



FCC RF EXPOSURE REPORT

For

IT controller

FCC ID: 2AX5HJRN-340K

IC: 26609-JRN340K

MODEL NUMBER: JRN-340K

REPORT NUMBER: 4791380330-1-RF-4

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Prepared for

JRC Mobility Inc.

834 Inasatomachi Nagano-shi, Nagano, 381-2289 JP

Prepared by

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: JRC Mobility Inc.
 Address: 834 Inasatomachi Nagano-shi, Nagano, 381-2289 JP

Manufacturer Information¹

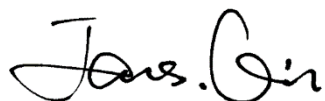
Company Name: JRC Mobility Inc.
 Address: 834 Inasatomachi Nagano-shi, Nagano, 381-2289 JP

EUT Information

EUT Name: IT controller
 Model: JRN-340K
 Brand: /
 Sample Received Date: June 25, 2024
 Sample Status: Normal
 Sample ID: 7350467
 Date of Tested: July 8, 2024 ~ July 31, 2024

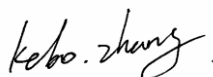
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC 47CFR§2.1091	PASS
KDB 447498 D01	PASS
RSS-102 Issue 6 December 15, 2023	PASS

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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 and KDB447498 D01 v06.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Delcaration of Conformity (DoC) and Certification rules</p> <p>ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30MHz had been correlated to measurements performed on an OFS.

4. REQUIREMENT of FCC

LIMIT AND CALCULATION METHOD

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

RF EXPOSURE LIMIT

Frequency Range (MHz)	E-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

5. REQUIREMENT of ISED

Routine Evaluation

According to the RSS-102 the following RF exposure evaluation shall to demonstrate RF exposure compliance.

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 MHzFootnote6 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 $1.31 \times 10^{-2} f^{0.683}$ 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.

Multiple Transmitters

According to RSS-102 Issue 5 Section 3.2 RF Exposure Evaluations of Devices:

A device requiring an RF exposure evaluation shall be made in accordance with the latest version of IEEE C95.3. If the device is designed such that more than one antenna can functionally transmit at the same time, the RF exposure evaluation shall be conducted while all antennas are transmitting. The individual exposure level ratios shall be totaled and used for compliance purposes.

If the device has more than one antenna, but is not designed to have more than one antenna functionally transmit at the same time, the RF exposure evaluation of the device shall be performed for each of the individually transmitting antennas. The maximum RF field strength value shall be recorded and used for compliance purposes.

If the device combines groups of simultaneous and non-simultaneous transmitting antennas, the worst-case of the above scenarios applies.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modeled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

Power Density Limit:

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/f ^{1.2}

Note: f is frequency in MHz.
 * Based on nerve stimulation (NS).
 ** Based on specific absorption rate (SAR).

CALCULATION METHOD

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

Where:

S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator R=distance to the center of radiation of the antenna

CALCULATED RESULTS

For Single RF Source

Operation Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	Power Density at R = 20 cm (W/m ²)	FCC Limit (W/m ²)	FCC Conclusion	ISED Limit (W/m ²)	ISED Conclusion
GSM850-GPRS 1TS	824	-0.50	35.0	0.7009	5.4933	Pass	2.5756	Pass
GSM850-GPRS 2TS	824	-0.50	33.0	0.8844	5.4933	Pass	2.5756	Pass
GSM850-GPRS 3TS	824	-0.50	31.0	0.8371	5.4933	Pass	2.5756	Pass
GSM850-GPRS 4TS	824	-0.50	30.0	0.8865	5.4933	Pass	2.5756	Pass
GSM1900-GPRS 1TS	1850	0.50	32.0	0.4422	10.0000	Pass	4.4763	Pass
GSM1900-GPRS 2TS	1850	0.50	30.0	3.3483	10.0000	Pass	4.4763	Pass
GSM1900-GPRS 3TS	1850	0.50	28.0	0.5282	10.0000	Pass	4.4763	Pass
GSM1900-GPRS 4TS	1850	0.50	27.0	0.5594	10.0000	Pass	4.4763	Pass
WCDMA B2	1850	0.50	24.0	0.5607	10.0000	Pass	4.4763	Pass
WCDMA B4	1710	0.50	24.0	0.5607	10.0000	Pass	4.2419	Pass
WCDMA B5	824	-0.50	25.0	0.5607	5.4933	Pass	2.5756	Pass
LTE B2	1850	0.50	23.0	0.4454	10.0000	Pass	4.4763	Pass
LTE B4	1710	0.50	24.0	0.5607	10.0000	Pass	4.2419	Pass
LTE B5	824	-0.50	25.0	0.5607	5.4933	Pass	2.5756	Pass
LTE B7	2500	2.70	22.0	0.5871	10.0000	Pass	5.4991	Pass
LTE B12	1427.9	-3.60	25.0	0.2746	9.5193	Pass	3.7502	Pass
2.4GHz WiFi	2402	2.20	21.0	0.4157	10.0000	Pass	5.3508	Pass

Simultaneous Analysis:

Co-location of this module with other transmitters that operate simultaneously are required to be evaluated using the FCC multi-transmitter procedures.

1. WWAN (worst) + 2.4 GHz WiFi = $3.3483/10 + 0.4157/10 = 0.3764$, for FCC
2. WWAN (worst) + 2.4 GHz WiFi = $3.3483/4.4763 + 0.4157/5.3508 = 0.8257$, for ISED

The maximum calculations of above situations are less than the limit (1.0), it is compliance.

Note:

1. The calculated distance is 20 cm.
2. The power comes from operation description.

END OF REPORT