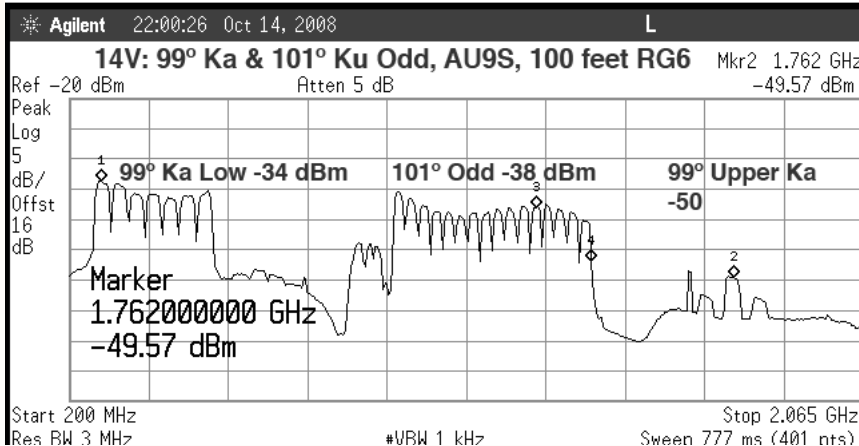
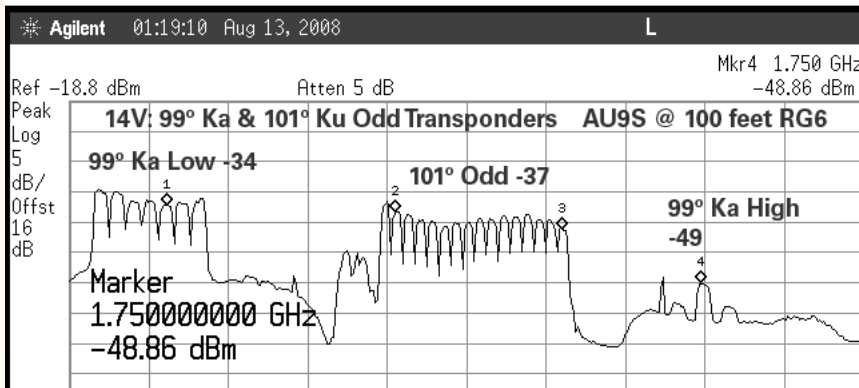
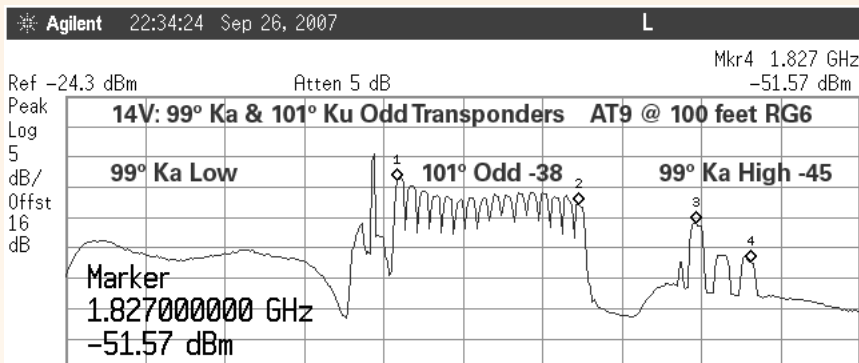




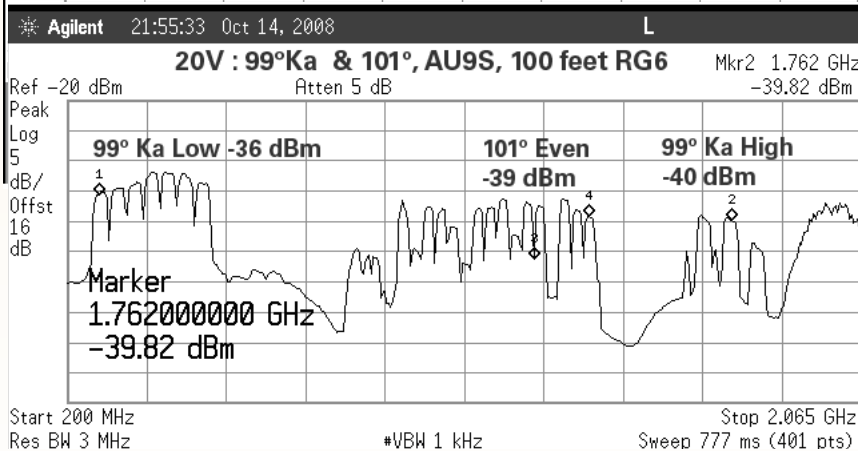
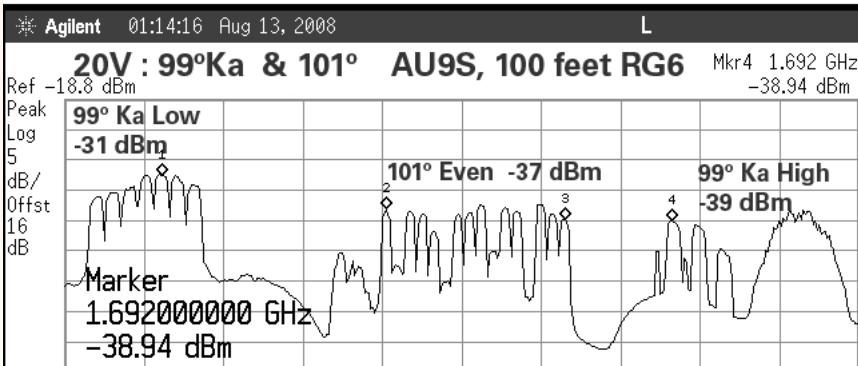
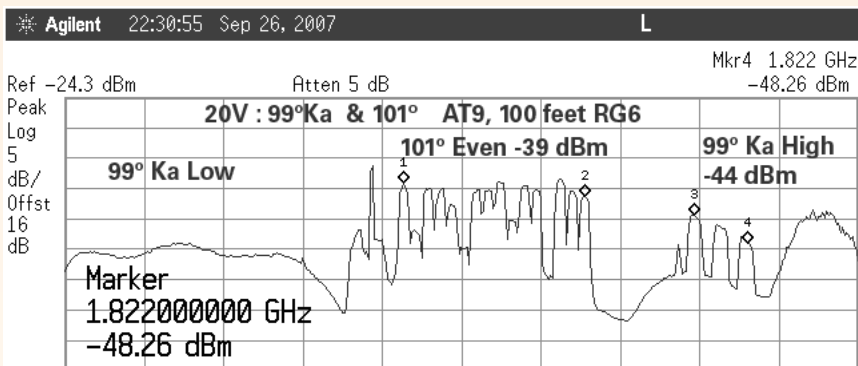
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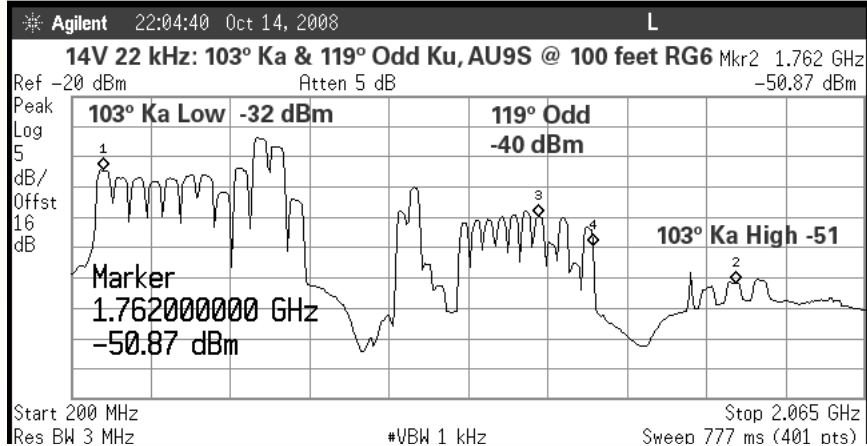
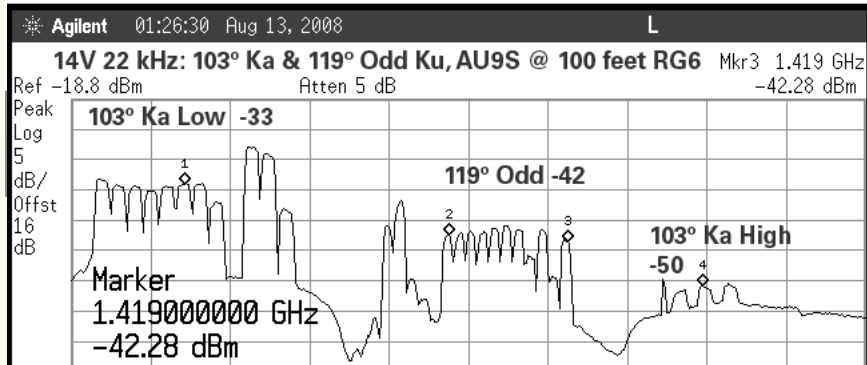
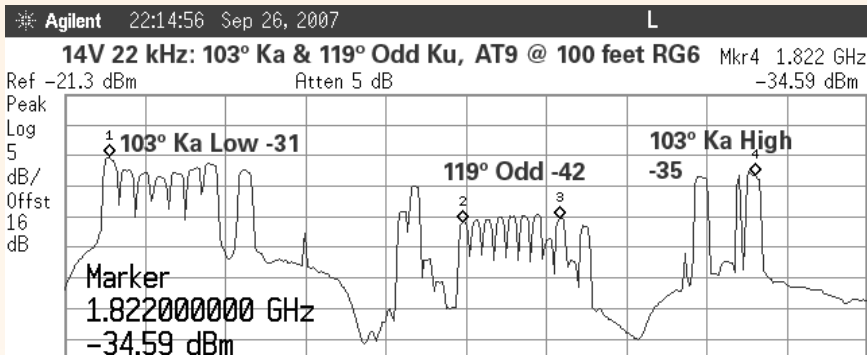
Ka / Ku 14V HISTORY

