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New as of: 03.2017

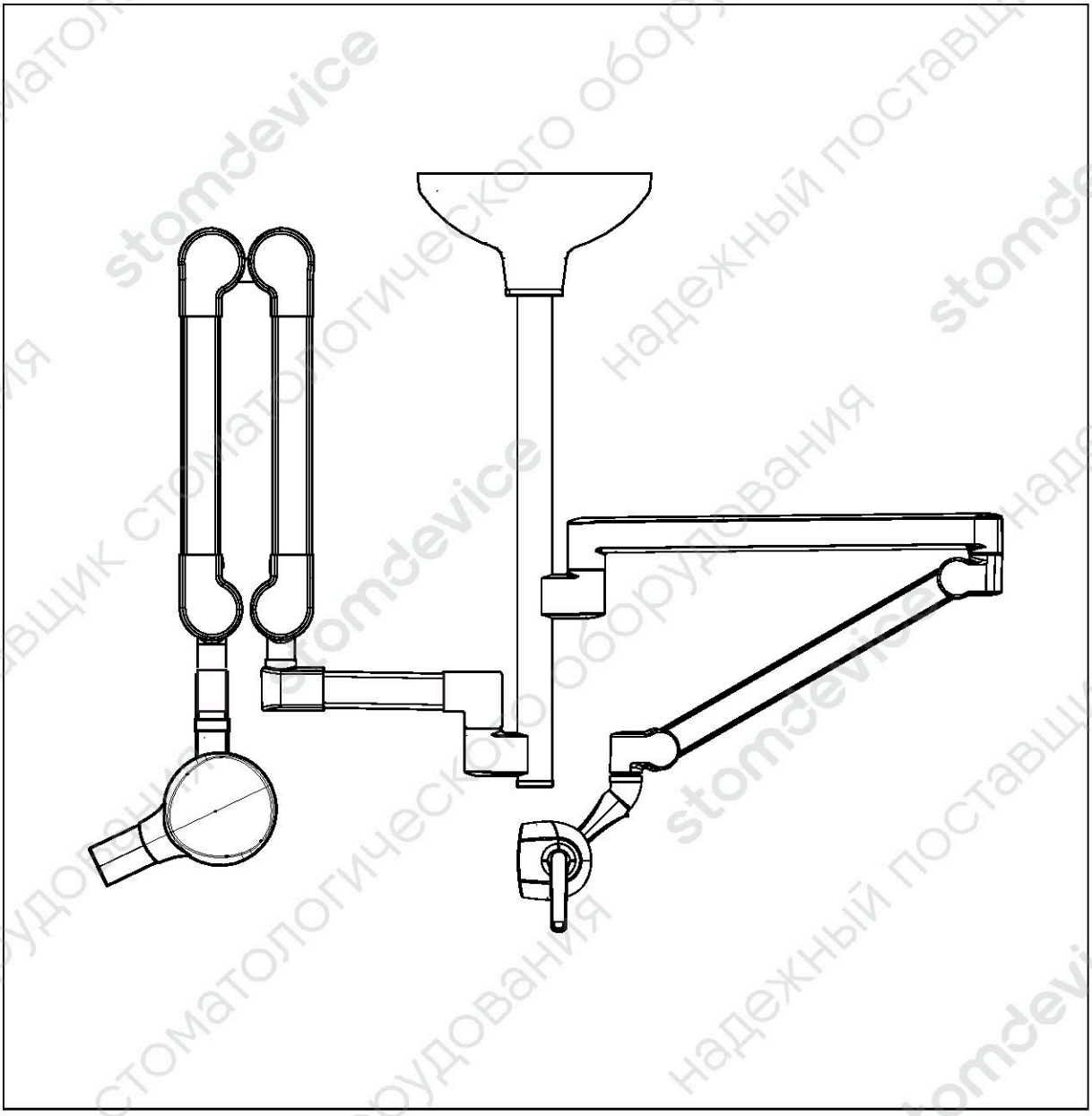
Dentsply Sirona

Ceiling Model

Ceiling Model for LEDview Plus and Heliodent Plus

Installation Requirements

English



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1 General data

1.1 Structure of the document

1.1.1 Identification of the danger levels

To prevent personal injury and material damage, please observe the warning and safety information provided in this document. This information is highlighted as follows:

⚠ DANGER

An imminent danger that could result in serious bodily injury or death.

⚠ WARNING

A possible dangerous situation that could result in serious bodily injury or death.

⚠ CAUTION

A possible dangerous situation that could result in slight bodily injury.

NOTICE

A possible harmful situation which could lead to damage of the product or an object in its environment.

IMPORTANT

Application instructions and other important information.

Tip: Information for facilitating work.

1.1.2 Formats and symbols used

The formats and symbols used in this document have the following meaning:

✓ Prerequisite **1.** First action step **2.** Second action step or ➢ Alternative action ↳ Result ➢ Individual action step	Requests you to do something.
see “Formats and symbols used [→ 4]”	Identifies a reference to another text passage and specifies its page number.
• List	Identifies a list.
“Command / menu item”	Identifies commands, menu items, or quotations.

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2 Safety instructions

2.1 Shielding of room

When using the Heliodent Plus X-ray tube assembly, proper shielding of the room and operator position is essential.

It is the installer's responsibility to ensure that all local radiation regulations and safety measures are met.

