

EMC TEST REPORT FCC 47 CFR Part 15B, ISED ICES-003 Issue 7	
Report Reference No	G0M-2104-9767-EF0115B-V02
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    A2LA - Registration number: 1983.01 (ISED) ISED wireless device testing laboratory: CN 3470A DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	ACL GmbH
Address	Apelsteinallee 5 04416 Markkleeberg GERMANY
Test Specification Standard(s)	47 CFR Part 15 Subpart B ISED ICES-003 Issue 7 ANSI C63.4:2014+A1:2017
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	The device is designed for documentation purposes of data, such as patient-related information inside and outside operating rooms, intensive care units and similar areas of use. It supports the local software environment and can be part of the IT data net
Model(s)	OR-PC® 21
Additional Model(s)	OR-PC® 24
Brand Name(s)	OR-PC®
Hardware Version(s)	OR-PC® 21 OR-PC® 24
Software Version(s)	No firmware, no software Tested devices are running on Windows 10 Pro, Version 2004
FCC-ID	2AUWB2
IC	None
Contains FCC-ID	None
Contains IC	None
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
required by standard but not appl. to test object	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Date of receipt of test item	2021-04-29	
Report:		
Compiled by	Ruslan Colbasiuc	
Tested by (+ signature) (Responsible for Test)	Ruslan Colbasiuc	
Approved by (+ signature) (Deputy Head of Lab)	Jens Marquardt	
Date of Issue	2021-08-24	
Total number of pages	79	
General Remarks:		
The test results presented in this report relate only to the object tested. The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
T _{NOM}	Nominal operating temperature
V _{NOM}	Nominal supply voltage
EF ID	Eurofins internal sample identifier

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2021-08-23	Initial Release	-
01	2021-08-24	Corrected ISED ICES-003 issue version on title page and result summary page	R.Colbasiuc

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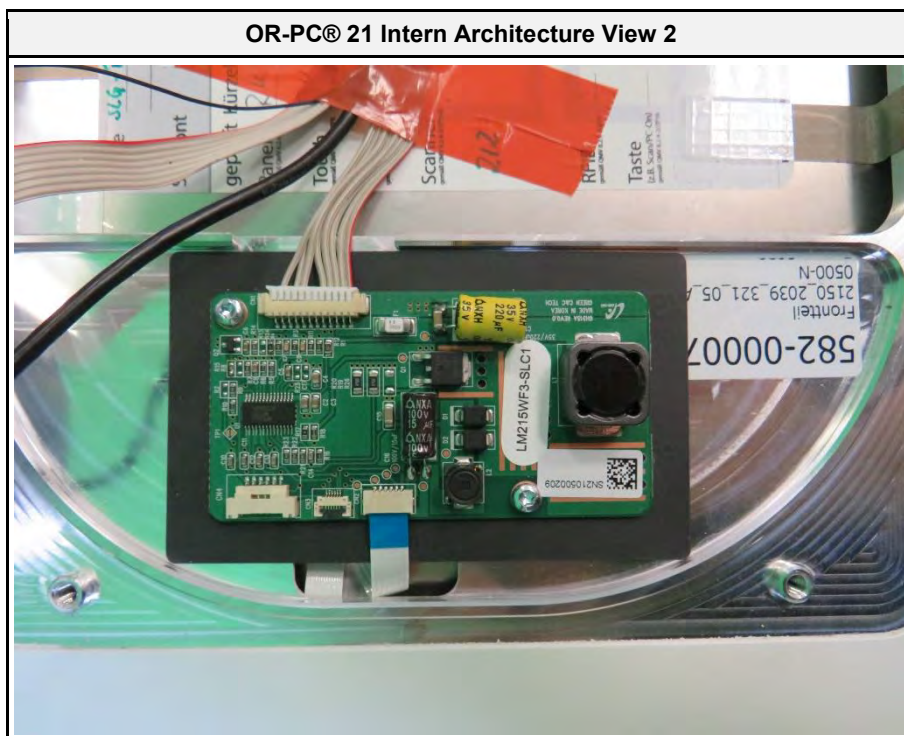
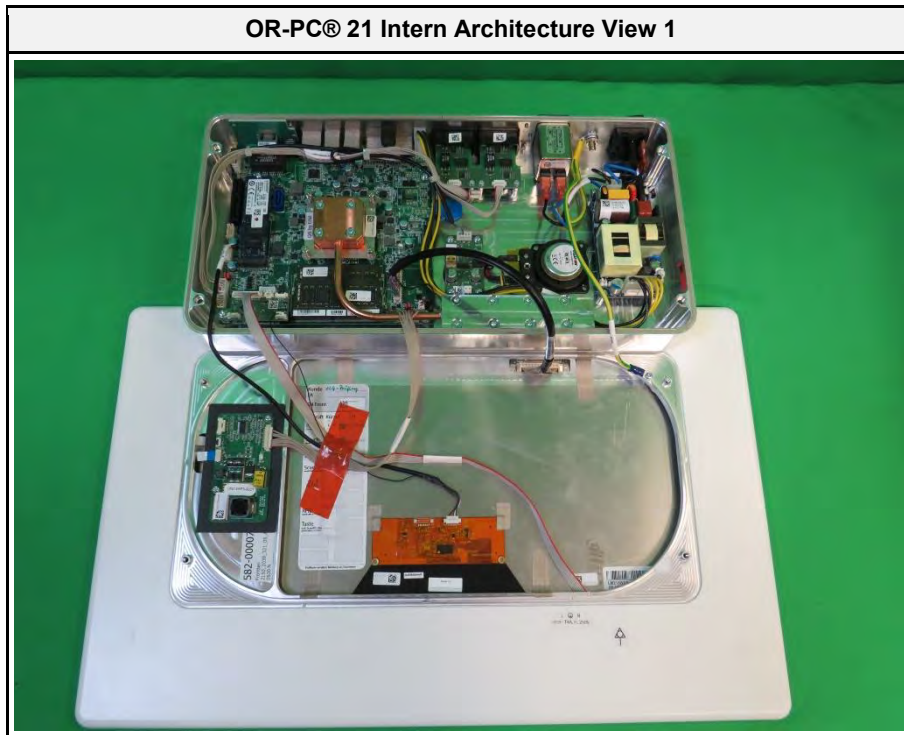
1 Equipment (Test Item) Under Test

Description	The device is designed for documentation purposes of data, such as patient-related information inside and outside operating rooms, intensive care units and similar areas of use. It supports the local software environment and can be part of the IT data net	
Model	OR-PC® 21	
Additional Model(s)	OR-PC® 24	
Brand Name(s)	OR-PC®	
Serial Number(s)	OR-PC® 21: 2120521001402 (EF ID 34384) OR-PC® 24: 2420521001502 (EF ID 34385)	
Hardware Version(s)	OR-PC® 21 OR-PC® 24	
Software Version(s)	No firmware, no software Tested devices are running on Windows 10 Pro, Version 2004	
FCC-ID	2AUWB2	
IC	None	
Contains FCC-ID	None	
Contains IC	None	
Class	Class B	
Equipment type	Table top	
Highest internal frequency [MHz]	5000	
Radio Module	None	
Supply Voltage	V _{NOM}	100 – 240 V / 50 – 60 Hz
Dimensions	OR-PC® 21: ca. 507,5 x 318,1 x 67 mm OR-PC® 24: ca. 558 x 378 x 65 mm	
Manufacturer	ACL GmbH Apelsteinallee 5 04416 Markkleeberg GERMANY	

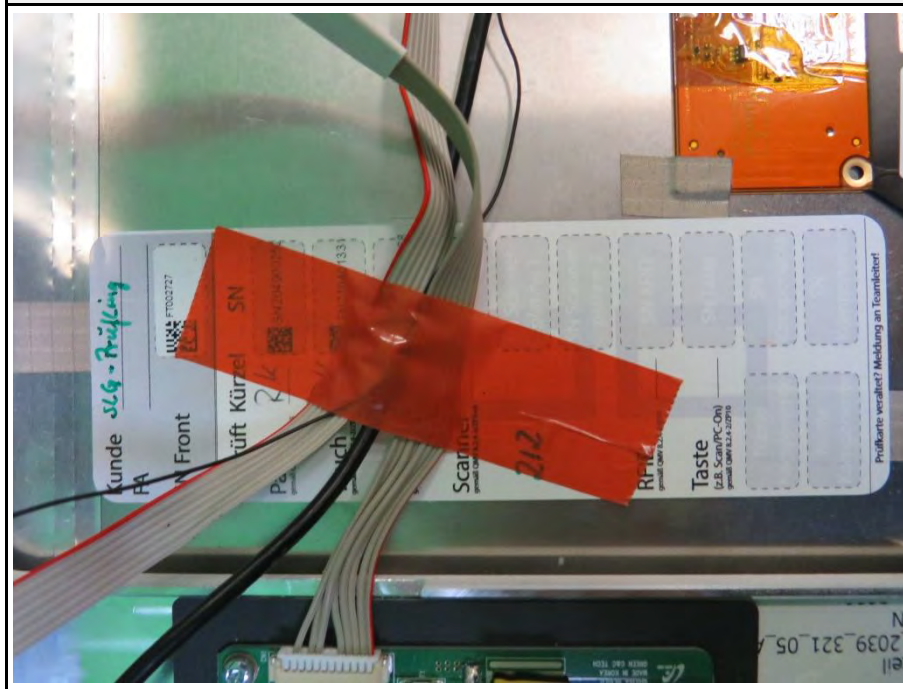
1.1 Equipment Ports

Name	Type	Attributes	Comment
Power Cord	AC	Count: 1 Direction: In Service only: No	-
Potential Equalization Port	PE	Count: 1 Direction: Out Service only: No	-
Display Port	IO	Count: 2 Direction: IO Service only: No	-
USB	IO	Count: 4 Direction: IO Service only: No	-
LAN	IO	Count: 1 Direction: IO Service only: No	-
Decoupled LAN	IO	Count: 1 Direction: IO Service only: No	-
Decoupled RS-232	IO	Count: 2 Direction: IO Service only: No	-
3.5mm audio jack	IO	Count: 1 Direction: Out Service only: No	-
Description:			
AC	AC mains power input/output port		
DC	DC power input/output port		
BAT	DC power input port connected to external battery		
IO	Input/Output port		
TP	Telecommunication port		
NE	Non-electrical port		
PE	Potential Equalization Port		

