1. General Information

1.1. Main Features

Green21, a computed tomography x-ray system intended to produce diagnostic details of the maxillofacial areas for adults and pediatric patients by reconstructing two or three dimensional images for a dental and ENT treatment.

Green21 (PCT-90LH) is an advanced 4 in 1 digital X-ray imaging system that incorporates PANO, i-CEPH (Optional), 3D CT (Dental / ENT) and 3D PHOTO (Optional) imaging capabilities into a single system for Dental and ENT (Ear, Nose and Throat) diagnostics.



- Extensive Diagnosis with Large FOV (Maximum FOV 21x19 (cm))
- Multi FOV support: Selectable FOV from 8x8 (cm) to 21x19 (cm)
- Multi Imaging Solution for Accurate Diagnostics
- 3D and 2D (Auto Pano*, Auto Ceph**) image acquisition by single scan
- Conventional 2D (PANO) image acquisition
- 3D for ENT Specialists: Optimized FOV for ENT Diagnosis
- Multi-purpose camera equipped for patient positioning and 3D PHOTO acquisition (Optional)
- Touch Screen implemented for easy use
- Digital Imaging Communication in Medicine (DICOM) format supported

* ***Auto Pano***

Auto Pano is a feature used to acquire reconstructed 2D images during 3D CT scans without additional X-ray exposure. It has the same region that conventional panoramic images offer. It provides images for Standard mode in DICOM or BMP format.

Auto Pano option is available under DENTAL CT (FOV: 21x19, 17x15) and ENT CT (FOV: 21x19) modality.

***** Auto Ceph***

Auto Ceph is a feature used to acquire reconstructed 2D images during 3D CT scans without additional X-ray exposure. It has the same region that conventional cephalometric images offer. It provides images for PA, Lateral, SMV and Waters' view modes in DICOM or BMP format.

Auto Ceph option is available under DENTAL CT (FOV: 21x19) and ENT CT (FOV: 21x19) modality.

◆ When selected, Auto Pano and/or Auto Ceph image is automatically acquired and can be seen on the EzDent-i Viewer.

1.2. Available Modes

Equipment	Available Modes
Green21	PANO, i-CEPH (Optional), CT (Dental / ENT), 3D PHOTO (Optional)

2. Functional Specifications

2.1. PANO Mode

2.1.1. Overview

PANO imaging software is classified into two levels as below.

Level	Examination Option	Optional Status	
		Domestic	Overseas
Normal	PANO examination	Default	Default
	Special examination	Default	Default
Magic PAN	Applies to Standard, Right, Front and Left imaging program	Default	Optional

2.1.2. Scan Time / Exposure Time

Examination	Arch Selection	Mode	Scan Time (s)		Exposure Time (s)	
			High Resolution	Green	High Resolution	Green
Pano Examination	Narrow, Normal, Wide, Orthogonal	Standard	13.5	13.5	13.5	13.5
		Right	13.5	13.5	6.8	6.8
		Front	13.5	13.5	11.2	11.2
		Left	13.5	13.5	6.8	6.8
	Child	Standard	11.9	11.9	11.9	11.9
		Right	11.9	11.9	6.0	6.0
		Front	11.9	11.9	9.5	9.5
		Left	11.9	11.9	6.0	6.0
	Orthogonal	Bitewing	13.5	13.5	9.6	9.6
		Bitewing Right	13.5	13.5	4.8	4.8
		Bitewing Left	13.5	13.5	4.8	4.8
Special Examination	-	TMJ LAT Open	13.5	N/A	6.0	N/A
		TMJ LAT Close	13.5		6.0	
		Sinus LAT	9.0		9.0	
		Sinus PA	13.5		11.2	

PANO sample image



[High Resolution / Standard]

2.2. i-CEPH Mode (Optional)

2.2.1. Scan Time / Exposure Time

Examination	Scan Time (s)	Exposure Time (s)
Lateral	18.0	18.0
PA	18.0	18.0
Carpus	8.4	8.4

i-CEPH sample image



[Lateral] **[PA]**

2.3. CT (Dental / ENT) Mode

2.3.1. Scan Area

CT Type	FOV Size (cm)	Vertical Position	Horizontal Position		
			Right	Center	Left
Dental CT	21x19	Occl.	X	O	X
	17x15	Occl.	X	O	X
	12x9	Occl.	X	O	X
	8x8	Occl.	O	O	O
ENT CT	21x19	Occl.	X	O	X
	17x11	TB&PNS	X	O	X
		Airway	X	O	X
	8x8	Occl.	O	X	O

