Timco Engineering Inc.
849 NW State Road 45
Newberry FL 32669

Adcon Telemetry Inc.
FCC ID: MQXD900SS-20-A
Corresp. Number : 20075
731Conf. Number: EA101242

Enclosed are the replies to your questions some of the answers are based on a conversation of the questions between yourself and Adcon.

1. 1) Verify the requested frequency range should be 902.8-910.15 MHz.
   The frequency range should 902 – 911 MHz not 902-928.

2. Confidential letter.
   I have uploaded the confidentiality letter.

3. Submit appropriate fees. I have submitted the payment for this job. The remittance number is 150542 and the authorization number 123285.

4. Indicate compliance with the RF safety requirements. The RF exposure statement is included in the revised user's manual, which has been uploaded to you. Page number 5 of the revised users manual.

5. Why was the device tested without the enclosure shown in the external photos? The corrected test setup photograph is included as page 5 of this letter and has been uploaded. The one originally sent with this job was the wrong photo.

6. Provide a bandwidth plots on a low, middle and high channel. Bandwidth plots on low middle and high channels are included as pages 7,8, and 9.

7. External photo of the top of the device. The top photograph is included as page 4 and has been uploaded to you.

8. The device has an RS232 port for connecting to a computer. File a composite application for the peripheral portion. Or if it DOC approved, provide the DOC certificate and correct the label to include the DOC label requirements. The D900SS-20-A is an evaluation tool for engineers and is not going to be used in the home or available for sale to the general public for home use, and as such falls under a Class A peripheral. The test report has been updated to reflect this and uploaded to you included in this report as page 6.

9. The manual indicates the use of other antennas that were not tested.
   Please correct the manual accordingly. This is addressed partially in item 8 above and in revision 0.6 of the users manual has been uploaded to you. See page 6 of this report.

10. How does the device comply with Section 15.203? The antenna is permanently attached and is addressed on page 3 of the test report.

11. The transmitter cannot coordinate its hopping sequence with the hopping sequence of other transmitters, or vice versa, for the purpose of avoiding the simultaneous occupancy of individual hopping frequencies

by multiple transmitters. Provide a description on how the device complies with this rule. Once the radios have been configured and completed the "acquisition procedure", the radios in the network operate completely independently of any other radios in the local area. Eight different hopping tables are available for each network, and this provides an additional method to minimize collisions between networks.

12. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies. Indicate how the pseudorandom hopping sequence is derived. The 8 pseudorandom hopping tables are burned into the EEPROM memory, and do not change. All 8 tables have the following characteristics: they use each channel only once per 50 hops, and they move randomly both in direction and in number of channels hopped. They were derived with the following procedure: The first three tables were created with an algorithm "maximal-length pseudo-random linear feedback shift register (LFSR)" based on maximum lengths of 6,7,8 bits, with rejection of frequencies already used. The other tables (tables 4-8) were created with an algorithm based on the RANDOM () function, with rejection of frequencies already used.

