Intel® RealSense™ D400 Series

Specification Update

Revision 017

November 2019

Contents

Table

Revision History

Document Number	Revision Number	Description	Revision Date
337125	001	Production Firmware 5.8.15 Release	February 2018
	002	Production Firmware 5.9.2 Release	March 2018
	003	Development Firmware 5.9.9 Release	April 2018
	004	Development Firmware 5.9.11 Release	May 2018
	005	Production Firmware 5.9.13 Release	June 2018
	006	Development Firmware 5.9.14	July 2018
	007	Development Firmware 5.10.3	August 2018
	008	Production Firmware 5.10.6	October 2018
	009	Development Firmware 5.10.13	November 2018
	010	Production Firmware 5.11.1	January 2019
	011	Production Firmware 5.11.1.100	February 2019
	012	Development Firmware 5.11.4	February 2019
	014	Production Firmware 5.11.6.250	June 2019
	015	Development Firmware 5.11.11.100	August 2019
	016	Development Firmware 5.11.15.0	September 2019
	017	Development Firmware 5.12.0	November 2019

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1   Preface

This document is an update to the specification contained in the <u>Affected Documents</u> table below. This document is a compilation of device and documentation errata, specification clarifications and changes. It is intended for hardware systems manufactures and software developers of applications, systems or tools.

Information types defined in Nomenclature are consolidated into the specification updates and are no longer published in other documents.

This document may also contain information that was not previously published.

1.1   Affected Documents

Document Title	Location
Intel® RealSense™ D400 Series Product Family Datasheet	https://www.intel.com/content/www/us/en/support/articles/ 000026827.html

1.2   Nomenclature

Errata are design defects or errors. These may cause behavior to deviate from published specifications. Hardware and software designed to be used with any given stepping must assume that all errata documented for that stepping are present on all devices.

Specification Changes are modifications to the current published specifications. These changes will be incorporated in any new release of the specifications.

Specification Clarifications describe a specification in greater detail or further highlight a specification's impact to a complex design situation. These clarifications will be incorporated in any new release of the specification.

Documentation Changes include typos, errors, or omissions from the current published specifications. These will be incorporated in any new release of the specification.

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2 *Summary Table of Changes*

The following tables indicate the errata, specification changes, specification clarifications, or documentation changes which apply to the Product Name product. Intel may fix some of the errata in a future stepping of the component and account for the other outstanding issues through documentation or specification changes as noted.

2.1 Codes Used in Summary Tables

Status

Doc:	Document change or update will be implemented
Open:	In engineering assessment
Plan Fix:	This erratum may be fixed in a future firm of the product
Fixed:	This erratum has been previously fixed
No Fix:	There are no plans to fix this erratum

Table 2-1. Errata Summary Table

Number	Status	Errata
DSO-7194	**Fixed** in Windows 10* RS4	Windows driver [mskssrv.sys] may crash with D400 series cameras in stress test condition
DSO-7755	**Fixed** in Development Firmware 5.9.9	Temporary stream hang observed on disabling Auto Exposure (AE) at 1280X720 resolution after any previous 90 FPS stream
DSO-7798	**Fixed** in Production Firmware 5.9.2	RGB at 60 FPS may not have the right exposure set when exposure is equal/less than -2
DSO-7849	**Fixed** in Development Firmware 5.9.9	ROI based depth streaming immediately after change of IR projector power may result in a stream hang
DSO-7854	**Fixed** in Production Firmware 5.9.13	Depth Stream hang when system resumes from Sleep (S3)
DSO-7976	**Fixed** in Production Firmware 5.9.2	D400 Series camera is not recognized after reboot on Linux
DSO-8007	**Fixed** in Windows Driver 5.160.1.5+	Firmware updates via DFU fails when firmware update limit is reached
DSO-8328	**Fixed** in Production Firmware 5.9.13	Metadata attribute "Trigger" indicating Depth to Color synchronization may not have correct value
DSO-8461	Not a RealSense bug (Requires Chrome* fix)	D400 Series Windows UWP driver does not work with Chrome browser
DSO-8467	**Fixed** in LibRealSense2.10.1	Left Imager UYVY format displays green image

Number	Status	Errata
DSO-8538	**Fixed** in Development Firmware 5.9.11	Color correction parameters are not updated correctly
DSO-8565	No Fix (expected as per current design)	Infrared speckles on color image from D415 and D435 cameras
DSO-6804 DSO-8681	No Fix	D400 Series cameras intermittently enumerated as USB2 device on unplug/plug
DSO-9006	**Fixed** in Development Firmware 5.9.11	Frame rate does not change when manual exposure value is changed
DSO-9074	**Closed**. This is USB2 Bandwidth related	Simultaneous streaming Depth, Imager and Color may result in data stream hang when camera is connected through USB2
DSO-9094	**Fixed** in Development Firmware 5.9.11	Specific controls values missing in frames metadata
DSO-9153	**Fixed** in Development Firmware 5.9.11	D400 series camera fails to be recognized on system reboot when connected through USB3
DSO-9224	**Fixed** in Production Firmware 5.9.13	IR Projector pattern flicker when streaming through USB2 connection
DSO-9228	**Fixed** in Production Firmware 5.9.13	D400 series camera disconnects on resume from system sleep when connected through USB2
DSO-9240	**Fixed** in Production Firmware 5.9.13	D400 Series camera fails to be recognized on system reboot when connected through USB2
DSO-9478	**Fixed** in Production Firmware 5.10.6	Image Flicker when Auto Exposure (AE) is enabled
DSO-9501	Open	Camera is not functional after HLK Sensor test when connected through USB2
DSO-9546	**Fixed** in Development Firmware 5.9.14	IR projector pattern flicker when streaming at 1280X720, 4 FPS and connected through USB2
DSO-9556	**Fixed** in Development Firmware 5.10.3	Camera stuck after streaming start-stop at Low FPS for few times
DSO-9645	**Fixed** in Development Firmware 5.10.3	Darker depth frame when changing depth exposure from [165760 - 165780] and connected through USB2
DSO-10002	**Fixed** in Development Firmware 5.10.3	Calibration tables may get corrupted during power on and off cycles
DSO-10011	No Fix	Auto Exposure (AE) for Color is not optimized for bright sunlight
DSO-10428	**Fixed** in Development Firmware 5.11.4	IR Image is black in Auto Exposure (AE) mode with sudden exposure to light
DSO-10431	**Fixed** in Production Firmware 5.11.1	IR image may flicker in outdoor sunlight when using Auto Exposure (AE) with default set point
DSO-10503	Open	Low fill rate in outdoor environment using Auto Exposure (AE)
DSO-10603	Open	Unable to set the Depth Exposure Time < 70 usec through USB2
DSO-10777	**Fixed** in LibRealSense	D435i - Buffer overflow on repeated start/stop
DSO-10674	**Fixed** in LibRealSense	D435i – The first (cold) start of IMU sensors in LibRealSense on Linux takes ~4 sec

Summary Table of Changes

Number	Status	Errata
DSO-10920	**Fixed** in LibRealSense	First frames not received on metadata test
DSO-11041	**Fixed** in LibRealSense	D435i – Unreasonably large accelerometer reading in Windows 10
DSO-10591	No Fix	In Multi Camera mode, sporadic and inconsistent frame drops and streaming halt
DSO-11040	**Fixed** in Development Firmware 5.11.4	D435 – Depth/IR corrupted image when streaming multi stream and RGB exposure is < -6
DSO-11042	**Fixed** in Development Firmware 5.11.11.100. LibRealSense 2.20.0 required.	D430 – RealSense Viewer errors out post reboot after using the "Hand' preset.
DSO-12586	**Fixed** in Development Firmware 5.11.11.100	D415, D435/D435i – RGB camera not available after FW Update process using DFU
DSO-12587 DSO-12814	**Fixed** in Production Firmware 5.11.6.250	D435i – Upgrading to FW version 5.11.6.200 causes corrupted calibration table. Note: Due to this issue this FW was removed.
DSO-10229 DSO-13386	**Fixed** in Development Firmware 5.11.15.0	Camera fail after start, stop of random profiles
DSO-13540	**Fixed** in Development Firmware 5.11.15.0	D415 – On-Chip calibration doesn't converge using D415 camera
DSO-13546	**Fixed** in Development Firmware 5.12.0	D435i – IMU frame drops
DSO-13554	**Fixed** in Development Firmware 5.11.15.0	D420 – Camera will stop working after FW update

Table 2-2. Specification Changes

Number	Specification Changes
	Development Firmware v5.10.13 adds support for Intel® RealSense™ D435i camera.
	Firmware v5.9.2+ adds USB 2.0 support for Intel® RealSense™ D410, D415 and D435 cameras. The USB2.0 is supported for OS Linux and Windows*10 with Intel® RealSense™ SDK 2.10.4+ To ensure the best of quality of service, connection to a dedicated USB2 root port is desired.
DSO-9015	Development firmware 5.11.15 allows a D4xx camera to run as an R200 via a JSON file. LibRealSense 2.20.0 or higher is required for this feature.
DSO-12258	Development firmware 5.11.11.100 and LibrealSense 2.23.0 will bring improved depth linearity and absolute accuracy. Please see https://dev.intelrealsense.com/docs/white-paper-subpixel-linearity-improvement-for-intel-realsense-depth-cameras
DSO-12399	Development Firmware 5.11.11.100 provides USB 2.0 support for D430 module. LibRealSense 2.21.0 or higher is required for this feature.
DSO-12266 DSO-12267	Development Firmware 5.11.15.0 provides the ability for self-calibration (Alpha version) to improve depth noise/precision. Also provides the ability for Tare calibration (Alpha version) to improve absolute accuracy. LibRealSense 2.29.0 or higher is required for this feature on D400 series devices.

Table 2-3. Specification Clarifications

No.	Specification Clarifications
	Firmware releases are classified as "Production" and "Development" Firmware. **Production Firmware** – Firmware version recommended for Production builds integrating Intel® RealSense™D400 Series, Remote product update and Software development. **Development Firmware** – Firmware version recommended for software developers and may contain features that have not been fully validated by Intel. The development firmware is not recommended for production builds or remote product update.

Table 2-4. Documentation Changes

No.	Documentation Changes
	None for this revision of this specification update.

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3   Errata

3.1   Open

DSO-6804 DSO-8681	D400 Series camera intermittently enumerated as USB2 device on unplug/plug
Problem:	D400 Series camera intermittently enumerates as a USB 2.0 high speed device when the camera is plugged to a USB 3.1 Gen1 port.
Implication:	The issue is seen on Windows* and Linux*. The issue is not applicable when Host to Camera connection is Type-C (Host) to Type-C (Camera)
Workaround:	Plug in to Host (USB-Type A) after camera connection (Type-C) or alternately physical unplug-plug a camera with different insertion speeds. Issue more likely to occur on slow plug insertion into USB 3.1 Gen1 port.
Status:	Refer the *Summary Tables of Changes*

DSO-9501	Camera is not functional after HLK Sensor test when connected through USB2
Problem:	Camera is not functional after HLK Sensor test when connected through USB2 (Windows HLK)
Implication:	The issue is observed on production units and not seen on pre-production samples.
Workaround:	None
Status:	Refer the *Summary Tables of Changes*

DSO-10503	Low fill rate in outdoor environment using Auto Exposure (AE)
Problem:	In outdoor light condition (at shaded area), the fill rate might be lower compared to older firmware versions.
Implication:	The failure is observed with Depth Camera D435
Workaround:	None
Status:	Refer the *Summary Tables of Changes*

DSO-10603	Unable to set the Depth Exposure Time < 70 usec through USB2
Problem:	When connected through USB2, setting Depth Exposure Time less than 70 usec will result in artifacts and over-exposed frames.
Implication:	The failure is observed with Depth Camera D400 series
Workaround:	When connected through USB2, do not set Depth Exposure Time less than 70 usec
Status:	Refer the *Summary Tables of Changes*

3.2   Fixed

DS0-7194	**Windows driver [mskssrv.sys] may crash with D400 Series camera in stress testing**
Problem:	Windows driver crashes in start- stop streaming iterations. It may take hundreds of start – stop streaming iterations for failure to occur.
Implication:	D400 Series camera fails to be recognized in Windows Device Manager
Status:	Refer the *Summary Tables of Changes*

DS0-7755	**Temporary stream hang observed on disabling Auto Exposure (AE) at 1280X720 resolution after any previous 90 FPS stream.**
Problem:	Play any 90 FPS depth or left or right imager stream -> stop -> play 1280x720 resolution -> disable Auto Exposure (AE) -> the stream gets stuck for few seconds.
Implication:	Depth or left and right Imager streams are stuck for a few seconds
Status:	Refer the *Summary Tables of Changes*

DSO-7798	**RGB at 60 FPS may not have the right exposure set when exposure is equal/less than -2**
Problem:	Manual exposure with value equal or less than -2 may not result in right exposure.
Implication:	Depth module D415 and Depth cameras D415 and D435 with RGB sensor are affected by this issue
Status:	Refer the *Summary Tables of Changes*

DSO-7849	**ROI based depth streaming immediately after change of IR projector power may result in a stream hang**
Problem:	Frames do not arrive after ROI (Region of Interest) is selected to start streaming immediately after a change is made to the IR projector power.
Implication:	No depth streaming
Status:	Refer the *Summary Tables of Changes*

DSO-7854	**Depth Stream hang when system resumes from Sleep (S3)**
Problem:	System resume from S3 does not resume depth streaming and requires application restart.
Implication:	Currently seen on Windows* only.
Status:	Refer the *Summary Tables of Changes*

DSO-7976	D400 series camera is not recognized after reboot on Linux
Problem:	Device does not appear in the device manager (lsusb)
Implication:	The frequency of the problem occurrence depends on specific Kernel version. It occurs more frequently on 4.4.0.x kernel versions and less frequently with 4.10.x kernel versions. Not seen on Windows*
Status:	Refer the *Summary Tables of Changes*

DSO-8007	Firmware updates via DFU Service fails when firmware update limit is reached
Problem:	D400 series firmware update engine will allow a return to a previous version or baseline version of firmware up to 20 times unless a higher version of firmware.
	DFU service as part of Windows Driver package updates camera firmware when camera connected has a firmware version different than expected. The DFU service fails to function when firmware update limit of 20 is reached.
Implication:	When the firmware update limit is reached, firmware update fails even if higher firmware version. DFU service is in Windows driver package only.
Status:	Refer the *Summary Tables of Changes*

DSO-8328	Metadata attribute "Trigger" indicating Depth to Color synchronization may not have correct value
Problem:	Trigger is a metadata field and its value indicates whether the depth and color streams are synced (1) or not (0). The value in this metadata field indicating synchronization may have the wrong value.
Implication:	D400 series cameras, D415 and D435 with color sensor
Status:	Refer the *Summary Tables of Changes*

DSO-8461	D400 Series Windows driver does not work with Chrome browser
Problem:	When Windows driver is installed on a Windows*10 system, chrome browser does not recognize D400 Series camera in chrome://settings/content/camera
Implication:	D400 series camera is recognized without Windows driver installed.
Status:	Refer the *Summary Tables of Changes*

DSO-8467	Left Imager UYVY format displays green image
Problem:	Streaming color out of left imager in UYVY format displays a green image
Implication:	RealSense Viewer displays a green image when UYVY format is selected for left imager stream
Status:	Refer the *Summary Tables of Changes*

DSO-8538	Color correction parameters are not updated correctly
Problem:	Color correction parameters update to default values
Implication:	This issue affects color from left imager in cameras D400, D410 & D415
Status:	Refer the *Summary Tables of Changes*

DSO-8565	Infrared speckles on color image from D415 and D435 cameras
Problem:	Infrared speckles are seen on color image from D415 and D435 cameras when laser power is at maximum or closer to maximum value
Implication:	Infrared speckles reduces with distance and ambient lighting
Status:	Refer the *Summary Tables of Changes*

DSO-9006	Frame rate does not change when manual exposure value is changed
Problem:	Frame rate (FPS) may need to change based on the exposure value and in some cases the FPS may not change as expected.
Implication:	Issue observed with camera D430 and D435
Status:	Refer the *Summary Tables of Changes*

DSO-9074	Simultaneous streaming Depth, Imager and Color may result in data stream hang when camera is connected through USB2
Problem:	One or two streams hangs may hang when simultaneously streaming Depth, Imager and Color data when camera is connected through USB2
Implication:	The issue is not observed when 1 or 2 data streams are simultaneously streaming. The issue is observed on Windows* and Linux*
Status:	Refer the *Summary Tables of Changes*

DSO-9094	Specific controls values missing in frames metadata
Problem:	Frames arrive without controls values in Metadata
Implication:	Missing metadata for valid frames. Issue observed in Linux*
Status:	Refer the *Summary Tables of Changes*

DSO-9153	D400 series camera fails to be recognized on system reboot when connected through USB3
Problem:	D400 Series camera may fail to be recognized on system reboot when connected through USB3
Implication:	The issue is observed on Windows*. Camera not recognized in Windows Device Manager

Status:	Refer the *Summary Tables of Changes*

DSO-9224	**IR Projector pattern flicker when streaming through USB2 connection**
Problem:	IR Projector pattern flicker maybe observed when camera is streaming through a USB2 connection
Implication:	The flicker may be observed after streaming for some time (~3 minutes) independent of resolution and frame rate. It is observed in D400 series cameras with IR projectors and on Windows* and Linux*
Status:	Refer the *Summary Tables of Changes*

DSO-9228	**D400 series camera disconnects on resume from system sleep when connected through USB2**
Problem:	D400 series camera may disconnect on resume from system sleep when connected through USB2.
Implication:	Application such as Intel® RealSense Viewer streaming before entering system sleep fail to function on resume from sleep as the camera may fail to be recognized. The issue is only observed on Linux* OS
Status:	Refer the *Summary Tables of Changes*

DSO-9240	**D400 Series camera fails to be recognized on system reboot when connected through USB2**
Problem:	D400 Series camera may fail to be recognized on system reboot when connected through USB2
Implication:	The issue is observed on Windows* and Linux*
Status:	Refer the *Summary Tables of Changes*

DSO-9478	**Image Flicker when Auto Exposure (AE) is enabled**
Problem:	Image flicker may be observed under certain light conditions when Auto Exposure (AE) is enabled
Implication:	Image flicker seen on imager output streams may impact the depth stream
Status:	Refer the *Summary Tables of Changes*

DSO-9546	**IR projector pattern flicker when streaming at 1280X720, 4 FPS and connected through USB2**
Problem:	IR projector pattern flicker may be observed when streaming at resolution 1280X720, 4 FPS and camera connected to a USB2 connection
Implication:	The issue is observed on Windows* and Linux*
Status:	Refer the *Summary Tables of Changes*

DSO-9556	Camera stuck after streaming start-stop at Low FPS for few times
Problem:	Camera depth streams at low frame rates may be stuck after start-stop streaming a few times
Implication:	The issue is observed for both, USB3 and USB2 camera connection and at 6FPS. Re-plugging the camera is required to be able to communicate with the camera again.
Status:	Refer the *Summary Tables of Changes*

DSO-9645	Darker depth frame when changing depth exposure from [165760 - 165780] and connected through USB2
Problem:	Darker (holes) depth frames are observed when depth exposure is changed between 165760 and 165780 range of values
Implication:	When streaming depth / IR configuration with resolutions [480x270/640x480] and [6/15/30/ 60] fps and camera connected through USB2
Status:	Refer the *Summary Tables of Changes*

DSO-10002	Calibration tables may get corrupted during power on and off cycles
Problem:	Power on/off cycles may cause calibration table to get corrupted
Implication:	Invalid depth stream
Status:	Refer the *Summary Tables of Changes*

DSO-10011	Auto Exposure (AE) for Color is not optimized for bright sunlight
Problem:	Auto Exposure for Color is not optimized for bright sunlight.
Implication:	Depth Cameras D415 and D435 support color through dedicated RGB sensor and are impacted by this issue. The cameras cannot be used for color in bright sunlight for use cases that require good AE based region of interest (ROI)
Status:	Refer the *Summary Tables of Changes*

DSO-10428	IR Image is black in Auto Exposure (AE) mode with sudden exposure to light
Problem:	When switching from no light to full outdoor sunlight in AE mode, IR image turns black
Implication:	The failure is observed with Depth Camera D415
Status:	Refer the *Summary Tables of Changes*

DSO-10431	IR image may flicker in outdoor sunlight when using Auto Exposure (AE) with default set point
Problem:	IR image flickers in outdoor sunlight when using Auto Exposure with default AE set-point (1536) and higher

Implication:	The failure is observed with Depth Camera D435
Status:	Refer the *Summary Tables of Changes*

DSO-10591	**In Multi Camera mode, sporadic and inconsistent frame drops and streaming halt**
Problem:	When Multi-camera configured: • Depth+Color VGAx30FPS • Start-stop streaming, 30 sec streaming duration There is sporadic: • High rate of frame drops received • Exception 'profile not found' received
Implication:	
Status:	Refer the *Summary Tables of Changes*

DSO-10674	**D435i – The first (cold) start of IMU sensors in LibRealSense on Linux takes ~4 sec**
Problem:	Sending request to stream Accel/Gyro data results in 4 sec wait till the data starts to arrive.
Implication:	The failure is observed with Depth Camera D435i
Status:	Refer the *Summary Tables of Changes*

DSO-10777	**D435i - Buffer overflow on repeated start/stop**
Problem:	Cycling through start/stop with Depth+Gyro+Accelerator streams abruptly terminates with: Process finished with exit code 134 (interrupted by signal 6: SIGABRT)
Implication:	The failure is observed with Depth Camera D435i
Status:	Refer the *Summary Tables of Changes*

DSO-11040	**D435 – Depth/IR corrupted image when streaming multi stream and RGB exposure is < -6**
Problem:	Depth/IR corrupted image when streaming multi stream and RGB exposure is less than -6
Implication:	The failure is observed with Depth Camera D435
Status:	Refer the *Summary Tables of Changes*

DSO-11041	**D435i – Unreasonably large accelerometer reading in Windows 10**
Problem:	Unreasonably large accelerometer reading in Windows 10

Implication:	The failure is observed with Depth Camera D435i
Status:	Refer the *Summary Tables of Changes*

DSO-11042	**D430 - RealSenseViewer crash after win10 PC reboot**
Problem:	RealSense Viewer errors out post reboot after using the "Hand' preset
Implication:	The failure is observed with D415, -435, -430
Status:	Refer the *Summary Tables of Changes*

DSO-12586	**D415, D435/D435i – RGB camera not available after FW Update process using DFU**
Problem:	Upgrade device using DFU after upgrade process is complete, RGB camera not available
Implication:	The failure is observed with D435/D435i and D415
Workaround:	Do not disconnect USB cable for 20+ secs after FW update process is complete. This allows the host system to enumerate the device properly. If device is experiencing this issue, please use the following steps to downgrade FW to recover Downgrade device FW to Development FW 5.11.4 using DFU tool (making sure to do not disconnect USB cable for 20+ secs after FW update is complete and device has been enumerated and detected by host platform
Status:	Refer the *Summary Tables of Changes*

DSO-12587 DSO-12814	**D435i – Upgrade to latest production FW causes corrupted calibration table**
Problem:	Upgrade device to latest production FW causes corrupted calibration table
Implication:	The failure is observed with D435i
Workaround:	If the device has been upgraded to FW 5.11.6.200, run LibRealSense ver 2.23 (or higher), and it will correct the calibration table. Alternatively, downgrade FW to Development FW 5.10.13 and verify that the calibration table is OK.
Status:	Refer the *Summary Tables of Changes*

DSO-10229 DSO-13386	**Camera fail after start, stop of random profiles**
Problem:	When trying to stream more than one camera stream (depth, infrared and color) in a random profile, the camera streams aborts.
Implication:	None
Workaround:	Disconnect and reconnect camera
Status:	Refer the *Summary Tables of Changes*

DSO-13540	D415 – On-Chip calibration doesn't converge using D415 camera
Problem:	When running On-chip calibration process via LibRealSense, the error "Calibration didn't converge! (EDGE_TO_CLOSE) please retry in different lighting conditions" is seen.
Implication:	The failure is observed with Depth Camera D415
Workaround:	None
Status:	Refer the *Summary Tables of Changes*

DSO-13554	D420 – Camera will stop working after FW update
Problem:	When upgrading FW, the D420 stops working.
Implication:	The failure is observed with Depth Module D420
Workaround:	If D420 is not experiencing issue, do not upgrade FW
Status:	Refer the *Summary Tables of Changes*

DSO-13546	D435i – IMU frame drops
Problem:	When depth, infrared, color, gyro and accel are streaming for a long period of time, frame drops (gyro and accel) are observed.
Implication:	The failure is observed with Depth Camera D435i
Workaround:	None
Status:	Refer the *Summary Tables of Changes*

DSO-10920	First frames not received on metadata test
Problem:	Metadata start frame on depth/IR/color stream began from 2 or 3 value, the expected value is 1.
Implication:	None
Workaround:	Ignore first frame of metadata
Status:	Refer the *Summary Tables of Changes*