

FCC REPORT

Applicant: Shenzhen Light Pioneer Technology Co., Ltd
Address of Applicant: 10th Floor, Block B, Guanghao International Centre, Longhua District, Shenzhen, China

Equipment Under Test (EUT)

Product Name: Handheld RFID Reader

Model No.: LP-006-GI

Trade mark: LightPioneer

FCC ID: 2AOJULP006GI

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of sample receipt: 18 Jul., 2019

Date of Test: 19 Jul., 2019 to 07 Aug., 2019

Date of report issued: 08 Aug., 2019

Test Result: PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	08 Aug., 2019	Original

Remark:

This report was amended on FCC ID: 2AOJULP-006D follow FCC data reuse policy.

The differences between them as below: Change the model No. and RFID antenna. Base on the differences description,

sport check was performed, and test results lower than original, no additional test results were reported.

Tested by:

YT Yang

Date:

08 Aug., 2019

Test Engineer

Reviewed by:

Wimer Zhang

Date:

08 Aug., 2019

Project Engineer

3 Contents

Page

1	COVER PAGE	1
2	VERSION	2
3	CONTENTS	3
4	TEST SUMMARY	4
5	GENERAL INFORMATION	5
5.1	CLIENT INFORMATION	5
5.2	GENERAL DESCRIPTION OF E.U.T.	5
5.3	TEST ENVIRONMENT AND TEST MODE	7
5.4	DESCRIPTION OF SUPPORT UNITS	7
5.5	MEASUREMENT UNCERTAINTY.....	7
5.6	LABORATORY FACILITY	7
5.7	LABORATORY LOCATION	7
5.8	TEST INSTRUMENTS LIST.....	8
6	TEST RESULTS AND MEASUREMENT DATA	9
6.1	ANTENNA REQUIREMENT.....	9
6.2	CONDUCTED OUTPUT POWER	10
6.3	20dB OCCUPY BANDWIDTH	11
6.4	CARRIER FREQUENCIES SEPARATION.....	12
6.5	HOPPING CHANNEL NUMBER.....	13
6.6	DWELL TIME	14
6.7	PSEUDORANDOM FREQUENCY HOPPING SEQUENCE	15
6.8	BAND EDGE.....	16
6.8.1	Conducted Emission Method	16
6.8.2	Radiated Emission Method	17
6.9	SPURIOUS EMISSION.....	22
6.9.1	Conducted Emission Method	22
6.9.2	Radiated Emission Method	23
7	TEST SETUP PHOTO	28
8	EUT CONSTRUCTIONAL DETAILS	29

4 Test Summary

Test Items	Section in CFR 47	Result
Antenna Requirement	15.203 & 15.247 (c)	Pass
Conducted Peak Output Power	15.247 (b)(2)	Pass*
20dB Occupied Bandwidth	15.247 (a)(1) (i)	Pass*
Carrier Frequencies Separation	15.247 (a)(1)	Pass*
Hopping Channel Number	15.247 (a)(1) (i)	Pass*
Dwell Time	15.247 (a)(1) (i)	Pass*
Spurious Emission	15.205 & 15.209	Pass

Pass: The EUT complies with the essential requirements in the standard.
N/A: N/A: Not Applicable.
Pass: refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.*

5 General Information

5.1 Client Information

Applicant:	Shenzhen Light Pioneer Technology Co., Ltd
Address:	10th Floor, Block B, Guanghao International Centre, Longhua District, Shenzhen, China
Manufacturer:	Shenzhen Light Pioneer Technology Co., Ltd
Address:	10th Floor, Block B, Guanghao International Centre, Longhua District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Handheld RFID Reader
Model No.:	LP-006-GI
Operation Frequency:	902 MHz~928MHz
Number of channel:	50
Modulation type:	2-FSK
Modulation technology:	FHSS
Antenna Type:	Circularly polarized Antenna
Antenna gain:	2.5 dBi
Power supply:	Rechargeable Li-ion Battery DC3.7V-4500mAh
AC adapter:	Model: GME10C-050200FCu Input: AC100-240V, 50/60Hz, 0.28A Output: DC 5.0V, 2A
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	902.75	13	909.25	26	915.75	39	922.25
1	903.25	14	909.75	27	916.25	40	922.75
2	903.75	15	910.25	28	916.75	41	923.25
3	904.25	16	910.75	29	917.25	42	923.75
4	904.75	17	911.25	30	917.75	43	924.25
5	905.25	18	911.75	31	918.25	44	924.75
6	905.75	19	912.25	32	918.75	45	925.25
7	906.25	20	912.75	33	919.25	46	925.75
8	906.75	21	913.25	34	919.75	47	926.25
9	907.25	22	913.75	35	920.25	48	926.75
10	907.75	23	914.25	36	920.75	49	927.25
11	908.25	24	914.75	37	921.25		
12	908.75	25	915.25	38	921.75		
Remark: Channel 0, 25 & 49 selected for tested.							

5.3 Test environment and test mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test Modes:	
Non-hopping mode:	Keep the EUT in continuous transmitting mode with worst case data rate.
Hopping mode:	Keep the EUT in hopping mode.
<p>The sample was placed 0.8m (below 1GHz)/1.5m (above 1GHz) above the ground plane of 3m chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working with a fresh battery, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.</p>	

5.4 Description of Support Units

The EUT has been tested as an independent unit.

