SWM PRODUCTS

SWMBOX 5LNB HUBS

SITUATION

Multiple **SWM8** switches are required at a single location to serve apartments or many rooms in a large home.

SOLUTION

SONORA pre-assembled hubs amplify and distribute ***DIRECTV***® Ka/Ku (5) LNB signals to up to 8 **SWM8** switches.

RELATED CONSIDERATIONS

All cables, power supplies and SWM mounting hardware is included. Installers press-fit **SWM8** switches and connect the color coded cables.

Model **SWMBOX-321** includes (1) SWM8 switch.
Model **SWMBOX-322** includes (2) SWM8 switches.
Model **SWMBOX-646** includes (6) SWM8 switches.

FEATURES

- *Compact design . . . . . 8" Depth*
- *Pre-Assembled & Tested . . . . . Plug & Play*
- *UPS shippable . . . . . .55 pounds*
- *Easy Installation. . . . . color coded cables*
- *Secure . . . . . steel enclosure for pad- locking*

APPLICATION NOTES

Model **SWMBOX** routers provide ***DIRECTV***® single wire stacked switched signals to multiple apartments or rooms in a custom home. Three models are available based on property size.

Model **SWMBOX-32** houses up to (4) SWM switches.

Model **SWMBOX-64** houses up to (8) SWM switches.

Model **SWMBOX-64T** houses up to (8) SWM switches and (5) taps.

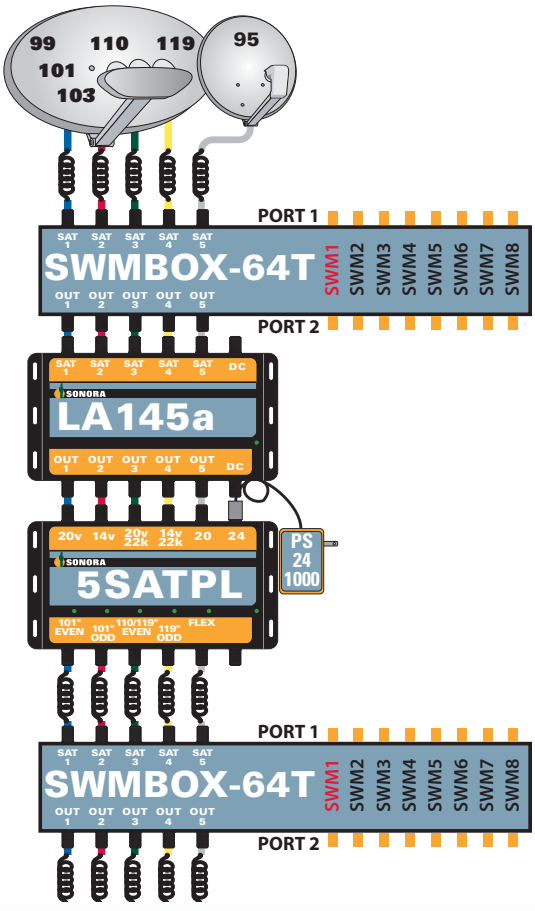
(**SWM8** sold seperately)

SWMBOX-64

SWMBOX-32

DESCRIPTION

Model **SWMBOX-32** & **SWMBOX-64** hubs process SLIMLINE® Ka/Ku and (1) flex signals and house multiple **SWM8** switches.



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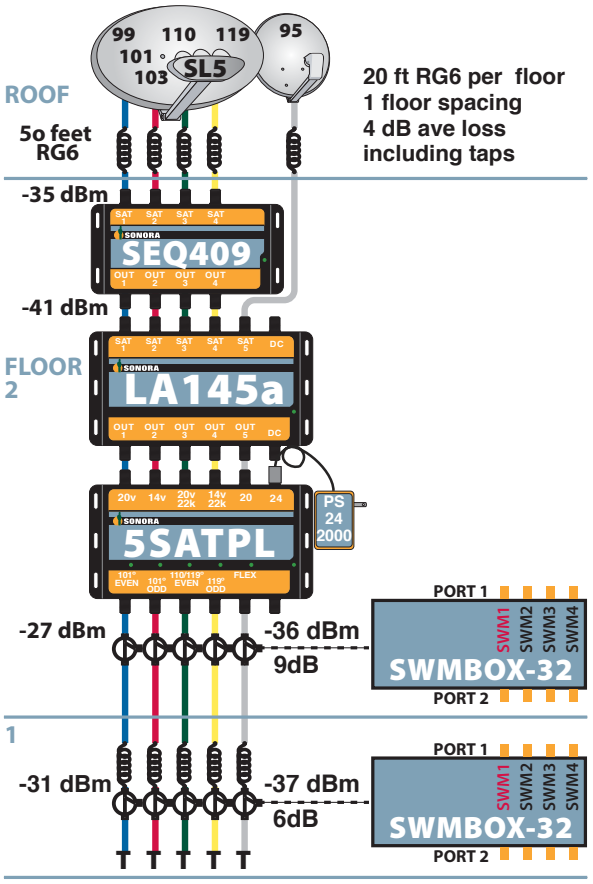
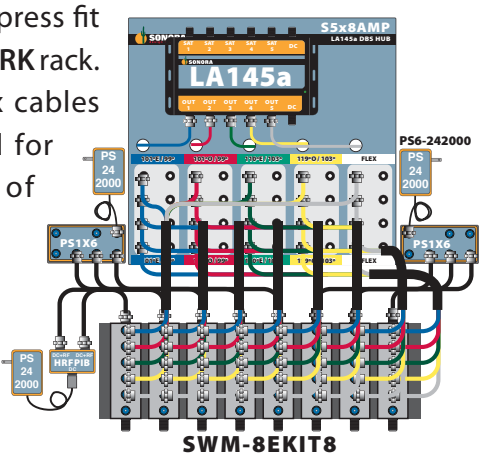
SWM PRODUCTS

SWMBOX-32 & 64 HUBS



Model **SWMBOX-64** receives signals from taps located on the trunk cables external to the box. Signal levels from -25 to -55 dBm provide each SWM8 switch their desired input for -30 dBm out.

Within the box model **S5x8AMP** amplifies and splits the signals to color-coded mini-coax jumper cables. Power for the switches and hub originate with (2) model **PS6-242000** and (1) **HRPIB24** power supplies secured to power strips. **SWM8** switches are press fit to the **SWM-8RK** rack. All mini-coax cables are provided for installation of (8) SWMs.



SWM-8EKIT8

SPECIFICATIONS

Specifications ..... Typical ..... QC Limit

Inputs ..... (5) @ 250 to 2150 MHz

Mechanical Specifications SWMBOX-32

Dimensions ..... 18"L x 24"W x 9.5"D

Weight ..... 35 lb (16 kg)

Mechanical Specifications SWMBOX-64

Dimensions ..... 18"L x 24"W x 9.5"D

Weight ..... 55 lb (25 kg)

Environmental Specifications

Operating Environment: ..... Indoor/Outdoor

Ambient Temperature ..... -30° C to +70°C

Gain Specifications ..... Typical ..... QC Limit

SWMBOX-32 : ..... -8 dB ..... -10 dB

SWMBOX-64 : ..... 6 dB ..... 3 dB

SWMBOX-64T w HRvT106: ..... 0 dB ..... -3 dB

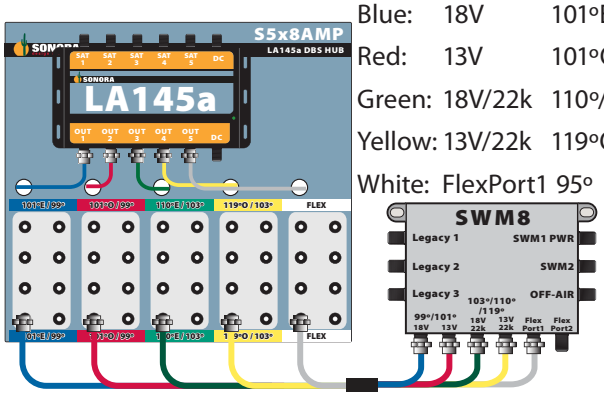
Power Specifications

SWMBOX-32 : ..... (2) 24V, 2 Amp supplies
..... Powers (4) SWM8 switches & SLIMLINE® Dish

SWMBOX-64 : ..... (3) 24V, 2 Amp supplies
..... Powers (8) SWM8 switches & SLIMLINE® Dish

SWMBOX-64T: ..... (3) 24V, 2 Amp supplies
Powers (8) SWM8 switches, Does NOT Power SLIMLINE® Dish

Color coded jumpers match the polarity of the hub with the polarities of the SWM8 switches.