2.3.2. Scan Time / Exposure Time

CT Type	FOV (cm), Scan Area	Scan Time (s)		Exposure Time (s)	
		High Resolution	Green	High Resolution	Green
Dental CT	21x19	18.0	18.0	18.0	18.0
	17x15	18.0	18.0	16.6	16.6
	12x9	18.0	18.0	13.9	13.9
	8x8	18.0	18.0	11.0	11.0
ENT CT	21x19	18.0	18.0	18.0	18.0
	17x11	18.0	18.0	16.6	16.6
	8x8	18.0	18.0	11.0	11.0

2.3.3. Image Reconstruction Time & File Size

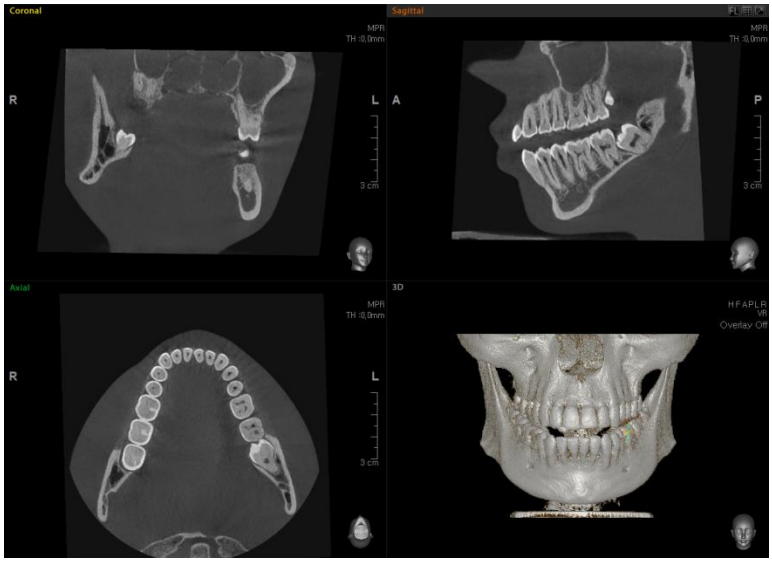
CT Type	FOV (cm)	Voxel Size	Reconstruction Time (s)		File Size (MB)
			High Resolution	Green	
Dental CT	21x19	0.3	199	168	592
		0.4	141	119	250
	17x15	0.3	143	120	307
		0.4	105	88	130
	12x9	0.2	145	133	309
		0.3	94	87	92
	8x8	0.12	186	174	123
		0.2	109	102	37
ENT CT	21x19	0.3	199	168	592
		0.4	141	119	250
	17x11	0.3	110	92	225
		0.4	72	61	95
	8x8	0.12	186	174	123
		0.2	109	102	37

- *MAR (Metal Artifact Reduction) skipped*
- *Measurement condition: HP Z440, Windows 7 pro 64bit OS: Intel Xeon E5-1620 3.5GHz, 32GB DDR4-2133 RAM, NVIDIA GEFORCE GTX980 Ti OC D5 6GB*
- *Time for image reconstruction can be differentiated depends on computer specifications and operation environment.*

