

RF Exposure

FCC ID: AJDK118

Applicant: PIONEER CORPORATION

Exposure category: General population/uncontrolled environment

Product name: RDS AV RECEIVER

Model: DMH-W2700NEX, DMH-W2770NEX

Refer Standard: FCC Part 2.1091: Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

FCC MPE Limited:

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
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

Test Data

Predication of MPE limit at a given distance

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

Where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Antenna Gain information

BT: -5.6dBi

5G WLAN: -7.5dBi

Worst-Case mode Conducted Output Power Results for BT /BLE

Bluetooth				
Band	Mode	Test Frequency	Power(dBm)	Tune-up tolerance(dBm)
BT EDR	GFSK	2402	0.76	1 ± 1
	GFSK	2441	1.30	1 ± 1
	GFSK	2480	1.71	1 ± 1
	pi/4DQPSK	2402	1.43	2 ± 1
	pi/4DQPSK	2441	2.21	2 ± 1
	pi/4DQPSK	2480	2.66	2 ± 1
	8DPSK	2402	1.99	2 ± 1
	8DPSK	2441	2.69	2 ± 1
	8DPSK	2480	3.18	3 ± 1

Worst-Case mode Conducted Power Test results of band U-NII-3

5G WIFI		
Frequency (MHz)	Conducted Output Power (dBm)	Tune Up tolerance(dBm)
802.11n (20MHz)5745	12.33	13 ± 1
802.11n (40MHz)5755	13.13	13 ± 1
802.11ac (20MHz)5745	12.37	13 ± 1
802.11ac (40MHz)5755	12.92	13 ± 1
802.11ac (80MHz)5775	12.72	13 ± 1
802.11a (20MHz)5745	12.65	13 ± 1

Calculation results (for 5G WIFI): Worst-Case mode

Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm ²)	Limit (mW/cm ²)
802.11n (20MHz)5745	14	20	0.001	1.0
802.11n (40MHz)5755	14	20	0.001	
802.11ac (20MHz)5745	14	20	0.001	
802.11ac (40MHz)5755	14	20	0.001	
802.11ac (80MHz)5775	14	20	0.001	
802.11a (20MHz)5745	14	20	0.001	

Calculation results (for BT/BLE): Worst-case mode

Bluetooth					
Band	Mode	Test Frequency	Power(dBm)	Result (mW/cm2)	Limit (mW/cm2)
BT EDR	8DPSK	2480	4	0.0001	1.0

Simultaneous Transmission Calculation (Worst-case mode)

No.	Transmitter Combinations	Scenario Supported or not
1	5G WLAN+BT	Yes

Max Simultaneous Transmission Calculation (Worst-case mode)

No.	Worst Mode	MPE Ratio	Results
1	5G WIFI+BT	0.0011	<1.0(pass)