ISO/IEC 14165-114 :2005-04 (E)

Information technology_- Fibre Channel_- Part_114: 100 MB/s Balanced copper physical interface (FC-100-DF-EL-S)

CONTENTS

FOREWORD....5
INTRODUCTION....6
1 Scope....7
2 Normative references....7
3 Definitions, symbols and abbreviations....8
3.1 Definitions....8
3.2 Symbols....9
3.3 Abbreviations....9
4 MAC interface....9
4.1 General....9
4.2 Overview....9
4.3 Detailed specification....10
4.3.1 RD<7:0> received data....10
4.3.2 RV receive valid....10
4.3.3 RE receive error....10
4.3.4 RCLK receive clock....10
4.3.5 TD<7:0> transmit data....10
4.3.6 TV transmit valid....11
4.3.7 TE transmit error....11
4.3.8 TCLK transmit clock....11
4.3.9 DC characteristics....11
4.3.10 MAC characteristics....11
4.3.11 MAC, GMII and MII interfaces....11
4.4 Testing....12
4.5 Data stream....12
4.6 Service control functions....12
4.7 Timers....13
4.8 Delay requirements....13
4.9 Reset....13
5 Operation....13
5.1 Detail of the physical interfaces....13
5.2 Signalling....14
5.3 Frame format....14
5.4 Functions at the MAC interface....15
6 Coding....15
6.1 Timers....15
6.2 Receive status OK....15
6.3 Errors....15
6.4 PHY control....15
6.5 Bit error rate....15
7 Test....15

7 Test 15
7.1 General 15
7.2 Tests 16
7.3 Fixtures 16
7.4 Interoperability compliance points 16
8 Transmitter signal 16
8.1 General 16
8.2 Differential output voltage and accuracy 16
8.3 Scrambling 16
8.4 Transmit eye diagram 17
8.5 Jitter 17
9 Receiver signal 18
9.1 General 18
9.2 Differential input voltage and accuracy 18
9.3 Descrambling 18
9.4 Receive eye diagram 18
10 Electrical and mechanical requirements 19
10.1 Isolation 19
10.2 Clock frequency 19
10.3 Receiver common mode rejection 19
10.4 Transmitter common mode output voltage 19
10.5 Input tolerance 19
10.6 Return loss 20
10.7 Connector 20
10.8 Connector configuration 20
11 Cabling channel 20
11.1 General conditions 20
11.2 External noise 20
12 Environmental 20
12.1 Safety 20
12.2 Grounding 20
12.3 Telephone voltages 21
12.4 Susceptibility 21
12.5 Temperature and humidity 21
12.6 Labelling 21
BIBLIOGRAPHY 22

Figure 1 – Model....6
Figure 2 – MAC interface....9
Figure 3 – Interface overview via 100 Ω Class F cabling....10
Figure 4 – MAC interface data stream....12
Figure 5 - State diagram of MLT-3....13
Figure 6 – Coding scheme of MLT-3....13
Figure 7 – Transmission with MLT-3....14
Figure 8 – Frame format....14
Figure 9 – Scrambler polynomial and correspondent circuit diagram....16
Figure 10 – Transmission eye diagram....17
Figure 11 – Transmission eye diagram detail....17
Figure 12 – Receiver eye diagram....18
Figure 13 – Receiver common mode rejection test....19
Figure 14 – Common mode voltage test....19

Table 1 – DC characteristics....11
Table 2 – AC characteristics....11
Table 3 – Signal mapping....12
Table 4 – Delay requirements....13
Table 5 – Control functions....15
Table 6 – Eye diagram mask at points R1 and R2....18
Table 7 – Return loss....20
Table 8 – Connector configuration....20