



Residential Signal Distribution Team Summit 2006

FACILITATOR'S GUIDE

DESCRIPTION: The purpose of this course is to

OBJECTIVES: After completing this training, participants will be able to:

AUDIENCE: Retailers and Business Owners

MATERIALS: PowerPoint Presentation
Loss Calculation Handout

TRAINING TIME: 50 Minutes

RELEASE DATE: TBD

Training & Development

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PREPARATION

Hand out a copy of the calculation loss diagrams to each participant before the beginning of class. The six diagrams will be covered during the exercise at the end of the class.

INTRODUCTION

Slide 2

Introduction of course and instructors.

AGENDA

Slide 3

This class will cover...

- Signal Sources and Quality
- Loss and Gain
- Super Home Node
- Calculation of Loss
- Q&A

LEAD-IN

Slide 4-7

Direct attention to PowerPoint slide

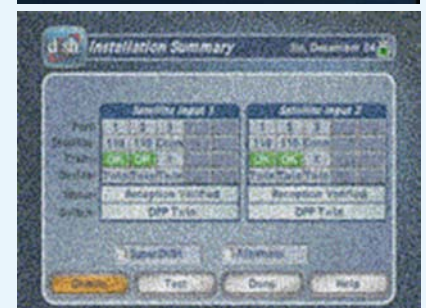
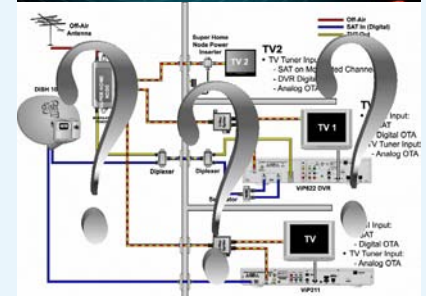
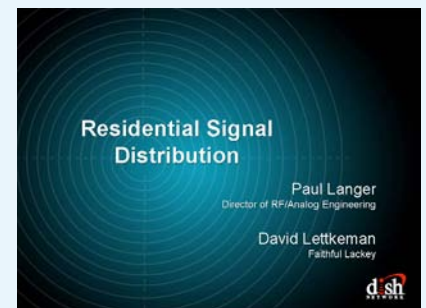
“How would you feel if after spending hours on an installation, you think you are done but your TV2 location looks like this?”

“You can imagine the customer wouldn't be too pleased with this situation either. Poor video quality can be caused by several factors. Today we are going to look at what causes poor video quality, and how to correct it.”

“By being able to calculate the loss in a system before the install is even started, you will be able to make sure the customer doesn't see a picture like this.”

“Recognizing the possible problem from the start allows you to correct the issue during the initial work rather than spending more time fixing a problem at the end.”

“This will save time on installations, reduce return visits to correct video quality problems, and provide the customer with a better overall experience.”



SIGNAL QUALITY

Slide 8

Video quality levels:

- Best Video: Above +3 & below +10 dBmV
- Good Video: 0 to +3 dBmV
- Acceptable video: -5 to 0 dBmV
- Marginal video: Below -5 dBmV
- Dependent of quality and age of television
- An off-air signal strength meter can be used to check dB levels at the TV. The meter will need to be set to dBmV.

SIGNAL SOURCES

Slide 9

- Channel 3/4 output level is ~ +6 dBmV
- Agile Modulator output level is ~ +17 dBmV

DIPLEXER USAGE

Slide 10

Use DISH Pro Approved Diplexers

- Double Check Connections
- SAT – Tuner to LNBF/Switch
- ANT – TV Distribution or Modulator
- IN/OUT – connect to IN/OUT ONLY

CABLE LOSS

Slide 11

- RG-6
 - Channel 3/4 ~ 1.5 dB
 - Channel 21 ~ 4.7 dB
 - Channel 69 ~ 5.5 dB
- RG-59
 - Channel 3/4 ~ 2.0 dB
 - Channel 21 ~ 5.5 dB
 - Channel 69 ~ 7.0 dB
- Levels are for 100' lengths of cable
- Channel 21 off-air ~ channel 73 Cable
- Channel 69 off-air ~ channel 125 Cable

Signal Quality

- TV input levels
 - Best Video: +3 dBmV to +10 dBmV
 - Good Video: 0 dBmV to +3 dBmV
 - Acceptable Video: -5 dBmV to 0 dBmV
 - Marginal Video: Below -5 dBmV
- dBmV levels can be checked using an off-air signal meter



Signal Sources

- Channel 3/4 output level is ~ +6 dBmV
- Agile Modulator output level is ~ +17 dBmV



Diplexer Usage



- Proper use of diplexers
 - Use DISH Pro Approved Diplexers
 - Double Check Connections
 - SAT – Tuner to LNBF/Switch
 - ANT – TV Distribution or Modulator
 - IN/OUT – Connect to IN/OUT only



Cable Losses

- RG 6
 - Channel 3/4 ~ 1.5 dB
 - Channel 21 ~ 4.7 dB
 - Channel 69 ~ 5.5 dB
- RG 59
 - Channel 3/4 ~ 2.0 dB
 - Channel 21 ~ 5.5 dB
 - Channel 69 ~ 7.0 dB
- Levels are for 100' lengths of cable
- Channel 21 off-air ~ channel 73 cable
- Channel 69 off-air ~ channel 125 cable



COMPONENT LOSS

Slide 12

- Diplexer TV channel path loss ~ -2 dB
- Splitters
 - 2 way splitter loss ~ -3.5 dB
 - 4 way splitter loss ~ -7.5 dB

AMPLIFICATION

Slide 13

- When to amplify
- Where to amplify
- How much to amplify

SUPER HOME NODE DISTRIBUTION

Slide 14

What does it do for you?

