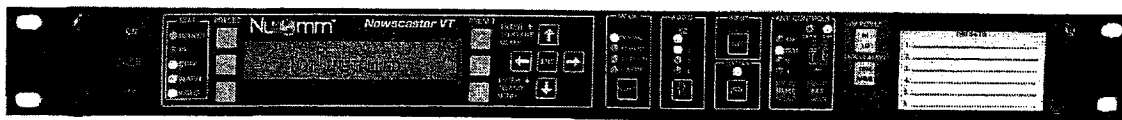
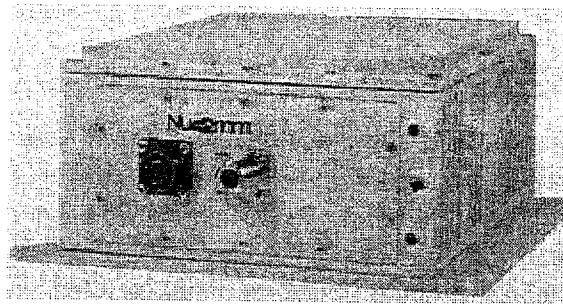




NEWSCASTER VT2

ENG/OB Microwave Transmitter



User Manual

M17-0002-00A - REV 4
(for software Rev D3.1 and below)

Nucomm Inc.
101 Bilby Road
Hackettstown, NJ 07840
Tel: 908-852-3700 Fax: 908-813-0399
www.Nucomm.com

Warranty

Equipment manufactured by Nucomm, Inc. is warranted to meet all customer specifications and to be free from defects in material and workmanship within a period of two years from date of shipment from Nucomm. The company's liability under this warranty is limited to:

- Servicing or adjusting equipment.
- Replacement of defective parts.

Any equipment returned to the factory shall have the freight paid for by the buyer.

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Customer Service Information

Equipment Returns

Customer Service technicians at Nucomm are available to extend technical assistance to customers installing or operating Nucomm equipment. They will also assist customers with equipment troubleshooting. If this cannot be successfully accomplished by telephone, the equipment may be returned to the factory for repair. Loaner equipment is often available until Nucomm is able to ship repaired units. The Nucomm Customer Service telephone number is (908) 852-3700.

Do not return any Nucomm product to the factory until you have received a return authorization (RA) number and shipping instructions from Nucomm. When returning equipment to Nucomm, please enclose a letter containing the following:

- RA number.
- Model number.
- Serial number.
- Frequency operating range (*in the case of modules*).
- A detailed description of the problem.
- Name of an engineer or technician we may contact in regards to this problem.
- Include a "ship to" and "bill to" address.

Ship to:

Nucomm, Inc.
101 Bilby Road
Hackettstown, New Jersey 07840

For International orders

In the case of units being shipped from outside the United States, Nucomm recommends the use of a courier such as Federal Express, UPS, etc, and that the goods be shipped DOOR-TO-DOOR PRE-PAID. This will eliminate Customs costs, handling charges and delays. Enclose all the information above, plus a statement that the equipment was manufactured in the United States (*the latter is needed to expedite customs processing*). Nucomm evaluates all returned units free of charge, and then confers with customers on corrective action.

Telephone Consultation

Should there be a need for emergency telephone consultation, please have your model number and serial number available for the Customer Service representative. Nucomm Customer Service representatives are available to deal with all technical questions or difficulties.

Replacement Modules

Troubleshooting to the component level is often not cost-effective and frequently impossible. Often the practical method of effecting field repairs is to substitute known good spare modules for suspect units. Nucomm maintains an inventory of replacement modules for its complete line of products.

Field Repair

Nucomm products are designed with easy access to components to facilitate service. When troubleshooting the VT2 Transmitter, the user is cautioned to read all module descriptions in this manual. Some Nucomm modules cannot be serviced in the field. Warnings are included in the circuit descriptions and on certain modules themselves, however the lack of a warning cannot be construed as a statement of safety. To prevent voiding of the Nucomm warranty that protects the equipment, please contact Nucomm before servicing or making any repairs.

Shipping Damage

Equipment shipped FOB Nucomm, Inc.; shall become the property of buyer upon delivery to and receipt from carrier. Any damage in shipment should be handled by the buyer directly with the carrier. Immediately request the carrier's inspection upon evidence of damage in shipment.

