



Test Report No.: SA180522W005



RF EXPOSURE REPORT

Product: Integrated Smart Terminal

Model Name: E800

FCC ID: V5PE800

Applicant: PAX Technology Limited

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Report No.: SA180522W005

Received Date: May 25, 2018

Test Date: May 26, 2018 ~ Jul. 06, 2018

Issued Date: Jul. 10, 2018

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA180522W005	Original release	Jul. 10, 2018



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Integrated Smart Terminal	
MODEL NAME	E800	
NOMINAL VOLTAGE	24Vdc (adapter or host equipment) 7.2Vdc (Li-ion, battery)	
OPERATING TEMPERATURE RANGE	0 ~ 50°C	
MODULATION TYPE	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	BT_LE	DTS
	Bluetooth	GFSK, $\pi/4$ -DQPSK, 8DPSK
	WCDMA	BPSK/QPSK
	LTE	QPSK/16QAM
	NFC	ASK
OPERATING FREQUENCY	WLAN	2412 ~ 2472MHz for 11b/g/n(HT20) 2422 ~ 2462MHz for 11n(HT40) 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5725MHz, 5725 ~ 5825MHz for 11a/n(HT20)/n(HT40)/ac(HT80)
	Bluetooth/BT_LE	2402MHz ~ 2480MHz
	WCDMA	1852.4MHz ~ 1907.6MHz (FOR WCDMA Band 2) 826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)
	LTE	1850.7MHz ~ 1909.3MHz (FOR LTE Band2) 1710.7MHz ~ 1754.3MHz (FOR LTE Band4) 824.7MHz ~ 848.3MHz (FOR LTE Band5) 699MHz ~ 716MHz (FOR LTE Band12) 704MHz ~ 716MHz (FOR LTE Band17)
	NFC	13.56 MHz
ANTENNA GAIN	PIFA Antenna with 1dBi gain for Bluetooth/ BT_LE/ WIFI 2.4G PIFA Antenna with 2dBi gain for WIFI 5G Fixed External antenna with -1.5dBi gain for WCDMA Band 5 / LTE Band 5/ LTE Band 12/ LTE Band 17 Fixed External antenna with 0.5dBi gain for WCDMA Band 2 / LTE Band 2/ LTE Band 4	
HW VERSION	E800-XXXXX-XXXX-XXX-XX	
SW VERSION	V0.0.0.1	
I/O PORTS	Refer to user's manual	



CABLE SUPPLIED	N/A
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NOTE:

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

ADAPTER	
BRAND:	HOIOTO
MODEL:	ADS-65HI-19A-3 24065E
INPUT:	AC 100-240V, 1550mA
OUTPUT:	DC 24V, 2700mA

3. 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 ²)	AVERAGE TIME (minutes)
LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

3.2 MPE CALCULATION FORMULA

$$Pd = (Pout * G) / (4 * pi * r^2)$$

where

Pd = power density in mW/cm²

Pout = 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

Bluetooth

GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	7.84	N/A
39	2441	8.19	N/A
78	2480	8.43	N/A

$\pi/4$ DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	3.92	N/A
39	2441	4.40	N/A
78	2480	4.14	N/A

8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	4.02	N/A
39	2441	4.29	N/A
78	2480	4.14	N/A

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
0	2402	3.73	N/A
19	2440	4.05	N/A
39	2480	3.69	N/A



WIFI 2.4G

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	15.73	N/A
6	2437	15.77	N/A
11	2462	15.88	N/A

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	15.58	N/A
6	2437	15.73	N/A
11	2462	15.80	N/A

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
1	2412	14.70	N/A
6	2437	14.68	N/A
11	2462	14.67	N/A

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
3	2422	14.35	N/A
6	2437	14.49	N/A
9	2452	14.34	N/A



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WIFI 5G

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
36	5180	8.86	PASS
40	5200	8.58	PASS
48	5240	8.22	PASS
52	5260	7.40	PASS
60	5300	7.25	PASS
64	5320	7.16	PASS
100	5500	8.53	PASS
116	5580	9.75	PASS
140	5700	9.89	PASS
149	5745	9.47	PASS
157	5785	8.22	PASS
165	5825	8.01	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
36	5180	8.35	PASS
40	5200	8.37	PASS
48	5240	7.63	PASS
52	5260	7.49	PASS
60	5300	7.37	PASS
64	5320	7.02	PASS
100	5500	7.26	PASS
116	5580	8.77	PASS
140	5700	9.42	PASS
149	5745	8.52	PASS
157	5785	8.04	PASS
165	5825	7.57	PASS



