

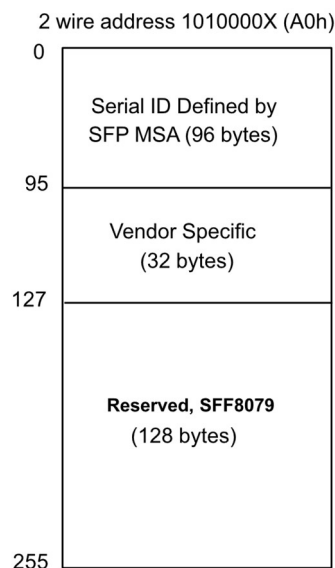
Software

Serial Identification

The SFP 2-wire serial interface (MOD_DEF1/MOD_DEF2) provides access to the identification information describing SFP capabilities, interfaces, and associated information. The serial interface uses the 2-wire serial EEPROM protocol defined for the ATMEL AT24C02 family component. The memory is organized as a series of 8-bit data words that can be addressed individually or sequentially. The content of the SERIAL IDENTIFICATION (serial ID) device is write-protected. The 2-wire serial bus address 1010000X (A0h) is used for serial ID access.

See INF-8074 section B4 for detailed information.

The table below defines the information structures that are obtained from the SFP Transceiver via the serial ID.



| Addr | Registry Name | Registry Description | Value |
|-----------------------|-----------------|--|-------|
| BASE ID FIELDS | | | |
| 0 | Identifier | Type of serial transceiver <i>03h – SFP transceiver or 80h – Vendor specific – Data Diode</i> | XXh |
| 1 | Ext. Identifier | Extended type of serial transceiver <i>SFP function is defined by serial ID only</i> | 04h |
| 2 | Connector | Connector type <i>LC</i> | 07h |
| 3 | Transceiver | Electronic or optical compatibility | XXh |
| 4 | | TBD | 00h |
| 5 | | | 00h |
| 6 | | | 00h |
| 7 | | | 00h |
| 8 | | | 00h |
| 9 | | | 00h |
| 10 | | | 00h |
| 11 | Encoding | Code for serial encoding algorithm TBD | XXh |
| 12 | BR, Nominal | Nominal bit rate, units of 100Mbps <i>100M – 01h 1G – 0Ah 10G – 64h</i> | XXh |
| 13 | Reserved | Reserved | 00h |
| 14 | Length (Fiber) | 9m -km | XXh |
| 15 | | 9m – 100m | XXh |
| 16 | | 50m | XXh |
| 17 | | 62.5m | XXh |
| 18 | Length (Copper) | Length supported (copper) in m <i>0</i> | 00h |
| 19 | Reserved | Reserved | 00h |
| 20 | Vendor name | SFP transceiver vendor name (ASCII) | 46h |
| 21 | | <i>"FIBERPLEX"</i> | 49h |

| Addr | Registry Name | Registry Description | Value | | | | | |
|--|---------------|--|------------|----------|-------------------------------|-------------------------|------------------------------------|-----|
| 22 | | | 42h | | | | | |
| 23 | | | 45h | | | | | |
| 24 | | | 52h | | | | | |
| 25 | | | 50h | | | | | |
| 26 | | | 4Ch | | | | | |
| 27 | | | 45h | | | | | |
| 28 | | | 58h | | | | | |
| 29 | | | 20h | | | | | |
| 30 | | | 20h | | | | | |
| 31 | | | 20h | | | | | |
| 32 | | | 20h | | | | | |
| 33 | | | 20h | | | | | |
| 34 | | | 20h | | | | | |
| 35 | | | 20h | | | | | |
| 36 | Transceiver | | 00h | | | | | |
| 37 | Vendor OUI | SFP vendor IEEE company ID | 00h | | | | | |
| 38 | | Patton = 00A0BAh | A0h | | | | | |
| 39 | | | BAh | | | | | |
| 40 | Vendor PN | Part number (ASCII) | XXh | | | | | |
| 41 | | Unique to each SKU | XXh | | | | | |
| 42 | | | XXh | | | | | |
| 43 | | | XXh | | | | | |
| 44 | | | XXh | | | | | |
| 45 | | | XXh | | | | | |
| 46 | | | XXh | | | | | |
| 47 | | | XXh | | | | | |
| 48 | | | XXh | | | | | |
| 49 | | | XXh | | | | | |
| 50 | | | XXh | | | | | |
| 51 | | | XXh | | | | | |
| 52 | | | XXh | | | | | |
| 53 | | | XXh | | | | | |
| 54 | | | XXh | | | | | |
| 55 | | | XXh | | | | | |
| 56-59 | Vendor rev | Revision level for part number (ASCII) | XXh ... | | | | | |
| 60 | Wavelength | 1310nm = 051Eh | 05h | | | | | |
| 61 | | 850nm = 0352h | 1Eh | | | | | |
| 62 | | | 00h | | | | | |
| 63 | CC_BASE | checksum (8lsb result) (add. 0-62) | XXh | | | | | |
| EXTENDED ID FIELDS | | | | | | | | |
| 64 | Options | optional SFP signals are implemented | 00h | | | | | |
| MSB LSB | | | | | | | | |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 | |
| r | r | r | r | r | r | r | r | |
| NA | NA | NA | NA | NA | Cooled Trasceiver Declaration | Power Level Declaration | Linear Receiver Output Implemented | |
| '0' | '0' | '0' | '0' | '0' | '0' | '0' | '0' | |
| 65 | | | | 1Ah | | | | |
| MSB | | | | LSB | | | | |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 | |
| r | r | r | r | r | r | r | r | |
| NA | NA | RATE_SELECTION | TX_DISABLE | TX_FAULT | LOS Inverted | LOS Implemented | NA | |
| '0' | '0' | '0' | '1' | '1' | '0' | '1' | '0' | |
| 66 | BR, max | Upper bit rate margin, unit of % | | | | | | 00h |
| 67 | BR, min | Lower bit rate margin, unit of % | | | | | | 00h |