Do not return any Nucomm product to the factory until a return authorization (RA) number has been given, along with shipping instructions, as discussed previously.

Contact Information

Nucomm Inc.
101 Bilby Road
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For 24-hour emergency service, our Customer Service Manager can be contacted by pager at (908) 515-3709.

Document Revision

Date Modified	Revision	Modified by	Modification Detail
October 25, 2004	0	J Payne/M Hardy	Initial Release
March 11, 2005	1	M Hardy	Formatting changes.
June 3, 2005	2	R Risch	Changing in text, graphics and formatting.
November 3, 2005	3	M Hardy	Updated Nycoil and related information, as well as figure numbering, references, Menu Tree, and Frequency Stability.
January 20, 2006	4	R Risch/M Hardy	Changes in format. Menu Tree, text and graphics. Added BAS instructions.

Terms & Definitions

16QAM	<i>(16 phase Quadrature Amplitude Modulation) A digital modulation technique that combines amplitude modulation and phase shift keying (16-phase-states) in sending data. This type of modulation supports a transfer rate up to 14 Mbps.</i>
64QAM	<i>(64 phase Quadrature Amplitude Modulation) A digital modulation technique that combines amplitude modulation and phase shift keying (64-phase-states) in sending data. This type of modulation supports a transfer rate up to 28 Mbps.</i>
ASI	<i>(Asynchronous Serial Interface) is a format for how video is carried. It is designed to transport MPEG-2 video streams over 75-ohm coaxial cable at a rate of 270 Mbps for television applications. It is similar to SDI (Serial Digital Interface) in bit rate and equalization properties, however; ASI uses 8B10 encoding and is compatible with varying bit-rate signals supporting both single and multiple transport streams. ASI carries both audio and video information within a signal.</i>
BER	<i>(Bit Error Rate) is the ratio of detected bits in error to the total bits delivered in a received signal.</i>
Composite Video	<i>A single analog video signal encoded with luminance (brightness), chrominance (color), horizontal, and vertical synchronization information, requiring only a single connection.</i>
COFDM	<i>(Coded Orthogonal Frequency Division Multiplexing) A type of modulation scheme where more than a 1000 signals are generated from a single signal, and transmitted at right angles to each other. This is to reduce signal loss by a receiver due to obstructions and reflections.</i>
DVB-T	<i>(Digital Video Broadcasting -Terrestrial) An international digital broadcast standard developed in Europe. DVB-T specifies a bandwidth of 6 to 8 MHz per channel, while utilizing MPEG-2 video compression and MPEG audio compression.</i>
Dynamic Range	<i>The ratio between noise and the greatest un-distorted signal on a channel. This is similar in concept to SNR.</i>

FEC	<i>(Forward Error Correction) A transmission technique that utilizes error correction data being sent with the carrier signal for possible signal re-generation by the receiver should errors be detected.</i>
GOP	<i>(Group Of Pictures) A sequence of frames within an MPEG-2 stream to allow video editing and splicing from different signal sources.</i>
MER	<i>(Modulation Error Rate) is the ratio of power of the signal to the power of the error vectors, expressed in dB. MER is fundamentally used as an early indicator of signal degradation.</i>
MPEG	<i>(Moving Picture Expert Group) A family of standards that utilizes complex compression techniques to encode audio-video information into a signal.</i>
NTSC	<i>(National Television Systems Committee) A United States based organization, which develops technical standards for broadcasting.</i>
PAL	<i>(Phase Alternating Line) The European standard for video broadcast.</i>
PID	<i>(Package Identifier) Information located at the beginning of a transmitted packet that tells the receiver what to do with the packet.</i>
QPSK	<i>(Quadrature Phase Shift Keying) A digital frequency modulation technique where a single phase carrier is modulated into a four phase signal, with each quadrant represented by a two digit binary number. The signal is then transmitted and demodulated by the receiver into frequency independent voltage levels.</i>
SDI	<i>(Serial Digital Interface) A digital video format utilizing a 270 Mbps transfer rate. The signal consists of a 10-bit, scrambled interface for both digital video and four channels of embedded digital audio. SDI requires a standard 75-ohm BNC connector and coax cable for connection to a device.</i>
SNR	<i>(Signal-to-Noise Ratio) is the ratio between the magnitude of a signal (useful information) to the amount of unwanted interference (noise) that has mixed in with it. SNRs are usually expressed in terms of the logarithmic decibel scale (dB). The greater the ratio, the less noise and the more easily it can be filtered out.</i>

