LETTER/FINDING REPORT

AVIATION PRODUCTS DIVISION

Aviation SYSTEMS/L3HARRIS TECHNOLOGIES

LETTER/FINDING REPORT

SCOPE OF WORK

FCC Class II Permissive Change Design Change Evaluation – AFIRS 228S Satellite Data Unit (SDU)

REPORT NUMBER

p20a0015_FCC C2PC_IB2AFIRS228S0

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December 1, 2020 Compliance Testing Report No. p20a0015_FCC C2PC_IB2AFIRS228S0

Project No. p20a0015

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Subject: FCC Class II Permissive Change Design Change Evaluation – AFIRS 228S Satellite Data Unit (SDU)

Dear Siméon:

This letter report represents the results of our evaluation of the above referenced product to the requirements contained in the following standards:

FCC Class II Permissive Change - KDB 178919 D01 Permissive Change Policy

SECTION 1

SUMMARY

Compliance Testing LLC wishes to inform you, we have completed – Class II Permissive Change design change review.

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SECTION 2
SCOPE OF WORK

A. Analyze 4 ea. Software Changes:
   1. PR358 solution
   2. Audio Processor (AP) minor software fix
   3. SBD IMEI number display fix
   4. SBD 9602N Data modems certification
   5. Technical description – Attachment A

B. Analyze 1 ea. Hardware Change
   1. Combined SLIC/Driver (PNR SI32287-A-GM) replaces obsolete PNR SI3226-E-GQ and PNR SI3208-B-GM
   2. Before/after block diagram – Attachment B

C. Prepare Letter/Findings Report
   1. Feasibility of Class II Permissive Change
   2. GAP testing required (if any)
   3. Filing requirements for Class II Permissive Change
   4. Filing procedures requirements and associated fees

SECTION 3
FINDINGS

A. SOFTWARE CHANGES –

   1. Software Change - PR358 solution has been verified and validated as an integral part of the operational SW-20 load based on SW-18 and SW-19.

   2. Software Change - Audio Processor (AP) minor software fix has been developed and verified to work with both the old SLIC and new SLIC on the newly respun MCIM CCA. (PNR 502-1300-07)

   3. Software Change - SBD IMEI number display fix to work for both new SBD 9602N and LBT 9523N

   4. Software Change - SBD 9602N Data modems certification as part of the SDU upgrade with Iridium new firmware, PNR TA19002.

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5. FINDINGS – FCC is not interested in software changes unless that changes the parameters of the original Grant. In this case it does not. For this case, a Class II PC is most appropriate.

B. HARDWARE CHANGES

1. The measured Pout and modulation scheme must remain the same. There should be no need to re-do frequency stability, unless there is a fundamental change to how the fundamental is created. Please see KDB 178919 D01 paragraph 1.

   "… Note that changes to the basic frequency determining and stabilizing circuit, frequency multiplication, basic modulator circuit or maximum power or field strength will always require a new Grant…"

2. A technical description is included in Attachment B. The SDU upgrade loaded with SW-20 will continue to comply with the previously FCC certification requirements.

3. A part-by-part comparison between the old and new variant is shown on Attachment B. The SDU upgrade loaded with SW-20 will continue to comply with the previously FCC certification requirements.

SECTION 4
TESTING

The below listed represents a summary of the tests that would be performed.

Required Testing - None required for Class II Permissive Change.

Recommended Testing – Although no testing is required, Compliance Testing recommends basic Part 15 EMC testing be conducted. The FCC considers this a "good engineering practice. This ensures the device is continuing to operate under the Rules. It also verifies to the manufacturer the performance is as expected and there are no unexpected results.

SECTION 5
FILINGS

Class II Permissive Change for FCC ID IB2AFIRS228S0

Please contact either your assigned Compliance Testing LLC Project Manager or Compliance Testing LLC Engineer who will assist you, if required.

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SECTION 6

PROJECT STATUS & ACTION

Issuance of this letter/Finding report completes the evaluation of FCC C2PC_IB2AFIRS228S0

by Compliance Testing LLC Project No. p20a0015.

If there are any questions regarding the results contained in this report, or any of the other services offered by Compliance Testing LLC, please do not hesitate to contact your dedicated Compliance Testing LLC Project Manager.

Completed by:	William Graff	Reviewed by:	Mark Sechrist
Title:	Senior Engineer	Title:	QA reviewer
Signature:		Signature	Mark Sechrist
Date	November 23, 2020	Date:	November 23, 2020

Please note: this Letter Report does not represent authorization for the use of any Compliance Testing LLC certification.

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Attachment A – Technical Description

CAGE Code 25583	**Engineering Coordination Memo**	L3Harris ECM No. ECM-11932	L3Harris Rev -
		Customer Reference No.	Customer Rev

From: L3 Aviation Products		**Type:** Program ☒ Technical	**Reply Requested** Yes ☒ No If yes. Date:
Date:	8/27/2020		
Author:	Simeon Masson		
Title:	Engineering Project Leader (EPL)	Approval:	
Telephone:	727-456-6691		
E-Mail:	Simeon.masson@L3Harris.com		
To:			
Name:	Chris Lougee	Telephone:	206-790-0790
Name		Telephone:	
Title:	LMR Industry Business Development	E-Mail:	ChrisL@compliancetesting.com
Department:	Compliance Testing LLC		
Subject:	ECM-11932 – FCC Testing for AFIRS 228S SDU Upgrade		

1. REFERENCE:

FCC Testing Task Description

2. DISCUSSION:

This Engineering Coordination Memo (ECM) is intended to describe the minor hardware and software changes for Compliance Testing LLC to assess and validate the level/type of FCC testing to be performed for the AFIRS 228S SDU upgrade. The operational software load, PNR 840E5733-20 (SW-20), will be common and configurable to both the Airbus (840E5733-18 (SW-18) and Airbus Canada 840E5733-19 (SW-19) platforms. The SDU upgrade, with the operational software load, PNR 840E5733-20 (SW-20), addresses 4 minor SW issues and one minor HW SLIC obsolescence issue.

Minor SW change**:**

- PR358 solution has been verified and validated as an integral part of the operational SW-20 load based on SW-18 and SW-19.
- Audio Processor (AP) minor software fix has been developed and verified to work with both the old SLIC and new SLIC on the newly respun MCIM CCA.((PNR 502-1300-07)
- SBD IMEI number display fix to work for both new SBD 9602N and LBT 9523N
- SBD 9602N Data modems certification as part of the SDU upgrade with Iridium new firmware, PNR TA19002.

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Minor HW change:

The obsolete SLIC (PNR SI3226-E-GQ) and SLIC driver (PNR SI3208-B-GM) were used on the MCIM CCA (PNR 502-1300-05) to provide two SLIC channels. A new combined SLIC/Driver (PNR SI32287-A-GM) is used on the re-spun MCIM CCA (PNR 502-1300-07) to replace these obsolete SLIC parts and provides a dual-function for two SLIC TIP and RING channels.

The SDU upgrade loaded with SW-20 will continue to comply with the previously FCC certification requirements.

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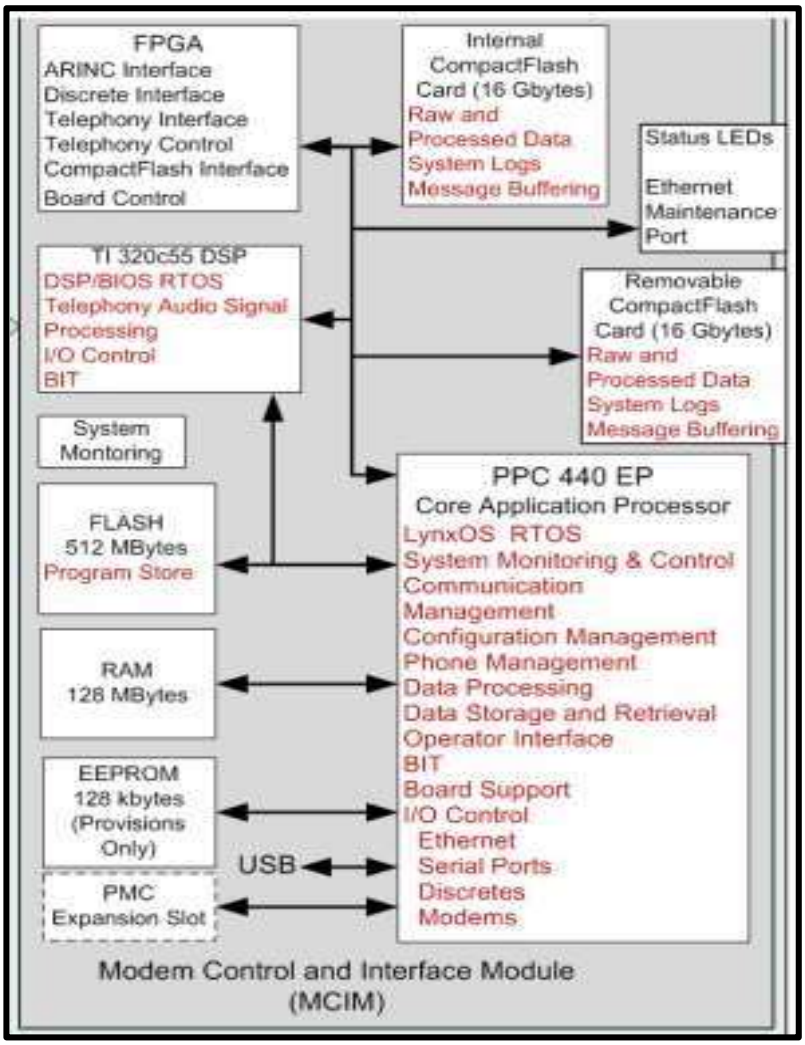
Attachment B – Before/after block diagram

Block diagram of the Modem Control and Interface Module (MCIM)



Before (Pld) and After (New) SLIC components

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Product Description	OBS SLIC	OBS SLIC Driver	New Combined SLIC/Driver
Mfr.'s Part #:	SI3226-E-GQ	SI3208-B-GM	SI32287-A-GM
Manufacturer:	SiLabs	SiLabs	SiLabs
Description:	Dual Channel SLIC	Dual Channel Line Driver	Dual Channel Combined SLIC and Line Driver
Lifecycle:	Obsolete/Removed	Obsolete/Removed	Active/Replacement
Specifications			
Number of Channels:	2	2	2
Interface:	SPI/PCM	N/A	SPI/PCM
Package / Case:	TQFP-64	QFN-40	QFN56
Dimension (L X W X H):	12.00 X 12.00 X 1.20 mm	6.00 X 6.00 X 0.90 mm	8.00 X 8.00 X 0.90 mm
Nominal Supply Voltage:	3.3 VDC	3.3V	3.3 VDC
VBAT Supply Voltage:	N/A	12 VDC	12VDC
Maximum SLIC Supply Current:	43 mA (combined)	43 mA (combined)	51.71 mA
Maximum VBAT Supply Current (Ringing State):	NA	41.6 mA	33.32 mA
Max VBAT Voltage:	N/A	-115 VDC	-106 VDC
Max TIP/RING Voltage:	N/A	-130 VDC	-112.4 VDC
Max TIP/RING Current:	N/A	±100 mA	±100 mA
Operating Temperature:	+ 85°C to -40°C	+ 85°C to -40°C	+ 85°C to -40°C
Storage Temperature:	+ 150°C to -55°C	+ 150°C to -55°C	+ 145°C to -55°C

Installed MCIM CCA (for Before/After)

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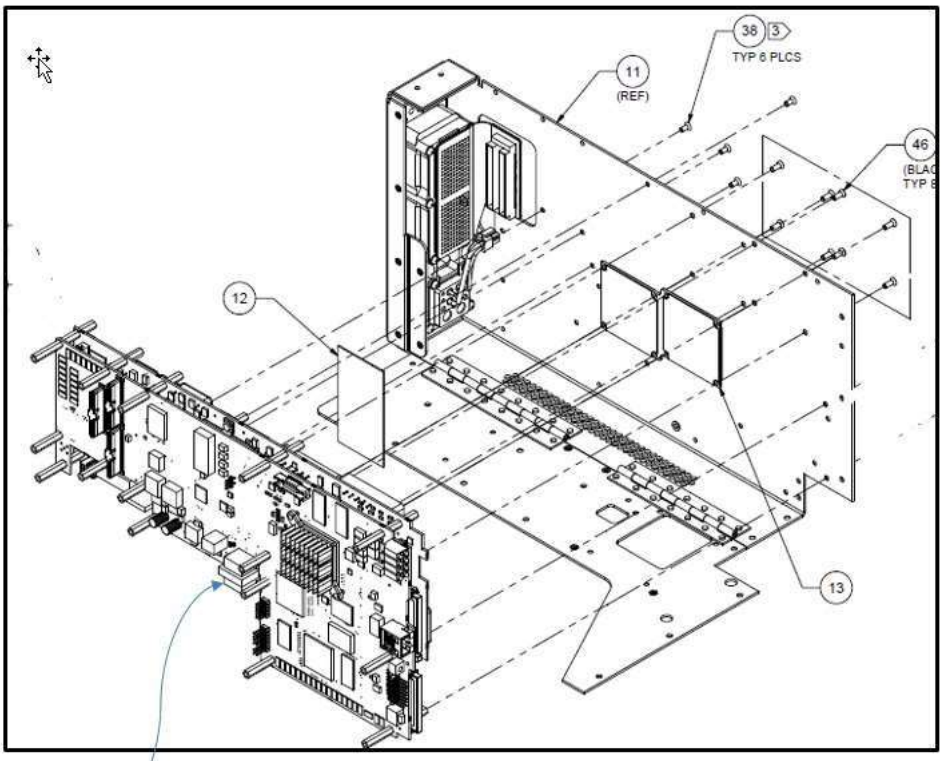
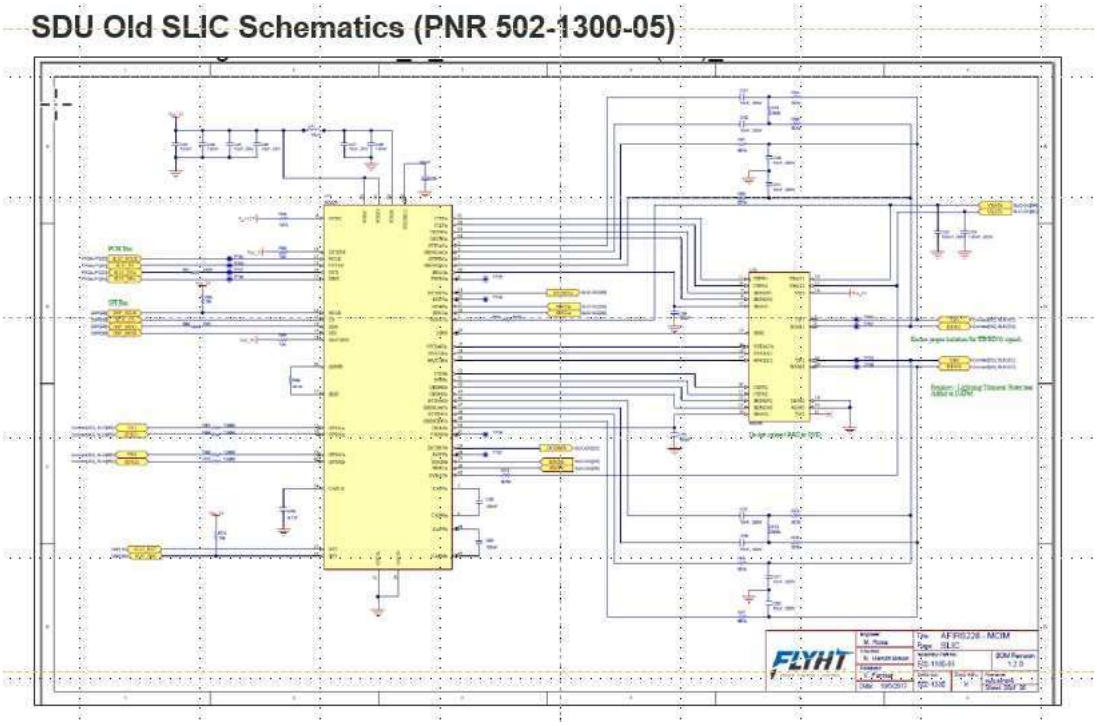


Figure 5 - MCIM installed in SDU AMDT E

MCIM

SDU Old SLIC Schematics (PNR 502-1300-05)



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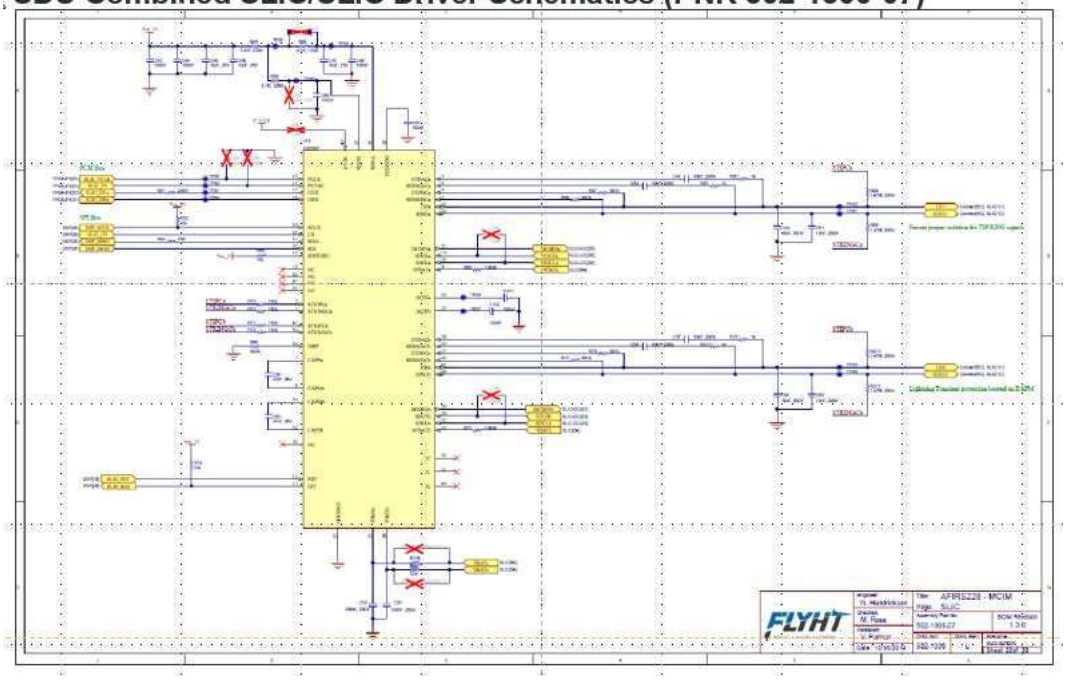
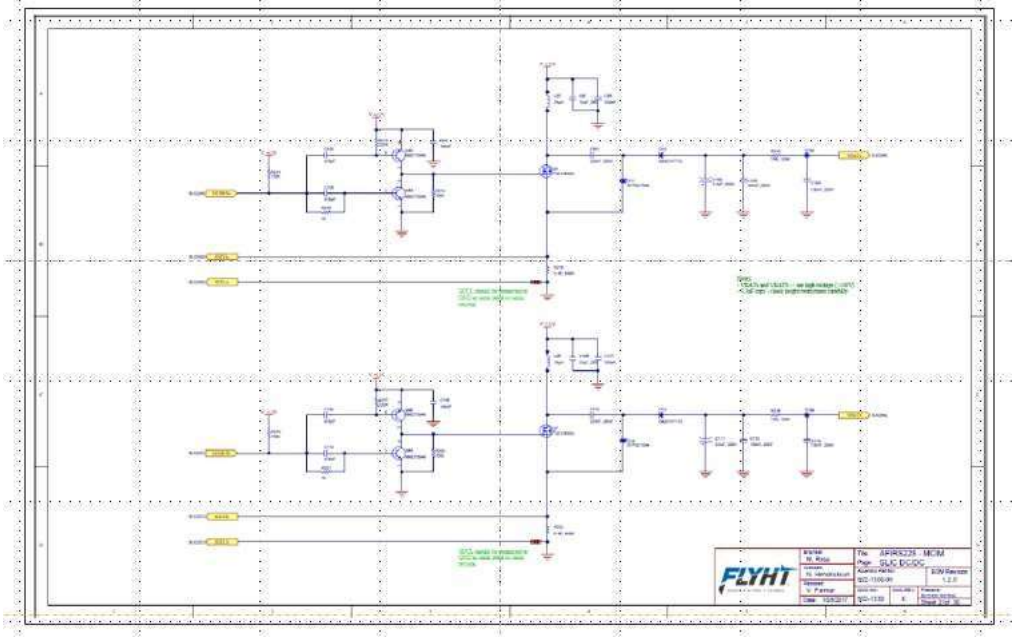
SDU Combined SLIC/SLIC Driver Schematics (PNR 502-1300-07)



Old SLIC DC-DC Converter Schematics on (PNR 502-1300-05)



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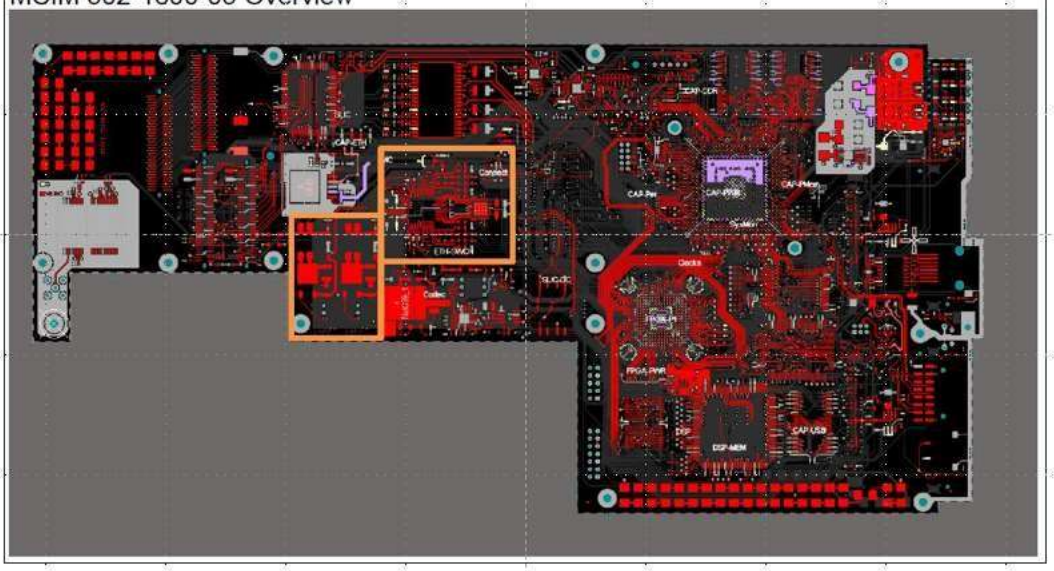
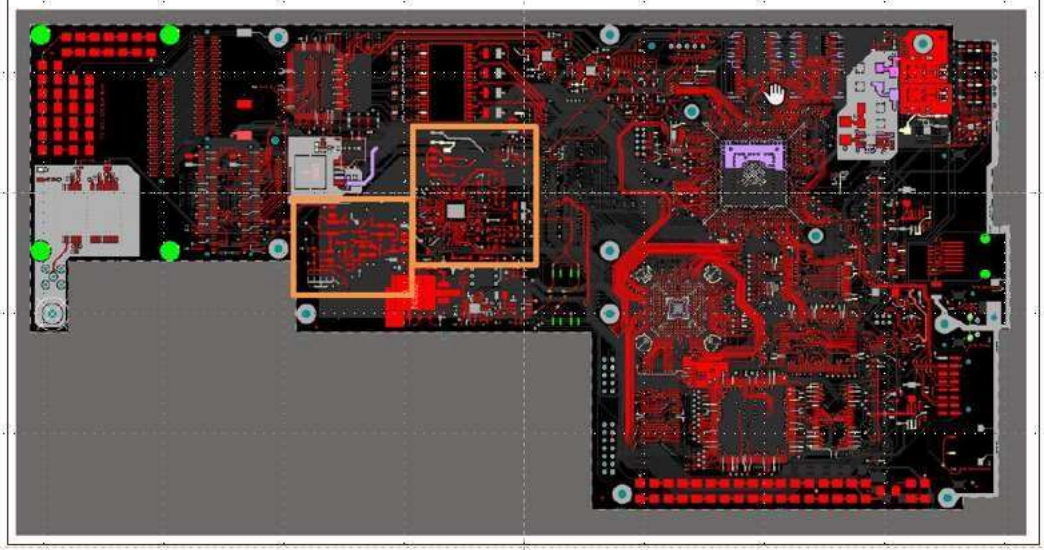
MCIM CCA Layout Overview (PNR 502-1300-05)

MCIM 502-1300-05 Overview



MCIM CCA Layout Overview (PNR 502-1300-07)

MCIM 502-1300-07