3313

Informe OTDR (1550 nm (9 µm))

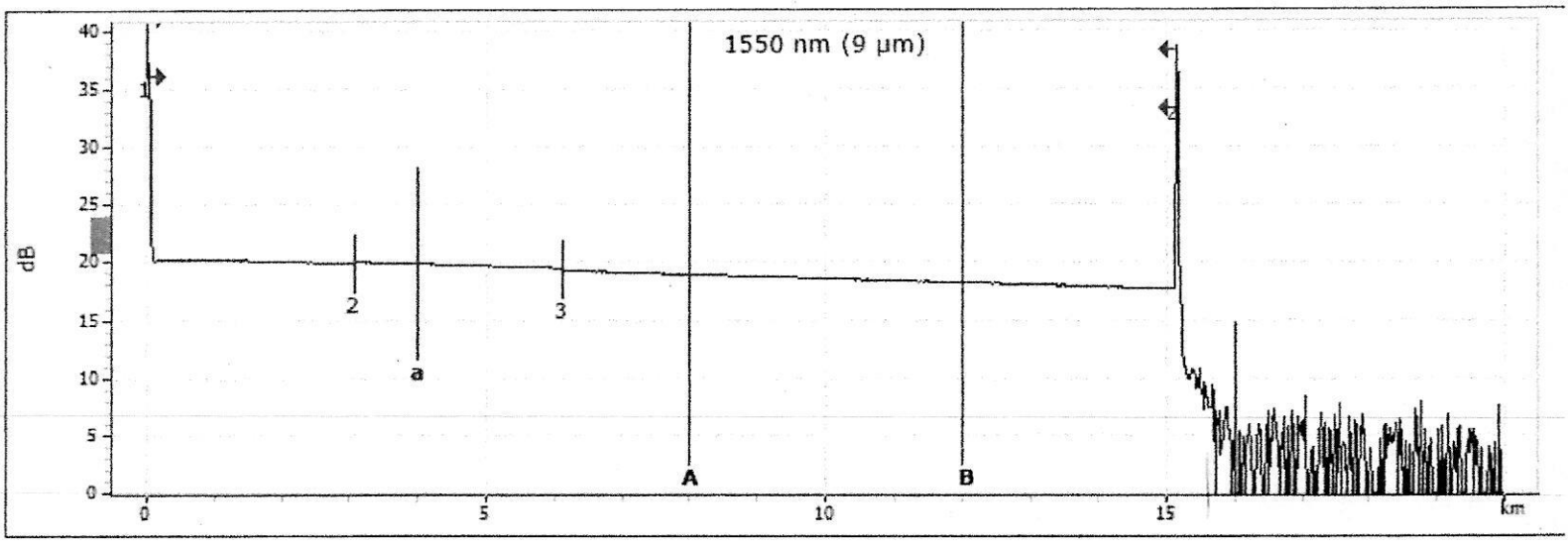
Información general

Nombre de archivo:	GOB B 27.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:21:15 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 27
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1404 km	Average loss:	0,176 dB/km	Injection level:	20,3 dB
Span loss:	2,660 dB	Average splice loss:	0,039 dB		
Span ORL:	<16,10 dB	Maximum splice loss:	0,200 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,845
A	7,9982	18,923
B	11,9974	18,187
b	15,9966	6,503

A-B LSA attenuation:	0,171 dB/km	A-B average loss:	0,184 dB/km
A-B LSA loss:	0,685 dB	4-point Event Loss:	-3,521 dB
A-B ORL:	36,62 dB	Maximum reflectance:	-70,0 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	> -24,5		0,000
Section		3,0722	0,452		0,147	0,452
Positive	2	3,0722	-0,122			0,330
Section		3,0584	0,565		0,185	0,895
Non-Reflective	3	6,1306	0,200			1,095
Section		9,0098	1,565		0,174	2,660
Reflective	4	15,1404	---	> -14,7		2,660

Macrobend

480

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3315

Informe OTDR (1550 nm (9 µm))

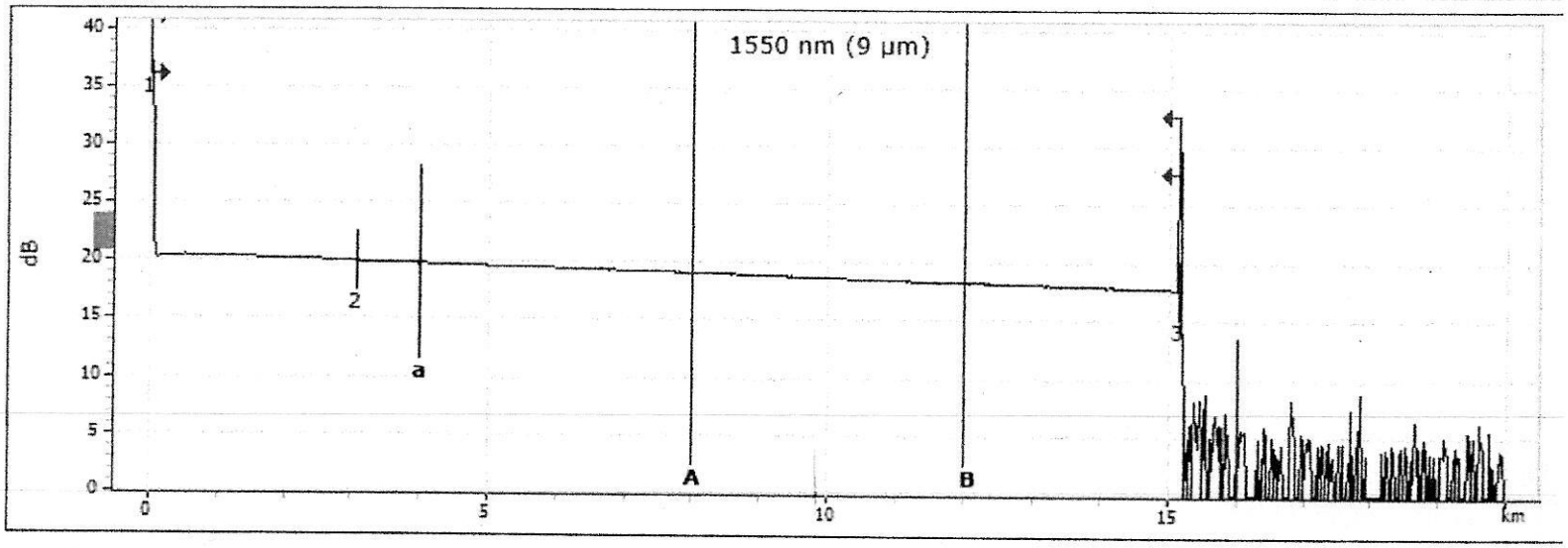
Información general

Nombre de archivo:	GOB B 29.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:22:24 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 29
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1401 km	Average loss:	0,180 dB/km	Injection level:	20,5 dB
Span loss:	2,726 dB	Average splice loss:	0,081 dB		
Span ORL:	<18,66 dB	Maximum splice loss:	0,081 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,832
A	7,9982	19,079
B	11,9974	18,379
b	15,9966	5,344

A-B LSA attenuation:	0,194 dB/km	A-B average loss:	0,175 dB/km
A-B LSA loss:	0,775 dB	4-point Event Loss:	-4,297 dB
A-B ORL:	36,67 dB	Maximum reflectance:	-73,6 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,5		0,000
Section		3,0706	0,440		0,143	0,440
Non-Reflective	2	3,0706	0,081			0,521
Section		12,0695	2,206		0,183	2,726
Reflective	3	15,1401	---	-29,4		2,726

Macrobend

EXFO

Firma: [signature]

Fecha: 12/04/2021

482

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3317

Informe OTDR (1550 nm (9 µm))

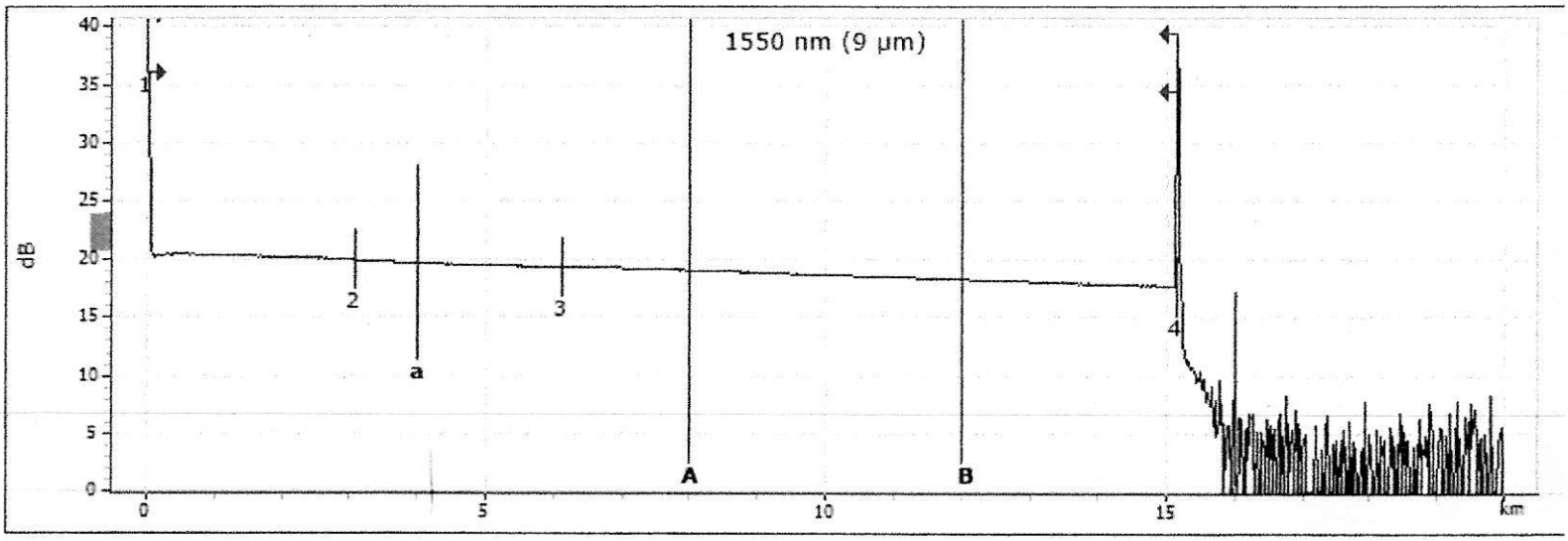
Información general

Nombre de archivo:	GOB B 30.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:23:46 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 30
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1394 km	Average loss:	0,185 dB/km	Injection level:	20,5 dB
Span loss:	2,797 dB	Average splice loss:	0,022 dB		
Span ORL:	<16,24 dB	Maximum splice loss:	0,177 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,686
A	7,9982	19,100
B	11,9974	18,321
b	15,9966	8,900

A-B LSA attenuation:	0,197 dB/km	A-B average loss:	0,195 dB/km
A-B LSA loss:	0,788 dB	4-point Event Loss:	-3,039 dB
A-B ORL:	36,68 dB	Maximum reflectance:	-75,7 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,6		0,000
Section		3,0664	0,443		0,144	0,443
Non-Reflective	2	3,0664	0,177			0,619
Section		3,0492	0,561		0,184	1,181
Positive	3	6,1156	-0,132			1,048
Section		9,0238	1,748		0,194	2,797
Reflective	4	15,1394	---	>-14,0		2,797

Macrobend

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

Informe OTDR (1550 nm (9 µm))

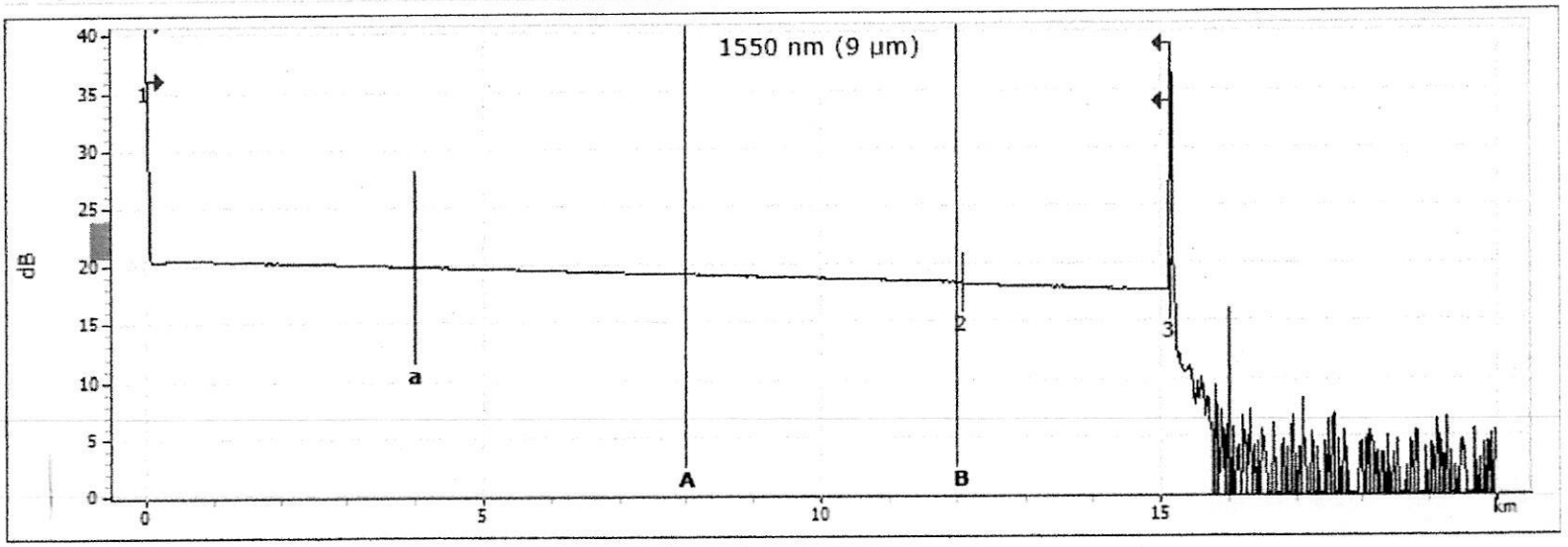
Información general

Nombre de archivo:	GOB B 31.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:24:19 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 31
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1401 km	Average loss:	0,195 dB/km	Injection level:	20,6 dB
Span loss:	2,950 dB	Average splice loss:	0,206 dB		
Span ORL:	<16,40 dB	Maximum splice loss:	0,206 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,891
A	7,9982	19,145
B	11,9974	18,410
b	15,9966	7,754

A-B LSA attenuation:	0,177 dB/km	A-B average loss:	0,184 dB/km
A-B LSA loss:	0,709 dB	4-point Event Loss:	-3,103 dB
A-B ORL:	36,60 dB	Maximum reflectance:	-70,1 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,6		0,000
Section		12,0823	2,176		0,180	2,176
Non-Reflective	2	12,0823	0,206			2,382
Section		3,0578	0,568		0,186	2,950
Reflective	3	15,1401	---	>-14,0		2,950

Macrobend

EXFO

Firma: Alejo tecnicosistemas Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3321

Informe OTDR (1550 nm (9 µm))

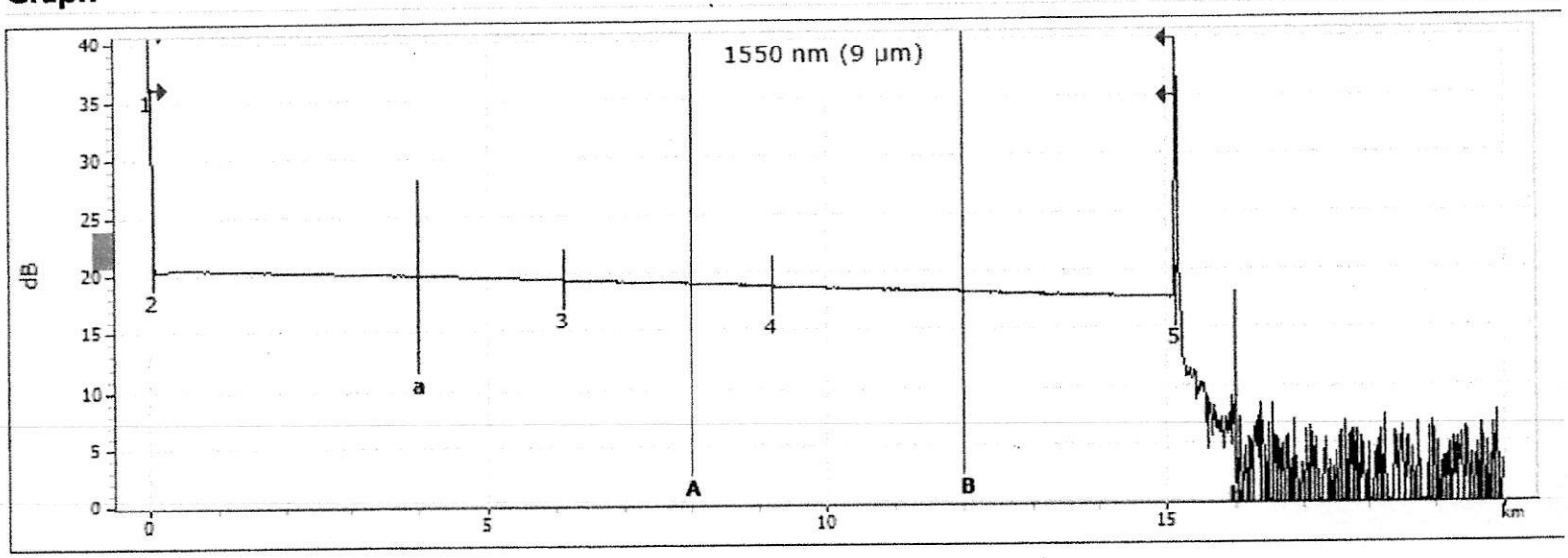
Información general

Nombre de archivo:	GOB B 32.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:25:35 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 32
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1391 km	Average loss:	0,504 dB/km	Injection level:	25,2 dB
Span loss:	7,633 dB	Average splice loss:	1,609 dB		
Span ORL:	<25,78 dB	Maximum splice loss:	4,693 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,910
A	7,9982	19,081
B	11,9974	18,275
b	15,9966	9,767

A-B LSA attenuation:	0,211 dB/km	A-B average loss:	0,201 dB/km
A-B LSA loss:	0,843 dB	4-point Event Loss:	-2,968 dB
A-B ORL:	36,74 dB	Maximum reflectance:	-71,6 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-28,5		0,000
Section		0,0587	0,012		0,207	0,012
Non-Reflective	2	0,0587	4,693			4,705
Section		6,0633	1,027		0,169	5,733
Non-Reflective	3	6,1220	0,067			5,799
Section		3,0814	0,566		0,184	6,365
Non-Reflective	4	9,2034	0,066			6,431
Section		5,9357	1,202		0,203	7,633
Reflective	5	15,1391	---	> 13,9		7,633

Macrobend

EXFO

Firma: Técnico sistemas Fecha: 12/04/2021

488

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B
IOR	1,468325
Backscatter (dB)	-81,87
Helix factor (%)	0,00
Splice loss detection threshold (dB)	0,020
Reflectance detection threshold (dB)	-72,0
End-of-fiber detection threshold (dB)	5,000

Macrobend Wavelengths	Macrobend Delta Loss (dB)

Informe OTDR (1550 nm (9 µm))

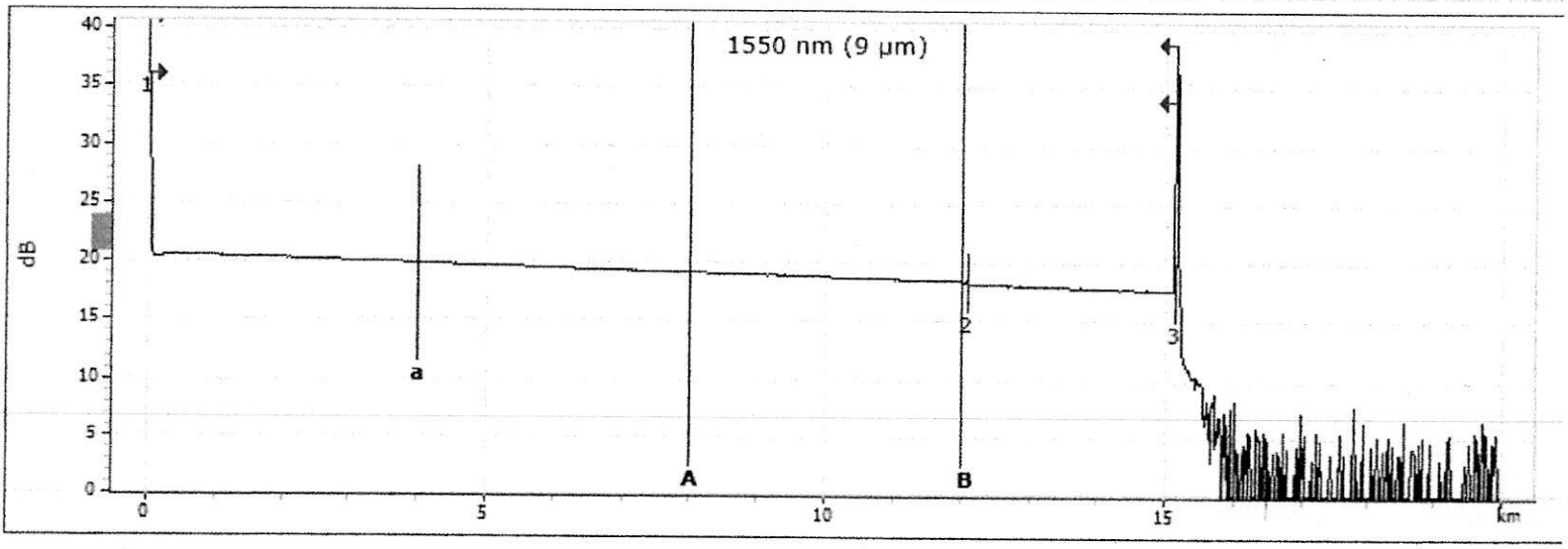
Información general

Nombre de archivo:	GOB B 33.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:26:10 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 33
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1401 km	Average loss:	0,194 dB/km	Injection level:	20,6 dB
Span loss:	2,942 dB	Average splice loss:	0,204 dB		
Span ORL:	<16,44 dB	Maximum splice loss:	0,204 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,917
A	7,9982	19,169
B	11,9974	18,435
b	15,9966	0,000

A-B LSA attenuation:	0,176 dB/km	A-B average loss:	0,184 dB/km
A-B LSA loss:	0,704 dB	4-point Event Loss:	-3,213 dB
A-B ORL:	36,64 dB	Maximum reflectance:	-70,8 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,6		0,000
Section		12,0893	2,177		0,180	2,177
Non-Reflective	2	12,0893	0,204			2,381
Section		3,0508	0,561		0,184	2,942
Reflective	3	15,1401	---	>-14,0		2,942

Macrobend

EXFO

Firma: [signature] tecnosistemas Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

Informe OTDR (1550 nm (9 µm))

