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## MEASUREMENT REPORT

### FCC PART 15.209

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**FCC ID:** 2AEDR-SEPR-1

**APPLICANT:** Accuride International Inc.

**Application Type:** Certification

**Product:** Stand-Alone Proximity Reader

**Model No.:** SEPR-1

**Brand Name:** Accuride

**FCC Classification:** Part 15 Low Power Transmitter Below 1705 kHz (DCD)

**FCC Rule Part(s):** FCC Part 15.209

**Test Procedure(s):** ANSI C63.10-2009

**Test Date:** Apr. 01 ~ 07, 2015

Reviewed By :

*Robin Wu*

( Robin Wu )

Approved By :

*Marlin Chen*

( Marlin Chen )



The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10-2009. Test results reported herein relate only to the item(s) tested.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

## Revision History

Report No.	Version	Description	Issue Date
1503RSU02701	Rev. 01	Initial report	04-17-2015

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## §2.1033 General Information

<b>Applicant:</b>	Accuride International Inc.
<b>Applicant Address:</b>	12311 Shoemaker Avenue Santa Fe Springs, CA 90670
<b>Manufacturer:</b>	Granding Technology Co., LTD
<b>Manufacturer Address:</b>	A1501,Hi-TechBldg,900 Yishan Road, Shanghai 200233 P.R. China
<b>Test Site:</b>	MRT Technology (Suzhou) Co., Ltd
<b>Test Site Address:</b>	D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
<b>MRT Registration No.:</b>	809388
<b>FCC Rule Part(s):</b>	Part 15.209
<b>Model No.</b>	SEPR-1
<b>FCC ID:</b>	2AEDR-SEPR-1
<b>Test Device Serial No.:</b>	N/A <input type="checkbox"/> Production <input checked="" type="checkbox"/> Pre-Production <input type="checkbox"/> Engineering
<b>FCC Classification:</b>	Part 15 Low Power Transmitter Below 1705 kHz (DCD)

### Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 809388) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-4179, G-814, C-4664, T-2206) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.



## 1. INTRODUCTION

### 1.1. Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Industry Canada Certification and Engineering Bureau.

### 1.2. MRT Test Location

The map below shows the location of the MRT LABORATORY, its proximity to the Taihu Lake. These measurement tests were conducted at the MRT Technology (Suzhou) Co., Ltd. Facility located at D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2009 on September 30, 2013.



## 2. PRODUCT INFORMATION

### 2.1. Equipment Description

Product Name	Stand-Alone Proximity Reader
Model No.	SEPR-1
Trade Name	Accuride
Frequency Range	125 KHz
Antenna Type	Coil
Device Category	Fixed Device

Note:

1. The EUT is register and delete ID card, read valid ID card then control the relay on/off with a built-in 125 KHz transmitter.
2. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.209

### 2.2. Test Standards

The following report is prepared on behalf of the **Accuride International Inc.** in accordance with FCC Part 15, Subpart C, and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and 15.209 of the Federal Communication Commissions rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which results in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

