RF TEST REPORT

Report No.: 15021324-FCC-R1



Supersede Report No.: N/A				
Applicant	Dalian Seaside Door Controlling System Co., Ltd			
Product Name	wireless keyless entry			
Model No.	M12S	M12S		
Serial Model	M12S-X(X=A~Z)	M12S-X(X=A~Z)		
Test Standard	FCC Part 15.231a, ANSI C63.10: 2013			
Test Date	January 29, 2016			
Issue Date	February 17, 2016			
Test Result	Pass Fail			
Equipment complied with the specification				
Equipment did not comply with the specification				
Amos Xia Hore Stoke				
Amos Xi Test Engin				
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only				

Issued by: SIEMIC (Nanjing-China) Laboratories

2-1 Longcang Avenue Yuhua Economic and Technology Development Park, Nanjing, China Tel:+86(25)86730128/86730129 Fax:+86(25)86730127 Email: China@siemic.com.cn



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Laboratories Introduction

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SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.



In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC , RF/Wireless , Telecom
Canada	EMC, RF/Wireless , Telecom
Taiwan	EMC, RF, Telecom , Safety
Hong Kong	RF/Wireless ,Telecom
Australia	EMC, RF, Telecom , Safety
Korea	EMI, EMS, RF, Telecom, Safety
Japan	EMI, RF/Wireless, Telecom
Singapore	EMC , RF , Telecom
Europe	EMC, RF, Telecom , Safety



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1. <u>Report Revision History</u>

Report No.	Report Version	Description	Issue Date
15021324-FCC-R1	NONE	Original	February 17, 2016

2. <u>Customer information</u>

Applicant Name	Dalian Seaside Door Controlling System Co., Ltd
Applicant Address	NO.23-7, yaobei road, Ganjingzi District, DALIAN
Manufacturer Name	Dalian Seaside Door Controlling System Co., Ltd
Manufacturer Address	NO.23-7, yaobei road, Ganjingzi District, DALIAN

3. <u>Test site information</u>

Lab performing tests	SIEMIC (Nanjing-China) Laboratories
Lab Address	2-1 Longcang Avenue Yuhua Economic and
Lab Address	Technology Development Park, Nanjing, China
FCC Test Site No.	986914
IC Test Site No.	4842B-1
Test Software	Labview of SIEMIC version 1.0



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4 English and the deal Test	
4. Equipment Under Test	
Description of EUT:	wireless keyless entry
Main Model:	M12S
Serial Model:	M12S-X(X=A~Z)
Date EUT received:	January 21, 2016
Test Date(s):	January 29, 2016
Antenna Gain:	0 dBi
Type of Modulation:	ASK
RF Operating Frequency (ies):	315MHz(TX)
Number of Channels:	1 CH
Port:	N/A
Input Power:	DC: 9V
Trade Name :	NA

2AAAL-M12S

FCC ID:



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5. Test Summary

The product was tested in accordance with the following specifications. All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207	Conducted Emissions Voltage	N/A
§15.231(b)	Fundamental & Radiated Spurious Emission	Compliance
§15.231(c)	20dB Bandwidth	Compliance
§15.231(a)(1)	Deactivation	Compliance

Note: Preliminary radiated emission testing has been performed on X, Y, Z axis, only worst case test result is presented in this test report.

"N/A" means the EUT worked by battery.

Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB



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6. <u>Measurements, Examination And Derived Results</u>

6.1 Antenna Requirement

Applicable Standard

Requirement(s): 47 CFR §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.

Antenna requirement must meet at least one of the following:

- a) Antenna must be permanently attached to the device.
- b) Antenna must use a unique type of connector to attach to the device.
- c) Device must be professionally installed. Installer shall be responsible for ensuring that the correct antenna is employed with the device.

The antenna is permanently attached to the device which meets the requirement.

Result: Compliance.



