RF Exposure Evaluation Declaration

FCC ID: TK4WPJ531

APPLICANT: Compex Systems Pte Ltd

Application Type: Certification

Product: WIRELESS ACCESS POINT

Model No.: WPJ531HV, WPJ531LV, MMZ531LV, MMZ531HV, MMJ531LV, MMJ531HV, MMS531LV, MMS531HV

Brand Name: COMPEX

FCC Classification: Digital Transmission System (DTS)

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ACCREDITED
TESTING LABORATORY
CERTIFICATE #3628.01

Revision History

Report No.	Version	Description	Issue Date
1506RSU01802	Rev. 01	Initial report	07-10-2015

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name	WIRELESS ACCESS POINT
Model No.	WPJ531HV, WPJ531LV, MMZ531LV, MMZ531HV, MMJ531LV, MMJ531HV, MMS531LV, MMS531HV
Frequency Range	802.11b/g/n-HT20: 2412 ~ 2462 MHz 802.11n-HT40: 2422 ~ 2452 MHz
Maximum Output Power	802.11b: 24.36dBm 802.11g: 24.18dBm 802.11n-HT20: 23.71dBm 802.11n-HT40: 21.84dBm
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM

1.2. Antenna Description

Antenna Type	Frequency Band (GHz)	Manufacturer	Tx Paths	Max Directional Gain (dBi)
Panel Antenna 1#	2.45	Compex Systems Pte Ltd	2	11
Panel Antenna 2#	2.45	Kenbotong Communication LTD	2	10
Panel Antenna 3#	2.45	Compex Systems Pte Ltd	2	7
Panel Antenna 4#	2.45	Smart Ant Inc	2	7
Panel Antenna 5#	2.45	Compex Systems Pte Ltd	2	5
Panel Antenna 6#	2.45	Compex Systems Pte Ltd	2	5
Dipole Antenna 1#	2.45	Kunshan Wavelink Electronic Co., Ltd.	2	2

2. RF Exposure Evaluation

2.1. 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
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	6
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: Pd = (Pout*G)/(4*pi*r2)

Where
Pd = power density in mW/cm2
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

Pd is the limit of MPE, $1mW/cm^2$. 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.

2.2. Test Result of RF Exposure Evaluation

Product	WIRELESS ACCESS POINT
Test Item	RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 11dBi for 2.4GHz in logarithm scale.

For 2.4G ISM Band:

Test Mode	Frequency Band (MHz)	Maximum Average Output Power (dBm)	Power Density at R = 20 cm (mW/cm^2)	Limit (mW/cm^2)
802.11b	2412 ~ 2462	24.36	0.6835	1
802.11g	2412 ~ 2462	24.18	0.6557	1
802.11n-HT20	2412 ~ 2462	23.71	0.5885	1
802.11n-HT40	2422 ~ 2452	21.84	0.3826	1

CONCULISON:

The Max Power Density at R (20 cm) = 0.6835mW/cm^2 < 1mW/cm^2.

So the EUT complies with the requirement.

The End