



Mobile and Wireless Systems Division

Norman H. Nelson
Symbol Technologies, Inc.
2145 Hamilton Ave
San Jose, CA 95125-5905
Voice:(408)369-2649
FAX: (408) 369-2740
norm@psd.symbol.com

Federal Communications Commission
Equipment Approval Services
P.O. Box 358315
Pittsburgh, PA 15251-5315

Re: Questions by Email.

FCC ID: H9PNP3010
Date: April 16, 1999

Dear Reviewer

This letter is a response to the following Email.

To: norm@psd.symbol.com
Subject: tx
From: oetech@fccsun07w.fcc.gov (OET)
Date: Fri, 14 May 1999 15:40:21 -0400

To: Norman Nelson, Symbol Technologies, Inc.
From: Joe Dichoso
jdichoso@fcc.gov
FCC Application Processing Branch

Re: FCC ID H9PND3010
Applicant: Symbol Technologies Inc
Correspondence Reference Number: 7793
731 Confirmation Number: EA93911
Date of Original E-Mail: 05/14/1999

- 1) The device was tested at 100 mW. However, the technical description indicates that the device can operate up to 500 mW. Please explain. If the device is to operate above 100 mW, supply additional test data and indicate how the device complies with the RF safety requirements.*

As discussed in the Operation Description in paragraph 2.1.3 the radio is adjustable at the factory. For this model the output power is adjusted to 100 mW. The user can not adjust the output power from the factory setting.

2) *The photo's of both sides of the RF board contain too many shields. Please provide photo's without the shields.*

Please see Attachment A.

3) *Section 15.247(a)1 indicates that the system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters. What is the receiver input bandwidth?*

The receiver uses a SAW band-pass filter at the IF frequency. The SAW 3 dB bandwidth is 1 MHz. A low-pass filter after demodulation also limits the bandwidth to approximately 1 MHz.

4) *With regard to the radiate emission test data, a duty cycle factor of 10 dB was used. However, the dwell time was 100 msec. Since the duty cycle is the on time per 100 msec, the duty cycle should have been 0 dB. Please explain/correct accordingly.*

Unfortunately the emissions test software was running on the DUT when the dwell plot was taken. Attachment B explains the duty cycle with the operational software loaded and contains the correct dwell plot.

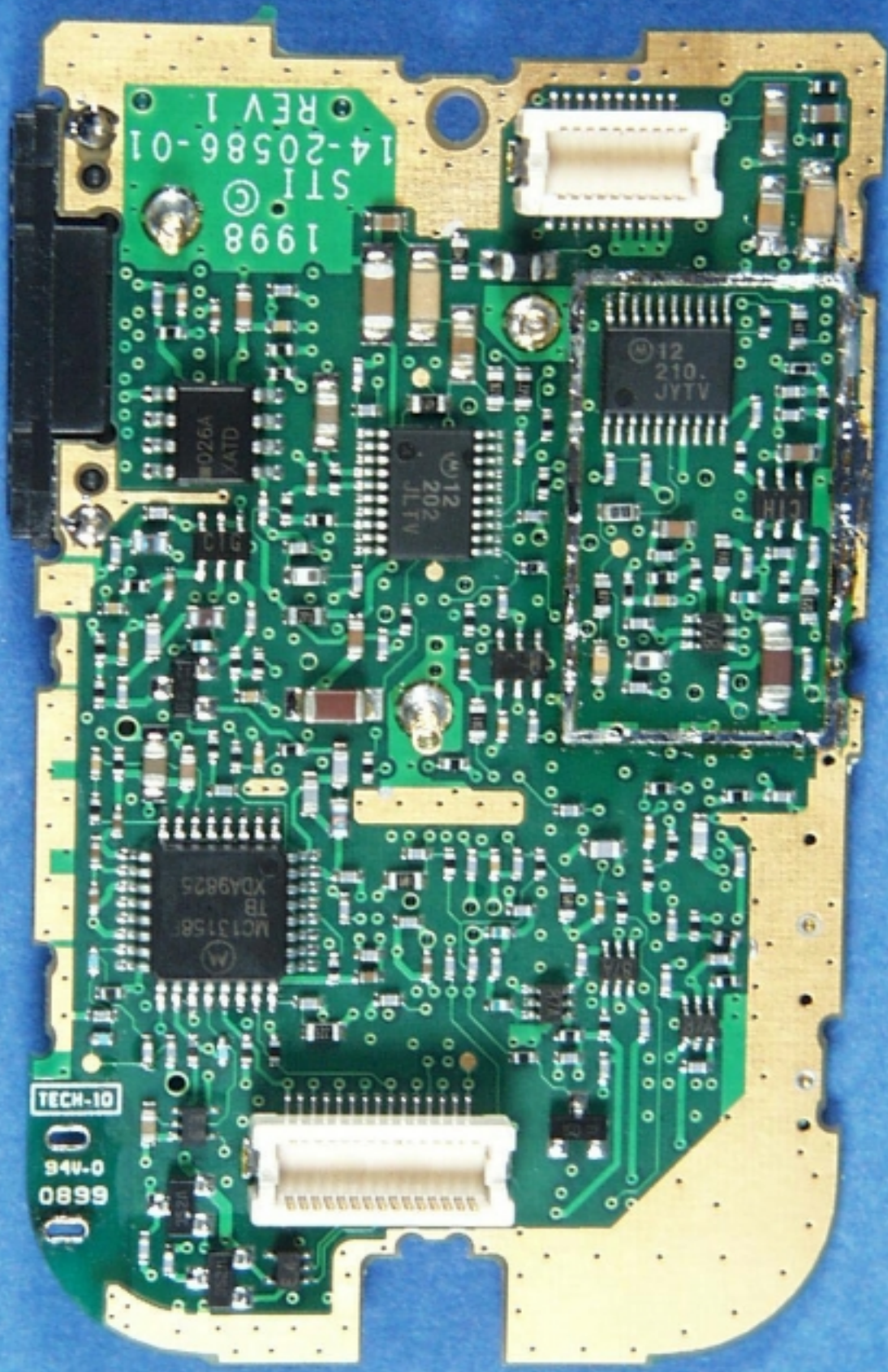
The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information within 60 days of the original e-mail date may result in application dismissal pursuant to Section 2.917 (c) and forfeiture of the filing fee pursuant to section 1.1108.

