

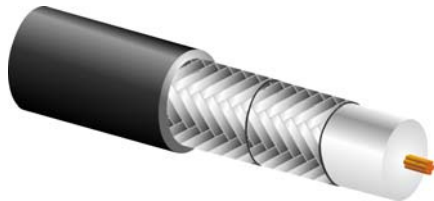


VIDEO & SOUND PROFESSIONAL BROADCAST

## VK 770F ENH+ series



### Aplicaciones / Application



Cable coaxial de vídeo para aplicaciones digitales. Soporta transmisiones de datos seriados (SDI) y formatos de televisión de alta definición (HDTV) según SMPTE 259M (270Mbps), ITU-R BT.601 (Composite PAL 177Mbps) , SMPTE 292M (1,5Gbps) y SMPTE 424M (Prog. Scan. HDTV/3G-SDI). Diseñado para aplicaciones móviles debido a su alta flexibilidad y su cubierta TPE-U compuesta por una mezcla de poliuretano y goma que garantiza una alta resistencia a los cortes y una gran memoria que evita deformidades por el uso. Muy bajas pérdidas del dieléctrico así como una alta velocidad de propagación gracias a su baja constante dieléctrica. También usados para circuitos analógicos críticos ofreciendo más de 100 dB de atenuación frente a señales interferentes de naturaleza electromagnética debido a su doble pantalla de cobre estañado.

Digital coaxial video cable for mobile applications. Can carry serial data interface (SDI) and high definition television formats (HDTV) according to SMPTE 259M (270Mbps), ITU-R BT.601 (composite PAL at 177Mbps), SMPTE 292M (1,5Gbps) and SMPTE 424M (Prog. Scan. HDTV/3G-SDI). Designed for mobile applications. Its high flexibility and its TPE-U jacket composed of polyurethane and rubber ensures resistance against cuts and prevents deformation caused by handling. Extremely low dielectric losses and high velocity of propagation thanks to its low dielectric constant. It is also used for analogue critical circuits offering over 100dB attenuation before electromagnetic interferences thanks to its double braided tinned copper shield.

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### Construcción / Construction

#### 1. Conductor:

Flexible Electrolytic High Conductivity Copper (EHC Cu) AWG 16  
UNE 21-011

#### 2. Aislante / Insulation:

Foam High Density FHDPE+ (GAS INJECTED+) IEC 708  
Ø 4.80 mm

#### 3. Pantallas / Shields (2 pantallas/ 2 shields):

##### 3.1 Primera Pantalla /First shield:

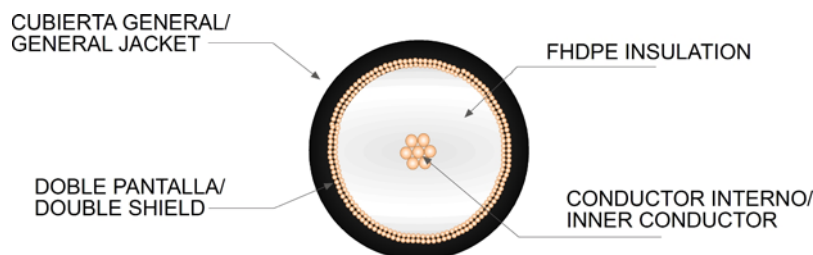
Braided CuSn 95% UNE 21-064

##### 3.2 Segunda Pantalla /Second shield:

Braided CuSn 98% UNE 21-064

#### 4. Cubierta externa / General Jacket:

Ø 7,20 mm



☑ Peso/Weight (kg /km) : 80

REVISION DATE: 13-11-2012

Las especificaciones están sujetas a cambio sin previo aviso

Specifications subject to change without prior notice



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VK 770F ENH+ series



MADE IN EUROPE

Pedido / Ordering Information:

- Cables Audio & Vídeo • Conexiones • Conectores
- Accesorios • Soporte Técnico • Soluciones HDTV
- Equipos Comunicaciones por Fibra Óptica • Calidad Broadcast