1.2 Equipment Photos – Internal



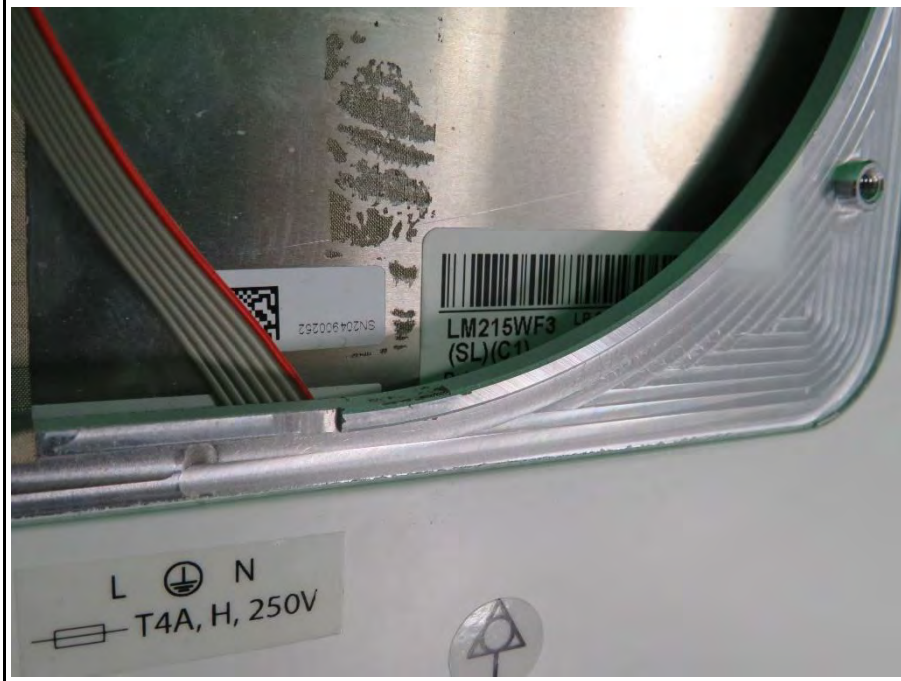
OR-PC® 21 Intern Architecture View 3



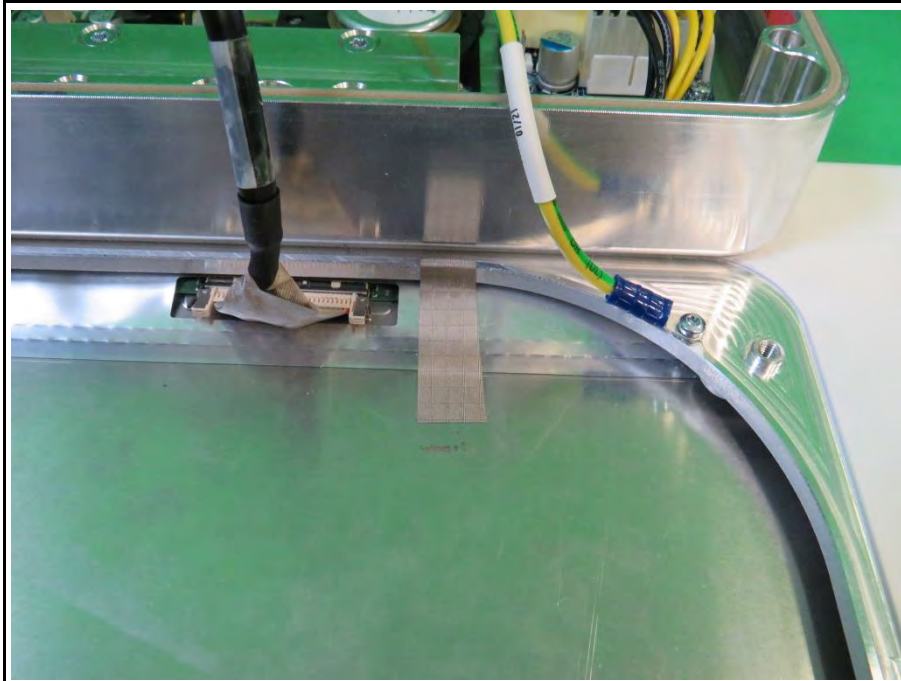
OR-PC® 21 Intern Architecture View 4



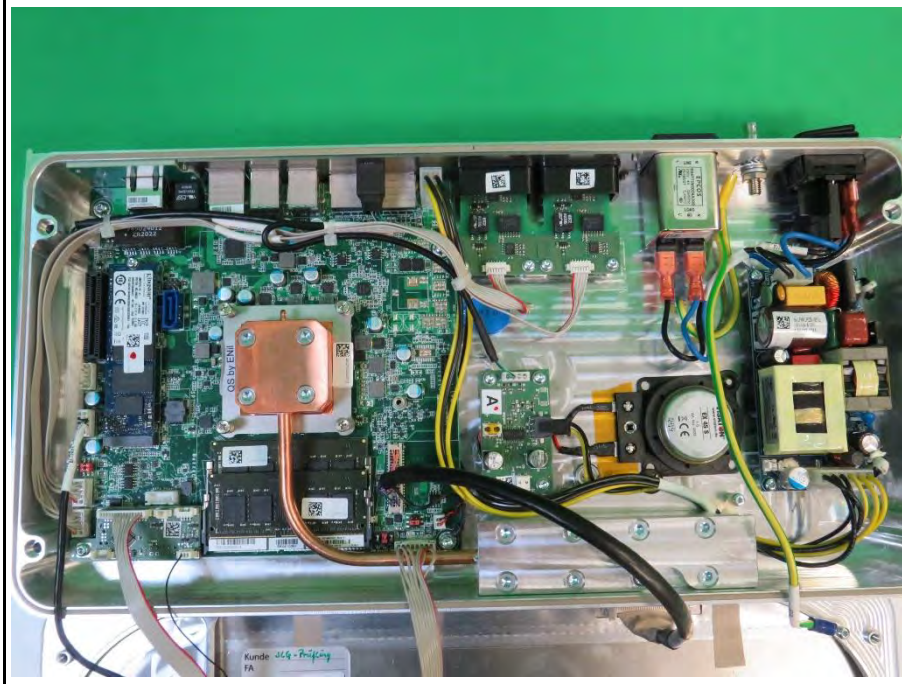
OR-PC® 21 Intern Architecture View 5



OR-PC® 21 Intern Architecture View 6



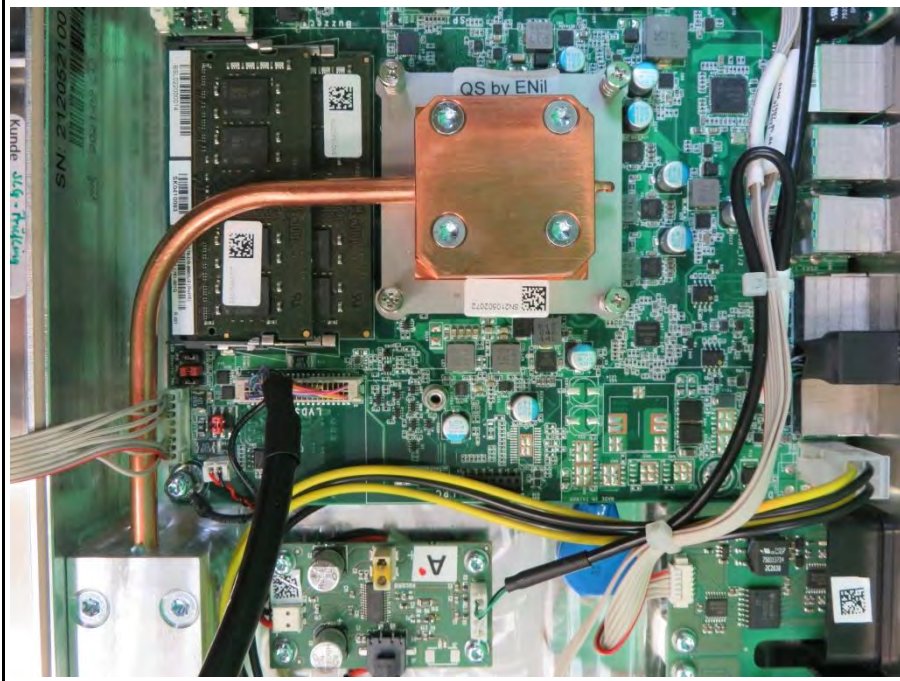
OR-PC® 21 Intern Architecture View 7



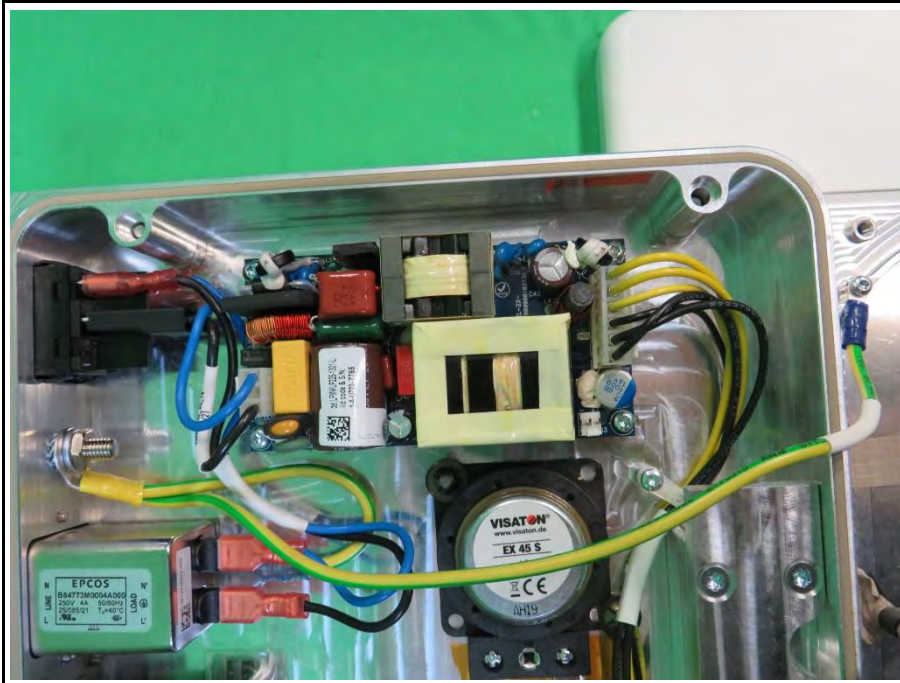
OR-PC® 21 Intern Architecture View 8



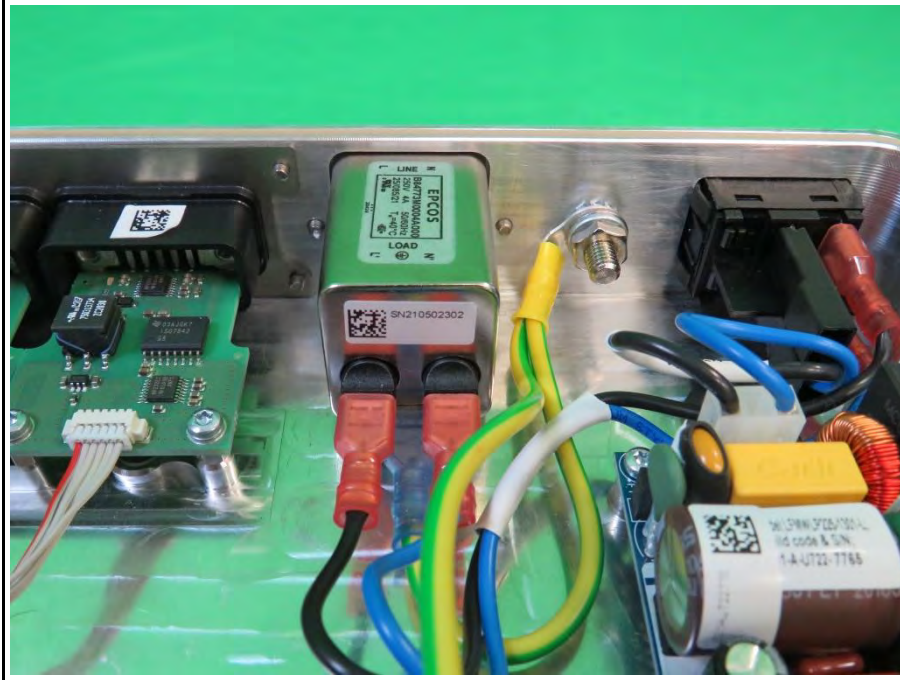
OR-PC® 21 Intern Architecture View 9



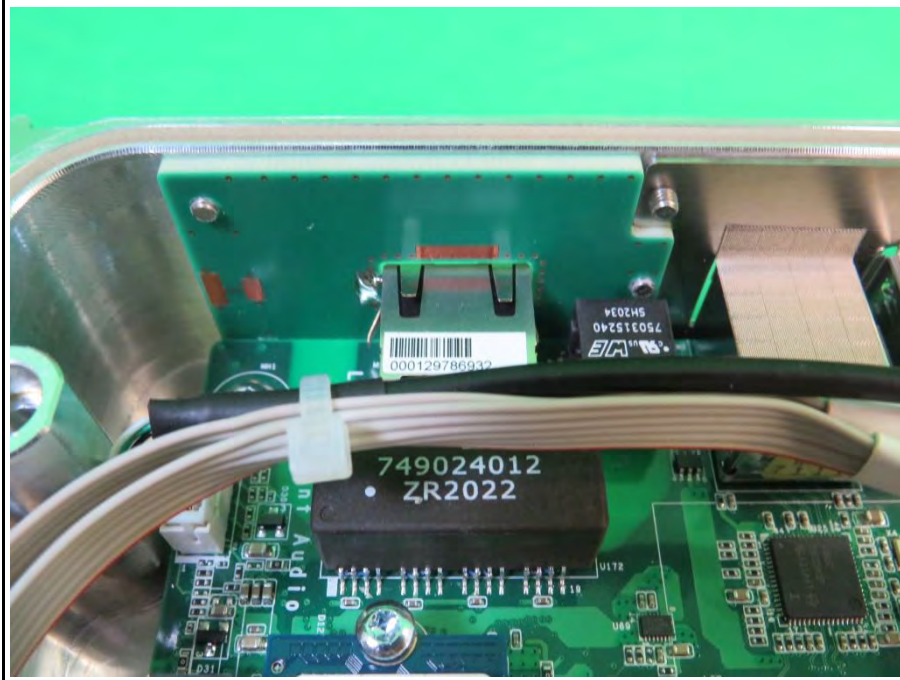
OR-PC® 21 Intern Architecture View 10



OR-PC® 21 Intern Architecture View 11



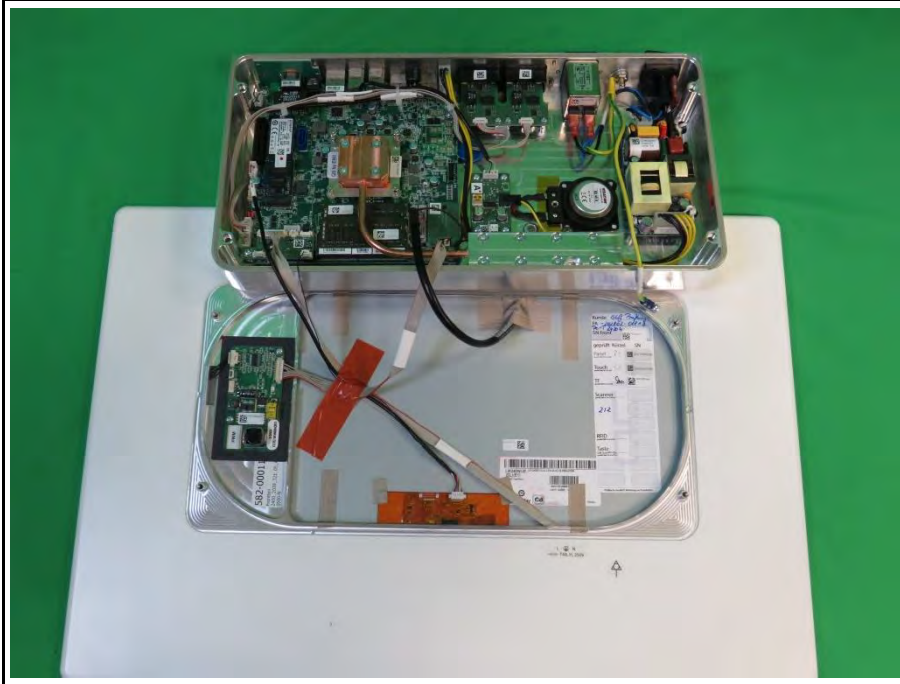
OR-PC® 21 Intern Architecture View 12



OR-PC® 21 Intern Architecture View 13



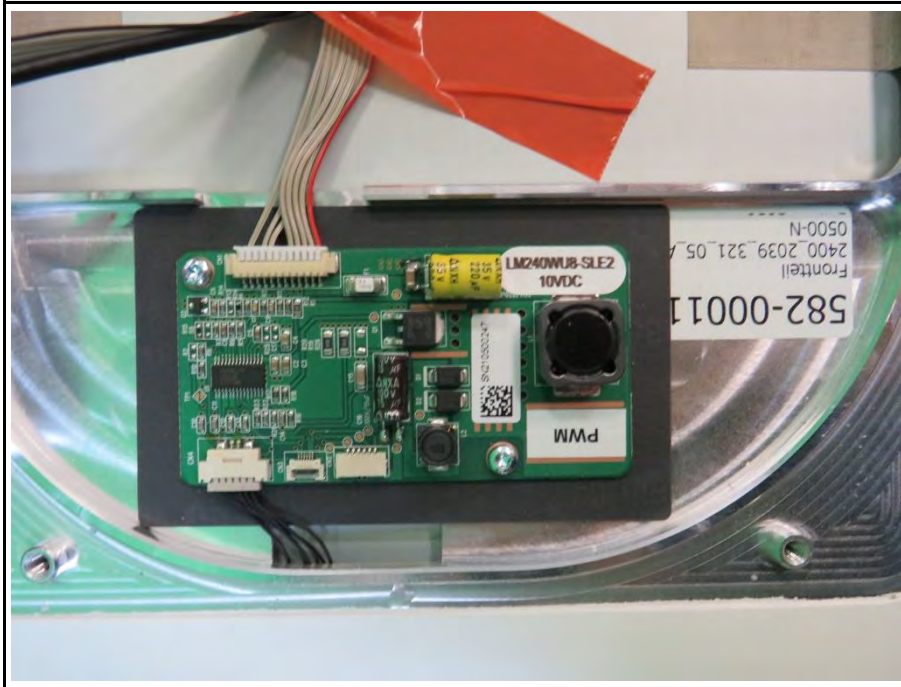
OR-PC® 24 Intern Architecture View 1



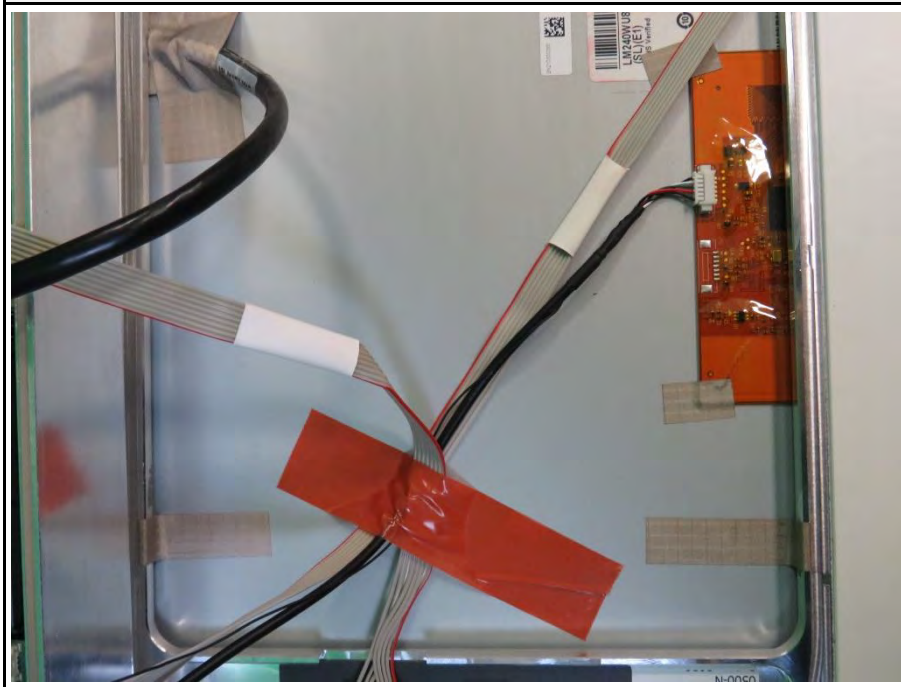
OR-PC® 24 Intern Architecture View 2



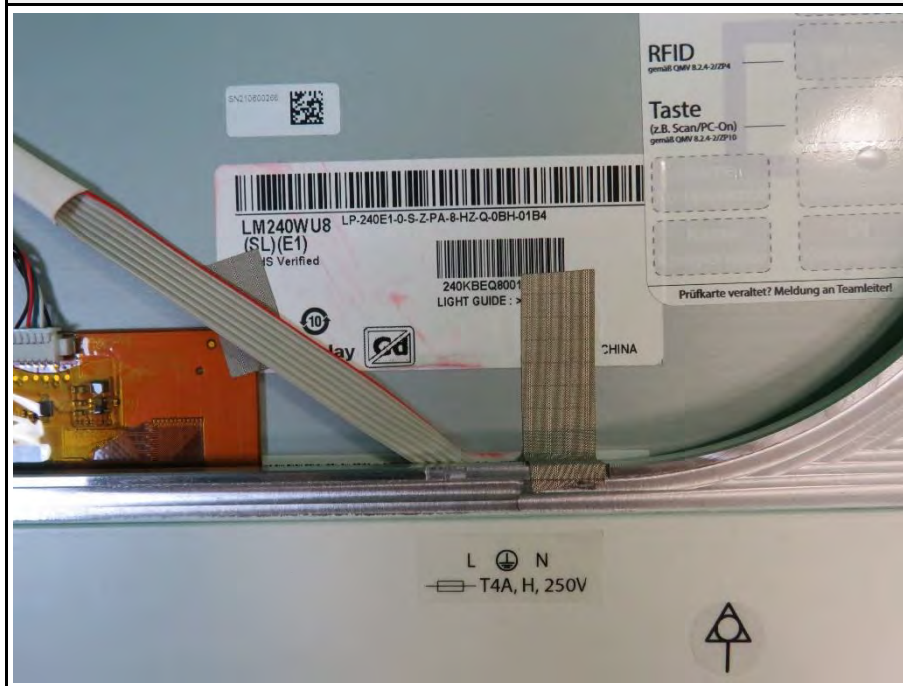
OR-PC® 24 Intern Architecture View 3



OR-PC® 24 Intern Architecture View 4



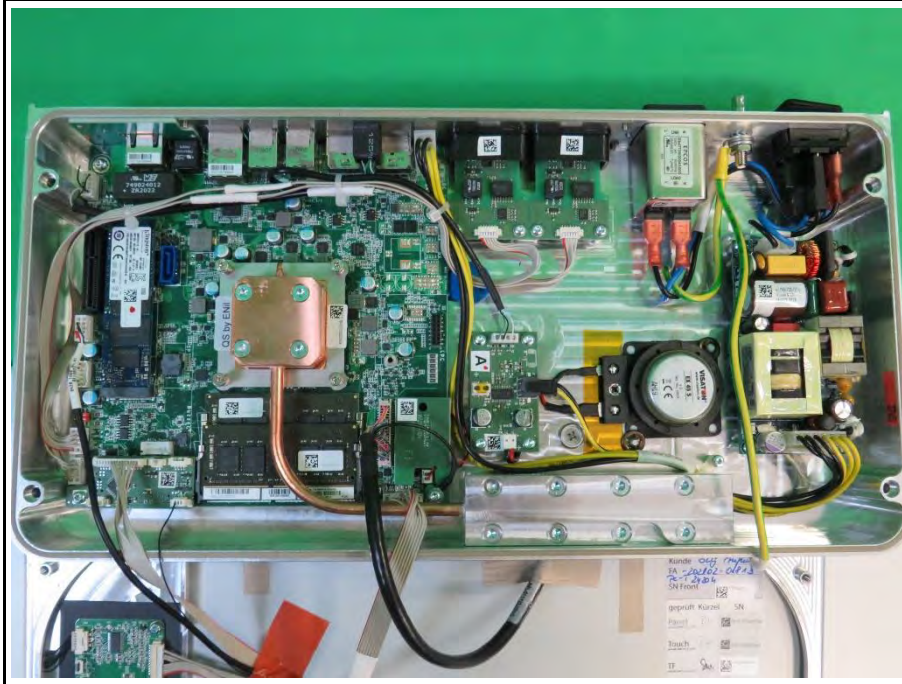
OR-PC® 24 Intern Architecture View 5



OR-PC® 24 Intern Architecture View 6



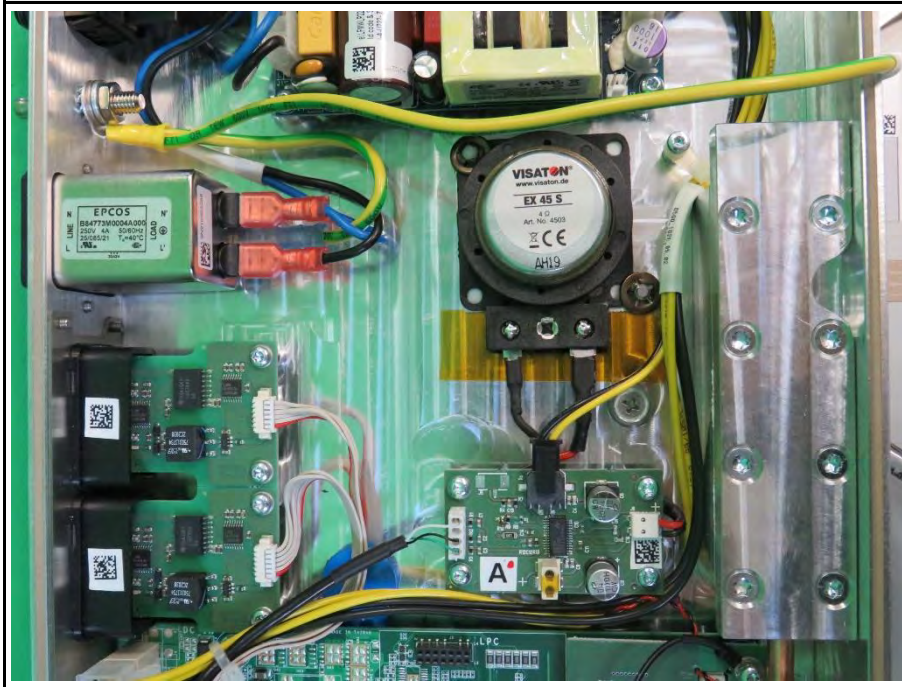
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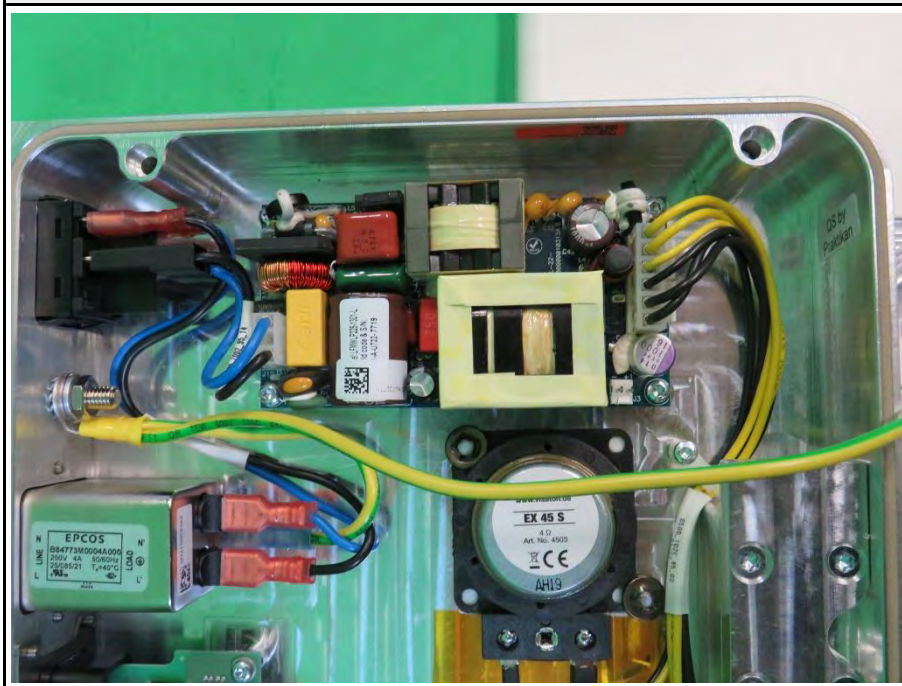
OR-PC® 24 Intern Architecture View 8



