

Exhibit 8 Manual - Confidential

Radio Frequency Electromagnetic Exposure

CDMA/GSM/LTE/WCDMA

Safety Information



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1 Introduction

This document provides information on Radio Frequency (RF) Electromagnetic Field (EMF) exposure from antennas either integrated in or connected to a radio base station (RBS) or a radio unit in the RBS 6000 family.

2 Compliance Boundaries for Electromagnetic Exposure

The compliance boundary defines the minimum separations that should be kept between the antenna and a person to ensure that the ICNIRP [1], FCC [2] and *Innovation, Science and Economic Development Canada* [3] RF exposure limits are not exceeded.

Ericsson has performed advanced numerical or experimental RF exposure assessments in accordance with European standards [4]-[6] in order to determine compliance boundaries for minimum and maximum power configurations of the RBS product with recommended antennas. The resulting dimensions, in meters, for a compliance boundary for both general public and occupational exposure are shown in the sections below for macro and micro RBS products.

The compliance boundary is defined as a cylinder or as a box surrounding the antenna/equipment. For configurations employing sector coverage antennas, the antenna/equipment is not located at the center of the compliance boundary. Instead it is located almost at the edge, facing towards the center of the cylinder/box. Figures illustrating the employed compliance boundaries for macro and micro configurations are provided in the subsections below.

2.1 Macro RBS

For the macro case, both cylindrical and box-shaped compliance boundaries are used as illustrated in Figure 1 and Figure 2. Box-shaped compliance boundaries are used for AIR configurations and for multicolumn MIMO configurations.

The distance between the back of the antenna and the cylinder/box is the "Distance behind antenna". The height of the cylinder/box is the antenna height plus a certain, equal distance above and below the antenna. For a box-shaped compliance boundary the 'Width' represents the width of the box.

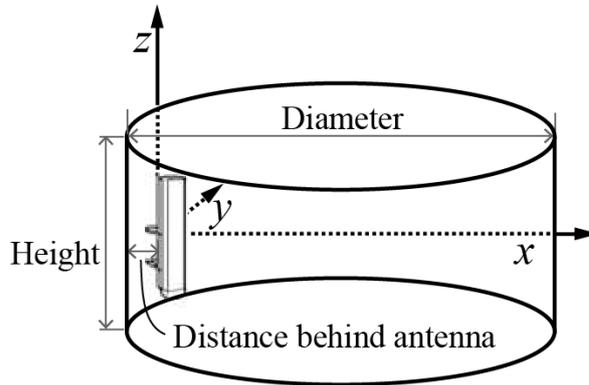


Figure 1. Cylindrical Compliance Boundary.

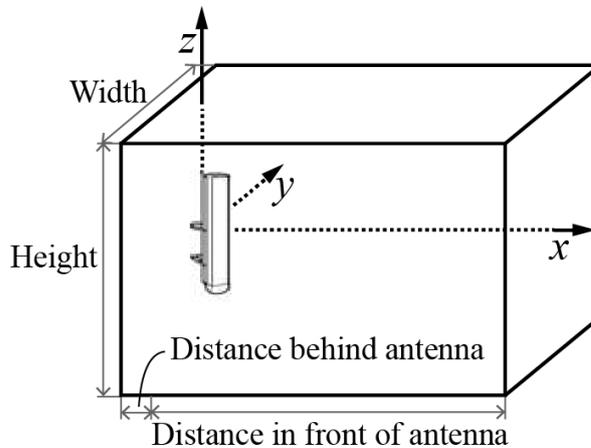


Figure 2. Box-shaped Compliance Boundary.

The resulting compliance boundary dimensions, in meters, for both general public and occupational exposure are shown in Table 1-1 and Table 1-2 for RU (internal radio unit), Tables 2-1, 2-2, 2-3, 2-4, and 2-5 for RRU (external radio unit), and Table 3 for AIR (antenna integrated radio unit).

It should be noted that Table 1 through Table 3 show examples for specified typical antennas and for minimum and maximum power levels, including the power tolerances and assumed transmission losses. As the antenna field distributions will differ for other antennas and power levels, calculations or measurements may be necessary to establish the compliance boundary for other configurations chosen by the customer. Other calculations or measurements may also be required if exposure limits other than [1] or [2] are specified in national regulations. For further information on RF exposure assessment methods, see [7].

The expanded uncertainty ($k=2$) is ± 2.3 dB for the underlying calculations of the power density used for assessment of the compliance boundary dimensions listed in Table 1 through Table 3.



Characteristics of the antennas recommended and tested for macro RBS 6000 configurations are listed in Table 4.

The total powers fed to the antennas (including tolerance and assumed transmission loss) are given in Table 5 for using RU, Table 6-1 and Table 6-2 for using RRU and Table 7-1 and 7-2 for using AIR.

Table 1-1 Cylindrical Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Output Powers using RU (Internal Radio Unit) with 0.6 dB Tolerance and Assumed 3 dB Transmission Loss.

Mode and output power for RU (internal radio unit)			Dimensions of the cylindrical compliance boundary (m)					
			Diameter		Height		Distance behind antenna	
Band	Standard ¹	Nominal output power from the radio	GP	O	GP	O	GP	O
B0 (900P)	G/W/L	20 W	0.9	0.4	2.6	2.6	<0.1	<0.1
		100 W	5.4	1.0	2.7	2.6	<0.1	<0.1
B1 (2100)	W/L	20 W	0.9	0.3	1.4	1.4	<0.1	<0.1
		100 W	4.8	0.9	1.6	1.4	<0.1	<0.1
B2 (1900)	G/W/L/C	20 W	0.9	0.3	1.4	1.4	<0.1	<0.1
	C	80 W	4.1	0.8	1.5	1.4	<0.1	<0.1
	G/W/L	100 W	4.9	0.9	1.6	1.4	<0.1	<0.1
B3 (1800)	G/W/L	20 W	1.1	0.3	1.4	1.4	<0.1	<0.1
		100 W	5.0	1.1	1.5	1.4	<0.1	<0.1
B4 (17/2100)	W/L/C	20 W	0.9	0.3	1.4	1.4	<0.1	<0.1
		80 W	4.0	0.8	1.6	1.4	<0.1	<0.1
B5 (850)	G/W/L/C	20 W	2.5	0.6	1.4	1.3	<0.1	<0.1
		100 W	5.7	2.5	1.6	1.4	<0.1	<0.1
B7 (2600)	L	20 W	1.0	0.3	1.4	1.4	<0.1	<0.1
		60 W	3.2	0.6	1.4	1.4	<0.1	<0.1
B8 (900E)	W/L	20 W	2.4	0.6	1.3	1.3	<0.1	<0.1
		100 W	5.6	2.5	1.6	1.3	<0.1	<0.1
	G	20 W	0.9	0.4	2.6	2.6	<0.1	<0.1
		100 W	5.4	1.0	2.7	2.6	<0.1	<0.1
B11 (1500)	W	20 W	1.5	0.4	1.5	1.4	<0.1	<0.1
		60 W	4.6	1.0	1.6	1.4	<0.1	<0.1
B12 (700 ₁₂)	L	20 W	2.7	0.6	2.0	1.9	<0.1	<0.1
		60 W	5.7	1.5	2.2	2.0	<0.1	<0.1
B13 (700 ₁₃)	L	20 W	2.7	0.6	2.0	1.9	<0.1	<0.1
		60 W	5.6	1.5	2.2	2.0	<0.1	<0.1
B14 (700 ₁₄)	L	20 W	2.6	0.6	2.0	1.9	<0.1	<0.1
		60 W	5.6	1.4	2.2	2.0	<0.1	<0.1
B20 (800DD)	L	20 W	2.6	0.7	1.4	1.3	<0.1	<0.1
		80 W	5.2	2.3	1.6	1.3	<0.1	<0.1
B28 (700)	L	20 W	2.5	0.6	1.4	1.4	<0.1	<0.1
		100 W	5.7	2.5	2.0	1.4	<0.1	<0.1

¹ The standards are abbreviated in the tables of this document: G/W/L/C = GSM/WCDMA/LTE/CDMA.



Table 2-2 Box Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Output Powers using RU (Internal Radio Unit) with 0.6 dB Tolerance and Assumed 3 dB Transmission Loss.

Mode and output power for RU (internal radio unit) using MIMO antenna and 0.6 dB tolerance				Dimensions of the box-shaped compliance boundary (m)							
				Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Number of Tx/Rx	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B13(700)	L	4	240 W	16	7.1	12.6	5.4	3.2	2.2	0.1	0.1



Table 3-1 Cylindrical Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Output Powers using RRU (External Radio Unit) with 0.6 dB Tolerance and Assumed 0.5 dB Transmission Loss.

Mode and output power for RRU (external radio unit)			Dimensions of the cylindrical compliance boundary (m)					
			Diameter		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
B0 (900P)	G/W/L	20 W	1.6	0.4	2.6	2.6	<0.1	<0.1
		120 W	9.8	2.0	2.9	2.6	<0.1	<0.1
B1 (2100)	W/L	20 W	1.5	0.4	1.4	1.4	<0.1	<0.1
		120 W	9.3	2.3	1.8	1.5	<0.1	<0.1
B2 (1900)	G/W/L	20 W	1.7	0.4	1.4	1.4	<0.1	<0.1
		160 W	8.9	2.3	1.7	1.5	<0.1	<0.1
B3 (1800)	G/W/L	20 W	1.8	0.4	1.4	1.4	<0.1	<0.1
		160 W	9.3	3.5	1.7	1.5	<0.1	<0.1
B4 (17/2100)	W/L/C	20 W	1.5	0.4	1.4	1.4	<0.1	<0.1
		120 W	7.8	2.0	1.7	1.4	<0.1	<0.1
B5 (850)	G/W/L/C	20 W	3.4	1.2	1.4	1.3	<0.1	<0.1
		160 W	9.7	4.4	2.0	1.5	<0.1	<0.1
B7 (2600)	L	20 W	1.9	0.4	1.4	1.4	<0.1	<0.1
		160 W ²	10.3	3.7	1.6	1.5	<0.2	<0.1
B8 (900E)	G/W/L ³	20 W	3.3	1.2	1.4	1.3	<0.1	<0.1
		160 W	9.5	4.3	2.0	1.4	<0.1	<0.1
	G ⁴	20 W	1.6	0.4	2.6	2.6	<0.1	<0.1
		120 W	9.9	2.0	2.9	2.6	<0.1	<0.1
B9 (17/1800)	W/L	20 W	1.8	0.4	1.4	1.4	<0.1	<0.1
		60 W	5.2	1.2	1.6	1.4	<0.1	<0.1
B11 (1500)	W/L	20 W	3.0	0.6	1.6	1.4	<0.1	<0.1
		80 W	7.4	1.9	1.8	1.6	<0.1	<0.1
B12 (700 ₁₂)	L	20 W	4.2	0.9	2.0	1.9	<0.1	<0.1
		80 W	9.0	3.8	2.4	2.0	<0.1	<0.1
B13 (700 ₁₃)	L	20 W	4.1	0.9	2.0	1.9	<0.1	<0.1
		120 W	10.8	4.7	2.5	2.1	<0.1	<0.1
B20 (800DD)	L	20 W	3.5	1.4	1.4	1.3	<0.1	<0.1
		80 W	7.0	3.2	1.8	1.4	<0.1	<0.1
B25 (1900G)	L/C	20 W	1.7	0.4	1.4	1.4	<0.1	<0.1
		80 W	6.0	1.3	1.6	1.4	<0.1	<0.1
B25 (1900)	W/L	160 W	8.9	2.3	1.7	1.5	<0.1	<0.1
B26 (850)	L/C	20 W	3.4	1.2	1.4	1.3	<0.1	<0.1
		80 W	6.8	3.1	1.7	1.4	<0.1	<0.1
B28 (700)	L	20 W	3.4	1.2	1.6	1.4	<0.1	<0.1
		160 W	9.6	4.4	2.9	1.8	0.2	<0.1
B29 (700)	L	20 W	3.4	1.2	1.6	1.4	<0.1	<0.1
		80 W	7.0	3.0	2.3	1.6	<0.1	<0.1
B31 (450)	L	20 W	4.7	1.2	2.3	2.0	<0.1	<0.1

² This row shows results for the KRE 101 2085/1 v02 antenna.