| Addr | Registry Name | Registry Description | Value | | | | | |
|----------------------------------|--------------------------------|---|----------------------------|---------------------------------------|------------------------------------|---|-----|-----|
| 68-83 | Vendor SN | Serial number (ASCII) | XXh ... | | | | | |
| 84-91 | Date code | Vendor's manufacturing date code | XXh ... | | | | | |
| 92 | Diagnostic Mon | Diagnostic Monitoring | 68h | | | | | |
| MSB | | | | | | | | LSB |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 | |
| r | r | r | r | r | r | r | r | |
| Reserved | DDM 1 = Enabled | Internal Calibration 1 = Enabled | External Calibration | RX Power Measurement 1 = Avg Power | Addr Change Required | NA | NA | |
| '0' | '1' | '1' | '0' | '1' | '0' | '0' | '0' | |
| 93 | Enhanced Options | Enhanced Options | F0h | | | | | |
| MSB | | | | | | | | LSB |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 | |
| r | r | r | r | r | r | r | r | |
| Alarm Flags 1 = Enabled | Soft TX_DISABLE 1 = Enabled | Soft TX_FAULT 1 = Enabled | Soft RX_LOS 1 = Enabled | Soft RATE_SELECT 0 = Disabled | Application Select 0 = Disabled | Soft Rate Select per SFF-8431 0 = Disabled | NA | |
| '1' | '1' | '1' | '1' | '0' | '0' | '0' | '0' | |
| 94 | SFF-8472 Compliance | SFF-8472 Compliance <i>Includes functionality described in Rev 11.0 of SFF-8472.</i> | 05h | | | | | |
| 95 | CC_EXT | Checksum (add. 64-94) | XXh | | | | | |
| VENDOR SPECIFIC ID FIELDS | | | | | | | | |
| 96-127 | Vendor Specific | Vendor Specific EEPROM | 00h | | | | | |
| 128-255 | Reserved | Reserved for SFF-8079 | XXh ... | | | | | |

Notes:

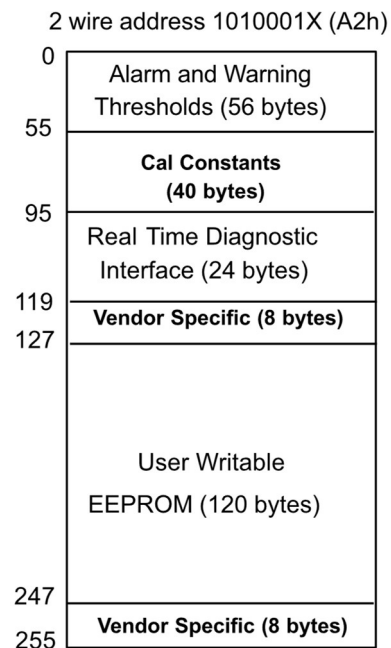
1. The values with XXh are determined during manufacturing
2. Addresses 68-83 specify the Vendor Serial Number
3. Addresses 84-91 specify the Manufacturing Date Code (YYMMDD: YY=Year, MM=Month, DD=Day)
4. Address 63 contains the checksum for byte 0-62
5. Address 95 contains the checksum for byte 64-94