- A September 1997 plot plot of the **14V, 99° & 101°** odd transponders from an AT9 dish in Los Angeles California is displayed after 100 feet of RG-6.
- Note the vertical divisions are 5 dB. The plot frequency is 200 MHz to 2150 MHz in 10 divisions. (195 MHz per horizontal division) Note the upper left corner "Ref" level for the top of graph.
- The signals were measured again in **August 2008** with an AU9S dish. Note the additional of (7) lower Ka transponders and a power reduction in the upper Ka transponders.
- Sonora re-tested the signals in **October 2008**.
- Lower 99° Ka signal levels are **4 dB stronger** than the 101° Ku transponders.



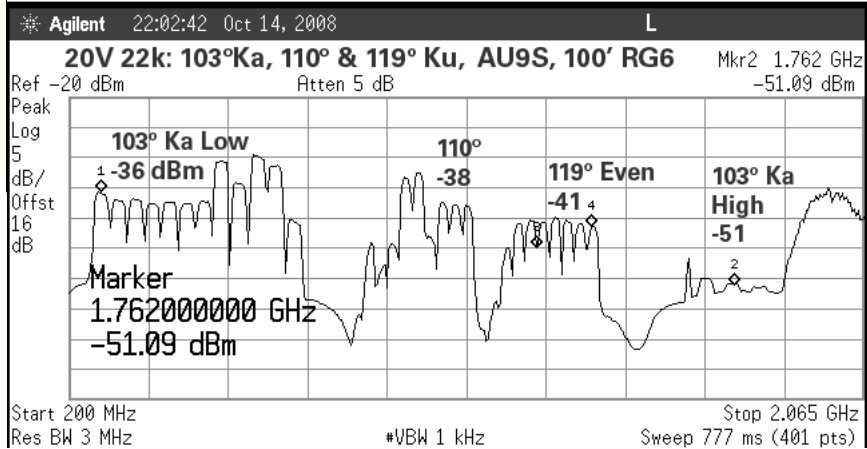
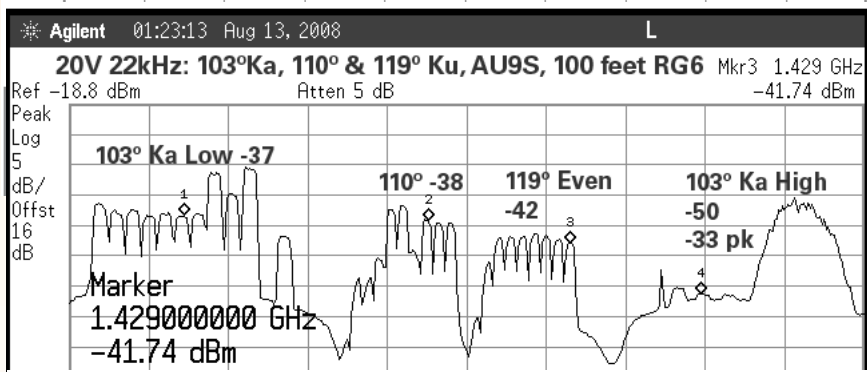
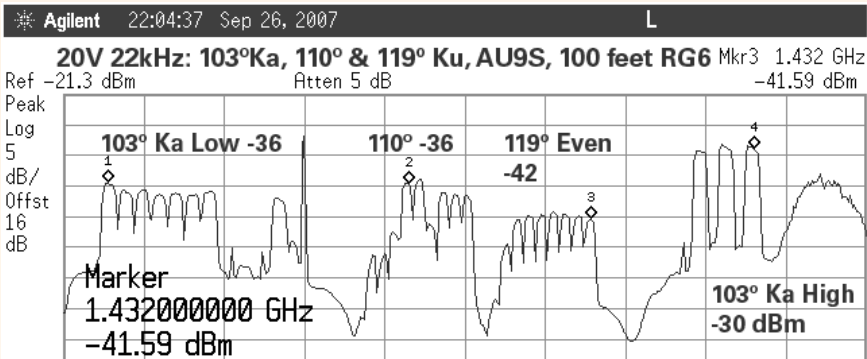
Ka / Ku 20V HISTORY

- A September 1997 plot plot of the 20V, 99° & 101° even transponders from an AT9 dish in Los Angeles California is displayed after 100 feet of RG-6.
- The signals were measured again in August 2008 with an AU9S dish. Note the additional of (7) lower Ka transponders. The upper Ka signal level increased by 5 dB.
- Sonora re-tested the signals in October 2008. Note the lower Ka signals are more equal than in August.
- The lower 99° Ka signal levels are **3 to 5 dB stronger** than the 101° Ku transponders.



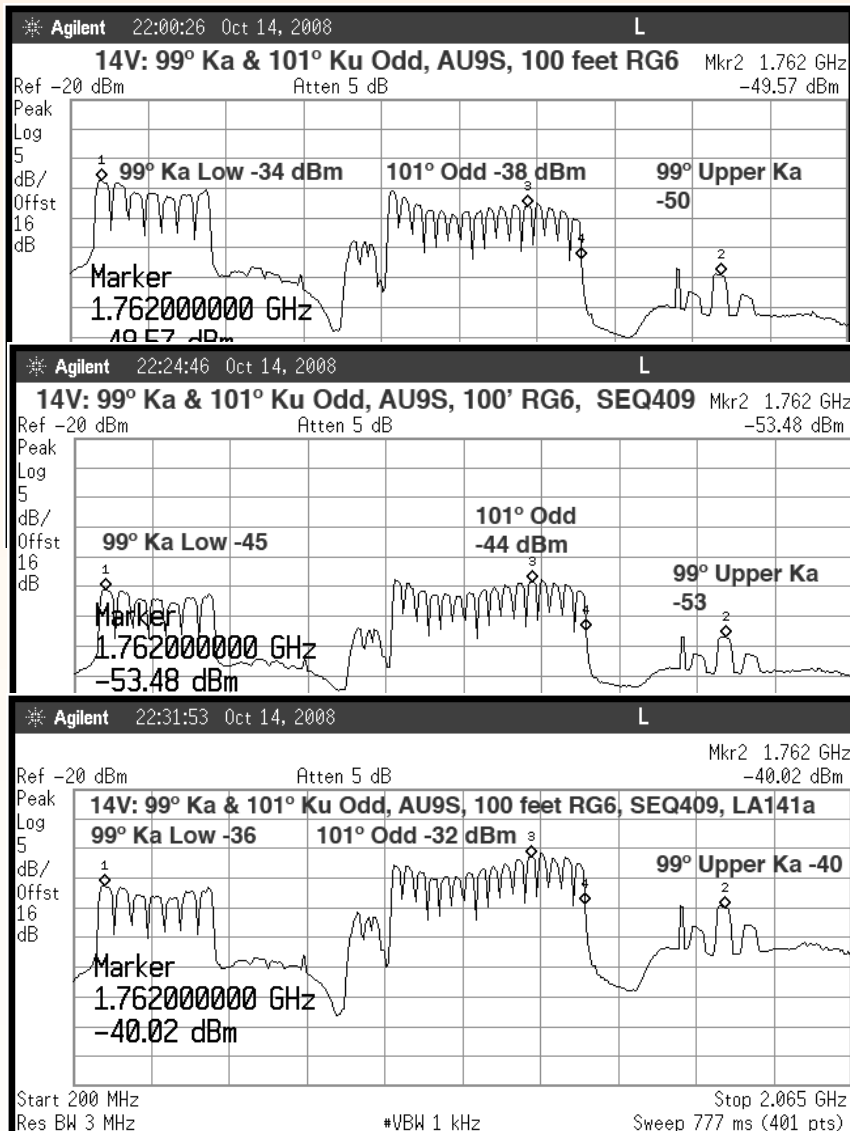
Ka / Ku 14V 22kHz HISTORY

- A September 1997 plot of the 14V & 22 kHz, 103° & 119° even transponders from an AT9 dish in Los Angeles California is displayed after 100 feet of RG-6.
- The signals were measured again in August 2008 with an AU9S dish. Note the upper Ka transponders were turned off and the lower Ka band increased by (3) transponders.
- Sonora re-tested the signals in October 2008.
- The lower 103° Ka signal levels are **8 to 13 dB stronger** than the 119° Ku transponders. The hot signals are spot beams.



