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Report No.: 1704RSU00204 Report Version: Issue Date: 06-25-2017

# **RF Exposure Evaluation Declaration**

FCC ID: TK4WPJ428

APPLICANT: Compex Systems Pte Ltd

**Application Type:** Certification

**Product:** Wireless Access Point

Model No.: WPJ428HV

Serial Model: WPJ428LV, WPJ418LV, WPJ418HV, MMS428LV,

MMS428HV, MMS418LV, MMS418HV

**COMPEX** Trademark:

FCC Classification: Digital Transmission System (DTS)

Unlicensed National Information Infrastructure (UNII)

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( Marlin Chen )



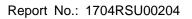


The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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## **Revision History**

Report No.	Version	Description	Issue Date	Note
1704RSU00204	Rev. 01	Initial report	06-25-2017	Valid

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## 1. PRODUCT INFORMATION

## 1.1. Equipment Description

Product Name	Wireless Access Point		
Model No.	WPJ428HV		
Serial Model	WPJ428LV, WPJ418LV, WPJ418HV, MMS428LV, MMS428HV,		
	MMS418LV, MMS418HV		
Brand Name	COMPEX		
Wi-Fi Specification	802.11a/b/g/n/ac		
Frequency Range	2.4GHz:		
	For 802.11b/g/n-HT20: 2412 ~ 2462 MHz		
	For 802.11n-HT40: 2422 ~ 2452 MHz		
	5GHz:		
	For 802.11a/n-HT20/ ac-VHT20:		
	5180~5240MHz, 5745~5825MHz		
	For 802.11n-HT40/ac-VHT40:		
	5190~5230MHz, 5755~5795MHz		
	For 802.11ac-VHT80:		
	5210MHz, 5775MHz		
Type of Modulation	802.11b: DSSS		
	802.11g/a/n/ac: OFDM		

Note: Differences between all models are for different marketing requirement, HV version (48V) means POE jack input, LV version (24V) means DC jack input, the other was the same.

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## 1.2. Antenna Description

Antenna Type	Frequency Band (MHz)	TX Paths	Per Chain Max Antenna Gain (dBi)		
			Ant 0	Ant 1	
P-T-P Operation					
Panel Antenna 1#	2412 ~ 2462	1	11		
		2	11	11	
Panel Antenna 2#	5150 ~ 5250,	1	25		
Panei Antenna 2#	5725 ~ 5850	2	25	25	

Note 1: The device didn't support beam-forming technology and Cyclic Delay Diversity (CDD) technology, and the transmit signals are uncorrected, so no add array gain to the band power and band PSD.

Note 2: The DTS band & UNII-1 band & UNII-3 band will be used for point-to-point operation that is declared by the manufacturer.

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## 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	Electric Field	Magnetic Field	Power Density	Average Time	
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm <sup>2</sup> )	(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:  $Pd = (Pout*G)/(4*pi*r^2)$ 

Where

Pd = power density in mW/cm<sup>2</sup>

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<sup>2</sup>. 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.

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## 2.2. Test Result of RF Exposure Evaluation

Product	Wireless Access Point
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 1.2.

#### For 2.4GHz ISM Band:

Test Mode	Frequency Band	Maximum Average	Power Density	Safety
	(MHz)	Output Power	Limit	Distance R
		(dBm)	(mW/cm <sup>2</sup> )	(cm)
802.11b/g/n	2412 ~ 2462	22.94	1	14.04

#### For 5GHz UNII Band:

Test Mode	Frequency Band	Maximum Average	Power Density	Safety
	(MHz)	Output Power	Limit	Distance R
		(dBm)	(mW/cm <sup>2</sup> )	(cm)
000 44 - /-/	5180 ~ 5240	14.89	1	27.85
802.11a/n/ac	5745 ~ 5825	19.32	1	46.39

#### **CONCULISON:**

Both of the WLAN 2.4GHz Band and WLAN 5GHz Band can transmit simultaneously. Therefore, the Min Safety Distance R = 14.04cm + 46.39cm = 60.43cm.

——— The End

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