RF EXPOSURE

1. Regulation

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this Chapter.

Limits for Maximum Permissive Exposure: RF exposure is calculated.

Frequency Range	Electric Field Strength [V/m]	Magnetic Field Strength [A/m]	Power Density [mW/cm^2]	Averaging Time [minute]
Limits for General Population / Uncontrolled Exposure				
0.3 ~ 1.34	614	1.63	*(100)	30
1.34 ~ 30	824/f	2.19/f	*(180/f2)	30
30 ~ 300	27.5	0.073	0.2	30
300 ~ 1 500	/	/	f/1 500	30
1 500 ~ 15 000	/	/	1	30

f=frequency in MHz, *= plane-wave equivalent power density

MPE (Maximum Permissive Exposure) Prediction

Predication of MPE limit at a given distance: Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2 \quad \left(\Rightarrow R = \sqrt{PG/4\pi S} \right)$$

S = power density [mW/cm^2]
P = Power input to antenna [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 [cm]

2. RF Exposure Compliance Issue

The information should be included in the user's manual:

This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter. A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

MPE Calculations : Bluetooth (BDR)

- Frequency Range :   2 402   MHz   ~   2 480   MHz

- Measured RF Output Power :   1.00   dBm

- Target Power & Tolerance   0.85   dBm   &   ±   1.00   dB

                    (Maximum :   1.85   dBm   &   Minimum :   -0.15   dBm   )

- Maximum Peak Antenna Gain :   -0.56   dBi

- Maximum Output Power for the Calculation :   1.85   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= 1.85 dBm + -0.56 dBi	P : Max tuneup Power (dBm)
= 1.29 dBm	G : Maximum Peak Antenna Gain (dBi)
= 1.35 mW	

Power Density at the specific separation

- S = EIRP / (4 X R^{2}π)	- NOTE
= 1.35 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.000 268** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : Bluetooth (EDR)

- Frequency Range : <u>2 402</u> MHz ~ <u>2 480</u> MHz

- Measured RF Output Power : <u>0.41</u> dBm

- Target Power & Tolerance <u>-0.50</u> dBm & ± <u>1.00</u> dB

(Maximum : <u>0.50</u> dBm & Minimum : <u>-1.50</u> dBm)

- Maximum Peak Antenna Gain : <u>-0.56</u> dBi

- Maximum Output Power for the Calculation : <u>0.50</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

	- NOTE
- EIRP = P + G	
= 0.50 dBm + -0.56 dBi	P : Max tuneup Power (dBm)
= -0.06 dBm	G : Maximum Peak Antenna Gain (dBi)
= 0.99 mW	

Power Density at the specific separation

	- NOTE
- S = EIRP / (4 X $R^2\pi$)	
= 0.99 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.000 196** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11b

- Frequency Range : <u>2 412</u>   MHz   ~   <u>2 462</u>   MHz

- Measured RF Output Power :   <u>18.89</u>   dBm

- Target Power & Tolerance   <u>18.50</u>   dBm   &   ±   <u>1.00</u>   dB

(Maximum :   <u>19.50</u>   dBm   &   Minimum :   <u>17.50</u>   dBm   )

- Maximum Peak Antenna Gain :   <u>-0.56</u>   dBi

- Maximum Output Power for the Calculation :   <u>19.50</u>   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= <u>19.50</u> dBm + <u>-0.56</u> dBi	P : Max tuneup Power (dBm)
= <u>18.94</u> dBm	G : Maximum Peak Antenna Gain (dBi)
= <u>78.34</u> mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 78.34 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.015 586** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11g

- Frequency Range : <u>2 412</u>   MHz   ~   <u>2 462</u>   MHz

- Measured RF Output Power :   <u>18.95</u>   dBm

- Target Power & Tolerance   <u>18.50</u>   dBm   &   ±   <u>1.00</u>   dB

       (Maximum :   <u>19.50</u>   dBm   &   Minimum :   <u>17.50</u>   dBm   )

- Maximum Peak Antenna Gain :   <u>-0.56</u>   dBi

- Maximum Output Power for the Calculation :   <u>19.50</u>   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G
 	
  = <u>19.50</u> dBm + <u>-0.56</u> dBi
 	
  = <u>18.94</u> dBm
 	
  = <u>78.34</u> mW
	- NOTE
	
	P : Max tuneup Power (dBm)
	
	G : Maximum Peak Antenna Gain (dBi)

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$) = 78.34 / (4 X 20^2 X π) = **<u>0.015 586</u>** mW/cm^2	- NOTE S : Maximum Power Density (mW/cm^2) EIRP : Equivalent Isotropic Radiated Power (mW) R : Distance to the center of the radiation of the antenna (<u>20</u> cm)

