

RF EXPOSURE REPORT

Product: Digital projector

Model Name: i500

FCC ID: JVPI500

Applicant: BENQ corporation

Address: 16 Jihu Road, Neihu, Taipei 114, Taiwan

Manufacturer: BENQ corporation

Address: 16 Jihu Road, Neihu, Taipei 114, Taiwan

Prepared by: Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch

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Report No.: SA160314W002

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Test Date: Mar. 15, 2016 ~ May 02, 2016

Issued Date: May 03, 2016

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA160314W002	Original release	May 03, 2016

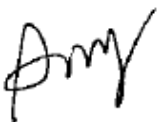


Test Report No.: SA160314W002

1 CERTIFICATION

PRODUCT: Digital projector
BRAND NAME: BENQ
MODEL NAME: i500
APPLICANT: BENQ corporation
TESTED: Mar. 15, 2016 ~ May 02, 2016
TEST SAMPLE: Identical Prototype
STANDARDS: **FCC Part 2 (Section 2.1091)**
FCC OET Bulletin 65, Supplement C (01-01)
IEEE C95.1

The above equipment has been tested by **Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch** 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:** May 03, 2016
(Amyee Qian / Engineer)

APPROVED BY :  , **DATE:** May 03, 2016
(William Chung / Manager)

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Digital projector	
MODEL NAME	i500	
ADDITIONAL MODELS	i500v, i0319, i0519, i490H, RW0519, i501JD, i500ST, i500P, i500E, i500H, i500F, i500N, i500J	
FCC ID	JVPI500	
NOMINAL VOLTAGE	19Vdc (adapter or host equipment)	
OPERATING TEMPERATURE RANGE	0 ~ 40℃	
MODULATION TECHNOLOGY	BT: FHSS	
	WIFI: DSSS, OFDM	
MODULATION TYPE	BT: GFSK, 8DPSK, $\pi/4$ DQPSK	
	WIFI: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM	
OPERATING FREQUENCY	BT	2402~ 2480MHz
	WIFI 2.4G	2412~ 2462MHz for 11b/g/n(HT20) 2422~ 2452MHz for 11b/g/n(HT40)
	WIFI 5G	5180 ~ 5240MHz, 5725 ~ 5825MHz
ANTENNA GAIN	BT: PCB Antenna with 2.3dBi gain	
ANTENNA 0 GAIN	2412~ 2462MHz: PCB Antenna with 2.3dBi gain 5180 ~ 5240MHz: PCB Antenna with 3.4dBi gain 5725 ~ 5825MHz: PCB Antenna with 3.5dBi gain	
ANTENNA 1 GAIN	2412~ 2462MHz: PCB Antenna with 2.3dBi gain 5180 ~ 5240MHz: PCB Antenna with 2.5dBi gain 5725 ~ 5825MHz: PCB Antenna with 2.5dBi gain	
HW VERSION	EP.628VX.BQ01M,V1.0	
SW VERSION	M03	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	N/A	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT provides completed transmitters and receivers.

MODULATION MODE	TX FUNCTION
802.11a	1TX/1RX
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	2TX/2RX
802.11n (HT40)	2TX/2RX

3. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	Ktec
MODEL:	KSAS1201900631M3
INPUT:	AC 100-240V, 1600mA
OUTPUT:	DC 19V, 6310mA

4. The above additional models are identical with the test model i500, and the only difference is 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 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

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

where

P_d = power density in mW/cm²

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

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 **Radio Equipment**.

3.4 CONDUCTED POWER

BT EDR

GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (mW)	PASS/FAIL
0	2402	3.59	2.286	125	PASS
39	2441	3.52	2.249	125	PASS
78	2480	2.09	1.618	125	PASS

$\pi/4$ DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (mW)	PASS/FAIL
0	2402	2.64	1.837	125	PASS
39	2441	2.48	1.770	125	PASS
78	2480	1.01	1.262	125	PASS

8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	POWER OUTPUT (dBm)	POWER OUTPUT (mW)	POWER LIMIT (mW)	PASS/FAIL
0	2402	2.68	1.854	125	PASS
39	2441	2.50	1.778	125	PASS
78	2480	1.05	1.274	125	PASS

WIFI 2.4G+BT_LE

802.11B

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	17.48	55.976	1	PASS
6	2437	17.23	52.845	1	PASS
11	2462	17.09	51.168	1	PASS

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
1	2412	20.55	113.501	1	PASS
6	2437	20.28	106.660	1	PASS
11	2462	20.19	104.472	1	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	POWER LIMIT (W)	PASS/FAIL
		CHAIN 0	CHAIN 1				
1	2412	17.78	15.42	19.77	94.813	1	PASS
6	2437	17.62	15.35	19.64	92.087	1	PASS
11	2462	17.24	15.73	19.56	90.377	1	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)		TOTAL POWER (dBm)	TOTAL POWER (mW)	POWER LIMIT (W)	PASS/FAIL
		CHAIN 0	CHAIN 1				
3	2422	17.08	15.18	19.24	84.011	1	PASS
6	2437	16.85	15.10	19.07	80.776	1	PASS
9	2452	16.66	15.02	18.93	78.114	1	PASS

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT(W)	PASS/FAIL
0	2402	3.41	2.193	1	PASS
19	2440	3.37	2.173	1	PASS
39	2480	1.91	1.552	1	PASS

WIFI 5G

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)	AVERAGE POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
36	5180	15.596	11.93	24	PASS
44	5220	14.622	11.65	24	PASS
48	5240	14.093	11.49	24	PASS
149	5745	11.324	10.54	30	PASS
157	5785	11.858	10.74	30	PASS
165	5825	12.078	10.82	30	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
		CHAIN0	CHAIN1				
36	5180	8.670	8.147	16.817	12.26	24	PASS
44	5220	8.492	7.980	16.472	12.17	24	PASS
48	5240	8.110	7.907	16.017	12.05	24	PASS
149	5745	8.318	8.166	16.484	12.17	30	PASS
157	5785	8.933	9.247	18.180	12.60	30	PASS
165	5825	8.453	8.710	17.163	12.35	30	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (mW)		TOTAL POWER (mW)	TOTAL POWER (dBm)	POWER LIMIT (dBm)	PASS/FAIL
		CHAIN0	CHAIN1				
38	5190	7.834	7.603	15.437	11.89	24	PASS
46	5230	7.516	7.328	14.844	11.72	24	PASS
151	5755	8.185	6.966	15.151	11.80	30	PASS
159	5795	8.433	6.622	15.055	11.78	30	PASS

3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

BT EDR

OPERATING BAND(MHz)	Output Power E.I.R.P. (dBm)	Output Power E.I.R.P. (mW)	Power Density (mW/cm ²)	limit (mW/cm ²)	PASS / FAIL
2402~2480	3.59	2.286	0.023	1.00	PASS

WIFI 2.4G+ BT_LE

OPERATING BAND(MHz)	Output Power E.I.R.P. (dBm)	Output Power E.I.R.P. (mW)	Power Density (mW/cm ²)	limit (mW/cm ²)	PASS / FAIL
2412~2462	20.55	113.501	0.023	1.00	PASS
2402~2480	3.41	2.193	0.023	1.00	PASS

WIFI 5G

OPERATING BAND(MHz)	Output Power E.I.R.P. (dBm)	Output Power E.I.R.P. (mW)	Power Density (mW/cm ²)	limit (mW/cm ²)	PASS / FAIL
5180 ~ 5240	15.66	36.813	0.007	1.00	PASS
5745 ~ 5825	16.10	40.738	0.008	1.00	PASS