The effective eirp for each additional radio operating in a band is determined by looking at the increase in total eirp within that band as the additional radio comes on-line. In the 5150-5250 MHz band the effective eirp of the additional radios is 0 since the output power is backed off on the existing radios to maintain the total power below 17dBm and eirp below 23dBm.

NII 3 = 5470-5725 MHz
NII 2 = 5250-5350 MHz
NII 1 = 5150-5250 MHz

EIRP per additional radio (mW) = Delta between the total EIRP for X number of radios and X-1 number of radios

Note - the power levels listed here were taken from the original testing. As these are equal to or higher than the power used in the XR1000, this represents a worse case calculation. In addition, this calculation was based on a minimum of 4 radios installed into a host system. As the XR1000 only supports two radios, the existing calculations represent a worse case condition.

Radios operating in band	Band	Total EIRP (dBm)	Total EIRP (mW)	EIRP per additional radio (mW)	
1	NII 3	26.7	468	468	NII 3 (#1)
2	NII 3	29.7	933	466	NII 3 (#2)
3	NII 3	30.0	1000	67	NII 3 (#3)
4	NII 3	30.0	1000	0	NII 3 (#4)
5	NII 3	30.0	1000	0	NII 3 (#5)
6	NII 3	30.0	1000	0	NII 3 (#6)
7	NII 3	30.0	1000	0	NII 3 (#7)
8	NII 3	30.0	1000	0	NII 3 (#8)
1	NII 2	26.5	447	447	NII 2 (#1)
2	NII 2	29.5	891	445	NII 2 (#2)
3	NII 2	30.0	1000	109	NII 2 (#3)
4	NII 2	30.0	1000	0	NII 2 (#4)
1	NII 1	22.6	182	182	NII 1 (#1)
2	NII 1	23.0	200	18	NII 1 (#2)
3	NII 1	23.0	200	0	NII 1 (#3)
4	NII 1	23.0	200	0	NII 1 (#4)
1	5.7 DTS	27.6	575	575	5.7 DTS (#1)
2	5.7 DTS	30.6	1151	575	5.7 DTS (#2)
3	5.7 DTS	32.4	1726	575	5.7 DTS (#3)
4	5.7 DTS	33.6	2302	575	5.7 DTS (#4)
5	5.7 DTS	34.6	2877	575	5.7 DTS (#5)
1	2.4 DTS	28.2	661	661	2.4 DTS (#1)
2	2.4 DTS	31.2	1318	658	2.4 DTS (#2)
3	2.4 DTS	33.0	1995	677	2.4 DTS (#3)

As this application is requesting grant notes to allow multiple radio modules to be collocated the rf exposure calculation needs to account for multiple radios being operational simultaneously. The following page provides calculations for the power density 20cm from the host system with 4, 8, 12 and 16 co-located modules.
The calculations are conservative as they assume all radios would be transmitting at 100% duty cycle and does not consider the separation distance between the individual modules' antennas.

Band	EIRP	Ranking
NII 3 #1	468	9
NII 3 #2	466	10
NII 3 #3	67	15
NII 3 #4	0	17
NII 3 #5	0	17
NII 3 #6	0	17
NII 3 #7	0	17
NII 3 #8	0	17
NII 2 #1	447	11
NII 2 #2	445	12
NII 2 #3	109	14
NII 2 #4	0	17
NII 1 #1	182	13
NII 1 #2	18	16
NII 1 #3	0	17
NII 1 #4	0	17
5.7 DTS #1	575	5
5.7 DTS #2	575	5
5.7 DTS #3	575	4
5.7 DTS #4	575	7
5.7 DTS #5	575	7
2.4 DTS #1	661	2
2.4 DTS #2	658	3
2.4 DTS #3	677	1

This table shows the eirp increase when a radio is turned on in a specific band. For example, the first radio truned on in NII band 3 adds 468mW of eirp to the total eirp from the host device, the second radio in that band adds 466mW, the third 67mW and the fourth 0mW.

Listing the eirps in order of power, highest first, we can then determine the maximum eirp from the complete device with multiple radios operating. This allows the rf exposure hazard to be evaluated based on a maximum power density of $1mW/cm^2$ allowed for devices operating in either 2.4GHz or 5GHz bands:

Band	EIRP	Ranking	Total eirp
2.4 DTS #3	677	1	677
2.4 DTS #1	661	2	1338
2.4 DTS #2	658	3	1995
5.7 DTS #3	575	4	2571
5.7 DTS #1	575	5	3146
5.7 DTS #2	575	5	3722
5.7 DTS #4	575	7	4297
5.7 DTS #5	575	8	4872
NII 3 #1	468	9	5340
NII 3 #2	466	10	5806
NII 2 #1	447	11	6252
NII 2 #2	445	12	6697
NII 1 #1	182	13	6879
NII 2 #3	109	14	6988
NII 3 #3	67	15	7054
NII 1 #2	18	16	7072
NII 3 #4	0	17	7072
NII 3 #5	0	18	7072
NII 3 #6	0	19	7072
NII 3 #7	0	20	7072
NII 3 #8	0	21	7072
NII 2 #4	0	22	7072
NII 1 #3	0	23	7072
NII 1 #4	0	24	7072

Once there are a total of 16 radios operational the total eirp remains constant (i.e the maximum eirp per band has been reached)

For 4 radios operating simultaneously:

Total EIRP:	2571	mW	
S @ 20cm:	**0.51**	**mW/cm^2**	5.1 W/m^2
Minimum separation distance for 1mW/cm^2:	**14.3**	**cm**	

For 8 radios operating simultaneously:

Total EIRP:	4872	mW	
S @ 20cm:	**0.97**	**mW/cm^2**	9.7 W/m^2
Minimum separation distance for 1mW/cm^2:	**19.7**	**cm**	

For 12 radios operating simultaneously:

Total EIRP:	6697	mW	
S @ 20cm:	**1.33**	**mW/cm^2**	13.3 W/m^2
Minimum separation distance for 1mW/cm^2:	**23.1**	**cm**	

For 16 radios operating simultaneously:

Total EIRP:	7072	mW	
S @ 20cm:	**1.41**	**mW/cm^2**	14.1 W/m^2
Minimum separation distance for 1mW/cm^2:	**23.7**	**cm**	

Note: Power Density (S) is calculated from:

$S = \frac{EIRP}{4\pi d^2}$ where d is the distance from the device.

Note: The 3x3 module has higher eirp than the 2x2 radio and so the MPE values for a host system containing either 2x2 or 3x3 modules would use the 3x3 MPE values as a conservative estimate for the rf exposure hazard.