Status of 2D and 3D racks designs

Łukasz CZUBA
Krystian BEC
WUT
22 October 2019 , BI forum

Scope of Work

1. **Design and preparation of infrastructure documentation and rack cabling for BD**:
    - 3D rack occupation designs of ~ 50 BD racks (collect all necessary models of each parts)
    - all cables connections between devices and modules inside racks,
    - list of all types of cables and connectors in each rack.

2. **Design and production of BD racks patch panels**.

3. **Installation support for BD racks**.

4. **Laboratory works: devices testing, lab organization, etc.**

Work description and duties

One of the most time consuming part of our job is to collect all necessary CAD models of all devices, electronics and mechanic parts inside rack.
What is more, all electronics have to be uploaded to „E-Plan Electric P8” program database, where all 2D wiring diagrams are created.

Work description and duties

Status of all 3D models can be checked in online table, as it is shown below

System	ESS Device name	CAD model	Added to E-Plan database	Company name	Part no.	Comment	E-Plan database name
Wire Scanner	WS BACK END	yes	yes	Elettra		2d model from Sandi Grulja / CAD model created by Krystian Bęc	ESS.WS_back_end
	WS MTCA	yes	yes				
	WS LAN	no	no				
BPM	BPM MTCA	yes	yes				
	BPM FRONT END	yes	yes	WUT		CAD model from Rafael Baron	ESS.BPM_front_end
	BPM PATCH PANEL	yes	yes	WUT		CAD model created by Krystian Bęc	ESS.BPM_patch_panel
BCM	BCM MTCA	yes	yes				
	BCM AIU	yes	yes	WUT		CAD model from Paweł Jatczak	ESS.BCM_AIU
	BCM PATCH PANEL	yes	yes	WUT		CAD model from Krystian Bec / need modifications	ESS.BCMpatchpanel
FBCM	FBCM MTCA	yes	yes				
	FBCM FRONT END	yes	yes	WUT		CAD model from Paweł Jatczak	ESS.FBCM_front_end
FBPM	FBPM MTCA	yes	yes				
	FBPM FRONT END	no	no	WUT		Waiting for replay (Paweł Jatczak)	
	nBLM PATCH PANEL	yes	yes	Saclay		CAD model from Laura Segui (Saclay)	ESS.nBLM_signal_patch_panel
	nBLM MTCA	yes	yes				

Source:

https://elkapw-my.sharepoint.com/:x:/r/personal/k_bec_elkapw_onmicrosoft_com/_layouts/15/doc2.aspx?sourcedoc=%7BFD3F32A7-1A42-43D9-BF78-9D1B85F0AAD7%7D&file=Skoroszyt.xlsx&action=default&mobileredirect=true&cid=7c38670a-49f9-48d5-9c8c-8cc7416a6416

Work description and duties

All internal rack cabling nedds to be added to E-Plan database as well

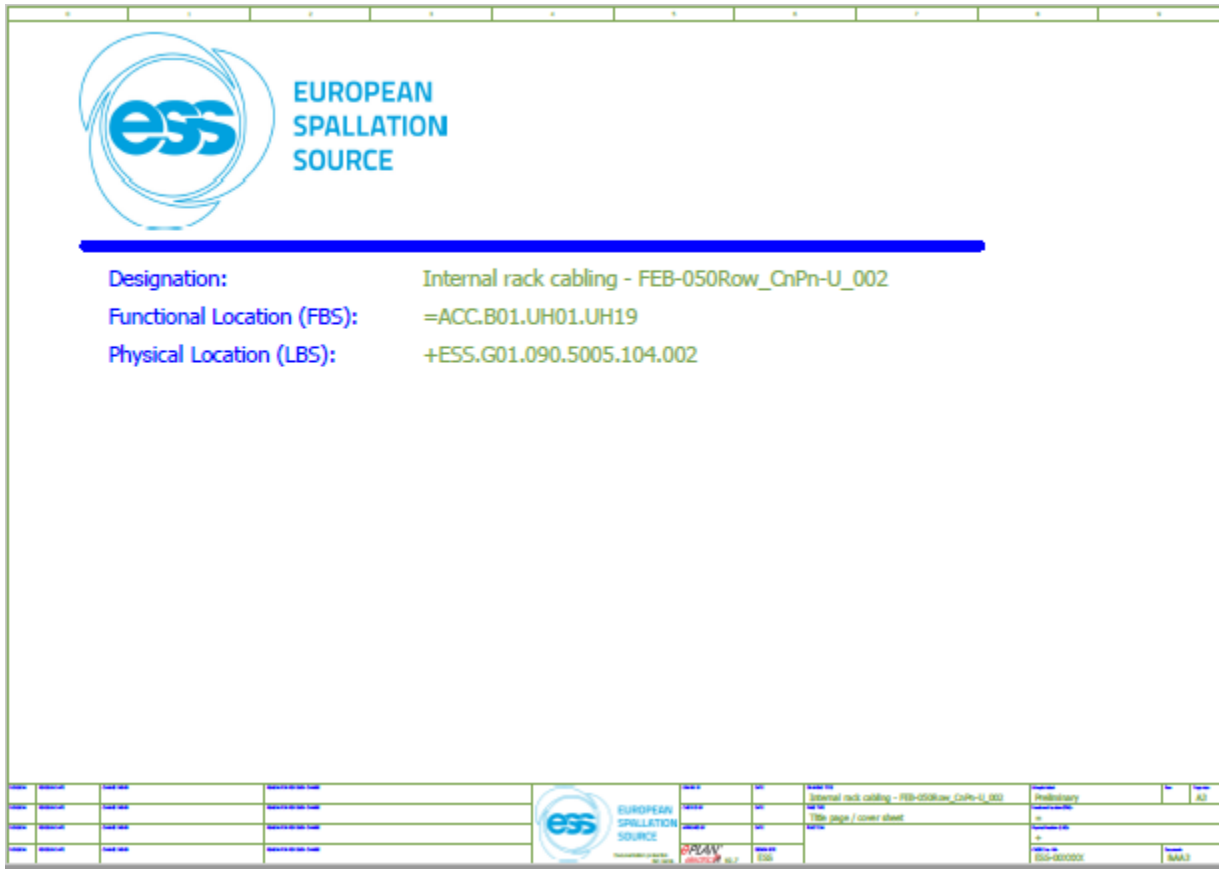
System	Manufacturer	Part no.	E-Plan database (Yes/No)	E-Plan database name	Comment
BPM	Mini-Circuits	141-5SM+	YES	MINI.141-5SM+	https://www.minicircuits.com/WebStore/dashboard.html?model=141-5SM%2B
	Radiall	R284C0351053	YES	RAD.R284C0351053	https://uk.farnell.com/radiall/r284c0351053/lead-rg316-sma-m-m-0-5m/dp/1349827
	RFS	SCF38-50JFN	YES	RFS.SCF38-50JFN	
	Harting	9456000600	YES	HAR.09456000600	
	Nexans	14070430	YES	NEX.14070430	https://www.nexans.se/eservice/Sweden-sv_SE/navigateproduct_540304513/14070430.html
	Lapp	1123479	YES	LAPP.1123479	
	Corning	006T8Z-32188E2G	YES	COR.006T8Z-32188E2G	
	Corning	CCXEDR-D0047-C003-L7	YES	COR.6xCCXEDR-D0047-C003-L7	
BCM	Draka	UCFIBRE I FL N DA LSHF 0.4kN	YES	DRA.UCFIBREIFLNDALSHF	http://www.alfaelektrik.com.tr/draka/fiber%20optik%202.pdf
	RFS	LCF12-50JFN	YES	RFS.LCF12-50JFN	
	Lapp	29289	YES	LAPP.29289	https://t3.lappcdn.com/fileadmin/DAM/Lapp_Oil_Gas/Nucleaire_Ang_light.pdf
	RFS	SCF38-50JFN	YES	RFS.SCF38-50JFN	
	Helukabel	32379	YES	HEL.32379	
	Lapp	1123479	YES	LAPP.1123479	
	Harting	9456000600	YES	HAR.09456000600	
	Corning	CCXEDR-D0047-C003-L7	YES	COR.6xCCXEDR-D0047-C003-L7	
	LEMO	MFB.00.250.LTE010???	NO		