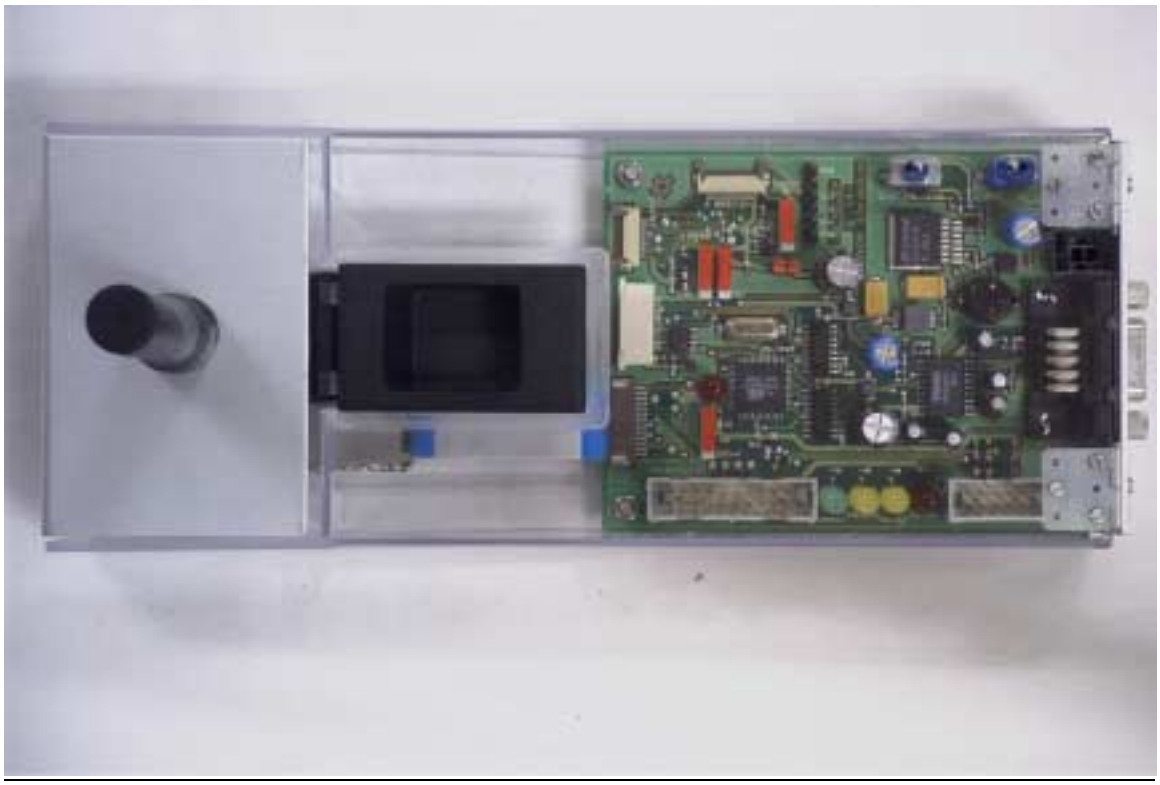
13. Each frequency must be used equally on the average by each transmitter. Except for voice systems, each new transmission must start at a different point in the sequence so that on average the full sequence is used. Therefore, Describe where the next transmission starts when all frequencies are not used for a previous message. This is required because some transmissions may need only a few frequency hops to be completed. i.e. If the transmission started on the same frequency each time, this frequency would be used more than the others if many short transmissions were sent. The next transmission starts with the next channel in the hopping table sequence. For example, if a short transmission starts with the first channel in the hopping table and needs only 8 hops to complete the transmission, the next transmission will start with the ninth channel in the hopping table sequence.

14. Section 15.247(a) 1 indicates that the system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals. Please explain how the device complies with this rule when a packet is repeated or when multiple packets are sent. What is the receiver input bandwidth? How does the receiver shift frequencies and determine which frequency to shift to in order to synchronize with this transmitter? The receiver uses a VCO to rapidly shift frequencies in synchronization with the transmitted signals, based on the hopping table that was chosen during the acquisition procedure.