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802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	PASS/FAIL
38	5190	7.52	PASS
46	5230	7.27	PASS
54	5270	6.29	PASS
62	5310	6.36	PASS
102	5510	7.67	PASS
110	5550	8.23	PASS
134	5670	9.38	PASS
151	5755	8.26	PASS
165	5825	7.33	PASS

802.11ac (80MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER w/o Duty Factor (dBm)	PASS/FAIL
42	5210	7.45	PASS
58	5290	7.27	PASS
106	5530	7.41	PASS
155	5775	7.56	PASS

NOTE: WWAN average power recorded in Report No.:SA160714W002.

3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

TUNE-UP POWER TABLE

Band	Frequency (MHz)	Operating Mode	Tune-Up Power And Tolerance (dBm)
Bluetooth	2480	GFSK	8.0 ± 0.5
WIFI 2.4G	2462	11b	15.5 ± 0.5
WIFI 5G B1	5180	11a	8.5 ± 0.5
WIFI 5G B2	5260	802.11n (20MHz)	7.5 ± 0.5
WIFI 5G B3	5700	11a	9.5 ± 0.5
WIFI 5G B4	5745	11a	9.0 ± 0.5
WCDMA Band II	1852.4	GPRS12	22.5 ± 0.5
WCDMA Band V	836.5	GPRS12	23.0 ± 0.5
LTE Band 2	1880.0	QPSK	22.5 ± 0.5
LTE Band 4	1745.0	QPSK	21.5 ± 0.5
LTE Band 5	829.0	QPSK	23.0 ± 0.5
LTE Band 12	707.5	QPSK	23.0 ± 0.5
LTE Band 17	710.0	QPSK	22.5 ± 0.5

BT & WIFI 2.4G & WIFI 5G

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Tune-up Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm ²)	limit (mW/cm ²)	PASS / FAIL
Bluetooth	2480	GFSK	1	8.5	0.316	0.000	1.00	PASS
WIFI 2.4G	2462	11b	1	16.0	50.119	0.010	1.00	PASS
WIFI 5G B1	5180	11a	2	9.0	12.589	0.003	1.00	PASS
WIFI 5G B2	5260	802.11n (20MHz)	2	10.0	15.849	0.003	1.00	PASS
WIFI 5G B3	5700	11a	2	8.0	10.000	0.002	1.00	PASS
WIFI 5G B4	5745	11a	2	9.5	14.125	0.003	1.00	PASS



WCDMA

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Conducted Time Average Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm ²)	limit (mW/cm ²)	PASS / FAIL
WCDMA V	836.4	GPRS12	3.5	23.05	451.856	0.090	2.60	PASS
WCDMA II	1852.4	GPRS12	4.8	22.85	582.103	0.116	1.00	PASS

LTE

Band	Frequency (MHz)	Operating Mode	Antenna Gain (dBi)	Conducted Time Average Power (dBm)	E.I.R.P Power (mW)	Power Density (mW/cm ²)	limit (mW/cm ²)	PASS / FAIL
Band2	1880.0	QPSK	4.8	22.08	487.528	0.097	1.00	PASS
Band4	1745.0	QPSK	4.8	21.90	467.735	0.093	1.00	PASS
Band5	829.0	QPSK	3.5	23.18	465.586	0.093	2.59	PASS
Band12	707.5	QPSK	3.5	23.0	446.684	0.089	2.32	PASS
Band17	710.0	QPSK	3.5	22.5	398.107	0.079	2.33	PASS

3.6 CONCLUSION OF SIMULTANEOUS TRANSMITTER

Both of the WLAN and plug-in device can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1/LPD1+CPD2/LPD2+.....etc. < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore the worst-case situation is

$$0.000/1.00+0.010/1.00+0.003/1.00+0.003/1.00+0.002/1.00+0.003/1.00+0.090/2.60+0.116/1.00+0.097/1.00+0.093/2.59+0.089/2.32+0.079/2.33 =0.38, \text{ which is less than "1",}$$

This confirmed that the device comply with FCC 1.1310 MPE limit.

--END--