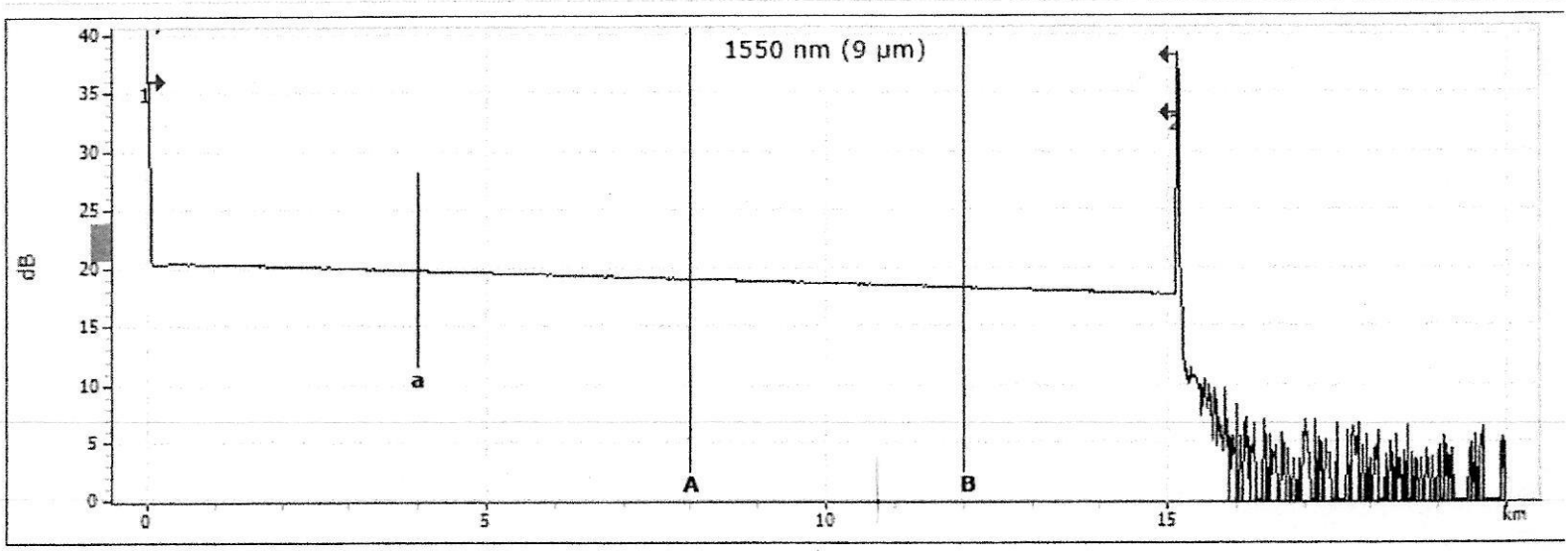
Información general

Nombre de archivo:	GOB B 34.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:26:44 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 34
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1404 km	Average loss:	0,186 dB/km	Injection level:	20,5 dB
Span loss:	2,822 dB	Average splice loss:	---		
Span ORL:	<16,35 dB	Maximum splice loss:	---		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,819
A	7,9982	19,012
B	11,9974	18,353
b	15,9966	0,000

A-B LSA attenuation:	0,175 dB/km	A-B average loss:	0,165 dB/km
A-B LSA loss:	0,701 dB	4-point Event Loss:	-3,221 dB
A-B ORL:	36,53 dB	Maximum reflectance:	-69,8 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,7		0,000
Section		15,1404	2,822		0,186	2,822
Reflective	2	15,1404	---	>-14,0		2,822

Macrobend

EXFO

Firma: Nuel Systems

Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3327

Informe OTDR (1550 nm (9 µm))

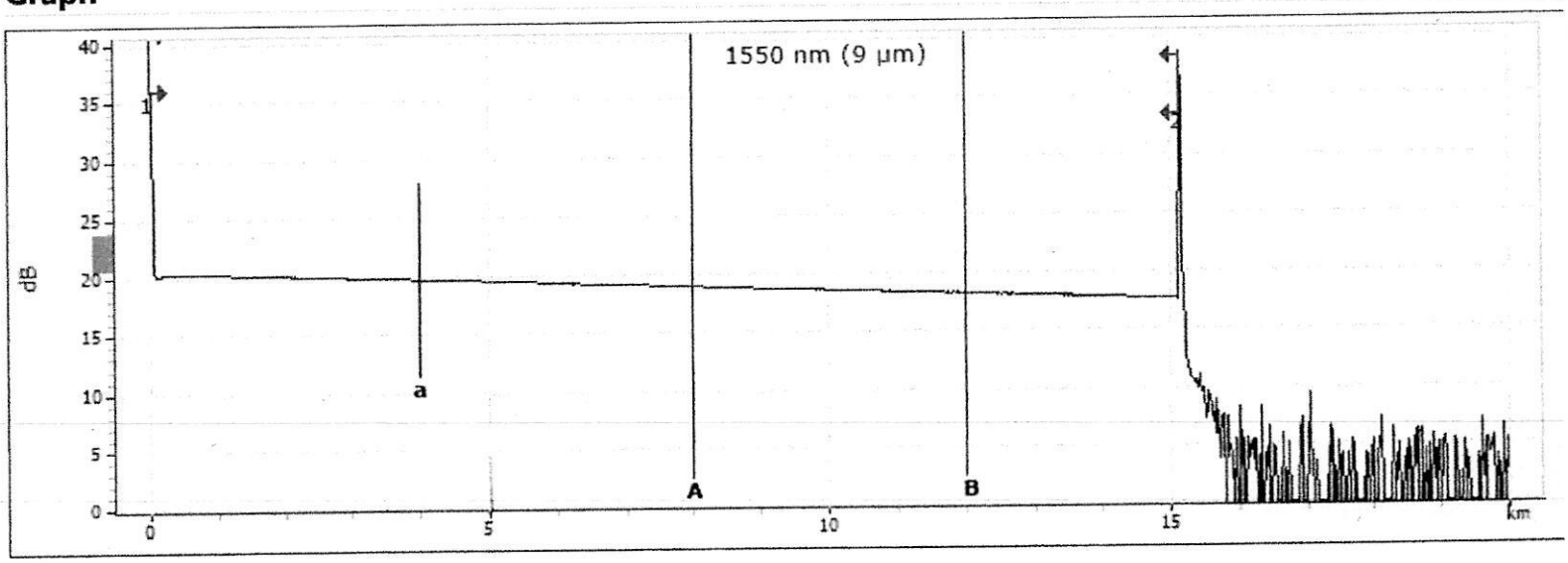
Información general

Nombre de archivo:	GOB B 35.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:27:17 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 35
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1404 km	Average loss:	0,188 dB/km	Injection level:	20,4 dB
Span loss:	2,839 dB	Average splice loss:	---		
Span ORL:	<16,23 dB	Maximum splice loss:	---		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,742
A	7,9982	18,974
B	11,9974	18,257
b	15,9966	0,000

A-B LSA attenuation:	0,178 dB/km	A-B average loss:	0,179 dB/km
A-B LSA loss:	0,713 dB	4-point Event Loss:	-3,341 dB
A-B ORL:	36,67 dB	Maximum reflectance:	-70,5 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,7		0,00
Section		15,1404	2,839		0,188	2,83
Reflective	2	15,1404	---	>-14,1		2,83

Macrobend

EXFO

Firma: fanco Systemas.

Fecha: 12/04/2021

494

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

Firma: [signature] técnico sistemas Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

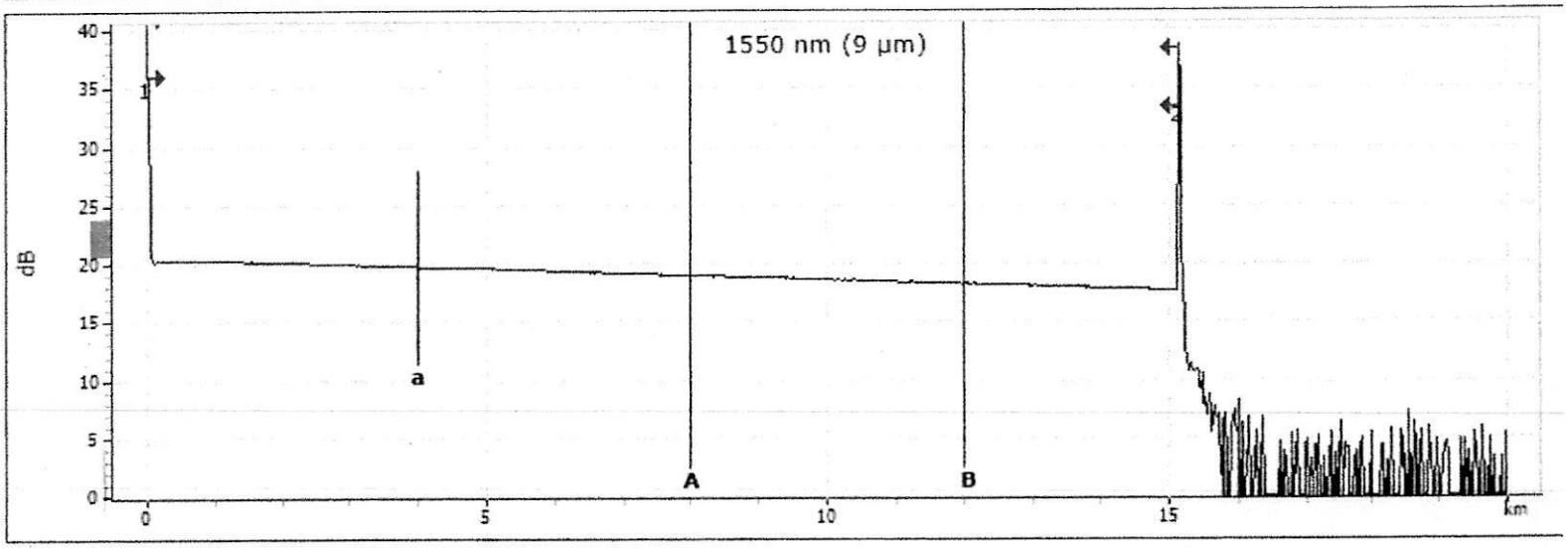
Información general

Nombre de archivo:	GOB B 36.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:28:35 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 36
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1404 km	Average loss:	0,185 dB/km	Injection level:	20,5 dB
Span loss:	2,806 dB	Average splice loss:	---		
Span ORL:	<16,23 dB	Maximum splice loss:	---		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,756
A	7,9982	18,995
B	11,9974	18,272
b	15,9966	0,000

A-B LSA attenuation:	0,182 dB/km	A-B average loss:	0,181 dB/km
A-B LSA loss:	0,726 dB	4-point Event Loss:	-3,384 dB
A-B ORL:	36,60 dB	Maximum reflectance:	-70,6 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,7		0,000
Section		15,1404	2,806		0,185	2,806
Reflective	2	15,1404	---	>-13,9		2,806

Macrobend

EXFO

Firma: Teonlw Sistemas

Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3331

Informe OTDR (1550 nm (9 µm))

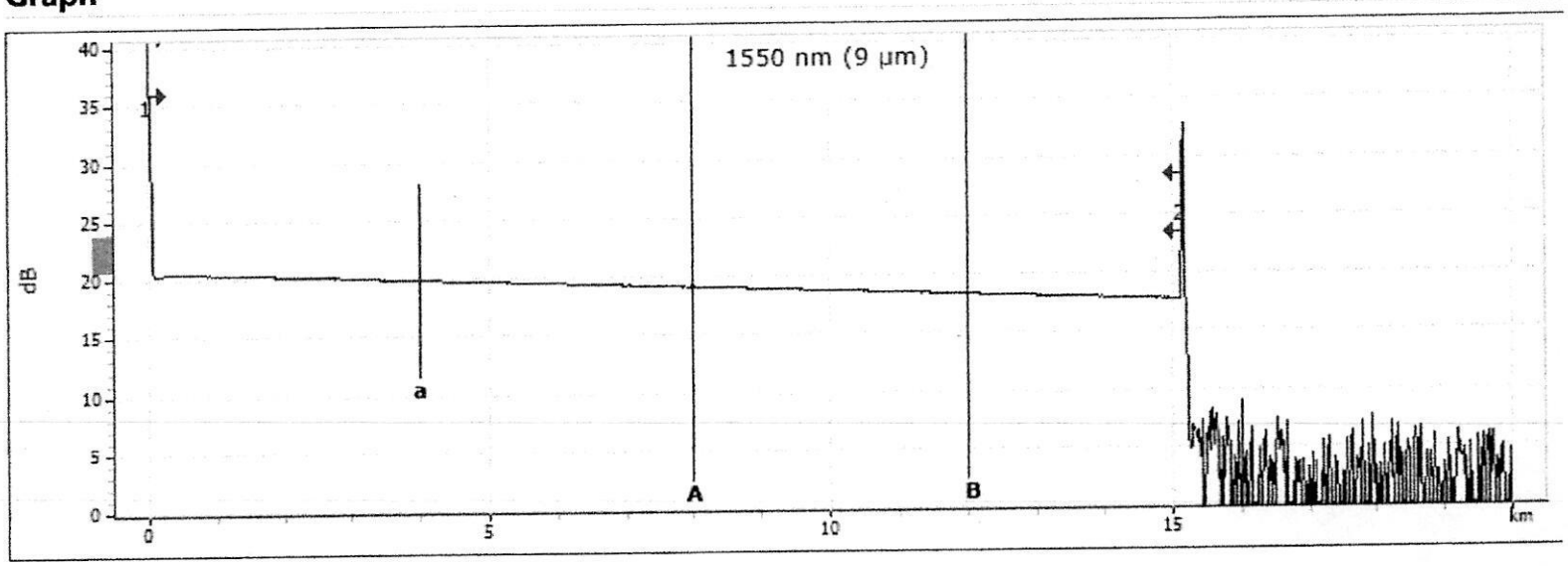
Información general

Nombre de archivo:	GOB B 37.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:29:15 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 37
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1465 km	Average loss:	0,189 dB/km	Injection level:	20,5 dB
Span loss:	2,856 dB	Average splice loss:	---		
Span ORL:	<18,92 dB	Maximum splice loss:	---		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,836
A	7,9982	19,079
B	11,9974	18,317
b	15,9966	0,602

A-B LSA attenuation:	0,188 dB/km	A-B average loss:	0,190 dB/km
A-B LSA loss:	0,753 dB	4-point Event Loss:	-3,957 dB
A-B ORL:	36,67 dB	Maximum reflectance:	-72,5 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,7		0,00
Section		15,1465	2,856		0,189	2,85
Reflective	2	15,1465	---	-27,2		2,85

Macrobend

EXFO

Firma: Técnico sistemas

Fecha: 12/04/2021

498

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3333

Informe OTDR (1550 nm (9 µm))

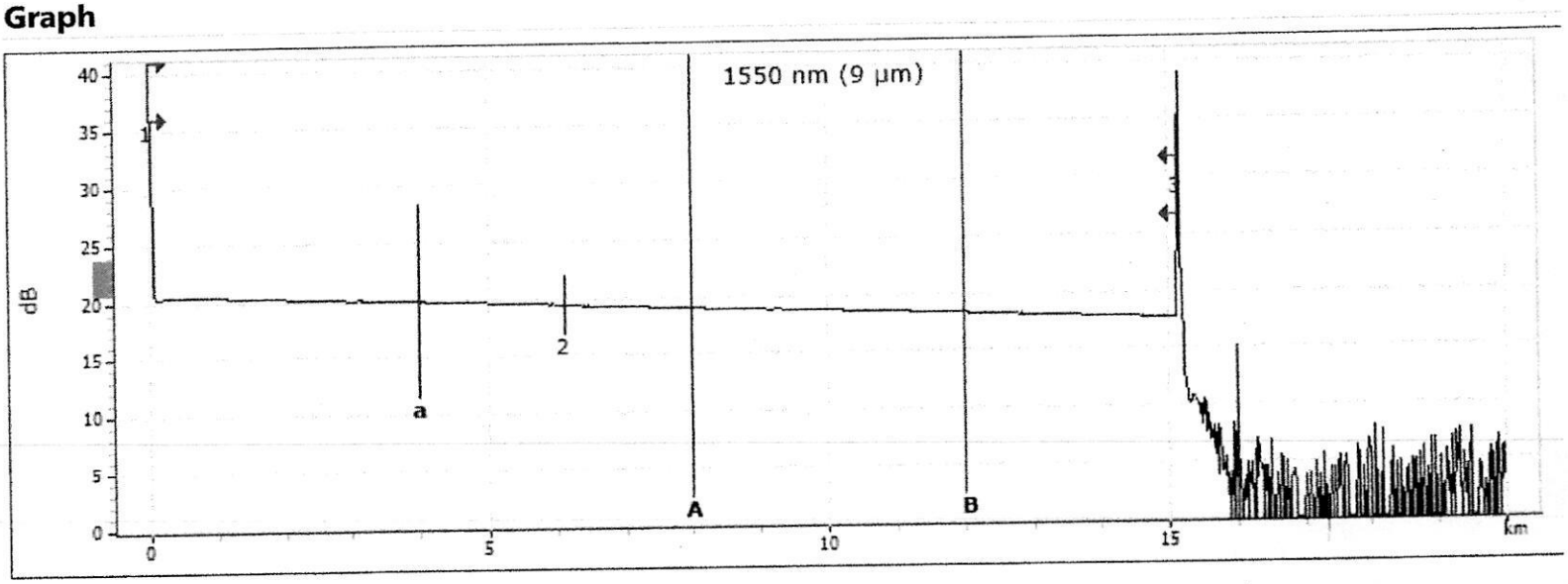
Información general

Nombre de archivo:	GOB B 38.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:29:57 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 38
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1461 km	Average loss:	0,182 dB/km	Injection level:	20,5 dB
Span loss:	2,763 dB	Average splice loss:	0,101 dB		
Span ORL:	<16,60 dB	Maximum splice loss:	0,101 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,872
A	7,9982	19,046
B	11,9974	18,355
b	15,9966	6,760

A-B LSA attenuation:	0,169 dB/km	A-B average loss:	0,173 dB/km
A-B LSA loss:	0,675 dB	4-point Event Loss:	-3,416 dB
A-B ORL:	36,58 dB	Maximum reflectance:	-73,5 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-24,8		0,00
Section		6,1220	1,014		0,166	1,01
Non-Reflective	2	6,1220	0,101			1,11
Section		9,0241	1,649		0,183	2,76
Reflective	3	15,1461	---	>-14,7		2,76

Macrobend

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B
IOR	1,468325
Backscatter (dB)	-81,87
Helix factor (%)	0,00
Splice loss detection threshold (dB)	0,020
Reflectance detection threshold (dB)	-72,0
End-of-fiber detection threshold (dB)	5,000

Macrobend Wavelengths	Macrobend Delta Loss (dB)

Informe OTDR (1550 nm (9 µm))

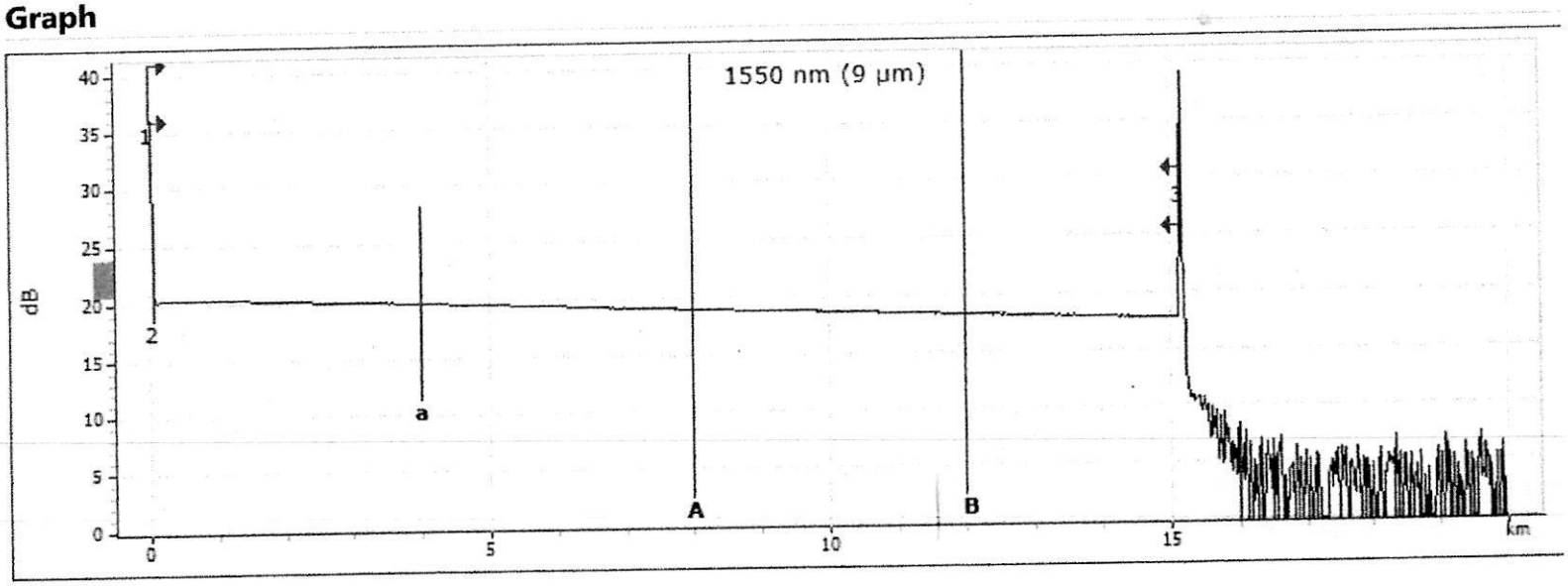
Información general

Nombre de archivo:	GOB B 39.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:30:30 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 39
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1471 km	Average loss:	0,458 dB/km	Injection level:	24,6 dB
Span loss:	6,939 dB	Average splice loss:	4,120 dB		
Span ORL:	<24,72 dB	Maximum splice loss:	4,120 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,849
A	7,9982	19,021
B	11,9974	18,276
b	15,9966	0,000

A-B LSA attenuation:	0,167 dB/km	A-B average loss:	0,186 dB/km
A-B LSA loss:	0,669 dB	4-point Event Loss:	-3,157 dB
A-B ORL:	36,57 dB	Maximum reflectance:	-71,0 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-27,3		0,00
Section		0,0447	0,067		1,500	0,06
Non-Reflective	2	0,0447	4,120			4,18
Section		15,1024	2,753		0,182	6,93
Reflective	3	15,1471	---	>-14,5		6,93

Macrobend

EXFO

Firma: Kenko sistem Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3337

Informe OTDR (1550 nm (9 µm))

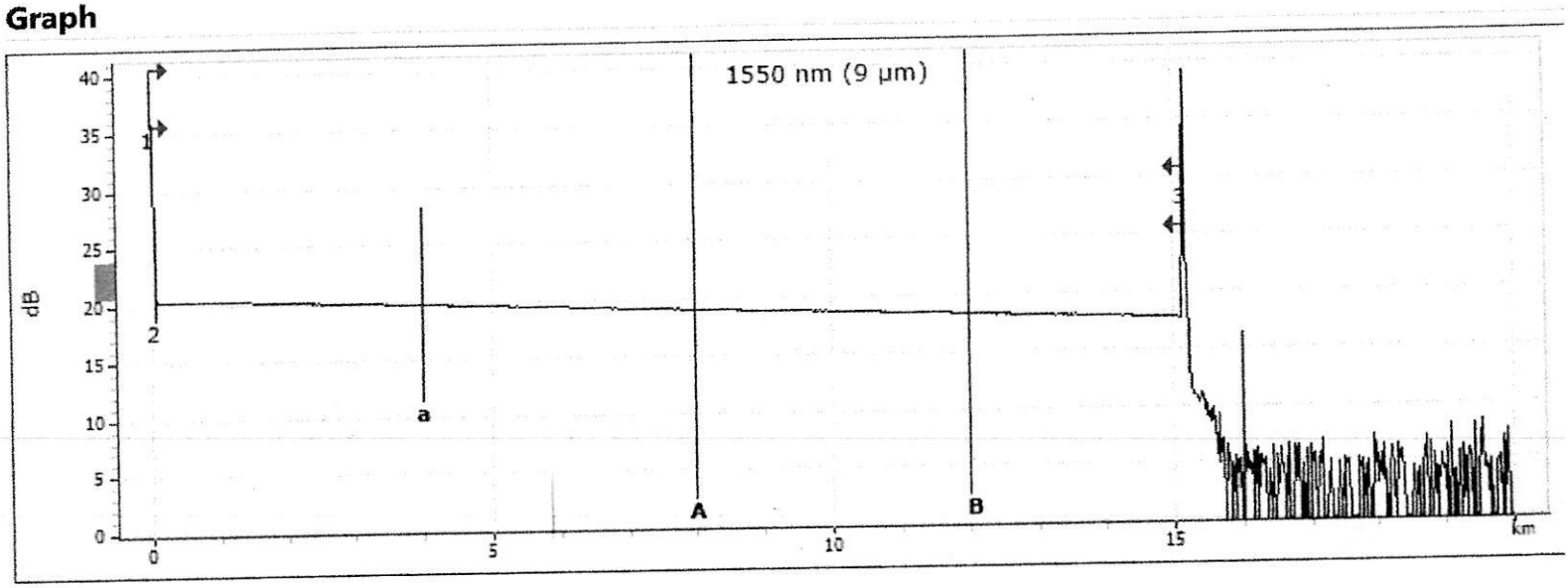
Información general

Nombre de archivo:	GOB B 40.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:32:05 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 40
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1468 km	Average loss:	0,458 dB/km	Injection level:	24,6 dB
Span loss:	6,930 dB	Average splice loss:	4,112 dB		
Span ORL:	<24,96 dB	Maximum splice loss:	4,112 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,869
A	7,9982	19,066
B	11,9974	18,364
b	15,9966	7,925

