

# IC REPORT

## (WIFI)

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

**Canada IC:** 27187-HHRK4

**Applicable standards:** RSS-Gen Issue 5, March 2019 Amendment 1  
RSS-247 Issue 2, February 2017

**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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## 2 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

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## 4 Test Summary

Test Items	Section	Result
AC Power Line Conducted Emission	RSS-GEN Section 8.8	Pass
Conducted Peak Output Power	RSS-247 Section 5.4(d)	Pass
6dB Emission Bandwidth 99% Occupied Bandwidth	RSS-247 Section 5.2(a)	Pass
Power Spectral Density	RSS-247 Section 5.2(b)	Pass
Band Edge	RSS-GEN Section 8.10 RSS-247 Section 5.5	Pass
Spurious Emission	RSS-GEN Section 6.13 RSS-247 Section 5.5	Pass
<b>Remark:</b> 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: Not Applicable. 3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).		
<b>Test Method:</b>	ANSI C63.4-2014 ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02	

## 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-HHRK4-470-3, NEBHNT-HHRK4-868-3, NEBHNT-HHRK4-915-3
Operation Frequency:	2412MHz~2462MHz (802.11b/802.11g/802.11n(H20))
Channel numbers:	11 for 802.11b/802.11g/802.11(H20)
Channel separation:	5MHz
Modulation technology: (IEEE 802.11b)	Direct Sequence Spread Spectrum (DSSS)
Modulation technology: (IEEE 802.11g/802.11n)	Orthogonal Frequency Division Multiplexing(OFDM)
Data speed (IEEE 802.11b):	1Mbps, 2Mbps, 5.5Mbps, 11Mbps
Data speed (IEEE 802.11g):	6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps
Data speed (IEEE 802.11n):	Up to 150Mbps
Antenna Type:	External Antenna
Antenna gain:	1 dBi
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-HHRK4-868-3, NEBHNT-HHRK4-915-3, NEBHNT-HHRK4-433-3, NEBHNT-HHRK4-470-3, NEBHNT-HHRK4-868-3, 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.

Operation Frequency each of channel for 802.11b/g/n(H20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz

3	2422MHz	6	2437MHz	9	2452MHz	
<p>Note:</p> <ol style="list-style-type: none"> <li>For 802.11n-HT40 mode, the channel number is from 3 to 9;</li> <li>Channel 1, 6 &amp; 11 selected for 802.11b/g/n-HT20 as Lowest, Middle and Highest channel. Channel 3, 6 &amp; 9 selected for 802.11n-HT40 as Lowest, Middle and Highest channel, Channel.</li> </ol>						

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### 5.3 Test environment and test mode, and test samples plans

Operating Environment:	
Temperature:	24.0 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode	Keep the EUT in continuous transmitting with modulation
<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, investigated all operating modes, rotated about all 3 axis (X, Y &amp; 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> <p>We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:</p>	
Per-scan all kind of data rate, the follow list were the worst case.	
Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
802.11n(H40)	13.5Mbps
<p><b>Remark:</b> JianYan 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.</p>	

### 5.4 Description of Support Units

The EUT has been tested as an independent unit.
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### 5.5 Measurement Uncertainty

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

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

No
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## 5.7 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>

## 5.8 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

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



## 5.9 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		

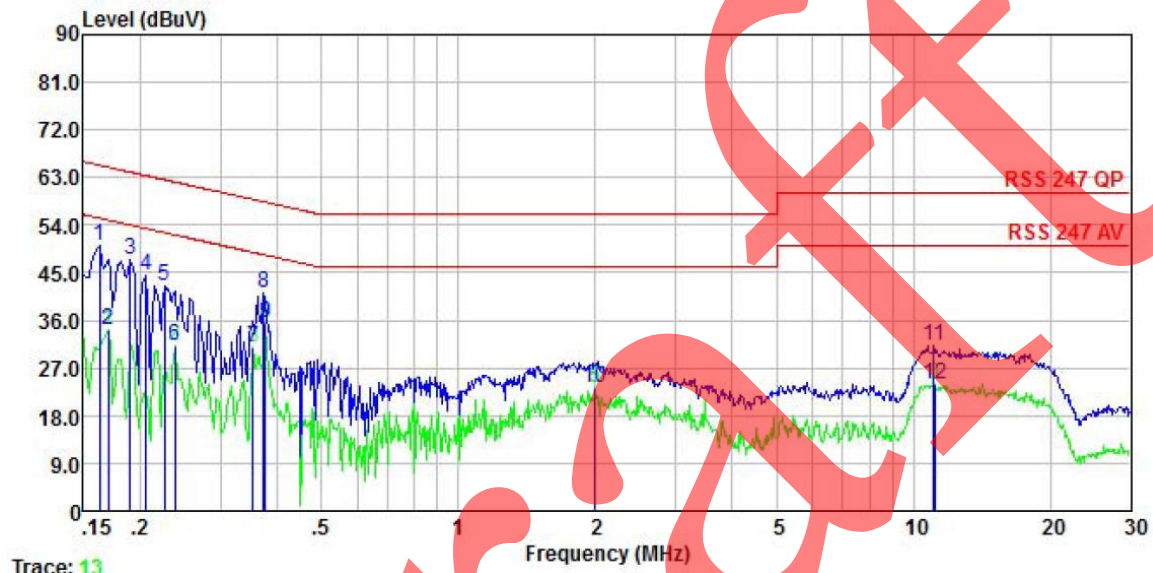
Conducted Emission:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
EMI Test Receiver	Rohde & Schwarz	ESCI 3	101189	03-03-2021	03-02-2022
LISN	Rohde & Schwarz	ENV432	101602	04-06-2021	04-05-2022
LISN	Rohde & Schwarz	ESH3-Z5	843862/010	06-18-2020	06-17-2022
ISN	Schwarzbeck	CAT3 8158	#96	03-03-2021	03-02-2022
ISN	Schwarzbeck	CAT5 8158	#166	03-03-2021	03-02-2022
ISN	Schwarzbeck	NTFM 8158	#126	03-03-2021	03-02-2022
RF Switch	TOP PRECISION	RSU0301	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	Version: 6.110919b		

Conducted method:					
Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9010B	MY60240202	10-27-2021	10-26-2022
Vector Signal Generator	Keysight	N5182B	MY59101009	10-27-2021	10-26-2022
Analog Signal Generator	Keysight	N5173B	MY59100765	10-27-2021	10-26-2022
Power Detector Box	MWRF-test	MW100-PSB	MW201020JYT	11-19-2021	11-18-2022
Simulated Station	Rohde & Schwarz	CMW270	102335	10-27-2021	10-26-2022
RF Control Box	MWRF-test	MW100-RFCB	MW200927JYT	N/A	N/A
PDU	MWRF-test	XY-G10	N/A	N/A	N/A
DC Power Supply	Keysight	E3642A	MY60296194	11-27-2020	11-26-2023
Temperature Humidity Chamber	ZhongZhi	CZ-C-150D	ZH16491	11-01-2020	10-31-2021
Test Software	MWRF-tes	MTS 8310	Version: 2.0.0.0		

Remark  
E.U.T: Equipment Under Test  
LISN: Line Impedance Stabilization Network  
Test table height=0.8m

## 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:	Wi-Fi Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Line
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Humi: 55%

