RF EXPOSURE REPORT

CERTIFICATE OF CONFORMITY

FCC Rule Part:	**FCC Part 2 (Section 2.1091)**
Report No.:	MFBEDV-WTW-P23030565A
FCC ID:	G95RG525FNA
Product:	Module
Brand:	Vantiva
Model No.:	RG525FNA
Received Date:	2023/3/16
Test Date:	2025/1/17
Issued Date:	2025/2/3
Applicant:	Vantiva USA LLC
Address:	4855 Peachtree Industrial Blvd. Suite 200 Norcross, Georgia 30092
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

Approved by: Jeremy Lin , **Date:** 2025/2/3

Jeremy Lin / Project Engineer

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Prepared by : Pettie Chen / Senior Specialist

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Release Control Record

Issue No.	Description	Date Issued
MFBEDV-WTW-P23030565A	Original release.	2025/2/3

1 Certificate

Product:	Module
Brand:	Vantiva
Test Model:	RG525FNA
Sample Status:	Engineering sample
Applicant:	Vantiva USA LLC
Test Date:	2025/1/17
FCC Rule Part:	FCC Part 2 (Section 2.1091)
Standard:	KDB 447498 D04 Interim General RF Exposure Guidance v01

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.

2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT.

Parameter	Specification	Uncertainty (±)
RF Exposure	1 GHz ~ 2.5 GHz	1.2 dB
	2.5 GHz ~ 8 GHz	1.3 dB

3 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

Routine Evaluation

Routine Evaluation Procedure - Single and/or Multiple RF Sources

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
E-Field Probe Wavecontrol	WPF60	22WP230188	2024/6/14	2025/6/13
EM Field Meter Wavecontrol	SMP2 Dual	22SN1914	2024/6/14	2025/6/13

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/1/17

4 Applicable RF Exposure Limit

§ 1.1310 Radiofrequency radiation exposure limits.

(a) Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b) of this part within the frequency range of 100 kHz to 6 GHz (inclusive).
(b) The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.
(c) The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

(e) Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields

➢ Limits for General Population/Uncontrolled Exposure

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
300-1,500	…	…	f/1500	<30
1,500-100,000	…	…	1.0	<30

f = frequency in MHz. * = Plane-wave equivalent power density.

➢ Limits for Occupational/Controlled Exposure

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				
0.3-3.0	614	1.63	*(100)	≤6
3.0-30	1842/f	4.89/f	*($900/f^2$)	<6
30-300	61.4	0.163	1.0	<6
300-1,500			f/300	<6
1,500-100,000			5	<6

f = frequency in MHz. * = Plane-wave equivalent power density.

MPE-based Exemption – §1.1307(b)(3)(i)(B)

- For mobile devices that are not exempt per Table 1 of §1.1307(b)(1)(i)(C) and device at distances from 20 cm to 40 cm and in 0.3 GHz to 6 GHz. The MPE-based test exemption condition is in terms of ERP, defined as the product of the maximum antenna gain and the delivered maximum time-averaged power.

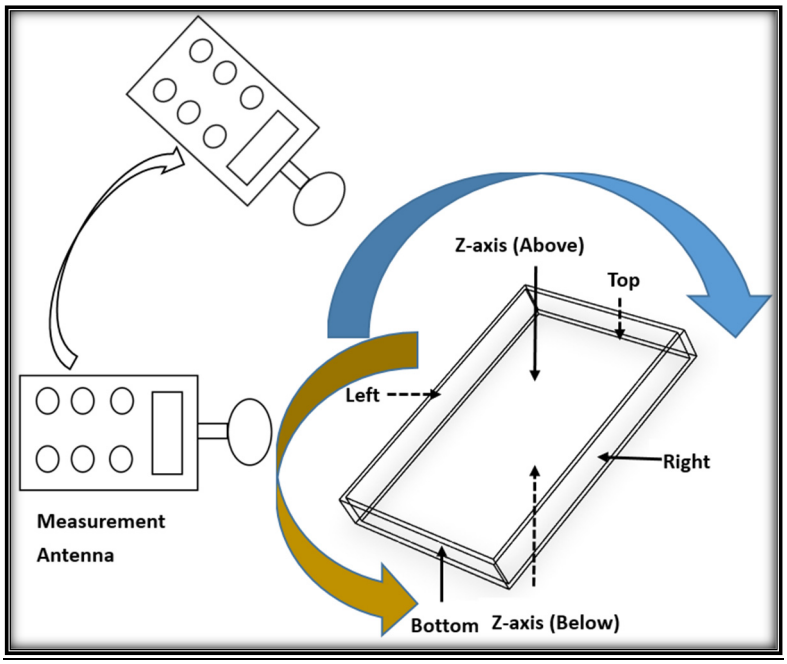
$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

Routine Evaluation

Routine Evaluation Procedure - Single and/or Multiple RF Sources

- MPE compliance are measurement in all directions surrounding the antenna and radiating structures of the device.