**SENSITIVE TECHNOLOGY**

PRECISION DIGITAL VIDEO

5.00 GHz

| REF. | COLOR         | DESCRIPCIÓN / DESCRIPTION   |
|------|---------------|---|
| 0560 | Negro / Black | TPE-U (PUR + PTC), -50 a 90°C. Excelente resistencia al agua, a aceites, a grasas y a disolventes. Alta resistencia a cortes mecánicos.<br><i>TPE-U (PUR + PTC), -50 a 90°C. Excellent resistance to water, oils, grease, solvents, resistance to water, a aceites, a grasas y a disolventes and mechanical cuts.</i> |

Conectores y matrices recomendados / Recommended Connectors and Tools

| REF.      | DESCRIPCIÓN / DESCRIPTION | HERRAMIENTA / TOOL |
|-----------|---------------------------|--------------------|
| 5183-HDTV | BNC 3G-SDI AERIAL MALE    | 5087-PN            |

Cortadora recomendada / Recommended Stripper (COREX)

| CONECTOR  | CUCHILLA/CASSETTE | COREX       | COLOR          |
|-----------|-------------------|-------------|----------------|
| 5183-HDTV | 5103-CX309        | 5102WHITE-V | Blanco / White |

Cola / Boot

| REF.   | DESCRIPCIÓN / DESCRIPTION  | COLOR / COLOUR    |
|--------|--|-------------------|
| 5153-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | NEGRO / BLACK     |
| 5154-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | AZUL / BLUE       |
| 5155-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | MARFIL / IVORY    |
| 5156-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | AMARILLO / YELLOW |
| 5157-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | ROJO / RED        |
| 5158-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | VERDE / GREEN     |
| 5162-V | COLA PARA CABLE VK 770F ENH+, VK 7, VK 70 ENH+ / BOOT FOR VK 770F ENH+, VK 7, VK 70 ENH+ CABLE | VIOLETA / VIOLET  |

Herramientas / Tools

| REF.       | DESCRIPCIÓN / DESCRIPTION  | OBS.                                 |
|------------|--|--------------------------------------|
| 5099-NW/30 | HERRAMIENTA EXTRACTORA BNC / EXTRACTION TOOL FOR BNC                 | 30 cm LONGITUD / LENGHT              |
| 5099-NW/50 | HERRAMIENTA EXTRACTORA BNC / EXTRACTION TOOL FOR BNC                 | 50 cm LONGITUD / LENGHT              |
| 5188-V     | HERRAMIENTA EXTRACTORA DIN 1.0/2.3 / EXTRACTION TOOL FOR DIN 1.0/2.3 |                                      |
| 5283-HD    | HERRAMIENTA EXTRACTORA BNC-HD / EXTRACTION TOOL FOR BNC-HD           | BNC ALTA DENSIDAD / HIGH DENSITY BNC |

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Datos eléctricos / *Electrical Data*

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**PRECISION DIGITAL VIDEO**

**5.00 GHz**

|   |                   |                     |
|---|-------------------|---------------------|
| <b>Velocidad de Propagación / Velocity of propagation</b> | %                 | 90,1670             |
| <b>Retraso Nominal / Nominal Delay</b>                    | ns/m              | 3.69314             |
| <b>Impedancia Nominal / Nominal Impedance</b>             | $\Omega$          | 75 $\pm$ 1 $\Omega$ |
| <b>Capacidad Nominal / Nominal Capacitance</b>            | pF/m              | 49.44025            |
| <b>Máxima tensión de trabajo / Max. Operation Voltage</b> | V                 | 300                 |
| <b>Inductancia nominal / Nominal inductance</b>           | $\mu$ H/m         | 0,27694             |
| <b>Resistencia núcleo en DC / Conductor DC resistance</b> | $\Omega$ /km      | 21                  |
| <b>Resistencia malla en DC / Shield DC resistance</b>     | $\Omega$ /km      | 4.21                |
| <b>ATENUACION/ATTENUATION:</b>                            | <b>Freq (MHz)</b> | <b>dB/100m</b>      |
|   | 1                 | 0.5                 |
|   | 10                | 1.9                 |
|   | 100               | 8.0                 |
|   | 200               | 10.1                |
|   | 300               | 14.0                |
|   | 500               | 17.3                |
|   | 800               | 22                  |
|   | 1000              | 25.8                |
|   | 1500              | 32                  |
|   | 2250              | 41.6                |
|   | 3000              | 49                  |
|   | 3500              | 54.4                |
|   | 4000              | 57.1                |
|   | 4500              | 62.2                |
|   | 5000              | 67.1                |
| <b>Minimum STRUCTURAL RETURN LOSS (SRL)</b>               | <b>Sweep</b>      | <b>dB</b>           |
|   | 50 MHz–300 MHz    | >26                 |
|   | 300 MHz–3000 MHz  | >22                 |
|   | 3000 MHz–3500 MHz | >18                 |
|   | 3500 MHz–5000 MHz | >15                 |

