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Report No.: SZEM111000400402

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RF Exposure Evaluation declaration

Application No.: SZEM1110004004RF
Applicant: Disruptive Ltd.
Address of Applicant: Windsor House, Turnpike Road, High Wycombe, Bucks, HP12 3NR, UK
Manufacturer: Disruptive Ltd.
Address of Manufacturer: Windsor House, Turnpike Road, High Wycombe, Bucks, HP12 3NR, UK
Factory: Minwa Electronics Co., Ltd.
Address of Factory: Minwa Industrial Park, Jiahu Road, Fucheng' ao Village, Pinghu Town,
Longgang District, Shenzhen
FCC ID: YNKPG539US
Fundamental Carrier Frequency : 2.412GHz to 2.462GHz
Equipment Under Test (EUT):
Name: Air Zone Series 1
Model No.: PG539/PG539US
Date of Receipt: 2011-10-09
Date of Test: 2011-10-26 to 2011-11-15
Date of Issue: 2011-11-24

Test Result :	PASS*
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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1 RF Exposure Evaluation

1.1 Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

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)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	300

F = Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3 Test Result of RF Exposure Evaluation

Product : Air Zone Series 1

Test Item : PG539/PG539US

Antenna Gain: 2dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 1.58dBi in linear scale.

802.11b

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	4.80	3.020	0.000949
6	2437	4.61	2.891	0.000909
11	2462	4.36	2.729	0.000858

The distance r (4th column) calculated from the Fries transmission formula is far shorter than 20 cm separation requirement.

802.11g

Output Power Into Antenna & RF Exposure Evaluation Distance (1dBi):

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412	17.02	50.350	0.015827
6	2437	16.73	47.098	0.014804
11	2462	16.41	43.752	0.013753

The distance r (4th column) calculated from the Fries transmission formula is far shorter than 20 cm separation requirement.