

**TYPE N AND ON CARRIER REPEATERS
REPEATERED HIGH-FREQUENCY LINE
CARRIER LINE-UP — HIGH-FREQUENCY LINE MEASUREMENTS
ADJUSTABLE DEVIATION EQUALIZER LINE-UP**

This section covers the procedures for adjusting the four network controls of an Adjustable Deviation Equalizer to equalize the slope characteristics of a repeatered line.

The Adjustable Deviation Equalizer (J98703BE) is used at the output of an N Carrier Low-High repeater on N or ON carrier systems to equalize deviations in slope and other line characteristics. It contains four adjustable networks (SLOPE, BULGE, CUBIC and QUARTIC) and an amplifier which compensates for the loss of the networks.

Normally the equalizer is installed near the middle of the section to be equalized. A Panoramic Analyzer is monitored at the end of the section being equalized while the controls on the equalizer are adjusted to minimize the transmission deviations (bulge, cubic and quartic). Fig. 1 is provided to show the effect of the networks on each channel and to aid in interpreting the Analyzer presentation while adjusting the Equalizer. After each successive adjustment, the previously adjusted Equalizer controls may be touched up to obtain a better presentation on the Analyzer. The final adjustment should produce an essentially flat slope line equal to the design slope at the Analyzer location.

A talking path (such as the order wire) must be established over the section being equalized. This talking path will be required for the duration of the equalization. (See Fig. 2.)

APPARATUS:

- 1 — KS-15872, L1 Panoramic Ultrasonic Analyzer
- 1 — J94070A Spectrum Generator (required if a fully equipped carrier terminal is not available as a source of carrier signals)
- 1 — W2DW Cord, or equivalent Shielded Cord (to connect the Analyzer)

(A) PREPARATION

STEP	PROCEDURE
	Over-all Span to Be Equalized
1	Verify that all repeater slope switches are set according to circuit layout information and that the repeatered line has been adjusted according to standard procedures.
2	Make busy or patch off all circuits on the system to be equalized.
3	Establish a talking circuit (such as the order wire) connecting the three work locations.

STEP	PROCEDURE
4	<p>Beginning of Span to Be Equalized</p> <p>If a carrier terminal is used as a source of signals, it must be fully equipped and lined up according to standard BSP sections. N terminals must be equipped with channels 2 thru 13. A good transmitting slope is essential for proper system equalization. (If a fully equipped terminal is not available, a Spectrum Generator must be used.)</p>
5	<p>Remove all signaling tones from the system by placing dummy plugs in the MOD IN jacks and/or removing the 3700-cycle oscillator tube.</p>
6	<p>If a Spectrum Generator is used as a source of signals, it must be properly calibrated and connected to the line (with the terminal or repeater at that location disconnected).</p>
	<p>Equalizer Location</p>
7	<p>Remove the cover from the front of the equalizer to be adjusted and set all controls to 0. If the equalizer has not previously been wired in, connect it to the system.</p>
	<p><i>Caution: Never remove the cover from more than one equalizer at a time to minimize intersystem crosstalk.</i></p>
	<p>End of Span to Be Equalized (Analyzer Location)</p>
	<p>Repeater Location</p>
8	<p>Remove both repeater connectors.</p>
9	<p>Connect a modified ED-92717-30, G4 Adapter (per Section 362-415-502) to either J2 or J3.</p>
10	<p>Connect the calibrated KS-15872, L1 Analyzer to the ED-92717-30, G4 Adapter.</p>
	<p>Terminal Location</p>
11	<p>At an N terminal, remove one receiving group connector and connect an unwired KS-13895 plug to the jack.</p>
12	<p>Connect the calibrated KS-15872, L1 Analyzer to terminals 3 and 4 of the KS-13895 plug using the W2DW cord.</p>
13	<p>At an ON terminal, connect the calibrated KS-15872, L1 Analyzer to the group receiver IN jack of one of the groups of the system to be equalized (use the W2DW cord).</p>

