BLONDER TONGUE LABORATORIES, INC.

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INSTRUCTION MANUAL

CAMS-60

c UL us LISTED

Channelized Agile Modulator with Emergency Alert System

Stock No. 5895

MADE IN USA

651176500G

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER FROM THIS UNIT.
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE

NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV System Installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Installation and Operation

NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV System Installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Unpacking and Handling

UNPACKING. Each unit is shipped with all equipment assembled, wired, factory tested, and then packaged in an appropriate shipping container.

Ensure that all accessories are removed from the container and packing material before they are discarded.This includes the jumper cables which must be installed to make the unit operational.

Mechanical Inspection

Inspect the front and rear of the equipment for shipping damage. Make sure the equipment is clean, and no wires, cables, or connectors are broken, damaged or loose.

Damage in Shipment

Should damage be discovered after unpacking the system, immediately file a claim with the carrier. A full report of the damage shall be made and a copy forwarded to BLONDER TONGUE Laboratories, Inc. The company will then advise what disposition is to be made of the equipment.

Precautions

Adherence to the initial installation precautions outlined in the Table below will help prevent problems arising during the installation and future maintenance of the unit.

Installation Precautions Table

PRECAUTIONS	REQUIREMENTS
Avoid Heat Buildup	Allow (1) EIA rack space ($1^{3/4}$") between powered headend products in the equipment racks.
Ensure easy access to rack wiring.	Allow a minimum of 18 inches behind the equipment rack(s)
Facilitate servicing and maintenance.	Allow a minimum of 36” of clearance in front of the equipment rack(s).
Avoid direct heating or air conditioning.	If unavoidable, use deflector plates.
AC power source outlets.	Locate equipment near sufficient outlets to provide power for test equipment and power tools.
Rack Support.	Make certain rack supports are sufficiently rigid to support racks.
Building leakage.	Beware of dripping water onto equipment from leaky roofs, waveguide roof entries, and cold water pipe condensations.

Returning Product for Repair (or Credit)

A Return Material Authorization (RMA) Number is required on all products returned to Blonder Tongue, regardless if the product is being returned for repair or credit. Before returning product, please contact the Blonder Tongue Service Department at 1-800-523-6049, Ext. 4256 or visit our website: **www.blondertongue.com** for further information.

Description

The CAMS-60 is a professional quality, channelized agile, heterodyne audio/video modulator equipped with the Emergency Alert System (EAS) feature, which can also be used as an alternate IF input. The basic unit provides audio and video modulated RF carrier output on any single SUB, CATV, VHF or UHF channel in the frequency range of 5 to 860 MHz. Any standard audio/video source can be used, such as satellite receivers, television cameras, video tape recorders, or television demodulators. A low cost, removable, single channel output filter module is used to provide channelized configuration of the CAMS-60. Customers can maintain an inventory of mainframes (Stock No. 5896) and a variety of output filter modules. Configuration of individual channels can be easily accomplished by combining the frequency agile mainframe with the appropriate output filter module.

The CAMS-60 accepts standard polarity (sync negative) video in the range of 0.7 to 2.0 Vp-p. A field selectable audio input allows for baseband or 4.5 MHz subcarrier modulated audio usage. The latter is available for stereo generators that deliver 4.5 MHz subcarrier output. Audio pre-emphasis is jumper selectable to properly accommodate either transmissions of stereo or monaural signals. True vestigial sideband selectivity and FCC group delay pre-distortion are maintained using a custom SAW filter. An external composite IF loop is provided which allows interfacing with Blonder Tongue's video all-call system. The heterodyne conversion process employs a crystal referenced PLL synthesized local oscillator with 12.5 KHz tuning increments. This guarantees very stable output frequency for the life of the modulator.

The CAMS-60 meets FCC Docket 21006 aeronautical frequency offset requirements (±5 KHz video carrier accuracy). Surface mount technology is utilized to provide superior performance and extremely high reliability.

The EAS/Alternate IF feature allows a choice between manual and automatic selection of the EAST/ALT IF input signal. This is done through a 3 position terminal strip on the rear of the unit. In the manual mode, the EAST/ALT IF feature is activated by a contact closure to ground. In the automatic mode, two positions on the terminal strip are jumpered together enabling an automatic detection circuit in the unit. When an EAS/ALT IF signal is routed to the EAS/ALT IF port, the unit automatically switches to that alternate signal.

The CAMS-60 is housed in a single height, 1.75" high, rack mountable, aluminum chassis. The unit has a complete set of front panel accessible controls including: video modulation, audio modulation, visual to aural carrier ratio, and RF output level.

Features

- Exceptional performance, CATV quality audio/video modulator
- PLL synthesized frequency control of 4.5 MHz aural carrier and RF Output
- Custom saw filter providing true VSB response with built-in FCC group delay pre-distortion
- Meets FCC Docket 21006 Aeronautical frequency offset requirements
- EAS/ALT Emergency Alert System
- -60 dBc spurious response over the full output level range
- -110 dBc typical broadband noise for 110 channel system
- Fully compatible with BTSC encoded MTS stereo audio
- Jumper selectable audio pre-emphasis
- Accepts external 4.5 MHz input
- Field replaceable channelized output filter module
- -20 dB test point, front panel accessible

Options

5 - BTSC Stereo Encoder Module

3 - Video AGC

4 - A/V Comp IN

Specifications

RF

Frequency Range: 54-860 MHz (CATV), 5-450 (SUB)
Output Level - Min: +60 dBmV
Output Level Range: +50 to +60 dBmV (a)
Aural/Visual Carrier Ratio: -15, ±5 dB
Visual Carrier Frequency Tolerance:
Standard Channels: ±20 KHz (max, 0° to +50° C)
FCC Aeronautical Channels: ±5 kHz (max, 0° to +50° C)
4.5 MHz Aural Carrier Frequency Tolerance: ±150 Hz (0° to +50° C)
Channel Selectivity
Adjacent Aural and Below: -40 dB
Adjacent Picture and Above: -40 dB ±5 dB
Spurious Outputs: -63 dBc
C/N Ratio In-Channel: 63 dB (b)
Broadband Noise: -110 dBc (b)
Output Impedance: 75 Ω
Output Return Loss: 18 dB

