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Report On

RF Exposure Compliance Boundary Assessment of the
Nokia Solutions and Networks
AirScale Base Station Products and Flexi Base Station Products
(462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz)

Document 75933222 Report 01 Issue 6 April 2018

Product Service

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REPORT ON

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This report has been up issued to Issue 6 and should be read in place of Issue 5. This report has been up issued to Issue 6 to change the frequency ranges 5170-5250 MHZ and 5735-5835 MHz to 5150-5250MHz and 5725-5850MHz

Product Service

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SECTION 1

REPORT SUMMARY

RF Exposure Compliance Boundary Assessment of the
Nokia Solutions and Networks AirScale Base Station Products and Flexi Base Station Products
(462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz)

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the RF Exposure Compliance Boundary Assessment of the Nokia Solutions and Networks AirScale Base Station Products and Flexi Base Station Products (462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz) to the requirements of the applied test specifications.

Objective	To perform RF Exposure Compliance Boundary Assessment to determine the Equipment Under Test's (EUT's) compliance of the applied rules.
Applicant	Nokia Solutions and Networks
Manufacturer	Nokia Solutions and Networks Oy
Manufacturing Description	AirScale Base Station Products and Flexi Base Station Products
Model Number(s)	Nokia AirScale Base Station Products and Flexi Base Station Products (462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz) In this document Flexi Base Station Product is a common name for Flexi Lite BTS, Flexi WCDMA Base Station, Flexi Multiradio Base Station, Flexi Multiradio 10 Base Station, Flexi Compact BTS and Flexi Zone BTS, Flexi Multiradio BTS GSM/EDGE and Flexi EDGE BTS
Power Variants	0.5, 1, 2, 5, 8, 10, 20, 30, 40, 50, 60, 70, 80, 90, 96, 100, 110, 120, 128, 130, 140, 150, 160 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350 and 360 W
Test Specification/Issue/Date	EN 62311:2008 CFR 47 Pt1.1310:2016 Health Canada Safety Code 6 ARPANSA Radiation Protection Series No.3
Related Documents	EN 50385:2002

1.2 BRIEF SUMMARY OF RESULTS

1.2.1 Compliance Boundaries (cm) for General Public Levels

Power (W)	Frequency Range (MHz)							
	462.5-467.5	617-652	698-960	1452-1492	1710-2690	3400-3800	5150-5250	5725-5850
	Distance (cm)							
0.5	101	91	87	68	64	51	44	43
1	142	129	123	123	91	72	10	10
2	201	182	174	136	128	102	88	85
5	317	287	275	214	203	161	139	135
8	401	363	348	271	256	203	176	170
10	448	406	389	303	287	227	197	190
20	633	574	550	428	405	320	278	269
30	775	703	674	525	496	392	341	329
40	895	811	778	606	573	453	393	380
50	1000	907	870	677	460	506	440	425
60	1100	993	952	742	500	555	481	465
70	1180	1073	840	801	701	599	520	502
80	1266	1147	1100	856	810	640	556	537
90	1342	1216	1166	908	859	679	589	569
96	1386	1256	1204	938	887	701	609	588
100	1415	1283	1230	957	905	716	621	600
110	1484	1345	1289	1004	949	751	651	629
120	1550	1405	1347	1049	992	784	681	658
128	1601	1451	1391	1083	1024	810	703	679
130	1614	1462	1402	1092	1032	816	708	685
140	1674	1517	1455	1133	1071	847	735	710
150	1733	1571	1506	1172	1109	877	761	735
160	1790	1622	1555	1211	1145	905	786	759
170	1844	1671	1602	1248	1180	933	810	782
180	1898	1720	1649	1284	1214	960	833	805
190	1951	1768	1695	1320	1248	987	857	828
200	2001	1814	1739	1354	1280	1012	879	849
210	2050	1858	1781	1387	1312	1037	900	870
220	2098	1901	1823	1419	1342	1061	921	890
230	2147	1945	1865	1452	1373	1086	942	911
240	2192	1986	1904	1483	1402	1109	962	930
250	2238	2028	1944	1514	1431	1132	982	949
260	2282	2068	1983	1544	1460	1154	1002	968
270	2324	2106	2019	1572	1487	1176	1020	986
280	2367	2145	2057	1602	1515	1198	1039	1004
290	2409	2183	2093	1629	1541	1219	1057	1022
300	2451	2221	2129	1658	1568	1240	1076	1039
310	2490	2257	2164	1685	1593	1260	1093	1056
320	2531	2294	2199	1712	1619	1280	1111	1073
330	2572	2331	2235	1740	1645	1301	1129	1091
340	2608	2363	2266	1764	1668	1319	1145	1106
350	2647	2399	2300	1791	1693	1339	1162	1123
360	2684	2432	2332	1816	1717	1358	1178	1138