A-B LSA attenuation:	0,168 dB/km	A-B average loss:	0,176 dB/km
A-B LSA loss:	0,673 dB	4-point Event Loss:	-3,449 dB
A-B ORL:	36,65 dB	Maximum reflectance:	-71,6 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-27,8		0,0
Section		0,0443	0,067		1,500	0,0
Non-Reflective	2	0,0443	4,112			4,1
Section		15,1024	2,752		0,182	6,9
Reflective	3	15,1468	---	>-14,5		6,9

Macrobend

EXFO

Firma: Helio Tecnosystems Fecha: 12/04/2021

504

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3339

Informe OTDR (1550 nm (9 µm))

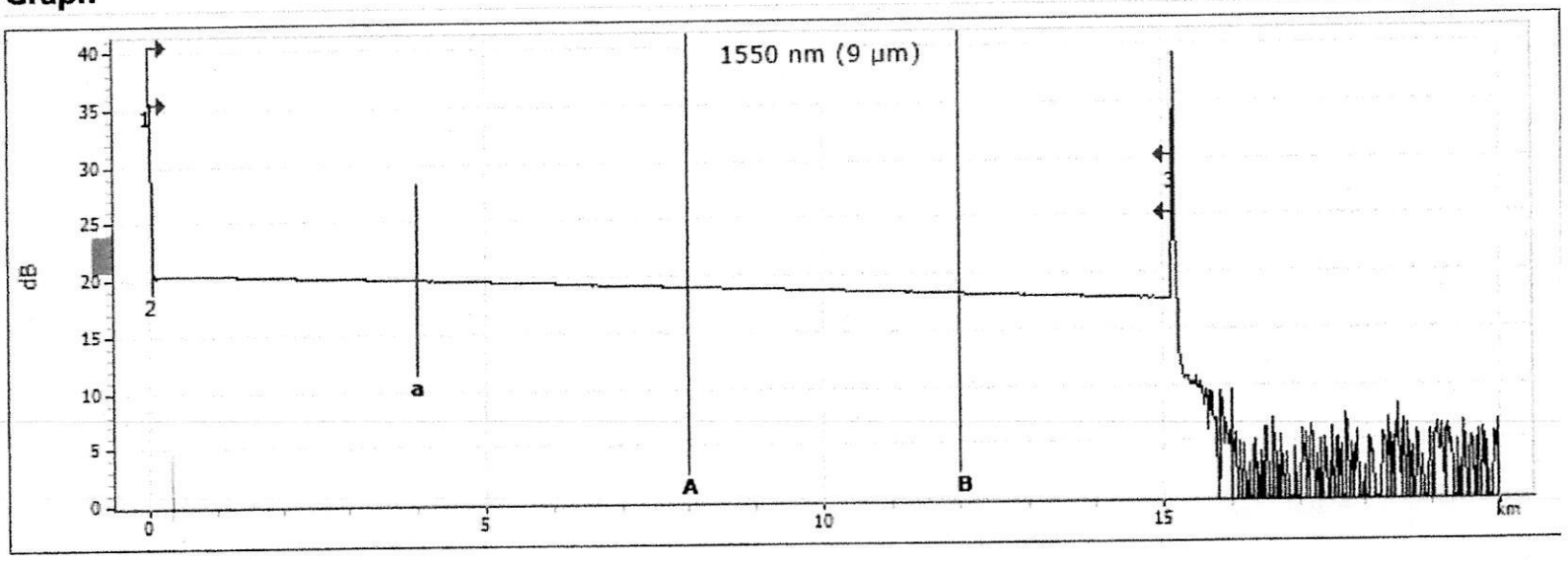
Información general

Nombre de archivo:	GOB B 41.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:32:38 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 41
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1477 km	Average loss:	0,461 dB/km	Injection level:	24,5 dB
Span loss:	6,981 dB	Average splice loss:	4,095 dB		
Span ORL:	<25,07 dB	Maximum splice loss:	4,095 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,775
A	7,9982	19,029
B	11,9974	18,298
b	15,9966	1,243

A-B LSA attenuation:	0,182 dB/km	A-B average loss:	0,183 dB/km
A-B LSA loss:	0,726 dB	4-point Event Loss:	-3,072 dB
A-B ORL:	36,70 dB	Maximum reflectance:	-70,9 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-28,1		0,000
Section		0,0443	0,067		1,500	0,067
Non-Reflective	2	0,0443	4,095			4,162
Section		15,1034	2,819		0,187	6,981
Reflective	3	15,1477	---	>-14,3		6,981

Macrobend

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3347

Informe OTDR (1550 nm (9 µm))

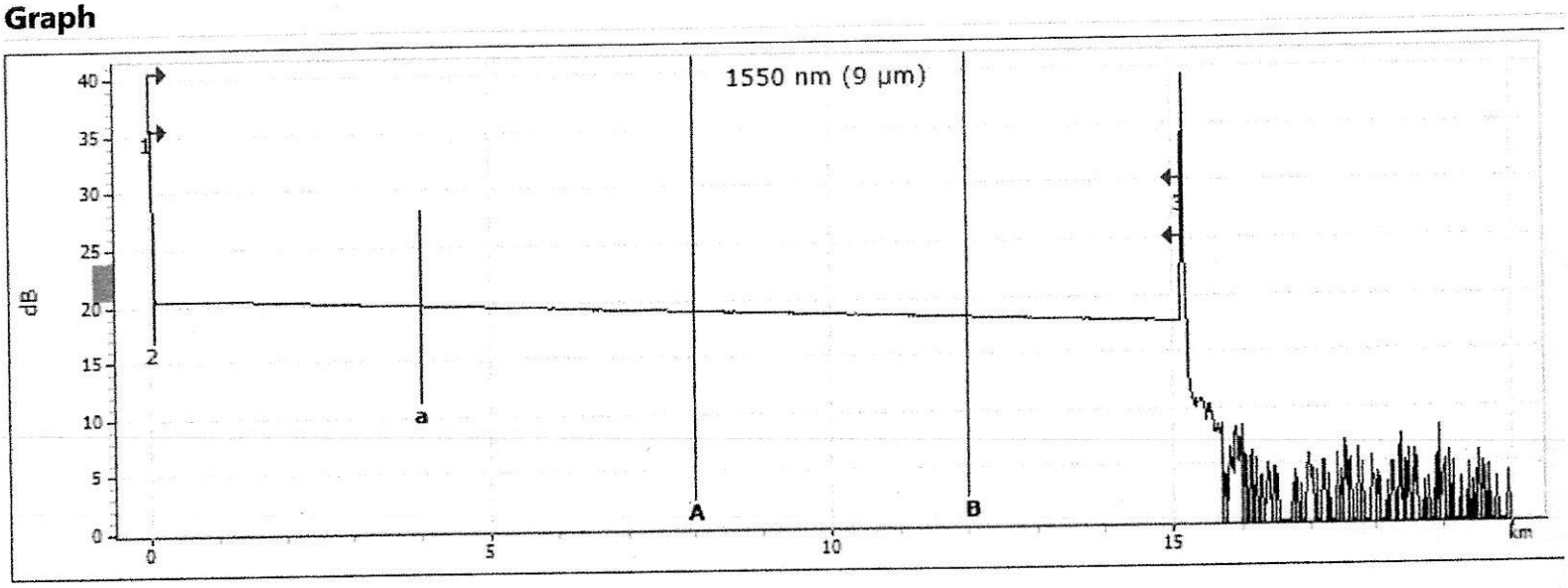
Información general

Nombre de archivo:	GOB B 42.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:33:09 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 42
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1477 km	Average loss:	0,420 dB/km	Injection level:	24,0 dB
Span loss:	6,364 dB	Average splice loss:	3,429 dB		
Span ORL:	<23,91 dB	Maximum splice loss:	3,429 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,833
A	7,9982	19,062
B	11,9974	18,364
b	15,9966	0,000

A-B LSA attenuation:	0,186 dB/km	A-B average loss:	0,174 dB/km
A-B LSA loss:	0,743 dB	4-point Event Loss:	-3,160 dB
A-B ORL:	36,60 dB	Maximum reflectance:	-71,6 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-27,3		0,00
Section		0,0469	0,070		1,500	0,07
Non-Reflective	2	0,0469	3,429			3,49
Section		15,1008	2,865		0,190	6,36
Reflective	3	15,1477	---	>-14,1		6,36

Macrobend

EXFO

Firma: Fecha: 12/04/2021

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Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3343

Informe OTDR (1550 nm (9 µm))

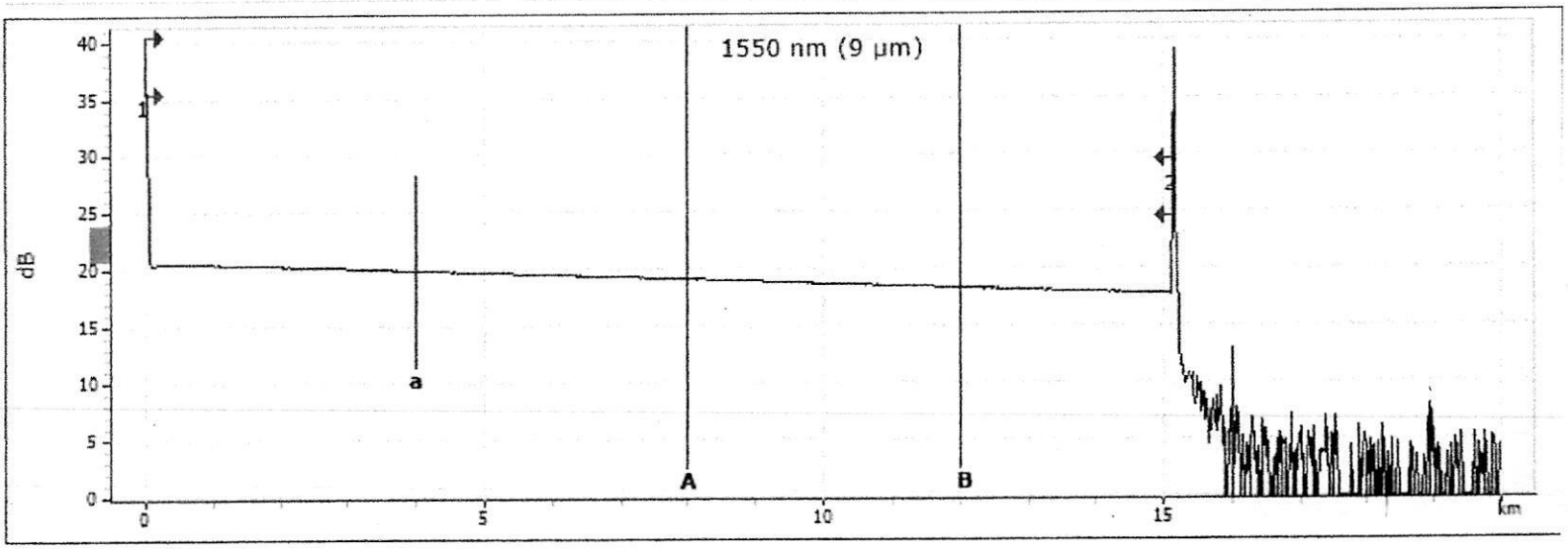
Información general

Nombre de archivo:	GOB B 43.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:33:40 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 43
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1480 km	Average loss:	0,190 dB/km	Injection level:	20,6 dB
Span loss:	2,882 dB	Average splice loss:	---		
Span ORL:	<17,32 dB	Maximum splice loss:	---		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,856
A	7,9982	19,119
B	11,9974	18,304
b	15,9966	4,554

A-B LSA attenuation:	0,199 dB/km	A-B average loss:	0,204 dB/km
A-B LSA loss:	0,798 dB	4-point Event Loss:	-3,135 dB
A-B ORL:	36,72 dB	Maximum reflectance:	-71,8 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-26,0		0,000
Section		15,1480	2,882		0,190	2,882
Reflective	2	15,1480	---	>-14,5		2,882

Macrobend

EXFO

Firma: Fibra Sistemas Fecha: 12/04/2021

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3345

Informe OTDR (1550 nm (9 µm))

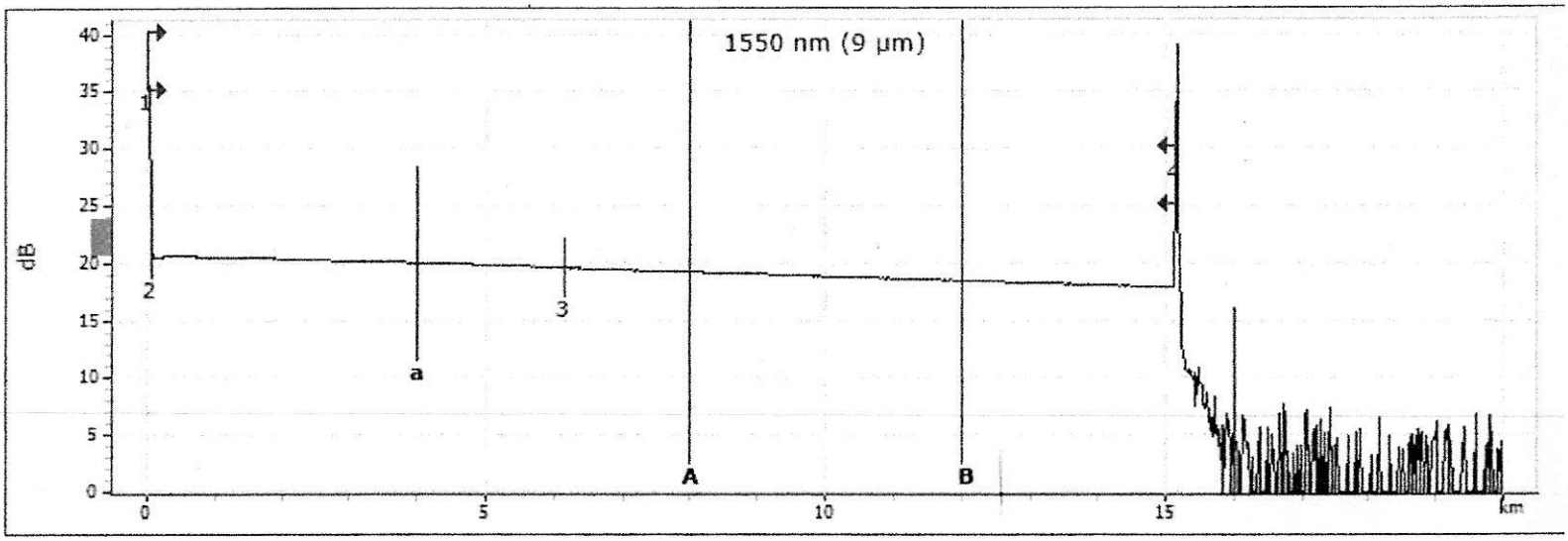
Información general

Nombre de archivo:	GOB B 44.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:34:11 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 44
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1477 km	Average loss:	0,443 dB/km	Injection level:	24,6 dB
Span loss:	6,717 dB	Average splice loss:	1,980 dB		
Span ORL:	<25,45 dB	Maximum splice loss:	3,887 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	20,013
A	7,9982	19,253
B	11,9974	18,495
b	15,9966	7,766

A-B LSA attenuation:	0,187 dB/km	A-B average loss:	0,189 dB/km
A-B LSA loss:	0,746 dB	4-point Event Loss:	-3,473 dB
A-B ORL:	36,68 dB	Maximum reflectance:	-70,9 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	>-28,8		0,000
Section		0,0584	0,088		1,500	0,088
Non-Reflective	2	0,0584	3,887			3,975
Section		6,0812	0,997		0,164	4,971
Non-Reflective	3	6,1395	0,073			5,044
Section		9,0082	1,673		0,186	6,717
Reflective	4	15,1477	---	>-15,0		6,717

Macrobend

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B
IOR	1,468325
Backscatter (dB)	-81,87
Helix factor (%)	0,00
Splice loss detection threshold (dB)	0,020
Reflectance detection threshold (dB)	-72,0
End-of-fiber detection threshold (dB)	5,000

Macrobend Wavelengths	Macrobend Delta Loss (dB)

3347

Informe OTDR (1550 nm (9 µm))

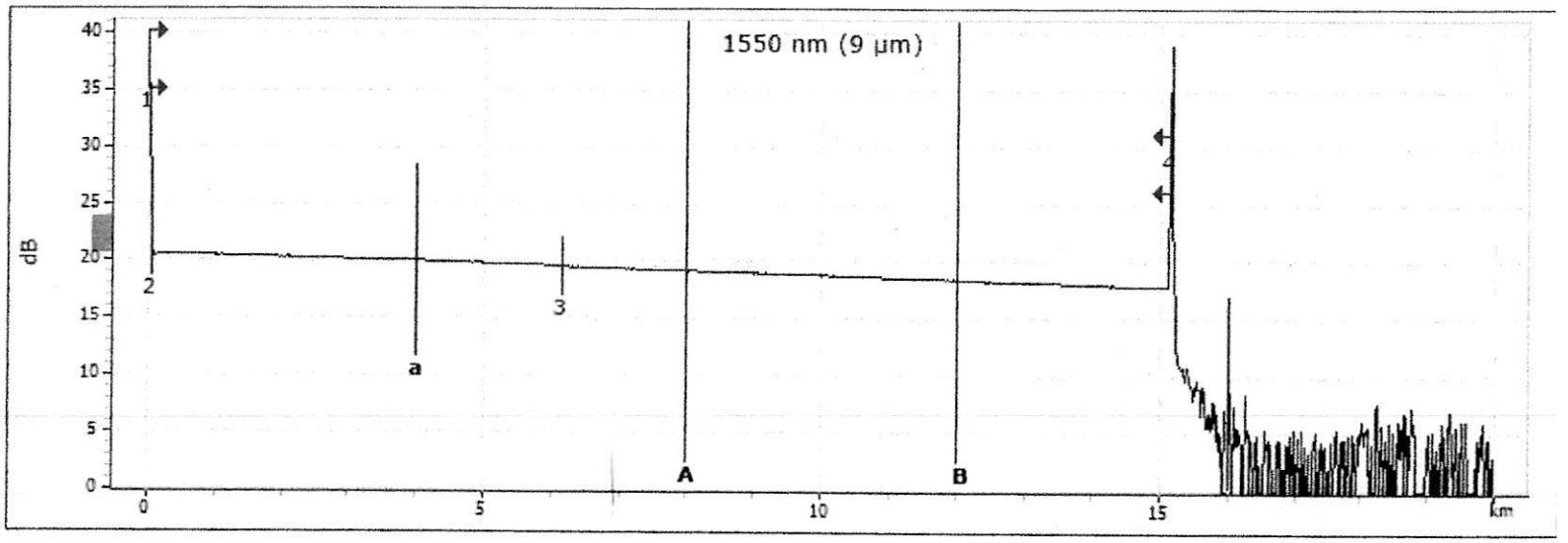
Información general

Nombre de archivo:	GOB B 45.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:34:40 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 45
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1468 km	Average loss:	0,486 dB/km	Injection level:	25,1 dB
Span loss:	7,356 dB	Average splice loss:	2,284 dB		
Span ORL:	<26,83 dB	Maximum splice loss:	4,458 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	20,017
A	7,9982	19,143
B	11,9974	18,488
b	15,9966	8,660

A-B LSA attenuation:	0,177 dB/km	A-B average loss:	0,164 dB/km
A-B LSA loss:	0,707 dB	4-point Event Loss:	-3,321 dB
A-B ORL:	36,54 dB	Maximum reflectance:	-71,3 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	-30,3		0,000
Section		0,0587	0,088		1,500	0,088
Non-Reflective	2	0,0587	4,458			4,546
Section		6,0898	1,010		0,166	5,556
Non-Reflective	3	6,1485	0,110			5,666
Section		8,9983	1,690		0,188	7,356
Reflective	4	15,1468	---	> -15,0		7,356

Macrobend

EXFO

Firma: Hermes Sistemas

Fecha: 12/04/2021

5 14

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

3349

Informe OTDR (1550 nm (9 µm))

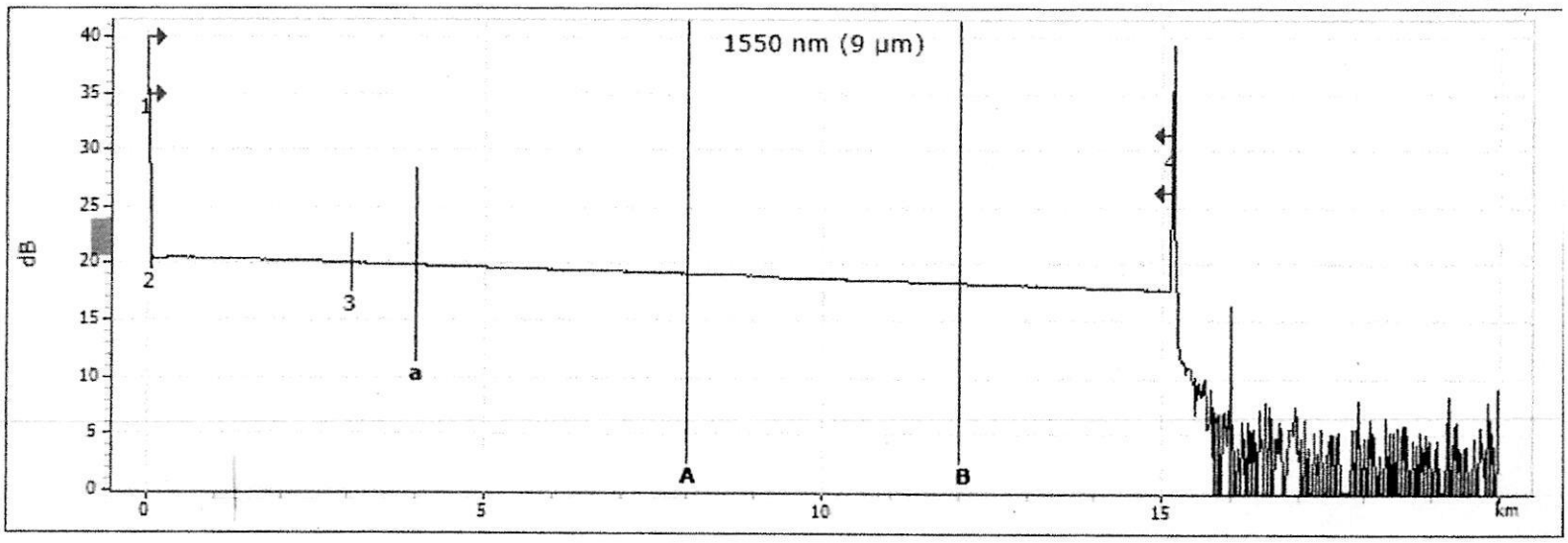
Información general

Nombre de archivo:	GOB B 46.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:35:16 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 46
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1468 km	Average loss:	0,468 dB/km	Injection level:	24,7 dB
Span loss:	7,090 dB	Average splice loss:	2,122 dB		
Span ORL:	<25,85 dB	Maximum splice loss:	4,156 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,853
A	7,9982	19,131
B	11,9974	18,382
b	15,9966	7,859

A-B LSA attenuation:	0,203 dB/km	A-B average loss:	0,187 dB/km
A-B LSA loss:	0,810 dB	4-point Event Loss:	-3,086 dB
A-B ORL:	36,71 dB	Maximum reflectance:	-71,8 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	-29,9		0,000
Section		0,0437	0,066		1,500	0,066
Non-Reflective	2	0,0437	4,156			4,222
Section		3,0074	0,465		0,155	4,687
Non-Reflective	3	3,0511	0,088			4,775
Section		12,0957	2,315		0,191	7,090
Reflective	4	15,1468	---	> -14,1		7,090

Macrobend

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B
IOR	1,468325
Backscatter (dB)	-81,87
Helix factor (%)	0,00
Splice loss detection threshold (dB)	0,020
Reflectance detection threshold (dB)	-72,0
End-of-fiber detection threshold (dB)	5,000

Macrobend Wavelengths	Macrobend Delta Loss (dB)

3351

Informe OTDR (1550 nm (9 µm))

