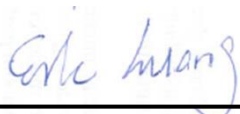


# FCC SAR Test Report

APPLICANT : Zebra Technologies Corporation  
EQUIPMENT : Touch computer  
BRAND NAME : Zebra  
MODEL NAME : TC700K  
FCC ID : UZ7TC700K  
STANDARD : FCC 47 CFR Part 2 (2.1093)  
ANSI/IEEE C95.1-1992  
IEEE 1528-2013

We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures and had been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.



Reviewed by: Eric Huang / Deputy Manager



Approved by: Jones Tsai / Manager



## SPORTON INTERNATIONAL INC.

No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.)



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## Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA672834-04	Rev. 01	Initial issue of report	Jan. 05, 2017

## **1. Statement of Compliance**

The maximum results of Specific Absorption Rate (SAR) found during testing for Zebra Technologies Corporation, Touch computer, TC700K, are as follows.

Equipment Class	Frequency Band	Highest SAR Summary		Highest Simultaneous Transmission 1g SAR (W/kg)
		Head (Separation 0mm)	Body-worn (Separation 15mm)	
		1g SAR (W/kg)		
DTS	2.4GHz WLAN	0.31	0.15	0.33
NII	5GHz WLAN	0.12	0.37	0.51
DSS	Bluetooth		< 0.01	0.21

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications

## **2. Administration Data**

Testing Laboratory	
Test Site	SPORTON INTERNATIONAL INC.
Test Site Location	No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan District, Taoyuan City, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978

Applicant	
Company Name	Zebra Technologies Corporation
Address	1 Zebra Plaza Holtsville, NY 11742

Manufacturer	
Company Name	Wistron Corporation
Address	21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist, New Taipei City 221, Taiwan R.O.C.

## **3. Equipment Under Test (EUT) Information**

### **3.1 General Information**

Product Feature & Specification	
Equipment Name	Touch computer
Brand Name	Zebra
Model Name	TC700K
FCC ID	UZ7TC700K
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	· 802.11a/b/g/n/ac HT20/HT40/VHT20/VHT40/VHT80 · Bluetooth BR/EDR/LE · NFC:ASK
HW Version	DV
SW Version	Android version 6.0.1
FW Version	91-12.04.4-MG-00
MFD	08NOV16
EUT Stage	Engineering sample

## 4. Re-use of Measured Data

### 1. Introduction Section :

The SAR test data for WLAN/BT (equipment class: DTS/NII/DSS) of UZ7TC700K (model: TC700K) is referenced from UZ7TC75EK (model: TC75EK).

The applicant takes full responsibility that the test data as referenced in this report represent compliance for UZ7TC700K (model: TC700K).

### 2. Difference Section :

FCC ID: UZ7TC700K is a variant version of FCC ID: UZ7TC75EK by changing hardware in UZ7TC700K, the detail difference information please referred to Product Equality Declaration.

### 3. Spot Check Verification Data Section :

#### <Head SAR>

Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Original Model (FCC ID : UZ7TC75EK )					Spot Check Model (FCC ID : UZ7TC700K )					Deviation
							Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
WLAN 2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 1	11	2462	18.13	18.30	98.62	0.049	0.052	17.80	18.30	98.62	0.045	0.051	-1.9%
WLAN 2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 2	11	2462	18.23	19.10	98.62	0.246	0.305	18.39	19.10	98.62	0.207	0.246	-19.4%
WLAN 5GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 1	60	5300	16.09	16.10	92.86	0.011	0.012	15.82	16.10	92.86	0.010	0.011	-8.3%
WLAN 5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	60	5300	17.56	17.80	92.86	0.095	0.108	17.12	17.80	92.86	0.072	0.091	-15.7%
WLAN 5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	116	5580	15.84	16.10	92.86	0.065	0.074	16.02	16.10	92.86	0.080	0.087	17.6%
WLAN 5GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 2	144	5720	17.59	17.80	92.86	0.087	0.098	17.66	17.80	92.86	0.085	0.095	-3.1%
WLAN 5GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 1	165	5825	15.88	16.10	92.86	0.103	0.117	16.07	16.10	92.86	0.123	0.133	13.7%
WLAN 5GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 2	157	5785	17.60	17.80	92.86	0.053	0.060	17.43	17.80	92.86	0.050	0.059	-1.7%

