



中认信通

CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)



RF EXPOSURE EVALUATION REPORT

Applicant: Waylens Inc.

Address: 2711 Centerville Road - Suite 400, Wilmington, Delaware, United States
19808

FCC ID: 2AKAF-CAM12

IC: 24254-CAM12

HVIN: CAM12

Product Name: AI Recorder II

**Standard(s): 47 CFR §1.1307
RSS-102 Issue 5 March 2015, Amendment 1
(February 2, 2021)**

The above equipment has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: CR230524361-00E

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Reviewed By: Sun Zhong

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Title: Manager

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Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 442868, the FCC Designation No. : CN1314.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0123.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “▲”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	CR230524361-00E	Original Report	2023/6/6

1. RF EXPOSURE EVALUATION

1.1 Applicable Standard

According to subpart §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 level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (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;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

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

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

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

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

1.1.2 EUT WAAN Information ▲ :

Operation Modes	Operation Frequency (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	ERP or EIRP (dBm)	Limit (dBm)
GSM850	824-849	33.65	0.05	31.55	38.45
GSM1900	1850-1910	29.73	3.01	32.74	33
WCDMA B2	1850-1910	23.01	3.01	26.02	33
WCDMA B5	824-849	23.98	0.05	21.83	38.45
LTE B2	1850-1910	22.76	3.01	25.77	33
LTE B4	1710-1755	22.59	1.84	24.43	30
LTE B5	824-849	22.86	0.05	20.76	38.45
LTE B12	699-716	23.42	0.12	23.54	34.77

Note:

The devices may contain certified WAAN Module, FCC ID: 2APNR-GM500U1A

1.1.3 Measurement Result

Operation Modes	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
WIFI	2412-2462	2.93	1.96	19	79.43	30	0.0138	1
BLE	2402-2480	2.93	1.96	6	3.98	30	0.0005	1
BDR/EDR	2402-2480	2.93	1.96	5	3.16	30	0.0007	1
GSM850	824-849	0.05	1.01	34	2511.89	30	0.2243	0.549
GSM1900	1850-1910	3.01	2	30	1000.00	30	0.1468	1
WCDMA B2	1850-1910	3.01	2	23.5	223.87	30	0.0396	1
WCDMA B5	824-849	0.05	1.01	24.5	281.84	30	0.0252	0.549
LTE B2	1850-1910	3.01	2	23	199.53	30	0.0353	1
LTE B4	1710-1755	1.84	1.53	23	199.53	30	0.0270	1
LTE B5	824-849	0.05	1.01	23.5	223.87	30	0.0200	0.549
LTE B12	699-716	0.12	1.03	24	251.19	30	0.0229	0.466

Note:

The WWAN, WiFi ,BLEand BT can transmit simultaneously.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k}$$

$$\begin{aligned}
 &= P_{WWAN} / P_{th} + P_{WiFi} / P_{th} \\
 &= 0.2243/0.549 + 0.0138/1 \\
 &= 0.422
 \end{aligned}$$

$$< 1.0$$

Result: The device meet FCC MPE at 30 cm distance.

1.2 MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.2.1 Applicable Standard

According to RSS-102 § 4Table 4, RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

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/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ <i>f</i> ^{0.25}	0.1540/ <i>f</i> ^{0.25}	8.944/ <i>f</i> ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> ^{0.3417}	0.008335 <i>f</i> ^{0.3417}	0.02619 <i>f</i> ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> ^{1.2}
150000-300000	0.158 <i>f</i> ^{0.5}	4.21 x 10 ⁻⁴ <i>f</i> ^{0.5}	6.67 x 10 ⁻⁵ <i>f</i>	616000/ <i>f</i> ^{1.2}
Note: <i>f</i> is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

1.2.2 Procedure

Prediction of power density at the distance of the applicable MPE limit

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

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

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

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

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

1.2.3 EUT WAAN Information ▲ :

Operation Modes	Operation Frequency (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	ERP or EIRP (dBm)	Limit (dBm)
GSM850	824-849	33.65	0.05	31.55	38.45
GSM1900	1850-1910	29.73	3.01	32.74	33
WCDMA B2	1850-1910	23.01	3.01	26.02	33
WCDMA B5	824-849	23.98	0.05	21.83	38.45
LTE B2	1850-1910	22.76	3.01	25.77	33
LTE B4	1710-1755	22.59	1.84	24.43	30
LTE B5	824-849	22.86	0.05	20.76	38.45
LTE B12	699-716	23.42	0.12	23.54	34.77

Note:

The devices may contain certified WWAN Module, IC: 23824-GM500U1A

1.2.4 Calculated Result:

Operation Modes	Frequency (MHz)	Antenna Gain		Conducted output power including Tune-up Tolerance		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
WIFI	2412-2462	2.93	1.96	19	79.43	30	0.138	5.37
BLE	2402-2480	2.93	1.96	6	3.98	30	0.007	5.35
BDR/EDR	2402-2480	2.93	1.96	5	3.16	30	0.005	5.35
GSM850	824-849	0.05	1.01	34	2511.89	30	2.243	2.58
GSM1900	1850-1910	3.01	2	30	1000.00	30	1.768	4.48
WCDMA B2	1850-1910	3.01	2	23.5	223.87	30	0.396	4.48
WCDMA B5	824-849	0.05	1.01	24.5	281.84	30	0.252	2.58
LTE B2	1850-1910	3.01	2	23	199.53	30	0.353	4.48
LTE B4	1710-1755	1.84	1.53	23	199.53	30	0.270	4.24
LTE B5	824-849	0.05	1.01	23.5	223.87	30	0.200	2.58
LTE B12	699-716	0.12	1.03	24	251.19	30	0.229	2.3

The WWAN, WiFi can transmit simultaneously:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$=S_{WWAN}/S_{limit-WWAN} + S_{WiFi}/S_{limit-WiFi}$$

$$=2.243/2.58 + 0.138/5.37$$

$$=0.895$$

$$< 1.0$$

Result: The device meet ISSED MPE at 30 cm distance

===== END OF REPORT =====