

# JianYan Testing Group Shenzhen Co., Ltd.

Report No: JYTSZ-R01-2200024

# IC REPORT

Applicant: Nebra Ltd

Address of Applicant: Unit 4 Bells Yew Green Business Court Bells Yew Green

**Equipment Under Test (EUT)** 

Product Name: Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor

Helium Hotspot ROCK Pi 4 Version

Model No.: NEBHNT-HHRK4-433, NEBHNT-HHRK4-470, NEBHNT-

HHRK4-868, NEBHNT-HHRK4-915, NEBHNT-HHRK4-433-2, NEBHNT-HHRK4-470-2, NEBHNT-HHRK4-868-2, NEBHNT-HHRK4-915-2, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-470-3, NEBHNT-HHRK4-868-3, NEBHNT-HHRK4-470-3, NEBHNT-HHRK4-868-

3, NEBHNT-HHRK4-915-3

Canada IC: 27187-HHRK4

Applicable standards: ICES-003 Issue 7 October 2020

Date of sample receipt: 05 Jan., 2022

**Date of Test:** 06 Jan., to 28 Jan., 2022

Date of report issued: 29 Jan., 2022

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 JYT product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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# Version

Version No.	Date	Description
00	29 Jan., 2022	Original

Tested by:  Test Engineer	Date: _	29 Jan., 2022
Reviewed by: Project Engineer	Date:	29 Jan., 2022

JianYan Testing Group Shenzhen Co., Ltd. No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366





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# 4 Test Summary

Test Item	Section	Result
Conducted Emission	ICES-003 Section 3.2.1	Pass
Radiated Emission	ICES-003 Section 3.2.2	Pass

#### Remark:

- 1. Pass: The EUT complies with the essential requirements in the standard.
- 2. N/A: The EUT not applicable of the test item.

Test Method: ANSI C63.4:2014



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### 5 General Information

### 5.1 Client Information

Applicant:	Nebra Ltd
Address:	Unit 4 Bells Yew Green Business Court Bells Yew Green
Manufacturer/Factory:	Nebra Ltd
Address:	Unit 4 Bells Yew Green Business Court Bells Yew Green

# **5.2 General Description of E.U.T.**

Product Name:	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version
Model No.:	NEBHNT-HHRK4-433, NEBHNT-HHRK4-470, NEBHNT-HHRK4-868, NEBHNT-HHRK4-915, NEBHNT-HHRK4-433-2, NEBHNT-HHRK4-470-2, NEBHNT-HHRK4-868-2, NEBHNT-HHRK4-915-2, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-470-3, NEBHNT-HHRK4-868-3, NEBHNT-HHRK4-915-3, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-915-3
AC adapter:	Model No.:R241-1202500I Input: AC100-240V, 50/60Hz 1.5 A
	Output: DC 12.0V, 2.5A
Remark:	Model No.: NEBHNT-HHRK4-433, NEBHNT-HHRK4-470, NEBHNT-HHRK4-868, NEBHNT-HHRK4-915, NEBHNT-HHRK4-433-2, NEBHNT-HHRK4-470-2, NEBHNT-HHRK4-868-2, NEBHNT-HHRK4-915-2, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-470-3, NEBHNT-HHRK4-470-3, NEBHNT-HHRK4-915-3, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-915-3, The difference between the models is that the LoRa Radio module used inside is different for each variant. Along with a respective antenna for each region / frequency. The -2 and -3 flags at the end of the model number relates to the specific chip part number for the main LoRa chip.
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

# 5.3 Test Mode, and test samples plans

Operating mode	Detail description
PC mode	Keep the EUT in Downloading mode(Worst case)
Charging+Recording mode	Keep the EUT in Charging+Recording mode
Charging+Playing mode	Keep the EUT in Charging+Playing mode
FM mode	Keep the EUT in FM receiver mode
GPS mode	Keep the EUT in GPS receiver mode

The sample was placed 0.8m 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, 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.