Symbol	<i>A single Symbol can be considered one phase-state of a QPSK signal. All four Symbols used together can be considered the baud rate of the signal.</i>
Transport Stream	<i>When several video and analog inputs are multiplexed into a single data stream for transmission.</i>
VIT	<i>(Viterbi - Forward Error Correction) is the process of signal re-generation after errors have been detected by the receiver. This is usually expressed in "Pre VIT" (before correction) and "Post VIT" (after correction) in order to show how hard the FEC is working. (See definition for "FEC".) Either Reed-Solomon or trellis decoding is applied directly after to correct error bits to give a quasi error free signal.</i>

1. DESCRIPTION

Nucomm's *NewsCaster VT2* series is a two box Digital and Analog ENG/OB Microwave Transmitter System. The Mast Mounted Microwave Transmitter is designed to operate in any specified band in the 1.00 to 15.5 GHz frequency range. Each unit is field programmable and configurable to meet a wide range of customer requirements.

The *NewsCaster VT2* consists of two boxes, the Mast Mount Transmitter and 19" Control unit. The two are connected with a single RG-6 coax (*or optional Triax*), which carries the 70 MHz IF, Control Data and typically also the DC power. However, some cable types require the use of an auxiliary power cable. (Refer to Table 1)

Highlighted features include 6 Quick-Key presets that allow single button operation, integrated dynamic color bars, super low delay MPEG, multiple modulation modes, and capable of transporting HD. Special menus have been included to ease the BAS relocation process.

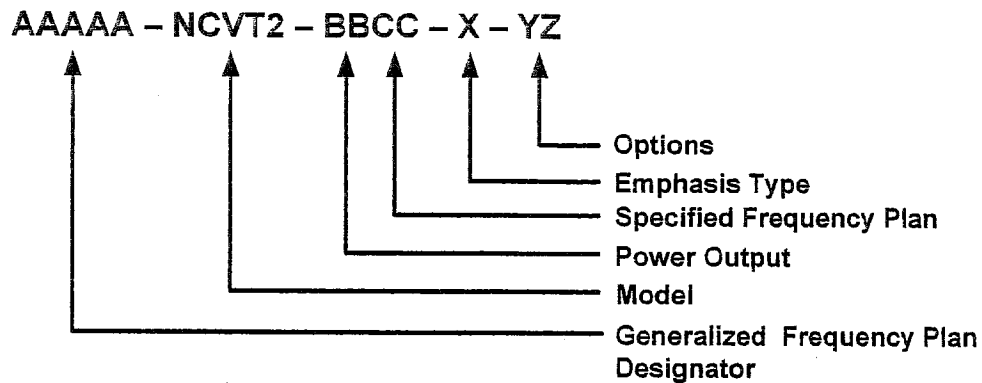
The *NewsCaster VT2* is fully integrated with an Analog FM modulator, compliant super-low delay MPEG 2 Encoder and Multimode Digital Modulator. Available modulations include FM (*NTSC / PAL*), COFDM, and ***optional*** single carrier QAM, and VSB. As additional digital modulation formats become available, the VT2 can be easily updated. This makes the VT2 extremely flexible while greatly reducing circuit complexity.

Other available options include Pan & Tilt control, 10Watt Digital Power Amplifier, remote control and monitoring, multi-band operation and many other features and options.

This manual is written in a general form to cover all configurations and options for the *NewsCaster VT2* within the 1.00 to 15.5 GHz frequency range.

The checklist on the front cover of this manual gives the specified frequency channel assignments for the particular model. The specific serial number is listed on the front cover sheet of this manual. The front cover sheet of this manual also lists the detailed configuration for this specific model and serial numbered unit.

Given the model number, the unit's configuration can be determined using the following:



Where:

AAAAA = mean frequency band center in GHz rounded to the closest GHz. This number is then multiplied by 10. For multiple bands, each center frequency designation is separated by a backslash "/".

