ODU EN BANDA DE 11GHZ

EMS-ODUB11

RADIO:
- 6-38 GHz
- 1+0, 1+1 HSB, 2+0

Características de la radio:
- Protección: 1+1 HSB
- QPSK a 2048 QAM con ACM
- Reutilización avanzada de frecuencia (AFR)

ESPECIFICACIONES TÉCNICAS

Ethernet /Interfaces Ethernet:
- Interfaces de tráfico: 1 puerto 10/100/1000Base-T (RJ-45) y 2 puertos 1000Base-X (SFP) o 2 puertos 10/100/1000Base-T (SFP eléctricos)
- Interfaz de gestión: 1 puerto 10/100Base-T (RJ-45)
- Tipos de SFP ópticos: 1000Base-LX (1310 nm) o SX (850 nm)
- Nota: Los dispositivos SFP deben ser de grado industrial (de -40 °C a +85 °C).

SINCRONIZACIÓN:
- Distribución de sincronización sobre cualquier interfaz de tráfico (GE/FE)
- Sync-E (ITU-T G.8261, G.8262)
- Compatibilidad con SSM/ESMC para aplicaciones de anillo/malla (ITU-T G.8264)
- Modo regenerador Sync-E, que proporciona un rendimiento de grado PRC (ITU-T G.811) para aplicaciones de canalización inteligente.
- IEEE-1588
- Transporte optimizado para reducir la variación de datos de procesamiento (PDV)
- IEEE-1588 TC

Características de Ethernet:
- MTU: 9600 bytes
- Calidad de servicio (QoS)
- o Múltiples criterios de clasificación (ID de VLAN, bits P, IPv4, DSCP, IPv6 TC, MPLS EXP)

a. 8 colas de prioridad
b. Almacenamiento en búfer profundo (configurable hasta 64 Mbit por cola)
c. WRED
d. QoS jerárquica: alta granularidad de servicio*
e. Marcado/remarcado de bits P

- 4K VLAN
- Agregar/eliminar/traducir VLAN
- • Corte de tramas: latencia y PDV controladas para aplicaciones sensibles a la latencia
- Deduplicación de encabezados: aumento de capacidad mediante la eliminación de ineficiencias en todas las capas (L2, MPLS, L3, L4, tunelización: GTP para LTE, GRE)
- Notificación de ancho de banda adaptativa (ABN)
- Resiliencia de red: G.8032 y Protocolo de árbol de expansión múltiple (MSTP)*
- Ethernet OAM: ITU-T Y.1731 FM, UIT-T Y.1731 PM*

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ESPECIFICACIONES TÉCNICAS:

- Especificaciones mecánicas
- Dimensiones: 230 mm (alto), 233 mm (ancho), 98 mm (profundidad), 6,0 kg
- Rango de diámetro del poste (para instalación remota): 8,89 cm – 11,43 cm
- Especificaciones ambientales
- -33 °C a +55 °C (-45 °C a +60 °C en régimen extendido)
- Especificaciones de entrada de alimentación
- Entrada estándar: -48 V CC
- Rango de entrada de CC de la unidad interior: -40 a -60 V CC
- Especificaciones de consumo de energía
- Consumo máximo de energía (6-11 GHz): 40 W; 13-38 GHz: 35 W
- Especificaciones mecánicas del inyector PoE
- Dimensiones: 134 mm (alto), 190 mm (ancho), 62 mm (profundidad), 1 kg
- Especificaciones ambientales del inyector PoE
- De 33 °C a +55 °C (de -45 °C a +60 °C con rango extendido)
- Especificaciones de entrada de alimentación del inyector PoE
- Entrada estándar: -48 o +24 V CC (opcional)
- Rango de entrada de CC: ±(18/40,5 a 60) V CC (se admite un rango extendido de +18 V CC como parte de la compatibilidad nominal con +24 V CC)
- Interfaces del inyector PoE
- Puerto de datos GbE compatible con 10/100/1000Base-T
- Puerto Power-Over-Ethernet (PoE)
- Puerto de alimentación de CC: de -40 V a -60 V (disponible un PoE con dos fuentes de alimentación de CC redundantes, cada una compatible con ±(18-60) V)

* Previsto para lanzamiento futuro.