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6.2 AC Conducted Emissions Voltage

Temperature	
Relative Humidity	
Atmospheric Pressure	
Test date :	
Tested By :	

Conducted Emission Limit

Frequency ranges	Limit (dBµV)	
(MHz)	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Spec	ltem	Requirement	Applicable
47CFR§15.20 7, RSS210 (A8.1)	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 [mu]H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	V
Test Setup		Vertical Ground Reference Plane Test Receiver 40cm EUT 40cm B0cm LISN B0cm Horizontal Ground Reference Plane Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.	
Procedure	-	The EUT and supporting equipment were set up in accordance with the of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as Annex B. The power supply for the EUT was fed through a 50W/50mH EUT LISN, filtered mains. The RF OUT of the EUT LISN was connected to the EMI test receiver via coaxial cable. All other supporting equipment were powered separately from another m	shown in connected to a a low-loss
Remark			
Result		ss Fail N/A	



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Test Data	□ _{Yes}	▼ _{N/A}
Test Plot	Yes (See below)	✓ N/A

NOTE: EUT worked by battery



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6.3 20dB Occupied Bandwidth

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	January 29, 2016
Tested By :	Amos Xia

Spec	Item	Requirement	Applicable
5.231(c)a)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.			
	b)	For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.	
Test Setup		Spectrum Analyzer EUT	
Test Procedure	- - - - M a tt	mission bandwidth measurement procedure Set RBW = 100 kHz. Set the video bandwidth (VBW) ≥ 3 $^{\prime}$ RBW. Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize. easure the maximum width of the emission that is constrained by the sociated with the two outermost amplitude points (upper and lower at are attenuated by 20 dB relative to the maximum level measured ndamental emission.	frequencies)
Remark			
Result	Pas	s Fail	
Test Data Yes		N/A	
Test Plot Yes		□ _{N/A}	



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20dB Bandwidth measurement result

Туре	Freq (MHz)	СН	Measured 20dB Bandwidth (kHz)	Limit (kHz)	Result
20dB BW	315	1 CH	629	787.5	Pass

Test Plots

20dB Bandwidth measurement result

Agilent Spectrum Analyzer - Swept SA				
🕅 RF 50 Ω AC	SENSE:INT	ALIGNAUTO (Avg Type: Log-Pwr	04:18:26 PMFeb 25, 2016 TRACE 1 2 3 4 5 6	Marker
PNO: Wide IFGain:Lov	e 🕞 Trig: Free Run w Atten: 30 dB	Avg Hold>100/100		Select Marker
10 dB/div Ref 117.00 dBµV		ΔΙ	0.380 dB	1
107				Normal
87.0				Delta
77.0 67.0 preform Annaly of Marine Ma	war a start a	Man man and a second and a second and a second a	122 65.93 dBpt	Fixed⊳
57.0				Off
37.0				Properties►
27.0 Center 315.0000 MHz #Res BW 100 KHz #V	/BW 300 kHz	Sweep 1.00	Span 1.000 MHz 00 ms (1001 pts)	More 1 of 2
MSG		STATUS		



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6.4 Radiated Fundamental and Spurious Emission

Temperature	20°C
Relative Humidity	50%
Atmospheric Pressure	1019mbar
Test date :	January 29, 2016
Tested By :	Amos Xia

Requirement(s):

	Item	Requirement Applicable					
§15.231(b)	a)	low-power radio-frequer specified in the following exceed the level of the f edges Fundamental frequency (MHz) 40.66-40.70 70-130 130-174 174-260 260-470 Above 470	ncy devices shall not exceed g table and the level of any u	inwanted emissions shall not ighter limit applies at the band Field strength of spurious emissions (microvolts/meter) 225 125 125 125 to 375 375 to 1250 1250			
Test Setup		EUT& Support Units	test report.	nt. Tower			
Procedure	1. 2. 3. 4.	The test was carried out a Maximization of the emission polarization, and adjustim a. Vertical or horiz rotation of the E b. The EUT was the c. Finally, the anter A Quasi-peak measurem	at the selected frequency po sions, was carried out by ro g the antenna height in the contal polarisation (whicheve EUT) was chosen. hen rotated to the direction the enna height was adjusted to ent was then made for that	er gave the higher emission leve hat gave the maximum emissic the height that gave the maxim	aracterisation. Itenna el over a full n. Ium emission.		

