



MPE REPORT

Report No.: PBJ-NQN2412130113SA01

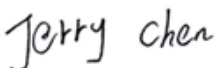
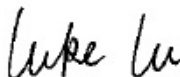
Product Name: Edge Router

Model Name: ER815-NRQ3-WLAN

Applicant: Beijing InHand Networks Technology Co., Ltd.

Manufacturer: Beijing InHand Networks Technology Co., Ltd.

FCC ID: 2AANY-ER815NRQ3

Prepared by Jerry Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Dec. 16, 2024	 Date: Dec. 16, 2024
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1 GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	BV 7Layers Communications Technology (Shenzhen) Co., Ltd
Address:	Room B37, Warehouse A5, No.3 Chiwan 4th Road, Zhaoshang Street, Nanshan District Shenzhen, Guangdong, People's Republic of China
City:	Shenzhen
Country or Region:	P.R.China
Tel:	+86 755 8869 6566
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Email:	customerservice.sw@bureauveritas.com
Designation Number:	CN1171
Registration number:	525120

1.3 Applicant's details

Company:	Beijing InHand Networks Technology Co., Ltd.
Address:	Room 501, floor 5, building 3, yard 18, ziyue road, chaoyang district, Beijing
City:	Beijing
Country or Region:	China
Contacted person:	GuJichi
Tel:	15281366255
Email:	gujc@inhand.com.cn

1.4 Manufacturer's details

Company:	Beijing InHand Networks Technology Co., Ltd.
Address:	Room 501, floor 5, building 3, yard 18, ziyue road, chaoyang district, Beijing
City:	Beijing
Country or Region:	China
Contacted person:	GuJichi
Tel:	15281366255
Email:	gujc@inhand.com.cn

1.5 Test Environment

Date of Receipt of test sample:	2024/11/27
Testing Start Date:	2024/11/28
Testing End Date:	2024/12/16

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	40
Maximum Extreme	50	---
Minimum Extreme	-10	---

Normal Supply Voltage (V d.c.):	12
Maximum Extreme Supply Voltage (V d.c.):	15
Minimum Extreme Supply Voltage (V d.c.):	9



2 DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Frequency Range:	LTE Band 2: Tx:1850~1910MHz Rx:1930~1990MHz LTE Band 4: Tx: 1710~1755MHz Rx: 2110~2155MHz LTE Band 5: Tx: 824~849MHz Rx: 869~894MHz LTE Band 7: Tx: 2500~2570MHz Rx: 2620~2690MHz LTE Band 12: Tx:699~716MHz Rx: 729~746MHz LTE Band 13: Tx: 777~787MHz Rx: 746~756MHz LTE Band 14: Tx: 788 ~798 MHz Rx: 758 ~768 MHz LTE Band 17: Tx: 704 ~ 716 MHz Rx: 734 ~ 746 MHz LTE Band 25: Tx: 1850 ~ 1915 MHz Rx: 1930 ~ 1995 MHz LTE Band 26: Tx: 814~849MHz Rx: 859~894MHz LTE Band 30: Tx: 2305 ~ 2315 MHz Rx: 2350 ~ 2360 MHz LTE Band 38: Tx:2570~2620MHz Rx:2570~2620MHz LTE Band 41: Tx: 2496~2690MHz Rx: 2496~2690MHz LTE Band 42: Tx: 3400 ~3600 MHz Rx: 3400 ~ 3600 MHz LTE Band 43: Tx: 3600 ~ 3800 MHz Rx: 3600 ~ 3800 MHz LTE Band 48: Tx:3550~3700MHz Rx:3550~3700MHz LTE Band 66: Tx: 1710~1780MHz Rx: 2110~2200MHz LTE Band 71: Tx: 663 ~698 MHz Rx: 617 ~652 MHz		
Frequency Range:(CA)	ULCA:CA_2C, CA_5B, CA_7C, CA_38C, CA_41C, CA_42C, CA_43C, CA_48C, CA_66B, CA_66C (See note1)		
Modulation Type(Uplink):	QPSK/16QAM/64QAM/256QAM		
Antenna Type:	External Antenna		
Antenna Gain:	LTE B2: 2.74dBi(Max)	LTE B4: 3.18dBi(Max)	LTE B5: 2.52dBi(Max)
	LTE B7: 3.05dBi(Max)	LTE B12: 1.80dBi(Max)	LTE B13: 1.83dBi(Max)
	LTE B14: 2.14dBi(Max)	LTE B17: 1.80dBi(Max)	LTE B25: 2.74dBi(Max)
	LTE B26: 2.52dBi(Max)	LTE B30: -0.68dBi(Max)	LTE B38: 2.86dBi(Max)
	LTE B41: 3.05dBi(Max)	LTE B42: 2.01dBi(Max)	LTE B43: 2.74dBi(Max)
	LTE B48: 0.14dBi(Max)	LTE B66: 3.18dBi(Max)	LTE B71: 1.80dBi(Max)
	ERP = EIRP(Power+Gain) – 2.15 (dB)		
Power Supply:	DC supply		
Software Revision:	V2.0		
Hardware Revision:	V1.1		