**Remark:** Jian Yan Testing Group Shenzhen Co., Ltd. is only responsible for the test project data of the above samples, and will keep the above samples for a month.

# 5.4 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%)	
Conducted Emission (9kHz ~ 150KHz) for V-AMN	3.11 dB	

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Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.





Conducted Emission (150kHz ~ 30MHz) for V-AMN	2.62 dB
Conducted Emission (150kHz ~ 30MHz) for AAN	3.54 dB
Radiated Emission (9kHz ~ 30MHz electric field) for 3m SAC	3.13 dB
Radiated Emission (9kHz ~ 30MHz magnetic field) for 3m SAC	3.13 dB
Radiated Emission (30MHz ~ 1GHz) for 3m SAC	4.45 dB
Radiated Emission (1GHz ~ 18GHz) for 3m SAC	5.34 dB
Radiated Emission (18GHz ~ 40GHz) for 3m SAC	5.34 dB

### 5.5 Description of Support Units

Manufacturer	Description	Model	Serial Number	FCC ID/DoC
DELL	PC	OPTIPLEX7070	2J8XSZ2	DoC
DELL	MONITOR	SE2018HR	3M7QPY2	DoC
DELL	KEYBOARD	KB216d	N/A	DoC
DELL	MOUSE	MS116t1	N/A	DoC
HP	Printer	HP LaserJet P1007	VNFP409729	DoC

### 5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

### 5.7 Description of Cable Used

Cable Type	Description	Length	From	То
N/A	N/A	N/A	N/A	N/A

### 5.8 Additions to, deviations, or exclusions from the method

No

# 5.9 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC - Designation No.: CN1211

JianYan Testing Group Shenzhen 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 and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen 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 L15527

JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527.

### • A2LA - Registration No.: 4346.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 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

# 5.10 Laboratory Location

JianYan Testing Group Shenzhen Co., Ltd.

Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366

JianYan Testing Group Shenzhen Co., Ltd.

No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China.





Email: info-JYTee@lets.com, Website: http://jyt.lets.com





## **5.11 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	ETS	RFD-100	Q1984	04-14-2021	04-13-2024
BiConiLog Antenna	SCHWARZBECK	VULB9163	9163-1246	03-07-2021	03-06-2022
Biconical Antenna	SCHWARZBECK	VUBA 9117	9117#359	06-17-2021	06-17-2022
Horn Antenna	SCHWARZBECK	BBHA9120D	912D-916	03-07-2021	03-06-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1067	04-02-2021	04-01-2022
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9170	1068	04-02-2021	04-01-2022
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	03-03-2021	03-02-2022
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	03-03-2021	03-02-2022
Spectrum analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Low Pre-amplifier	SCHWARZBECK	BBV9743B	00305	03-07-2021	03-06-2022
High Pre-amplifier	SKET	LNPA_0118G-50	MF280208233	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-NN-8M	JYT3M-1	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-18G-NN-8M	JYT3M-2	03-07-2021	03-06-2022
Cable	Qualwave	JYT3M-1G-BB-5M	JYT3M-3	03-07-2021	03-06-2022
Cable	Bost	JYT3M-40G-SS-8M	JYT3M-4	04-02-2021	04-01-2022
EMI Test Software	Tonscend	TS+		Version:3.0.0.1	·

Conducted Emission:						
Test Equipment	Manufacturer	Mode	No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI	3	101189	03-03-2021	03-02-2022
LISN	Rohde & Schwarz	ENV4	32	101602	04-06-2021	04-05-2022
LISN	Rohde & Schwarz	ESH3-	Z5	843862/010	06-18-2020	06-17-2022
ISN	Schwarzbeck	CAT3 8	158	#96	03-03-2021	03-02-2022
ISN	Schwarzbeck	CAT5 8	158	#166	03-03-2021	03-02-2022
ISN	Schwarzbeck	NTFM 8	158	#126	03-03-2021	03-02-2022
RF Switch	TOP PRECISION	RSU03	301	N/A	03-03-2021	03-02-2022
Cable	Bost	JYTCE-1G	NN-2M	JYTCE-1	03-03-2021	03-02-2022
Cable	Bost	JYTCE-1G	BN-3M	JYTCE-2	03-03-2021	03-02-2022
EMI Test Software	AUDIX	E3		Ve	ersion: 6.110919	b

