



Test Report No.: SA180523W001



# RF EXPOSURE REPORT

**Product:** LED Projector

**Model Name:** F1, F1xy (x, y:A~Z; 0~9 or bank)

**FCC ID:** MSQ-F1

**Applicant:** ASUSTek Computer Inc.

**Address:** 4F, NO.150, Li-Te Rd. Peitou, Taipei Taiwan

**Manufacturer:** ASUSTek Computer Inc.

**Address:** 4F, NO.150, Li-Te Rd. Peitou, Taipei Taiwan

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**Report No.:** SA180523W001

**Received Date:** Jun. 14, 2018

**Test Date:** Jun. 15, 2018 ~ Jul. 17, 2018

**Issued Date:** Jul. 18, 2018

This report should not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA180523W001	Original release	Jul. 18, 2018



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# 1 CERTIFICATION

**PRODUCT:** LED Projector  
**BRAND NAME:** Asus  
**MODEL NAME:** F1, F1xy (x, y:A~Z; 0~9 or bank)  
**APPLICANT:** ASUSTek Computer Inc.  
**TESTED:** Jun. 15, 2018 ~ Jul. 17, 2018  
**TEST SAMPLE:** Production Unit  
**STANDARDS:** **FCC Part 2 (Section 2.1091)**  
**FCC OET Bulletin 65, Supplement C (01-01)**  
**KDB 447498 D01 General RF Exposure Guidance v06**  
IEEE C95.1

The above equipment has been tested by **BV 7Layers Communications Technology (Shenzhen) Co. Ltd** and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY :**  \_\_\_\_\_, **DATE:** Jul. 18, 2018  
(Roger Li/ Engineer)

**APPROVED BY :**  \_\_\_\_\_, **DATE:** Jul. 18, 2018  
( Sam Tung / Manager)



## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	LED Projector	
<b>MODEL NAME</b>	F1, F1xy (x, y:A~Z; 0~9 or bank)	
<b>NOMINAL VOLTAGE</b>	19Vdc (adapter or host equipment)	
<b>OPERATING TEMPERATURE RANGE</b>	0 ~ 40°C	
<b>MODULATION TYPE</b>	<b>WLAN</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
<b>OPERATING FREQUENCY</b>	<b>WLAN</b>	2412 ~ 2462MHz for 11b/g/n(HT20) 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5725MHz, 5725 ~ 5805MHz for 11a/n(HT20)/n(HT40)
<b>ANTENNA TYPE</b>	PIFA Antenna	
<b>ANTENNA GAIN</b>	1.8dBi for 2412 ~ 2462MHz 2.2dBi for 5180 ~ 5240MHz 2.2dBi for 5260 ~ 5320MHz 3.5dBi for 5500 ~ 5700MHz 3.5dBi for 5745 ~ 5805MHz	
<b>HW VERSION</b>	9943C	
<b>SW VERSION</b>	1.19.20180426	
<b>I/O PORTS</b>	Refer to user's manual	
<b>CABLE SUPPLIED</b>	Power cord: non-shielded, detachable, 1.0m HDMI: non-shielded, detachable, 1.8m	

**NOTE:**

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT was powered by the following adapter:

ADAPTER	
<b>BRAND:</b>	ASUS
<b>MODEL:</b>	ADP-120RH B
<b>INPUT:</b>	AC 100-240V, 2000mA
<b>OUTPUT:</b>	DC 19V, 6320mA

- The EUT matched the following Power cord and HDMI:

POWER CORD	
<b>BRAND:</b>	N/A
<b>MODEL:</b>	N/A
<b>SIGNAL LINE:</b>	1.0 METER



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<b>HDMI</b>	
<b>BRAND:</b>	N/A
<b>MODEL:</b>	N/A
<b>SIGNAL LINE:</b>	1.8 METER

4. The above models are identical except the model name for marketing purpose.
5. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

### 3 RF EXPOSURE

#### 3.1 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

FREQUENCY RANGE (MHz)	ELECTRIC FIELD STRENGTH (V/m)	MAGNETIC FIELD STRENGTH (A/m)	POWER DENSITY (mW/cm <sup>2</sup> )	AVERAGE TIME (minutes)
<b>LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE</b>				
300-1500	...	...	F/1500	30
1500-100,000	...	...	1.0	30

F = Frequency in MHz

#### 3.2 MPE CALCULATION FORMULA

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

G = gain of antenna in linear scale

$\pi$  = 3.1416

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

#### 3.3 CLASSIFICATION

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

### 3.4 CONDUCTED POWER

#### WIFI 2.4G

##### 802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	<b>16.43</b>	N/A
6	2437	16.13	N/A
11	2462	16.22	N/A

##### 802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	15.39	N/A
6	2437	15.44	N/A
11	2462	15.19	N/A

##### 802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	14.44	N/A
6	2437	14.40	N/A
11	2462	14.36	N/A





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WIFI 5G

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
36	5180	12.93	PASS
40	5200	12.94	PASS
48	5240	13.12	PASS
52	5260	<b>13.14</b>	PASS
60	5300	13.10	PASS
64	5320	12.83	PASS
100	5500	<b>12.32</b>	PASS
116	5580	11.03	PASS
140	5700	11.17	PASS
149	5745	13.98	PASS
157	5785	14.36	PASS
161	5805	14.63	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
36	5180	12.91	PASS
40	5200	12.87	PASS
48	5240	<b>12.98</b>	PASS
52	5260	12.80	PASS
60	5300	12.75	PASS
64	5320	12.72	PASS
100	5500	11.83	PASS
116	5580	11.01	PASS
140	5700	11.08	PASS
149	5745	13.70	PASS
157	5785	14.11	PASS
161	5805	<b>14.79</b>	PASS



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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
38	5190	12.69	PASS
46	5230	12.57	PASS
54	5270	12.65	PASS
62	5310	12.81	PASS
102	5510	11.84	PASS
110	5550	11.50	PASS
134	5670	11.62	PASS
151	5755	14.79	PASS
161	5805	14.66	PASS



### 3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

#### TUNE-UP POWER TABLE

Band	Frequency (MHz)	Operating Mode	Tune-Up Power And Tolerance (dBm)
WIFI 2.4G	2412	11b	16.0 ± 0.5
WIFI 5G B1	5240	11n (20MHz)	12.5 ± 0.5
WIFI 5G B2	5260	11a	13.0 ± 0.5
WIFI 5G B3	5500	11a	12.0 ± 0.5
WIFI 5G B4	5805	11n (20MHz)	15.5 ± 0.5

#### WIFI

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Tune-up Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm <sup>2</sup> )	limit (mW/cm <sup>2</sup> )	PASS / FAIL
WIFI 2.4G	2412	11b	1.8	16.5	67.608	0.013	1.00	PASS
WIFI 5G B1	5240	11n (20MHz)	2.2	13.0	33.113	0.007	1.00	PASS
WIFI 5G B2	5260	11a	2.2	13.5	37.154	0.007	1.00	PASS
WIFI 5G B3	5500	11a	3.5	12.5	39.811	0.008	1.00	PASS
WIFI 5G B4	5805	11n (20MHz)	3.5	16.0	89.125	0.018	1.00	PASS

--END--