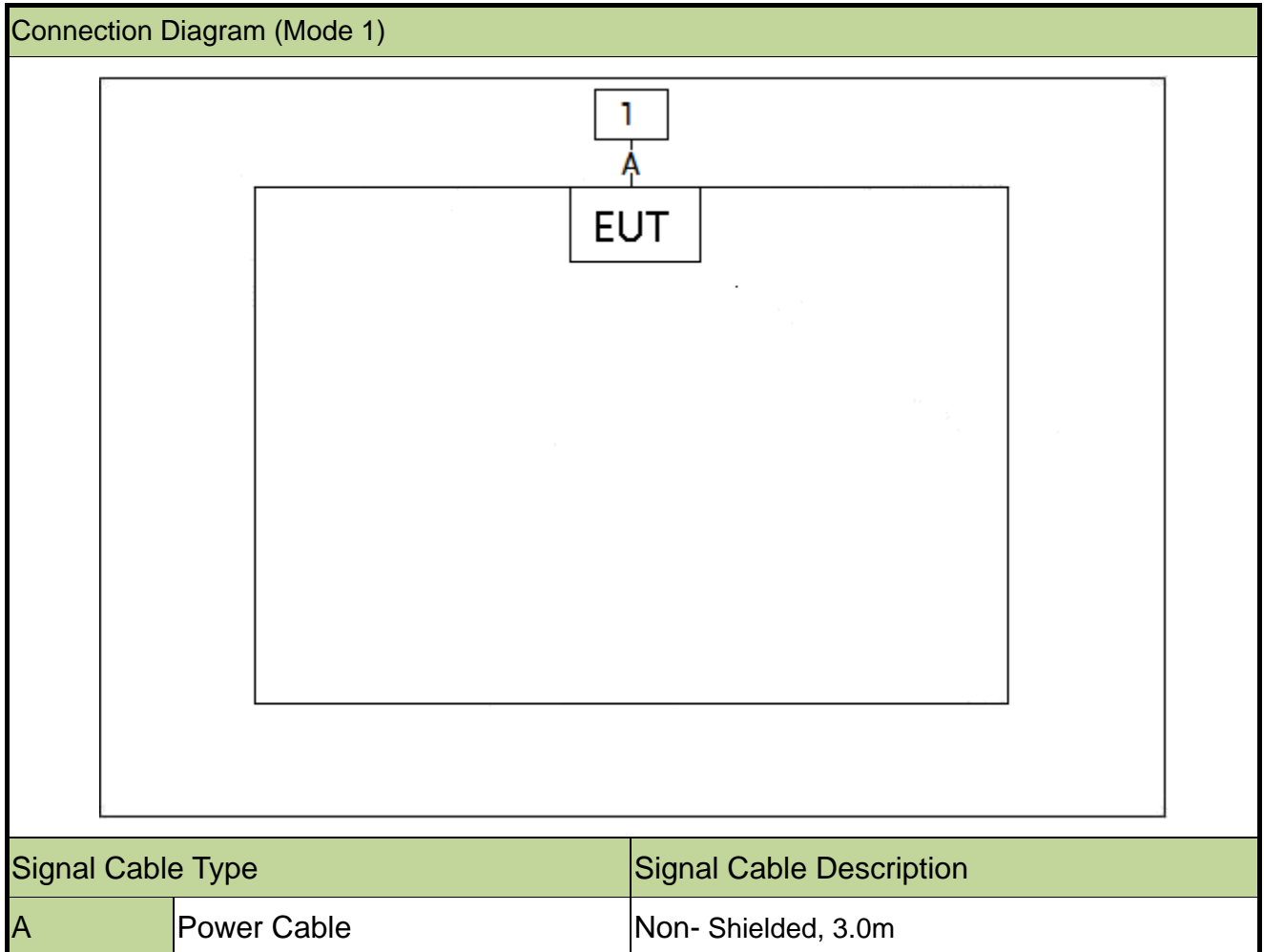
### 2.3. Test Methodology

The measurement procedures described in the American National Standard for Testing Unlicensed Wireless Devices (ANSI C63.10-2009).

**Deviation from measurement procedure.....None**

## 2.4. Test Configuration of Equipment under Test

### 2.4.1 Configuration of Tested System



### 2.4.2 Test System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1	DC Power Supply	GWINSTEK	GPS-3030D	EM861052
				Non-Shielded, 1.8m

### 3. ANTENNA REQUIREMENTS

**Excerpt from §15.203 of the FCC Rules/Regulations:**

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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.”

- The antenna of the Stand-Alone Proximity Reader is **permanently attached**.
- There are no provisions for connection to an external antenna.

**Conclusion:**

The Stand-Alone Proximity Reader **FCC ID: 2AEDR-SEPR-1** unit complies with the requirement of §15.203.



#### 4. TEST EQUIPMENT CALIBRATION DATA

##### Radiated Emission

Instrument	Manufacturer	Type No.	Serial No.	Cali. Interval	Cali. Due Date
EMI Test Receiver	R&S	ESR7	101209	1 year	2015/11/07
Loop Antenna	Schwarzbeck	FMZB1519	1519-041	1 year	2015/11/08
TRILOG Antenna	Schwarzbeck	VULB9162	9162-047	1 year	2015/11/08
DC Power Supply	GWINSTEK	GPS-3030D	EM861052	1 year	2015/11/13
Temperature/Humidity Meter	Anymetre	TH101B	AC1-01	1 year	2015/11/14

## 5. MEASUREMENT UNCERTAINTY

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k = 2$ .

Radiated Emission Measurement
Measuring Uncertainty for a Level of Confidence of 95% ( $U=2U_c(y)$ ): 9kHz ~ 1GHz: 4.18dB

## 6. TEST RESULT

### 6.1. Summary

Company Name: Accuride International Inc.