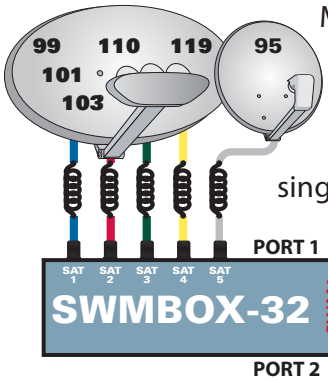
Blue: 18V 101°E/99°

Red: 13V 101°O/99°

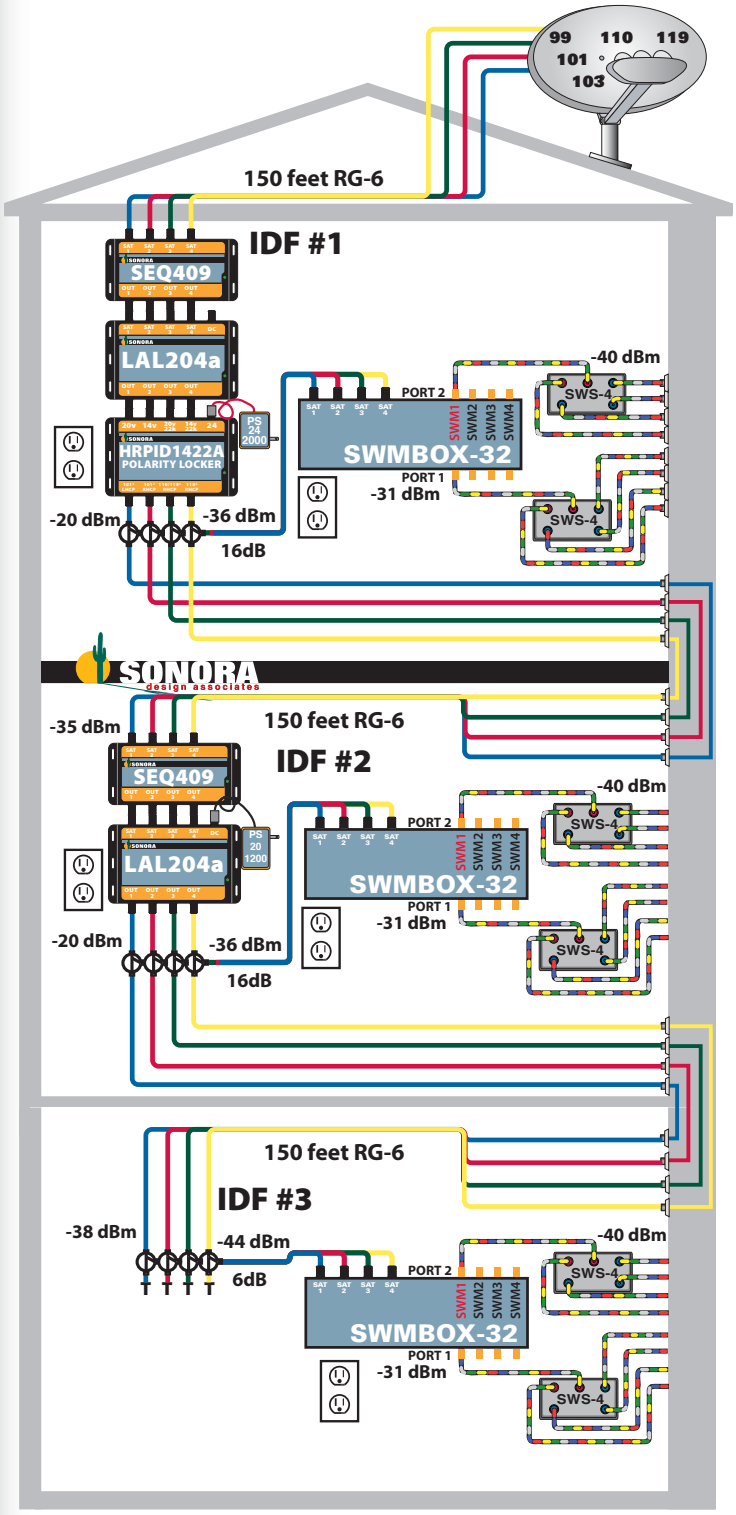
Green: 18V/22k 110°/103°

Yellow: 13V/22k 119°O/103°

White: FlexPort1 95°



Model **SWMBOX-32** powers and polarity locks an SLIMLINE® dish to provide up to 16 apartments with single wire HD programing.



3IDF_SWMBOX32

A custom home with (3) IDF electronic closets was wired with legacy DIRECTV (3) LNB equipment. The homeowner requested the latest in high definition receivers.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º replaced his Phase III dish.

Model **SEQ409**, **LAL204a** and **HRPID1422A** start the distribution located 150 feet from the dish.

An AU9 dish typically has an output of -30 dBm.

After 150 feet of RG-6 the signal to the **SEQ409** equalizer is **-45 dBm**. At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LAL204a** with automatic gain has an output of **-20 dBm** .

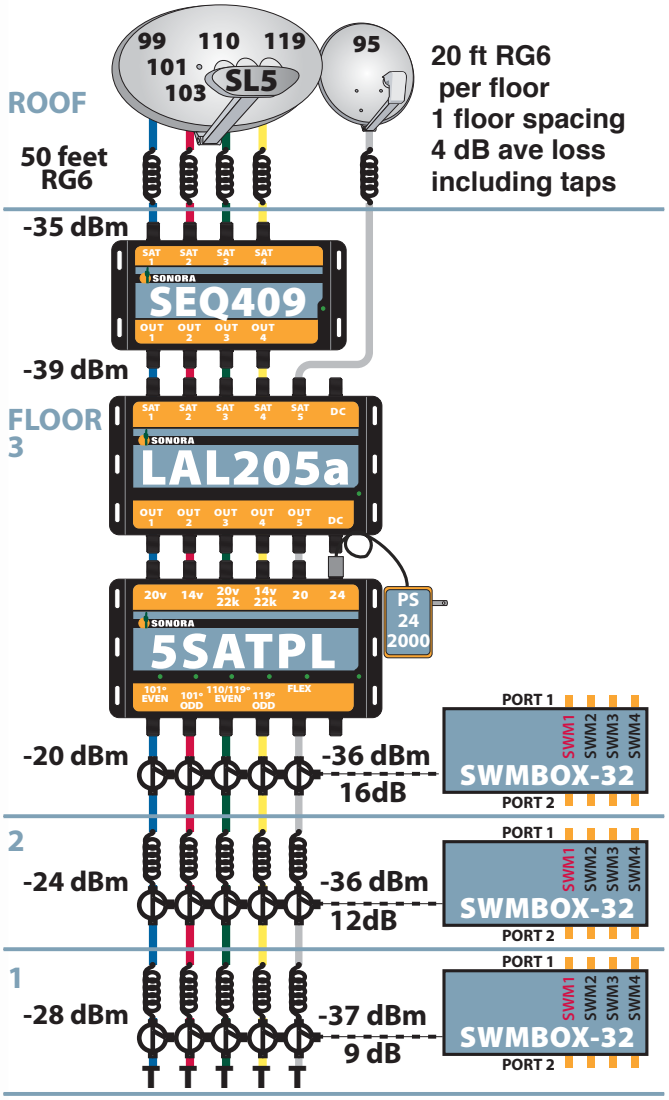
Model **HRvTxx** taps are used to couple some of the signal to the SWMBOX-32.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. Inputs of **-16 dBm to -46 dBm** is required to each SWMBOX-32.

The signal travel 150 feet from IDF#1 to IDF#2. The loss at 250 MHz of RG-6 is

Bill of Materials **3FL_LAL205a_1FS**

- **(1) SEQ409**
- **(1) LAL205a**
- **(1) 5SATPL**
- **(5) HRvT116**
- **(5) HRvT112**
- **(5) HRvT109**



Bill of Materials **3FL_LAL205a_1FS**

- **(1) SEQ409**
- **(1) LAL205a**
- **(1) 5SATPL**
- **(5) HRvT116**
- **(5) HRvT112**
- **(5) HRvT109**

3FL_LAL205a_1FS

The system consists of backbone electronics and IDF equipment. The IDF equipment is itemized separately from the backbone since it is required only when subscribers are added.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL205a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left.

An AU9 dish typically has an output of -30 dBm.

After 50 feet of RG-6 the signal to the **SEQ409** equalizer is **-35 dBm**.

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LAL204a** with automatic gain has an output of **-20 dBm** even if the dish were 150 feet away.

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. High value taps have less insertion loss than lower value taps. (1.5 dB to 3 dB) A combined tap loss and cable loss of **4 dB per floor** is used for calculations.

