

## Table of Contents

Preface .....	i
Comments .....	ii
Abstract .....	iii
Current Status .....	iv
Table of Contents .....	vii
List of Figures .....	xvii
List of Tables .....	xxi
1. Introduction.....	1
1.1 Scope.....	1
1.2 Related Documents.....	1
1.3 Document Organization.....	1
1.4 Serial Bus Applications.....	1
1.4.1 Alternate Bus.....	1
1.4.2 Low Cost Peripheral Bus.....	2
1.4.3 Bus Bridge.....	2
1.5 Document Notation.....	2
1.5.1 Mechanical Notation.....	2
1.5.2 Signal Naming.....	2
1.5.3 Size Notation.....	3
1.5.4 Numerical Values.....	3
1.5.5 Packet Formats.....	4
1.5.6 Register Formats.....	4
1.5.7 C Code Notation.....	4
1.5.8 Service Model.....	5
1.5.9 State Machine Notation.....	6
1.5.10 CSR, ROM, and Field Notation.....	7
1.5.11 Register Specification Format.....	7
1.5.12 Reserved Registers and Fields.....	9
1.6 Compliance.....	9
1.6.1 IEEE 1212 Compliance.....	9
1.6.2 Node Implementation Requirements.....	10
1.6.2.1 Physical Layer.....	10
1.6.2.2 Link Layer.....	10
1.6.2.3 Transaction Layer.....	10
1.6.2.4 Bus Management.....	10
2. Definitions and Abbreviations.....	11
3. Overview.....	15
3.1 Node and Board Architectures.....	15
3.2 Topology.....	16
3.2.1 Cable Environment.....	16
3.2.2 Backplane Environment.....	16
3.3 Addressing.....	17
3.4 Protocol Architecture.....	18
3.5 Transaction Layer.....	19
3.5.1 Lock Subcommands.....	19
3.6 Link Layer.....	21
3.6.1 Link Layer Services.....	21
3.6.2 Link and Transaction Layer Interactions.....	22
3.6.2.1 Unified Transactions.....	22
3.6.2.2 Split Transactions.....	23

3.6.2.3 Subaction Concatenation.....	24
3.6.2.4 Busy Conditions.....	25
3.6.3 Asynchronous Access.....	25
3.6.4 Isochronous Access.....	25
3.7 Physical Layer.....	26
3.7.1 Packet Data Transmission and Reception.....	26
3.7.2 Fair Arbitration.....	27
3.7.3 Cable Physical Layer (C-PHY).....	28
3.7.3.1 Cable Configuration.....	28
3.7.3.1.1 Bus initialize.....	29
3.7.3.1.2 Tree identify.....	29
3.7.3.1.3 Self identify.....	30
3.7.3.2 Normal arbitration.....	31
3.7.3.3 Speed Signalling.....	34
3.7.3.4 Cable Media Interface.....	34
3.7.4 Backplane Physical Layer (B-PHY).....	34
3.7.4.1 Backplane Arbitration.....	35
3.7.4.2 Urgent Arbitration.....	35
3.7.4.3 Backplane Media Interface.....	36
3.8 Bus Management.....	37
4. Cable Physical Layer Specification.....	39
4.1 Cable Physical Layer Services.....	39
4.1.1 Cable Physical Layer Bus Management Services for the Management Layer.....	39
4.1.1.1 PHY Control Request (PH_CONTROL.request).....	39
4.1.1.2 PHY Control Confirmation (PH_CONTROL.confirmation).....	39
4.1.1.3 PHY State Indication (PH_STATE.indication).....	40
4.1.2 PHY Layer Arbitration Services for the Link Layer.....	40
4.1.2.1 PHY Arbitration Request (PH_ARB.request).....	40
4.1.2.2 PHY Arbitration Confirmation (PH_ARB.confirmation).....	41
4.1.3 PHY Layer Data Services for the Link Layer.....	41
4.1.3.1 PHY Clock Indication (PH_CLOCK.indication).....	41
4.1.3.2 PHY Data Request (PH_DATA.request).....	41
4.1.3.3 PHY Data Indication (PH_DATA.indication).....	42
4.2 Cable Physical Connection Specification.....	42
4.2.1 Media Attachment.....	43
4.2.1.1 Connectors.....	43
4.2.1.1.1 Connector Plug.....	43
4.2.1.1.2 Connector Plug Terminations.....	46
4.2.1.1.3 Connector Socket.....	46
4.2.1.1.4 Positive Retention.....	51
4.2.1.1.5 Contact Finish on Plug and Socket Contacts.....	51
4.2.1.1.6 Termination Finish on Plug and Contact Socket Terminals.....	51
4.2.1.1.7 Shell Finish on Plugs and Sockets.....	51
4.2.1.1.8 Connector Durability.....	51
4.2.1.2 Cables.....	52
4.2.1.2.1 Cable Material.....	52
4.2.1.2.2 Cable Assemblies.....	52
4.2.1.3 Connector and Cable Assembly Performance Criteria.....	53
4.2.1.3.1 Performance Group A: Basic Mechanical Dimensional Conformance & Electrical Functionality When Subjected to Mechanical Shock & Vibration.....	54
