APPENDIX K

WJ-860XA/CAL CALIBRATION OPTION

P/N 181183-001, Revision C

BAE SYSTEMS
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WARNING

This equipment utilizes voltages which are potentially dangerous and may be fatal if contacted. Exercise extreme caution when working with the equipment with any protective cover removed.

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LIST OF EFFECTIVE PAGES

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i	Cover	C
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WJ-860XA/CAL OPTION

REVISION RECORD

Revision	Description	Date
A	Initial issue.	2/95
B	Added WJ part number to the title page. Incorporated a List of Effective Pages. Added page numbers to section cover pages and their back pages. Removed "intentionally left blank" pages and replaced with "Notes" pages that are formatted with headers and page numbers.	8/97
C	Incorporated ECO 041393.	08/01

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APPENDIX K

WJ-860XA/CAL CALIBRATION OPTION

K.1 INTRODUCTION

This appendix describes the WJ-860XA/CAL Calibration and is applicable option to receivers in the WJ-860XA family that are equipped with version 6.00 (or higher) firmware. The inclusion of the calibration option in the receiver means that custom calibration data has been collected and programmed into the receiver EEPROM. A "CAL" sticker is added to the rear panel of the receiver to signify the inclusion of this option in the receiver. The calibration process can only be performed at the factory, prior to shipment of the receiver.

K.2 CALIBRATION OPTION DESCRIPTION

All WJ-860XA receivers that are equipped with version 6.00 (or higher) firmware can be custom calibrated with attenuator, log detector and gain/frequency tables unique to each receiver. The tables are loaded into receiver EEPROM to calibrate its SSD buffer output measurements. The calibration improves the signal measurement response of the sweep/step data (SSD) output buffer to within ±2 dB of absolute, when operating at 25°C (after warm up) and for signals >20 dB above the theoretical noise floor of the selected IF bandwidth.

If the receiver has not been calibrated, the attenuator tables and log detector table are loaded with generic default values and the frequency normalization tables are initialized to all zeros. Specific commands used to calibrate the receiver along with default values are summarized in **Table K-1**.

Table K-1. Configuration Commands used with /CAL Option

Command	Response	Description
#CEA nrf,nrf,...nrf		Configuration data for FE attenuator from 0 to 23 dB in 0.5-dB steps. Forty-seven (47) entries required.
#CEA?	#CEA nr1,nr1,...nr1	Request current EEPROM data for FE attenuator. Default: #CEA 255,230,215,207,202,199,194,190,184, 180,175,169,162,157,150,144,136,131,126,120, 116,111,108,104,101,098,095,093,091,089,087, 085,083,082,081,080,079,078,077,077,076,075, 075,074,073,073,072,072

Table K-1. Configuration Commands used with /CAL Option (Continued)

Command	Response	Description
#CFA nrf,nrf,...nrf		Configuration data for final attenuator from 0 to 48 dB in 0.5-dB steps. Ninety-seven (97) entries required
#CFA?	#CFA nr1,nr1,...nr1	Request current EEPROM data for RF attenuator. Default: #CFA 255,250,245,240,236,233,229,225,222, 218,215,211,207,203,200,196,193,188,182,178, 174,170,167,163,159,155,152,148,144,140,137, 133,129,126,121,119,117,115,113,110,107,104, 101,098,095,092,090,087,084,082,080,079,078, 075,071,069,067,064,062,060,058,056,054,053, 051,050,048,047,045,044,042,041,039,038,037, 036,035,033,032,030,029,028,027,026,025,024, 023,022,021,020,020,019,018,017,016,015,014
#CIA nrf,nrf,...nrf		Configuration data for 1st IF attenuator from 0 to 23 dB in 0.5-dB steps. Forty-seven (47) entries required.
#CIA?	#CIA nr1,nr1,...nr1	Request current EEPROM data for 1st IF attenuator. Default: #CIA 255,239,223,213,203,195,185,176,167, 159,150,143,135,129,122,117,111,106,101,097, 093,090,086,084,081,079,076,075,073,071,069, 068,067,066,064,063,062,062,061,060,059,059, 058,057,056,056,055
#CLG nrf,nrf,...nrf		Configuration data for log detector from 0 to 70 dB in 1-dB steps. Seventy-one (71) entries required.
#CLG?	#CLG nr1,nr1,...nr1	Request current EEPROM data for log amp. Default: #CLG 005,007,008,009,010,012,016,020,024, 028,032,037,041,046,051,056,061,066,071,076, 081,085,089,093,098,102,107,112,117,122,127, 131,136,140,144,148,152,156,160,164,167,171, 175,179,183,187,191,195,199,202,206,209,211, 215,217,220,223,226,229231,234,237,240,243, 246,248,250,251,253,254,255

