SPOT CHECK EVALUATION

FCC ID	:	**UZ7TC58BE**
Equipment	:	**Touch Computer**
Model Name		**TC58BE**
Applicant	:	**Zebra Technologies Corporation** **Zebra Technologies Corporation** **1 Zebra Plaza, Holtsville, NY 11742**
Standard	:	**FCC Part 15 Subpart C §15.209** **FCC Part 15 Subpart C §15.247** **FCC Part 15 Subpart E §15.407**

We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has 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. Wensan Laboratory, the test report shall not be reproduced except in full.

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History of this test report

Version	Description	Issue Date
01	Initial issue of report	May. 15, 2024

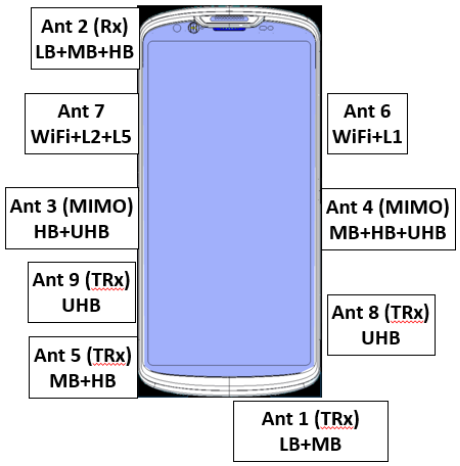
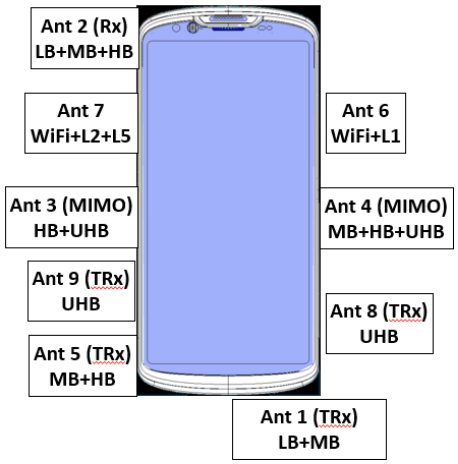
1. Introduction Section

Justification of Test Data Referencing, for EMC/RF

- Reference model: FCC ID: UZ7TC58AE (NA SKU)
- Variant model: FCC ID: UZ7TC58BE (ROW SKU)
- **Product Overview**

Radio	FCC Rule Part	**FCC ID: UZ7TC58AE** **SKU1- Reference model**	**FCC ID: UZ7TC58BE** **SKU2- Variant model**
Wi-Fi, 2.4, 5 ,6 GHz	Part 15	Supported	Supported
BT, BLE	Part 15	Supported	Supported
WWAN, 3G, LTE, 5GNR	Part 22,24,27,90,96	Supported	Supported
WWAN, 2G	Part 22,24	No supported	Supported

Antenna Diagram

FCC ID: UZ7TC58AE (Reference Model)	UZ7TC58BE (Variant Model)
	

Technology	FCC ID: UZ7TC58AE Reference model	FCC ID: UZ7TC58BE Variant model
WIFI2.4G/5G/BT Antenna	Support	Support
COMMENTS	The FCC ID: UZ7TC58AE (reference model) and FCC ID: UZ7TC58BE (variant model) are HW identical, the main differences exist per SKUs are related to RF WWAN Bands supported.	

Comparison – Summary

1. Identical

- The FCC ID: UZ7TC58AE (reference model) and FCC ID: UZ7TC58BE (variant model) are Hardware identical.

2. Difference:

FCC ID: UZ7TC58BE (Variant model) is different from FCC ID: UZ7TC58AE (Reference model), in the following:

The only difference between UZ7TC58AE and UZ7TC58BE are the WWAN support bands, which is controlled by software.

	UZ7TC58AE (reference model)	UZ7TC58BE (variant model)
Part 22	• WWAN 2G: Not supported • WWAN 3G: Band 5 • WWAN LTE: Band 5 / 26 • WWAN 5GNR: Band n5 / n26	• WWAN 2G: 850 • WWAN 3G: Band 5 • WWAN LTE: Band 5 / 26 • WWAN 5GNR: Band n5 / n26
Part 24	• WWAN 2G: Not supported • WWAN 3G: Band 2 • WWAN LTE: Band 2 / 25 • WWAN 5GNR: Band n2 / n25	• WWAN 2G: 1900 • WWAN 3G: Band 2 • WWAN LTE: Band 2 / 25 • WWAN 5GNR: Band n2 / n25
Part 27	• WWAN 3G: Band 4 • WWAN LTE: Band 4/7/12/13/17/30/38/41/66/71	• WWAN 3G: Band 4 • WWAN LTE: Band 4/7/12/17/38/41/42/43/66/71