FCC ID: 2AEDR-SEPR-1

FCC Part Section(s)	Test Description	Test Condition	Test Result
15.209	Radiated Spurious Emissions	Radiated	Pass

**Notes:**

- 1) All modes of operation and data rates were investigated. The test results shown in the following sections represent the worst case emissions.
- 2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
- 3) The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

## 6.2. Radiated Emissions

### 6.2.1. Standard Applicable

According to §15.209, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

FCC Part 15 Subpart B Paragraph 15.209 Limits		
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2,400/F(kHz)	300
0.490– 1.705	24,000/F(kHz)	30
1.705 – 30	30	30
30 – 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note:

1. RF Voltage (dBμv) = 20 log RF Voltage (μv)
2. Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 6.2.2. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz. Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle

towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

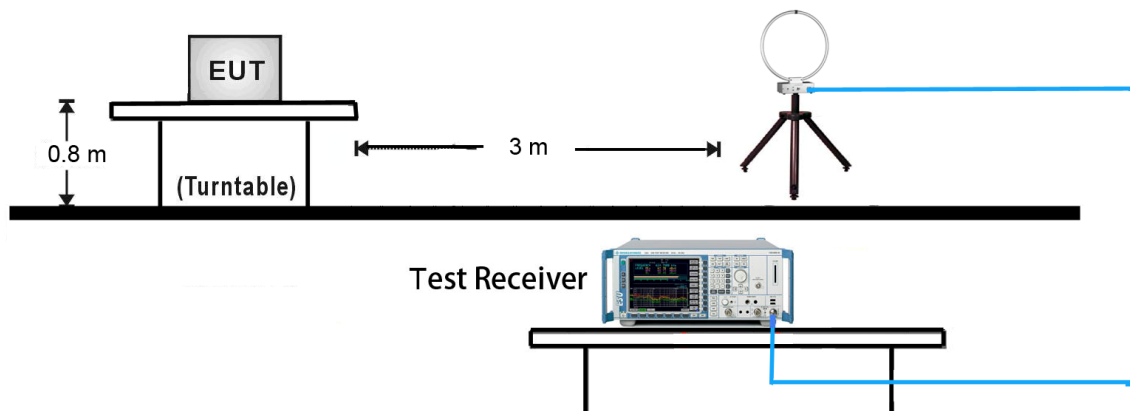
The worst radiated emission is measured on the Final Measurement.

The measurement frequency range from 9 KHz to 10th Harmonic of fundamental was investigated.

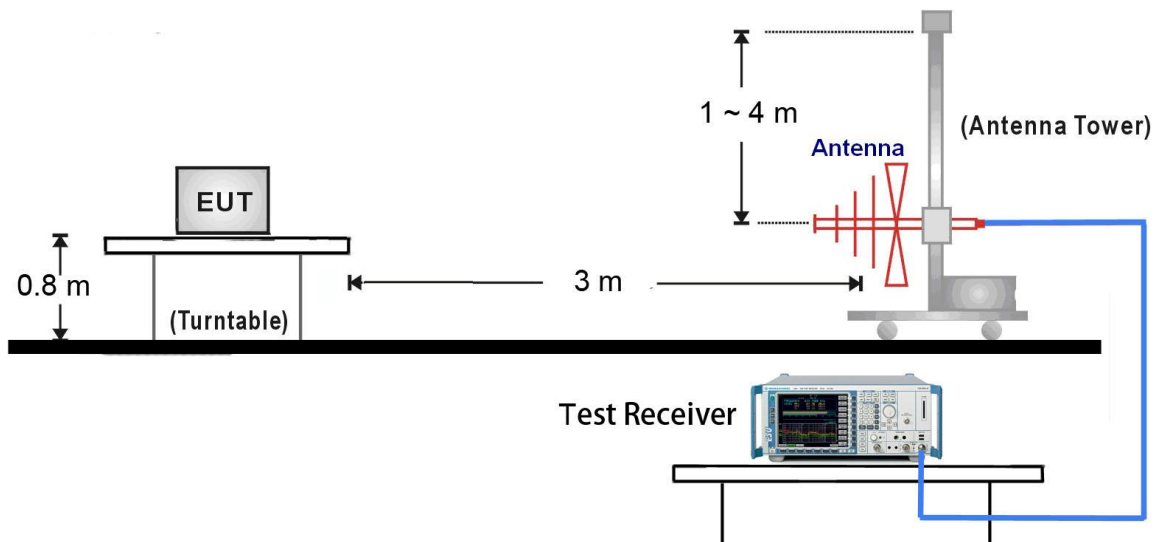
### 6.2.3. Test Setup

The setup of EUT is according with per ANSI C63.10-2009 measurement procedure. The specification used was FCC Part 15.209 Limit.