4.2.1.3.2 Performance Group B: Low Level Contact Resistance When Subjected to Thermal Shock & Humidity Stress.....	55
4.2.1.3.3 Performance Group C: Insulator Integrity When Subjected to Thermal Shock & Humidity Stress.....	56
4.2.1.3.4 Performance Group D: Contact Life & Durability When Subjected to Mechanical Cycling & Corrosive Gas.....	

Exposure.....	57
4.2.1.3.5 Performance Group E Contact Resistance & Unmating Force When Subjected to Temperature Life Stress.....	59
4.2.1.3.6 Performance Group F: Intermateability of Connectors From Competitive Suppliers.....	60
4.2.1.3.7 Performance Group G: General Tests.....	61
4.2.1.4 Signal Propagation Performance.....	63
4.2.1.4.1 Signal Impedance.....	63
4.2.1.4.2 Signal Pairs Attenuation.....	63
4.2.1.4.3 Signal Pairs Velocity of Propagation.....	64
4.2.1.4.4 Signal Pairs Relative Propagation Skew.....	64
4.2.1.4.5 Power Pair Characteristic Impedance.....	64
4.2.1.4.6 Power Pair DC Resistance.....	64
4.2.1.4.7 Crosstalk.....	64
4.2.1.4.8 Shield AC Coupling.....	64
4.2.2 Media Signal Interface.....	65
4.2.2.1 Signal Amplitude.....	65
4.2.2.2 Common Mode Voltage.....	66
4.2.2.3 Common Mode Current.....	67
4.2.2.4 Arbitration Signal Voltages.....	68
4.2.2.5 Input Impedance.....	68
4.2.2.6 Noise.....	69
4.2.2.7 Power and Ground.....	69
4.2.2.8 Driver and Receiver Fault protection.....	69
4.2.3 Media Signal Timing.....	70
4.2.3.1 Data Rate.....	70
4.2.3.2 Data Signal Rise and Fall Times.....	70
4.2.3.3 Jitter and Skew.....	70
4.3 Cable Physical Layer Facilities.....	71
4.3.1 Coding.....	71
4.3.2 Cable Physical Layer Signals.....	71
4.3.3 Cable Physical Layer Line States.....	72
4.3.4 Cable Physical Layer Packets.....	73
4.3.4.1 Self-ID Packet.....	73
4.3.4.2 Link-on Packet.....	74
4.3.4.3 PHY Configuration Packet.....	74
4.3.5 Cable Physical Layer Timing Constants.....	75
4.3.6 Gap Timing.....	76
4.3.7 Cable Physical Layer Node Constants.....	76
4.3.8 Node Variables.....	76
4.3.9 Port Variables.....	77
4.4 Cable Physical Layer Operation.....	78
4.4.1 Data Transmission and Reception.....	79
4.4.1.1 Cable Environment Data Transmission.....	79
4.4.1.2 Cable Environment Data Reception and Repeat.....	80
4.4.2 Cable Environment Arbitration.....	81
4.4.2.1 Bus Reset.....	82
4.4.2.2 Tree Identify.....	83
4.4.2.3 Self Identify.....	85
4.4.2.4 Normal Arbitration.....	88
4.5 Cable PHY Reference Code.....	92
4.5.1 Data Types and Constants.....	92
4.5.2 Gap Flags.....	93
4.5.3 Node Variables.....	93
4.5.4 Port Functions.....	93
4.5.5 Port Variables.....	94

5. Backplane Physical Layer Specification.....	95
5.1 Backplane Physical Layer Services.....	95
5.1.1 Backplane Physical Layer Bus Management Services for the Management Layer.....	95
5.1.1.1 PHY Control Request (PH_CONTROL.request).....	95
5.1.1.2 PHY Control Confirmation (PH_CONTROL.confirmation).....	95
5.1.1.3 PHY State Indication (PH_STATE.indication).....	96
5.1.2 PHY Layer Arbitration Services for the Link Layer.....	96
5.1.2.1 PHY Arbitration Request (PH_ARB.request).....	96
5.1.2.2 PHY Arbitration Confirmation (PH_ARB.confirmation).....	97
5.1.3 PHY Layer Data Services for the Link Layer.....	97