	• WWAN 5GNR: Band n7/n12/n13/n30/n38/n41/n66/n71/n77/n78	• WWAN 5GNR: Band n7/n12/n38/n41/n66/n71/n77/n78
Part 90	• WWAN LTE: Band 14/26 • WWAN 5GNR: Band n14/n26	• WWAN LTE: Band 26 • WWAN 5GNR: Band n26
Part 96	• WWAN LTE: Band 48 • WWAN 5GNR: Band n48/n77/n78	• WWAN LTE: Not supported • WWAN 5GNR: Not supported

■ **PCB Description :**

UZ7TC58AE (reference model) and UZ7TC58BE (variant model) use same PCB

		UZ7TC58AE (reference model)	UZ7TC58BE (variant model)
BT/BLE	IC	QCM 4490	
	Component on PCB	UZ7TC58AE and UZ7TC58BE are the same	
	Antenna	UZ7TC58AE and UZ7TC58BE are the same	
WLAN 2.4GHz	IC	QCM 4490	
	Component on PCB	UZ7TC58AE and UZ7TC58BE are the same	
	Antenna	UZ7TC58AE and UZ7TC58BE are the same	
WLAN 5GHz	IC	QCM 4490	
	Component on PCB	UZ7TC58AE and UZ7TC58BE are the same	
	Antenna	UZ7TC58AE and UZ7TC58BE are the same	
WLAN 6GHz	IC	QCM 4490	
	Component on PCB	UZ7TC58AE and UZ7TC58BE are the same	
	Antenna	UZ7TC58AE and UZ7TC58BE are the same	

2. Spot Check Verification Data Section

Conducted power test and radiated spurious emission test configurations were selected from the worst cases identified in the parent model and tested to demonstrate the test data from original model remains representative for the variant model.

Based on the RF parameter is still identical so the EBW from original model remains representative for the variant model.

Summary for power and RSE spot check for each FCC rule part is listed as below:

Mode	Test Item	UZ7TC58AE Parent Worst mode Test Result	UZ7TC58BE Variant Check Test Result	Deviation	Limit (dB)
BT	Number of Channels	79	79	0	Within the authorized block
	Hopping Channel Separation	1.007	1.303	0.296	Within the authorized block
	Dwell Time of Each Channel	0.31	0.31	0	Within the authorized block
	20dB Bandwidth	0.872	0.87	0.002	Within the authorized frequency block
	99% Bandwidth	0.803	0.798	0.005	Within the authorized frequency block
	Conducted Band Edges	-43.53	-45.87	2.34	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-36.86	-38.91	2.05	Deviation (ddB) < 3 dB
	Peak Output Power	7.18	6.7	0.48	Deviation (ddB) < 3 dB
	Radiated Band Edges and Radiated Spurious Emission	48.41	47.65	0.76	Deviation (ddB) < 3 dB
	AC Conducted Emission	17.48	19.72	2.24	Deviation (ddB) < 3 dB
BLE	6dB Bandwidth	1.142	1.155	0.013	Within the authorized frequency block
	99% Bandwidth	1.998	1.996	0.002	Within the authorized frequency block
	Power Spectral Density	5.44	6.07	0.63	Deviation (ddB) < 3 dB
	Conducted Band Edges	-43.68	-46.24	2.56	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-41.5	-38.88	2.62	Deviation (ddB) < 3 dB
	Peak Output Power	6.3	5.9	0.4	Deviation (ddB) < 3 dB
	Radiated Band Edges and Spurious Emission	50.56	50.49	0.07	Deviation (ddB) < 3 dB
	AC Conducted Emission	17.48	19.72	2.24	Deviation (ddB) < 3 dB
WIFI 2.4G	6dB Bandwidth	9.03	8.54	0.47	Within the authorized frequency block
	99% Bandwidth	13.59	13.52	0.07	Within the authorized frequency block
	Power Spectral Density	1.78	1.06	0.72	Deviation (ddB) < 3 dB
	Conducted Band Edges	-30.53	-30.89	0.36	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-46.39	-48.89	2.50	Deviation (ddB) < 3 dB
	Peak Output Power	23.41	23.31	0.1	Deviation (ddB) < 3 dB
	Radiated Band Edges and Spurious Emission	59.99	59.85	0.14	Deviation (ddB) < 3 dB