2.2 Electromagnetic compatibility

The unit should not be operated in the immediate vicinity of other devices. If this proves to be unavoidable, the unit should be monitored to ensure that it is operating properly.

For details, see chapter Electromagnetic compatibility [→ 16]

2.3 Modifications and extensions to the device

Modifications to this unit which might affect the safety of the system owner, patients or other persons are prohibited by law.

For reasons of product safety, this product may be operated only with original accessories from the manufacturer or third-party accessories expressly approved by the manufacturer. The user is responsible for any damage resulting from the use of non-approved accessories.

If any additional units not approved by the manufacturer are connected or installed in the course of forming a system, they must comply with the applicable standards, e.g.:

- IEC 60950-1 or IEC 62368-1 for information technology equipment and
- IEC 60601-1 for medical devices.

If in doubt, contact the manufacturer of the system components.

The system creator assumes responsibility for conformity of the system as a whole.

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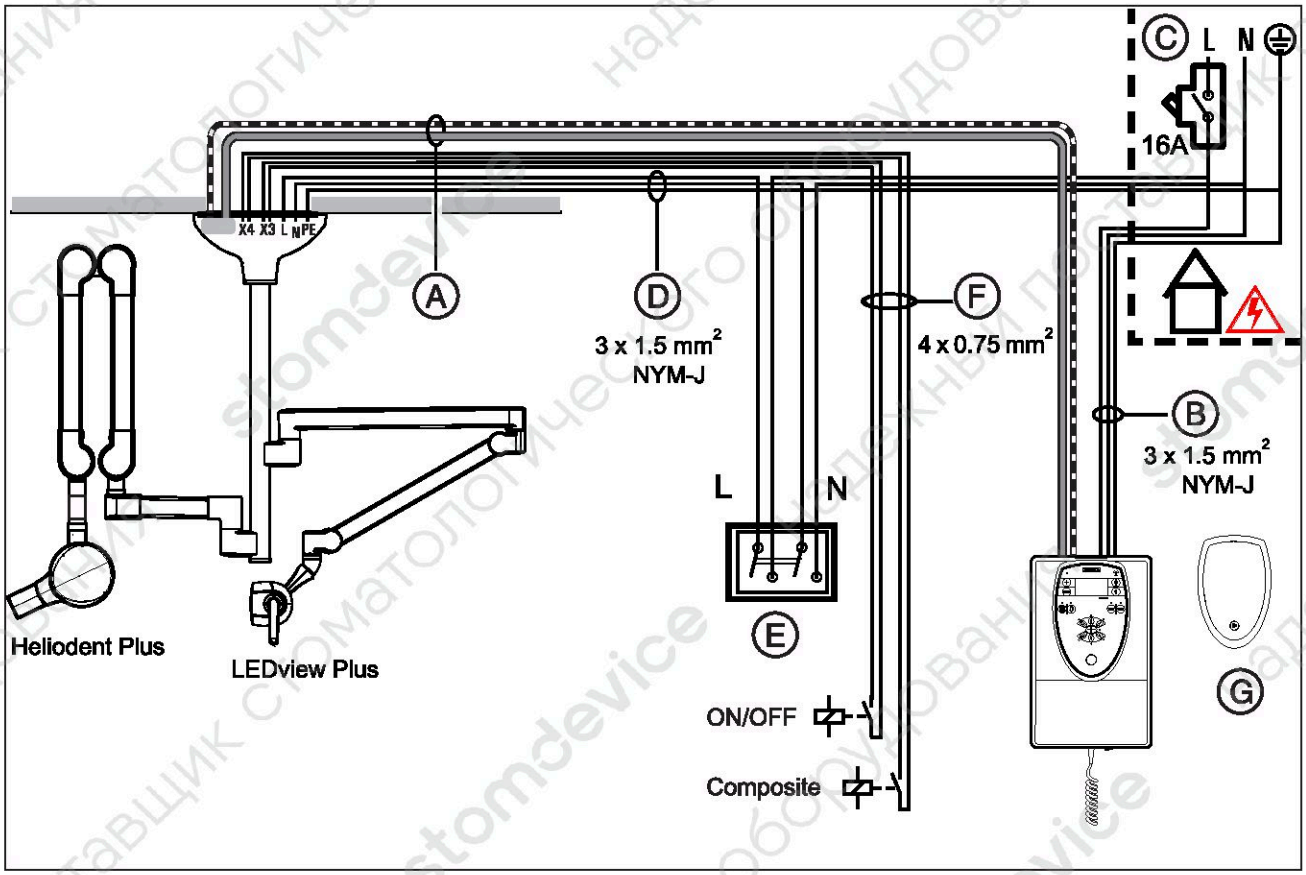
3 On-site installation

⚠ CAUTION

The LEDview Plus operating light and the Heliodent Plus X-ray unit are authorized for use with fixed connections only!

Please observe the line voltage specifications on the rating plates of the ceiling MODEL and Heliodent Plus wall adapter.

3.1 Schematic diagram of cable routing



Heliodent Plus:

- The radiation cable (A) and the ground wire between the ceiling adapter and the wall adapter are supplied.
  12.5 mm outer diameter,
  max. cable length 10 meters (393").
  - Overhang on the cover at least 30 cm.
- Power cable (B) to wall adapter, only concealed installation is possible:
  3x1.5 mm^2 NYM-J (3xAWG 14 with PE), with sheath

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- Cable for remote control or Remote Timer (G): Conduit ⌀ int. min. 12 mm (1/2"), requires an excess length of at least 0.25 m (10") at both ends.
  The installation options for the remote control or Remote Timer can be found in the Heliodent Plus installation instructions.