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# **Test results and Measurement Data**

### **6.1 Conducted Emission**

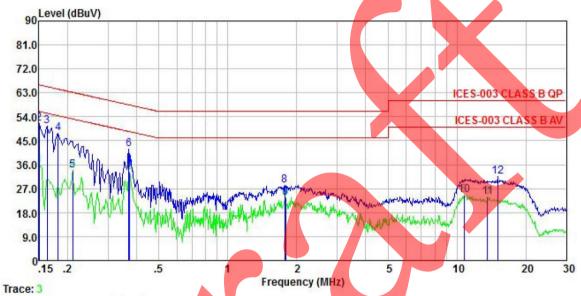
Test Requirement:	ICES-003 Section 3.2.1					
Test Frequency Range:	150kHz to 30MHz					
Class / Severity:	Class B					
Receiver setup:	RBW=9kHz, VBW=30kHz					
Limit:	Frequency range (MHz)		(dBµV)			
	0.15-0.5	Quasi-peak 66 to 56*	Average 56 to 46*			
	0.5-5	56	46			
	0.5-30	60	50			
	* Decreases with the logarithm	of the frequency.				
Test setup:	Reference Plane					
	Test table/Insulation plane  Remark E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network Test table height-0.8m	Filter AC power				
Test procedure	<ol> <li>The E.U.T and simulators are impedance stabilization network coupling impedance for the normal stabilization network.</li> <li>The peripheral devices are all LISN that provides a 500hm/stermination. (Please refers to photographs).</li> <li>Both sides of A.C. line are interference. In order to find positions of equipment and according to ANSI C63.4(late).</li> </ol>	ork(L.I.S.N.). The province as uring equipment. Iso connected to the m 50uH coupling impeda the block diagram of the checked for maximum d the maximum emission all of the interface cal	ride a 50ohm/50uH nain power through a since with 50ohm the test setup and conducted ion, the relative bles must be changed			
Test Instruments:	Refe <mark>r to section 5.11 for details</mark>					
Test mode:	Refer to section 5.3 for details					
Test results:	Pass					

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### Measurement data:

Product name:	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version	Product model:	NEBHNT-HHRK4-915	
Test by:	Mike	Test mode:	PC mode	
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line	
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5 °C Huni: 55%	



	120	Read	LISN	Cable	100	Limit	Over	20 1
	Freq	Level	Factor	Loss	Level	Line	Limit	Remark
	MHz	dBu₹	₫B	₫B	dBu₹	dBu₹	dB	
1 2	0.150 0.150	35.83 51.55	0.04 0.04	0.01	35.88 51.60		-20.12 -14.40	Average
3	0.162 0.182	50.56 47.72	0.04	0.01	50.61 47.77	65.34	-14.73 -16.65	QP
5	0. 211 0. 369	33.76 41.88	0.04	0.03	33.83 41.95	53.18		Average
23456789	0.373 1.772	33. 23 27. 84	0.04	0.03	33.30 28.09	48.43		Average
9 10	1.790 10.733	23.43	0.07 0.22	0.19 0.12	23.69 24.62	46.00	-22.31	Average Average
11	13.623	23.63	0.26	0.12	24.01	50.00	-25.99	Average
12	15.066	31.20	0.27	0.14	31.61	60.00	-28.39	ųР

### Notes:

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.