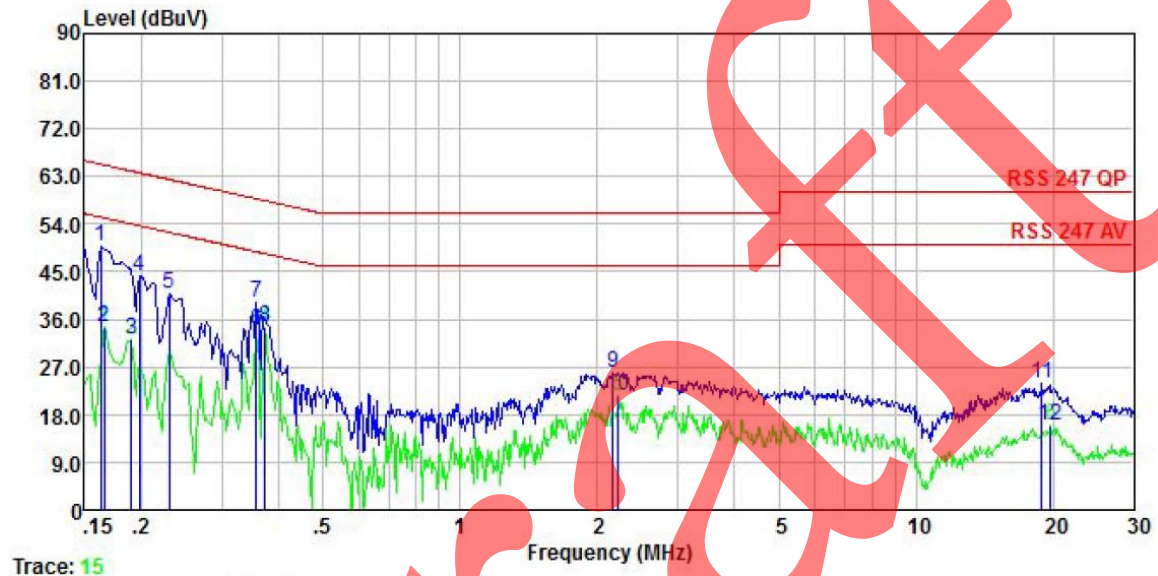


	Read	LISN	Cable	Limit	Over	
Freq	Level	Factor	Loss	Line	Limit	Remark
MHz	dBuV	dB	dB	dBuV	dB	
1	50.09	0.04	0.01	50.14	65.34	-15.20 QP
2	34.07	0.04	0.01	34.12	54.94	-20.82 Average
3	47.56	0.04	0.03	47.63	64.02	-16.39 QP
4	44.48	0.04	0.04	44.56	63.36	-18.80 QP
5	42.44	0.04	0.02	42.50	62.61	-20.11 QP
6	31.19	0.04	0.02	31.25	52.17	-20.92 Average
7	30.76	0.04	0.02	30.82	48.87	-18.05 Average
8	41.02	0.04	0.03	41.09	58.43	-17.34 QP
9	35.32	0.04	0.03	35.39	48.34	-12.95 Average
10	22.85	0.07	0.21	23.13	46.00	-22.87 Average
11	30.87	0.22	0.11	31.20	60.00	-28.80 QP
12	23.68	0.23	0.11	24.02	50.00	-25.98 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.

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:	Wi-Fi Tx mode
Test frequency:	150 kHz ~ 30 MHz	Phase:	Neutral
Test voltage:	AC 120 V/60 Hz	Environment:	Temp: 22.5℃ Humi: 55%

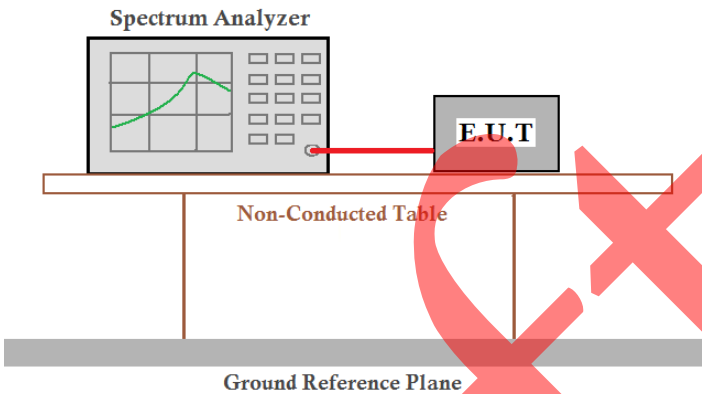


	Read	LISN	Cable		Limit	Over	
Freq	Level	Factor	Loss	Level	Line	Limit	Remark
MHz	dBUV	dB	dB	dBUV	dBUV	dB	
1	0.162	49.86	0.05	0.01	49.92	65.34	-15.42 QP
2	0.166	34.64	0.05	0.01	34.70	55.16	-20.46 Average
3	0.190	32.07	0.04	0.03	32.14	54.02	-21.88 Average
4	0.198	44.20	0.04	0.04	44.28	63.71	-19.43 QP
5	0.230	40.71	0.04	0.02	40.77	62.44	-21.67 QP
6	0.358	33.82	0.04	0.02	33.88	48.78	-14.90 Average
7	0.358	39.08	0.04	0.02	39.14	58.78	-19.64 QP
8	0.373	34.47	0.04	0.03	34.54	48.43	-13.89 Average
9	2.167	25.71	0.06	0.18	25.95	56.00	-30.05 QP
10	2.225	21.30	0.07	0.17	21.54	46.00	-24.46 Average
11	18.920	23.40	0.29	0.15	23.84	60.00	-36.16 QP
12	19.740	15.37	0.30	0.15	15.82	50.00	-34.18 Average

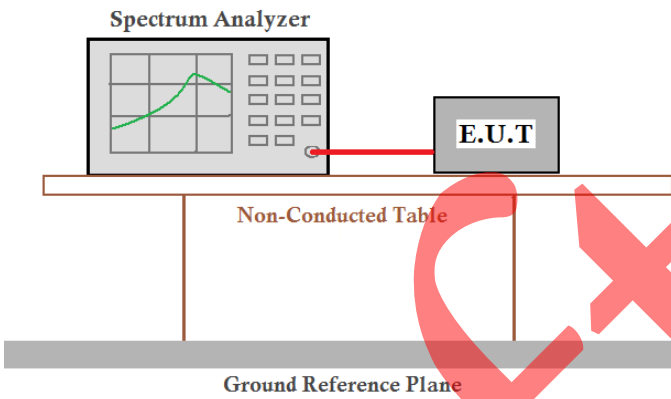
## Notes:

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

## 6.2 Conducted Output Power

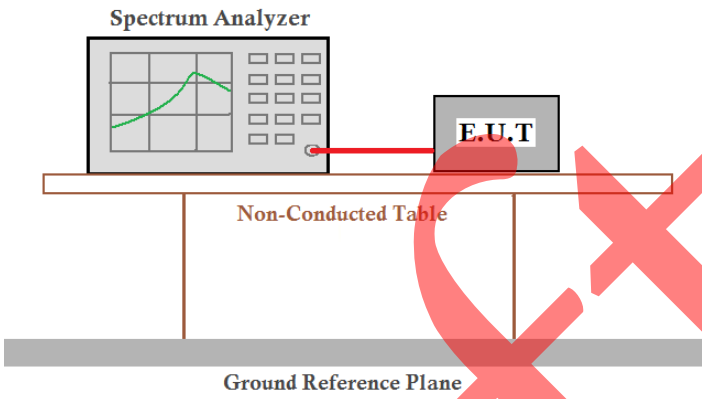
Test Requirement:	RSS-247 Section 5.4 (d)
Limit:	1W(conducted Power) and 4W(EIRP)
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### 6.3 Occupy Bandwidth

Test Requirement:	RSS-247 section 5.2(a)
Limit:	>500kHz
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer, showing a frequency spectrum on its screen, is connected to an E.U.T. (Equipment Under Test) box. Both components are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane, represented by a shaded rectangular area.</p>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

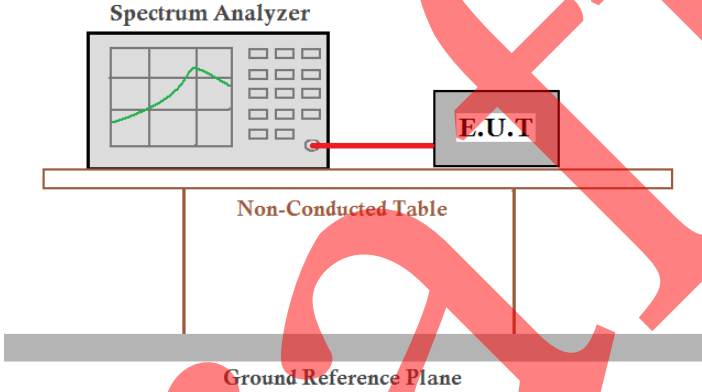


## 6.4 Power Spectral Density

Test Requirement:	RSS-247 section 5.2(b)
Limit:	8 dBm/3kHz
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 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