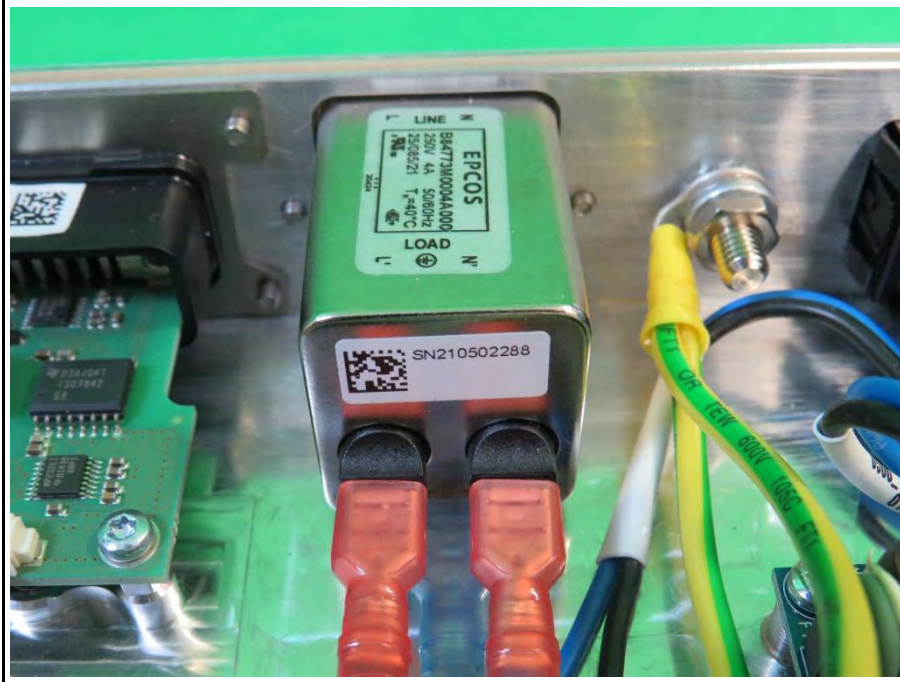
OR-PC® 24 Intern Architecture View 9



OR-PC® 24 Intern Architecture View 10



OR-PC® 24 Intern Architecture View 11



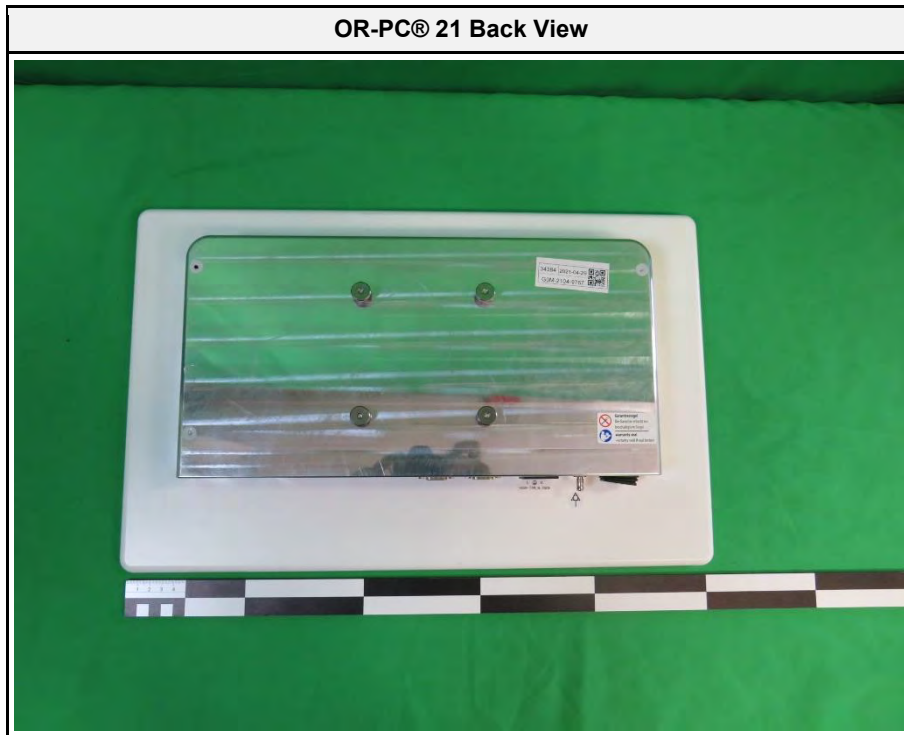
OR-PC® 24 Intern Architecture View 12



OR-PC® 24 Intern Architecture View 13



1.3 Equipment Photos – External



OR-PC® 21 Ports View 1



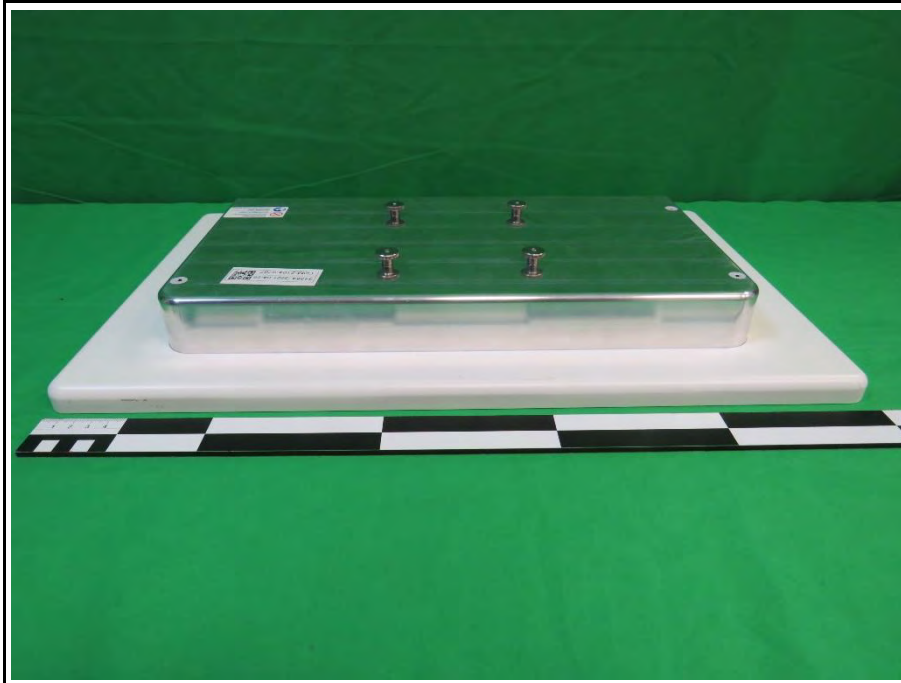
OR-PC® 21 Ports View 2



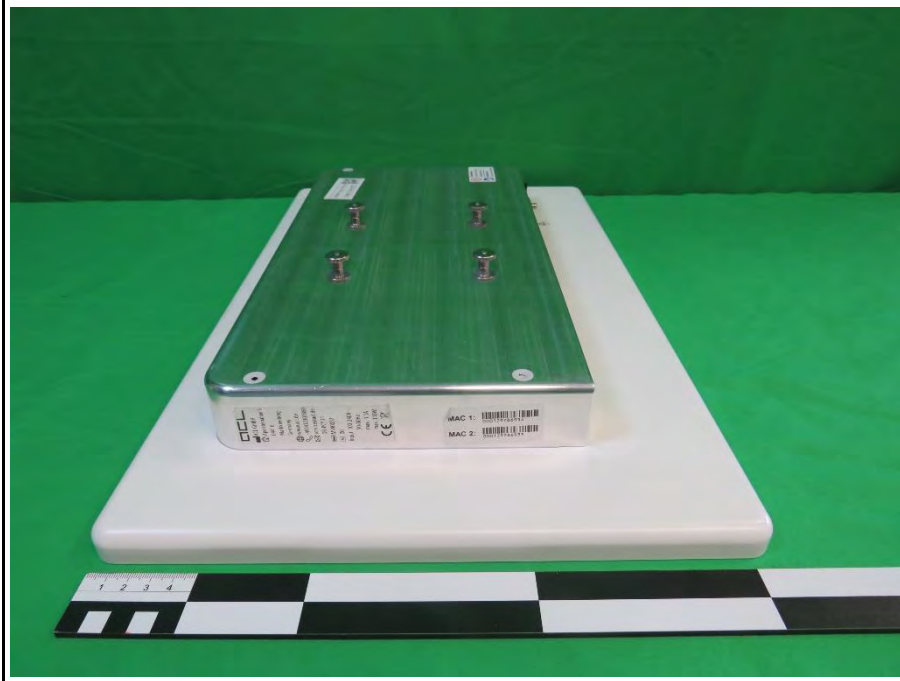
OR-PC® 21 Side View 1



OR-PC® 21 Top View



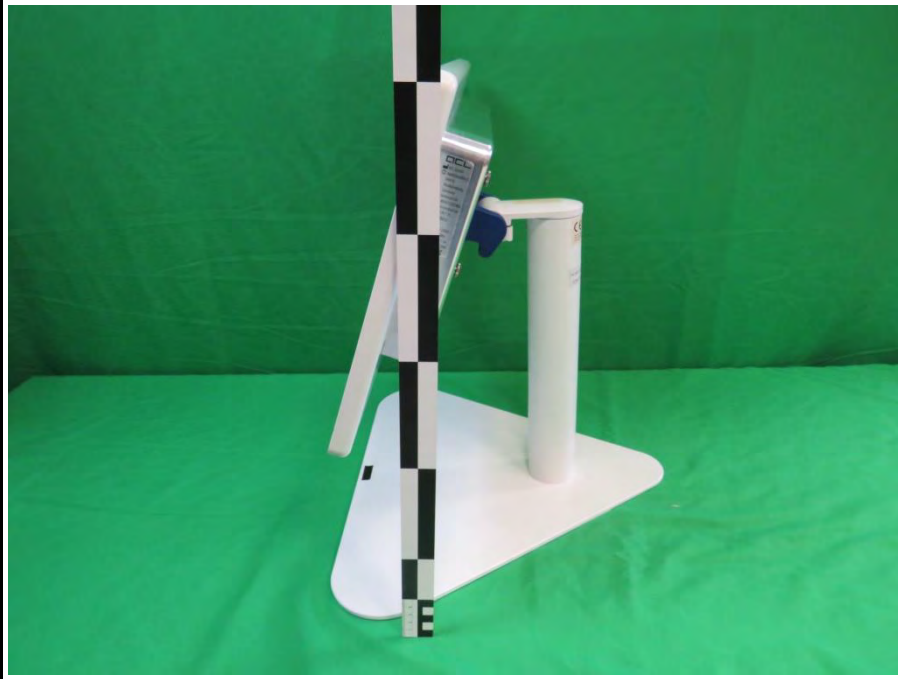
OR-PC® 21 Side View 2



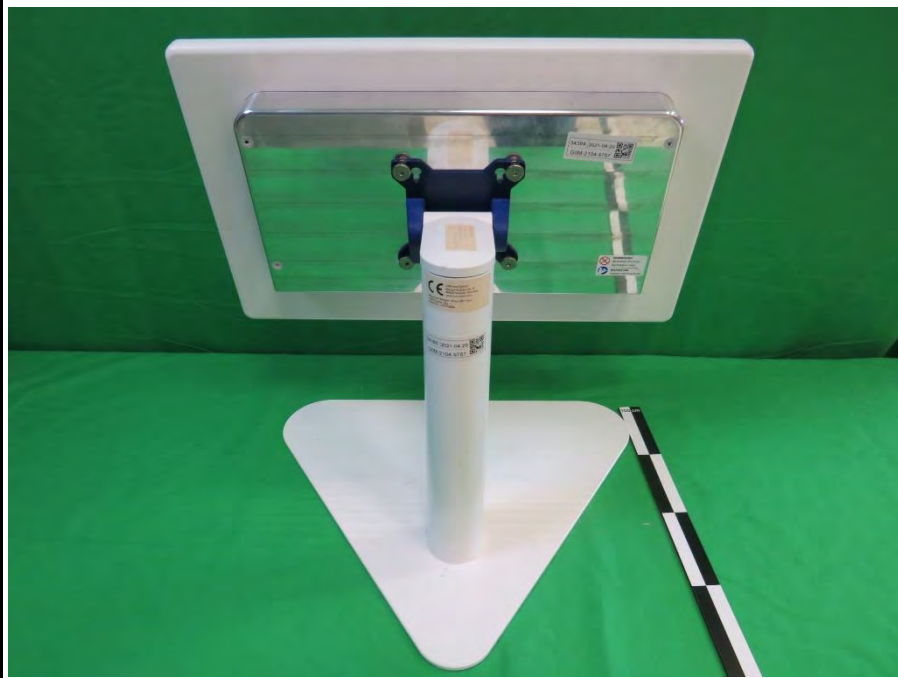
OR-PC® 21 Front View



OR-PC® 21 with Universal VESA Stand View 1



OR-PC® 21 with Universal VESA Stand View 2



OR-PC® 24 Front View



OR-PC® 24 Back View



OR-PC® 24 Bottom View



OR-PC® 24 Ports View 1



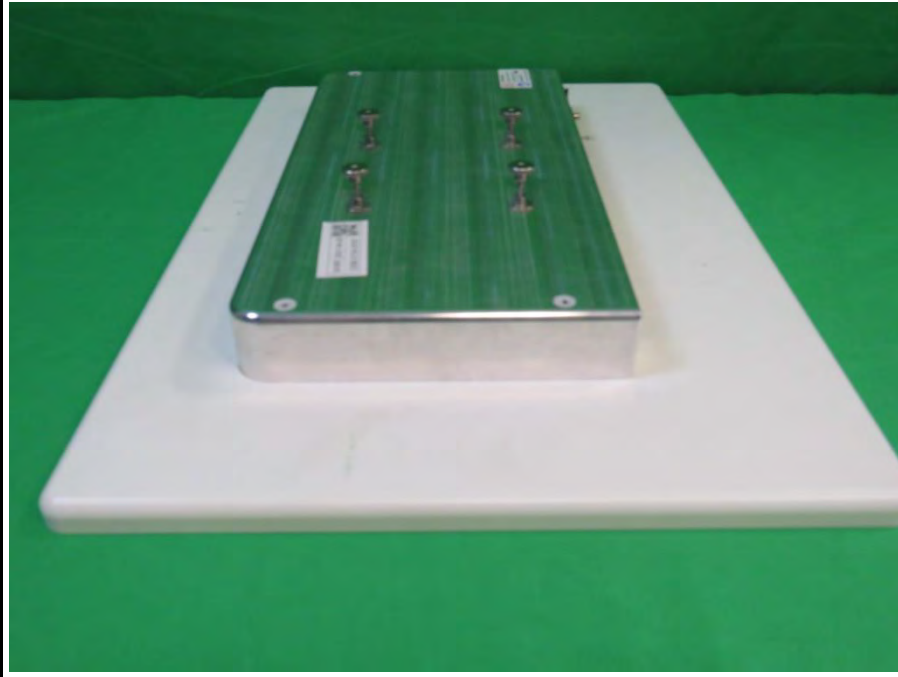
OR-PC® 24 Ports View 2



OR-PC® 24 Side View 1



OR-PC® 24 Side View 2



OR-PC® 24 with Universal VESA Stand View 1



OR-PC® 24 with Universal VESA Stand View 2



OR-PC® 24 with Universal VESA Stand View 3



Signal Tester View 1



Signal Tester View 2



Signal Tester View 3



Signal Tester View 4



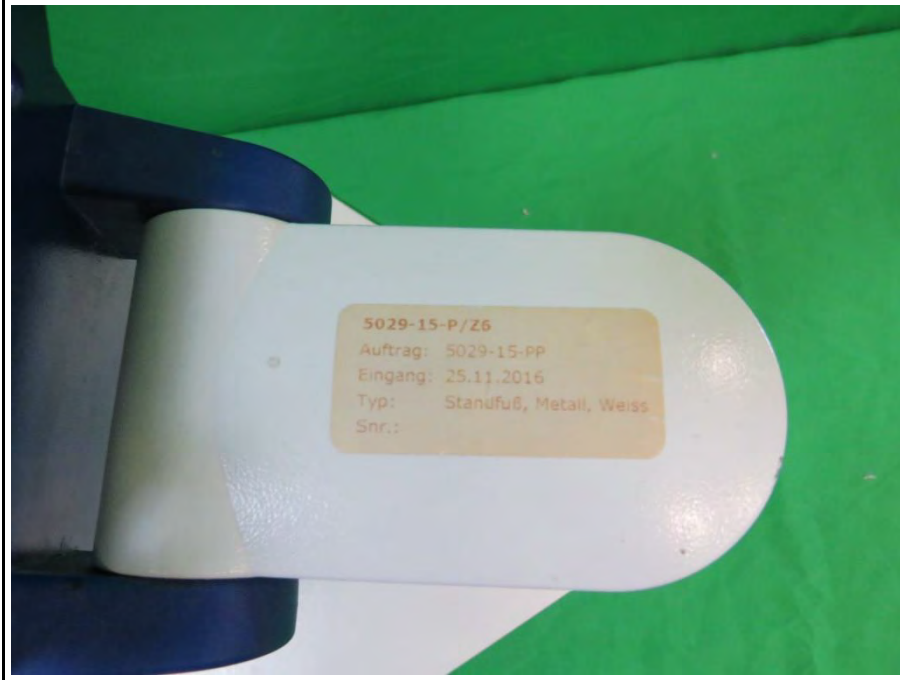
Universal VESA Stand View 1 (not part of the tests)



Universal VESA Stand Label 1 (not part of the tests)



Universal VESA Stand Label 2 (not part of the tests)



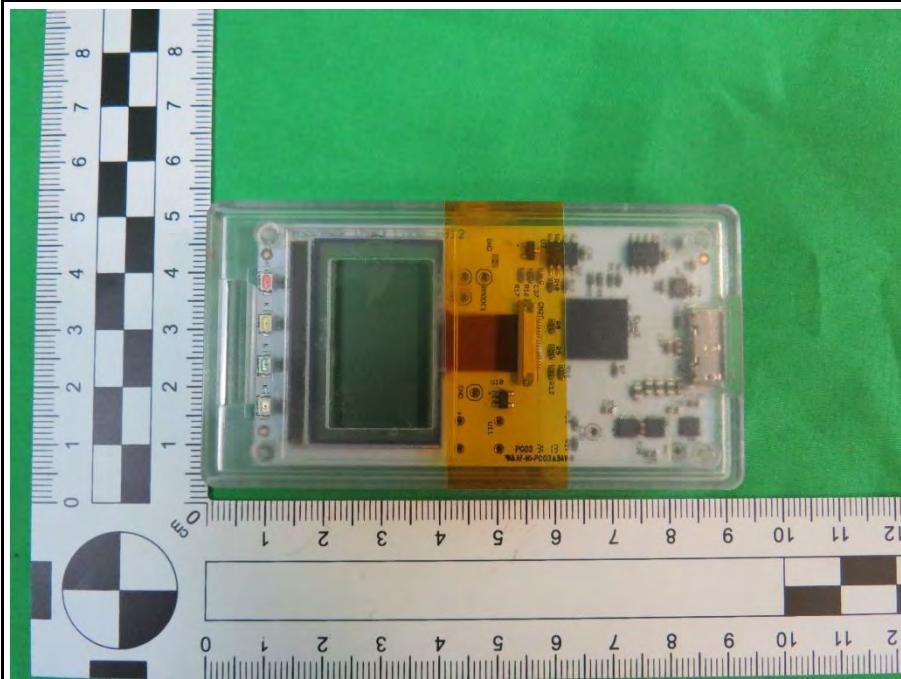
Universal VESA Stand View 2 (not part of the tests)



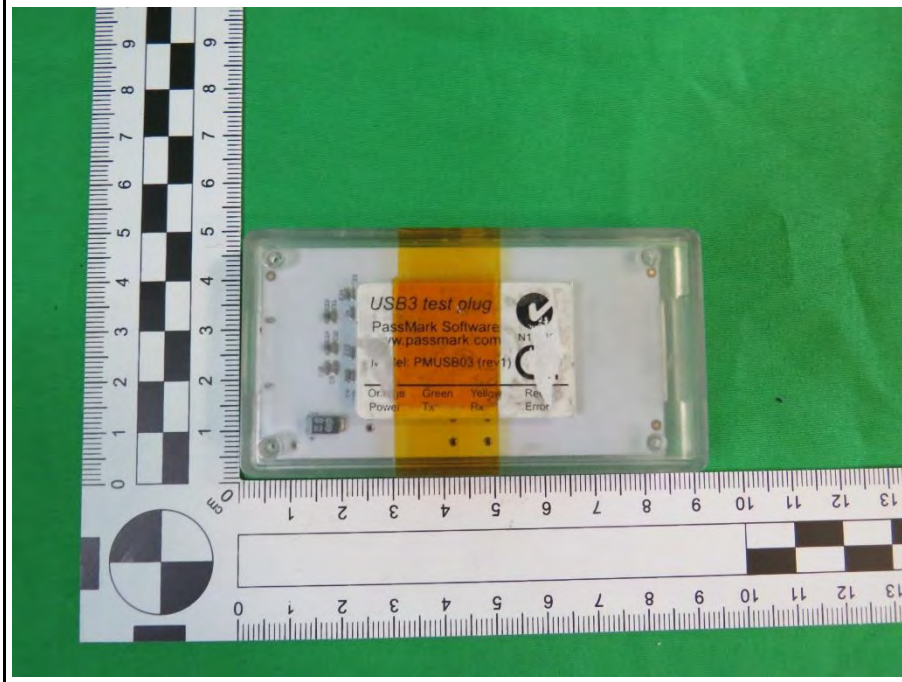
Universal VESA Stand View 3 (not part of the tests)