-	MIC			
SIE	MIC		Test Report No.	15021324-FCC-R1
GLOBAL TEST	TING & CERTIFICATIONS		Page	14 of 27
TAIN CHEMES PE	N-TON FOR ON MILLION ROA			
Result	Pass	🗖 Fail		
Test Data	Yes	□ _{N/A}		
Test Plot	Yes (See below)	□ _{N/A}		



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Fundamental Measurement Result

Frequency (MHz)	Cord. Amp. (dBµV/m)	Azimuth	Polarity	Height(m)	Factors(dB)	FCC 15.231(a) Limit (dBµV)	Margin (dB)	Comments
315.00	66.22	207	V	1	-29.19	95.62	-29.40	Pk
315.00	63.22	-	V	-	-	75.62	-12.40	Ave
315.00	75.79	253.4	Н	2	-29.48	95.62	-19.83	Pk
315.00	72.79	-	Н	-	-	75.62	-2.83	Ave

Spurious Emissions (< 1GHz) Measurement Result

Frequency (MHz)	Cord. Amp. (dBµV/m)	Azimuth	Polarity	Height(m)	Factors(dB)	FCC 15.231(a) Limit (dBµV)	Margin (dB)	Comments
630.00	40.80	357	V	2	-21.83	75.62	-34.82	Pk
630.00	37.80	-	V	-	-	55.62	-17.82	Ave
630.00	48.54	267.9	Н	3	-20.78	75.62	-27.08	Pk
630.00	45.54	-	Н	-	-	55.62	-10.08	Ave
945.00	36.01	144.1	V	2	-18.11	75.62	-39.61	Pk
945.00	33.01	-	V	-	-	55.62	-22.61	Ave
945.00	46.88	66.7	Н	3	-16.92	75.62	-28.74	Pk
945.00	43.88	_	Н	-	-	55.62	-11.74	Ave

Notes:

- 1. Duty cycle is 70.759%, 20log (duty cycle) = -3.004dB correction was used to determine the average level from the peak reading. Average = peak reading + 20log (duty cycle), Final Average= peak reading -3.00dB
- 2. All the data measurement of peak values.
- 3. FCC Limit for Average Measurement=13125 (315MHz)-7083.3333=6041.67µV/m=75.6dBµV/m
- 4. Average pulsed signal over one complete pulse train or 100 ms time frame if pulse train exceeds 100 ms
- 5. Maximum average in 100 ms
- 6. Calculate duty cycle for pulse train or 100 ms
- 7. Duty cycle = (t1 + t2 + t3+...tn)/T where tn = pulse width, T = pulse train length or 100 ms

Note:Average Duty Factor:-3.004dB≈ -3.00dB



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Spurious Emissions (> 1GHz) Measurement Result