³ This row shows the compliance boundary obtained with the X-pol macro RBS directional antenna (KRE 101 2021/1).

⁴ This row shows the compliance boundary obtained with the X-pol macro RBS directional antenna (KRE 101 2057/1).



Mode and output power for RRU (external radio unit)			Dimensions of the cylindrical compliance boundary (m)					
			Diameter		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
		80 W	9.5	4.2	2.9	2.2	<0.1	<0.1
B32 (1500)	L	20 W	3.0	0.6	1.6	1.4	<0.1	<0.1
		160 W	10.6	4.5	2.0	1.6	<0.1	<0.1
B38 (2600)	L	20 W	1.9	0.4	1.4	1.4	<0.1	<0.1
		80 W	6.4	1.4	1.4	1.4	<0.1	<0.1
B39 (1900)	L	20 W	1.8	0.4	1.4	1.4	<0.1	<0.1
		80 W	6.1	1.3	1.6	1.4	<0.1	<0.1
B40 (2300)	L	20 W	1.6	0.4	1.4	1.4	<0.1	<0.1
		100 W	7.0	1.5	1.5	1.4	<0.1	<0.1
B41 (2500)	L	20 W	1.9	0.4	1.4	1.4	<0.1	<0.1
		120 W	8.0	2.1	1.4	1.4	<0.1	<0.1
B42 (3500)	L	20 W	3.3	1.6	1.2	1.2	<0.1	<0.1
		80 W	6.4	3.0	1.2	1.2	<0.1	<0.1
B66 (17/2100)	W/L	20 W	1.5	0.4	1.4	1.4	<0.1	<0.1
		160 W	9.2	2.3	1.8	1.5	0.1	<0.1

Table 2-2 Cylindrical Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Output Powers using RRU (External Radio Unit) operating on multiple bands with 0.6 dB Tolerance and Assumed 0.5 dB Transmission Loss.

Mode and output power for RRU (external radio unit)			Dimensions of the cylindrical compliance boundary (m)					
			Diameter		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
B18 / B28 ⁵	L	10 W	2.3	0.6	1.4	1.4	<0.1	<0.1
		100 W	7.6	3.4	2.2	1.5	<0.1	<0.1
B3 ⁶	L	2 W	0.3	0.2	1.4	1.4	<0.1	<0.1
		20 W	1.8	0.4	1.4	1.4	<0.1	<0.1

⁵ This row shows the result for RRU 22F2 with operation on B18 and B28 with power ratios of 60 % and 40 % on these bands, respectively.

⁶ This row shows the results for RRU 22F1.



Table 2-3 *Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Power Configurations with MIMO Multi-Column Antennas using RRU (External Radio Unit) with 1 dB Tolerance and Assumed 0.5 dB Transmission Loss.*

Mode and output power for RRU (external radio unit) using MIMO antenna and 1 dB tolerance				Dimensions of the box-shaped compliance boundary (m)							
				Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Number of Tx/Rx	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B38 (2600)	L	8	40 W	11.2	2.7	9.4	2.0	2.1	1.6	<0.1	<0.1
			120 W	20.2	8.3	17.1	6.5	2.8	1.8	0.2	<0.1
B39 (1900)	L	8	40 W	7.8	2.9	9.0	2.2	1.6	1.4	<0.1	<0.1
			80 W	11.2	4.8	13.2	5.2	1.9	1.4	0.3	<0.1
B41 (2500)	L	8	40 W	11.2	2.7	9.4	2.0	2.1	1.6	<0.1	<0.1
			240 W	28.8	12.4	24.4	10.1	3.6	2.1	0.2	<0.1

Table 2-4 *Cylindrical Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Power Configurations with RRU (External Radio Unit) with 1 dB Tolerance and Assumed 0.5 dB Transmission Loss.*

Mode and output power for RRU (external radio unit) with 1 dB tolerance			Dimensions of the cylindrical compliance boundary (m)					
			Diameter		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
B38 (2600)	L	20 W	2.0	0.5	1.4	1.4	<0.1	<0.1
		80 W	6.7	1.5	1.4	1.4	<0.1	<0.1
B40 (2300)	L	20 W	1.6	0.4	1.4	1.4	<0.1	<0.1
		40 W	3.9	0.7	1.4	1.4	<0.1	<0.1

Table 2-5 *Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Power Configurations with MIMO Multi-Column Antennas using RRU (External Radio Unit) with 0.6 dB Tolerance and Assumed 0.5 dB Transmission Loss.*

Mode and output power for RRU (external radio unit) using MIMO antenna and 0.6 dB tolerance				Dimensions of the box-shaped compliance boundary (m)							
				Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Number of Tx/Rx	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100)	W/L	4	160 W	12.7	5.3	9.9	3.6	3.5	1.6	<0.1	<0.1
B2 (1900)	G/W/L	4	40 W	7.2	1.4	4.6	0.7	1.6	1.5	<0.1	<0.1
			160 W	15.4	6.4	11.7	3.8	2.0	1.6	0.1	<0.1
B3 (1800)	L	4	20 W	4.6	0.8	2.3	0.4	1.6	1.5	<0.1	<0.1
			40 W	7.1	1.7	4.9	0.9	1.6	1.5	<0.1	<0.1
	G/L	4	160 W	15.0	6.4	11.6	4.2	2.1	1.6	<0.1	<0.1



Mode and output power for RRU (external radio unit) using MIMO antenna and 0.6 dB tolerance				Dimensions of the box-shaped compliance boundary (m)							
				Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Number of Tx/Rx	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B4 (17/2100)	W/L	4	40 W	7.3	1.4	5.0	0.8	1.5	1.5	<0.1	<0.1
			160 W	15.3	6.3	11.7	4.1	1.9	1.5	0.1	<0.1
B5 (850)	L	4	160 W	15.2	6.8	11.6	5.2	2.7	2.0	<0.1	<0.1
B7 (2600)	L	4	40 W	7.9	1.1	4.2	0.7	1.6	1.5	<0.1	<0.1
			160 W	17.3	6.7	13.1	2.9	2.1	1.6	0.3	<0.1
B8 (900E)	G/W/L	4	160 W	14.7	6.6	11.5	5.2	2.5	2.0	<0.1	<0.1
B14 (700)	L	4	160 W	17.4	7.8	13.6	5.9	3.3	2.3	0.1	0.1
B25 (1900G)	L/C	4	40 W	5.6	1.3	3.8	0.9	2.0	1.8	<0.1	<0.1
			160 W	13.6	4.5	11.8	2.9	3.4	1.9	<0.2	<0.1
B30 (2300)	L	4	25 W	5.9	0.9	2.9	0.5	1.6	1.5	<0.1	<0.1
			100 W	13.7	4.7	9.4	2.1	1.7	1.5	<0.1	<0.1
B38 (2600)	L	4	40 W	7.9	1.1	4.5	0.7	1.6	1.5	<0.1	<0.1
			160 W	17.3	6.7	12.0	3.5	2.0	1.6	<0.3	<0.1
B40 (2300)	L	4	20 W	4.8	0.6	2.2	0.4	1.6	1.5	<0.1	<0.1
			160 W	17.4	7.0	12.2	3.9	1.9	1.6	<0.1	<0.1
B41 (2500)	L	4	20 W	3.2	0.6	1.9	0.4	1.6	1.5	<0.1	<0.1
			160 W	17.3	6.7	12.0	3.5	2.0	1.6	<0.3	<0.1
B41 (2500)	L	8	40 W	10.6	2.5	8.8	1.7	1.9	1.5	<0.1	<0.1
			160 W	22.1	9.2	19.2	7.5	3.0	1.8	<0.2	<0.1
B66 (17/2100)	W/L	4	40 W	7.3	1.4	5.0	0.8	1.5	1.5	<0.1	<0.1
			160 W	15.3	6.3	11.7	4.1	1.9	1.5	0.1	<0.1
B71 (600)	L	4	160 W	17.9	7.8	16.3	6.3	3.6	2.7	<0.3	<0.1

Table 4-1 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Power Configurations using AIR (Antenna Integrated Radio) with 0.6 dB Tolerance and Assumed 0 dB Transmission Loss.

Mode and output power for AIR (antenna integrated radio)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100) ⁷	W/L	20 W	1.9	0.5	1.2	0.4	1.5	1.5	0	0
		60 W	5.5	1.1	4.0	0.7	1.5	1.5	0	0
B1 (2100) ⁸	W/L	20 W	1.7	0.5	1.2	0.5	2.0	2.0	0	0
		60 W	5.4	1.1	3.3	0.8	2.0	2.0	0	0
B2 (1900) ⁹	G/W/L	20 W	2.7	0.6	1.3	0.4	1.5	1.5	0	0
		60 W	5.9	1.6	4.1	0.9	1.7	1.5	0	0
B2 (1900) ¹⁰	G/W/L	20 W	1.8	0.5	1.0	0.4	2.5	2.5	0	0
		60 W	5.1	1.0	3.3	0.6	2.6	2.5	0	0
B2 (1900) ¹¹	G/W/L	20 W	1.3	0.5	1.2	0.4	2.0	2.0	0	0

⁷ This row shows the compliance boundary dimensions of the KRE 101 2144/1 antenna.

⁸ This row shows the compliance boundary dimensions of the KRE 101 2168/1 antenna.

⁹ This row shows the compliance boundary dimensions of the KRE 101 2132/1 antenna.

¹⁰ This row shows the compliance boundary dimensions of the KRE 101 2174/1 antenna.

¹¹ This row shows the compliance boundary dimensions of the KRE 101 2170/1 antenna.



Mode and output power for AIR (antenna integrated radio)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
		60 W	5.4	1.2	3.6	0.9	2.0	2.0	0	0
B2 (1900) ¹²	G/W/L	120 W	14.2	6.1	10.4	3.4	1.9	1.6	< 0.1	0
B2 (1900) ¹³	G/W/L	120 W	11.1	4.7	8.0	3.0	2.5	2.0	0	0
B3 (1800) ¹⁴	G/W/L	20 W	2.6	1.0	1.8	0.6	1.5	1.5	0	0
		60 W	5.6	1.9	3.6	1.4	1.5	1.5	0	0
B3 (1800) ¹⁵	G/W/L	20 W	1.9	0.5	1.3	0.5	2.5	2.5	0	0
		60 W	5.2	1.1	4.1	1.0	2.5	2.5	0	0
B3 (1800) ¹⁶	G/L	120 W	12.8	4.8	11.5	3.1	2.8	2.0	0	0
B4 (17/2100) ¹⁷	W/L	20 W	2.0	0.6	1.4	0.4	1.5	1.5	0	0
		60 W	5.7	1.4	4.2	0.8	1.6	1.5	0	0
B4 (17/2100) ¹⁸	W/L	20 W	1.8	0.5	1.2	0.4	2.5	2.5	0	0
		60 W	5.3	1.1	3.5	0.7	2.6	2.5	0	0
B4 (17/2100) ¹⁹	W/L	20 W	1.7	0.5	1.2	0.5	2.0	2.0	0	0
		60 W	5.4	1.1	3.3	0.8	2.0	2.0	0	0
B4 (17/2100) ²⁰	W/L	120 W	15.2	6.1	10.5	3.0	1.8	1.5	0	0
B7 (2600)	L	20 W	1.2	0.4	0.9	0.4	1.5	1.5	0	0
		60 W	3.3	0.9	2.4	0.5	1.5	1.5	0	0
B7 (2600) ²¹	L	120 W	10.8	2.6	7.0	1.5	5.7	2.5	0	0
B3 (1800), B7 (2600) ²²	G/L, L	240 W	16.7	6.9	13.6	4.0	5.8	2.6	0	0
B8 (900E)	G/W	20 W	3.6	0.8	1.7	0.4	2.0	2.0	0	0
		60 W	7.0	1.9	4.8	1.2	2.0	2.0	0	0
B20 (800DD) ²³	L	20 W	3.6	0.7	1.8	0.4	2.1	2.0	0	0
		60 W	7.2	1.9	5.4	1.1	2.3	2.0	0	0
B20 (800DD) ²⁴	L	20 W	3.5	1.2	2.5	0.6	1.5	1.5	0	0
		60 W	6.2	2.8	4.8	1.8	1.8	1.5	0	0
B66 (17/2100) ¹²	W/L	120 W	15.1	6.1	10.7	3.2	1.9	1.6	0	0
B66 (17/2100) ²⁵	W/L	120 W	9.8	2.6	12.2	2.8	2.6	2.0	0	0
B2 (1900), B66 (17/2100) ²⁶	G/W, W/L	240 W	20.9	9.1	15.4	6.0	2.2	1.6	< 0.1	0
B7 (2600), B66 (17/2100) ²⁷	L, W/L	240 W	14.2	5.3	14.1	3.5	5.9	2.6	0	0

¹² This row shows the compliance boundary dimensions of the KRE 105 244/1 antenna.

