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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 15 SUBPART C REQUIREMENT

OF

Reader

Model No.: AY-Q20

FCC ID: GCDAYQX0

Trademark: Rosslare

Report No.:ES150312083E

Issue Date: September 17, 2015

Prepared for

Rosslare Enterprises Limited
Flat 12,9/F., Wing Fat Ind. Bldg.,12 Wang Tai Road , Kowloon Bay, Kowloon, Hong Kong

Prepared by

SHENZHEN EMTEK CO., LTD.

Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

TEL: 86-755-26954280
FAX: 86-755-26954282

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VERIFICATION OF COMPLIANCE

Applicant:	Rosslare Enterprises Limited Flat 12,9/F., Wing Fat lnd. Bldg.,12 Wang Tai Road , Kowloon Bay, Kowloon, Hong Kong
Manufacturer:	Rosslare Enterprises Limited Flat 12,9/F., Wing Fat lnd. Bldg.,12 Wang Tai Road , Kowloon Bay, Kowloon, Hong Kong
Product Description:	Reader
Model Number:	AY-Q20
Trademark:	Rosslare

We hereby certify that:

The above equipment was tested by SHENZHEN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4-2014 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15.209(2014).

The test results of this report relate only to the tested sample identified in this report.

Date of Test : March 12, 2015 to April 11, 2015

Prepared by : Joe Xia

Joe Xia/Editor

Reviewer : Jack. Li

Jack Li/Supervisor

Approved & Authorized Signer :

Lisa Wang/Manager

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	ES150312083E

Table of Contents

1 General Information

1.1 Product Description

Characteristics	Description
Product Name	Reader
Model number	AY-Q20
Power Supply	DC 5-16V
Modulation	ASK
Operating Frequency Range	125KHz
Number of Channels	1 channel
Antenna Type	Internal antenna

Note: for a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.2 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Radio Frequency	±1x10^-5
Maximum Peak Output Power Test	±1.0dB
Conducted Emissions Test	±2.0dB
Radiated Emission Test	±2.0dB
Power Density	±2.0dB
Occupied Bandwidth Test	±1.0dB
Band Edge Test	±3dB
All emission, radiated	±3dB
Antenna Port Emission	±3dB
Temperature	±0.5℃
Humidity	±3%

Measurement Uncertainty for a level of Confidence of 95%

1.3 Test Facility

Site Description
EMC Lab. :

Accredited by FCC, June 18, 2014
The Certificate Number is 247565.

Accredited by Industry Canada, February 19, 2014
The Certificate Registration Number. is 9444A.

Name of Firm : DONGGUAN EMTEK CO., LTD.
Site Location : No.281, Guantai Road, Nancheng District, Dongguan, Guangdong, China

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4-2014 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4-2014.

2.4 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

Table 2-1 Equipment Used in Tested System

Item	Equipment	Brand	Model No.	FCC ID	Series No.	Note
1	Reader	Rosslare	AY-Q20	GCDAYQX0	N/A	***EUT***

Note:

(1) Unless otherwise denoted as EUT in『Remark』column, device(s) used in tested system is a support equipment.

(2) Three orthogonal panels X, Y, Z of EUT are tested. And the test results of the worst test panel(X) were recorded.

2 Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207	AC Power Conducted Emission	N/A
§15.209	Radiated Emission	Compliant
§15.203	Antenna Application	Compliant

Remark: The EUT is supplied by battery, there is no need for AC Power Conducted Emission test to be performed on this product.

