KRAMER

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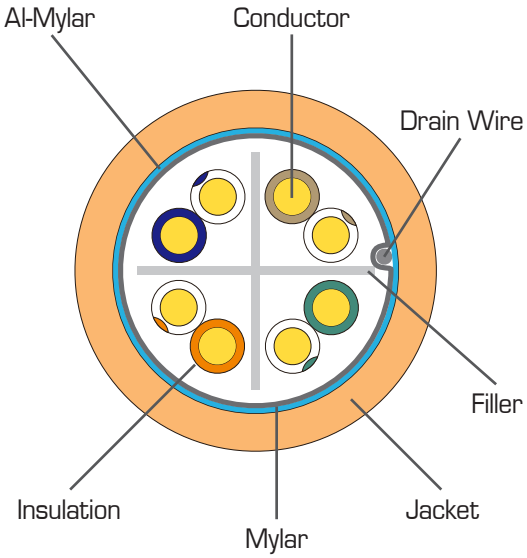
# BCLS-330R-5

## CAT6A F/UTP LSZH Cable




Kramer's BCLS-330R is a high performance CAT6A F/UTP cable designed for IT, LAN and Ethernet installations. Constructed with 23AWG solid bare copper conductors with a cross filler and overall metal foil screen with a drain wire in a LSZH jacket with sequential markings every meter and packed on a fumigated plywood reel make this cable exceed CAT6A specifications to provide additional performance and bandwidth over the basic standard

| | |
|---|---|
| Product Description | CAT6A F/UTP, 23AWG solid bare copper, LSZH.<br>With cross filler.<br>Overall metal foil screen with drain wire. |
| Product Features | High performance of transmission.<br>High quality of safety properties.<br>Sweep frequency up to 650 MHz. |
| Applications | Structure cabling for horizontal and building backbone cable.<br>Designed for IT, LAN and Ethernet installations.<br>IEEE 802.3an 10GBASE-T and legacy speeds.<br>CDDI / ATM / Token Ring<br>IEEE 802.3af (PoE) / IEEE 802.3at (PoE+) |

Applicable Standard

THIRD PARTY TESTING 3P

Performance Standards:

| | |
|---|---|
| ANSI/TIA-568-C.2 (2009) | Balanced Twisted-Pair Telecommunications Cabling and Components Standards |
| ISO/IEC 11801 (Edition 2.2) | Information technology - Generic cabling for customer premises |
| IEC 61156-5 (Edition 2.0) | Multicore and symmetrical pair/quad cables for digital communications - Part 5: Symmetrical pair/quad cables with transmission characteristics up to 1000 MHz - Horizontal floor wiring - Sectional specification |
| EN 50288-10-1:2012 | Multi-element metallic cables used in analogue and digital communication and control - Part 10-1: Sectional specification for screened cables characterized up to 500 MHz - Horizontal floor and building backbone cables |
| EN 50173-1:2011 | Information technology. Generic cabling systems, General requirements |

Standards for flammability, acidity and smoke:

| | |
|---|---|
| IEC 60332-1-2 | Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame |
| IEC 61034-1 / 61034-2 | Measurement of smoke density of cables burning under defined conditions |
| IEC 60754-2 | Test on gases evolved during combustion of materials from cables |

EU Directive 2011/65/EC (RoHS 2)

EU Directive 2006/95/EC (LVD)

CE compliance date: 2010.01.01

## MATERIAL AND CONSTRUCTION

| | | | |
|---|---|---|---|
| Conductor | Material | 23AWG solid bare copper | |
| Insulation | Material | Polyolefin (PO) | |
| | Color code & diameter | Blue & white/blue Stripe | 1.15 ± 0.02 mm |
| | | Orange & white/orange stripe | 1.11 ± 0.02 mm |
| | | Green & white/green stripe | 1.15 ± 0.02 mm |
| | | Brown & white/brown stripe | 1.11 ± 0.02 mm |
| Twisted | Description | Left hand direction | |
| Filler | Material | Polyolefin (PO) | |
| Assembly | Description | Left hand direction | |
| Shield | Material | Mylar tape | |
| Drain wire | Material | 24AWG solid tinned copper | |
| Shield | Material | Al Mylar tape | |
| | Description | 100 % coverage and mylar side facing out | |
| Jacket | Material | Low smoke zero halogen (LSZH) | |
| | Diameter | 7.60 ± 0.2 mm | |
| | Thickness | 0.55 ± 0.05 mm | |
| | Color | Orange[Pantone 1485C] | |