IMEI:

867922070005233

Frequency Range:	n2: Tx:1850~1910 MHz Rx:1930~1990 MHz n5: Tx: 824~849 MHz Rx:869~894 MHz n7: Tx:2500~2570 MHz Rx:2620~2690 MHz n12: Tx: 699~716 MHz Rx:729~746 MHz n13: Tx: 777~787 MHz Rx:746~756 MHz n14: Tx: 788~798 MHz Rx:758~768 MHz n25: Tx: 1850~1915 MHz Rx:1930~1995 MHz n26: Tx: 814~849 MHz Rx:859~894 MHz n30: Tx: 2305~2315 MHz Rx:2350~2360 MHz n38: Tx: 2570~2620 MHz Rx:2570~2620 MHz n41: Tx:2496~2690 MHz Rx: 2496~2690 MHz n48: Tx: 3550~3700 MHz Rx:3550~3700 MHz n66: Tx:1710~1780 MHz Rx:1995~2020 MHz n70: Tx: 1695~1710 MHz Rx:617~652 MHz n71: Tx: 663~698 MHz Rx:617~652 MHz n77: Tx: 3450~3550 MHz Rx:3450~3550 MHz 3700~3980 MHz Rx:3700~3980 MHz n78: Tx: 3450~3550 MHz Rx:3450~3800 MHz 3700~3800 MHz Rx:3700~3800 MHz
Frequency Range:(CA)	UL: n25A-n41A;n41A-n66A;n41A-n71A;n7A-n78A;n5A-n78An66A-n78 A:n7A-n77A:n2A-n77A:n5A-n77A:n66A-n77An30A-n77A;n71A-n7 7A:n71A-n78A:n25A-n78A:n38A-n66An25A-n77A;n25A-n38A;n13 A-n77A; n2A-n41A
Single band single SCS single carrier	n2/n5/n7/n12/ n13/n14/n25/ n26/n30/ n38/n41/n48/n66/ n70/n71/n77/n78
Single band single SCS HPUE	n41/n77/n78
SA Bandwidth	n2: 5MHz/ 10MHz/ 15MHz/ 20MHz n5: 5MHz/ 10MHz/ 15MHz/ 20MHz n7: 5MHz/ 10MHz/ 15MHz/ 20MHz/ 25MHz/ 30MHz/ 40MHz n12: 5MHz/ 10MHz/ 15MHz n13: 5MHz/ 10MHz n14: 5MHz/ 10MHz n25: 5MHz/ 10MHz/ 15MHz/ 20MHz/ 25MHz/ 30MHz/ 40MHz n26: 5MHz/ 10MHz/ 15MHz/ 20MHz n30: 5MHz/ 10MHz n38: 10MHz/ 15MHz/ 20MHz/ 30MHz/ 40MHz n41: 20MHz/ 30MHz/ 40MHz/ 50MHz/ 60MHz/ 70MHz/ 80MHz/ 90MHz/ 100MHz n48: 10MHz/ 20MHz/ 30MHz/ 40MHz n66: 5MHz/ 10MHz/ 15MHz/ 20MHz/ 30MHz/ 40MHz n70: 5MHz/ 10MHz/ 15MHz n71: 5MHz/ 10MHz/ 15MHz/ 20MHz n77: 10MHz/ 15MHz/ 20MHz/ 30MHz/ 40MHz/ 50MHz/ 60MHz/70MHz/ 80MHz/90MHz/100MHz