BB = Used to identify the power output, per the following Power Output Designators:

Code	Analog	Digital	Single Band	Dual Band
E	5 Watt	2 Watt	2 or 7GHz	
J	10 Watt	4 Watt	7GHz	
L	12 Watt	6 Watt	2GHz	
EJ	5 / 10 Watt	2 / 4 Watt		2 / 7GHz
EL	5 / 12 Watt	2 / 6 Watt		2 / 7GHz
JL	10 / 12 Watt	4 / 6 Watt		2 / 7GHz

CC = Nucomm assigns a frequency chart number for each unique frequency channel combination. The specific frequency-channel assignment for the unit covered by this manual is given in the chart as shown on the front cover of this manual.

X = Type Emphasis; 1 = NTSC and PAL M; 2 = PAL B/G.

YZ = Miscellaneous options as listed below (append as many letters as needed)

G = 160 VDC Pan & Tilt

G1 = 12 – 24 VDC Pan & Tilt

I = Four Contact Closures

U1 = 90 to 260 VAC

U3 = 11 to 15 VDC

M = FM only

M1 = COFDM only

M2 = FM / COFDM

M3 = FM / COFDM / DVBS

M4 = COFDM / DVBS

M5 = DVBS only

M6 = External 70MHz

M7 = VSB

The convention of this manual to show options that are not a standard part of the NewsCaster VT2 will be shown by shaded text as shown here:

2. FEATURES

Nucomm's *NewsCaster VT2* Series Digital-Analog ENG/OB Microwave Transmitters were designed with the BAS Relocation in mind, and are the most comprehensive ENG/OB radios in the world. The VT2 features both Analog and Digital operation, and is optimized for ENG/OB truck applications.

In the Digital mode, the *NewsCaster VT2* will accept SDI, ASI, or Composite video signals, and digitally compresses them using a 4:2:2 or 4:2:0 MPEG2 encoder. This signal is then internally modulated using one of the available modulation formats: COFDM, or **optional** QAM or VSB. (Refer to Figure 1). The *NewsCaster VT2* can also accept externally modulated signals via the 70 MHz Input Port.

The *NewsCaster VT2* Control Unit contains the Multi-Mode 70 MHz modulator (*FM, COFDM, or optional VSB, and QAM*), MPEG Encoder, Control interface, and Power Supply. The 70 MHz IF, +45VDC, and Control Data are typically sent up a 75 Ω cable (50 Ω **optional**), via a Nycoil assembly, to feed the mast-mounted RF Unit next to the antenna. Many state-of-the-art options are available, some not found on any other ENG/OB Transmitters.

The Nucomm *NewsCaster VT2* Series of ENG/OB transmitters are available in single, and dual models. This manual covers all the models in the *NewsCaster VT2* series. Refer to the front cover of this manual for the bands available in your specific configuration.

The multi-band unit provides full coverage of the 2 / 2.5 and 7 GHz bands. Band and channel selections are clearly viewed and controlled via the front panel LCD interface.

The rugged *NewsCaster VT2* RF Head (Figure 15 & Figure 17) includes the power amplifier, up-converter, and low noise frequency synthesizer, encased in a weatherproof enclosure that mounts on the antenna pan and tilt, replacing the conventional power amplifier. This setup combines precise tuning of the transmitter frequency with exceptional output power. The RF unit is equipped with a type "N" connectors for the directional and **optional** omni-directional antennas. For Dual-Band systems, the RF unit has may have as many as four type "N" connectors: two for 2 GHz operation, and two for 7 GHz operation.

Frequency Coverage

The Nucomm *NewsCaster VT2* is available in single, dual and multi-band models. The chart on the front cover of this manual lists the frequencies covered for the indicated serial numbered unit. Channel selection is accomplished through the front panel LCD controls.

Prime Power

All *NewsCaster VT2* mast mounted transmitters feature a built-in AC power supply, which operates on AC power ranging from 90 to 260 VAC and 40 to 60 Hz. The *NewsCaster VT2* automatically adapts to the input voltage without requiring internal jumpers or switch settings. The *NewsCaster VT2* is also available in a DC powered unit using +11 to +32 VDC.

Audio Sub-carriers

Two (*four optional*) field programmable synthesized audio sub-carriers feature individual LINE/OFF/TONE source selection. The sub-carrier frequencies, Mode, and additional gain are front panel adjustable using the LCD interface.