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Conducted Emission (9kHz ~ 30MHz)	±1.60 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	±3.12 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	±4.32 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	±5.38 dB (k=2)
Radiated Emission (18GHz ~ 40GHz)	±3.36 dB (k=2)

5.6 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC - Designation No.: CN1211 Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551. ● ISED – CAB identifier.: CN0021 The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. ● CNAS - Registration No.: CNAS L6048 Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048. ● A2LA - Registration No.: 4346.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf
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5.7 Laboratory Location

<p>Shenzhen Zhongjian Nanfang Testing Co., Ltd. Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road, Bao'an District, Shenzhen, Guangdong, China Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info@ccis-cb.com, Website: http://www.ccis-cb.com</p>

5.8 Test Instruments list

Radiated Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
Loop Antenna	SCHWARZBECK	FMZB1519B	00044	03-18-2019	03-17-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	916	03-18-2019	03-17-2020
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	06-22-2017	06-21-2020
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170582	11-21-2018	11-20-2019
EMI Test Software	AUDIX	E3	Version: 6.110919b		
Pre-amplifier	HP	8447D	2944A09358	03-18-2019	03-17-2020
Pre-amplifier	CD	PAP-1G18	11804	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-18-2019	03-17-2020
Spectrum analyzer	Rohde & Schwarz	FSP40	100363	11-21-2018	11-20-2019
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-18-2019	03-17-2020
Cable	ZDECL	Z108-NJ-NJ-81	1608458	03-18-2019	03-17-2020
Cable	MICRO-COAX	MFR64639	K10742-5	03-18-2019	03-17-2020
Cable	SUHNER	SUCOFLEX100	58193/4PE	03-18-2019	03-17-2020
RF Switch Unit	MWRFTTEST	MW200	N/A	N/A	N/A
Test Software	MWRFTTEST	MTS8200	Version: 2.0.0.0		

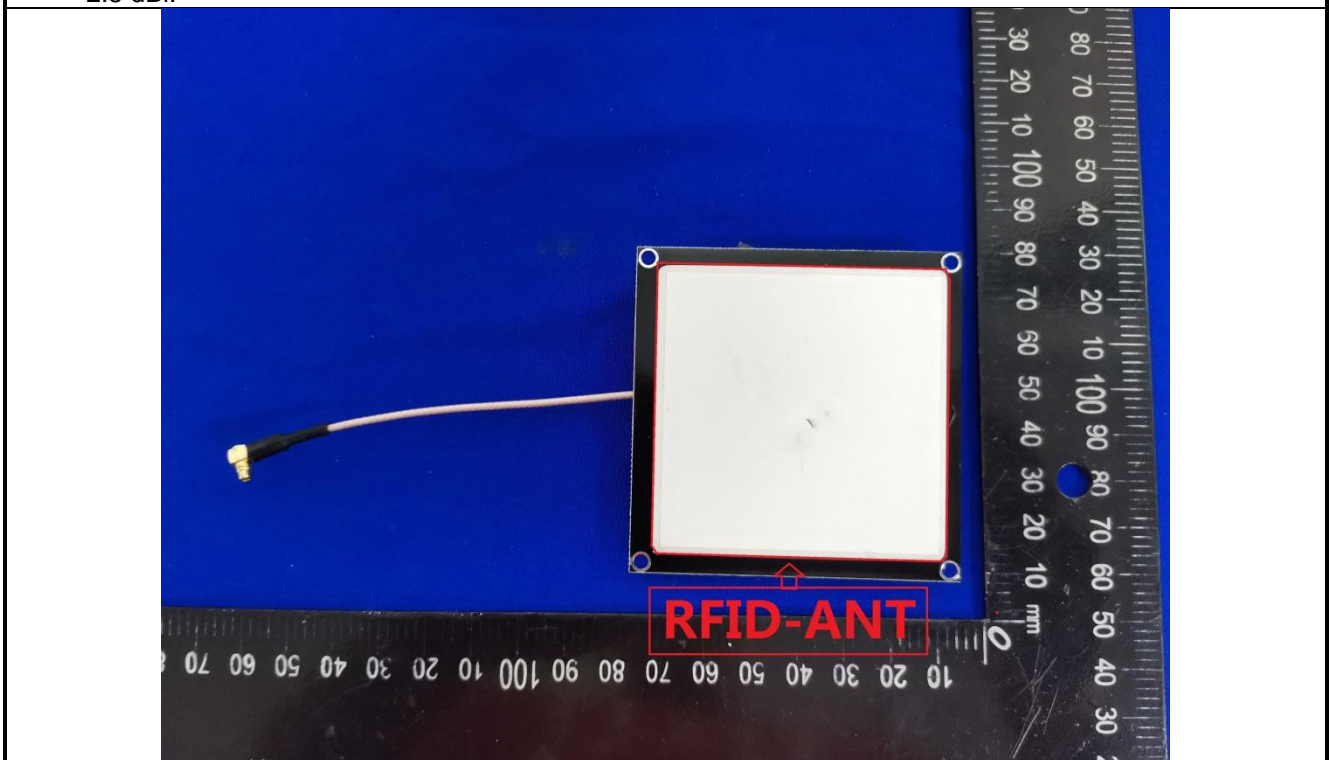
Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	101189	03-18-2019	03-17-2020
Pulse Limiter	SCHWARZBECK	OSRAM 2306	9731	03-18-2019	03-17-2020
LISN	CHASE	MN2050D	1447	03-18-2019	03-17-2020
LISN	Rohde & Schwarz	ESH3-Z5	8438621/010	07-21-2018	07-20-2019
				07-21-2019	07-20-2020
Cable	HP	10503A	N/A	03-18-2019	03-17-2020
EMI Test Software	AUDIX	E3	Version: 6.110919b		