⚠ CAUTION

Do not install the cables for Remote Timer and power cables in the same conduit.

- Protection of the LEDview Plus / Heliodent Plus – ceiling model: 16 AT when using automatic circuit breakers (C)

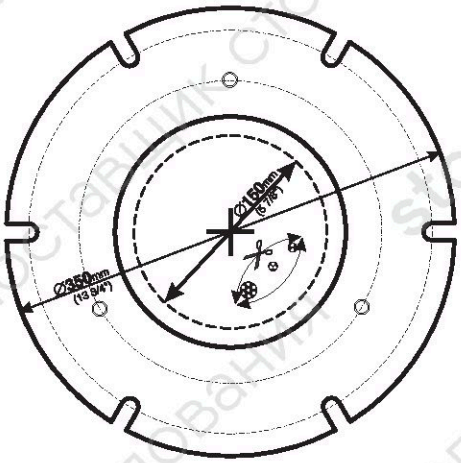
⚠ CAUTION

The power cable must not be routed from the ceiling model to the wall adapter of the Heliodent Plus.
The power cable must be routed from the house installation directly to the wall adapter of the Heliodent Plus.

LEDview Plus:

- Power cable (D) 3x1.5 mm^2 NYM-J (3xAWG 14 with PE), with sheath
  - Overhang on the cover at least 30 cm.
- Switch (E) for turning off the line voltage for the LEDview Plus. The switch must be located in the same room as the ceiling model.
- Touch function (F) for ON/OFF and composite of LEDview Plus (optional):
  standard 4x0.75 mm^2 without PE (4xAWG 18, without PE), cable with sheath.

3.1.1 Discharge area of the supply lines



The discharge area of the supply lines for LEDview Plus and/or Heliodent Plus must be within the range of 150 mm from the midpoint and must have an overhang on the ceiling of at least 30 cm.

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3.2 Ceiling construction

Important information on ceiling construction

Please provide detailed information on the load capacity of the ceiling and purchase the appropriate installation materials from a specialized dealer.

- **Load capacity of ceiling construction**
  The total installed weight of the ceiling model with LEDview Plus and Heliodent Plus is approx. 50 kg (110 lb). Calculate for the attachment with at least four times the safety factor.
  The ceiling construction must therefore have a minimum load capacity of 200 kg (440 lb).
- **Concrete ceilings**
  The heavy duty anchors supplied may be used only for concrete ceilings!
- **Other ceilings**
  For all ceilings other than concrete ceilings, the ceiling construction must be checked to make sure that its fastening substance is sufficient to accommodate special wall plugs.
  For wood joist ceilings, an (approx. 10 mm thick) metallic anchor plate is required, which can be made by a local fitter.

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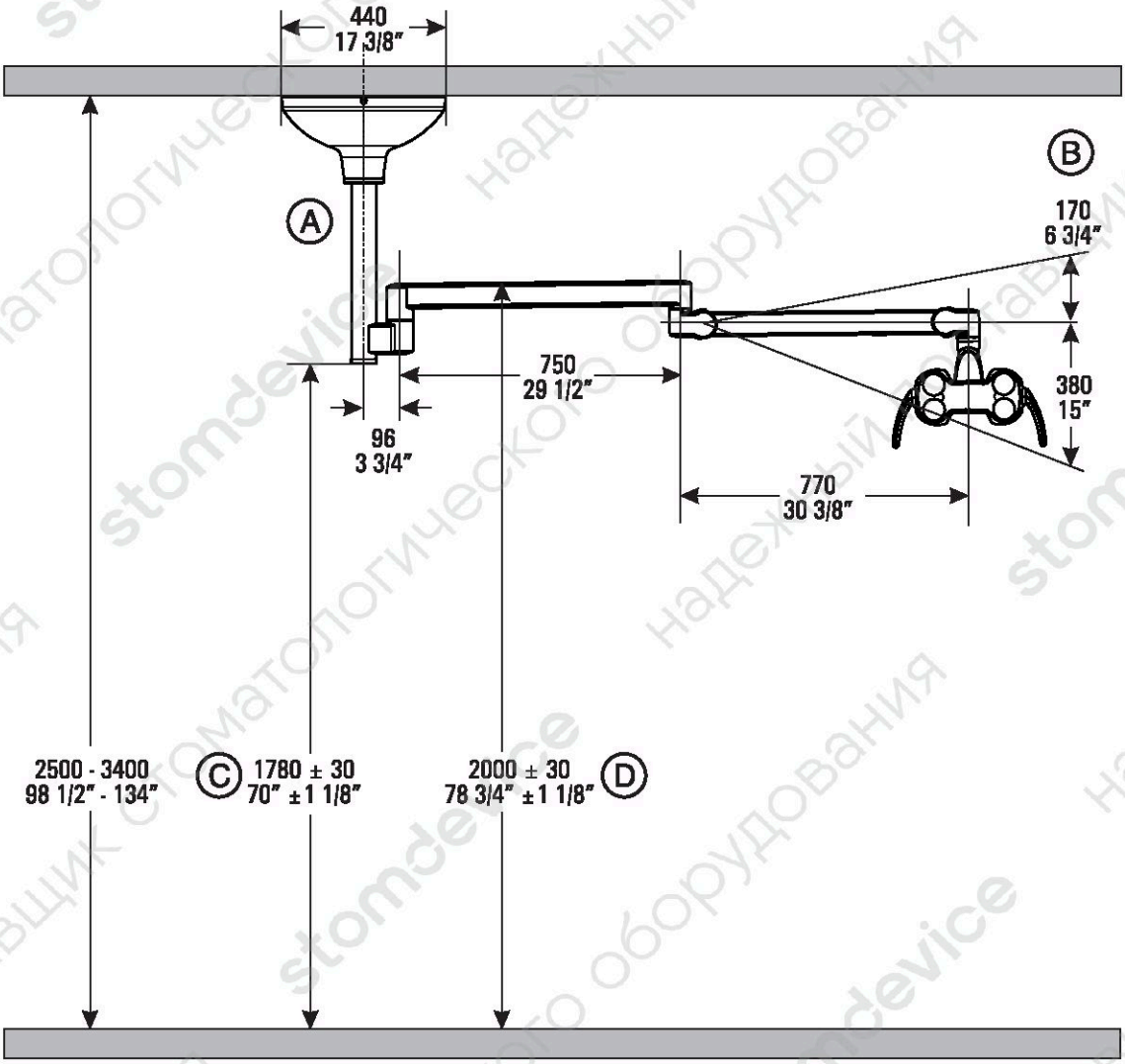
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4 Dimensions, technical data