MPE Calculations : 802.11n_HT20

- Frequency Range : <u>2 412</u> MHz ~ <u>2 462</u> MHz

- Measured RF Output Power : <u>18.93</u> dBm

- Target Power & Tolerance <u>18.50</u> dBm & ± <u>1.00</u> dB

         (Maximum : <u>19.50</u> dBm & Minimum : <u>17.50</u> dBm)

- Maximum Peak Antenna Gain : <u>-0.56</u> dBi

- Maximum Output Power for the Calculation : <u>19.50</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G		- NOTE
= <u>19.50</u> dBm + <u>-0.56</u> dBi		P : Max tuneup Power (dBm)
= <u>18.94</u> dBm		G : Maximum Peak Antenna Gain (dBi)
= <u>78.34</u> mW		

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 78.34 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.015 586</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the antenna (<u>20</u> cm)

MPE Calculations : 802.11a (UNII-1)

- Frequency Range :   5 180   MHz   ~   5 240   MHz

- Measured RF Output Power :   10.45   dBm

- Target Power & Tolerance   10.00   dBm   &   ±   1.00   dB

  (Maximum :   11.00   dBm   &   Minimum :   9.00   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   11.00   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE	
= 11.00 dBm + 0.00 dBi	P : Max tuneup Power (dBm)	
= 11.00 dBm	G : Maximum Peak Antenna Gain (dBi)	
= 12.59 mW		

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 12.59 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.002 505** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11a (UNII-2A)

- Frequency Range :   <u>5 260</u>   MHz   ~   <u>5 320</u>   MHz

- Measured RF Output Power :   <u>10.29</u>   dBm

- Target Power & Tolerance   <u>10.00</u>   dBm   &   ±   <u>1.00</u>   dB

       (Maximum :   <u>11.00</u>   dBm   &   Minimum :   <u>9.00</u>   dBm   )

- Maximum Peak Antenna Gain :   <u>0.00</u>   dBi

- Maximum Output Power for the Calculation :   <u>11.00</u>   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= <u>11.00</u> dBm + <u>0.00</u> dBi	P : Max tuneup Power (dBm)
= <u>11.00</u> dBm	G : Maximum Peak Antenna Gain (dBi)
= <u>12.59</u> mW	

Power Density at the specific separation

- S = EIRP / (4 X R^2π)	- NOTE
= 12.59 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.002 505</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11a (UNII-2C)

- Frequency Range : <u>5 500</u> MHz ~ <u>5 700</u> MHz

- Measured RF Output Power : <u>10.85</u> dBm

- Target Power & Tolerance <u>9.50</u> dBm & ± <u>1.50</u> dB

          (Maximum : <u>11.00</u> dBm & Minimum : <u>8.00</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>11.00</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= <u>11.00</u> dBm + <u>0.00</u> dBi	P : Max tuneup Power (dBm)
= <u>11.00</u> dBm	G : Maximum Peak Antenna Gain (dBi)
= <u>12.59</u> mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 12.59 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.002 505</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11a (UNII-3)

- Frequency Range :   5 745   MHz   ~   5 805   MHz

- Measured RF Output Power :   8.11   dBm

- Target Power & Tolerance   7.50   dBm   &   ±   1.00   dB

                    (Maximum :   8.50   dBm   &   Minimum :   6.50   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   8.50   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= 8.50 dBm + 0.00 dBi	P : Max tuneup Power (dBm)
= 8.50 dBm	G : Maximum Peak Antenna Gain (dBi)
= 7.08 mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 7.08 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.001 408** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11n_HT20 (UNII-1)

- Frequency Range :   5 180   MHz   ~   5 240   MHz

- Measured RF Output Power :   9.82   dBm

- Target Power & Tolerance   9.00   dBm   &   ±   1.00   dB

                    (Maximum :   10.00   dBm   &   Minimum :   8.00   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   10.00   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

	- NOTE
- EIRP = P + G	
	P : Max tuneup Power (dBm)
= 10.00 dBm + 0.00 dBi	
	G : Maximum Peak Antenna Gain (dBi)
= 10.00 dBm	
= 10.00 mW	

Power Density at the specific separation

	- NOTE
- S = EIRP / (4 X $R^2\pi$)	
	S : Maximum Power Density (mW/cm^2)
= 10.00 / (4 X 20^2 X π)	
	EIRP : Equivalent Isotropic Radiated Power (mW)
= **0.001 989** mW/cm^2	
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11n_HT20 (UNII-2A)

- Frequency Range :   5 260   MHz   ~   5 320   MHz

- Measured RF Output Power :   9.55   dBm

- Target Power & Tolerance   9.00   dBm   &   ±   1.00   dB

                              (Maximum :   10.00   dBm   &   Minimum :   8.00   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   10.00   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= 10.00 dBm + 0.00 dBi	P : Max tuneup Power (dBm)
= 10.00 dBm	G : Maximum Peak Antenna Gain (dBi)
= 10.00 mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 10.00 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.001 989** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11n_HT20 (UNII-2C)

