RF Exposure Report

Report No.: SA170209C07B

FCC ID: 2AAEDWP2117

Test Model: WiCS-2100

Received Date: Feb. 09, 2017

Test Date: Mar. 08, 2017

Issued Date: May 06, 2017

Applicant: Barco NV

Address: President Kennedypark 35, 8500 Kortrijk, Belgium

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

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Release Control Record

Issue No.	Description	Date Issued
SA170209C07B	Original release.	May 06, 2017

1 Certificate of Conformity

Product: WiCS-2100

Brand: wePresent

Test Model: WiCS-2100

Sample Status: ENGINEERING SAMPLE

Applicant: Barco NV

Test Date: Mar. 08, 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:** May 06, 2017
Wendy Wu / Specialist

Approved by : ______________________ , **Date:** May 06, 2017
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				
0.3-1.34	614	1.63	(100)*	30
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 ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

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

where

Pd = power density in mW/cm^2

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

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

For 2.4GHz & BT					
Antenna No.	Brand	Model	Antenna Net. Gain(dBi)	Frequency range (GHz)	Antenna Type
1 (Main-WLAN+BT combo Ant)	Pegatron Corp.	Pegatron P/N: 1415- 05VU000 (Hong-Bo P/N: 290- 30536)	2.85	2.4~2.4835	PCB
2 (Aux-WLAN Ant)			1.76	2.4~2.4835	
For 5GHz					
Antenna No.	Brand	Model	Antenna Net. Gain(dBi)	Frequency range (GHz)	Antenna Type
1 (Main-WLAN Ant)	Pegatron Corp.	Pegatron P/N: 1415- 05VU000 (Hong-Bo P/N: 290- 30536)	2.58	5.15~5.25	PCB
			3.37	5.25~5.35	
			3.68	5.47~5.725	
			3.58	5.725~5850	
2 (Aux-WLAN Ant)	Pegatron Corp.	Pegatron P/N: 1415-05VT000 (Hong-Bo P/N: 290- 30535)	2.76	5.15~5.25	PCB
			3.4	5.25~5.35	
			3.26	5.47~5.725	
			2.07	5.725~5850	

2.5 Calculation Result of Maximum Conducted Power

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band) and bluetooth data was copied from the original test report (Report No.: SA170209C07)

For WLAN:

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	399.052	5.33	20	0.27087	1
5180-5240	126.192	5.68	20	0.09285	1
5260-5320	105.958	6.4	20	0.09202	1
5500-5580 & 5660-5700	102.479	6.48	20	0.09065	1
5745-5825	200	5.87	20	0.15373	1

NOTE:

2.4GHz: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.33dBi

5GHz:

UNII-1: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.68dBi

UNII-2A: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.4dBi

UNII-2C: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 6.48dBi

UNII-3: Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 5.87dBi

For BT-LE:

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	3.162	2.85	20	0.00121	1

NOTE: 1. This power include tune-up tolerance range that specified in WiCS-2100 Tune Up power table

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + BT-LE = 0.27087 / 1 + 0.00121 / 1 = 0.27208

WLAN 5GHz + BT-LE = 0.15373 / 1 + 0.00121 / 1 = 0.15494

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

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