Standby Mode

In the Standby mode, the NewsCaster VT2 is powered on, but the RF output is muted, enabling the transmitter to be tuned safely without radiating off-frequency emissions. The NewsCaster VT2 will remain in Standby until on-frequency lock has been obtained. Switching from Standby to the Normal (operating) mode results in instantaneous on-frequency transmission. If the synthesizer has not attained lock when the Standby switch is switched to Normal, the unit will remain in Standby until on-frequency lock has been obtained.

Signal-Strength Indicators

Transmitted signal strength is indicated on the LCD display by a digital readout. The digital readout indicates the transmitted signal level in dBm, as well as the transmit mode (*Analog or Digital*). This is intended as only an approximate reading of power.

Video Presence Detector

Feature currently disabled. - The Video Presence Remote Standby mode enables the camera operator to remotely turn on the color bars or put the NewsCaster VT2 in standby mode.

Color Bar Generator

- Tone (L – CW / R – Pulse).
- ID (*Blinking when connection active*).
- Dynamic.

Other Standard Features

- Digitally synthesized microwave oscillator tuning.
- Independent Automatic Gain Control (AGC) for line inputs. (*Two audio sub-carriers are standard, four are optional.*)
- RS232/RS485 Remote.
- Antenna Polarization Control.
- Power Adjustments.
- Analog/Digital Operation.
- Field Programmable RF and ASC settings.
- Four Relay Contact Closures (*Optional*).

2.1 PHYSICAL DESCRIPTION

The master control unit measures 19.0 inches (48.1 cm) wide by one 1.75 inches (4.43 cm) high by 13.0 inches (32.9 cm) deep. The mast mounted RF unit measures 9.0 inches (22.8 cm) wide by 10.0 inches (25.3 cm) long by 3.75 inches (9.5 cm) high in a rugged housing and is designed to withstand rough handling in the field. The case is weather-resistant and all connectors are weatherproofed.

2.2 OPTIONS

- Pan & Tilt Controller.
- Remote Control Software allowing the NewsCaster VT2 to be fully monitored and controlled from an IBM Compatible PC through a RS232C/RS485 port.
- High Power Amplifier (*20 Watt Analog, 10 Watt Digital*).
- Mounting Adapter Plates enabling mounting of the RF Head and High Power Amplifier to the Pan and Tilt.