Source:

https://elkapw-my.sharepoint.com/:x:/r/personal/k_bec_elkapw_onmicrosoft_com/_layouts/15/doc2.aspx?sourcedoc=%7BFD3F32A7-1A42-43D9-BF78-9D1B85F0AAD7%7D&file=Skoroszyt.xlsx&action=default&mobileredirect=true&cid=7c38670a-49f9-48d5-9c8c-8cc7416a6416

Work description and duties

Preparation of documentation for few racks (mainly from FEB building) – 2D electrical scheme in E-Plan P8

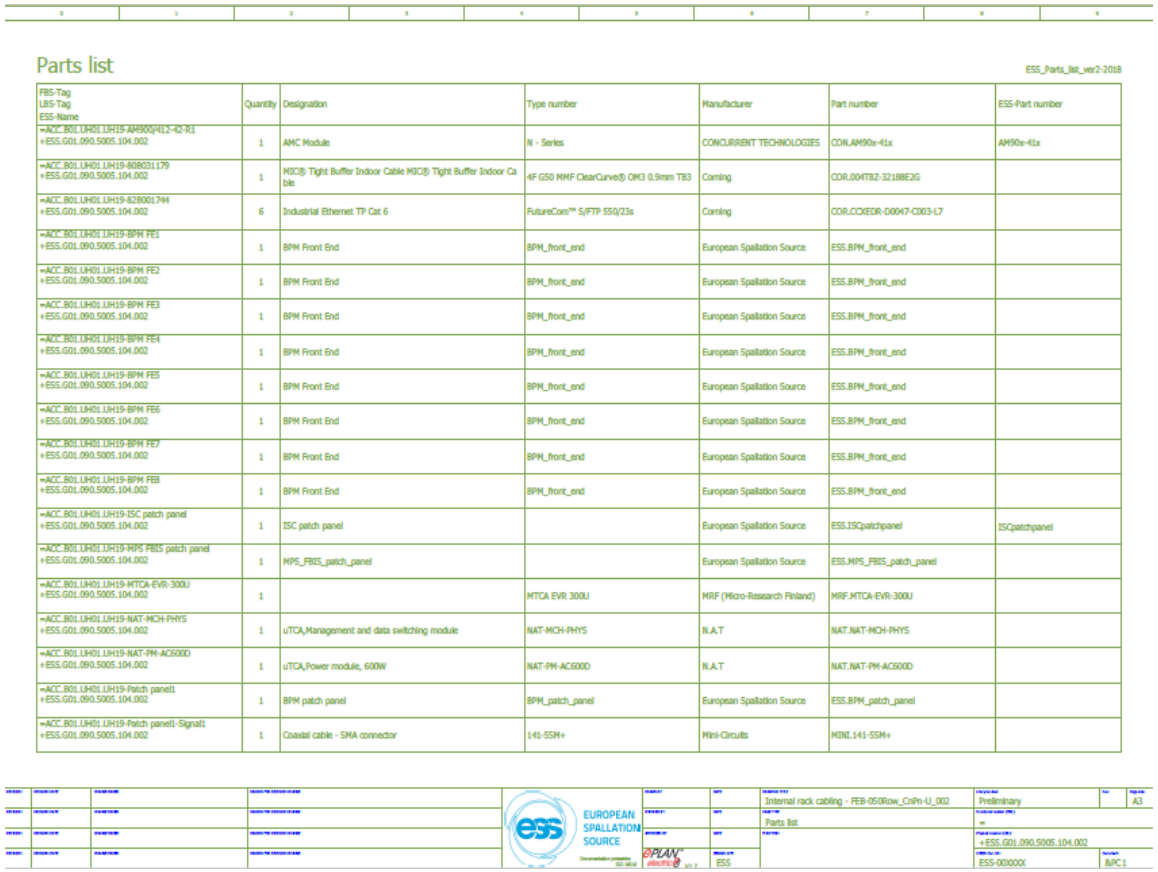


EUROPEAN SPALLATION SOURCE

Designation: Internal rack cabling - FEB-050Row_CnPn-U_002

Functional Location (FBS): =ACC.B01.UH01.UH19

Physical Location (LBS): +ESS.G01.090.5005.104.002



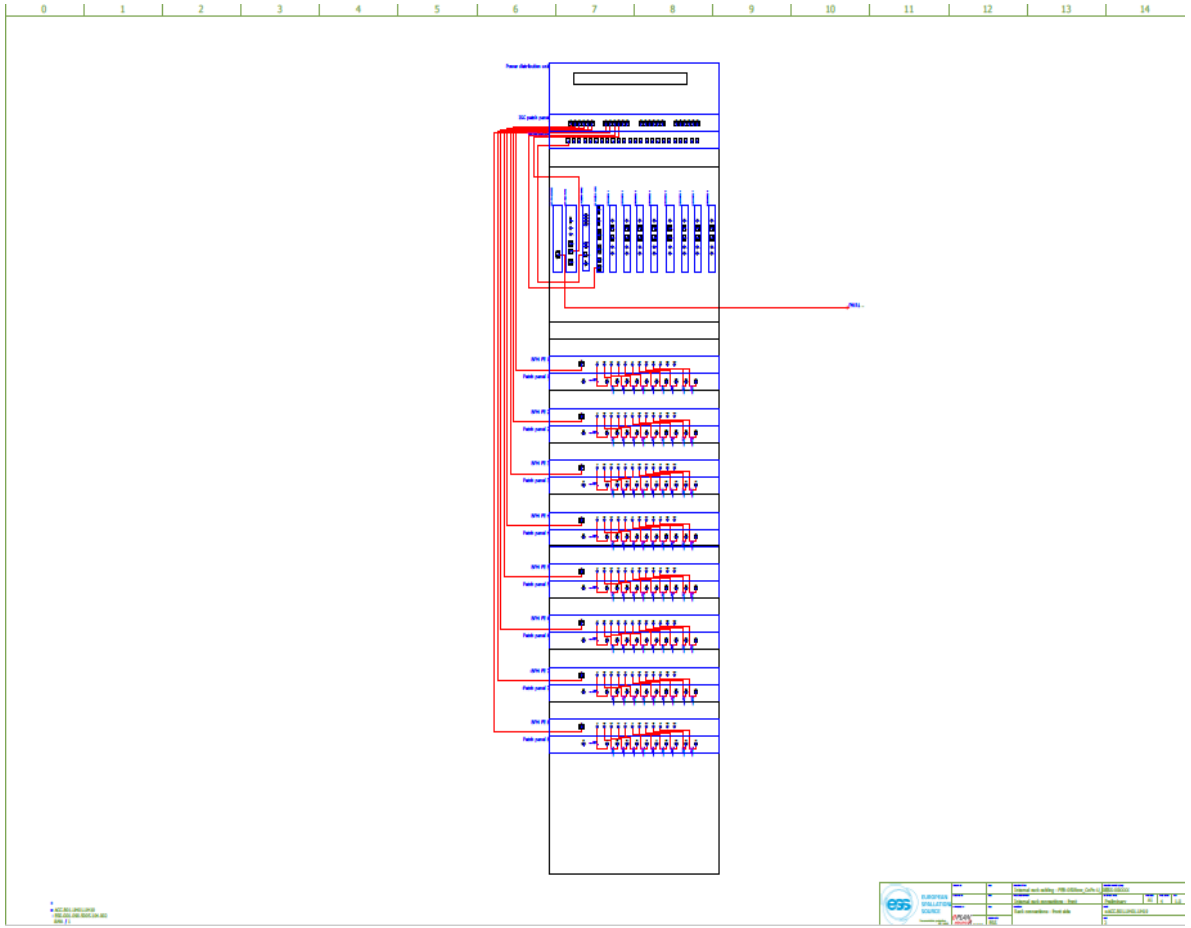
Parts list

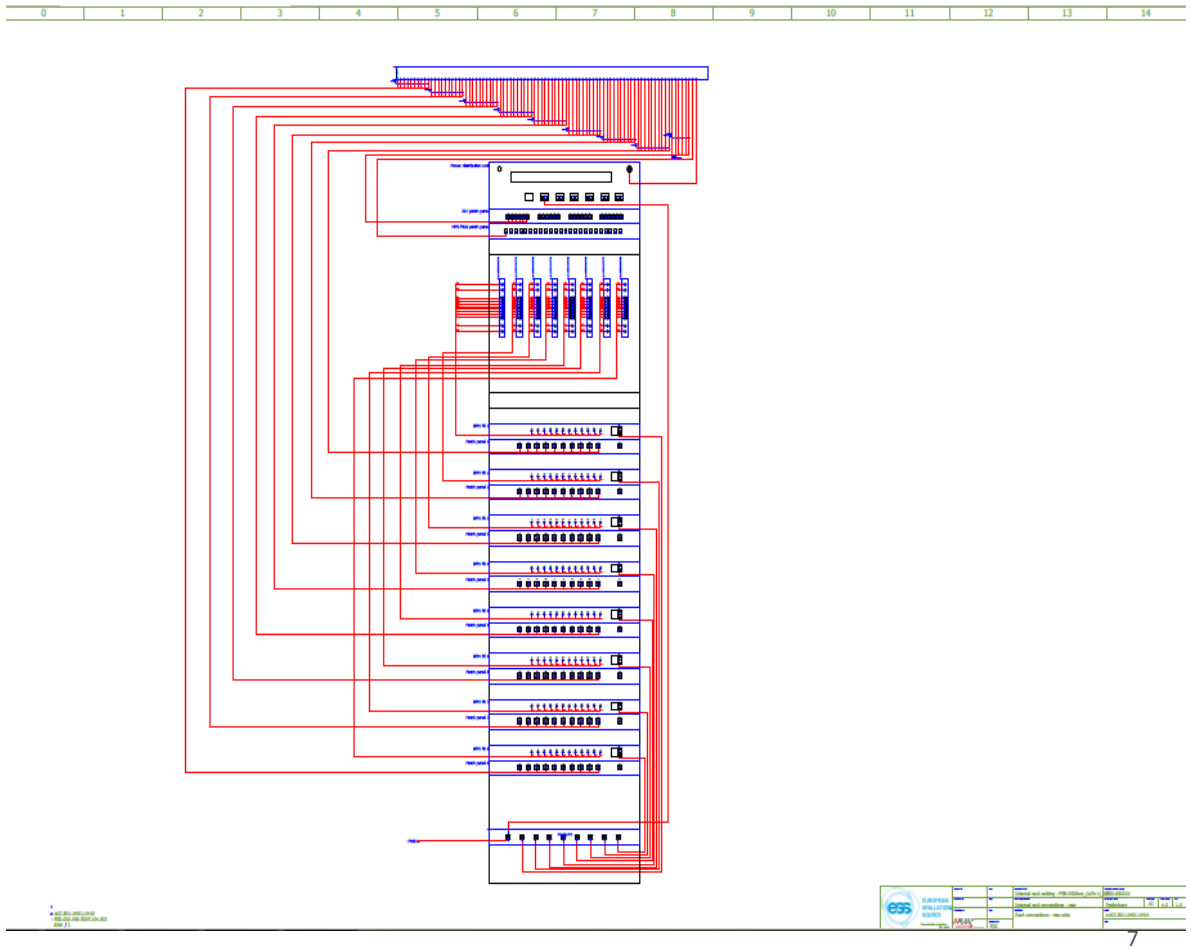
ESS_Parts_list_ver2-2018

FBS-Tag LBS-Tag ESS-Name	Quantity	Designation	Type number	Manufacturer	Part number	ESS-Part number
=ACC.B01.UH01.UH19-AM900/412-42-R1 +ESS.G01.090.5005.104.002	1	AMC Module	N - Series	CONCURRENT TECHNOLOGIES	CON.AM90x-41x	AM90x-41x