Frequency	Direction	Height	Polar	Factors (dB)	Amplifier	Cord. Amp.	FCC 15.231	Margin	Comments
MHz	Degree	Meter	H/V	(dB)	(dB)	(dBuV/m)	Limit (dBuV/m)	(dB)	(Pk/Av)
1260.23	121.3	0.88	Н	-23.25	55	47.36	75.62	-28.26	Peak
1260.23	-	-	Н	-	-	44.36	55.62	-11.26	Ave
1575.3	152.7	1.17	Н	-20.32	55	47.32	74	-26.68	Peak
1575.3	-	-	Н	-	-	44.32	54	-9.68	Ave
1890.36	83.0	0.94	Н	-18.62	55	52.35	75.62	-23.27	Peak
1890.36	-	-	Н	-	-	49.50	55.62	-6.12	Ave
2205.42	210.9	2.28	Н	-16.42	55	41.09	74	-32.91	Peak
2205.42	-	-	Н	-	-	38.09	54	-15.91	Ave
2520.48	131.7	2.42	Н	-13.21	55	41.90	75.62	-33.72	Peak
2520.48	-	-	Н	-	-	38.90	55.62	-16.72	Ave
2835.54	18.0	1.63	Н	-10.18	55	39.17	74	-34.83	Peak
2835.54	-	-	Н	-	-	36.17	54	-17.83	Ave
3150.6	90.5	2.03	Н	-8.24	55	41.38	75.62	-34.24	Peak
3150.6	-	-	Н	-	-	38.38	55.62	-17.24	Ave
3465.66	133.9	2.25	Н	-6.73	55	41.17	75.62	-34.45	Peak
3465.66	-	-	Н	-	-	38.17	55.62	-17.45	Ave
1260.23	208.5	1.52	V	-23.25	55	49.21	75.62	-26.41	Peak
1260.23	-	-	V	-	-	46.21	55.62	-9.41	Ave
1575.3	114.9	1.84	V	-20.32	55	47.49	74	-26.51	Peak
1575.3	-	-	V	-	-	44.49	54	-9.51	Ave
1890.36	144.0	0.83	V	-18.62	55	44.14	75.62	-31.48	Peak
1890.36	-	-	V	-	-	41.14	55.62	-14.48	Ave
2205.42	224.4	1.65	V	-16.42	55	42.19	74	-31.81	Peak
2205.42	-	-	V	-	-	39.19	54	-14.81	Ave
2520.48	253.3	2.16	V	-13.21	55	38.35	75.62	-37.27	Peak
2520.48	-	-	V	-	-	35.35	55.62	-20.27	Ave
2835.54	125.8	1.76	V	-10.18	55	41.80	74	-32.20	Peak
2835.54	-	-	V	-	-	38.80	54	-15.20	Ave
3150.6	46.2	1.85	V	-8.24	55	36.38	75.62	-39.24	Peak
3150.6	-	-	V	-	-	33.38	55.62	-22.24	Ave
3465.66	202.8	2.11	V	-6.73	55	34.08	75.62	-41.54	Peak
3465.66	-	-	V	-	-	31.08	55.62	-24.54	Ave

Note: 1. Duty cycle is 70.759 %, 20log (duty cycle) = -3.004 dB correction was used to determine the average level from the peak reading. Average = peak reading + 20log (duty cycle), Final Average = peak reading -3.00dB

Note: Pulse width (PW) =0.26ms 2/PW = 2/0.26ms =7.69kHz RBW > 2/PW (7.69kHz) Therefore PDCF is not needed.

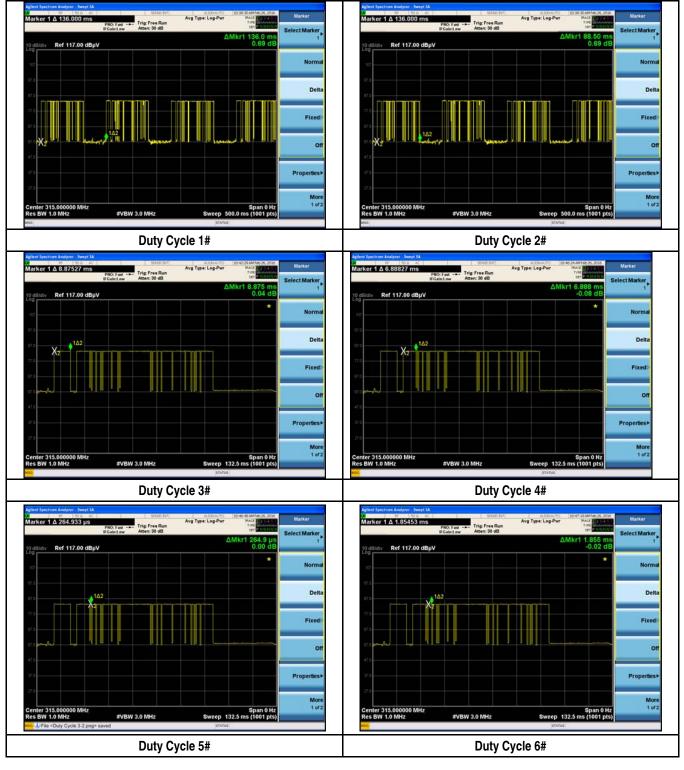
Note:Average Duty Factor:-3.004dB≈ -3.00dB



