Spot Check Evaluation

APPLICANT	**:**	**Veea Inc.**
EQUIPMENT	**:**	**Wireless Edge Server**
BRAND NAME	**:**	**VeeaHub**
MODEL NAME	**:**	**VHC25-5G**
FCC ID	**:**	**2ARXK-VHC25-5G**
STANDARD	**:**	**47 CFR Part 15 Subpart C §15.247**
		47 CFR Part 15 Subpart E §15.407
TEST DATE(S)	**:**	**Jul. 31, 2024 ~ Sep. 10, 2024**

We, Sporton International Inc. (Shenzhen), 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. (Shenzhen), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

Sporton International Inc. (ShenZhen)

1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055

People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
452231B	Rev. 01	Initial issue of report	Sep. 18, 2024

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account. 2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1. Applicant

Veea Inc.
164 E 83rd Street, NEW YORK, United States 10028

1.2. Manufacturer

Veea Inc.
164 E 83rd Street, NEW YORK, United States 10028

1.3. Product Feature of Equipment Under Test

Product Feature	
Equipment	Wireless Edge Server
Brand Name	VeeaHub
Model Name	VHC25-5G
FCC ID	2ARXK-VHC25-5G
SN Code	Conducted: C25DCW00000000006194 Radiation: C25DCW00000000006143 Conduction: C25DCW00000000006141
HW Version	1.0
SW Version	2.33.1-0.mfg.alpha.4.0.7
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4. Modification of EUT

No modifications are made to the EUT during all test items.

1.5. Testing Site

Sporton International Inc. (ShenZhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-SZ CO01-SZ	CN1256	421272

Test Firm	Sporton International Inc. (ShenZhen)		
Test Site Location	101, 1st Floor, Block B, Building 1, No. 2, Tengfeng 4th Road, Fenghuang Community, Fuyong Street, Baoan District, Shenzhen City, Guangdong Province 518103 People's Republic of China TEL: +86-755-86066985		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	03CH01-SZ	CN1256	421272

1.6. Test Software

Item	Site	Manufacturer	Name	Version
1.	03CH01-SZ	AUDIX	E3	6.2009-8-24
2.	CO01-SZ	AUDIX	E3	6.120613b
3.	DFS01-SZ	Sporton	Test Tools	1.0

1.7. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC KDB 484596 D01 Referencing Test Data v02r03
- 47 CFR Part 15 Subpart C §15.247
- 47 CFR Part 15 Subpart E §15.407
- ANSI C63.10-2013
- ANSI C63.26-2015

2 Re-use of Measured Data

2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: VHC25-5G, FCC ID: 2ARXK-VHC25-5G) is electrically identical to the reference device (Model: VHC25,VHC20, FCC ID: 2ARXK-VHC25) for the portions of the circuitry corresponding to the data being re-used, following the FCC KDB 484596 D01 Referencing Test Data v02r03.

ECR Data Referencing Inquiry has been approved by FCC, and the data referencing and spot check test plan includes RF/EMC, the details are presented in section 2.3 of this report, For SAR Reference detail, please refer to FCC SAR report FA452231.

The criteria set in section 3 of KDB 484596 D01 v02r03 is followed to determine whether the data referencing is justified. For SAR, the higher between the referenced value and the spot check value is used to determine compliance in standalone conditions.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: 2ARXK-VHC25-5G .

2.2 Model Difference Information

The **main** difference between FCC ID: 2ARXK-VHC25 and FCC ID: 2ARXK-VHC25-5G is as below:

- Add WWAN module and antenna corresponding.

Other differences and all the details of similarity and difference can be found in the confidential documents (VHC25-5G_Operational Description of Product Equality Declaration).