MEF ESTÁNDAR:

- Carrier Ethernet 2.0 (CE 2.0)**
- Estándares Ethernet compatibles
- 10/100/1000base-T/X (IEEE 802.3)
- VLAN Ethernet (IEEE 802.3ac)
- Red de área local virtual (VLAN, IEEE 802.1Q)
- Clase de servicio (IEEE 802.1p)
- Puentes de proveedor (QinQ – IEEE 802.1ad)
- Agregación de enlaces (IEEE 802.3ad)
- Auto MDI/MDIX para 1000baseT
- RFC 1349: IPv4 TOS
- RFC 2474: IPv4 DSCP
- RFC 2460: Clases de tráfico IPv6

Seguridad:

- Cifrado AES de 256 bits
- Protocolos seguros (HTTPS, SNMPv3, SSH, SFTP)
- Autenticación y autorización RADIUS
- Cumplimiento de estándares
- EMC: EN 301 489-1, EN 301 489-4, Clase B (Europa), FCC 47 CFR, parte 15, clase B (EE. UU.), ICES-003, Clase B (Canadá), TEC/EMI/TEL-001/01, Clase B (India)
- Protección contra sobretensiones: EN61000-4-5, Clase 4 (para puertos PWR y ETH1/PoE)
- Seguridad: EN 60950-1, IEC 60950-1, UL 60950-1, CSA-C22.2 No.60950-1, EN 60950-22, UL 60950-22, CSAC22.2.60950-22
- Protección de ingreso: Conforme a IP66
- Almacenamiento: ETSI EN 300 019-1-1 Clase 1.2
- Transporte: ETSI EN 300 019-1-2 Clase 2.3

TRANSMITIR POTENCIA

	Frecuencia (GHz)									
Potencia de transmisión (dBm)	**6**	**7**	**8**	**10-11**	**13-15**	**18**	**23**	**24 UL HP**	**26**	**28-38**
QPSK	29	28	28	27	24	22	20	18	21	18
8 PSK	29	28	28	27	24	22	20	18	21	18
16 QAM	28	27	27	26	23	21	20	18	20	17
32 QAM	27	26	26	25	22	20	20	18	19	16
64 QAM	27	26	26	25	22	20	20	18	19	16
128 QAM	27	26	26	25	22	20	20	18	19	16
256 QAM	27	26	24	25	20	20	18	16	17	14
512 QAM	25	24	24	24	20	18	18	16	17	14
1024 QAM	25	24	24	23	20	18	17	15	16	13
2048 QAM	23	22	22	21	18	16	16	14	15	12