4.1 Dimensions

4.1.1 Dimensions LEDview Plus, scale 1:20

Side view



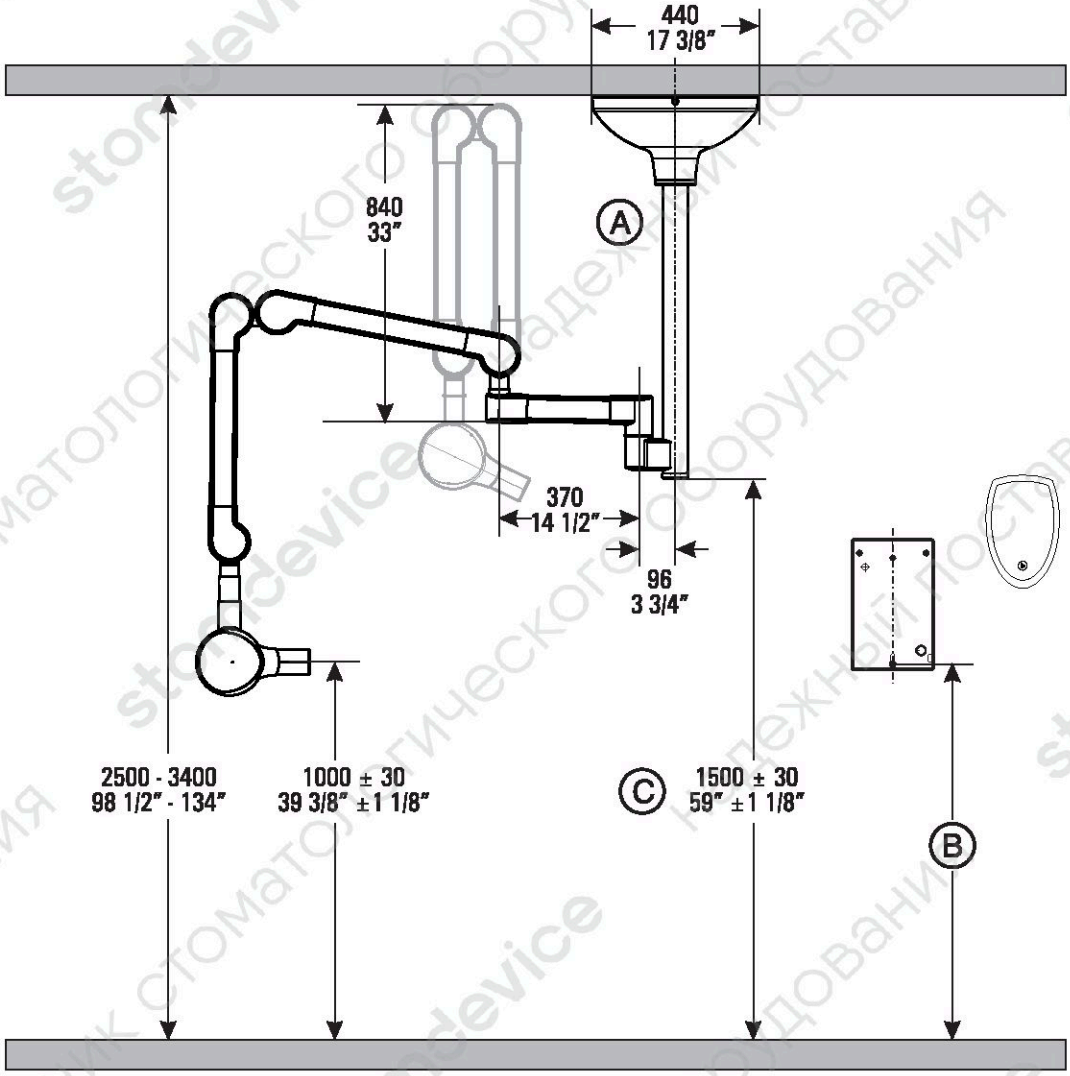
A	Shortenable assembly tube
B	Vertical setting range for the operating light
C	Light height beneath the assembly tube
D	Height of the support arm of operating light