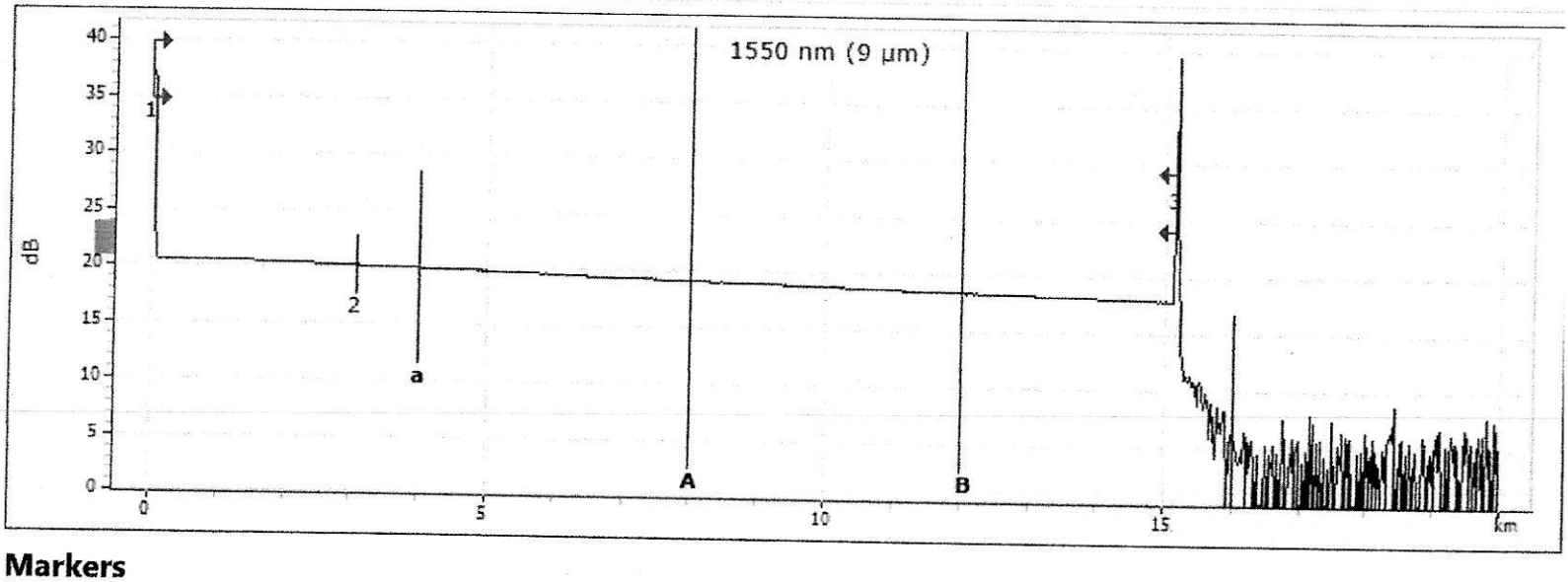
Información general

Nombre de archivo:	GOB B 47.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:35:59 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 47
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1487 km	Average loss:	0,184 dB/km	Injection level:	20,7 dB
Span loss:	2,788 dB	Average splice loss:	0,075 dB		
Span ORL:	<17,00 dB	Maximum splice loss:	0,075 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	19,952
A	7,9982	19,132
B	11,9974	18,413
b	15,9966	8,394

A-B LSA attenuation:	0,178 dB/km	A-B average loss:	0,180 dB/km
A-B LSA loss:	0,712 dB	4-point Event Loss:	-3,068 dB
A-B ORL:	36,60 dB	Maximum reflectance:	-71,8 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	-27,3		0,000
Section		3,0801	0,464		0,151	0,464
Non-Reflective	2	3,0801	0,075			0,538
Section		12,0685	2,250		0,186	2,788
Reflective	3	15,1487	---	-14,0		2,788

Macrobend

EXFO

Firma: Heather Sisters Fecha: 12/04/2021

518

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B
IOR	1,468325
Backscatter (dB)	-81,87
Helix factor (%)	0,00
Splice loss detection threshold (dB)	0,020
Reflectance detection threshold (dB)	-72,0
End-of-fiber detection threshold (dB)	5,000

Macrobend Wavelengths	Macrobend Delta Loss (dB)

3353

Informe OTDR (1550 nm (9 µm))

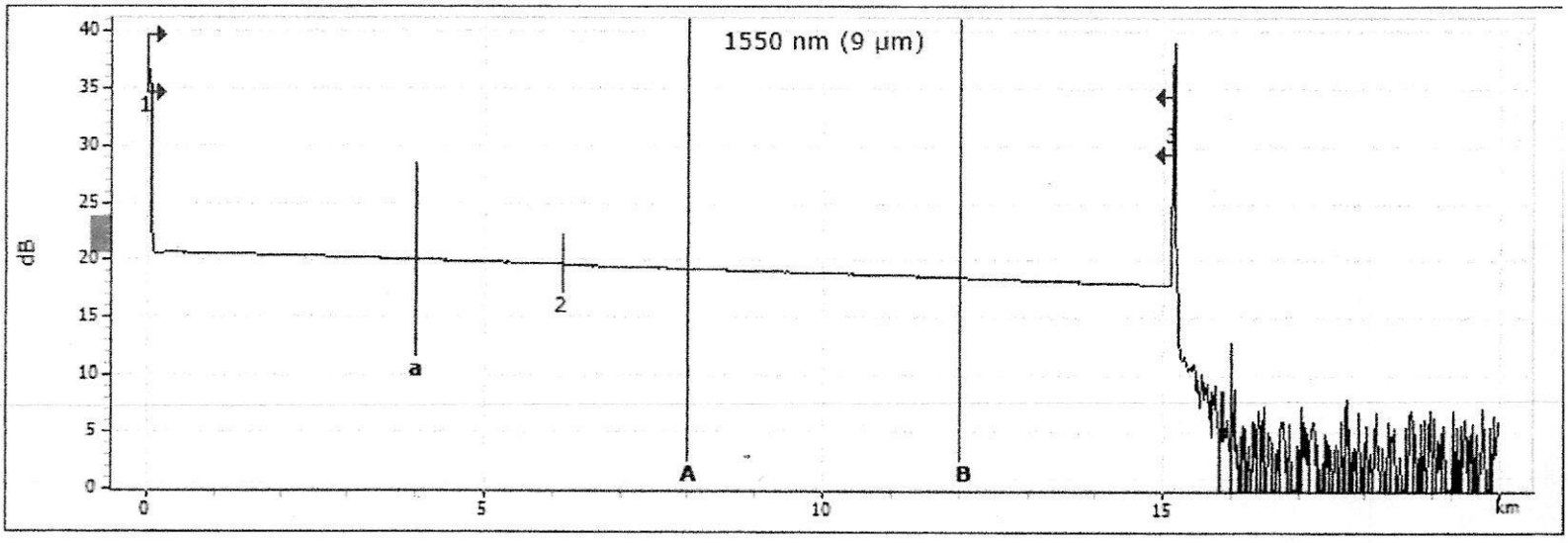
Información general

Nombre de archivo:	GOB B 48.SOR		
Fecha de la prueba:	12/04/2021	Cliente:	
Hora de la prueba:	12:36:35 p. m.	Empresa:	
ID de cable:		ID de fibra:	GOB B 48
ID de trabajo:	PRUEBAS		
Comentarios:			

Results

Span length:	15,1442 km	Average loss:	0,190 dB/km	Injection level:	20,8 dB
Span loss:	2,874 dB	Average splice loss:	0,090 dB		
Span ORL:	<17,60 dB	Maximum splice loss:	0,090 dB		

Graph



Markers

Marker	Position (km)	Value (dB)
a	3,9989	20,064
A	7,9982	19,286
B	11,9974	18,530
b	15,9966	4,494

A-B LSA attenuation:	0,181 dB/km	A-B average loss:	0,189 dB/km
A-B LSA loss:	0,723 dB	4-point Event Loss:	-3,167 dB
A-B ORL:	36,67 dB	Maximum reflectance:	-70,6 dB

Event Table

Type	No.	Pos./Length (km)	Loss (dB)	Reflectance (dB)	Attenuation (dB/km)	Cumulative (dB)
First Connector	1	0,0000	---	-27,6		0,000
Section		6,1392	1,073		0,175	1,073
Non-Reflective	2	6,1392	0,090			1,164
Section		9,0050	1,711		0,190	2,874
Reflective	3	15,1442	---	>-14,0		2,874

Macrobend

120

Informe OTDR (1550 nm (9 µm))

Test Parameters

	A → B
Wavelength (nm)	1550 nm (9 µm)
Range (km)	20,0000
Pulse (ns)	275
Duration (s)	15
High-resolution	Yes

Test Settings

	A → B	Macrobend Wavelengths	Macrobend Delta Loss (dB)
IOR	1,468325		
Backscatter (dB)	-81,87		
Helix factor (%)	0,00		
Splice loss detection threshold (dB)	0,020		
Reflectance detection threshold (dB)	-72,0		
End-of-fiber detection threshold (dB)	5,000		

ANEXO TÉCNICO No. 22. FICHAS TÉCNICAS MES 3 Y MANUAL DEL FUNCIONAMIENTO DE EQUIPOS INSTALADOS.

Domicilio: Calle 7 N° 2-27 / Cel. 3204863868/ E-mail: cctvcasanare@gmail.com

HIKVISION

HikCentral Professional License

Thank you for choosing HikCentral Professional.

License Performance

Activation Code	12b3-4cac-d3a3-4f1e-8c53-3d50-e281-963c	
Purchase Order:	C2104002907 license	
License Type	Basal	
Expiry Date	2099-12-31	
Video Surveillance System	128 Channels	
Access Control System	0 Doors	
Indoor Stations	0 Indoor Stations	
ANPR	0 Cameras	
Facial Recognition	0 Cameras	
IP Speaker	0 Units	
Thermal Imaging Report	0 Cameras	
Radar	0 Radars	
Dock Station	0 Dockstation	
Remote Site Management	0 Sites	
Alarm Inputs*	0 Channels	
Upgrade-Expiry Period	3 Years	
Application	Smart Wall	NO
	Entrance & Exit System	NO
	Attendance	NO
	Elevator Control	NO
	Visitor Management	NO
	Video Intercom System	NO
	UVSS	NO
	Temperature & Mask	NO
	Data Reporting	NO
Addition	Open API	YES
	EZVIZ DDNS	NO
	Server Distribute	NO
	GIS MAP	YES
	ONVIF	YES
	Virtual Machine	YES

* Alarm inputs only refer to the channels managed by security control devices, excluding the ones of network cameras and NVRs

* The Licenses are compatible with HikCentral Professional V1.7.1and later versions

* Stream Media Server is not supported by Virtual Machine

HIKVISION

* The SUP starts from the day when License is activated

Download links for software:

- HikCentral Professional v1.7.1 Client and Server Software package download LINK
- HikCentral Professional v1.7.1 Client only Software package download LINK

Software Requirements and Hardware performance

- For recommended Server and Client configuration and expected performance please refer to following document: LINK

Recommendations for cybersecurity:

- Block unauthorized computers or devices to access the local network, and forbid unauthorized connection to untrusted network on rightful computers.
- In case some services must be exposed to an untrusted network, build a Demilitarized Zone (DMZ) to add an additional layer of security to the Local Area Network (LAN), so that an external attacker only has access to the services in the DMZ, rather than any device of the LAN.
- Create VLANs to divide the network into different broadcast domains, and apply strict security strategies for important VLANs.
- Use VPN for remote access, which interconnects remote, and mostly geographically separate, networks through public communication infrastructures, such as the Internet.
- Choose proper security technologies to enhance the network safety, such as intrusion detection system (IDS), ACL (Access Control List), 802.1x, RADIUS authentication and Security Auditing.
- Adopt Domain Control on Windows Server Systems, whereby computer users are granted to have a number of necessary permissions.

Attention

To ensure the proper use of your license, please subject to the following items:

- The license can be applied to activate only one Hikvision SYS platform at a time.
- The license should be kept in a safe place. Hikvision shall not provide replacement for any loss of the license.
- The Upgrade license can only be applied on platform of standard versions (customized versions excluded)
- NEW: Due to the upgrade of License system, if the version of your HikCentral Professional is V1.5.0 or earlier, you need to upgrade your software or install a patch following professional instructions. Instruction and patch installation package download LINK

HIKVISION

HikCentral Professional License

Thank you for choosing HikCentral Professional.

License Performance

Activation Code	d029-f7b9-35ad-4d4a-8f75-e006-35db-7508	
Purchase Order:	C2104002306	
License Type	Expanded	
Expiry Date	2099-12-31	
Video Surveillance System	0 Channels	
Access Control System	0 Doors	
Indoor Stations	0 Indoor Stations	
ANPR	0 Cameras	
Facial Recognition	0 Cameras	
IP Speaker	0 Units	
Thermal Imaging Report	0 Cameras	
Radar	0 Radars	
Dock Station	0 Dockstation	
Remote Site Management	0 Sites	
Alarm Inputs*	0 Channels	
Upgrade-Expiry Period	0 Years	
Application	Smart Wall	YES
	Entrance & Exit System	NO
	Attendance	NO
	Elevator Control	NO
	Visitor Management	NO
	Video Intercom System	NO
	UVSS	NO
	Temperature & Mask	NO
	Data Reporting	NO
Addition	Open API	NO
	EZVIZ DDNS	NO
	Server Distribute	NO
	GIS MAP	NO
	ONVIF	YES
	Virtual Machine	YES

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To ensure the proper use of your license, please subject to the following items:

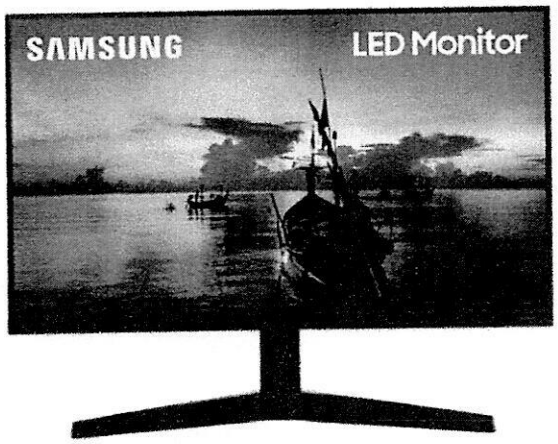
- The license can be applied to activate only one Hikvision SYS platform at a time.
- The license should be kept in a safe place. Hikvision shall not provide replacement for any loss of the license.
- The Upgrade license can only be applied on platform of standard versions (customized versions excluded)
- NEW: Due to the upgrade of License system, if the version of your HikCentral Professional is V1.5.0 or earlier, you need to upgrade your software or install a patch following professional instructions. Instruction and patch installation package download LINK

3360

Monitor LED de 24" con diseño sin bordes

Dónde comprar

Características Especificaciones Reseña Soporte Comparar



Monitor LED de 24" con diseño sin bordes

LF24T350FHLXZP

★★★★★ 5.0 (2) Escriba una reseña

- Vista totalmente expansiva
- Podrás ver desde cualquier ángulo
- Acción sincronizada

Elige tu size

24"

Monitor LED de 24" con diseño sin bordes

24"

Dónde comprar

Diseño sin bordes

IPS

AMD FreeSync

Frecuencia de actualización de 75 Hz

3361

Pantalla

Tamaño de pantalla (clase)
24

Tamaño de pantalla activa (HxV) (mm)
527.04 x 296.46

Tipo de panel
IPS

Brillo (mín.)
200cd/m²

Relación de contraste dinámico
Mega

Tiempo de respuesta
5 (GTG)

Colores admitidos
Máx. 16.7 M

Velocidad de actualización
Máx. 75 Hz

Plana/Curva
Plano

Relación de aspecto
16:9

Brillo (típico)
250cd/m²

Relación de contraste estático
1000:1 (típico)

Resolución
1,920 x 1,080

Ángulo de visión (H/V)
178°/178°

Gama de colores (NTSC 1976)
72%

Características generales

Eco Saving Plus
Sí

Flicker Free
Sí

Tamaño de la imagen
Sí

FreeSync
Sí

Modo de protección ocular
Sí

Modo de juego
Sí

Certificación de Windows
Windows 10

Off Timer Plus
Sí

Interfaz

Pantalla inalámbrica
No

DVI
No

Puerto de pantalla
No

Puerto de pantalla de salida
No

Puerto de minipantalla
No

Versión HDMI
1.4

Audífonos
No

Versión de concentrador USB
No

D-Sub
1 EA

DVI Dual Link
No

Versión de puerto de pantalla
No

Versión de puerto de pantalla de salida
No

HDMI
1 EA

Entrada de audio
No

Puertos USB
No

USB-C
No

528

Potencia de carga de USB-C
No

Audio

Altavoz
No

Barra de sonido USB (apto para usarlo)
No

Condiciones operativas

Temperatura
10°C~ 40°C

Humedad
10 % ~ 80 %, sin condensación

Diseño

Color
Azul / Gris Oscuro

Tipo de soporte
Simple

Inclinación
-2 ~ 20

Montaje para pared
100 x 100

Eco

Clase de eficiencia energética
N/A

Plástico reciclado
No

Alimentación

Fuente de alimentación
AC 100~240V

Consumo de energía (DPMS)
0.5 W

Consumo de energía (modo apagado)
0.3 W

Tipo
Adaptador externo

Dimensiones

Dimensiones del equipo con soporte (ancho x alto x prof.)
539.2 x 425.3 x 232.0 mm

Dimensiones del equipo sin soporte (ancho x alto x prof.)
539.2 x 322.8 x 39.4 mm

Dimensiones del paquete (ancho x alto x prof.)
675 x 387 x 125 mm

Peso

Peso del equipo con soporte
2.7 kg

Peso del equipo sin soporte
2.4 kg

Peso del paquete
4 kg

Accesorio

Longitud del cable de alimentación
1.5 m

Cable HDMI
Sí

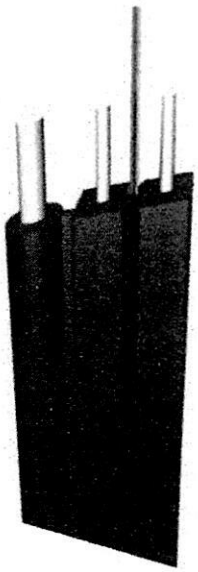
Género para minipantalla
No

3363

FICHA TÉCNICA/ MGFT-312697

CABLE DE FIBRA OPTICA DROP / FIGURA 8.

Cable óptico auto-sustentado formado por un tubo tipo loose que contiene de 1 a 4 fibras ópticas en su interior.El núcleo óptico es reforzado por fibras dieléctricas y protegido por un revestimiento externo de material polimérico resistente a intemperies.



APLICACIÓN

Recomendado como cable de acceso al usuario en redes FTTH.Su construcción tipo figura 8, le ofrece gran facilidad de instalación y confiabilidad de red, sumado al bajo costo de instalación y mantenimiento.

CARACTERÍSTICAS GENERALES

Tipo de fibra óptica, con revestimiento en acrilato	**Monomodo(9/125um)**	**G.652.D**
	Monomodo NZD (9/125)	**G.655**
Cantidad de fibras	**01 hasta 04 fibras**	
Cubierta externa	**Polietileno o copolímero de color negro con o sin retardación a Llama (NR o RC) o resistente al Efecto Tracking (RT)**	

CARACTERISTICAS TÉCNICAS:

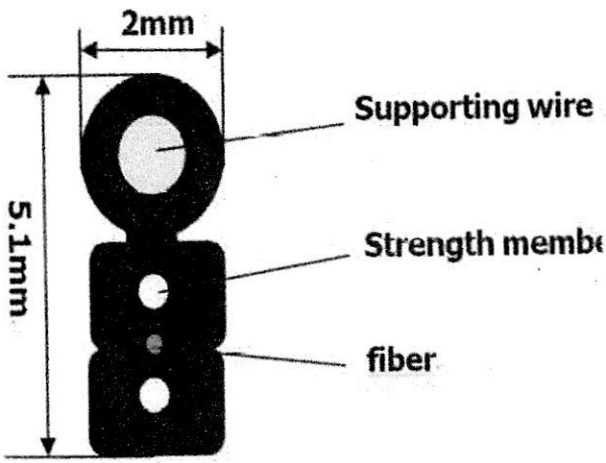
ESPECIFICACIONES	CARACTERISTICAS	CABLE DE 1 FIBRA	CABLE DE 2 FIBRA	CABLE DE 4 FIBRA
AUTOSOPORTADO	Material	Alambres de Acero		
	Diámetro (mm)	1.10 (mm)		
Miembro de Fuerza	Material	Alambre de Acero		
	Diámetro (mm)	0.52/0.45	0.52/0.45	0.52/0.45
Diámetro del cable (mm)		2.00 (0.1±)		
Peso del Cable (Kg/km)		18.5/20	19/20.5	20/21.5
Rango de temperatura de funcionamiento		-40~+70		
Resistencia a la tracción a corto / largo plazo (N)		650/350		
Resistencia a la compresión a corto / largo plazo (N / 100mm)		1000/500		

330

FICHA TÉCNICA/ MGFT-312697

Atenuación de Fibra.

	G.652.D	G.657
@1310nm	≤0.40 dB/km	≤0.36 dB/km
@1550nm	≤0.30 dB/km	≤0.25 dB/km



PRUEBAS DE ESTANDARES CUMPLIDAS.

PRUEBAS DE ESTANDAR	ESTANDAR
Tensión	IEC 60794-1-2-E1
Roptura	IEC 60794-1-2-E3
Impacto	IEC 60794-1-2-E4
Curvaturas	IEC 60794-1-2-E6
Ciclismo de temperaturas	IEC 60794-1-2-F1

EdgeSwitch 16 XG

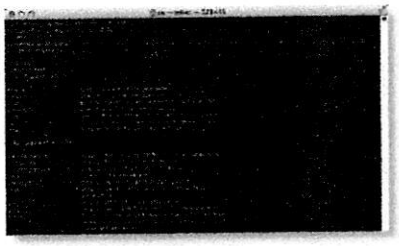
Hardware Specifications

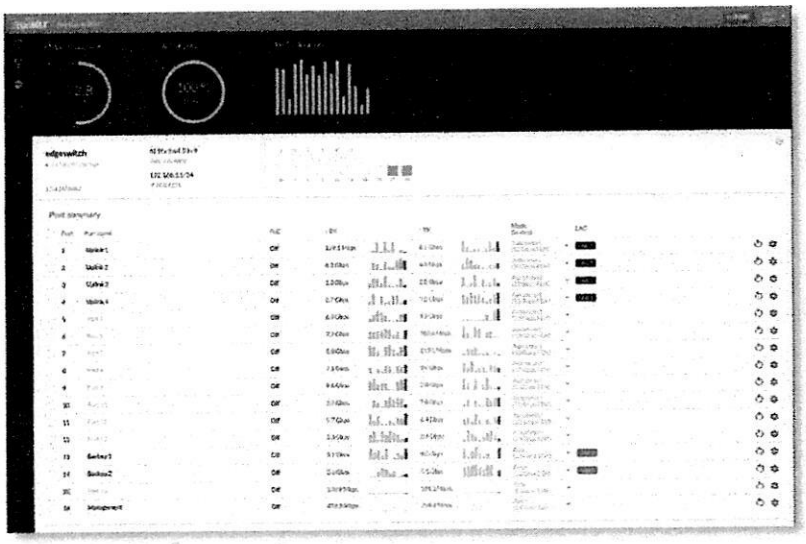
ES-16-XG		
Dimensions		443 x 221 x 43 mm (17.44 x 8.70 x 1.69")
Weight	Rack-Mount Brackets Included	Rack-Mount Brackets Excluded
	2.71 kg (5.97 lb)	2.62 kg (5.78 lb)
Enclosure Characteristics		SGCC Steel
Total Non-Blocking Throughput		160 Gbps
Switching Capacity		320 Gbps
Forwarding Rate		238.10 Mpps
Max. DC Power Consumption		36W (Excludes SFP/SFP+ Modules)
Power Method	AC	DC
	100-240VAC/50-60 Hz, Universal Input	DC 56W, 25 to 16V, with 2.5 mm DC Power Inline Connector
Supported Voltage Range	100 to 240VAC	25 to 16VDC
Power Supply		AC/DC, Internal, 56W DC
LEDs Per Data Port		Speed/Link/Activity
Networking Interfaces		(12) 1/10 Gbps SFP+ Ethernet Ports (4) 1/10 Gbps RJ45 Ethernet Ports
Management Interface		(1) RJ45 Serial Port, Ethernet In/Out Band
Rackmount		Yes, 1U High
ESD/EMP Protection		Air: ± 24 kV, Contact: ± 24 kV
Shock and Vibration		ETSI300-019-1.4 Standard
Operating Temperature		-5 to 40° C (23 to 104° F)
Operating Humidity		5 to 95% Noncondensing
Certifications		CE, FCC, IC

Comprehensive User Interface

Designed for convenient management, the EdgeSwitch Configuration Interface allows administrators to configure and monitor switch features in a graphical user interface.