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**PRECISION DIGITAL VIDEO**

**5.00 GHz**

*Formato Digital de Vídeo / Digital Video Format*

|   | MAXIMUM TRANSMISSION DISTANCE (meters) AT SERIAL DIGITAL DATA RATES (SDI) |
|---|---|
| 71,5 MHz/143 Mbps (SMPTE 259M, Composite NTSC)                    | 443,57  |
| 88,5 MHz /177 Mbps (ITU-R BT. 601, Composite PAL)                 | 398,62  |
| 135 MHz/270 Mbps (SMPTE 259M, Component video)                    | 322,74  |
| 180 MHz/360 Mbps (SMPTE 259M, widescreen)                         | 279,50  |
| 270 MHz/540 Mbps (SMPTE 344M, widescreen)                         | 228,21  |
| 750 MHz/1.5 Gbps (SMPTE 292M, HDTV) SDI BNC's                     | 170   |
| 750 MHz/1.5 Gbps (SMPTE 292M, HDTV) 3G-SDI/HDTV BNC's             | 180   |
| 1,50 GHz/3.0 Gbps (SMPTE 424M, Prog. Scan HDTV) 3G-SDI/HDTV BNC's | 128   |

*\*WE SUGGEST TO USE ONLY 85% OF THE RECOMMENDED DISTANCE*

*Formato Vídeo Analógico / Analogue Video Format*

|                                   | TRANSMISSION DISTANCE IN METERS OF ANALOGUE VIDEO SIGNAL WITH MINIMUM LOSSES (MAX -3 dB) |
|-----------------------------------|--|
| M-II (COMPONENT 5,0 MHz BW)       | 167,70   |
| EBU-C (COMPOSITE 5,5 MHz BW)      | 159,90   |
| BETACAM SP (COMPONENT 4,5 MHz BW) | 176,77   |
| U-MATIC SP (COMPOSITE 4 MHz BW)   | 187,50   |
| S-VHS (COMPOSITE 5,0 MHz BW)      | 167,70   |
| ANALOG COMPONENT/RGB (5,0 MHz BW) | 167,70   |

*\*DISTANCE BASED UPON THE LIMIT FREQUENCY OF 5,5 MHz, 5 MHz, 4,5 MHz and 4 MHz.*

*SMPTE 276M- unbalanced audio*

|   | MAXIMUM TRANSMISSION DISTANCE (meters) AT SERIAL DIGITAL AUDIO DATA RATES (AES3-1992) |
|---|---|
| DSR (Sampling Rate 32KHz/BW 4,096 MHz)        | 1235,26   |
| CD/DVD (Sampling Rate 44,1 KHz/BW 5,6448 MHz) | 1052,24   |
| DAT (Sampling Rate 48 KHz/BW 6,144 MHz)       | 1008,58   |
| DVD (Sampling Rate 96 KHz/BW 12,228 MHz)      | 714,92  |
| DVD (Sampling Rate 192 KHz/BW 24,576 MHz)     | 504,29  |

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PRECISION DIGITAL VIDEO

5.00 GHz

Pruebas de HD-SDI a 180 metros de VK 770F / 180 meters of VK 770F under HD-SDI transmission

- Se utiliza un generador de señal de video de alta definición EXTRON VTG400D con una tensión de salida de pico a pico de 800 milivoltios ,una velocidad de datos de 1485Mbps o 1485/1001 Mbps, un jitter timing no superior a 1 UI (673 picosegundos) y un jitter alignment no superior a 0,2 UI (134,6 picosegundos).

