



SPOT CHECK EVALUATION

FCC ID : UZ7KC50E22
Equipment : KC50E22 Kiosk Computer
Brand Name : Zebra
Model Name : KC50E22
Applicant : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
Manufacturer : Zebra Technologies Corporation
3 Overlook Point, Lincolnshire, IL 60069 USA
Standard : FCC Part 15 Subpart C §15.247
FCC Part 15 Subpart E §15.407

The product was received on Jul. 03, 2024 and testing was performed from Jul. 05, 2024 to Aug. 14, 2024. 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 spot check report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

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History of this test report

Version	Description	Issue Date
01	Initial issue of report	Aug. 20, 2024



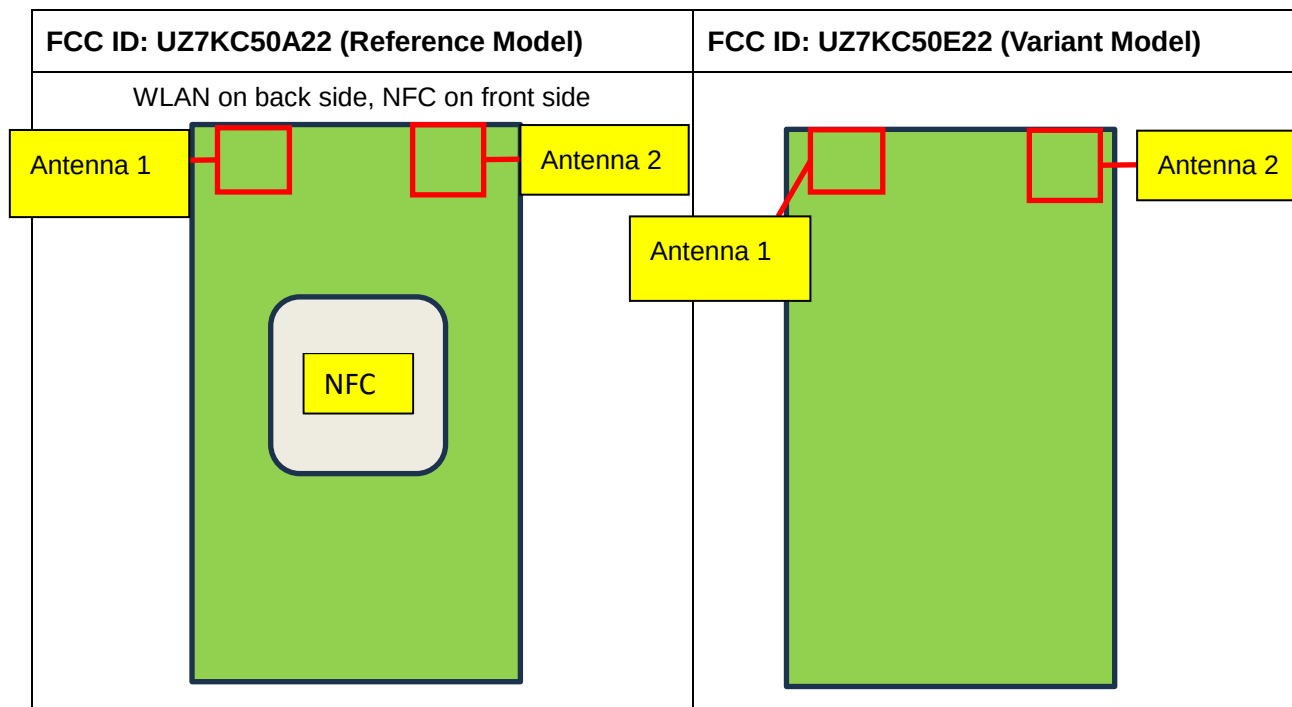
1. Introduction Section

Justification of Test Data Referencing, for EMC/RF

- Reference model: FCC ID: UZ7KC50A22 (SKU1)
- Variant model: FCC ID: UZ7KC50E22 (SKU2)

Product Overview

Radio	FCC Rule Part	FCC ID: UZ7KC50A22 SKU1- Reference model	FCC ID: UZ7KC50E22 SKU2- Variant model
Wi-Fi, 2.4G, 5G, 6 GHz	Part 15	Supported	Supported
Bluetooth	Part 15	Supported	Supported
NFC	Part 15	Supported	No supported

Antenna Diagram


Technology	FCC ID: UZ7KC50A22 SKU1- Reference model	FCC ID: UZ7KC50E22 SKU2- Variant model
WIFI 2.4G/5G/6G/ Bluetooth Antenna	Support	Support
NFC	Support	No support
Comments	WIFI 2.4G/5G/6G/Bluetooth antenna between SKU1 and SKU2 are designed the identical, including pattern/matching circuit/gain/tuner codes, etc., Only NFC is different.	