Serial Configuration Interface

The SFP 2-wire serial interface (MOD_DEF1/MOD_DEF2) provides also digital diagnostic monitoring via the SERIAL CONFIG INTERFACE. The serial interface uses the 2-wire serial EEPROM protocol defined for the ATMEL AT24C02 family component. The memory is organized as a series of 8-bit data words that can be addressed individually or sequentially. The 2-wire serial bus address 1010001X (A2h) is used for SERIAL CONFIG INTERFACE access.

See SFF-8472 for more detailed implementation.

The table below defines the information structures that are obtained from the SFP Transceiver via the SERIAL CONFIG INTERFACE.



| Addr | Field Name | Registry Name | Description | Default Value (hex) | Default Value (dec) |
|-------|----------------------------|-----------------------------|---|---------------------|---------------------|
| 0 | Alarm & Warning Thresholds | Temp High Alarm (MSB) | Internal Temperature High Alarm Threshold | 55h | +85°C |
| 1 | | Temp High Alarm (LSB) | | 00h | |
| 2 | | Temp Low Alarm (MSB) | Internal Temperature Low Alarm Threshold | D8h | -40°C |
| 3 | | Temp Low Alarm (LSB) | | 00h | |
| 4 | | Temp High Warning (MSB) | Internal Temperature High Warning | 50h | +80°C |
| 5 | | Temp High Warning (LSB) | Threshold | 00h | |
| 6 | | Temp Low Warning (MSB) | Internal Temperature Low Warning | DDh | -35°C |
| 7 | | Temp Low Warning (LSB) | Threshold | 00h | |
| 8 | | Voltage High Alarm (MSB) | Internal Voltage High Alarm Threshold | 8Ch | +3.6V |
| 9 | | Voltage High Alarm (LSB) | | A0h | |
| 10 | | Voltage Low Alarm (MSB) | Internal Voltage Low Alarm Threshold | 75h | +3.0V |
| 11 | | Voltage Low Alarm (LSB) | | 30h | |
| 12 | | Voltage High Warning (MSB) | Internal Voltage High Warning Threshold | 87h | +3.47V |
| 13 | | Voltage High Warning (LSB) | | 8Ch | |
| 14 | | Voltage Low Warning (MSB) | Internal Voltage Low Warning Threshold | 7Ah | +3.14V |
| 15 | | Voltage Low Warning (LSB) | | A8h | |
| 16 | | Bias High Alarm (MSB) | Bias High Alarm Threshold | XXh.. | TBD |
| 17 | | Bias High Alarm (LSB) | | XXh.. | |
| 18 | | Bias Low Alarm (MSB) | Bias Low Alarm Threshold | XXh.. | TBD |
| 19 | | Bias Low Alarm (LSB) | | XXh.. | |
| 20 | | Bias High Warning (MSB) | Bias High Warning Threshold | XXh.. | TBD |
| 21 | | Bias High Warning (LSB) | | XXh.. | |
| 22 | | Bias Low Warning (MSB) | Bias Low Warning Threshold | XXh.. | TBD |
| 23 | | Bias Low Warning (LSB) | | XXh.. | |
| 24 | | TX Power High Alarm (MSB) | TX Power High Alarm Threshold | XXh.. | TBD |
| 25 | | TX Power High Alarm (LSB) | | XXh.. | |
| 26 | | TX Power Low Alarm (MSB) | TX Power Low Alarm Threshold | XXh.. | TBD |
| 27 | | TX Power Low Alarm (LSB) | | XXh.. | |
| 28 | | TX Power High Warning (MSB) | TX Power High Warning Threshold | XXh.. | TBD |
| 29 | | TX Power High Warning (LSB) | | XXh.. | |
| 30 | | TX Power Low Warning (MSB) | TX Power Low Warning Threshold | XXh.. | TBD |
| 31 | | TX Power Low Warning (LSB) | | XXh.. | |
| 32 | | RX Power High Alarm (MSB) | RX Power High Alarm Threshold | XXh.. | TBD |
| 33 | | RX Power High Alarm (LSB) | | XXh.. | |
| 34 | | RX Power Low Alarm (MSB) | RX Power Low Alarm Threshold | XXh.. | TBD |
| 35 | | RX Power Low Alarm (LSB) | | XXh.. | |
| 36 | | RX Power High Warning (MSB) | RX Power High Warning Threshold | XXh.. | TBD |
| 37 | | RX Power High Warning (LSB) | | XXh.. | |
| 38 | | RX Power Low Warning (MSB) | RX Power Low Warning Threshold | XXh.. | TBD |
| 39 | RX Power Low Warning (LSB) | | XXh.. | | |
| 40-55 | Unallocated | Unallocated | Reserved | XXh... | |
| 56-59 | Ext Cal Constant | Rx_PWR(4) | Rx optical power | 00000000h | 0 |
| 60-63 | | Rx_PWR(3) | | 00000000h | 0 |
| 64-67 | | Rx_PWR(2) | | 00000000h | 0 |
| 68-71 | | Rx_PWR(1) | | 00000001h | 1 |
| 72-75 | | Rx_PWR(0) | | 00000000h | 0 |
| 76-77 | | Tx_I(Slope) | | 0001h | 1 |
| 78-79 | | Tx_I(Offset) | | 0000h | 0 |
| 80-81 | | Tx_PWR(Slope) | | 0001h | 1 |
| 82-83 | | Tx_PWR(Offset) | | 0000h | 0 |
| 84-85 | | T(Slope) | | 0001h | 1 |
| 86-87 | T(Offset) | 0000h | 0 | | |
| 88-89 | V(Slope) | 0001h | 1 | | |