*We use an EXTRON VTG400D high definition video signal generator with an output peak-to-peak voltage of 800 millivolts, a data speed of 1485Mbps or 1485/1001 Mbps, a jitter timing under 1 UI (673 picoseconds) and a jitter alignment under 0,2 UI (134,6 picoseconds).*

- El receptor es un WFM700M de Tektronix / The receiver is WFM700M Tektronix

| RATE NAME             | BIT RATE                   | H FREQ / V FREQ    |
|-----------------------|----------------------------|--------------------|
| 720 p 1280 x 720      | 1.485/1.001 (1.4835) Gbps  | 44.96kHz / 59.94Hz |
| 720 p 1280 x 720      | 1.4850 Gbps                | 45.00kHz / 60.00Hz |
| 1080i 1920 x 1080     | 1.4850/1.001 (1.4835) Gbps | 33.72kHz / 29.97Hz |
| 1080i 1920 x 1080     | 1.4850 Gbps                | 33.75kHz / 30.00Hz |
| 1080p 1920 x 1080     | 1.4850 Gbps                | 33.75kHz / 30.00Hz |
| 1080p 1920 x 1080     | 1.4850/1.001 (1.4835) Gbps | 33.72kHz / 29.97Hz |
| 1080p 1920 x 1080     | 1.4850 Gbps                | 27.00kHz / 24.00Hz |
| 1080p(sf) 1920 x 1080 | 1.4850 Gbps                | 27.00kHz / 24.00Hz |
| 1080p(sf) 1920 x 1080 | 1.4850/1.001 (1.4835) Gbps | 26.97kHz / 23.98Hz |

The screenshot shows a 'Video Status' window with the following data:

- Input:** 1A (WFM7M)
- Signal:** 1.4850 Gb/s
- Format Exp:** Any Supported
- Format Det:** 1080i 50.00
- Colorimetry:** BT.709 (AUTO)
- Embedded Audio:** No Emb. audio
- Active Video Width:** 10 bits
- Timecode:** None
- Selected Ref:** INT
- Ref Format:** N/A
- CC:** Missing
- Y Stuck Bits:** 0
- C Stuck Bits:** 0
- Y Errored Lines:** 0
- C Errored Lines:** 0
- Time since reset:** 0:00:41:00

The 'Video Session' window shows the following error statistics:

- SMPTE 292 CRC:** 0
- V Errored Seconds:** 0
- Y Errored Fields:** 0
- Y % Errored Fields:** ---
- Y Status:** OK
- C Errored Seconds:** 0
- C Errored Fields:** 0
- C % Errored Fields:** ---
- C Status:** OK
- RGB Errored Seconds:** 0
- RGB Errored Fields:** 0
- RGB % Errored Fields:** ---
- RGB Gamut Status:** NA
- V+C Errored Seconds:** 0
- Y+C Errored Fields:** 0
- Y+C % Errored Fields:** ---
- Y+C Gamut Status:** NA
- Luma Errored Seconds:** 0
- Luma Errored Fields:** 0
- Luma % Errored Fields:** ---
- Luma Gamut Status:** NA

At the bottom, there are control buttons for 'Display: Session', 'Video Session', 'Aux Data Status', 'Session: Stopped Running', and 'Reset Session'.

Errores en tx. de señal de video / Video session errors.

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**PRECISION DIGITAL VIDEO**

**5.00 GHz**

Pruebas de 3G-SDI a 128 metros de VK 770/128 meters of VK 770 under 3G-SDI transmission

- Se utiliza un generador de señal de video progresivo de alta definición (3G-SDI) y monitor de forma de onda de la marca Tektronix, modelo WFM 7120, con una velocidad de transmisión de datos de 2.970 Gbps (SMPTE 424/425M) y un refresco de pantalla de 50/59.94/60 Hz.