RECIBIR SENSIBILIDAD

		Frecuencia (GHz)													
Modulación	**Canal de espaciado**	**6**	**7**	**8**	**10**	**11**	**13**	**15**	**18**	**23**	**24**	**26**	**28-31**	**32**	**38**
QPSK	3.5 & 5 MHz	-96.5	-96.0	-96.0	-95.5	-96.5	-95.5	-94.5	-96.0	-95.0	-94.5	-94.5	-94.5	-94.0	-94.0
16 QAM		-90.0	-89.0	-89.0	-89.0	-89.5	-88.5	-88.0	-89.0	-88.0	-87.5	-88.0	-87.5	-87.5	-87.0
32 QAM		-86.5	-85.5	-85.5	-85.5	-86.0	-85.0	-84.5	-85.5	-84.5	-84.0	-84.5	-84.0	-84.0	-83.5
64 QAM		-83.0	-82.5	-82.5	-82.0	-83.0	-82.0	-81.0	-82.5	-81.5	-81.0	-81.0	-81.0	-80.5	-80.5
128 QAM		-79.5	-79.0	-79.0	-78.5	-79.5	-78.5	-77.5	-79.0	-78.0	-77.5	-77.5	-77.5	-77.0	-77.0
256 QAM		-76.5	-75.5	-75.5	-75.5	-76.5	-75.0	-74.5	-75.5	-75.0	-74.5	-74.5	-74.0	-74.0	-73.5
QPSK	7 MHz	-93.5	-93.0	-93.0	-92.5	-93.5	-92.5	-91.5	-93.0	-92.0	-91.5	-91.5	-91.5	-91.0	-91.0
8 PSK		-87.5	-87.0	-87.0	-86.5	-87.5	-86.5	-85.5	-87.0	-86.0	-85.5	-85.5	-85.5	-85.0	-85.0
16 QAM		-87.0	-86.5	-86.5	-86.0	-87.0	-86.0	-85.0	-86.5	-85.5	-85.0	-85.0	-85.0	-84.5	-84.5
32 QAM		-83.5	-83.0	-83.0	-82.5	-83.5	-82.5	-81.5	-83.0	-82.0	-81.5	-81.5	-81.5	-81.0	-81.0
64 QAM		-80.5	-80.0	-80.0	-79.5	-80.5	-79.5	-78.5	-80.0	-79.0	-78.5	-78.5	-78.5	-78.0	-78.0
128 QAM		-77.5	-76.5	-76.5	-76.5	-77.5	-76.0	-75.5	-76.5	-76.0	-75.5	-75.5	-75.0	-75.0	-74.5
256 QAM		-74.0	-73.5	-73.5	-73.0	-74.0	-73.0	-72.0	-73.5	-72.5	-72.0	-72.0	-72.0	-71.5	-71.5
512 QAM		-72.0	-71.5	-71.5	-71.0	-72.0	-71.0	-70.0	-71.5	-70.5	-70.0	-70.0	-70.0	-69.5	-69.5
1024 QAM (strong FEC)		-68.5	-68.0	-68.0	-67.5	-68.5	-67.5	-66.5	-68.0	-67.0	-66.5	-66.5	-66.5	-66.0	-66.0
1024 QAM (light FEC)		-68.0	-67.0	-67.0	-67.0	-67.5	-66.5	-66.0	-67.0	-66.0	-65.5	-66.0	-65.5	-65.5	-65.0
QPSK	10 MHz	-92.0	-91.5	-91.5	-91.0	-92.0	-91.0	-90.0	-91.5	-90.5	-87.0	-90.0	-90.0	-89.5	-89.0
8 PSK		-87.0	-86.0	-86.0	-86.0	-87.0	-85.5	-85.0	-86.0	-85.5	-81.5	-85.0	-84.5	-84.5	-84.0
16 QAM		-85.5	-85.0	-85.0	-84.5	-85.5	-84.5	-83.5	-85.0	-84.0	-80.5	-83.5	-83.5	-83.0	-82.5
32 QAM		-82.0	-81.5	-81.5	-81.0	-82.0	-81.0	-80.0	-81.5	-80.5	-77.0	-80.0	-80.0	-79.5	-79.0
64 QAM		-79.0	-78.5	-78.5	-78.0	-79.0	-77.5	-77.0	-78.5	-77.5	-74.0	-77.0	-77.0	-76.5	-76.0
128 QAM		-75.5	-75.0	-75.0	-74.5	-75.5	-74.5	-73.5	-75.0	-74.0	-70.5	-73.5	-73.5	-73.0	-72.5
256 QAM		-72.5	-72.0	-72.0	-71.5	-72.5	-71.5	-70.5	-72.0	-71.0	-67.5	-70.5	-70.5	-70.0	-69.5
512 QAM		-70.0	-69.5	-69.5	-69.0	-70.0	-68.5	-68.0	-69.5	-68.5	-65.0	-68.0	-68.0	-67.5	-67.0
1024 QAM (strong FEC)		-67.0	-66.5	-66.5	-66.0	-67.0	-66.0	-65.0	-66.5	-65.5	-62.0	-65.0	-65.0	-64.5	-64.0
1024 QAM (light FEC)		-66.5	-65.5	-65.5	-65.5	-66.5	-65.0	-64.5	-65.5	-65.0	-61.0	-64.5	-64.0	-64.0	-63.5
QPSK	14 MHz	-90.5	-90.0	-90.0	-89.5	-90.5	-89.5	-88.5	-90.0	-89.0	-88.5	-88.5	-88.5	-88.0	-88.0
8 PSK		-84.5	-84.0	-84.0	-83.5	-84.5	-83.5	-82.5	-84.0	-83.0	-82.5	-82.5	-82.5	-82.0	-82.0
16 QAM		-83.5	-83.0	-83.0	-82.5	-83.5	-82.5	-81.5	-83.0	-82.0	-81.5	-81.5	-81.5	-81.0	-81.0
32 QAM		-80.5	-79.5	-79.5	-79.5	-80.5	-79.0	-78.5	-79.5	-79.0	-78.5	-78.5	-78.0	-78.0	-77.5
64 QAM		-77.5	-76.5	-76.5	-76.5	-77.5	-76.0	-75.5	-76.5	-76.0	-75.5	-75.5	-75.0	-75.0	-74.5
128 QAM		-74.0	-73.5	-73.5	-73.0	-74.0	-73.0	-72.0	-73.5	-72.5	-72.0	-72.0	-72.0	-71.5	-71.5