¹³ This row shows the compliance boundary dimensions of the KRE 101 241/1 antenna.

¹⁴ This row shows the compliance boundary dimensions of the KRE 101 2148/1 antenna.

¹⁵ This row shows the compliance boundary dimensions of the KRE 101 2166/1 antenna.

¹⁶ This row shows the compliance boundary dimensions of the KRE 105 241/1 antenna.

¹⁷ This row shows the compliance boundary dimensions of the KRE 101 2133/1 antenna.

¹⁸ This row shows the compliance boundary dimensions of the KRE 101 2149/1 antenna.

¹⁹ This row shows the compliance boundary dimensions of the KRE 101 2167/1 antenna.

²⁰ This row shows the compliance boundary dimensions of the KRE 105 216/1 antenna.

²¹ This row shows the compliance boundary dimensions of the KRE 105 237/1 antenna.

²² KRE 105 245/1 transmits simultaneously on B3 and B7 with the power divided equally among the two bands.

²³ This row shows the compliance boundary dimensions of the KRE 101 2087/1 antenna.

²⁴ This row shows the compliance boundary dimensions of the KRE 101 2131/1 antenna.

²⁵ This row shows the compliance boundary dimensions of the KRE 105 241/1 antenna.

²⁶ KRE 105 244/1 transmits simultaneously on B2 and B66 with equal power ratios.

²⁷ KRE 105 245/1 transmits simultaneously on B7 and B66 with equal power ratios.



Note: The distance behind antenna given in Table 3 is measured from the back of the AIR radio unit.

Table 3-2 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Minimum and Maximum Power Configurations using AIR (Antenna Integrated Radio) with 1 dB Tolerance and Assumed 0 dB Transmission Loss.

Mode and output power for AIR (antenna integrated radio)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna		Width		Height		Distance behind antenna	
Band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B41E (2600)	L	120 W	17.4	7.8	21.9	9.8	13.5	6.0	0	0



Table 5 Characteristics for the tested antennas

Antenna specifications	X-pol macro RBS directional antenna (BXA-70063/6CF)	X-pol macro RBS directional antenna (KRE 101 1985/1)	X-pol macro RBS directional antenna (KRE 101 2085/1 v01)	X-pol macro RBS directional antenna (KRE 101 2085/1 v02)
Antenna dimensions	Height: 1.8 m	Height: 1.3 m	Height: 1.4 m	Height: 1.45 m
Half-power beam width	63 degrees	64-68 degrees	60-61 degrees	58 degrees
Antenna gain	17 dBi	18.2 dBi	18 dBi	19 dBi
Down tilt	0 degrees	0 degrees	0 degrees	0 degrees
Tested bands	B12, B13, B14	B1, B2, B3, B4, B9, B25, B39	B7, B38, B40, B41	B7
Antenna specifications	X-pol macro RBS directional 8-branch antenna (TYDA-202415D4T0)	X-pol macro RBS directional 8-branch antenna (ODS-090R15NV06(F))	X-pol macro RBS directional antenna (KRE 101 2057/1)	X-pol macro RBS directional antenna
Antenna dimensions	Height: 1.4 m	Height: 1.4 m	Height: 2.6 m	Height: 1.4 m
Half-power beam width	29 degrees	≤25 degrees	65-66 degrees	67 degrees
Antenna gain	20 dBi	22 dBi	17 dBi	18 dBi
Down tilt	0 degrees	0 degrees	0 degrees	0 degrees
Tested bands	B39 (MIMO only)	B38, B41 (MIMO only)	B0, B8	B11, B32
Antenna specifications	X-pol macro RBS directional antenna (KRE 101 2087/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2132/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2133/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2146/1), Integrated in AIR
Antenna dimensions	Height: 2.0 m	Height: 1.4 m	Height: 1.4 m	Height: 2.0
Half-power beam width	66 degrees	62 degrees	62 degrees	63 degrees
Antenna gain	16 dBi	18 dBi	18 dBi	16 dBi
Down tilt	0 degrees	0 degrees	0 degrees	0 degrees
Tested bands	B20 (AIR only)	B2 (AIR only)	B4 (AIR only)	B8 (AIR only)
Antenna specifications	X-pol macro RBS directional antenna (KRE 101 2149/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2144/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2148/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2166/1), Integrated in AIR
Antenna dimensions	Height: 2.3 m	Height: 1.4 m	Height: 1.4 m	Height: 2.4 m
Half-power beam width	60 degrees	65 degrees	65 degrees	63 degrees
Antenna gain	17 dBi	18 dBi	18 dBi	17.2 dBi
Down tilt	0 degrees	0 degrees	0 degrees	0 degrees
Tested bands	B4 (AIR only)	B1 (AIR only)	B3 (AIR only)	B3 (AIR only)



Antenna specifications	X-pol macro RBS directional antenna (KRE 101 2163/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2131/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2174/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2170/1), Integrated in AIR
Antenna dimensions	Height: 1.4 m	Height: 1.4 m	Height: 2.4 m	Height: 2.0 m
Half-power beam width	55 degrees	67 degrees	60 degrees	63 degrees
Antenna gain	18.1 dBi	14.2 dBi	16.8 dBi	17.9 dBi
Down tilt	0 degrees	0 degrees	0 degrees	0 degrees
Tested bands	B7 (AIR only)	B20 (AIR only)	B2 (AIR only)	B2 (AIR only)
Antenna specifications	X-pol macro RBS directional antenna (KRE 101 2224/1)	X-pol macro RBS directional antenna (RFS APXVSP18-C)	X-pol macro RBS directional antenna (KRE 101 2167/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 101 2168/1), Integrated in AIR
Antenna dimensions	Height: 1.4 m	Height: 1.8 m	Height: 2.0 m	Height: 2.0 m
Half-power beam width	65-68 degrees	65 degrees	63 degrees	63 degrees
Antenna gain	14.2-14.8 dBi	18 dBi ²⁸	18.1 dBi	18.1 dBi
Down tilt	0 degrees	0 degrees	0 degrees	0 degrees
Tested bands	B18, B28, B29	B25	B4 (AIR only)	B1 (AIR only)
Antenna specifications	X-pol macro RBS directional antenna (KRE 101 2092/1)	X-pol macro RBS directional antenna (KRE 105 216/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 105 237/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 105 245/1), Integrated in AIR
Antenna dimensions	Height: 1.5 m	Height: 1.4 m	Height: 2.0 m	Height: 2.0 m
Half-power beam width	57-67 degrees	61 degrees	62/58 degrees	62/64 degrees (B3), 63/58 degrees (B7) 59/63 degrees (B66)
Antenna gain	17.5 -18.9 dBi ²⁸	18.4 ²⁸	17.1/17.9 ²⁹	17 / 16.9 (B3), 17.5 / 17.9 (B7) ³⁰ 17.5 / 17.3 (B66)
Down tilt	0 degrees	0 degrees	2.5 degrees	2.5 degrees
Tested bands	B2, B3, B4, B7, B30, B38, B40, B41, B66	B4	B7	B3, B7, B66
Antenna specifications	X-pol macro RBS directional antenna (KRE 101 1902/1)	X-pol macro RBS directional antenna (KRE 101 2260/1)	X-pol macro RBS directional antenna (KRE 105 244/1), Integrated in AIR	X-pol macro RBS directional antenna (KRE 105 241/1), Integrated in AIR
Antenna dimensions	Height: 2 m	Height: 1.0 m	Height: 1.4 m	Height: 2.0 m
Half-power beam width	65 degrees	70.6 degrees	62 degrees (B2), 61 degrees (B66)	59 / 65 degrees (B2), 62 / 64 degrees (B3), 59 / 63 degrees (B66)
Antenna gain	15 dBi	17.7 dBi	17.8 (B2), 18.3 (B66) ²⁸	17.5 / 16.9 (B2), 17.0 / 16.9 (B3), 17.5 / 17.3 (B66) ²⁹
Down tilt	0 degrees	2 - 12 degrees	2 degrees	2 degrees
Tested bands	B31	B42	B2, B66	B2, B3, B66

²⁸ The far-field properties for this antenna are given for one of the ports excited.

²⁹ The far-field properties for this antenna correspond to values for the two array columns (broadside beam excitation).

³⁰ The far-field properties for this antenna correspond to values for the two array columns (broadside beam excitation).



Antenna specifications	X-pol macro RBS directional antenna (KRE 101 2021/1)	X-pol macro RBS directional antenna ³¹	Internal AAS antenna (KRE 105 257/1)	X-pol macro RBS directional antenna ³²
Antenna dimensions	Height: 1.3 m	Height: 1.8m	Height: 0.99m	Height: 1.8m
Half-power beam width	65-67 degrees	32.7 degrees	12±4 degrees	33.2
Antenna gain	15 dBi	19.5 dBi ³³	24.3 ³⁴	19.4 ³⁵
Down tilt/beam steering	0 degrees	0 degrees	±60° (azimuth) 73° - 113° (elevation)	0 degrees
Tested bands	B5, B8, B20, B26	B14	B41E	B13
Antenna specifications	X-pol macro RBS directional antenna (ODI-065R15I02-Q)	X-pol macro RBS directional antenna (KRE 101 2301/1)	X-pol macro RBS directional antenna (KRE 101 2294/1)	
Antenna dimensions	Height: 2.4 m	Height: 2.0 m	Height: 1.5 m	
Half-power beam width	67 degrees	60 degrees	64 degrees	
Antenna gain	19 ³⁶ dBi	15.8 ³⁷ dBi	17.9 ³⁸ dBi	
Down tilt/beam steering	0 degrees	2 degrees	2 degrees	
Tested bands	B71	B5, B8 (4TX MIMO)	B1 (4TX MIMO)	

Table 6 Total Power to the Antenna for Minimum and Maximum Power Configurations using RU (Internal Radio Unit) including 0.6 dB Tolerance and 3 dB Transmission Loss.

Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B0 (900P)	G/W/L	43.0/20	40.6/11.5
		50.0/100	47.6/57.5
B1 (2100)	W/L	43.0/20	40.6/11.5
		50.0/100	47.6/57.5
B2 (1900)	G/W/L/C	43.0/20	40.6/11.5
	C	49.0/80	46.6/45.7
	G/W/L	50.0/100	47.6/57.5
B3 (1800)	G/W/L	43.0/20	40.6/11.5
		50.0/100	47.6/57.5
B4 (17/2100)	W/L/C	43.0/20	40.6/11.5

³¹ Two 2 Tx antennas based on BXA-70063/6CF were used to create a 4 Tx antenna model for B14 since no real antenna was available

³² Two 2 Tx antennas based on BXA-70063/6CF were used to create a 4 Tx antenna model for B13 since no real antenna was available

³³ The information specified here is the data obtained for the 2 Tx antenna model based on BXA-70063/6CF

³⁴ The stated gain value is the peak beam gain.

³⁵ The information specified here is the data obtained for the 2 Tx antenna model based on BXA-70063/6CF

³⁶ The far-field properties for this antenna correspond to values for the two array columns (broadside beam excitation).

³⁷ The far-field properties for this antenna are given for one of the ports excited.

³⁸ The far-field properties for this antenna are given for one of the ports excited.



Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
		49.0/80	46.6/45.7
B5 (850)	G/W/L/C	43.0/20	40.6/11.5
		50.0/100	47.6/57.5
B7 (2600)	L	43.0/20	40.6/11.5
		47.8/60	45.4/34.7
B8 (900E)	W/L	43.0/20	40.6/11.5
		50.0/100	47.6/57.5
	G	43.0/20	40.6/11.5
		50.0/100	47.6/57.5
B11 (1500)	W	43.0/20	40.6/11.5
		47.8/60	45.4/34.7
B12 (700 ₁₂)	L	43.0/20	40.6/11.5
		47.8/60	45.4/34.7
B13 (700 ₁₃)	L	43.0/20	40.6/11.5
		47.8/60	45.4/34.7
B13 (700 ₁₃) ³⁹	L	53.8/240	51.4/138
B14 (700 ₁₄)	L	43.0/20	40.6/11.5
		47.8/60	45.4/34.7
B20 (800DD)	L	43.0/20	40.6/11.5
		49.0/80	46.6/45.7
B28 (700)	L	43.0/20	40.6/11.5
		50.0/100	47.6/57.5

³⁹ These assessments were made for a 4-branch antenna (4 Tx).



Table 7-1 Total Power to the Antenna for Minimum and Maximum Power Configurations using RRU (External Radio Unit) including 0.6 dB Tolerance and 0.5 dB Transmission Loss.

Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B0 (900P)	G/W/L	43.0/20	43.1/20.4
		50.8/120	50.9/123
B1 (2100)	W/L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B1 (2100) ⁴⁰	W/L	52.0/160	52.1/162.2
B2 (1900)	G/W/L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B2 (1900) ⁴¹	L	46.0/40	46.1/40.7
		52.0/160	52.1/162.2
B3 (1800)	G/W/L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B3 (1800) ³⁴	L	43.0/20	43.1/20.4
	G/L	46.0/40	46.1/40.7
		52.0/160	52.1/162.2
B4 (17/2100)	W/L/C	43.0/20	43.1/20.4
		50.8/120	50.9/123
B4 (17/2100) ³⁴	L	46.0/40	46.1/40.7
		52.0/160	52.1/162.2
B5 (850)	G/W/L/C	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B5 (850) ⁴²	L	52.0/160	52.1/162.2
B7 (2600)	L	43.0/20	43.1/20.4
		50.8/120	50.9/123
B7 (2600) ³⁴	L	46.0 / 40	46.1 / 40.7
		52.0 / 160	52.1 / 162.2
B8 (900E)	G/W/L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
	G	43.0/20	43.1/20.4
B8 (900E) ⁴³	G/W/L	50.8/120	50.9/123
		52.0/160	52.1/162.2
B9 (17/1800)	W/L	43.0/20	43.1/20.4
		47.8/60	47.9/61.7
B11 (1500)	W/L	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B12 (700 ₁₂)	L	43.0/20	43.1/20.4
		49/80	49.1/81.3
B13 (700 ₁₃)	L	43.0/20	43.1/20.4
		50.8/120	50.9/123
B14 (700)	L	52 / 160	52.1 / 162.2

⁴⁰ These assessments were made for a 4-branch antenna (4 Tx).

⁴¹ These assessments were made for a 4-branch antenna (4 Tx).

⁴² These assessments were made for a 4-branch antenna (4 Tx).

⁴³ These assessments were made for a 4-branch antenna (4 Tx).



Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B18 (800), B28 (700) ⁴⁴	L	37.8/6.0	37.9/6.2
		36.0/4.0	36.1/4.1
B20 (800DD)	L	47.8/60.3	47.9/61.7
		46.0/39.8	46.1/40.7
B25 (1900G)	L/C	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B25 (1900G) ⁴⁵	L/C	46/40	46.1/40.7
		52/160	52.1/162.2
B26 (850)	L/C	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B28 (700)	L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B29 (700)	L	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B30 (2300)	L	44.0 / 25	44.1 / 25.7
		50.0 / 100	50.1 / 102.3
B31 (450)	L	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B32 (1500)	L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B38 (2600)	L	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B38 (2600) ³⁶	L	46.0/40	46.1/40.7
		52.0/160	52.1/162.2
B39 (1900)	L	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B40 (2300)	L	43.0/20	43.1/20.4
		50.0/100	50.1/102
B40 (2300) ³⁶	L	46.0/40	46.1/40.7
		52.0/160	52.1/162.2
B41 (2500)	L	43.0/20	43.1/20.4
		46.0/40	46.1/40.7
		50.8/120	50.9/123
		52.0/160	52.1/162.2
B41 (2500) ³⁶	L	43.0/20	43.1/20.4
		52.0/160	52.1/162.2
B41 (2500) ⁴⁶	L	46.0/40	46.1/40.7
		50.8/120	50.9/123
B42 (3500)	L	43.0/20	43.1/20.4
		49.0/80	49.1/81.3
B66 (17/2100) ³⁶	W/L	46.0/40	46.1/40.7
		52.0/160	52.1/162.2
B71 (600)	L	52.0/160	52.1/162.2

⁴⁴ This power level is used in a multi-band product transmitting simultaneously on B18 and B28 with power distributed as 60 % and 40 % over the bands, respectively.

⁴⁵ These assessments were made for a 4-branch antenna (4 Tx).

⁴⁶ These assessments were made for an 8-branch antenna (8 Tx).



Table 6-2 Total Power to the Antenna for Minimum and Maximum Power Configurations using RRU (External Radio Unit) including 1 dB Tolerance and 0.5 dB Transmission Loss.

Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B38 (2600)	L	43.0/20	43.5/22.4
		49.0/80	49.5/89.1
B38 (2600) ⁴⁷	L	46.0/40	46.5/44.7
		50.8/120	51.3/134.9
B39 (1900) ³⁸	L	46.0/40	46.5/44.7
		49.0/80	49.5/89.1
B40 (2300)	L	43.0/20	43.5/22.4
		46.0/40	46.5/44.7
B41(2500) ³⁸	L	46.0/40	46.5/44.7
		53.8/240	54.3/269.2

Table 8-1 Total Power to the Antenna for Minimum and Maximum Power Configurations using AIR (Antenna Integrated Radio Unit) including 0.6 dB Tolerance and 0 dB Transmission Loss.

Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B1 (2100) ⁴⁸	W/L	43.0/20	43.6/22.9
		47.8/60	48.4/69.2
B2 (1900) ⁴⁹	G/W/L	43.0/20	43.6/22.9
		47.8/60	48.4/69.2
		50.8 / 120	51.4 / 138
B3 (1800) ⁵⁰	G/W/L	43.0/20	43.6/22.9
		47.8/60	48.4/69.2
	G/L	50.8 / 120	51.4 / 138
B4 (17/2100) ⁵¹	W/L	43.0/20	43.6/22.9
		47.8/60	48.4/69.2
		50.8/120	51.4/138
B7 (2600) ⁵²	L	43.0/20	43.6/22.9
		47.8/60	48.4/69.2
		50.8/120	51.4/138
B3 (1800), B7 (2600) ⁵³	G/L, L	53.8 / 240	54.4 / 275
B8 (900E)	G/W	43.0/20	43.6/22.9
		47.8/60	48.4/69.2

⁴⁷ These assessments were made for an 8-branch antenna (8 Tx).

⁴⁸ B1 has been tested for two different antennas.

⁴⁹ B2 has been tested for five different antennas.

⁵⁰ B3 has been tested for four different antennas.

⁵¹ B4 has been tested for four different antennas.

⁵² B7 has been tested for three different antennas.

⁵³ This power level is used in a multi-band product transmitting simultaneously on B3 and B7 with the power distributed equally among the two bands.



Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B20 (800DD) ⁵⁴	L	43.0/20	43.6/22.9
		47.8/60	48.4/69.2
B66 (17/2100) ⁵⁵	W/L	50.8 / 120	51.4 / 138
B2 (1900), B66 (17/2100) ⁵⁶	G/W, W/L	53.8 / 240	54.4 / 275
B3 (1800), B7 (2600) ⁵⁷	L, W/L	53.8 / 240	54.4 / 275

Table 7-2 Total Power to the Antenna for Minimum and Maximum Power Configurations using AIR (Antenna Integrated Radio Unit) including 1 dB Tolerance and 0 dB Transmission Loss.

Band	Standard	Nominal output power from the radio (dBm/W)	Total power delivered to antenna (dBm/W)
B41E (2100)	L	50.8 / 120	51.3 / 136

⁵⁴ B20 has been tested for two different antennas.

⁵⁵ This power level is applicable to two different products capable of transmission on B66.

⁵⁶ This power level is used in a multi-band product transmitting simultaneously on B2 and B66 with the power distributed equally among the two bands.

⁵⁷ This power level is used in a multi-band product transmitting simultaneously on B7 and B66 with the power distributed equally among the two bands.



2.2 Micro RBS

For the micro products, box-shaped compliance boundaries are used. For configurations with internal antennas or external sector coverage antennas, the front and back compliance distances are defined from the equipment/antenna casing as shown in Figure 3. For configurations with external omni-directional antennas, the compliance boundary dimensions are defined with respect to the origin centered between the dipole antenna elements, see Figure 4.

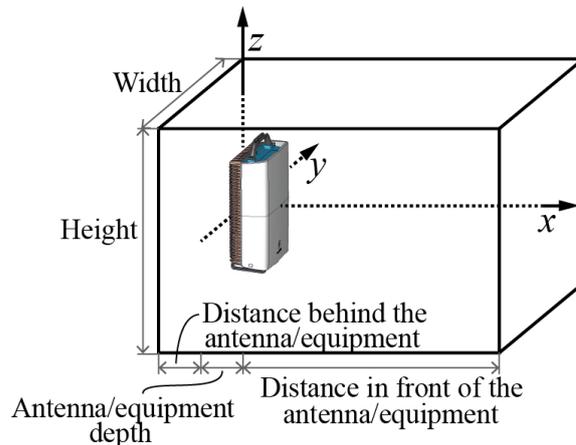


Figure 3. Box-shaped Compliance Boundary used for configurations with internal antennas and for configurations with external sector coverage antennas. The front and back compliance distances are defined from the EUT/antenna casing.

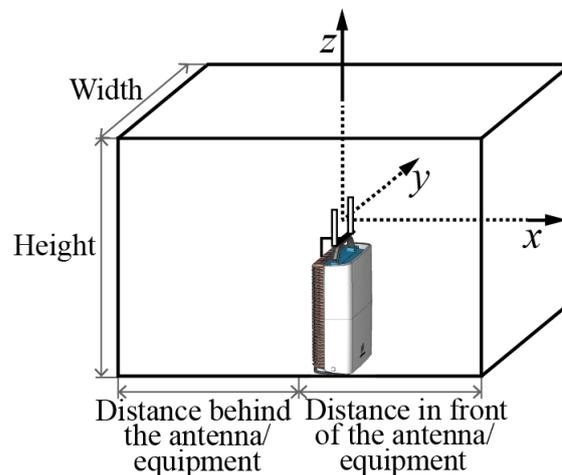


Figure 4. Box-shaped Compliance Boundary used for configurations with external omni-directional antennas. The compliance boundary dimensions are defined with respect to the origin centered between the dipole antenna elements.