6 Test results and measurement data

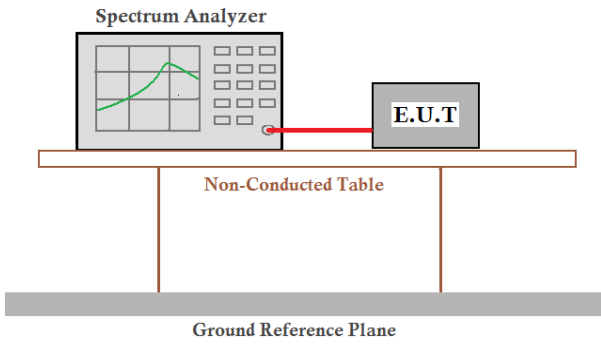
6.1 Antenna Requirement

Standard requirement:	FCC Part 15 C Section 15.203 & 247(c)
<p>15.203 requirement: 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.</p> <p>15.247(c) (1)(i) requirement: (i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.</p>	

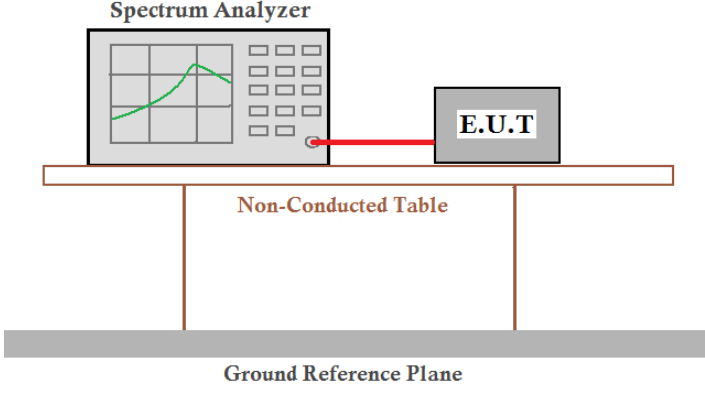
E.U.T Antenna:	
The antenna under test sample is a ceramic antenna as below, and the best case gain of the antenna is 2.5 dBi.	



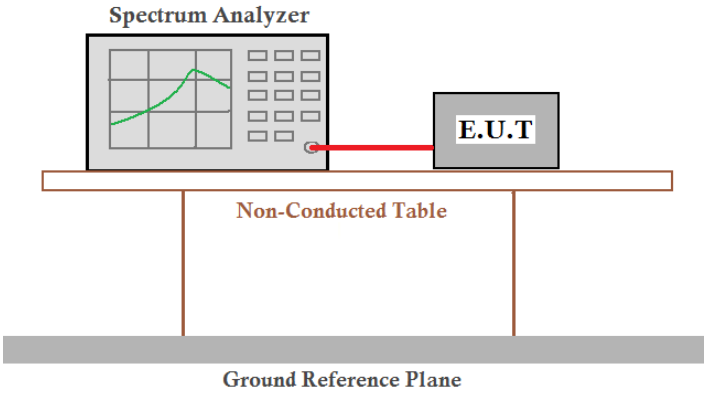
6.2 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(2)
Test Method:	ANSI C63.10:2013 and DA00-705
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak
Limit:	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by two legs. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Non-hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

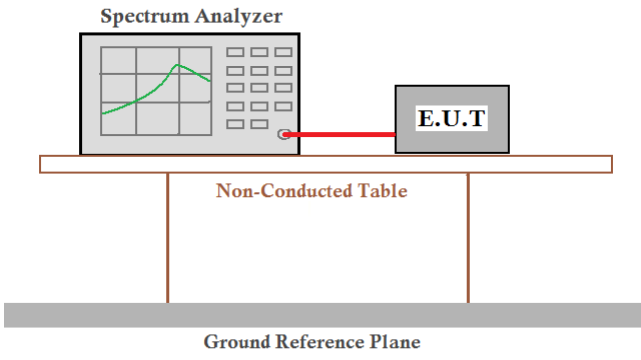
6.3 20dB Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)(i)
Test Method:	ANSI C63.10:2013 and DA00-705
Receiver setup:	RBW=30 kHz, VBW=100 kHz, detector=Peak
Limit:	if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Non-hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

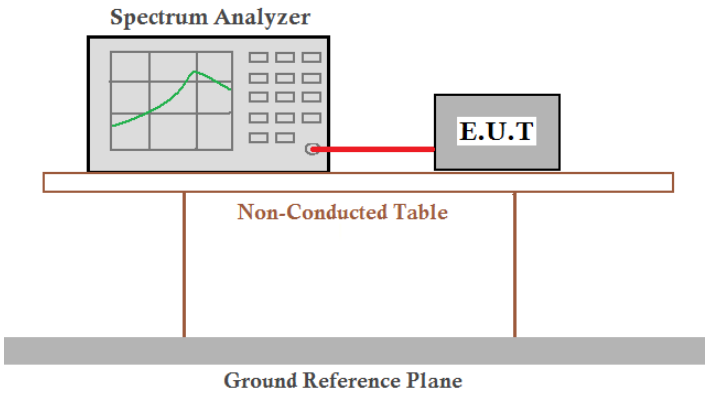
6.4 Carrier Frequencies Separation

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 and DA00-705
Receiver setup:	RBW=100 kHz, VBW=300 kHz, detector=Peak
Limit:	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