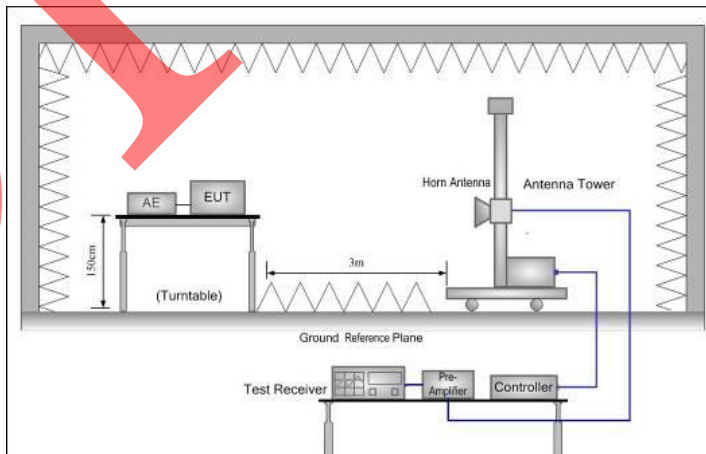
## 6.5 Band Edge

### 6.5.1 Conducted Emission Method

Test Requirement:	RSS-247 section 5.5
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed



## 6.5.2 Radiated Emission Method

Test Requirement:	RSS-GEN section 8.10				
Test Frequency Range:	2310 MHz to 2390 MHz and 2483.5 MHz to 2500 MHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	Above 1GHz	Peak RMS	1MHz 1MHz	3MHz 3MHz	Peak Value Average Value
Limit:	Frequency	Limit (dBuV/m @3m)		Remark	
	Above 1GHz	54.00 74.00		Average Value Peak Value	
Test Procedure:	<div>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</div> <div>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.</div> <div>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.</div> <div>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.</div> <div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div> <div>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.</div>				
Test setup:					
Test Instruments:	Refer to section 5.9 for details				
Test mode:	Refer to section 5.3 for details				
Test results:	Passed				

## 802.11b mode:

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:	802.11b Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

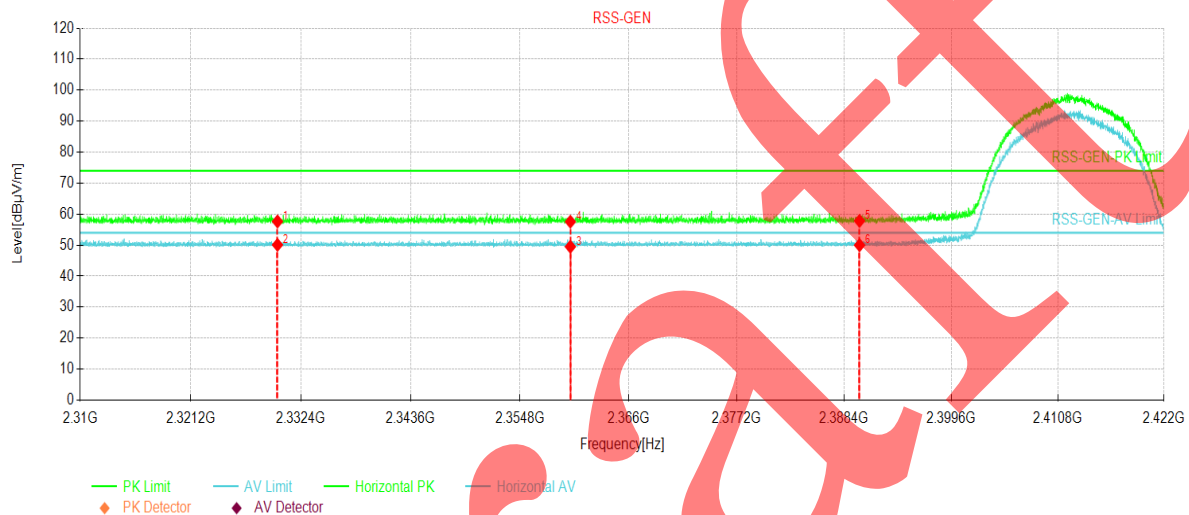


NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	2330.00	21.98	57.39	35.41	74.00	16.61	PK	Vertical
2	2330.00	14.84	50.25	35.41	54.00	3.75	AV	Vertical
3	2360.00	15.21	50.84	35.63	54.00	3.16	AV	Vertical
4	2360.00	22.85	58.48	35.63	74.00	15.52	PK	Vertical
5	2390.00	23.71	59.55	35.84	74.00	14.45	PK	Vertical
6	2390.00	15.77	51.61	35.84	54.00	2.39	AV	Vertical

## 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.

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:	802.11b Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

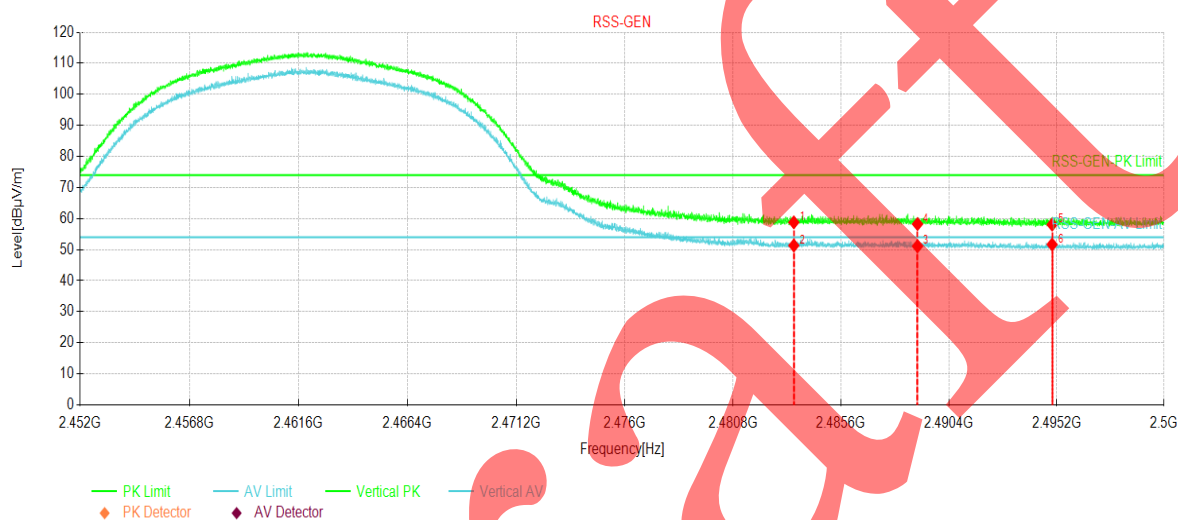


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2330.00	22.24	57.65	35.41	74.00	16.35	PK	Horizontal
2	2330.00	14.68	50.09	35.41	54.00	3.91	AV	Horizontal
3	2360.00	13.87	49.50	35.63	54.00	4.50	AV	Horizontal
4	2360.00	21.93	57.56	35.63	74.00	16.44	PK	Horizontal
5	2390.00	21.98	57.82	35.84	74.00	16.18	PK	Horizontal
6	2390.00	14.16	50.00	35.84	54.00	4.00	AV	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.

