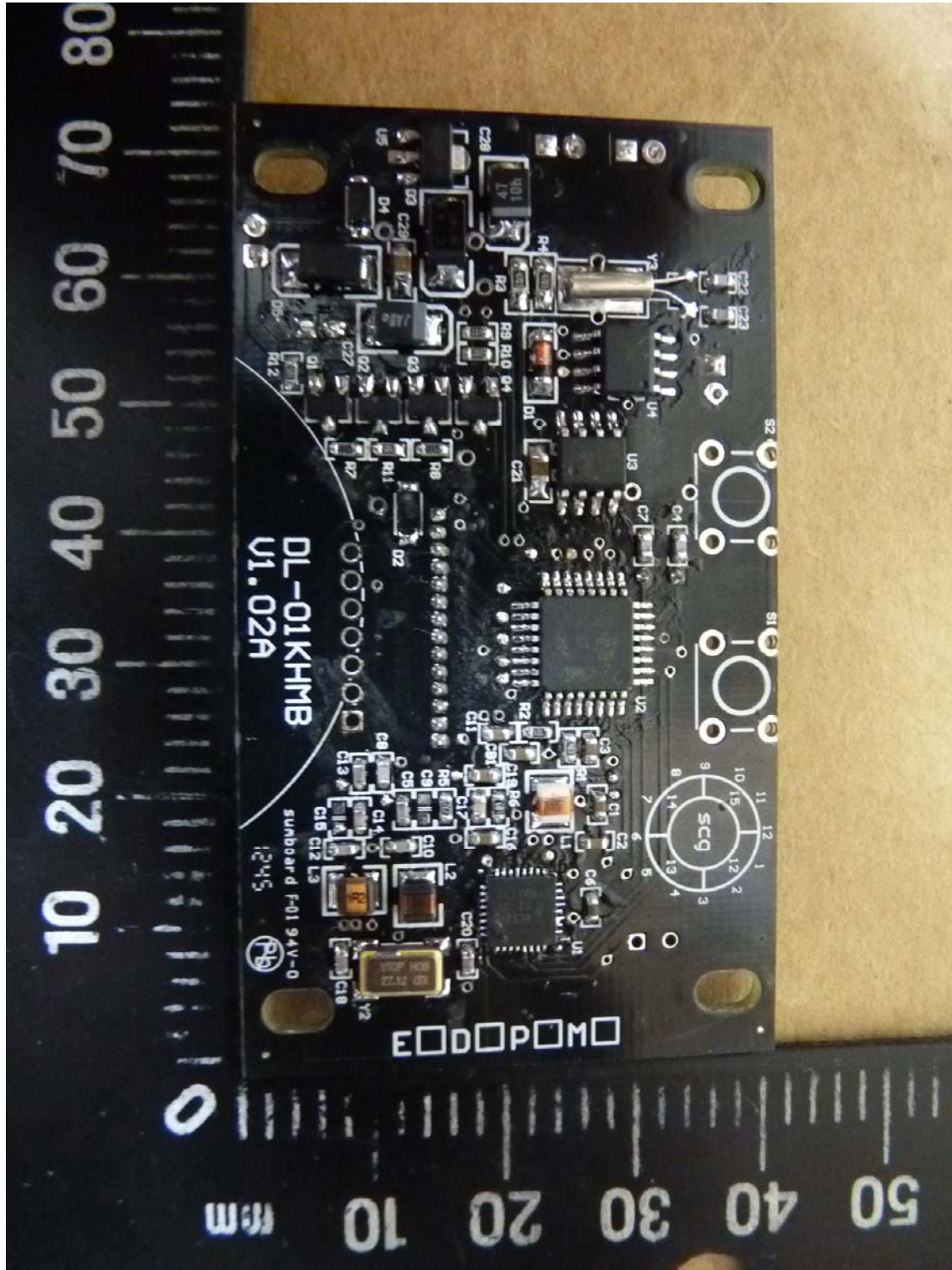




Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

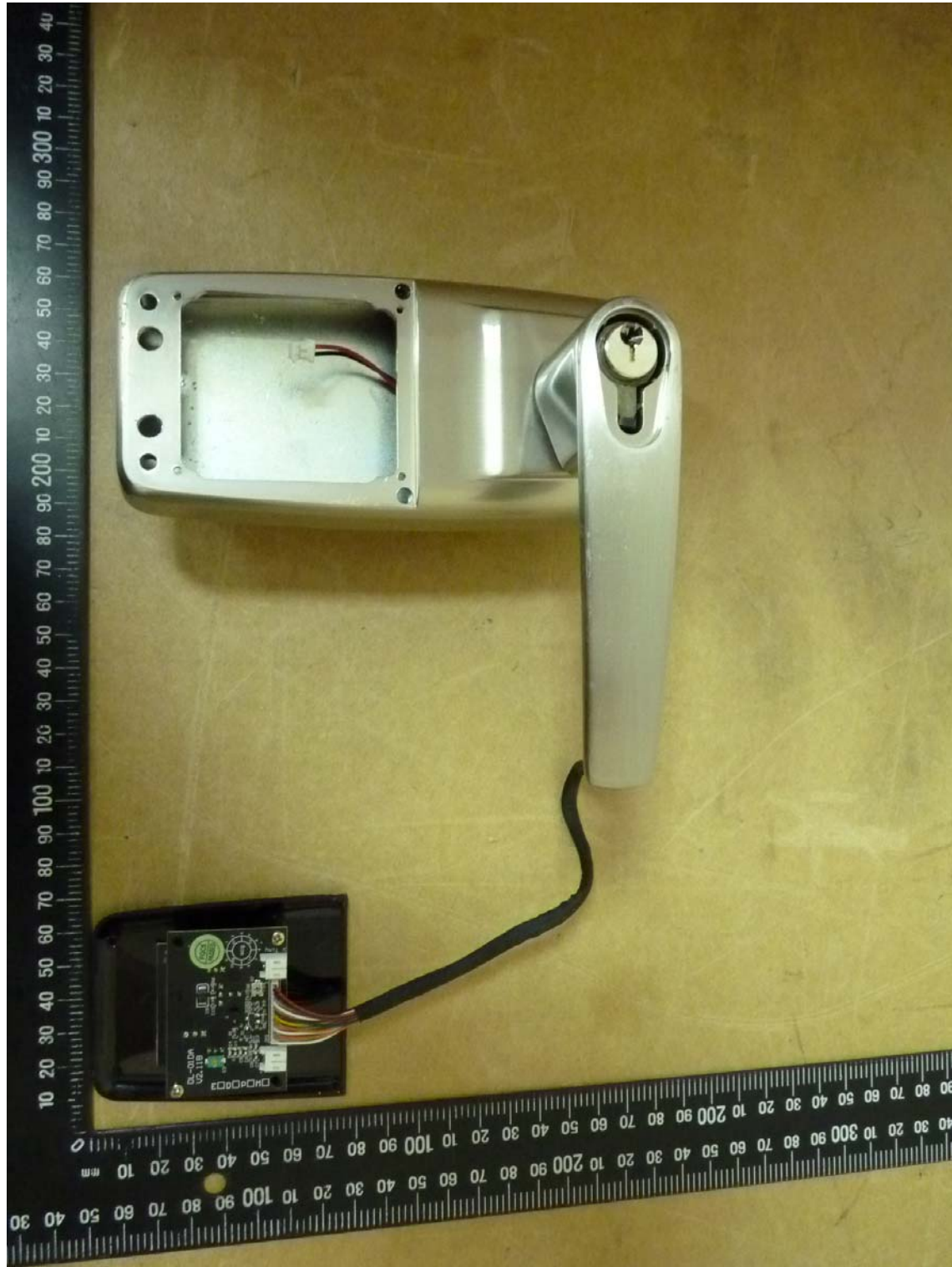


Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002