The resulting compliance boundary dimensions in meters are shown in Table 8 and Table 9. The power levels used for the assessments include power tolerances and transmission losses. The transmitted field distributions are dependent on the used antenna. Separate calculations or measurements may therefore be necessary to establish compliance boundaries for configurations employing other external antennas chosen by the customer. For further information on RF exposure assessment methods, see [7]. The expanded uncertainty (k=2) is ± 2.3 dB for the underlying calculations of the power density used for assessment of the compliance boundary dimensions listed in Table 8.

Characteristics of the antennas recommended are listed in Table 10.

The total powers fed to the antennas (including tolerance and assumed transmission loss) are given in Table 11.

Table 9-1 *Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for mRRUS 12 with 1 dB tolerance and 0 dB transmission loss (intended markets: Europe/Rest of world).*

Mode and output power for the mRRU (external radio unit)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna/EUT		Width		Height		Distance behind antenna/EUT	
Band, antenna, installation case ⁵⁸	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100), KRE 101 2141/1, Vertical	W/L	2 x 5 W	0.9	0.4	0.8	0.4	1.0	0.6	0	0
B3 (1800), KRE 101 2141/1, Vertical	W/L	2 x 5 W	0.8	0.4	0.9	0.4	1.0	0.6	0	0
B7 (2600), KRE 101 2142/1, Vertical	L	2 x 5 W	0.9	0.4	0.8	0.4	1.0	0.6	0	0
B1 (2100), KRE 101 2141/1, Horizontal	W/L	2 x 5 W	0.9	0.4	1.0	0.6	0.8	0.4	0	0
B3 (1800), KRE 101 2141/1, Horizontal	W/L	2 x 5 W	0.8	0.4	1.0	0.6	0.9	0.4	0	0
B7 (2600), KRE 101 2142/1, Horizontal	L	2 x 5 W	0.9	0.4	1.0	0.6	0.8	0.4	0	0
B1 (2100), KRE 101 1985/1, Horizontal/Vertical	W/L	2 x 5 W	0.8	0.2	0.5	0.2	1.4	1.4	<0.1	<0.1
B3 (1800), KRE 101 1985/1, Horizontal/Vertical	W/L	2 x 5 W	1.0	0.2	0.6	0.2	1.4	1.4	<0.1	<0.1
B1 (2100), KRE 101 2024/1, Vertical	W/L	2 x 5 W	0.6	0.3	1.2	0.6	0.6	0.3	0.6	0.3
B3 (1800), KRE 101 2024/1, Vertical	W/L	2 x 5 W	0.7	0.3	1.3	0.7	0.7	0.3	0.7	0.3
B7 (2600), KRE 101 2024/1, Vertical	L	2 x 5 W	0.5	0.3	0.9	0.5	0.4	0.2	0.5	0.3
B1 (2100), KRE 101 2024/1, Horizontal	W/L	2 x 5 W	0.6	0.2	1.3	0.7	0.6	0.3	0.6	0.2

⁵⁸ The installation case refers to the orientation of the equipment.



Mode and output power for the mRRU (external radio unit)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna/EUT		Width		Height		Distance behind antenna/EUT	
Band, antenna, installation case ⁵⁹	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B3 (1800), KRE 101 2024/1, Horizontal	W/L	2 × 5 W	0.7	0.3	1.3	0.8	0.6	0.3	0.7	0.3
B7 (2600), KRE 101 2024/1, Horizontal	L	2 × 5 W	0.5	0.4	1.0	0.7	0.4	0.2	0.5	0.4

Table 8-2 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for mRBS 6501 with 1 dB tolerance and 0 dB transmission loss (intended markets: Europe/Rest of world).

Mode and output power for the mRBS (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna/EUT		Width		Height		Distance behind antenna/EUT	
Band, antenna, installation case ⁵⁹	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100), KRE 101 2141/1, Vertical	W/L	2 × 5 W	0.9	0.4	0.8	0.4	0.8	0.5	0	0
B3 (1800), KRE 101 2141/1, Vertical	W/L	2 × 5 W	0.8	0.4	0.8	0.4	0.8	0.5	0	0
B7 (2600), KRE 101 2142/1, Vertical	L	2 × 5 W	0.9	0.4	0.8	0.4	0.9	0.5	0	0
B1 (2100), KRE 101 2141/1, Horizontal	W/L	2 × 5 W	0.9	0.4	0.8	0.5	0.8	0.4	0	0
B3 (1800), KRE 101 2141/1, Horizontal	W/L	2 × 5 W	0.8	0.4	0.8	0.5	0.8	0.4	0	0
B7 (2600), KRE 101 2142/1, Horizontal	L	2 × 5 W	0.9	0.4	0.9	0.5	0.8	0.4	0	0
B1 (2100), KRE 101 1985/1, Horizontal/Vertical	W/L	2 × 5 W	0.8	0.2	0.5	0.2	1.4	1.4	<0.1	<0.1
B3 (1800), KRE 101 1985/1, Horizontal/Vertical	W/L	2 × 5 W	1.0	0.2	0.6	0.2	1.4	1.4	<0.1	<0.1
B7 (2600), KRE 101 2085/1, Horizontal/Vertical	L	2 × 5 W	1.0	0.1	0.6	0.2	1.4	1.4	< 0.1	< 0.1
B1 (2100), KRE 101 2024/1, Vertical	W/L	2 × 5 W	0.6	0.3	1.2	0.6	0.6	0.3	0.6	0.3
B3 (1800), KRE 101 2024/1, Vertical	W/L	2 × 5 W	0.7	0.3	1.3	0.7	0.7	0.3	0.7	0.3
B7 (2600), KRE 101 2024/1, Vertical	L	2 × 5 W	0.5	0.3	0.9	0.5	0.4	0.2	0.5	0.3
B1 (2100), KRE 101 2024/1, Horizontal	W/L	2 × 5 W	0.6	0.2	1.3	0.7	0.6	0.3	0.6	0.2
B3 (1800), KRE 101 2024/1, Horizontal	W/L	2 × 5 W	0.7	0.3	1.3	0.8	0.6	0.3	0.7	0.3

⁵⁹ For internal antennas and antennas mounted on the equipment, the installation case refers to the orientation of the equipment. For external antennas not mounted on the equipment, the installation case refers to the orientation of the antennas.



Mode and output power for the mRBS (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna/EUT		Width		Height		Distance behind antenna/EUT	
Band, antenna, installation case ⁵⁹	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B7 (2600), KRE 101 2024/1, Horizontal	L	2 x 5 W	0.5	0.4	1.0	0.7	0.4	0.2	0.5	0.4

Table 8-3 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for Radio 2203 with 1 dB tolerance and 0 dB transmission loss (intended markets: Europe/Rest of world).

Mode and output power for the RRU (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of radio		Width		Height		Distance behind radio	
Band, antenna, installation case ⁵⁰ <small>Error! Bookmark not defined.</small>	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100) KRE 101 2249/1 Vertical	W/L	2 x 5 W	1.2	0.5	1.0	0.5	0.8	0.4	0	0
B3 (1800) KRE 101 2249/1 Vertical	W/L	2 x 5 W	1.1	0.5	1.0	0.5	0.8	0.4	0	0
B1 (2100), KRE 101 2024/1 Vertical	W/L	2 x 5 W	0.6	0.2	1.4	0.8	0.6	0.2	0.6	0.2
B7 (2600) KRE 101 2250/1 Vertical	W/L	2 x 5 W	1.1	0.5	1.0	0.5	0.7	0.4	0	0
B5 (800) KRE 101 2199/1 Vertical	W/L	2 x 5 W	1.2	0.6	1.1	0.6	1.2	0.6	0	0
B8 (900) KRE 101 2199/1 Vertical	W/L	2 x 5 W	1.2	0.6	1.1	0.5	1.2	0.6	0	0
B1 (2100), KRE 101 2266/1 Vertical	W/L	2 x 5 W	0.6	0.2	1.3	0.8	0.6	0.2	0.6	0.2
B3 (1800) KRE 101 2266/1 Vertical	W/L	2 x 5 W	0.6	0.2	1.4	0.8	0.6	0.3	0.6	0.2
B5 (800) KRE 101 2266/1 Vertical	W/L	2 x 5 W	0.9	0.4	1.8	1.0	0.9	0.4	0.9	0.4
B7 (2600) KRE 101 2266/1 Vertical	W/L	2 x 5 W	0.6	0.2	1.3	0.8	0.6	0.2	0.6	0.2
B8 (900) KRE 101 2266/1 Vertical	W/L	2 x 5 W	0.9	0.4	1.8	1.0	0.8	0.4	0.9	0.4

Table 8-4 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RRU 2208 with 1 dB tolerance and 0 dB transmission loss (intended markets: Europe/Rest of world).

Mode and output power for the RRU (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)			
			Distance in front of radio	Width	Height	Distance behind radio



Band, antenna, installation case ⁶⁰	Standard	Nominal output power from the radio	GP		O		GP		O	
			GP	O	GP	O	GP	O	GP	O
B41 (TD 2500), KRE 101 2250/2 Vertical	L	2 × 1 W	0.5	0.2	0.5	0.2	0.3	0.2	0.0	0.0
		2 × 10 W	1.6	0.7	1.4	0.7	0.8	0.4	0.0	0.0

Table 8-5 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for mRRUS 61 with 1 dB tolerance and 0 dB transmission loss (intended markets: Europe/Rest of world).

Mode and output power for the mRRU (external radio unit)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna/EUT		Width		Height		Distance behind antenna/EUT	
Band, antenna, installation case ⁵¹	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B38 (2600), KRE 101 2142/2, Vertical	L	2 × 5 W	0.7	0.3	0.7	0.3	0.8	0.5	<0.1	<0.1

Table 8-6 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RRU 22F3 with 0.6 dB tolerance and 0.2 dB transmission loss (intended markets: Europe/Rest of world).

Mode and output power for the RRU (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna		Width		Height		Distance behind antenna	
Band, antenna, installation case ⁶¹	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 / B18 / B28 ⁶² , KRE 101 2245/1, Vertical	L	2.8 W (B1: 1.2 W, B18: 0.8 W, B28: 0.8 W)	0.3	0.1	1.3	1.0	0.4	0.3	0.3	0.1
		28 W (B1: 12 W, B18: 8 W, B28: 8 W)	1.2	0.5	2.7	1.5	1.1	0.5	1.2	0.5

The maximum available power to Radio 2205, tested for B46A (5155 MHz – 5250 MHz) for the European market, including output power tolerance of 1 dB and 0 dB transmission loss is 17.8 mW, which is less than the applicable low-power exclusion level of 20 mW specified in [8]. As a consequence, no RF exposure evaluation is required, and the product is inherently in compliance with the appropriate RF exposure standards and recommendations.

Table 10-1 Box-Shaped Compliance Boundary Dimensions for General Public/Uncontrolled (GP) Exposure for mRRUS with 1 dB tolerance and 0 dB transmission loss (intended markets: USA/Canada).

Mode and output power for the RRU (external radio unit)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of antenna/EUT		Width		Height		Distance behind antenna/EUT	

⁶⁰ The installation case refers to the orientation of the equipment.

⁶¹ For internal antennas and antennas mounted on the equipment, the installation case refers to the orientation of the equipment. For external antennas not mounted on the equipment, the installation case refers to the orientation of the antennas.