## USAGE & ENVIRONMENTAL CONDITION

| | | |
|---|---|---|
| Temperature range | Storage & shipping | -20°C to 60°C |
| | Installation | 0°C to 60°C |
| | Operation | -20°C to 60°C |
| Minimum bending radius | | ≥ 4 times of overall diameter |
| Maximum pulling tension | | ≤ 110 N |

## PHYSICAL & ELECTRICAL CHARACTERISTICS (AT 20°C)

| | |
|---|---|
| Temperature & voltage rating | 60°C / 300V |
| Spark test | 2.5 KV DC |
| AC leakage current through overall jacket | ≤ 10mA (1.5KV AC) |
| Cable cold bend | -20°C for 4 hr |
| Conductor DC resistance | ≤ 9.38 Ω/100m |
| Resistance unbalance | ≤ 5% |
| Dielectric strength | 1.5 KV ac for 2 s |
| Insulation resistance | ≥ 5000 MΩ•m |
| Mutual capacitance | ≤ 5.6 nF/100m |
| Capacitance unbalance pair-to-ground | ≤ 330 pF/100m |
| Characteristic Impedance | @1~100MHz,100±15 Ohm |
| Coupling Attenuation | AT 30 MHz ≤ 55dB; AT 500 MHz ≤ 41 dB |
| Insulation Tensile Strength | 2400 PSI MIN. (1.69 Kg/m$^2$) |
| NVP | 67% |

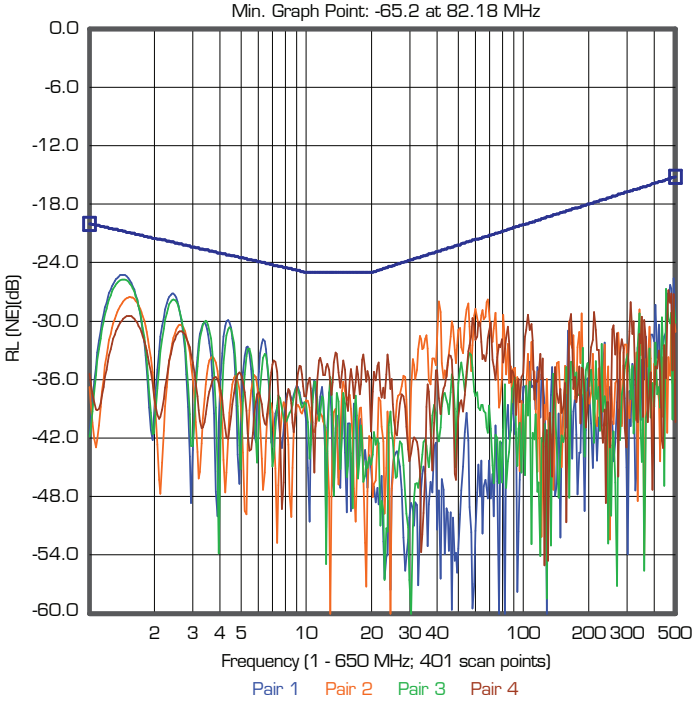
## TRANSMISSION PERFORMANCE (AT 20°C)