Thank you for your attention.

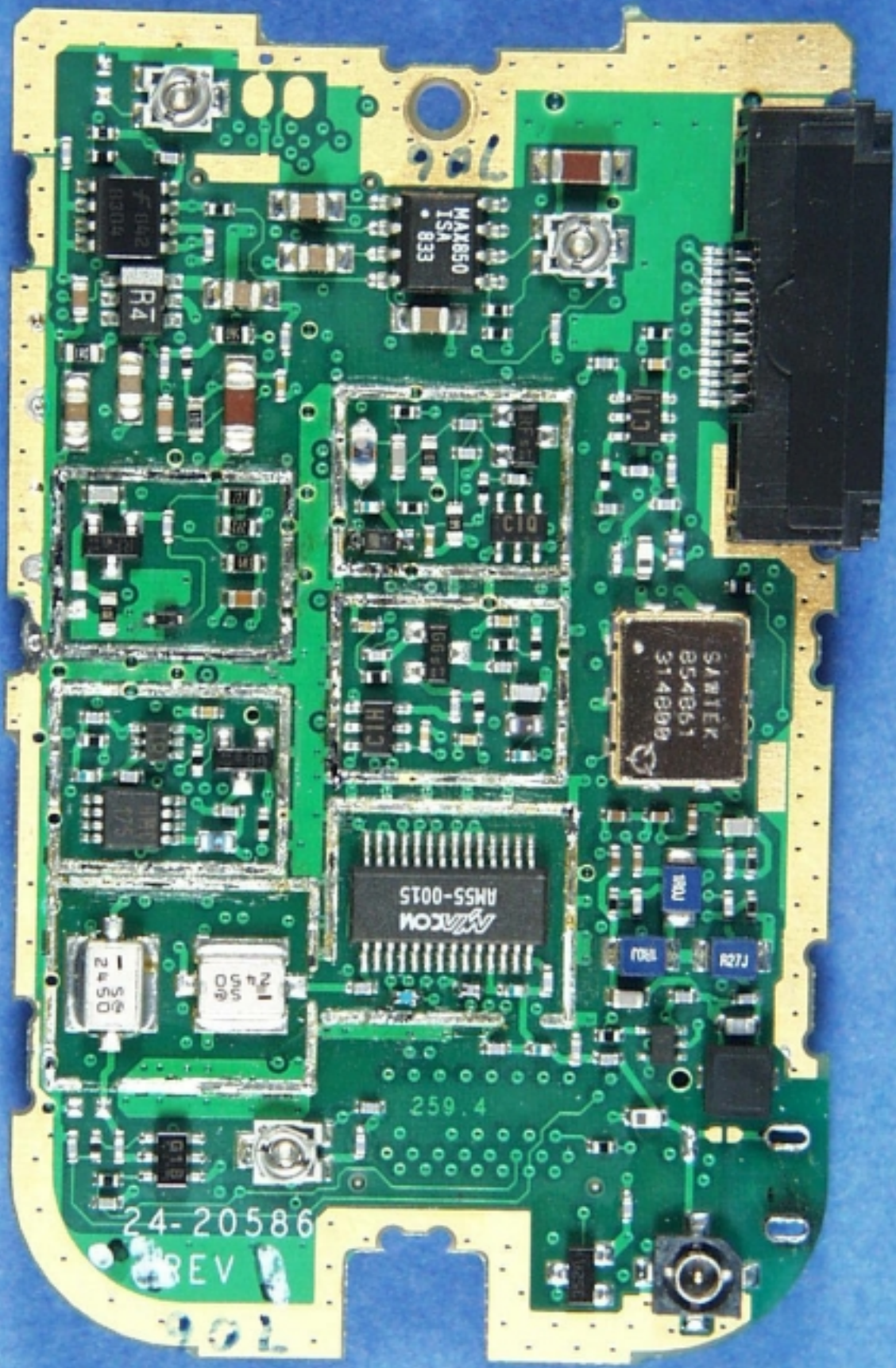
Respectfully submitted,

Norman H. Nelson

Attachment A



H9PND3010

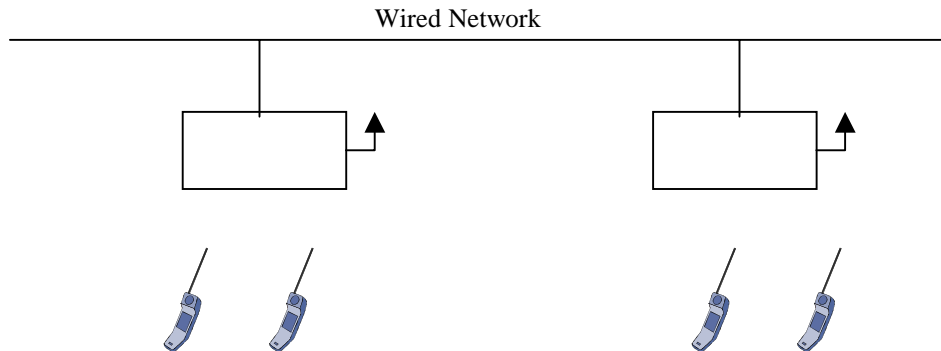


H9PND3010

Attachment B

Duty Cycle Calculation

The NetVision Phone communicates as part of a Wireless Local Network (WLAN) called Spectrum24. Spectrum24 is based on the IEEE 802.11 WLAN specification. The Spectrum24 WLAN operates from 2.4 to 2.5 GHz using frequency hopping technology at 1 Mbps.



Typical Spectrum24 WLAN Topology

The Spectrum 24 network is a cellular infrastructure network using multiple Access Points (AP). The communication is half duplex, when one unit is in transmit the other is in receive. The Access Point acts like a base station in that it talks to one or more NetVision Phones on a time shared basis and relays the messages. The NetVision Phones and Access Point compete for transmit time with a listen before talk protocol.

The communications from the NetVision Phone to the Access Point begins with the NetVision Phone listening (in receive mode, transmitter off) to determine if any other transmission is under way the listening takes place for at least 0.1 msec. The NetVision Phone then transmits a maximum packet size of 32 bytes of voice data, with addressing and other packet overhead the packet size is 112 bytes at 1 Mbit per second the packet time is $112 \text{ bytes} \times 8 \text{ bits/byte} / 1 \text{ Mbitsec} = 0.896 \text{ msec}$. The Access Point replies with an acknowledgment in 0.02 msec the acknowledgment packet is 0.2 msec long and during the acknowledgment packet the NetVision Phone is in receive mode (transmitter is off). The NetVision Phone typically sends one packet every 30 msec but can send a maximum of 12 packets in any 100 msec interval. Therefore the NetVision Phone transmit duty cycle is:

Maximum transmit time in 100 msec interval $\leq (12 \text{ packets}) (0.896 \text{ msec/packet})$

Maximum transmit time in 100 msec interval = 10.75 msec.

