

**UNITED STATES DEPARTMENT OF AGRICULTURE  
Rural Utilities Service  
RD Telecommunications Program  
Washington, DC 20250-1500**

**TECHNICAL STANDARDS COMMITTEE "A" (TELECOMMUNICATIONS)**

**Latest Changes to the List of Acceptable Materials,  
as of October 16, 2009**

1. Committee A has accepted Hitachi Cable's fiber optic cables under the new RUS cables specifications: 7 CFR 1755.902 for back bone, feeder, and distributions cables and 7 CFR 1755.903 for service entrance cables. This action will be reflected in the List of Acceptable Materials in our next update, as shown below.

oc – Fiber Optic Cable

<i>Manufacturer name and accepted fibers</i>	<i>Accepted Cables</i>			
	Cables for backbone, feeder and distribution comply with 7 CFR 1755.902 and service entrance cables comply with 7 CFR 1577.903. Cables must be used only for intended application per product datasheet. For cable installation, users must follow the manufacturer's practices. Borrowers are expected to obtain the manufacturer's documentation for proper use and known industry issues i.e. PON mid-span and uni-tube dry ribbon cable coupling issues. Notes are found on page 1.5.4.			
	<b>Listing in green font indicates that RUS has not yet determined compliance with new cable specifications and is waiting for a response from the manufacturer.</b>			
<i>Manufacturer name and accepted fibers</i>	<i>Accepted Cables</i> <sup>(1)</sup>	<b>9 0 2</b>	<b>9 0 3</b>	<i>Cable Design</i>
<b>Hitachi Cable</b> <b>Accepted only for dispersion-un-shifted and dispersion-shifted single mode optical fibers.</b>	60090			d
	60102 <sup>(5)</sup>			d
	60298 <sup>(4)</sup>			d

Cable Designs:

- a – Unit Core or Central Core Tube Fiber Core Construction
- b – Gel Filled Multiple Loose Tube Core Construction; May contain multiple fibers per tube.
- c – Self-Supporting Filled Fiber Optic Cables
- d – Dry Filled Multiple Loose Tube Fiber Core Construction; May contain multiple fibers per tube.
- e – ADSS Cable Design
- \* – Indicates Cable Designs that are fully dry using water blocking elements throughout.
- f – Flat Drop Cable

**NOTES:**

- (1) Cable meeting 7 CFR 1755.902 for backbone, feeder and distribution may be used for drops, as recommended by the manufacturer.
- (2) CSM not embedded in jacket; surrounds central core tube.

- (3) Replace blank with the number 1 or 2.
- (4) Double jacketed design.
- (5) Single jacketed design.
- (6) Replace blank with either the letter M or H.
- (7) For air blown microduct (a duct having a diameter of 10 to 13 millimeters) installations only.
- (8) Toneable ribbon cable accepted
- (9) High count (288-432) 24 fiber splittable ribbon accepted
- (10) Users must follow manufacturer's installation requirements and method. Blown fiber system is accepted through 7 CFR 1755.900, section 1.4: *"Optical cable designs not specifically addressed by this specification may be allowed if accepted by REA. Justification for acceptance of a modified design must be provided to substantiate product utility and long term stability and endurance."* System includes all accessories and components and is not accepted for individual use without the system.
- (11) It's specified for >216 to 864 fibers; however, lower fiber counts can be provided on special request.
- (12) May contain a 12 AWG, stranded copper conductor to replace a filler rod. User must comply with all local and National Electrical Codes (NEC) when opening, connecting, and/or terminating this conductor; conductor shall not be left floating.
- (13) Includes Cable Designs that are fully dry using water blocking elements throughout.
- (14) Fiber Optic Service Entrance Cables included
- (15) Specialty Cable -Mid-span test does not applied

2. Committee A has accepted Hitachi Communication Technologies' listing addendum to include the Node+Zero™ Universal Micronode product. This product will be listed as shown below.