⁶² This row shows the result for RRU 22F3 with simultaneous operation on B1, B18 and B28 with power ratios of 42.9 %, 28.6 % and 28.6 %, respectively. The orientation of the antennas is independent from the orientation of the RRU.



Band, antenna, installation case ⁶³	Standard	Nominal output power from the radio	GP	GP	GP	GP
B2 (1900), KRE 101 2141/1, Vertical	W/L	2 x 5 W	0.8	0.8	0.9	0.2
B2 (1900), KRE 101 2141/1, Horizontal	W/L	2 x 5 W	0.7	0.9	0.8	0.2
B2 (1900), KRE 101 2233/1, Vertical	W/L	2 x 5 W	0.4	0.7	0.7	0.4
B2 (1900), KRE 101 2233/1, Horizontal	W/L	2 x 5 W	0.4	0.9	0.9	0.4
B4 (2100), KRE 101 2141/1, Vertical	W/L	2 x 5 W	1.0	0.9	0.9	0.2
B4 (2100), KRE 101 2141/1, Horizontal	W/L	2 x 5 W	0.8	0.9	0.9	0.2
B4 (2100), KRE 101 2024/1, Vertical	W/L	2 x 5 W	0.4	0.7	0.7	0.4
B4 (2100), KRE 101 2024/1, Horizontal	W/L	2 x 5 W	0.5	0.9	0.9	0.5
B7 (2600), KRE 101 2142/1, Vertical	L	2 x 5 W	0.5	0.7	0.9	0.2
B7 (2600), KRE 101 2142/1, Horizontal	L	2 x 5 W	0.5	0.9	0.7	0.2
B7 (2600), KRE 101 2024/1, Vertical	L	2 x 5 W	0.3	0.7	0.7	0.3
B7 (2600), KRE 101 2024/1, Horizontal	L	2 x 5 W	0.3	0.9	0.9	0.3
B12 (700), KRE 101 2134/1, Vertical	L	2 x 5 W	1.0	0.8	0.9	0.2
B12 (700), KRE 101 2134/1, Horizontal	L	2 x 5 W	1.0	0.9	0.8	0.2
B12 (700), KRE 101 2245/1, Horizontal	L	2 x 5 W	0.5	1.1	1.1	0.5
B13 (750), KRE 101 2135/1, Vertical	L	2 x 5 W	1.1	1.0	1.0	0.2
B13 (750), KRE 101 2135/1, Horizontal	L	2 x 5 W	1.2	1.0	1.0	0.2
B13 (750), KRE 101 2245/1, Horizontal	L	2 x 5 W	0.6	1.2	1.2	0.6

Table 9-2 Box-Shaped Compliance Boundary Dimensions for General Public/Uncontrolled (GP) Exposure for mRBS with 1 dB tolerance and 0 dB transmission loss (intended markets: USA/Canada).

Mode and output power for the mRBS (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)			
			Distance in front of antenna/EUT	Width	Height	Distance behind antenna/EUT
Band, antenna, installation case ⁶⁴	Standard	Nominal output power from the radio	GP	GP	GP	GP

⁶³ The installation case refers to the orientation of the equipment.

⁶⁴ The installation case refers to the orientation of the equipment.



Mode and output power for the mRBS (micro-RBS)			Dimensions of the box-shaped compliance boundary (m)			
			Distance in front of antenna/EUT	Width	Height	Distance behind antenna/EUT
Band, antenna, installation case ⁶⁴	Standard	Nominal output power from the radio	GP	GP	GP	GP
B2 (1900), KRE 101 2141/1, Vertical	W/L	2 x 5 W	1.0	0.9	1.0	0.2
B2 (1900), KRE 101 2141/1, Horizontal	W/L	2 x 5 W	0.9	1.0	0.9	0.2
B2 (1900), KRE 101 2233/1, Vertical	W/L	2 x 5 W	0.6	0.8	0.8	0.6
B2 (1900), KRE 101 2233/1, Horizontal	W/L	2 x 5 W	0.4	1.0	1.0	0.4
B4 (2100), KRE 101 2141/1, Vertical	W/L	2 x 5 W	0.8	0.9	0.9	0.2
B4 (2100), KRE 101 2141/1, Horizontal	W/L	2 x 5 W	0.8	0.9	0.9	0.2
B4 (2100), KRE 101 2024/1, Vertical	W/L	2 x 5 W	0.4	0.7	0.7	0.4
B4 (2100), KRE 101 2024/1, Horizontal	W/L	2 x 5 W	0.3	0.9	0.9	0.3
B7 (2600), KRE 101 2142/1, Vertical	L	2 x 5 W	0.6	0.8	0.9	0.2
B7 (2600), KRE 101 2142/1, Horizontal	L	2 x 5 W	0.5	0.9	0.8	0.2
B7 (2600), KRE 101 2024/1, Vertical	L	2 x 5 W	0.3	0.8	0.8	0.3
B7 (2600), KRE 101 2024/1, Horizontal	L	2 x 5 W	0.3	0.9	0.9	0.3
B12 (700), KRE 101 2134/1, Vertical	L	2 x 5 W	1.0	0.9	0.9	0.2
B12 (700), KRE 101 2134/1, Horizontal	L	2 x 5 W	1.1	0.9	0.9	0.2
B12 (700), KRE 101 2245/1, Horizontal	L	2 x 5 W	0.5	1.1	1.1	0.5
B13 (750), KRE 101 2135/1, Vertical	L	2 x 5 W	1.0	1.1	0.9	0.2
B13 (750), KRE 101 2135/1, Horizontal	L	2 x 5 W	1.1	0.9	1.1	0.2
B13 (750), KRE 101 2245/1, Horizontal	L	2 x 5 W	0.6	1.2	1.2	0.6
B25 (1900), KRE 101 2141/1, Vertical	L	2 x 5 W	0.9	0.8	0.9	0.2
B25 (1900), KRE 101 2141/1, Horizontal	L	2 x 5 W	0.9	0.9	0.8	0.2
B25 (1900), KRE 101 2233/1, Vertical	L	2 x 5 W	0.5	0.9	0.9	0.5
B25 (1900), KRE 101 2233/1, Horizontal	L	2 x 5 W	0.4	1.0	1.0	0.4



Table 9-3 *Box-Shaped Compliance Boundary Dimensions for General Public/Uncontrolled (GP) Exposure for Radio 2203 with 0.6 dB tolerance and 0 dB transmission loss (intended market: USA)*

Mode and output power for the mRRU (micro-RRU)			Dimensions of the box-shaped compliance boundary (m)			
			Distance in front of antenna/EUT	Width	Height	Distance behind antenna/EUT
Band, antenna, installation case ⁶⁵	Standard	Nominal output power from the radio	GP	GP	GP	GP
B2/25 (1900) KRE 101 2249/1, Vertical	W/L	2 × 5 W	0.7	0.6	0.6	0.2
B2/25 (1900) KRE 101 2233/1, Vertical	W/L	2 × 5 W	0.3	0.9	0.9	0.3
B2/25 (1900) KRE 101 2245/1, Vertical	W/L	2 × 5 W	0.3	0.9	0.9	0.3
B5 (850) KRE 101 2199/1, Vertical	W/L	2 × 5 W	0.7	0.6	0.6	0.2
B5 (850) KRE 101 2233/1, Vertical	W/L	2 × 5 W	0.3	1.0	1.0	0.4
B66A (2100), KRE 101 2249/1 Vertical	W ⁶⁵ /L	2 × 5 W	0.8	0.6	0.6	0.2
B66A (2100), KRE 101 2233/1, Vertical	W ⁵⁶ /L	2 × 5 W	0.2	0.9	0.9	0.3
B66A (2100), KRE 101 2245/1, Vertical	W ⁵⁶ /L	2 × 5 W	0.3	0.9	0.9	0.3

Table 9-4 *Box-Shaped Compliance Boundary Dimensions for General Public/Uncontrolled (GP) Exposure for Radio 2203 with 0.6 dB tolerance and 0 dB transmission loss (intended market: Canada)*

Mode and output power for the mRRU (micro-RRU)			Dimensions of the box-shaped compliance boundary (m)			
			Distance in front of antenna/EUT	Width	Height	Distance behind antenna/EUT
Band, antenna, installation case ⁶⁵	Standard	Nominal output power from the radio	GP	GP	GP	GP
B2/25 (1900) KRE 101 2249/1, Vertical	W/L	2 × 5 W	1.2	1.0	1.0	0.2
B2/25 (1900) KRE 101 2233/1, Vertical	W/L	2 × 5 W	0.4	1.0	1.0	0.5
B2/25 (1900) KRE 101 2245/1, Vertical	W/L	2 × 5 W	0.4	1.1	1.1	0.5
B5 (850) KRE 101 2199/1, Vertical	W/L	2 × 5 W	1.2	1.0	1.0	0.2
B5 (850) KRE 101 2233/1, Vertical	W/L	2 × 5 W	0.6	1.6	1.6	0.8
B7 (2600) KRE 101 2250/1 Vertical	W/L	2 × 5 W	1.1	0.9	0.9	0.2
B7 (2600) KRE 101 2233/1 Vertical	W/L	2 × 5 W	0.3	0.9	0.9	0.4

⁶⁵ For WCDMA/UMTS the Radio 2203 B66A is limited to B4 frequencies.



Mode and output power for the mRRU (micro-RRU)			Dimensions of the box-shaped compliance boundary (m)			
			Distance in front of antenna/EUT	Width	Height	Distance behind antenna/EUT
Band, antenna, installation case ⁵⁵	Standard	Nominal output power from the radio	GP	GP	GP	GP
B7 (2600) KRE 101 2245/1 Vertical	W/L	2 × 5 W	0.3	0.9	0.9	0.3
B66A (2100), KRE 101 2249/1, Vertical	W ⁵⁶ /L	2 × 5 W	1.4	1.0	1.0	0.2
B66A (2100), KRE 101 2233/1, Vertical	W ⁵⁶ /L	2 × 5 W	0.5	1.1	1.1	0.5
B66A (2100), KRE 101 2245/1, Vertical	W ⁵⁶ /L	2 × 5 W	0.6	1.1	1.1	0.6

Table 11-1 Characteristics for the tested internal antennas used with mRRUS, mRBS, RRU 2208, Radio 2203 and Radio 2205.

Antenna specifications	Internal X-pol sector coverage antenna (KRE 101 2141/1)	Internal X-pol sector coverage antenna (KRE 101 2135/1)	Internal X-pol sector coverage antenna (KRE 101 2142/1)	Internal X-pol sector coverage antenna (KRE 101 2134/1)	Internal X-pol sector coverage antenna (KRE 101 2142/2)
Antenna dimensions (m)	—	—	—	—	—
Half-power beam width (degrees)	68 – 81	79 – 92	93 – 108	86 - 106	76 - 96
Antenna gain (dBi)	5.8 – 7.9	5.3 – 6.6	4.8 – 5.4	5.2 – 6.7	6.8 – 6.1
Down tilt (degrees)	—	—	—	—	—
Tested bands	B1, B2, B3, B4, B25	B13	B7	B12	B38

Antenna specifications	Internal X-pol sector coverage antenna (KRE 101 2150/2)	Internal X-pol sector coverage antenna (KRE 101 2249/1)	Internal X-pol sector coverage antenna (KRE 101 2199/1)	Internal X-pol sector coverage antenna (KRE 101 2250/1)	Internal X-pol sector coverage antenna (KRE 105 259/1)
Antenna dimensions (m)	—	—	—	—	—
Half-power beam width (degrees)	65 ± 10	85	—	82 ± 13	90° ± 10°
Antenna gain (dBi)	> 10	> 7.5	6.9, 6.5	> 7.5	10.5
Down tilt (degrees)	—	8	—	8	—
Tested bands	B41	B1, B2, B3, B25, B66A	B5, B8	B7	B46A

Table 10-2 Characteristics for the tested external antennas used with mRRUS, mRBS, RRU 2208 and Radio 2203.