5.1.3.1 PHY Clock Indication (PH_CLOCK.indication).....	97
5.1.3.2 PHY Data Request (PH_DATA.request).....	97
5.1.3.3 PHY Data Indication (PH_DATA.indication).....	98
5.2 Backplane Physical Connection Specification.....	98
5.2.1 Media Attachment.....	99
5.2.1.1 Distribution of Nodes.....	99
5.2.1.2 Fault Detection and Isolation.....	99
5.2.1.3 Live Insertion.....	99
5.2.2 Media Signal Interface.....	99
5.2.2.1 Definition of Logic States.....	99
5.2.2.2 Bit Rates.....	100
5.2.2.3 Transition Times.....	100
5.2.2.4 Noise Rejection.....	100
5.2.3 Media Signal Timing.....	100
5.2.3.1 Backplane Transmit Data Timing.....	100
5.2.3.2 Backplane Receive Data Timing.....	101
5.2.3.3 Backplane and Transceiver Skew.....	102
5.2.4 Backplane Arbitration Timing.....	102
5.2.4.1 Bus Synchronization and Propagation Delay.....	102
5.2.4.2 Arbitration Bit Timing.....	103
5.3 Backplane Physical Layer Facilities.....	105
5.3.1 Coding.....	105
5.3.2 Bus Signals.....	105
5.3.3 Gap Flags.....	106
5.3.4 Arbitration Sequence.....	107
5.3.4.1 Arbitration Number.....	107
5.3.4.2 Priority.....	107
5.3.4.3 Format of Arbitration Sequence.....	107
5.4 Backplane Physical Layer Operation.....	108
5.4.1 Arbitration.....	109
5.4.1.1 Fairness Intervals.....	109
5.4.1.2 Fair Arbitration.....	110
5.4.1.3 Urgent Arbitration.....	110
5.4.1.4 Cycle Master Arbitration.....	111
5.4.1.5 Isochronous Arbitration.....	111
5.4.1.6 Immediate Arbitration.....	111
5.4.2 Backplane Environment Packet Transmission and Reception.....	111
5.4.2.1 Backplane Environment Packet Transmission.....	111
5.4.2.2 Backplane Environment Packet Reception.....	113
5.5 Backplane Bus Initialization.....	113
6. Link Layer Specification.....	115
6.1 Link Layer Services.....	115
6.1.1 Link Layer Bus Management Services for the SBM Layer.....	115

6.1.1.1 Link Control Request (LK_CONTROL.request).....	115
6.1.1.2 Link Control Confirmation (LK_CONTROL.confirmation).....	116
6.1.1.3 Link State Indication (LK_STATE.indication).....	116
6.1.2 Link Layer Asynchronous Data Services for the Transaction Layer.....	117
6.1.2.1 Link Data Request (LK_DATA.request).....	117
6.1.2.2 Link Data Confirmation (LK_DATA.confirmation).....	117
6.1.2.3 Link Data Indication (LK_DATA.indication).....	117
6.1.2.4 Link Data Response (LK_DATA.response).....	118
6.1.3 Link Layer Isochronous Data Services for Application Layers.....	118
6.1.3.1 Link Cycle Start Indication (LK_CYCLE.indication).....	118
6.1.3.2 Link Isochronous Request (LK_ISO.request).....	118
6.1.3.3 Link Isochronous Indication (LK_ISO.indication).....	119
6.2 Link Layer Facilities.....	119
6.2.1 Primary Packets.....	120
6.2.2 Asynchronous Packets.....	121
6.2.2.1 Asynchronous Packets with No-data Payload.....	122
6.2.2.1.1 Read Request for Data Quadlet.....	122
6.2.2.1.2 Write Response.....	123
6.2.2.2 Asynchronous Packet Formats with Data Quadlet Payload.....	123
6.2.2.2.1 Read Request for Data Block.....	124
6.2.2.2.2 Write Request for Data Quadlet.....	124
6.2.2.2.3 Cycle Start.....	124
6.2.2.2.4 Read Response for Data Quadlet.....	125
6.2.2.3 Asynchronous Packet Formats with Data Block Payload.....	126
6.2.2.3.1 Write Request for Data Block.....	127