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:	802.11b Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%

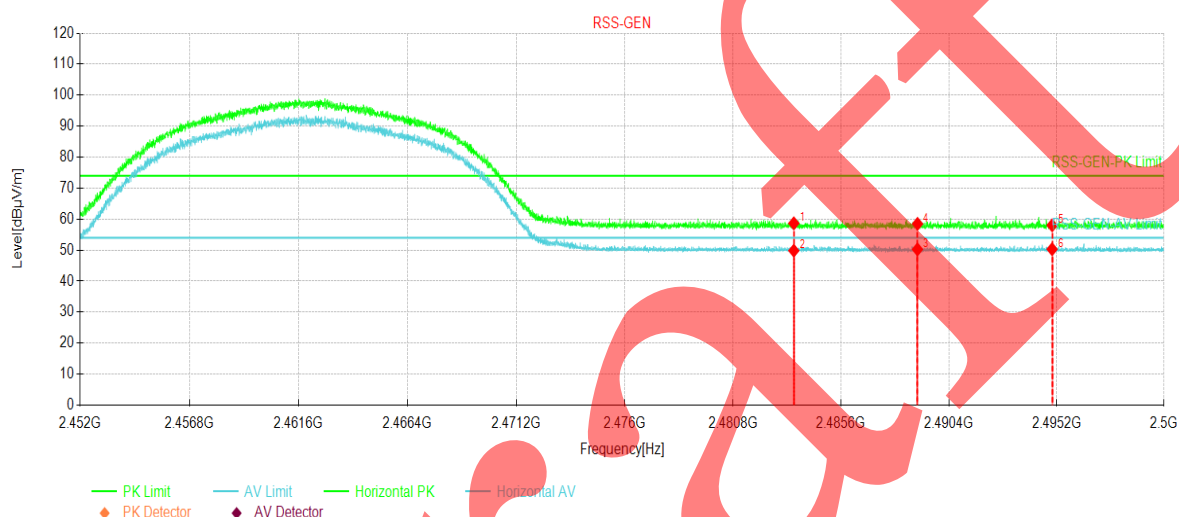


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2483.50	23.06	58.78	35.72	74.00	15.22	PK	Vertical
2	2483.50	15.60	51.32	35.72	54.00	2.68	AV	Vertical
3	2489.00	15.37	51.08	35.71	54.00	2.92	AV	Vertical
4	2489.00	22.52	58.23	35.71	74.00	15.77	PK	Vertical
5	2495.00	22.37	58.06	35.69	74.00	15.94	PK	Vertical
6	2495.00	15.96	51.65	35.69	54.00	2.35	AV	Vertical

#### 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.

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:	802.11b Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	2483.50	22.93	58.65	35.72	74.00	15.35	PK	Horizontal
2	2483.50	14.12	49.84	35.72	54.00	4.16	AV	Horizontal
3	2489.00	14.54	50.25	35.71	54.00	3.75	AV	Horizontal
4	2489.00	22.76	58.47	35.71	74.00	15.53	PK	Horizontal
5	2495.00	22.32	58.01	35.69	74.00	15.99	PK	Horizontal
6	2495.00	14.62	50.31	35.69	54.00	3.69	AV	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.

## 802.11g mode:

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:	802.11g Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	2328.43	15.96	51.36	35.40	54.00	2.64	AV	Vertical
2	2329.22	24.19	59.60	35.41	74.00	14.40	PK	Vertical
3	2347.38	16.24	51.78	35.54	54.00	2.22	AV	Vertical
4	2366.61	25.01	60.68	35.67	74.00	13.32	PK	Vertical
5	2390.01	22.93	58.77	35.84	74.00	15.23	PK	Vertical
6	2390.01	15.44	51.28	35.84	54.00	2.72	AV	Vertical

## 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.

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:	802.11g Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



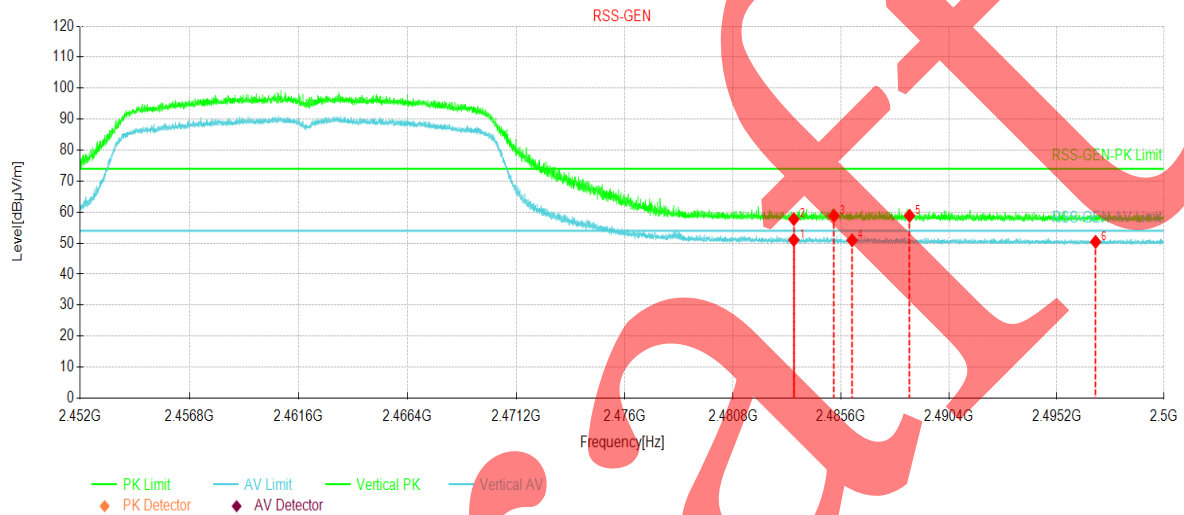
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2335.97	24.43	59.89	35.46	74.00	14.11	PK	Horizontal
2	2340.84	15.08	50.57	35.49	54.00	3.43	AV	Horizontal
3	2353.16	14.65	50.23	35.58	54.00	3.77	AV	Horizontal
4	2355.52	25.33	60.92	35.59	74.00	13.08	PK	Horizontal
5	2390.01	22.20	58.04	35.84	74.00	15.96	PK	Horizontal
6	2390.01	14.40	50.24	35.84	54.00	3.76	AV	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.



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:	802.11g Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%



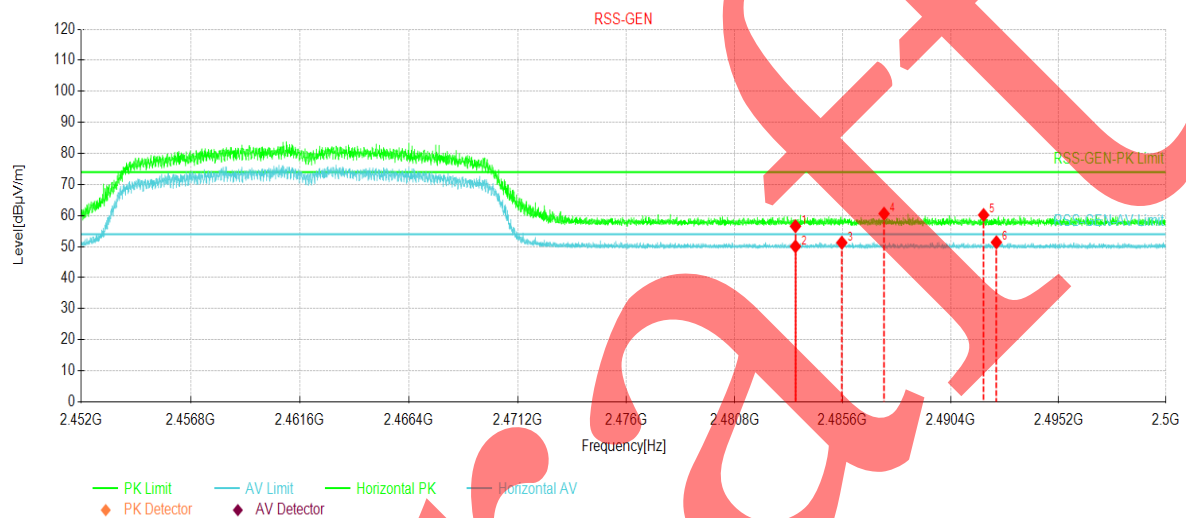
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2483.50	15.31	51.03	35.72	54.00	2.97	AV	Vertical
2	2483.50	22.03	57.75	35.72	74.00	16.25	PK	Vertical
3	2485.28	23.12	58.83	35.71	74.00	15.17	PK	Vertical
4	2486.09	15.19	50.90	35.71	54.00	3.10	AV	Vertical
5	2488.64	23.15	58.86	35.71	74.00	15.14	PK	Vertical
6	2496.94	14.72	50.41	35.69	54.00	3.59	AV	Vertical

#### 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.



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:	802.11g Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