IF

Aural Frequency Standard: 41.25 MHz
Visual Frequency Standard: 45.75 MHz
Composite IF Loop Output:
Aural Carrier Level: +20 dBmV
Visual Carrier Level: +35 dBmV
Output/Input Impedance: 75 Ω
Output Return Loss: 15 dB
Input Return Loss: 16 dB
EAS/ALT IF Input Level: 38 dBmV, @ 45.75 MHz
EAS/ALT IF Switch Isolation: >60 dB

Video

Input Level: 1.0 V p-p (d)
Frequency Repsonse fv-0.5 MHz to fv+4.2 MHz: 1.5 dB P/V
P-P Video to RMS Hum Ratio: 65 dB
Video Signal-to-Noise Ratio, Weighted: 58 dB (b)
Differential Gain: 2.0% (d)
Differential Phase: 1.0° (d)
C/L Delay Inequality: see note ns (c)
Input Impedance: 75 Ω
Input Return Loss: 18 dB

Audio

Input Level: 180 mV RMS (e)
Ext. 4.5 MHz Input Level: +35 to +45 dBmV (f)
Frequency Range: 20 Hz to 20 kHz
Frequency Response: ±1.0 dB (g)
Pre-Emphasis_Mono: 75 µs
Audio Signal-to-Noise: 60dB (e)
Total Harmonic Distortion: 0.6% (h)
Overmodulation Indicator: 25, ±2 kHz
Input Impedance: 10 kΩ

General

Power Requirements:
Voltage: 117, ±10% VAC
Frequency: 60 Hz
Power: 14W (i)
Fuse: 0.31 A, Type T
Temperature Range: 0° to +50° C

Mechanical

Dimensions (WxHxD):
19.0 x 1.75 x 14.25 in.,
483 x 44 x 362 mm
Weight: 7 lbs. (3.18 kg)

Connectors (Rear Panel)

Video Input: "F" Female
Audio Input: Barrier Strip / RCA Female
IF Output: "F" Female
IF Input: "F" Female
RF Output: "F" Female
EAS/ALT IF: "F" Female
4.5 MHz Input: "F" Female

Controls (Front Panel)

Video Level: Control
Aural Carrier Level: Control
Audio Level: Control
RF Output Level: Control

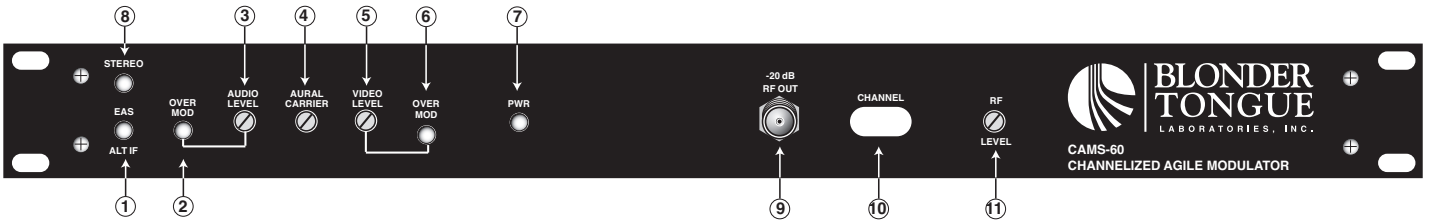
Indicators (Front Panel)

Video Overmodulation: LED, Red
Audio Overmodulation: LED, Red
EAS/ALT IF: LED, Red
Stereo: LED, Green (Option)
Power: LED, Green

NOTES

(a) 0.2 dB steps
(b) 4 MHz bandwidth
(c) meets FCC CATV group delay pre-distortion requirements for color transmission
(d) 87.5% depth of modulation
(e) for 25 kHz peak deviation
(f) available with Option 10
(g) referenced to standard 75 µs pre-emphasis
(h) 20 Hz to 20 kHz, 25 kHz deviation
(i) standard unit with no options installed

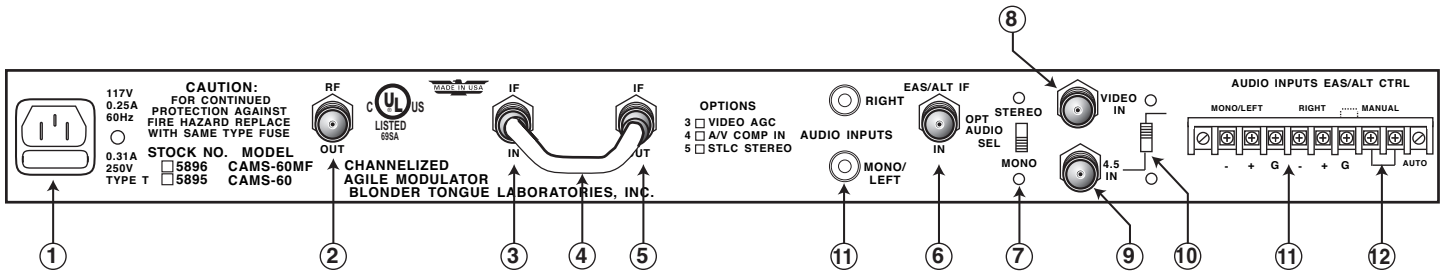
Operating Controls



Front Panel Controls and Indicators

1. **EAS/ALT INDICATOR** - Lights red when EAS/ALT is active.
2. **AUDIO OVERMODULATION LED** - Lights when the aural carrier peak deviation is over 25 KHz in Mono mode and over 55 KHz when the Stereo option is present and the rear panel audio select switch is set to Stereo.
3. **AUDIO LEVEL** - Adjusts the aural carrier modulation.
4. **AURAL CARRIER** - Controls the amplitude of the aural carrier to change the aural/visual ratio.
5. **VIDEO LEVEL** - Adjusts the percentage of video modulation.
6. **VIDEO OVERMODULATION LED** - Lights when the modulation exceeds 87.5%.
7. **POWER LED** - Indicates power is present and the fuse is good.
8. **BTSC STEREO LED** - When the Stereo option and video input are present, the LED indicates the presence of the stereo pilot tone.
9. **-20 dB RF OUT** - Test point output 20 dB below the RF output.
10. **CHANNEL** - Channel number.
11. **RF LEVEL** - The control simultaneously adjusts the amplitude of the aural and visual carriers to the final drive amplifier.

