

RF Exposure Evaluation declaration

Product Name : LATTE ART PRINTER
Trade Name : Jolimark
Model No. : CP111D
FCC ID. : WAGCP111D

Applicant : KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD.
Address : 18 Kongyue Road, Jinguzhou Zone, Xinhui District, Jiangmen City,
Guangdong Province, China

Date of Receipt : Mar. 26, 2019
Date of Declaration : Jun. 22, 2021
Report No. : 1930419R-RFUSP02V00
Report Version : V1.0



The declaration results relate only to the samples calculated.

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Applicant : KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD.
Address : 18 Kongyue Road, Jinguzhou Zone, Xinhui District, Jiangmen
City, Guangdong Province, China
Manufacturer : KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD.
Model No. : CP111D
FCC ID : WAGCP111D
Trade Name : Jolimark
Applicable Standard : FCC 47 CFR Part 2.1091 Radiofrequency radiation exposure
evaluation: mobile devices.
Test Lab : Hsin Chu Laboratory
Address : No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu
County 310, Taiwan, R.O.C.
TEL: +886-3-582-8001 / FAX: +886-3-582-8958
Test Result : Complied

Tested By :



(Max Chang / Senior Engineer)

Approved By :



(Louis Hsu / Deputy Manager)

Revision History

Version	Description	Issued Date
V1.0	Initial issue of report	Jun. 22, 2021

1. General Information

1.1. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required	Test Site
Temperature (°C)	Peak Power Output	15 - 35	1
Humidity (%RH)		25 - 75	

Note: Test site information refers to Laboratory Information.

Laboratory Information

USA	:	FCC Registration Number: TW3024
Canada	:	IC Registration Number: 22397-1 / 22397-2 / 22397-3

The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: <http://www.dekra.com.tw>

If you have any comments, please don't hesitate to contact us. Our test sites as below:

Test Laboratory	DEKRA Testing and Certification Co., Ltd.
Address	1. No.372, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C. 2. No.372-2, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County 31061, Taiwan, R.O.C.
Phone number	1. +886-3-582-8001 2. +886-3-582-8001
Fax number	1. +886-3-582-8958 2. +886-3-582-8958
Email address	info.tw@dekra.com
Website	http://www.dekra.com.tw

1.2. List of Test Equipment

Peak Power Output / SR10-H

Instrument	Manufacturer	Model No.	Serial No.	Cal. Date	Next Cal. Date
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2018/12/17	2019/12/16
High Speed Peak Power Meter Dual Input	Anritsu	ML2496A	1602004	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531043	2018/12/17	2019/12/16
Pulse Power Sensor	Anritsu	MA2411B	1531043	2019/12/02	2020/12/01
Pulse Power Sensor	Anritsu	MA2411B	1531044	2018/12/17	2019/12/16
Pulse Power Sensor	Anritsu	MA2411B	1531044	2019/12/02	2020/12/01
Power Meter	Keysight	8990B	MY51000248	2018/06/07	2019/06/06
Power Meter	Keysight	8990B	MY51000248	2019/05/21	2020/05/20
Power Sensor	Keysight	N1923A	MY57240005	2018/06/07	2019/06/06
Power Sensor	Keysight	N1923A	MY57240005	2019/05/21	2020/05/20

Note: All equipment upon which need to calibrated are with calibration period of 1 year.

1.3. Uncertainty

Test item	Uncertainty
Peak Power Output	± 2.26 dB

Determining compliance shall be based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2. RF Exposure Evaluation

2.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-1023	170	180	-	Instantaneous*
0.1-10	-	1.6/ <i>f</i>	-	6**
1.29-10	193/ <i>f</i> 0.5	-	-	6**
10-20	61.4	0.163	10	6
20-48	129.8/ <i>f</i> 0.25	0.3444/ <i>f</i> 0.25	44.72/ <i>f</i> 0.5	6
48-100	49.33	0.1309	6.455	6
100-6000	15.60 <i>f</i> 0.25	0.04138 <i>f</i> 0.25	0.6455 <i>f</i> 0.5	6
6000-15000	137	0.364	50	6
15000-150000	137	0.364	50	616000/ <i>f</i> 1.2
150000-300000	0.354 <i>f</i> 0.5	9.40 x 10 ⁻⁴ <i>f</i> 0.5	3.33 x 10 ⁻⁴ <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).				

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm^2

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, $1 \text{ mW}/\text{cm}^2$. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

2.3. Test Result of RF Exposure Evaluation

Product	LATTE ART PRINTER
Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Antenna Gain: The maximum Gain is -1dBi or 0.79 in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

	Frequency (MHz)	Conducted Output Power		Power Density (mW/cm ²)	Limit (mW/cm ²)
		(dBm)	(mW)		
802.11b	2402	13.300	21.380	0.00338	1
	2440	13.400	21.878	0.00346	1
	2480	13.500	22.387	0.00354	1
802.11g	2402	15.000	31.623	0.00500	1
	2440	15.300	33.884	0.00535	1
	2480	15.400	34.674	0.00548	1
802.11n (20 MHz)	2402	14.600	28.840	0.00456	1
	2440	14.900	30.903	0.00488	1
	2480	15.100	32.359	0.00511	1
802.11n (40 MHz)	2402	13.900	24.547	0.00388	1
	2440	14.500	28.184	0.00445	1
	2480	14.600	28.840	0.00456	1
BT 4.0	2402	-7.600	0.174	0.00003	1
	2440	-6.300	0.234	0.00004	1
	2480	-6.200	0.240	0.00004	1

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm².

The results are evaluated using the maximum power.