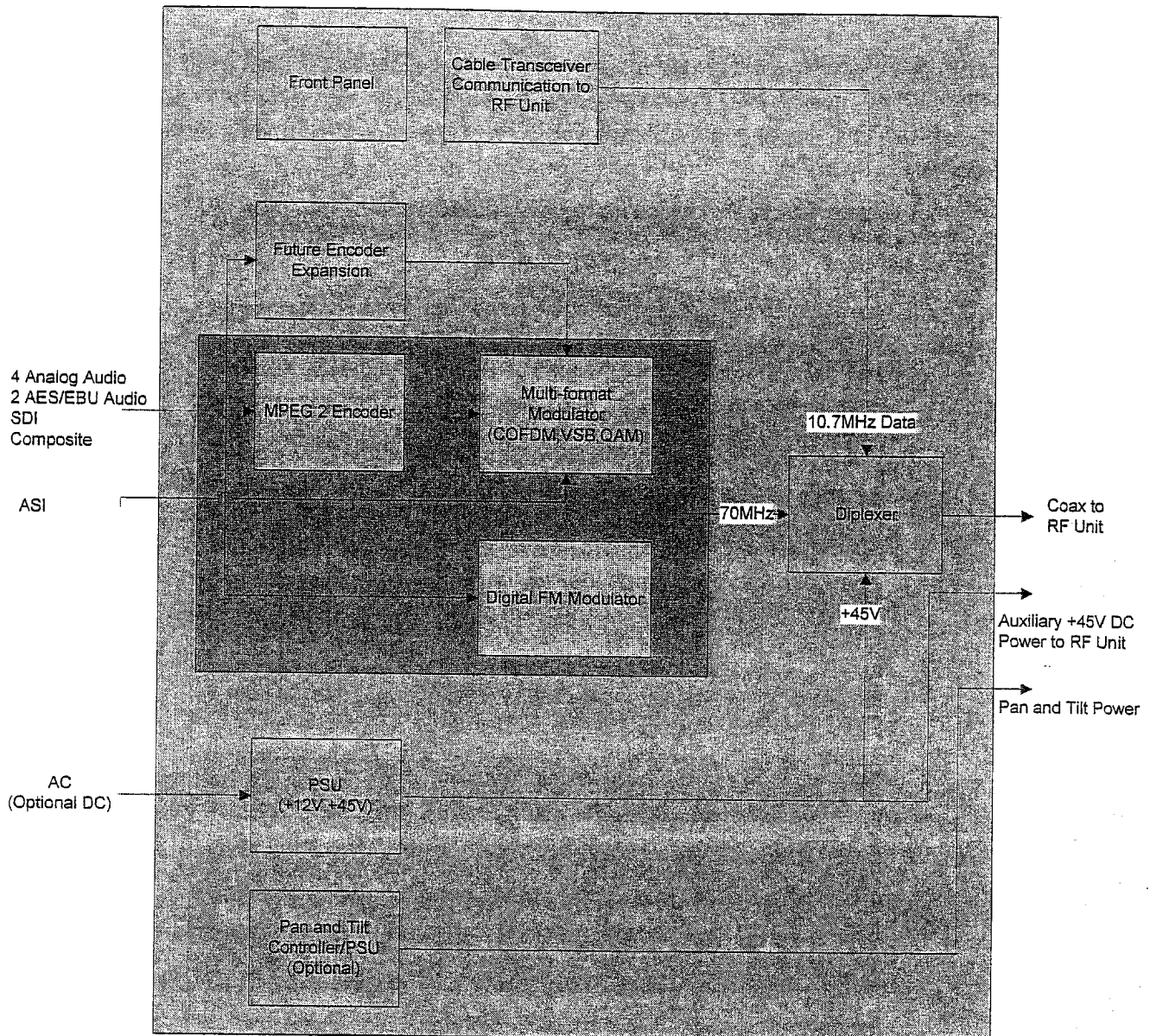


Figure 1: NewsCaster VT2 Control Unit Block Diagram

2.3 FREQUENCY PLANS (USA)

Typical Frequency Plans for the *NewsCaster VT2* can only be provided for the United States. All other *international* Frequency Plans are individualized to meet specific customer requirements and licensing restrictions. Units ordered will have their frequencies and bands stated on the customer's purchase order.

CHANNEL / FREQUENCY PLAN - CHART NO: 326 (2 GHz Old) (Frequency Range 1,994 MHz – 2,497 MHz)		
Channel	Offset	Receive Frequency MHz
1	–	1,994.75
1	0	1,999.00
1	+	2,003.75
2	–	2,012.25
2	0	2,016.50
2	+	2,020.75
3	–	2,029.25
3	0	2,033.50
3	+	2,037.75
4	–	2,046.25
4	0	2,050.50
4	+	2,054.75
5	–	2,063.25
5	0	2,067.50
5	+	2,071.75
6	–	2,080.25
6	0	2,084.50
6	+	2,088.75
7	–	2,097.25
7	0	2,101.50
7	+	2,105.75
8	–	2,454.25
8	0	2,458.50
8	+	2,462.75
9	–	2,471.25
9	0	2,475.50
9	+	2,479.75
10	–	2,488.25
10	0	2,492.50
10	+	2,496.75

Table 1: Frequency Plan (US), 2GHz “Old”

CHANNEL / FREQUENCY PLAN - CHART NO: 326 (2 GHz New) (Frequency Range 2,025 MHz – 2,496 MHz)		
Channel	Offset	Receive Frequency MHz
1	–	2,025.50
1	0	2,031.50
1	+	2,037.50
2	–	2,037.50
2	0	2,043.50
2	+	2,049.50
3	–	2,049.50
3	0	2,055.50
3	+	2,061.50
4	–	2,061.50
4	0	2,067.50
4	+	2,073.50
5	–	2,073.50
5	0	2,079.50
5	+	2,085.50
6	–	2,085.50
6	0	2,091.50
6	+	2,097.50
7	–	2,097.50
7	0	2,103.50
7	+	2,109.50
8	–	2,454.25
8	0	2,458.50
8	+	2,462.75
9	–	2,471.25
9	0	2,475.50
9	+	2,479.75
10	–	2,488.25
10	0	2,492.50
10	+	2,496.75