For advanced users, an industry-standard command-line interface (CLI) is available through the serial console port, telnet, and SSH.



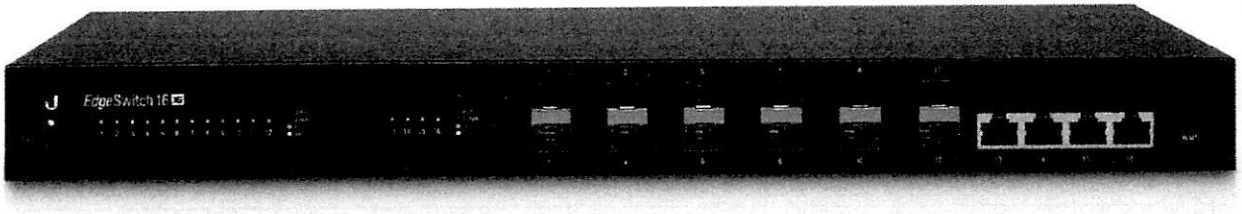


Powerful Functionality

The EdgeSwitch XG uses a sophisticated operating system that provides basic switching features and a variety of advanced features including:

- MSTP/RSTP/STP
- VLAN, Private VLAN, Voice VLAN
- Link Aggregation
- DHCP Snooping, IGMP Snooping
- TACACS+, RADIUS, 802.1X, MAC Filtering, ACL
- DiffServ, CoS
- Static Routing
- DHCP Server Functionality



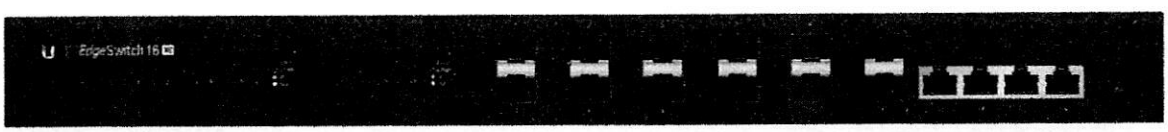


Model

EdgeSwitch 16 XG

Model: ES-16-XG

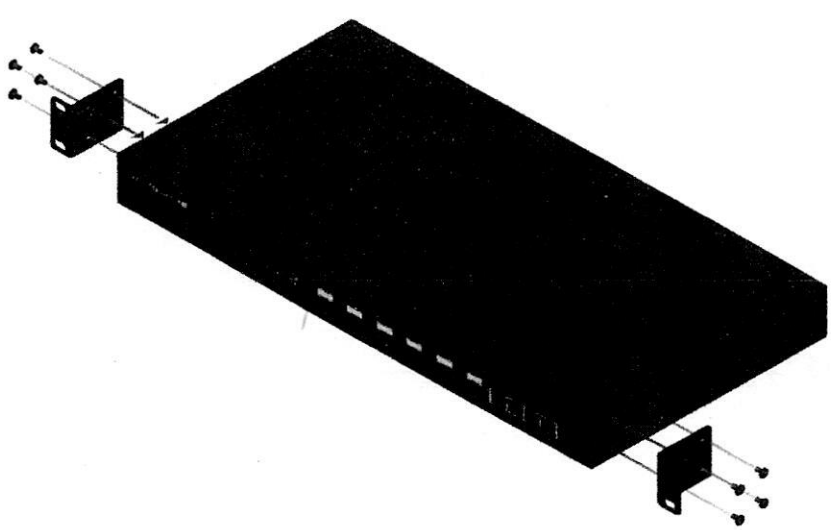
- (12) SFP+ Ports
- (4) 10G RJ45 Ports
- (1) RJ45 Serial Console Port
- Non-Blocking Throughput: 160 Gbps
- Switching Capacity: 320 Gbps
- Forwarding Rate: 238.10 Mpps
- Rack Mountable with Rack-Mount Brackets (Included)
- DC Input Option (Redundant or Stand-Alone)



Front Panel



Back Panel



Attaching Rack-Mount Brackets to the EdgeSwitch XG

EdgeMAX®

Software Specifications

The following specifications have been updated with firmware version 1.8.0.
We recommend that you update the EdgeSwitch to the latest firmware.

Software Information	
Core Switching Features	• ANSI/TIA-1057: LLDP-Media Endpoint Discovery (MED) • IEEE 802.1AB: Link Layer Discovery Protocol (LLDP) • IEEE 802.1D: Spanning Tree Compatibility • IEEE 802.1S: Multiple Spanning Tree Compatibility • IEEE 802.1W: Rapid Spanning Tree Compatibility • IEEE 802.1Q: Virtual LANs with Port-Based VLANs • IEEE 802.1p: Ethernet Priority with User Provisioning and Mapping • IEEE 802.1X: Port-Based Authentication with Guest VLAN Support • IEEE 802.3ab: 1000BASE-T • IEEE 802.3an-2006: 10GBASE-T • IEEE 802.1ak: Virtual Bridged Local Area Networks - Amendment 07: Multiple Registration Protocol • IEEE 802.3ac: VLAN Tagging • IEEE 802.3ad: Link Aggregation • IEEE 802.3x: Flow Control • IEEE 802.1D-2004: Generic Attribute Registration Protocol: Clause 12 (GARP) • IEEE 802.1D-2004: Dynamic L2 multicast registration: Clause 10 (GMRP) • IEEE 802.1Q-2003: Dynamic VLAN registration: Clause 11.2 (GVRP) • RFC 4541: Considerations for Internet Group Management Protocol (IGMP) Snooping Switches
Advanced Layer 2 Features	• Broadcast Storm Recovery • Broadcast/Multicast/Unknown Unicast Storm Recovery • DHCP Snooping • IGMP Snooping Querier • Independent VLAN Learning (IVL) Support • Jumbo Ethernet Frame Support • Port MAC Locking • Port Mirroring • Protected Ports • Static MAC Filtering • TACACS+ • Voice VLANs • Unauthenticated VLAN • Internal 802.1X Authentication Server

Software Information	

Platform Specifications	• DHCP Server
	  • Maximum Number of Pools: 128
	  • Maximum Number of Leases (Total): 2048
	• Routing
	  • Number of Routes: 16
	  • Number of Routing Interfaces: 15
	• VLANs: 4093
	• MAC Addresses: 16,384
	• MSTP Instances: 4
	• LAGs: 32
	• ACLs: 100 with 10 Rules per Port
	• Traffic Classes (Queues): 8

System Facilities	• Event and Error Logging Facility • Run-Time and Configuration Download Capability • PING Utility
	• FTP/TFTP Transfers via IPv4/IPv6 • Malicious Code Detection • BootP and DHCP • RFC 2021: Remote Network Monitoring Management Information Base Version 2 • RFC 2030: Simple Network Time Protocol (SNTP) • RFC 2819: Remote Network Monitoring Management Information Base • RFC 2865: RADIUS Client • RFC 2866: RADIUS Accounting • RFC 2868: RADIUS Attributes for Tunnel Protocol Support • RFC 2869: RADIUS Extensions • RFC 3579: RADIUS Support for EAP • RFC 3580: IEEE 802.1X RADIUS Usage Guidelines • RFC 3164: BSD Syslog Protocol
Management	• Web UI • Industry-Standard CLI • IPv6 Management • Password Management • Autoinstall Support for Firmware Images and Configuration Files • SNMP v1, v2, and v3 • SSH 1.5 and 2.0 • SSL 3.0 and TLS 1.0 • Telnet (Multi-Session Support)
Layer 3 Routing	• Static Routing

Software Information	
QoS	• Access Control Lists (ACLs), Permit/Deny Actions for Inbound IP and Layer 2 Traffic Classification Based on: • Time-Based ACL • Source/Destination IP Address • TCP/UDP Source/Destination Port • IP Protocol Type • Type of Service (ToS) or Differentiated Services (DSCP) Field • Source/Destination MAC Address • EtherType • IEEE 802.1p User Priority • VLAN ID • RFC 1858: Security Considerations for IP Fragment Filtering • Optional ACL Rule Attributes • Assign Flow to a Specific Class of Service (CoS) Queue • Redirect Matching Traffic Flows • Differentiated Services (DiffServ) • Classify Traffic Based on Same Criteria as ACLs • Mark the IP DSCP or Precedence Header Fields, Optional • Police the Flow to a Specific Rate with Two-Color Aware Support • RFC 2474: Definition of the Differentiated Services Field (DS field) in the IPv4 and IPv6 Headers • RFC 2475: An Architecture for Differentiated Services • RFC 2597: Assured Forwarding Per-Hop Behavior (PHB) Group • RFC 3246: An Expedited Forwarding PHB • RFC 3260: New Terminology and Clarifications for DiffServ • Class of Service (CoS) Queue Mapping Configuration • AutoVoIP: Automatic CoS Settings for VoIP • IP DSCP-to-Queue Mapping • Configurable Interface Trust Mode (IEEE 802.1p, DSCP, or Untrusted) • Interface Egress Shaping Rate • Strict Priority versus Weighted Scheduling per Queue

Specifications are subject to change. Ubiquiti products are sold with a limited warranty described at: www.ubnt.com/support/warranty
The limited warranty requires the use of arbitration to resolve disputes on an individual basis, and, where applicable, specify arbitration instead of jury trials or class actions.
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3341

HIKVISION

DS-A82 Series Hybrid SAN

Introduction

The DS-A82 series is a dual controller-structure Hybrid SAN(Storage Area Network). Hikvision Hybrid SAN product creates a network with access to data storage servers, and it integrates Hikvision's unique video direct streaming technology as well as supports IPSAN/FCSAN. This flexible, cost-effective solution features ONVIF-support to third-party cameras, support for RTSP, and SIP protocols, and extended data retention. With no recording server needed, Hikvision's Hybrid SAN systems truly make applications simple, flexible, and budget-friendly



Features

Reliable System

- Modular and no-cable design.
- Dual controller.
- Real-time cache.
- Optional BBU (Backup Battery Unit).

High-Performance and Extendable Hardware Platform

- 64-bit multi-core processor.
- PCI-E 2.0 bus.
- Four 1000M Ethernet interfaces per controller.
- SAS interface for storage enclosure.
- High-density chassis. 4U chassis: 24 HDDs.

HDD Detection and Repair/RAID Optimization

- Detection before operation.
- Detection in operation.
- Fault repair.
- RAID 0, 1, 3, 5, 6, 10, 50.
- Global and local hot spare.
- Quick RAID building.
- Capability of cascading up to two storage enclosures behind a single SAS port.

Advanced Data Protection

- Synchronous backup of key information in system disk and HDD.
- RAID-based tamper-proof data technology.
- Auto data synchronization between devices.

Energy Efficient

- CPU load balance.
- Auto fan tuning.

User-Friendly UI

- Quick configuration.
- Various alarm management.
- SADP protocol supported.
- SNMP supported.

Surveillance-Specialized Stream Media Direct Storage (Direct Streaming Mode)

- Space pre-allocation strategy.
- Direct storage for video stream and picture stream.
- Supports direct IP camera/DVR/NVR streaming and recording.
- Supports camera access through RTSP, ONVIF, and PSIA protocol.
- Supports alarm/scheduled/manual recording.
- N+1 technology.
- Automatic network replenishment (ANR), timely uploading, and video loss alarm.
- Lock key videos.
- Supports both Direct Streaming Mode and IPSAN Mode.
- Search, play, and download videos by video type or video time.

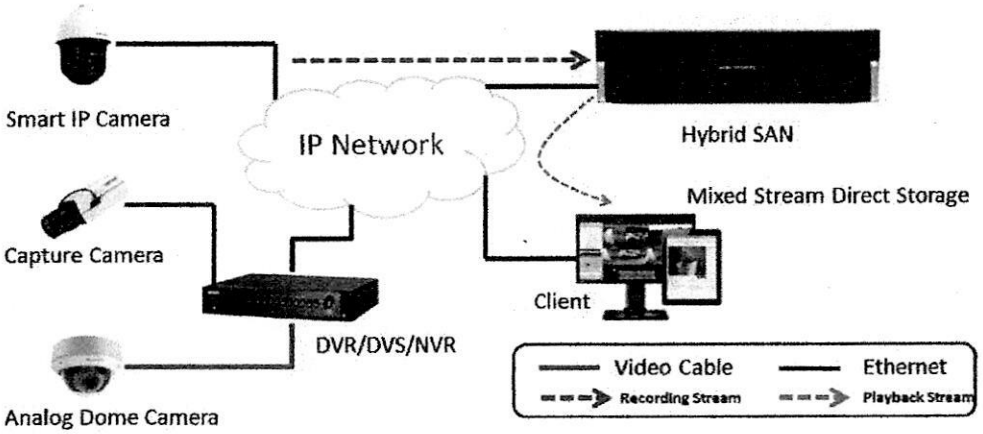
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Specification

Model		DS-A82024D
Performance	Direct Streaming mode: video (2 Mbps) + picture	448-ch (recording + playback)
	IPSAN	256-ch (recording + playback)
Controller	Controller	Dual controller
	Processor	64-bit multi-core processor
	Cache per controller	8 GB (extendable to 32 GB)/controller
HDD	HDD slot	24
	Interface/capacity	SSD (optional), SAS/1TB, 2TB, 3TB, 4TB, 6TB,8TB
	Hot-swapping	Supported
	HDD support	Single, RAID(Enterprise Hard Disk)
	RAID	RAID0, 1, 3, 5, 6, 10, 50, JBOD, Hot-Spare
Network	Protocol	iSCSI, RTSP, ONVIF, PSIA
Interfaces	Data network interface per controller	4, 1000M Ethernet interface (4 × GbE or 2 × 10GbE is extendable)
	Management network interface	1, 1000M Ethernet interface/Controller
	MiniSAS interface	Supported
	VGA per controller	1
	USB per controller	3
General	Power supply	Redundant
	Consumption (with HDDs)	• Working: ≤ 507 W (1729 BTU with 24 HDDs); • Rated: ≤ 800 W
	Environment temperature	• Working: +5 °C to +35 °C (41 °F to 95 °F) • Storing: -20 °C to +70 °C (-4 °F to 158 °F)
	Environment humidity	• Working: 20% to 80%RH (non-condensing/frozen); • Storing: 5% to 90%RH (non-condensing/frozen)
	Chassis	19-inch 4U
	Dimensions (W × H × D)	447 x 172 x 550 mm (17.6 x 6.8 x 21.7 in)
	Weight (without HDDs)	≤ 33.5 Kg (73.9 lb)

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Typical Application



Available Models

DS-A82024D

Hikvision Tested and recommended HDDs

Seagate MakaraBP 5xxn config Series (eg. ST8000NM0075) / **Seagate MakaraBP 5xxe config Series** (eg. ST6000NM0095) / **Seagate MakaraBP Series** (eg. ST6000NM0034) **HGST 7k6000 series** (eg. HUS726060AL5210)

Note: Enterprise HDD strong recommended when used in RAID mode and ISCSI application due to more stability design features; if Surveillance HDD need to be Used, please consult with Hikvision Sales.

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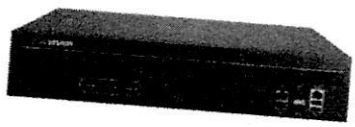
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DS-6916UDI
Decoder



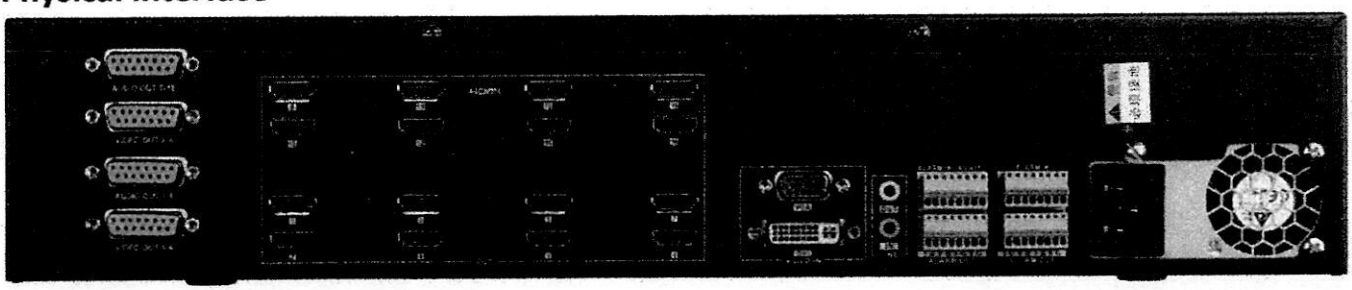
- Provides HDMI (adaptable to DVI-D) and BNC output interfaces.
- Up to 4K (3840 × 2160@30Hz) via HDMI output interfaces (only for even interface).
- Up to 8-ch decoding at 24 MP resolution.
- H.265+/H.265, H.264+/H.264, Hik264, MPEG4 and MJPEG video compression.
- PS, RTP, TS, ES, HIK encapsulation formats.
- Three encoding levels: baseline, main, and high-profile.
- G.722, G711A, G726, G711U, MPEG2-L2, and AAC audio compression.
- Two decoding modes: active decoding and passive decoding.
- Supports two-way audio via client software.
- Remote video files' decoding output.
- Supports window opening and window roaming.
- Supports multi-screen control with PC installed with RSC server.
- Gets stream and decodes via URL and RTSP from encoding devices.
- Displays the decoded video stream on the video wall by directly linking cameras or by stream media forwarding.
- Configurable LED width and height parameters when the LED is connected.
- Regular and irregular virtual screen configurable to display multiple signal sources and get rid of the restriction of physical screen.
- Accessible by thermal network camera and you can view the temperature measurement, dynamic fire source detection, ship detection and VCA information in live view and playback.
- You can enable or disable the smart information for the thermal network camera.
- Remote PTZ control via transparent channel.
- Accessible by 2.4 MP DeepinView camera.
- Port aggregation technology (Ethernet Channel).
- Two-way audio.
- You can configure what the video wall shows when decoding ends and streaming fails via the Web browser and client software.

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▪ Specification

	Model	DS-6916UDI
Decoding	Decoding Resolution	Up to 12MP
	Decoding Channel	128-ch
	Decoding Capability	24MP@30fps: 8-ch, 12MP@20fps:16-ch, 8MP@30fps: 32-ch, 5MP@30fps: 48-ch, 3MP@30fps: 80-ch, 1080p@30fps/3 Mbps: 128-ch
	Split Screen	1/4/6/8/9/12/16/25/36
Input/Output	Input	VGA, DVI-I
	Input Resolution	VGA, DVI-I: WSXGA: 1680×1050/60Hz, WXGA: 1440 × 900/60Hz, WXGA: 1280×800/60Hz, 1366×768/60Hz, 1080p: 1920 × 1080@50/60Hz, UXGA: 1600 × 1200@60Hz, XVGA: 1280 × 960@60Hz, 720p: 1280 × 720@50Hz/60Hz, SXGA: 1280 × 1024@60Hz, XGA: 1024 × 768@60Hz
	Output	HDMI: 16-ch, BNC: 8-ch, 2 DB 15
	Output Resolution	HDMI: 4K: 3840 × 2160@30Hz (for odd interface only) , 1080p: 1920 × 1080@50/60Hz, WSXGA: 1680×1050/60Hz, UXGA: 1600 × 1200@60Hz (for odd interface only), 720p: 1280 × 720@50Hz/60Hz, SXGA: 1280 × 1024@60Hz, XGA: 1024 × 768@60Hz
Interface	Network Interface	2 10/100/1000 Mbps Ethernet interface
	Serial Interface	1 RS-232 (RJ45), 1 RS-485
	Audio Output	16-ch, 2 DB 15
	Two-way Audio Out	1-ch, 3.5 mm connector (2.0 Vp-p, 1 KΩ)
	Alarm In	8
	Two-way Audio In	1-ch, 3.5 mm connector (2.0 Vp-p, 1 KΩ)
	Alarm Out	8
General	Power Supply	100 to 240 VAC
	Power Consumption	≤ 108 W
	Dimensions(W × D × H)	440 × 311 × 80 mm (17.32 × 12.24 × 3.15 inch)
	Working Temperature	-10 °C to +55 °C (14 °F to 131 °F)
	Working Humidity	10% to 90%
	Weight	≤ 6.4 kg (14.11 lb)

▪ Physical Interface



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No.	Interface	Connections
1	Audio output	BNC connector
2	Video output	BNC connector
3	HDMI video output	HDMI output of decoded video
4	VGA video input	VGA input of decoded video
5	DVI video input	DVI input of decoded video
6	LINE IN/OUT	Two-way audio input/output, 3.5mm connector
7	RS-485 serial interface	Connect to RS-485 devices, e.g., keyboard, etc.
8	Alarm in	8 alarm inputs
9	Alarm out	8 alarm outputs
10	Power	Power input
11	⊖	GND

▪ Available Model

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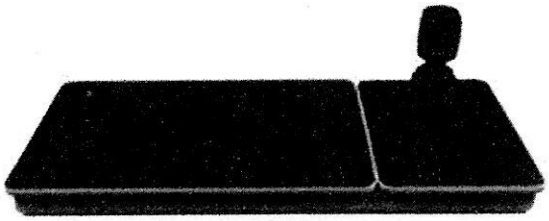
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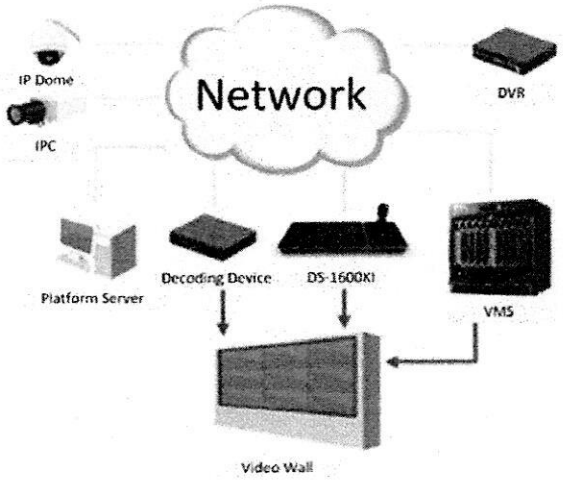
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DS-1600KI

Detachable Network Keyboard





Key features

- 10.1" capacitive touchscreen;
- Detachable design of the touchscreen and joystick;
- Capable of decoding 2-ch at 1080P decoding; up to 16-division window display;
- Control of MVC and decoders for video decoding and output on video wall;
- PTZ control, setting and calling preset, patrol and pattern;

Available Models

DS-1600KI

	DS-1600KI
Operating System	Android 4.4
TFT LCD Screen	10.1" TFT LCD touchscreen Resolution: 1024 × 600
Joystick	4-axis joystick
Local Decoding	Local live view at 1080P/720P/HD1/BCIF/CIF/QCIF resolution, and up to 16-division window display
Two-way Audio Input	1-ch, 3.5mm connector (2.0Vp-p, >1kΩ)
Audio Output	1-ch, 3.5mm connector (2.0 Vp-p, 600 Ω)
Network Interface	10M/100M/1000M Adaptive Ethernet port
WiFi	Supported
USB Interface	USB 2.0 × 2
Video Interface	HDMI, DVI
Power Supply	12V DC /POE
Consumption	≤15W
Working Temperature	-10°C ~+55°C
Working Humidity	10°C~90°C
Dimensions (W × D × H)	404 × 180 × 163 mm
Weight	1.7 Kg

1. Specification

1.1. Specification of optical fibers

Characteristics		Acceptance Value
Attenuation	@1310nm	≤0.35dB/km
	@1550nm	≤0.22dB/km
Mode Field Diameter	@1310nm	9.3±0.5μm
	@1550nm	10.4±0.8μm
Dispersion	@1285-1330nm	≤3.5ps/(nm·km)
	@1525-1570nm	≤19ps/(nm·km)
PMD		≤ 0.2 ps·km$^{1/2}$
Cable cutoff wavelengthλ_{cc}(nm)		≤1260nm
Zero-Dispersion wavelength		1300nm～1324nm
Zero-Dispersion slope		≤0.092ps/(nm^2·km)
Cladding diameter		125±1μm
Cladding non-circularity		≤0.8%
Core/cladding concentricity error		≤0.6μm
Proof Test		≥0.7GPa (100kpsi)
Dynamic fatigue		≥20
Point discontinuity		≤0.05dB
Attenuation uniformity		≤0.05dB/km
Macrobend loss at 1550nm	Φ32mm,1turn	≤0.1dB
	Φ75mm,100turns	≤0.05dB