6.5 Hopping Channel Number

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)(i)
Test Method:	ANSI C63.10:2013 and DA00-705
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak
Limit:	50 channels
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

6.6 Dwell Time

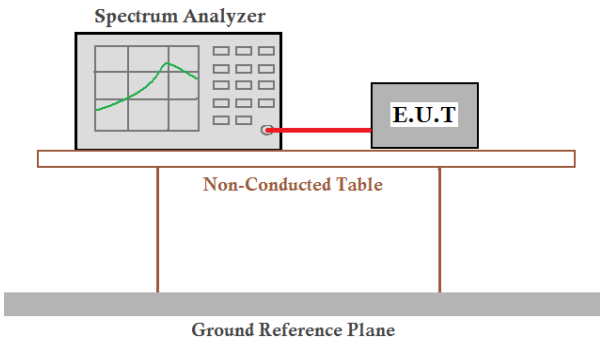
Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)(i)
Test Method:	ANSI C63.10:2013 and KDB DA00-705
Receiver setup:	RBW=1 MHz, VBW=1 MHz, Span=0 Hz, Detector=Peak
Limit:	Occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both are placed on a Non-Conducted Table, which is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

6.7 Pseudorandom Frequency Hopping Sequence

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1) requirement:
For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.	
EUT Pseudorandom Frequency Hopping Sequence	
An example of Pseudorandom Frequency Hopping Sequence as follow:	
5 3 9 15 ... 36 .. 141 4 48 7 ...11 50 28 69 ... 47 28 12	
Each frequency used equally on the average by each transmitter.	
The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.	

6.8 Band Edge

6.8.1 Conducted Emission Method

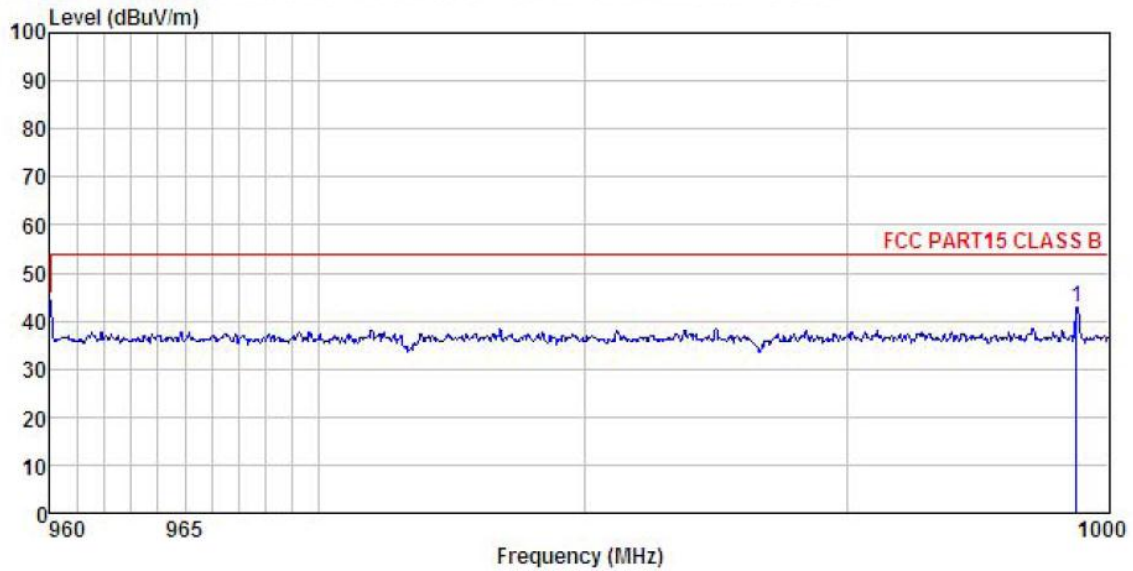
Test Requirement:	FCC Part 15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and DA00-705
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Non-hopping mode and hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

6.8.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209 and 15.205				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	960MHz to1240MHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	Above 1GHz	54.00		Average Value	
		74.00		Peak Value	
Test setup:					
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT was placed on the top of a rotating table 1.5meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. 				
Test Instruments:	Refer to section 5.8 for details				
Test mode:	Non-hopping mode				
Test results:	Passed				

Below 1GHz:

Product Name:	Handheld RFID Reader	Product Model:	LP-006-GI
Test By:	YT	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