6.2.2.3.2 Lock Request.....	128
6.2.2.3.3 Read Response for Data Block.....	129
6.2.2.3.4 Lock Response.....	129
6.2.3 Isochronous Packets.....	130
6.2.3.1 Isochronous Data Block Packet Format.....	130
6.2.4 Primary Packet Components.....	131
6.2.4.1 Reserved Fields, Codes, and Values.....	131
6.2.4.2 Destination Address.....	131
6.2.4.2.1 Destination ID (destination ID).....	131
6.2.4.2.2 Destination Offset (destination offset).....	132
6.2.4.3 Transaction Label (tl).....	132
6.2.4.4 Retry Code (rt).....	132
6.2.4.5 Transaction Code (tcode).....	132
6.2.4.6 Priority (pri).....	133
6.2.4.7 Source ID (source ID).....	133
6.2.4.8 Data Length (data length).....	133
6.2.4.9 Extended Transaction Code (extended tcode).....	133
6.2.4.10 Response Code (rcode).....	134
6.2.4.11 Data Field.....	134
6.2.4.12 Channel.....	134
6.2.4.13 Synchronization Code (sy).....	134
6.2.4.14 CRCs.....	134
6.2.5 Acknowledge Packets.....	135
6.2.5.1 Acknowledge Packet Format.....	136
6.2.5.2 ACK Packet Components.....	136
6.2.5.2.1 Reserved Codes.....	136
6.2.5.2.2 Acknowledge Code (ack code).....	136
6.2.5.2.3 Acknowledge Parity (ack parity).....	137
6.3 Link Layer Operation.....	137

6.3.1 Overview of Link Layer Operation.....	137
6.3.1.1 Sending an Asynchronous Packet.....	137
6.3.1.2 Receiving an Asynchronous Packet.....	137
6.3.1.3 Sending an Acknowledge Concatenated to an Asynchronous Packet.....	138
6.3.1.4 Isochronous Cycles.....	138
6.3.1.5 Sending Isochronous Packets.....	138
6.3.1.6 Receiving an Isochronous Packet.....	138
6.3.2 Details of Link Layer Operation.....	138
6.3.2.1 Link Initialization.....	140
6.3.2.2 Asynchronous Operation.....	140
6.3.2.3 Isochronous Operation.....	142
6.3.3 Packet Transmission and Reception.....	143
6.3.3.1 Sending a Single Packet.....	143
6.3.3.2 Sending Concatenated Packets.....	143
6.3.3.3 Receiving a Packet.....	144
6.3.4 Asynchronous Operations.....	144
6.3.4.1 Sending Primary Asynchronous Packet.....	145
6.3.4.2 Receiving Primary Asynchronous Packet.....	145
6.3.4.3 Sending an Acknowledge Packet.....	145
6.3.4.4 Receiving an Acknowledge Packet.....	145
6.3.5 Isochronous Operations.....	145
6.3.5.1 Isochronous Cycles.....	145
6.3.5.2 Sending a Primary Isochronous Packet.....	146
6.3.5.3 Receiving a Primary Isochronous Packet.....	146
6.4 Link Layer Reference Code.....	147
6.4.1 CRC Generation and Checking.....	147
6.4.2 Cycle Counter Operation.....	148
7. Transaction Layer Specification.....	149
7.1 Transaction Services.....	149
7.1.1 Transaction Layer Bus Management Services for the SBM Layer.....	149
7.1.1.1 Transaction Control Request (TR_CONTROL.request).....	149
7.1.1.2 Transaction Control Confirmation (TR_CONTROL.confirmation).....	150
7.1.1.3 Transaction State Indication (TR_STATE.indication).....	150
7.1.2 Transaction Layer Data Services for applications and the SBM Layer.....	150
7.1.2.1 Transaction Data Request (TR_DATA.request).....	150
7.1.3 Transaction Data Confirmation (TR_DATA.confirmation).....	151
7.1.4 Transaction Data Indication (TR_DATA.indication).....	151
7.1.5 Transaction Data Response (TR_DATA.response).....	152
7.2 Transaction Facilities.....	152
7.2.1 Timers.....	152
