

EXHIBIT 11 - MPE CALCULATION DATA

FCC ID: KBCIX260MPIA555BT

Applicant: ITRONIX, Corp.

Model: IX260 with three co-located transmitters listed below

1.) AIRCARD555 with IX260 blade antenna

-supporting calculations on pages 3 & 4

	<u>Max Peak</u>	<u>Average</u>
Tx Freq: 824.47 Power @ antenna terminal input:	24.65	23.0
Tx Freq: 835.89 Power @ antenna terminal input:	24.36	23.0
Tx Freq: 848.31 Power @ antenna terminal input:	24.47	23.0
Antenna gain: -0.4 dB		
Tx Freq: 1851.25 Power @ antenna terminal input:	24.42	23.0
Tx Freq: 1880.00 Power @ antenna terminal input:	24.42	23.0
Tx Freq: 1908.75 Power @ antenna terminal input:	24.35	23.0
Antenna Gain: -3.2 dBi		

2.) MPI350 with Rangestar antenna PN 100929

-supporting calculations on page 5

Tx Freq: 2412 MHz
 Max Peak Power @ antenna terminal input: 21.2 dBm
 Antenna Gain: 4.5 dBi

3.) Bluetooth with Rangestar antenna PN 100929

-supporting calculations on page 6

Tx Freq: 2402 MHz
 Max Peak Power @ antenna terminal input: 14.46 dBm
 Antenna Gain: 4.5 dBi

Multiple Frequency Exposure Requirements

The MPE calculations are submitted for multiple frequency exposure criteria. The ratio of the field strength or power density to the applicable exposure limit at the exposure location was determined for each transmitter below and the sum of these ratios does not exceed the 1 mW/cm² limit for uncontrolled exposure / general population exposure limits detailed in CFR 47, Part 1.1310.

Ratio 1	Ratio 2	Ratio 3	Limit mW/cm ²
AIRCARD555/Cell CDMA	MPI350	Bluetooth	<1.0
0.056/0.55	0.074/1.0	0.016/1	<1.0
= .101	= .074	= .016	<1.0
Sum = .191 (mW/cm ²)			<1.0

Ratio 1	Ratio 2	Ratio 3	Limit mW/cm ²
AIRCARD555/PCS CDMA	MPI350	Bluetooth	<1.0
0.056/1	0.074/1.0	0.016/1	<1.0
= .056	= .074	= .016	<1.0
Sum = .146 (mW/cm ²)			<1.0

Conclusion

We believe that the MPE evaluation was based on the worst case location due to the following:

We assumed the highest gain for each antenna and the maximum peak power output as measured at the antenna terminal for each transmitter rather than average. The ratio of the field strength or power density to the applicable exposure limit at the exposure location was determined for each transmitter. The sum of the individual power density ratios for the three transmitter antenna combinations at this 20 cm location is below the 1.0 mW/cm² limit for general population uncontrolled exposure limits detailed in CFR 47, Part 1.1310. Assuming a fictional point in space for the exposure location 20 cm from each antenna, where the direction of maximum antenna gain and maximum power output, from all three sources, could coincidentally align for a worst case exposure location.

The actual radiated power from each antenna would in fact be reduced by a minimum of 1.3 dB at 1850 MHz and 1.6 dB at 2410 MHz due to the loss in about 20 inches of coax feeding each antenna. So it is not likely that the actual power density could ever reach the worst case calculated levels that follow.

Prediction of MPE Limit OET Bulletin 65, Edition 97-01

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

$$R = \sqrt{\frac{PG}{4\pi S}}$$

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
R= distance to the center of radiation of the antenna

Choose



Occupational/Controlled
General Population/Uncontrolled

☐
☒

ENTER



Tx Frequency: _____ (MHz)
Maximum Peak Power at Antenna Input Terminal: _____ (dBm)
Antenna gain (typical)+9dB for 8-element array: _____ (dBi)

824.47
24.65
-0.10

S= _____ 0.55 (mW/cm²)

P= _____ 291.7427 (mW)

G= _____ 0.98 (numeric)

R = 6.42 (cm)

S (mw/cm²)
at 20cm

0.056657756

Choose



Occupational/Controlled
General Population/Uncontrolled

☐
☒

ENTER



Tx Frequency:

1880.00	(MHz)
24.42	(dBm)
-3.20	(dBi)

Maximum Peak Power at Antenna Input Terminal:

Antenna gain (typical)+9dB for 8-element array:

S= 1.00 (mW/cm²)

P= 276.6942 (mW)

G= 0.48 (numeric)

R = 3.25 (cm)

S (mw/cm²)
at 20cm

0.026318393

Choose



Occupational/Controlled



General Population/Uncontrolled



ENTER



Tx Frequency:

2412.00 (MHz)

Maximum Peak Power at Antenna Input Terminal:

21.20 (dBm)

Antenna gain (typical)+9dB for 8-element array:

4.50 (dBi)

S= 1.00 (mW/cm²)

P= 131.8257 (mW)

G= 2.82 (numeric)

R = 5.44 (cm)

S (mw/cm²)
at 20cm

0.073834505

Choose



Occupational/Controlled

☐

General Population/Uncontrolled

☒

ENTER



Tx Frequency:

2402.00 (MHz)

Maximum Peak Power at Antenna Input Terminal:

14.46 (dBm)

Antenna gain (typical)+9dB for 8-element array:

4.50 (dBi)

S= 1.00 (mW/cm²)

P= 27.9254 (mW)

G= 2.82 (numeric)

R = 2.50 (cm)

S (mw/cm²)
at 20cm

0.015640815