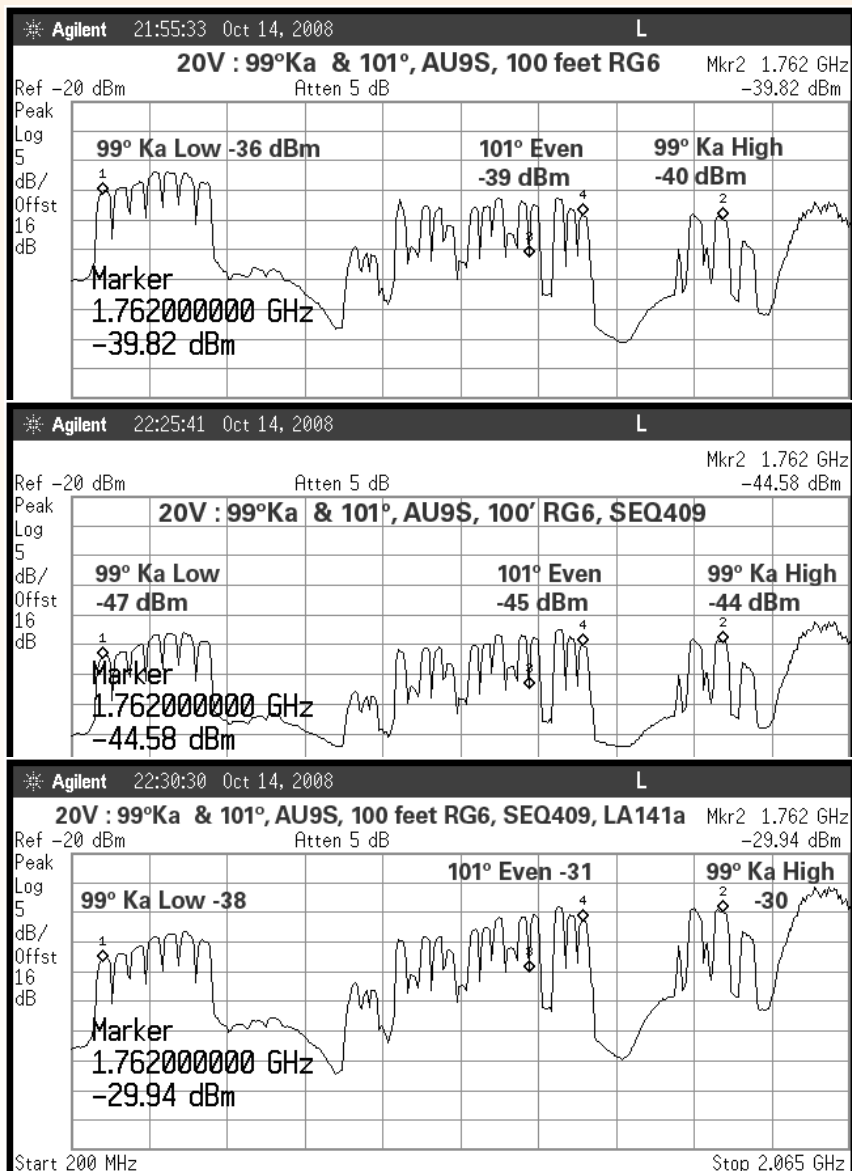
Ka / Ku 20V 22kHz HISTORY

- A September 1997 plot plot of the **20V & 22 kHz, 103°, 110° & 119°** even transponders from an AT9 dish in Los Angeles California is displayed after 100 feet of RG-6.
- The signals were measured again in **August 2008** with an AU9S dish. Note the upper (3) Ka transponders were turned off and the lower Ka band increased from (8) to (11) transponders.
- Sonora re-tested the signals in **October 2008**. The lower Ka band increased from (11) to (12) transponders.
- The lower 103° Ka signal levels are **5 to 10 dB stronger** than the 119° Ku transponders.



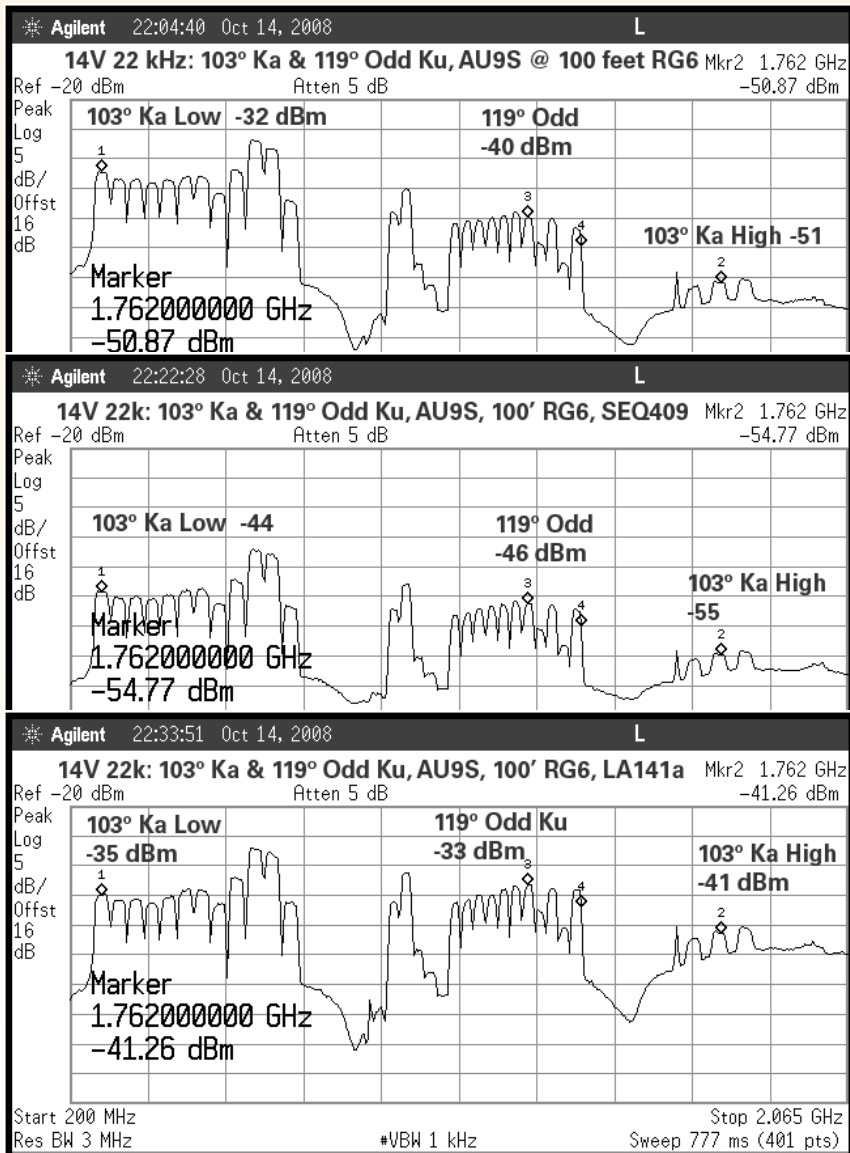
14 V SEQ409 Equalizer & LA141a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 99° Ka marker 1 signal is **+4 dB** higher than the 101° transponder marker 3.
- The signal is passed through one input of model **SEQ409** equalizer. The resulting lower 99° Ka marker 1 signal is now **1 dB lower** than the 101° transponder marker 3.
- Finally, signal is passed through the **SEQ409** equalizer and model **LA141a** amplifier. The resulting lower 99° Ka marker 1 transponder is now **4 dB lower** than the 101° transponder at marker 3.
- The signals are under control and ready for distribution down the trunk. We went from low Ka **+4 dB** higher to **4 dB lower** than the 101° transponder.