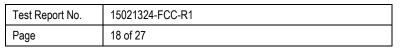
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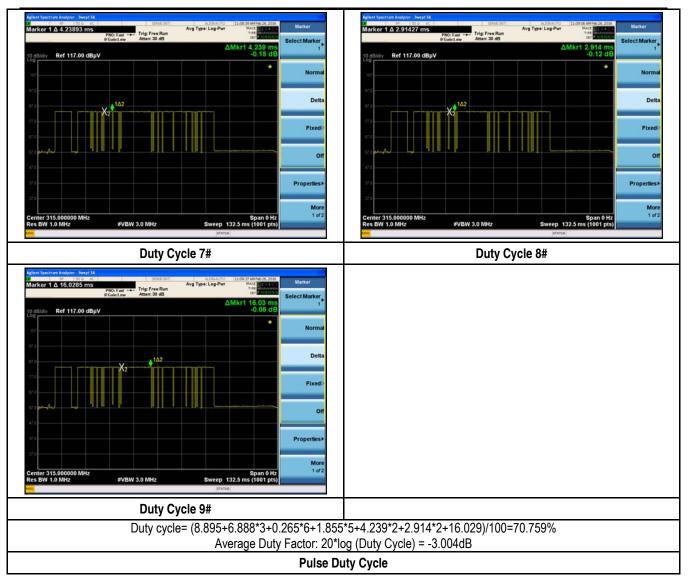
Test Plots











Note:Average Duty Factor:-3.004dB≈ -3.00dB



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6.5 Deactivation

Temperature		20°C					
Relative Humidity			50%				
Atmospheric Pressure			1019mbar				
Test date :			January 29, 2016				
Tested By :		Amos Xia					
Requirement(s):	ltom	Requirement	Annlinghla				
Spec	Item	Applicable					
§15.231 (a)(1)	 A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. 						
Test Setup		Spectrum Analyzer EUT					
Test Procedure	measurement procedure - Set analyzer center frequency to channel center frequency. - Set the span to 0Hz. - Set the RBW=100KHz - Set the VBW ≥ 3 ' RBW. - Detector = peak. - Sweep time = auto couple. - Trace mode = max hold. - Allow trace to fully stabilize.						
Remark							
Result	Pas	s Fail					
Test Data Yes Test Plot Yes		✓ N/A					
Test Plots Duty Cycle Measu	rement R	Agenet Spectrum Andyrer Marker Marker Marker Marker 1 1.32200 st FMO: Web error Trig: Free Run Meter: 10 dB Avg Type: Log-Pvr Trig: Spectrum Trig: Spectrum Meter: 20 dB Marker 10 dB/dW Ref 117.00 dB/W Avg Type: Log-Pvr Trig: Spectrum Meter: 20 dB Marker 10 dB/dW Ref 117.00 dB/W Avg Type: Log-Pvr Trig: Spectrum Meter: 20 dB Marker 10 dB/dW Ref 117.00 dB/W Avg Type: Log-Pvr Trig: Spectrum Meter: 20 dB Marker 10 dB/dW Ref 117.00 dB/W Avg Type: Log-Pvr Trig: Spectrum Meter: 20 dB Normal 11 dD 1 dD Avg Type: Log-Pvr Trig: Spectrum Meter: 20 dB Normal 11 dD 1 dD Avg Type: Log-Pvr FiledD Delta 11 dD 1 dD Avg Type: Log-Pvr Properties Delta 11 dD Avg Type: Log-Pvr Spectrum Pvr Properties Properties 12 ovg Hybrid FiledD Sweep 5.000 s (1001 pts) More 1 of 2 12 ovg Hybrid FVBW 300 kHz Sweep 5.000 s (1001 pts) Mo					
< 5 seconds							