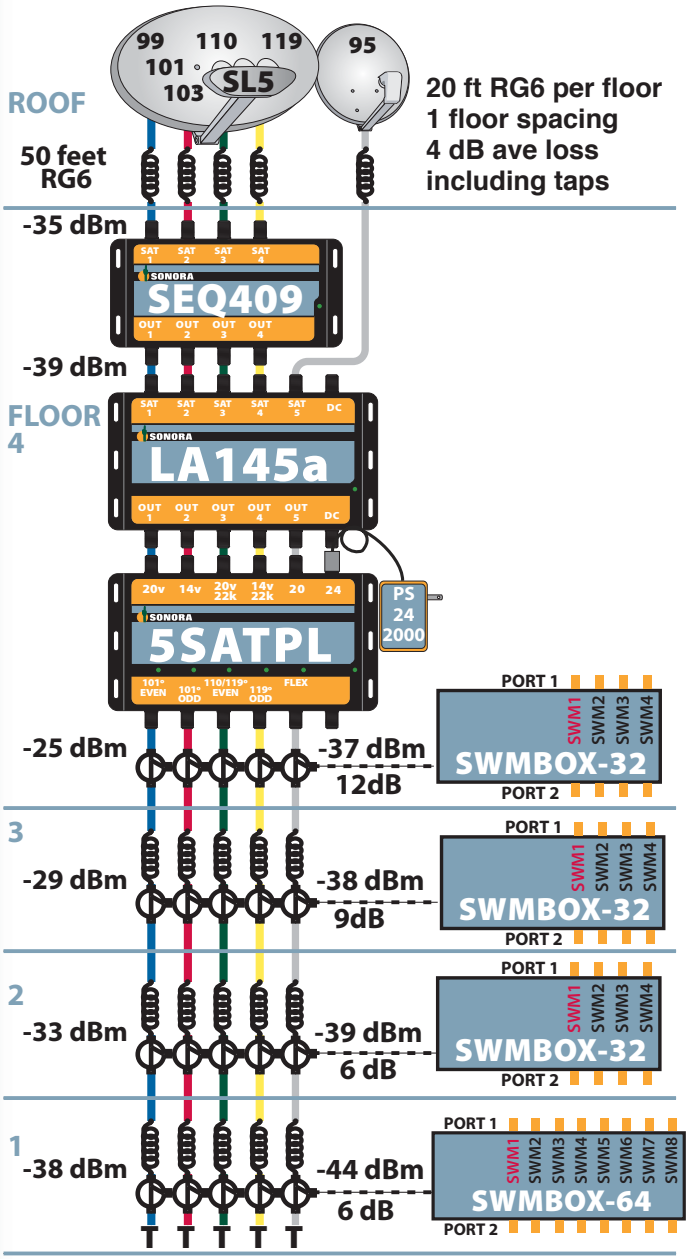
Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of **-25 dBm to -55 dBm** is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. Inputs of **-16 dBm to -46 dBm** is required to each IDF.

DIRECTV® MDU

(4) FLOOR, TAP PER FLOOR

4FL_LA145A_1FS



Bill of Materials for Riser

- (1) SEQ409
- (1) LA145a
- (1) 5SATPL
- (5) HRvT112
- (5) HRvT109
- (10) HRvT106

The system consists of backbone electronics and IDF equipment. The IDF equipment is priced separately from the riser since it is required only when subscribers are added.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LA145a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left.

An AU9 dish typically has an output of **-30 dBm.**

After 50 feet of RG-6 the signal to the **SEQ409** equalizer is **-35 dBm.**

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA145a** with 14 dB of gain has an output of **-25 dBm**.

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. High value taps have less insertion loss than lower value taps. (1.5 dB to 3 dB) A combined tap loss and cable loss of **4 dB per floor** is used for calculations.

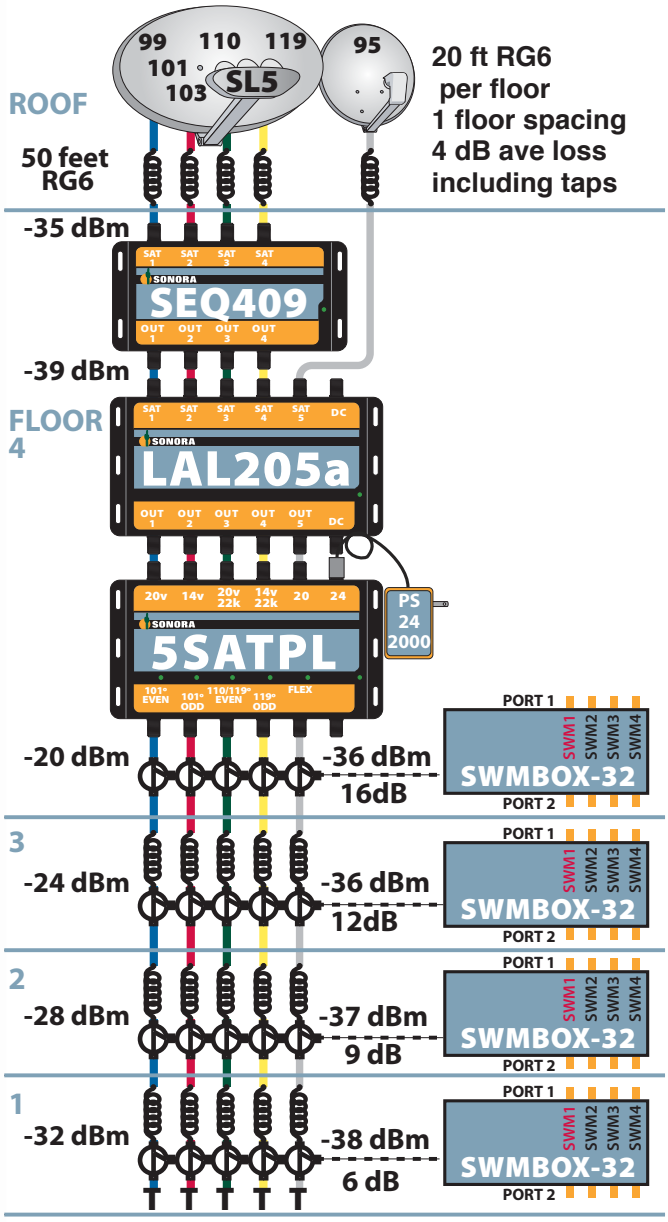
Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. SWM8 switches have AGC simplifying the design. Inputs of **-16 dBm to -46 dBm** is required to each IDF.

Model **SWMBOX-64** hubs could be used to provide the signals to up to (8) SWM8 switches at zero loss. Inputs of **-25 dBm to -55 dBm** is required to each IDF.

DIRECTV® MDU

(4) FLOOR, TAP PER FLOOR

4FL_LAL205A_1FS



Bill of Materials **4FL_LAL205A_1FS**

- (1) SEQ409
- (1) LAL204a
- (1) LAL20a
- (1) 5SATPL
- (5) HRvT116
- (5) HRvT112
- (5) HRvT109
- (5) HRvT106

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL204a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left. A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be 4 dB.

An AU9 dish typically has an output of **-30 dBm.**

After 50 feet of RG-6 the signal to the **SEQ409** equalizer is **-35 dBm**.

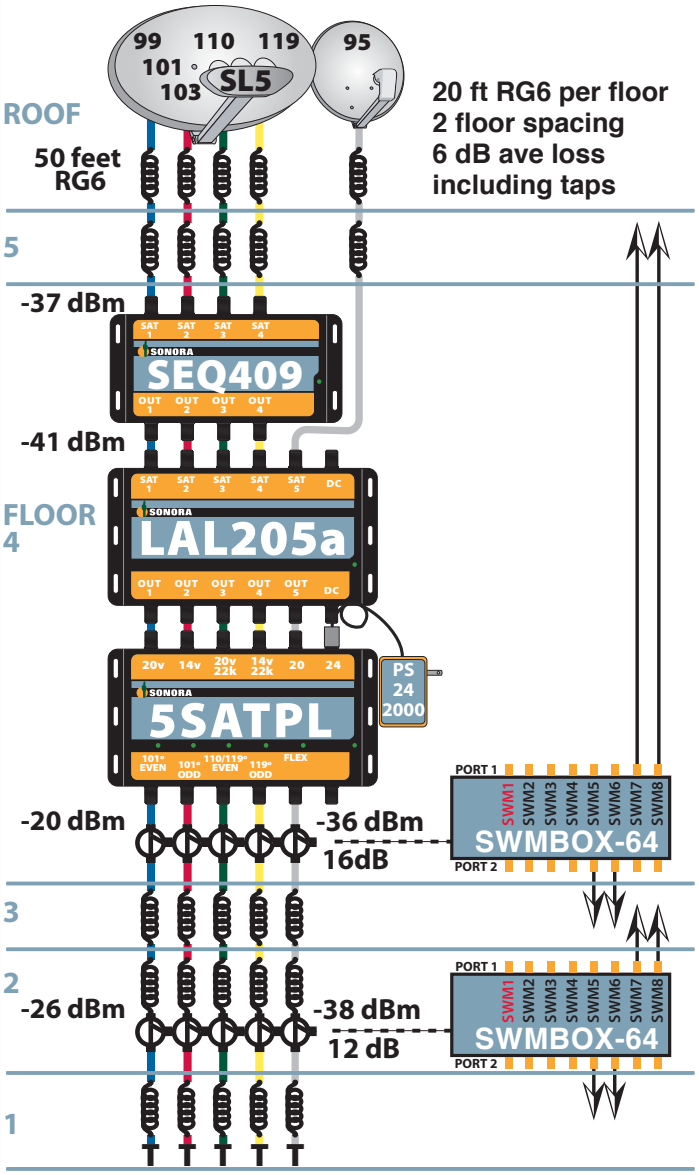
At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA204a** with automatic gain has an output of **-20 dBm** with inputs from **-35 to -55 dBm.**