Operating Controls - continued



Rear Panel Controls and Connections

1. **IEC POWER RECEPTACLE WITH FUSE** - The provided power cord is plugged into this receptacle. A slide-out drawer contains the AC fuse.
2. **RF OUT** - The filtered RF signal is available for connection to a headend combiner.
3. **IF IN** - The composite IF signal is looped to the PLL/Up-converter.
4. **IF LOOP** - An F to F jumper cable is provided to loop the IF OUT to the IF IN.
5. **IF OUT** - The combined SAW filtered and modulated IF signal appears at this port.
6. **EAS/ALT IF INPUT** - Accepts EAS/ALT Input.
7. **AUDIO SELECT** - Switches between the Mono and Stereo (when stereo option is present) mode of processing for the audio input.
8. **VIDEO IN** - The modulator accepts standard negative sync video at a 0.7 to 2.5Vp-p level.
9. **4.5 IN** - External 4.5 MHz modulated carrier input.
10. **AUDIO INPUT SWITCH** - Selects between an external 4.5 MHz modulated aural carrier and the internally processed aural carrier.
11. **AUDIO INPUT** - Input connectors for the Mono/Stereo audio signal. Either the RCA or barrier strip audio inputs can be used.
12. **EAS/ALT TERMINAL BLOCK** - Selection done by manual or automatic 3 position terminal switch.

Preparation for Use

After installing the unit, make the following adjustments:

Output Level - Connect the IF loop cable from the IF OUT in the IF IN connectors. Connect a suitable RF meter (Field Strength Meter or Spectrum Analyzer) to the RF OUT and tune to the visual carrier frequency. Adjust the RF LEVEL control to the desired visual carrier level.

Aural/Visual Carrier Ratio - Tune the level meter to the aural carrier frequency, then adjust the AURAL LEVEL control for the desired carrier ratio.

Video Level - With a nominal 1Vp-p video source connected, set the VIDEO MODULATION ADJ so that the VIDEO OVERMODULATION indicator just comes on. Verify with suitable test equipment or by using a TV, and checking picture contrast.

Audio Level - For monaural audio signals, connect the signal to the MONO/RIGHT terminals of the 8-pin terminal strip. Set the AUDIO INPUT switch to the UP position and the AUDIO SEL switch to the MONO position. Adjust the AUDIO MODULATION ADJ so that the AUDIO OVERMODULATION indicator flashes on the loudest peaks of the audio program. Monitor for a few minutes to assure the proper setting.

Stereo Compatibility of the CAMS-60 Modulator

The CAMS-60 is designed to accept either a standard monaural audio signal, a BTSC encoded baseband audio signal or a 4.5 MHz modulated subcarrier. It can also generate a BTSC encoded stereo signal when Option 5 is installed.

If a BTSC encoded baseband signal is used, the internal audio pre-emphasis circuit must be disabled. To do this, disconnect the unit from power and remove the unit cover. Locate the A/V modulator board (the board with the audio and video controls accessible through the front panel). Next, locate J3 (behind Audio Overmodulation LED on the front panel) and move the shorting plug from "ENA" (enable) to "STR" (stereo). This disables the audio pre-emphasis. Replace the unit cover. Connect the baseband stereo signal to the MONO/RIGHT terminals. Set the AUDIO INPUT switch to the UP position and the AUDIO SEL switch to STEREO. In the STEREO position the AUDIO OVERMODULATION indicator is set to come on when deviations exceed ±55 KHZ (stereo peak deviation). Adjust the AUDIO MODULATION ADJ so the indicator just comes on. Monitor for a few minutes to assure proper setting.

If a 4.5 MHz modulated subcarrier is to be used, set the AUDIO INPUT switch to the 4.5 IN position. Neither the AUDIO MODULATION ADJ nor the AUDIO OVERMODULATION indicator are operational in this mode and no internal modifications to the modulator are required.

Changing the Output Filter Module

1. Unplug the modulator.
2. Remove the unit cover and the PLL module cover (located next to the RF Output).
3. Remove the two faceplate screws securing the Output Filter Module (OFM) to the faceplate.
4. Note the connections of the two coax cables to the OFM before removing them.
5. Remove the screw that secures the OFM L-mounting bracket to the chassis and remove the OFM.
6. Note the Channel Chart on the new OFM.
7. Set the three sets of DIP switches, visible through the top of the PLL module, to the channel of the new OFM.
8. Insert the new module, channel label up, and connect the two coax cables, OFM mounting hardware, PLL module cover and unit cover.
9. Before reinstalling the unit in a rack, verify its operation by connecting the RF Out to an appropriate piece of test equipment. Use caution when connecting the modulator to test equipment because the output level may exceed +60 dBmV.

CAMS-60 with Stereo Option 5

The CAMS-60 with the Stereo option (Option 5) will convert the left and right channels from an audio source to the BTSC encoder stereo format used in television transmission. It can also be used for the transmission of standard monaural audio signals available from non-stereo sources.

Input Requirements

Audio Levels

Stereo:	0.7 Vp-p to 7 Vp-p, typ (-10 dBm to +10 dBm)
Mono:	1 Vp-p to 7 Vp-p, typ.
Video Level:	1 Vp-p

Connections

Connect and make all adjustments for the video, IF loop thru and RF Out as described under **Preparation for Use**. The audio input signal may be balanced or unbalanced. If an unbalanced input is used, the unused terminal must be grounded via a short jumper to an adjacent ground terminal. Stereo input connections are made to the corresponding left and right terminals as indicated on the rear panel. A monaural input signal is connected to the right channel input with the left channel remaining either open or grounded.

Adjustments

For stereo operation, the AUDIO SEL switch on the rear panel is set to the STEREO position.