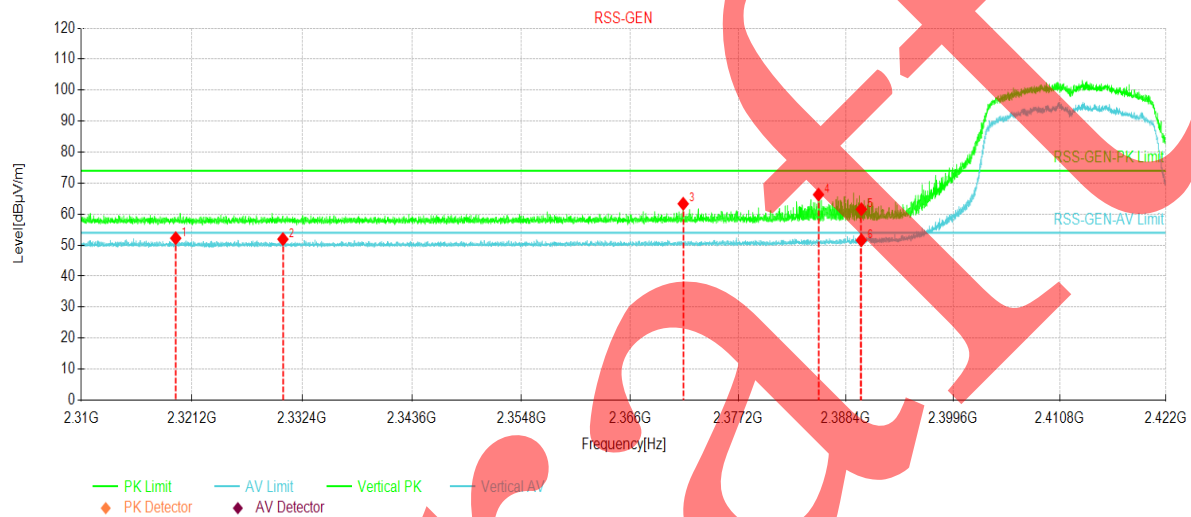
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2483.50	20.85	56.57	35.72	74.00	17.43	PK	Horizontal
2	2483.50	14.35	50.07	35.72	54.00	3.93	AV	Horizontal
3	2485.55	15.56	51.27	35.71	54.00	2.73	AV	Horizontal
4	2487.43	24.88	60.59	35.71	74.00	13.41	PK	Horizontal
5	2491.86	24.48	60.18	35.70	74.00	13.82	PK	Horizontal
6	2492.43	15.69	51.39	35.70	54.00	2.61	AV	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.

## 802.11n(HT20):

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:	802.11n(HT20) Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%

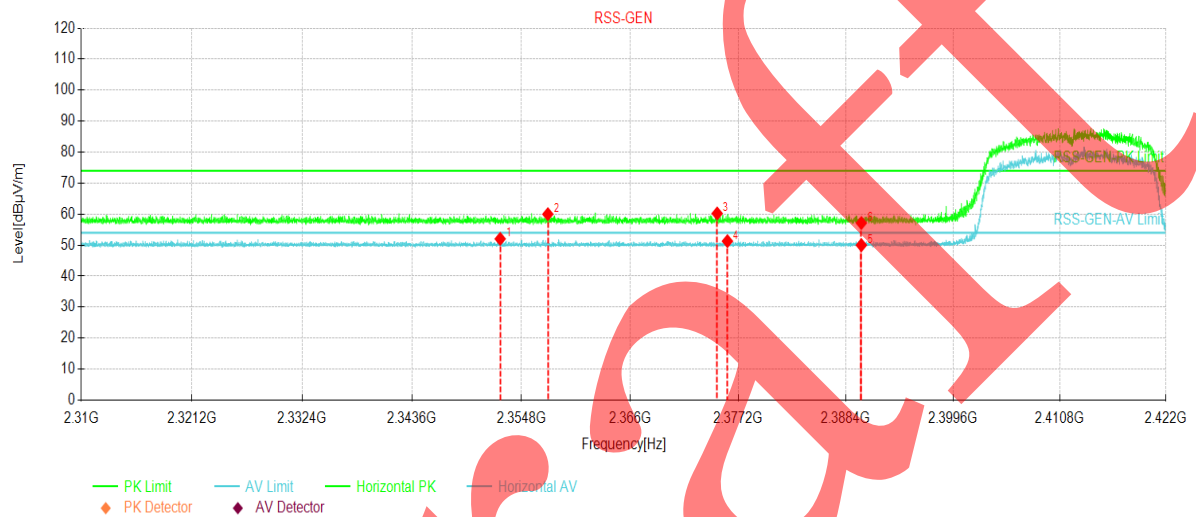


NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	2319.54	16.90	52.24	35.34	54.00	1.76	AV	Vertical
2	2330.42	16.50	51.92	35.42	54.00	2.08	AV	Vertical
3	2371.50	27.63	63.34	35.71	74.00	10.66	PK	Vertical
4	2385.54	30.48	66.29	35.81	74.00	7.71	PK	Vertical
5	2390.01	25.73	61.57	35.84	74.00	12.43	PK	Vertical
6	2390.01	15.74	51.58	35.84	54.00	2.42	AV	Vertical

## 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.

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:	802.11n(HT20) Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%

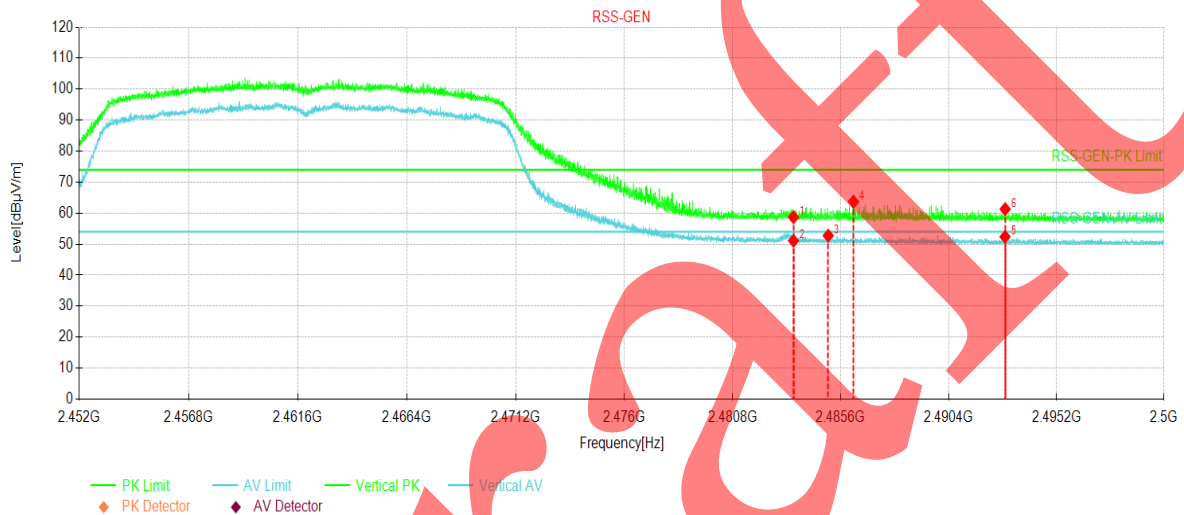


NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	2352.63	16.46	52.03	35.57	54.00	1.97	AV	Horizontal
2	2357.53	24.38	59.99	35.61	74.00	14.01	PK	Horizontal
3	2375.01	24.49	60.22	35.73	74.00	13.78	PK	Horizontal
4	2376.08	15.55	51.29	35.74	54.00	2.71	AV	Horizontal
5	2390.01	14.15	49.99	35.84	54.00	4.01	AV	Horizontal
6	2390.01	21.31	57.15	35.84	74.00	16.85	PK	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.