1.2.2 Compliance Boundaries (cm) for Occupational Levels

Power (W)	Frequency Range (MHz)							
	462.5-467.5	617-652	698-960	1452-1492	1710-2690	3400-3800	5150-5250	5725-5850
	Distance (cm)							
0.5	40	35	33	27	26	22	20	19
1	57	49	46	46	37	31	5	5
2	80	69	65	54	52	43	39	38
5	126	109	103	85	81	68	62	60
8	159	138	130	107	103	86	78	76
10	178	154	145	119	115	97	87	85
20	251	218	205	169	162	136	123	120
30	308	266	251	206	198	167	150	147
40	355	308	289	238	190	193	174	169
50	397	344	323	266	229	215	194	189
60	435	377	354	292	280	236	213	207
70	470	407	390	315	250	255	230	224
80	502	435	409	337	323	272	245	239
90	532	461	434	357	343	289	260	253
96	550	476	448	369	354	298	269	262
100	561	486	457	376	361	304	274	267
110	589	510	479	394	379	319	288	280
120	615	532	501	412	396	333	300	293
128	635	550	517	426	409	344	310	302
130	640	554	521	429	412	347	313	305
140	664	575	541	445	427	360	324	316
150	687	595	560	461	442	373	336	327
160	710	615	578	476	457	385	347	338
170	731	633	595	490	471	396	357	348
180	753	652	613	505	484	408	368	358
190	774	670	630	519	498	419	378	368
200	794	687	646	532	511	430	388	378
210	813	704	662	545	523	441	397	387
220	832	720	677	558	535	451	406	396
230	851	737	693	571	548	461	416	405
240	869	753	708	583	559	471	425	413
250	887	768	722	595	571	481	434	422
260	905	784	737	606	582	490	442	430
270	922	798	750	618	593	499	450	438
280	939	813	764	629	604	509	459	447
290	955	827	778	640	615	518	467	454
300	972	842	791	651	625	527	475	462
310	988	855	804	662	635	535	482	470
320	1004	869	817	673	646	544	490	477
330	1020	883	830	684	656	553	498	485
340	1034	895	842	693	665	560	505	492
350	1050	909	855	703	675	569	513	499
360	1064	922	866	713	685	577	520	506

The distances are valid for antenna gain 16.4 dBi and RF power as indicated. For other antenna gains and/or RF-power, the compliance boundaries should be recalculated using the formulas in section 2.3 of this report.

1.3 PRODUCT INFORMATION

1.3.1 Attestation

The wireless device described within this report has been shown to be capable of compliance with the basic restrictions related to human exposure to electromagnetic fields for both General public and Occupational. The calculations shown in this report were made in accordance the procedures specified in the applied test specification(s).

1.3.2 Technical Description

The Equipment under test was a Nokia Solutions and Networks AirScale Base Station Products and Flexi Base Station Products (462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz). A full technical description can be found in the manufacturer's documentation.