*We use a progressive high definition video signal generator (3G-SDI) and a Tektronix WFM 7120 waveform monitor, with a data transmission speed of 2.970 Gbps (SMPTE 424/425M) and a screen refresh rate of 50/59.94/60 Hz.*

| RATE NAME                | BIT RATE   | V FREQ / FORMAT             |
|--------------------------|------------|-----------------------------|
| 1080p (1920 X 1080p) @50 | 2.970 Gbps | 50 Hz / YCbCr 4:2:2 10 bits |
| 1080p (1920 X 1080p) @60 | 2.970 Gbps | 60 Hz / YCbCr 4:2:2 10 bits |

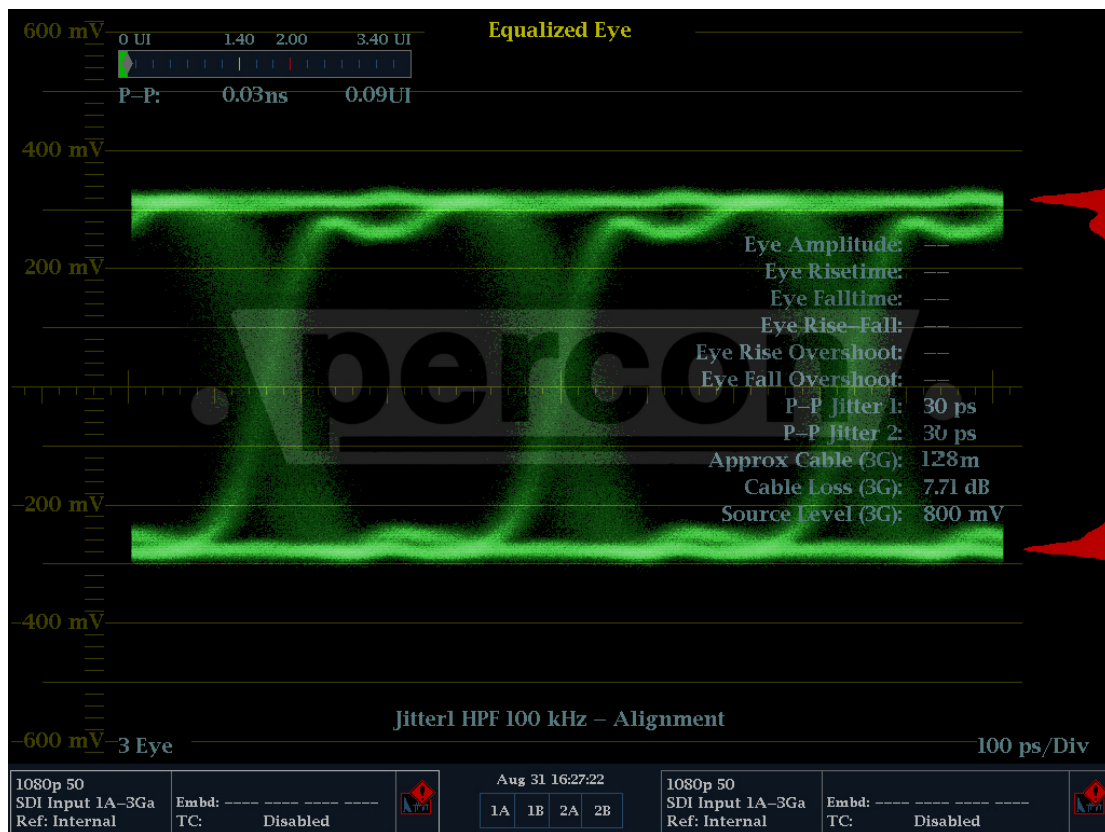


Diagrama de ojo /Eye pattern.

