

FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Standard Applicable

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz) | 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/f ²) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | / | / | F/1500 | 30 |
| 1500-15000 | / | / | 1.0 | 30 |

F = frequency in MHz

* = Plane-wave equipment power density

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG/4\pi R^2$$

Where: S = Power density

P = Power input to antenna

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

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Maximum Permissible Exposure (MPE) Evaluation

802.11a Max. output power

802.11a_Main

| CH | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|-------------------|------------------|---------------------------------|--------|
| 36 | 5180 | MCS0 | 14.44 | 27.797 | 23.98 | PASS |
| 44 | 5220 | MCS0 | 14.37 | 27.353 | 23.98 | PASS |
| 48 | 5240 | MCS0 | 14.24 | 26.546 | 23.98 | PASS |
| 52 | 5260 | MCS0 | 14.16 | 26.062 | 23.98 or $11+10\log(B) = 23.98$ | PASS |
| 60 | 5300 | MCS0 | 14.44 | 27.797 | 23.98 or $11+10\log(B) = 24.02$ | PASS |
| 64 | 5320 | MCS0 | 14.47 | 27.990 | 23.98 or $11+10\log(B) = 24.04$ | PASS |
| 100 | 5500 | MCS0 | 14.49 | 28.119 | 23.98 or $11+10\log(B) = 24.13$ | PASS |
| 116 | 5580 | MCS0 | 14.49 | 28.119 | 23.98 or $11+10\log(B) = 24.17$ | PASS |
| 140 | 5700 | MCS0 | 14.46 | 27.925 | 23.98 or $11+10\log(B) = 24.08$ | PASS |
| 149 | 5745 | MCS0 | 14.49 | 28.119 | 30 | PASS |
| 157 | 5785 | MCS0 | 14.48 | 28.054 | 30 | PASS |
| 165 | 5825 | MCS0 | 14.22 | 26.424 | 30 | PASS |

MPE Prediction (802.11a 5150~5250)

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.44 | (dBm) |
| Average output power at antenna input terminal: | 27.797133 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 27.797133 | (mW) |
| Peak Antenna gain (Maximum): | 3.01 | (dBi) |
| Peak Antenna gain (linear): | 1.9998619 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5180 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.011 | (mW/cm ²) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.011 mW/cm ² . | | |
| This is below the uncontrolled exposure limit of 1 mW/cm ² at 5180MHz. | | |

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MPE Prediction (802.11a 5250~5350)

| | | |
|---|-----------|-----------|
| Average output power at antenna input terminal: | 14.47 | (dBm) |
| Average output power at antenna input terminal: | 27.989813 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 27.989813 | (mW) |
| Peak Antenna gain (Maximum): | 3.01 | (dBi) |
| Peak Antenna gain (linear): | 1.9998619 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5320 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm2) |
| Power density at predication frequency at 20 (cm) | 0.011 | (mW/cm^2) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.011 mW/cm2. | | |
| This is below the uncontrolled exposure limit of 1 mW/cm2 at 5320MHz. | | |

MPE Prediction (802.11a 5470~5725)

| | | |
|---|-----------|-----------|
| Average output power at antenna input terminal: | 14.49 | (dBm) |
| Average output power at antenna input terminal: | 28.119008 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 28.119008 | (mW) |
| Peak Antenna gain (Maximum): | 4.11 | (dBi) |
| Peak Antenna gain (linear): | 2.5763212 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5500 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm2) |
| Power density at predication frequency at 20 (cm) | 0.014 | (mW/cm^2) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.014 mW/cm2. | | |
| This is below the uncontrolled exposure limit of 1 mW/cm2 at 5500MHz. | | |

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MPE Prediction (802.11a 5725~5850)

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.49 | (dBm) |
| Average output power at antenna input terminal: | 28.119008 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 28.119008 | (mW) |
| Peak Antenna gain (Maximum): | 2.66 | (dBi) |
| Peak Antenna gain (linear): | 1.8450154 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5745 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.010 | (mW/cm ²) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.01 mW/cm ² . | | |
| This is below the uncontrolled exposure limit of 1 mW/cm ² at 5745MHz. | | |

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802.11n_HT20M Max. output power