2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Reference on test	Reference Title	FCC ID Filling (Variant)	Test on the variant	Data Referencing (Y/N)
15C	DSS (BR/EDR)	2400~2483.5	2ARXK-VHC25	Full test	FR172726AB	2ARXK-VHC25-5G	Spot check	Y, All test items
	DTS (BLE)	2400~2483.5	2ARXK-VHC25	Full test	FR172726AC	2ARXK-VHC25-5G	Spot check	Y, All test items
	DTS (WLAN)	2400~2483.5	2ARXK-VHC25	Full test	FR452219A	2ARXK-VHC25-5G	Spot check	Y, All test items
	DTS (ZigBee)	2400~2483.5	2ARXK-VHC25	Full test	FR172726AD	2ARXK-VHC25-5G	Spot check	Y, All test items
15E	U-NII	5180~5240	2ARXK-VHC25	Full test	FR452219C	2ARXK-VHC25-5G	Spot check	Y, All test items
		5260~5320	2ARXK-VHC25	Full test	FR452219B	2ARXK-VHC25-5G	Spot check	Y, All test items
		5500~5720	2ARXK-VHC25	Full test	FR452219B	2ARXK-VHC25-5G	Spot check	Y, All test items
		5745~5825	2ARXK-VHC25	Full test	FR452219C	2ARXK-VHC25-5G	Spot check	Y, All test items

Y: Pointer to spot-check exhibit; N: Pointer to full test exhibit

2.4 Spot Check Verification Data Section

All test items 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.

All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation d_{dB} from the reference data no larger than 3 dB:

$$d_{dB} = | V_{dB} - R_{dB} | \leq 3 \text{ dB} \quad (1)$$

V_{dB}, the variant spot-check level

R_{dB}, the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} = |C_{dB} - R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation ddB from the reference data satisfies the following condition:

$$d_{dB} = | V_{dB} - R_{dB} | \leq (3 + M_{dB}/20) \text{ dB , for } 0 \leq M_{dB} \leq 60 \text{ dB} \quad (2)$$

where "| |" is the absolute value of the measured quantity.

When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB.

Summary for spot check for each rule entry and technology is listed as below:

Mode	Test Item	2ARXK-VHC25 Parent Worst mode Test Result	2ARXK-VHC25-5G Variant Check Test Result	Deviation	Limit
WLAN 5G (802.11ax HE 80 CH138)	26dB&99% Bandwidth (MHz)	77.202	77.202	0	3
	Power Spectral Density (dBm/MHz)	5.376	5.336	0.04	3
WLAN 5G (802.11ax HE20 CH64)	Radiated Band Edges and Spurious Emission (dBuV/m)	53.48	51.69	1.79	3
WLAN 5G (802.11ax HE80 CH155)	Radiated Band Edges and Spurious Emission (dBuV/m)	66.33	66.01	0.32	3
WLAN 5G	AC Conducted Emission (dBuV)	54.62	53.58	1.04	3

Test Item	Mode	2ARXK-VHC25 Parent Worst mode Test Result	2ARXK-VHC25-5G Variant Check Test Result	Deviation	Limit
Conducted Output Power (dBm)	5.2G 802.11ax HE80 CH42	22.62	22.43	0.19	3
	5.3G 802.11ax HE40 CH54	22.38	22.30	0.08	3
	5.5G 802.11ax HE80 CH138	22.71	22.54	0.17	3
	5.8G 802.11ax 11a CH149	22.58	22.45	0.13	3
	2.4G 11g CH01	29.88	29.45	0.43	3
	BR-DH5	7.60	7.42	0.18	3
	BLE-1M	6.98	6.75	0.23	3
	BLE-2M	7.10	6.86	0.24	3
	ZigBee	7.88	7.60	0.28	3

Conclusion:

All test items 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.

Based on the spot check test result, the test data from the original model is representative for the variant model. All spot check test data are shown within expected level compliant to limit line.

We are using power measurements from the original parent model reports to list on the grant.