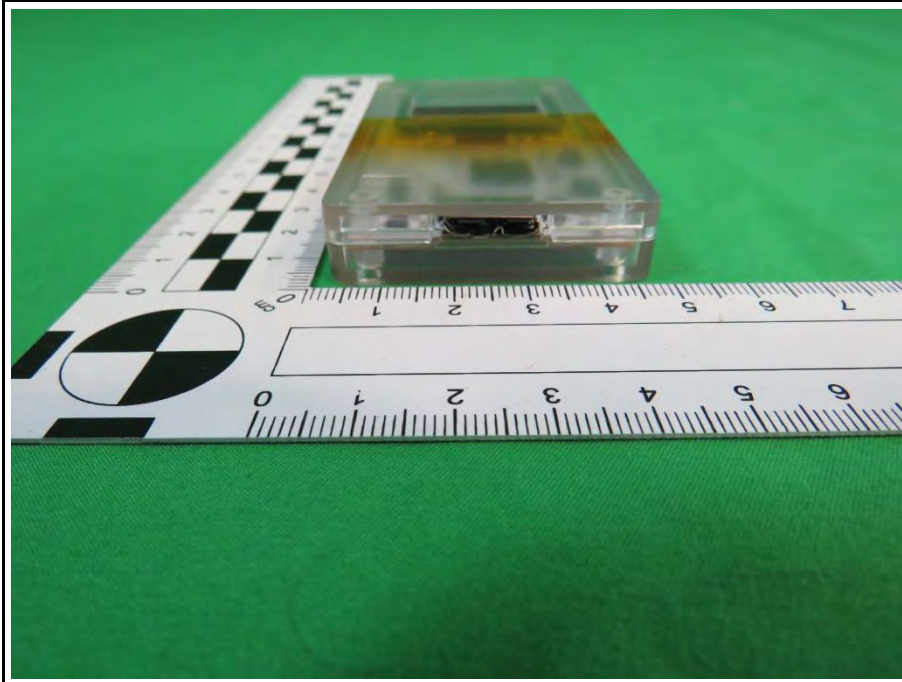
USB Testing Device Top View



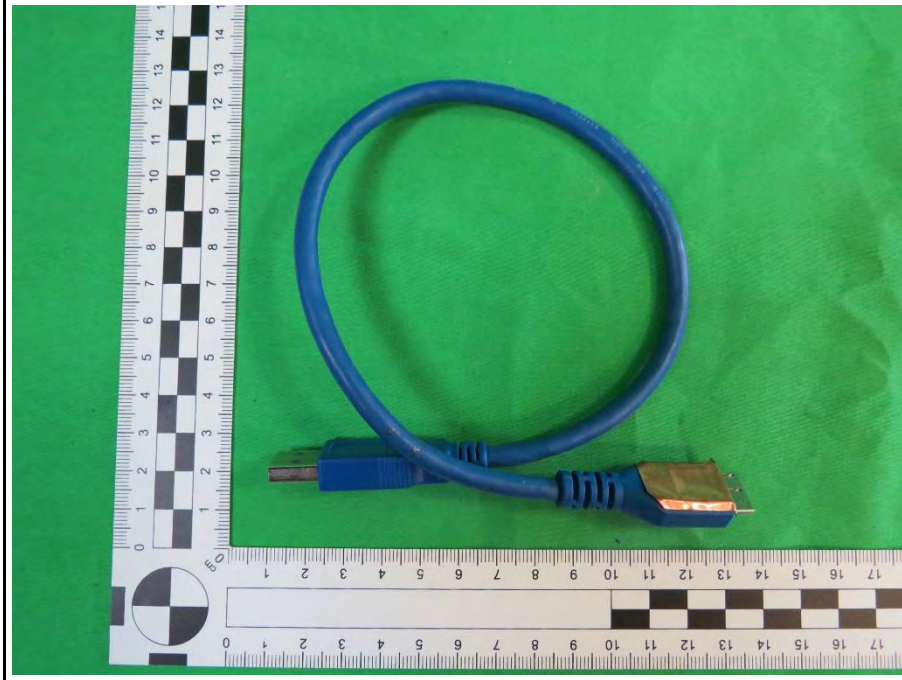
USB Testing Device Bottom View



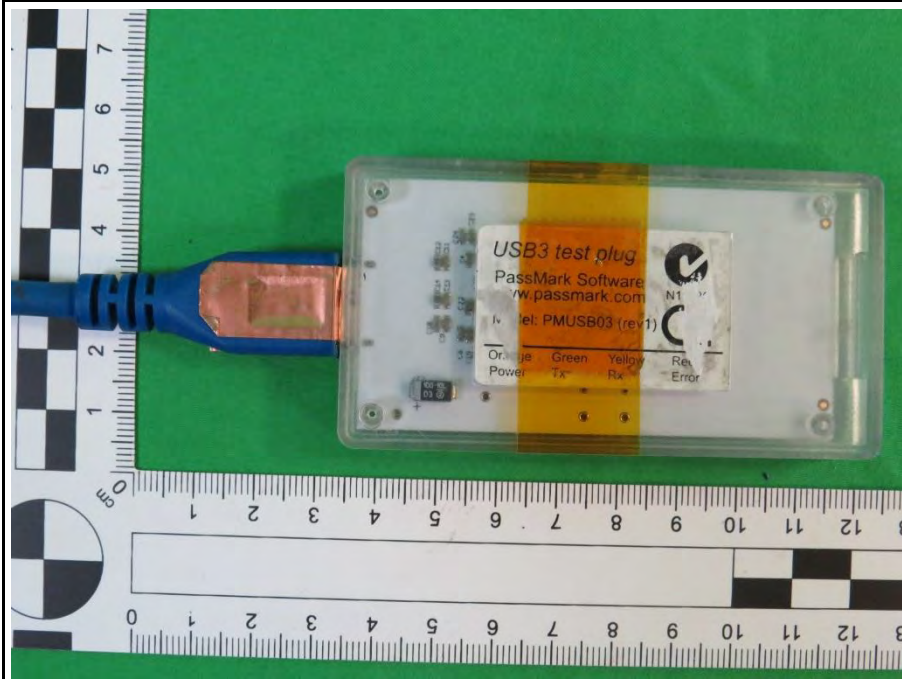
USB Testing Device Port View



USB Cable used for USB Testing Device



USB Cable Connection with USB Testing Device



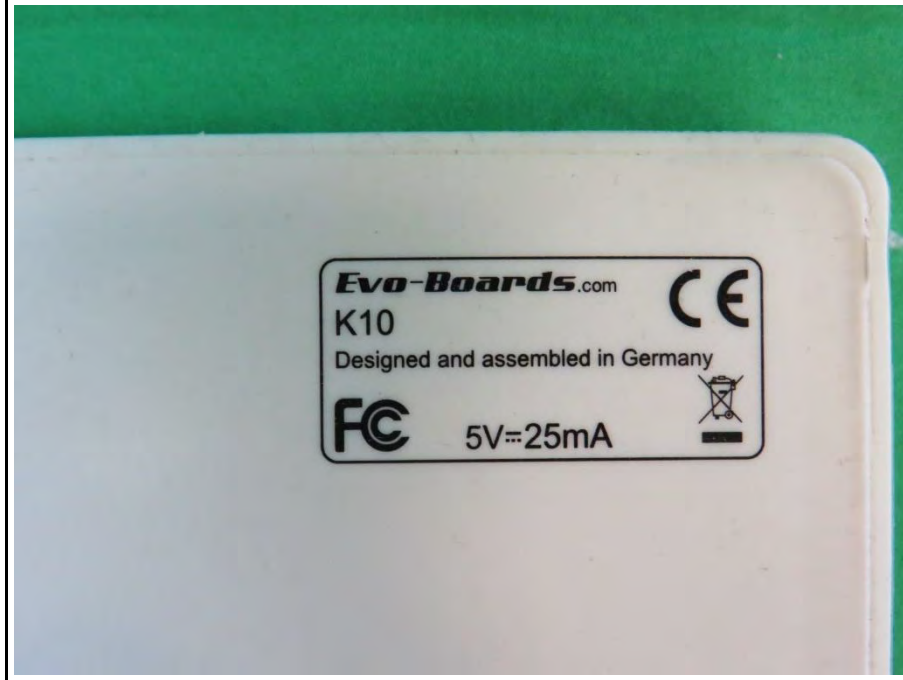
Medical Key Board Top View



Medical Key Board Bottom View



Medical Key Board Label 1



Medical Key Board Label 2 - Part 1



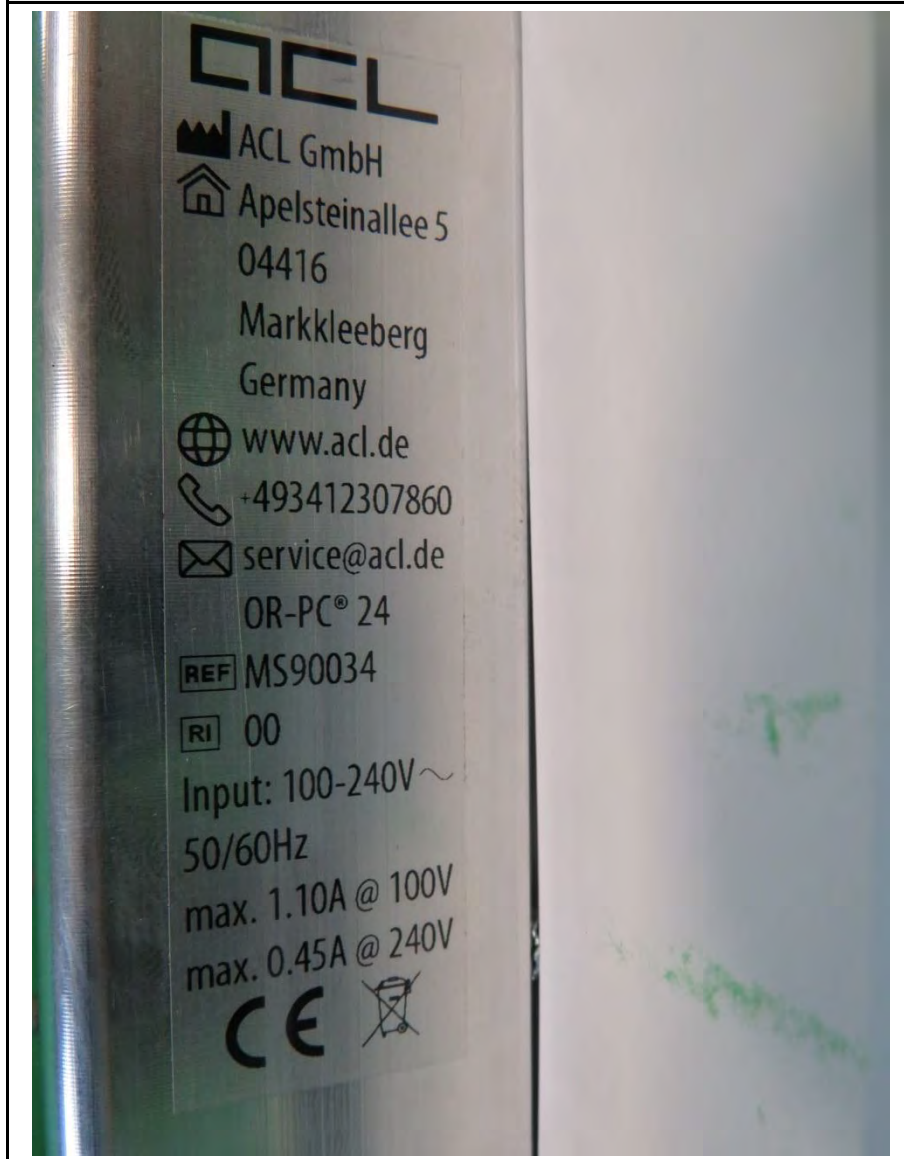
Medical Key Board Label 2 - Part 2



OR-PC-21 Label



OR-PC-24 Label



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Signal tester	ACL GmbH	AAE1	allows signal transmission via 2x USB 2x DP 2x RS-232 3,5mm audio jack cable
AE	Medical key board with integrated touch pad	Active Key GmbH & Co. KG	K10	-
SIM	USB testing device	PassMark Software Pty Ltd	USB3 test plug	-
AE	universal VESA stand	CIM med GmbH	Tischträger freistehend	-
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
MON	Monitoring Equipment			
CBL	Connecting Cable			
Comment:				

1.5 Operational Modes

Mode #	Description
1	Full Load EMC: - device activated - backlight at 100% - BurnInTest running with CPU, 2D Graphics, 3D Graphics, Memory (RAM), Sound and Serial Port 1 - iperf is transmitting data via RJ45
Comment:	

1.6 EUT Configuration

Configuration #	Description
1	OR-PC® 21 configuration: DUT supported by universal VESA stand DUT connected to the mains via power supply cord, connected with signal tester by 2x USB A to B cable 2x DP 2x RS-232 3,5mm audio jack cable potential equalization (signal tester connected to the mains, mains switch in on-position) K10 keyboard connected USB3 test plug connected via USB with the DUT Cat.6A cable connecting both RJ45 interfaces of the device
2	OR-PC® 24 configuration: DUT supported by universal VESA stand DUT connected to the mains via power supply cord, connected with signal tester by 2x USB A to B cable 2x DP 2x RS-232 3,5mm audio jack cable potential equalization (signal tester connected to the mains, mains switch in on-position) K10 keyboard connected USB3 test plug connected via USB with the DUT Cat.6A cable connecting both RJ45 interfaces of the device
Comment:	

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyser in dBµV. Any external preamplifiers used are taken into account through internal analyser settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyser. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

$$\text{Reading on Analyser (dB}\mu\text{V)} + \text{A.F. (dB/m)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

$$\text{Limit (dB}\mu\text{V/m)} = 20 \cdot \log(\mu\text{V/m})$$

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading + AF	= Net Reading	:	Net reading - FCC limit	= Margin
+21.5 dBµV + 26 dB/m	= 47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15B, ISED ICES-003 Issue 7				
Reference	Requirement	Reference Method	Result	Remarks
Emission				
FCC 15.109 ICES-003, 3.2.2	Radiated emissions	ANSI C63.4:2014 +A1:2017	PASS	-
FCC 15.107 ICES-003, 3.2.1	AC power line conducted emissions	ANSI C63.4:2014 +A1:2017	PASS	-
Comment:				

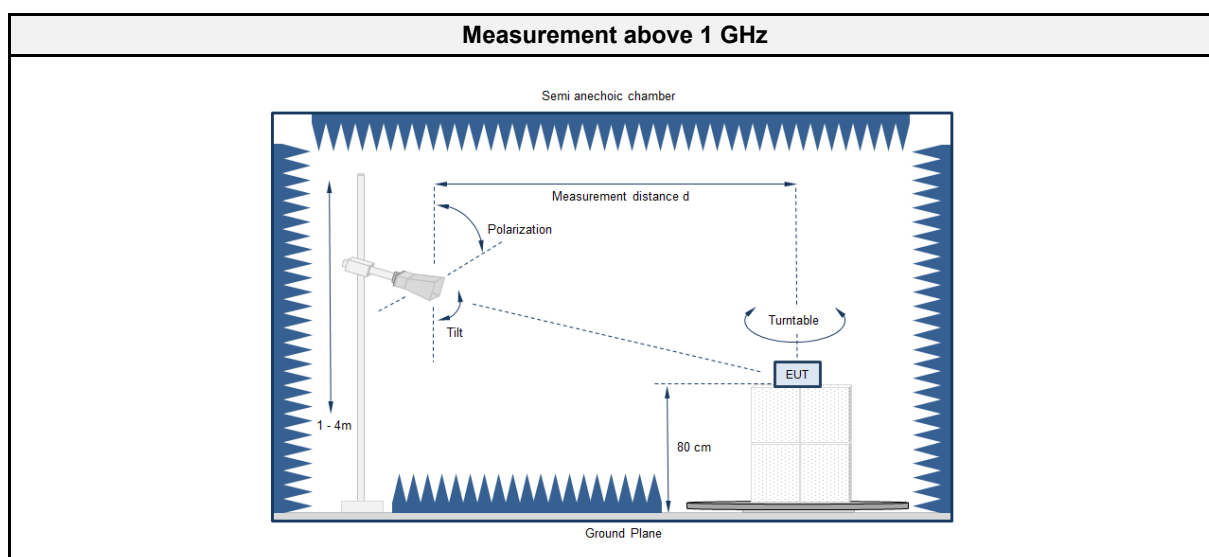
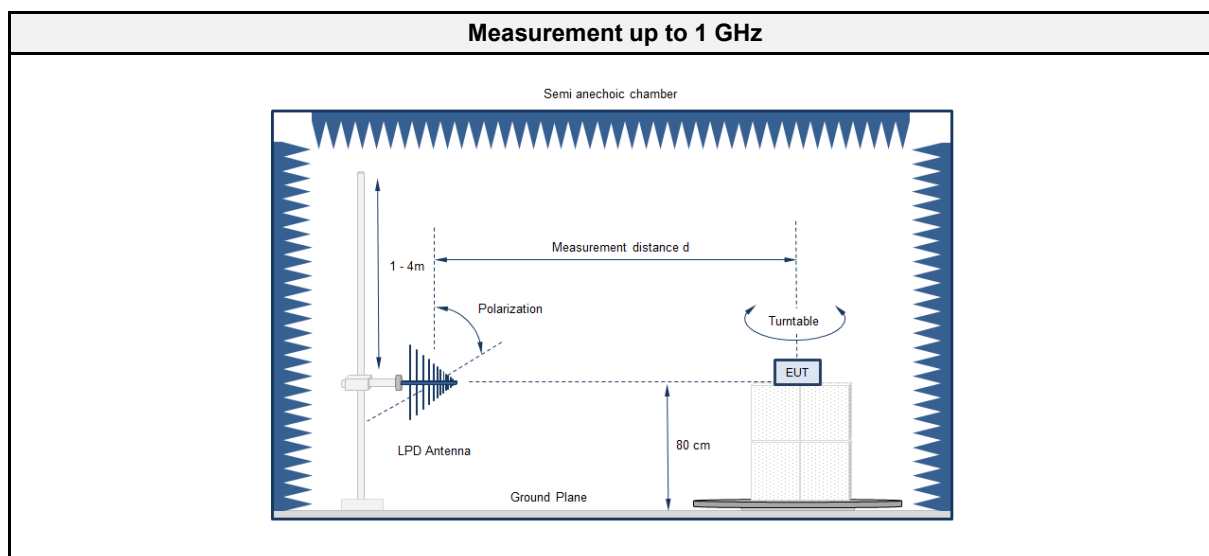
Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

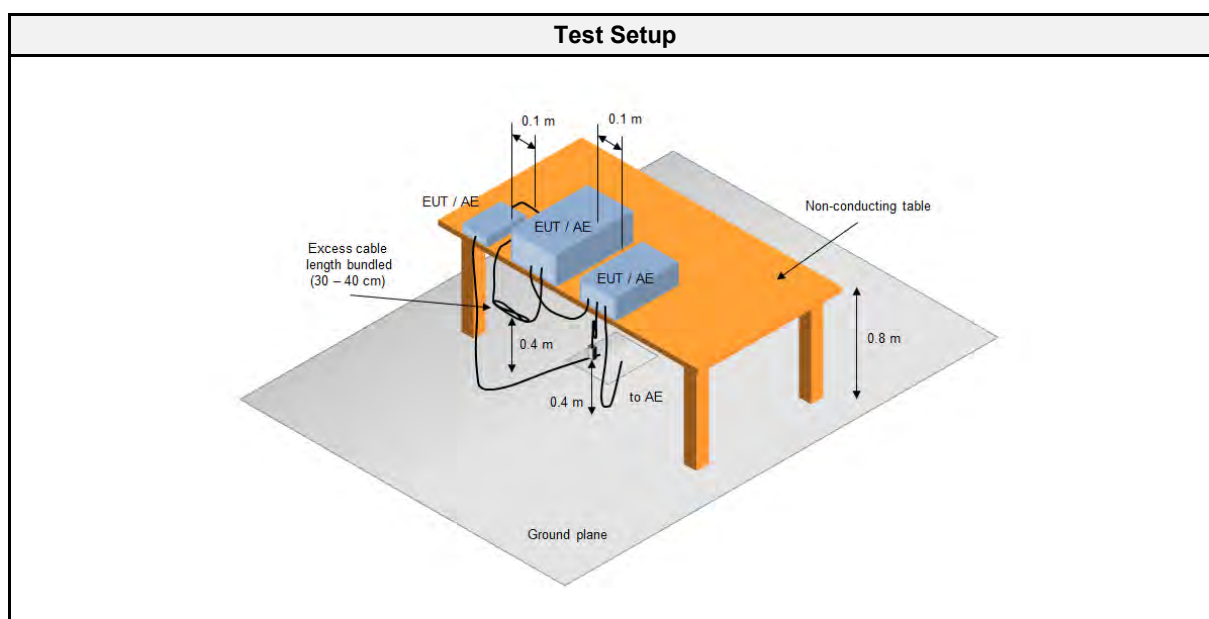
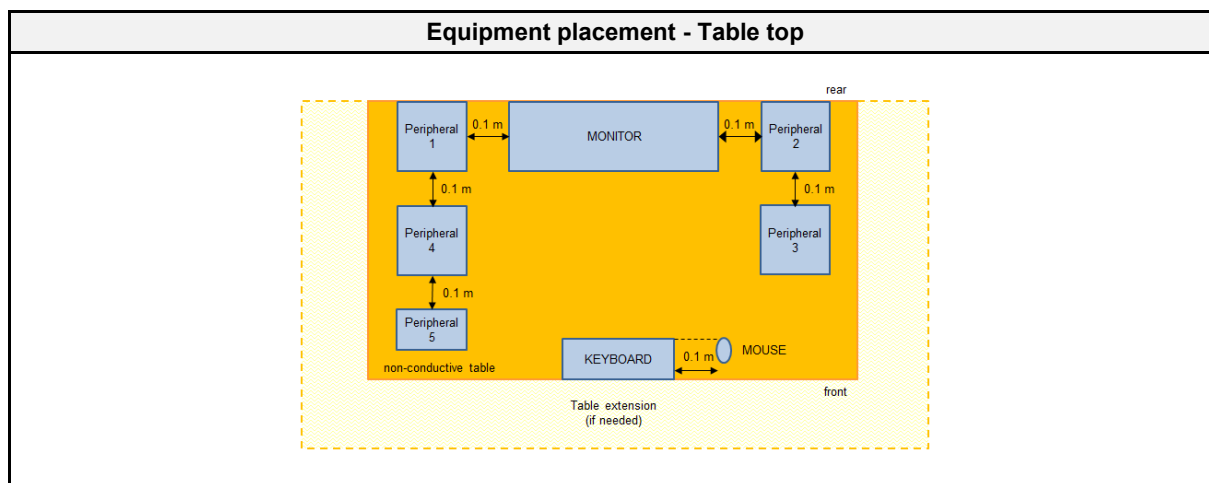
2.1 Test Conditions and Results - Radiated emissions acc. to ANSI C63.4

2.1.1 Information

Test Information	
Reference	FCC 15.109, ICES-003
Reference method	ANSI C63.4:2014+A1:2017 Section 8
Equipment class	Class B
Equipment type	Table top
Highest internal frequency [MHz]	5000
Measurement range	30 MHz to 25000 MHz
Temperature [°C]	23
Humidity [%]	50
Operator	Ruslan Colbasiuc
Date	2021-07-30 to 2021-08-16

2.1.2 Setup





2.1.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic chamber	Frankonia	AC6	EF00910	2021-07	2024-07
EMI Test Receiver	R&S	ESU26	EF00887	2021-07	2022-07
TRILOG Broadband Antenna	Schwarzbeck	VULB 9162	EF00978	2019-10	2022-10
40GHz High Gain Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06
Horn Antenna	ETS-Lindgren	3117	EF00976	2019-03	2022-03
Climatic Sensor	Embedded Data Systems, LLC.	9A0010000025477E	EF01124	2021-03	2022-03

2.1.4 Procedure

Exploratory measurement	
1.	The EUT was placed on a non-conductive table at a height of 0.8m.
2.	The EUT and support equipment, if needed, were set up to simulate typical usage.
3.	Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
4.	The antenna was placed at a distance of 3 or 10 m.
5.	The received signal was monitored at the measurement receiver.
6.	This procedure has to be performed in both antenna polarizations, horizontal and vertical.
7.	The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 1.3

Final measurement	
1.	The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver.
2.	A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast.
3.	The EUT and cable arrangement were based on the exploratory measurement results.
4.	Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded.
5.	The test data of the worst-case conditions were recorded and shown on the next pages.