All reported calculations were carried out on the relevant information supplied for the Nokia AirScale Base Station Products and Flexi Base Station Products (462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz) to demonstrate compliance with the applied test specification(s) the sample assessed was found to comply with the requirements of the applied rules.

1.4 SUMMARY

The RF Exposure Compliance Boundary assessment is based upon the following criteria:

The Nokia AirScale Base Station Products and Flexi Base Station Products operate in the frequency ranges 462.5-467.5 MHz, 617-652 MHz, 698-960 MHz, 1452-1492 MHz, 1710-2690 MHz, 3400-3800 MHz, 5150-5250 MHz and 5725-5850 MHz

Gain	16.4 dBi
Power	0.5, 1, 2, 5, 8, 10, 20, 30, 40, 50, 60, 70, 80, 90, 96, 100, 110, 120, 128, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350 and 360 W
Duty Cycle	100%

SECTION 2

TEST DETAILS

2.1 RATIONALE FOR ASSESSMENT OF THE RF EXPOSURE COMPLIANCE BOUNDARY

The aim of the assessment report is to evaluate the compliance boundary for a set of given input power(s) according to the basic restrictions (directly or indirectly via compliance with reference levels) related to human exposure to radio frequency electromagnetic fields.
The chosen assessment method to establish the compliance boundary in the far-field region is the reference method as defined in EN50383:2002 Clause 5.2; E-field or H-field calculation. The method of calculation used is defined in EN50383:2002; Clause 8.2.2, 8.2.3 and 8.2.4.
The calculated values have been compared with limits provided in the ICNIRP guidelines.
Calculations can be made in three separate regions, based on distance from the antenna. These are called:

- far-field region,
- radiating near-field region,
- reactive near-field region.

The theory that defines these regions is given in EN50383:2002 Annex A.

Far-field region

As shown in EN50383 Annex A, the far-field calculations are accurate when the distance, r, from an antenna of length D to a point of investigation is greater than

$$r = \frac{2D^2}{\lambda}$$

Where, r is the distance from the antenna to the point of investigation.

Radiating near-field region

The radiating near-field region of an antenna of length D as shown in EN50383 Annex A, this region is defined by

$$\frac{\lambda}{4} < r > \frac{2D^2}{\lambda}$$

Reactive near-field region

The reactive near-field region of an antenna as shown in EN50383 Annex A, this region is defined by

$$r \leq \frac{\lambda}{4}$$

Where, r is the distance from the antenna to the point of investigation.
Recommend λ/4 as the boundary between the radiated near-field and reactive near-field for RF Exposure Compliance Boundary compliance assessment.

2.2 ESTABLISHING WAVELENGTH AND 1/4 WAVELENGTH

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
462.5	0.648649	64.86486	0.162162	16.21622
465	0.645161	64.51613	0.16129	16.12903
467.5	0.641711	64.17112	0.160428	16.04278

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
617	0.486224	48.622366	0.121556	12.15559
634.5	0.472813	47.281324	0.118203	11.82033
652	0.460123	46.012270	0.115031	11.50307

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
698	0.429799	42.97994	0.10745	10.74499
829	0.361882	36.18818	0.09047	9.047045
960	0.3125	31.25	0.078125	7.8125

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
1452	0.206612	20.66116	0.051653	5.165289
1472	0.203804	20.38043	0.050951	5.095109
1492	0.201072	20.10724	0.050268	5.02681

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
1710	0.175439	17.54386	0.04386	4.385965
2200	0.136364	13.63636	0.034091	3.409091
2690	0.111524	11.15242	0.027881	2.788104

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
3400	0.088235	8.823529	0.022059	2.205882
3600	0.083333	8.333333	0.020833	2.083333
3800	0.078947	7.894737	0.019737	1.973684

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
5150	0.058252	5.825243	0.014563	1.456311
5200	0.057692	5.769231	0.014423	1.442308
5250	0.057143	5.714286	0.014286	1.428571