	n78: 10MHz/ 15MHz/20MHz/ 30MHz/ 40MHz/ 50MHz/ 60MHz/ 70MHz/ 80MHz/ 90MHz/ 100MHz		
NSA Band	See note2		
Modulation Type:	PI/2 BPSK, QPSK,16QAM,64QAM,256QAM		
Antenna Type:	External antenna		
Antenna Gain:	n2: 2.74dBi(Max)	n5: 2.52dBi(Max)	n7: 3.05dBi(Max)
	n12: 1.80dBi(Max)	n13: 1.83dBi(Max)	n14: 2.14dBi(Max)
	n25: 2.74dBi(Max)	n26: 2.52dBi(Max)	n30: -0.68dBi(Max)
	n38: 2.86dBi(Max)	n41: 3.05dBi(Max)	n48: 0.14dBi(Max)
	n66: 3.18dBi(Max)	n70: 2.74dBi(Max)	n71: 1.80dBi(Max)
	n77: 2.74dBi(Max)	n78: 2.74dBi(Max)	
	ERP = EIRP(Power +Gain) – 2.15 (dB)		
Power Supply:	DC supply		
Software Revision:	V2.0		
Hardware Revision:	V1.1		
IMEI/SN:	867922070005233		

Frequency Band:	2.412GHz~2.462GHz
Number of Channel For 20MHz:	11
Number of Channel For 40MHz:	7
Modulation Type:	802.11b 802.11g 802.11n (HT20/HT40)
Power Supply:	DC supply
Antenna gain:	For Power/PSD: 4.71dBi(max)
Directional Gain:	N/A
Software Revision:	V2.0
Hardware Revision:	V1.1
IMEI:	867922070005233
Antenna gain:	4.71dBi
Antenna type:	Sucker antenna
Antenna connector:	RP-SMA-J1.5

Frequency Band(s):	U-NII-1:5150MHz-5250MHz
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	U-NII-3:5725MHz-5850MHz
Modulation Type:	802.11a 802.11n (HT20/HT40) 802.11ac (VHT20/VHT40/VHT80) 802.11ax (HE20/HE40/HE80)
RU Type	Full RU Partial RU
Antenna Type:	Sucker antenna
Antenna gain	For Power/PSD: 5150MHz-5250MHz: 4.41dBi(Max) 5725MHz-5850MHz: 4.33dBi(Max)
Directional Gain:	5150MHz-5250MHz: 4.41dBi(Max) 5725MHz-5850MHz: 4.33dBi(Max)
Beamforming Directional Gain:	N/A
Power Supply:	DC supply
Software Revision:	V2.0
Hardware Revision:	V1.1
IMEI:	867922070005233

NOTE1: Directional gain = $10 \log[(10^{G1/10} + 10^{G2/10} + \dots + 10^{GN/10}) / N_{ANT}]$ dBi(Uncorrelated)

NOTE2: Except LTE&NR are quoted from the report SEWM2304000122RG04



3 REFERENCE SPECIFICATION

Specification	Version	Title
Part 1.1310	Latest	Radio frequency radiation exposure limits.

4 RESULT SUMMARY

Case	Verdict
MPE	Pass



5 CALCULATION RESULT

5.1 Maximum permissible exposure (MPE)

Limit:

(A) 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 Time 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 ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

(B) 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 Time 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 ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

**Result:**

According to §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$\text{The } S = PG / (4\pi R^2)$$

Where S = power density in mW/cm²

P = transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

Standalone Transmission Result

Band	Freq. (MHz)	Maximum Power (dBm)	ANT Gain (dBi)	Maximum EIRP (dBm)	Maximum EIRP(mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
LTE Band 2/LTE CA 2C	1850.7	25.00	2.74	27.74	594.292	0.118	1.000
LTE Band 4	1710.7	25.00	3.18	28.18	657.658	0.131	1.000
LTE Band 5/LTE CA 5B	824.7	25.00	2.52	27.52	564.937	0.112	0.550
LTE Band 7/LTE CA 7C	2502.5	25.00	3.05	28.05	638.263	0.127	1.000
LTE Band 12	699.7	25.00	1.80	26.80	478.630	0.095	0.466
LTE Band 13	779.5	25.00	1.83	26.83	481.948	0.096	0.520
LTE Band 14	790.5	25.00	2.14	27.14	517.607	0.103	0.527
LTE Band 17	706.5	25.00	1.80	26.80	478.630	0.095	0.471
LTE Band 25	1850.7	25.00	2.74	27.74	594.292	0.118	1.000
LTE Band 26(814-824)	814.7	25.00	2.52	27.52	564.937	0.112	0.543
LTE Band 26(824-849)	824.7	25.00	2.52	27.52	564.937	0.112	0.543
LTE Band 30	2307.5	25.00	-0.68	24.32	270.396	0.054	1.000
LTE Band 38/LTE CA 38C	2572.5	28.00	2.86	30.86	1218.990	0.243	1.000
LTE Band 41/LTE CA 41C	2498.5	28.00	3.05	31.05	1273.503	0.253	1.000
LTE Band 42(3450-3550) /LTE CA 42C	3452.5	28.00	2.01	30.01	1002.305	0.200	1.000
LTE Band 43(3700-3800)/LTE CA 43C	3702.5	28.00	2.74	30.74	1185.769	0.236	1.000
LTE Band 48/LTE CA 48C*	3550~3700	24.00	0.14	24.14	259.418	0.052	1.000
LTE Band 66/LTE CA 66B/LTE CA 66C	1710.7	25.00	3.18	28.18	657.658	0.131	1.000