#### <Body-Worn Accessory SAR>

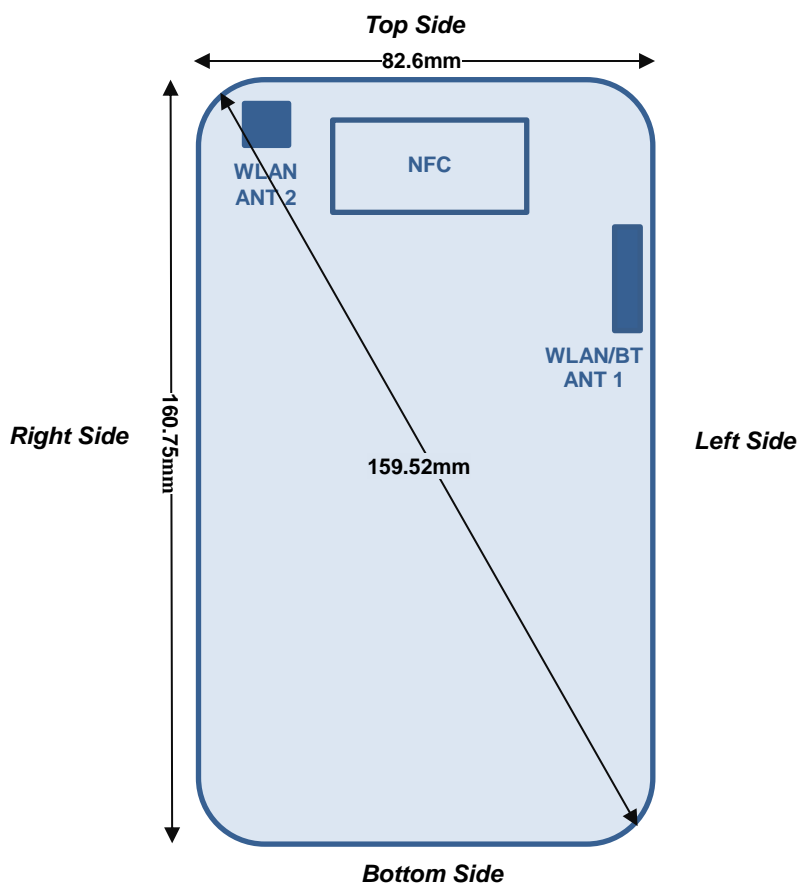
Band	Mode	Test Position	Gap (mm)	Antenna	Ch.	Freq. (MHz)	Original Model (FCC ID : UZ7TC75EK )					Spot Check Model (FCC ID : UZ7TC700K )					Deviation
							Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Average Power (dBm)	Tune-Up Limit (dBm)	Duty Cycle %	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
WLAN 2.4GHz	802.11b 1Mbps	Back	15mm	Ant 1	6	2437	18.04	18.30	98.62	0.143	0.154	18.03	18.30	98.62	0.142	0.153	-0.6%
WLAN 2.4GHz	802.11b 1Mbps	Back	15mm	Ant 2	6	2437	18.72	19.10	98.62	0.094	0.104	18.77	19.10	98.62	0.087	0.095	-8.7%
WLAN 5GHz	802.11a 6Mbps	Back	15mm	Ant 1	60	5300	16.09	16.10	92.86	0.130	0.140	15.82	16.10	92.86	0.130	0.148	5.7%
WLAN 5GHz	802.11a 6Mbps	Back	15mm	Ant 2	52	5260	17.55	17.80	92.86	0.317	0.361	17.27	17.80	92.86	0.350	0.425	17.7%
WLAN 5GHz	802.11a 6Mbps	Back	15mm	Ant 1	116	5580	15.84	16.10	92.86	0.093	0.106	16.02	16.10	92.86	0.116	0.126	18.9%
WLAN 5GHz	802.11a 6Mbps	Back	15mm	Ant 2	116	5580	17.54	17.80	92.86	0.321	0.367	17.58	17.80	92.86	0.359	0.405	10.4%
WLAN 5GHz	802.11a 6Mbps	Back	15mm	Ant 1	157	5785	15.93	16.10	92.86	0.090	0.101	16.07	16.10	92.86	0.077	0.083	-17.8%
WLAN 5GHz	802.11a 6Mbps	Back	15mm	Ant 2	165	5825	17.57	17.80	92.86	0.313	0.355	17.45	17.80	92.86	0.358	0.416	17.2%