| Freq. MHz | IL | NEXT | PS NEXT | ACR | PS ACR | ACRF | PS ACR-F | RL | Propagation Delay | Delay Skew | PS ANEXT | PS AACR-F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. dB/100m | Min. dB/100m | Min. dB/100m | Min. dB/100m | Min. dB/100m | Min. dB/100m | Min. dB/100m | Min. dB/100m | Max. ns/100m | Max. ns/100m | Min. dB/100m | Min. dB/100m |
| 1 | 2.08 | 75.30 | 73.30 | 73.22 | 71.22 | 71.80 | 68.80 | 20.00 | 570.00 | 45.00 | 75.00 | 71.00 |
| 4 | 3.80 | 66.27 | 64.27 | 62.47 | 60.47 | 59.76 | 56.76 | 23.01 | 552.00 | | 75.00 | 70.16 |
| 8 | 5.31 | 61.75 | 59.75 | 56.44 | 54.44 | 53.74 | 50.74 | 24.52 | 546.73 | | 75.00 | 64.14 |
| 10 | 5.93 | 60.30 | 58.30 | 54.37 | 52.37 | 51.80 | 48.80 | 25.00 | 545.38 | | 75.00 | 62.20 |
| 16 | 7.49 | 57.24 | 55.24 | 49.75 | 47.75 | 47.72 | 44.72 | 25.00 | 543.00 | | 75.00 | 58.12 |
| 20 | 8.38 | 55.78 | 53.78 | 47.41 | 45.41 | 45.78 | 42.78 | 25.00 | 542.05 | | 75.00 | 56.18 |
| 25 | 9.38 | 54.33 | 52.33 | 44.95 | 42.95 | 43.84 | 40.84 | 24.32 | 541.20 | | 75.00 | 54.24 |
| 31.25 | 10.50 | 52.88 | 50.88 | 42.37 | 40.37 | 41.90 | 38.90 | 23.64 | 540.44 | | 75.00 | 52.30 |
| 62.5 | 14.99 | 48.36 | 46.36 | 33.37 | 31.37 | 35.88 | 32.88 | 21.54 | 538.55 | | 73.56 | 46.28 |
| 100 | 19.14 | 45.30 | 43.30 | 26.17 | 24.17 | 31.80 | 28.80 | 20.11 | 537.60 | | 70.50 | 42.20 |
| 150 | 23.68 | 42.66 | 40.66 | 18.98 | 16.98 | 28.28 | 25.28 | 18.87 | 536.94 | | 67.86 | 38.68 |
| 200 | 27.58 | 40.78 | 38.78 | 13.21 | 11.21 | 25.78 | 22.78 | 18.00 | 536.55 | | 65.98 | 36.18 |
| 250 | 31.07 | 39.33 | 37.33 | 8.26 | 6.26 | 23.84 | 20.84 | 17.32 | 536.28 | | 64.53 | 34.24 |
| 300 | 34.27 | 38.14 | 36.14 | 3.88 | 1.88 | 22.26 | 19.26 | 16.77 | 536.08 | | 63.34 | 32.66 |
| 350 | 37.25 | 37.14 | 35.14 | N.A. | N.A. | 20.92 | 17.92 | 16.30 | 535.92 | | 62.34 | 31.32 |
| 400 | 40.05 | 36.27 | 34.27 | N.A. | N.A. | 19.76 | 16.76 | 15.89 | 535.80 | | 61.47 | 30.16 |
| 450 | 42.71 | 35.50 | 33.50 | N.A. | N.A. | 18.74 | 15.74 | 15.53 | 535.70 | | 60.70 | 29.14 |
| 500 | 45.26 | 34.82 | 32.82 | N.A. | N.A. | 17.82 | 14.82 | 15.21 | 535.61 | | 60.02 | 28.22 |
| 550 | 47.70 | 34.19 | 32.19 | N.A. | N.A. | 16.99 | 13.99 | 14.92 | 535.54 | | 59.39 | 27.39 |
| 600 | 50.05 | 33.63 | 31.63 | N.A. | N.A. | 16.24 | 13.24 | 14.66 | 535.47 | | 58.83 | 26.64 |
| 650 | 52.33 | 33.11 | 31.11 | N.A. | N.A. | 15.54 | 12.54 | 14.42 | 535.41 | | 58.31 | 25.94 |