=ACC.B01.UH01.UH19-808031179 +ESS.G01.090.5005.104.002	1	MIC® Tight Buffer Indoor Cable MIC® Tight Buffer Indoor Cable	4F G50 MMF ClearCurve® OM3 0.9mm TB3	Corning	COR.004TBZ-32188E2G	
=ACC.B01.UH01.UH19-82B001744 +ESS.G01.090.5005.104.002	6	Industrial Ethernet TP Cat 6	FutureCom™ S/FTP 550/23s	Corning	COR.COXEDR-D0047-C003-L7	
=ACC.B01.UH01.UH19-BPM FE1 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE2 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE3 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE4 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE5 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE6 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE7 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-BPM FE8 +ESS.G01.090.5005.104.002	1	BPM Front End	BPM_front_end	European Spallation Source	ESS.BPM_front_end	
=ACC.B01.UH01.UH19-ISC patch panel +ESS.G01.090.5005.104.002	1	ISC patch panel		European Spallation Source	ESS.ISCpatchpanel	ISCpatchpanel
=ACC.B01.UH01.UH19-MPS FBIS patch panel +ESS.G01.090.5005.104.002	1	MPS_FBIS_patch_panel		European Spallation Source	ESS.MPS_FBIS_patch_panel	
=ACC.B01.UH01.UH19-MTCA-EVR-300U +ESS.G01.090.5005.104.002	1		MTCA EVR 300U	MRF (Micro-Research Finland)	MRF.MTCA-EVR-300U	
=ACC.B01.UH01.UH19-NAT-MCH-PHYS +ESS.G01.090.5005.104.002	1	uTCA,Management and data switching module	NAT-MCH-PHYS	N.A.T	NAT.NAT-MCH-PHYS	
=ACC.B01.UH01.UH19-NAT-PM-AC600D +ESS.G01.090.5005.104.002	1	uTCA,Power module, 600W	NAT-PM-AC600D	N.A.T	NAT.NAT-PM-AC600D	
=ACC.B01.UH01.UH19-Patch panel1 +ESS.G01.090.5005.104.002	1	BPM patch panel	BPM_patch_panel	European Spallation Source	ESS.BPM_patch_panel	
=ACC.B01.UH01.UH19-Patch panel1-Signal1 +ESS.G01.090.5005.104.002	1	Coaxial cable - SMA connector	141-5SM+	Mini-Circuits	MINI.141-5SM+	