		Frecuencia (GHz)													
Modulación	**Canal de espaciado**	**6**	**7**	**8**	**10**	**11**	**13**	**15**	**18**	**23**	**24**	**26**	**28-31**	**32**	**38**
256 QAM	14 MHz	-71.5	-70.5	-70.5	-70.5	-71.0	-70.0	-69.5	-70.5	-69.5	-69.0	-69.5	-69.0	-69.0	-68.5
512 QAM		-68.5	-68.0	-68.0	-67.5	-68.5	-67.5	-66.5	-68.0	-67.0	-66.5	-66.5	-66.5	-66.0	-66.0
1024 QAM (strong FEC)		-65.5	-65.0	-65.0	-64.5	-65.5	-64.5	-63.5	-65.0	-64.0	-63.5	-63.5	-63.5	-63.0	-63.0
1024 QAM (light FEC)		-65.0	-64.0	-64.0	-64.0	-65.0	-63.5	-63.0	-64.0	-63.5	-63.0	-63.0	-62.5	-62.5	-62.0
QPSK	20 MHz	-89.0	-88.5	-88.5	-88.0	-89.0	-88.0	-87.0	-88.5	-87.5	-84.0	-87.0	-87.0	-86.5	-86.0
8 PSK		-84.0	-83.5	-83.5	-83.0	-84.0	-83.0	-82.0	-83.5	-82.5	-79.0	-82.0	-82.0	-81.5	-81.0
16 QAM		-82.5	-82.0	-82.0	-81.5	-82.5	-81.0	-80.5	-82.0	-81.0	-77.5	-80.5	-80.5	-80.0	-79.5
32 QAM		-79.0	-78.5	-78.5	-78.0	-79.0	-77.5	-77.0	-78.5	-77.5	-74.0	-77.0	-77.0	-76.5	-76.0
64 QAM		-76.0	-75.0	-75.0	-75.0	-76.0	-74.5	-74.0	-75.0	-74.5	-70.5	-74.0	-73.5	-73.5	-73.0
128 QAM		-73.0	-72.0	-72.0	-72.0	-73.0	-71.5	-71.0	-72.0	-71.5	-67.5	-71.0	-70.5	-70.5	-70.0
256 QAM		-70.0	-69.5	-69.5	-69.0	-70.0	-68.5	-68.0	-69.5	-68.5	-65.0	-68.0	-68.0	-67.5	-67.0
512 QAM		-67.5	-66.5	-66.5	-66.5	-67.5	-66.0	-65.5	-66.5	-66.0	-62.0	-65.5	-65.0	-65.0	-64.5
1024 QAM (strong FEC)		-64.5	-63.5	-63.5	-63.5	-64.5	-63.0	-62.5	-63.5	-63.0	-59.0	-62.5	-62.0	-62.0	-61.5
1024 QAM (light FEC)		-63.5	-63.0	-63.0	-62.5	-63.5	-62.5	-61.5	-63.0	-62.0	-58.5	-61.5	-61.5	-61.0	-60.5
2048 QAM		-60.0	-59.5	-59.5	-59.0	-60.0	-59.0	-58.0	-59.5	-58.5	-55.0	-58.0	-58.0	-57.5	-57.0
QPSK	25MHz	-87.5	-86.5	-86.5	-86.5	-87.0	-86.0	-85.5	-86.5	-85.5	-82.0	-85.5	-85.0	-85.0	-84.0
8 PSK		-82.5	-82.0	-82.0	-81.5	-82.5	-81.5	-80.5	-82.0	-81.0	-77.5	-80.5	-80.5	-80.0	-79.5
16 QAM		-80.5	-80.0	-80.0	-79.5	-80.5	-79.5	-78.5	-80.0	-79.0	-75.5	-78.5	-78.5	-78.0	-77.5
32 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-72.5	-75.5	-75.5	-75.0	-74.5
64 QAM		-74.5	-74.0	-74.0	-73.5	-74.5	-73.5	-72.5	-74.0	-73.0	-69.5	-72.5	-72.5	-72.0	-71.5
128 QAM		-71.5	-71.0	-71.0	-70.5	-71.5	-70.5	-69.5	-71.0	-70.0	-66.5	-69.5	-69.5	-69.0	-68.5
256 QAM		-68.5	-67.5	-67.5	-67.5	-68.5	-67.0	-66.5	-67.5	-67.0	-63.0	-66.5	-66.0	-66.0	-65.5
512 QAM		-66.0	-65.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-60.5	-64.0	-63.5	-63.5	-63.0