Frequency (MHz)	$\lambda = \frac{3x10^8}{f}$		$\frac{\lambda}{4}$	
	m	cm	m	cm
5725	0.052402	5.240175	0.013100	1.310044
5787.5	0.051836	5.183585	0.012959	1.295896
5850	0.051282	5.128205	0.012821	1.282051

2.3 FAR FIELD CALCULATIONS

The following calculations are based on: 16.4 dBi gain antenna

For 0.5W – 462.5 MHz
P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 101 centimetres or 1.01 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 1.70 W/m^2

S= 0.17 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 25.34 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.07 A/m

The following calculations are based on: 16.4 dBi gain antenna

For 0.5W – 617 MHz
P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 91 centimetres or 0.91metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 2.10 W/m^2

S= 0.21 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 28.12 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.07 A/m

The following calculations are based on: 16.4 dBi gain antenna

For 0.5W – 698 MHz

P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 87 centimetres or 0.87 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 2.29 W/m^2

S= 0.23 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 29.41 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.08 A/m

The following calculations are based on: 16.4 dBi gain antenna

For 0.5W – 1452 MHz

P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 68 centimetres or 0.68 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 3.76 W/m^2

S= 0.376 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 37.63 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.10 A/m

For 05W – 1710 MHz

P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 64 centimetres or 0.64 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$

S = 4.24 W/m^2

S= 0.42 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$

E = 39.98 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$

H = 0.11 A/m

For 0.5W – 3400 MHz

P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 51 centimetres or 0.51 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$

S = 6.68 W/m^2

S= 0.67 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$

E = 50.17 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$

H = 0.13 A/m

For 0.5W – 5150 MHz

P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 44 centimetres or 0.44 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$

S = 8.97 W/m^2

S= 0.90 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 58.16 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.15 A/m

For 0.5W – 5725 MHz

P = 0.5 Watts or 500 milliwatts
G = 43.652 Numeric Gain
r = 43 centimetres or 0.43 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 9.39 W/m^2

S= 0.94 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 59.51 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.16 A/m

For 360 W – 462.5 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 2432 centimetres or 24.32 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 1.73 W/m^2

S= 0.17 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 25.57 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.07 A/m

For 360 W – 617 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 2332 centimetres or 23.32metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 2.11 W/m^2

S= 0.21 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 28.22 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.07 A/m

For 360 W – 698 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 2332 centimetres or 23.32metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 2.29 W/m^2

S= 0.23 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 29.43 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.08 A/m

For 360 W – 1710 MHz

P = 160Watts or 160000 milliwatts
G = 43.652 Numeric Gain
r = 1717 centimetres or 17.17 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 4.23 W/m^2

S= 0.423 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 39.97 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.16 A/m

For 360W – 1452 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 1816 centimetres or 18.16 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 3.78 W/m^2

S= 0.38 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 37.79 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.10 A/m

For 360W – 3400 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 1358 centimetres or 13.58 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 6.78 W/m^2

S= 0.68 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 50.57 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.13 A/m

For 360W – 5150 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 1177 centimetres or 11.78 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$ S = 9.01 W/m^2

S= 0.90 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$ E = 58.27 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$ H = 0.15 A/m

For 360W – 5725 MHz

P = 360 Watts or 360000 milliwatts
G = 43.652 Numeric Gain
r = 1138 centimetres or 11.38 metres

