RF Exposure Report

Report No.:	SABHDI-WTW-P21120081
FCC ID:	2ARXKVHE09-4GL
Test Model:	VHE09-4GL, VHH09-4GL
Series Model:	VHE09XXXXX (X=A-Z, 0-9, blank or “-”)
Received Date:	Dec. 24, 2021
Date of Evaluation:	Apr. 07, 2022
Issued Date:	Apr. 22, 2022
Applicant:	Veea Inc
Address:	164 E 83rd Street, New York NY, 10028, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
SABHDI-WTW-P21120081	Original Release	Apr. 22, 2022

1 Certificate of Conformity

Product:	veeaHub
Brand:	veeaHub
Test Model:	VHE09-4GL, VHH09-4GL
Series Model:	VHE09XXXXX (X=A-Z, 0-9, blank or "-")
Sample Status:	Engineering Sample
Applicant:	Veea Inc
Date of Evaluation:	Apr. 07, 2022
Standards:	FCC Part 2 (Section 2.1091)
References Test Guidance :	KDB 447498 D01 General RF Exposure Guidance v06

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 RF characteristics under the conditions specified in this report.

Prepared by : Lena Wang , **Date:** Apr. 22, 2022

Lena Wang / Specialist

Approved by : Jeremy Lin , **Date:** Apr. 22, 2022

Jeremy Lin / Project Engineer

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				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	…	…	f/1500	30
1500-100,000	…	…	1.0	30

f = Frequency in MHz ; *Plane-wave equivalent power density

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 33 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max AV Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2412~2462	27.13	6.21	33	0.158	1
WLAN 5180~5240	28.94	8.12	33	0.371	1
WLAN 5260~5320	23.36	8.12	33	0.103	1
WLAN 5500~5720	23.63	8.12	33	0.109	1
WLAN 5745~5825	29.65	8.12	33	0.437	1
Zigbee 2405~2475	16.76	3.2	33	0.007	1
BT LE 2402~2480	-5.33	6.0	33	0.0001	1
BT EDR 2402~2480	0.03	6.0	33	0.0003	1
LoRa 923.3 MHz – 927.5 MHz	24.71	5.0	33	0.068	0.616

For WLAN 2.4GHz Band: Directional gain = 3.2dBi + 10log(2) = 6.21dBi
For WLAN 5.0GHz Band: Directional gain = 2.1dBi + 10log(4) = 8.12dBi
For Zigbee: antenna gain = 3.2dBi
For BT: max. antenna gain = 6.0dBi
For LoRa: antenna gain = 5.0dBi

WWAN (module model: EG25G MINPCIE)

Band	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
GSM850	824-849	32.60	0.3	33	0.142	0.55
PCS1900	1850-1910	28.54	1.7	33	0.077	1.00
WCDMA II	1850-1910	23.49	1.7	33	0.024	1.00
WCDMA IV	1710-1755	23.60	1.7	33	0.025	1.00
WCDMA V	824-849	23.68	0.3	33	0.018	0.55
LTE 2	1850-1910	22.72	1.7	33	0.020	1.00
LTE 4	1710-1755	22.96	1.7	33	0.021	1.00
LTE 5	824-849	23.41	0.3	33	0.017	0.55
LTE 7	2500-2570	22.50	2.3	33	0.022	1.00
LTE 12	699-716	22.96	0.3	33	0.015	0.47
LTE 13	777-787	23.56	0.3	33	0.018	0.52
LTE 25	1850-1915	22.88	1.7	33	0.021	1.00
LTE 26	814-849	23.48	0.3	33	0.017	0.54
LTE 38	2575-2610	22.52	2.3	33	0.022	1.00
LTE 41	2496-2690	22.51	2.3	33	0.022	1.00

Note:

1. This report is issued as a supplementary report to BV CPS report no. SA200424C06. The difference compared with original report is is adding model name (VHH09-4GL), updating mainboard and changing WWAN Module (EG25-G MINIPCIE). Therefore, MPE value was re-calculated in this report.
2. Model difference as below

Model	Type	LoRa Module	LTE Module	LED for LTE Status	Power Button	USB 3.0	Console	SD Slot	Power	PCB Design
VHE09-4GL	Indoor	RG-1008M (915MHz)	EC25A	Y	Y	Y	Y(RS-232)	Y	65W DC-48V desktop power adapter	Same design (VHE09/VHE10/VHH10)
VHH09-4GL	Outdoor	RG-1008M (915MHz)	EG25G	N	N	N	Y(M.12)	N	Power adapter or PoE	

3. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
4. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible
5. Contains module FCC ID: 2ATM8EG25G

Conclusion:

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4G + WLAN 5G + Zigbee + Bluetooth + LoRa + WWAN (module model: EG25G MINPCIE) = 0.158/1+0.437/1+0.007/1+0.0003/1+0.068/0.616+0.142/0.55=0.971

Therefore the maximum calculations of above situations are less than the “1” limit.

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