<b><u>ae - Access equipment</u></b>	
<b>a – FTTH Systems<sup>(21)</sup></b>	
<b>Manufacturer</b>	<b>Product</b>
Hitachi	AMN 1200 FTTP
	AMN 1220 FTTP
	Node+Zero™ Universal Micronode (Models: H-112, H-110, H-103)

3. Committee A has accepted 3M’s listing addendum to include the following closures:

- Fiber Dome Closure FDC10S
- SLiC™ Fiber Aerial Terminal Closure 530 with Internal Drop Termination for Factory-Terminated External Cable Assembly Module (ECAM) FD Drop and;
- 3M™ SLiC™ Fiber Aerial Terminal Closure 530 Internal Drop Terminations for Direct Spliced Drops

These closures will be listed as follows:

Manufacturer	Accepted Closures	Max. Cable Dia.(6)	Max. Splice Capacity(8)	Encapsu-lant.(2)	Closure Design	Suffixes	
(cont.)3M Company	FD06		48		d	B, C	
	FD08		96		d	B, C	
	2178S (non-flame retardant) <sup>(9)</sup>		96		d, f	A, B, C	
	2178LS		480		d, e	A, B, C	
	2177-R		64	8882	e	A, B, C	
	2178FR (flame retardant)				f		
	2178XSB		48		d, e	B	
	SLiC Fiber Aerial Closure 530 <sup>(15)</sup>		12		d	A, B, C	
	SLiC Fiber Aerial Closure 533			144		d	C
	SLiC Fiber Aerial Closure 733			288		d	C
	Fiber Dome Closure FDC 08			96		d, e	B, C
	Fiber Dome Closure FDC10S			288		d, e	B, C
	Fiber Dome Terminal Closure FDT 08 External Drop (w/ HFOC)			72 with 4, 6, or 8 drop ports (14)		d, e	B, C
	Fiber Dome Terminal Closure FDT 08 Direct Splice Drop			96 or 72 with up to 8 drop ports		d, e	B, C
	Fiber Dome Terminal Closure FDT 08 Internal Drop			24 with 4, 6, or 8 drop ports		d, e	B, C
	Fiber Dome Stubbed Terminal FDST 08 (FDST 08S) <sup>(17)</sup>			8		d, e	B, C

Notes:

15. Acceptance includes 4, 6, 8, and 12 external drop cable terminations. Also, accepted – internal drop termination for factory-terminated external cable assembly module (ECAM) FD Drop and internal drop terminations for direct spliced drops.

4. Committee A has accepted Superior Essex request for the labeling of their cable with as LS Cable. This action will be reflected on the List of Materials as follows:

**sc - Buried Cable**

Cables listed below comply with 7 CFR 1755.390 or 1755.890.

<b>Manufacturer Name</b>	<b>PE-39</b>	<b>PE-89</b>	<b>Accepted Cables</b>	<b>Suffixes</b>
<b>Superior/Essex<sup>(15)</sup></b>	X		SEALPIC-F	A <sup>(1)</sup>
		X <sup>(7)</sup>	SEALPIC-F <sup>(11)</sup>	A <sup>(1)</sup>
	X		CUPIC-F	C <sup>(1)</sup>
		X <sup>(7)</sup>	CUPIC-F <sup>(11)</sup>	C <sup>(1)</sup>
	X		GOPIC-F	Y <sup>(1)</sup>
			CUPIC-F10	
		X <sup>(7)</sup>	GOPIC-F <sup>(11)</sup>	Y <sup>(1)</sup>
			CUPIC-F <sup>(11)</sup> 10	
	X		CASPIC-F	X <sup>(1)</sup>
		X <sup>(7)</sup>	CASPIC-F <sup>(11)</sup>	X <sup>(1)</sup>
	X	X <sup>(7)</sup>	<sup>(3)</sup> T1	H <sup>(1)</sup>
	X	X <sup>(7)</sup>	<sup>(3)</sup> T1C	H1C <sup>(2)</sup>
X	X <sup>(7)</sup>	<sup>(4)</sup> P	P <sup>(1)</sup>	

**Suffixes**

Coated Aluminum Shield	A
5 Mil Copper Shield	C
Gopher-Resistant Shield Containing Copper	Y
Gopher-Resistant Shield/Armor Design	X
Screened Cable for T1 Carrier	H
Screened Cable for T1C Carrier	H1C
Pre-connectorized Cable 100 pairs & greater	P