Test Setup



Note: The measurement antenna are moving and surrounding the EUT when performed the test, the test results recorded the highest values for each sides of the EUT (left/right/top/bottom/z-axis (Above)/z-axis (Below))

Fixed RF sources operating in the same time-averaging period – §1.1307(b)(3)(ii)(B)

- Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluatedk term) should be used to determine exemption for simultaneous transmission according to Formula below,

$$\sum_{i=1}^{a} \frac{P_i}{P_{th,i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

The sum of the ratios of the applicable terms for SAR-based, MPE-based and measured SAR or MPE should be less than 1, to determine simultaneous transmission exposure compliance.

Where:

a = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(B) of this section for P_{th}, including existing exempt transmitters and those being added.

c = number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance including existing evaluated transmitters.

$P_{th,i}$ = the exemption threshold power (P_{th}) according to paragraph (b)(3)(i)(B) of this section for fixed, mobile, or portable RF source *i*.

$ERP_{th,j}$ = exemption threshold ERP for fixed, mobile, or portable RF source *j,* at a distance of at least λ/2π according to the applicable formula of paragraph (b)(3)(i)(C) of this section.

Exposure Limit$_k$ = either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable RF source *k,* as applicable from § 1.1310 of this chapter.

b = number of fixed, mobile, or portable RF sources claiming exemption using paragraph (b)(3)(i)(C) of this section for Threshold ERP, including existing exempt transmitters and those being added.

P_i = the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source *i* at a distance between 0.5 cm and 40 cm (inclusive).

ERP_j = the ERP of fixed, mobile, or portable RF source *j*.

Evaluated$_k$ = the maximum reported SAR or MPE of fixed, mobile, or portable RF source *k* either in the device or at the transmitter site from an existing evaluation at the location of exposure.

5 Test Results

Environmental Conditions:	25°C, 60% RH	Tested By:	Gary Lin

The EUT is authorized for use in specific End-product. Please refer to below for more details.

Item	Brand	Model	FCC ID	Note
WIFI Gateway	Vantiva	MGA5331	G95MGA5331	Model difference only for marketing strategy.
		MGA5331VBV5	G95MGA5331	

For Single RF Source

LTE

MPE-based Exemption §1.1307(b)(3)(i)(B)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
LTE Band 2	1850.7-1909.3	141.906	5.05	276.695	25	3060	Pass
LTE Band 4	1710.7-1754.3	140.281	4.84	260.615	25	3060	Pass
LTE Band 5	824.7-848.3	184.502	2.38	194.536	25	1682.388	Pass
LTE Band 7	2502.5-2567.5	147.231	5.7	333.426	25	3060	Pass
LTE Band 12	699.7-715.3	182.39	1.12	143.88	25	1427.388	Pass
LTE Band 13	779.5-784.5	172.982	2.02	167.880	25	1590.18	Pass
LTE Band 14	790.5 - 795.5	177.011	2.02	171.791	25	1612.62	Pass
LTE Band 17	706.5 - 713.5	177.419	0.5	121.339	25	1441.26	Pass
LTE Band 25	1850.7-1914.3	145.546	5.05	283.792	25	3060	Pass
LTE Band 26(Part 90)	814.7-823.3	170.608	2.3	176.604	25	1661.988	Pass
LTE Band 26(Part 22)	824.7-848.3	173.78	2.38	183.231	25	1682.388	Pass
LTE Band 30	2307.5 - 2312.5	111.944	2	108.144	25	3060	Pass
LTE Band 38	2572.5-2617.5	269.774	6.11	671.429	25	3060	Pass
LTE Band 41	2498.5-2687.5	271.019	6.17	683.911	25	3060	Pass
LTE Band 42	3452.5 - 3547.5	304.789	4.29	498.884	25	3060	Pass
LTE Band 43	3702.5 - 3797.5	271.644	4.47	463.447	25	3060	Pass
LTE Band 48	3552.5-3697.5	37.844	4.85	70.469	25	3060	Pass
LTE Band 66	1710.7-1779.3	142.889	4.84	265.46	25	3060	Pass
LTE Band 71	665.5-695.5	175.388	1.12	138.357	25	1357.62	Pass

Note:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The manufacturer declares that maximum rated power (including tune-up tolerances) is equal to maximum output power.

