



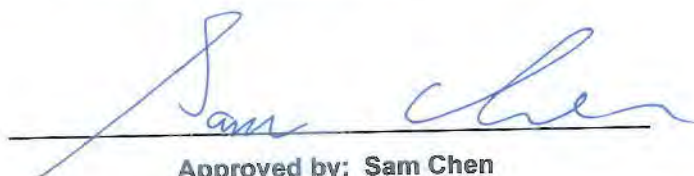
FCC RADIO EXPOSURE TEST REPORT

FCC ID : 2AGMRTRM9995G
Equipment : 802.11ac WiFi Radio Module
Brand Name : EVEREST™ Network Solutions
Model Name : TRM9995G
Applicant : Tembo Systems, Inc.
2933 Bunker Hill lane, Suite 100, Santa Clara, CA 95054
U.S.A
Manufacturer : Tembo Systems, Inc.
2933 Bunker Hill lane, Suite 100, Santa Clara, CA 95054
U.S.A
Standard : 47 CFR Part 2.1091

The product was received on Apr. 25, 2018, and testing was started from May 16, 2018 and completed on Jun. 12, 2018. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Sam Chen

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Reviewed by: Sam Chen

Report Producer: Vicky Huang



1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)

Note: The host (AP1004UNe series) insert four radios. Radio 1 is 2.4GHz, Radio 2 is 5GHz band 1, band 2, Radio 3 is 5GHz band 3, Radio 4 is 5GHz band 4.

Radio 1 FCC ID: 2AGMRTRM9992G.

Radio 2~Radio 4 FCC ID: 2AGMRTRM9995G.

1.2 Antenna Information

Ant. Set	Brand Holder	Band	Model Name	Antenna Type	Connector	Gain (dBi)	TX Function	Host System Model
1	Tembo Systems Inc.	Band 1, 2 and Band 4	PCA-000007-XXX-X/ PCA-000005-XXX-X	OMNI Antenna	I-PEX	Note1	4TX/4RX	AP1004WRe series
		Band 3	PCA-000006-000-X/ PCB-000015-XXX-X					
2	Tembo Systems Inc.	Band 1 and Band 2	PCA-000009-XXX-X	Directional Antenna	I-PEX	Note1	4TX/4RX	AP1004NRe series
		Band 3	PCB-000011-XXX-X					
		Band 4	PCA-000010-XXX-X					
3	Tembo Systems Inc.	Band 1 and Band 2	PCA-000033-000-X	Directional Antenna	I-PEX	Note1	2TX/2RX	AP1004UNe series
		Band 3	PCA-000046-000-X				4TX/4RX	
		Band 4	PCA-000034-000-X				2TX/2RX	

Note1:

Ant. Set	Band	Gain (dBi)	Cable loss	True Gain (dBi)	Array Gain (dBi)
1	Band 1	5.06	9.90	-4.84	4
	Band 2	4.55	9.90	-5.35	4
	Band 3	4.82	1.35	3.47	4
	Band 4	5.03	10.9	-5.87	4



Ant. Set	Band	Tested Antenna Gain (dBi)	Cable loss (dB)	Tested net antenna gain (dBi)	Certified Net Antenna Gain (dBi)	Array Gain (dBi)
2	Band 1	13.6	1.6	12	13	1
	Band 2	13.6	1.6	12	13	1
	Band 3	15.3	1.6	13.7	14	1
	Band 4	13.6	1.6	12	13	1

Ant. Set	Band	Tested Antenna Gain (dBi)	Cable loss (dB)	Tested net antenna gain (dBi)	Certified Net Antenna Gain (dBi)	Array Gain (dBi)
3	Band 1	19.25	1.6	17.65	18	0
	Band 2	19.25	1.6	17.65	18	0
	Band 3	15.30	1.6	13.70	14	1
	Band 4	19.25	1.6	17.65	18	0

Note2: For Ant. Set 1:

The EUT is a limited module which only limited to the host (model: AP1004WRe series).

The EUT was installed to the host (model: AP1004WRe series) to perform all the tests.

For Ant. Set 2:

The EUT is a limited module which only limited to the host (model: AP1004NRe series).

The EUT was installed to the host (model: AP1004NRe series) to perform all the tests.

For Ant. Set 3:

The EUT is a limited module which only limited to the host (model: AP1004UNe series).

The EUT was installed to the host (model: AP1004UNe series) to perform all the tests.

1.3 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA650411-01

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Add the third set antenna with the same type (Directional Antenna) (Antenna type: Directional Ant. / Brand holder: Tembo Systems Inc. /Part Number: PCA-000033-000-X, PCA-000046-000-X, PCA-000034-000-X). 2. For Band 1, Band 2 and Band 4, the gain is higher than the original's gain. The third set antenna support 2TX/2RX but the original directional antenna support 4TX/4RX. 3. For Band 3, the gain is same as the original's gain. The third set antenna and the original directional antenna support 4TX/4RX. Note: According the modification above, only available for the host system Model Name: AP1004UNe series.	Maximum Permissible Exposure.
4. Adding brand name "EVEREST™ Network Solutions".	It does not affect the test.



1.4 Testing Location

Testing Location		
☐	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
☒	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.



2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 20 cm to show compliance with the power density limit. The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	10.50	22.83	33.33	0.50	33.83	2.41546	20	0.48053	1
5.2G;D1D	18.00	17.99	35.99	0.01	36.00	3.98107	20	0.79199	1
5.3G;D1D	18.00	11.92	29.92	0.08	30.00	1.00000	20	0.19894	1
5.6G;D1D	14.00	15.97	29.97	0.03	30.00	1.00000	20	0.19894	1
5.8G;D1D	18.00	17.90	35.90	0.10	36.00	3.98107	20	0.79199	1

Simultaneous Transmission Analysis Mode: 2.4G+5G B1, 2+5G B3+5G B4 for host model: AP1004UNe series

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	10.50	22.83	33.33	0.50	33.83	2.41546	31	0.20001	1.00000
5.2G;D1D	18	17.99	35.99	0.01	36.00	3.98107	31	0.32965	1.00000
5.3G;D1D	18	11.92	29.92	0.08	30.00	1.00000	31	0.08280	1.00000
5.6G;D1D	14	15.97	29.97	0.03	30.00	1.00000	31	0.08280	1.00000
5.8G;D1D	18	17.90	35.90	0.09	36.00	3.98107	31	0.32965	1.00000

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)	Ratio (S/Limit)
2.4G;D1D	10.50	22.83	33.33	0.50	33.83	2.41546	31	0.20001	1.00000	0.20001
5.2G;D1D	18	17.99	35.99	0.01	36.00	3.98107	31	0.32965	1.00000	0.32965
5.6G;D1D	14	15.97	29.97	0.03	30.00	1.00000	31	0.08280	1.00000	0.08280
5.8G;D1D	18	17.90	35.90	0.10	36.00	3.98107	31	0.32965	1.00000	0.32965
									Sum Ratio	0.94211
									Ratio Limit	1

————THE END————