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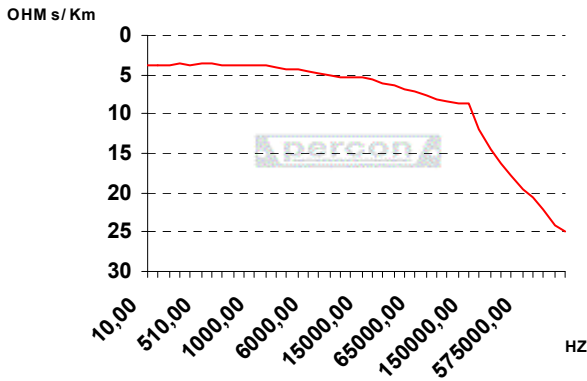
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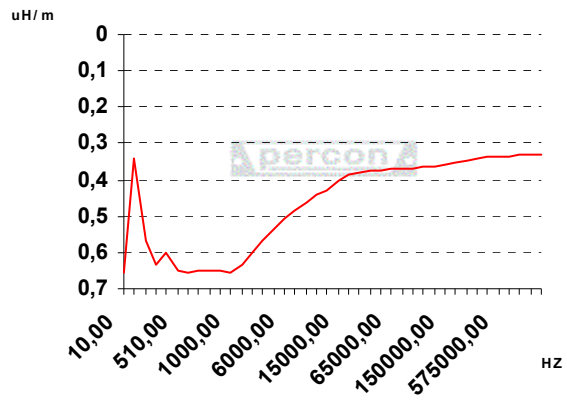
# PRECISION DIGITAL VIDEO

