Supplementary RF Exposure Report

Report No.:	SA991201E03O
FCC ID:	UZ7MC319ZUS
Test Model:	MC319ZUS
Received Date:	Jan. 11, 2016
Test Date:	Jan. 25, 2016
Issued Date:	Feb. 04, 2016
Applicant:	Zebra Technologies Corporation
Address:	1 Zebra Plaza, Holtsville, NY 11742
Manufacturer:	Zebra Technologies Corporation
Address:	1 Zebra Plaza, Holtsville, NY 11742
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.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Report Issue History Record of EUT (MC319ZUS)

Attachment No.	Issue Date	Description
991201E03-2	Sep. 11, 2013	Original release.
991201E03O-2	Feb. 04, 2016	Upgraded the versions of the standard to section 15.407 under new rule.

Release Control Record

Issue No.	Description	Date Issued
SA991201E03O	Original release.	Feb. 04, 2016

1 Certificate of Conformity

Product:	Mobile Computing Terminal
Brand:	Zebra
Test Model:	MC319ZUS
Sample Status:	MASS-PRODUCTION
Applicant:	Zebra Technologies Corporation
Test Date:	Jan. 25, 2016
Standards:	FCC Part 2 (Section 2.1091) KDB 447498 D01 General RF Exposure Guidance v06 IEEE C95.1-2005

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:** Feb. 04, 2016
Claire Kuan / Specialist

Approved by : _____ , **Date:** Feb. 04, 2016
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				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

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**.

3 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

WLAN Antenna Spec.						
Brand	Antenna Type	Peak Gain(dBi) with cable loss	Connecter Type	Frequency range	Cable Loss (dB)	Cable Length
Auden	Monopole + coupling	3.4 dBi (2.4GHz) 4.5 dBi (5GHz)	hirose	2.4 ~ 2.5 GHz 4.92 ~ 5.85 GHz	-0.2640 dB -0.6168 dB	52 mm
Auden	PIFA	1.3 dBi (2.4GHz) 3.6 dBi (5GHz)	hirose	2.4 ~ 2.5 GHz 4.92 ~ 5.85 GHz	-0.6409 dB -1.0418 dB	68 mm

RFID Antenna Spec.						
Brand	Antenna Type	Peak Gain(dBi) with cable loss	Connecter Type	Frequency range	Cable Loss (dB)	Cable Length
Auden	Dipole	3.66	hirose	902 ~ 928 MHz	-0.43 dB	85 mm
Auden	Slot Dipole	1.95	hirose	902 ~ 928 MHz	-0.43 dB	85 mm

Bluetooth Antenna Spec.							
Brand	Model No.	Antenna Type	Peak Gain(dBi)	Connecter Type	Frequency range (MHz)	Cable Loss (dB)	Cable Length
Antenova	(Mica 2.4GHz) 303DA5654-01	Chip Antenna	-1.34	U.FL	2400-2500 MHz	0.185	74 mm

4 Calculation Result Of Maximum Conducted Power

For WLAN (2.4GHz) & WLAN (5GHz - U-NII-1, U-NII-2A, U-NII-2C) & Bluetooth, RFID data was copied from the original test report (Report No.: SA991201E03 R1).

For WLAN

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2412-2462	151.4	3.6	20	0.066	1
5180-5320	27.5	4.5	20	0.015	1
5500-5720	33.1	4.5	20	0.019	1
5745-5825	30.269	4.5	20	0.01697	1

For Bluetooth

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
2402-2480	2.9	-1.34	20	0.00042	1

For RFID

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
902.75 ~ 927.25	955.0	3.66	20	0.441	1

Note: Bluetooth technology (BT2.1+EDR), WLAN and RFID technology cannot transmit at same time.

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