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Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
AC Line Conducted Emissions					
R&S EMI Test Receiver	ESPI3	101216	09/27/2015	09/26/2016	N/A
V-LISN	ESH3-Z5	838979/005	09/27/2015	09/26/2016	N/A
Com-Power Transient Limiter	LIT-153	531021	09/27/2015	09/26/2016	N/A
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2015	10/08/2016	N/A
SIEMIC Conducted Emissions software	V1.0	N/A	N/A	N/A	N/A
RF conducted test					
R&S EMI Receiver	ESPI3	101216	09/27/2015	09/26/2016	>
Power Splitter	1#	1#	02/02/2015	02/01/2016	×
Spectrum Analyzer	N9010A	MY47191130	09/27/2015	09/26/2016	K
Temperature/Humidity Chamber	1007H	N/A	01/07/2015	01/06/2016	K
Radiated Emissions					
Spectrum Analyzer	N9010A	MY47191130	09/27/2015	09/26/2016	K
R&S EMI Receiver	ESPI3	101216	09/27/2015	09/26/2016	K
Antenna (30MHz~6GHz)	JB6	A121411	04/15/2015	04/14/2016	>
EMCO Horn Antenna (1 ~18GHz)	3115	N/A	10/09/2015	10/08/2016	V
INFOMW Antenna (1 ~18GHz)	JXTXLB-10180	J2031081120092	10/09/2015	10/08/2016	K
Horn Antenna (18~40GHz)	AH-840	101013	04/22/2015	04/22/2016	N/A
Microwave Pre-Amp (18~40GHz)	PA-840	181250	05/29/2015	05/28/2016	N/A
Hp Agilent Pre-Amplifier	8447F	1937A01160	10/27/2015	10/26/2016	K
MITEQ Pre-Amplifier (0.1 ~ 18GHz)	AMF-7D- 00101800-30- 10P	1451709	10/27/2015	10/26/2016	Z

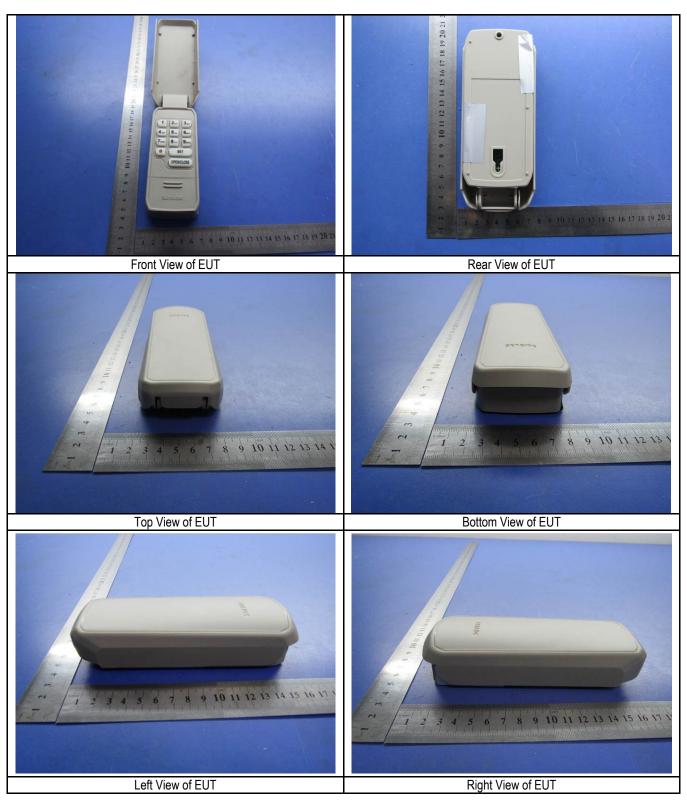


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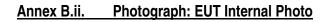
Annex B. EUT And Test Setup Photographs