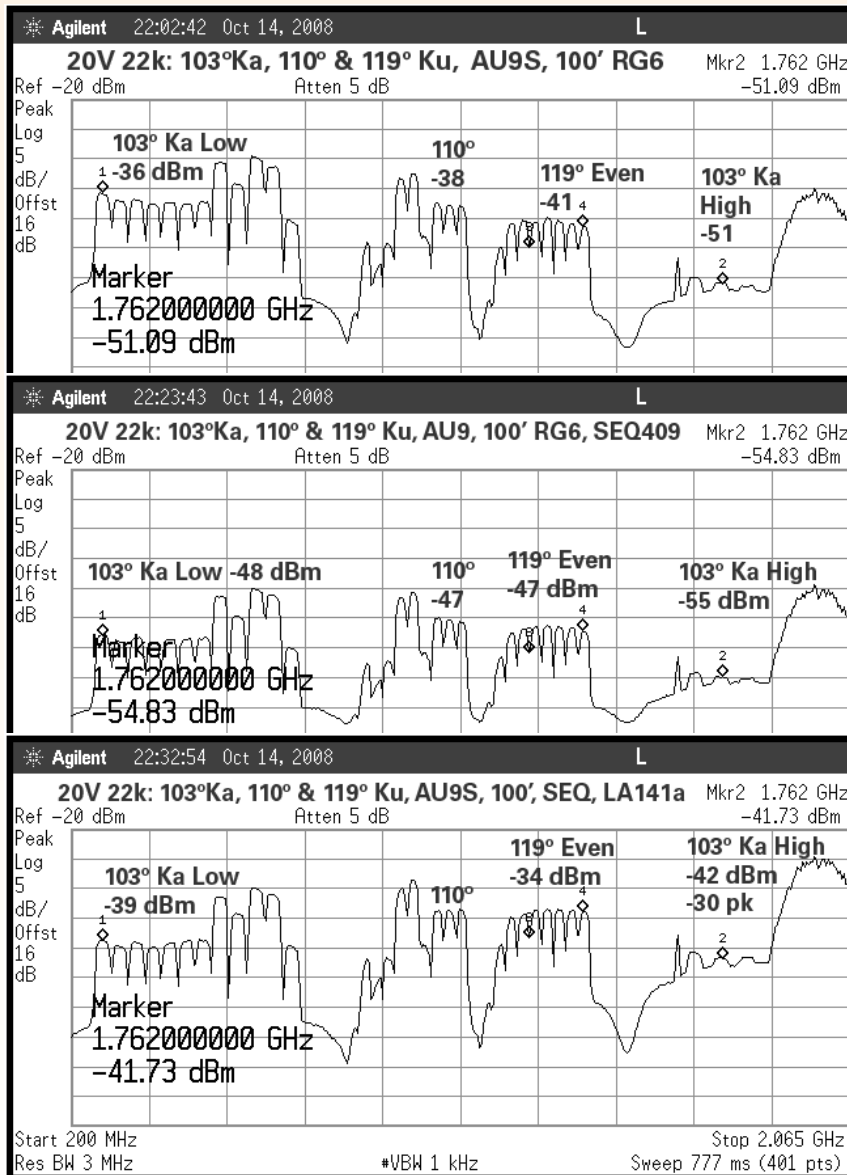
20 V SEQ409 Equalizer & LA141a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 99° Ka marker 1 signal is **+3 dB** higher than the 101° transponder marker 4.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 99° Ka marker 1 signal is now **2 dB lower** than the 101° transponder marker 4.
- Finally, signal is passed through the SEQ409 equalizer and model LA141a amplifier. The resulting lower 99° Ka marker 1 transponder is now **7 dB lower** than the 101° transponder at marker 4.
- The signals are under control and ready for distribution down the trunk. We went from low Ka **+3 dB** higher to **7 dB lower** than the 101° transponder.



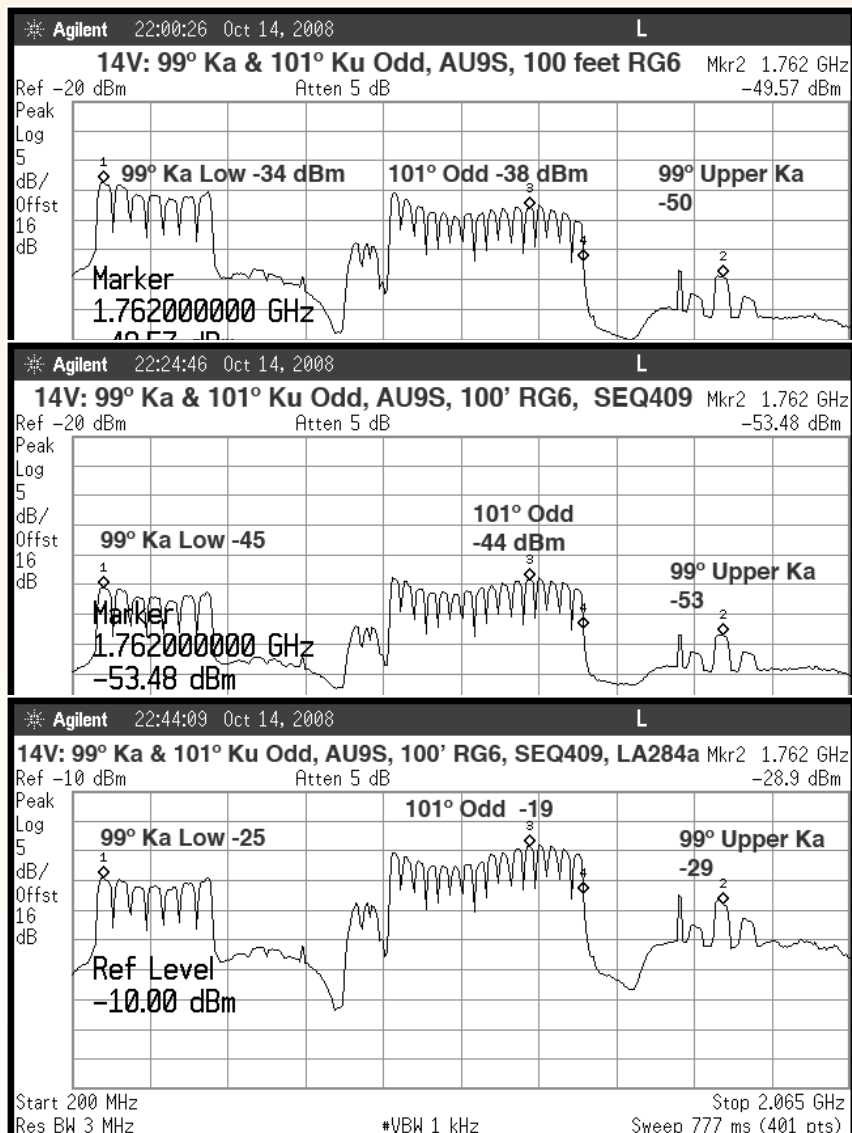
14 V 22 kHz SEQ409 & LA141a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 103° Ka marker 1 signal is **+8 dB higher** than the 119° transponder marker 3.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 103° Ka marker 1 signal is now **+2 dB higher** than the 119° transponder marker 3.
- Finally, signal is passed through the SEQ409 equalizer and model LA141a amplifier. The resulting lower 103° Ka marker 1 transponder is now **2 dB lower** than the 119° transponder at marker 3.
- The signals are under control and ready for distribution down the trunk. The lower Ka signals went from **+8 dB higher to 2 dB lower** than the 119° transponder at marker 3.



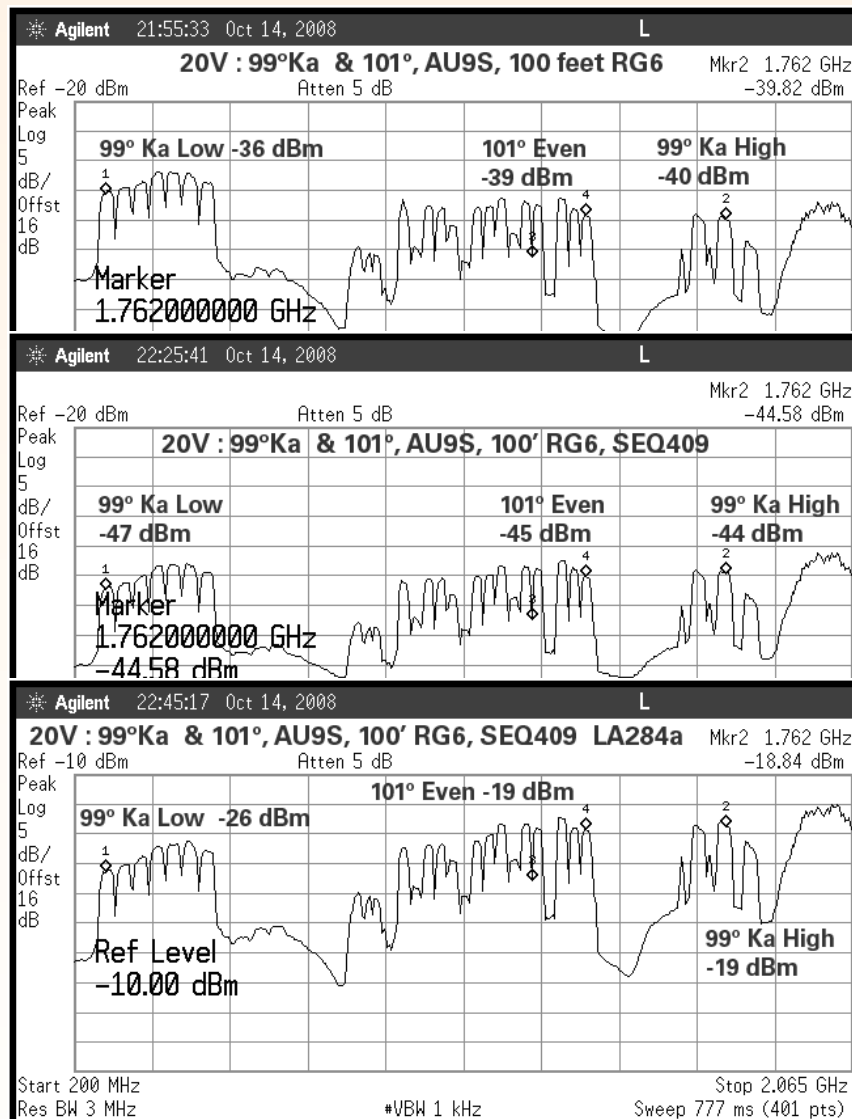
20 V 22 kHz SEQ409 & LA141a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 103° Ka marker 1 signal is **+2 dB higher** than the 119° transponder marker 4.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 103° Ka marker 1 signal is now **+1 dB lower** than the 119° transponder marker 4.
- Finally, signal is passed through the SEQ409 equalizer and model LA141a amplifier. The resulting lower 103° Ka marker 1 transponder is now **5 dB lower** than the 119° transponder at marker 4.
- The signals are under control and ready for distribution down the trunk. The lower Ka went from **+2 dB higher** to **5 dB lower** than the 119° transponder at marker 4.