Table 2: Frequency Plan (US), 2GHz “New”

CHANNEL / FREQUENCY PLAN - CHART NO: 326 (Frequency Range 6,431 MHz – 7,119 MHz)		
Channel	Offset	Receive Frequency MHz
1	–	6,881.25
1	0	6,887.50
1	+	6,893.75
2	–	6,906.25
2	0	6,912.50
2	+	6,918.75
3	–	6,931.25
3	0	6,937.50
3	+	6,943.75
4	–	6,956.25
4	0	6,962.50
4	+	6,968.75
5	–	6,981.25
5	0	6,987.50
5	+	6,993.75
6	–	7,006.25
6	0	7,012.50
6	+	7,018.75
7	–	7,031.25
7	0	7,037.50
7	+	7,043.75
8	–	7,056.25
8	0	7,062.50
8	+	7,068.75
9	–	7,081.25
9	0	7,087.50
9	+	7,093.75
10	–	7,106.25
10	0	7,112.50
10	+	7,118.75
11	–	6,431.25
11	0	6,437.50
11	+	6,443.75
12	–	6,456.25
12	0	6,462.50
12	+	6,468.75
13	–	6,481.25
13	0	6,487.50
13	+	6,493.75
14	–	6,506.25
14	0	6,512.50
14	+	6,518.75

Table 3: Frequency Plan (US), 7GHz

CHANNEL / FREQUENCY PLAN - CHART NO: 10 (Frequency Range 12,706MHz - 12,950MHz)		
Channel	Offset	Receive Frequency MHz
1	-	12,706.25
1	0	12,712.50
1	+	12,718.75
1	++	12,725.00
2	-	12,731.25
2	0	12,737.50
2	+	12,743.75
2	++	12,750.00
3	-	12,756.25
3	0	12,762.50
3	+	12,768.75
3	++	12,775.00
4	-	12,781.25
4	0	12,787.50
4	+	12,793.75
4	++	12,800.00
5	-	12,806.25
5	0	12,812.50
5	+	12,818.75
5	++	12,825.00
6	-	12,831.25
6	0	12,837.50
6	+	12,843.75
6	++	12,850.00
7	-	12,856.25
7	0	12,862.50
7	+	12,868.75
7	++	12,875.00
8	-	12,881.25
8	0	12,887.50
8	+	12,893.75
8	++	12,900.00
9	-	12,906.25
9	0	12,912.50
9	+	12,918.75
9	++	12,925.00
10	-	12,931.25
10	0	12,937.50
10	+	12,943.75
10	++	12,950.00

Table 4: Frequency Plan (US), 12GHz

CHANNEL / FREQUENCY PAN - CHART NO: 10 (Frequency Range 12,976MHz - 13,250MHz)		
Channel	Offset	Receive Frequency MHz
1	-	12,956.25
1	0	12,962.50
12	+	13,243.75
12	++	13,250.00
2	-	12,981.25
2	0	12,987.50
2	+	12,993.75
2	++	13,000.00
3	-	13,006.25
3	0	13,012.50
3	+	13,018.75
3	++	13,025.00
4	-	13,031.25
4	0	13,037.50
4	+	13,043.75
4	++	13,050.00
5	-	13,056.25
5	0	13,062.50
5	+	13,068.75
5	++	13,075.00
6	-	13,081.25
6	0	13,087.50
6	+	13,093.75
6	++	13,100.00
7	-	13,106.25
7	0	13,112.50
7	+	13,118.75
7	++	13,125.00
8	-	13,131.25
8	0	13,137.50
8	+	13,143.75
8	++	13,150.00
9	-	13,156.25
9	0	13,162.50
9	+	13,168.75
9	++	13,175.00
10	-	13,181.25
10	0	13,187.50
10	+	13,193.75
10	++	13,200.00
11	-	13,206.25
11	0	13,212.50
11	+	13,218.75
11	++	13,225.00
12	-	13,231.25
12	0	13,237.50

Table 5: Frequency Plan (US), 13GHz

3. SPECIFICATIONS

RF PERFORMANCE

Frequency Bands (*Front panel selectable*)