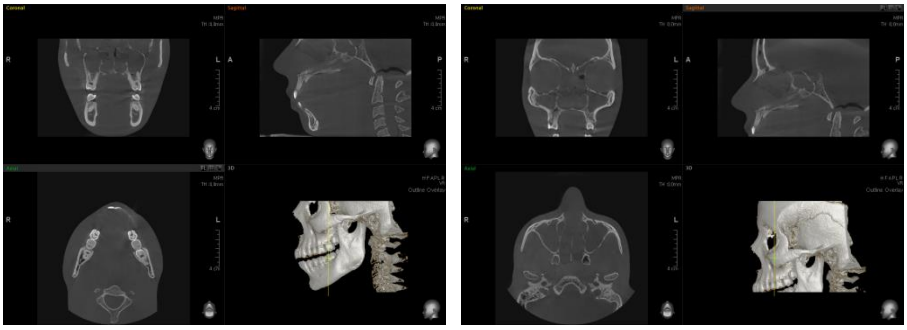
Computed Tomography (CT) sample image



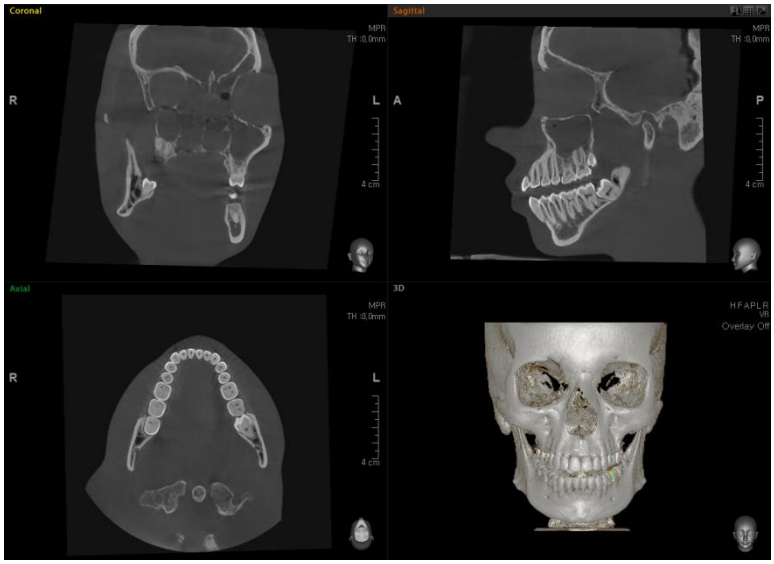
[High Resolution: FOV 8x8 Left / Center / Right_0.2 voxel image]



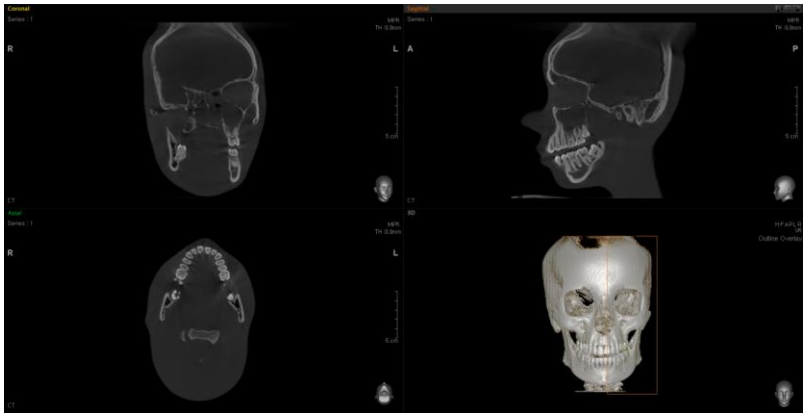
[High Resolution: FOV 12x9_0.2 voxel image]



[High Resolution: FOV 17x11_Airway / TB&Sinus_0.2 voxel image]



[High Resolution: FOV 17x15_0.2 voxel image]



[High Resolution: FOV 21x19_0.3 voxel image]