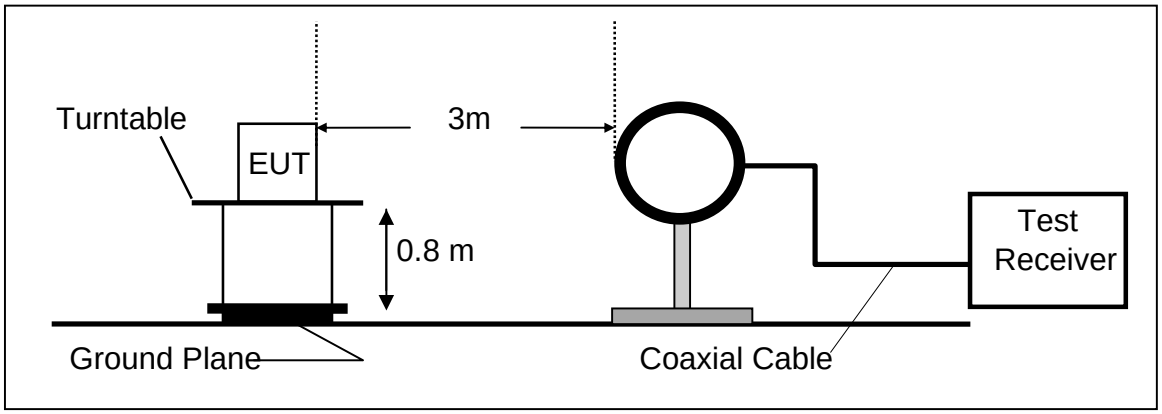
3 Radiated Emission Test

3.1 Measurement Procedure

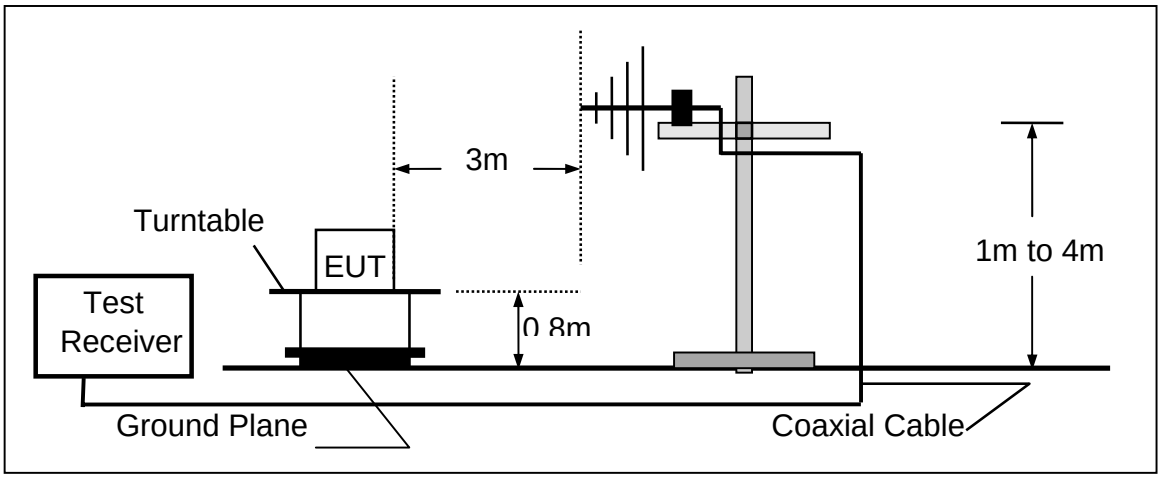
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

3.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



3.3 Measurement Equipment Used

Equipment	Serial No.	Manufacturer	Model No.	Cal. Date	Due Date
EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	05/16/2015	05/15/2016
Pre-Amplifier	HP	8447D	2944A07999	05/16/2015	05/15/2016
Bilog Antenna	Schwarzbeck	VULB9163	142	05/16/2015	05/15/2016
Loop Antenna	Schwarzbeck	FMZB 1519	012	05/16/2015	05/15/2016
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	05/16/2015	05/15/2016
Horn Antenna	Schwarzbeck	BBHA9120D	D143	05/16/2015	05/15/2016
Cable	Schwarzbeck	AK9513	ACRX1	05/16/2015	05/15/2016
Cable	Rosenberger	N/A	FP2RX2	05/16/2015	05/15/2016
Cable	Schwarzbeck	AK9513	CRPX1	05/16/2015	05/15/2016
Cable	Schwarzbeck	AK9513	CRRX2	05/16/2015	05/15/2016
Pre-Amplifier	A.H.	PAM-0126	1415261	05/16/2015	05/15/2016