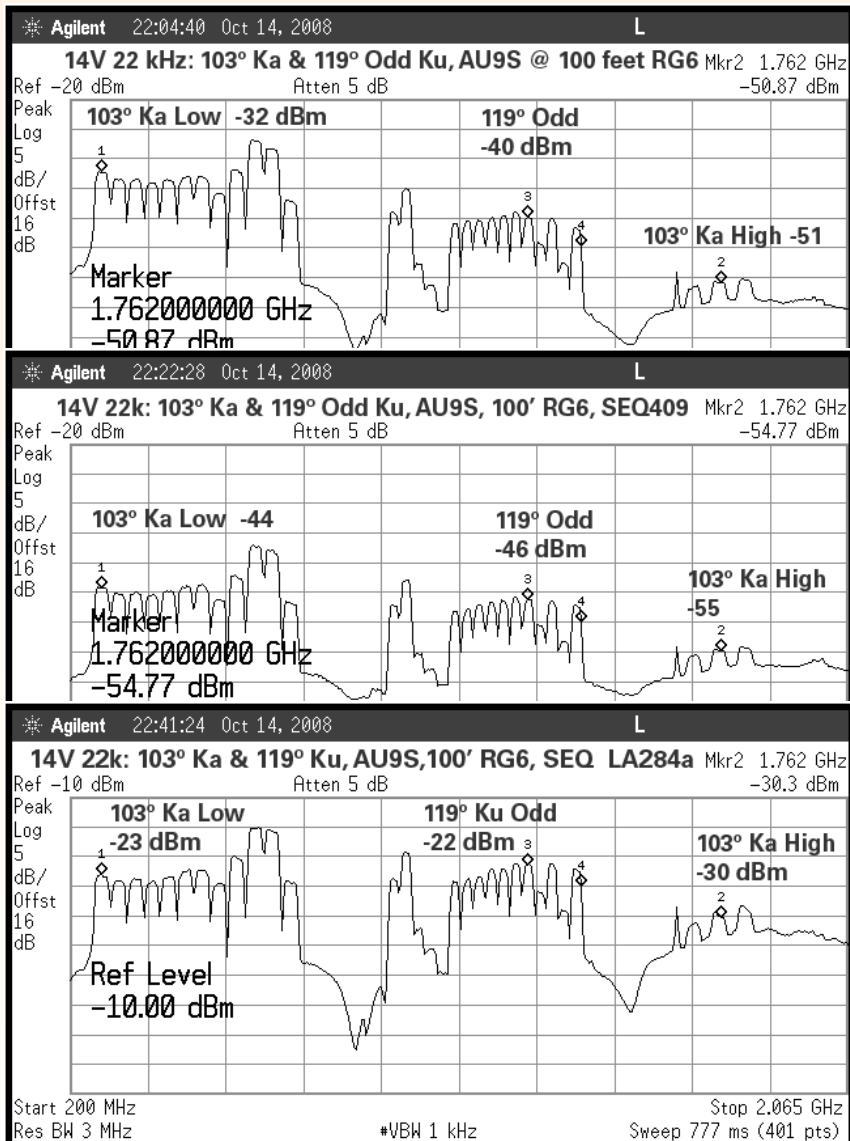
14 V SEQ409 & LA284a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 99° Ka marker 1 signal is **+4 dB higher** than the 101° transponder marker 3.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 99° Ka marker 1 signal is now **1 dB lower** than the 101° transponder marker 3.
- Finally, signal is passed through the SEQ409 equalizer and model LA141a amplifier. The resulting lower 99° Ka marker 1 transponder is now **6 dB lower** than the 101° transponder at marker 3.
- The signals are under control and ready for distribution down the trunk. The lower Ka signals went from **+4 dB higher** to **6 dB lower** than the 101° transponder at marker 3.



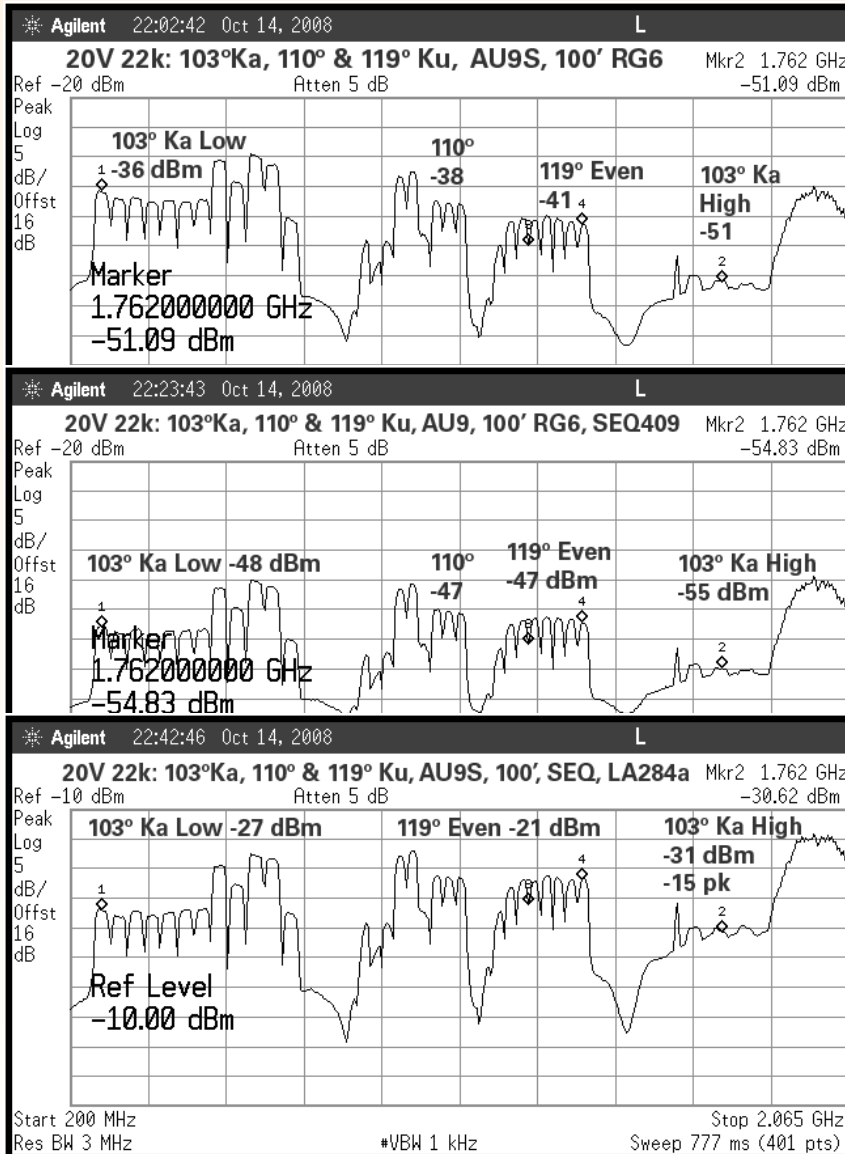
20 V SEQ409 & LA284a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 99° Ka marker 1 signal is **+3 dB** higher than the 101° transponder marker 4.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 99° Ka marker 1 signal is now **2 dB lower** than the 101° transponder marker 4.
- Finally, signal is passed through the SEQ409 equalizer and model LA284a amplifier. The resulting lower 99° Ka marker 1 transponder is now **7 dB lower** than the 101° transponder at marker 4.
- The signals are under control and ready for distribution down the trunk. The lower Ka signals went from **+3 dB higher** to **7 dB lower** than the 101° transponder at marker 4.