802.11n_HT20_MIMO

| CH | Frequency (MHz) | Data Rate | AVERAGE POWER (dBm) | | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|---------------------|-------|-------------------|------------------|----------------------------|--------|
| | | | CH 0 | CH 1 | | | | |
| 36 | 5180 | MCS8 | 11.72 | 11.21 | 14.48 | 28.072 | 23.96 | PASS |
| 44 | 5220 | MCS8 | 11.69 | 11.11 | 14.42 | 27.669 | 23.96 | PASS |
| 48 | 5240 | MCS8 | 11.65 | 11.07 | 14.38 | 27.416 | 23.96 | PASS |
| 52 | 5260 | MCS8 | 11.68 | 11.27 | 14.49 | 28.120 | 23.96 or 11+10log(B) 24.05 | PASS |
| 60 | 5300 | MCS8 | 11.67 | 11.24 | 14.47 | 27.994 | 23.96 or 11+10log(B) 23.96 | PASS |
| 64 | 5320 | MCS8 | 11.66 | 11.3 | 14.49 | 28.145 | 23.96 or 11+10log(B) 24.02 | PASS |
| 100 | 5500 | MCS8 | 11.68 | 11.11 | 14.41 | 27.635 | 22.86 or 11+10log(B) 24.10 | PASS |
| 116 | 5580 | MCS8 | 11.76 | 11.11 | 14.46 | 27.909 | 22.86 or 11+10log(B) 24.04 | PASS |
| 140 | 5700 | MCS8 | 11.88 | 10.74 | 14.36 | 27.275 | 22.86 or 11+10log(B) 24.00 | PASS |
| 149 | 5745 | MCS8 | 11.98 | 10.67 | 14.38 | 27.444 | 30 | PASS |
| 157 | 5785 | MCS8 | 11.84 | 11.02 | 14.46 | 27.923 | 30 | PASS |
| 165 | 5825 | MCS8 | 11.73 | 10.57 | 14.20 | 26.296 | 30 | PASS |

MPE Prediction (802.11n_HT20 5150~5250)

MIMO gain= $G+(10 \log N)= 3.01+3.01=6.025\text{dBm}$

| | | |
|---|--------------|-----------------------|
| Max. output power including tune-up tolerancel: | 14.48 | (dBm) |
| Max. output power including tune-up tolerancel: | 28.05433638 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 28.05433638 | (mW) |
| Peak Antenna gain (Maximum): | 6.02 | (dBi) |
| Peak Antenna gain (linear): | 3.999447498 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5180 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.022 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.022 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5180MHz.

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MPE Prediction (802.11n_HT20 5250~5350)

MIMO gain= $G+(10 \log N)= 3.01+3.01= 6.02\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Max. output power including tune-up tolerancel: | 14.49 | (dBm) |
| Max. output power including tune-up tolerancel: | 28.119008 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 28.119008 | (mW) |
| Peak Antenna gain (Maximum): | 6.02 | (dBi) |
| Peak Antenna gain (linear): | 3.9994475 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5320 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.022 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.022 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5320MHz.

MPE Prediction (802.11n_HT20 5470~5725)

MIMO gain= $G+(10 \log N)= 4.11+3.01= 7.12\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Max. output power including tune-up tolerancel: | 14.46 | (dBm) |
| Max. output power including tune-up tolerancel: | 27.925438 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 27.925438 | (mW) |
| Peak Antenna gain (Maximum): | 7.12 | (dBi) |
| Peak Antenna gain (linear): | 5.1522864 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5580 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.029 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.029 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5580MHz.

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MPE Prediction (802.11n_HT20 5725~5850)

MIMO gain= $G+(10 \log N)= 2.66+3.01= 5.67\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Max. output power including tune-up tolerancel: | 14.46 | (dBm) |
| Max. output power including tune-up tolerancel: | 27.925438 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 27.925438 | (mW) |
| Peak Antenna gain (Maximum): | 5.67 | (dBi) |
| Peak Antenna gain (linear): | 3.689776 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5785 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.021 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.021 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5785MHz.

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802.11n_HT40M Max. output power

802.11n_HT40_MIMO

| CH | Frequency (MHz) | Data Rate | AVERAGE POWER (dBm) | | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|---------------------|-------|-------------------|------------------|----------------------------|--------|
| | | | CH 0 | CH 1 | | | | |
| 38 | 5190 | MCS8 | 11.46 | 11.33 | 14.41 | 27.579 | 23.96 | PASS |
| 46 | 5230 | MCS8 | 11.89 | 10.87 | 14.42 | 27.671 | 23.96 | PASS |
| 54 | 5270 | MCS8 | 11.68 | 11.28 | 14.49 | 28.151 | 23.96 or 11+10log(B) 27.03 | PASS |
| 62 | 5310 | MCS8 | 11.61 | 11.22 | 14.43 | 27.731 | 23.96 or 11+10log(B) 27.04 | PASS |
| 102 | 5510 | MCS8 | 11.81 | 11.12 | 14.49 | 28.112 | 22.86 or 11+10log(B) 27.04 | PASS |
| 110 | 5550 | MCS8 | 11.72 | 11.11 | 14.44 | 27.772 | 22.86 or 11+10log(B) 27.09 | PASS |
| 134 | 5670 | MCS8 | 11.79 | 11.14 | 14.49 | 28.102 | 22.86 or 11+10log(B) 27.05 | PASS |
| 151 | 5755 | MCS8 | 11.73 | 11.13 | 14.45 | 27.865 | 30 | PASS |
| 159 | 5795 | MCS8 | 11.77 | 10.75 | 14.30 | 26.916 | 30 | PASS |