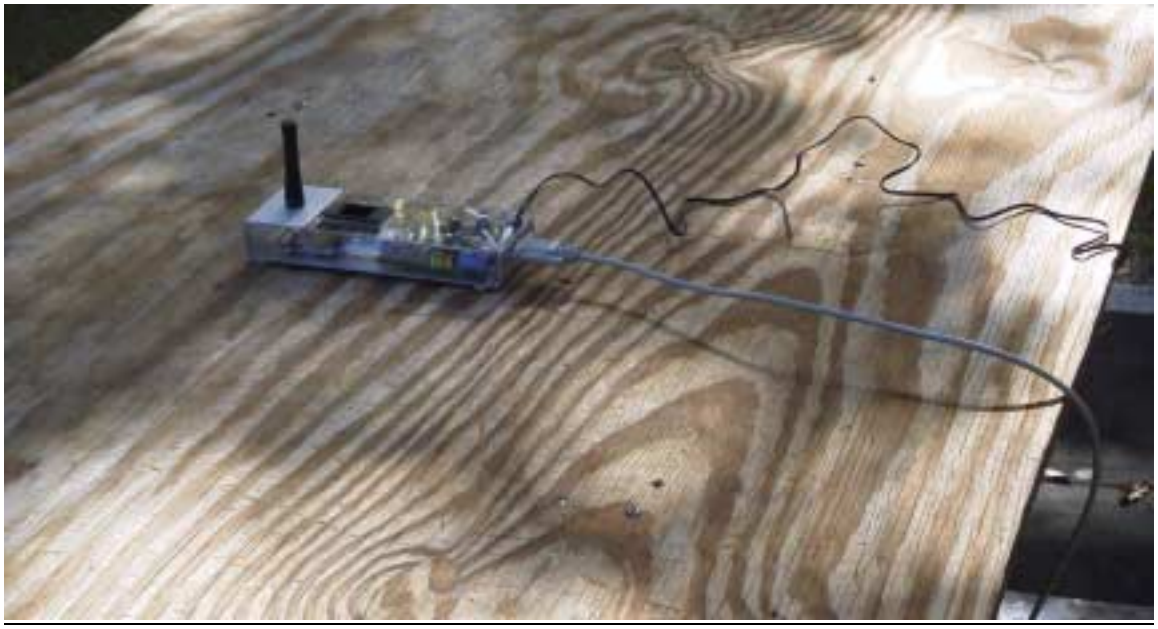
When a packet is repeated, it is transmitted on the next hopping channel, which is a different frequency.

The receiver input bandwidth is limited by the filters on the receiver, which have a pass band of +/- 50kHz at 3dB. The adjacent channel rejection is 20dB.

The receiver shifts frequencies with the following procedure:
After changing to a new hopping frequency, the microcontroller sends a command to the VCO to shift frequencies. It waits until the VCO has stabilized, then activates the receiver chip, and starts to process the data from the received signals.



Top View with covers



Test Setup Photo

INTRODUCTION: GENERAL INFORMATION AND DATA

PRODUCT DESCRIPTION The MQXD900SS-20-A is a frequency hopping radio, and interface to be used as an engineering development tool. This product is not being sold to the general public but is only an aid to developing products based on the core module of this product. As such the computer interface through the RS-232 port was tested as a Class A digital device under 15.109. It consists of several separate blocks. The controller is responsible for all interfacing and receives and responds to all incoming events.