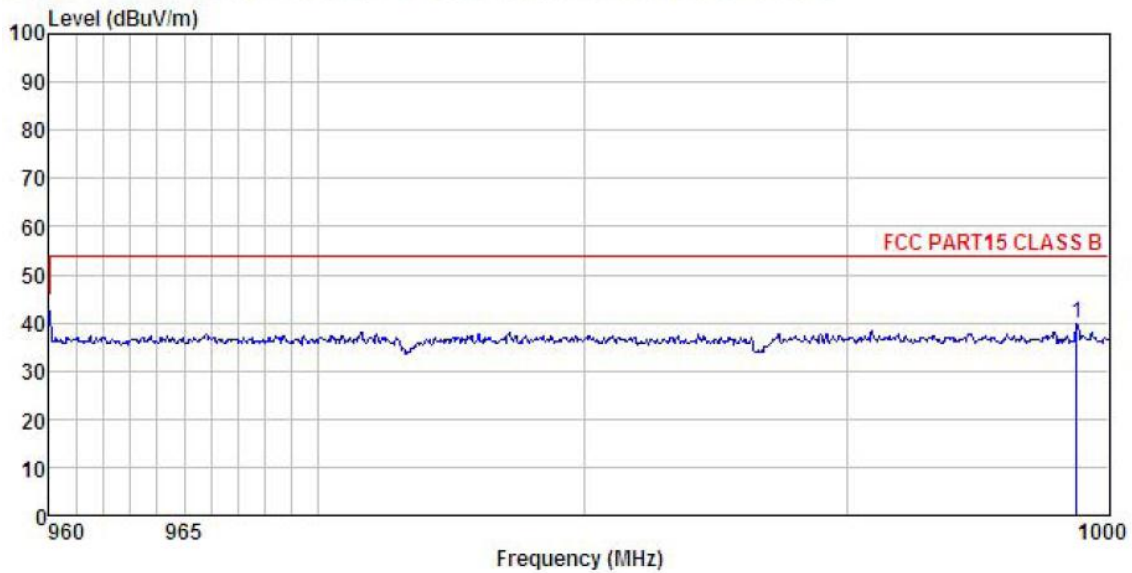


	ReadAntenna	Cable	Preamp	Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line		
-----	-----	-----	-----	-----	-----	-----		
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m		
1	998.776	15.60	22.80	4.46	0.00	42.86	54.00	-11.14

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Handheld RFID Reader	Product Model:	LP-006-GI
Test By:	YT	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



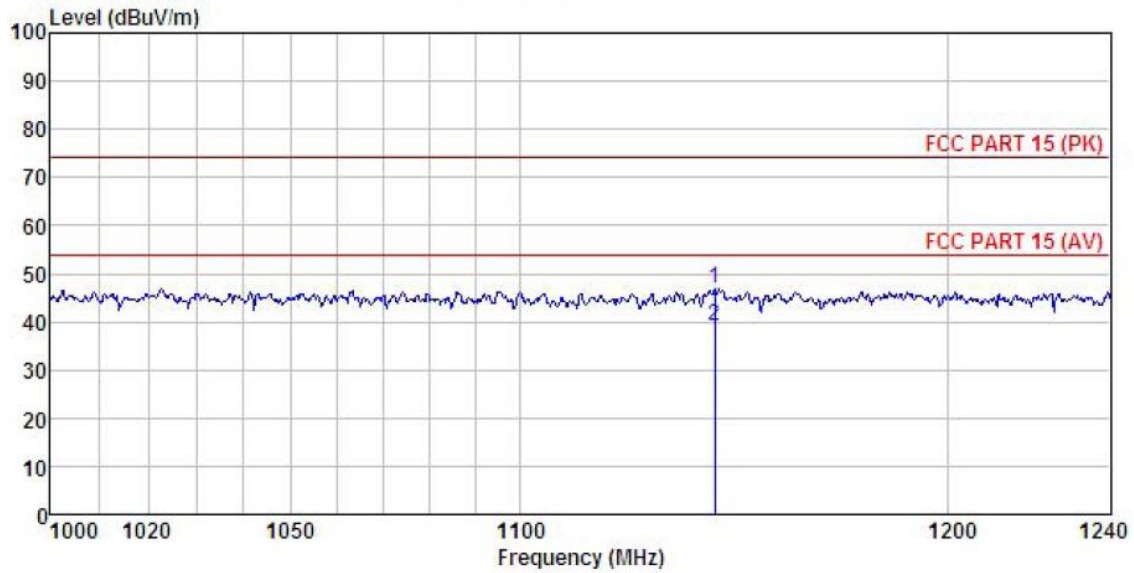
	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	998.776	12.51	22.80	4.46	0.00	39.77	54.00 -14.23

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Above 1GHz:

Product Name:	Handheld RFID Reader	Product Model:	LP-006-GI
Test By:	YT	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Huni: 57%