1.2. Specification of optical cables

2.2.1. Specification of CFOA-SM-ASY-S-XXFO COMPACTO NR

Cable cross-section and dimensions

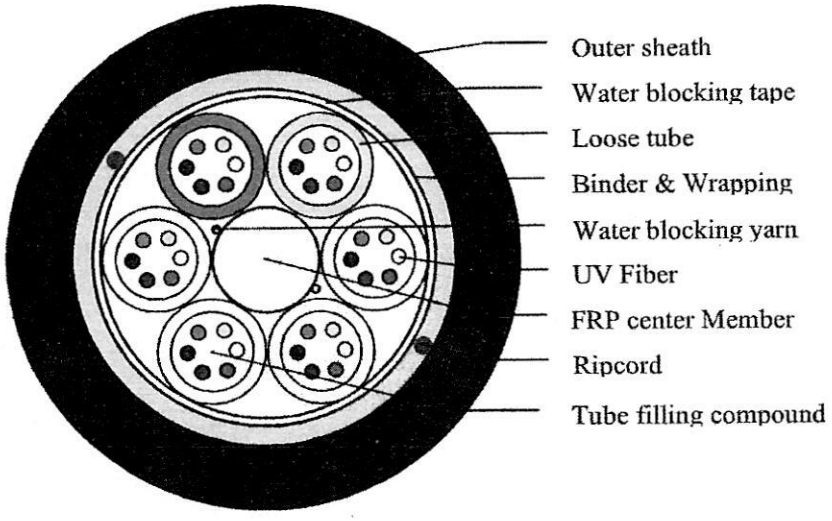


Figure. Cable Cross-Section (A-end)

Item	Material	Description
Outer sheath	PE	PE
Strength member	Aramid yarn	Additional strength member
Binder & Wrapping	Polyester Yarn	Cable core binding
Water blocking tape	Water blocking tape	Water blocking & Moisture proof
Loose tube	PBT	Colors of tubes:green, yellow, nature,nature,nature,nature,nature,nature,nature,nature,nature,nature
Tube filling compound	Thyrotrophic gel	Water blocking & Moisture proof
Fiber	Silicon-based fiber	UV colored fiber with: green, yellow, white, blue, red, violet, brown, pink, black, gray, orange, aqua
Water blocking yarn	Water blocking yarn	Water blocking & Moisture proof
Center member	FRP+PE	FRP+PE

Y=80 (span) XX= 12,24,36 (cable cores)

Cable Cores	Unit	12	24	36
No. of Tubes		6	4	6
No. of Fillers		0	2	0
Fiber Counts in Tube		2	6	6
Cable Diameter	mm	6.8±0.5	8.0±0.5	
Cable Weight	Kg/km	36±15	45±15	
Allowable tensile strength (N)				Y=80, 1.5×P
Allowable crush resistance (N)				1×P/10cm
Operation temperature				-20 ° C +65 ° C

2.2.3. Specification of CFOA-SM-ASY-S-XXFO NR

Cable cross-section and dimensions

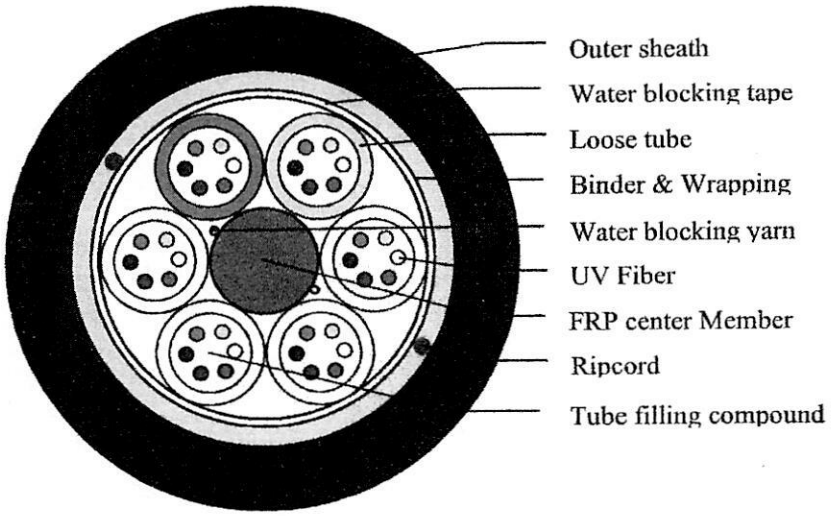


Figure. Cable Cross-Section (A-end)

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Loose tube	PBT	Colors of tubes: green, yellow, nature,nature,nature,nature,nature,nature,nature,nature,nature,nature
Tube filling compound	Thyrotrophic gel	Water blocking & Moisture proof
Fiber	Silicon-based fiber	UV colored fiber with: green, yellow, white, blue, red, violet, brown, pink, black, gray, orange, aqua
Water blocking yarn	Water blocking yarn	Water blocking & Moisture proof
Center member	FRP+PE	FRP+PE

Y=80/120 (span) XX= 6,12,18,24,36,48,60,72, 144 (cable cores)

Cable Cores	Unit	6	12	18	24	36
No. of Tubes		3	6	3	4	6
No. of Fillers		3	0	3	2	0
Fiber Counts in Tube		2	2	6	6	6
Cable Diameter	mm	9.4±0.5		10.0±0.5		
Cable Weight	Kg/km	65±15		75±15		

Cable Cores	Unit	48	60	72	144
No. of Tubes		4	5	6	12
No. of Fillers		2	1	0	0
Fiber Counts in Tube		12	12	12	12
Cable Diameter	mm	11.2±0.5			16.6±0.5
Cable Weight	Kg/km	90±15			195±15
Allowable tensile strength (N)					Y=80, 1.5×P Y=120, 2×P
Allowable crush resistance (N)					1×P/10cm
Operation temperature					-20 ° C +65 ° C

Y=200 (span) XX= 6,12,18,24,36,48,60,72, 144 (cable cores)

Cable Cores	Unit	6	12	18	24	36
No. of Tubes		3	6	3	4	6
No. of Fillers		3	0	3	2	0
Fiber Counts in Tube		2	2	6	6	6
Cable Diameter	mm	9.9±0.5		10.4±0.5		
Cable Weight	Kg/km	72±15		75±15		

Cable Cores	Unit	48	60	72	144
No. of Tubes		4	5	6	12
No. of Fillers		2	1	0	0
Fiber Counts in Tube		12	12	12	12
Cable Diameter	mm	11.6±0.5			17.0±0.5
Cable Weight	Kg/km	95±15			200±15
Allowable tensile strength (N)					Y=200, 3×P
Allowable crush resistance (N)					1×P/10cm
Operation temperature					-20 ° C +65 ° C

3304



EdgeSwitch®

Configuration Interface

Release Version: 1.8

USER GUIDE

551

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Chapter 1: Overview

Introduction

This User Guide is designed to provide details about how to set up and use the EdgeSwitch® Configuration Interface, version 1.8 or above. This interface manages the EdgeSwitch and EdgeSwitch X models, which this User Guide will collectively refer to as EdgeSwitch.

The EdgeSwitch XP models use a different user interface. This is described in the EdgeSwitch XP User Guide, which is available at: **downloads.ubnt.com/edgemax**

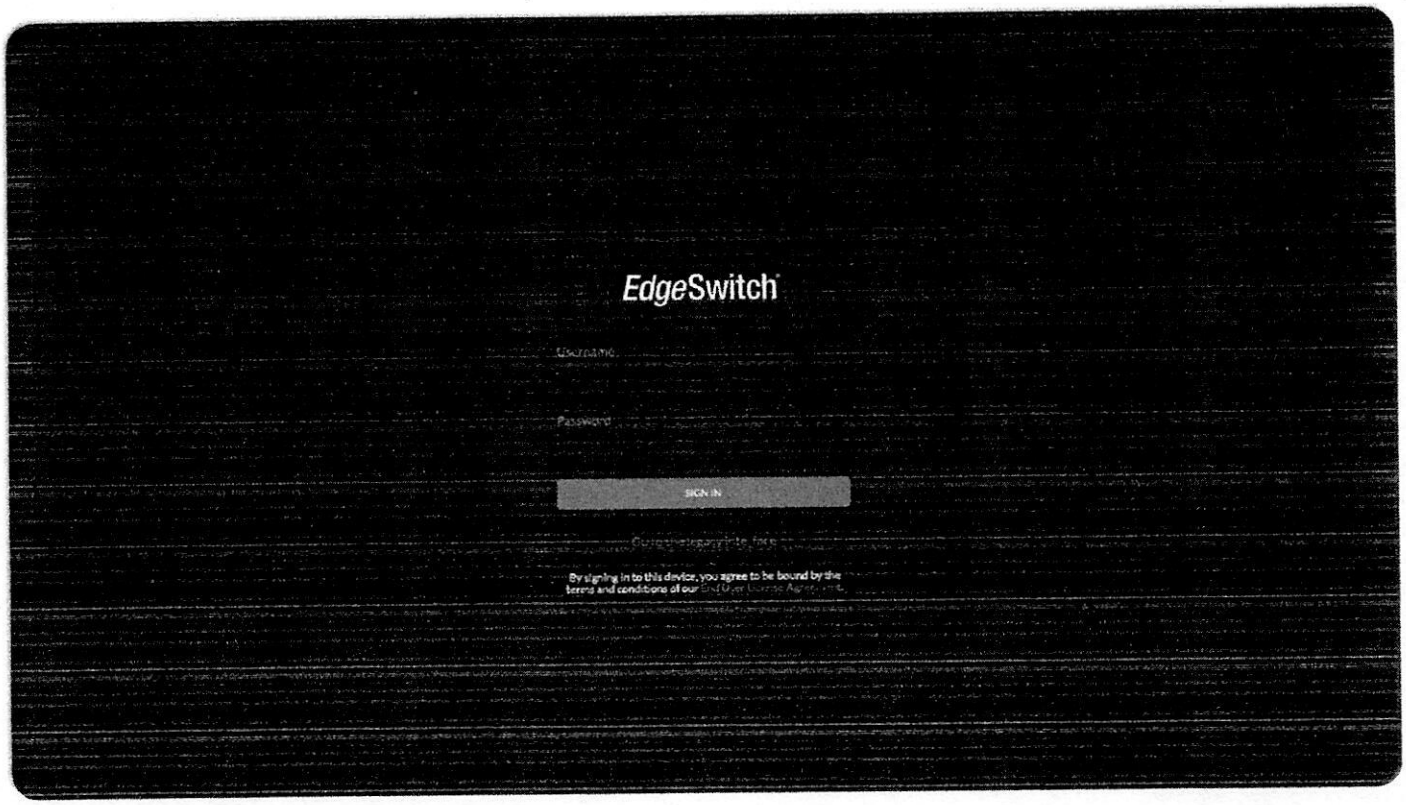
Configuration

This intuitive interface allows you to conveniently manage your EdgeSwitch using your web browser. There are two versions available; however, this User Guide describes the default, which is the new UI with a more graphical interface. The legacy UI is still available as an option and is described in the EdgeSwitch Administration Guide, which is available at: **downloads.ubnt.com/edgemax**

You can also manage your device using the Ubiquiti® Network Management System, UNMS™, which lets you configure, monitor, upgrade, and back up your devices using a single software application. To get started, go to: **unms.com**

Configuration Interface System Requirements

- Linux, Mac OS X, or Microsoft Windows
- Web Browser: Google Chrome, Mozilla Firefox, or Apple Safari



Chapter 2: Navigation

The EdgeSwitch uses an advanced operating system accessed through a simple and intuitive user interface for convenient configuration and management via a web browser. This interface is referred to as the Configuration Interface or UI (User Interface).

There are two versions of the Configuration Interface. The new one is described in this User Guide. The previous one is described in the EdgeSwitch Administration Guide, which is available at: **downloads.ubnt.com/edgemax**

The new Configuration Interface is designed for basic configuration of the EdgeSwitch. If you want to configure advanced settings via the old Configuration Interface or CLI, then please be aware that these advanced settings may interfere with the proper function of the new Configuration Interface, and vice versa.

Note: Do NOT make configuration changes using both the new interface and old interface/CLI – this is NOT supported.

Accessing the Configuration Interface

The EdgeSwitch is set to *DHCP* by default, so it will try to automatically obtain an IP address. If that fails, then it will use the default fallback IP address, *192.168.1.2* or *192.168.1.20*, depending on the model number.

Fallback IP Address	Model Number
192.168.1.2	ES-8-150W, ES-12F, ES-16-150W, ES-16-XG, ES-24-250W, ES-24-500W, ES-24-Lite, ES-48-500W, ES-48-750W, ES-48-Lite
192.168.1.20	ES-10X, ES-10XP

Proceed to the appropriate section, *DHCP* or **"Fallback IP Address" on page 4**:

DHCP

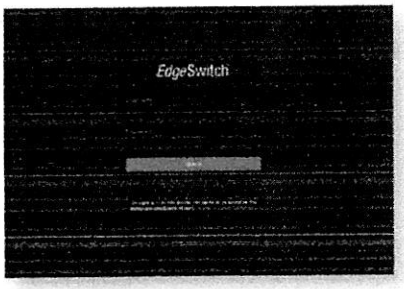
Use one of the following methods:

- Set up the DHCP server to provide a specific IP address to the EdgeSwitch based on its MAC address (on the label).
- Let the EdgeSwitch obtain an IP address and then check the DHCP server to see which IP address was assigned.

To log in, follow these steps:

1. Launch your web browser. Type the appropriate IP address in the address field. Press **enter** (PC) or **return** (Mac).

2. Enter **ubnt** in the *Username* and *Password* fields. Click **Sign In**. (When you sign in, you agree to accept the Ubiquiti License Agreement.)



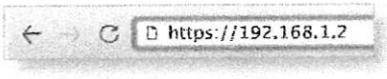
Note: To use the previous Configuration Interface, click **Go to the legacy interface**.

The EdgeSwitch Configuration Interface will appear, allowing you to customize additional settings as needed.

You can also manage your device using the Ubiquiti Network Management System. UNMS lets you configure, monitor, upgrade, and back up your devices using a single application. Get started at **www.unms.com**

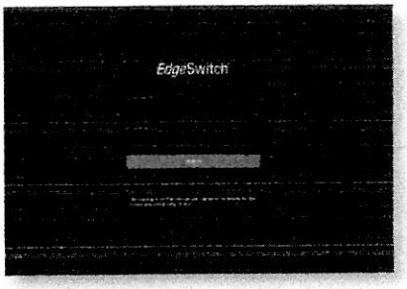
Fallback IP Address

1. Ensure that your computer (or other host system) is connected to the EdgeSwitch.
2. Configure the Ethernet adapter on your host system with a static IP address on the 192.168.1.x subnet.
3. Launch your web browser. Type the appropriate IP address in the address field. Press **enter** (PC) or **return** (Mac).



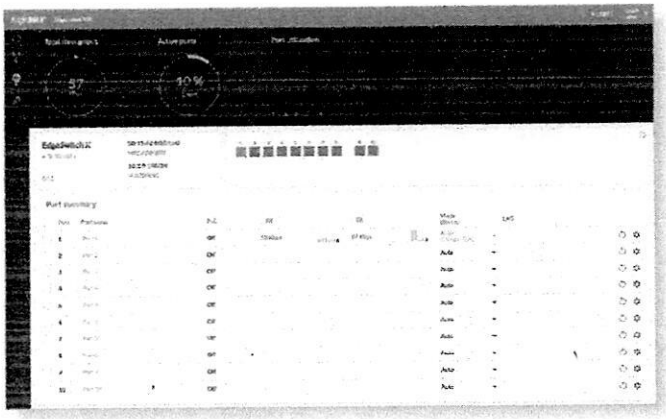
Fallback IP Address	Model Number
192.168.1.2	ES-8-150W, ES-12F, ES-16-150W, ES-16-XG, ES-24-250W, ES-24-500W, ES-24-Lite, ES-48-500W, ES-48-750W, ES-48-Lite
192.168.1.20	ES-10X, ES-10XP

4. Enter **ubnt** in the *Username* and *Password* fields. Click **Sign In**. (When you sign in, you agree to accept the Ubiquiti License Agreement.)

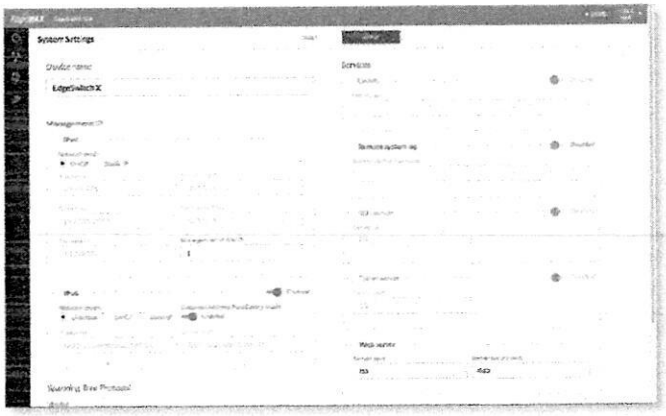


Note: To use the previous Configuration Interface, click **Go to the legacy interface**.

5. The EdgeSwitch Configuration Interface will appear. Click the **System Settings** tab.



6. Change the *IP Address* to a unique IP address. Click **Apply**.



Note: If you change the IP settings, then the session will be cut off, and you will need to reconnect to the EdgeSwitch using the new IP address.

Customize additional settings as needed.

You can also manage your device using the Ubiquiti Network Management System. UNMS lets you configure, monitor, upgrade, and back up your devices using a single application. Get started at **www.unms.com**

Common Interface Options

The common interface options are accessible from the top right of the Configuration Inteface.

- UNMS
- **"User" on page 5**



UNMS

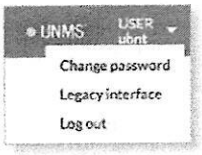
You can manage your device using UNMS, which lets you configure, monitor, upgrade, and back up your devices using a single application. Click the **UNMS** button to visit: **unms.com**

The color of the circular icon represents the status of the connection to UNMS.

Color	Status
●	Connected to UNMS
●	Trying to Connect to UNMS (Refer to the on-screen tooltip for more information)
●	Disabled

User

Click **User** to view the *User* options:



Change Password Click **Change Password** to make a change. The *Change Password* screen appears:

- **Old Password** Enter the previous password.
- **New Password** Enter the new password.
- **Confirm New Password** Enter the new password again.
- **Change Password** Click to save the new password.



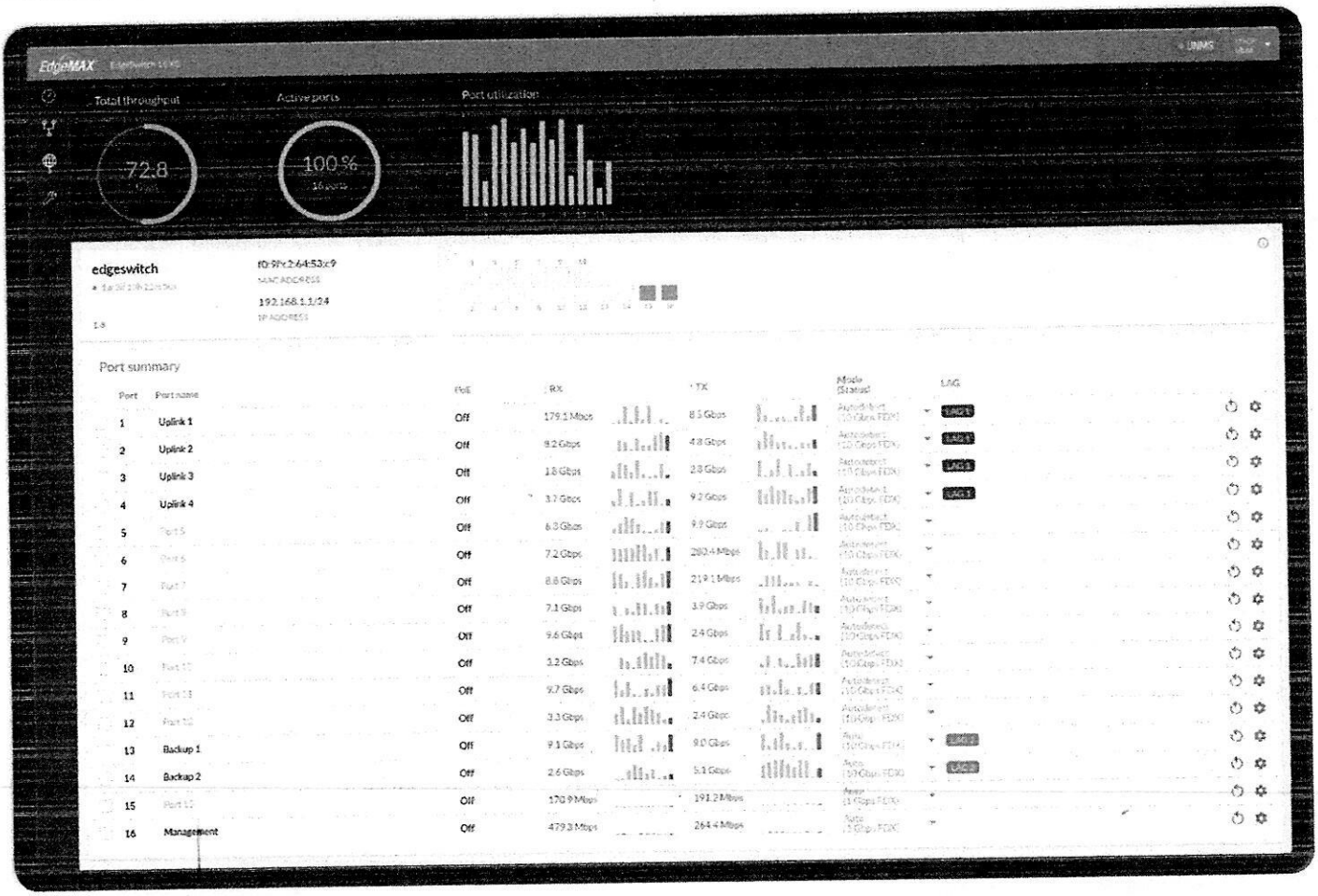
Legacy Interface Click to use the previous Configuration Interface.

Log Out Click to manually log out of the EdgeSwitch Configuration Interface.

Interface Screens

The Configuration Interface contains four main screens, each of which provides a web-based management page to configure a specific aspect of the EdgeSwitch. This User Guide covers each main screen with a chapter. For details on a specific screen, refer to the appropriate chapter.

- **Dashboard** **"Dashboard" on page 7** displays status information and statistics for the EdgeSwitch and each port. You can also configure port settings and Link Aggregation Groups (LAGs).
- **VLANs** **"VLANs" on page 13** configures Virtual Local Area Networks (VLANs) for the various ports.
- **System Settings** **"System Settings" on page 15** configures system settings and services.
- **Tools** **"Tools" on page 21** offers the MAC forwarding table and ping test as network administration and monitoring tools.



Chapter 3: Dashboard

The *Dashboard* screen displays a summary of the link status information, current values of the basic configuration settings, network settings and information, and traffic statistics. You can also configure port settings.

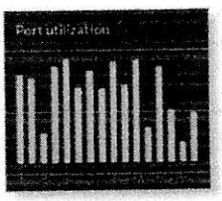
Total Throughput Displays the throughput as related to the currently active ports and their link status information. For example, if there is only one active port and it is set to 100 Mbps in full-duplex mode, then the maximum *Total Throughput* is 100 Mbps, shown with a complete circle. The throughput dimension (bps, kbps, Mbps) changes dynamically depending on the mean throughput value.



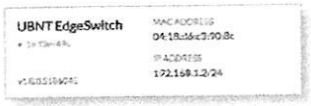
Active Ports Displays the percentage of usage (all ports combined).



Port Utilization Displays the port utilization as related to each active port and its link status information. For example, if there is only one active port and it is set to 100 Mbps in full-duplex mode, then the maximum *Port Utilization* is 100%, shown with a full bar to indicate the maximum theoretical utilization for the port's link state.