Duty Cycle \leq Maximum NetVision Phone transmit time / 100 msec

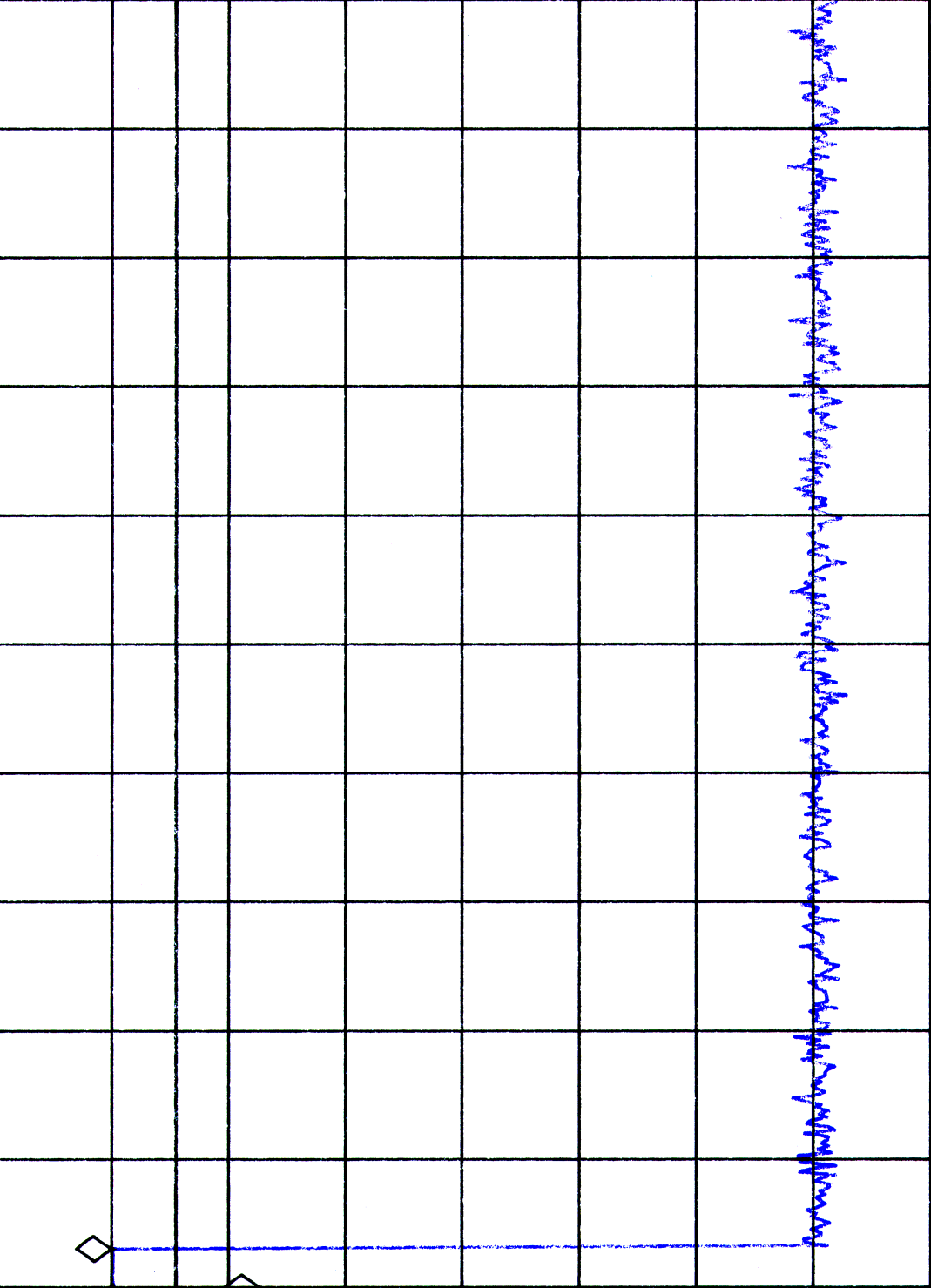
Duty Cycle $< 10.75 \%$

The correction factor is then $20 \log (.1075) = 19.37 \text{ dB}$.

15: 40: 21 MAY 17, 1999

h/p MKR Δ 600.00 μsec
12.78 dB

REF 30.0 dBm ATTEN 40 dB



PEAK
LOG
10
dB/

DL
14.4
dBm

WA SB
SC VC
CORR

CENTER 2.440000 GHZ SPAN 0 HZ
#RES BW 1.0 MHZ #SWP 20.0 msec
VBW 300 KHZ