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. and combined with the cable loss for a loss of **4 dB per floor.**

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of **-25 dBm to -55 dBm** is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. Inputs of **-16 dBm to -46 dBm** is required to each IDF.

5FL_LA205A_2FS



(1) SEQ409
(1) LAL204a
(1) LAL20a
(1) 5SATPL
(5) HRvT116
(5) HRvT112

This example has an IDF placed on alternate floors. Signals from **SWMBOX-64** and **SWMBOX-32** feed their floor plus or minus one floor.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL205a** and **5SATPL** start the distribution located 50 feet from the dishes.

A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be 4 dB.

An AU9 dish typically has an output of -30 dBm.

Signal passes through floor 5 so the total dish to floor 4 is 70 feet. After 70 feet of RG-6 the signal to the **SEQ409** equalizer is -37 dBm.

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LAL205a** with automatic gain has an output of -20 dBm with inputs from -35 to -55 dBm.

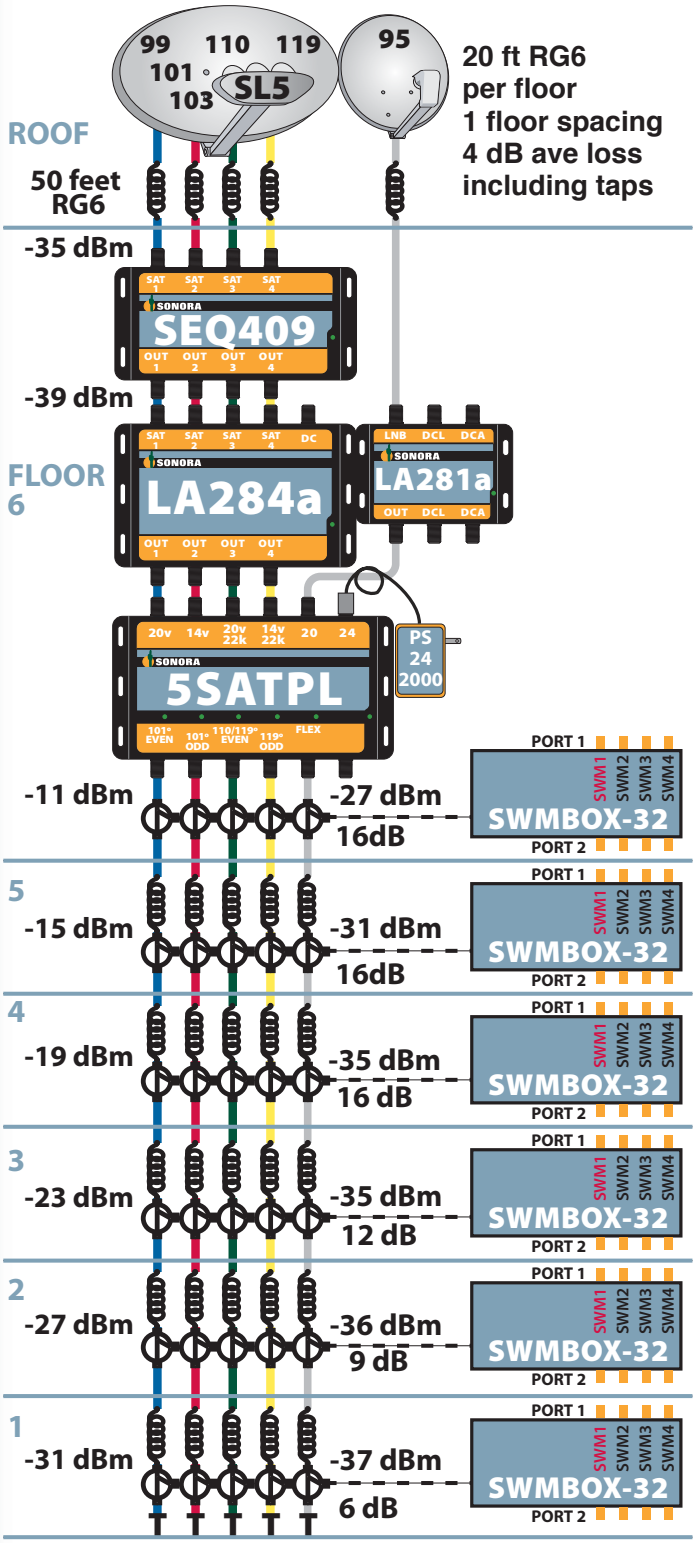
Model **HRvTxx** taps are used to couple signal to the IDF equipment. A per floor loss is assumed to be 6 dB.

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of -25 dBm to -55 dBm is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. A minimum input of -46 dBm is required to each IDF.

Use SWMBOX-64 hubs for higher expected penetration
Bill of Materials **5FL_LA205A_2FS**

6FL_LA285A_1FS



Bill of Materials for Riser

(1) SEQ409	(15) HRvT116
(1) LA284a	(5) HRvT112
(1) LA281a	(5) HRvT109
(1) 5SATPL	(5) HRvT106

The system consists of backbone electronics and IDF equipment. The IDF equipment is priced separately from the riser since it is required only when subscribers are added.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LA285a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left.

An AU9 dish typically has an output of **-30 dBm.**

After 50 feet of RG-6 the signal to the **SEQ409** equalizer is **-35 dBm.**

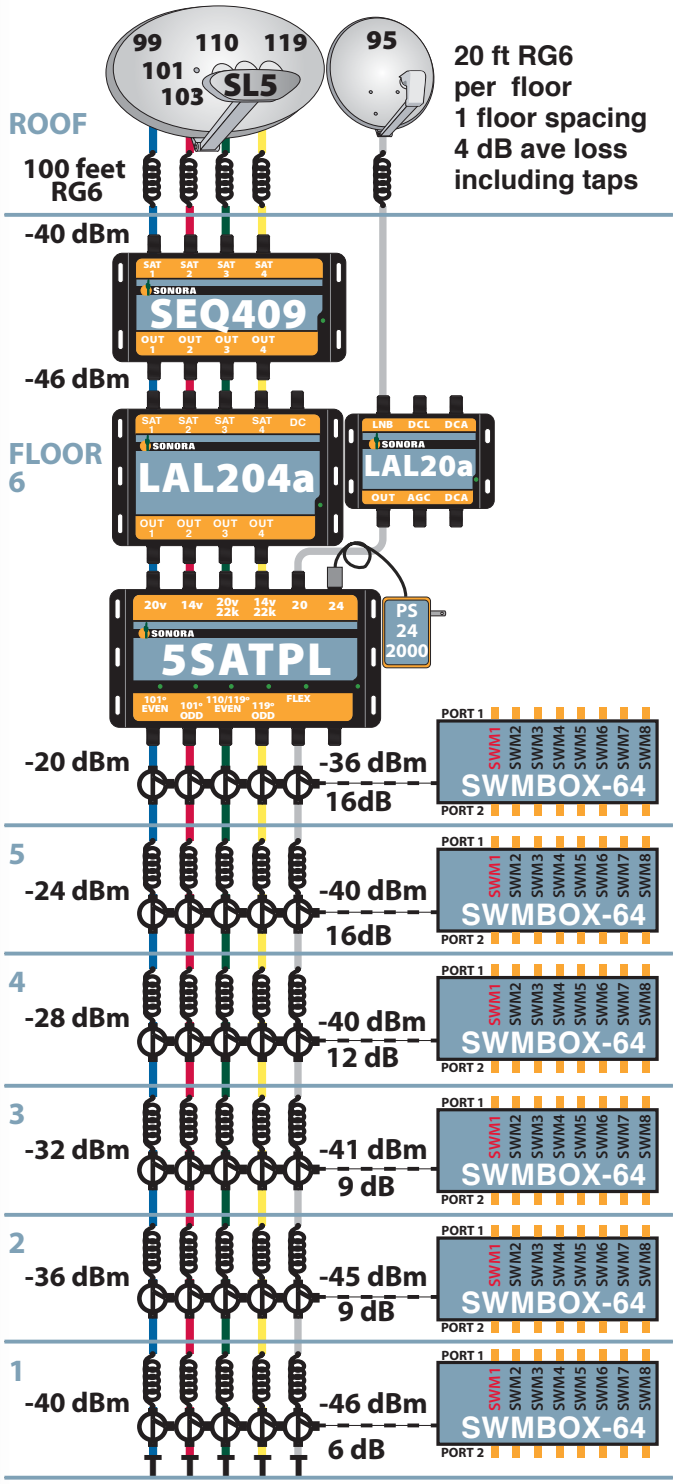
At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA285a** with 28 dB of gain has an output of **-11 dBm**.