#### 9kHz ~ 30MHz Test Setup:



#### 30MHz ~ 1GHz Test Setup:



#### 6.2.4. Test Results

##### Fundamental Emission

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
X Axis							
0.125	38.8	20.2	59.0	125.7	-66.7	PK	Face on
0.125	21.1	20.2	41.3	125.7	-84.4	PK	Face off
Y Axis							
0.125	62.9	20.2	83.1	125.7	-42.6	PK	Face on
0.125	42.3	20.2	62.5	125.7	-63.2	PK	Face off
Z Axis							
0.125	64.9	20.2	85.1	125.7	-40.6	PK	Face on
0.125	40.3	20.2	60.5	125.7	-65.2	PK	Face off

Note:

1.  $\text{Limit} = 25.666 \text{ dB}\mu\text{V/m} + 40 \cdot \log(300(\text{m})/3(\text{m})) = 105.7 \text{ dB}\mu\text{V/m}$  (Average detector),  
125.67 dBμV/m (Peak detector).
2. Measurement Level = Reading Level + Factor.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.

## General Radiated Emission 9kHz ~ 30MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
0.250	10.2	20.3	30.5	99.6	-69.1	PK	Face on
0.375	31.2	20.3	51.5	96.1	-44.6	PK	Face on
0.500	10.4	20.4	30.8	73.6	-42.8	QP	Face on
0.625	23.1	20.5	43.6	71.7	-28.1	QP	Face on
0.750	8.6	20.6	29.2	70.1	-40.9	QP	Face on
0.875	18.5	20.6	39.1	68.8	-29.7	QP	Face on
1.000	7.5	20.5	28.0	67.6	-39.6	QP	Face on
1.125	14.7	20.5	35.2	66.6	-31.4	QP	Face on
1.250	6.9	20.5	27.4	65.7	-38.3	QP	Face on
0.250	14.8	20.3	35.1	99.6	-64.5	QP	Face off
0.375	12.7	20.3	33.0	96.1	-63.1	QP	Face off
0.500	10.8	20.4	31.2	73.6	-42.4	QP	Face off
0.625	10.6	20.5	31.1	71.7	-40.6	QP	Face off
0.75	7.9	20.6	28.5	70.1	-41.6	QP	Face off
0.875	9.5	20.6	30.1	68.8	-38.7	QP	Face off
1.000	6.5	20.5	27.0	67.6	-40.6	QP	Face off
1.125	6.7	20.5	27.2	66.6	-39.4	QP	Face off
1.250	7.3	20.5	27.8	65.7	-37.9	QP	Face off

Note:

1. Measurement Level = Reading Level + Factor.
2. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
3. The average measurement was not performed when the peak measured data under the limit of average detection. If the readings given are average, peak measurement should also be supplied.



## General Radiated Emission 30MHz ~ 1GHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
48.2	20.3	14.9	35.2	40	-4.8	QP	Horizontal
57.8	13.1	14.2	27.3	40	-12.7	QP	Horizontal
59.9	9.7	13.9	23.6	40	-16.4	QP	Horizontal
66.3	10.8	12.1	22.9	40	-17.1	QP	Horizontal
221.2	12.7	12.6	25.3	46	-20.7	QP	Horizontal
265.5	9.6	13.9	23.5	46	-22.5	QP	Horizontal
66.3	20.0	12.1	32.1	40	-7.9	QP	Vertical
110.5	6.0	12.8	18.8	43.5	-24.7	QP	Vertical
145.1	9.7	9.4	19.1	43.5	-24.4	QP	Vertical
221.2	13.8	12.6	26.4	46	-19.6	QP	Vertical
243.3	7.8	13.5	21.3	46	-24.7	QP	Vertical
265.5	11.2	13.9	25.1	46	-20.9	QP	Vertical

Note:

1. Measurement Level = Reading Level + Factor.
2. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

## 7. CONCLUSION

The data collected relate only the item(s) tested and show that the **Stand-Alone Proximity Reader** **FCC ID: 2AEDR-SEPR-1** is in compliance with FCC Part 15.209 of the FCC Rules.

\_\_\_\_\_ The End \_\_\_\_\_