| Addr | Field Name | Registry Name | Description | Default Value (hex) | Default Value (dec) | | |
|---|--|------------------------------------|--|------------------------------------|---|---|------------------------------------|
| 90-91 | | V(Offset) | | 0000h | 0 | | |
| 92-94 | Unallocated | Unallocated | Reserved | XXh... | | | |
| 95 | CC_DMI | Checksum | Checksum | XXh | | | |
| 96 | Diagnostics | Temperature (MSB) | Internally measured module temperature. | XXh | °C | | |
| 97 | | Temperature (LSB) | | XXh | | | |
| 98 | | Vcc (MSB) | Internally measured supply voltage in transceiver. | XXh | V | | |
| 99 | | Vcc (LSB) | | XXh | | | |
| 100 | | TX Bias MSB | Internally measured TX Bias Current. | XXh... | A | | |
| 101 | | TX Bias LSB | | XXh... | | | |
| 102 | | TX Power MSB | Measured TX output power. | XXh... | mW | | |
| 103 | | TX Power LSB | | XXh... | | | |
| 104 | RX Power MSB | Measured RX input power. | XXh... | mW | | | |
| 105 | RX Power LSB | | XXh... | | | | |
| 106-109 | Unallocated | Unallocated | Reserved | XXh... | | | |
| 110 | Status/Control | Status/Control | See below for bit definition | XXh | | | |
| MSB | | | | LSB | | | |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 |
| r | r/w | r | r | r | r | r | r |
| TX_DIS State | Soft Tx_Disable Select | NA | NA | NA | TX_FAULT | RX_LOS | Data_Ready State |
| TX_DIS input pin state can be read via this bit | 1=Force Disable TX 0=Use TX_DIS pin (default) | | | | TX_FAULT input pin state can be read via this bit | RX_LOS input pin state can be read via this bit | 1=Power up 0=Data ready |
| 'X' | '0' | '0' | '0' | '0' | 'X' | 'X' | 'X' |
| 111 | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| 112 | Alarm Flags | Alarm Flags | See below for bit definition | XXh | | | |
| MSB | | | | LSB | | | |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 |
| r | r | r | r | r | r | r | r |
| Temp High Alarm | Temp Low Alarm | Vcc High Alarm | Vcc Low Alarm | TX Bias High Alarm | TX Bias Low Alarm | TX Power High Alarm | TX Power Low Alarm |
| 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive |
| 'X' | 'X' | 'X' | 'X' | 'X' | 'X' | 'X' | 'X' |
| 113 | Alarm Flags | Alarm Flags | See below for bit definition | XXh | | | |
| MSB | | | | LSB | | | |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 |
| r | r | r | r | r | r | r | r |
| RX Power High Alarm | RX Power Low Alarm | Reserved | Reserved | Reserved | Reserved | Reserved | Reserved |
| 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | | | | | | |
| 'X' | 'X' | '0' | '0' | '0' | '0' | '0' | '0' |
| 114-115 | Unallocated | Unallocated | Reserved | XXh... | | | |
| 116 | Warning Flags | Warning Flags | See below for bit definition | XXh | | | |