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:	802.11n(HT20) Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Huni: 57%

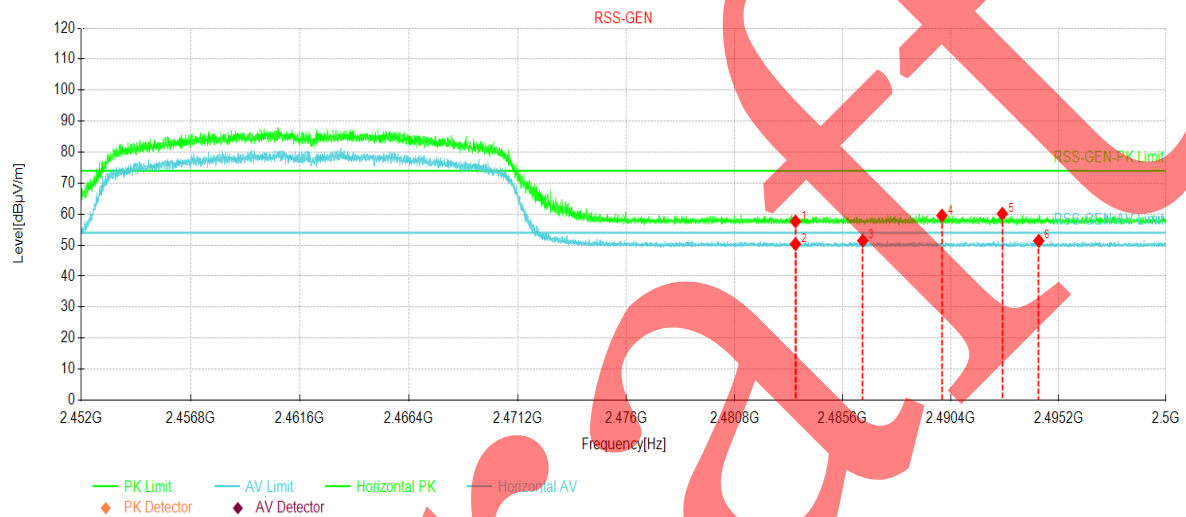


NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	2483.50	22.97	58.69	35.72	74.00	15.31	PK	Vertical
2	2483.50	15.38	51.10	35.72	54.00	2.90	AV	Vertical
3	2485.04	17.03	52.74	35.71	54.00	1.26	AV	Vertical
4	2486.16	28.00	63.71	35.71	74.00	10.29	PK	Vertical
5	2492.90	16.68	52.38	35.70	54.00	1.62	AV	Vertical
6	2492.91	25.61	61.31	35.70	74.00	12.69	PK	Vertical

#### 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.

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:	802.11n(HT20) Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



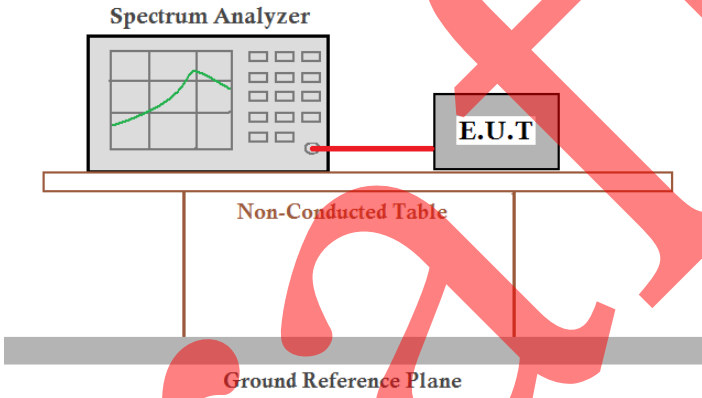
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	2483.50	21.92	57.64	35.72	74.00	16.36	PK	Horizontal
2	2483.50	14.60	50.32	35.72	54.00	3.68	AV	Horizontal
3	2486.48	15.74	51.45	35.71	54.00	2.55	AV	Horizontal
4	2490.01	23.83	59.53	35.70	74.00	14.47	PK	Horizontal
5	2492.69	24.41	60.11	35.70	74.00	13.89	PK	Horizontal
6	2494.32	15.70	51.39	35.69	54.00	2.61	AV	Horizontal

#### Remark:

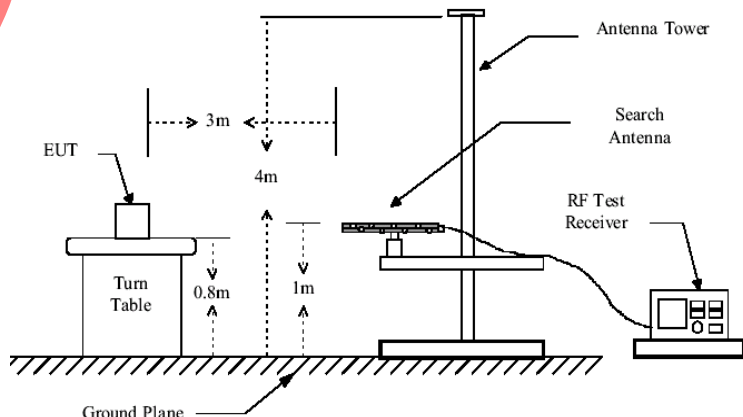
- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

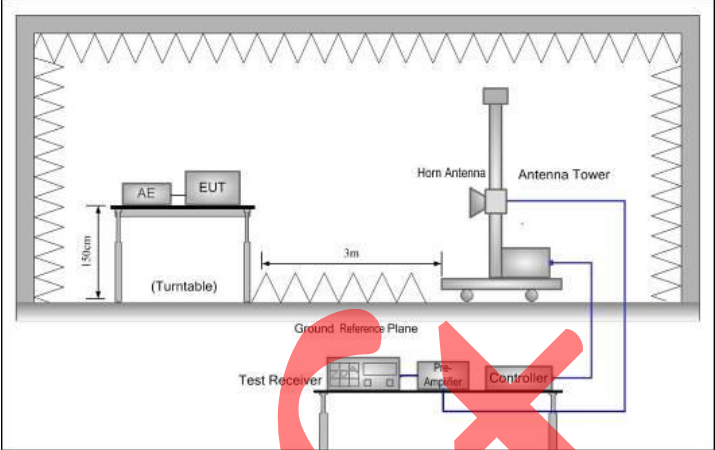
## 6.6 Spurious Emission

### 6.6.1 Conducted Emission Method

Test Requirement:	RSS-247 section 5.5
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.
Test setup:	 <p>The diagram illustrates the test setup for conducted emissions. 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 Non-Conducted Table is supported by a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

### 6.6.2 Radiated Emission Method

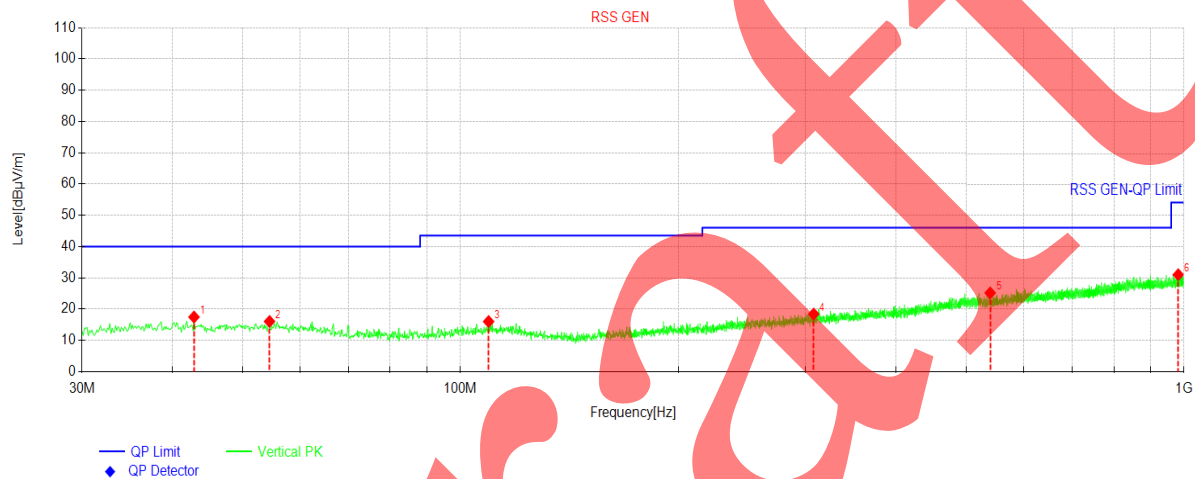
Test Requirement:	RSS-Gen section 6.13				
Test Frequency Range:	9kHz to 25GHz				
Test Distance:	3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		RMS	1MHz	3MHz	Average Value
Limit:	Frequency	Limit (dBuV/m @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 Procedure:	<div><div><div>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 was rotated 360 degrees to determine the position of the highest radiation.</div><div>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.</div><div>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.</div><div>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.</div><div>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</div><div>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.</div></div></div>				
Test setup:	<div>Below 1GHz</div> <div></div> <div>Above 1GHz</div>				