Registration number: W6M21209-12720-P-15

FCC ID: RDWSCGPTDL0002

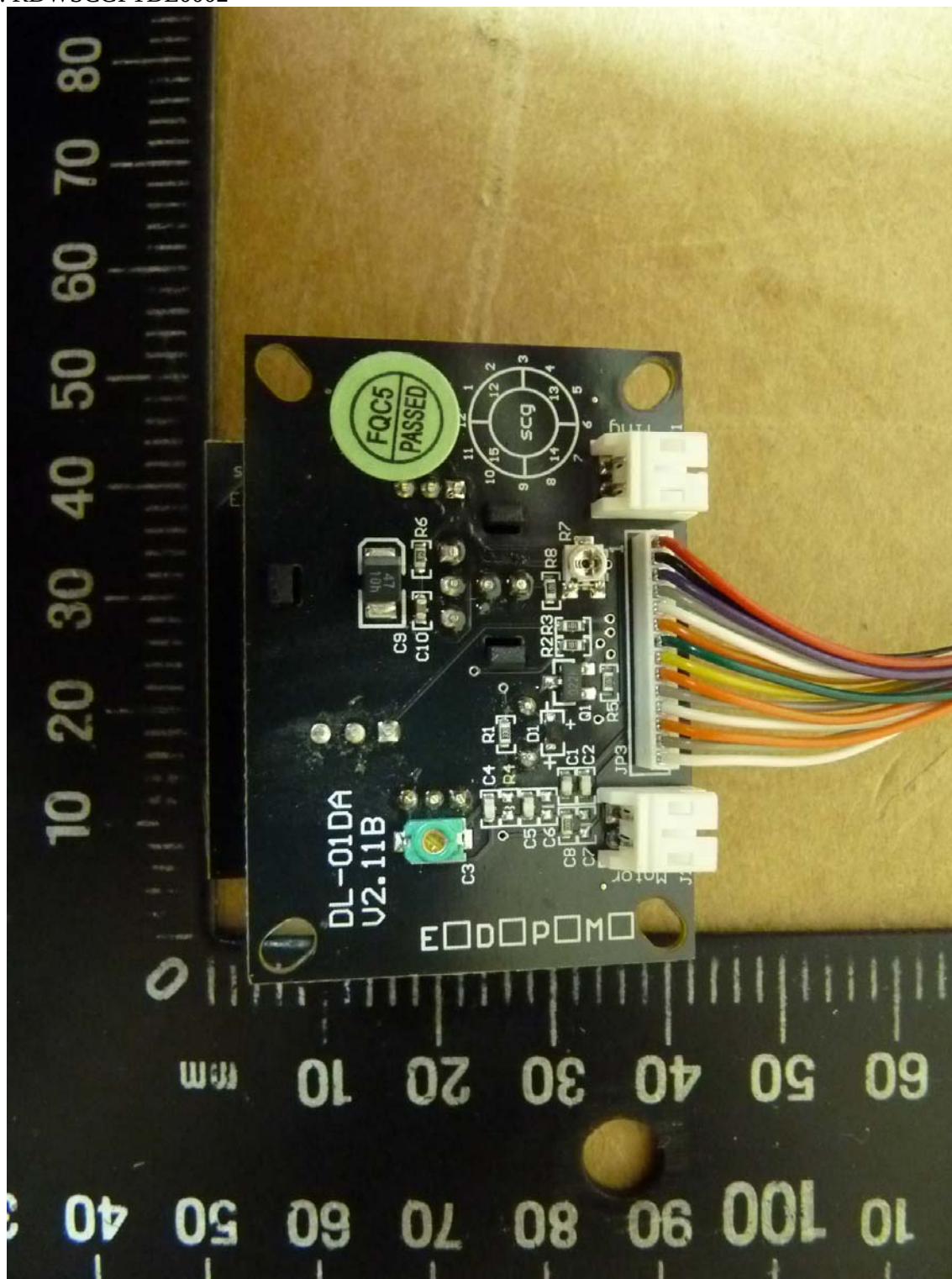




Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

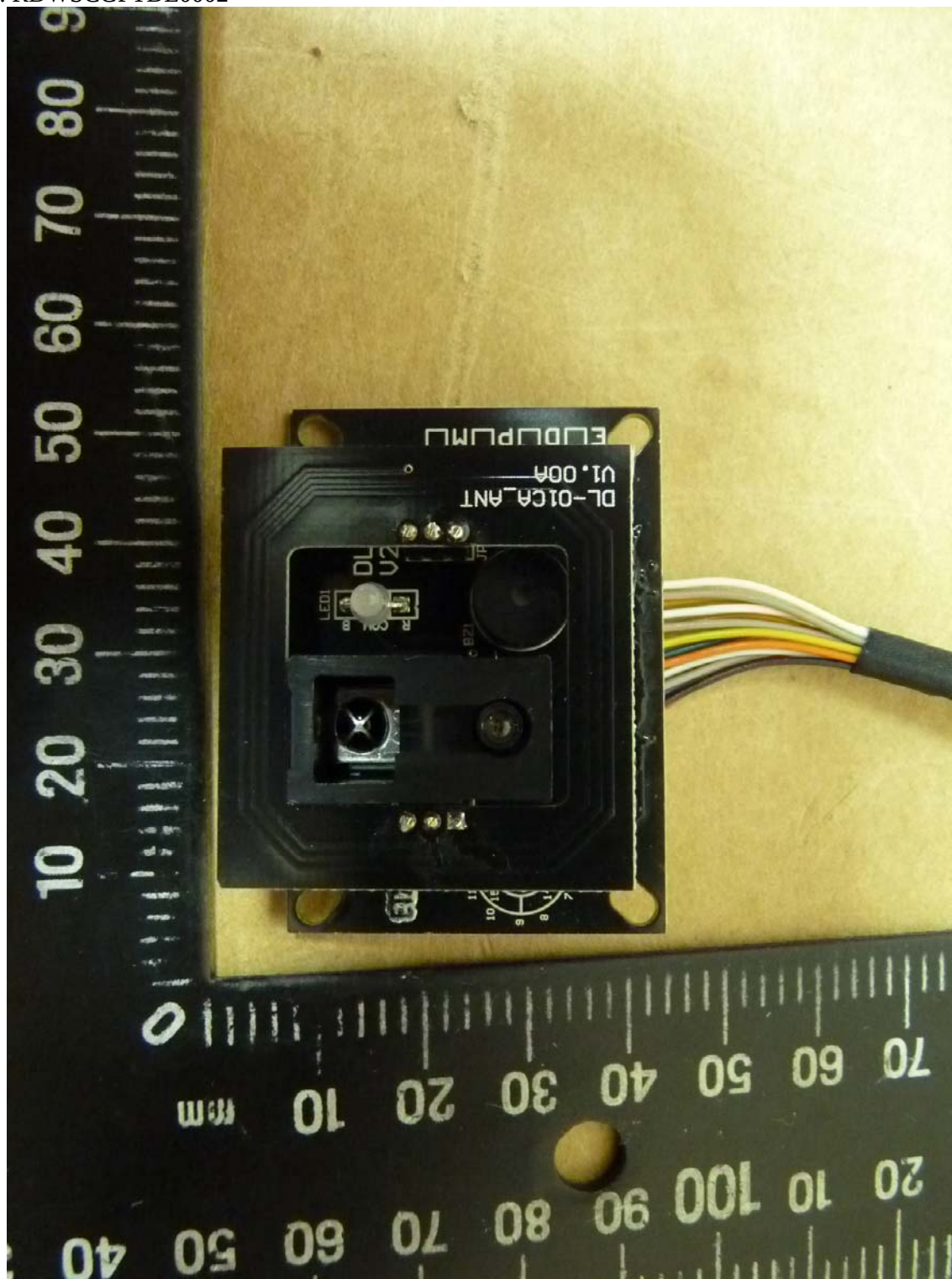


Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