3.4 Radiated Emission Limit

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table 15.209(a):

FCC Part 15.209				
Frequency (MHz)	Field Strength Limitation		Field Strength Limitation Frequency at 3m Measurement Distance	
	(uV/m)	Distance	(uV/m)	(dBuV/m)
0.009 – 0.490	2400 / F(KHz)	300m	10000 * 2400/F(KHz)	20log 2400/F(KHz) + 80
0.490 – 1.705	24000 / F(KHz)	30m	100 * 24000/F(KHz)	20log 24000/F(KHz) + 40
1.705 – 30.00	30	30m	100* 30	20log 30 + 40
30.0 – 88.0	100	3m	100	20log 100
88.0 – 216.0	150	3m	150	20log 150
216.0 – 960.0	200	3m	200	20log 200
Above 960.0	500	3m	500	20log 500

15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

Remark : 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205, and the emissions located in restricted bands also comply with 15.209 limit.

3.5 Measurement Result

Fundamental

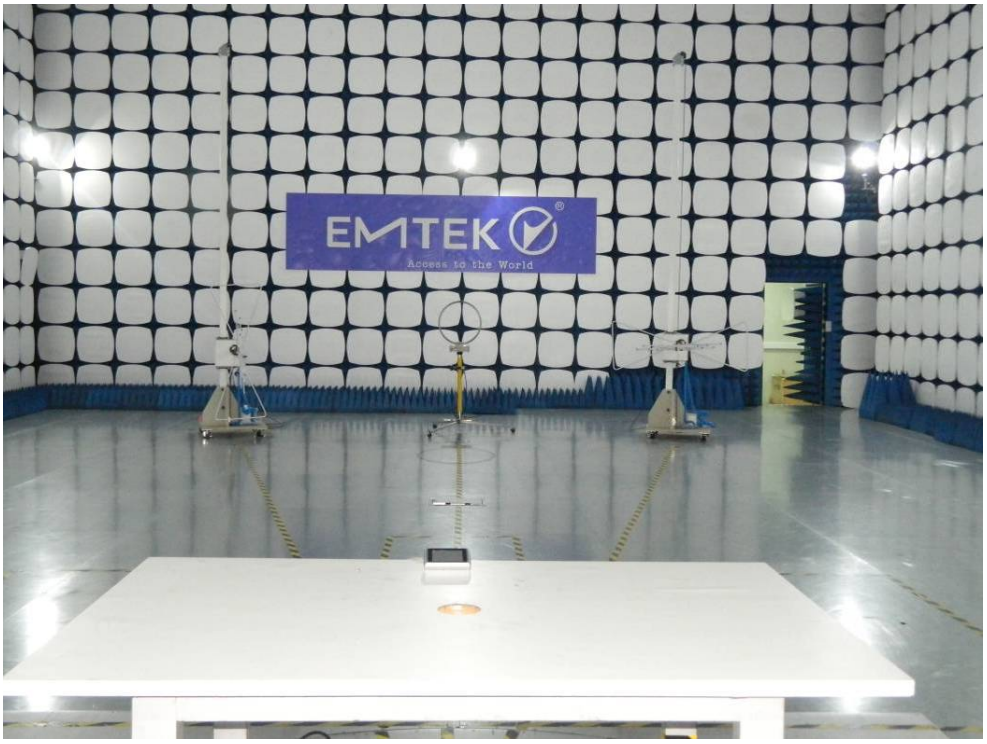
Frequency (MHz)	Ant.Pol (H/V)	Reading@3m (dBuV/m)		Limit@3m (dBuV/m)		Margin (dB)	
		Peak	Average	Peak	Average	Peak	Average
0.125	V	67.15	63.84	125.7	105.7	-58.55	-41.86

Other Emissions:

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
9.04	V	32.05	69.54	-37.49	QP
10.36	V	33.69	69.54	-35.85	QP
25.49	V	37.04	69.54	-32.50	QP
8.41	H	32.16	69.54	-37.38	QP
13.24	H	33.04	69.54	-36.50	QP
25.49	H	35.79	69.54	-33.75	QP

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)	Note
45.5200	V	17.13	40.00	-22.87	QP
113.4200	V	15.75	43.50	-27.75	QP
279.2900	V	18.31	46.00	-27.69	QP
415.0900	V	21.85	46.00	-24.15	QP
528.5800	V	24.34	46.00	-21.66	QP
664.3800	V	25.05	46.00	-20.95	QP
60.0700	H	19.51	40.00	-20.49	QP
113.4200	H	19.60	43.50	-23.90	QP
154.1600	H	14.80	43.50	-28.70	QP
243.4000	H	18.63	46.00	-27.37	QP
277.3500	H	19.11	46.00	-26.89	QP
527.6100	H	23.94	46.00	-22.06	QP

3.6 Radiated Measurement Photos:



4 ANTENNA REQUIREMENT

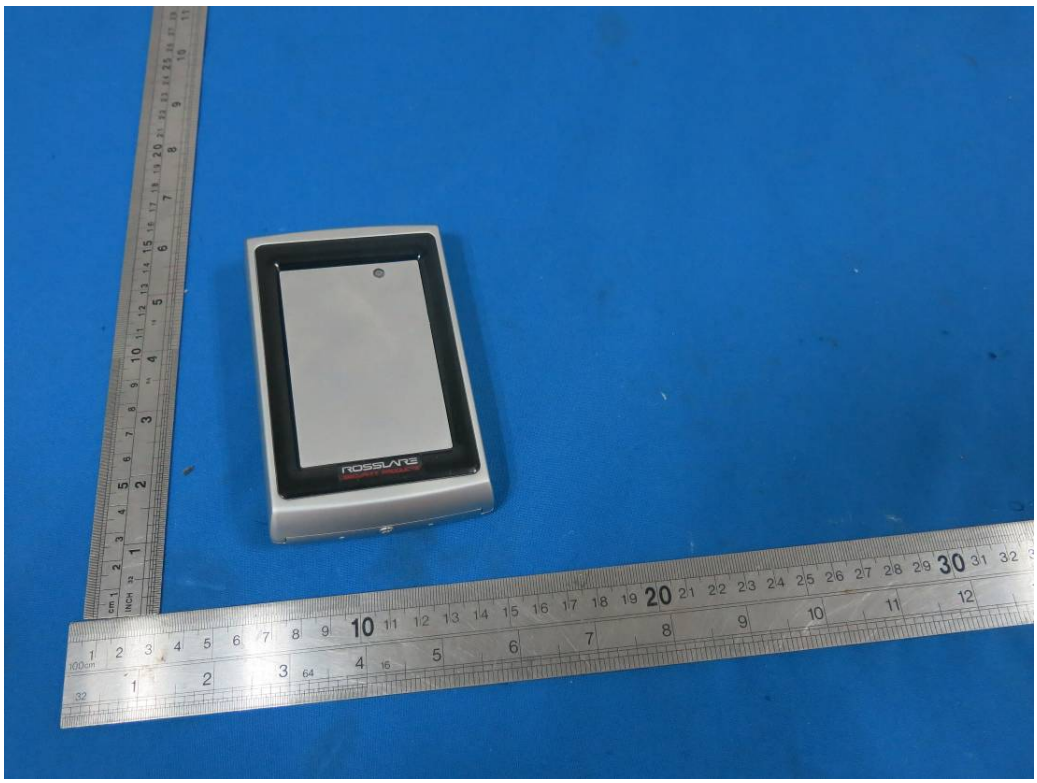
The EUT'S antenna is met the requirement of FCC part 15C section 15.203 and 15.247.

FCC part 15C section 15.247 requirements:
Systems operating in the 2402-2480MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

4.1 Result

The antenna is permanently attached on PCB, no consideration of replacement. Please refer to internal Photos for details.