- Frequency Range : <u>5 500</u> MHz ~ <u>5 700</u> MHz

- Measured RF Output Power : <u>10.39</u> dBm

- Target Power & Tolerance <u>9.00</u> dBm & ± <u>1.50</u> dB

  (Maximum : <u>10.50</u> dBm & Minimum : <u>7.50</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>10.50</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

	- NOTE
- EIRP = P + G	
= <u>10.50</u> dBm + <u>0.00</u> dBi	P : Max tuneup Power (dBm)
= <u>10.50</u> dBm	G : Maximum Peak Antenna Gain (dBi)
= <u>11.22</u> mW	

Power Density at the specific separation

	- NOTE
- S = EIRP / (4 X R^2π)	
= 11.22 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.002 232</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11n_HT20 (UNII-3)

- Frequency Range : <u>5 745</u> MHz ~ <u>5 805</u> MHz

- Measured RF Output Power : <u>7.65</u> dBm

- Target Power & Tolerance <u>7.00</u> dBm & ± <u>1.00</u> dB

(Maximum : <u>8.00</u> dBm & Minimum : <u>6.00</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>8.00</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= <u>8.00</u> dBm + <u>0.00</u> dBi	P : Max tuneup Power (dBm)
= <u>8.00</u> dBm	G : Maximum Peak Antenna Gain (dBi)
= <u>6.31</u> mW	

Power Density at the specific separation

- S = EIRP / (4 X R^{2}π)	- NOTE
= 6.31 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.001 255</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11n_HT40 (UNII-1)

- Frequency Range : <u>5 190</u> MHz ~ <u>5 230</u> MHz

- Measured RF Output Power : <u>10.08</u> dBm

- Target Power & Tolerance <u>9.50</u> dBm & ± <u>1.00</u> dB

(Maximum : <u>10.50</u> dBm & Minimum : <u>8.50</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>10.50</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G		- NOTE
	= <u>10.50</u> dBm + <u>0.00</u> dBi	P : Max tuneup Power (dBm)
	= <u>10.50</u> dBm	G : Maximum Peak Antenna Gain (dBi)
	= <u>11.22</u> mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 11.22 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.002 232</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11n_HT40 (UNII-2A)

- Frequency Range :   <u>5 270</u>   MHz   ~   <u>5 310</u>   MHz

- Measured RF Output Power :   <u>9.81</u>   dBm

- Target Power & Tolerance   <u>9.00</u>   dBm   &   ±   <u>1.00</u>   dB

        (Maximum :   <u>10.00</u>   dBm   &   Minimum :   <u>8.00</u>   dBm   )

- Maximum Peak Antenna Gain :   <u>0.00</u>   dBi

- Maximum Output Power for the Calculation :   <u>10.00</u>   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

	- NOTE
- EIRP = P + G	
	P : Max tuneup Power (dBm)
= <u>10.00</u> dBm + <u>0.00</u> dBi	
	G : Maximum Peak Antenna Gain (dBi)
= <u>10.00</u> dBm	
= <u>10.00</u> mW	

Power Density at the specific separation

	- NOTE
- S = EIRP / (4 X $R^2\pi$)	
	S : Maximum Power Density (mW/cm^2)
= 10.00 / (4 X 20^2 X π)	
	EIRP : Equivalent Isotropic Radiated Power (mW)
= **0.001 989** mW/cm^2	
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11n_HT40 (UNII-2C)

- Frequency Range : <u>5 510</u> MHz ~ <u>5 670</u> MHz

- Measured RF Output Power : <u>10.62</u> dBm

- Target Power & Tolerance <u>9.70</u> dBm & ± <u>1.00</u> dB

(Maximum : <u>10.70</u> dBm & Minimum : <u>8.70</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>10.70</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

	- NOTE
- EIRP = P + G	
= <u>10.70</u> dBm + <u>0.00</u> dBi	P : Max tuneup Power (dBm)
= <u>10.70</u> dBm	G : Maximum Peak Antenna Gain (dBi)
= <u>11.75</u> mW	

Power Density at the specific separation

	- NOTE
- S = EIRP / (4 X R^2π)	
= 11.75 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.002 337** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : 802.11n_HT40 (UNII-3)

- Frequency Range :   5 755   MHz   ~   5 795   MHz

- Measured RF Output Power :   7.72   dBm

- Target Power & Tolerance   7.00   dBm   &   ±   1.00   dB

        (Maximum :   8.00   dBm   &   Minimum :   6.00   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   8.00   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= 8.00 dBm + 0.00 dBi	P : Max tuneup Power (dBm)
= 8.00 dBm	G : Maximum Peak Antenna Gain (dBi)
= 6.31 mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 6.31 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.001 255** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11ac_VHT80 (UNII-1)