2.1.5 Limits

Class B @ 3 m		
Frequency [MHz]	Detector	Limit [dB μ V/m]
30 - 88	Quasi-peak	40
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46
960 - 1000	Quasi-peak	54
> 1000	Peak	74
	Average	54

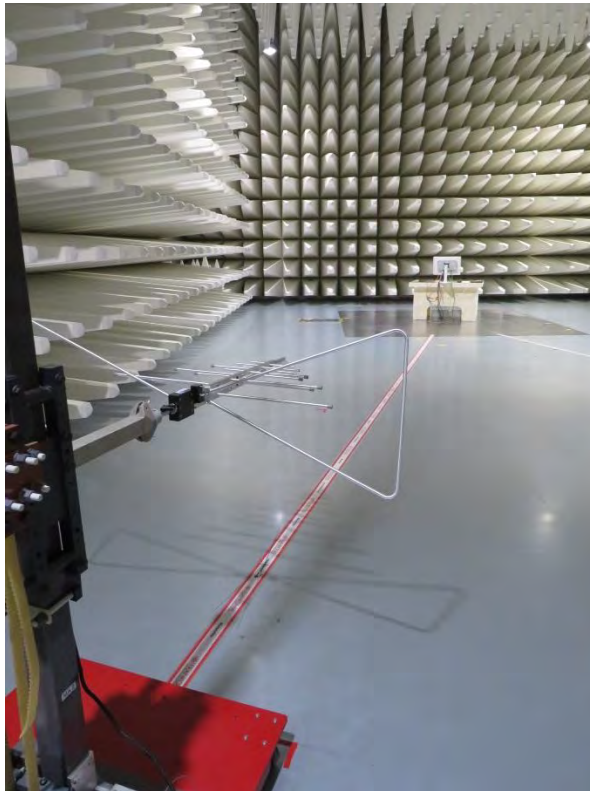
Class A @ 10 m		
Frequency [MHz]	Detector	Limit [dB μ V/m]
30 - 88	Quasi-peak	39
88 - 216	Quasi-peak	43.5
216 - 960	Quasi-peak	46.5
960 - 1000	Quasi-peak	49.5
> 1000	Peak	69.5
	Average	49.5

2.1.6 Results

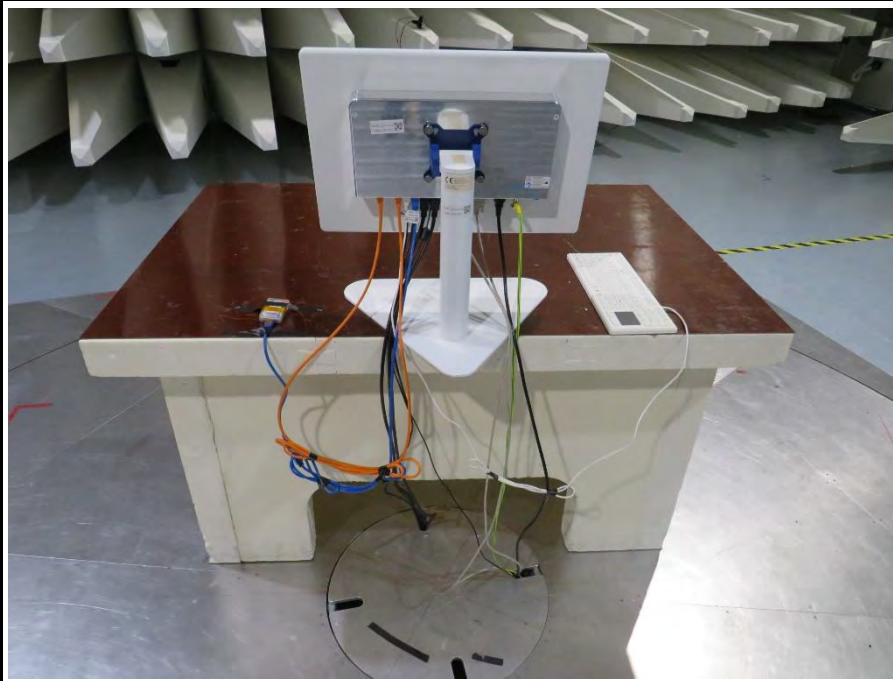
Test Results			
Operational mode	EUT Configuration	Verdict	Remark
1	1	PASS	-
1	2	PASS	-

2.1.7 Setup Photos

OR-PC® 24 Radiated Emission Test Setup 30 - 1000 MHz Antenna View



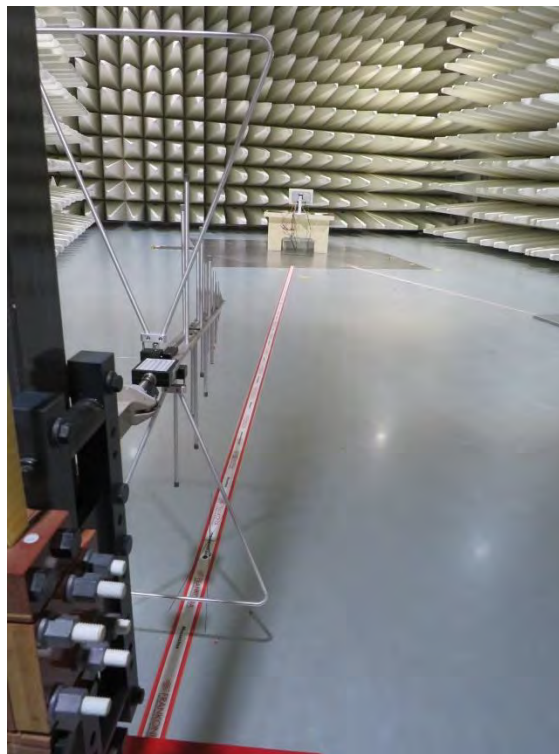
OR-PC® 24 Radiated Emission Test Setup 30 – 1000 MHz



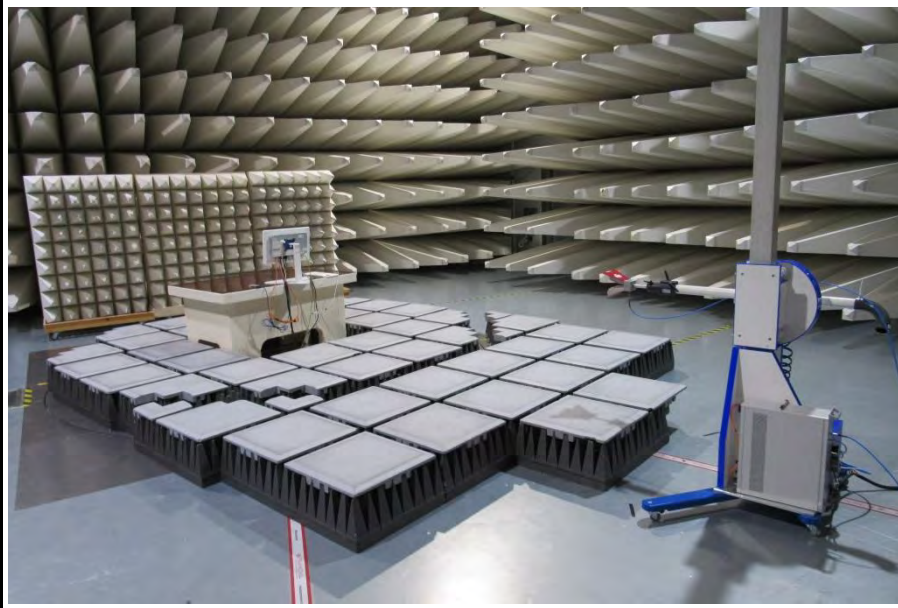
OR-PC® 21 Radiated Emission Test Setup 30 - 1000 MHz



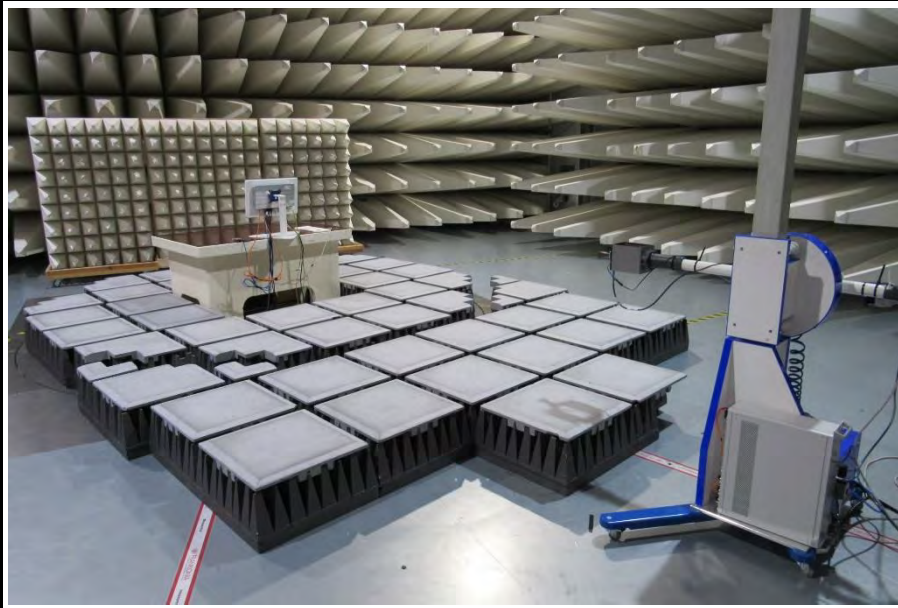
OR-PC® 21 Radiated Emission Test Setup 30 - 1000 MHz Antenna View



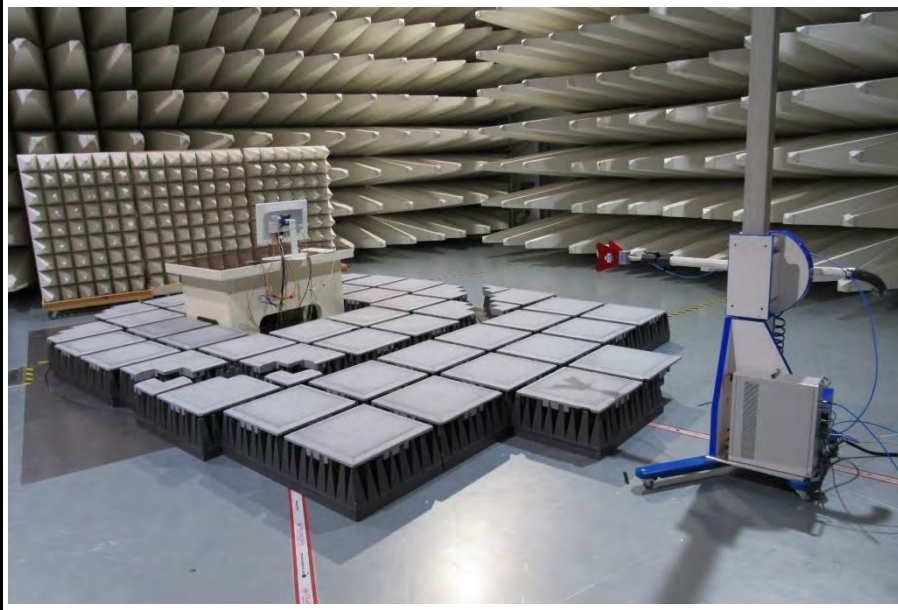
OR-PC® 21 Radiated Emission Test Setup 1 - 17 GHz Antenna View



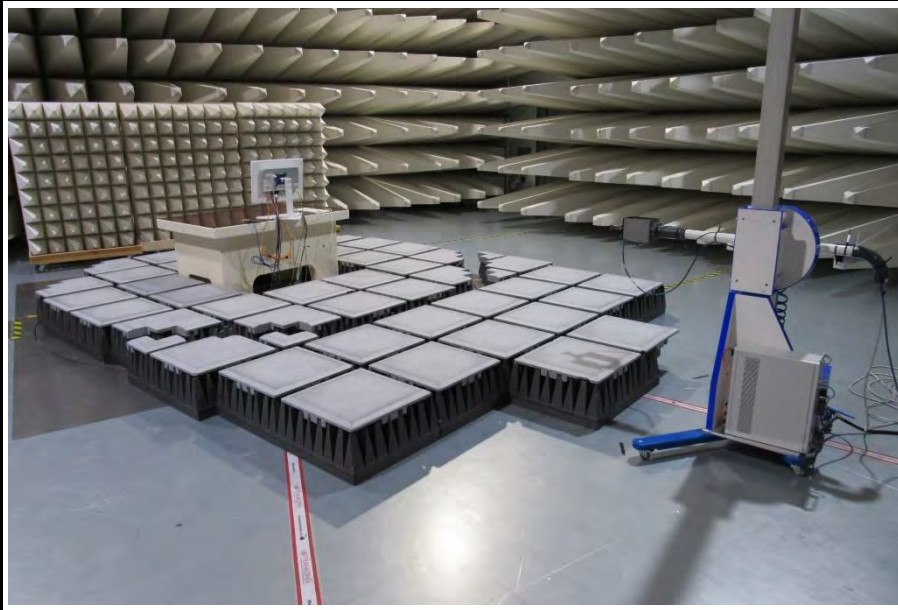
OR-PC® 21 Radiated Emission Test Setup 17 - 25 GHz Antenna View



OR-PC® 24 Radiated Emission Test Setup 1 - 17 GHz Antenna View



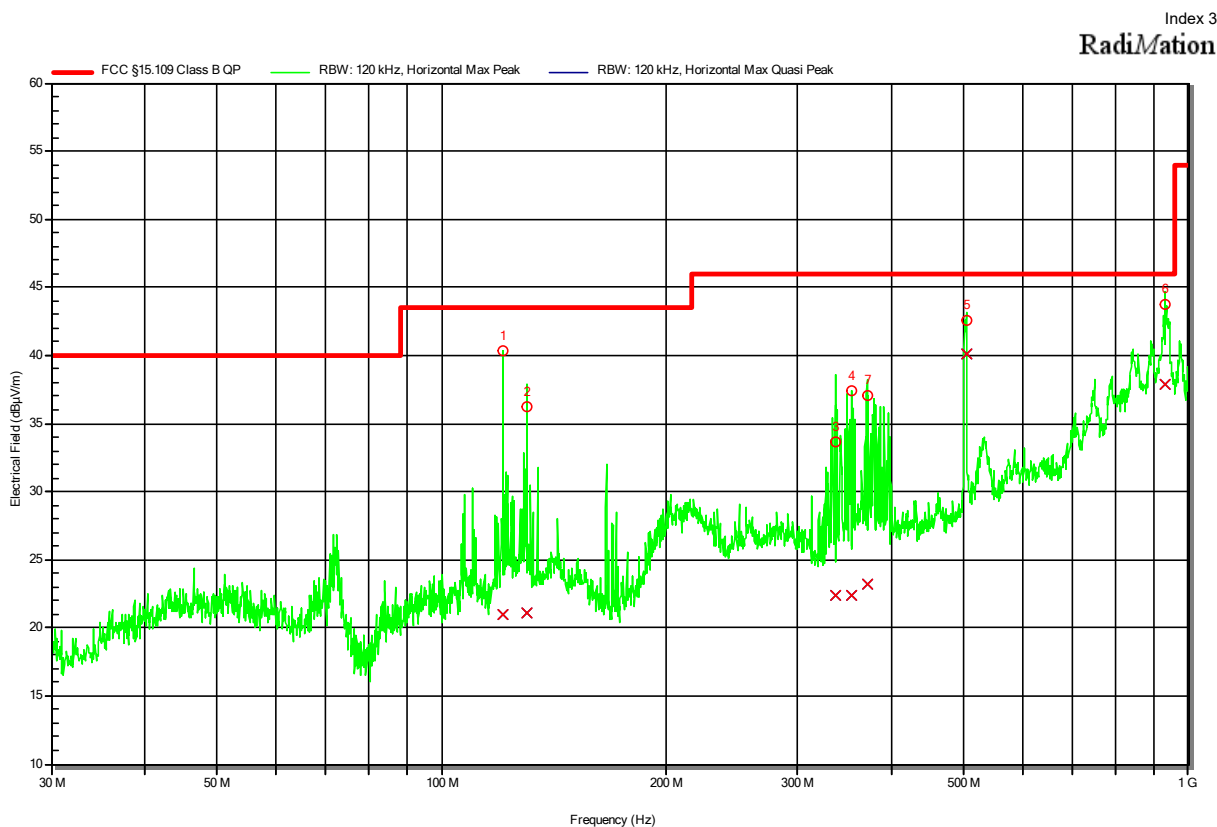
OR-PC® 24 Radiated Emission Test Setup 17 - 25 GHz Antenna View



2.1.8 Records

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34384
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-07-30
 Operating Conditions: ambient temperature: 23 °Celsius
 power input: 120 V / 60 Hz
 Antenna: Schwarzbeck VULB 9162, Horizontal
 Measurement Distance: 10 m converted to 3m
 Operational Mode & EUT Configuration: Mode 1
 Configuration 1
 Note 1:



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	120.984 MHz	21 dBµV/m	43.5 dBµV/m	-22.5 dB	Pass	-135 degrees	3 m
2	130.092 MHz	21.1 dBµV/m	43.5 dBµV/m	-22.4 dB	Pass	-135 degrees	3 m
3	336.924 MHz	22.4 dBµV/m	46 dBµV/m	-23.7 dB	Pass	-135 degrees	3 m
4	353.418 MHz	22.4 dBµV/m	46 dBµV/m	-23.6 dB	Pass	-135 degrees	3 m
5	503.94 MHz	40.1 dBµV/m	46 dBµV/m	-5.9 dB	Pass	-135 degrees	3 m
6	931.44 MHz	37.9 dBµV/m	46 dBµV/m	-8.2 dB	Pass	-135 degrees	3 m
7	372.426 MHz	23.2 dBµV/m	46 dBµV/m	-22.8 dB	Pass	-135 degrees	3 m

Test Report No.: G0M-2104-9767-EF0115B-V02

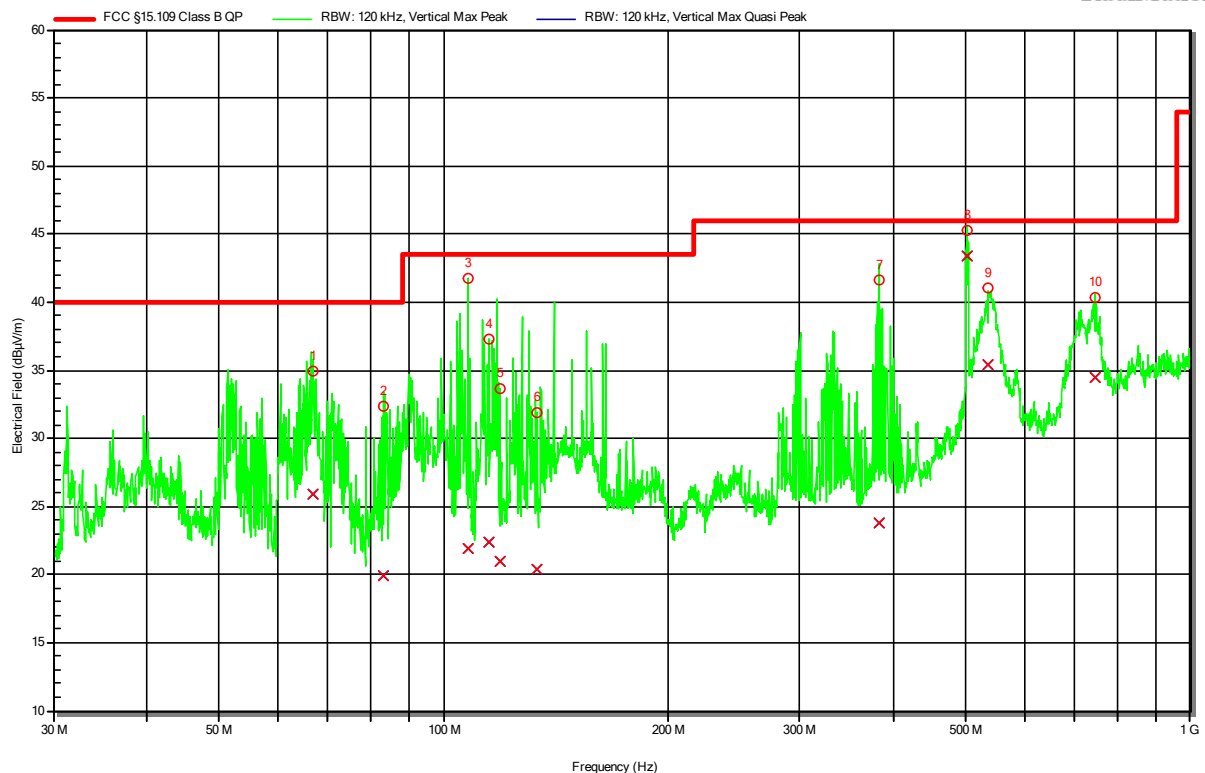
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34384
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-07-30
Operating Conditions: ambient temperature: 23 °Celsius
power input: 120 V / 60 Hz
Antenna: Schwarzbeck VULB 9162, Vertical
Measurement Distance: 10m converted to 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 1
Note 1:

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Radiation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	66.72 MHz	25.9 dBμV/m	40 dBμV/m	-14.1 dB	Pass	150 degrees	1 m
2	83.196 MHz	19.9 dBμV/m	40 dBμV/m	-20.1 dB	Pass	150 degrees	1 m
3	107.808 MHz	21.9 dBμV/m	43.5 dBμV/m	-21.7 dB	Pass	150 degrees	1 m
4	115.182 MHz	22.3 dBμV/m	43.5 dBμV/m	-21.2 dB	Pass	150 degrees	1 m
5	118.92 MHz	21 dBμV/m	43.5 dBμV/m	-22.6 dB	Pass	150 degrees	1 m
6	133.47 MHz	20.4 dBμV/m	43.5 dBμV/m	-23.1 dB	Pass	150 degrees	1 m
7	383.772 MHz	23.8 dBμV/m	46 dBμV/m	-22.2 dB	Pass	150 degrees	1 m
8	502.32 MHz	43.4 dBμV/m	46 dBμV/m	-2.6 dB	Pass	150 degrees	1 m
9	534.72 MHz	35.4 dBμV/m	46 dBμV/m	-10.6 dB	Pass	150 degrees	1 m
10	744.66 MHz	34.5 dBμV/m	46 dBμV/m	-11.6 dB	Pass	150 degrees	1 m