MPE Prediction (802.11n_HT40 5150~5250)

MIMO gain= $G+(10 \log N)= 3.01+3.01= 6.02\text{dBm}$

| | | |
|---|--------------|-----------------------|
| Average output power at antenna input terminal: | 14.42 | (dBm) |
| Average output power at antenna input terminal: | 27.669416 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 27.669416 | (mW) |
| Peak Antenna gain (Maximum): | 6.02 | (dBi) |
| Peak Antenna gain (linear): | 3.9994475 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5230 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.022 | (mW/cm ²) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.022 mW/cm ² . | | |
| This is below the uncontrolled exposure limit of 1 mW/cm ² at 5230MHz. | | |

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MPE Prediction (802.11n_HT40 5250~5350)

MIMO gain= $G+(10 \log N)= 3.01+3.01= 6.02\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.49 | (dBm) |
| Average output power at antenna input terminal: | 28.119008 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 28.119008 | (mW) |
| Peak Antenna gain (Maximum): | 6.02 | (dBi) |
| Peak Antenna gain (linear): | 3.9994475 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5270 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.022 | (mW/cm ²) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.022 mW/cm ² . | | |
| This is below the uncontrolled exposure limit of 1 mW/cm ² at 5270MHz. | | |

MPE Prediction (802.11n_HT40 5470~5725)

MIMO gain= $G+(10 \log N)= 4.11+3.01= 7.12\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.49 | (dBm) |
| Average output power at antenna input terminal: | 28.119008 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 28.119008 | (mW) |
| Peak Antenna gain (Maximum): | 7.12 | (dBi) |
| Peak Antenna gain (linear): | 5.1522864 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5510 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.029 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.029 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5510MHz.

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MPE Prediction (802.11n_HT40 5725~5850)

MIMO gain= $G+(10 \log N)= 2.66+3.01= 5.67\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.45 | (dBm) |
| Average output power at antenna input terminal: | 27.861212 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 27.861212 | (mW) |
| Peak Antenna gain (Maximum): | 5.67 | (dBi) |
| Peak Antenna gain (linear): | 3.689776 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5755 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.020 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.02 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5755MHz.

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802.11ac VHT80M Max. output power

802.11ac_VHT80_MIMO

| CH | Frequency (MHz) | Data Rate | AVERAGE POWER (dBm) | | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm) | RESULT |
|-----|-----------------|-----------|---------------------|-------|-------------------|------------------|----------------------------|--------|
| | | | CH 0 | CH 1 | | | | |
| 42 | 5210 | MCS8 | 11.1 | 11.3 | 14.21 | 26.372 | 23.96 | PASS |
| 58 | 5290 | MCS8 | 11.28 | 11.18 | 14.24 | 26.550 | 23.96 or 11+10log(B) 30.08 | PASS |
| 106 | 5530 | MCS8 | 11.75 | 10.27 | 14.08 | 25.604 | 22.86 or 11+10log(B) 30.05 | PASS |
| 122 | 5610 | MCS8 | 11.11 | 11.23 | 14.18 | 26.186 | 22.86 or 11+10log(B) 30.07 | PASS |
| 155 | 5775 | MCS8 | 11.26 | 10.89 | 14.09 | 25.640 | 30 | PASS |

MPE Prediction (802.11ac_VHT80 5150~5250)

MIMO gain= $G+(10 \log N)= 3.01+3.01= 6.02\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.21 | (dBm) |
| Average output power at antenna input terminal: | 26.363314 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 26.363314 | (mW) |
| Peak Antenna gain (Maximum): | 6.02 | (dBi) |
| Peak Antenna gain (linear): | 3.9994475 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5210 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.021 | (mW/cm ²) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.021 mW/cm ² . | | |
| This is below the uncontrolled exposure limit of 1 mW/cm ² at 5210MHz. | | |

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MPE Prediction (802.11ac_VHT80 5250~5350)