	
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed
Remark:	<ol style="list-style-type: none"> <li>1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis is the worst case.</li> <li>2. 9 kHz to 30MHz is too low, so only shows the data of above 30MHz in this report.</li> </ol>



**Measurement Data (worst case):**
**Below 1GHz:**

<b>Product name:</b>	Nebra Indoor LoRa Gateway ROCK Pi 4 Version / Nebra Indoor Helium Hotspot ROCK Pi 4 Version	<b>Product model:</b>	NEBHNT-HHRK4-915
<b>Test By:</b>	Mike	<b>Test mode:</b>	Wi-Fi Tx mode
<b>Test Frequency:</b>	30 MHz ~ 1 GHz	<b>Polarization:</b>	Vertical
<b>Test Voltage:</b>	AC 120/60Hz	<b>Environment:</b>	Temp: 24℃ Humi: 57%

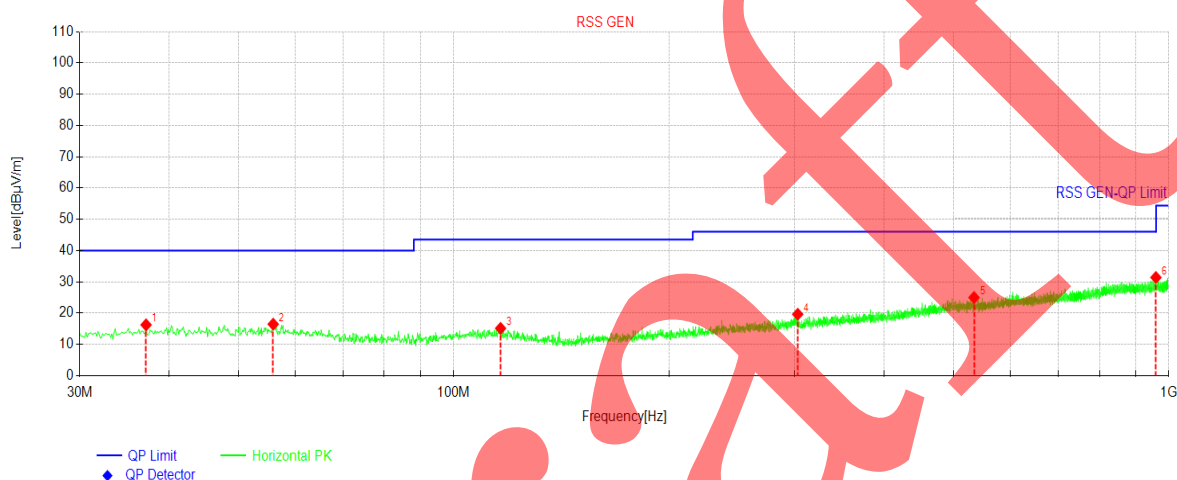


NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	42.8525	32.26	17.47	-14.79	40.00	22.53	PK	Vertical
2	54.4925	30.68	16.06	-14.62	40.00	23.94	PK	Vertical
3	109.418	31.90	16.04	-15.86	43.50	27.46	PK	Vertical
4	307.783	30.92	18.43	-12.49	46.00	27.57	PK	Vertical
5	539.735	31.97	25.17	-6.80	46.00	20.83	PK	Vertical
6	981.812	31.89	31.01	-0.88	54.00	22.99	PK	Vertical

**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.
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:	Wi-Fi Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	AC 120/60Hz	Environment:	Temp: 24℃ Humi: 57%



NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	37.1538	31.03	16.26	-14.77	40.00	23.74	PK	Horizontal
2	55.9475	31.15	16.46	-14.69	40.00	23.54	PK	Horizontal
3	116.330	30.76	15.14	-15.62	43.50	28.36	PK	Horizontal
4	302.812	32.27	19.64	-12.63	46.00	26.36	PK	Horizontal
5	534.278	31.83	24.99	-6.84	46.00	21.01	PK	Horizontal
6	959.502	32.28	31.40	-0.88	46.00	14.60	PK	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.
- The Aux Factor is a notch filter switch box loss, this item is not used.

### Above 1GHz

802.11b						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4824.00	54.25	-9.46	44.79	74.00	29.21	Vertical
4824.00	55.48	-9.46	46.02	74.00	27.98	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4824.00	47.09	-9.46	37.63	54.00	16.37	Vertical
4824.00	48.11	-9.46	38.65	54.00	15.35	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4874.00	54.45	-9.11	45.34	74.00	28.66	Vertical
4874.00	55.60	-9.11	46.49	74.00	27.51	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4874.00	47.45	-9.11	38.34	54.00	15.66	Vertical
4874.00	47.87	-9.11	38.76	54.00	15.24	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4924.00	54.62	-8.74	45.88	74.00	28.12	Vertical
4924.00	55.60	-8.74	46.86	74.00	27.14	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4924.00	47.19	-8.74	38.45	54.00	15.55	Vertical
4924.00	47.81	-8.74	39.07	54.00	14.93	Horizontal
Remark:						
1. Final Level = Receiver Read level + Factor.						
2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.						

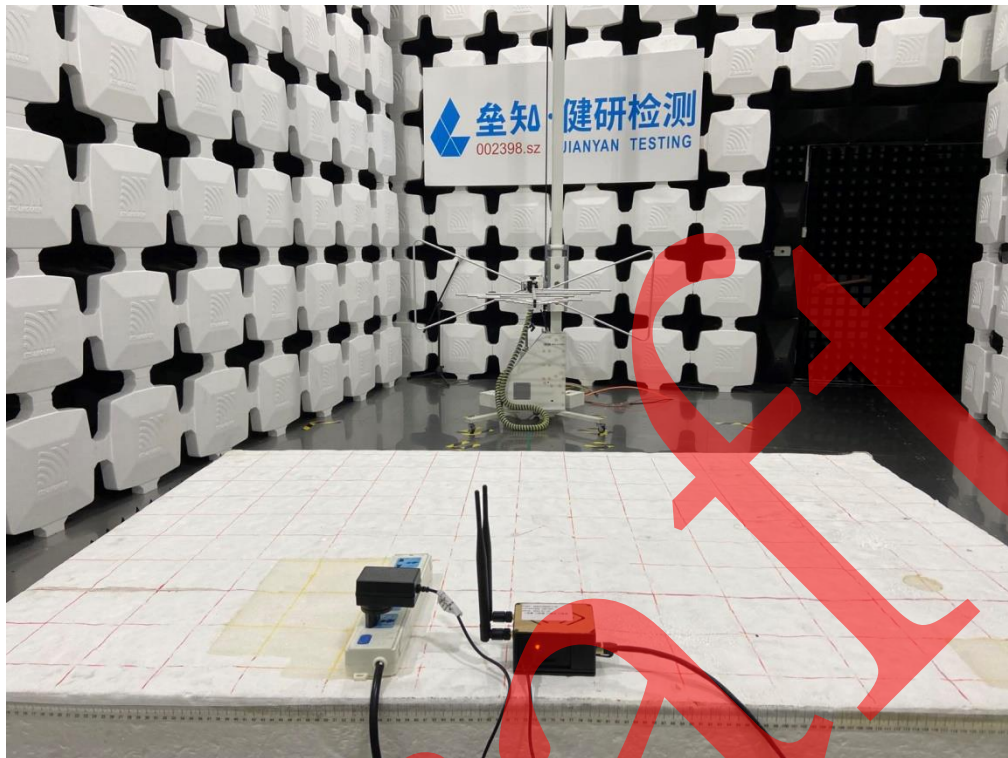
802.11g						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4824.00	54.09	-9.46	44.63	74.00	29.37	Vertical
4824.00	55.31	-9.46	45.85	74.00	28.15	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4824.00	47.44	-9.46	37.98	54.00	16.02	Vertical
4824.00	48.20	-9.46	38.74	54.00	15.26	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4874.00	54.00	-9.11	44.89	74.00	29.11	Vertical
4874.00	55.42	-9.11	46.31	74.00	27.69	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4874.00	47.53	-9.11	38.42	54.00	15.58	Vertical
4874.00	47.97	-9.11	38.86	54.00	15.14	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4924.00	54.16	-8.74	45.42	74.00	28.58	Vertical
4924.00	55.04	-8.74	46.30	74.00	27.70	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4924.00	47.49	-8.74	38.75	54.00	15.25	Vertical
4924.00	48.36	-8.74	39.62	54.00	14.38	Horizontal
Remark: 1. Final Level = Receiver Read level + Factor. 2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.						