Band 1:1.99 GHz– 2.50 GHz
 Band 1, optional:2.30 GHz – 2.70 GHz
 Band 2:6.43 GHz – 7.12 GHz
 (other plans available)

Tuning step size:250 kHz (US), 100 kHz (International)
 70 MHz input:-10 to 0 dBm (*75 Ohms*)
 Frequency stability:+/- 5ppm (.0005%)

Power Output:

2 GHz band:

Standard:12W Analog; 4W Digital
 Optional:10W Digital; Analog adjustable to FCC maximum
 EIRP (*max amp power 25W*); Separate RF Head

6/7 GHz band:

Standard:5W Analog; 2W Digital
 Optional:10W Analog, 4 W Digital
 Optional:10W Digital; Analog adjustable to FCC maximum
 EIRP (*max amp power 25W*); Separate RF Head

Dual Band 2 + 7GHz:

Standard: 2GHz: 12W Analog, 4W Digital; 7GHz: 5W Analog,
 2.0W Digital
 Optional:2GHz: 10W Digital; Analog adjustable to FCC
 maximum EIRP (*max amp power 25W*); Separate
 RF Head 7GHz: 10W Analog, 4W Digital.

13GHz Band

Standard:1W Analog, 0.25W Digital
 Optional:3W Analog, 1.75W Digital

Standby mode:

Standby:No RF output
 Normal:Instant on frequency transmission

Modulation Modes

COFDM

Modulation Formats COFDM; QPSK, 16QAM, 64 QAM
 Code Rate: 1/2, 2/3 3/4, 5/6, 7/8
 Guard Interval: 1/32, 1/16, 1/8, 1/4
 Bandwidth: 6, 7 and 8 MHz.

Analog

Analog FM: 2 field tunable sub-carriers, Optional: 2 additional field tunable
 sub-carriers
 Modulation Deviation (field selectable): 3 MHz/volt or 4 MHz/volt

VSB

Modulation Formats 2VSB, 4VSB, 8VSB, 8TVSB

NEWSCASTER VT2 Specifications

(Continued)

Video & Digital Input Performance:

Video:.....525/625 lines NTSC/PAL field selectable

Analog Video Mode:

1 V p-p for +/- 4 MHz deviation

1 V p-p for +/- 3 MHz deviation

(Video input sensitivity switchable)

Pre-emphasis or Flat:Field selectable

Pre-emphasis:NTSC/PAL-B,G or M LCD field selectable

Video Low-Pass-Filter LCD field selectable: 3.9, 4.5, 4.75, 5.0 and 6.0MHz

Frequency Response:0.5 dB *(10 Hz to video filter selected)*Base-Band Response:1.0 dB *(10 Hz to 10 MHz)*Signal-to-noise ratio:69 dB typical *(65 dB minimum)*

Differential Phase:+/- 1.0 degrees

Differential Gain:+/- 1.0 %

Digital Video Mode:

Composite Video:

1 V p-p Maximum input

Frequency Response:0.5 dB *(10 Hz to 20 kHz)*Base-Band Response:1.0 dB *(10 Hz to 10 MHz)*Signal-to-noise ratio:..... 69 dB typical *(65 dB minimum)*

Differential Phase:+/- 0.5 degrees

Differential Gain:+/- 0.5 %

SDI and ASI.....0.80 Volts p-p

Digital and Analog Modes:

Input impedance:75 Ohms

Return loss:-26 dB *(10 Hz to 5 MHz)***Audio Performance:****Analog Audio Mode**Two channels:2 Analog, *or* 1 AES/EBU, SDI De-embeddedFour optional4 Analog, *or* 2 AES/EBU, SDI De-embedded

Sub-Carriers: selectable and field tunable from front panel; Tunable in 5 kHz steps 4.8 to 9.0 MHz

Line input:

US:+8 dBm, 600 Ohms for 75 kHz deviation

International:+12 dBm, 600 Ohms for 100 kHz deviation

Frequency Response:

30 Hz to 10 kHz:0.5 dB

10 kHz to 15 kHz:1.0 dB

Deviation:75 kHz peak at 1 kHz *(100 kHz for PAL)*Pre-emphasis:75 μ s & 50 μ s LCD selectable