Work description and duties

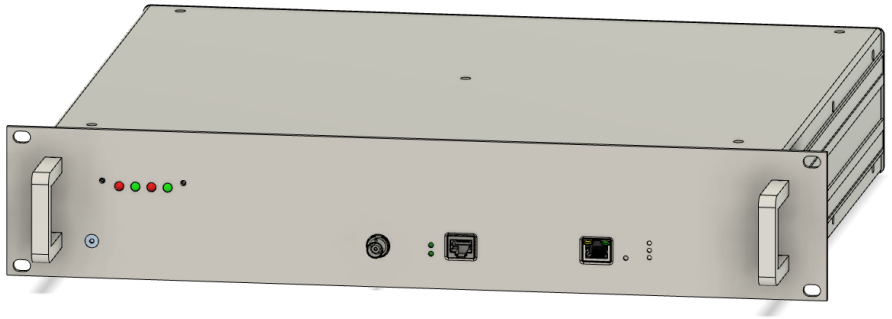
Preparation of documentation for few racks (mainly from FEB building) – 2D electrical scheme in E-Plan P8





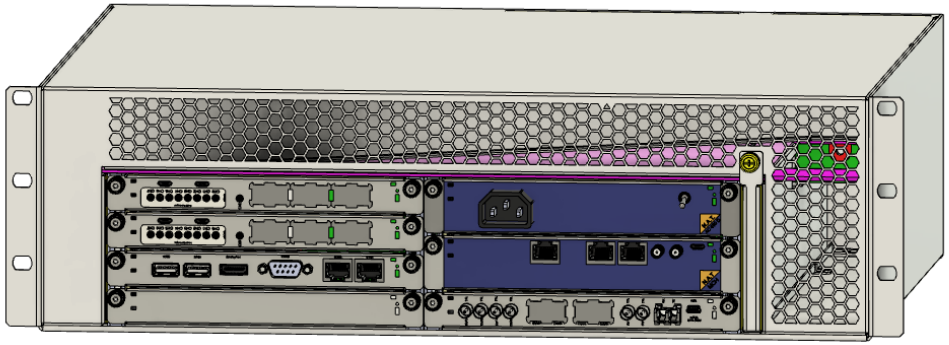
Work description and duties

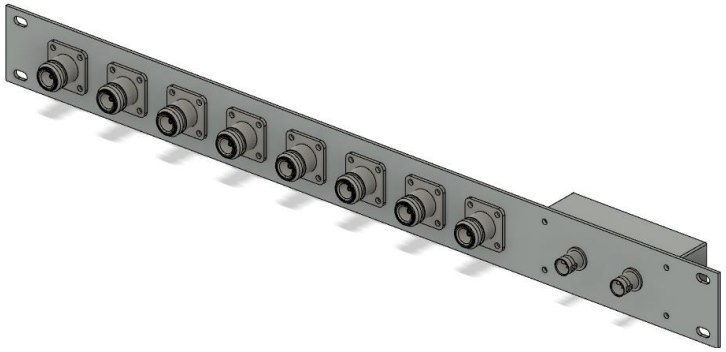
3D samples of racks components

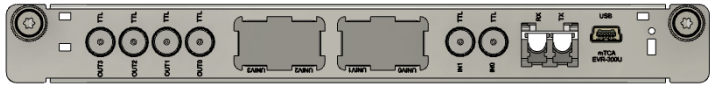


Work description and duties

3D samples of racks components

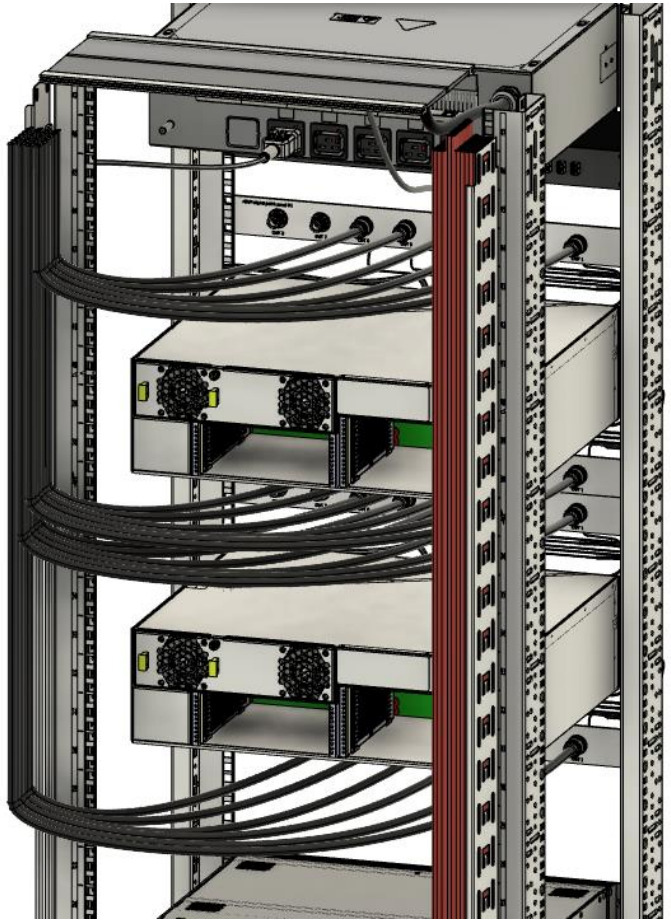






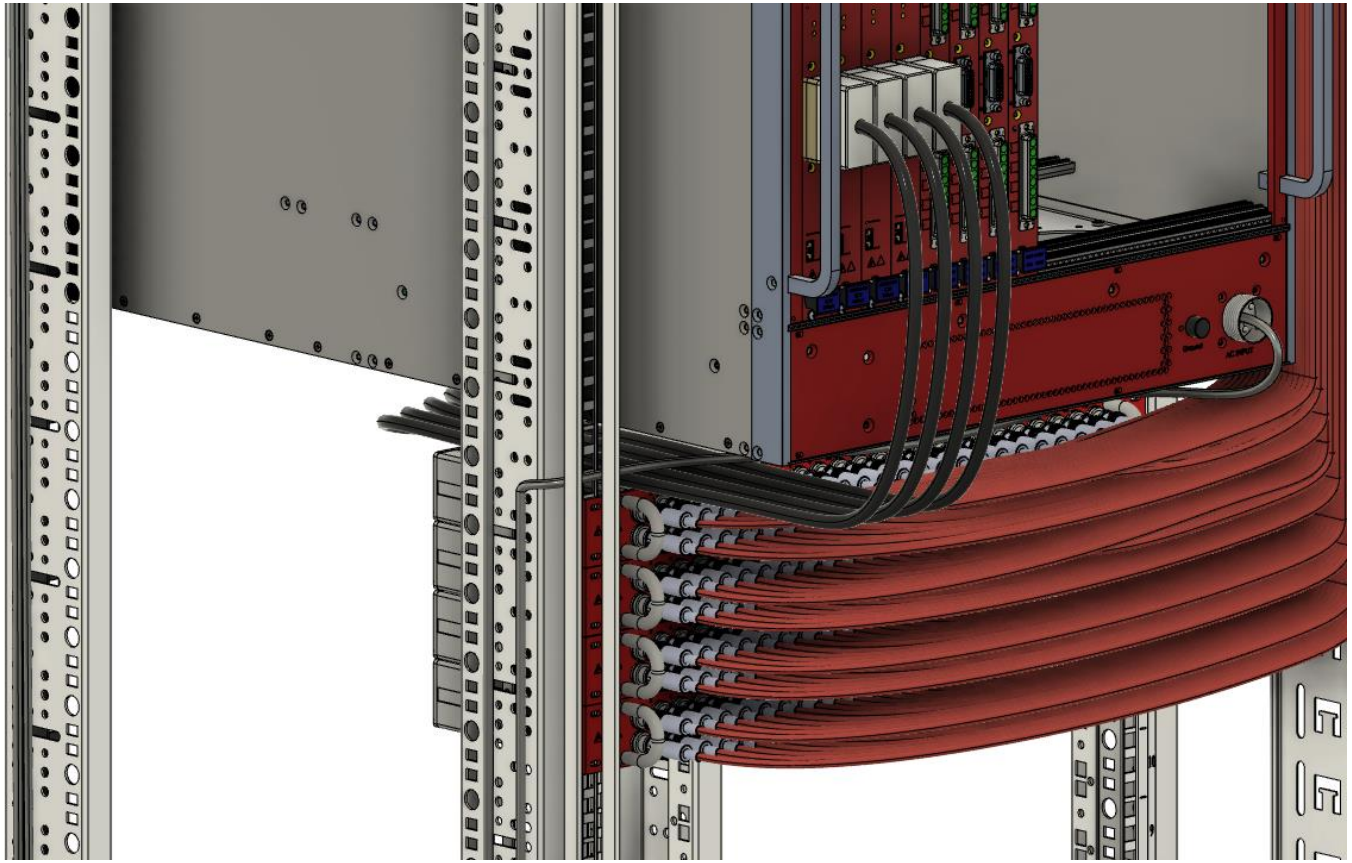
Work description and duties

nBLM rack 3D cabling – examples



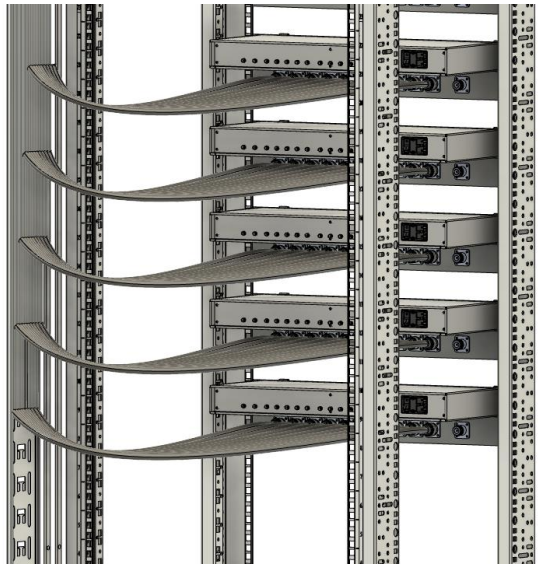
Work description and duties

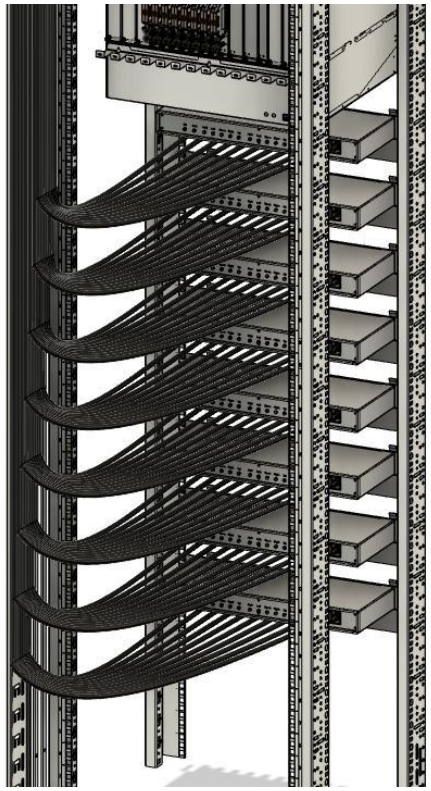
nBLM rack 3D cabling – examples



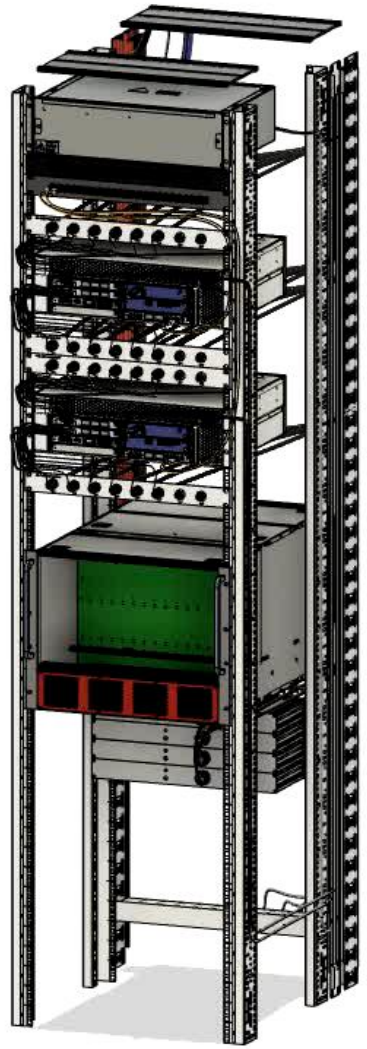
Work description and duties

BPM rack 3D cabling (80x 3/8”CELLFLEX cables coming through the top of the rack to BPM Front End Units).





3D visualization – nBLM rack



Patch panels for BD – status list

Design and production of patch panels for BD systems by WUT.