APPENDIX I
(Photos of EUT)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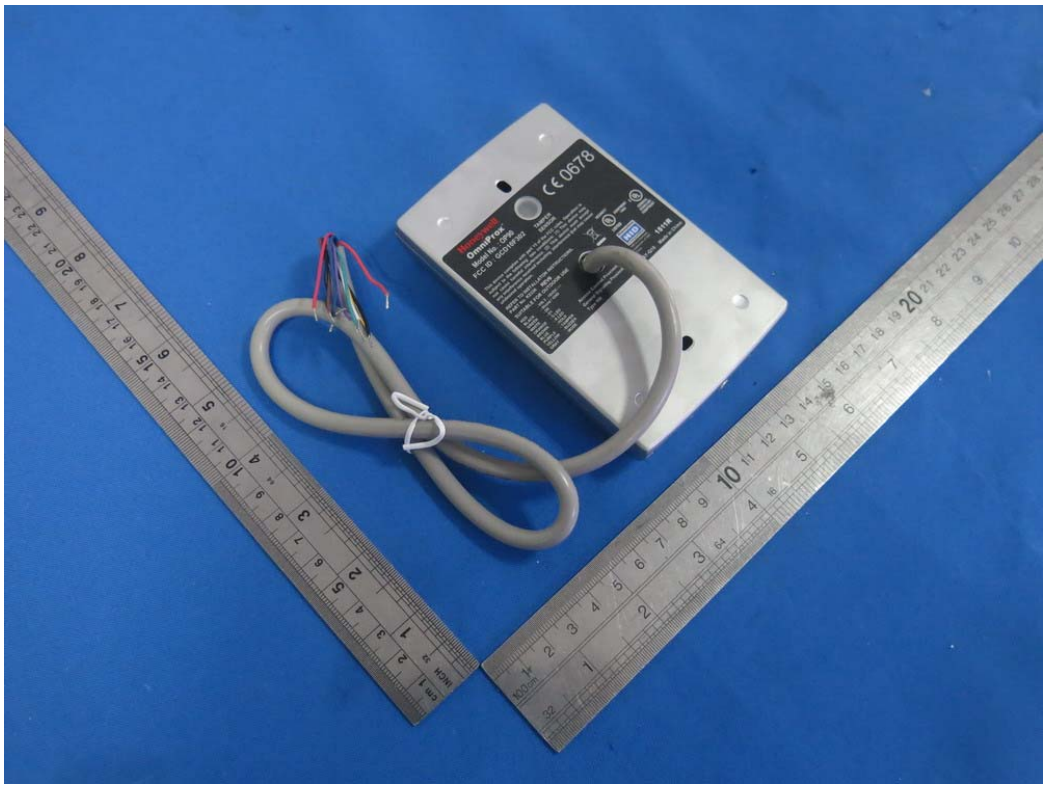
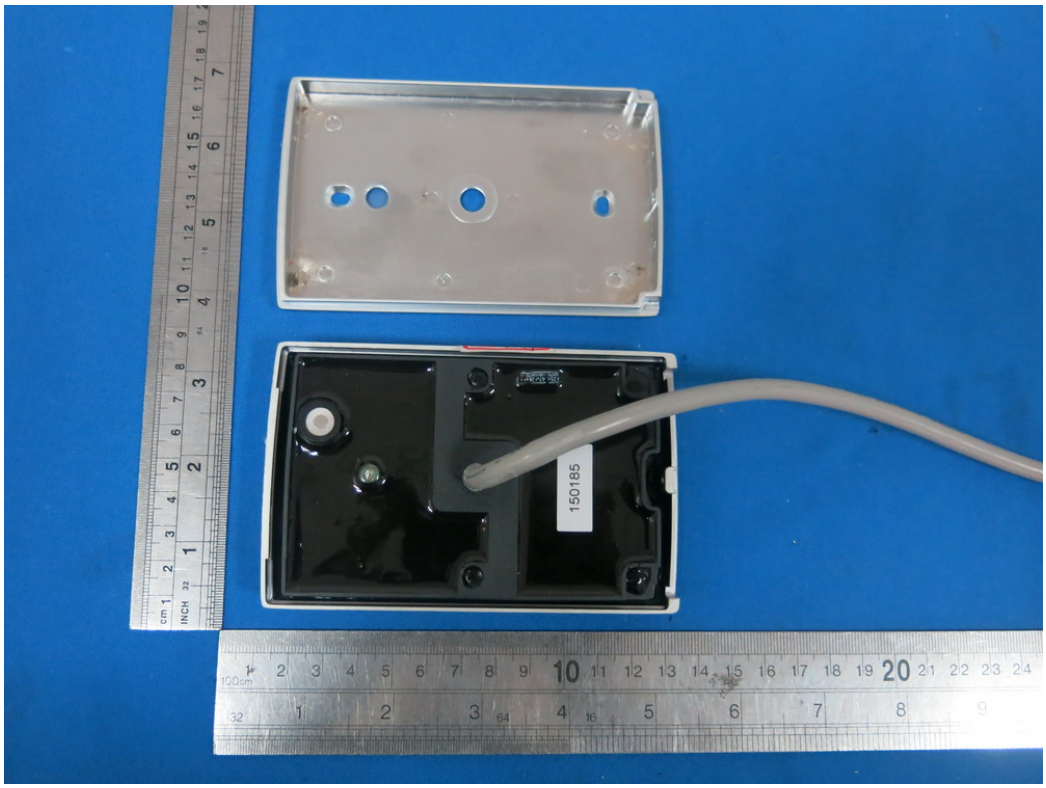