**Notes:**

- (1) Available in 19 through 26 AWG conductor sizes.
- (2) Available in 19 through 24 AWG conductor sizes.
- (3) Replace blank with manufacturer's catalog designation shown in the listing for suffixes A through X.
- (4) Replace blank with manufacturer's catalog designation shown in the listing for suffixes A through H1C.
- (5) Not accepted for 19 AWG conductor sizes.
- (6) Accepted for only foam/skin.
- (7) Accepted for foam and foam/skin.
- (10) Replace the blank with the letters AR, CR, JR, or WR to specify shield type.
- (11) Replace blank with either the letter F or the letters SF to specify conductor insulation type.
- (12) Replace blank with either the letter A, M, or T to specify conductor AWG size.
- (13) Gel Filled, 8mil thick Al shielded, LLDPE jacket, 6 pr. – 1500pr.
- (14) Gel Filled, 8mil thick Al shielded, LLDPE jacket, 6 pr. – 1800pr.
- (15) Listed cables sold also under the *LS Cable* name

5. Committee A has accepted Symmetricom’s Timesource 3000. This equipment will be listed as shown below.

<b>Ene-c- Gateways/Controllers/Management Systems/Network Synchronization</b>	
<b>Manufacturer</b>	<b>Product</b>
Symmetricom	TimeCelsium 4500, TimeCreator 1000, SSU 2000, Time Hub 5500, TimeProvider 1000, TimeSource 3500, & TimeSource 3000 (TS-3000)

6. Committee A has accepted the use of “LS Cable Low Water Peak Single Mode Optical Fiber” for use in fiber optic cables manufactured per PE-90 (7 CFR 1755.902 and 7 CFR 1755.903). This action will be shown in the List of Acceptable Materials when updated, as shown below.

Cables for backbone, feeder and distribution comply with 7 CFR 1755.902 and service entrance cables comply with 7 CFR 1577.903. Cables must be used only for intended application per product datasheet. For cable installation, users must follow the manufacturer’s practices. Borrowers are expected to obtain the manufacturer’s documentation for proper use. Please note that RUS does not recommend the use of Gel-free cables for used in buried applications in coastal areas where cables may be exposed to brackish water. Also, RUS recommends that cable locking loops be used on installations of Gel-free Ribbon Cables.

Notes are found on page 1.5.5.

<b>Superior Essex</b> Matched Clad (MC), FullBand® Low Water Peak, Allwave® Flex Zero Water Peak, AllWave® Zero Water Peak, Low Water Peak, LS Cable Zero Water Peak Single Mode, ASMF 200 AFC, TeraLight, SMF-28 and 28e+, SMF-LS, Leaf NZ-DSF SMF, Dispersion- unshifted SMF, PureBand, 62.5/125 µm, 50/125 µm.	SLT-F (Dielectric and armored)	x		a
	SLT-5 <sup>(2)</sup> (Dielectric and armored)	x		a
	SLT-R (Ribbon) (Dielectric and armored)	x		a
	SLT-R (Dri-Lite™) (Dielectric and armored)	x		a*
	Series S2 (Ribbon up to 1008)	x		d
	Series S1 (Ribbon up to 1008)	x		d, e
	MLT <sup>(12)</sup> (Dielectric and armored)	x		b, d, e
	MLT-8 (Dielectric and armored)	x		b, c, d
	Universal FTTP OFNR		x	a, c, e, f
	Toneable FTTP OFCR		x	a, c, f
	ADP FTTP Series 57		x	a, c, f
	Buried FTTP Composite Series 72		x	a, g
	Universal Drop FTTP Series 570Q		x	a, c, e, f
	UG FTTP Series 513		x	a, e, g
	Buried FTTP Series 523		x	a, g
Toneable Drop FTTP Series 571Q		x	a, c, f	
Figure 8 FTTP Series 573Q		x	a, c, g	

7. Committee A has accepted Armorcast's request to add the A6002424 and A6001833 series handholes. These products will be listed as shown below.