(B) ADJUSTMENT		
STEP	PROCEDURE	
	Equalizer Location	Analyzer Location
1	Adjust all controls to their midpoint position.	
2	Adjust the SLOPE control.....	until slope is as near as possible to 0 db.
3		Adjust the Analyzer so that the tops of the pips (slope line) are near the upper (most accurate) part of the screen.
4	Adjust the BULGE control.....	until the middle of the band is as flat as possible.
5	Readjust the SLOPE control.....	to get a flat slope line.
6	Adjust the CUBIC control.....	until the level of the following pairs of carriers are as near the same level as possible: N = 5-6 and 9-10 ON1 = 4-5 and 7-8 ON2 = 4-5 and 8-9
7	Readjust the BULGE and SLOPE controls.....	to get a flat slope line.
8	Adjust the QUARTIC control.....	until the levels of the following carriers (or pairs of carriers) are as near the same average level as possible: N = 4-5 and 10-11 and 7-8 ON1 = 3 and 8 and 6 ON2 = 3-4 and 9-10 and 6-7
9	Readjust all four controls.....	until as flat a slope line as possible is obtained.
10	Adjust the SLOPE control.....	until the slope line is as close as possible to that specified in the circuit order information.
11	Notify the system control office of the four control settings and record locally for future reference. (The numbers around the controls are for reference only and do not indicate db directly.)	Using the KS-15538 Carrier Frequency Voltmeter, compute the slope according to standard BSP sections. Requirement: The slope of the span being equalized should be within ± 1.5 db of the design value. No channels should be more than ± 1.5 db from the computed slope line.
12	Replace the cover on the Adjustable Deviation Equalizer.	Remove all test equipment and restore the system to normal.