We confirm that the test data referencing policy of FCC KDB 484596 D01 Referencing Test Data v02r03 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

3 List of Measuring Equipment

For BT/ZigBee/WIFI2.4G/5G:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101078	10Hz~40GHz	Apr. 09, 2024	Sep. 10, 2024	Apr. 08, 2025	Conducted (TH01-SZ)
Pulse Power Senor	Anritsu	MA2411B	1339473	30MHz~40GHz	Dec. 29, 2023	Sep. 10, 2024	Dec. 28, 2024	Conducted (TH01-SZ)
Power Meter	Anritsu	ML2495A	1218010	50MHz Bandwidth	Aug. 20, 2024	Sep. 10, 2024	Aug. 19, 2025	Conducted (TH01-SZ)
Thermo meter	Anymetre	JR593	#7	- 10℃ ~ 50℃ 10%RH~99%RH	Apr. 09, 2024	Sep. 10, 2024	Apr. 08, 2025	Conducted (TH01-SZ)

NCR: No Calibration Required.

For WIFI5G:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver&SA	Agilent	N9038A	MY52260185	20Hz~26.5GHz	Dec. 27, 2023	Jul. 31, 2024	Dec. 26, 2024	Radiation (03CH01-SZ)
EXA Spectrum Analyzer	KEYSIGHT	N9010A	MY55150213	10Hz~44GHz	Jul. 03, 2024	Jul. 31, 2024	Jul. 02, 2025	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2E	101141	9kHz~30MHz	Dec. 29, 2023	Jul. 31, 2024	Dec. 28, 2024	Radiation (03CH01-SZ)
Bilog Antenna	TeseQ	CBL6112D	35407	30MHz-2GHz	Oct. 24, 2023	Jul. 31, 2024	Oct. 23, 2025	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00119436	1GHz~18GHz	Jul. 04, 2024	Jul. 31, 2024	Jul. 03, 2025	Radiation (03CH01-SZ)
SHF-EHF Horn	com-power	AH-840	101071	18Ghz-40GHz	Apr. 09,2024	Jul. 31, 2024	Apr. 08,2025	Radiation (03CH01-SZ)
LF Amplifier	Burgeon	BPA-530	102209	0.01~3000Mhz	Apr. 09, 2024	Jul. 31, 2024	Apr. 08,2025	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	AMF-7D-00101800-30-10P-R	1943528	1GHz~18GHz	Oct. 18,2023	Jul. 31, 2024	Oct. 17,2024	Radiation (03CH01-SZ)
HF Amplifier	KEYSIGHT	83017A	MY53270105	0.5GHz~26.5Ghz	Oct. 18,2023	Jul. 31, 2024	Oct. 17,2024	Radiation (03CH01-SZ)
HF Amplifier	MITEQ	TTA1840-35-HG	1871923	18GHz~40GHz	Jul. 03, 2024	Jul. 31, 2024	Jul. 02, 2025	Radiation (03CH01-SZ)
AC Power Source	Chroma	61601	616010001985	N/A	Oct. 18,2023	Jul. 31, 2024	Oct. 17,2024	Radiation (03CH01-SZ)
Turn Table	EM	EM1000	N/A	0~360 degree	NCR	Jul. 31, 2024	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM	EM1000	N/A	1 m~4 m	NCR	Jul. 31, 2024	NCR	Radiation (03CH01-SZ)
EMI Receiver	R&S	ESR7	101630	9kHz~7GHz;	Jul. 04, 2024	Aug. 01, 2024	Jul. 03, 2025	Conduction (CO01-SZ)
AC LISN	R&S	ENV216	100063	9kHz~30MHz	Jul. 04, 2024	Aug. 01, 2024	Jul. 03, 2025	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Oct. 16, 2023	Aug. 01, 2024	Oct. 15, 2024	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	616020000891	100Vac~250Vac	Aug. 14, 2024	Aug. 01, 2024	Aug. 13, 2025	Conduction (CO01-SZ)

NCR: No Calibration Required

4 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement (WIFI2.4G/5G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±1.34 dB
Occupied Channel Bandwidth	±0.012 MHz
Conducted Power	±1.34 dB
Conducted Power Spectral Density	±1.32 dB
Frequency	±1.3 Hz

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5 dB

03CH01-SZ:

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.8 dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.2 dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.0 dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	4.3 dB

----------THE END----------