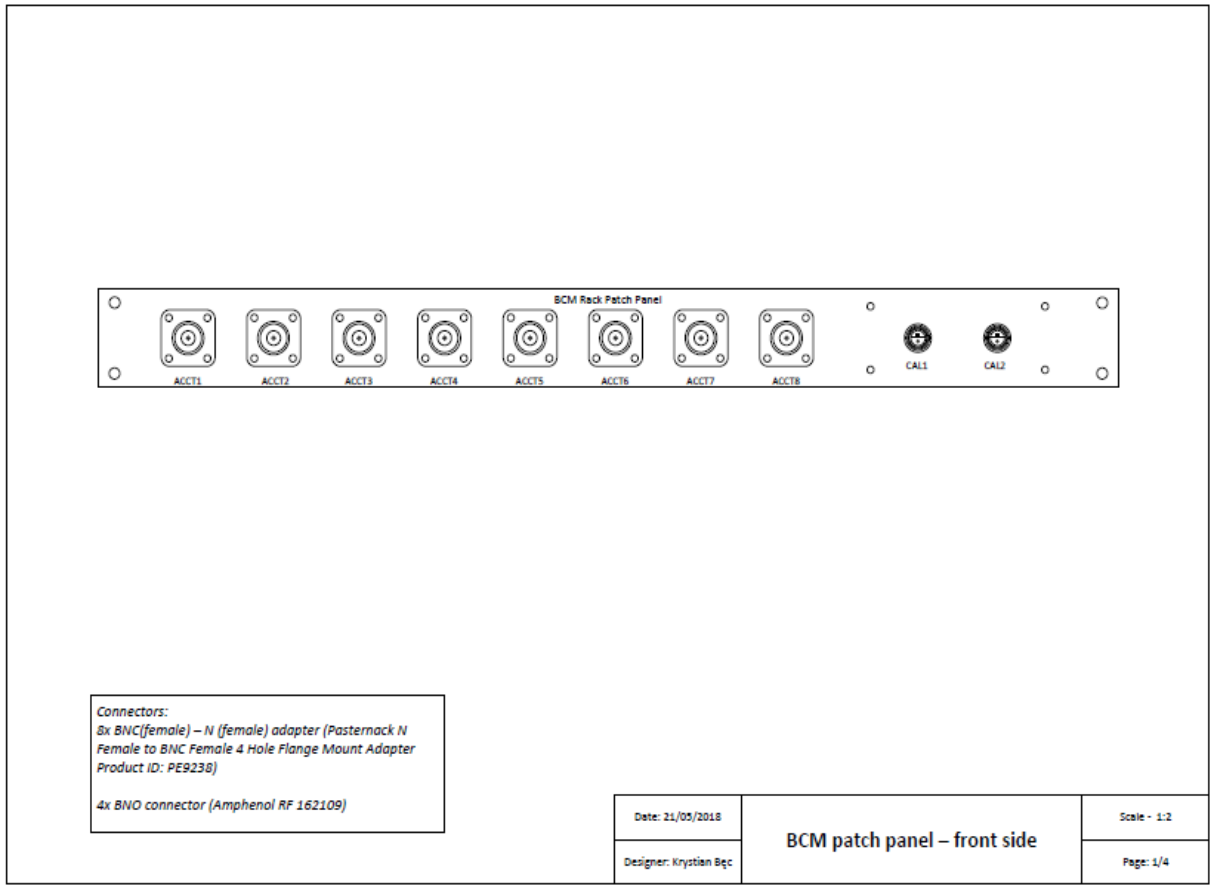
2.WUT patch panels designs

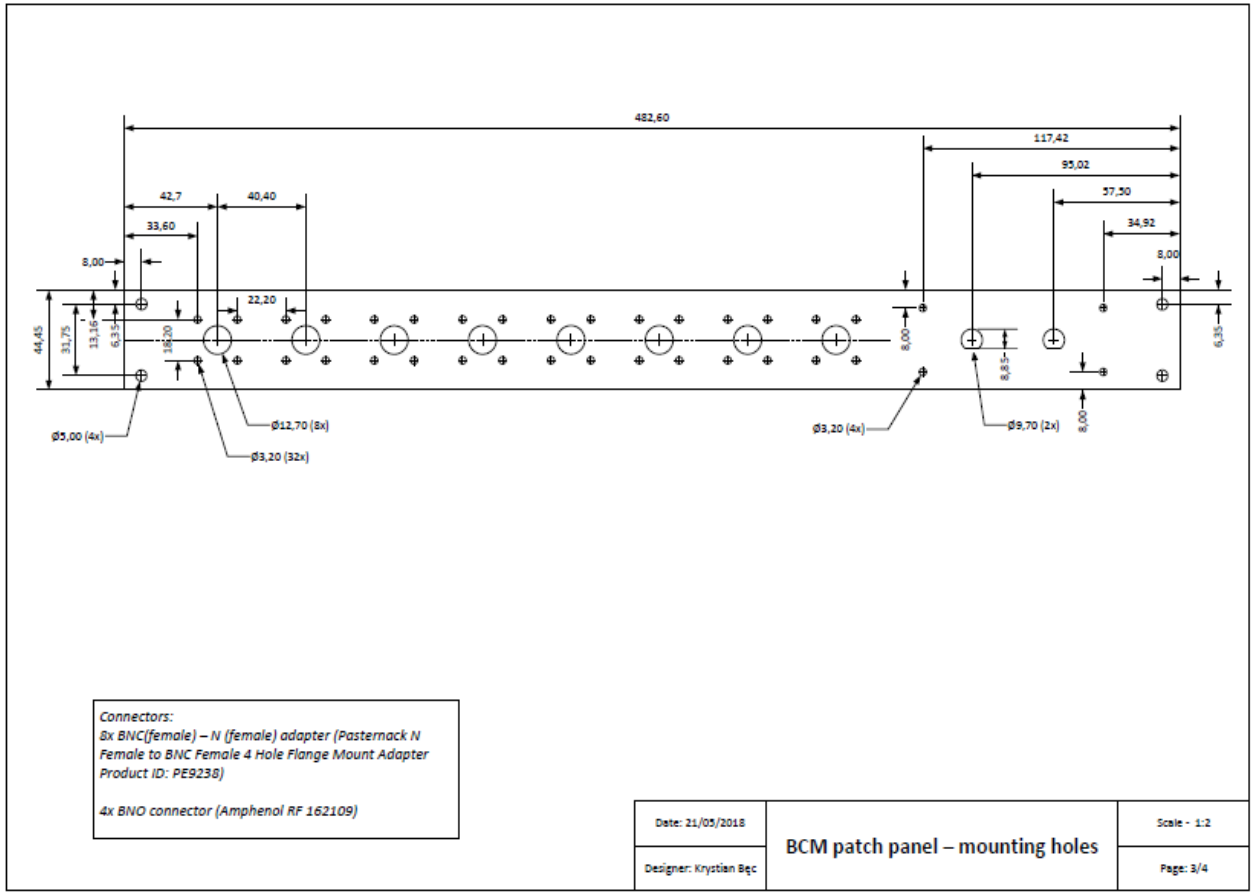
No.	Patch panel name	Ordering person	Quantity	Delivered	Planned delivery	Design
1.	LEBT EMU H+V & DPL motion control patch panel	Clement Derrez Cyrille Thomas	1	1/1		LEBT EMU H+V & DPL motion control patch panel.pdf
2.	LEBT EMU encoder patch panel	Clement Derrez	2	2/2		LEBT encoder patch panel.pdf
3.	BCM patch panel	Hooman Hassanzadegan	14	14/14		BCM patch panel.pdf
4.	BPM patch panel v1	Hooman Hassanzadegan Rafael Baron	1	1/1		BPM patch panel v1.pdf
5.	BPM patch panel v4	Rafael Baron	11	11/11		BPM patch panel version 4.pdf
6.	LEBT NPM motion control patch panel	Edvard Bergman	1	1/1		NPM motion control patch panel v.2.pdf
7.	BCM patch box	Hooman Hassanzadegan	20	20/20 (6 BNO miss)		BCM patch box Drawing v2.pdf
8.	ICBLM signal patch panel	Johan Norin	46	0/46	TBD	