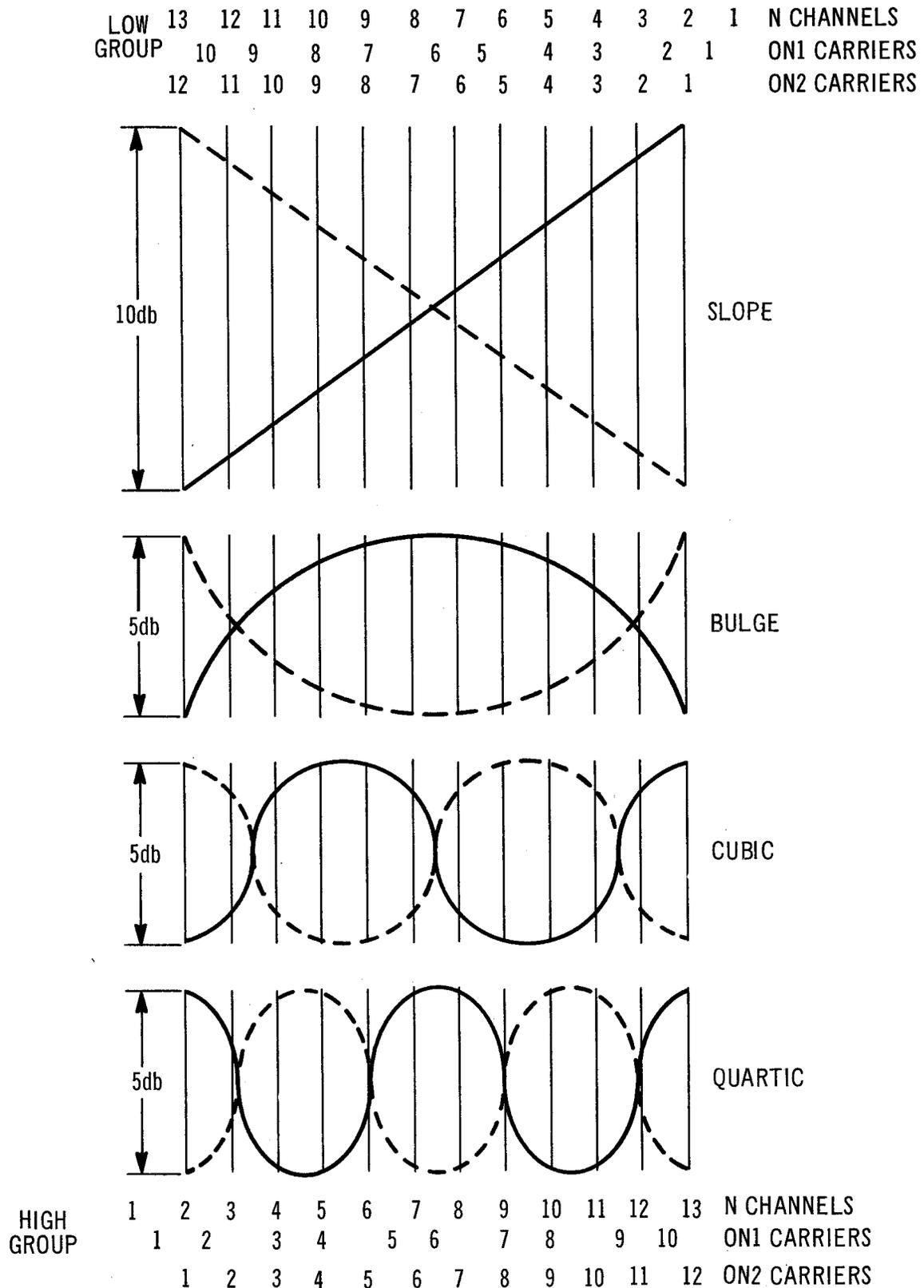


Fig. 1 - Network Effect on Carriers

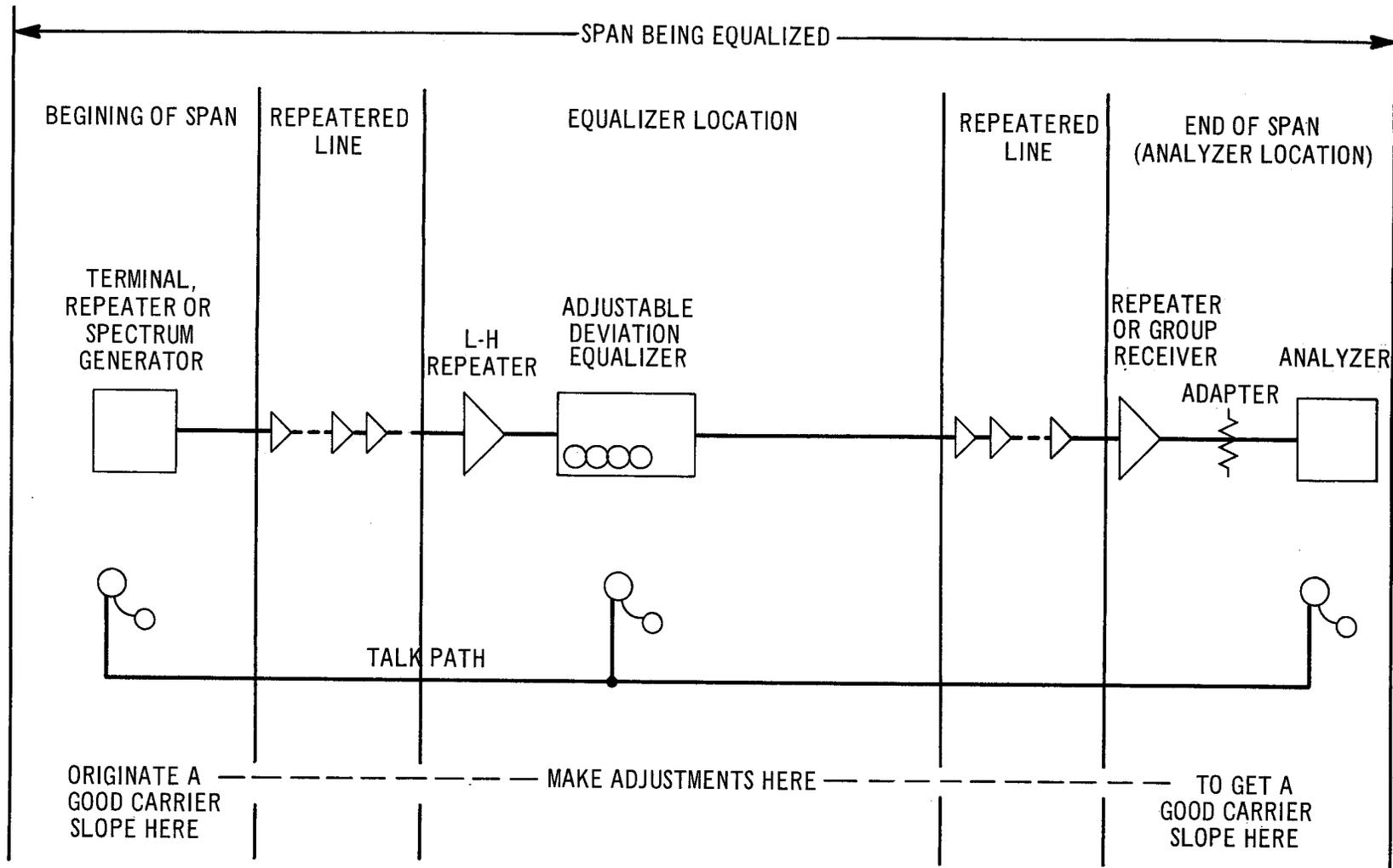


Fig. 2 - Over-all Test Arrangement