

Compliance to 15.407(c)
HZB-U58-B60

The HZB-U58-B60 operates in a point-to-multipoint network, and only transmits under the following conditions:

- a) The base station has received information at its Ethernet interface that is addressed to a destination accessible through a subscriber unit. In the absence of information bearing data, the base station will continue to periodically transmit synchronization bursts.
- b) The base station will periodically "poll" the subscriber units by transmitting a polling command in a broadcast network control message. This is required to maintain inbound synchronization and power control for each subscriber unit.
- c) The Control Processor in the base station only enables dc power to the transmitter circuitry if the following operational conditions are met:
 - (i) The frequency synthesizers are locked.
 - (ii) The transmitter output power is below its allowable limit, as determined by coupling and detecting the output RF signal and comparing the detector output with a calibrated threshold.
 - (iii) The transmitter power-control attenuators are operating within their expected range.
 - (iv) The Control Processor is responding to interrupts as expected (checked by a watchdog timeout).
 - (v) The modem, data buffer, and Ethernet interface is processing data without checksum or synchronization errors.

Therefore, it is shown that the base station will automatically discontinue transmission in the absence of information to transmit or operational failure to ensure compliance with 15.407(c).

**Compliance to 15.407(g)
Base Station (Model 40400/40500)
Tsunami Multipoint**

Emissions of the Tsunami Multipoint base station will be maintained within the band under all conditions of normal operation under the worst case of frequency shift. As described in the theory of operations document, the frequency of the RF signal is completely determined by a single reference oscillator of 20.75MHz frequency. Two vendors have been approved to supply the reference oscillator, part #690-00427-02, and the frequency-stability characteristics of each vendor's part are shown in the following table. Data sheets are attached for reference.

Frequency-Stability Characteristics of Reference Oscillator (p/n 690-00427-02)

Characteristic	Vectron OSC-2B2@20.75
Type	OCXO
Initial Calibration	±0.1 ppm
Stability vs. Temperature (-33°C to +70°C)	±0.01
Stability vs. Supply Voltage	±0.001
Aging (10 years)	±0.5
Total:	±0.611 ppm

The worst-case stability is ±0.6 ppm, or ±3.5 kHz, over all operating conditions. This is sufficient to maintain the emissions within the allowable band; the supporting reasoning for this claim is as follows:

- a) The lowest channel center frequency is 5740.40MHz, with a maximum 26dBc bandwidth of 26MHz. The margin from the lower band edge of 5.725GHz to the lower 26dBc point is 2.4MHz. This margin is greater than the maximum oscillator error of 3.5kHz.
- b) The highest channel center frequency is 5809.57MHz, with a maximum 26dBc bandwidth of 26MHz. The margin from the upper band edge of 5.825GHz to the upper 26dBc point is 2.43MHz. This margin is also greater than the maximum oscillator error of 3.5kHz.

Therefore, it is determined that the frequency-determining components offer superior stability to ensure compliance with 15.407(g).

Temperature stability:	$\pm 1 \times 10^{-8}$ over -30°C to +70°C
Aging:	1×10^{-9} /day, 1×10^{-7} /year, 5×10^{-7} / 10 years
Frequency vs. supply:	1×10^{-9} /percent
Short-term: (Allan Variance)	5×10^{-11} /second
Output:	+5dBm Min; +10dBm Max (50Ω load)
Harmonics	-20 dBc max
Ssb Noise/Hz: (typical, static)	-110dBc @ 10Hz -120dBc @ 100Hz -130dBc @ 1kHz -140dBc @ 10kHz -145dBc @ 50kHz
Supply:	+9 Vdc $\pm 2.5\%$
Input power:	<6W at turn-on <4W stabilized at -20°C
Warm Up: (@ 25°C)	$\pm 1 \times 10^{-7}$ within 5 minutes following a 24Hr off period
Accuracy:	± 0.1 PPM with 2.5v on Vc at time of shipment
Electrical tuning:	$\pm 7 \times 10^{-7}$ (over 0v to +5v)
Size:	1.41" x 1.06" x 0.76" (35.3x26.9x19.3 mm) CO-08 Package
Base:	Pins for pcb mounting
Frequency:	20.75MHz

FSCM 27802

Specification Control Drawing No. 738Y5244

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