*Values above 500 MHz are for information only

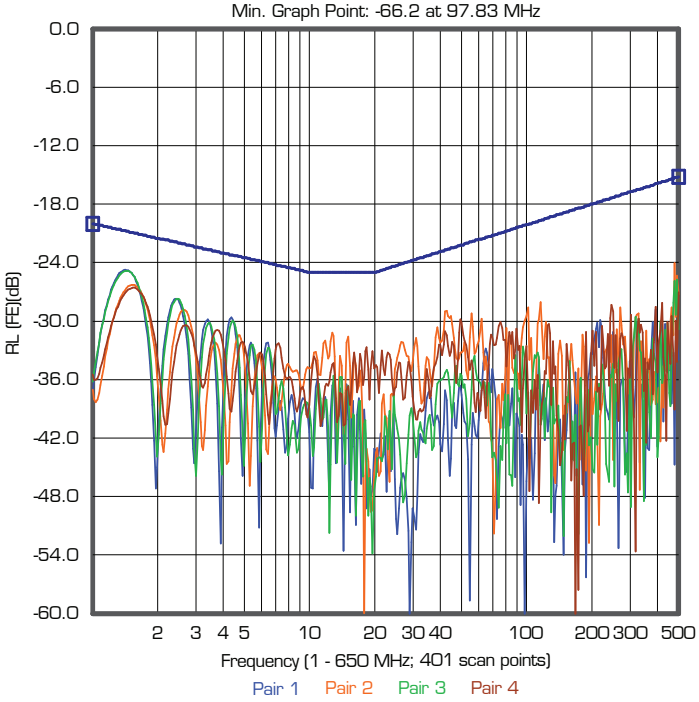
**RL (NE) vs. Frequency**

Max. Graph Point: -25.3 at 1.39 MHz
Min. Graph Point: -65.2 at 82.18 MHz



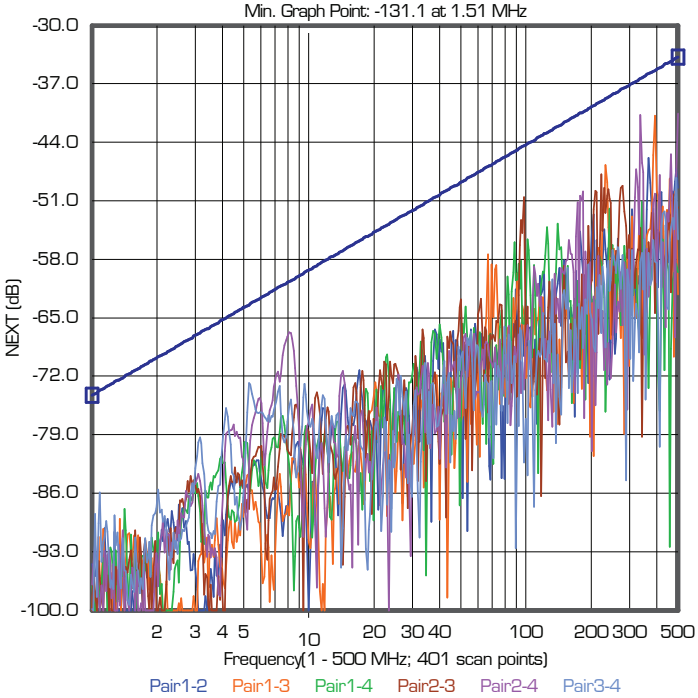

**RL (FE) vs. Frequency**

Max. Graph Point: -24.1 at 479.97 MHz
Min. Graph Point: -66.2 at 97.83 MHz



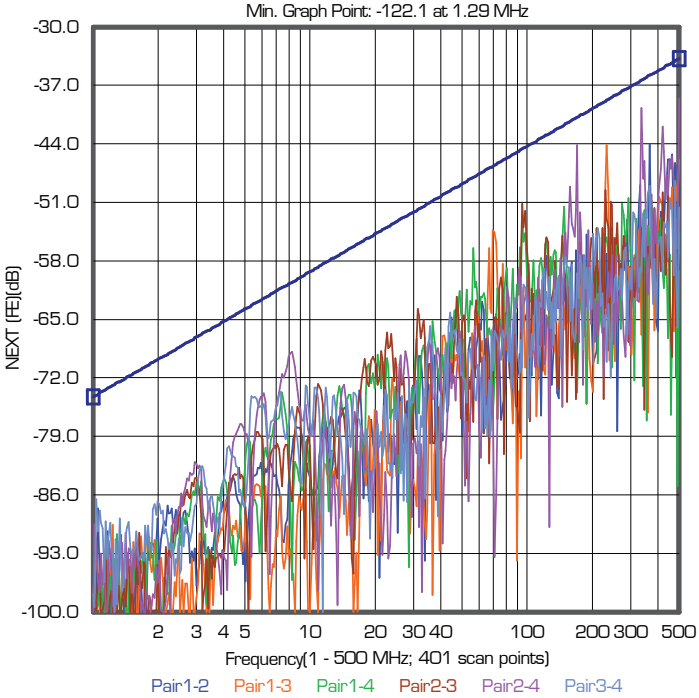

**NEXT vs. Frequency**

Max. Graph Point: -40.5 at 500.00 MHz
Min. Graph Point: -131.1 at 1.51 MHz