- Frequency Range : <u>5 210</u> MHz

- Measured RF Output Power : <u>9.02</u> dBm

- Target Power & Tolerance <u>8.50</u> dBm & ± <u>1.00</u> dB

(Maximum : <u>9.50</u> dBm & Minimum : <u>7.50</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>9.50</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G = <u>9.50</u> dBm + <u>0.00</u> dBi = <u>9.50</u> dBm = <u>8.91</u> mW	- NOTE P : Max tuneup Power (dBm) G : Maximum Peak Antenna Gain (dBi)

Power Density at the specific separation

- S = EIRP / (4 X R^2π) = 8.91 / (4 X 20^2 X π) = **<u>0.001 773</u>** mW/cm^2	- NOTE S : Maximum Power Density (mW/cm^2) EIRP : Equivalent Isotropic Radiated Power (mW) R : Distance to the center of the radiation of the antenna (<u>20</u> cm)

MPE Calculations : 802.11ac_VHT80 (UNII-2A)

- Frequency Range :   5 290   MHz

- Measured RF Output Power :   9.22   dBm

- Target Power & Tolerance   8.50   dBm & ± 1.00   dB

        (Maximum :   9.50   dBm & Minimum :   7.50   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   9.50   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= 9.50 dBm + 0.00 dBi	P : Max tuneup Power (dBm)
= 9.50 dBm	G : Maximum Peak Antenna Gain (dBi)
= 8.91 mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 8.91 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.001 773** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11ac_VHT80 (UNII-2C)

- Frequency Range :   5 530   MHz

- Measured RF Output Power :   9.90   dBm

- Target Power & Tolerance   9.00   dBm   &   ±   1.00   dB

                              (Maximum :   10.00   dBm   &   Minimum :   8.00   dBm   )

- Maximum Peak Antenna Gain :   0.00   dBi

- Maximum Output Power for the Calculation :   10.00   dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

- EIRP = P + G	- NOTE
= 10.00 dBm + 0.00 dBi	P : Max tuneup Power (dBm)
= 10.00 dBm	G : Maximum Peak Antenna Gain (dBi)
= 10.00 mW	

Power Density at the specific separation

- S = EIRP / (4 X $R^2\pi$)	- NOTE
= 10.00 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **0.001 989** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (20 cm)

MPE Calculations : 802.11ac_VHT80 (UNII-3)

- Frequency Range : <u>5 775</u> MHz

- Measured RF Output Power : <u>7.20</u> dBm

- Target Power & Tolerance <u>7.00</u> dBm & ± <u>1.00</u> dB

(Maximum : <u>8.00</u> dBm & Minimum : <u>6.00</u> dBm)

- Maximum Peak Antenna Gain : <u>0.00</u> dBi

- Maximum Output Power for the Calculation : <u>8.00</u> dBm

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the The MPE calculation for this exposure is shown below.

		- NOTE
- EIRP = P + G		
= <u>8.00</u> dBm + <u>0.00</u> dBi		P : Max tuneup Power (dBm)
= <u>8.00</u> dBm		G : Maximum Peak Antenna Gain (dBi)
= <u>6.31</u> mW		

Power Density at the specific separation

	- NOTE
- S = EIRP / (4 X $R^2\pi$)	
= 6.31 / (4 X 20^2 X π)	S : Maximum Power Density (mW/cm^2)
= **<u>0.001 255</u>** mW/cm^2	EIRP : Equivalent Isotropic Radiated Power (mW)
	R : Distance to the center of the radiation of the
	antenna (<u>20</u> cm)

MPE Calculations : Bluetooth + WLAN 2G + WLAN 5G

The EUT will only be used with a separation of 20 centimeters or greater between the antenna and the body of the
The MPE calculation for this exposure is shown below.

Simultaneous MPE for Bluetooth and Wi-Fi

802.11b + 802.11a + Bluetooth (BDR)

- Total (%) =	- NOTE
[802.11b Result(mW/cm2) / Limit(mW/cm2)] +	802.11b + 802.11a + Bluetooth (BDR)
[802.11a Result(mW/cm2) / Limit(mW/cm2)] +	WLAN 802.11b = 0.015 586 mW/cm2
[BDR Result(mW/cm2) / Limit(mW/cm2)] * 100	WLAN 802.11a = 0.002 505 mW/cm2
= [**0.015 586** / 1] +	Bluetooth(BDR) = 0.000 268 mW/cm2
[**0.002 505** / 1] +	Distance to the center of the radiation of the
[**0.000 268** / 1] * 100	antenna (20 cm)
= **1.585** %	Limit : ≤ 100 %