The power flux:

$$S = \frac{PG_{(\theta,\phi)}}{4\pi r^2}$$

S = 9.65 W/m^2

S= 0.97 mW/cm^2

The electric field strength:

$$E = \frac{\sqrt{30PG}_{(\theta,\phi)}}{r}$$

E = 60.31 V/m

The magnetic field strength:

$$H = \frac{E}{\eta_o}$$

H = 0.16 A/m

The calculations meet the General Public Exposure Levels described in the ICNIRP Guidelines.
The calculations meet the General Public Exposure Levels described in the FCC 47CFR§1.1310.
The calculations meet the General Public Exposure Levels described in the Canada's RF Safety Code 6.
The calculations meet the General Public Exposure Levels described in the Australian Radiation Protection Series Publication No. 3
The calculations meet the Occupational Exposure Levels described in the ICNIRP Guidelines.
The calculations meet the Occupational Exposure Levels described in the FCC 47CFR§1.1310
The calculations meet the Occupational Exposure Levels described in the Canada's RF Safety Code 6
The calculations meet the Occupational Exposure Levels described in the Australian Radiation Protection Series Publication No. 3

SECTION 3

DISCLAIMERS AND COPYRIGHT

3.1 DISCLAIMERS AND COPYRIGHT

This report relates only to the actual item/items tested.

Product Service

ANNEX A

REGIONAL REQUIREMENTS

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0.065 - 1	-	610/f	1.6/f
1 - 10	-	610/f	1.6/f
10 - 400	10	61	0.162
400 - 2000	f/40	3*f^0.5	0.00796*f^0.5
2000 - 300000	50	137	0.363

Table A.1 – EN 62311:2008 Occupational Limits

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0.003 - 0.15	-	87	5
0.15 - 1	-	87/f	0.73/f
1 - 10	-	87/f^0.5	0.73/f
10 - 400	2	27	0.071
400 - 2000	f/200	1.375*f^0.5	0.00364*f^0.5
2000 - 300000	10	61	0.162

Table A.2 – EN 62311:2008 General Population Limits

Frequency Range (MHz)	S Field (mW/cm^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0 - 0.3	-	-	-
0.3 - 3	100	614	1.63
3 - 30	900/f^2	1842/f	4.89/f
30 - 300	1	61.4	0.163
300 - 1500	f/300	-	-
1500 - 100000	5	-	-

Table A.3 – CFR 47 Pt1.1310 Occupational Limits

Frequency Range (MHz)	S Field (mW/cm^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0 - 0.3	-	-	-
0.3 - 3	100	614	1.63
3 - 30	180/f^2	824/f	2.19/f
30 - 300	0.2	27.5	0.073
300 - 1500	f/1500	-	-
1500 - 100000	1	-	-

Table A.4 – CFR 47 Pt1.1310 General Population Limits

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
10 - 20	10	61.4	0.163
20 - 48	44.72/f^0.5	129.8/f^0.25	0.3444/f^0.25
48 - 100	6.455	49.33	0.1309
100 - 6000	0.6455*f^0.5	15.60*f^0.25	0.04138*f^0.25
6000 - 150000	50	137	0.364

Table A.5 – Health Canada Safety Code 6 Occupational Limits

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
10 - 20	2	27.46	0.0728
20 - 48	8.944/f^0.5	58.07/f^0.25	0.1540/f^0.25
48 - 300	1.291	22.06	0.05852
300 - 6000	0.02619*f^0.6834	3.142*f^0.3417	0.008335*f^0.3417
6000 - 15000	10	61.4	0.163

Table A.6 – Health Canada Safety Code 6 General Population Limits

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0.1 - 1	-	614	1.63/f
1 - 10	1000/f^2	614	1.63/f
10 - 400	10	61.4	0.163
400 - 2000	f/40	3.07*f^0.5	0.00814*f^0.5
2000 - 300000	50	137	0.364

Table A.7 – ARPANSA Radiation Protection Series No.3 Occupational Limits

Frequency Range (MHz)	Power Density (W/m^2)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)
0.1 - 0.15	-	86.8	4.86
0.15 - 1	-	86.8	0.729/f
1 - 10	-	86.8/f^0.5	0.729/f
10 - 400	2	27.4	0.0729
400 - 2000	f/200	1.37*f^0.5	0.00364*f^0.5
2000 - 300000	10	61.4	0.163

Table A.8 – ARPANSA Radiation Protection Series No.3 General Population Limits