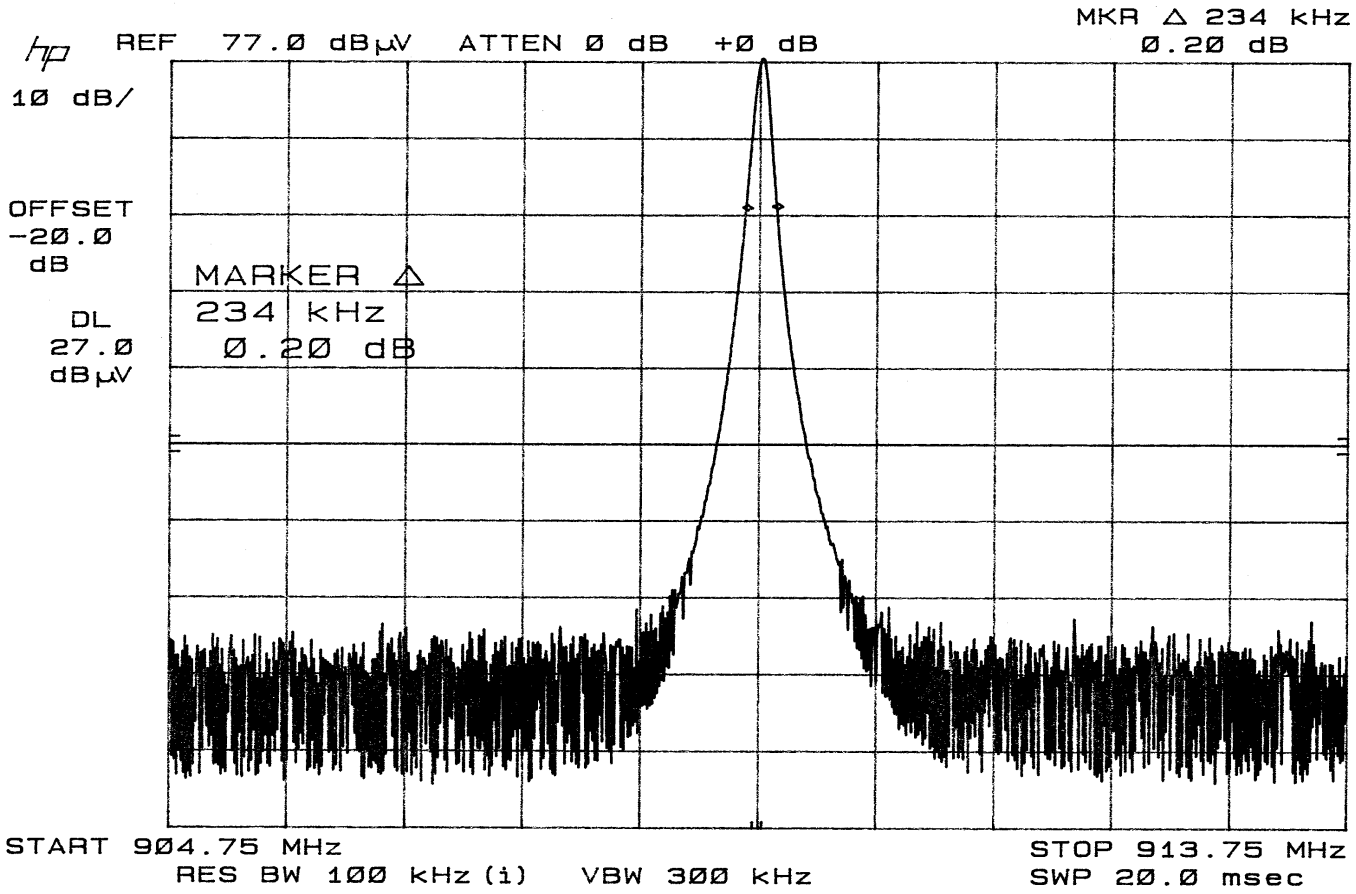
ANTENNA: The MQXD900SS-20-A incorporates a permanent antenna having less than 1 dBi gain. The antenna is permanently epoxied in place. This antenna is the only antenna to be used with this unit. The antenna as installed has a negative gain factor because of the inadequate ground plane.