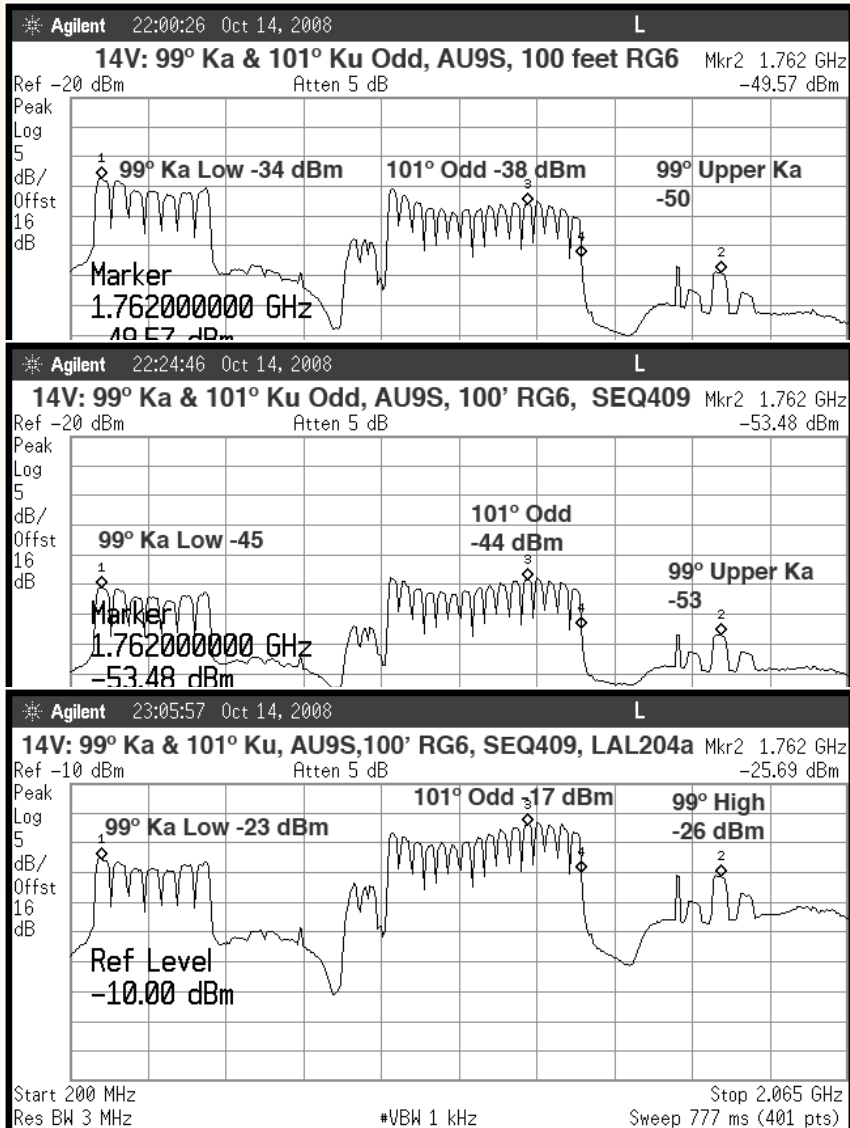
14 V 22 kHz SEQ409 & LA284a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 103° Ka marker 1 signal is **+8 dB higher** than the 119° transponder marker 3.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 103° Ka marker 1 signal is now **+2 dB higher** than the 119° transponder marker 3.
- Finally, signal is passed through the SEQ409 equalizer and model LA284a amplifier. The resulting lower 103° Ka marker 1 transponder is now **1 dB lower** than the 119° transponder at marker 3.
- The signals are under control and ready for distribution down the trunk. The lower Ka signals went from **+8 dB higher to 1 dB lower** than the 119° transponder at marker 3.



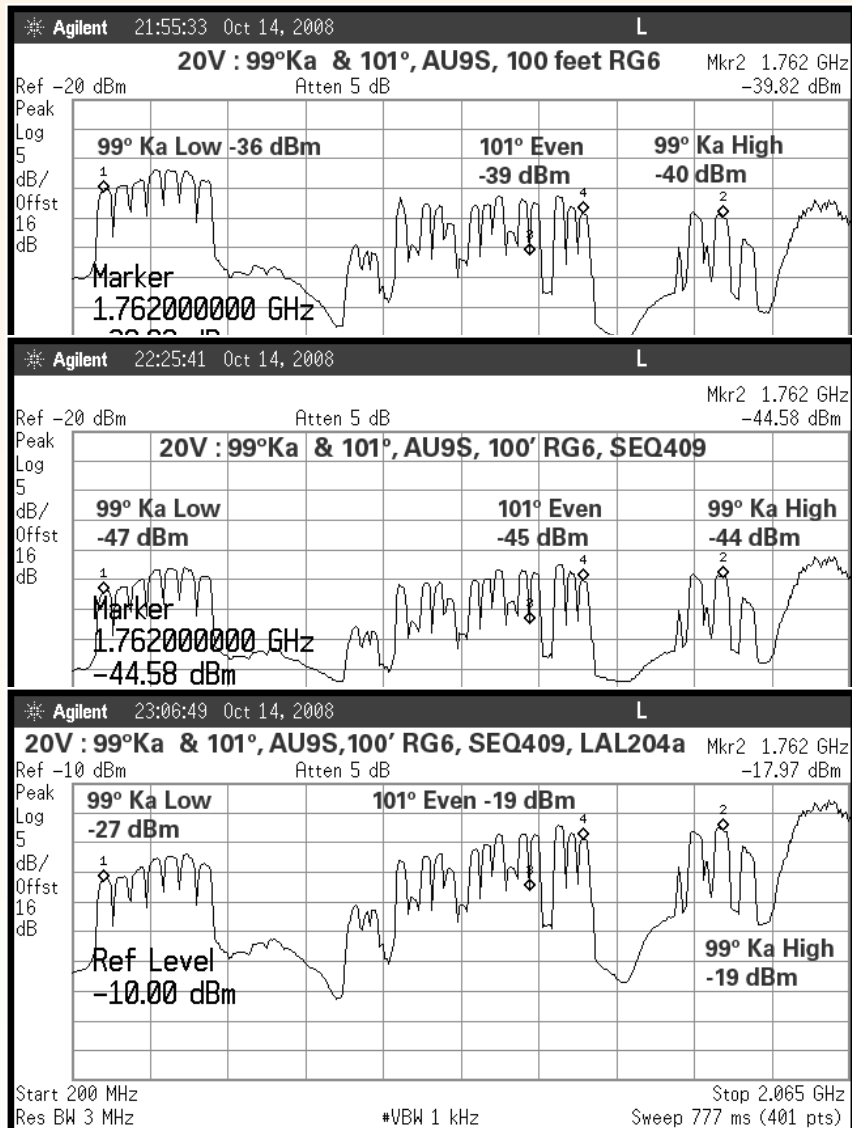
20 V 22 kHz SEQ409 & LA284a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 103° Ka marker 1 signal is **+5 dB higher** than the 119° transponder marker 4.
- The signal is passed through one input of model **SEQ409** equalizer. The resulting lower 103° Ka marker 1 signal is now **+1 dB lower** than the 119° transponder marker 4.
- Finally, signal is passed through the **SEQ409** equalizer and model **LA284a** amplifier. The resulting lower 103° Ka marker 1 transponder is now **6 dB lower** than the 119° transponder at marker 4.
- The signals are under control and ready for distribution down the trunk. The lower Ka signals went from **+5 dB higher** to **6 dB lower** than the 119° transponder at marker 4.



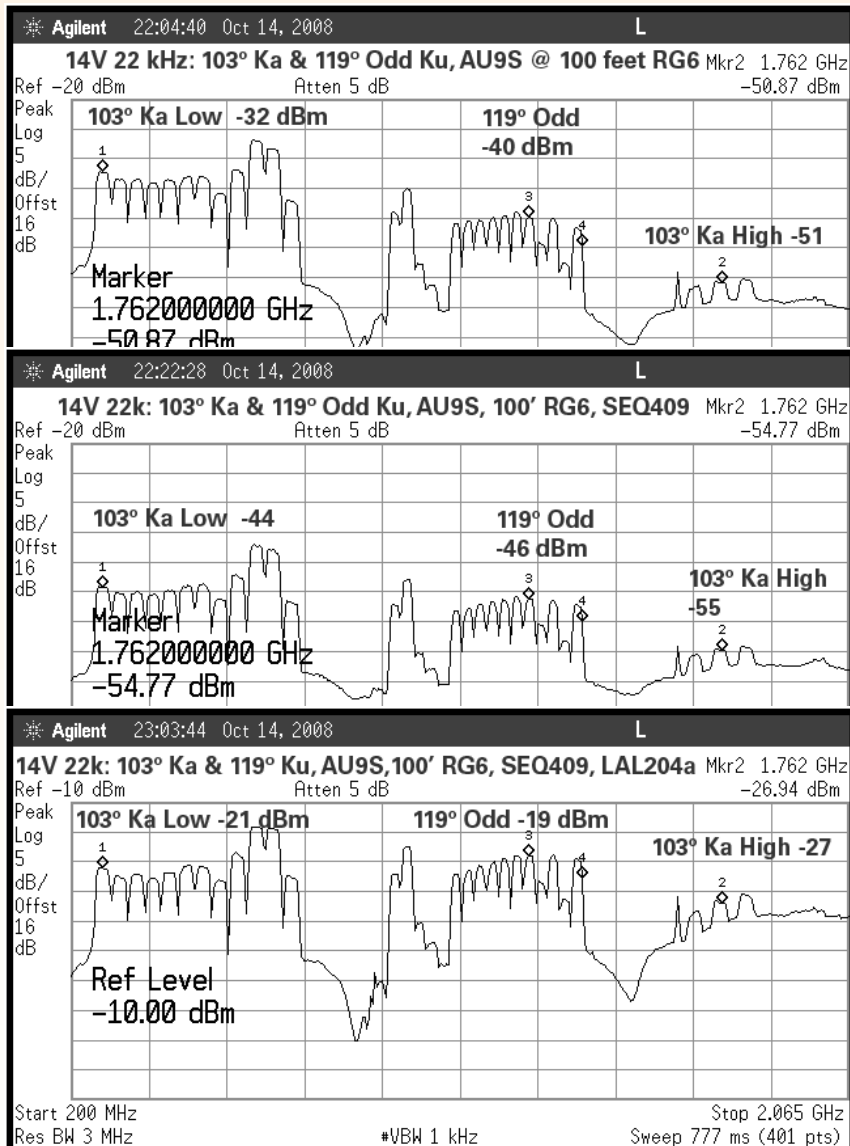
14 V SEQ409 & AGC LAL20a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 99° Ka marker 1 signal is **+4 dB** higher than the 101° transponder marker 3.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 99° Ka marker 1 signal is now **1 dB lower** than the 101° transponder marker 3.
- Finally, signal is passed through the SEQ409 equalizer and model LAL204a automatic gain amplifier. The resulting lower 99° Ka marker 1 transponder is now **6 dB lower** than the 101° transponder at marker 3.
- The LAL204a input transponder at marker 2 is -53 dBm and the output is -26 dB. The net gain is 27 dB. AGC has just started. Full gain for the LAL204A is 30 dB.