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. High value taps have less insertion loss than lower value taps. (1.5 dB to 3 dB) A combined tap loss and cable loss of **4 dB per floor** is used for calculations.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. SWM8 switches have AGC simplifying the design. Inputs of **-16 dBm to -46 dBm** is required to each IDF.

Model **SWMBOX-64** hubs could be used to provide the signals to up to (8) SWM8 switches at zero loss. Inputs of **-25 dBm to -55 dBm** is required to each IDF.

6FL_LAL205A_1FS



Bill of Materials **6FL_LAL205A_1FS**

- (1) SEQ409
- (1) LAL204a
- (1) LAL20a
- (1) 5SATPL
- (5) HRvT116
- (5) HRvT112
- (5) HRvT109
- (5) HRvT106

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL204a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left. A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be 4 dB.

An AU9 dish typically has an output of -30 dBm.

After 50 feet of RG-6 the signal to the **SEQ409** equalizer is -35 dBm.

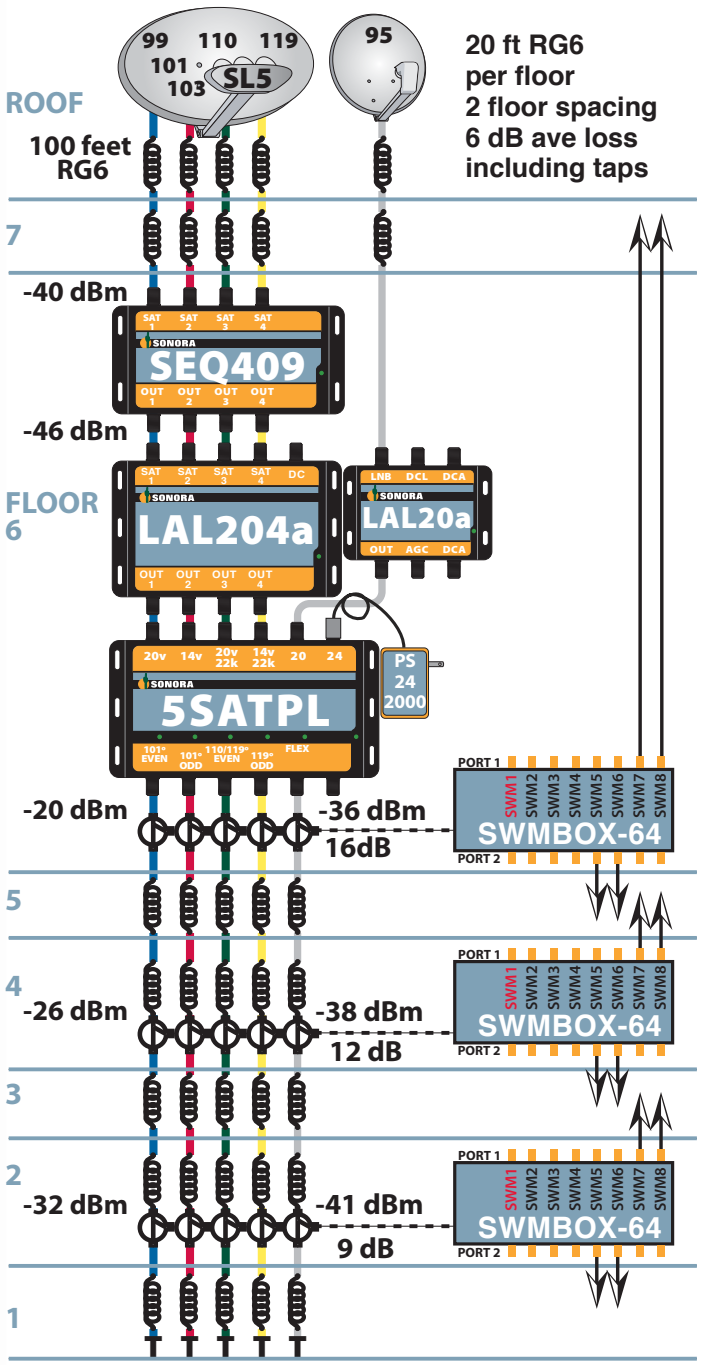
At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA204a** with automatic gain has an output of -20 dBm with inputs from -35 to -55 dBm.

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. and combined with the cable loss for a loss of 4 dB per floor.

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of -25 dBm to -55 dBm is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. A minimum input of -46 dBm is required to each IDF.

Note a **SWMBOX-64** is used in each case on floor 1. The signal level is at the low end to feed a **SWMBOX-32**.



Bill of Materials **7FL_LA205A_2FS**

- (1) SEQ409
- (1) LAL204a
- (1)LAL20a
- (1) 5SATPL
- (5) HRvT116
- (5) HRvT112
- (5) HRvT109

7FL_LA205A_2FS

This example has an IDF placed on alternate floors. Signals from **SWMBOX-64** and **SWMBOX-32** feed their floor plus or minus one floor.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL205a** and **5SATPL** start the distribution located 100 feet from the dishes.

A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be 4 dB.

An AU9 dish typically has an output of -30 dBm.

Signal passes through floor 7 so the total dish to floor 6 is 120 feet. After 120 feet of RG-6 the signal to the **SEQ409** equalizer is -46 dBm.

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LAL205a** with automatic gain has an output of -20 dBm with inputs from -35 to -55 dBm.

Model **HRvTxx** taps are used to couple signal to the IDF equipment. A per floor loss is assumed to be 6 dB.

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of -25 dBm to -55 dBm is required to each IDF.

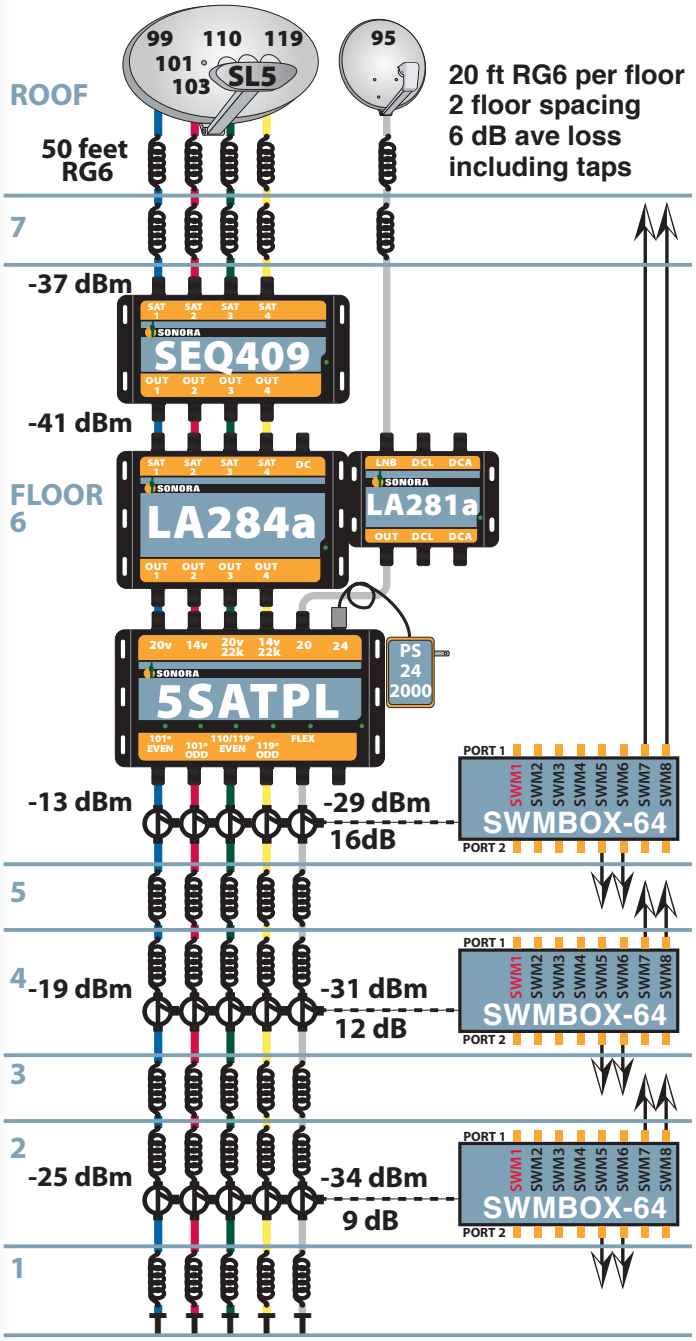
Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. A minimum input of -46 dBm is required to each IDF.