## 5.00 GHz

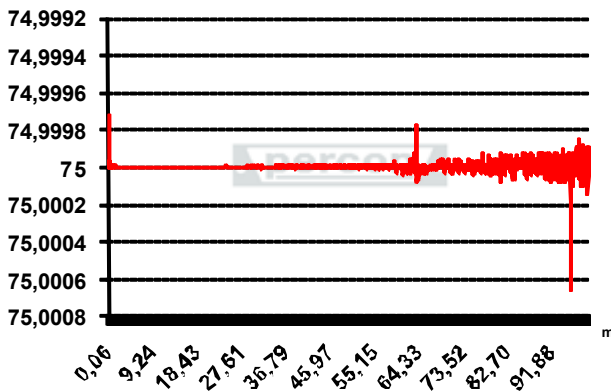
**Shield RESISTANCE**



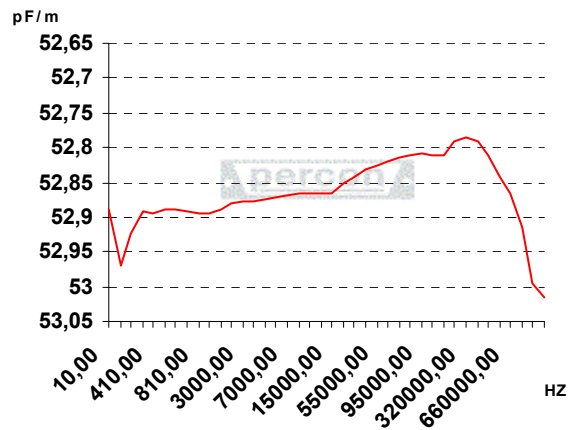
**bulk INDUCTANCE**



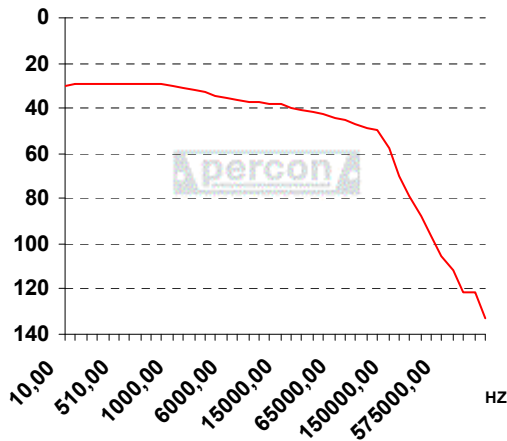
**Nominal IMPEDANCE**



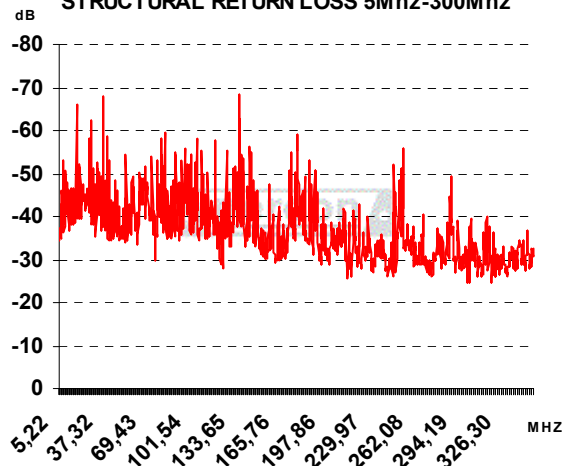
**CAPACITANCE**



**OHM s/ Km**



**STRUCTURAL RETURN LOSS 5Mhz-300Mhz**



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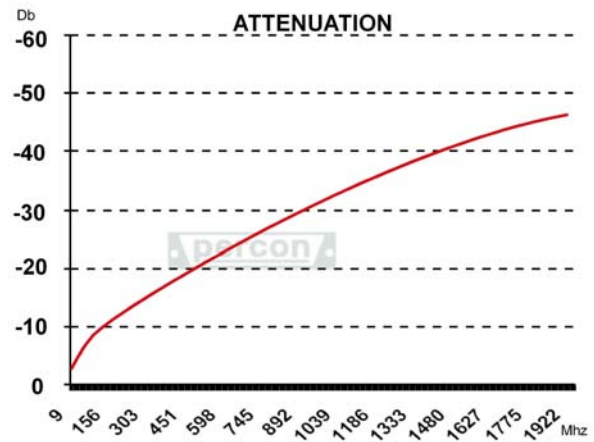
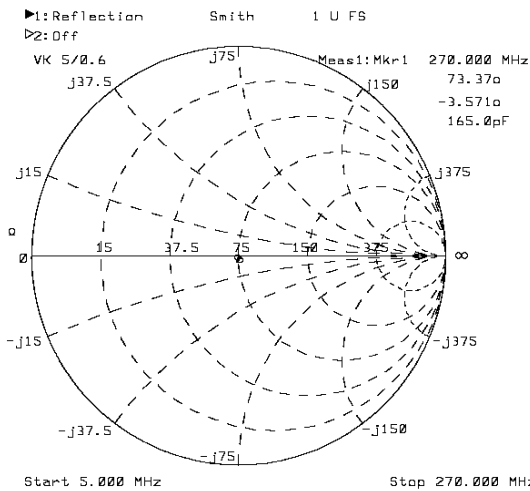
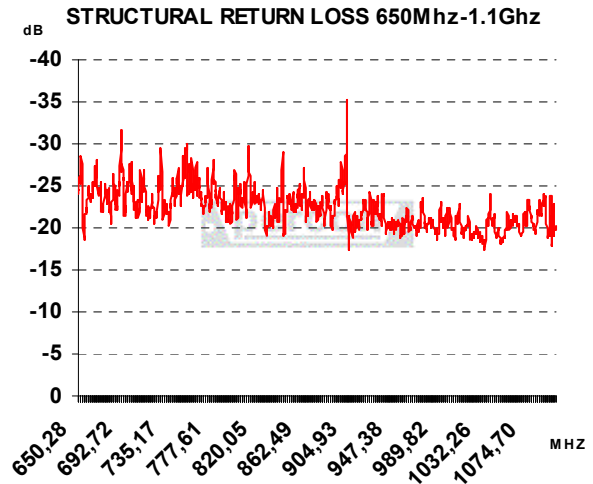
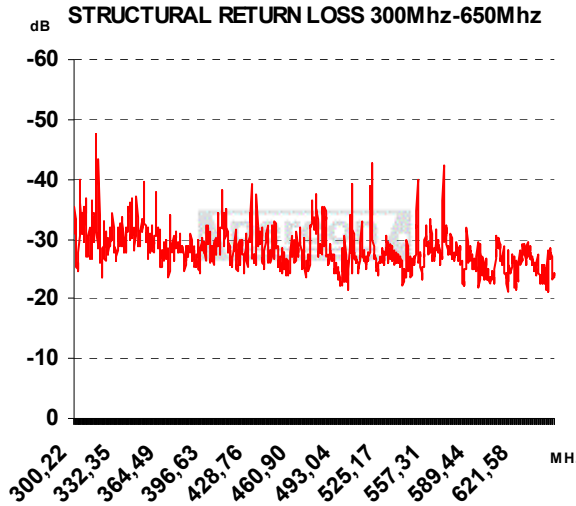


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