7.2.1.1 Split Transaction Timer.....	152
7.2.1.2 Transaction Retry Count.....	152
7.3 Transaction Operation.....	152
7.3.1 Transaction Definitions.....	152
7.3.1.1 Unified Transaction.....	153
7.3.1.2 Split Transaction.....	153
7.3.1.3 Concatenated Transaction.....	153
7.3.1.4 Broadcast Transaction.....	153
7.3.1.5 Pending Transaction.....	153
7.3.2 Transaction Initiation and Reaction.....	153
7.3.2.1 Initiating a Transaction.....	153
7.3.2.2 Reacting to a Transaction Request.....	154
7.3.3 Transaction Types.....	154

7.3.3.1 Read Transactions.....	154
7.3.3.2 Write Transactions.....	155
7.3.3.3 Lock Transactions.....	155
7.3.3.3.1 Mask Swap Lock Transactions.....	155
7.3.3.3.2 Compare Swap Lock Transactions.....	155
7.3.3.3.3 Fetch Add Lock Transactions.....	155
7.3.3.3.4 Little Add Lock Transactions.....	155
7.3.3.3.5 Bounded Add Lock Transactions.....	155
7.3.3.3.6 Wrap Add Lock Transactions.....	155
7.3.3.3.7 Vendor Dependent Lock Transactions.....	155
7.3.4 Transaction Details.....	156
7.3.4.1 Variables, Flags, and Timers.....	157
7.3.4.2 Timers.....	157
7.3.4.3 States and Transitions.....	157
7.4 IEEE 1212 Compliance.....	157
8. Serial Bus Management.....	159
8.1 Serial Bus Management Services.....	159
8.1.1 SB_CONTROL.request.....	159
8.1.2 SB_CONTROL.confirm.....	159
8.1.3 SB_CONTROL.indication.....	159
8.2 Command and Status Registers.....	160
8.2.1 Node Reset.....	160
8.2.2 CSR Core Registers.....	160
8.2.3 STATE_CLEAR and STATE_SET Bus-dependent Fields.....	161
8.2.4 Serial Bus Dependent Registers.....	162
8.2.4.1 Cycle Time Register.....	163
8.2.4.2 Bus Time Register.....	163
8.2.4.3 Power Fail Imminent Register.....	164
8.2.4.4 Power Source Register.....	164
8.2.4.5 PHY Control Register (cable environment only).....	165
8.2.4.6 Notification Register.....	165
8.2.4.7 Monarch Contention Register.....	166
8.2.5 Unit Required Registers.....	166
8.2.6 CSR ROM Requirements.....	167
8.2.6.1 Minimal ROM Format Requirements.....	167
8.2.6.2 General ROM Root Format Requirements.....	167
8.2.6.2.1 Bus_Info_Block Root Entry.....	167
8.2.6.2.2 Node_Capabilities Root Entry.....	167
8.2.6.3 General ROM Unit Subdirectory Format Requirements.....	167
8.3 Bus Management Operation.....	168
8.3.1 Initialize <tbd>.....	168
8.3.1.1 Resets.....	168
8.3.1.2 Bus Configuration.....	168
8.3.1.3 Power Management.....	168
8.3.1.4 Cycle Master Selection.....	168
8.3.2 Normal Operation.....	168
8.3.2.1 Channel Management.....	168
8.3.3 Error Management.....	168
Annex A. Cable Physical Layer Configuration Guide.....	169
A.1 Timing Formulas (informative).....	169
A.2 Cable Arbitration Timing.....	169
A.3 Cable Environment Jitter Budget.....	169

Annex B. Backplane Physical Layer Configuration Guide.....	171
B.1 Timing Formulas (informative).....	171
B.2 .Backplane Arbitration Timing.....	171
B.3 Backplane Gap Timing.....	171
Annex C. Cable Operation and Implementation Examples (informative).....	173
C.1 Cable Physical Layer Configuration Example.....	173
C.1.1 Bus initialize.....	173
C.1.2 Tree identify.....	173
C.1.3 Self identify.....	177
C.1.4 Topology construction.....	183
C.2 Example Cable Physical Layer Implementation.....	185