LTE Band 71	665.5	25.00	1.80	26.80	478.630	0.095	0.444
NR Band n2	1852.5	25.00	2.74	27.74	594.292	0.118	1.000
NR Band n5	826.5	25.00	2.52	27.52	564.937	0.112	0.551
NR Band n7	2502.5	25.00	3.05	28.05	638.263	0.127	1.000
NR Band n12	701.5	25.00	1.80	26.80	478.630	0.095	0.468
NR Band n13	779.5	25.00	1.83	26.83	481.948	0.096	0.520
NR Band n14	790.5	25.00	2.14	27.14	517.607	0.103	0.527
NR Band n25	1852.5	25.00	2.74	27.74	594.292	0.118	1.000
NR Band n26(814-824)	816.5	25.00	2.52	27.52	564.937	0.112	0.544
NR Band n26(824-849)	826.5	25.00	2.52	27.52	564.937	0.112	0.544
NR Band n30	2307.5	25.00	-0.68	24.32	270.396	0.054	1.000
NR Band n38	2575	28.00	2.86	30.86	1218.990	0.243	1.000
NR Band n38(MIMO)	2575	28.00	2.86	30.86	1218.990	0.243	1.000
NR Band n41	2506	28.00	3.05	31.05	1273.503	0.253	1.000
NR Band n41(MIMO)	2506	30.00	3.05	33.05	2018.366	0.402	1.000
NR Band n48*	3550~3700	24.50	0.14	24.64	291.072	0.058	1.000
NR Band n66	1712.5	25.00	3.18	28.18	657.658	0.131	1.000
NR Band n70	1697.5	25.00	2.74	27.74	594.292	0.118	1.000
NR Band n71	665.5	25.00	1.80	26.80	478.630	0.095	0.444
NR Band n77 (3450-3550)	3455	28.00	2.74	30.74	1185.769	0.236	1.000
NR Band n77 (3450-3550)(MIMO)	3455	30.00	2.74	32.74	1879.317	0.374	1.000
NR Band n77 (3700-3980)	3707.5	28.00	2.74	30.74	1185.769	0.236	1.000
NR Band n77 (3700-3980)(MIMO)	3707.5	30.00	2.74	32.74	1879.317	0.374	1.000
NR Band n78 (3450-3550)	3455	28.00	2.74	30.74	1185.769	0.236	1.000
NR Band n78 (3450-3550)(MIMO)	3455	30.00	2.74	32.74	1879.317	0.374	1.000
NR Band n78 (3700-3800)	3705	28.00	2.74	30.74	1185.769	0.236	1.000
NR Band n78 (3700-3800)(MIMO)	3705	30.00	2.74	32.74	1879.317	0.374	1.000
WLAN2.4GHz*	2412~2462	19.00	4.71	23.71	234.963	0.047	1.000
WLAN5GHz*	5150~5250	19.00	4.41	23.41	219.280	0.044	1.000

NOTE: Except for the data marked with *, other data are quoted from the report SEWM2304000122RG04



Simultaneous Transmission Result

Power Density1 / Limit	Power Density2 / Limit	Σ (Power Density / Limit)
0.374(WWAN MAX)	0.047+0.044 (WIFI 2.4G+WIFI 5G)	0.465

Note: Simultaneous Transmission Limit = Power Density_1 / Limit_1 + Power Density_2 / Limit_2 < 1.

---End of Test Report---