Antenna specifications	External X-pol sector coverage antenna (KRE 101 2085/1)	External X-pol sector coverage antenna (KRE 101 1985/1)	External V-pol omni-directional antenna (KRE 101 2024/1)	External V-pol omni-directional antenna (KRE 101 2245/1)	External V-pol omni-directional antenna (KRE 101 2233/1)
Antenna dimensions (m)	Height: 1.4	Height: 1.3	Height: 0.12	Height: 0.2	Height: 0.19
Half-power beam width (degrees)	58	64 – 68	omni	omni	omni



Antenna gain (dBi)	19.0	17.7 - 18	2	2	2
Down tilt (degrees)	0	0	—	—	—
Tested bands	B7	B1, B3	B1, B3, B4, B7	B2, B7, B12, B13, B25, B66A	B2, B7, B25, B66A

Antenna specifications	External V-pol omni-directional antenna (KRE 101 2266/1)
Antenna dimensions (m)	Height: 0.19
Half-power beam width (degrees)	omni
Antenna gain (dBi)	2
Down tilt (degrees)	—
Tested bands	B1, B3, B5, B7, B8

Table 10-3 Characteristics for the tested antennas used with RRU 22F3.

Antenna specifications	External V-pol omni-directional antenna (KRE 101 2245/1)
Antenna dimensions (m)	Height: 0.2
Half-power beam width (degrees)	omni
Antenna gain (dBi)	2
Down tilt (degrees)	—
Tested bands	B1, B18, B28

Table 12-1 Total Power to the mRRUS, mRBS, RRU 2208, Radio 2203, and Radio 2205 antennas.

Band	Standard	Nominal output power from the radio (dBm/W)	Upper limit of power delivered to the antenna (dBm/W)
B1 (2100)	W/L	40 / 10	41 / 12.6
B2 (1900)	W/L	40 / 10	41 / 12.6
B3 (1800)	W/L	40 / 10	41 / 12.6
B4 (2100)	W/L	40 / 10	41 / 12.6
B5 (850) ⁶⁶	W/L	40 / 10	41 / 12.6
B5 (850) ⁶⁷	W/L	40 / 10	40.6 / 11.5
B7 (2600)	L	40 / 10	41 / 12.6

⁶⁶ For configurations with 1 dB power tolerance and 0 dB transmission loss.

⁶⁷ For configurations with 0.6 dB power tolerance and 0 dB transmission loss.



Band	Standard	Nominal output power from the radio (dBm/W)	Upper limit of power delivered to the antenna (dBm/W)
B8 (900)	W/L	40 / 10	41 / 12.6
B12 (700)	L	40 / 10	41 / 12.6
B13 (750)	L	40 / 10	41 / 12.6
B25 (1900)	W/L	40 / 10	41 / 12.6
B38 (2600)	L	40 / 10	41 / 12.6
B41 (TD 2500)	L	33 / 2.0	34 / 2.5
		43 / 20	44 / 25
B46A (5000)	L	11.5 / 0.014	12.5 / 0.018
B66A (2100)	W/L	40 / 10	40.6 / 11.5

Table 11-2 Total Power to the RRU 22F3 antennas.

Band	Standard	Nominal output power from the radio (dBm/W)	Upper limit of power delivered to the antenna (dBm/W)
B1 (2100)	L	12 / 40.8 ⁶⁸	13 / 41.2 ⁵⁹
B18 (800)	L	8.0 / 39.0 ⁵⁹	8.7 / 39.4 ⁵⁹
B28 (700)	L	8.0 / 39.0 ⁵⁹	8.7 / 39.4 ⁵⁹

⁶⁸ This row shows the result for RRU 22F3 with simultaneous operation on B1, B18 and B28 with power ratios of 42.9 %, 28.6 % and 28.6 %, respectively.



According to FCC and Innovation, Science and Economic Development Canada requirements, of relevance for the USA and Canada, Radio 2205 may be classified as a mobile device with an intended separation distance to the user or nearby persons of at least 20 cm. Conducted EMF tests have confirmed that the exposure levels are below the exposure limits at 20 cm separation distance for the internal and external antenna configurations in Table 13

Table 13 Characteristics for the tested configurations of Radio 2205 with compliance confirmed at 20 cm separation distance.

Antenna specifications	Internal X-pol sector coverage antenna (KRE 105 259/1)	External X-pol omni-directional antenna (Galtronics P6480i)
Antenna dimensions (m)	—	Height: 0.63
Horizontal half-power beam width (degrees)	$90^\circ \pm 10^\circ$	omni
Vertical half-power beam width (degrees)	$30^\circ \pm 5^\circ$	19
Antenna gain (dBi)	10.5	6
Tested bands	B46	B46
Standard	L	L
Nominal output power from the radio (dBm/W)	(24 / 0.25)	(28.5 / 0.71)



2.3 Pico RBS

For EU and markets other than US and Canada, box-shaped compliance boundaries have been determined with the front and back compliance distances defined from the equipment casing as shown in Figure 5. The widths and heights are specified including the dimensions of the product.

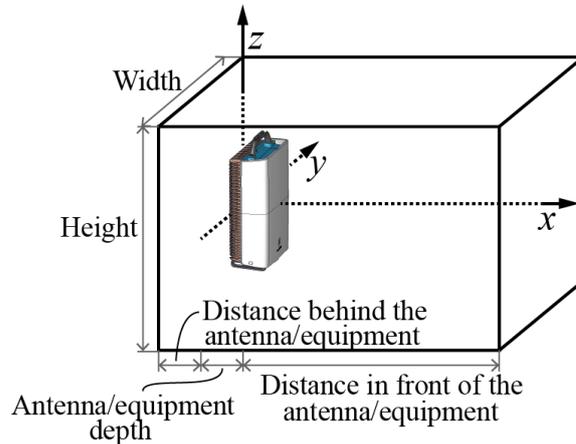


Figure 5. Box-shaped Compliance Boundary. The front and back compliance distances are defined from the equipment casing.

For ceiling mounted external antennas, cylinder-shaped compliance boundaries have been determined with the front, back and radial compliance distances defined relative to the equipment casing as shown in Figure 6.

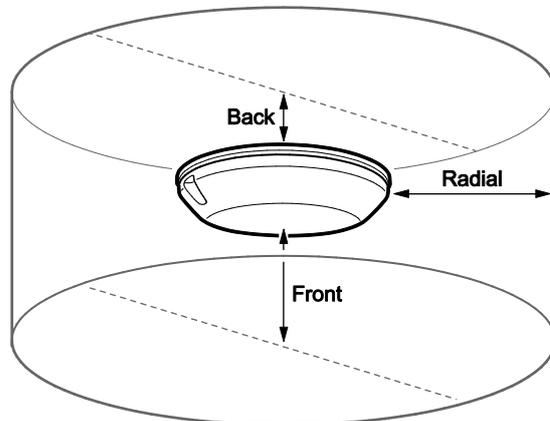


Figure 6. Cylinder-shaped Compliance Boundary. The compliance distances are defined relative to the equipment casing.

The compliance boundary dimensions in meters are shown in Table 14. The power levels used for the assessments include power tolerances and transmission losses where applicable. The expanded uncertainty ($k=2$) for the underlying specific absorption rate (SAR) and field strength measurements is less than $\pm 30\%$.

The nominal power levels (excluding tolerances) are given in Table 15.



According to FCC and *Innovation, Science and Economic Development Canada* requirements, of relevance for the USA and Canada, a Pico RBS is to be classified as a *mobile device* with an intended separation distance to the user or nearby persons of at least 20 cm. Conducted EMF tests have confirmed that the exposure levels are below the exposure limits at 20 cm separation distance for the internal and external antennas used individually or combined, see Table 16.

Table 14-1 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RBS 6401 with the internal antenna KRE 101 2139/1 with 0.6 dB power tolerance and 0 dB transmission loss. (Intended markets: Europe/Rest of world (RoW)).

Mode and output power for the RBS (radio base station)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of EUT		Width		Height		Distance behind EUT	
3GPP band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100)	W	2 × 1 W	0.20	0.06	0.26 ⁶⁹	0.26 ⁶⁰	0.42 ⁷⁰	0.42 ⁶¹	0	0
B1 (2100)	W	2 × 1 W	0.20	0.06	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
	WiFi 2.4 GHz	0.1 W								
	WiFi 5 GHz	0.25 W								
B1 (2100)	L	2 × 1 W	0.20	0.03	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
B1 (2100)	L	2 × 1 W	0.20	0.03	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
	WiFi 2.4 GHz	0.1 W								
	WiFi 5 GHz	0.25 W								
B2 (1900)	W	2 × 1 W	0.20	0.06	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
B2 (1900)	W	2 × 1 W	0.20	0.06	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
	WiFi FCC-RoW 2.4 GHz	0.1 W								
	WiFi FCC-RoW 5 GHz	0.25 W								
B2 (1900)	L	2 × 1 W	0.20	0.03	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
B2 (1900)	L	2 × 1 W	0.20	0.03	0.26 ⁶⁰	0.26 ⁶⁰	0.42 ⁶¹	0.42 ⁶¹	0	0
	WiFi FCC-RoW 2.4 GHz	0.1 W								
	WiFi FCC-RoW 5 GHz	0.25 W								

⁶⁹ Same as product width. This implies that there is no compliance distance to the side of the product.

⁷⁰ Same as product height. This implies that there is no compliance distance above or below the product.



Table 13-2 Box-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RBS 6402 with the internal antenna KRE 105 660/1 with 0.6 dB power tolerance and 0 dB transmission loss. (Intended markets: Europe/Rest of world (RoW)).

Mode and output power for the RBS (radio base station)			Dimensions of the box-shaped compliance boundary (m)							
			Distance in front of EUT		Width		Height		Distance behind EUT	
3GPP/ Wi-Fi band & hardware configuration type	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O	GP	O
B1 (2100) without fan module	W	2 × 0.25 W	0	0	0.28 ⁶⁰	0.28 ⁶⁰	0.17 ⁶¹	0.17 ⁶¹	0	0
B1 (2100) with fan module	W	2 × 0.25 W	0	0	0.28 ⁶⁰	0.28 ⁶⁰	0.19 ⁶¹	0.19 ⁶¹	0	0
B7 (2600) without fan module	L	2 × 0.25 W	0	0	0.28 ⁶⁰	0.28 ⁶⁰	0.17 ⁶¹	0.17 ⁶¹	0	0
B7 (2600) with fan module	L	2 × 0.25 W	0	0	0.28 ⁶⁰	0.28 ⁶⁰	0.19 ⁶¹	0.19 ⁶¹	0	0
B1 (2100), B3 (1800) or B7 (2600) combined with B1 (2100), B3 (1800) or B7 (2600)	L	4 × 0.25 W	0.02	0.01	0.31	0.30	0.21	0.21	0	0
B1 (2100), B3 (1800) or B7 (2600) combined with B46A (5200), or B46D (5800)	L	2 × 0.25 W (B1, B3, B7) 2 × 0.025 W (B46A) 2 × 0.13 W (B46D)	0.01	0	0.30	0.28 ⁵¹	0.19 ⁵²	0.19 ⁵²	0	0
B1 (2100), B3 (1800) or B7 (2600) combined with B1 (2100), B3 (1800) or B7 (2600) and Wi-Fi 2 GHz and Wi-Fi 5GHz	L Wi-Fi 2 GHz Wi-Fi 5 GHz	4 × 0.25 W 3 × 0.40 W 3 × 0.50 W	0.02	0.01	0.30	0.29	0.20	0.20	0	0

Table 13-3 Dimensions of the cylinder-shaped compliance boundary for general public (GP) and occupational (O) exposure for the RBS 6402 with the external cellular antennas with 0.6 dB output power tolerance and connected with the supplied transmission cable. (Intended markets: Europe/Rest of world (RoW)).