1024 QAM (strong FEC)		-63.0	-62.5	-62.5	-62.0	-63.0	-61.5	-61.0	-62.5	-61.5	-58.0	-61.0	-61.0	-60.5	-60.0
1024 QAM (light FEC)		-62.5	-61.5	-61.5	-61.5	-62.5	-61.0	-60.5	-61.5	-61.0	-57.0	-60.5	-60.0	-60.0	-59.5
2048 QAM		-58.5	-58.0	-58.0	-57.5	-58.5	-57.0	-56.5	-58.0	-57.0	-53.5	-56.5	-56.5	-56.0	-55.5
QPSK	28 MHz ACCP	-87.5	-87.0	-87.0	-86.5	-87.5	-86.5	-85.5	-87.0	-86.0	-85.5	-85.5	-85.5	-85.0	-85.0
8 PSK		-83.0	-82.5	-82.5	-82.0	-83.0	-82.0	-81.0	-82.5	-81.5	-81.0	-81.0	-81.0	-80.5	-80.5
16 QAM		-81.0	-80.5	-80.5	-80.0	-81.0	-79.5	-79.0	-80.5	-79.5	-79.0	-79.0	-79.0	-78.5	-78.0
32 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.5	-75.0	-74.5
64 QAM		-74.5	-74.0	-74.0	-73.5	-74.5	-73.0	-72.5	-74.0	-73.0	-72.5	-72.5	-72.5	-72.0	-71.5
128 QAM		-71.5	-70.5	-70.5	-70.5	-71.0	-70.0	-69.5	-70.5	-69.5	-69.0	-69.5	-69.0	-69.0	-68.5
256 QAM		-68.5	-67.5	-67.5	-67.5	-68.0	-67.0	-66.5	-67.5	-66.5	-66.0	-66.5	-66.0	-66.0	-65.5
512 QAM		-66.0	-65.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-64.0	-64.0	-63.5	-63.5	-63.0
1024 QAM (strong FEC)		-63.0	-62.5	-62.5	-62.0	-63.0	-61.5	-61.0	-62.5	-61.5	-61.0	-61.0	-61.0	-60.5	-60.0
1024 QAM (light FEC)		-62.0	-61.5	-61.5	-61.0	-62.0	-60.5	-60.0	-61.5	-60.5	-60.0	-60.0	-60.0	-59.5	-59.0
2048 QAM		-58.5	-58.0	-58.0	-57.5	-58.5	-57.0	-56.5	-58.0	-57.0	-56.5	-56.5	-56.5	-56.0	-55.5
QPSK	30 MHz & 28 MHz ACAP	-87.5	-87.0	-87.0	-86.5	-87.5	-86.0	-85.5	-87.0	-86.0	-85.5	-85.5	-85.5	-85.0	-84.5
8 PSK		-82.5	-81.5	-81.5	-81.5	-82.5	-81.0	-80.5	-81.5	-81.0	-80.5	-80.5	-80.0	-80.0	-79.0
16 QAM		-81.0	-80.0	-80.0	-80.0	-80.5	-79.5	-79.0	-80.0	-79.0	-78.5	-79.0	-78.5	-78.5	-77.5
32 QAM		-77.0	-76.5	-76.5	-76.0	-77.0	-76.0	-75.0	-76.5	-75.5	-75.0	-75.0	-75.0	-74.5	-74.0
64 QAM		-74.5	-73.5	-73.5	-73.5	-74.0	-73.0	-72.5	-73.5	-72.5	-72.0	-72.5	-72.0	-72.0	-71.0
128 QAM		-71.0	-70.5	-70.5	-70.0	-71.0	-70.0	-69.0	-70.5	-69.5	-69.0	-69.0	-69.0	-68.5	-68.0
256 QAM		-68.0	-67.5	-67.5	-67.0	-68.0	-67.0	-66.0	-67.5	-66.5	-66.0	-66.0	-66.0	-65.5	-65.0
512 QAM		-66.0	-65.5	-65.5	-65.0	-66.0	-64.5	-64.0	-65.5	-64.5	-64.0	-64.0	-64.0	-63.5	-63.0
1024 QAM (strong FEC)		-63.0	-62.0	-62.0	-62.0	-62.5	-61.5	-61.0	-62.0	-61.0	-60.5	-61.0	-60.5	-60.5	-59.5
1024 QAM (light FEC)		-62.0	-61.0	-61.0	-61.0	-62.0	-60.5	-60.0	-61.0	-60.5	-60.0	-60.0	-59.5	-59.5	-58.5
2048 QAM		-58.0	-57.5	-57.5	-57.0	-58.0	-56.5	-56.0	-57.5	-56.5	-56.0	-56.0	-56.0	-55.5	-55.0

