

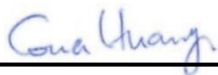
RF EXPOSURE EVALUATION REPORT

FCC ID : TX2-RTL8722DM
Equipment : 802.11 a/b/g/n Wireless LAN+Bluetooth module
Brand Name : REALTEK
Model Name : RTL8722DM
Applicant : Realtek Semiconductor Corp.
No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu
300, Taiwan
Manufacturer : Realtek Semiconductor Corp.
No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu
300, Taiwan
Standard : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part 2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full



Approved by: Cona Huang / Deputy Manager



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History of this test report

Report No.	Version	Description	Issued Date
FA0N0645	Rev. 01	Initial issue of report	Apr. 13, 2021



1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	802.11 a/b/g/n Wireless LAN+Bluetooth module
Brand Name	REALTEK
Model Name	RTL8722DM
FCC ID	TX2-RTL8722DM
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5825 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN: 802.11a/b/g/n HT20/HT40 Bluetooth LE
Antenna Type	WLAN: Printed Antenna / External Antenna (Dipole or PIFA) Bluetooth: Printed Antenna / External Antenna (Dipole or PIFA)
HW Version	AM8722DM01_6V0
SW Version	3e2bfb766
EUT Stage	Identical Prototype
Remark:	
1. There have three types of antenna and information as below table. Choose high gain for RF Exposure evaluation calculation.	

Printed Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	4.1
5150 MHz ~ 5250 MHz	Peak Gain (dBi)	3.6
5250 MHz ~ 5350 MHz	Peak Gain (dBi)	3.6
5470 MHz ~ 5725 MHz	Peak Gain (dBi)	3.9
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	2.1

Dipole Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	3.0
5150 MHz ~ 5250 MHz	Peak Gain (dBi)	5
5250 MHz ~ 5350 MHz	Peak Gain (dBi)	5
5470 MHz ~ 5725 MHz	Peak Gain (dBi)	5
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	5

PIFA Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	3.5
5150 MHz ~ 5250 MHz	Peak Gain (dBi)	5
5250 MHz ~ 5350 MHz	Peak Gain (dBi)	5
5470 MHz ~ 5725 MHz	Peak Gain (dBi)	5
5725 MHz ~ 5850 MHz	Peak Gain (dBi)	5

Reviewed by: Jason Wang

Report Producer: Daisy Peng

2. Maximum RF average output power among production units

<Bluetooth>

Mode	Average power (dBm)
	LE
Tune-up Limit	4.5

2.4GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit
	802.11b 1Mbps	1	2412	17.00
		6	2437	17.00
		11	2462	17.00
		12	2467	17.00
		13	2472	16.00
	802.11g 6Mbps	1	2412	16.50
		6	2437	17.00
		11	2462	15.50
		12	2467	14.00
		13	2472	1.00
	802.11n-HT20 MCS0	1	2412	16.00
		6	2437	16.00
		11	2462	15.00
		12	2467	13.50
		13	2472	-1.50
	802.11n-HT40 MCS0	3	2422	15.00
		6	2437	15.00
		9	2452	14.00
		10	2457	12.50
		11	2462	9.00

5.2GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit
	802.11a 6Mbps	36	5180	14.00
		40	5200	14.00
		44	5220	14.00
		48	5240	13.50
	802.11n-HT20 MCS0	36	5180	13.00
		40	5200	13.00
		44	5220	13.00
		48	5240	12.50
	802.11n-HT40 MCS0	38	5190	12.50
		46	5230	13.00

5.3GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit
	802.11a 6Mbps	52	5260	14.00
		56	5280	13.50
		60	5300	13.50
		64	5320	13.50
	802.11n-HT20 MCS0	52	5260	13.00
		56	5280	12.50
		60	5300	12.50
		64	5320	13.00
	802.11n-HT40 MCS0	54	5270	13.00
		62	5310	13.00

5.6GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit
	802.11a 6Mbps	100	5500	14.00
		116	5580	14.00
		124	5620	14.00
		132	5660	14.00
		140	5700	14.00
		144	5720	14.00
	802.11n-HT20 MCS0	100	5500	13.00
		116	5580	13.00
		124	5620	13.00
		132	5660	13.00
		140	5700	13.00
		144	5720	13.00
	802.11n-HT40 MCS0	102	5510	13.00
		110	5550	13.00
		126	5630	13.00
		134	5670	13.00
		142	5710	13.00

5.8GHz WLAN	Mode	Channel	Frequency (MHz)	Ant 1 Tune-up Limit
	802.11a 6Mbps	149	5745	14.00
		157	5785	14.00
		165	5825	14.00
	802.11n-HT20 MCS0	149	5745	13.00
		157	5785	13.00
		165	5825	13.00
	802.11n-HT40 MCS0	151	5755	13.00
		159	5795	13.00

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
WLAN2.4GHz Band	4.1	17.0	21.1	0.13	128.82	0.026	1.000
WLAN5GHz Band	5.0	14.0	19.0	0.08	79.43	0.016	1.000
Bluetooth	4.1	4.5	8.6	0.01	7.24	0.001	1.000

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.