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4.1.2 Dimensions of Heliodent Plus, scale: 1:20

Side view



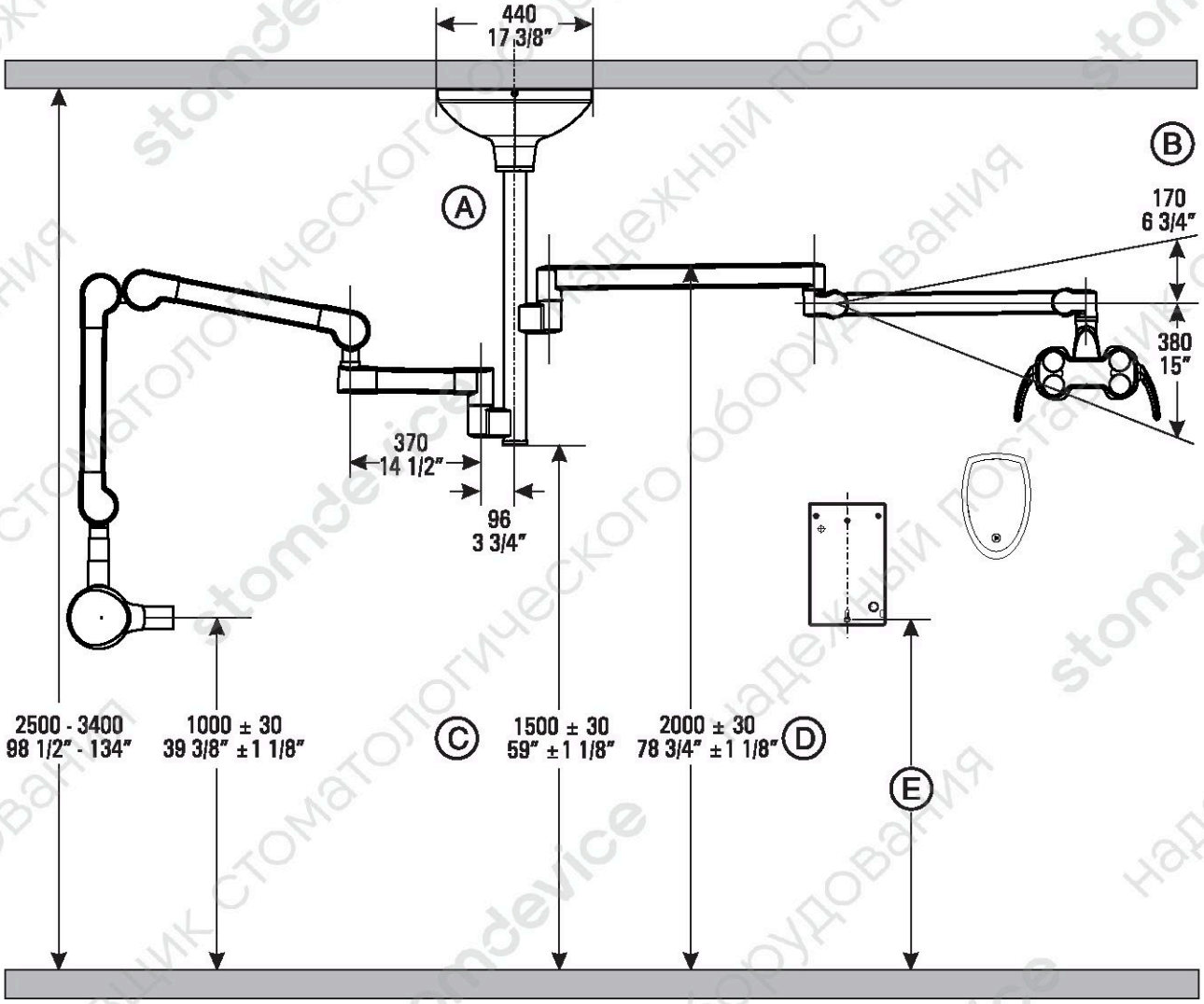
A	Shortenable assembly tube
B	See Heliodent Plus installation requirements
C	Light height beneath the assembly tube

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4.1.3 Dimensions of ceiling combination with LEDview Plus and HELIODENT Plus, scale: 1:20

Side view



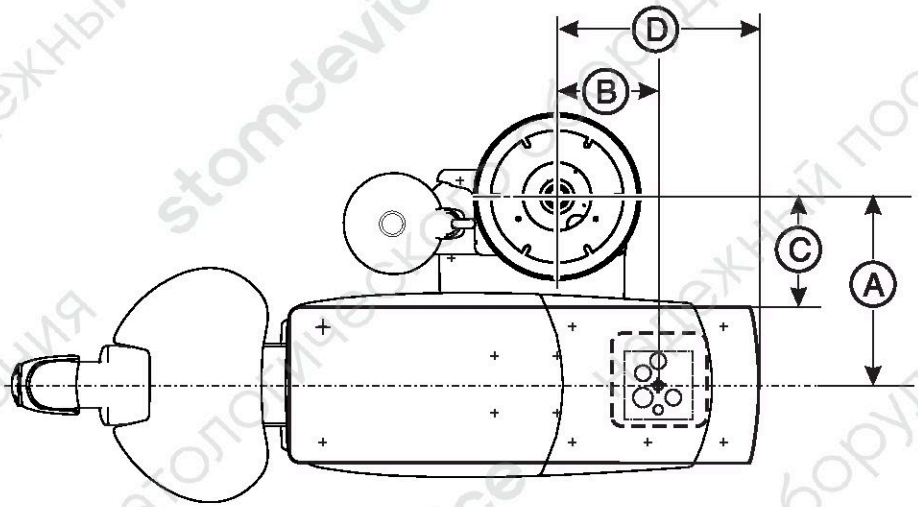
A	Shortenable assembly tube
B	Vertical setting range for the operating light
C	Light height beneath the assembly tube
D	Height of the support arm of operating light
E	See Heliodent Plus installation requirements