Comparison – Summary

1. Identical

FCC ID: **UZ7KC50A22**, FCC ID: **UZ7KC50E22** are identical in the followings:

- The device form factor, the size of display area and the housing material are identical.
- Enclosure and material

2. Difference:

FCC ID: **UZ7KC50E22** (Variant model) is different from FCC ID: **UZ7KC50A22** (Reference model), in the followings:

- Main board schematics are different because camera, NFC and PoE related components are depopulated on the same PCB.
- Some key components of BOM are changed.
- Remove NFC software and hardware.

**■ PCB Description :**

SKU1 and SKU2 use same PCB

		SKU1 SKU	SKU2 SKU
Bluetooth	IC	WCN-6856	
	Component on PCB	SKU1 and SKU2 are the same	
	Antenna	SKU1 and SKU2 are the same	
WLAN 2.4GHz	IC	WCN-6856	
	Component on PCB	SKU1 and SKU2 are the same	
	Antenna	SKU1 and SKU2 are the same	
WLAN 5GHz	IC	WCN-6856	
	Component on PCB	SKU1 and SKU2 are the same	
	Antenna	SKU1 and SKU2 are the same	
WLAN 6GHz	IC	WCN-6856	
	Component on PCB	SKU1 and SKU2 are the same	
	Antenna	SKU1 and SKU2 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	UZ7KC50A22 Parent Worst mode Test Result	UZ7KC50E22 Variant Check Test Result	Deviation	Limit (dB)
Bluetooth	Number of Channels	79	79	0	Within the authorized block
	Hopping Channel Separation	1.003	1.007	0.004	Within the authorized block
	Dwell Time of Each Channel	0.31	0.31	0	Within the authorized block
	20dB Bandwidth	0.893	0.891	0.002	Within the authorized frequency block
	99% Bandwidth	0.827	0.827	0	Within the authorized frequency block
	Conducted Band Edges	-41.22	-41.73	0.51	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-31.93	-32.30	0.37	Deviation (ddB) < 3 dB
	Peak Output Power	5.40	6.20	0.8	Deviation (ddB) < 3 dB
	Radiated Band Edges and Radiated Spurious Emission	42.16	39.94	2.22	Deviation (ddB) < 3 dB
	AC Conducted Emission	42.98	40.01	2.97	Deviation (ddB) < 3 dB
Bluetooth-LE	6dB Bandwidth	0.674	0.668	0.006	Within the authorized frequency block
	99% Bandwidth	1.019	1.019	0	Within the authorized frequency block
	Power Spectral Density	-9.55	-10.09	0.54	Deviation (ddB) < 3 dB
	Conducted Band Edges	-41.10	-42.38	1.28	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-31.69	-32.23	0.54	Deviation (ddB) < 3 dB
	Power Output Measurement	4.80	4.60	0.2	Deviation (ddB) < 3 dB
	Radiated Band Edges and Spurious Emission	42.35	39.81	2.54	Deviation (ddB) < 3 dB
	AC Conducted Emission	42.98	40.01	2.97	Deviation (ddB) < 3 dB
WIFI 2.4G	6dB Bandwidth	8.06	8.08	0.02	Within the authorized frequency block
	99% Bandwidth	13.04	13.09	0.05	Within the authorized frequency block
	Power Spectral Density	3.70	3.78	0.08	Deviation (ddB) < 3 dB
	Conducted Band Edges	-36.65	-36.24	0.41	Deviation (ddB) < 3 dB
	Conducted Spurious Emission	-42.84	-41.89	0.95	Deviation (ddB) < 3 dB
	Output Power	26.46	26.36	0.1	Deviation (ddB) < 3 dB
	Radiated Band Edges and Spurious Emission	52.24	51.35	0.89	Deviation (ddB) < 3 dB
	AC Conducted Emission	42.98	40.01	2.97	Deviation (ddB) < 3 dB