Test Report No.: G0M-2104-9767-EF0115B-V02

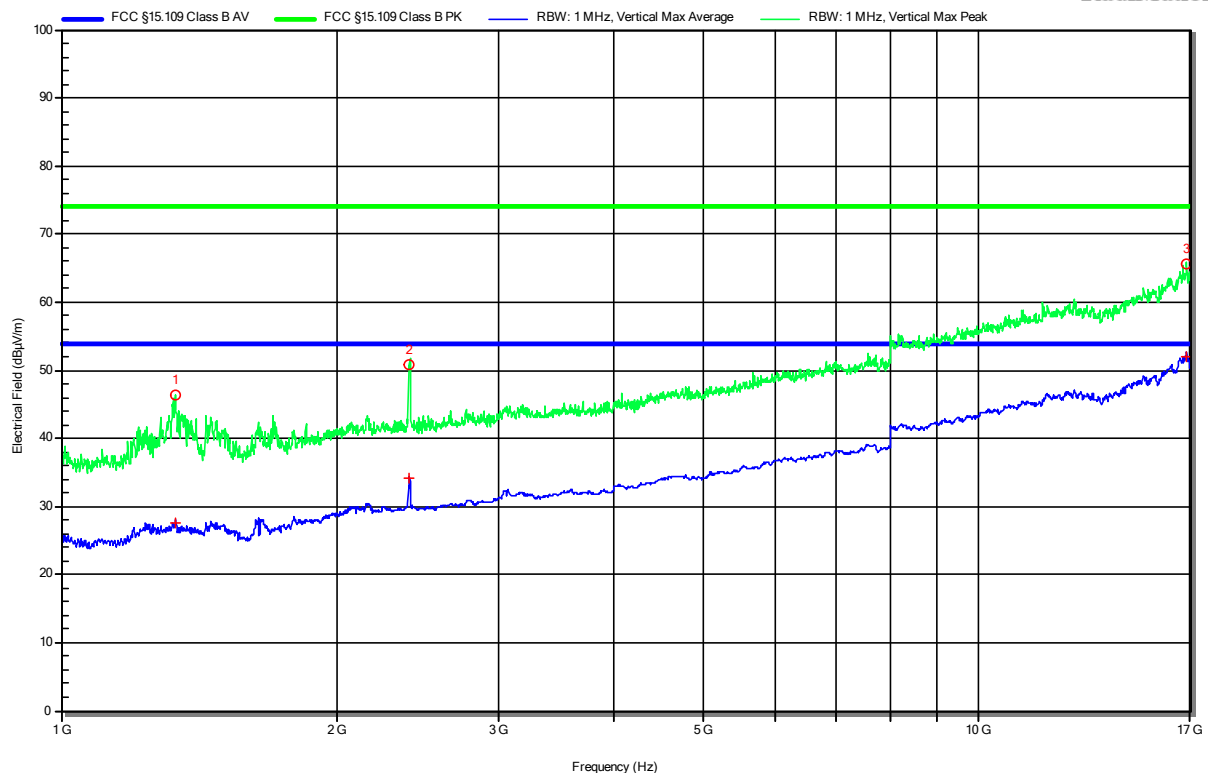
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34384
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-13
 Operating Conditions: ambient temperature: 23 °Celsius
 power input: 120 V / 60 Hz
 Antenna: ETS-Lindgren 3117, Vertical
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Mode 1
 Configuration 1
 Note 1:

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Radiation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	1.332 GHz	46.5 dBμV/m	74 dBμV/m	-27.5 dB	Pass	100 degrees	1 m
2	2.396 GHz	50.8 dBμV/m	74 dBμV/m	-23.2 dB	Pass	100 degrees	1 m
3	16.825 GHz	65.7 dBμV/m	74 dBμV/m	-8.3 dB	Pass	100 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	1.332 GHz	27.5 dBμV/m	54 dBμV/m	-26.5 dB	Pass	100 degrees	1 m
2	2.396 GHz	34.3 dBμV/m	54 dBμV/m	-19.7 dB	Pass	100 degrees	1 m
3	16.825 GHz	52 dBμV/m	54 dBμV/m	-2.0 dB	Pass	100 degrees	1 m

Test Report No.: G0M-2104-9767-EF0115B-V02

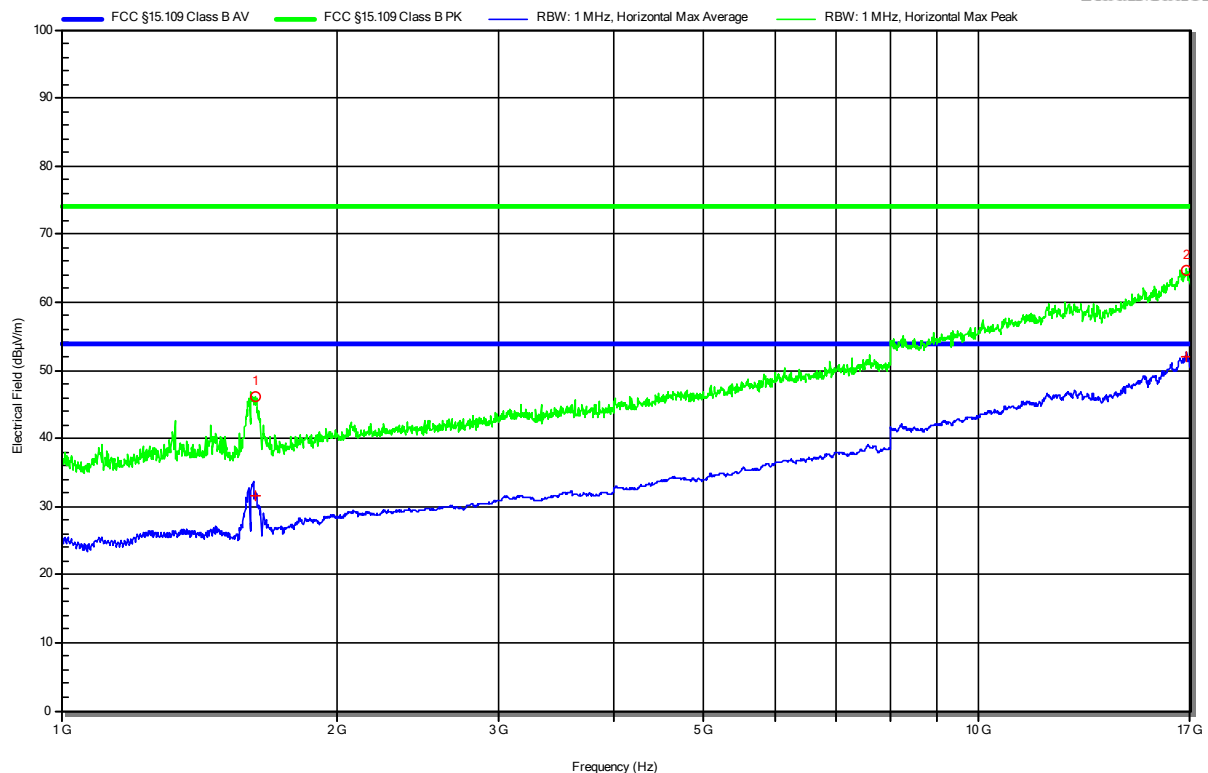
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34384
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-13
 Operating Conditions: ambient temperature: 23 °Celsius
 power input: 120 V / 60 Hz
 Antenna: ETS-Lindgren 3117, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Mode 1
 Configuration 1
 Note 1:

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Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	1.626 GHz	46.1 dBμV/m	74 dBμV/m	-27.8 dB	Pass	-55 degrees	1 m
2	16.849 GHz	64.7 dBμV/m	74 dBμV/m	-9.3 dB	Pass	-55 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	1.626 GHz	31.5 dBμV/m	54 dBμV/m	-22.5 dB	Pass	-55 degrees	1 m
2	16.849 GHz	52 dBμV/m	54 dBμV/m	-2.0 dB	Pass	-55 degrees	1 m

Test Report No.: G0M-2104-9767-EF0115B-V02

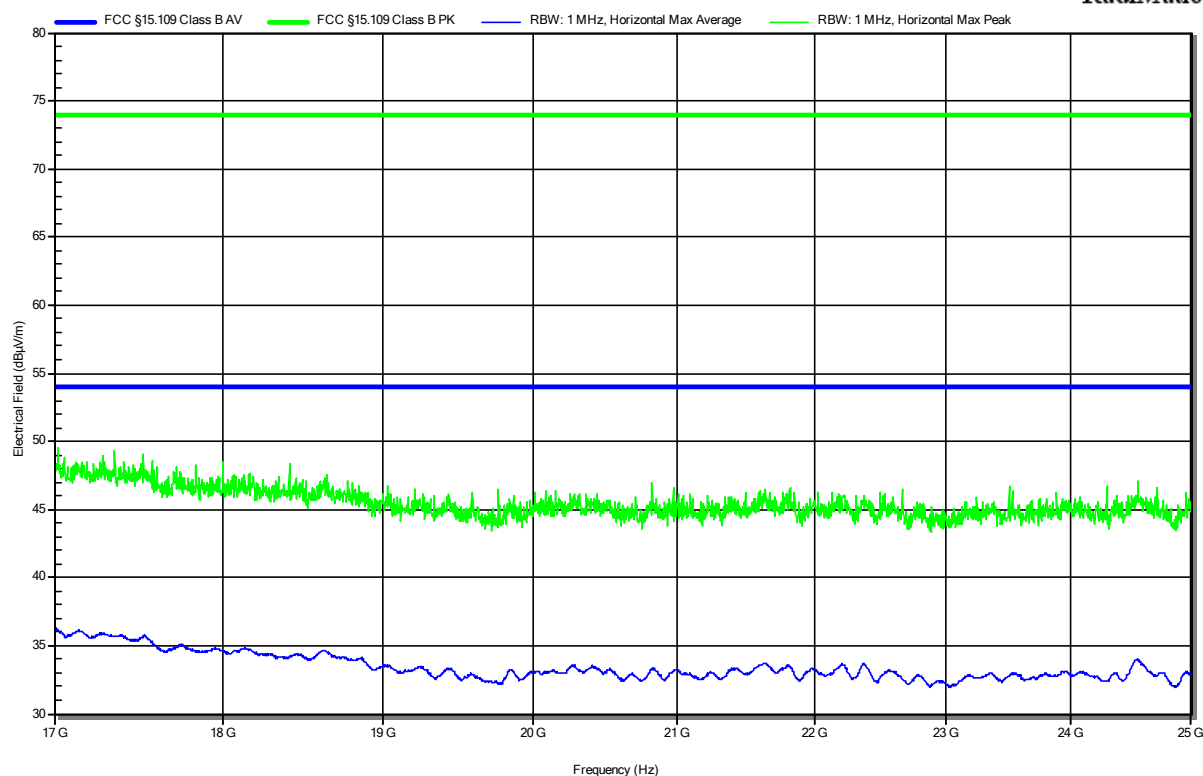
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34384
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-08-16
Operating Conditions: ambient temperature: 23 °Celsius
power input: 120 V / 60 Hz
Antenna: AT4560, Horizontal
Measurement Distance: 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 1
Note 1: Table position -33° / antenna high 1m

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RadiMation

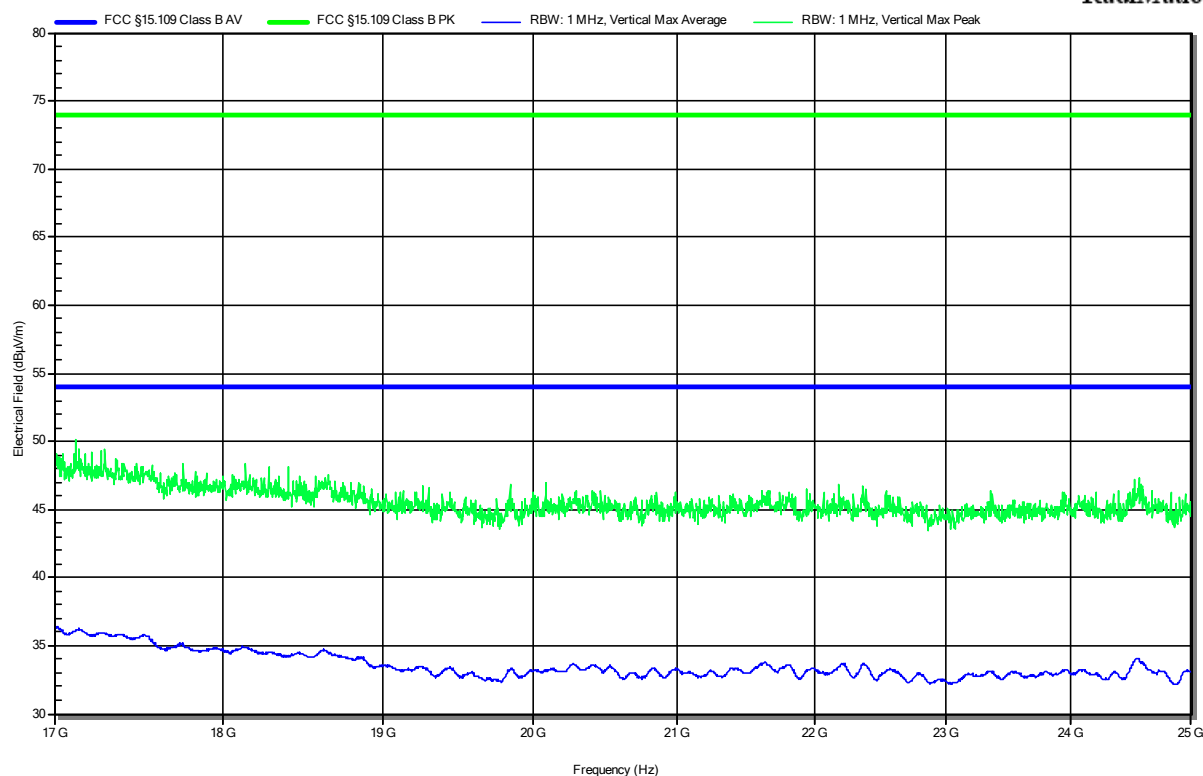


Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34384
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-08-16
Operating Conditions: ambient temperature: 23 °Celsius
power input: 120 V / 60 Hz
Antenna: AT4560, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 1
Note 1: Table position 150° / antenna high 1m

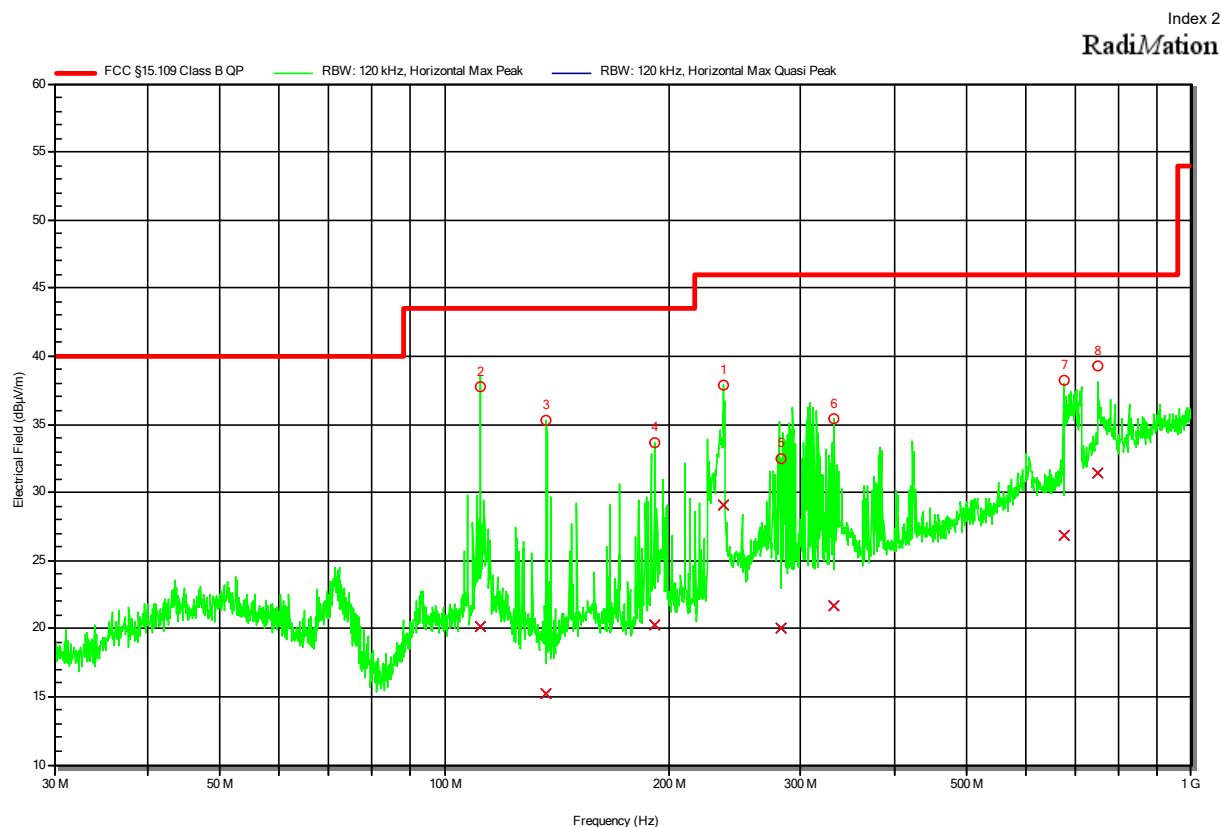
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RadiMation



Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34385
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-07-30
Operating Conditions: ambient temperature: 24 °Celsius
power input: 120 V / 60 Hz
Antenna: Schwarzbeck VULB 9162, Horizontal
Measurement Distance: 10m converted to 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 2
Note 1:



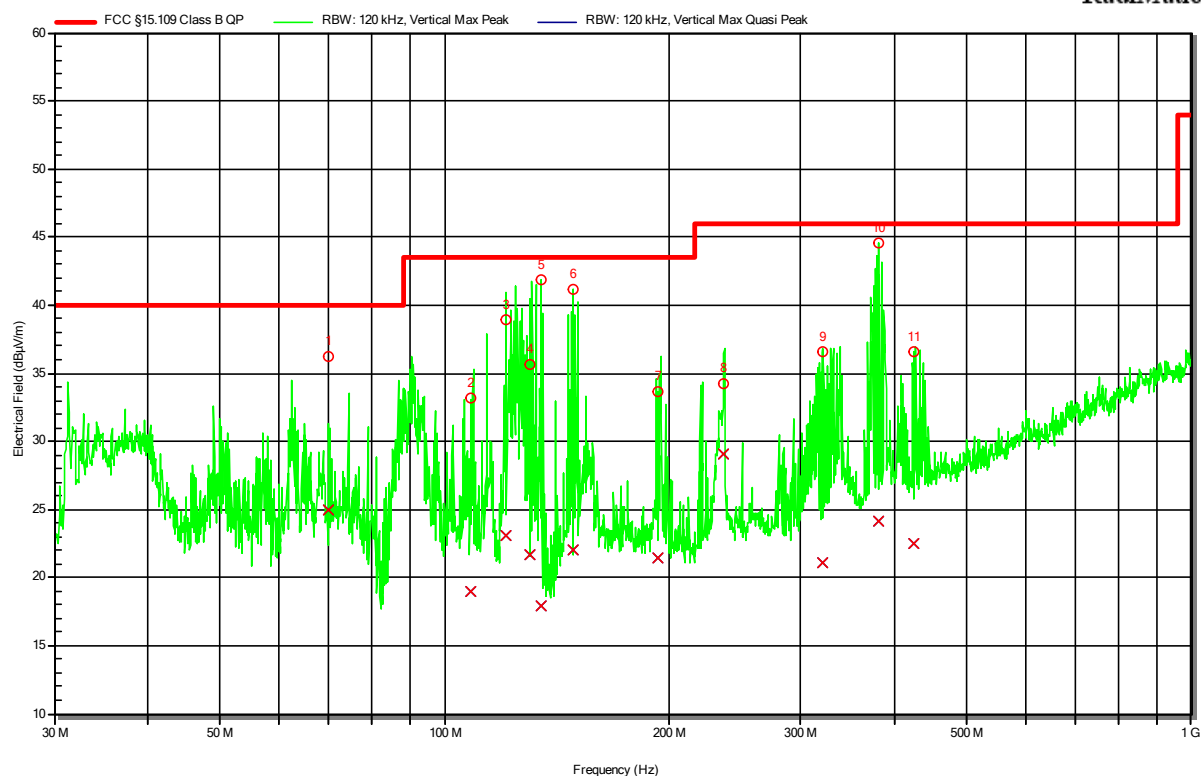
Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	236.274 MHz	29.1 dBµV/m	46 dBµV/m	-17.0 dB	Pass	180 degrees	3 m
2	111.601 MHz	20.1 dBµV/m	43.5 dBµV/m	-23.4 dB	Pass	180 degrees	4 m
3	136.879 MHz	15.3 dBµV/m	43.5 dBµV/m	-28.3 dB	Pass	180 degrees	4 m
4	191.479 MHz	20.2 dBµV/m	43.5 dBµV/m	-23.3 dB	Pass	180 degrees	4 m
5	282.489 MHz	20.1 dBµV/m	46 dBµV/m	-26.0 dB	Pass	180 degrees	4 m
6	331.623 MHz	21.7 dBµV/m	46 dBµV/m	-24.3 dB	Pass	180 degrees	4 m
7	674.94 MHz	26.9 dBµV/m	46 dBµV/m	-19.1 dB	Pass	180 degrees	4 m
8	749.76 MHz	31.4 dBµV/m	46 dBµV/m	-14.7 dB	Pass	180 degrees	4 m

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34385
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-07-30
Operating Conditions: ambient temperature: 24 °Celsius
power input: 120 V / 60 Hz
Antenna: Schwarzbeck VULB 9162, Vertical
Measurement Distance: 10m converted to 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 2
Note 1:

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Radiation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
1	69.96 MHz	25 dBμV/m	40 dBμV/m	-15.0 dB	Pass	-125 degrees	1 m
2	108.306 MHz	19 dBμV/m	43.5 dBμV/m	-24.6 dB	Pass	-125 degrees	1 m
3	120.804 MHz	23.1 dBμV/m	43.5 dBμV/m	-20.4 dB	Pass	-125 degrees	1 m
4	130.254 MHz	21.6 dBμV/m	43.5 dBμV/m	-21.9 dB	Pass	-160 degrees	1 m
5	134.7 MHz	18 dBμV/m	43.5 dBμV/m	-25.6 dB	Pass	-160 degrees	1 m
6	148.644 MHz	22 dBμV/m	43.5 dBμV/m	-21.5 dB	Pass	-160 degrees	1 m
7	193.272 MHz	21.5 dBμV/m	43.5 dBμV/m	-22.0 dB	Pass	-160 degrees	1 m
8	236.88 MHz	29.1 dBμV/m	46 dBμV/m	-16.9 dB	Pass	-160 degrees	1 m
9	320.916 MHz	21.1 dBμV/m	46 dBμV/m	-24.9 dB	Pass	-160 degrees	1 m
10	381.186 MHz	24.2 dBμV/m	46 dBμV/m	-21.9 dB	Pass	-160 degrees	1 m
11	425.106 MHz	22.5 dBμV/m	46 dBμV/m	-23.5 dB	Pass	-160 degrees	1 m