<u>Handholes for Fiber &amp; Copper Systems</u>	
<u>Manufacturer</u>	<u>Catalog Number</u>
Armorcast	A60000182 Series (27" DI)
	A6002424 Series (24" x 24")
	A6001423 Series (12" x 12")
	A6001430 (30" x 48")
	A6001433 Series (48" x 48")
	A6001436 (36" x 60")
	A6001441 Series (36" x 36")
	A6001506 Series (48" x 72")
	A6001640 (17" x 30")
	A6001691 (39" x 30" DI)
	A6001742 (30" x 60")
	A6001833 Series (36" x 60")
	A6001946 (13" x 24")
	A6001974 (24" x 36")
A6002424 Series (24" X 24")	

8. Committee A has technically accepted TII Network Technologies' addendum to add the TII Micro Angle Driver model AD-01W-LP. This action will be reflected in the List of Materials as follows:

<u>nh-a Gas Tubes</u>			
<u>Manufacturer</u>	<u>MDF Module</u>	<u>Station Module</u>	<u>Well Mount</u>
TII (Non-Domestic listing expires on 09/16/2011.)		126M <sup>(2)(5)</sup>	
		355M <sup>(3)(6)</sup>	
		356M1 <sup>(3)(5)</sup>	
		AD-02W-FS <sup>(3)(5)</sup>	
		AD-01W-LP <sup>(3)(5)</sup>	

Notes:

<sup>(2)</sup>2-electrode.

<sup>(3)</sup>3-electrode

<sup>(4)</sup>Medium duty

<sup>(5)</sup>Heavy duty

<sup>(6)</sup>Maximum duty.

9. Committee A has accepted MRV Communications' listing addendum to include the Optiswitch 900 Demarcation Series. This equipment will be listed as shown below.

<b><u>Ene-a- Routers/Switches</u></b>	
<b><u>Manufacturer</u></b>	<b><u>Product</u></b>
MRV Communications <sup>(6)</sup>	OptiSwitch <sup>®</sup> (OS) 9000 Platform
	OptiSwitch <sup>®</sup> (OS) 900 Series

NOTES:

6. Includes the OS9012C – 10Gx, OS9012 – M, OS9024 – 4C, OS9024FX – 4GC, OS9024 – M, OS904 series, OS904 series, OS906 series, OS910 series, OS912 series, OS930 10GE demarcation, and OS910-M Service Modular platform.

10. Committee A has technically accepted Infinera's listing addendum to include the ATN platform. This action will be reflected in the list of Acceptable Materials as shown below.

<b><u>te - Transport Equipment</u></b>		
<b><u>Manufacturer</u></b>	<b><u>Product</u></b>	<b><u>Interface Rate</u></b>
Infinera <i>(Non-domestic listing expires on <b>09/30/11</b>).</i>	DTN (Includes BMM, DLM Line Card, and TAM Tributary adaptor)	OC-3/12/48/192
	ATN	

11. Committee has renewed the existing listings and technically accepted IP Wireless' listing addendum to include the User Equipment (UE) and the PEM-2500. These changes will be included List of Acceptable Materials as follows:

<b><u>wn – Wireless Networks</u></b>		
<b><u>Manufacturer</u></b>	<b><u>Product</u></b>	<b><u>Technology</u></b>
IP Wireless (Nextwave) <i>(Non-domestic listing expires on <b>09/30/2011</b>.)</i>	V4 NodeB	Licensed: TD-CDMA
	V5 NodeB	
	Integrated Network Controller (INC)	
	P1D modem	
	PCMCIA modem	
	UE (outdoor) and PEM-2500	

12. Committee A has accepted Alloptic’s listing addendum to include the RF over Glass (RFoG). This action will be reflected on the List of Acceptable Materials as shown below.

<b>ae - Access equipment</b>	
<b>a – FTTH Systems<sup>(21)</sup></b>	
<b>Manufacturer</b>	<b>Product</b>
Alloptic	GigaForce <sup>(20)</sup>
	RFoG Products <sup>(43)</sup>
	Edge Video Optical Amplifiers (EVEAxxxx and EVDCxxxx) (Non-domestic listing expires on <b>September 30, 2011.</b> )

NOTES:

- 20. Gigabit Ethernet Access Routers (GEAR) includes Edge \_\_\_\_ (2000, 200, or 10), Home4000, Xgen \_\_\_\_ (1000, 5000, 6000, 7500, 8000, or 9000), and BizXgen 200.
- 43. Return Path Receivers (EVRRx), Return Path Transmitters (EVTX) and MicroNode RFoG ONUs (MNTH).

13. Committee A has accepted Composite Industries’ additional handholes (Series of Fiberglass & Polymer Concrete Boxes & Covers”: 3636 Series, 3672 Series, 4872 Series, 6072 Series, and 7272 Series). These handholes will be listed as shown below.