Device Status



(Device Name) Displays the customizable name or identifier of the device. The *Device Name* (also known as hostname) is displayed in registration screens and discovery tools.

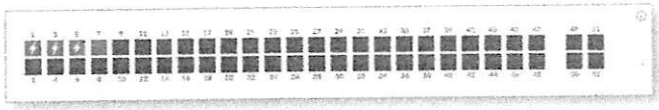
(Uptime) This is the total time the device has been running since the latest reboot (when the device was powered up) or software upgrade. The time is displayed in days, hours, minutes, and seconds.

(Firmware) Displays the firmware version of the device.

MAC Address Displays the Media Access Control (MAC) address of the device.

IP Address Displays the local IP address of the device.

Port Status



(Port) Displays the number of the port.

Link Status Displays the speed, activity status, and PoE feature of the port.

Color	Status
	10/100 Mbps Link
	10/100 Mbps Link with PoE
	1000 Mbps/1 Gbps Link
	1000 Mbps/1 Gbps Link with PoE
	10 Gbps Link
	Disabled
	Disconnected
	Disconnected with PoE

Click a port to access its advanced settings. Go to **"Advanced Settings" on page 10** for more information.

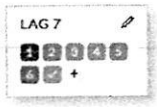
Port Summary



(checkbox) Select multiple ports for group configuration.



- **Aggregate** If you have multiple ports selected, click **Aggregate** to configure LAG options for them. The *LAG* window appears and displays the following:
  - **(Add)** Click an existing LAG to add the selected ports.
  - **(Create)** Click the *Create* + icon to create a new LAG. Go to **"Create or Edit a LAG" on page 9**.
  - **(Edit)** (Available if the selected ports belong to the same LAG.) Click the *Edit* icon to configure LAG settings. Go to **"Create or Edit a LAG" on page 9**.



  - **(Delete)** (Available if the selected ports belong to the same LAG.) Move the cursor over the current LAG. When the check mark becomes an X, click it to remove the selected ports from the LAG.
  - **(Delete from current LAGs)** (Available if the selected ports belong to different LAGs.) Click the *Delete* icon to remove the selected ports from the current LAGs.



- **(Advanced Settings)** Configure settings for the selected ports. Go to **"Advanced Settings" on page 10** for more information.

Port Displays the number of the port.

Port Name Displays the name of the port. Click to change the name.

RX Displays the current RX throughput in blue.

TX Displays the current TX throughput in green.

PoE Displays the status and voltage of the *PoE* feature. Active PoE is displayed in blue. To disable PoE, select **Off**. To enable 24V passive PoE, select **24V**. The default is *PoE+*.

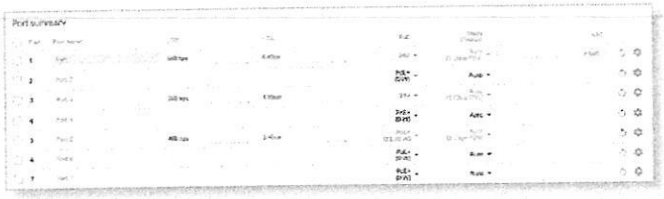
Mode (Status) Active mode is displayed in green. For RJ45 ports, *Auto* is enabled by default, and it applies only to speed and duplex, not PoE. For SFP/SFP+ ports, *Autodetect* is enabled by default. The EdgeSwitch automatically detects the speed of the inserted SFP/SFP+ module.

The EdgeSwitch automatically negotiates transmission parameters, such as speed and duplex, with its counterpart. In this process, the networked devices first share their capabilities and then choose the fastest transmission mode they both support.

To manually specify the maximum transmission link speed and duplex mode, select the appropriate option (options vary depending on the model). Full-duplex mode allows communication in both directions simultaneously. Half-duplex mode allows communication in one direction at a time, alternating between transmission and reception.

To achieve full performance with extra-long Ethernet cables, ensure that you use Cat 6-qualified cables and interconnects.

LAG A port channel, also known as a Link Aggregation Group (LAG), combines multiple links into a single logical link (single IP address) for load balancing and/or redundancy. You can have up to 8 ports in a LAG, and you can create up to 32 LAGs per EdgeSwitch. If a port is part of a LAG, its LAG number is displayed.



Click the *Add LAG* + LAG icon to add the port to a LAG.

You have the following options:

- **(Add)** Click an existing LAG to add the port to it.
- **(Create)** Click the *Create* + icon to create a new LAG. Go to the *Create or Edit a LAG* section below for more information.
- **(Edit)** If a LAG is already selected, click the *Edit* ✎ icon to configure LAG settings. Go to the *Create or Edit a LAG* section below for more information.



- **(Delete)** Move the cursor over the current LAG ☑. When the check mark becomes an X, click it to remove the port from the LAG.

Create or Edit a LAG

To edit or create a new LAG, configure these options:



New LAG Settings

- **Static LAG** Dynamic LAGs use the Link Aggregation Control Protocol (LACP); all devices must use LACP. If any device does not support LACP, then you can configure a static LAG. If enabled, this LAG will be static and will not use LACP.
- **Link Trap** If enabled, a notification (SNMP trap) will be sent if the status of the link changes.
- **Enable STP** Enabled by default. Ethernet networks cannot have multiple active paths between switches (excluding aggregation such as LAG), as this causes a switching loop: broadcast and multicast traffic is amplified and repeated in a never-ending loop, disrupting the network. Spanning Tree prevents switching loops and allows for redundant interconnections between switches. Interfaces with redundant paths are put into STP blocking mode, leaving the port down unless the current best active path fails.

  Deselecting this option will disable all versions of spanning tree; however, this is not recommended, as it can leave the network susceptible to being taken down by an inadvertently created switching loop.
- **DHCP Snooping** DHCP snooping monitors DHCP messages between clients and servers and builds a database of trusted sources. If enabled, only DHCP server messages from trusted sources will be allowed.
- **Load Balance Mode** Load balancing distributes traffic load while preserving the packet order per flow. The algorithm can consider different packet attributes to determine the appropriate outgoing physical port to use. Select the appropriate option:
  - *Source/Destination MAC, VLAN, Ethertype, Incoming Port* (default)
  - **Destination MAC, VLAN, Ethertype, Incoming Port**
  - **Source/Destination MAC, VLAN, Ethertype, Incoming Port**
  - **Source IP and Source TCP/UDP Port Fields**
  - **Destination IP and Destination TCP/UDP Port Fields**
  - **Source/Destination IP and TCP/UDP Port Fields**

- **Delete** Click the *Delete* DELETE icon to remove an existing LAG. Then click **OK** to confirm.
- **Save** Click to apply changes.



(Powercycle) To power off the connected device for five seconds and then power it back on, click the *Powercycle* icon.

(Advanced Settings) To configure advanced settings, click the *Advanced Settings* icon.

Advanced Settings

- **Enable Port** Enabled by default. Deselect to disable.

Note: Enabling/disabling this option only affects data traffic on a port. PoE functionality remains unaffected.

- **Isolate Port** Disabled by default. Select this option to mark this port as an isolated port. Isolated ports cannot communicate directly with any other isolated port.



- **Flow Control** Disabled by default. Select this option to enable 802.3x Ethernet Flow Control. This should remain disabled, unless you have a specific requirement for 802.3x and understand its implications.
- **DHCP Snooping** Disabled by default. DHCP snooping monitors DHCP messages between clients and servers and builds a database of trusted sources. If enabled, only DHCP server messages from trusted sources are allowed.
- **STP** Enabled by default. Ethernet networks cannot have multiple active paths between switches (excluding aggregation such as LAG), as this causes a switching loop: broadcast and multicast traffic is amplified and repeated in a never-ending loop, disrupting the network. Spanning Tree prevents switching loops and allows for redundant interconnections between switches. Interfaces with redundant paths are put into STP blocking mode, leaving the port down unless the current best active path fails.

  Deselecting this option will disable all versions of spanning tree; however, this is not recommended, as it can leave the network susceptible to being taken down by an inadvertently created switching loop.

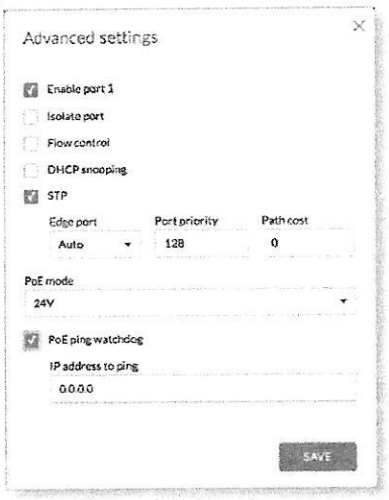
  - **Edge Port** Select **Auto**, **Enable**, or **Disable**. If enabled, designates this port as a port that connects to only a host device. The host device must not be connected to another switch or router. The *Edge Port* is always in the forwarding state and never undergoes the learning or blocking state. The default is *Auto*.

  Note: Ensure that the *Edge Port* is connected to only a host device. If the *Edge Port* is connected to a switch or router (even indirectly through a host device), then this may cause a network loop.

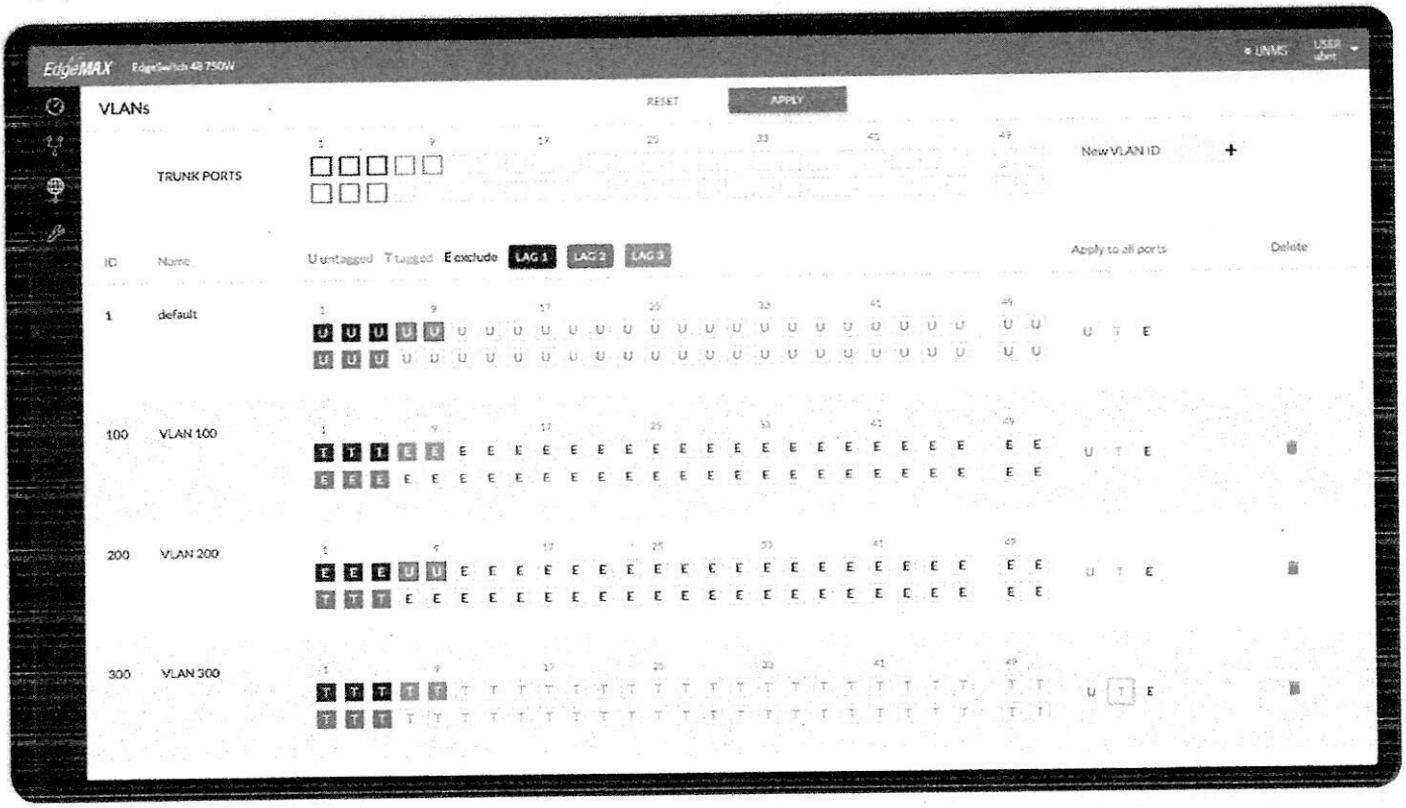
  - **Priority** STP uses *Priority* as a tiebreaker when multiple ports have the same *Path Cost* value. The lower the value, the higher the priority. If multiple ports have the same *Path Cost* value, then STP chooses the port with the highest *Priority* (lowest value) as the active port (the others are blocked). If STP detects a network loop, then a port with higher *Priority* is less likely to be blocked. If multiple ports share the highest *Priority*, then STP enables the port with the lowest port ID. The *Priority* range is 0 (highest priority) to 255 (lowest priority).The default is *128*.
  - **Path Cost** STP uses *Path Cost* to determine the best path between devices. The lower the value, the higher the ranking. In most cases, specify lower values for ports with higher bandwidths, such as gigabit speeds, and specify higher values for ports with lower bandwidth. You can also specify lower values for ports you prefer to use. (*Path Cost* has precedence over *Priority*.) The default is *0*.
- **PoE Mode** Select the appropriate option: **Off**, **24V**, or **PoE+**. The default is *PoE+*, which is auto-sensing.
- **PoE Ping Watchdog** Disabled by default. *Ping Watchdog* is only for PoE-enabled ports. If enabled, it configures the device to continuously ping a user-defined IP address (it can be the internet gateway, for example). If it is unable to ping under the user-defined constraints, then the device will automatically turn off PoE on the port, and then turn it back on. This option creates a kind of "fail-proof" mechanism.

Ping Watchdog is dedicated to continuous monitoring of the specific connection to the remote host using the *Ping* tool. The *Ping* tool works by sending ICMP echo request packets to the target host and listening for ICMP echo response replies. If the specified number of replies is not received, the tool reboots the device.

- **IP Address to Ping** Specify the IP address of the target host to be monitored by *Ping Watchdog*.



- **Save** Click to apply changes.



Chapter 4: VLANs

The *VLANs* screen configures Virtual Local Area Networks (VLANs) and trunk ports.

Reset To cancel your changes, click **Reset**.

Apply To immediately save your changes, click **Apply**.

VLANs

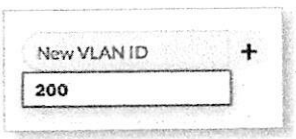
All ports belong to VLAN1, which is enabled as a management VLAN by default. A port can belong to more than one VLAN.



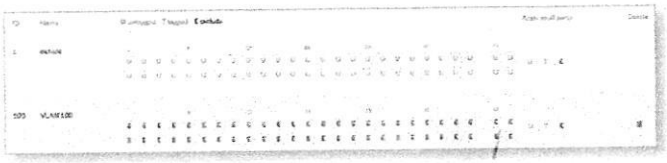
Trunk Ports Trunk mode is disabled by default. Trunk ports carry both untagged and tagged traffic from multiple VLANs. Trunk ports are indicated by a dark gray background in the *Trunk Ports* section and by a thick outline in the *VLAN* sections below. If ports belong to a LAG, they are color-coded by LAG.



New VLAN ID To create a new VLAN, enter a unique VLAN ID from 2 to 4093 and click +.



The new VLAN appears.

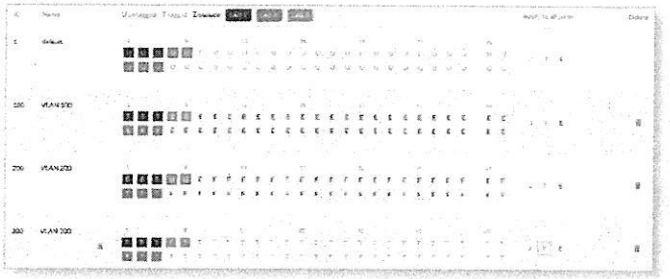


- **ID** Displays the ID number of the VLAN.
- **Name** Displays the name of the VLAN. Click to change the name.
- **(ports)** Displays the ports with the appropriate membership status indicator, as described below.
- *n* For each port, assign its membership status as a tagged or untagged member of this VLAN. You can also exclude a port from this VLAN.
  - **T (tag)** The port belongs to this VLAN, and VLAN tags are included on outgoing frames. Click the letter until it becomes a "T".
  - **U (untag)** The port belongs to this VLAN, and VLAN tags are excluded from outgoing frames. Click the letter until it becomes a "U".

- **E (exclude)** The port does not belong to this VLAN. Click the letter until it becomes an "E". If a port is configured as a trunk port, you can also use *E (exclude)* to exclude it from trunking.

Icon	Status
U	Untagged
T	Tagged
E	Exclude

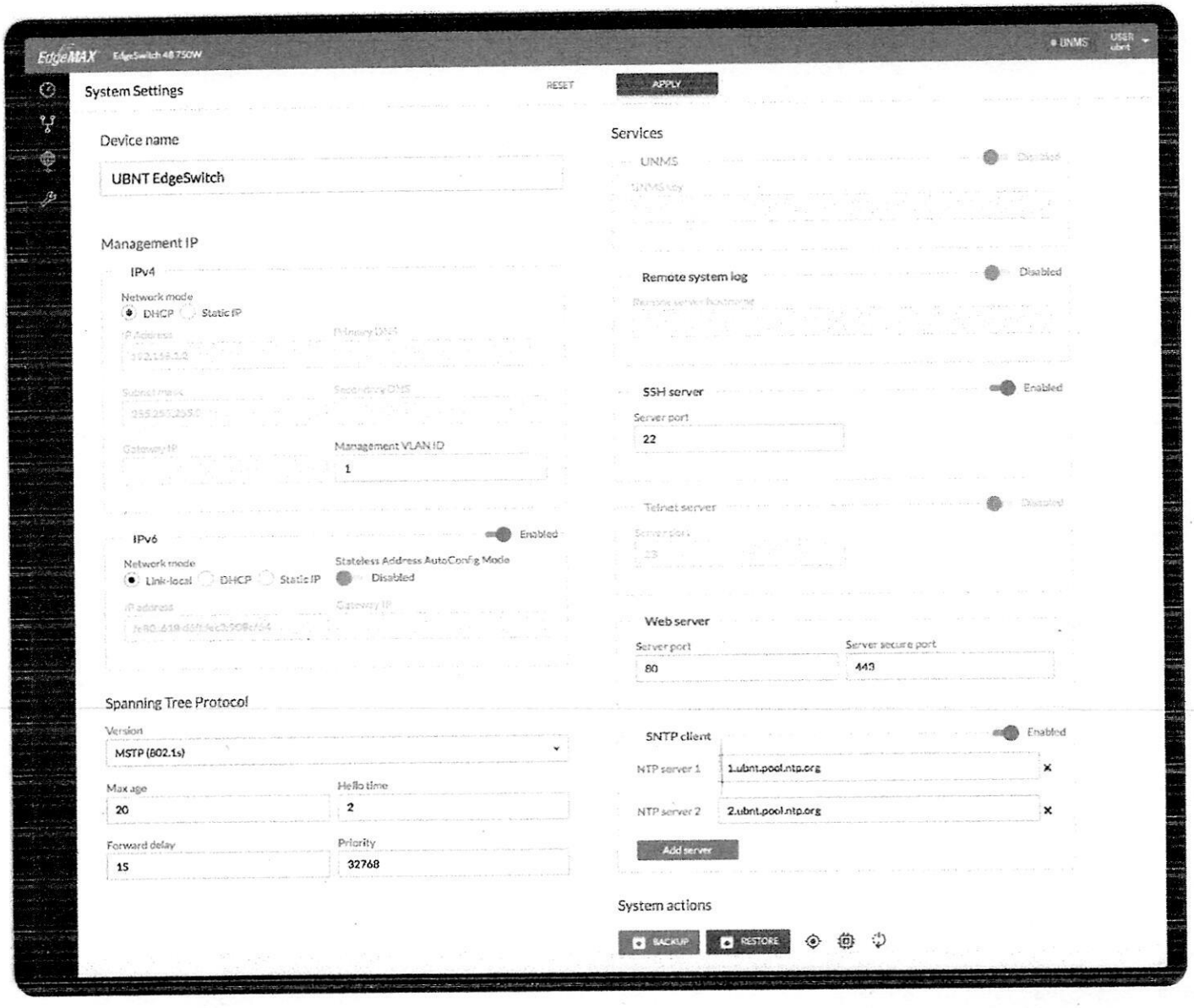
If ports belong to a LAG, they are color-coded by LAG. For any LAG port, click the letter until it becomes a "U", "T", or "E". The other ports in the same LAG will be automatically assigned the same status.



- **Apply to all ports** You can assign member status to all ports as a group. You have the following options:
  - **T (tag)** All ports are tagged members of this VLAN. All ports belong to this VLAN, and VLAN tags are included on outgoing frames. Click **T**.
  - **U (untag)** All ports belong to this VLAN, and VLAN tags are excluded from outgoing frames. Click **U**.
  - **E (exclude)** All ports do not belong to this VLAN. Click **E**.



- **Delete** Click the *Delete* icon to permanently remove the VLAN.



Chapter 5: System Settings

The *System Settings* screen allows you to configure and use the *Device Name*, *Management IP*, *Spanning Tree Protocol*, *Services*, and *System Actions*, including configuration backup and restore, as well as firmware update.

Reset To cancel your changes, click **Reset**.

Apply To immediately save your changes, click **Apply**.

Device Name



Device Name Specify the Device Name (hostname), which is the system-wide device identifier. The SNMP agent reports it to authorized management stations. The *Device Name* will be used in popular router operating systems, registration screens, and discovery tools.

Management IP

The *Management IP* settings configure the IP settings of the EdgeSwitch.

The *IP Address* and *Subnet Mask* are not mandatory for a Layer 2 device such as the EdgeSwitch; however, they must be configured if you want to manage the EdgeSwitch (and will not be using DHCP).

Configure the *Management VLAN ID* and then configure the appropriate section(s): IPv4 or IPv6.

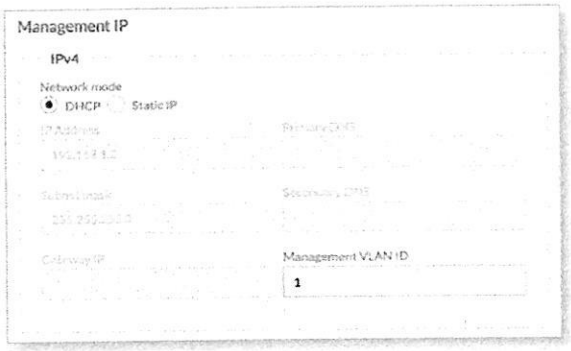
Note: The *Management VLAN ID* is shared for IPv4 DHCP and static modes, as well as IPv6.

Management VLAN ID Specify the ID of the management VLAN. This VLAN must be configured in the list of VLANs; otherwise you may lose access. The default is *1*.

IPv4

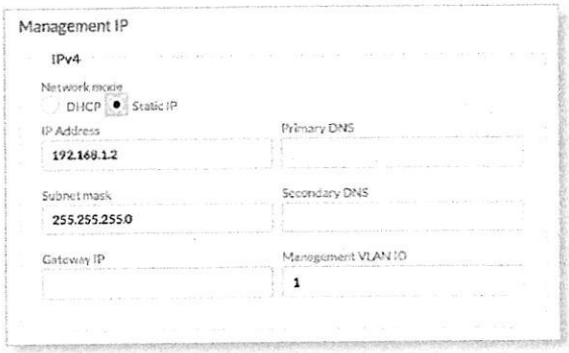
Network Mode The EdgeSwitch can use a static IP address or obtain an IP address from its DHCP server.

- **DHCP** The local DHCP server assigns a dynamic IP address, netmask, gateway IP address, and DNS address to the EdgeSwitch.



- **Static** Assign static IP settings to the EdgeSwitch.

Note: IP settings should be consistent with the address space of the EdgeSwitch's network segment.