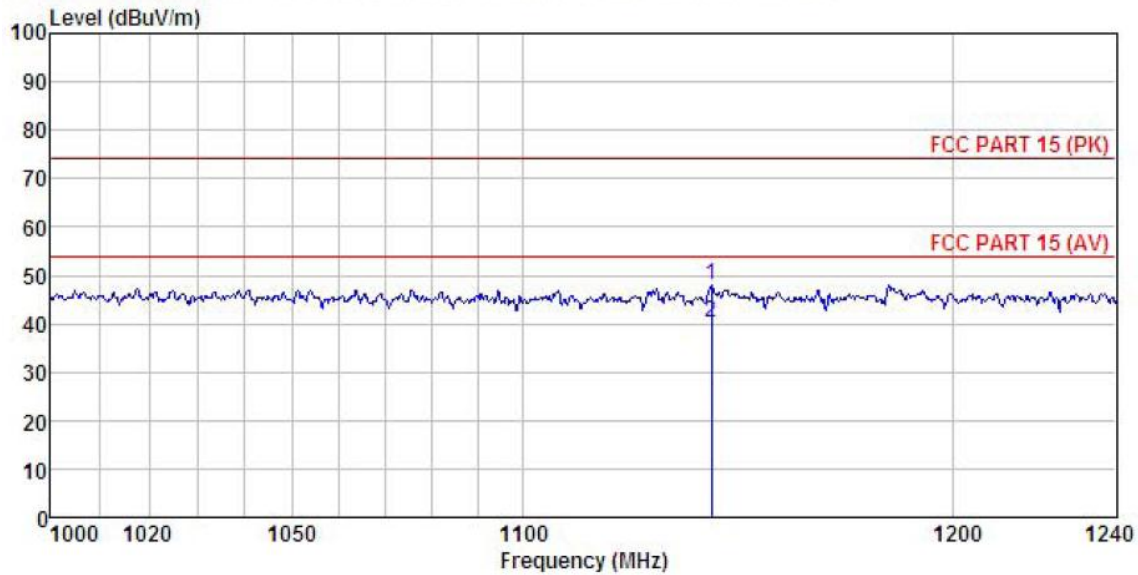


	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1144.394	18.96	24.52	3.24	0.00	46.72	74.00	-27.28 Peak
2	1144.394	11.47	24.52	3.24	0.00	39.23	54.00	-14.77 Average

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Handheld RFID Reader	Product Model:	LP-006-GI
Test By:	YT	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



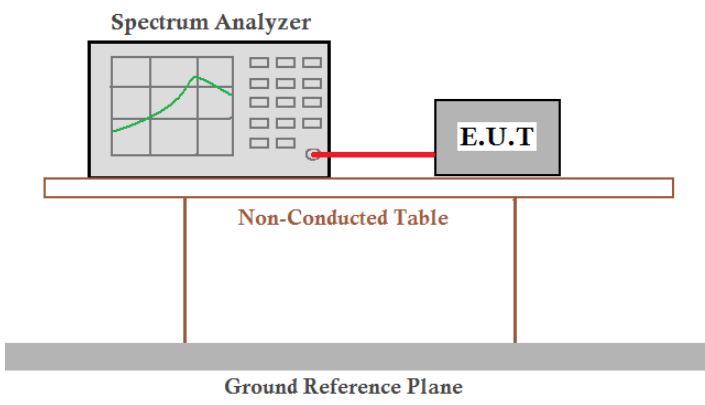
	ReadAntenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	1142.672	20.33	24.52	3.23	0.00	48.08	74.00 -25.92 Peak
2	1142.672	12.56	24.52	3.23	0.00	40.31	54.00 -13.69 Average

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

6.9 Spurious Emission

6.9.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and DA00-705
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Non-hopping mode
Test results:	Refer to the FCC ID: 2AOJULP-006D, Report No.: CCISE180913008.

6.9.2 Radiated Emission Method

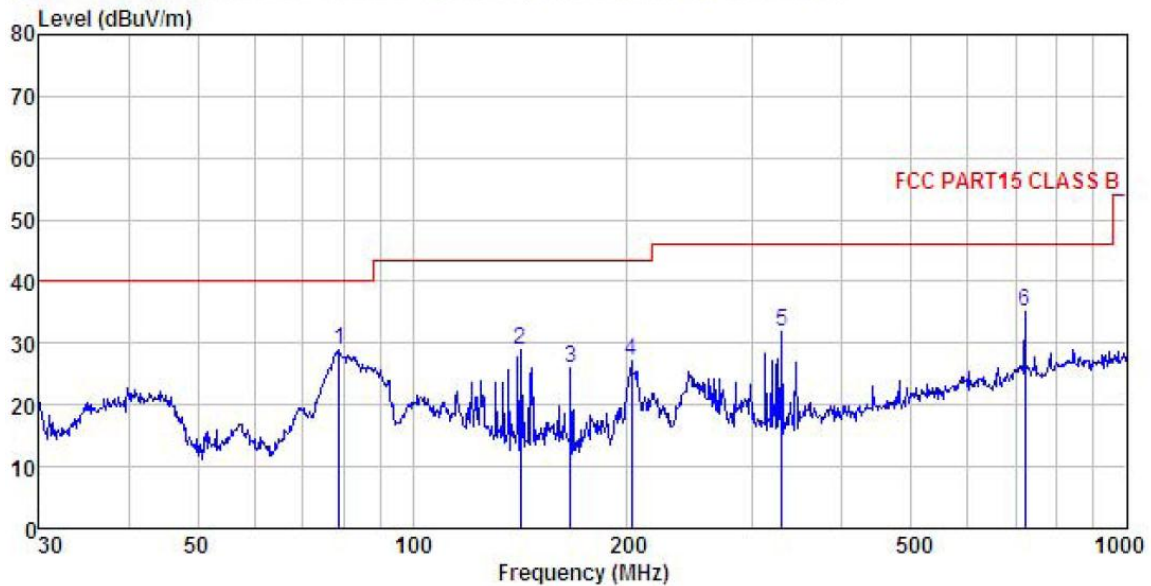
Test Requirement:	FCC Part 15 C Section 15.209				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	9 kHz to 10 GHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	30MHz-88MHz	40.0		Quasi-peak Value	
	88MHz-216MHz	43.5		Quasi-peak Value	
	216MHz-960MHz	46.0		Quasi-peak Value	
	960MHz-1GHz	54.0		Quasi-peak Value	
	Above 1GHz	54.0		Average Value	
		74.0		Peak Value	
Test setup:	Below 1GHz				
	Above 1GHz				
Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8m(below 1GHz) /1.5m(above 1GHz) above the ground at a 3 meter chamber. The table				

	<p>was rotated 360 degrees to determine the position of the highest radiation.</p> <ol style="list-style-type: none"> 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Non-hopping mode
Test results:	Pass
Remark:	<ol style="list-style-type: none"> 1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case. 2. 9 kHz to 30 MHz is noise floor, so only shows the data of above 30MHz in this report.