Table K-1. Configuration Commands used with /CAL Option (Continued)

Command	Response	Description
#CRA nrf,nrf,...nrf		Configuration data for RF attenuator from 0 to 23 dB in 0.5-dB steps. Forty-seven (47) entries required.
#CRA?	#CRA nr1,nr1, ...nr1	Request current EEPROM data for RF attenuator. Default: #CRA 255,240,224,214,204,195,186, 177,168,159,151,143,136,129,123,118,112,107, 102,098,094,091,087,085,082,080,077,075,073, 072,070,069,067,066,065,064,063,062,061,060, 059,058,058,057,057,056
#CSA nrf,nrf,...nrf		Configuration data for 2nd IF attenuator from 0 to 23 dB in 0.5-dB steps. Forty-seven (47) entries required.
#CSA?	#CSA nr1,nr1,...nr1	Request current EEPROM data for 2nd IF attenuator. Default: #CSA 255,240,225,215,206,197,188,179,170, 163,156,149,140,133,126,121,115,110,105,101, 096,093,089,087,084,082,079,077,075,073,071, 070,069,068,066,065,064,063,062,061,060,060, 059,059,058,058,057
#FNA nrf,nrf,...nrf		Configuration command for 37 frequency data points from 19.9936 to 48.9983 MHz in 0.8192-MHz steps. Points / Range / Offset / Step 0 - 24 / 19.9936-39.9871 / 19.8656 / .8192 25-36 / 39.9872-48.9983 / 39.3216 / .8192
#FNA?	#FNA nr1,nr1,...nr1	Request current EEPROM data for FNA. Default: #FNA 000,000,...000 (total of 37 entries)
#FNB nrf,nrf,...nrf		Configuration command for 44 frequency data points from 48.9984 to 117.9903 MHz in 1.6384 MHz steps. Points / Range / Offset / Step 0 - 20 / 48.9984 - 819967 / 48.7424 / 1.6384 21 - 43 / 81.9968 - 117.9903 / 81.9200 / 1.6384
#FNB?	#FNB nr1,nr1,...nr1	Request current EEPROM data for FNB. Default: #FNB 000,000,...000 (total of 44 entries)

Table K-1. Configuration Commands used with /CAL Option (Continued)

Command	Response	Description
#FNC nrf,nrf,...nrf		Configuration command for 25 frequency data points from 17.9904 to 274.9951 MHz in 6.5536-MHz steps. Points Range Offset Step 0 - 6 117.9904-159.9999 117.9648 6.5536 7 - 24 160.0000-274.9951 158.9248 6.5536
#FNC?	#FNC nr1,nr1,...nr1	Request current EEPROM data for FNC. Default: #FNC 000,000,...000 (total of 25 entries)
#FND nrf,nrf,...nrf		Configuration command for 37 frequency data points from 274.0000 to 513.9999 MHz in 6.5536 MHz steps. Points Range Offset Step 0 - 36 274.0000-513.9999 271.9744 6.5536
#FND?	#FND nr1,nr1,...nr1	Request current EEPROM data for FND. Default: #FND 000,000,...000 (total of 37 entries)
#FNE nrf,nrf,...nrf		Configuration command for 120 frequency data points from 511.9999 to 1291.0592 MHz in 6.5536 MHz steps. Points Range Offset Step 0-119 511.9999-1291.0592 511.1808 6.5536
#FNE?	#FNE nr1,nr1,...nr1	Request current EEPROM data for FNE. Default: #FNE 000,000,...000 (total of 120 entries)
#FNF nrf,nrf,...nrf		Configuration command for 113 frequency data points from 511.9999 to 1297.6128 MHz in 6.5536 MHz steps. Points Range Offset Step 0-112 511.9999-1291.0592 1297.6128 6.5536
#FNF?	#FNF nr1,nr1,...nr1	Request current EEPROM data for FNF. Default: #FNF 000,000,...000 (total of 113 entries)

Table K-1. Configuration Commands used with /CAL Option (Continued)

Command	Response	Description
#FNP nrf		Configuration command for frequency from 0 to 512 MHz with preselector bypass on (BYP 1) and 0 to 19.9935 with bypass off (BYP 0).
#FNP?	#FNP nr1	Request current EEPROM data for FNP. Default: #FNP 000

NOTES