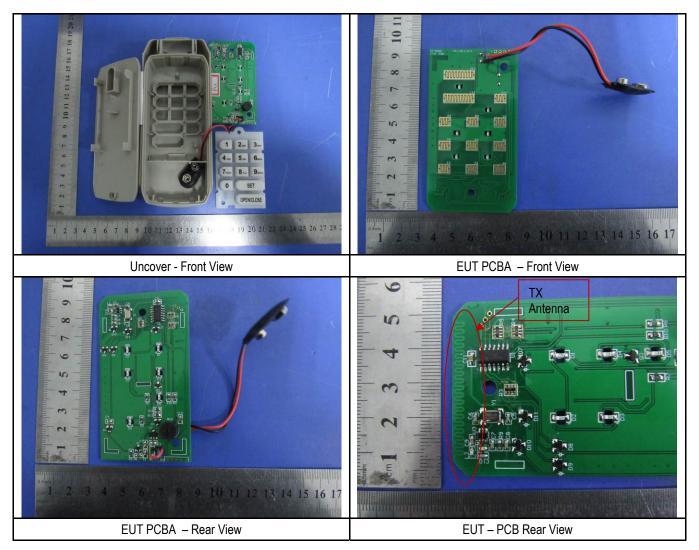
Annex B.i. Photograph: EUT External Photo





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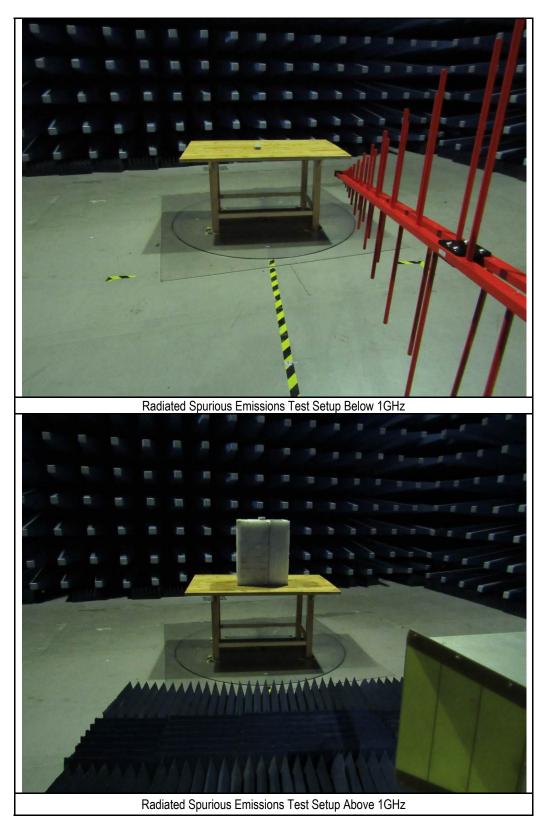




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Annex B.iii. Photograph: Test Setup Photo





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Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK



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Annex C. il. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
N/A	N/A	N/A	N/A	N/A



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Annex D. User Manual / Block Diagram / Schematics / Partlist

Page

Please see attachment



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Annex E. DECLARATION OF SIMILARITY

To: SIEMIC INC.

Declaration letter

Dear Sir,

For our business issue and marketing requirement, we would like to list different models numbers on the FCC certificates and reports, as

following:

Model No.: M12S

Serial Model Name: M12S-X (X=A~Z)

The Main test model M12S and M12S-X (X=A~Z) have the same circuit

board and system, just have the different in colors and shell, so the test

results in the certification for M12S equally apply to M12S-X(X=A~Z).

Thank you!

Product name: wireless keyless entry FCC ID: 2AAAL-M12S Applicant: Dalian Seaside Door Controlling System Co., Ltd Address: NO.23-7, yaobei road, Ganjingzi District, DALIAN

Company representative: