**Software detailed design**

**Model: iDOLPHIN (iDOLPHIN-S & iDOLPHIN-View)**

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| **META BIOMED CO., LTD.** |

**Revision History**

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| **Revision No.** | **Revision history** | **Date** |
| 0 | Initial release, alpha-test | 2013.09.06 |
| 1 | Modified according to EN 62366, Class A | 2014.07.03 |
| 2 | According to Non-conformity, Modify Class B | 2016.02.19 |
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# Software Design Specification (SDS)

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| Clause | Function | Design Spec | Class | Remark |
| Microprocessor | Initialization | -Create following objects :  HW control / Scan UI /Image Viewer / DB manager | CMainSystem | SDS-M01 |
| -Connect to scan process  (Normal control channel/ real time channel).  - ROM File Upload | FpgaFilesDirectory | SDS-M02 |
| - Check iDOLPHIN HW & display error message. | CHwCtrl | SDS-M03 |
| Camera Setting | First. Camera setting | Camera\_s() | SDS-M04 |
| System option setting | -Supported categories for system options: Scan/Pre-scan/Image processing/DB/System info.  -Save setup information to local file | CSystemOptionsDlg | SDS-M05 |
| Memory device | Hard Disk  Check | -Support flexible format to Include reconstructed image / DB information / raw data  (See below. Database Module) | ::SaveDBDataToFile  ::WriteDataToMIFFile | SDS-D01 |
| Rom Check | Run the uploaded file to check for errors. | CRomCheck | SDS-D02 |
| Energy sources | Camera | Confirm the data coming from the camera data.  - 250 by 250 array data. | ProcessingWrapper.pr[0] | SDS-E01 |
| Optical Fiber | Adjust illumination on Hardware and illuminate dark site. | CtrFiberValue | SDS-E02 |
| Safety features | Overcurrent | Calculation TI | CurrentStatus() | SDS-S01 |
| Noise | System check to the Power status. If User want Power off, It can Power off. | NoiseE() | SDS-S02 |

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| Clause | Function | Design Spec | Class | Remark |
| Communications | Save: Image | If User check to the Image at pause, It can pause it. | SaveImg() | SDS-C01 |
| Save: Cine | If User want to change the image position, It can change position. (Vertical) | SaveCine() | SDS-C02 |
| Rotation | If User want to change the image position, It can change position. (Horizontal) | Image\_status() | SDS-C03 |
| Brightness | Adjust Brightness | ImgBrigh(); | SDS-C04 |
| Folder | -Create New patient  -Import existing patient/study information from local DB / Work list server  -Check mandatory information | CPatientStudyRegDlg | SDS-C05 |
| Zoom | Zoom motion | Zoom() | SDS-C06 |
| AEC | AEC | AEC() | SDS-C07 |
| External equipment | PC |  | Using System  System.IO | SDS-X01 |
| Monitor | Display device supporting |
| Mouse | User can manipulate |
| Key Board | User can manipulate |
| Imaging Processing and Motion (H/W) | RGGB | Data coming from the camera is an RGGB data. | colorReconstruction.pixelGain[0~3] | SDS-HW01 |

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| Clause | Function | Design Spec | Class | Remark |
| Timing and memory requirements | Memory Storage | Save to the information.  (Patient, Image, Cine etc…) | STime\_F()  SCon\_F()  Timefor() | SDS-T01 |
| System boot time | System boot time | Boot\_S  Con\_S | SDS-T02 |
| Camera recognition time | Camera is connected to the system time | Con\_P | SDS-T03 |

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| Clause | Function | Design Spec | Class | Remark |
| Imaging Processing and Motion (S/W) | Bad Pixel  Removal | The more homogeneous the image will look | RemoveBadPixel.Apply  RemoveBadPixe.Value | SDS-SW01 |
| Reconstruction | This color pre-gain algorithm will always be applied. | colorReconstruction.pixelGain | SDS-SW02 |
| Color | If the Apply option is set to true, the color reconstruction algorithm will be applied | colorReconstruction.Apply | SDS-SW03 |
| Color Adjustment Matrix | This function allows to give a little more saturation to the colors | colorAdjustmentMatrix | SDS-SW04 |
| Gamma | This algorithm is applied with a certain gamma correction parameter. | GammaCorrection.Apply  GammaCorrection.value | SDS-SW05 |
| Frames Mean | This feature allows to remove some of the image noise | framesMean.ImagesToDoMean  framesMea.ThresholdValue  framesMea.Apply | SDS-SW06 |
| Skip Frames | The skip frames is used in slower systems to prevent the high memory usage of the machine, and to assure that we don’t have image delay. | skipFrames.FramesNumber | SDS-SW07 |
| Brightness | The brightness value is always applied | Brightness.Apply  Brightness.Value | SDS-SW08 |
| Show image | Images displayed on the UI. | videoBox.XXX | SDS-SW09 |
| AEC | This algorithm is AEC | AEC.Enable  AEC.TargetGreyValue | SDS-SW10 |