Mode	Test Item	UZ7KC50A22 Parent Worst mode Test Result	UZ7KC50E22 Variant Check Test Result	Deviation	Limit (dB)
WIFI 5G	26dB Bandwidth	165.98	165.94	0.04	Within the authorized frequency block
	99% Bandwidth	156.32	156.56	0.24	Within the authorized frequency block
	Power Spectral Density	10.52	10.38	0.14	Deviation (ddB) < 3 dB
	Maximum Conducted Output Power	23.58	23.48	0.1	Deviation (ddB) < 3 dB
	Unwanted Emissions	66.96	64.84	2.12	Deviation (ddB) < 3 dB
	AC Conducted Emission	41.81	40.50	1.31	Deviation (ddB) < 3 dB
WIFI 6G	26dB Emission Bandwidth	165.84	166.56	0.72	Within the authorized frequency block
	99% Occupied Bandwidth	156.80	157.76	0.96	Within the authorized frequency block
	Contention Based Protocol	-66.35	-68.65	2.3	Within the authorized block
	Fundamental Maximum EIRP	26.54	25.96	0.58	Deviation (ddB) < 3 dB
	Fundamental Power Spectral Density	16.81	16.71	0.1	Deviation (ddB) < 3 dB
	In-Band Emissions (Channel Mask)	-42.43	-41.04	1.39	Deviation (ddB) < 3 dB
	Unwanted Emissions	67.14	66.93	0.21	Deviation (ddB) < 3 dB
	AC Conducted Emission	41.15	40.16	0.99	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	UZ7KC50A22	Original Grant	FR450112B FR450112C	UZ7KC50E22
	DSS	Bluetooth	2400~2483.5	UZ7KC50A22	Original Grant	FR450112A	UZ7KC50E22
15E	NII	Wi-Fi	5150~5250 5250~5350 5470~5725 5725~5850	UZ7KC50A22	Original Grant	FR450112E FR450112F	UZ7KC50E22
	6CD	Wi-Fi	5925~6425 6425~6525 6525~6875 6875~7125	UZ7KC50A22	Original Grant	FR450112G FR450112H	UZ7KC50E22



4. List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Sep. 12, 2023	Jul. 26, 2024~ Jul. 30, 2024	Sep. 11, 2024	Radiation (03CH15-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	41912 & 05	30MHz~1GHz	Feb. 04, 2024	Jul. 26, 2024~ Jul. 30, 2024	Feb. 03, 2025	Radiation (03CH15-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02294	1GHz~18GHz	Jun. 20, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jun. 19, 2025	Radiation (03CH15-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00993	18GHz~40GHz	Nov. 24, 2023	Jul. 26, 2024~ Jul. 30, 2024	Nov. 23, 2024	Radiation (03CH15-HY)
Amplifier	SONOMA	310N	363440	9kHz~1GHz	Dec. 25, 2023	Jul. 26, 2024~ Jul. 30, 2024	Dec. 24, 2024	Radiation (03CH15-HY)
Preamplifier	EMEC	EM01G18G	060837	1GHz~18GHz	Feb. 15, 2024	Jul. 26, 2024~ Jul. 30, 2024	Feb. 14, 2025	Radiation (03CH15-HY)
Preamplifier	EM Electronics	EM01G18G	060802	1GHz~18GHz	Feb. 29, 2024	Jul. 26, 2024~ Jul. 30, 2024	Feb. 28, 2025	Radiation (03CH15-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	May 27, 2024	Jul. 26, 2024~ Jul. 30, 2024	May 26, 2025	Radiation (03CH15-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY54130085	20MHz~8.4GHz	Oct. 06, 2023	Jul. 26, 2024~ Jul. 30, 2024	Oct. 05, 2024	Radiation (03CH15-HY)
Spectrum Analyzer	Keysight	N9010B	MY60241058	10Hz~44GHz	Jul. 11, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jul. 10, 2025	Radiation (03CH15-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jul. 26, 2024~ Jul. 30, 2024	N/A	Radiation (03CH15-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jul. 26, 2024~ Jul. 30, 2024	N/A	Radiation (03CH15-HY)
Software	Audix	E3_V9_230621	RK-002394	N/A	N/A	Jul. 26, 2024~ Jul. 30, 2024	N/A	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104, 102E	MY582185/4, 519228/2,803 950/2	N/A	Jun. 11, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jun. 10, 2025	Radiation (03CH15-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804 012/2	18-40G	Jan. 02, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jan. 01, 2025	Radiation (03CH15-HY)
Filter	Wainwright	WRCQV14-5425- 5825-6525-6925-6 OSS	SN1	N/A	Jan. 05, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jan. 04, 2025	Radiation (03CH15-HY)
Filter	Wainwright	WRCQV14-6025- 6425-7125-7525-6 OSS	SN2	N/A	Jan. 05, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jan. 04, 2025	Radiation (03CH15-HY)
Filter	Wainwright	WLJ4-1000-1530- 6000-40ST	SN4	1.53GHz Low Pass Filter	Jun. 05, 2024	Jul. 26, 2024~ Jul. 30, 2024	Jun. 04, 2025	Radiation (03CH15-HY)
Filter	Wainwright	WHKX6-7268-920 0-26500-40CD	SN4	9GHz High Pass Filter	May 22, 2024	Jul. 26, 2024~ Jul. 30, 2024	May 21, 2025	Radiation (03CH15-HY)
Hygrometer	TECEPEL	DTM-302	SN4	N/A	Sep. 08, 2023	Jul. 26, 2024~ Jul. 30, 2024	Sep. 07, 2024	Radiation (03CH15-HY)



Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9kHz~30MHz	Sep. 12, 2023	Aug. 02, 2024 Aug. 06, 2024	Sep. 11, 2024	Radiation (03CH22-HY)
Bilog Antenna with 6dB	TESEQ & WOKEN	CBL 6111D & 00802N1D-06	63304 & 002	30MHz~1GHz	Oct. 15, 2023	Aug. 02, 2024 Aug. 06, 2024	Oct. 14, 2024	Radiation (03CH22-HY)
Amplifier	SONOMA	310N	421581	N/A	Jul. 14, 2024	Aug. 02, 2024 Aug. 06, 2024	Jul. 13, 2025	Radiation (03CH22-HY)
Double Ridged Guide Horn Antenna	RFSPIN	DRH18-E	LE2C04A18EN	1GHz~18GHz	Jul. 11, 2024	Aug. 02, 2024 Aug. 06, 2024	Jul. 10, 2025	Radiation (03CH22-HY)
SHF-EHF Horn Antenna	SCHWARZB ECK	BBHA 9170	1224	18GHz~40GHz	Jun. 24, 2024	Aug. 02, 2024 Aug. 06, 2024	Jun. 23, 2025	Radiation (03CH22-HY)
Amplifier	EMEC	EM01G18GA	060877	N/A	Sep. 28, 2023	Aug. 02, 2024 Aug. 06, 2024	Sep. 27, 2024	Radiation (03CH22-HY)
Preamplifier	EMEC	EM18G40G	060872	18~40GHz	Sep. 06, 2023	Aug. 02, 2024 Aug. 06, 2024	Sep. 05, 2024	Radiation (03CH22-HY)
Signal Analyzer	Keysight	N9010B	MY62170278	10Hz~44GHz	Aug. 31, 2023	Aug. 02, 2024 Aug. 06, 2024	Aug. 30, 2024	Radiation (03CH22-HY)
EMI Test Receiver	Keysight	N9038B	MY62210111	20Hz~8.4GHz	Aug. 23, 2023	Aug. 02, 2024 Aug. 06, 2024	Aug. 22, 2024	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP211469	N/A	Jan. 03, 2024	Aug. 02, 2024 Aug. 06, 2024	Jan. 02, 2025	Radiation (03CH22-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Aug. 02, 2024 Aug. 06, 2024	N/A	Radiation (03CH22-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Aug. 02, 2024 Aug. 06, 2024	N/A	Radiation (03CH22-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Aug. 02, 2024 Aug. 06, 2024	N/A	Radiation (03CH22-HY)
Software	Audix	E3 6.09824_2019122	RK-002347	N/A	N/A	Aug. 02, 2024 Aug. 06, 2024	N/A	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Aug. 02, 2024 Aug. 06, 2024	Mar. 05, 2025	Radiation (03CH22-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804390/2,804611/2,804615/2	N/A	Oct. 24, 2023	Aug. 02, 2024 Aug. 06, 2024	Oct. 23, 2024	Radiation (03CH22-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Jul. 05, 2024~ Aug. 14, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Sensor	DARE	RPR3008W	RPR8W-23010011 (NO:109)	10MHz~8GHz	Jul. 04, 2024	Jul. 05, 2024~ Aug. 14, 2024	Jul. 03, 2025	Conducted (TH05-HY)
Switch Control Mainframe	Burgeon	ETF-058	EC1300485 (BOX4)	N/A	Apr. 08, 2024	Jul. 05, 2024~ Aug. 14, 2024	Apr. 07, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101564	10Hz ~ 40GHz	Sep. 12, 2023	Jul. 05, 2024~ Aug. 14, 2024	Sep. 11, 2024	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_version_240411	N/A	Conducted Other Test Item	N/A	Jul. 05, 2024~ Aug. 14, 2024	N/A	Conducted (TH05-HY)