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4.1.4 Dimensions of ceiling model, scale 1:20

Top view in relation to the treatment units



Distance in mm / inches	A	B	C	D
Teneo	500 19 3/4"	260 10 1/4"	294 11 9/16"	530 207/8"
Sinius	514 20 1/4"	327 12 7/8"	280 11"	590 23 1/4"
Sinius CS Scandinavian version	514 20 1/4"	227 9"	280 11"	490 19 1/4"
Intego	514 20 1/4"	450 17 3/4"	294 11 9/16"	650 25 1/2"
Intego CS Scandinavian version	424 16 5/8"	450 17 3/4"	204 8"	650 25 1/2"
Intego pro	514 20 1/4"	360 14 1/8"	294 11 9/16"	560 22"
Intego pro CS Scandinavian version	514 20 1/4"	260 10 1/4"	294 11 9/16"	460 18 1/8"

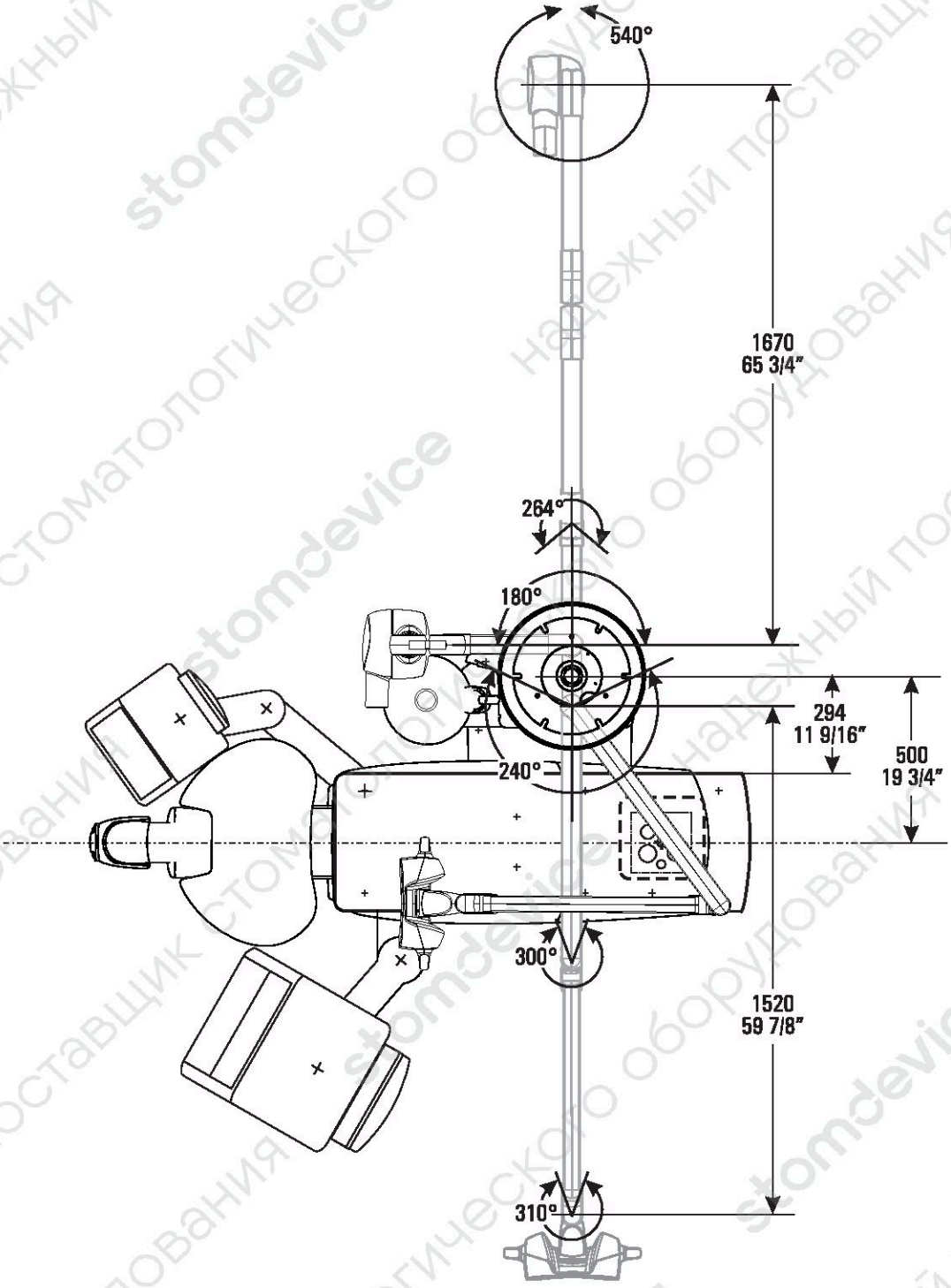
Explanation

The center of the shaft of the ceiling girder should be located above the position at which the mounting bar of the operating light would be located if it were attached to the treatment center.