Test Report No.: G0M-2104-9767-EF0115B-V02

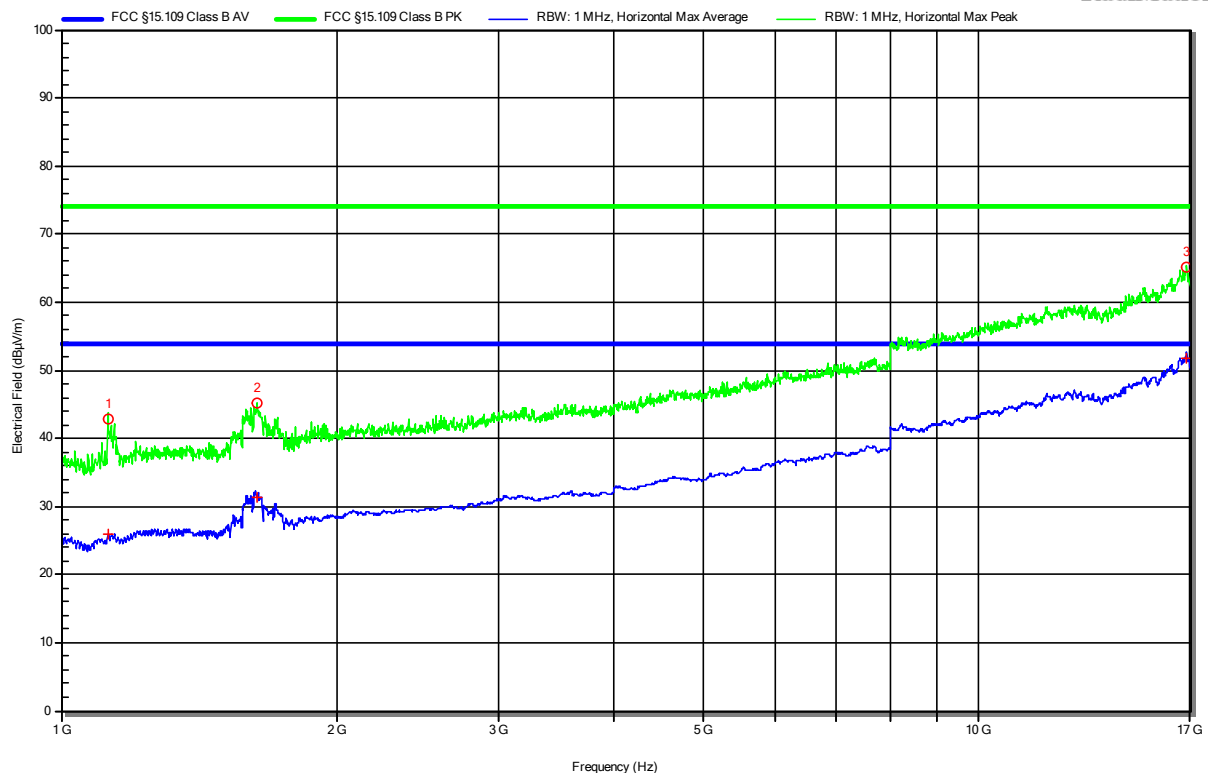
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34385
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-13
 Operating Conditions: ambient temperature: 24 °Celsius
 power input: 120 V / 60 Hz
 Antenna: ETS-Lindgren 3117, Horizontal
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Mode 1
 Configuration 2
 Note 1:

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Radiation



Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	1.125 GHz	42.9 dBμV/m	74 dBμV/m	-31.1 dB	Pass	-50 degrees	1 m
2	1.635 GHz	45.1 dBμV/m	74 dBμV/m	-28.9 dB	Pass	-50 degrees	1 m
3	16.846 GHz	65.1 dBμV/m	74 dBμV/m	-8.9 dB	Pass	-50 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	1.125 GHz	26 dBμV/m	54 dBμV/m	-27.9 dB	Pass	-50 degrees	1 m
2	1.635 GHz	31.3 dBμV/m	54 dBμV/m	-22.7 dB	Pass	-50 degrees	1 m
3	16.846 GHz	51.8 dBμV/m	54 dBμV/m	-2.2 dB	Pass	-50 degrees	1 m

Test Report No.: G0M-2104-9767-EF0115B-V02

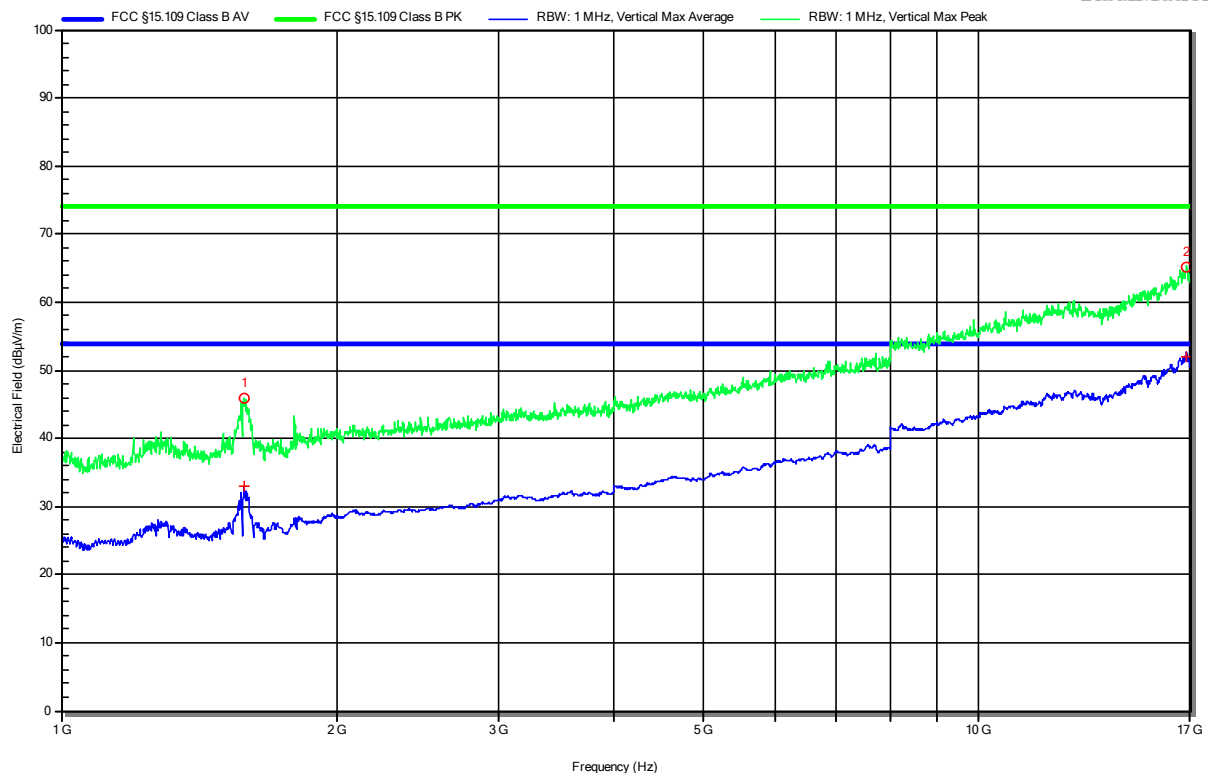
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34385
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-13
 Operating Conditions: ambient temperature: 24 °Celsius
 power input: 120 V / 60 Hz
 Antenna: ETS-Lindgren 3117, Vertical
 Measurement Distance: 3m
 Operational Mode & EUT Configuration: Mode 1
 Configuration 2
 Note 1:

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Peak Number	Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Angle	Height
1	1.582 GHz	45.9 dBμV/m	74 dBμV/m	-28.1 dB	Pass	-75 degrees	1 m
2	16.842 GHz	65.2 dBμV/m	74 dBμV/m	-8.8 dB	Pass	-75 degrees	1 m

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	Angle	Height
1	1.582 GHz	33 dBμV/m	54 dBμV/m	-21.0 dB	Pass	-75 degrees	1 m
2	16.842 GHz	52.1 dBμV/m	54 dBμV/m	-1.9 dB	Pass	-75 degrees	1 m

Test Report No.: G0M-2104-9767-EF0115B-V02

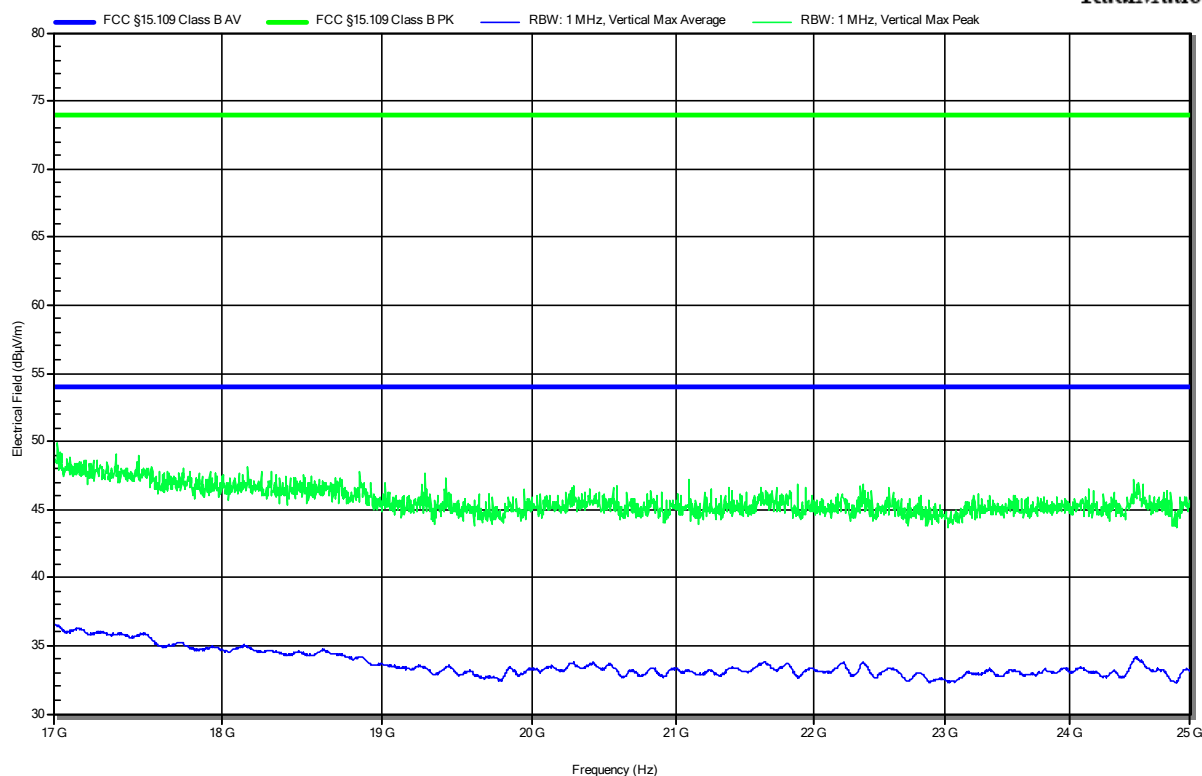
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34385
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-08-16
Operating Conditions: ambient temperature: 24 °Celsius
power input: 120 V / 60 Hz
Antenna: AT4560, Vertical
Measurement Distance: 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 2
Note 1: Table position 150° / antenna high 1m

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Radiation

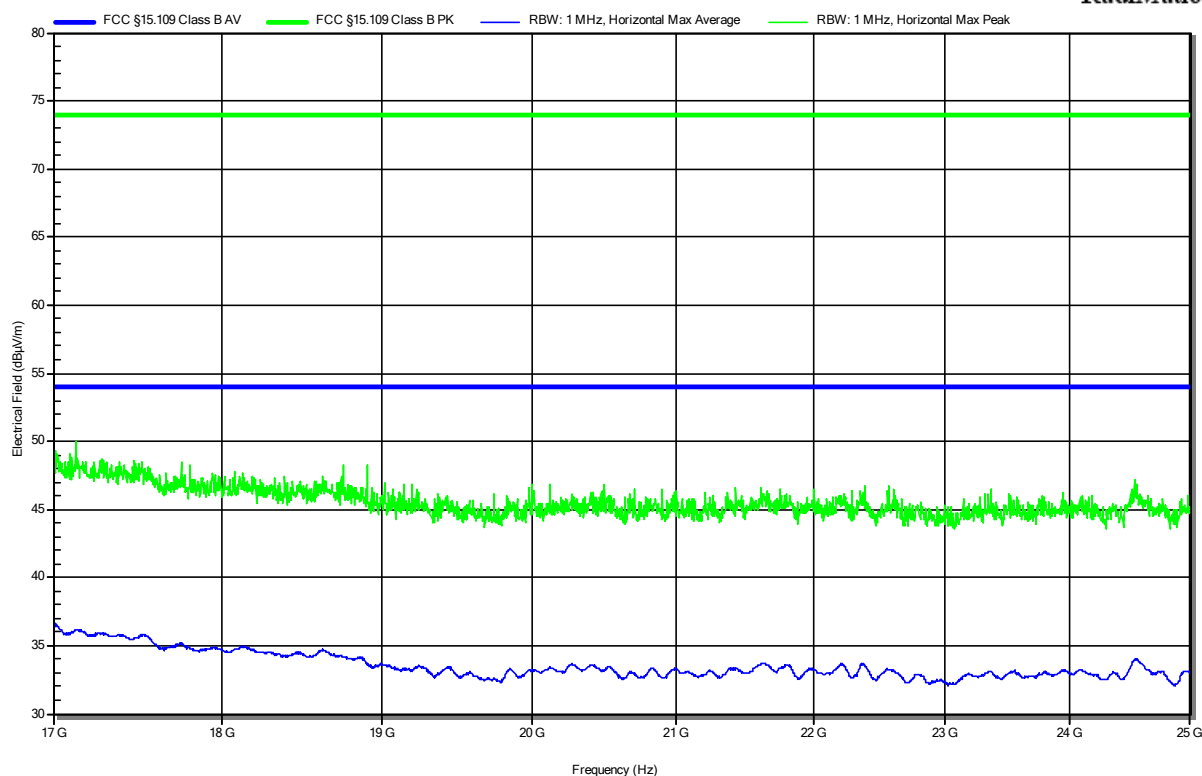


Radiated emissions according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 21
Test Sample ID: 34385
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-08-16
Operating Conditions: ambient temperature: 24 °Celsius
power input: 120 V / 60 Hz
Antenna: AT4560, Horizontal
Measurement Distance: 3m
Operational Mode & EUT Configuration: Mode 1
Configuration 2
Note 1: Table position -33° / antenna high 1m

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RadiMation

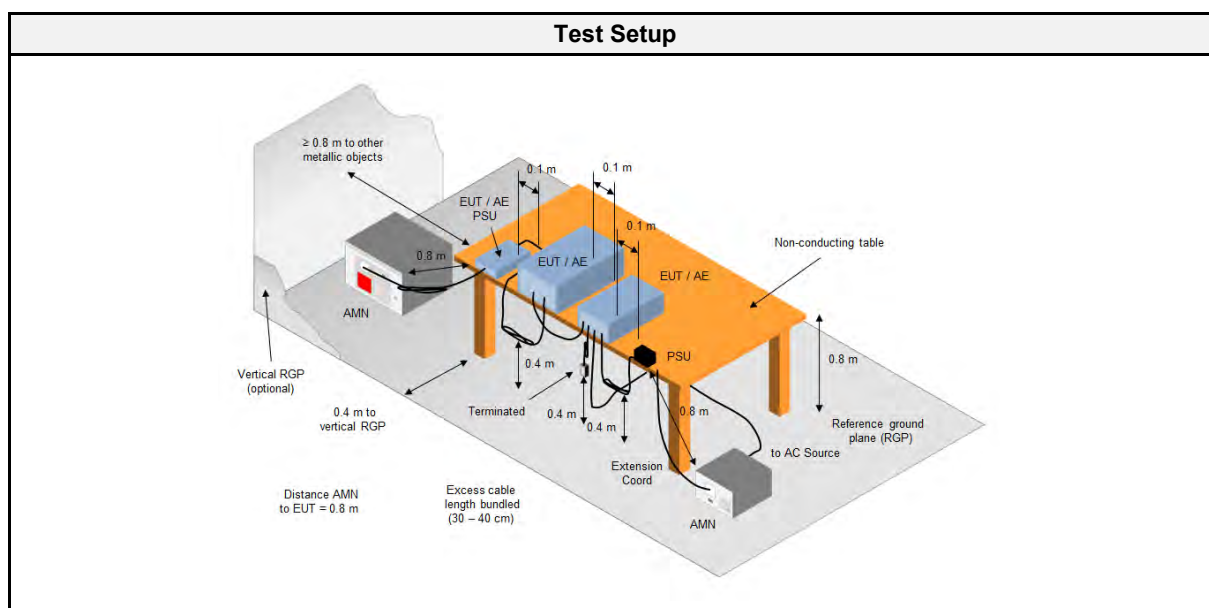
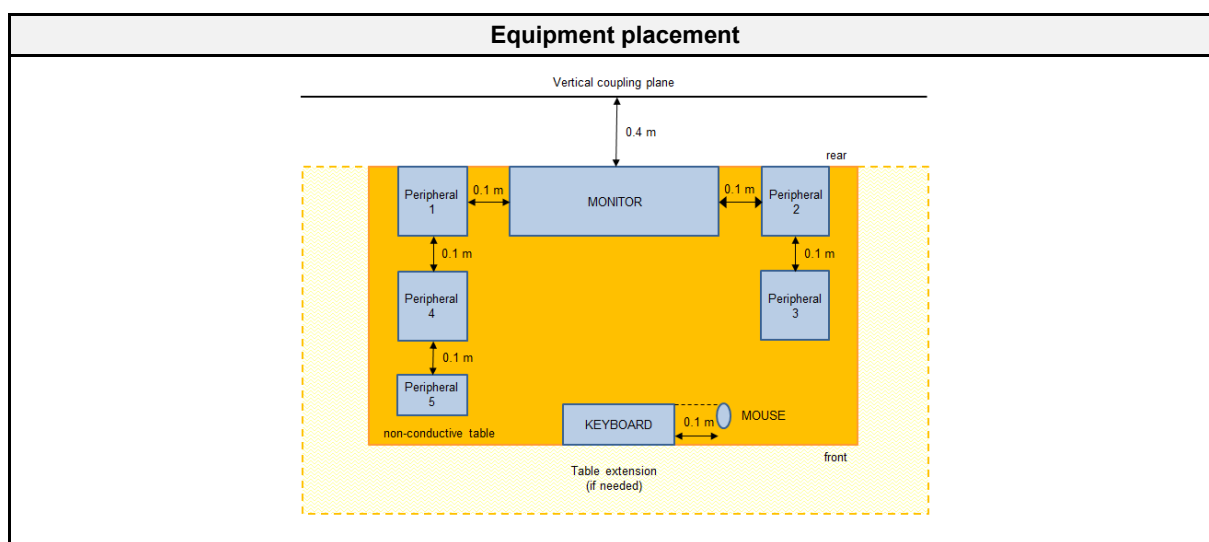


2.2 Test Conditions and Results - Conducted emissions acc. to ANSI C63.4

2.2.1 Information

Test Information	
Reference	FCC 15.107, ICES-003
Reference method	ANSI C63.4:2014+A1:2017 Section 12
Measurement range	150 kHz to 30 MHz
Equipment class	Class B
Equipment type	Table top
Temperature [°C]	23
Humidity [%]	50
Operator	Ruslan Colbasiuc
Date	2021-08-02

2.2.2 Setup



2.2.3 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	Radimation	2020.1.8

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	Schwarzbeck	NSLK 8128	EF00975	2021-07	2023-07
EMI Test Receiver	R&S	ESU26	EF00887	2021-07	2022-07
Artificial mains network	Rohde & Schwarz Vertriebs GmbH	ESH2-Z5	EF00182	2021-07	2022-07
Climatic Sensor	Embedded Data Systems, LLC.	9A0010000025477E	EF01124	2021-03	2022-03

2.2.4 Procedure

Exploratory measurement
1. The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1) 2. The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN. 3. The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length). 4. The LISN measurement port was connected to a measurement receiver 5. I/O cables were bundled not longer than 0.4 m 6. Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor 7. To maximize the emissions the cable positions were manipulated 8. The worst configuration of EUT and cables is shown on a test setup picture at item 1.3

Final measurement
1. The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1) 2. The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN. 3. The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length). 4. The LISN measurement port was connected to a measurement receiver 5. The EUT and cable arrangement were based on the exploratory measurement results 6. The test data of the worst-case conditions were recorded and shown on the next pages

