

1. Radio Frequency Exposure

RESULT:
Pass

Test standard : FCC Part 2: Section 2.1091
 KDB 447498 D01 General RF Exposure Guidance v06

1.1 Product Technical Information

The EUT (Equipment Under Test) is an aircraft (Matrice 30 with model M30 RTK, Matrice 30T with model M30T RTK). It supports 2.4GHz SDR, 5.8GHz SDR, GNSS and ADS-B functions.

*remark: SDR means specific defined radio, and cannot changes radio specification via software/firmware by end-users.

According to the declaration of the applicant, the electrical circuit design and PCB layout are identical for M30 RTK, M30T RTK, except M30T RTK supports infrared camera.

For details refer to the User Manual, Technical Description and Circuit Diagram.

General Information of EUT	Value
Kind of Equipment:	Matrice 30, Matrice 30T
Type Designation:	M30 RTK, M30T RTK
Trademark:	DJI
Operating Temperature Range:	-20 °C ~ 50 °C
Operating Voltage:	Battery operated (DC 22.38V, 5880mAh)
Testing Voltage:	Built-in battery
Radiofrequency operating mode	1) 2.4GHz SDR: operating within 2400-2483.5MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth 2) 5.8GHz SDR: operating within 5725-5850MHz, supports 1.4MHz/3MHz/10MHz/20MHz/40MHz Bandwidth 3) GPS & BDS & Galileo (receiver): operating within 1559-1610MHz 4) ADS-B (receiver): operating at 978MHz (1MHz Bandwidth) and 1090MHz (2MHz Bandwidth)
Technical Specification of 2.4GHz SDR	
Operating Frequency	2403.5-2469.5MHz for 1.4MHz Bandwidth 2405.12-2471.12MHz for 1.4MHz Bandwidth (CA mode) 2405.5-2468.5MHz for 3MHz Bandwidth 2408.2-2471.2MHz for 3MHz Bandwidth (CA mode) 2407.5-2467.5MHz for 10MHz Bandwidth 2412.5-2462.5MHz for 20MHz Bandwidth 2422.5-2452.5MHz for 40MHz Bandwidth
Type of Modulation	OFDM (QPSK, 16QAM, 64QAM)
Channel Number	34 channels for 1.4MHz Bandwidth 34 channels for 1.4MHz Bandwidth (CA mode) 22 channels for 3MHz Bandwidth 22 channels for 3MHz Bandwidth (CA mode) 61 channels for 10MHz Bandwidth 51 channels for 20MHz Bandwidth 31 channels for 40MHz Bandwidth
Channel Separation	2MHz for 1.4MHz Bandwidth

	2MHz for 1.4MHz Bandwidth (CA mode) 3MHz for 3MHz Bandwidth 3MHz for 3MHz Bandwidth (CA mode) 1MHz for 10MHz Bandwidth 1MHz for 20MHz Bandwidth 1MHz for 40MHz Bandwidth
Antenna Type	Integral Antenna
Antenna Number	1Tx4Rx for SISO mode (ANT0 or ANT1 or ANT2 or ANT3) 2Tx4Rx for MIMO mode (ANT0+ANT1, or ANT0+ANT3, or ANT2+ANT1, or ANT2+ANT3)
Antenna Gain	4dBi for ANT0 2.8dBi for ANT1 2.8dBi for ANT2 4dBi for ANT3
The type of wideband data transmission equipment	Non-FHSS
Technical Specification of 5.8GHz SDR	
Operating Frequency	5728.5-5846.5MHz for 1.4MHz Bandwidth 5730.12-5848.12MHz for 1.4MHz Bandwidth (CA mode) 5727.5-5844.5MHz for 3MHz Bandwidth 5730.2-5847.2MHz for 3MHz Bandwidth (CA mode) 5730.5-5844.5MHz for 10MHz Bandwidth 5735.5-5839.5MHz for 20MHz Bandwidth 5745.5-5829.5MHz for 40MHz Bandwidth
Type of Modulation	OFDM (QPSK, 16QAM, 64QAM)
Channel Number	60 channels for 1.4MHz Bandwidth 60 channels for 1.4MHz Bandwidth (CA mode) 40 channels for 3MHz Bandwidth 40 channels for 3MHz Bandwidth (CA mode) 115 channels for 10MHz Bandwidth 105 channels for 20MHz Bandwidth 85 channels for 40MHz Bandwidth
Channel Separation	2MHz for 1.4MHz Bandwidth 2MHz for 1.4MHz Bandwidth (CA mode) 3MHz for 3MHz Bandwidth 3MHz for 3MHz Bandwidth (CA mode) 1MHz for 10MHz Bandwidth 1MHz for 20MHz Bandwidth 1MHz for 40MHz Bandwidth
Antenna Type	Integral Antennas
Antenna Number	1Tx4Rx for SISO mode (ANT0 or ANT1 or ANT2 or ANT3) 2Tx4Rx for MIMO mode (ANT0+ANT1, or ANT0+ANT3, or ANT2+ANT1, or ANT2+ANT3)
Antenna Gain	3.5dBi for ANT0 3.5dBi for ANT1 3.5dBi for ANT2 3.5dBi for ANT3
The type of wideband data transmission equipment	Non-FHSS

1.2 Product Classification

This device defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

1.3 Radio Frequency Exposure Limit

For FCC:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)
300-1,500	--	--	f/1500
1,500-100,000	--	--	1.0

1.4 Radio Frequency Exposure Calculation Formula

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
 P = power input to the antenna (in appropriate units, e.g., mW)
 G = power gain of the antenna in the direction of interest relative to an isotropic radiator
 R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

or:

$$S = \frac{EIRP}{4\pi R^2}$$

where: EIRP = equivalent (or effective) isotropically radiated power

1.5 Calculation Result

1.5.1 Stand-alone transmission MPE

Mode	*Measured RF Output Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	FCC Limit (mW/cm ²)
2.4GHz SDR	837.53	4	20	0.419	1.0
5.8GHz SDR	202.8	3.5	20	0.101	1.0

Note:

1. *2.4GHz SDR RF Output Power: Refer to test report CN21HH0Z 002
2. *5.8GHz SDR RF Output Power: Refer to test report CN21HH0Z 003

1.5.2 Simultaneous transmission MPE

Not applicable since the 2.4G SDR and 5.8G SDR can not transmit simultaneously.

1.5.3 Conclusion

Therefore the maximum calculations result of above are meet the requirement of Radio Frequency Exposure (MPE) limit.