



RF Exposure Evaluation Report

Equipment : CGA2121 FAMILY, 24x8 D3.0 GTWY
Brand Name : technicolor
Model No. : CGA2121
FCC ID : N89-CGA2121
Standard : 47 CFR Part 2.1091
Applicant : CyberTAN Technology Inc.
No. 99, Park Avenue III, Science-based Industrial
Park Hsinchu, 308 Taiwan
Manufacturer : CyberTAN Technology Inc.
No. 99, Park Avenue III, Science-based Industrial
Park Hsinchu, 308 Taiwan

The product sample received on Nov. 27, 2017 and completely tested on Dec. 29, 2017. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with 47 CFR Part 2.1091 and pass the limit.

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Sam Chen
SPORTON INTERNATIONAL INC.





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PHOTOGRAPHS OF EUT V01		

REVISION HISTORY

[illegible]

1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
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)

1.2 Table for Multiple Listing

The two EUTs which are identical to each other in all aspects except for the following table:

EUT	EUT 1		EUT 2	
Location	Value	Part Number	Value	Part Number
C1304	4.7pF	202.01109.025	C/7.5pF +-0.1pF/0402/NPO	202.01280.005
C1305	20pF	202.00069.005	39pF	202.01305.005
C1306	20pF	202.00069.005	36pF	202.01334.005
C1307	11pF	202.01395.005	27pF	202.01149.025
C1308	18pF	202.00056.005	47pF	202.01293.005
C1309	27pF	202.01149.025	56pF	202.01236.005
C1310	20pF	202.00069.005	39pF	202.01305.005
C1311	22pF	202.01137.015	36pF	202.01334.005
C1312	27pF	202.01149.025	62pF	202.01335.005
C1320	33pF	202.00097.005	56pF	202.00125.005
C1325	16pF	202.01201.005	33pF	202.01297.005
C1326	13pF	202.00048.005	36pF	202.01334.005
C1327	13pF	202.00048.005	30pF	202.01304.005
C1328	36pF	202.01122.005	68pF	202.01313.005
C1329	27pF	202.01149.025	47pF	202.01293.005
C1330	150pF	202.01121.005	220pF	202.01336.005
L1300	150nH	132.00596.005	330nH	132.01497.005
L1301	100nH	132.01595.005	220nH	132.01484.005
L1302	100nH	132.01595.005	220nH	132.01484.005



L1303	150nH	132.00596.005	270nH	132.00595.005
L1308	220nH	132.01312.005	390nH	132.00715.005
L1313	120nH	132.00837.005	270nH	132.01234.005
L1315	120nH	132.00837.005	330nH	2005-21330011R
L1317	82nH	132.01116.005	180nH	2005-21180008R

Note: There are two colors (White / Black) of the EUT and all material of them are identical except for the case color.

1.3 Table for Class II Change

This product is an extension of original one reported under Sporton project number: FA733013-01

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

Modifications	Performance Checking
Adding 5GHz Band 2 and Band 3 (5250~5350 MHz, 5470~5725 MHz) for this device.	EMF test.

Note: Maximum Permissible Exposure of 2.4GHz Band and 5GHz Band 1, 4 are based on original.

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 22 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	3.50	27.93	31.43	0.50	31.93	1.55955	22	0.25654	1.00000
5.2G;D1D	9.11	26.83	35.94	0.06	36.00	3.98107	22	0.65488	1.00000
5.3G;D1D	8.01	20.85	28.86	0.50	29.36	0.86298	22	0.14189	1.00000
5.6G;D1D	8.07	20.83	28.90	0.50	29.40	0.87096	22	0.14320	1.00000
5.8G;D1D	9.11	26.88	35.99	0.01	36.00	3.98107	22	0.65488	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz+WLAN 5GHz

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	3.50	27.93	31.43	0.50	31.93	1.55955	22	0.25654	1.00000	0.25654
5.8G;D1D	9.11	26.88	35.99	0.01	36.00	3.98107	22	0.65488	1.00000	0.65488
									Sum Ratio	0.91142
									Ratio Limit	1