Use SWMBOX-64 hubs for higher expected penetration

DIRECTV® MDU

(7) FL, TAP PER (2) FLOORS

7FL_LA285A_2FS



Riser Bill of Materials

- (1) SEQ409
- (1) LA284a
- (1) LA281a
- (1) 5SATPL
- (5) HRvT116
- (5) HRvT112
- (5) HRvT109

The system consists of backbone electronics and IDF equipment. The IDF equipment is priced separately from the backbone since it is required only when subscribers are added.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LA285a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left. A distance of 20 feet per floor of RG-6 is assumed.

An AU9 dish typically has an output of **-30 dBm**.

After 70 feet of RG-6 the signal to the **SEQ409** equalizer is **-37 dBm.**

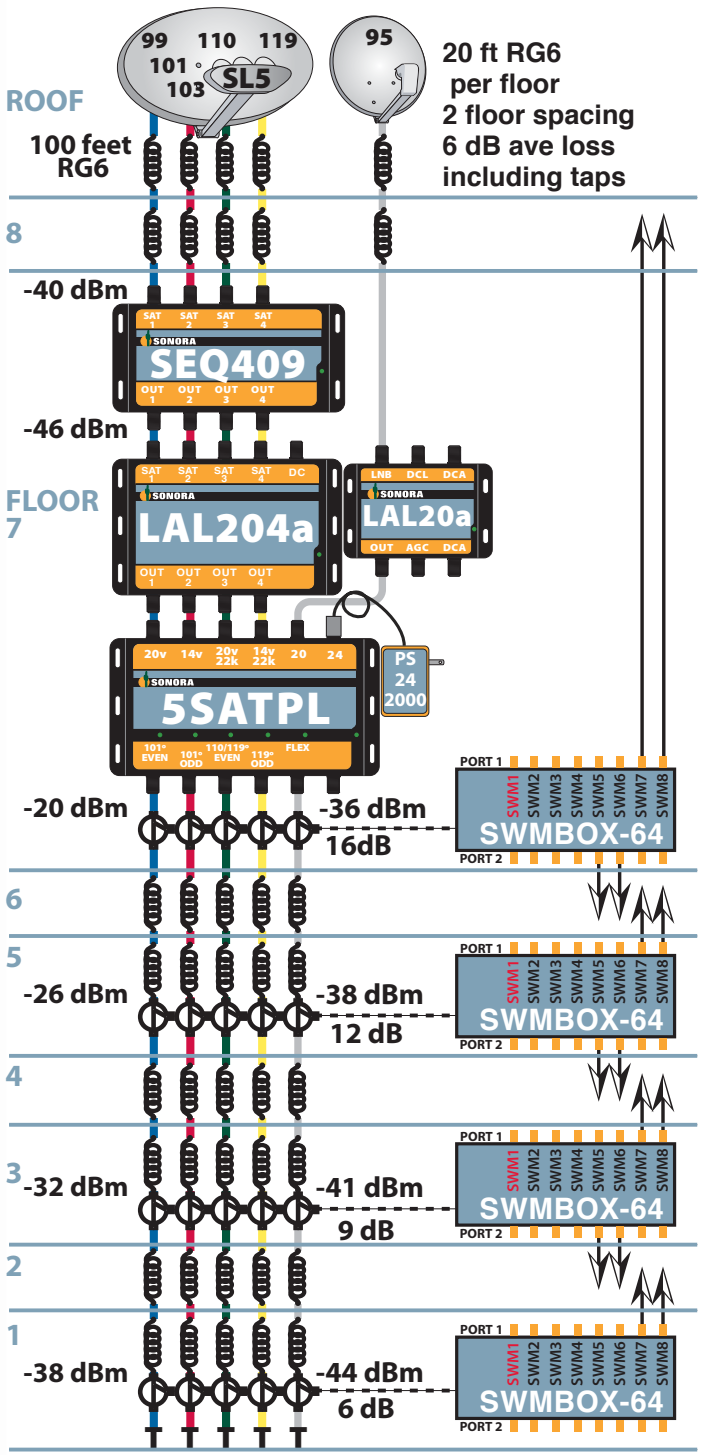
At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA285a** with 28 dB of gain has an output of **-13 dBm.**

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. High value taps have less insertion loss than lower value taps. (1.5 dB to 3 dB)

A combined tap loss and cable loss of **6 dB per floor** is used for calculations.

Model **SWMBOX-64** hubs are used to provide the signals to up to (8) SWM8 switches at zero loss. Inputs of **-25 dBm to -55 dBm** is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. SWM8 switches have AGC simplifying the design. Inputs of **-16 dBm to -46 dBm** is required to each IDF.



Bill of Materials **8FL_LA205A_2FS**

- (1) SEQ409
- (1) LAL204a
- (1)LAL20a
- (1) 5SATPL
- (5) HRvT116
- (5) HRvT112
- (5) HRvT109
- (5) HRvT106

8FL_LA205A_2FS

This example has an IDF placed on alternate floors. Signals from **SWMBOX-64** and **SWMBOX-32** feed their floor plus or minus one floor.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL205a** and **5SATPL** start the distribution located 100 feet from the dishes.

A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be 4 dB.

An AU9 dish typically has an output of -30 dBm.

Signal passes through floor 8 so the total dish to floor 7 is 120 feet. After 120 feet of RG-6 the signal to the **SEQ409** equalizer is -46 dBm.

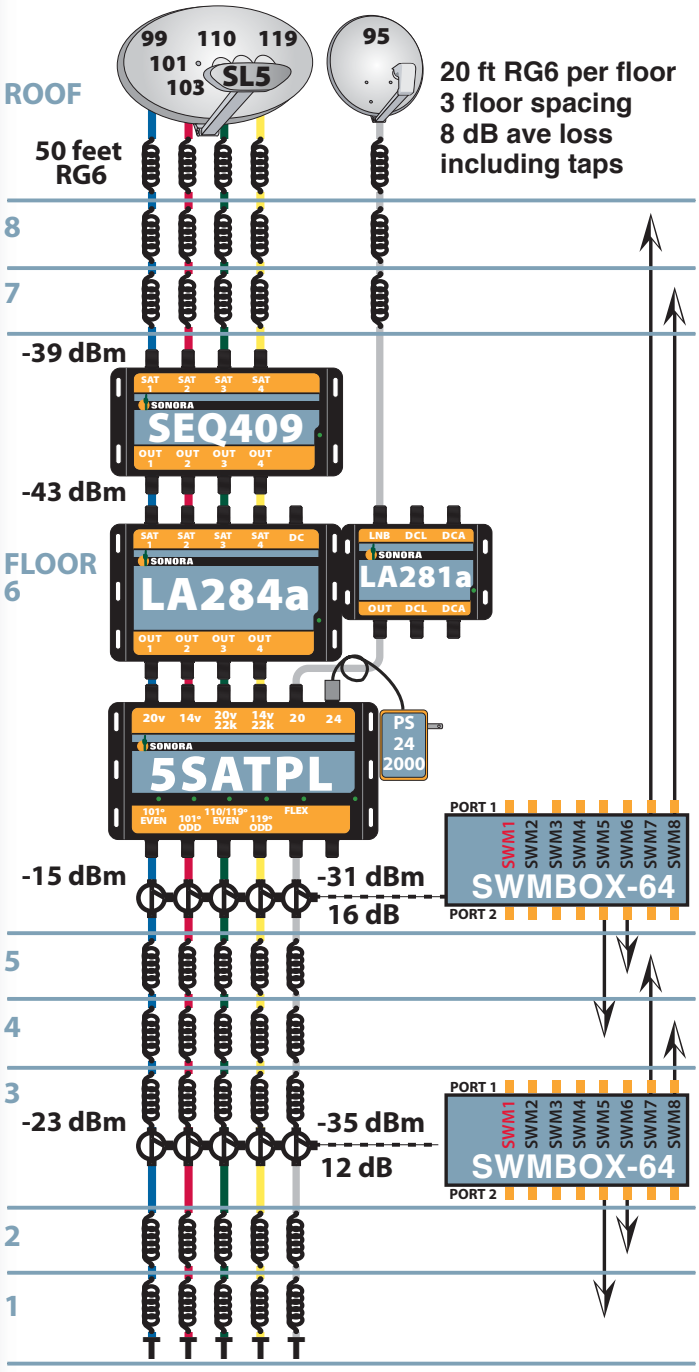
At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LAL205a** with automatic gain has an output of -20 dBm with inputs from -35 to -55 dBm.