IMPORTANT
If the treatment center is not yet attached, the position of the mounting bar for the operating light can be determined using the surgical guide for the treatment center.

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Top view with swivel range of the LEDview Plus and Heliodent Plus (using the example of Teneo)



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4.2 Technical data

4.2.1 Cover support

	Dimensions of the packaging	**Weight** with / without packaging
Assembly tube 2.5 m LEDview Plus	80 cm x 21 cm x 15 cm 31 1/2" x 8 1/4" x 5 7/8"	7.5 kg / 6.5 kg 16.5 lb / 14.3 lb
Assembly tube 2.5 m LEDview Plus/Heliodent Plus	110 x 30 x 15 cm 43 1/4" x 11 3/4" x 5 7/8"	11.5 kg / 10 kg 25.3 lb / 22 lb
Assembly tube 3.4 m LEDview Plus	170 cm x 21 cm x 15 cm 67 x 8 1/4" x 5 7/8"	14.5 kg / 13 kg 32 lb / 28.6 lb
Assembly tube 3.4 m LEDview Plus/Heliodent Plus	200 x 30 x 15 cm 78 3/4" x 11 3/4" x 5 7/8"	18.5 kg / 16.5 kg 40.8 lb / 36.3 lb
Ceiling connection covers	50 x 50 x 30 cm 19 5/8" x 19 5/8" x 11 3/4"	2 kg / 1 kg 4.4 lb / 2.2 lb
Ceiling connection	40 x 40 x 30 cm 15 3/4" x 15 3/4" x 11 3/4"	15.5 kg / 14 kg 34.2 lb / 30.9 lb

4.2.2 LEDview Plus

	Dimensions of the packaging	**Weight** with / without packaging
LEDview Plus	40 cm x 40 cm x 19 cm 15 3/4" x 15 3/4" x 7 1/2"	3 kg / 2 kg 6.6 lb / 4.4 lb
Support arm LEDview Plus	93 x 40 x 20 cm 36 5/8" x 15 3/4" x 7 7/8"	8 kg / 6.5 kg 17.6 lb / 14.3 lb

Power connection	
Line voltage LEDview Plus	100 VAC - 240 VAC, +/- 10%, 50/60 Hz
Nominal current	0.65 A - 0.4 A
Fuse (for LEDview Plus and Heliodent Plus)	16 A slow blow

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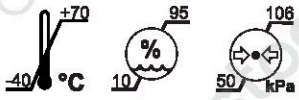
4.2.3 Heliodent Plus

	Dimensions of the packaging	**Weight** with / without packaging
Angular support arm system	99 cm x 94 cm x 29 cm 39" x 37" x 11 1/2"	37 kg / 30 kg 81.57 lb / 66.14 lb

Power connection	
Line voltage for ceiling model	120 V, 200 V - 240 VAC, +/- 10%, 50/60 Hz
Internal line resistance	At 120 V: 0.3 Ω at 200 V - 240 V: 0.8 Ω
Nominal current	At 120 V: 10 A at 200 V - 240 V: 6 A - 5 A
Fuse (for LEDview Plus and Heliodent Plus)	16 A slow blow
Power consumption	≤ 1.2 kW

4.2.4 Transport, storage and operating conditions

Ceiling model with LEDview Plus and Heliodent Plus

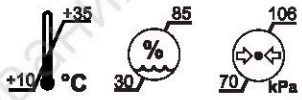


Transport and storage conditions:

Temperature: -40°C – +70°C (-40°F – +158°F)

Relative humidity: 10% - 95%

Air pressure: 50 kPa – 106 kPa



Operating conditions:

Ambient temperature:+10 °C - +35 °C (50 °F – 95 °F)

Relative humidity: 30% - 85% no condensation

Air pressure: 70 kPa – 106 kPa

Operating altitude:

≤ 3000 m above sea level

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5 Electromagnetic compatibility

The ceiling model complies with the requirements for electromagnetic compatibility (EMC) according to IEC 60601-1-2. The ceiling model is hereinafter referred to as the "UNIT". Observance of the following information is necessary to ensure safe operation regarding EMC aspects.

5.1 Accessories

Designation of the interface cables	Supplier
7x1.5mm^2 NYY-J and ground wire max. 10m 7xAWG 14,	Sirona
3x1.5mm^2 NYM-J 3xAWG 14 with PE, with sheath	Commercially available
4x0.75 mm^2 4xAWG 18, with sheath	Commercially available

The **UNIT** may only be operated with accessories and spare parts approved by Sirona. Unapproved accessories and spare parts may lead to an increased emission or to a reduced immunity to interference.

The **UNIT** should not be operated in the immediate vicinity of other devices. If this proves to be unavoidable, the UNIT should be monitored to ensure that it is operating properly.

5.2 Electromagnetic emission

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.

Emission measurement	Conformity	Electromagnetic environment - guidelines
RF emissions according to **CISPR 11**	Group 1	The **UNIT** uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions according to **CISPR 11**	Class B	The **UNIT** is intended for use in all facilities, including residential areas and in any facilities connected directly to a public power supply providing electricity to buildings used for residential purposes.
Harmonics according to **IEC 61000-3-2**	Class A	
Voltage fluctuations / flicker according to **IEC 61000-3-3**	coincides	

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5.3 Interference immunity

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.