The AUDIO OVERMODULATION indicator is configured to work in both the stereo and mono modes. When the AUDIO SEL switch is set to MONO, the LED will light when the deviation exceeds ±25 KHz. In the STEREO position, the LED will light when the deviation exceeds ±55 KHz (±50 KHz program audio and ±5 KHz pilot tone). Adjust the AUDIO MODULATION ADJ so that the overmod indicator flashes. Monitor for a few minutes to assure the proper setting.

For the BTSC STEREO indicator to light there must be an input video signal and the AUDIO SEL switch must be set to STEREO.

Specifications

Separation 50 Hz - 10 KHz: 20 dB

Frequency Response 50 Hz - 10 KHz: ±1.5 dB

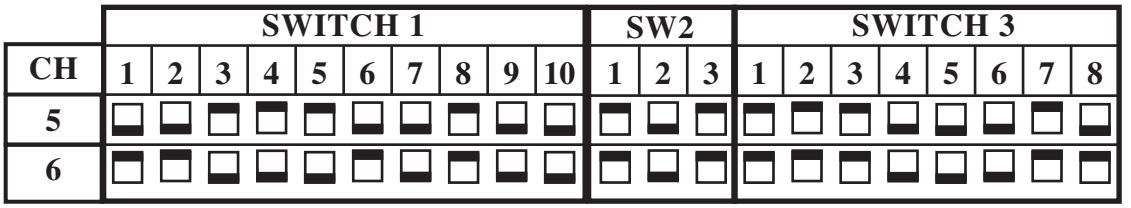
Harmonic Distortion @1KHz: 0.5%

IRC FREQUENCY OFFSETS ONLY

The tables on pages 11 thru 17 list the switch settings for the standard cable TV and broadcast TV channel assignments. 0= UP = OFF (as labeled on the switch). The LO frequency is the sum weighting of the switches in the UP position. The weighting of the specific switches are provided below:

To obtain a +12.5 KHz offset, move Switch Bank 3, position #3 UP. If the position is already UP, move Switch Bank 3, position #4 UP & move Switch Bank 3, position#3 DOWN. (This adds 25 KHz and subtracts 12.5 KHz.)

Switch Bank 1				Switch Bank 3			
Switch #	Weight	Switch#	Weight	Switch #	Weight	Switch#	Weight
1	0.8 MHz.	6	25.6 MHz	1	VCO BandSwitch	5	50 kHz
2	1.6 MHz	7	51.2 MHz	2	VCO BandSwitch	6	100 kHz
3	3.2 MHz	8	102.4 MHz	3	12.5 KHz	7	200 kHz
4	6.4 MHz	9	204.8 MHz	4	25.0 KHz	8	400 kHz
5	12.8 MHz	10	409.6 MHz				



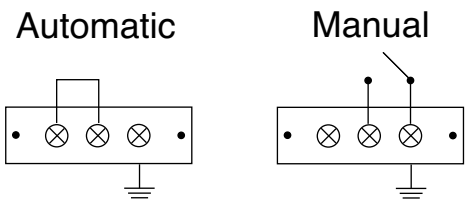
IRC Switch Settings for Channels 5 & 6

Note: This chart **only** applies to channels 5 and 6. All other channels are offset +12.5 KHz for standard to IRC conversion as described above.

EAS/ALT IF

AUTOMATIC - Connect a jumper to the terminal strip auto position. EAS will switch on when a +37 dBmV EAS IF signal is detected.

MANUAL - EAS is active with a ground connection on the manual position of the terminal strip.



Standard PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH. NO.	VISUAL CARR.	LO	Switch 1										Switch 2			BSW1	BSW2	Switch3					
			1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
2	55.2500	101.0000	1	0	0	0	0	0	0	1	1	1	0	1	0	0	0	1	1	1	1	0	1
3	61.2500	107.0000	0	1	0	1	1	1	1	0	1	1	0	1	0	0	0	1	1	1	1	0	0
4	67.2500	113.0000	0	1	0	0	1	1	1	0	1	1	0	1	0	0	0	1	1	1	1	0	1
5	77.2500	123.0000	0	1	1	0	0	1	1	0	1	1	0	1	0	0	0	1	1	1	1	0	0
6	83.2500	129.0000	0	1	1	1	1	0	1	0	1	1	0	1	0	0	0	1	1	1	1	0	1
95	91.2500	135.0000	0	0	1	0	1	0	1	0	1	1	0	1	0	0	0	1	1	1	1	0	1
96	97.2500	141.0000	1	0	1	1	0	0	1	0	1	1	0	1	0	0	0	1	1	1	1	0	0
97	103.2500	147.0000	1	0	1	0	0	0	1	0	1	1	0	1	0	0	0	1	1	1	1	0	1
98	109.2750	155.0250	0	1	1	1	1	1	0	0	1	1	0	1	0	0	0	1	0	1	1	0	0
99	115.2750	161.0250	0	1	1	0	1	1	0	0	1	1	0	1	0	0	0	1	0	1	1	0	1
14	121.2625	167.0125	1	1	1	1	0	1	0	0	1	1	0	1	0	0	0	0	1	1	1	0	0
15	127.2625	173.0125	1	1	1	0	0	1	0	0	1	1	0	1	0	0	0	0	1	1	1	0	1
16	133.2625	179.0125	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0	0	1	1	1	0	0
17	139.2500	185.0000	0	0	0	1	1	0	0	0	1	1	0	1	0	0	0	1	1	1	1	0	1
18	145.2500	191.0000	1	0	0	0	1	0	0	0	1	1	0	1	0	0	0	1	1	1	1	0	0
19	151.2500	197.0000	1	0	0	1	0	0	0	0	1	1	0	1	0	0	0	1	1	1	1	0	1
20	157.2500	203.0000	0	1	0	0	0	0	0	0	1	1	0	1	0	0	0	1	1	1	1	0	0
21	163.2500	209.0000	0	1	0	1	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	0	1
22	169.2500	215.0000	1	1	0	0	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	0	0
7	175.2500	221.0000	1	1	0	1	0	1	1	1	0	1	0	1	0	0	0	1	1	1	1	0	1
8	181.2500	227.0000	0	0	1	0	0	1	1	1	0	1	0	1	0	0	0	1	1	1	1	0	0
9	187.2500	233.0000	0	0	1	1	1	0	1	1	0	1	0	1	0	0	0	1	1	1	1	0	1
10	193.2500	239.0000	1	0	1	0	1	0	1	1	0	1	0	1	0	0	1	1	1	1	1	0	0
11	199.2500	245.0000	1	0	1	1	0	0	1	1	0	1	0	1	0	0	1	1	1	1	1	0	1
12	205.2500	251.0000	0	1	1	0	0	0	1	1	0	1	0	1	0	0	1	1	1	1	1	0	0
13	211.2500	257.0000	0	1	1	1	1	1	0	1	0	1	0	1	0	0	1	1	1	1	1	0	1
23	217.2500	263.0000	1	1	1	0	1	1	0	1	0	1	0	1	0	0	1	1	1	1	1	0	0
24	223.2625	269.0125	1	1	1	1	0	1	0	1	0	1	0	1	0	0	1	0	1	1	1	0	1
25	229.2625	275.0125	0	0	0	1	0	1	0	1	0	1	0	1	0	0	1	0	1	1	1	0	0
26	235.2625	281.0125	0	0	0	0	0	1	0	1	0	1	0	1	0	0	1	0	1	1	1	0	1
27	241.2625	287.0125	1	0	0	1	1	0	0	1	0	1	0	1	0	0	1	0	1	1	1	0	0
28	247.2625	293.0125	1	0	0	0	1	0	0	1	0	1	0	1	0	0	1	0	1	1	1	0	1
29	253.2625	299.0125	0	1	0	1	0	0	0	1	0	1	0	1	0	0	1	0	1	1	1	0	0