Measurement Data (worst case):

Below 1GHz:

Product Name:	Handheld RFID Reader	Product Model:	LP-006-GI
Test By:	YT	Test mode:	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%

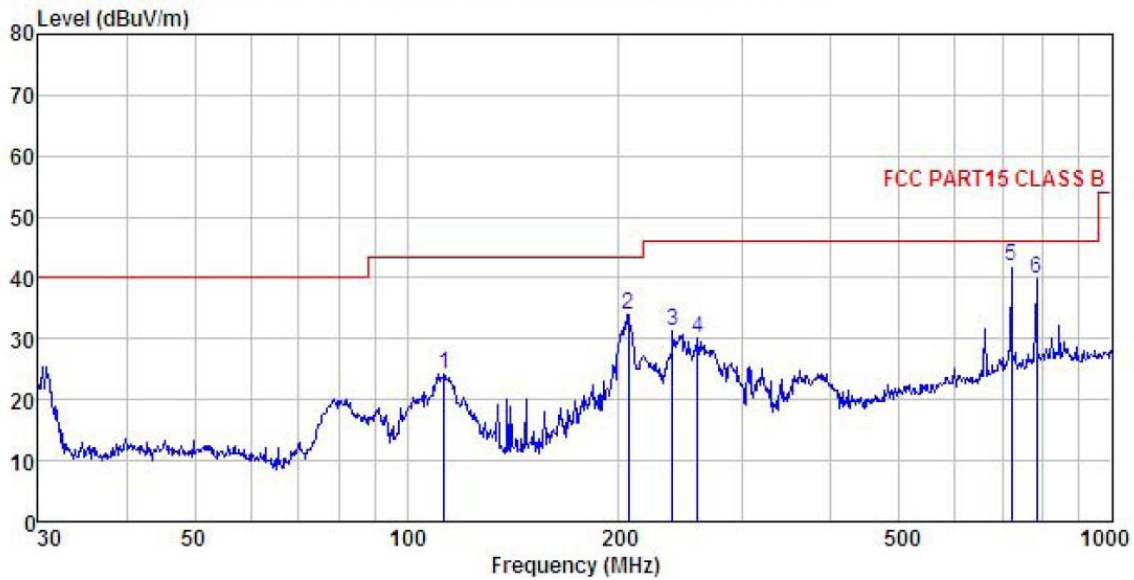


	Freq	ReadAntenna	Cable	Preamp	Level	Limit	Over	Remark
	MHz	Level	Factor	Loss	Factor	Line	Limit	
		dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	78.965	49.37	7.65	1.65	29.65	29.02	40.00	-10.98 QP
2	141.826	46.25	9.39	2.42	29.26	28.80	43.50	-14.70 QP
3	166.651	43.03	9.52	2.64	29.08	26.11	43.50	-17.39 QP
4	202.810	42.41	10.72	2.87	28.81	27.19	43.50	-16.31 QP
5	329.039	43.28	14.19	3.03	28.51	31.99	46.00	-14.01 QP
6	721.726	39.05	20.49	4.26	28.58	35.22	46.00	-10.78 QP

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product Name:	Handheld RFID Reader	Product Model:	LP-006-GI
Test By:	YT	Test mode:	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24°C Humi: 57%



	ReadAntenna	Cable Preamp	Limit	Over					
Freq	Level	Loss	Line	Limit	Remark				
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	112.920	40.05	11.41	2.09	29.44	24.11	43.50	-19.39	QP
2	206.398	49.13	10.88	2.86	28.79	34.08	43.50	-9.42	QP
3	238.310	44.99	12.22	2.82	28.60	31.43	46.00	-14.57	QP
4	258.326	42.90	12.87	2.83	28.52	30.08	46.00	-15.92	QP
5	721.726	45.72	20.49	4.26	28.58	41.89	46.00	-4.11	QP
6	782.345	42.49	21.22	4.35	28.29	39.77	46.00	-6.23	QP

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

Above 1GHz:

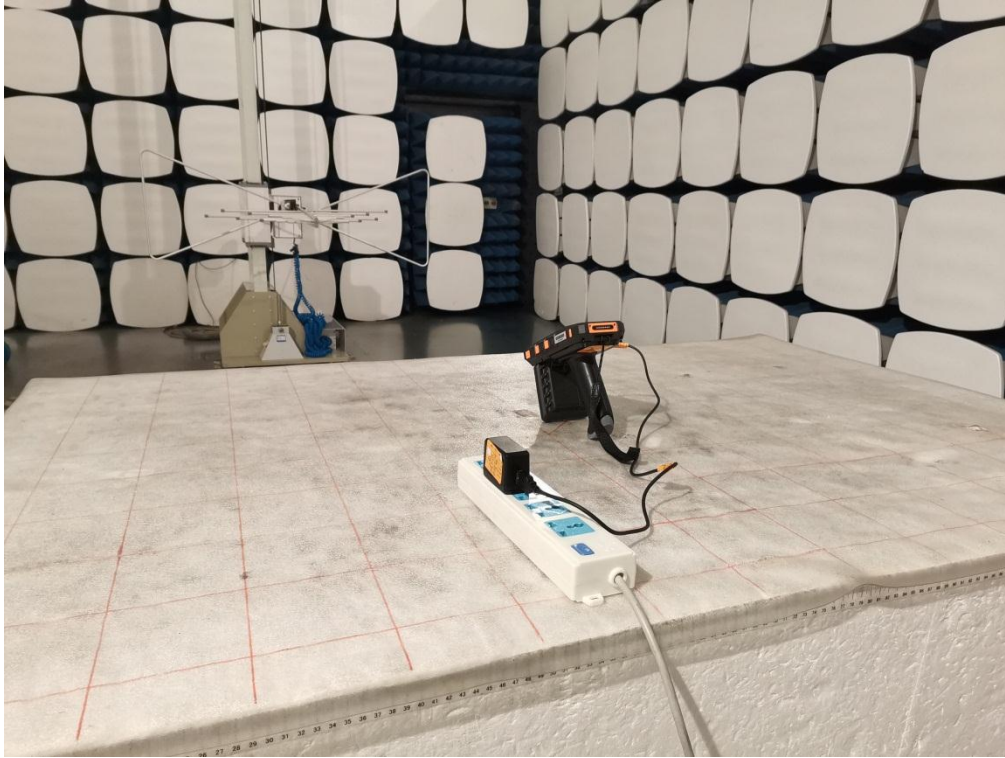
Test channel: Lowest channel								
Detector: Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1805.50	60.04	25.61	4.12	41.22	48.55	74.00	-25.45	Vertical
1805.50	58.04	25.61	4.12	41.22	46.55	74.00	-27.45	Horizontal
Detector: Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1805.50	52.62	25.61	4.12	41.22	41.13	54.00	-12.87	Vertical
1805.50	49.93	25.61	4.12	41.22	38.44	54.00	-15.56	Horizontal
Test channel: Middle channel								
Detector: Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1830.50	62.60	25.63	4.15	41.27	51.11	74.00	-22.89	Vertical
1830.50	61.28	25.63	4.15	41.27	49.79	74.00	-24.21	Horizontal
Detector: Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1830.50	53.62	25.63	4.15	41.27	42.13	54.00	-11.87	Vertical
1830.50	52.44	25.63	4.15	41.27	40.95	54.00	-13.05	Horizontal
Test channel: Highest channel								
Detector: Peak Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1854.50	55.46	25.65	4.17	41.32	43.96	74.00	-30.04	Vertical
1854.50	56.96	25.65	4.17	41.32	45.46	74.00	-28.54	Horizontal
Detector: Average Value								
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1854.50	49.63	25.65	4.17	41.32	38.13	54.00	-15.87	Vertical
1854.50	48.82	25.65	4.17	41.32	37.32	54.00	-16.68	Horizontal

Remark:

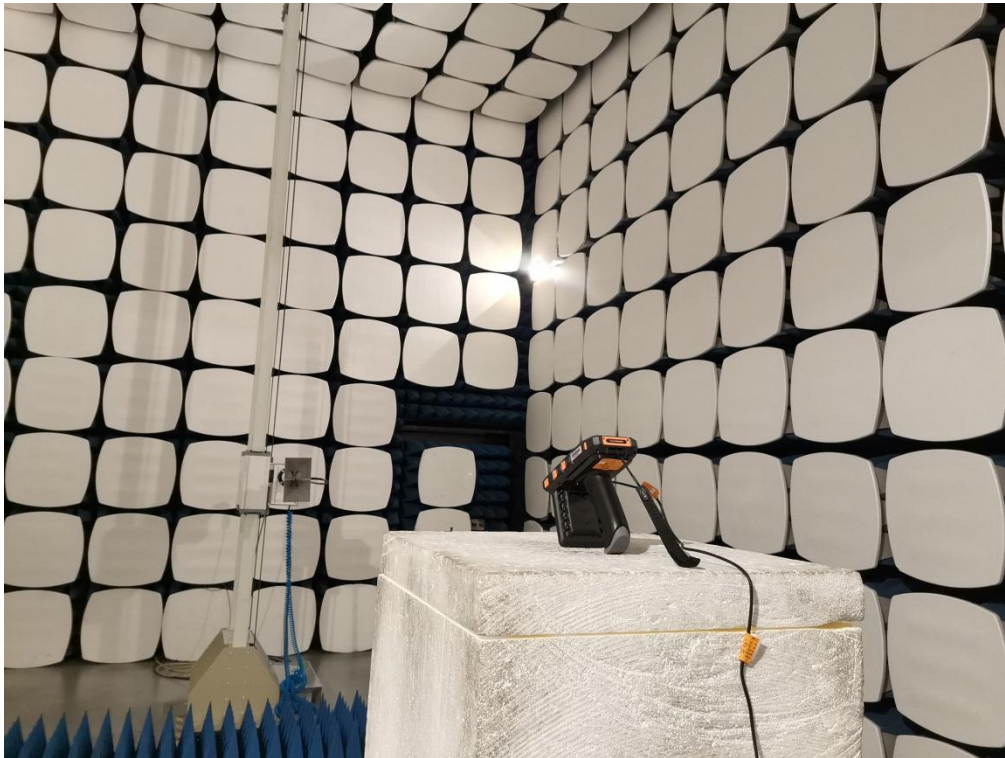
- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

7 Test Setup Photo

Radiated Spurious Emission
Below 1GHz



Above 1GHz



8 EUT Constructional Details

Reference to the test report No.: CCISE190708901

-----End of report-----