ITL

RF Exposure evaluation report

Applicant:	ChamSys Ltd
Address of Applicant:	Unit 3B Richmond Works, Pitt Road, Freemantle, Southampton, SO15 3FQ United Kingdom
Manufacturer:	ChamSys Ltd
Address of Manufacturer:	Unit 3B Richmond Works, Pitt Road, Freemantle, Southampton, SO15 3FQ United Kingdom
Product name:	QuickQ Consoles
Model:	QUICKQ RACK
Rating(s):	100-240Vac, 50/60Hz 0.337A, 24W @ 100Vac 0.188A, 23W @ 240Vac
Trademark:	CHAMSYS
Standards:	47 CFR Part 1.1310 (2013) 47 CFR Part 2.1091 (2013) KDB447498D01 General RF Exposure Guidance v06
FCC ID:	2AQWR-QUICKQR
Date of Receipt:	2019-07-30
Date of Test:	2019-07-30~2019-08-30
Date of Issue:	2019-09-02
Test Result	**Pass***

* In the configuration tested, the test item complied with the standards specified above.

Authorized for issue by:

Test by: *Reviewed by:*

Sep.02, 2019 Eleven Liang   Sep.02, 2019   Pauler Li

          Project Engineer   Project Manager

Date	Name/Position	Signature	Date	Name/Position	Signature

Possible test case verdicts:

test case does not apply to the test object ..:　N/A

test object does meet the requirement ....:　P (Pass)

test object does not meet the requirement ..:　F (Fail)

Testing Laboratory information:

Testing Laboratory Name .... :　　　　ITL Co., Ltd

Address _____:　　　　No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, 523757 P.R.C.

Testing location　:　　　　Same as above

Tel　　　　　:　　　　0086-769-39001678

Fax　　　　　:　　　　0086-20-62824387

E-mail　　　:　　　　itl@i-testlab.com

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report would be invalid test report without all the signatures of testing technician and approver.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

General product information:

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2 General Information

2.1 Client Information

Applicant: ChamSys Ltd

Address of Applicant: Unit 3B Richmond Works, Pitt Road, Freemantle, Southampton, SO15 3FQ United Kingdom

2.2 General Description of E.U.T.

Name: QuickQ Consoles

Model No.:   QuickQ Rack

Trade Mark: CHAMSYS

Operating Frequency: 802.11 b/g/n(HT20): 2412MHz-2462MHz

                        2402 MHz to 2480 MHz for Bluetooth.

Channels: 802.11b, 802.11g, 802.11n(20MHz): 11

                        802.11n(40MHz): 7

                        79 channels with 1MHz step for Bluetooth

Type of Modulation: CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM for WIFI

                        GFSK, (π/4) DQPSK, 8DPSK for Bluetooth

Antenna Reference   SMA-reverse antenna with 3dBi peak Gain

Function: QuickQ Consoles

2.3 Details of E.U.T.

EUT Power Supply: 120Vac, 60Hz

Test mode for WIFI: The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	802.11b	2412MHz, 2437MHz, 2462MHz,
TM2	802.11g	2412MHz, 2437MHz, 2462MHz,
TM3	802.11n(HT20)	2412MHz, 2437MHz, 2462MHz,
TM4	802.11n(40MHz)	2422MHz, 2437MHz, 2452MHz,

Test mode for BT: The program used to control the EUT for staying in continuous transmitting and

receiving mode is programmed. Channel lowest (2402MHz), middle

(2441MHz) and highest (2480MHz) are chosen for Bluetooth full testing.

Normal mode: the Bluetooth has been tested on the Modulation of GFSK;

EDR mode: the Bluetooth has been tested on the Modulation of (π/4)DQPSK an 8DPSK, compliance test and record the worst case on (π/4)DQPSK an 8DPSK

2.4 Description of Support Units

The EUT has been tested as an independent unit for fixed frequency by testing lab.

2.5 Test Location

All tests were performed at:

ITL Co., Ltd

No. 8 Jinqianling Street 5, Huangjiang Town, Dongguan, Guangdong, 523757 P.R.C.

0086-769-39001678

itl@i-testlab.com

No tests were sub-contracted.

2.6 Deviation from Standards

Biconical and log periodic antennas were used instead of dipole antennas.

2.7 Abnormalities from Standard Conditions

None.

2.8 Other Information Requested by the Customer

None.

2.9 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS Lab code:L9342**
- **FCC Designation No.:CN5035**
- **IC Registration NO.: 12593A**
- **NVLAP LAB CODE: 600199-0**

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3   SAR Evaluation

3.1   RF Exposure Compliance Requirement

3.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06 and FCC 1.1310 Radiofrequency radiation exposure limits for General Population/Uncontrolled Exposure

3.1.2 Maximum Peak Output Power

BT

Normal mode(DH5):		
Test Channel	**Fundamental Frequency (MHz)**	**Output Power (dBm)**
Lowest	2402	4.41
Middle	2441	4.49
Highest	2480	4.80

EDR mode(2DH5):		
Test Channel	**Fundamental Frequency (MHz)**	**Output Power (dBm)**
Lowest	2402	5.213
Middle	2441	5.285
Highest	2480	5.596

EDR mode(3DH5):		
Test Channel	**Fundamental Frequency**	**Output Power (dBm)**
Lowest	2402	5.428
Middle	2441	5.467
Highest	2480	5.808

WIFI

Test mode	Test Channel	Test Result (dBm)
802.11b	2412	17.29
	2437	17.95
	2462	18.16
802.11g	2412	15.79
	2437	16.22
	2462	16.82
802.11n(HT20)	2412	15.85
	2437	16.20
	2462	16.77
802.11n(HT40)	2422	14.85
	2437	15.04
	2452	15.51

3.1.3 EUT RF Exposure

$Pd = PG/4\pi R^2$

Pd = power density in mW/cm2

P = 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

FREQUENCY BAND (MHz)	MAX POWER (dBm)	MAX POWER (mW)	ANTENNA GAIN	DISTANCE (cm)	POWER DENSITY (mW/cm2)	LIMIT (mW/cm2)
BT	5.808	3.81	2	20	0.00152	1
WIFI	18.16	65.46	2	20	0.02609	1

CONCLUSION: Both of the WIFI and BT can transmit simultaneously, the formula of calculated

the MPE is: CPD1 / LPD1 + CPD2 / LPD2 < 1

CPD = Calculation power density

LPD = Limit of power density

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