Standard PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH.	VISUAL		Switch 1										Switch 2			BSW1	BSW2	Switch3					
NO.	CARR.	LO	1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
30	259.2625	305.0125	0	1	0	0	0	0	0	1	0	1	0	1	0	0	1	0	1	1	1	0	1
31	265.2625	311.0125	1	1	0	1	1	1	1	0	0	1	0	1	0	0	1	0	1	1	1	0	0
32	271.2625	317.0125	1	1	0	0	1	1	1	0	0	1	0	1	0	0	1	0	1	1	1	0	1
33	277.2625	323.0125	0	0	1	1	0	1	1	0	0	1	0	1	0	0	1	0	1	1	1	0	0
34	283.2625	329.0125	0	0	1	0	0	1	1	0	0	1	0	1	0	0	1	0	1	1	1	0	1
35	289.2625	335.0125	1	0	1	1	1	0	1	0	0	1	0	1	0	0	1	0	1	1	1	0	0
36	295.2625	341.0125	1	0	1	0	1	0	1	0	0	1	0	1	0	0	1	0	1	1	1	0	1
37	301.2625	347.0125	0	1	1	1	0	0	1	0	0	1	0	1	0	0	1	0	1	1	1	0	0
38	307.2625	353.0125	0	1	1	0	0	0	1	0	0	1	0	1	0	0	1	0	1	1	1	0	1
39	313.2625	359.0125	1	1	1	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	1	0	0
40	319.2625	365.0125	1	1	1	0	1	1	0	0	0	1	0	1	0	0	1	0	1	1	1	0	1
41	325.2625	371.0125	0	0	0	0	1	1	0	0	0	1	0	1	0	0	1	0	1	1	1	0	0
42	331.2750	377.0250	0	0	0	1	0	1	0	0	0	1	0	1	0	0	1	1	0	1	1	0	1
43	337.2625	383.0125	1	0	0	0	0	1	0	0	0	1	0	1	0	0	1	0	1	1	1	0	0
44	343.2625	389.0125	1	0	0	1	1	0	0	0	0	1	0	1	0	0	1	0	1	1	1	0	1
45	349.2625	395.0125	0	1	0	0	1	0	0	0	0	1	0	1	0	0	1	0	1	1	1	0	0
46	355.2625	401.0125	0	1	0	1	0	0	0	0	0	1	0	1	0	0	1	0	1	1	1	0	1
47	361.2625	407.0125	1	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	1	0	0
48	367.2625	413.0125	1	1	0	1	1	1	1	1	1	0	0	1	0	0	1	0	1	1	1	0	1
49	373.2625	419.0125	0	0	1	0	1	1	1	1	1	0	0	1	0	0	1	0	1	1	1	0	0
50	379.2625	425.0125	0	0	1	1	0	1	1	1	1	0	0	1	0	0	1	0	1	1	1	0	1
51	385.2625	431.0125	1	0	1	0	0	1	1	1	1	0	0	1	0	0	1	0	1	1	1	0	0
52	391.2625	437.0125	1	0	1	1	1	0	1	1	1	0	0	1	0	0	1	0	1	1	1	0	1
53	397.2625	443.0125	0	1	1	0	1	0	1	1	1	0	0	1	0	0	1	0	1	1	1	0	0
54	403.2500	449.0000	0	1	1	1	0	0	1	1	1	0	0	1	0	0	1	1	1	1	1	0	1
55	409.2500	455.0000	1	1	1	0	0	0	1	1	1	0	0	1	0	0	1	1	1	1	1	0	0
56	415.2500	461.0000	1	1	1	1	1	1	0	1	1	0	0	1	0	0	1	1	1	1	1	0	1
57	421.2500	467.0000	0	0	0	1	1	1	0	1	1	0	0	1	0	0	1	1	1	1	1	0	0
58	427.2500	473.0000	0	0	0	0	1	1	0	1	1	0	0	1	0	0	1	1	1	1	1	0	1
59	433.2500	479.0000	1	0	0	1	0	1	0	1	1	0	0	1	0	0	1	1	1	1	1	0	0
60	439.2500	485.0000	1	0	0	0	0	1	0	1	1	0	0	1	0	0	1	1	1	1	1	0	1
61	445.2500	491.0000	0	1	0	1	1	0	0	1	1	0	0	1	0	0	1	1	1	1	1	0	0
62	451.2500	497.0000	0	1	0	0	1	0	0	1	1	0	0	1	0	0	1	1	1	1	1	0	1
63	457.2500	503.0000	1	1	0	1	0	0	0	1	1	0	0	1	0	0	1	1	1	1	1	0	0
64	463.2500	509.0000	1	1	0	0	0	0	0	1	1	0	0	1	0	1	1	1	1	1	1	0	1
65	469.2500	515.0000	0	0	1	1	1	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
66	475.2500	521.0000	0	0	1	0	1	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
67	481.2500	527.0000	1	0	1	1	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
68	487.2500	533.0000	1	0	1	0	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
69	493.2500	539.0000	0	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0