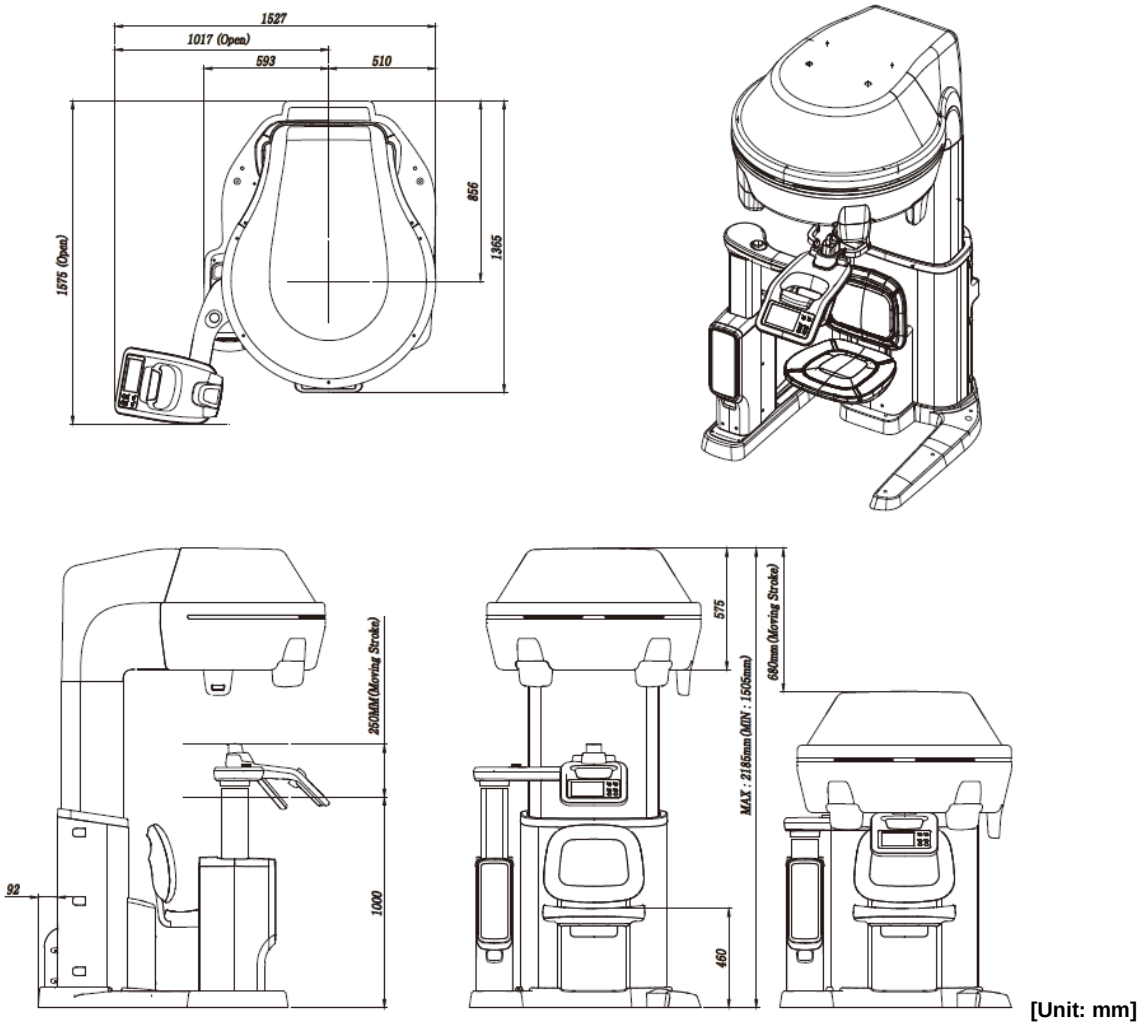
3. PC Specifications (Recommended)

Item	Specification (HP)
CPU	Intel Xeon E5-1607v4 3.1GHz 2133 10MB cache CPU or higher
RAM	32GB DDR4-2400 ECC RAM
HDD	1TB SATA 1st HDD
Graphics board	GALAX GEFORCE GTX1080 EXOC D5X 8GB or greater
Ethernet interface	Broadcom 5761 Gigabit PCIe NIC
Serial Port (RS232)	HP Serial Port Adapter Kit
Power Supply	≥ 700 Watts (90% Efficiency)
Slots	1 PCI Express Gen3 x 8 Slot 2 PCI Express Gen3 x 16 slot 1 PCI Express Gen2 x 8 Slot 1 PCI Express Gen2 x 4 Slot
	1 PCI Slot
CD/DVD Drive	DVD-ROM, DVD+/-RW, Blu-Ray
Monitor Resolution	1280 x 1024 screen resolution
Operating System	Windows 7 Professional 64-Bit Windows 8.1 Professional 64-Bit Windows 10 Professional 64-Bit
Recommended system	HP Z440

- *Recommended specifications and system for PC can be changed without notice.*

4. Mechanical Specifications

4.1. Equipment Dimensions



[Unit: mm]