Product name:	Nebra Indoor LoRa Ga ROCK Pi 4 Version / Indoor Helium Hotspot Pi 4 Version	Nebra	Product mod	del:	NEBH	NT-HHRK4	-915
Test by:	Mike	Т	est mode:		PC mc	ode	
Test frequency:	150 kHz ~ 30 MHz	P	hase:		Neutra	al	
Test voltage:	AC 120 V/60 Hz	E	nvironmen	t:	Temp:	22.5℃	Huni: 55%
90 Level (dBuV) 81.0 72.0 63.0 54.0 45.0 36.0 27.0 18.0 9.0 0.15 .2	.5 Read LISN	Freque	2 ncy (MHz)	Limit	10 Over	5-003 CLASS 5-003 CLASS 12-14-14-14-14-14-14-14-14-14-14-14-14-14-	
Fre		Loss	Level	AVACOUS III		Remark	
MI	Iz dBuV dB	₫B	dBu∀	dBu∀	₫B		
1 0.15 2 0.15 3 0.16 4 0.16 5 0.19 6 0.20 7 0.35 8 0.37 9 2.22 10 3.22 11 8.27 12 19.74	50 52.65 0.05 56 37.07 0.05 56 50.27 0.05 70 46.36 0.04 70 33.39 0.04 71 33.93 0.04 72 28.24 0.07 73 25.55 0.16	0. 01 0. 01 0. 01 0. 03 0. 04 0. 02 0. 03 0. 17 0. 07 0. 10 0. 15	39.59 52.71 37.13 50.33 46.43 33.47 39.98 34.00 28.48 22.01 25.81 15.71	65.16 - 64.02 - 53.36 - 58.78 - 48.43 - 56.00 - 60.00 -	13. 29 18. 03 14. 83 17. 59 19. 89 18. 80 14. 43 27. 52 23. 99 34. 19	QP Average QP Average QP Average QP Average	

#### Notes

- 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
- 2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
- 3. Final Level =Receiver Read level + LISN Factor + Cable Loss.

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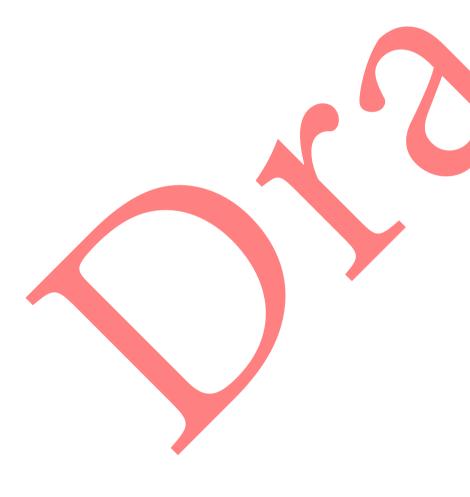
## 6.2 Radiated Emission

Test Requirement:	ICES-003 Section 3.2.2						
Test Frequency Range:	30MHz to 6000MHz						
Test site:	Measurement Dis						
Receiver setup:	Frequency	Detecto	or	RBW	VBW	Remark	
'	30MHz-1GHz	Quasi-pe	eak	120kHz	300kHz	Quasi-peak Value	
	Above 1GHz	Peak		1MHz	3MHz	Peak Value	
	Above IGHZ	RMS		1MHz	3MHz	Average Value	
Limit:	Frequenc	;y	Lim	nit (dBuV/m	@3m)	Remark	
	30MHz-88N	ЛHz		40.0		Quasi-peak Value	
	88MHz-216	MHz		43.5		Quasi-peak Value	
	216MHz-230	MHz		46.0		Quasi-peak Value	
	230MHz-960	MHz		47.0		Quasi-peak Value	
	960MHz-10	SHz		54.0		Quasi-peak Value	
	Above 1GI	<b>⊔</b> -		54.0		Average Value	
	Above 1GI	П		74.0		Peak Value	
Test setup:	Below 1GHz						
	EUT	4m		RF T Rece			
	Above 1GHz	EUT Jable)	3m	Horn Antenna	Antenna Tower		
Test Procedure:	ground at a 3 n degrees to dete	Dlaced on the ermine the set 3 meter unted on the	ne top anec positi s awa e top	o of a rotatin hoic camber on of the hig ay from the ii of a variable	The table thest radiat nterference e-height and	e-receiving antenna, tenna tower.	
	ground to deter	rmine the n	naxim	ium value of	the field st		