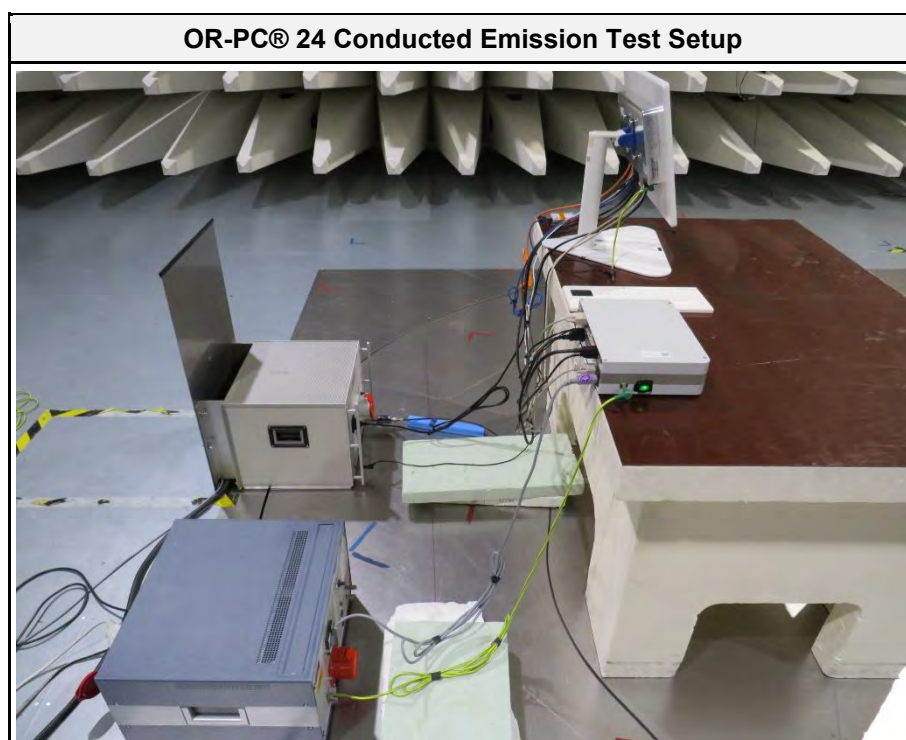
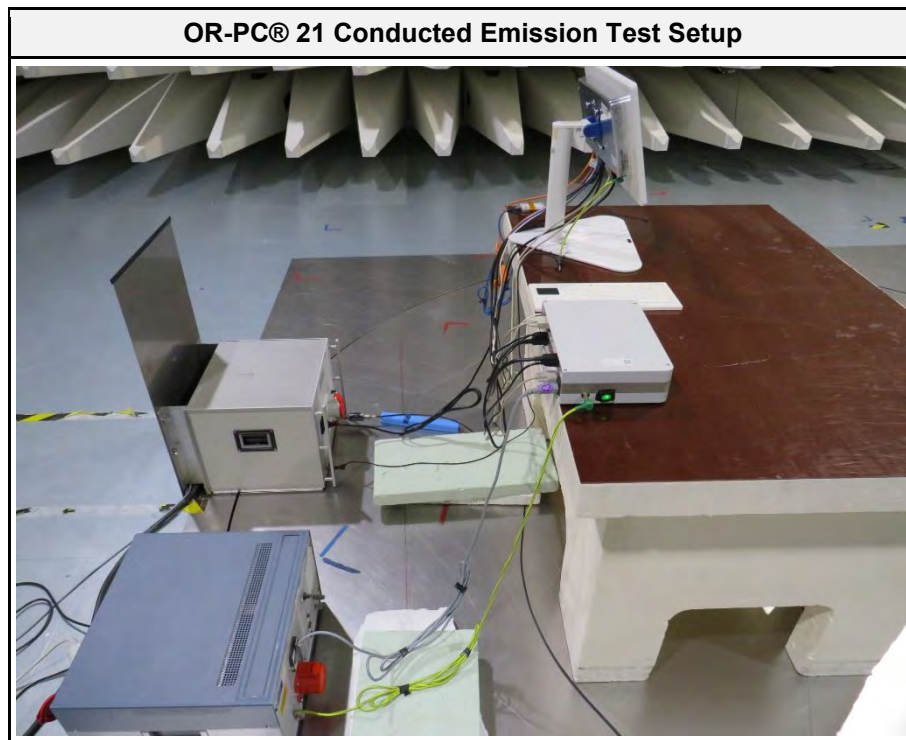
2.2.5 Limits

Class B		
Frequency [MHz]	Quasi-peak Limit [dBμV]	Average Limit [dBμV]
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5	56	46
5 - 30	60	50
* Decreases with the logarithm of the frequency		

2.2.6 Results

AC power line conducted emissions					
Port	Coupling	Operational mode	EUT Configuration	Verdict	Remark
Power Cord	AMN	1	1	PASS	-
Power Cord	AMN	1	2	PASS	-

2.2.7 Setup Photos



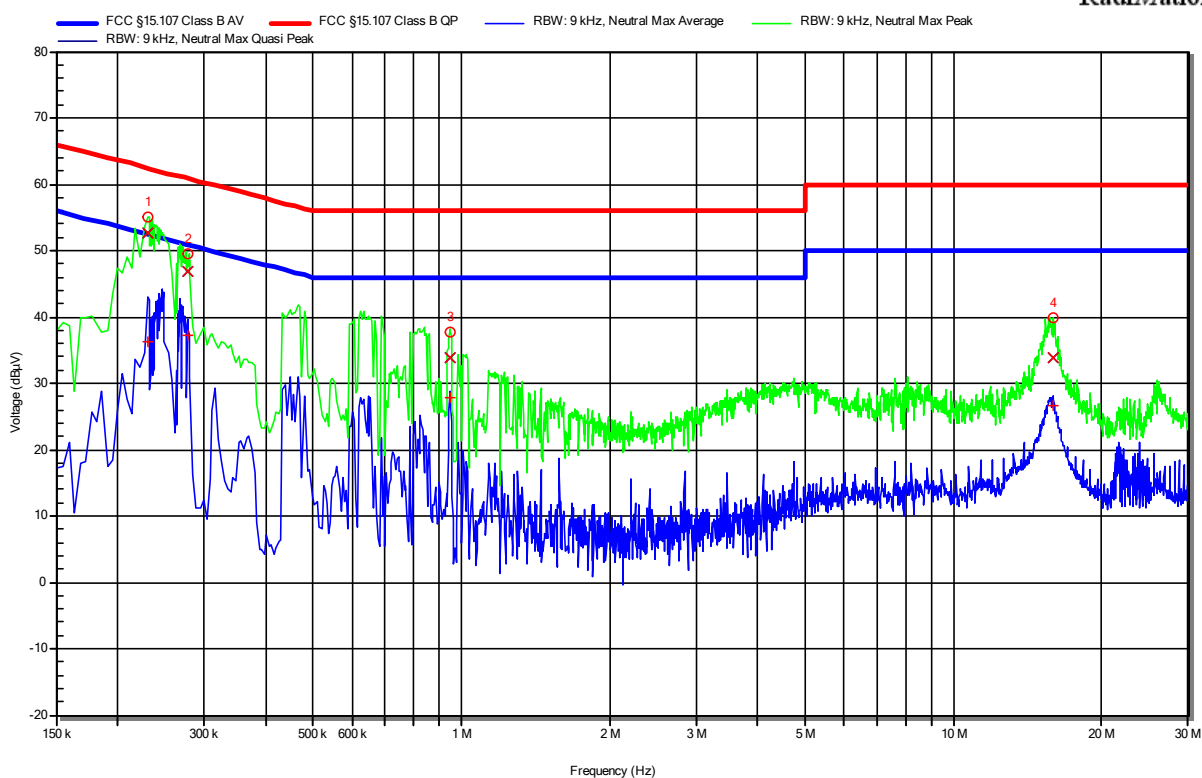
2.2.8 Records

Conducted emissions at the mains power port according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34384
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-02
 Operating Conditions: ambient temperature: 23 °Celsius
 power input: 120 V / 60 Hz
 LISN: Schwarzbeck NSLK 8128 (N)
 Operational Mode & EUT Configuration: Mode 1
 Configuration 1
 Applied to Port: Power Cord
 Note 1:

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RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	231 kHz	52.6 dBµV	62.4 dBµV	-9.8 dB	Pass	Neutral
2	278.7 kHz	46.8 dBµV	60.9 dBµV	-14.0 dB	Pass	Neutral
3	947.85 kHz	33.9 dBµV	56 dBµV	-22.1 dB	Pass	Neutral
4	15.891 MHz	33.8 dBµV	60 dBµV	-26.2 dB	Pass	Neutral

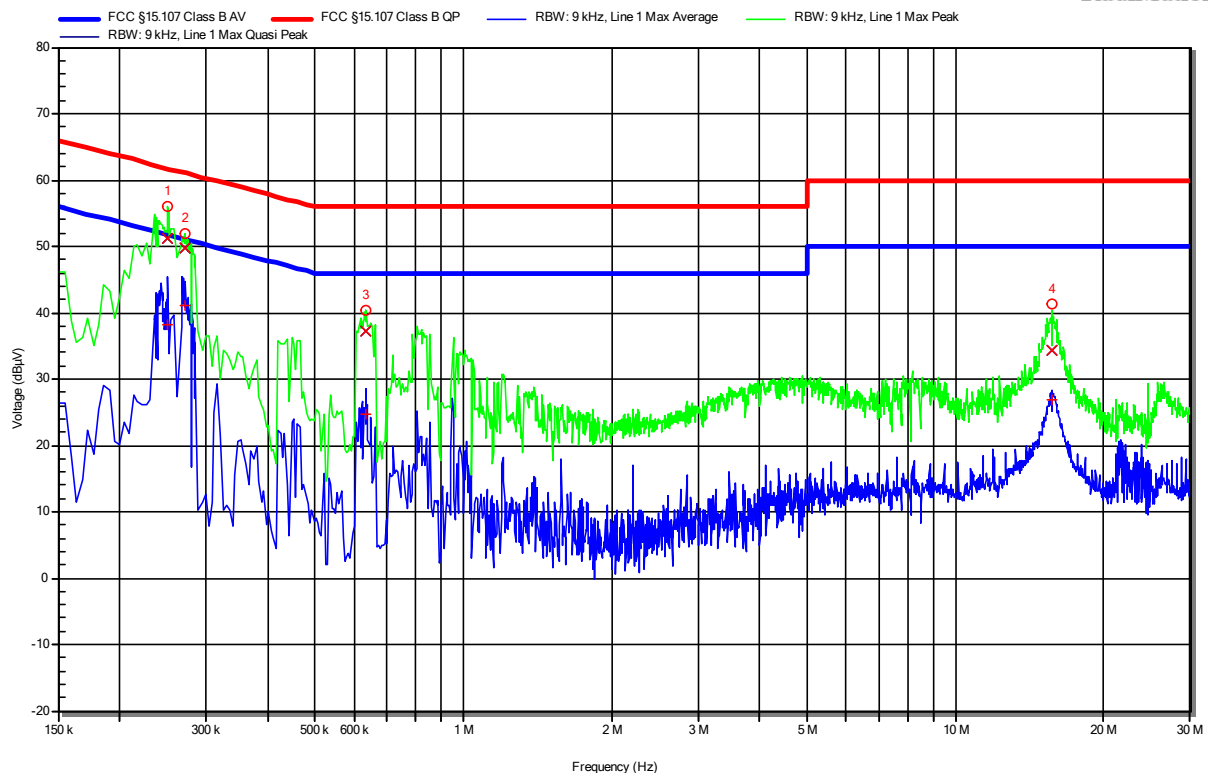
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	231 kHz	36.3 dBµV	52.4 dBµV	-16.2 dB	Pass	Neutral
2	278.7 kHz	37.2 dBµV	50.9 dBµV	-13.6 dB	Pass	Neutral
3	947.85 kHz	27.7 dBµV	46 dBµV	-18.3 dB	Pass	Neutral
4	15.891 MHz	26.6 dBµV	50 dBµV	-23.4 dB	Pass	Neutral

Conducted emissions at the mains power port according to FCC 15B

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 21
 Test Sample ID: 34384
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-02
 Operating Conditions: ambient temperature: 23 °Celsius
 power input: 120 V / 60 Hz
 LISN: Schwarzbeck NSLK 8128 (L)
 Operational Mode & EUT Configuration: Mode 1
 Configuration 1
 Applied to Port: Power Cord
 Note 1:

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Radiation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	250.8 kHz	51.2 dBµV	61.7 dBµV	-10.6 dB	Pass	Line 1
2	271.05 kHz	49.8 dBµV	61.1 dBµV	-11.3 dB	Pass	Line 1
3	631.95 kHz	37.2 dBµV	56 dBµV	-18.8 dB	Pass	Line 1
4	15.675 MHz	34.2 dBµV	60 dBµV	-25.8 dB	Pass	Line 1

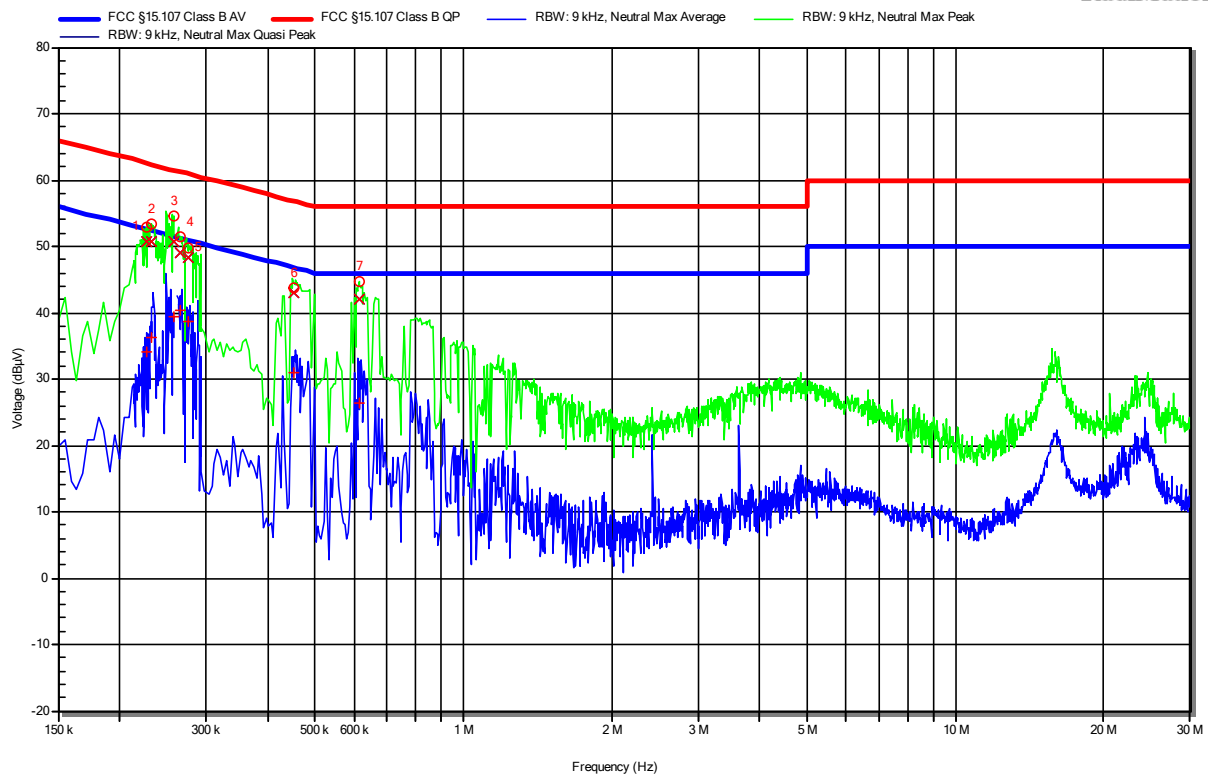
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	250.8 kHz	38.1 dBµV	51.7 dBµV	-13.6 dB	Pass	Line 1
2	271.05 kHz	41 dBµV	51.1 dBµV	-10.1 dB	Pass	Line 1
3	631.95 kHz	24.7 dBµV	46 dBµV	-21.3 dB	Pass	Line 1
4	15.675 MHz	26.8 dBµV	50 dBµV	-23.2 dB	Pass	Line 1

Conducted emissions at the mains power port according to FCC 15B

Project Number: G0M-2104-9767
Applicant: ACL GmbH
Model Description: Medical PC
Model: OR-PC® 24
Test Sample ID: 34385
Test Site: Eurofins Product Service GmbH
Operator: Mr. Colbasiuc
Test Date: 2021-08-02
Operating Conditions: ambient temperature: 24 °Celsius
power input: 120 V / 60 Hz
LISN: Schwarzbeck NSLK 8128 (N)
Operational Mode & EUT Configuration: Mode 1
Configuration 2
Applied to Port: Power Cord
Note 1:

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Radiation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	226.5 kHz	50.8 dBµV	62.6 dBµV	-11.8 dB	Pass	Neutral
2	232.35 kHz	50.8 dBµV	62.4 dBµV	-11.5 dB	Pass	Neutral
3	257.1 kHz	50.7 dBµV	61.5 dBµV	-10.8 dB	Pass	Neutral
4	265.65 kHz	49.1 dBµV	61.3 dBµV	-12.1 dB	Pass	Neutral
5	276 kHz	48.3 dBµV	60.9 dBµV	-12.6 dB	Pass	Neutral
6	451.05 kHz	43 dBµV	56.9 dBµV	-13.8 dB	Pass	Neutral
7	613.05 kHz	42.1 dBµV	56 dBµV	-13.9 dB	Pass	Neutral

Test Report No.: G0M-2104-9767-EF0115B-V02

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

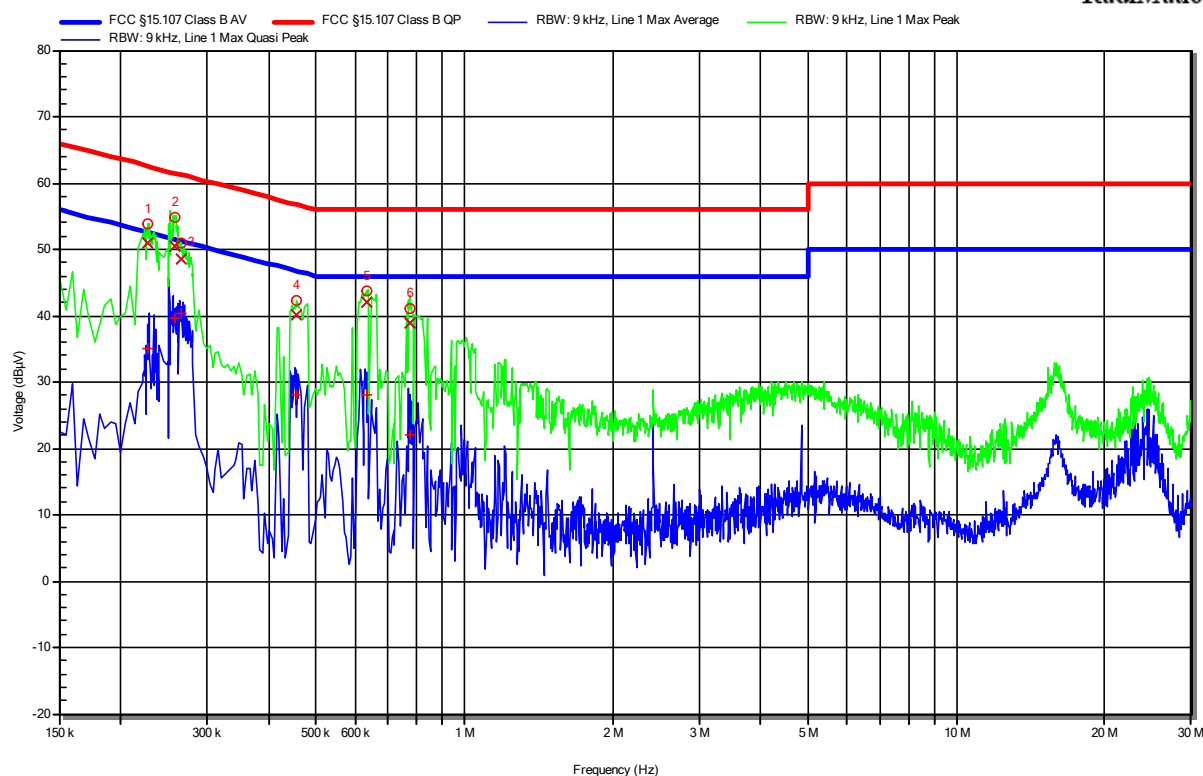
Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	226.5 kHz	34.2 dB μ V	52.6 dB μ V	-18.4 dB	Pass	Neutral
2	232.35 kHz	36.3 dB μ V	52.4 dB μ V	-16.1 dB	Pass	Neutral
3	257.1 kHz	39.4 dB μ V	51.5 dB μ V	-12.1 dB	Pass	Neutral
4	265.65 kHz	40.2 dB μ V	51.3 dB μ V	-11.0 dB	Pass	Neutral
5	276 kHz	38.8 dB μ V	50.9 dB μ V	-12.2 dB	Pass	Neutral
6	451.05 kHz	30.9 dB μ V	46.9 dB μ V	-16.0 dB	Pass	Neutral
7	613.05 kHz	26.5 dB μ V	46 dB μ V	-19.5 dB	Pass	Neutral

**Conducted emissions at the mains power port
according to FCC 15B**

Project Number: G0M-2104-9767
 Applicant: ACL GmbH
 Model Description: Medical PC
 Model: OR-PC® 24
 Test Sample ID: 34385
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Colbasiuc
 Test Date: 2021-08-02
 Operating Conditions: ambient temperature: 24 °Celsius
 power input: 120 V / 60 Hz
 LISN: Schwarzbeck NSLK 8128 (L)
 Operational Mode & EUT Configuration: Mode 1
 Configuration 2
 Applied to Port: Power Cord
 Note 1:

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Radiation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	227.85 kHz	51 dBµV	62.5 dBµV	-11.5 dB	Pass	Line 1
2	258.45 kHz	50.4 dBµV	61.5 dBµV	-11.1 dB	Pass	Line 1
3	266.1 kHz	48.7 dBµV	61.2 dBµV	-12.6 dB	Pass	Line 1
4	456 kHz	40.1 dBµV	56.8 dBµV	-16.6 dB	Pass	Line 1
5	631.95 kHz	42 dBµV	56 dBµV	-14.0 dB	Pass	Line 1
6	777.3 kHz	39 dBµV	56 dBµV	-17.0 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	227.85 kHz	35 dB μ V	52.5 dB μ V	-17.5 dB	Pass	Line 1
2	258.45 kHz	39.5 dB μ V	51.5 dB μ V	-12.0 dB	Pass	Line 1
3	266.1 kHz	40.4 dB μ V	51.2 dB μ V	-10.9 dB	Pass	Line 1
4	456 kHz	28.1 dB μ V	46.8 dB μ V	-18.6 dB	Pass	Line 1
5	631.95 kHz	28.1 dB μ V	46 dB μ V	-17.9 dB	Pass	Line 1
6	777.3 kHz	22.1 dB μ V	46 dB μ V	-23.9 dB	Pass	Line 1