Standard PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH.	VISUAL		Switch 1										Switch 2			BSW1	BSW2	Switch3					
NO.	CARR.	LO	1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
70	499.2500	545.0000	0	1	1	0	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
71	505.2500	551.0000	1	1	1	1	0	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
72	511.2500	557.0000	1	1	1	0	0	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
73	517.2500	563.0000	0	0	0	0	0	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
74	523.2500	569.0000	0	0	0	1	1	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
75	529.2500	575.0000	1	0	0	0	1	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
76	535.2500	581.0000	1	0	0	1	0	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
77	541.2500	587.0000	0	1	0	0	0	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
78	547.2500	593.0000	0	1	0	1	1	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
79	553.2500	599.0000	1	1	0	0	1	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
80	559.2500	605.0000	1	1	0	1	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
81	565.2500	611.0000	0	0	1	0	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
82	571.2500	617.0000	0	0	1	1	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
83	577.2500	623.0000	1	0	1	0	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
84	583.2500	629.0000	1	0	1	1	0	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
85	589.2500	635.0000	0	1	1	0	0	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
86	595.2500	641.0000	0	1	1	1	1	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
87	601.2500	647.0000	1	1	1	0	1	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
88	607.2500	653.0000	1	1	1	1	0	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
89	613.2500	659.0000	0	0	0	1	0	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
90	619.2500	665.0000	0	0	0	0	0	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
91	625.2500	671.0000	1	0	0	1	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
92	631.2500	677.0000	1	0	0	0	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
93	637.2500	683.0000	0	1	0	1	0	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
94	643.2500	689.0000	0	1	0	0	0	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
100	649.2500	695.0000	1	1	0	1	1	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
101	655.2500	701.0000	1	1	0	0	1	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
102	661.2500	707.0000	0	0	1	1	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
103	667.2500	713.0000	0	0	1	0	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
104	673.2500	719.0000	1	0	1	1	1	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
105	679.2500	725.0000	1	0	1	0	1	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
106	685.2500	731.0000	0	1	1	1	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
107	691.2500	737.0000	0	1	1	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
108	697.2500	743.0000	1	1	1	1	1	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
109	703.2500	749.0000	1	1	1	0	1	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
110	709.2500	755.0000	0	0	0	0	1	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
111	715.2500	761.0000	0	0	0	1	0	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
112	721.2500	767.0000	1	0	0	0	0	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
113	727.2500	773.0000	1	0	0	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
114	733.2500	779.0000	0	1	0	0	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0

Standard PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH. NO.	VISUAL CARR.	LO	Switch 1										Switch 2			BSW1	BSW2	Switch3					
			1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
115	739.2500	785.0000	0	1	0	1	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
116	745.2500	791.0000	1	1	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0
117	751.2500	797.0000	1	1	0	1	1	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
118	757.2500	803.0000	0	1	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	0	0	0	1
119	763.2500	809.0000	1	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	1	0	0	1
120	769.2500	815.0000	0	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	0	1	0	1
121	775.2500	821.0000	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1
122	781.2500	827.0000	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	1	1
123	787.2500	833.0000	1	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	1	1
124	793.2500	839.0000	0	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	1	1
125	799.2500	845.0000	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	1
126	805.2500	851.0000	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	0	0
127	811.2500	857.0000	0	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0
128	817.2500	863.0000	1	0	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	0	0
129	823.2500	869.0000	0	0	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	0
130	829.2500	875.0000	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	1	0
131	835.2500	881.0000	0	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	1	0
132	841.2500	887.0000	1	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	1	0
133	847.2500	893.0000	0	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	0
134	853.2500	899.0000	1	1	0	0	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	0	1
135	859.2500	905.0000	0	1	0	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	1
UHF																							
14	471.2500	517.0000	1	0	0	1	1	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
15	477.2500	523.0000	0	1	0	0	1	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
16	483.2500	529.0000	0	1	0	1	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
17	489.2500	535.0000	1	1	0	0	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
18	495.2500	541.0000	1	1	0	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
19	501.2500	547.0000	0	0	1	0	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
20	507.2500	553.0000	0	0	1	1	0	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1
21	513.2500	559.0000	1	0	1	0	0	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0
22	519.2500	565.0000	1	0	1	1	1	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
23	525.2500	571.0000	0	1	1	0	1	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
24	531.2500	577.0000	0	1	1	1	0	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
25	537.2500	583.0000	1	1	1	0	0	1	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
26	543.2500	589.0000	1	1	1	1	1	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
27	549.2500	595.0000	0	0	0	1	1	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
28	555.2500	601.0000	0	0	0	0	1	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
29	561.2500	607.0000	1	0	0	1	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	0
30	567.2500	613.0000	1	0	0	0	0	0	0	0	1	0	0	1	0	1	1	1	1	1	1	0	1
31	573.2500	619.0000	0	1	0	1	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
32	579.2500	625.0000	0	1	0	0	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
33	585.2500	631.0000	1	1	0	1	0	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
34	591.2500	637.0000	1	1	0	0	0	1	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
35	597.2500	643.0000	0	0	1	1	1	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0