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		Frequency (GHz)													
Modulation	**Channel Spacing**	**6**	**7**	**8**	**10**	**11**	**13**	**15**	**18**	**23**	**24**	**26**	**28-31**	**32**	**38**
QPSK	40 MHz	-86.0	-85.5	-85.5	-85.0	-86.0	-85.0	-84.0	-85.5	-84.5	-84.0	-84.0	-84.0	-83.5	-83.5
8 PSK		-81.0	-80.5	-80.5	-80.0	-81.0	-79.5	-79.0	-80.5	-79.5	-79.0	-79.0	-79.0	-78.5	-78.0
16 QAM		-79.5	-79.0	-79.0	-78.5	-79.5	-78.0	-77.5	-79.0	-78.0	-77.5	-77.5	-77.5	-77.0	-76.5
32 QAM		-76.0	-75.0	-75.0	-75.0	-75.5	-74.5	-74.0	-75.0	-74.0	-73.5	-74.0	-73.5	-73.5	-73.0
64 QAM		-73.0	-72.0	-72.0	-72.0	-73.0	-71.5	-71.0	-72.0	-71.5	-71.0	-71.0	-70.5	-70.5	-70.0
128 QAM		-70.0	-69.0	-69.0	-69.0	-70.0	-68.5	-68.0	-69.0	-68.5	-68.0	-68.0	-67.5	-67.5	-67.0
256 QAM		-67.0	-66.0	-66.0	-66.0	-66.5	-65.5	-65.0	-66.0	-65.0	-64.5	-65.0	-64.5	-64.5	-64.0
512 QAM		-64.0	-63.5	-63.5	-63.0	-64.0	-62.5	-62.0	-63.5	-62.5	-62.0	-62.0	-62.0	-61.5	-61.0
1024 QAM (strong FEC)		-61.5	-61.0	-61.0	-60.5	-61.5	-60.0	-59.5	-61.0	-60.0	-59.5	-59.5	-59.5	-59.0	-58.5
1024 QAM (light FEC)		-60.5	-60.0	-60.0	-59.5	-60.5	-59.5	-58.5	-60.0	-59.0	-58.5	-58.5	-58.5	-58.0	-58.0
2048 QAM		-58.0	-57.0	-57.0	-57.0	-58.0	-56.5	-56.0	-57.0	-56.5	-56.0	-56.0	-55.5	-55.5	-55.0
QPSK	50 MHz	-85.5	-84.5	-84.5	-84.5	-85.0	-84.0	-83.5	-84.5	-83.5	-80.0	-83.5	-83.0	-83.0	-82.5
8 PSK		-80.0	-79.5	-79.5	-79.0	-80.0	-79.0	-78.0	-79.5	-78.5	-75.0	-78.0	-78.0	-78.0	-77.5
16 QAM		-78.5	-77.5	-77.5	-77.5	-78.0	-77.0	-76.5	-77.5	-76.5	-73.0	-76.5	-76.0	-76.0	-75.5
32 QAM		-74.5	-74.0	-74.0	-73.5	-74.5	-73.5	-72.5	-74.0	-73.0	-69.5	-72.5	-72.5	-72.5	-72.0
64 QAM		-71.5	-70.5	-70.5	-70.5	-71.5	-70.0	-69.5	-70.5	-70.0	-66.0	-69.5	-69.0	-69.0	-68.5
128 QAM		-68.5	-68.0	-68.0	-67.5	-68.5	-67.5	-66.5	-68.0	-67.0	-63.5	-66.5	-66.5	-66.5	-66.0
256 QAM		-66.0	-65.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-60.5	-64.0	-63.5	-63.5	-63.0
512 QAM		-63.5	-63.0	-63.0	-62.5	-63.5	-62.0	-61.5	-63.0	-62.0	-58.5	-61.5	-61.5	-61.5	-61.0
1024 QAM (strong FEC)		-60.0	-59.5	-59.5	-59.0	-60.0	-58.5	-58.0	-59.5	-58.5	-55.0	-58.0	-58.0	-58.0	-57.5
1024 QAM (light FEC)		-59.0	-58.0	-58.0	-58.0	-59.0	-57.5	-57.0	-58.0	-57.5	-53.5	-57.0	-56.5	-56.5	-56.0
2048 QAM		-57.0	-56.0	-56.0	-56.0	-56.5	-55.5	-55.0	-56.0	-55.0	-51.5	-55.0	-54.5	-54.5	-54.0
QPSK	56 MHz ACCP	-84.0	-83.5	-83.5	-83.0	-84.0	-83.0	-82.0	-83.5	-82.5	-82.0	-82.0	-82.0	-81.5	-81.5
8 PSK		-80.0	-79.5	-79.5	-79.0	-80.0	-79.0	-78.0	-79.5	-78.5	-78.0	-78.0	-78.0	-77.5	-77.5
