



RF Exposure Evaluation Declaration

FCC ID: TK4WSD377

APPLICANT: Compex Systems Pte Ltd

Application Type: Certification

Product: 2.4GHz/5GHz WiFi + Bluetooth Combination Module

Model No.: WSD377

Serial No. WSD377-I ,WSD377-EVK

Brand Name: COMPEX

FCC Classification: Spread Spectrum Transmitter(DSS)
Digital Transmission System (DTS)
Unlicensed National Information Infrastructure (NII)

Test Date: December 13 ~ 29, 2018

Reviewed By:

Jame Yuan

(Jame Yuan)

Approved By:

Robin Wu

(Robin Wu)



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.

The test report shall not be reproduced except in full without the written approval of MRT Technology (Suzhou) Co., Ltd.

Revision History

Report No.	Version	Description	Issue Date	Note
1812RSU007-U6	Rev. 01	Initial report	12-29-2018	Valid

1. PRODUCT INFORMATION

1.1. Equipment Description

Product Name:	2.4GHz/5GHz WiFi + Bluetooth Combination Module
Model No.:	WSD377
Serial No.:	WSD377-I ,WSD377-EVK
Brand Name:	COMPEX
Wi-Fi Specification:	802.11a/b/g/n/ac
Bluetooth Specification:	v4.2 single mode

Note: The difference between these models is only for different market.

1.2. Description of Available Antennas

Antenna Type	Frequency Band (MHz)	TX Paths	Antenna Gain (dBi)
Dipole Antenna	2400 ~ 2483.5	1*1	5.0
	5150 ~ 5850	1*1	7.0

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: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

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/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.

2.2. Test Result of RF Exposure Evaluation

Product	2.4GHz/5GHz WiFi + Bluetooth Combination Module
Test Item	RF Exposure Evaluation

Antenna Gain: Refer to clause 1.2.

Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20 cm (mW/cm ²)	Limit (mW/cm ²)
Bluetooth	2402~2480MHz	17.08	0.0102	1
Wi-Fi	2412~2462MHz, 5180~5320MHz, 5500~5700MHz, 5745~5825MHz	23.00	0.0397	1

Conducted power refer to user manual TX power tolerance.

CONCLUSION:

The Bluetooth, WLAN 2.4GHz Band, and WLAN 5GHz Band can't transmit simultaneously.

The max Power Density at R (20 cm) = 0.0397mW/cm² < 1mW/cm².

Therefore, the Min Safety Distance is 20cm.

_____ The End _____

Appendix A - Test Setup Photograph

Refer to "1812RSU007-UT" file.

Appendix B - EUT Photograph

Refer to "1812RSU007-UE" file.