Standard PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH.	VISUAL		Switch 1										Switch 2			BSW1	BSW2	Switch3					
NO.	CARR.	LO	1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
36	603.2500	649.0000	0	0	1	0	1	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
37	609.2500	655.0000	1	0	1	1	0	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	0
38	615.2500	661.0000	1	0	1	0	0	0	1	1	0	0	0	1	0	1	1	1	1	1	1	0	1
39	621.2500	667.0000	0	1	1	1	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
40	627.2500	673.0000	0	1	1	0	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
41	633.2500	679.0000	1	1	1	1	0	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
42	639.2500	685.0000	1	1	1	0	0	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
43	645.2500	691.0000	0	0	0	0	0	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
44	651.2500	697.0000	0	0	0	1	1	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
45	657.2500	703.0000	1	0	0	0	1	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
46	663.2500	709.0000	1	0	0	1	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1
47	669.2500	715.0000	0	1	0	0	0	0	0	1	0	0	0	1	0	1	1	1	1	1	1	0	0
48	675.2500	721.0000	0	1	0	1	1	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
49	681.2500	727.0000	1	1	0	0	1	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
50	687.2500	733.0000	1	1	0	1	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
51	693.2500	739.0000	0	0	1	0	0	1	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
52	699.2500	745.0000	0	0	1	1	1	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
53	705.2500	751.0000	1	0	1	0	1	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
54	711.2500	757.0000	1	0	1	1	0	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	1
55	717.2500	763.0000	0	1	1	0	0	0	1	0	0	0	0	1	0	1	1	1	1	1	1	0	0
56	723.2500	769.0000	0	1	1	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
57	729.2500	775.0000	1	1	1	0	1	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0
58	735.2500	781.0000	1	1	1	1	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
59	741.2500	787.0000	0	0	0	1	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0
60	747.2500	793.0000	0	0	0	0	0	1	0	0	0	0	0	1	0	1	1	1	1	1	1	0	1
61	753.2500	799.0000	1	0	0	1	1	0	0	0	0	0	0	1	0	1	1	1	1	1	1	0	0
62	759.2500	805.0000	0	1	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	1	1	0	0
63	765.2500	811.0000	1	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	0	0	1	0
64	771.2500	817.0000	0	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	1	0	1	0
65	777.2500	823.0000	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	1	0
66	783.2500	829.0000	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	0
67	789.2500	835.0000	1	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	0	1
68	795.2500	841.0000	0	0	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	1
69	801.2500	847.0000	1	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	0	1
70	807.2500	853.0000	0	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	1
71	813.2500	859.0000	1	0	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	1	1
72	819.2500	865.0000	0	0	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	1	1
73	825.2500	871.0000	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	1	1
74	831.2500	877.0000	0	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	1
75	837.2500	883.0000	0	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	0	0	0	0
76	843.2500	889.0000	1	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	0	0	0
77	849.2500	895.0000	0	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	0	1	0	0
78	855.2500	901.0000	1	1	0	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	0	0

Sub-Band PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH. NO.	VISUAL CARR.	LO	Switch 1										Switch 2			BSW1	BSW2	Switch3					
			1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
T-7	7.0000	52.7500	0	1	1	1	1	1	0	1	1	1	0	1	0	0	0	1	1	0	0	0	0
T-8	13.0000	58.7500	0	1	1	0	1	1	0	1	1	1	0	1	0	0	0	1	1	0	0	0	1
T-9	19.0000	64.7500	1	1	1	1	0	1	0	1	1	1	0	1	0	0	0	1	1	0	0	0	0
T-10	25.0000	70.7500	1	1	1	0	0	1	0	1	1	1	0	1	0	0	0	1	1	0	0	0	1
T-11	31.0000	76.7500	0	0	0	0	0	1	0	1	1	1	0	1	0	0	0	1	1	0	0	0	0
2	55.2500	101.0000	1	0	0	0	0	0	0	1	1	1	0	1	0	0	1	1	1	1	1	0	1
3	61.2500	107.0000	0	1	0	1	1	1	1	0	1	1	0	1	0	0	1	1	1	1	1	0	0
4	67.2500	113.0000	0	1	0	0	1	1	1	0	1	1	0	1	0	0	1	1	1	1	1	0	1
5	77.2500	123.0000	0	1	1	0	0	1	1	0	1	1	0	1	0	0	1	1	1	1	1	0	0
6	83.2500	129.0000	0	1	1	1	1	0	1	0	1	1	0	1	0	0	1	1	1	1	1	0	1
95	91.2500	135.0000	0	0	1	0	1	0	1	0	1	1	0	1	0	0	1	1	1	1	1	0	1
96	97.2500	141.0000	1	0	1	1	0	0	1	0	1	1	0	1	0	0	1	1	1	1	1	0	0
97	103.2500	147.0000	1	0	1	0	0	0	1	0	1	1	0	1	0	0	1	1	1	1	1	0	1
98	109.2750	155.0250	0	1	1	1	1	1	0	0	1	1	0	1	0	0	1	1	0	1	1	0	0
99	115.2750	161.0250	0	1	1	0	1	1	0	0	1	1	0	1	0	0	1	1	0	1	1	0	1
14	121.2625	167.0125	1	1	1	1	0	1	0	0	1	1	0	1	0	0	1	0	1	1	1	0	0
15	127.2625	173.0125	1	1	1	0	0	1	0	0	1	1	0	1	0	0	1	0	1	1	1	0	1
16	133.2625	179.0125	0	0	0	0	0	1	0	0	1	1	0	1	0	0	1	0	1	1	1	0	0
17	139.2500	185.0000	0	0	0	1	1	0	0	0	1	1	0	1	0	0	1	1	1	1	1	0	1
18	145.2500	191.0000	1	0	0	0	1	0	0	0	1	1	0	1	0	0	1	1	1	1	1	0	0
19	151.2500	197.0000	1	0	0	1	0	0	0	0	1	1	0	1	0	0	1	1	1	1	1	0	1
20	157.2500	203.0000	0	1	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1	1	1	0	0
21	163.2500	209.0000	0	1	0	1	1	1	1	1	0	1	0	1	0	0	1	1	1	1	1	0	1
22	169.2500	215.0000	1	1	0	0	1	1	1	1	0	1	0	1	0	0	1	1	1	1	1	0	0
7	175.2500	221.0000	1	1	0	1	0	1	1	1	0	1	0	1	0	0	1	1	1	1	1	0	1
8	181.2500	227.0000	0	0	1	0	0	1	1	1	0	1	0	1	0	0	1	1	1	1	1	0	0
9	187.2500	233.0000	0	0	1	1	1	0	1	1	0	1	0	1	0	0	1	1	1	1	1	0	1
10	193.2500	239.0000	1	0	1	0	1	0	1	1	0	1	0	1	0	1	1	1	1	1	1	0	0
11	199.2500	245.0000	1	0	1	1	0	0	1	1	0	1	0	1	0	1	1	1	1	1	1	0	1
12	205.2500	251.0000	0	1	1	0	0	0	1	1	0	1	0	1	0	1	1	1	1	1	1	0	0
13	211.2500	257.0000	0	1	1	1	1	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	1
23	217.2500	263.0000	1	1	1	0	1	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	0
24	223.2625	269.0125	1	1	1	1	0	1	0	1	0	1	0	1	0	1	1	0	1	1	1	0	1
25	229.2625	275.0125	0	0	0	1	0	1	0	1	0	1	0	1	0	1	1	0	1	1	1	0	0

