

RF EXPOSURE EVALUATION REPORT

Product Name: COMPACT

Trade Mark: 

Model No. / HVIN: COMPACT-AAAA-R01

Add. Model No. / HVIN: N/A

Report Number: 2212163242RFC-2

Test Standards: FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 5

FCC ID: 2AIKG-COMPACT

IC: 25270-COMPACT

Test Result: PASS

Date of Issue: April 28, 2023

Prepared for:

VIX Technology (Aust) Pty Ltd
Level 1, 50 St Georges Terrace, Perth WA 6000 Australia

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
**Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and
technology park, Longhua district, Shenzhen, China**

TEL: +86-755-2823 0888

FAX: +86-755-2823 0886

Prepared by:



Calvin Chen
Senior Project Engineer

Reviewed by:



Henry Lu
Team Leader

Approved by:



Kevin Liang
Assistant Manager

Date:

April 28, 2023

Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS102-V1.1

Version

Version No.	Date	Description
V1.0	April 28, 2023	Original



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-RSS102-V1.1

CONTENTS

1. GENERAL INFORMATION	4
1.1 CLIENT INFORMATION	4
1.2 EUT INFORMATION	4
1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD	4
1.4 OTHER INFORMATION.....	4
1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	5
1.6 DEVIATION FROM STANDARDS	5
1.7 ABNORMALITIES FROM STANDARD CONDITIONS.....	5
1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER	5
2. EQUIPMENT LIST	5
3. MPE EVALUATION	6
3.1 REFERENCE DOCUMENTS FOR EVALUATION	6
3.2 MPE COMPLIANCE REQUIREMENT	6
3.2.1 LIMITS	6
3.2.2 TEST PROCEDURE	7
3.3 MPE CALCULATION METHOD	7
3.4 MPE CALCULATION RESULTS	7
3.4.1 FOR RFID	7
APPENDIX 1 PHOTOS OF TEST SETUP.....	9
APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS.....	9

1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	VIX Technology (Aust) Pty Ltd
Address of Applicant:	Level 1, 50 St Georges Terrace, Perth WA 6000 Australia
Manufacturer:	VIX Technology (Aust) Pty Ltd
Address of Manufacturer:	Level 1, 50 St Georges Terrace, Perth WA 6000 Australia

1.2 EUT INFORMATION

Product Name:	COMPACT	
Model No. / HVIN:	COMPACT-AAAA-R01	
Add. Model No. / HVIN:	N/A	
Trade Mark:		
DUT Stage:	Production Unit	
EUT Supports Function: (Provided by the customer)	NFC:	13.553 MHz to 13.567 MHz
Software Version:	1.0.2147.CR (Provided by the customer)	
Hardware Version:	N/A(Provided by the customer)	
Sample Received Date:	December 21, 2022	
Remark: The above EUT's information was provided by customer. Please refer to the specifications or user's manual for more detailed description.		

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

Frequency Band:	13.110 MHz to 14.010 MHz
Nominal Operating Frequency:	13.56 MHz
Work in Modes:	☐ Card Emulation ☒ Reader/Writer ☐ Peer-to-Peer
NFC Type:	☒ NFC A Type ☒ NFC B Type ☒ NFC F Type ☒ NFC V Type
Max. Data Rates:	848 Kbps
Type of Modulation:	ASK
Number of Channels:	1
Antenna Type: (Provided by the customer)	PCB Antenna
Maximum Field Strength:	77.61 dBμV/m at 3 meter

1.4 OTHER INFORMATION

Frequency	Test RF Channel
13.56 MHz	Channel 1
	13.56 MHz

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 5

All test items have been performed and recorded as per the above standards

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	RSS-102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
3	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

3.2.1.2 RSS-102 Issue 5

According to RSS-102 Issue 5, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

According to RSS-102 Issue 5, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz⁶ and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

3.2.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3.3 MPE CALCULATION METHOD

FCC 47 CFR Part 1 Subpart I

$$S = PG/4\pi R^2 = EIRP/4\pi R^2$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.4 MPE CALCULATION RESULTS

Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.4.1 For RFID

For RFID function, operating at 13.110 MHz to 14.010 MHz

3.4.1.1 Antenna Type:

PCB Antenna

3.4.1.2 Antenna Gain:

N/A.

3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I

For RFID				
Frequency (MHz)	Maximum H-field (dBμV/m)	H-field strength (V/m)	H-field strength Limit (V/m)	Result
13.56	77.61	0.0075945	60.77	Pass

3.4.1.4 Results for RSS-102 Issue 5

For RFID				
Frequency (MHz)	Maximum H-field (dBμV/m)	e.i.r.p (W)	e.i.r.p Limit (W)	Result
13.56	77.61	0.0001730	1	Pass

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of UnionTrust, this report can't be reproduced except in full.