MIMO gain= $G+(10 \log N)= 3.01+3.01= 6.02\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.24 | (dBm) |
| Average output power at antenna input terminal: | 26.546056 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 26.546056 | (mW) |
| Peak Antenna gain (Maximum): | 6.02 | (dBi) |
| Peak Antenna gain (linear): | 3.9994475 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5290 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.021 | (mW/cm ²) |
| Measurement Result | | |
| The predicted power density level at 20 cm is 0.021 mW/cm ² . | | |
| This is below the uncontrolled exposure limit of 1 mW/cm ² at 5290MHz. | | |

MPE Prediction (802.11ac_VHT80 5470~5725)

MIMO gain= $G+(10 \log N)= 4.11+3.01= 7.12\text{dBm}$

| | | |
|---|-----------|-----------------------|
| Average output power at antenna input terminal: | 14.18 | (dBm) |
| Average output power at antenna input terminal: | 26.18183 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 26.18183 | (mW) |
| Peak Antenna gain (Maximum): | 7.12 | (dBi) |
| Peak Antenna gain (linear): | 5.1522864 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5610 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.027 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.027 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5610MHz.

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MPE Prediction (802.11ac_VHT80 5725~5850)

MIMO gain= $G+(10 \log N)= 2.66+3.01= 5.67\text{dBm}$

| | | |
|---|----------|-----------------------|
| Average output power at antenna input terminal: | 14.09 | (dBm) |
| Average output power at antenna input terminal: | 25.64484 | (mW) |
| Duty cycle: | 100 | (%) |
| Maximum Pav : | 25.64484 | (mW) |
| Peak Antenna gain (Maximum): | 5.67 | (dBi) |
| Peak Antenna gain (linear): | 3.689776 | (numeric) |
| Prediction distance: | 20 | (cm) |
| Prediction frequency: | 5775 | (MHz) |
| MPE limit for uncontrolled exposure at prediction | 1 | (mW/cm ²) |
| Power density at predication frequency at 20 (cm) | 0.019 | (mW/cm ²) |

Measurement Result

The predicted power density level at 20 cm is 0.019 mW/cm².

This is below the uncontrolled exposure limit of 1 mW/cm² at 5775MHz.

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Collocated MPE Analysis:

The modem may transmit simultaneously with other collocated radio transmitters within a host device, provided the following conditions are met:

- Each collocated radio transmitter has been certified by FCC for mobile application (that will be met since SQNS module will have its own FCC ID and host device will have its own FCC ID)
- At least 20 cm separation distance between the antennas of the collocated transmitters and the user's body must be maintained at all times (host installation should taking care of that)

The output power and antenna gain in a collocated configuration must not exceed the limits and configurations stipulated in the following table 1. The power density calculations for the individual transmitters per wireless technology at an exposure minimum separation distance of 20cm.

Exclusion of test condition:

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on calculated or measured field strengths or power density, is ≤ 1.0 .

$$MPE\ ratio1 + MPE\ ratio2 + MPE\ ratio3 \leq 1.0$$

The spreadsheet as FCC deduces, and releases is employed to conduct the measurement:

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Table 1: Collocated MPE Calculation (Worst-case table)

| Technology | Frequency (MHz) | Max Conducted Power (dBm) | Max Gain (dBi) | Duty Cycle | FCC Power Density @20cm (mW/cm ²) | FCC MPE Limit (mW/cm ²) |
|--------------------|-----------------|---------------------------|----------------|------------|---|-------------------------------------|
| BT (BR) | 2480 | 1.28 | 3.11 | 0.58 | 0.000 | 1.000 |
| WLAN (802.11n 20) | 2452 | 16.46 | 6.37 | 1 | 0.038 | 1.000 |
| UNII (802.11 n 20) | 5320 | 14.49 | 6.02 | 1 | 0.022 | 1.000 |

Scenario 1:

BT +WLAN +UNII

| BT (mW/c m ²) | FCC MPE Limit (mW/c m ²) | (BT) / MPE Result | WLAN (mW/c m ²) | FCC MPE Limit (mW/c m ²) | (WLAN) / MPE Result | UNII (mW/c m ²) | FCC MPE Limit (mW/c m ²) | (UNII) / MPE Result | (BT +WLAN +UNII) | FCC Limit (mW/c m ²) |
|---------------------------|--------------------------------------|-------------------|-----------------------------|--------------------------------------|---------------------|-----------------------------|--------------------------------------|---------------------|------------------|----------------------------------|
| 0.000 | 1.000 | 0 | 0.038 | 1.000 | 0.038 | 0.022 | 1.000 | 0.022 | 0.06 | 1.000 |

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