16 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.5	-75.5	-77.0	-76.0	-75.5	-75.5	-75.5	-75.0	-75.0
32 QAM		-74.5	-73.5	-73.5	-73.5	-74.0	-73.0	-72.5	-73.5	-72.5	-72.0	-72.5	-72.0	-72.0	-71.5
64 QAM		-71.0	-70.5	-70.5	-70.0	-71.0	-70.0	-69.0	-70.5	-69.5	-69.0	-69.0	-69.0	-68.5	-68.5
128 QAM		-68.5	-67.5	-67.5	-67.5	-68.0	-67.0	-66.5	-67.5	-66.5	-66.0	-66.5	-66.0	-66.0	-65.5
256 QAM		-65.0	-64.5	-64.5	-64.0	-65.0	-64.0	-63.0	-64.5	-63.5	-63.0	-63.0	-63.0	-62.5	-62.5
512 QAM		-63.0	-62.5	-62.5	-62.0	-63.0	-61.5	-61.0	-62.5	-61.5	-61.0	-61.0	-61.0	-60.5	-60.0
1024 QAM (strong FEC)		-59.5	-59.0	-59.0	-58.5	-59.5	-58.5	-57.5	-59.0	-58.0	-57.5	-57.5	-57.5	-57.0	-57.0
1024 QAM (light FEC)		-58.5	-58.0	-58.0	-57.5	-58.5	-57.5	-56.5	-58.0	-57.0	-56.5	-56.5	-56.5	-56.0	-56.0
2048 QAM		-54.0	-53.5	-53.5	-53.0	-54.0	-53.0	-52.0	-53.5	-52.5	-52.0	-52.0	-52.0	-51.5	-51.5
QPSK	60 MHz & 56 MHz ACAP	-84.5	-84.0	-84.0	-83.5	-84.5	-83.0	-82.5	-84.0	-83.0	-82.5	-82.5	-82.5	-82.0	-81.5
8 PSK		-80.0	-79.0	-79.0	-79.0	-79.5	-78.5	-78.0	-79.0	-78.0	-77.5	-78.0	-77.5	-77.5	-77.0
16 QAM		-77.5	-77.0	-77.0	-76.5	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.5	-75.0	-74.5
32 QAM		-74.0	-73.0	-73.0	-73.0	-73.5	-72.5	-72.0	-73.0	-72.0	-71.5	-72.0	-71.5	-71.5	-71.0
64 QAM		-70.5	-70.0	-70.0	-69.5	-70.5	-69.5	-68.5	-70.0	-69.0	-68.5	-68.5	-68.5	-68.0	-68.0
128 QAM		-68.0	-67.0	-67.0	-67.0	-67.5	-66.5	-66.0	-67.0	-66.0	-65.5	-66.0	-65.5	-65.5	-65.0
256 QAM		-64.5	-64.0	-64.0	-63.5	-64.5	-63.5	-62.5	-64.0	-63.0	-62.5	-62.5	-62.5	-62.0	-62.0
512 QAM		-62.5	-62.0	-62.0	-61.5	-62.5	-61.5	-60.5	-62.0	-61.0	-60.5	-60.5	-60.5	-60.0	-60.0
1024 QAM (strong FEC)		-59.0	-58.5	-58.5	-58.0	-59.0	-58.0	-57.0	-58.5	-57.5	-57.0	-57.0	-57.0	-56.5	-56.5
1024 QAM (light FEC)		-58.0	-57.5	-57.5	-57.0	-58.0	-57.0	-56.0	-57.5	-56.5	-56.0	-56.0	-56.0	-55.5	-55.5
2048 QAM		-55.5	-54.5	-54.5	-54.5	-55.0	-54.0	-53.5	-54.5	-53.5	-53.0	-53.5	-53.0	-53.0	-52.5
QPSK	80 MHz	N/A	N/A	N/A	N/A	-83.5	N/A	N/A	-82.5	N/A	N/A	N/A	N/A	N/A	N/A
8 PSK		N/A	N/A	N/A	N/A	-78.0	N/A	N/A	-77.5	N/A	N/A	N/A	N/A	N/A	N/A
16 QAM		N/A	N/A	N/A	N/A	-76.5	N/A	N/A	-76.0	N/A	N/A	N/A	N/A	N/A	N/A
32 QAM		N/A	N/A	N/A	N/A	-73.0	N/A	N/A	-72.5	N/A	N/A	N/A	N/A	N/A	N/A
64 QAM		N/A	N/A	N/A	N/A	-70.0	N/A	N/A	-69.5	N/A	N/A	N/A	N/A	N/A	N/A
128 QAM		N/A	N/A	N/A	N/A	-67.0	N/A	N/A	-66.5	N/A	N/A	N/A	N/A	N/A	N/A
256 QAM		N/A	N/A	N/A	N/A	-64.5	N/A	N/A	-64.0	N/A	N/A	N/A	N/A	N/A	N/A
512 QAM		N/A	N/A	N/A	N/A	-61.5	N/A	N/A	-61.0	N/A	N/A	N/A	N/A	N/A	N/A
1024 QAM		N/A	N/A	N/A	N/A	-58.5	N/A	N/A	-58.0	N/A	N/A	N/A	N/A	N/A	N/A