  - **IP Address** Specify the IP address of the EdgeSwitch. This IP will be used for device management purposes. The default is *192.168.1.2*.
  - **Subnet Mask** When the subnet mask is expanded into its binary form, it provides a mapping to define which portions of the IP address range are used for the network devices and which portions are used for host devices. The netmask defines the address space of the EdgeSwitch's network segment. The default 255.255.255.0 (or "/24") netmask is commonly used on many Class C IP networks.
  - **Gateway IP** Typically, this is the IP address of the host router, which provides the point of connection to the internet. This can be a DSL modem, cable modem, or WISP gateway router. The EdgeSwitch directs packets to the gateway if the destination host is not within the local network.
  - **Primary DNS IP** Specify the IP address of the primary DNS (Domain Name System) server.
  - **Secondary DNS IP** Specify the IP address of the secondary DNS server. This entry is optional and used only if the primary DNS server is not responding.

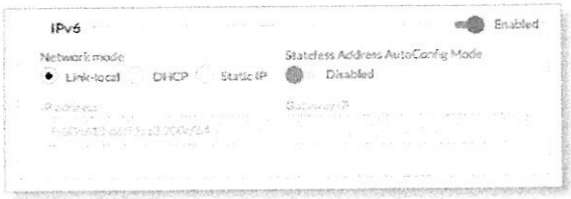
IPv6

Note: The *Management VLAN ID* setting is in the IPv4 section; however, it is shared for both IPv4 and IPv6.

Enabled/Disabled IPv6 is enabled by default.

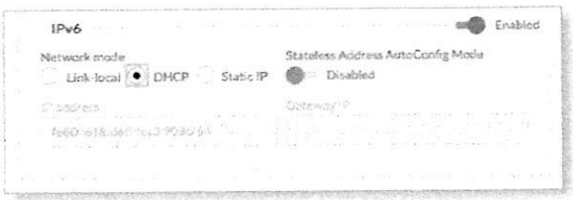
Network Mode Configure the appropriate mode for the EdgeSwitch: **Link-local**, **DHCP**, **Static IP**, or **Stateless Address AutoConfig Mode**.

- **Link-local** A link-local address is intended for communication only within the local network. Link-local addresses have a prefix of *fe80::/64*.



- **DHCP** The local DHCPv6 server assigns a dynamic IP address, netmask, gateway IP address, and DNS address to the EdgeSwitch.

Note: We do not recommend the *DHCP* option. The IP address may change, and you will need to use the *Discovery* tool from another Ubiquiti device or computer to discover the IP address of the EdgeSwitch. You can also reset the EdgeSwitch to its factory default settings. (Press and hold the **Reset** button for more than 10 seconds.) Its default *IP Address* is reset to an EUI-64 link-local address derived from its MAC address.



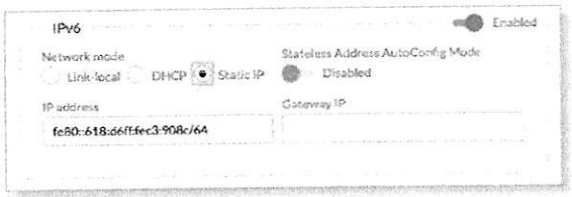
- **Static** Assign static IPv6 settings to the EdgeSwitch.

Note: IP settings should be consistent with the address space of the EdgeSwitch's network segment.



- **IP Address** Specify the IPv6 address of the EdgeSwitch. This IP will be used for device management purposes. The default is an EUI-64 link-local address derived from its MAC address.
- **Gateway IP** Typically, this is the IPv6 address of the host router, which provides the point of connection to the internet. This can be a DSL modem, cable modem, or WISP gateway router. The EdgeSwitch directs packets to the gateway if the destination host is not within the local network.

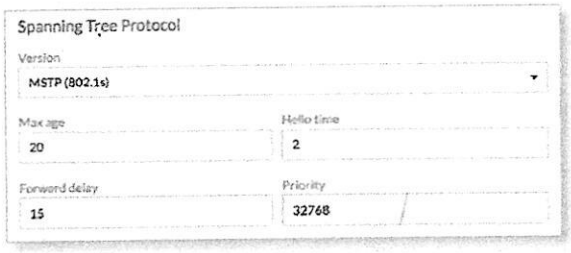
- **Stateless Address AutoConfig Mode** Disabled by default. If enabled, the EdgeSwitch can acquire an IPv6 address through the IPv6 Neighbor Discovery Protocol (NDP) and the use of Router Advertisement messages.



Spanning Tree Protocol

For optimal performance, there should be a single active path between two networking devices in an Ethernet network. Spanning Tree Protocol (STP) provides redundant paths and prevents network loops that can create excessive traffic and slow down performance. STP calculates the best path for network traffic; if the best path fails, STP recalculates and finds the next best path.

Enabled by default, STP provides redundancy without network loops.



Version Select the version of STP to use: **MSTP**, **STP**, or **RSTP**. Multiple STP (MSTP) and Rapid STP (RSTP) are enhanced versions of STP. RSTP displays the following states: *Blocking*, *Learning*, and *Forwarding*. MSTP uses RSTP and groups VLANs together. When STP is selected, the EdgeSwitch sends STP packets. The default is *MSTP*.

Max Age Specify how long the EdgeSwitch saves a configuration message received on a port. If the EdgeSwitch does not hear any new configuration messages after the *Max Age* time interval, then the EdgeSwitch adapts and starts to reconfigure. The default is *20* seconds.

Hello Time Specify the time interval between configuration messages transmitted by the EdgeSwitch to other switches. The default is *2* seconds.

Forward Delay Specify how long the listening and learning states last before the EdgeSwitch forwards traffic. The default is *15* seconds.

Priority STP uses priority values to select a switch as the root switch of the spanning tree. Specify the *Priority* value of the EdgeSwitch. The default is *32768*.

Services

Configure the following services: *UNMS*, *Remote System Log*, *SSH Server*, *Telnet Server*, *Web Server*, and *SNTP Client*.

UNMS



Enabled/Disabled Disabled by default. Enabling this option activates UNMS access to the device.

- **UNMS Key** Enter the UNMS key, which helps to secure communication between the device and UNMS. For more information, go to: **ubnt.link/UNMS-Key**

Remote System Log

Every logged message contains at least a system time and host name. Usually a specific service name that generates the system event is also specified within the message. Messages from different services have different contexts and different levels of detail. Usually error, warning, or informational system service messages are reported; however, more detailed debug level messages can also be reported. The more detailed the system messages reported, the greater the volume of log messages generated.



Enabled/Disabled Disabled by default. If enabled, system log messages are sent to a remote server.

- **Remote Server Hostname** Enter the hostname of the remote server that receives syslog messages. Properly configure the remote host to receive syslog protocol messages.

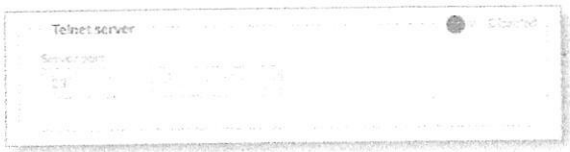
SSH Server



Enabled/Disabled SSH access to the device is enabled by default.

- **Server Port** Specify the TCP/IP port of the SSH server. The default is *22*.

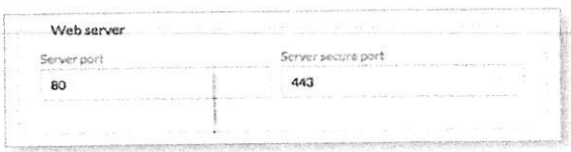
Telnet Server



Enabled/Disabled Disabled by default. Enabling this option activates Telnet access to the device.

- **Server Port** Specify the TCP/IP port of the Telnet server. The default is *23*.

Web Server



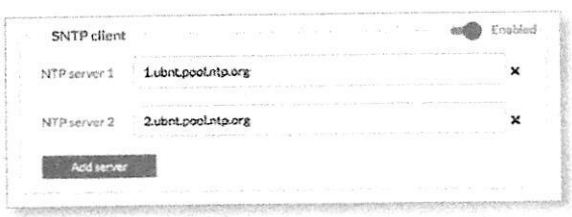
HTTPS is enabled by default. The following *Web Server* parameters can be set:

Server Port For HTTP mode, specify the TCP/IP port of the web server. The default is *80*.

Secure Server Port For secure HTTPS mode, specify the TCP/IP port of the web server. The default is *443*.

SNTP Client

Simple Network Time Protocol (SNTP) is a simplified version of NTP, a protocol for the synchronization of network device clocks using an SNTP server. You can use it to set the system time on the device, and the system time is reported next to every log entry that registers a system event.



Enabled/Disabled Enabled by default. The device obtains the system time from a time server on the internet.

- **NTP Server 1** Specify the IP address or domain name of the primary NTP server. The default is as follows: *1.ubnt.pool.ntp.org*
- **NTP Server 2** Specify the IP address or domain name of the secondary NTP server. The default is as follows: *2.ubnt.pool.ntp.org*

System Actions

This section manages device configuration routines, firmware updates, and the option to reset the device to factory default settings.

Backup



Backup Click BACKUP to download the current system configuration file. The device configuration is stored as a gzipped tar archive (.tar.gz). You can back up, restore, or update the system configuration file:

Note: We strongly recommend that you save the configuration file in a secure location. The configuration file includes confidential information, such as hashed passwords.

Restore



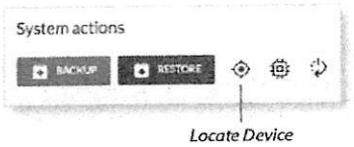
Note: We recommend that you back up your current system configuration before uploading the new configuration.

The configuration file must match the device you are uploading to. Behavior may be unpredictable if you mix configuration files from different device models. For example, upload an ES-16-150W configuration file to an ES-16-150W; do NOT upload an ES-24-Lite configuration file to an ES-16-150W.

Restore Click RESTORE to locate the new configuration file. Select the file and then click **Open** to upload the new configuration file to the EdgeSwitch.

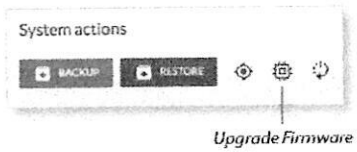
After the EdgeSwitch reboots, the settings of the new configuration are displayed in the Configuration Interface.

Locate Device



Click the *Locate Device* icon to flash the System LED on the EdgeSwitch so you can locate it. It will quickly flash blue until you click the *Locate Device* icon again.

Upgrade Firmware



Note: We recommend that you back up your current system configuration before updating the firmware.

The EdgeSwitch firmware update is compatible with all configuration settings. The system configuration is preserved while the EdgeSwitch is updated with a new firmware version.

Click the *Upgrade Firmware* icon to locate the new firmware file. Select the file and then click **Open** to update the firmware.

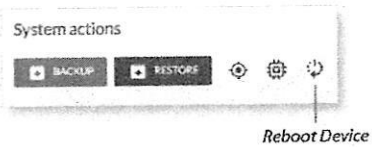
During the firmware update, the System LED on the EdgeSwitch will alternate between blue and white.

If the firmware update is in process, you can close the EdgeSwitch Configuration Interface, but this does not cancel the firmware update.

While the firmware update is in process, please be patient, as the firmware update routine can take three to seven minutes. You cannot access the EdgeSwitch until the firmware update routine is completed.

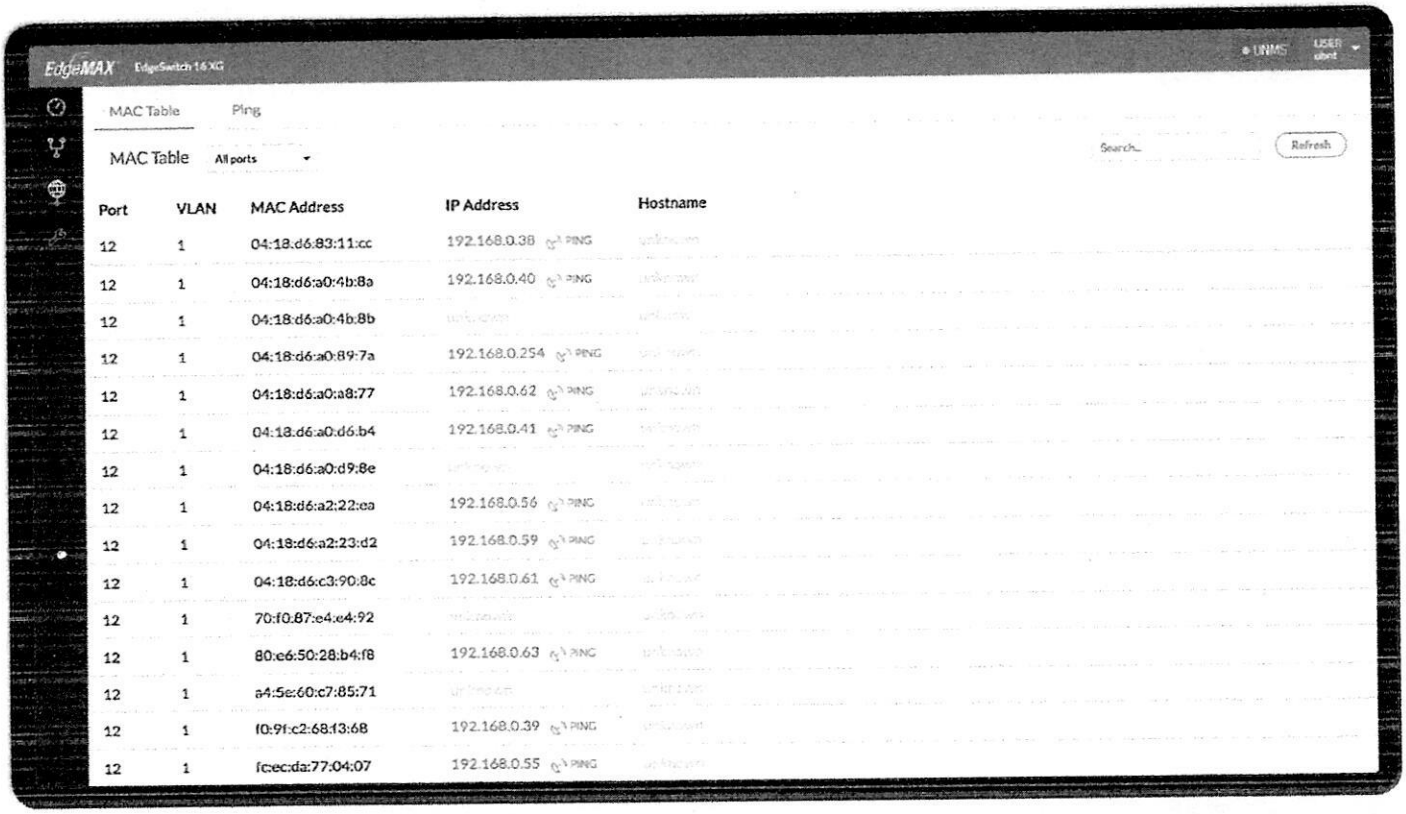
WARNING: Do not power off, do not reboot, and do not disconnect the EdgeSwitch from the power supply during the firmware update process as these actions will damage the EdgeSwitch!

Reboot Device



Click the *Reboot Device* icon to initiate a full reboot cycle of the device. You will be prompted to confirm; click **OK** to proceed with the reboot or click *Cancel* to cancel the reboot.

Reboot is the same as the hardware reboot, which is similar to the power-off and power-on cycle. The system configuration stays the same after the reboot cycle completes. Any changes that have not been applied are lost.

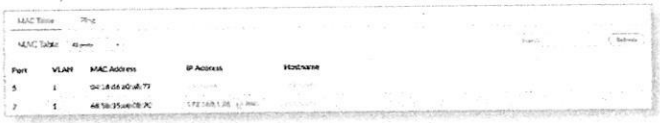


Chapter 6: Tools

The *Tools* screen offers the MAC forwarding table and ping test.

MAC Table

The *MAC Forwarding Table* displays information, including MAC addresses, of the hardware devices using the EdgeSwitch.



MAC Table

All ports *All ports* is the default. To view information about the hardware device using a specific port, select the port from the drop-down list.

Search The *Search* field automatically filters MAC and IP addresses containing specified numbers or letters as you enter them.

Refresh To refresh the window, click **Refresh**.

The *MAC Forwarding Table* reports the *Port* number, *VLAN* ID, *MAC Address*, *IP Address*, and *Hostname* for each hardware device.

- **Ping** If the IP address is displayed, then you can click the *Ping* PING icon to start a ping test.

Ping

You can ping other devices on the network directly from the EdgeSwitch. The *Ping* tool uses ICMP packets to check the preliminary link quality and packet latency estimation between two network devices.



Ping

Address Enter the IP address.

Packet size The default is *56 bytes*. To specify the size of the packet in bytes, click **Change parameters**.

Packet count The default is *10*. To specify the number of packets to send for the ping test, click **Change parameters**.

Ping Parameters

- **Packet size** Enter the size of the packet in bytes.
- **Packet count** Enter the number of packets to send for the ping test.
- **Save** Click to apply changes.

Start Click to begin the ping test.



Packet loss statistics and latency time evaluation are displayed after the test is completed.

Appendix A: Contact Information

Ubiquiti Networks Support

Ubiquiti Support Engineers are located around the world and are dedicated to helping customers resolve software, hardware compatibility, or field issues as quickly as possible. We strive to respond to support inquiries within a 24-hour period.

Ubiquiti Networks, Inc.
685 Third Avenue, 27th Floor
New York, NY 10017 USA
www.ubnt.com

Online Resources

Support: **ubnt.link/EdgeMAX-Support**

Community: **community.ubnt.com/edgemax**

Downloads: **downloads.ubnt.com/edgemax**

3405

HIKVISION

DS-1600KI Keyboard

User Manual

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User Manual

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Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
Danger	Indicates a hazardous situation which, if not avoided, will or could result in death or serious injury.
Caution	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results.
Note	Provides additional information to emphasize or supplement important points of the main text.

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Chapter 1 Product Description

1.1 Product Overview

Introduction

DS-1600KI is a fully touch-enabled and detachable network keyboard independently developed by Hikvision.

In addition to displaying images, the 10.1" capacitive touchscreen supports DVI and HDMI video outputs. The software system runs on Android 6.0. It is compatible with all series of Hikvision IP cameras, NVRs/DVRs, and control center platform such as HikCentral. It supports recording, picture capturing and two-way audio, as well as the video wall control and scene switch of platform and decoding devices.

The four-axis joystick can be used to the PTZ control of speed dome and quick location of the target. The joystick panel is detachable for convenience.

Key Features

- 10.1" capacitive touchscreen
- Detachable design of the touchscreen and joystick
- Capable of decoding 4-ch at 1080p resolution
- Up to 16-division window display
- Supports H.265 encoding format
- Live view on touchscreen
- DVI and HDMI outputs to monitor
- Local playback of video
- Controllable of up to 8,000 devices
- Accessible to private products including DVR, DVS, NVR, network camera, speed dome, etc.
- Control of decoders for video decoding and output on video wall
- Accessible by platforms and matrix access gateway
- Supports video wall configuration and scene switch
- Smart scaling of video wall layout
- Flexible PTZ control including setting and calling the preset, calling the patrol, auto-scan, setting and calling the pattern, light on/off, wiper on/off, focus control and iris control; You can control the directions, zoom in, zoom out and capture pictures via the joystick
- Upgrade and configuration files import/export by USB flash drive
- Recording, picture capturing and two-way audio; Saving files in USB flash drive or uploading to FTP server
- Two-level user authority and up to 32 user accounts are configurable, including 1 admin and 31 operators
- Wired and Wi-Fi network connection

1.2 Appearance

The DS-1600KI keyboard consists of a touchscreen and a joystick panel. The joystick panel is detachable and can be separated from the keyboard.

Refer to the following figure for keyboard appearance.

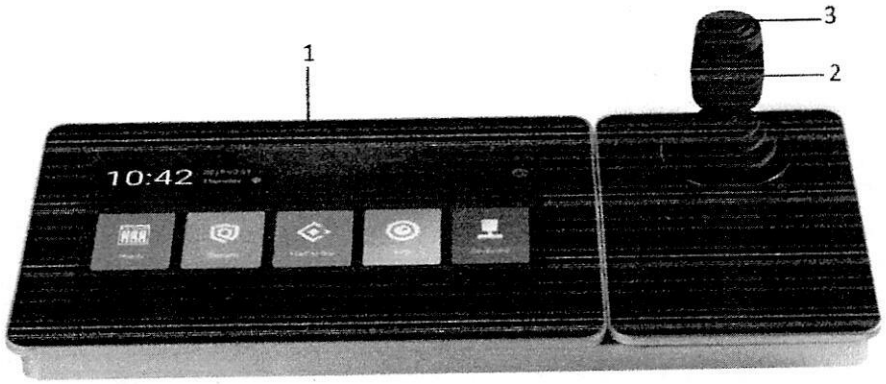


Figure 1-1 DS-1600KI Keyboard Appearance

Front Panel

Refer to the following table for description of keyboard appearance.

Table 1-1 Keyboard Appearance Description

Number	Name	Description
1	Touchscreen	10.1" capacitive touchscreen for display, configuration and operation of the keyboard.
2	Joystick	Used for PTZ control.
3	Capture Button	Used for picture capture.

Refer to the following table for description of joystick operations.

Table 1-2 Joystick Operation Description

Operation	Function
Up	PTZ control mode: Move the PTZ up.
Down	PTZ control mode: Move the PTZ down.
Left	PTZ control mode: Move the PTZ left.
Right	PTZ control mode: Move the PTZ right.

Operation	Function
Upper left	PTZ control mode: Move the PTZ upper left.
Upper right	PTZ control mode: Move the PTZ upper right.
Lower left	PTZ control mode: Move the PTZ lower left.
Lower right	PTZ control mode: Move the PTZ lower right.
Rotate anticlockwise	Zoom out (ZOOM-)
Rotate clockwise	Zoom in (ZOOM+)

Interfaces

Eight interfaces and one button are provided on the rear panel of DS-1600KI keyboard.

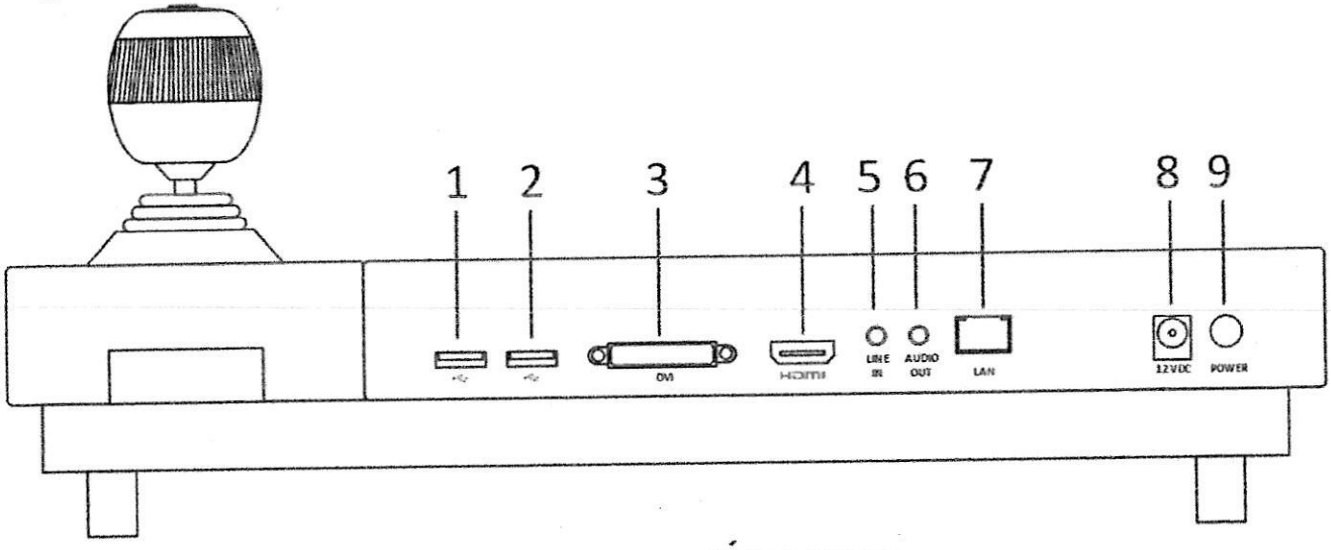


Figure 1-2 Rear Panel of DS-1600KI

Refer to the following table for description of the interfaces.

Table 1-3 Description of Interfaces

Number	Name	Description
1	USB Interface	One for connecting to the USB device. One for connecting to the joystick.
2		
3	DVI	DVI video output connector.
4	HDMI	HDMI video output connector.
5	LINE IN	3.5 mm connector for audio input.
6	AUDIO OUT	3.5 mm connector for audio output (the external amplifier must be connected).