9.	COLL signal patch panel	Johan Norin	1	0/1	TBD	
10.	ICBLM spare cable patch panel	Johan Norin	14	1/14	13/14 10.2019	ICBLM spare cable patch panel drawing v2.pdf
11.	nBLM spare cable patch panel	Johan Norin	10	1/10	9/10 10.2019	nBLM patch panel Drawing v4.pdf
12.	FC spare cable patch panel	Johan Norin	1	1/1		Fc spare cable patch panel v1 Drawing v4.pdf

Status list of patch panels designed and produced for BD systems until October 2019.

2D patch panels design

Design and production of patch panels for BD systems by WUT



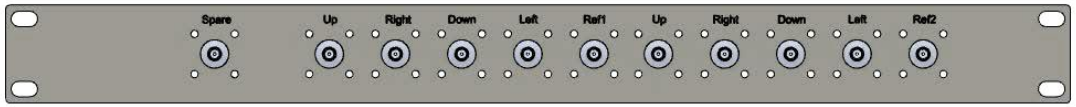


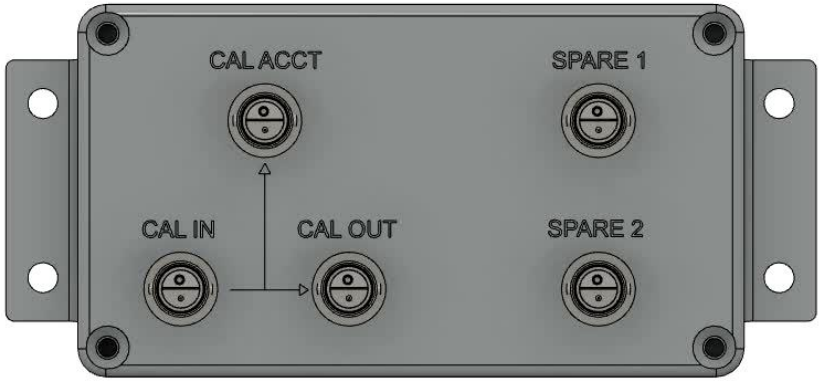
Manufactured patch panels

Design and production of patch panels for BD systems by WUT.

BCM patch panel from rack no. FEB-050ROW:CNPW-U-013 and BCM patch box

3D visualization – patch panels





Thank you for your attention!