	AC Conducted Emission	17.48	19.72	2.24	Deviation (ddB) < 3 dB
WIFI 5G	26dB Bandwidth	167.75	165.22	2.53	Within the authorized frequency block
	99% Bandwidth	154.89	155.47	0.58	Within the authorized frequency block
	Power Spectral Density	-2.9	-1.17	1.73	Deviation (ddB) < 3 dB
	Conducted Output Power	17.81	17.71	0.1	Deviation (ddB) < 3 dB
	Unwanted Emissions	63.2	64.81	1.61	Deviation (ddB) < 3 dB
	AC Conducted Emission	18.52	19.96	1.44	Deviation (ddB) < 3 dB
WIFI 6G UNII-8 (802.11ax HE20 CH189 6895MHz)	26dB Emission Bandwidth	20.75	21.14	0.39	Within the authorized frequency block
	99% Occupied Bandwidth	18.88	18.92	0.04	Within the authorized frequency block
	Conducted Output Power	7.66	7.56	0.1	Deviation (ddB) < 3 dB
	Fundamental Maximum EIRP	9.8	9.7	0.1	Deviation (ddB) < 3 dB
	Fundamental Power Spectral Density	-1.04	-1.41	0.37	Deviation (ddB) < 3 dB
	In-Band Emissions	-10.04	-12.35	2.31	Deviation (ddB) < 3 dB
WIFI 6G UNII-8 (802.11ax HE80 CH215 7025MHz)	Unwanted Emissions	72.37	72.28	0.09	Deviation (ddB) < 3 dB
WIFI 6G	AC Conducted Emission	18.52	19.96	1.44	Deviation (ddB) < 3 dB

Conclusion:

Radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

The spot check emission level is not degraded more than 3dB, and the margin to the limit is greater than 1.5dB, data referencing is justified according to the guidance in the KDB inquiry

3. Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	Reference FCC ID (Parent)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)
15C	DTS	Bluetooth-LE Wi-Fi	2400~2483.5	UZ7TC58AE	Original Grant	FR411111B FR411111C	UZ7TC58BE
	DSS	Bluetooth	2400~2483.5	UZ7TC58AE	Original Grant	FR411111A	UZ7TC58BE
15E	NII	Wi-Fi	5150~5250 5250~5350 5470~5725 5725~5850 5925~6425 6425~6525 6525~6875 6875~7125	UZ7TC58AE	Original Grant	FR411111E FR411111F FR411111G FR411111H	UZ7TC58BE

4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Aug. 17, 2023	Apr. 01, 2024~ Apr. 04, 2024	Aug. 16, 2024	Radiation (03CH11-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-10M-7000-MR	EC1900245	10MHz-7GHz	Jan. 09, 2024	Apr. 01, 2024 ~ Apr. 04, 2024	Jan. 08, 2025	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Jun. 14, 2023	Apr. 01, 2024 ~ Apr. 04, 2024	Jun. 13, 2024	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 05, 2023	Apr. 01, 2024 ~ Apr. 04, 2024	Oct. 04, 2024	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Apr. 01, 2024 ~ Apr. 04, 2024	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Apr. 01, 2024 ~ Apr. 04, 2024	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Apr. 01, 2024 ~ Apr. 04, 2024	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Apr. 01, 2024 ~ Apr. 04, 2024	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY1595/2	30MHz~40GHz	Mar. 06, 2024	Apr. 01, 2024 ~ Apr. 04, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz~40GHz	Mar. 06, 2024	Apr. 01, 2024 ~ Apr. 04, 2024	Mar. 05, 2025	Radiation (03CH11-HY)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Characteristics**	**Calibration Date**	**Test Date**	**Due Date**	**Remark**
RF Cable	HUBER + SUHNER	SUCOFLEX 102	**803951**/2	9K~30M	Mar. 06, 2024	Apr. 01, 2024 ~ Apr. 04, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	30M~40G	Mar. 06, 2024	Apr. 01, 2024 ~ Apr. 04, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN3	3GHz High Pass Filter	Sep. 11, 2023	Apr. 01, 2024 ~ Apr. 04, 2024	Sep. 10, 2024	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Dec. 08, 2023	Apr. 01, 2024 ~ Apr. 04, 2024	Dec. 07, 2024	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07. 2023	Mar. 29. 2024	Nov. 06. 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	15I00041SNO10 (NO:248)	10MHz~6GHz	Jun. 05, 2023	Mar. 29. 2024	Jun. 04, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2023	Mar. 29. 2024	Aug. 22, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	17I00015SNO36 (NO:35_原 144)	10MHz~6GHz	Aug. 23, 2023	Mar. 29. 2024~ Apr. 24. 2024	Aug. 22, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101564	10Hz ~ 40GHz	Sep. 12, 2023	Mar. 29. 2024~ Apr. 24. 2024	Sep. 11, 2024	Conducted (TH05-HY)

———THE END———