Model **HRvTxx** taps are used to couple signal to the IDF equipment. A per floor loss is assumed to be 6 dB.

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of -25 dBm to -55 dBm is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. A minimum input of -46 dBm is required to each IDF.

Use SWMBOX-64 hubs for higher expected penetration



Riser Bill of Materials

- (1) SEQ409
- (1) LA284a
- (1) LA281a
- (1) 5SATPL
- (5) HRvT116
- (5) HRvT112

8FL_LA285A_3FS

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LA285a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left. A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be **8 dB** including tap insertion loss.

An AU9 dish typically has an output of **-30 dBm**.

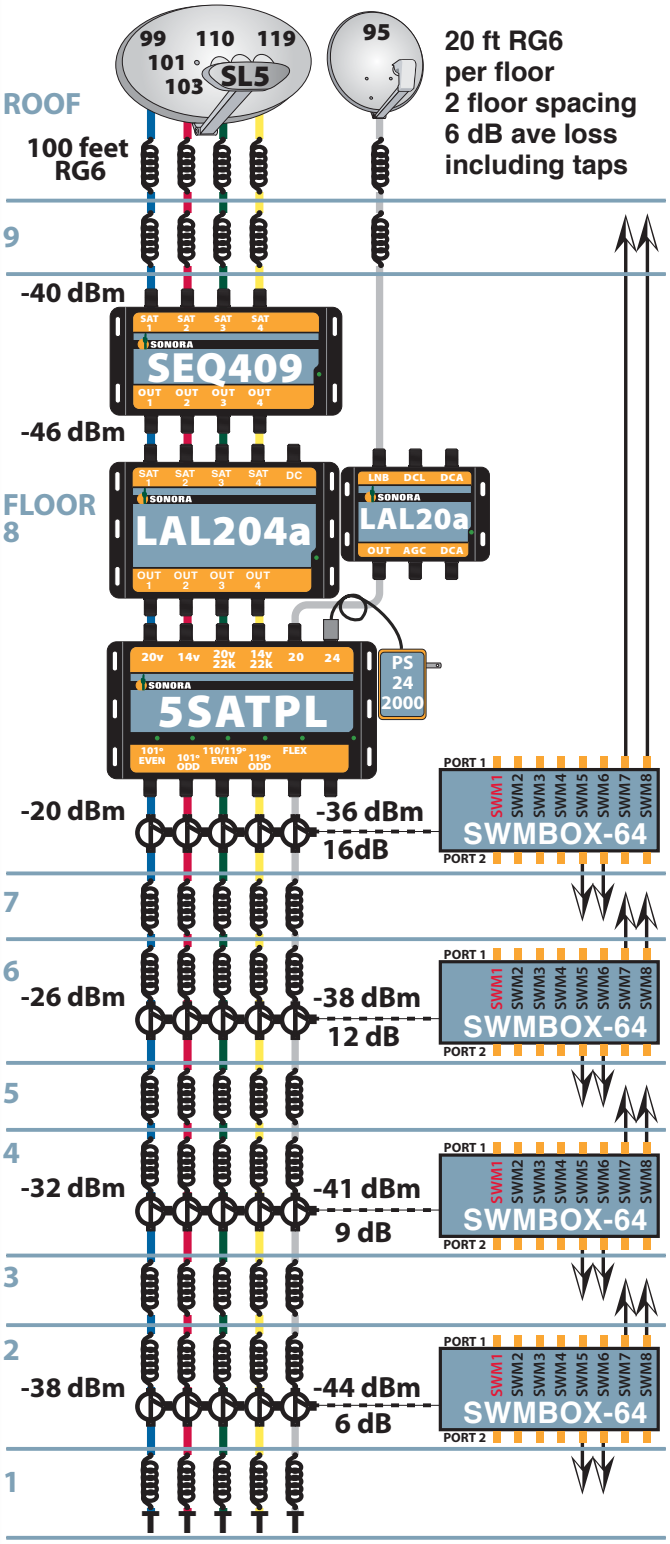
After 90 feet of RG-6 the signal to the **SEQ409** equalizer is **-39 dBm**.

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA285a** with 28 dB of gain has an output of **-15 dBm**.

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. High value taps have less insertion loss than lower value taps. (1.5 dB to 3 dB)

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of **-25 dBm to -55 dBm** is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. Inputs of **-15 dBm to -45 dBm** is required to each IDF.



Bill of Materials **9FL_LA205A_2FS**

(1) SEQ409	(5) HRvT116
(1) LAL204a	(5) HRvT112
(1)LAL20a	(5) HRvT109
(1) 5SATPL	(5) HRvT106

9FL_LA205A_2FS

This example has an IDF placed on alternate floors. Signals from **SWMBOX-64** and **SWMBOX-32** feed their floor plus or minus one floor.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LAL205a** and **5SATPL** start the distribution located 100 feet from the dishes.

A distance of 20 feet of RG-6 is assumed to determine the average loss per floor. (2 dB loss) A per floor loss is assumed to be 4 dB.

An AU9 dish typically has an output of -30 dBm.

Signal passes through floor 9 so the total dish to floor 8 is 120 feet. After 120 feet of RG-6 the signal to the **SEQ409** equalizer is -46 dBm.

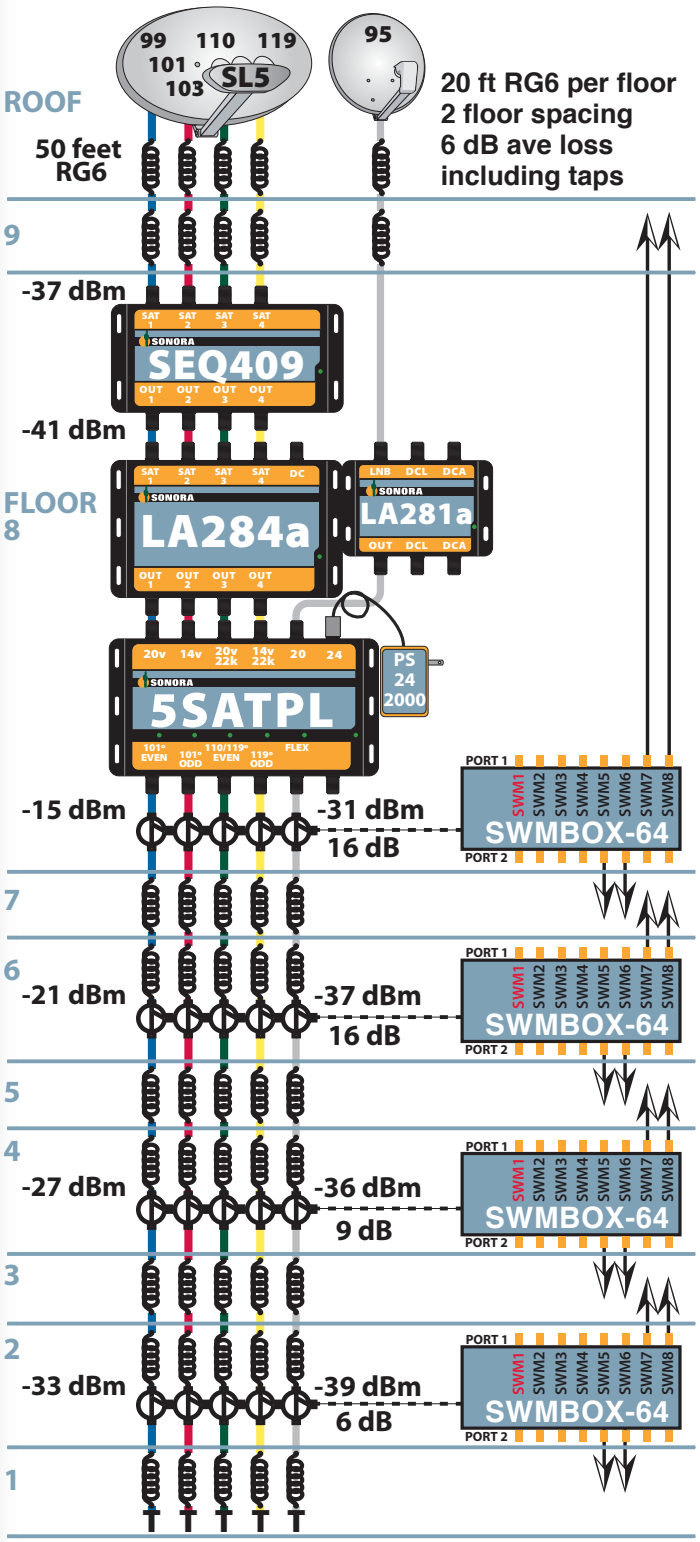
At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LAL205a** with automatic gain has an output of -20 dBm with inputs from -35 to -55 dBm.