| Addr | Field Name | Registry Name | Description | Default Value (hex) | Default Value (dec) | | |
|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|------------------------------------|
| | | | | MSB | LSB | | |
| b7 | b6 | b5 | b4 | b3 | b2 | b1 | b0 |
| r | r | r | r | r | r | r | r |
| Temp High Warning | Temp Low Warning | Vcc High Warning | Vcc Low Warning | TX Bias High Warning | TX Bias Low Warning | TX Power High Warning | TX Power Low Warning |
| 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive | 1=Alarm Active 0=Alarm Inactive |
| 'X' | 'X' | 'X' | 'X' | 'X' | 'X' | 'X' | 'X' |
| 117 | Alarm Flags | Alarm Flags | Not Applicable | | | XXh | |
| 118 | Ext | Ext Status/Control | Not Applicable | | | XXh | |
| 119 | Status/Control | Unallocated | Reserved | | | XXh | |
| 120-127 | Vendor Specific | Vendor Specific | Reserved | | | XXh... | |
| 128-247 | User EEPROM | User Writable EEPROM | Reserved | | | | |
| 248-255 | Vendor Specific | Vendor specific control functions | | | | | |

Notes:

1. The values with XXh are either determined during manufacturing or depend on SFP state
2. Address 95 contains the checksum for byte 64-94
3. Autosleep enables/disables the Save Mode

Specifications

| ELECTRICAL SPECIFICATIONS | | | | | | | |
|--|--|--|---------------------|---------|------|---------|--------|
| Absolute Maximum Ratings | | | Symbol | Min | Typ | Max | Unit |
| <i>Exceeding any of these ratings may permanently damage the module. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.</i> | | | | | | | |
| Absolute Maximum | Voltage Range | | V _{CC_MAX} | -0.5 | - | +4.0 | VDC |
| Environmental | Storage Temperature | | T _s | -40 | - | +85 | °C |
| | Operating Relative Humidity (non condensing) | | | 5 | - | 95 | % |
| | ESD Rating | | | - | - | 1 | kV HBM |
| Recommended Operating Conditions | | | Symbol | Min | Typ | Max | Unit |
| <i>Unless otherwise specified, all specifications are valid under these conditions: VCC = 3.3V ±5%, TC = -40°C to +80°C. Specifications are guaranteed by design and characterization.</i> | | | | | | | |
| Recommended Operating Conditions | Supply Voltage | | V _{CC} | 3.13 | 3.3 | 3.47 | VDC |
| | Operating Case Temperature | | T _c | -40 | - | +85 | °C |
| | Serial Data Rate | | BR _{CS2} | 9.95 | - | 11.3 | Gbps |
| DC characteristics | Power Supply Current ¹ (RX1 <140m) | | I _{CC} | - | 348 | 402 | mA |
| | Power Supply Current ¹ (RX1 >140m) | | I _{CC} | - | 368 | 427 | mA |
| | Total Power Consumption ¹ (RX1 >140m) | | P _o | - | 1216 | 1410 | mW |
| | <small>All power consumption characterised at 25°C</small> | | | | | | |
| Digital I/O Characteristics - Logic | | | Symbol | Min | Typ | Max | Unit |
| TX_DIS (Input) | Input Voltage Low | | V _{IL} | VEE+0.3 | - | 0.8 | V |
| | Input Voltage High | | V _{IH} | 2.0 | - | VCC+0.3 | V |
| | Rpull-up | | R _{PU} | 4.7 | - | 10 | kΩ |
| TX_FAULT | Input Voltage Low | | V _{IL} | VEE+0.3 | - | 0.8 | V |
| | Input Voltage High | | V _{IH} | 2.0 | - | VCC+0.3 | V |
| LOS (Output) | Output Voltage Low (I _{OL} =10μA) | | V _{OL} | - | - | 0.1 | V |
| | Output Voltage Low (I _{OL} =8.5μA) | | | - | - | 0.6 | V |
| MOD_DEF2 (Output) | Output Voltage Low (I _{OL} =10μA) | | V _{OL} | - | - | 0.1 | V |