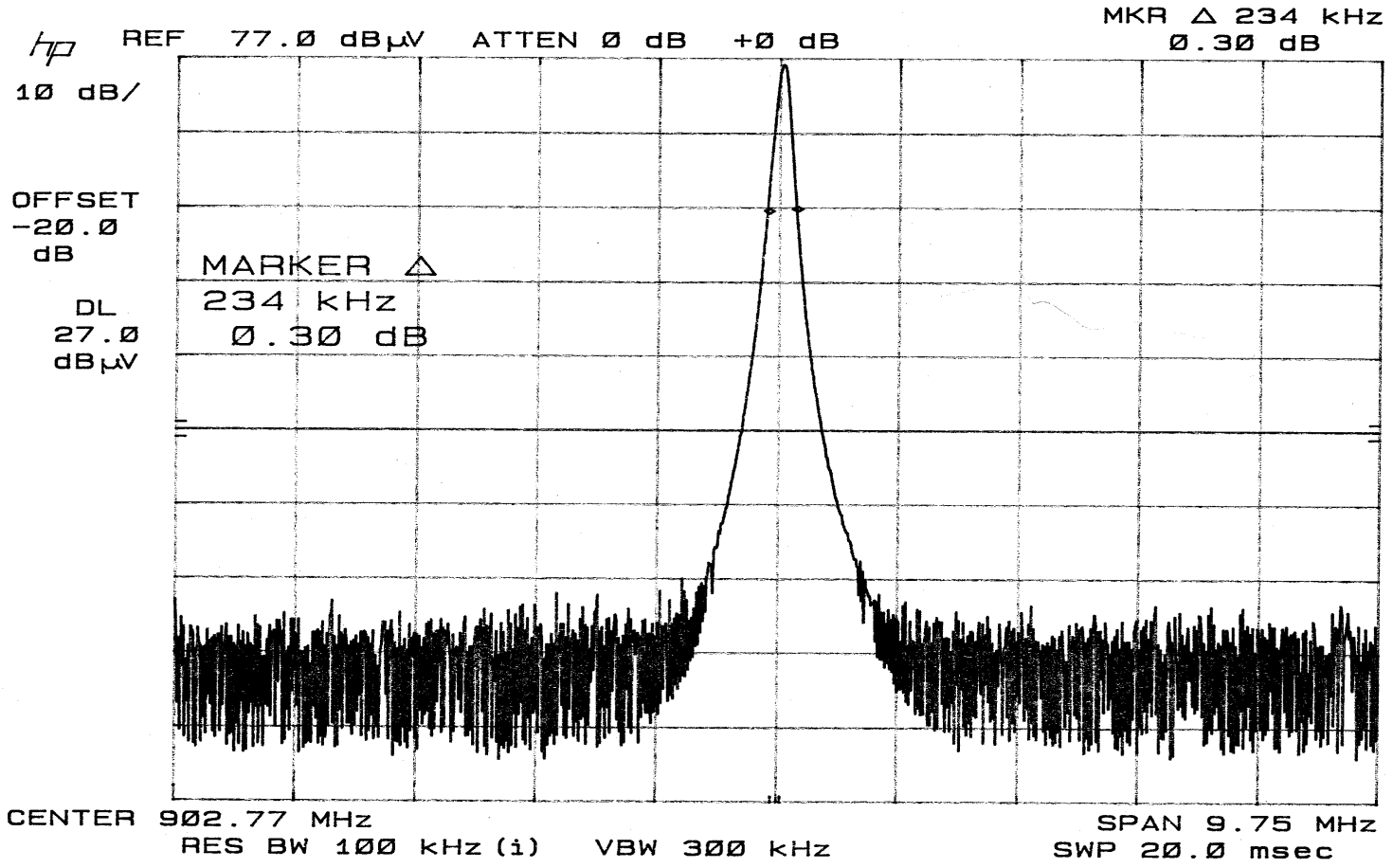
15.247(a): Definition: This EUT uses a pseudo random algorithm to hop over the frequency range of 902.87 to 910.23MHz in 50 hops.