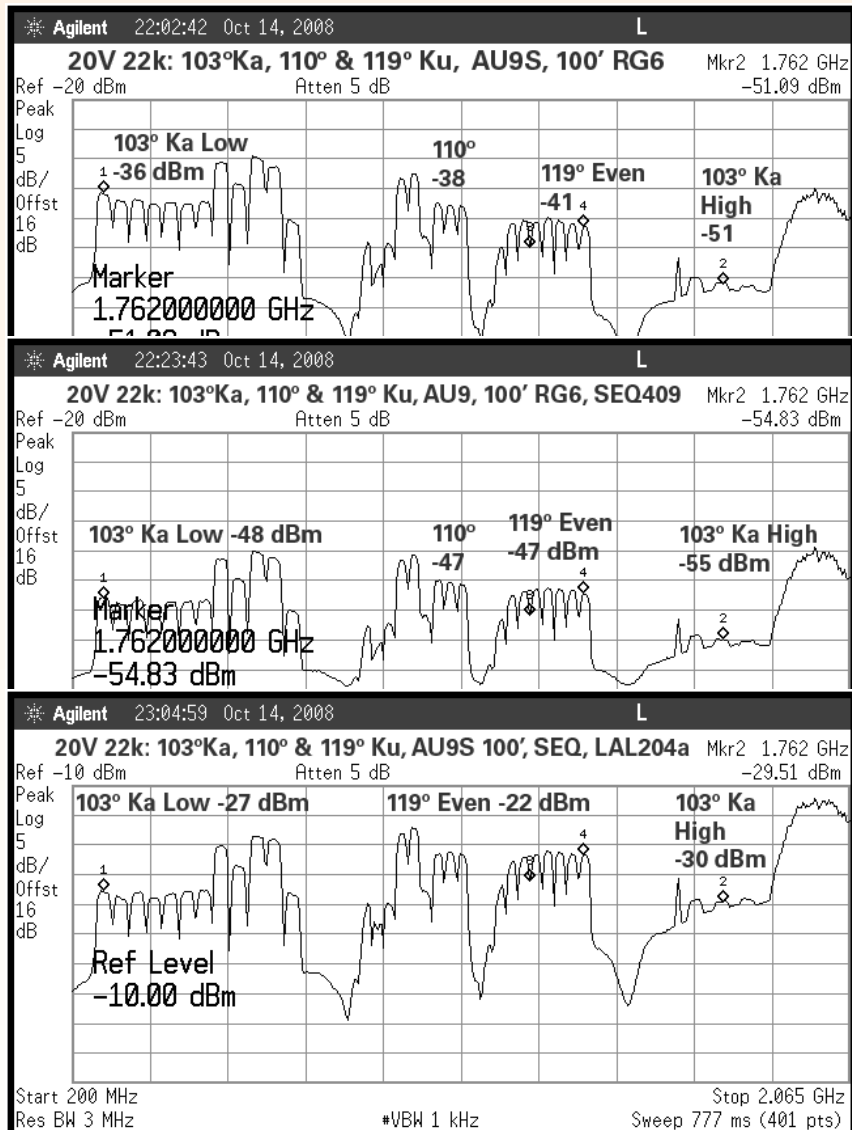
20 V SEQ409 & LAL204a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 99° Ka marker 1 signal is **+3 dB** higher than the 101° transponder marker 4.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 99° Ka marker 1 signal is now **2 dB lower** than the 101° transponder marker 4.
- Finally, signal is passed through the SEQ409 equalizer and model LAL204a amplifier. The resulting lower 99° Ka marker 1 transponder is now **8 dB lower** than the 101° transponder at marker 4. **The slope is ideal!**
- The LAL204a input transponder at marker 2 is -44 dBm and the output is -19 dB. The net gain is 25 dB. The AGC is working. Full gain for the LAL204A is 30 dB.



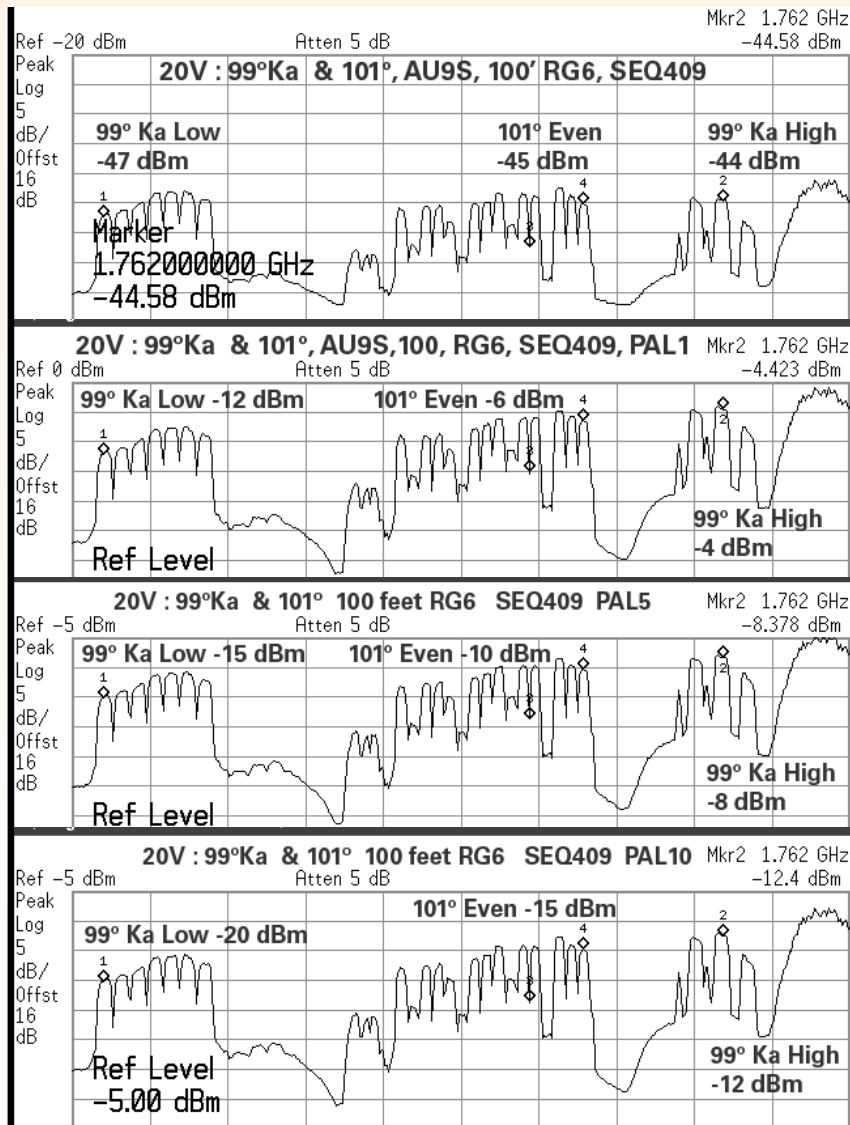
14 V 22 kHz SEQ409 & LAL204a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 103° Ka marker 1 signal is **+8 dB higher** than the 119° transponder marker 3.
- The signal is passed through one input of model SEQ409 equalizer. The resulting lower 103° Ka marker 1 signal is now **+2 dB higher** than the 119° transponder marker 3.
- Finally, signal is passed through the SEQ409 equalizer and model LAL204a amplifier. The resulting lower 103° Ka marker 1 transponder is now **2 dB lower** than the 119° transponder at marker 3.
- The LAL204a input transponder at marker 2 is -55 dBm and the output is -27 dB. The net gain is 28 dB. The AGC is just starting. (Open loop gain for the LAL204a is 30 dB at 2150 MHz)