	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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
	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 5.11 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	All of the observed value above 6GHz ware the niose floor , which were no recorded



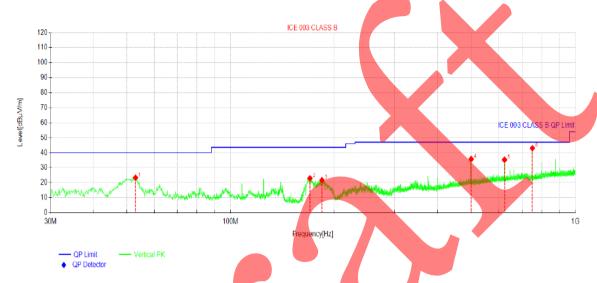
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### **Measurement Data:**

### **Below 1GHz:**

Product name:	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version	Product model:	NEBHNT-HHRK4-915
Test By:	YT	Test mode:	PC mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	52.9913	37.96	23.31	-14.65	40.00	16.69	PK	Vertical
2	170.082	39.92	22.92	-17.00	43.50	20.58	PK	Vertical
3	184.342	38.08	21.65	-16.43	43.50	21.85	PK	Vertical
4	500.012	42.69	35.73	-6.96	47.00	11.27	PK	Vertical
5	625.057	40.58	<b>3</b> 5.27	-5.31	47.00	11.73	PK	Vertical
6	750.103	46.69	42.95	-3.74	47.00	4.05	PK	Vertical

### Remark:

- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. The Aux Factor is a notch filter switch box loss, this item is not used.



Product name:	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version	Product model:	NEBHNT-HHRK4-915
Test By:	Mike	Test mode:	PC mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



	NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
	1	59.0059	28.72	13.78	-14.94	40.00	26.22	PK	Horizontal
	2	169.888	34.78	17.78	-17.00	43.50	25.72	PK	Horizontal
	3	250.018	34.05	20.26	-13.79	47.00	26.74	PK	Horizontal
	4	375.063	44.49	33.61	-10.88	47.00	13.39	PK	Horizontal
	5	500.012	40.68	33.72	-6.96	47.00	13.28	PK	Horizontal
4	6	750.103	43.38	39.64	-3,74	47.00	7.36	PK	Horizontal

#### Remark

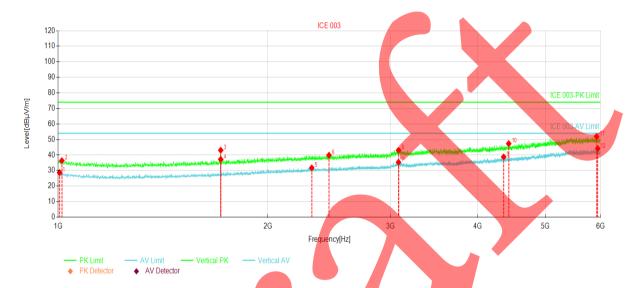
- 1. Final Level = Receiver Read level + Antenna Factor + Cable Loss + Aux Factor Preamplifier Factor.
- 2. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3. The Aux Factor is a notch filter switch box loss, this item is not used.

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### **Above 1GHz:**

Product name:	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version	Product model:	NEBHNT-HHRK4-915
Test By:	Mike	Test mode:	PC mode
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