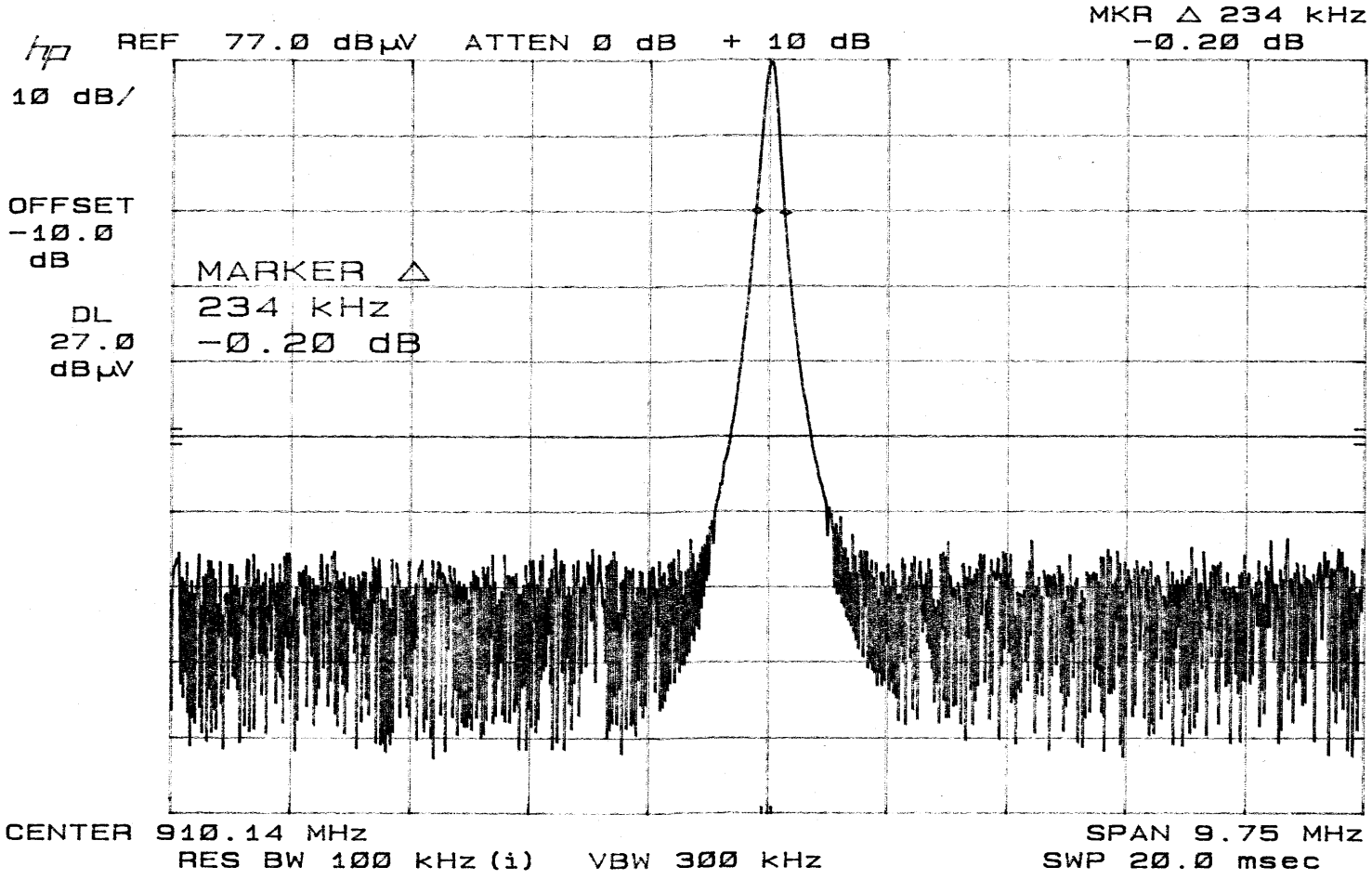
15.247(a)(1): The number of hops is 50 hops at a separation of 150 kHz, the requirement in the 902-928MHz band is a minimum of 50.

15.247(a) Channel Frequency Separation: See exhibit #10, the channel frequency separation is 152kHz.

15.247(a)(1)(i) Dwell Time of Hop: The dwell time of any hopping frequency cannot be greater than 0.4 seconds in any 20 second period. The Dwell time in 20 seconds is .39 seconds.


REF 77.0 dBµV
ATTEN 0 dB +0 dB
MKR Δ 234 kHz
0.20 dB
10 dB/
OFFSET
-20.0
dB
DL
27.0
dBµV
MARKER Δ
234 kHz
0.20 dB
START 904.75 MHz
RES BW 100 kHz (i)
VBW 300 kHz
STOP 913.75 MHz
SWP 20.0 msec


REF 77.0 dBµV
ATTEN 0 dB +0 dB
MKR Δ 234 kHz
0.30 dB
10 dB/
OFFSET
-20.0
dB
DL
27.0
dBµV
MARKER Δ
234 kHz
0.30 dB
CENTER 902.77 MHz
RES BW 100 kHz (i)
VBW 300 kHz
SPAN 9.75 MHz
SWP 20.0 msec


MKR △ 234 kHz
−0.20 dB
REF 77.0 dBµV
ATTEN 0 dB + 10 dB
10 dB/
OFFSET
−10.0
dB
MARKER △
234 kHz
−0.20 dB
DL
27.0
dBµV
CENTER 910.14 MHz
SPAN 9.75 MHz
RES BW 100 kHz (i)
VBW 300 kHz
SWP 20.0 msec