<b><u>Handholes for Fiber &amp; Copper Systems</u></b>	
<b><u>Manufacturer</u></b>	<b><u>Catalog Number</u></b>
Composite Industries LLC	CI1212 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 1224 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 1830 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 2436 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 3048 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 3636 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 3660 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>

<b><u>Handholes for Fiber &amp; Copper Systems</u></b>	
<b><u>Manufacturer</u></b>	<b><u>Catalog Number</u></b>
Composite Industries LLC (Continuation)	CI 3672 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 4848 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 4860 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 4872 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 6060 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 6072 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>
	CI 7272 Series Fiberglass & Polymer Concrete Box & Cover <sup>(7)</sup>

**Notes:**

(7) This product consists of two components, the box and cover in either fiberglass or polymer concrete and each component may be sold separately.

14. Committee has determined that AFL’s cables meet the requirements of the new RUS cables specifications: 7 CFR 1755.902 for back bone, feeder, and distributions cables and 7 CFR 1755.903 for service entrance cables. This action will be reflected in the List of Acceptable Materials in our next update, as shown below.

oc – Fiber Optic Cable

<i>Accepted Cables</i>																													
<i>Manufacturer name and accepted fibers</i>	Cables for backbone, feeder and distribution comply with 7 CFR 1755.902 and service entrance cables comply with 7 CFR 1577.903. Cables must be used only for intended application per product datasheet. For cable installation, users must follow the manufacturer’s practices. Borrowers are expected to obtain the manufacturer’s documentation for proper use and known industry issues i.e. PON mid-span and uni-tube dry ribbon cable coupling issues. Notes are found on page 1.5.4.																												
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<b>AFL</b> Accepted for dispersion-unshifted and dispersion-shifted single mode optical fibers. Also accepted for 50/125 and 62.5/125 micrometer multimode optical fibers.	<table border="1"> <tr> <td>Dielectric__(Pure) Uni-Tube MicroCore<sup>(2, 7)</sup></td> <td style="text-align: center;">x</td> <td></td> <td style="text-align: center;">a</td> </tr> <tr> <td>AFL ADSS Mini-Span Series</td> <td style="text-align: center;">x</td> <td></td> <td style="text-align: center;">c, e</td> </tr> <tr> <td>AFL Loose Tube Cable</td> <td style="text-align: center;">x</td> <td></td> <td style="text-align: center;">d</td> </tr> <tr> <td>AFL Armored Loose Tube Cable</td> <td style="text-align: center;">x</td> <td></td> <td style="text-align: center;">d</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Dielectric__(Pure) Uni-Tube MicroCore <sup>(2, 7)</sup>	x		a	AFL ADSS Mini-Span Series	x		c, e	AFL Loose Tube Cable	x		d	AFL Armored Loose Tube Cable	x		d												
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AFL ADSS Mini-Span Series	x		c, e																										
AFL Loose Tube Cable	x		d																										
AFL Armored Loose Tube Cable	x		d																										

15. Committee A has accepted the RADWIN 2000 Wireless Broadband microwave system. This equipment will be listed as shown below.

<b>wn – Wireless Networks</b>		
<b><u>Manufacturer</u></b>	<b><u>Product</u></b>	<b><u>Technology</u></b>
RADWIN Inc.	RADWIN 2000 <sup>(1,3)</sup>	Unlicensed: 5.740-5.835 GHz

NOTES:

13. The Radwin 2000 has two other commercial names: AirMux 400, used by Rad Data Communications; FibeAir 2000 used by Ceragon Networks.

15. Committee A has accepted Calix’s 765G-R ONTs. This equipment will be listed as shown below.

<b><u>ae - Access equipment</u></b>	
<b>a – FTTH Systems<sup>(21)</sup></b>	
<b>Manufacturer</b>	<b>Product</b>
Calix Networks, Inc	FTTH Systems <sup>(12)</sup>

Notes:

- 12. This listing includes the FiberDrive OLT, Calix F5 OLT, Calix 400 Series ONTs, Calix 500 Series ONTs, Calix C7 OLT, Calix 700 Series ONTs, and 765G-R ONTs: 760G MDU ONT, and the 765G-R Rack Mount MDU ONT. Also IP DSLAMs: E5-110, E5-111, E5-120, E5-121, Active Ethernet: E5-400 (transport), E5-312, 700GX ONT, C7 MSAP cards: OC-48, OC-12, RAP2-OC-48, RAP-OC-3-12, RAP, AMP, ATP, ADSL2-24, Combo 2-24, DSO-DP6, REBS-12, RPOTS-24, RU2W-24, TO-6, DSI-A12, HDLSL-2-4-6, JMA-12, T1-6, T1-6 A+T, DS3-4P, DS3-12P, DS3E-4P, DS3-12S, FE-12S, GE-2P, GE-2P FE-4P, GE-4S, OLT-G4, OLT-B2, IRC, VGP, VIPR

16. Committee A has accepted AFL Telecommunications’ 100 Series Fiber Distribution Hubs (FDHs). This equipment will be listed as shown below.