Annex D. Backplane Physical Implementation Example (informative).....	187
D.1 Backplane Signals.....	187
D.2 ANSI/IEEE 896 FutureBus+.....	187
D.2.1 Link Design.....	187
D.3 ANSI/IEEE 960 FASTBUS.....	187
D.4 ANSI/IEEE 1014 VMEbus.....	187
D.5 ANSI/IEEE 1196 NuBus.....	187
D.6 ANSI/IEEE 1296 Multibus II.....	187
Annex E. Socket P.C.B. Terminal Patterns and Mounting.....	189
E.1 Socket Orientation.....	189
E.2 P.C.B. Mounting.....	189
E.3 Panel Mounting.....	194
E.4 Electrical Isolation of Socket Shell to Panel.....	194
E.5 RF Trap.....	194
Annex F. Identification System for Connector and Cable Assembly Variations.....	195
F.1 Connector Identification System.....	195
F.1.1 Typical Connector Socket Identifier.....	196
F.1.2 Typical Connector Plug Identifier.....	196
F.2 Cable Assembly Identification System.....	196
F.2.1 Typical Cable Assembly Identifier.....	197
Annex G. Connector Positive Retention.....	199
Annex H. Internal Device Physical Interface.....	201
H.1 Overview.....	201
H.2 Electrical Interface Assumptions For Internal Devices.....	201
H.2.1 Power Requirements.....	201
H.2.2 Signal Requirements.....	201
H.2.3 Miscellaneous Signals.....	202
H.2.4 Connector Requirements.....	202
Annex I. P1394 Link-Phy Interface Specification.....	203
I.1 Document Scope.....	203
I.2 Overview.....	203
I.3 Operation.....	204
I.3.1 Request.....	204
I.3.2 Status.....	207
I.3.3 Transmit.....	208
I.3.4 Receive.....	209
I.4 PhyRegister Map.....	210
I.5 State Diagrams.....	211
I.5.1 Link Request.....	212



I.5.2 Link General.....	213
I.5.3 Phy General.....	214
I.6 Isolation Barrier.....	215
I.7 AC Timing.....	216
I.8 Open Issues.....	216
I.9 Revision History.....	216
Annex J. Serial Bus Cable Test Procedures.....	219
J.1 Scope.....	219
J.2 Test Fixture.....	219
J.3 Signal Pairs Characteristic Impedance.....	221
J.3.1 Signal Pairs Impedance Setup Calibration - Short and Load.....	221
J.3.2 Signal Pairs Impedance Test Procedure.....	221
J.3.3 Signal Pairs Impedance Limits.....	222
J.4 Signal Pairs Attenuation.....	222
J.4.1 Signal Pairs Attenuation Setup Calibration.....	223
J.4.2 ATpA.....	224
J.4.3 ATpB.....	224
J.4.4 Signal Pairs Attenuation Limits.....	225
J.5 Signal Pairs Velocity of Propagation.....	225
J.5.1 Signal Pairs Velocity of Propagation Setup Calibration.....	225
J.5.2 VTpA.....	225
J.5.3 VTpB.....	226
J.5.4 Signal Pairs Velocity of Propagation Limits.....	226
J.6 Signal Pairs Relative Propagation Skew.....	226
J.6.1 Signal Pairs Skew Setup Calibration.....	227
J.6.2 Signal Pairs Skew Test Procedure.....	228
J.6.3 Signal Pairs Skew Limits.....	228
J.7 Power Pair Characteristic Impedance.....	229
J.7.1 Power Pair Impedance Setup Calibration - Short and Load.....	229
J.7.2 Power Pair Impedance Test Procedure.....	229
J.8 Power Pair DC Resistance.....	229
J.8.1 DC Resistance Setup Calibration.....	230
J.8.2 DC Resistance Test Procedure.....	231
J.8.3 DC Resistance Limits.....	231
J.9 Crosstalk.....	231
J.9.1 Crosstalk Setup Calibration.....	232
J.9.2 Crosstalk Test Procedure.....	233
J.9.3 Crosstalk Limits.....	234
Annex K. Shielding Effectiveness and Transfer Impedance Testing.....	235
Index .....	Index -237