Item	Description
Weight	321 kg (708 lbs. with the Base)
Total Height	Max. 2185 mm (86.0 inch)
Rotating Unit Vertical Movement	Max. 680 mm (26.8 inch)
Dimensions (Length(L) x Width(W) x Height(H))	1575(L) x 1527(W) x 2185(H) mm (62.0(L) x 60.1(W) x 86.0(H) inch)
Installation type	Base stand

4.2. Image Magnification

Mode	FDD (mm)	FOD (mm)	ODD (mm)	Magnification
PANO	672.72	446.13	226.59	1.51
i-CEPH (PA & Lateral)	672.72	384.12	288.60	1.75 (Virtual : 1)
i-CEPH (Carpus)	672.72	626.20	46.50	1.07
CT	672.72	384.12	288.60	1.75

** FDD : Focal Spot to Detector Distance*
** FOD : Focal Spot to object Distance*
** ODD : Object to Detector Distance (ODD = FDD – FOD)*
** Magnification = FDD / FOD*

5. Technical Specifications

5.1. X-ray Generator

Item			Description
High Voltage Generator	Model		DG-08C22C2
	Rated output power		1.2 kW (0.1 sec)
	Type		Inverter
	Normal / Pulse	kVp	60 ~ 120 kV (1 kV increment ±10 %)
		mA	4 ~ 10 mA (1 mA increment ±20 %) (PANO & i-CEPH: 0.5 mA increment, CT: 0.1 mA increment ±10 %)
	Cooling		Cooling Protect (Optional fan cooling, ≥ 60 ℃)
	Total filtration		Min. 2.5 mm Al
	Added filtration		2.0 mm Al
X-ray Tube	Manufacturer		CEI
	Model		OX/115-05 (Stationary Anode type)
	Focal spot size		0.5 mm (IEC 60336)
	Target Angle		15 degree
	Inherent Filtration		0.5 mm Al
	Anode Heat Content		30 kJ
	Duty Cycle		1:60 or more (Exposure time : Interval time)

5.2. Detector

Item	Description
Model	Xmaru3104CF
Detector Type	CMOS photodiode array
Pixel size	99 μm @ 2X2 Binning : PANO 198 μm @ 4X4 Binning : CT (Dental / ENT), i-CEPH
Active area	310.4 mm x 36.4 mm
Frame Rate	107 fps (2x2 Binning) : PANO 308 fps (4x4 Binning) : CT (Dental / ENT), i-CEPH
Analogue-Digital Conversion	14 bits
Operating condition	10 ~ 35 ℃ (Temperature) 10 ~ 75 % (Humidity)
Storage condition	-10 ~ 60 ℃ (Temperature) 10 ~ 75 % (Humidity)
Sensor size	350 mm x 300 mm
Converter	Csl:Ti
Energy Range	60 ~ 120 kVp
Readout	Charge amplifier array
Video Output	Optic

6. Electrical Specifications

Item	Description
Power supply voltage	AC 100 - 240 V
Frequency	50 / 60 Hz
Power rating	1.3 - 1.6 kVA

* The input line voltage depends on the local electrical distribution system.

* Allowable input voltage fluctuation requirement*: ±10%*

7. Environmental Specifications

Item		Description
During Operation	Temperature	10 ~ 35℃
	Relative humidity	30 ~ 75%
	Atmospheric pressure	860 ~ 1060 hPa
During Transport and Storage	Temperature	-10 ~ 60℃
	Relative humidity	10 ~ 75%
	Atmospheric pressure	860 ~ 1060 hPa

8. International Standards and Regulations

Green21 was designed and developed to comply with the following international standards and regulations:

IEC/EN 60601-1(3rd), UL 60601-1(1st), IEC/EN 60601-1-3, IEC 60601-2-63

21 CFR 1020.30, 31, 33

NEMA Standard publication PS 3.1-3.18, 2008

CE 2460	This is Class IIb equipment and obtained CE marking in April, 2007 for regulations compliance in accordance with the revised European Union's MDD (Medical Devices Directive) 93/42 EEC.
CLASSIFIED c UL us Medical equipment UL 60601-1 / CAN/CSA C22.2 No. 601.1 E330656	This equipment received the UL certification mark in accordance with UL 60601-1/CAN/CSA C22.2 No.601.1 regulations.

9. Additional Information

For further information for **Green21**, please contact us at:

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