<b><u>se - Buried Plant Housings</u></b> <b>(Complies with 7 CFR 1755.910)</b>		
Note: PON users must follow the cable manufacturer’s recommended use and practices when installing fiber optic cables in fiber optic enclosures.		
<b><u>Manufacturer</u></b>	<b><u>Designation</u></b>	
	<b><u>Terminal Type (5)</u></b>	<b><u>Cabinet Series</u></b>
AFL	SC, APC	FDH 700 & 100 Series <sup>(19)</sup> ( includes FDH 100 Accessories & Splitter Modules)

17. Committee A has accepted Aurora Networks' Hybrid Fiber Coaxial/Fiber Deep and RF over Glass (RFoG) products. This action will be reflected on the List of Acceptable materials as shown below.

<b><u>ae - Access equipment</u></b>	
<b>a – FTTH Systems<sup>(21)</sup></b>	
<b>Manufacturer</b>	<b>Product</b>
Aurora Networks <sup>(44)</sup>	Hybrid Fiber Coaxial (HFC)/Fiber Deep
	RF over Glass (RFoG)

**Notes:**

44. Includes 3000 Series Chassis and Modules, 4000 Series Node and VHub™ Optical Platform and Modules, RFoG Customer Premises Equipment, and miscellaneous power supplies, transmitters, optical amplifiers and switches, Light-Plex™ broadcast/narrowcast combiners, transponder receivers, passives – multiplexers, demultiplexers, splitters and filters etc...

19. Committee A has accepted SKYFIBER™'s Free-space Optic (FSO) System. This equipment will be listed as shown below.

<b>wn – Wireless Networks</b>		
<b><u>Manufacturer</u></b>	<b><u>Product</u></b>	<b><u>Technology</u></b>
SkyFiber <sup>(43)</sup>	SKYFIBER™	Free-space Optic System (FSO)

**Notes:**

43. Includes models SFS-0100-10 and SFS-0100-20.

20. Committee A has accepted Positron Access Systems' Aktino products. This equipment will be listed as shown below.

<b><u>ae - Access equipment</u></b>			
<b><u>b – Multi Service Access</u></b>			
<b>Manufacturer</b>	<b>Product</b>	<b>Copper</b>	<b>Fiber</b>
Positron Access Systems <sup>(45)</sup>	AK3000 Product Family	Y	N
	AK5000 Product Family	Y	N

**Notes:**

45. Includes models AK3000C, AK3001C, AK3000R, AK3R, AK500S, AK590CC, AK512LC, AK512LCA, AK500S, AK512LCP, AK512LCPA, AK525LC, AK525LCA, AK525LCP, AK525LCPA, AK512RU, AK512RUA, AK525RU, AK525RUA, AK5R AK525, AK512CUA, AK512CUP, AK512CUPA, AK525CU, AK525CUA, AK525CUPA, AK355C, AK355CP, AK355R, AK355RPT, AKEMS.

21. Committee A has accepted Ligowave's PTP wireless products. This equipment will be listed as shown below.

<b>wn – Wireless Networks</b>		
<b>Manufacturer</b>	<b>Product</b>	<b>Technology</b>
Ligowave	PTP – 900	Unlicensed: 900 MHz
	PTP – 2	Unlicensed: 2.4 GHz
	PTP – 3	Licensed: 3.65, GHz
	PTP – 4	Licensed: 4.9 GHz
	PTP – 5	Unlicensed: 5 GHz

Sincerely,

*/s/ Norberto Esteves*

**NORBERTO ESTEVES**  
 Chairman, Technical Standards  
 Committee "A" (Telecommunications)  
 Rural Development Telecommunications Program  
 Rural Utilities Service

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