802.11n(HT20)						
Test channel: Lowest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4824.00	54.38	-9.46	44.92	74.00	29.08	Vertical
4824.00	55.33	-9.46	45.87	74.00	28.13	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4824.00	47.44	-9.46	37.98	54.00	16.02	Vertical
4824.00	48.61	-9.46	39.15	54.00	14.85	Horizontal
Test channel: Middle channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4874.00	54.21	-9.11	45.10	74.00	28.90	Vertical
4874.00	54.98	-9.11	45.87	74.00	28.13	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4874.00	47.92	-9.11	38.81	54.00	15.19	Vertical
4874.00	49.08	-9.11	39.97	54.00	14.03	Horizontal
Test channel: Highest channel						
Detector: Peak Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4924.00	54.34	-8.74	45.60	74.00	28.40	Vertical
4924.00	55.36	-8.74	46.62	74.00	27.38	Horizontal
Detector: Average Value						
Frequency (MHz)	Read Level (dBuV)	Factor(dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Polarization
4924.00	48.07	-8.74	39.33	54.00	14.67	Vertical
4924.00	48.67	-8.74	39.93	54.00	14.07	Horizontal
Remark: 1. Final Level = Receiver Read level + Factor. 2. The emission levels of other frequencies are lower than the limit 20dB and not show in test report.						

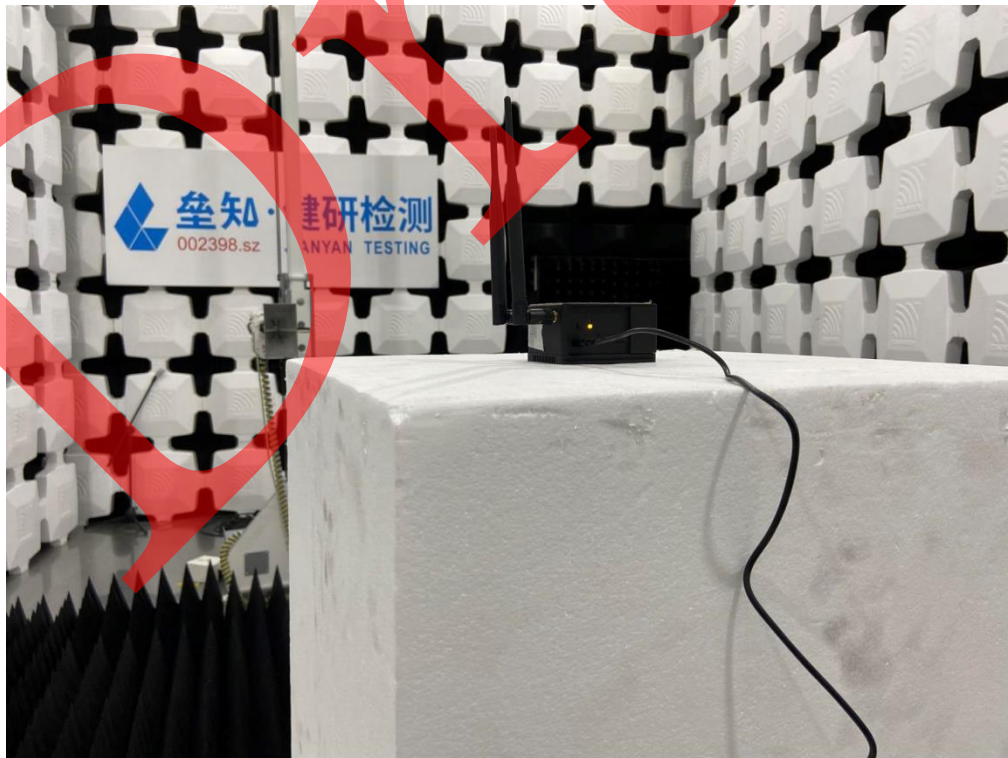


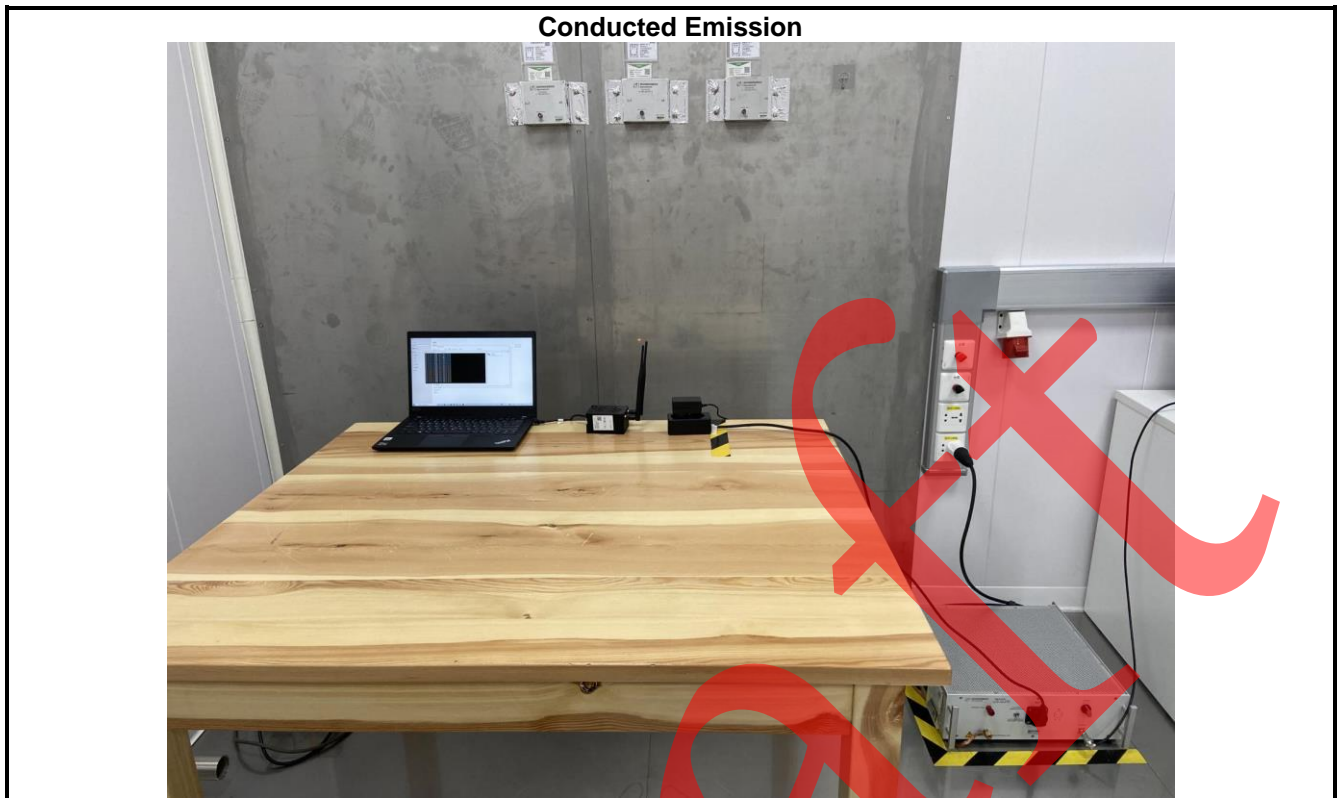
## 7 Test Setup Photo

Radiated Emission Below 1GHz



Radiated Emission Above 1GHz





## 8 EUT Constructional Details

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

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