- Combines Off-Air/Cable and Agile Modulator
- Distributes signals to four televisions
- Complies with agency requirements

CALCULATING LOSS

Slide 15

When calculating what your signal will be at the TV, you have to take into account multiple factors

- Starting signal level
- Cable loss
- Component loss

Plus any amplification you add to the system

With all that in mind, we are going to look at some examples.

CALCULATION OF LOSS EXERCISE

For each set of diagrams, show and explain the slide to the participants. Afterwards give them a few minutes to figure out the dB levels for each box.

After a couple minutes advance the slide to show the diagram again with the dB values filled in.

Continue this for all slides.

Component Losses

- Diplexers
 - Diplexer TV channel path loss ~ -2 dB
- Splitters
 - 2 way splitter loss ~ -3.5 dB
 - 4 way splitter loss ~ -7.5 dB

Amplification

- What is Amplification
- When to Amplify
- Where to Amplify
- How much to Amplify

Super Home Node Distribution

- What does it do for you?
 - Combines Off-Air/Cable and Agile Modulator
 - Distributes signals to four televisions
 - Complies with agency requirements
- Channel 3/4 to RX output +6 dB
- Agile to RX output -7 dB
- Antenna to RX +3 dB gain

Calculating Loss



SINGLE RECEIVER DIRECT FEED

Slide 16 & 17

Agile Modulator set to channel 69 for TV2.

50 feet RG-59 between receiver and 4-Way splitter = 3.5 dB loss
50 feet RG-59 between 4-Way splitter and TV location = 3.5 dB loss
4-Way splitter between receiver and TV 2 location = 7.5 dB loss

SINGLE RECEIVER WITH DIPLEXERS

Slide 18 & 19

Agile Modulator set to channel 69 for TV2.

Two Diplexers between receiver and 4-Way splitter = 2 dB loss per diplexer
50 feet RG-6 between receiver and 4-Way splitter = 2.75 dB loss
50 feet RG-6 between 4-Way splitter and TV location = 2.75 dB loss
4-Way splitter between receiver and TV 2 location = 7.5 dB loss

DUAL RECEIVERS WITH DIRECT OR DIPLEXER FEED

Slide 20

2 receiver locations

Location #1 agile modulator set to channel 69

Location #2 agile modulator set to channel 21

Location #1

100 feet of RG-59 between receiver and TV3 = 7 dB loss

Two 2-way splitters between receiver and TV3 = 3.5 dB loss per splitter

Location #2

100 feet of RG-59 between receiver and TV3 = 5.5 dB loss

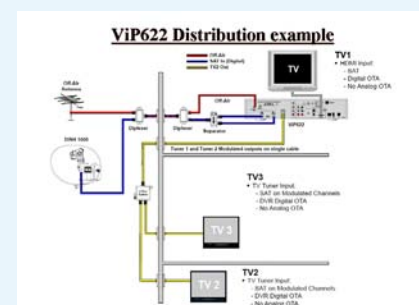
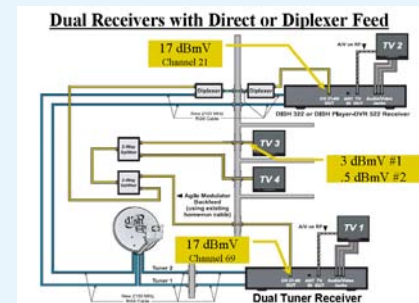
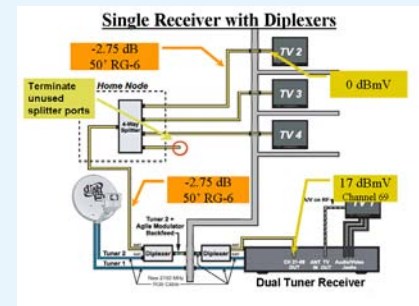
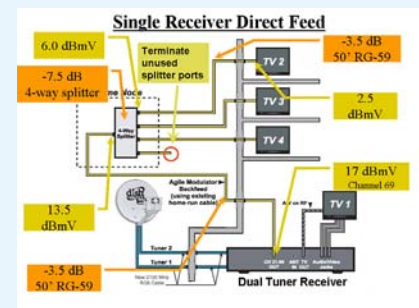
Two diplexers between receiver and TV3 = 2 dB loss per diplexer

Two 2-way splitter between receiver and TV3 = 3.5 dB loss per splitter

VIP622 DISTRIBUTION EXAMPLE

Slide 21

Your on your own here guys



SINGLE RECEIVER DUAL MODULATORS

Slide 22

Agile Modulator set to channel 69

Channel $\frac{3}{4}$ output on channel 3

100 feet RG-59 between receiver and TV location = 7 dB loss

2-way splitter between receiver and TV location = 3.5 dB loss

4-way splitter between receiver and TV location = 7.5 dB loss

SINGLE RECEIVER WITH OFF AIR ANTENNA

Slide 23 & 24

Agile modulator set to channel 69

Channel $\frac{3}{4}$ output set to channel 3

100 feet RG-59 between receiver and TV location = 7 dB loss

2-way splitter between receiver and TV location = 3.5 dB loss

Super Home Node between receiver and TV location = 3 dB gain

QUESTIONS AND ANSWERS - 10 MINUTES

Slide 25