CE 0678


ROSSLARE
SECURITY PRODUCTS
Model: AY-Q20
Multi Format Proximity Reader
FCC ID: GCDAYQX0
IC: 3869A-AYQX0
TAMPER
SENSOR
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. (2) This device must accept any interference received including interference that may cause undesired operation.
REFER TO INSTALLATON INSTRUCTIONS,
PART No. 0706-096xxxx+00
SUITABLE FOR OUTDOOR USE
RED - VIN 5 - 16VDC
BLACK - Shield / GND
GREEN - D0
WHITE - D1
ORANGE - G.LED
BROWN - R.LED
BLUE - HOLD
PURPLE - TAMPER
YELLOW - BUZZER
GRAY - MODE
SECURITY
LISTED
EQUIPMENT
18DB
LISTED
GENERAL
SIGNALING
EQUIPMENT
Access Control Proximity Reader,
General Signaling Proximity Reader
Type NM
Made in China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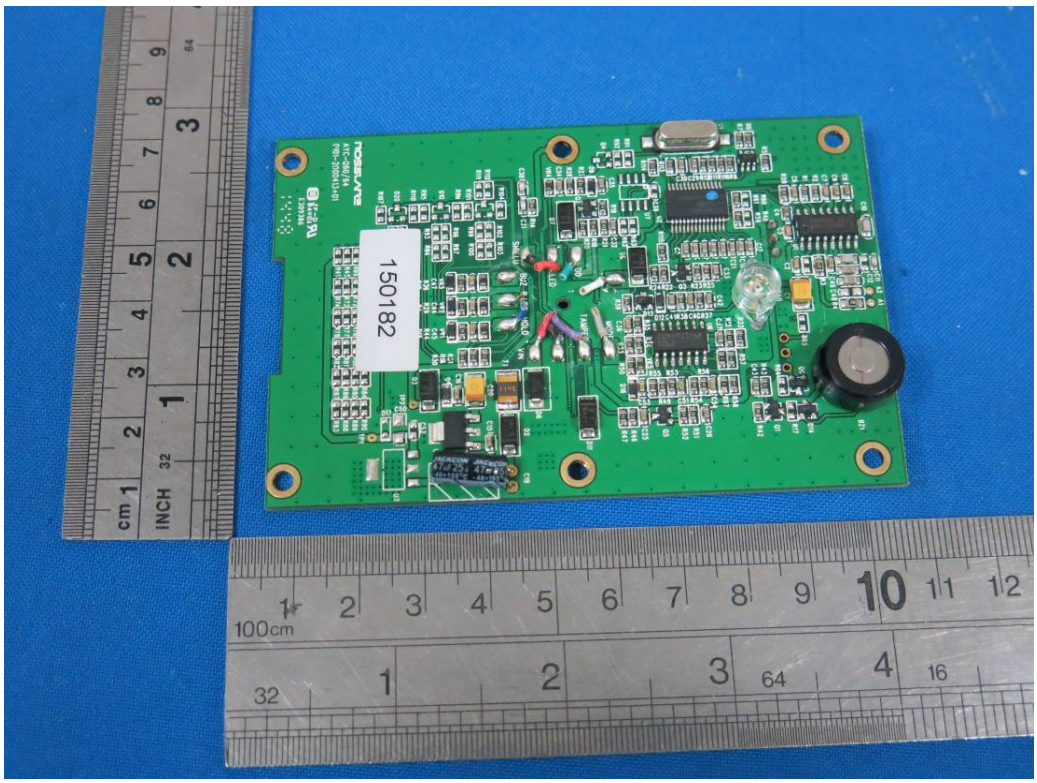
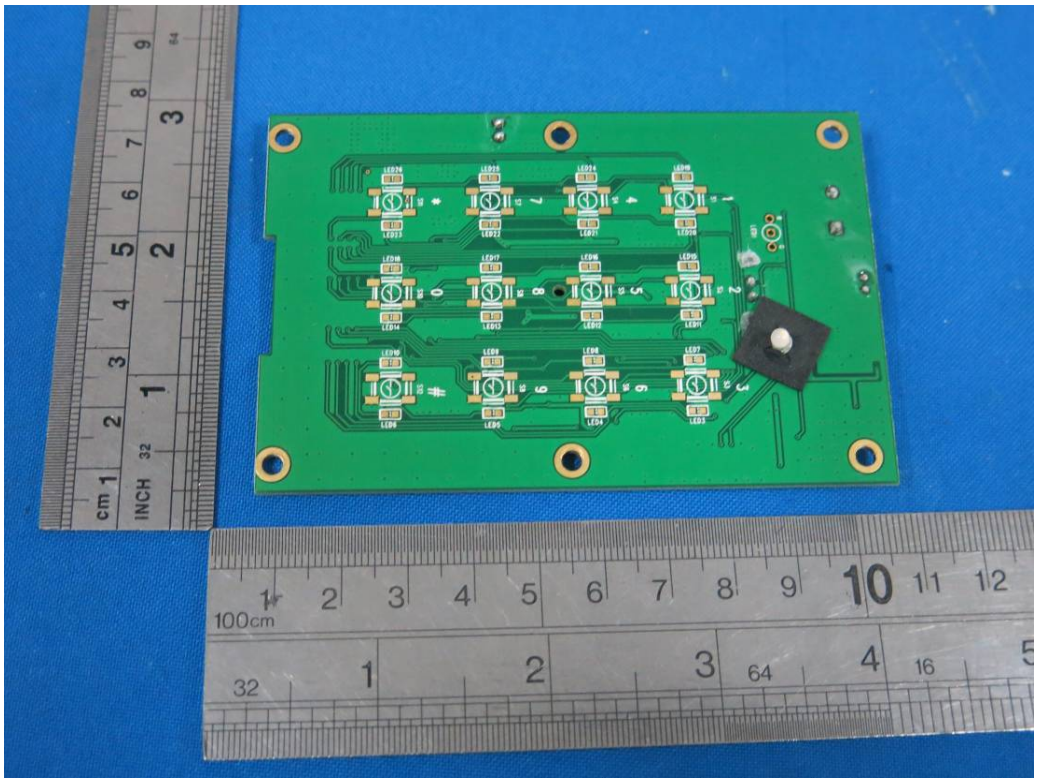

150182
INCH
cm
100cm


INCH
cm
100cm