RENDIMIENTO DE ETHERNET

		Rendimiento Ethernet (Mbps)				Rendimiento Ethernet (Mbps)		
Modulación	**Channel Size**	**No Compresión**	**L2 Compresión**	**Multicapa Compresión**	**Channel Size**	**No Compresión**	**L2 Compresión**	**Multi-Layer Compresión**
QPSK	3.5 MHz & 5 MHz	3	3-4	4-11	7 MHz	8	8-10	9-27
8 PSK		N/A	N/A	N/A		13	13-14	13-40
16 QAM		8	8-9	9-26		18	18-20	19-58
32 QAM		11	11-13	12-36		24	24-27	25-77
64 QAM		14	14-16	15-45		30	30-34	31-95
128 QAM		17	17-19	18-54		36	36-41	37-114
256 QAM		19	20-22	20-62		41	41-47	43-132
512 QAM		N/A	N/A	N/A		44	44-50	46-141
1024 QAM (strong FEC)		N/A	N/A	N/A		47	47-54	49-151
1024 QAM (light FEC)		N/A	N/A	N/A		50	51-57	53-161
QPSK	10 MHz	12	12-14	13-40	14 MHz	19	19-22	20-62
8 PSK		19	19-21	20-61		29	29-33	30-93
16 QAM		26	26-30	27-83		40	40-45	42-128
32 QAM		34	35-39	36-111		53	53-60	55-169
64 QAM		42	43-48	45-137		65	65-74	68-208
128 QAM		51	51-58	53-164		78	79-89	82-251
256 QAM		58	59-67	61-188		89	90-102	94-287
512 QAM		64	65-73	67-206		98	99-112	103-316
1024 QAM (strong FEC)		67	68-77	71-216		104	105-119	109-335
1024 QAM (light FEC)		72	72-82	75-230		111	111-126	116-355
QPSK	20 MHz	27	28-31	29-88	25 MHz	35	35-40	37-112
8 PSK		41	41-47	43-132		52	53-60	55-168
16 QAM		56	57-64	59-180		71	72-81	75-229
32 QAM		74	75-85	78-238		94	95-107	99-302
64 QAM		91	92-104	96-293		116	117-132	121-372
128 QAM		110	111-126	116-354		139	141-159	147-448
256 QAM		125	126-142	131-401		159	160-181	167-511
512 QAM		136	137-156	143-438		175	177-200	184-564
1024 QAM (strong FEC)		145	146-165	152-466		186	188-213	196-599
1024 QAM (light FEC)		154	155-176	162-495		198	199-226	208-636
2048 QAM		164	165-187	172-528		212	214-242	223-682
QPSK	28 MHz (ACCP)	40	40-45	42-127	30 MHz & 28 MHz (ACAP)	42	42-48	44-135
8 PSK		59	60-68	62-191		61	62-70	65-197
16 QAM		81	82-93	85-261		86	87-98	90-277
32 QAM		107	108-122	112-344		113	114-129	119-364
64 QAM		132	133-150	138-424		139	140-159	147-449
128 QAM		159	160-181	166-509		168	169-192	176-540
256 QAM		181	182-206	190-580		193	195-220	203-621
512 QAM		199	201-227	209-640		206	208-235	216-662
1024 QAM (strong FEC)		212	214-242	223-681		224	226-259	236-722
1024 QAM (light FEC)		225	227-257	236-723		238	240-271	250-764
2048 QAM		241	243--275	253-775		260	262-296	273-833

Modulación	Channel Size	No Compression	L2 Compression	Multi-Layer Compression	Channel Size	No Compression	L2 Compression	Multi-Layer Compression
QPSK	40 MHz	57	57-65	60-183	50 MHz	69	70-79	73-223
8 PSK		85	86-97	89-273		108	108-123	113-346
16 QAM		116	117-132	121-372		146	147-166	153-469
32 QAM		152	154-174	160-490		183	185-209	193-589
64 QAM		187	189-214	197-602		237	239-270	249-761
128 QAM		226	228-258	238-728		276	278-315	290-833
256 QAM		243	245-278	256-782		327	330-374	344-833
512 QAM		267	269-304	280-833		355	358-405	373-833
1024 QAM (strong FEC)		302	305-345	318-833		387	390-441	406-833
1024 QAM (light FEC)		321	324-366	337-833		411	414-468	431-833
2048 QAM		347	350-396	365-833		443	446-505	465-833
QPSK	56 MHz (ACCP)	81	82-93	86-262	60 MHz & 56 MHz (ACAP)	86	86-98	90-276
8 PSK		121	122-138	127-390		125	126-143	131-402
16 QAM		165	166-188	173-531		174	175-198	182-558
32 QAM		217	219-248	228-699		229	230-261	240-734
64 QAM		267	269-304	280-833		281	283-320	295-833
128 QAM		323	325-368	339-833		339	342-387	356-833
256 QAM		369	372-421	388-833		391	394-447	411-833
512 QAM		401	404-457	421-833		421	424-480	442-833
1024 QAM (strong FEC)		436	439-497	458-833		458	461-522	481-833
1024 QAM (light FEC)		462	466-528	486-833		486	490-555	511-833
2048 QAM		502	505-572	527-833		527	531-601	553-833
QPSK	80 MHz	113	114-129	119-363				
8 PSK		160	161-183	168-515				
16 QAM		228	230-260	240-733				
32 QAM		300	302-342	315-833				
64 QAM		367	369-418	385-833				
128 QAM		433	436-494	455-833				
256 QAM		499	503-569	524-833				
512 QAM		548	552-625	576-833				
1024 QAM		596	601-680	626-833				