NR

MPE-based Exemption §1.1307(b)(3)(i)(B)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
NR Band 2	1852.5-1907.5	169.434	5.05	330.37	25	3060	Pass
NR Band 5	826.5-846.5	191.426	2.38	201.837	25	1686.06	Pass
NR Band 7	2502.5 - 2567.5	169.824	5.7	384.591	25	3060	Pass
NR Band 12	701.5-713.5	199.067	1.12	157.036	25	1431.06	Pass
NR Band 14	790.5 - 795.5	213.304	2.02	207.014	25	1612.62	Pass
NR Band 25	1852.5-1912.5	173.38	5.05	338.064	25	3060	Pass
NR Band 26(Part 90)	816.5 - 821.5	175.388	2.3	181.552	25	1665.66	Pass
NR Band 26(Part 22)	826.5 - 846.5	173.38	2.38	182.81	25	1686.06	Pass
NR Band 30	2307.5 - 2312.5	125.603	2	121.339	25	3060	Pass
NR Band 38	2575-2615	356.451	6.11	887.156	25	3060	Pass
NR Band 41	2506.02-2679.99	390.841	6.17	986.28	25	3060	Pass
NR Band 48	3555 - 3694.98	44.668	4.47	76.208	25	3060	Pass
NR Band 66	1712.5-1777.5	162.555	4.84	301.995	25	3060	Pass
NR Band 71	665.5-695.5	200.447	1.12	158.125	25	1357.62	Pass
NR Band 77(Part 27Q)	3455.01-3544.98	386.367	3.65	545.758	25	3060	Pass
NR Band 77(Part 27O)	3705-3975	289.068	5.37	606.736	25	3060	Pass

Notes:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The manufacturer declares that maximum rated power (including tune-up tolerances) is equal to maximum output power.
3. Calculate the ERP of NR Band 48 from the radiated field strength:
   ERP (dBm) = Radiated field strength (dBuV/m) + 20 x Log(d) − 104.8 − 2.15
   d is the distance, in 3 m.
   ERP = 116.23 + 20 x Log(3) − 104.8 − 2.15 = 18.82 dBm (76.208 mW)
   Average Power = ERP (dBm) - Antenna Gain (dBi) + 2.15 = 16.5 dBm (44.668 mW)

WLAN

MPE-based Exemption §1.1307(b)(3)(i)(B)							
Operation Mode	Frequency Band (MHz)	Average Power (mW)	Antenna Gain (dBi)	Maximum ERP (mW)	Distance (cm)	Limit Threshold (mW)	Test Result
WLAN 2.4 GHz_CDD	2412-2462	954.993	1.28	781.628	25	3060	Pass
WLAN 5 GHz_CDD	5180-5320 5500-5825	984.011	2.81	1145.513	25	3060	Pass
WLAN 2.4 GHz_BF	2412-2462	837.529	3.21	1069.055	25	3060	Pass

Note:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. The manufacturer declares that maximum rated power (including tune-up tolerances) is equal to maximum output power.

Routine Evaluation (General Population)					
Operation Mode	Frequency Band (MHz)	Power Density (mW/cm^2)	Test Distance (cm)	Limit (mW/cm^2)	Test Result
WLAN 5 GHz_BF	5180-5320 5500-5825	0.202	25	1	Pass

For Multiple RF Sources (Simultaneous Operations)

Multiple RF Sources (Simultaneous Operations)							
Exemption Evaluation					Sum of Ratios	Limit of Ratios	Test Result
Operation Mode	Frequency Band (MHz)	Maximum ERP (mW)	Limit Threshold (mW)	Ratio			
WLAN 2.4 GHz_BF	2412-2462	1069.055	3060	0.349	0.873	1	Pass
NR Band 41	2506.02-2679.99	986.28	3060	0.322			
Routine Evaluation (General Population)							
Operation Mode	Operation Mode	Power Density (mW/cm^2)	Limit (mW/cm^2)	Ratio			
WLAN 5 GHz_BF	5180-5320 5500-5825	0.202	1	0.202			

6 Conclusion

Source-base time average power is below Exemption Criteria and/or Routine Evaluation MPE thresholds, therefore the device is compliant FCC RF exposure requirement.

7 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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The address and road map of all our labs can be found in our web site also.

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