**Note:** In the tables above, all the deviation of SAR test results are compliant with uncertainty budget.

### 4. Reference detail Section:

Equipment Class	Reference FCC ID	Folder Test/RF Exposure	Report Title/Section
DTS	UZ7TC75EK	RF Exposure (FA672834)	Sections related to DTS test data
NII	UZ7TC75EK	RF Exposure (FA672834)	Sections related to NII test data
DSS	UZ7TC75EK	RF Exposure (FA672834)	Sections related to DSS test data

## 5. Antenna Location



B

## 6. Simultaneous Transmission Analysis

NO.	Simultaneous Transmission Configurations	Head	Body-worn
1.	WLAN Ant 1 + WLAN Ant 2	Yes	Yes
2.	Bluetooth Ant 1 + WLAN Ant 2		Yes

### General Note:

- In this report, all the test results and transmission simultaneous analysis are referred to UZ7TC75EK (FCC ID: UZ7TC75EK), Sporton Report No: FA672834 or Appendix A.
- WLAN and Bluetooth share the same antenna 1, and cannot transmit simultaneously.
- EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment.
- The worst case WLAN reported SAR for each configuration was used for SAR summation. Therefore, the following summations represent the absolute worst cases for simultaneous transmission with WLAN.
- The Scaled SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
  - Scalar SAR summation  $< 1.6\text{W/kg}$ .
  - $\text{SPLSR} = (\text{SAR1} + \text{SAR2})^{1.5} / (\text{min. separation distance, mm})$ , and the peak separation distance is determined from the square root of  $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$ , where  $(x1, y1, z1)$  and  $(x2, y2, z2)$  are the coordinates of the extrapolated peak SAR locations in the zoom scan.
  - If  $\text{SPLSR} \leq 0.04$ , simultaneously transmission SAR measurement is not necessary.
  - Simultaneously transmission SAR measurement, and the reported multi-band SAR  $< 1.6\text{W/kg}$ .
  - The SPLSR calculated results please refer to section 16.4.
- For simultaneous transmission analysis, Bluetooth SAR is estimated per KDB 447498 D01v06 based on the formula below.
  - $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})} / x] \text{ W/kg}$  for test separation distances  $\leq 50 \text{ mm}$ ; where  $x = 7.5$  for 1-g SAR, and  $x = 18.75$  for 10-g SAR.
  - When the minimum separation distance is  $< 5\text{mm}$ , the distance is used 5mm to determine SAR test exclusion.
  - 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is  $> 50 \text{ mm}$ .

Bluetooth Max Power	Exposure Position	Body worn (Front with holster)	Body worn (Front)
	Test separation	5 mm	15 mm
4 dBm	Estimated SAR (W/kg)	0.126 W/kg	0.042 W/kg

### 6.1 Head Exposure Conditions

Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)
	2.4GHz WLAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 2 1g SAR (W/kg)	5GHz WLAN Ant 1 1g SAR (W/kg)	5GHz WLAN Ant 2 1g SAR (W/kg)		
Right Cheek	0.052	0.156	0.117	0.028	<b>0.208</b>	<b>0.145</b>
Right Tilted	0.021	0.139	0.035	0.036	<b>0.160</b>	<b>0.071</b>
Left Cheek	0.020	0.305	0.018	0.108	<b>0.325</b>	<b>0.126</b>
Left Tilted	0.026	0.247	0.026	0.089	<b>0.273</b>	<b>0.115</b>

### 6.2 Body-Worn Accessory Exposure Conditions

Exposure Position	1	2	3	4	5	1+2 Summed 1g SAR (W/kg)	3+4 Summed 1g SAR (W/kg)	2+5 Summed 1g SAR (W/kg)	4+5 Summed 1g SAR (W/kg)
	2.4GHz WLAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 2 1g SAR (W/kg)	5GHz WLAN Ant 1 1g SAR (W/kg)	5GHz WLAN Ant 2 1g SAR (W/kg)	Bluetooth Ant 1 1g SAR (W/kg)				
Front	0.012	0.066	0.018	0.040	0.042	<b>0.078</b>	<b>0.058</b>	<b>0.108</b>	<b>0.060</b>
Front with Holster	0.012	0.083	0.016	0.044	0.126	<b>0.095</b>	<b>0.060</b>	<b>0.209</b>	<b>0.142</b>
Back	0.154	0.104	0.140	0.367	0.001	<b>0.258</b>	<b>0.507</b>	<b>0.105</b>	<b>0.141</b>