Type of Change	
Date: **2020. 08.19** <yyyy.mm.dd>	Document Number: **LPN-430e_1**

☒ Major Change   ☐ Minor Change

Description of Change:
For standard phyCORE®-i.MX 6, phyFLEX®-i.MX 6, phyCARD®-i.MX 6 modules, and the phyBOARD-Mira Kit, a new software version is available: BSP-Yocto-i.MX6-PD20.1.0.
All new standard modules produced, which previously had version PD18.1.2 barebox or older, will be updated and programmed with the newest BSP PD20.1.0 barebox.
All new phyBOARD-Mira kits will be programmed with the complete BSP PD20.1.0 instead of BSP PD18.1.2.

More information and the complete Release Notes can be found online:
ftp://ftp.phytec.de/pub/Software/Linux/BSP-Yocto-i.MX6/BSP-Yocto-i.MX6-PD20.1.0/ReleaseNotes
or the following pages.

Type of Change:	Impacted Component:	Software Update necessary:
Software Update	PD18.1.2 and previous	Yes

Affected Product	
Affected PHYTEC product group:	phyBOARD®-Mira, phyCORE®-i.MX 6, phyFLEX®-i.MX 6, phyCARD®-i.MX 6
Affected PHYTEC product group part:	PB-01501, PCL-058, PCM-058, PFL-A-02, PCA-A-XL3

Affected Product Number	Replacement Product Number
PB-01501 product group	
PCL-058 product group	
PCM-058 product group	
PFL-A-02 product group	
PCA-A-XL3 product group	

Possible Options	
☒	Change to the new software revision PD20.1.0
☐	Change to different PHYTEC product
☐	Change to different option of product
☐	Final stock

Anticipated Impact on Form, Fit, Function, EMC, Quality or Reliability
(1) The new software release PD20.1.0 is highly recommended instead of PD18.1.2 and previous

The complete release notes of the changes are shown below:

Release Notes unified i.MX6 Linux BSP:
=====================================

BSP-Yocto-i.MX6-PD20.1.0   2020-08-06
===
- Linux Kernel v4.19.100 (v4.19 is a LTS kernel)
  * Update from v4.14.134 to v4.19.100
- barebox v2019.11.0
- Yocto 2.7.4 (warrior)
- Qt 5.12.6 from meta-qt5 (warrior)

Tested Yocto Images:

- phytec-qt5demo-image
- phytec-vision-image

Build Environment:

- Ubuntu 16.04 64Bit

Machines:

- Added:
  * phyflex-imx6-11
  * phycard-imx6-2

Changes since PD18.1.2:

- New Features:
  * RAUC (Robust Auto-Update Controller) on eMMC
  * Following new phyCAM cameras are supported with this BSP:
   - VM-016 (phyCAM-P / phyCAM-S+ / phyCAM-M)
  * X11 support
  * wayland support
  * phytec-vision-image is now shipped with X11 enabled
  * New QtDemo version 1.3

- Fixes:
  * general:
   - H264 encoded videos can now be played with VPU support through QT.

  * barebox:
   - The first attempt to read subdirectory structure over TFTP does no
     longer fail.

Known Issues:

- general:
  * Playing H264 encoded videos with VPU decoding support via QT has limited
    framerate for higher resolutions
  * The internal watchdog of the i.MX 6 cannot be used. We recommend to use
    the PMIC watchdog as preconfigured.

- barebox:
  * In rare cases (< 0.5%) during boot the ethernet phy does not come up
    correctly and Ethernet is not working

- kernel:
  * In rare cases (< 0.1%) during kernel boot the NAND flash fails to be
    detected with following error:
    gpmi_reset_block(f0a2a000): module reset timeout.
  * On phyCORE-i.MX 6 with i.MX 6QuadPlus (phyboard-mira-imx6-9) when booting
    from MMC or SPI-NOR the NAND flash might not be detected correctly with
    following message:
    nand: No NAND device found
  * On phyCORE-i.MX 6 with i.MX 6QuadPlus (phyboard-mira-imx6-9) manual video
    playback with gstreamer pipeline and kmssink on the HDMI port does not
    work properly.
  * In very rare cases (<0.1%) on phyFLEX-i.MX 6 (phyflex-imx6-4 & phyflex-imx6-7)
    the system can fail to boot with a kernel oops.
  * 1.2 GHz i.MX 6:
    - Controlling ARM and SOC voltages for DVFS with PMIC is not supported
      since the 1.2 GHz operating point is not allowed to be operated with
      the internal i.MX 6 LDO's in bypass mode. So this machine always
      operates with internal LDO's enabled which results in highly more heat
      generation on the SOC.
  * HDMI audio module driver is disabled due to imcompatibility issues with
    alsa.
  * Line-In input on the phyFLEX-i.MX6 does not work.
  * On SOMs with 1 GB RAM size a CMA size of 256 MB is not supported when
    the imx legacy framebuffer is used.
  * The LDB_DI0_SEL and LDB_DI1_SEL mux can only be set in the
    devicetree and cannot be changed on runtime.
  * The maximum pixel clock frequency for LVDS is 72 MHz.

Notes:

- From PD18.1.X to PD20.1.0 the Linux kernel introduced a change in device
  tree for the i.MX 6 which removed leading zeros in all unit-addresses. Since
  bootloader and kernel both access this devicetree updating from an early
  release to PD20.1.0 requires a bootloader update. Othwerwise the Kernel's
  devicetree would require a rework.
- Until now the BSP Manual showed examples for partitioning the ubi Layer on
  the NAND flash with 8 MB for the Kernel image. With PD20.1.0 the kernel size
  exceeds these 8 MB so a larger kernel partition is required. In the BSP
  manual we now suggest a kernel partition size of 16 MB.
- With PD20.1.0 we start to use config fragments for our kernel builds. So
  instead of running 'make imx_v6_v7_defconfig' to configure a manual kernel
  build now the command 'scripts/kconfig/merge_config.sh -m
  arch/arm/configs/imx_v6_v7_defconfig arch/arm/configs/imx6_phytec_* &&
  ./build olddefconfig' needs to be used.

PHYTEC Qualification
The new product(s) were qualified according to our company qualification procedure and best practices.

☐ PCB redesign was necessary,	☒ Software adaption was necessary, General kernel and feature update.

☒ Software tests were conducted with:

BSP used: PD20.1.0

Test programs: Boot tests in software test rack for barebox and kernel

Recommended Measures for Customer

☒ Software update or patch

☒ Linux BSP: PD20.1.0 ☒ backward compatible to the last version PD18.1.2
    Link: ftp://ftp.phytec.de/pub/Software/Linux/BSP-Yocto-i.MX6/BSP-Yocto-i.MX6-PD20.1.0/

☐ Update Programming Tool

☒ Test the recommended measures in combination with your system and use case.

PHYTEC recommends that customers take this opportunity to review these changes against their specifications, system design considerations, and environment conditions to assess impact (if any) to their application.

Please contact our order team to ask for an interims or final stock for components or PHYTEC products.
Please contact our support, if you need any further information.

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Purpose: This Product Change Notification (PCN) is to provide notification to PHYTEC customers of component, process, or other relevant engineering changes on a PHYTEC hardware subassembly. Impact, qualification, validation, and approval of this change shall be documented on the corresponding Customer-Specific Modification (KSM/KSP) form for the PHYTEC hardware subassembly.

Per JEDEC Standard JESD46-D Section 3.2.3; lack of acknowledgment of this PCN within 30 days constitutes acceptance of change.

Revision History of the Document
_1: Initial document