Sub-Band PLL -900 Switch Settings

1 = ON (DOWN) 0 = OFF (UP)

CH. NO.	VISUAL CARR.	LO	Switch 1										Switch 2			BSW1	BSW2	Switch3					
			1	2	3	4	5	6	7	8	9	10	1	2	3	1	2	3	4	5	6	7	8
26	235.2625	281.0125	0	0	0	0	0	1	0	1	0	1	0	1	0	1	1	0	1	1	1	0	1
27	241.2625	287.0125	1	0	0	1	1	0	0	1	0	1	0	1	0	1	1	0	1	1	1	0	0
28	247.2625	293.0125	1	0	0	0	1	0	0	1	0	1	0	1	0	1	1	0	1	1	1	0	1
29	253.2625	299.0125	0	1	0	1	0	0	0	1	0	1	0	1	0	1	1	0	1	1	1	0	0
30	259.2625	305.0125	0	1	0	0	0	0	0	1	0	1	0	1	0	1	1	0	1	1	1	0	1
31	265.2625	311.0125	1	1	0	1	1	1	1	0	0	1	0	1	0	1	1	0	1	1	1	0	0
32	271.2625	317.0125	1	1	0	0	1	1	1	0	0	1	0	1	0	1	1	0	1	1	1	0	1
33	277.2625	323.0125	0	0	1	1	0	1	1	0	0	1	0	1	0	1	1	0	1	1	1	0	0
34	283.2625	329.0125	0	0	1	0	0	1	1	0	0	1	0	1	0	1	1	0	1	1	1	0	1
35	289.2625	335.0125	1	0	1	1	1	0	1	0	0	1	0	1	0	1	1	0	1	1	1	0	0
36	295.2625	341.0125	1	0	1	0	1	0	1	0	0	1	0	1	0	1	1	0	1	1	1	0	1
37	301.2625	347.0125	0	1	1	1	0	0	1	0	0	1	0	1	0	1	1	0	1	1	1	0	0
38	307.2625	353.0125	0	1	1	0	0	0	1	0	0	1	0	1	0	1	1	0	1	1	1	0	1
39	313.2625	359.0125	1	1	1	1	1	1	0	0	0	1	0	1	0	1	1	0	1	1	1	0	0
40	319.2625	365.0125	1	1	1	0	1	1	0	0	0	1	0	1	0	1	1	0	1	1	1	0	1
41	325.2625	371.0125	0	0	0	0	1	1	0	0	0	1	0	1	0	1	1	0	1	1	1	0	0
42	331.2750	377.0250	0	0	0	1	0	1	0	0	0	1	0	1	0	1	1	1	0	1	1	0	1
43	337.2625	383.0125	1	0	0	0	0	1	0	0	0	1	0	1	0	1	1	0	1	1	1	0	0
44	343.2625	389.0125	1	0	0	1	1	0	0	0	0	1	0	1	0	1	1	0	1	1	1	0	1
45	349.2625	395.0125	0	1	0	0	1	0	0	0	0	1	0	1	0	1	1	0	1	1	1	0	0
46	355.2625	401.0125	0	1	0	1	0	0	0	0	0	1	0	1	0	1	1	0	1	1	1	0	1
47	361.2625	407.0125	1	1	0	0	0	0	0	0	0	1	0	1	0	1	1	0	1	1	1	0	0
48	367.2625	413.0125	1	1	0	1	1	1	1	1	1	0	0	1	0	1	1	0	1	1	1	0	1
49	373.2625	419.0125	0	0	1	0	1	1	1	1	1	0	0	1	0	1	1	0	1	1	1	0	0
50	379.2625	425.0125	0	0	1	1	0	1	1	1	1	0	0	1	0	1	1	0	1	1	1	0	1
51	385.2625	431.0125	1	0	1	0	0	1	1	1	1	0	0	1	0	1	1	0	1	1	1	0	0
52	391.2625	437.0125	1	0	1	1	1	0	1	1	1	0	0	1	0	1	1	0	1	1	1	0	1
53	397.2625	443.0125	0	1	1	0	1	0	1	1	1	0	0	1	0	1	1	0	1	1	1	0	0
54	403.2500	449.0000	0	1	1	1	0	0	1	1	1	0	0	1	0	1	1	1	1	1	1	0	1
55	409.2500	455.0000	1	1	1	0	0	0	1	1	1	0	0	1	0	1	1	1	1	1	1	0	0
56	415.2500	461.0000	1	1	1	1	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	0	1
57	421.2500	467.0000	0	0	0	1	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	0	0
58	427.2500	473.0000	0	0	0	0	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	0	1
59	433.2500	479.0000	1	0	0	1	0	1	0	1	1	0	0	1	0	1	1	1	1	1	1	0	0
60	439.2500	485.0000	1	0	0	0	0	1	0	1	1	0	0	1	0	1	1	1	1	1	1	0	1
61	445.2500	491.0000	0	1	0	1	1	0	0	1	1	0	0	1	0	1	1	1	1	1	1	0	0

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