

RF EXPOSURE REPORT

Product: Digital Projector

Model Name: GV1

Additional Model: GV1+, TV1, TV533, TV200, P20033

FCC ID: JVPGV1

Applicant: Benq Corporation

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

Manufacturer: Benq Corporation

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

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Report No.: SA180913W005-1

Received Date: Sep. 13, 2018

Test Date: Sep. 14, 2018 ~ Oct. 12, 2018

Issued Date: Oct. 15, 2018

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
SA180913W005-1	Original release	Oct. 15, 2018



Test Report No.: SA180913W005-1

1 CERTIFICATION

PRODUCT: Digital Projector

BRAND NAME: BenQ

MODEL NAME: GV1

ADDITIONAL MODEL: GV1+, TV1, TV533, TV200, P20033

APPLICANT: Benq Corporation

TESTED: Sep. 14, 2018 ~ Oct. 12, 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 : Roger, **DATE:** Oct. 15, 2018
(Roger Li/ Engineer)

APPROVED BY : [Signature], **DATE:** Oct. 15, 2018
(Sam Tung / Manager)




2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Digital Projector	
MODEL NAME	GV1	
ADDITIONAL MODEL	GV1+, TV1, TV533, TV200, P20033	
NOMINAL VOLTAGE	12Vdc (adapter or host equipment) 7.4Vdc (Li-ion, battery)	
OPERATING TEMPERATURE RANGE	0 ~ 35°C	
MODULATION TYPE	WLAN	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	BT_LE	BT-LE(GFSK) for DTS
	Bluetooth	GFSK, $\pi/4$ -DQPSK, 8DPSK
OPERATING FREQUENCY	WLAN	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40) 5150 ~ 5240MHz, 5745 ~ 5805MHz for 11a/n(HT20)/n(HT40)
	Bluetooth/BT_LE	2402MHz ~ 2480MHz
ANTENNA TYPE	FPC Antenna with 2.1dBi gain	
HW VERSION	A175C	
SW VERSION	v1.0.1	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable: non-shielded, detachable, 1.0meter	

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The above models are identical except model number for marketing purpose.
- The EUT was powered by the following adapter:

ADAPTER	
BRAND:	FULLPOWER 
MODEL:	ICP30-120-2000
INPUT:	AC 100-240V, 800mA
OUTPUT:	DC 12V, 2000mA



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4. The EUT matched the following USB cable and remote control:

USB CABLE	
BRAND:	N/A
MODEL:	F.01.0401000127
SIGNAL LINE:	1.0 METER

REMOTE CONTROL	
BRAND:	BenQ
MODEL:	RCI014
OUTPUT:	DC 2.3 ~ 3.3V, 6 ~ 25mA
RANGE:	6.0 METER

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

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

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 **Mobile Device**.

3.4 CONDUCTED POWER

Bluetooth

GFSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
0	2402	7.10	7.5	N/A
39	2441	9.05	9.5	N/A
78	2480	5.00	5.5	N/A

$\pi/4$ DQPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
0	2402	5.11	5.5	N/A
39	2441	7.13	7.5	N/A
78	2480	3.18	3.5	N/A

8DPSK

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
0	2402	5.10	5.5	N/A
39	2441	7.07	7.5	N/A
78	2480	3.22	3.5	N/A

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
0	2402	-2.00	-1.5	N/A
39	2441	-0.96	-0.5	N/A
78	2480	-4.14	-4.0	N/A

WIFI 2.4G

802.11b

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
1	2412	16.01	16.5	N/A
6	2437	16.16	16.5	N/A
11	2462	15.90	16.0	N/A

802.11g

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
1	2412	15.06	15.5	N/A
6	2437	15.12	15.5	N/A
11	2462	15.10	15.5	N/A

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
1	2412	14.50	15.0	N/A
6	2437	14.75	15.0	N/A
11	2462	14.39	14.5	N/A

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
1	2412	13.55	14.0	N/A
6	2437	13.86	14.0	N/A
11	2462	13.49	14.0	N/A

WIFI 5G

802.11a

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
36	5180	14.01	14.5	PASS
40	5200	14.05	14.5	PASS
48	5240	14.06	14.5	PASS
149	5745	14.17	14.5	PASS
157	5785	14.19	14.5	PASS
161	5805	14.37	14.5	PASS

802.11n (20MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
36	5180	13.15	13.5	PASS
40	5200	13.33	13.5	PASS
48	5240	13.08	13.5	PASS
149	5745	14.16	14.5	PASS
157	5785	14.01	14.5	PASS
161	5805	14.27	14.5	PASS

802.11n (40MHz)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	TUNE-UP POWER (dBm)	PASS/FAIL
38	5190	14.29	14.5	PASS
46	5230	14.16	14.5	PASS
151	5755	14.09	14.5	PASS
159	5795	14.41	14.5	PASS

3.5 CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

TUNE-UP POWER TABLE

Band	Frequency (MHz)	Operating Mode	Tune-Up Power And Tolerance (dBm)
Bluetooth	2441	GFSK	9.0 ± 0.5
WIFI 2.4G	2437	11b	16.0 ± 0.5
WIFI 5G B1	5190	11n (40MHz)	14.0 ± 0.5
WIFI 5G B4	5795	11n (40MHz)	14.0 ± 0.5

CALCULATION RESULT

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	2441	GFSK	2.1	9.5	14.454	0.003	1.00	PASS
WIFI 2.4G	2437	11b	2.1	16.5	72.444	0.014	1.00	PASS
WIFI 5G B1	5190	11n (40MHz)	2.1	14.5	45.709	0.009	1.00	PASS
WIFI 5G B4	5795	11n (40MHz)	2.1	14.5	45.709	0.009	1.00	PASS

Note: The WLAN and Bluetooth cannot transmit simultaneously, so there is no co-location test requirement for WLAN and Bluetooth.

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