

RF Exposure Report

Report No.: SA170414E05

FCC ID: MQT-E200CP

Test Model: xCL_E200CP

Received Date: Apr. 14, 2017

Test Date: Apr. 28 to May 16, 2017

Issued Date: May 31, 2017

Applicant: XAC AUTOMATION CORP.

Address: 4F, No. 30, INDUSTRY E. RD. IX, SCIENCE-BASED INDUSTRIAL
PARK,HSINCHU,TAIWAN

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits for Maximum Permissible Exposure (MPE)	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
2.4 Antenna Gain	5
2.5 Calculation Result of Maximum Conducted Power	6

Release Control Record

Issue No.	Description	Date Issued
SA170414E05	Original release.	May 31, 2017

1 Certificate of Conformity

Product: Terminal

Brand: XAC

Test Model: xCL_E200CP

Sample Status: ENGINEERING SAMPLE

Applicant: XAC AUTOMATION CORP.


Test Date: Apr. 28 to May 16, 2017


Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan 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:** _____
Claire Kuan / Specialist

Approved by :  , **Date:** _____
May Chen / Manager

2 RF Exposure

2.1 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				
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 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

2.3 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**.

2.4 Antenna Gain

WiFi/BT Antenna Spec.			
Antenna Net Gain(dBi)	Frequency range (GHz)	Antenna Type	Antenna Connector
4.01	2.4~2.4835	PCB	i-pex(MHF)
3.79	5.15~5.85		
RFID Antenna Spec.			
Antenna Net Gain(dBi)	Frequency range (MHz)	Antenna Type	Antenna Connector
13	13.56	Loop	N/A

2.5 Calculation Result

For RFID

Freq. (MHz)	Electric field (dBuV/m)@3m	Pout EIRP (dBm)	Pout EIRP (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Pass /Fail
13.56	86.23	-9.00	0.1259	0.00003	0.97893	Pass

NOTE: 1. Limit of Electric field=824/f
 2. Pout EIRP (dBm) = Field Strength of Fundamental (dBuV/m) - 95.23 (dB)
 3. This power included tune-up tolerance range (1dB) that specified by manufacturer.

WLAN

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2412-2462	100.000	4.01	20	0.05009	1
5180-5240, 5260-5320, 5500-5700, 5745-5825	12.589	3.79	20	0.00599	1

NOTE: 1. This power included tune-up tolerance range (1dB) that specified by manufacturer.

BT-EDR

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2402-2480	7.943	4.01	20	0.00158	1

NOTE: 1. This power included tune-up tolerance range (1dB) that specified by manufacturer.

BT-LE

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
2402-2480	1.585	4.01	20	0.00079	1

NOTE: 1. This power included tune-up tolerance range (1dB) that specified by manufacturer.

Conclusion:

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + Bluetooth + RFID = $0.05009 / 1 + 0.00398 / 1 + 0.00003 / 0.97893 = 0.05410$

WLAN 5GHz + Bluetooth + RFID = $0.00599 / 1 + 0.00398 / 1 + 0.00003 / 0.97893 = 0.01000$

Therefore the maximum calculations of above situations are less than the “1” limit.

--- END ---