Model **HRvTxx** taps are used to couple signal to the IDF equipment. A per floor loss is assumed to be 6 dB.

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of -25 dBm to -55 dBm is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. A minimum input of -46 dBm is required to each IDF.

Use SWMBOX-64 hubs for higher expected penetration



Bill of Materials for Riser

(1) SEQ409	(15) HRvT116
(1) LA284a	(5) HRvT112
(1) LA281a	(5) HRvT109
(1) 5SATPL	(10) HRvT106

9FL_LA285A_2FS

The system consists of backbone electronics and IDF equipment. The IDF equipment is priced separately from the backbone since it is required only when subscribers are added.

An **AU9 SL5S** signal consisting of the 99º,101º,103º, 110º and 119º is supplemented with a single dish focused on the 95º satellite.

Model **SEQ409**, **LA285a** and **5SATPL** start the distribution located 50 feet from the dishes.

The signal levels expected are indicated on the left.

An AU9 dish typically has an output of **-30 dBm**.

After 70 feet of RG-6 the signal to the **SEQ409** equalizer is **-35 dBm**.

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA285a** with 28 dB of gain has an output of **-11 dBm.**

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. High value taps have less insertion loss than lower value taps. (1.5 dB to 3 dB)

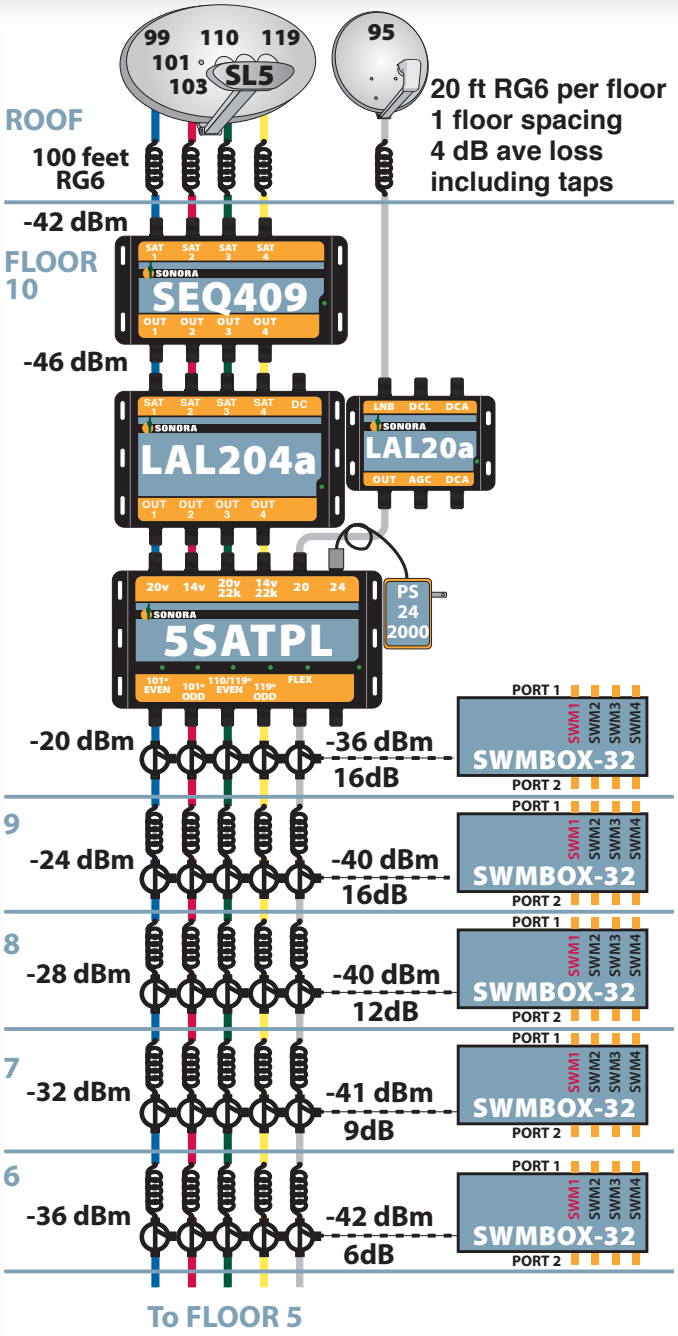
A combined coax and tap insertion loss of **4 dB** per floor is used for level calculations.

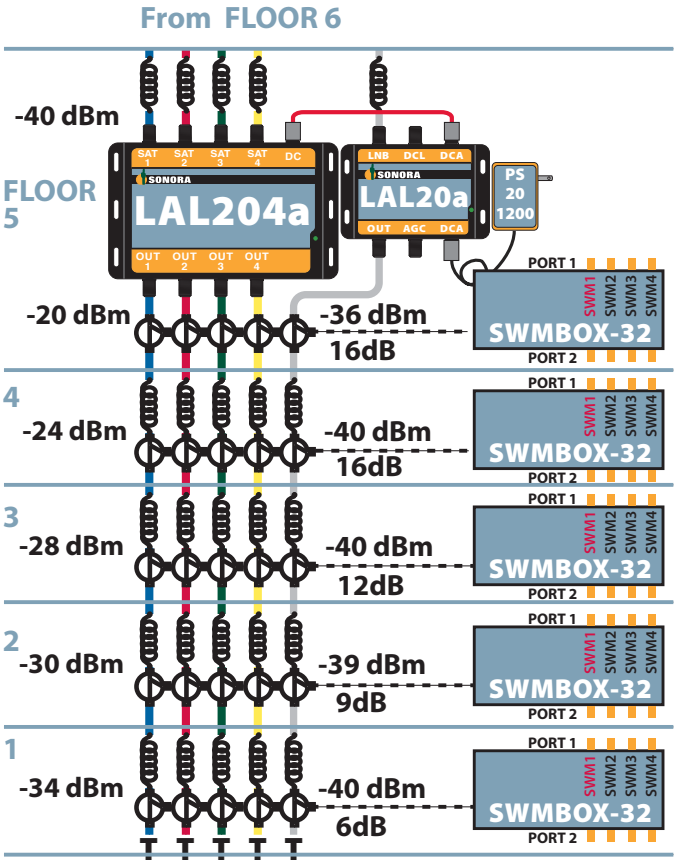
Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. SWM8 switches have AGC simplifying the design. A minimum input of -46 dBm is required to each IDF.

Model **SWMBOX-64** hubs could be used to provide the signals to up to (8) SWM8 switches at zero loss. Inputs of -25 dBm to -55 dBm is required to each IDF.

DIRECTV® MDU

(10) FL, TAP PER FLOOR





10FL_2LAL205A_1FS

Model **SEQ409**, **LAL204a** and **5SATPL** start the distribution located 100 feet from the dishes.

After 100 feet of RG-6 the signal to the **SEQ409** equalizer is -42 dBm.

At the higher Ku frequency, the **SEQ409** insertion loss is 4 dB. The **LA204a** with automatic gain has an output of -20 dBm with inputs from -35 to -55 dBm.

Model **HRvTxx** taps are used to couple some of the signal to the IDF equipment. The insertion loss of the tap values is averaged. and combined with the cable loss for a loss of 4 dB per floor.

Model **SWMBOX-64** hubs provide the signals to up to (8) SWM8 switches at zero loss. SWM8 switches have AGC simplifying the design. Inputs of -25 dBm to -55 dBm is required to each IDF.

Model **SWMBOX-32** hubs provide the signals to up to (4) SWM8 switches with 9 dB loss. A minimum input of -46 dBm is required to each IDF.

Bill of Materials **9FL_LAL205A_LA145a_1FS**

- (1) SEQ409
- (1) LAL204a
- (1) LAL20a
- (1) LA145a-T
- (1) 5SATPL
- (15) HRvT116
- (10) HRvT112
- (10) HRvT109
- (5) HRvT106