Su	Suspected Data List								
N	Э.	Freq.	Reading	Level	Factor	Limit	Margin	Trace	Polarity
		[MHz]	[dBµV/m]	[dBµV/m]	[dB]	[dBµV/m]	[dB]		
1		1005.00	50.31	28.70	-21.61	54.00	25.30	AV	Vertical
2	2	1012.50	58.09	36.36	-21.73	74.00	37.64	PK	Vertical
3	3	1711.25	64.83	43.07	-21.76	74.00	30.93	PK	Vertical
4	1	1711.25	58.96	37.20	-21.76	54.00	16.80	AV	Vertical
5	5	2311.25	50.74	31.70	-19.04	54.00	22.30	AV	Vertical
6	3	2446.87	58.58	<b>3</b> 9.87	-18.71	74.00	34.13	PK	Vertical
7	7	3078.75	51.47	<b>3</b> 5.32	-16.15	54.00	18.68	AV	Vertical
8	3	3078.75	59.22	43.07	-16.15	74.00	30.93	PK	Vertical
9	)	4357.50	50.15	38.77	-11.38	54.00	15.23	AV	Vertical
1	0	4430.62	58.40	47.33	截图(Alt + A)	74.00	26.67	PK	Vertical
1	1	5923.75	56.69	51.84	-4.85	74.00	22.16	PK	Vertical
1:	2	5945.62	49.01	44.11	-4.90	54.00	9.89	AV	Vertical

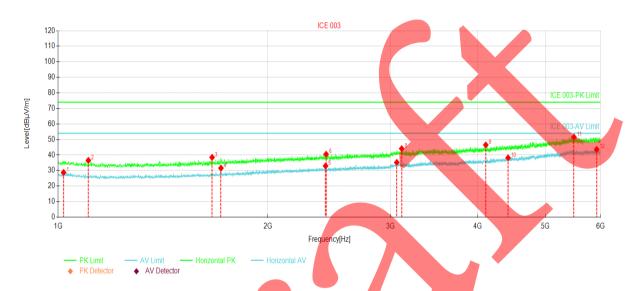
#### Remark

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

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Product name:	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version	Product model:	NEBHNT-HHRK4-915		
Test By:	Mike	Test mode:	PC mode		
Test Frequency:	1 GHz ~ 6 GHz	Polarization:	Horizontal		
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%		



	Suspected Data List								
	NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
Г	1	1018.12	50.55	28.73	-21.82	54.00	25.27	AV	Horizontal
	2	1105.00	59.65	36.52	-23.13	74.00	37.48	PK	Horizontal
Z	3	1663.12	60.45	38.48	-21,97	74.00	35.52	PK	Horizontal
	4	1712.50	53.33	31.57	-21.76	54.00	22.43	AV	Horizontal
	5	2419.37	51.72	32.96	-18.76	54.00	21.04	AV	Horizontal
	6	2423.75	59.26	40.51	-18.75	74.00	33.49	PK	Horizontal
	7	3061.25	51.53	35.22	-16.31	54.00	18.78	AV	Horizontal
	8	3111.25	60.03	44.08	-15.95	74.00	29.92	PK	Horizontal
	9	4107.50	58.98	46.49	-12.49	74.00	27.51	PK	Horizontal
	10	4421.25	49.27	38.17	-11.10	54.00	15.83	AV	Horizontal
	11	5495.62	57.61	51.54	-6.07	74.00	22.46	PK	Horizontal
	12	5924,37	48.46	43.61	-4.85	54.00	10.39	AV	Horizontal

### Remark:

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

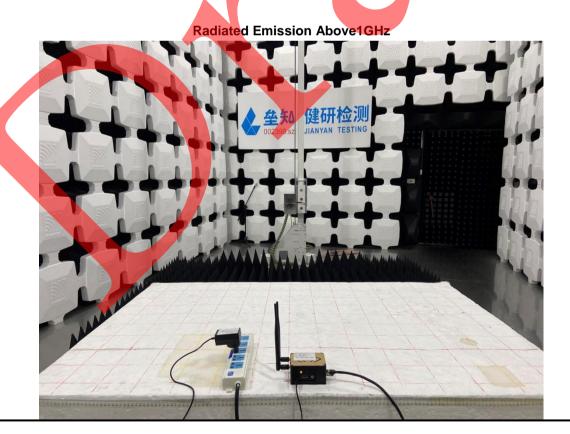
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# **Test Setup Photo**





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# 8 EUT Constructional Details

Reference to the test report No.: JYTSZ-R12-2200089.

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