Mode and output power for the equipment under test (EUT)			Dimensions of the cylinder-shaped compliance boundary (m)					
			Distance in front of EUT		Distance in radial direction		Distance behind EUT	
3GPP band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
B1 (2100)	W/L	2 × 0.25 W	0	0	0	0	0	0
B3 (1800)	L	2 × 0.25 W	0	0	0	0	0	0
B7 (2600)	L	2 × 0.25 W	0	0	0	0	0	0



Table 15-1 RBS 6401 Nominal Power Levels.

Band	Standard	Nominal output power from the radio (dBm/W)
B1 (2100)	W/L	33/2
B2, B25 (1900)	W/L	33/2
B1 (2100)	WiFi, 2.4 GHz FCC- RoW	20/0.1
B1 (2100)	WiFi, 5 GHz FCC- RoW	24/0.25 ⁷¹
B2, B25 (1900)	WiFi, 2.4 GHz FCC- RoW	20/0.1
B2, B25 (1900)	WiFi, 5 GHz FCC- RoW	24/0.25 ⁶²

Table 14-2 RBS 6402 Nominal Power Levels.

Band	Standard	Nominal output power from the radio (dBm/W)
B1 (2100)	W/L	27/0.5 ⁷²
B2 (1900)	W	27/0.5 ⁶³
B2,25 (1900)	L	27/0.5 ⁶³
B2,25 (1900)	L	30/1 ⁷³
B3 (1800)	L	27/0.5 ⁷⁴
B4(2100)	W/L	27/0.5 ⁶³
B4(2100)	L	30/1 ⁶⁴
B7 (2600)	L	27/0.5 ⁶³
B7 (2600)	L	30/1 ⁶⁴
B1 (2100), B3 (1800) or B7 (2600) combined with B1 (2100), B3 (1800) or B7 (2600)	L	30/1 ⁶⁴

⁷¹ The power level provided corresponds to the maximum power among the available bands.

⁷² This output power value corresponds to the EUT with one RF card installed or to the configuration with an external antenna.

⁷³ This output power value corresponds to the EUT with both RF cards installed.

⁷⁴ This output power value corresponds to the configuration with an external antenna.



Band	Standard	Nominal output power from the radio (dBm/W)
B2,25 (1900), B4 (2100) or B7 (2600) combined with B46A (5200)	L	28.8/0.75
B2,25 (1900), B4 (2100) or B7 (2600) combined with B46D (5700)	L	28.8/0.75
B1 (2100), B3 (1800) or B7 (2600) combined with B46A (5200)	L	27.4 / 0.55
B1 (2100), B3 (1800) or B7 (2600) combined with B46D (5800)	L	28.8 / 0.75
B1 (2100), B3 (1800) or B7 (2600) combined with B1 (2100), B3 (1800) or B7 (2600) and Wi-Fi 2 GHz and Wi-Fi 5GHz	L + Wi-Fi	31/1.27 ⁷⁵
B2,25 (1900), B4 (2100) or B7 (2600) combined with B2,25 (1900), B4 (2100) or B7 (2600) and Wi-Fi 2 GHz and Wi-Fi 5GHz	W/L + Wi-Fi	31/1.27 ⁶⁶

Table 16-1 Characteristics for the tested antennas used with RBS 6401 for the compliance tests with compliance confirmed at 20 cm separation distance.

Antenna specifications	Internal X-pol sector coverage antenna (KRE 101 2139/1)	External V-pol omni-directional antenna (KRE 101 2024/1)
Antenna dimensions (m)	—	Height: 0.12
Half-power beam width (degrees)	62 – 105	omni
Antenna gain (dBi)	6.4-8.3	2
Tested bands	B1, B2, B25	B2, B25

Table 15-2 Characteristics for the tested antennas used with RBS 6402 for the compliance tests with compliance confirmed at 20 cm separation distance.

Antenna specifications	Internal PIFA antenna (KRE 105 660/1)	Internal antenna (KRE 105 211/1)	Internal antenna (KRE 105 211/2)	External H/V linearly polarized antenna (Laird CMD69273)
Antenna dimensions (m)	—	—	—	Diameter 219 mm × Height 94mm / Height extending beneath the ceiling 44 mm
Half-power beam width (degrees)	—	—	—	—
Antenna gain (dBi)	4.5 (Max)	6 (Max)	6 (Max)	5.0 B2/B4/B25 5.6 B7
Tested bands	B2 ,B4, B7, B25	B46A, B46D,	Wi-Fi 2.4 GHz,	B2, B4, B7, B25

⁷⁵ This output power values corresponds to the configuration with two cellular band RF-cards and one Wi-Fi RF-card.



		Wi-Fi 2.4 GHz, Wi-Fi 5 GHz	Wi-Fi 5 GHz	
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2.4 Radio Dot System

For EU and countries other than USA and Canada, cylinder-shaped compliance boundaries are defined with the front, back and radial compliance distances relative to the equipment casing as shown in Figure 7.

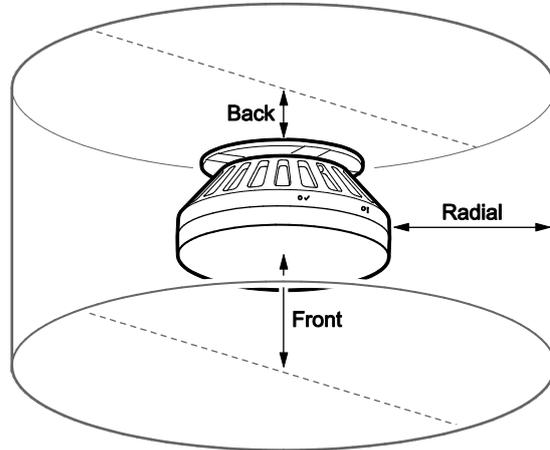


Figure 7. Cylinder-shaped Compliance Boundary. The compliance distances are defined relative to the equipment casing.

The compliance boundary dimensions for the Radio Dot, in meters, are shown in Table 17, Table 18 and Table 19. A distance of zero means that the radio head is compliant at the surface. The power levels used for the assessments include power tolerances and transmission losses. The expanded uncertainty ($k=2$) for the underlying SAR measurements is less than $\pm 30\%$. The total power fed to the antennas for RD 2242, RD 4442 and RD 2243 (including tolerance) is given in Table 19, Table 20, and Table 21, *respectively*.

Table 17 Cylinder-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RD 2242. A 2 dB power tolerance and 0 dB transmission loss is assumed. (intended markets: Europe/Rest of world (RoW)).

Mode and output power for the RBS (radio base station)			Dimensions of the cylinder-shaped compliance boundary (m)					
			Distance in front of radio head		Radial distance		Distance in the back of the radio head	
3GPP band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
B1 (2100)	W/L	2×0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B3 (1800)	L	2×0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B7 (2600)	L	2×0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B40 (2300)	L	2×0.05 W	0.0	0.0	0.0	0.0	0.0	0.0



Table 18 *Cylinder-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RD 4442. A 2 dB power tolerance and 0 dB transmission loss is assumed. (intended markets: Europe/Rest of world (RoW)).*

Mode and output power for the RBS (radio base station)			Dimensions of the cylinder-shaped compliance boundary (m)					
			Distance in front of radio head		Radial distance		Distance in the back of the radio head	
3GPP band	Standard	Nominal output power from the radio ⁷⁶	GP	O	GP	O	GP	O
B1 (2100) B3 (1800)	B1: W/L B3: L	B1: 2 × 0.05 W B3: 2 × 0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B1 (2100) B7 (2600)	B1: W/L B7: L	B1: 2 × 0.05 W B7: 2 × 0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B3 (1800) B7 (2600)	B3: L B7: L	B3: 2 × 0.05 W B7: 2 × 0.05 W	0.0	0.0	0.0	0.0	0.0	0.0

Table 19 *Cylinder-Shaped Compliance Boundary Dimensions for General Public (GP) and Occupational (O) Exposure for RD 2243. A 2 dB power tolerance and 0 dB transmission loss is assumed. (intended markets: China, Europe/Rest of world (RoW)).*

Mode and output power for the RBS (radio base station)			Dimensions of the cylinder-shaped compliance boundary (m)					
			Distance in front of radio head		Radial distance		Distance in the back of the radio head	
3GPP band	Standard	Nominal output power from the radio	GP	O	GP	O	GP	O
B1 (2100)	W/L	2 × 0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B3 (1800)	W/L	2 × 0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B7 (2600)	L	2 × 0.05 W	0.0	0.0	0.0	0.0	0.0	0.0
B40A (2300)	L	2 × 0.125 W	0.0	0.0	0.01 (H&T) ⁷⁷ 0.0 (L) ⁷⁸	0.0	0.0	0.0

⁷⁶ Simultaneous operation on two radio bands

⁷⁷ Head and Trunk exposure

⁷⁸ Limbs exposure



Table 20 RD 2242 Nominal Power Levels.

Band	Standard	Nominal output power from the radio (dBm/W)	Upper limit of power delivered to the antennas (dBm/W)
B1 (2100)	W/L	20 / 0.1	22 / 0.16
B2 (1900)	W/L	20 / 0.1	22 / 0.16
B3 (1800)	L	20 / 0.1	22 / 0.16
B4 (2100)	L	20 / 0.1	22 / 0.16
B5 (850)	L	20 / 0.1	22 / 0.16
B7 (2600)	L	20 / 0.1	22 / 0.16
B13 (700)	L	20 / 0.1	22 / 0.16
B17a (700)	L	20 / 0.1	22 / 0.16
B40 (2300)	L	20 / 0.1	22 / 0.16

Table 21 RD 4442 Nominal Power Levels.

Band	Standard	Nominal output power from the radio (dBm / W) ⁷⁹	Upper limit of power delivered to the antennas (dBm / W) ⁸⁰
B1 (2100) B3 (1800)	B1: W/L B3: L	23 / 0.2	25 / 0.32
B1 (2100) B7 (2600)	B1: W/L B7: L	23 / 0.2	25 / 0.32
B3 (1800) B7 (2600)	B3: L B7: L	23 / 0.2	25 / 0.32

Table 22 RD 2243 Nominal Power Levels.

Band	Standard	Nominal output power from the radio (dBm / W)	Upper limit of power delivered to the antennas (dBm / W)
B1 (2100)	W/L	20 / 0.1	22 / 0.16
B3 (1800)	W/L	20 / 0.1	22 / 0.16
B7 (2600)	L	20 / 0.1	22 / 0.16
B40A (2300)	L	24 / 0.25	26 / 0.40

According to *FCC and Innovation, Science and Economic Development Canada* requirements, of relevance for USA and Canada, a Radio Dot may be classified as a *mobile device* with an intended separation distance to the user or nearby persons of at least 20 cm. Conducted EMF tests have confirmed that the RF exposure levels are below the exposure limits at 20 cm separation from the radio head, see Table 22.

⁷⁹ Simultaneous operation on two radio bands

⁸⁰ Simultaneous operation on two radio bands



Table 23 Characteristics for the tested antennas used with RD 2242 for the compliance tests with compliance confirmed at 20 cm separation distance.

Antenna specifications	Tested bands	Maximum antenna gain (dBi)
Internal sector coverage antenna (KRE 101 2191/2)	B2	3
Internal sector coverage antenna (KRE 101 2191/2)	B4	2.5
Internal sector coverage antenna (KRE 101 2187/1)	B5	-0.4
Internal sector coverage antenna (KRE 101 2185/1)	B13	-2.0
Internal sector coverage antenna (KRE 101 2184/2)	B17a	-2.6



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