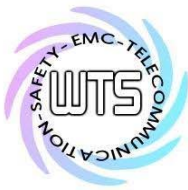
Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002





Registration number: W6M21209-12720-P-15

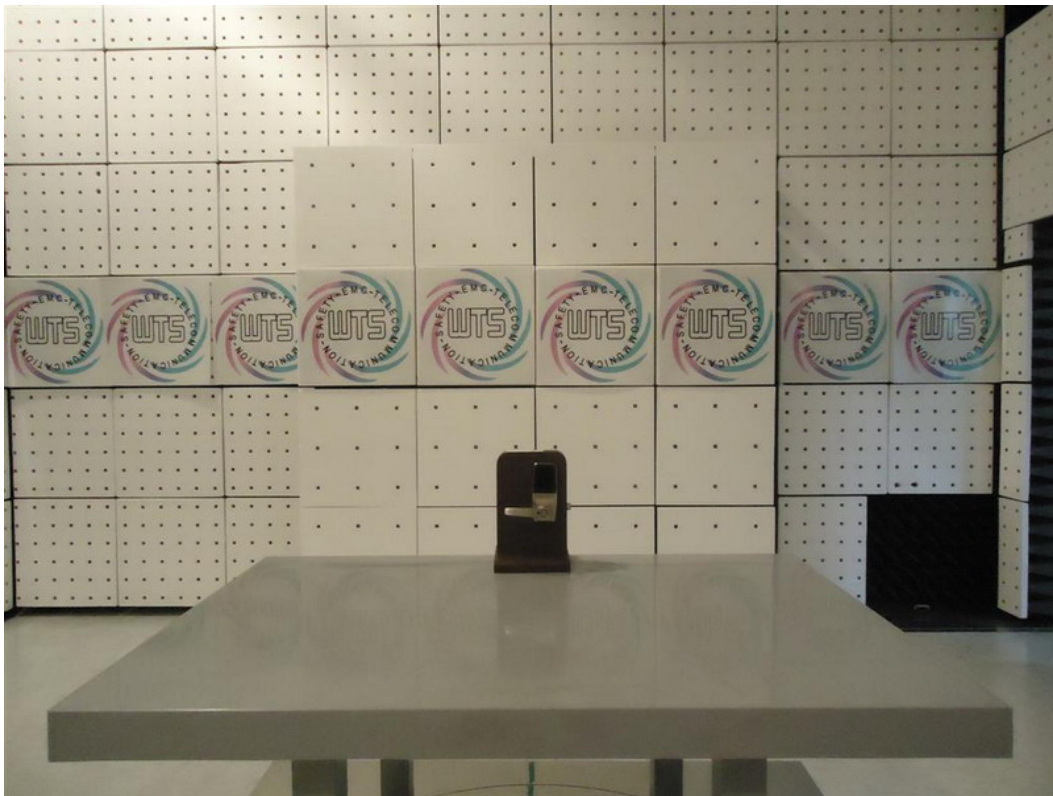
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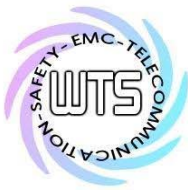
Set Up Photo of Radiated Emission

RF Below 30MHz



Above 30MHz





Registration number: W6M21209-12720-P-15
FCC ID: RDWSCGPTDL0002