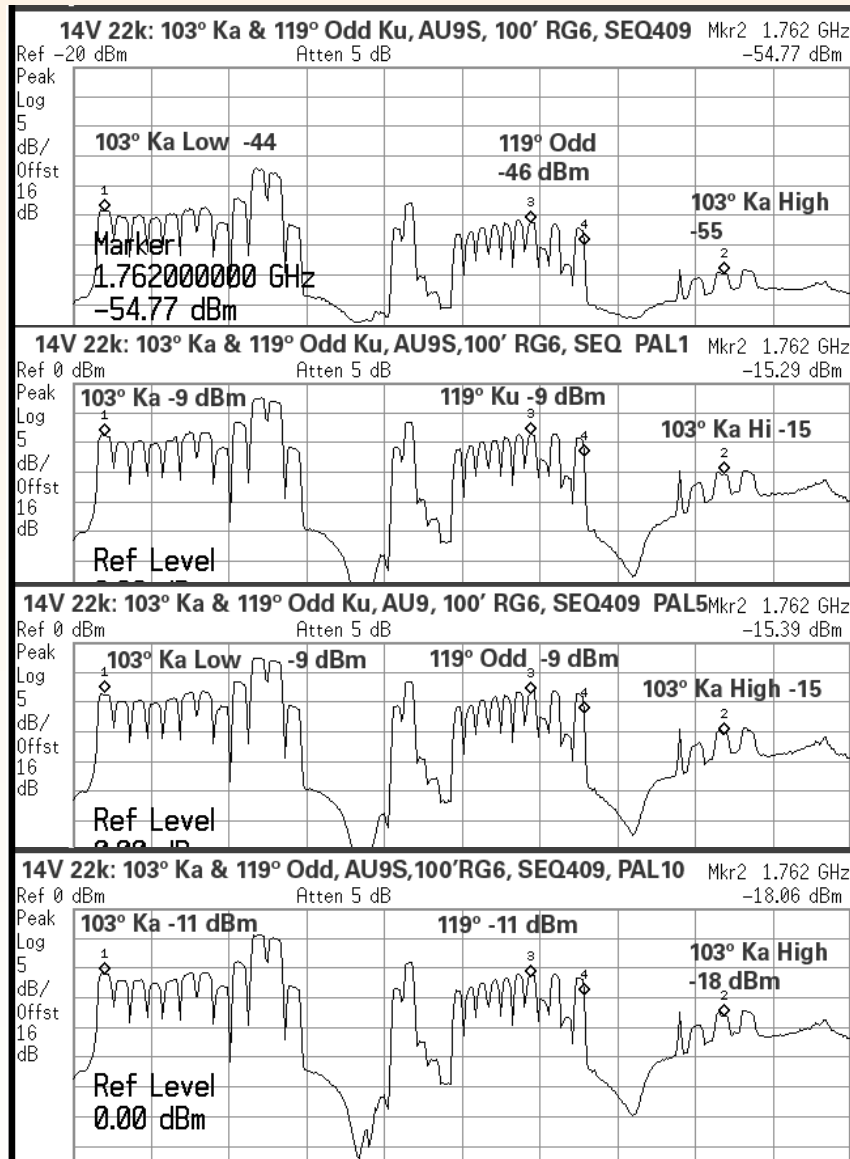
20 V 22 kHz SEQ409 & LAL204a

- The top plot is from an AU9S dish in Los Angeles after 100 feet of RG-6.
- The lower 103° Ka marker 1 signal is **+5 dB higher** than the 119° transponder marker 4.
- The signal is passed through one input of model **SEQ409** equalizer. The resulting lower 103° Ka marker 1 signal is now **+1 dB lower** than the 119° transponder marker 4.
- Finally, signal is passed through the **SEQ409** equalizer and model **LAL204a** amplifier. The resulting lower 103° Ka marker 1 transponder is now **5 dB lower** than the 119° transponder at marker 4.
- The **LAL204a** input transponder at marker 2 is -55 dBm and the output is -30 dB. The net gain is 25 dB. The AGC is working. Full gain for the **LAL204A** is 30 dB.



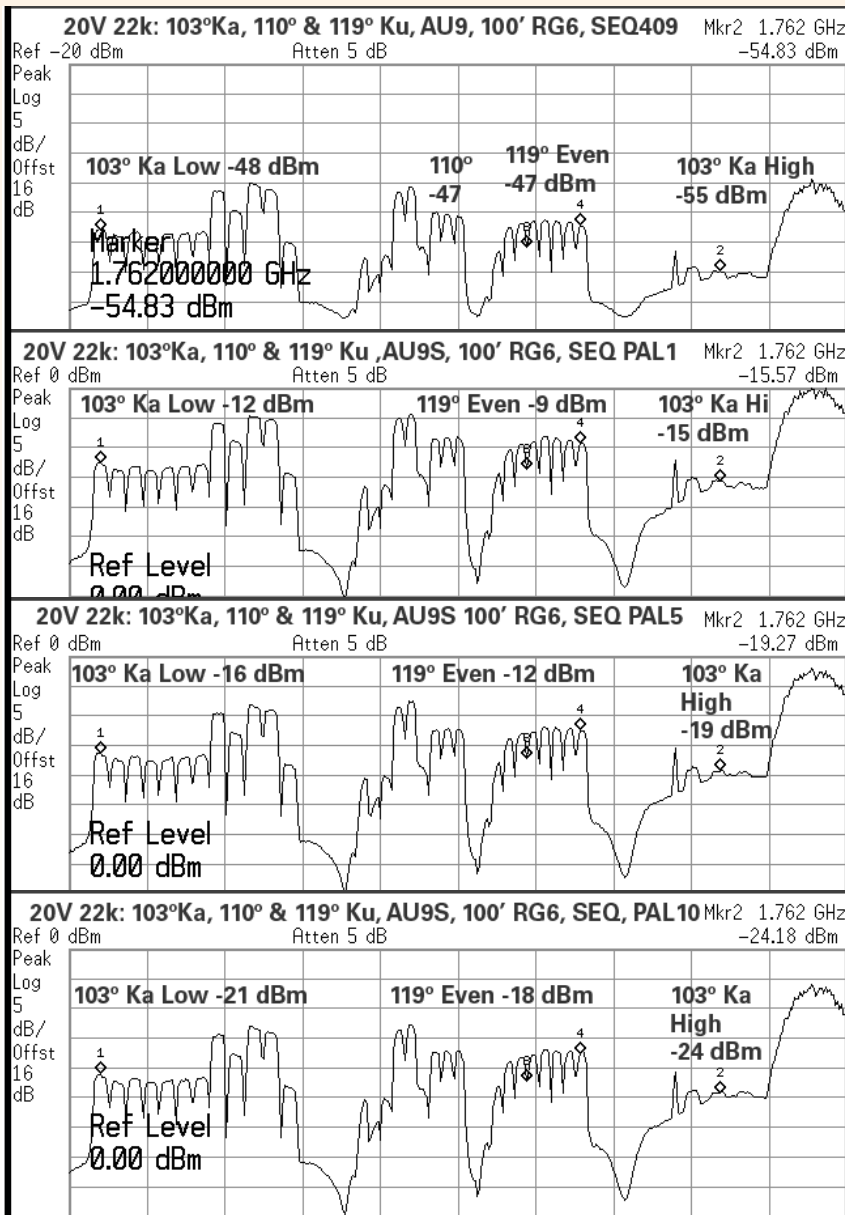
14 V SEQ409 & AGC PAL1, 5, 10

- The AU9S dish in Los Angeles after 100 feet of RG-6 is passed through the SEQ409 equalizer.
- The signal is passed through the SEQ409 equalizer and models PAL1, PAL5, & PAL10 automatic gain amplifiers. How do the output levels compare?
- The PAL1 input transponder at marker 2 is -44 dBm and the output is -4 dB. The net gain is 40 dB. AGC is just starting.
- The PAL5 input transponder at marker 2 is -44 dBm and the output is -8 dB. The net gain is 36 dB. *AGC has cut the output by 4 dB.*
- The PAL10 input transponder at marker 2 is -44 dBm and the output is -12 dB. The net gain is 32 dB. *AGC has cut the output by 8 dB.*



14 V 22k SEQ409 & AGC PAL1, 5, 10

- The AU9S dish in Los Angeles after 100 feet of RG-6 is passed through the SEQ409 equalizer.
- The signal is passed through the SEQ409 equalizer and models PAL1, PAL5, & PAL10 automatic gain amplifiers. How do the output levels compare? (Slope control set "flat")
- The PAL1 input transponder at marker 2 is -55 dBm and the output is -15 dB. The net gain is 40 dB. *AGC has not begun.*
- The PAL5 input transponder at marker 2 is -55 dBm and the output is -15 dB. The net gain is 40 dB. *AGC has not begun.*
- The PAL10 input transponder at marker 2 is -55 dBm and the output is -18 dB. The net gain is 37 dB. *AGC has cut the output by 3 dB.*



20 V 22 kHz SEQ409 & PAL1,5,10

- The AU9S dish in Los Angeles after 100 feet of RG-6 is passed through the SEQ409 equalizer.
- The signal is passed through the SEQ409 equalizer and models PAL1, PAL5, & PAL10 automatic gain amplifiers. How do the output levels compare? (Slope control set "flat")
- The PAL1 input transponder at marker 2 is -55 dBm and the output is -15 dB. The net gain is 40 dB. *AGC has not begun.*
- The PAL5 input transponder at marker 2 is -55 dBm and the output is -19 dB. The net gain is 37 dB. *AGC has cut the output by 3 dB.*
- The PAL10 input transponder at marker 2 is -55 dBm and the output is -24 dB. The net gain is 31 dB. *AGC has cut the output by 9 dB.*