| | | | | | | |
|---|--|-------------------|-------------|------------|------------|-------------------|
| | Output Voltage Low ($I_{OL}=8.5\mu A$) | | - | - | 0.6 | V |
| MOD_DEF1 & MOD_DEF2 (Input) ¹ | Input Voltage Low | V_{IL} | - | - | 0.8 | V |
| | Input Voltage High | V_{IH} | 2.0 | - | - | V |
| | MOD_DEF1 (SCL) & MOD_DEF2 (SDA) must be pulled up to V_{CC} with a 4.7k-10k Ω on the host board | | | | | |
| Digital I/O Characteristics - Data | | Symbol | Min | Typ | Max | Unit |
| RD \pm (Output) | Single-ended Voltage Swing | $V_{O\ P-P}$ | 310 | 375 | 440 | mVP-P |
| | Differential Voltage Swing | $V_{DIFF\ P-P}$ | 300 | 600 | 850 | mVP-P |
| | Differential Impedance | Z_{ODIFF} | 90 | 100 | 110 | Ω |
| | Rise Time, Fall Time (20% - 80%) | t_r, t_f | - | 90 | 130 | ps |
| | Serial Data Output Jitter | $t_{jit-C03}$ | - | 0.01 | 0.03 | UI |
| TD \pm (Input) | Differential Voltage Swing | V_{DIFF} | 120 | 600 | 850 | mVP-P |
| | Differential Impedance | Z_{IN} | 90 | 100 | 110 | Ω |
| | Input Rise Time / Fall Time | t_r, t_f | - | - | 1500 | ps |
| | Serial Input Jitter Tolerance (A_1 -Timing Jitter - RP184-1996) | $TOL_{jit-SD-A1}$ | >6 | - | - | UI _{P-P} |
| | (A_2 - Alignment Jitter - RP184-1996) | | | | | |
| Optical Characteristics | | Symbol | Min | Typ | Max | Unit |
| RX (Input) | Receiver Sensitivity ¹ | PIN | - | - | -13 | dBm |
| | Overload ¹ | $IRL_{D-1.5G}$ | 0.5 | - | - | dBm |
| | Receiver Reflectance | | - | - | -12 | dB |
| | Optical Center Wavelength | λ_C | 1260 | - | 1610 | nm |
| | LOS Assert | | -30 | - | - | dBm |
| | LOS De-assert | | - | - | -15 | dBm |
| TX (Output) | LOS Hysteresis | | 0.5 | - | 5 | dB |
| | Output Power | AOP | -5 | - | +0.5 | dBm |
| | Optical modulation amplitude | P_{OMA} | -5.2 | - | - | dBm |
| | Extinction Ratio | ER | 6.0 | - | - | dB |
| | Transmitter and Dispersion Penalty | TDP | - | - | 3.2 | dB |
| | Average Launch power of OFF TX | P_{OFF} | - | - | -45 | dBm |
| | Optical Wavelength | λ | 1260 | 1310 | 1355 | nm |
| | Spectral Width (-20dB) | $\Delta\lambda$ | - | - | 1 | nm |
| | Side mode Suppression Ratio | SMSR | 30 | - | - | dB |
| | Optical Return Loss Tolerance | ORLT | - | - | 12 | dB |
| | Relative Intensity Noise | RIN | - | - | -128 | dB/Hz |
| | Optical Eye Mask 1 ³ | | ITU-T G.691 | | | |
| | Optical Eye Mask 2 ² | | IEEE802.3ae | | | |
| NOTES: | | | | | | |
| 1. BER $\leq 10^{-12}$ @ PRBS231-1 at 10.3125Gb/s. | | | | | | |
| 2. Measured at 10.3125Gb/s, Non-framed PRBS2 ³¹ -1, NRZ. | | | | | | |
| 3. Measured at 9.95328Gb/s, PRBS2 ³¹ -1, NRZ. | | | | | | |
| Timing Characteristics | | Symbol | Min | Typ | Max | Unit |
| MOD_DEF1 (Input) | Clock Rate ¹ | | - | - | 400 | kHz |
| If host does not support clock stretching, MOD_DEF1 (SCL) clock rate should be set to 100kHz maximum. | | | | | | |

Applicable References and Standards

Reference Designs

- tidr437 – TI 10G SFP Reference Design
- SFP-RDK – Analog Devices SFP Reference Design
- AN2360 – Maxim Multi-Rate (1Gbps – 3.2Gbps) 850nm SFP Transceiver

Patton Standards

- None

Design Standards

- INF-8074 – SFP Transceiver (MSA)
- SFF-8079 – SFP Rate and Application Selection

- SFF-8431 – SFP+ High Speed Electrical Interface
- SFF-8472 – Diagnostic Monitoring Interface

Compliance Requirements

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2
- Immunity compatible with IEC 61000-4-3
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2
- RoHs compliant with 2002/95/EC 4.1&4.2 2005/747/EC