Interference immunity tests	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment - guidelines
Electrostatic discharge (ESD) according to **IEC 61000-4-2**	± 8KV contact discharge ± 15 KV air discharge	± 8 KV contact discharge ± 15 KV air discharge	Floors should be made of wood or concrete or finished with ceramic tiling. If the floor is covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/ burst according to **IEC 61000-4-4**	± 1 kV for input and output lines ± 2 kV for power supply lines	± 1 kV for input and output lines ± 2 kV for power supply lines	The quality of the line power supply should be that of a typical commercial or hospital environment.
Surge voltages according to **IEC 61000-4-5**	± 1 kV differential mode ± 2 kV common mode voltage	± 1 kV differential mode ± 2 kV common mode voltage	The quality of the line power supply should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and variations of the power supply according to **IEC 61000-4-11**	<5% U_T for ½ period (>95% dip of U_T) 40% U_T for 5 periods (60% dip of U_T) 70% U_T for 25 periods (30% dip of U_T) <5% U_T for 5sec. (>95% dip of U_T	<5% U_T for ½ period (>95% dip of U_T) 40% U_T for 5 periods (60% dip of U_T) 70% U_T for 25 periods (30% dip of U_T) <5% U_T for 5sec. (>95% dip of U_T	The quality of the line power supply should be that of a typical commercial or hospital environment. If the user of the **UNIT** requires it to continue functioning following interruptions of the power supply, it is recommended to have the **UNIT** powered by an uninterruptible power supply or a battery.
Magnetic field of power frequencies (50/60 Hz) according to **IEC 61000-4-8**	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Note: U_T is the AC supply voltage prior to application of the test level.			
			Portable and mobile radio equipment must not be used within the recommended working clearance from the **UNIT** and its cables, which is calculated based on the equation suitable for the relevant transmission frequency. Recommended working clearance:

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Interference immunity tests	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment - guidelines
Conducted RF disturbance **IEC 61000-4-6**	3 V_{eff} 150 kHz to 80 MHz[1]	3 V_{eff}	$d = [1,2]\ \sqrt{P}$
Radiated RF interference **IEC 61000-4-3** [4]	3 V/m 80 MHz - 800 MHz[1] 3 V/m 800 MHz - 2.7 GHz[1]	3 V_{eff} 3 V_{eff}	$d = [1,2]\ \sqrt{P}$ at 80 MHz - 800 MHz $d = [2,3]\ \sqrt{P}$ at 800 MHz - 2.7 GHz with P as the power rating of the transmitter in watts (W) according to the transmitter manufacturer's specifications and d as recommended safety distance in meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey[2] should be less than the compliance level[3] in each frequency range. Interference is possible in the vicinity of equipment bearing the following graphic symbol. 

1. The higher frequency range applies at 80 MHz and 800 MHz.
2. The field strengths of fixed transmitters, such as base stations of radiotelephones and mobile agricultural radio broadcast services, amateur radio stations, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. A site survey is recommended to assess the electromagnetic environment due to fixed RF transmitters. If the measured field strength in the location in which the **UNIT** is used exceeds the applicable RF compliance level above, the **UNIT** should be observed to verify normal operation. If unusual performance characteristics are observed, it may be necessary to take additional measures such as reorientation or repositioning of the **UNIT**.
3. Over the frequency range 150kHz to 80 MHz, field strengths should be less than 3 V/m.
4. Test specification for radiated RF interference IEC 61000-4-3:

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Test frequency (MHz)	Band (MHz)	Service	Modulation	Maximum Power (W)	Distance (m)	Immunity test level (V/m)
385	380 - 390	TETRA 400	Pulse modulation 18 Hz	1,8	0,3	27
450	430 - 470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	2	0,3	28
710 745 780	704 - 787	LTE Band 13, 17	Pulse modulation 217 Hz	0,2	0,3	9
810 870 930	800 - 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	2	0,3	28
1720 1845 1970	1700 - 1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	2	0,3	28
2450	2400 - 2570	Bluetooth, WLAN, 802,11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	2	0,3	28
5240 5500 5785	5100 - 5800	WLAN 802.11 a/n	Pulse modulation 217 Hz	0,2	0,3	9

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5.4 Working clearances

Recommended working clearances between portable and mobile RF communication devices and the UNIT

The **UNIT** is intended for operation in an electromagnetic environment, where radiated RF interference is checked. The customer or the user of the **UNIT** can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the **UNIT** - depending on the maximum output power of the communication device, as shown below.

Power rating of the transmitter [W]	Working clearance according to transmission frequency [m]		
	150 kHz - 80 MHz	80 MHz - 800 MHz	800 MHz - 2.5 GHz
	$d = [1.2] \sqrt{P}$	$d = [1.2] \sqrt{P}$	$d = [2.3] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

The recommended safety distance d in meters (m) can be determined for transmitters, whose maximum power rating is not specified in the above table, using the equation that belongs to the corresponding column, wherein P is the maximum power rating of the transmitter in watts (W) according to the transmitter manufacturer.

Note 1

The higher frequency range applies at 80 MHz and 800 MHz.

Note 2

These guidelines may not apply in all cases. The propagation of electromagnetic waves is influenced by their absorption and reflection by buildings, objects and persons.

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We reserve the right to make any alterations which may be required due to technical improvements.

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