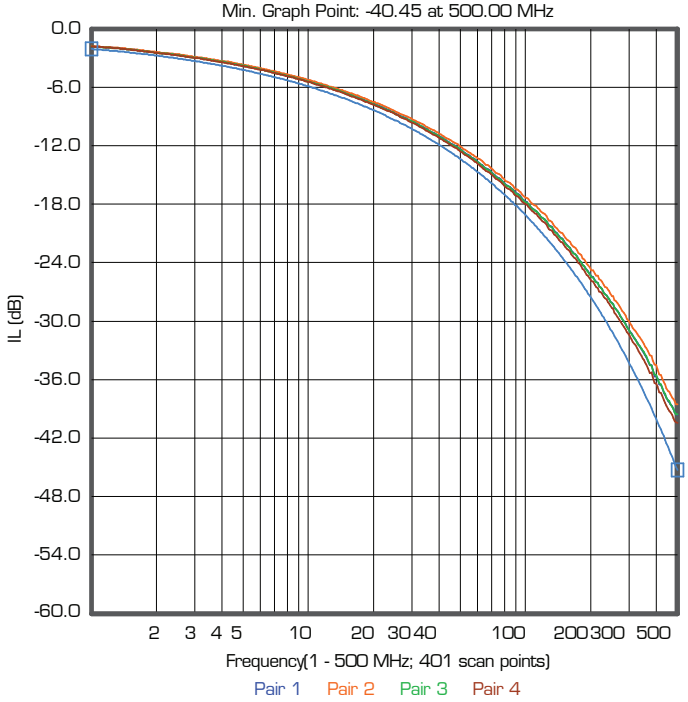

**NEXT (FE) vs. Frequency**

Max. Graph Point: -38.6 at 500.00 MHz
Min. Graph Point: -122.1 at 1.29 MHz



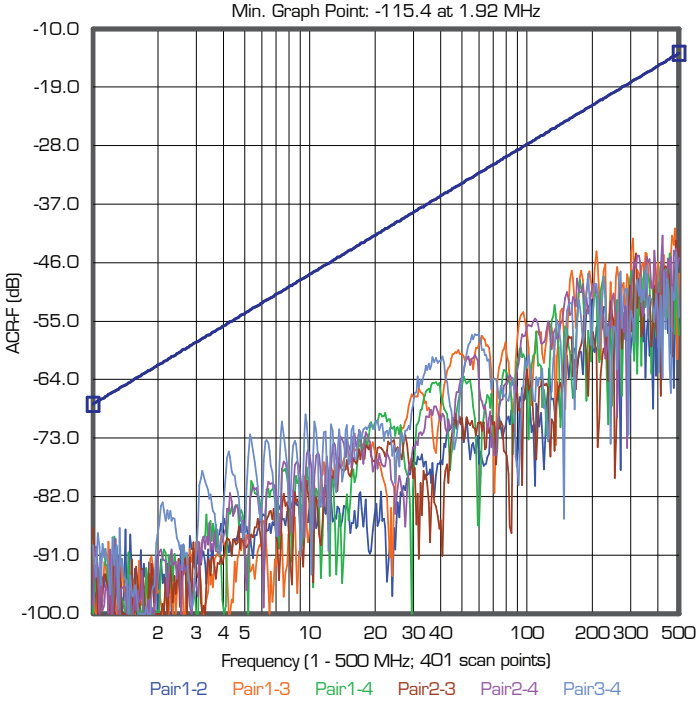
**IL vs. Frequency**

Max. Graph Point: -1.75 at 1.00 MHz
Min. Graph Point: -40.45 at 500.00 MHz



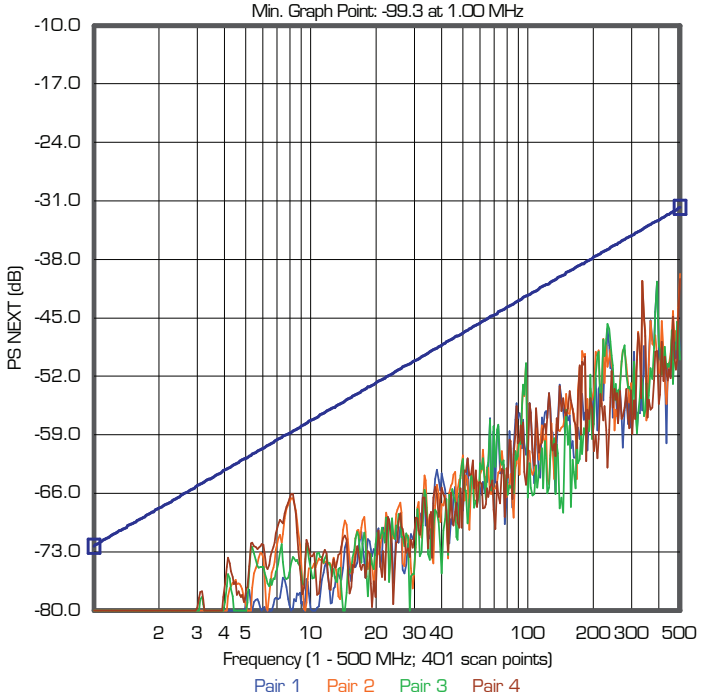

**ACR-F vs. Frequency**

Max. Graph Point: -40.8 at 479.97 MHz
Min. Graph Point: -115.4 at 1.92 MHz



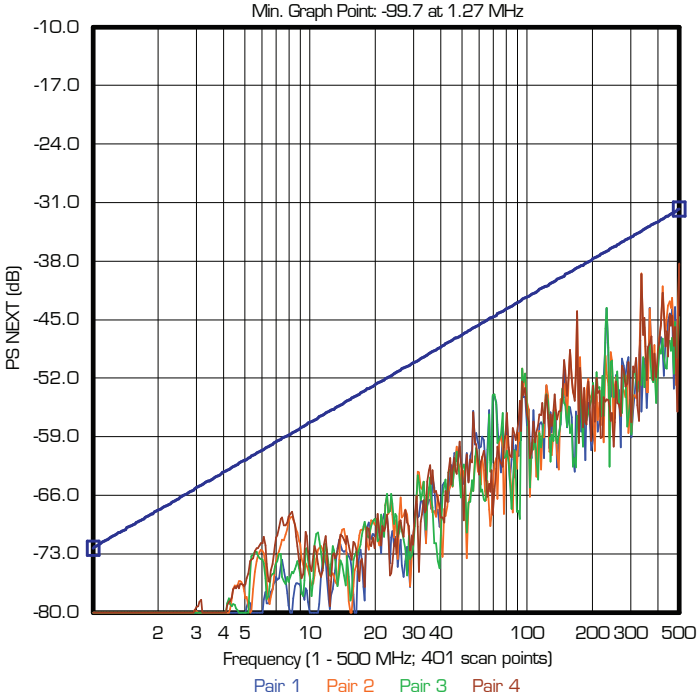

**PS NEXT vs. Frequency**

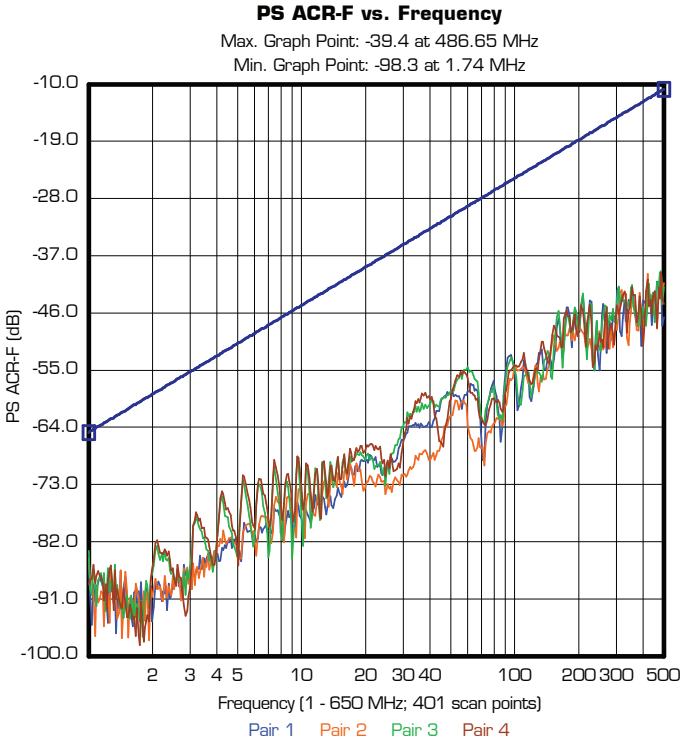
Max. Graph Point: -39.7 at 500.00 MHz
Min. Graph Point: -99.3 at 1.00 MHz




**PS NEXT (FE) vs. Frequency**

Max. Graph Point: -38.3 at 500.00 MHz
Min. Graph Point: -99.7 at 1.27 MHz






**KRAMER ELECTRONICS**
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SHIPPING INFORMATION:

| Item | Dimension | Nominal net weight |
|---|---|---|
| Cable | 500 m | 28.45 kg (62.72 lb) |
| Plywood reel | D450 x d220 x H330 x h300 mm | 3.9 kg |
| Pallet | 1150 x1150 x120 mm | 14.1 kg |