EXHIBIT QQ – Response to Items #5 & 6

FCC ID O2Z-BT1

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Dear Application Examiner:

I. The following is in response to Item 5 of your email to us on 7/25/2000, summarized as follows :

"With the device in the acquisition mode, it is a Hybrid transmitter. The dwell time in the acquisition mode was not submitted. Hybrid transmitters must also comply with Section 15.247(a)1. Please address the requirements in this Section. What is the channel separation. How is the hop sequence derived and supply an example of a sequence. How are the frequencies used equally. What is the receiver input bandwidth and how does the receiver synchronize to the acquisition signal?"

a) Dwell time in the acquisition mode:

Please refer to Figures 4, 5, and 6 for Page Mode operation and Figures 7, 8, and 9 for Inquiry mode operation. These figures are part of the file described as "Supplemental Test Report1A.pdf" which has been forwarded and attached to the application filing for this equipment. An individual transmission on a channel in page mode is 182 microseconds long. During a 12.8 sec time period, the total dwell time on a given channel is 116.5 milliseconds in page mode. In inquiry mode, an individual transmission on a channel is 182 microseconds long. During a 12.8 second time period, the total dwell time on a given channel is 98.5 milliseconds in inquiry mode.

The following analyzer settings were used.
Span = 0 centered on hopping channel
Resolution Bandwidth = 1 MHz
Video Bandwidth =Resolution Bandwidth
Sweep = as necessary to capture the entire dwell time per hopping channel
Detector = peak
Trace = max hold

b) Channel Separation: Response: By system architecture channels are 1 MHz apart

c) Derivation of Hop Sequence:

Response: The pseudorandom sequence is generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage with the result fed back to the input of the first stage. This produces a pseudorandom sequence length of 31 bits for page and inquiry modes and provides for transition to a 511 bit pseudorandom
sequence length for data mode of operation.

d) An Example of the Hop Sequence in the hybrid mode:

Response:

Sequence example a:
5,72,13,48,14,39,54,23,7,46,62,30,3,8,55,10,63,12,16,37,11,43,66,25,51,58,24,17,47,
9,29,65
Sequence example b:
41,38,63,14,31,59,40,13,6,25,65,15,61,67,58,47,19,28,54,55,8,48,52,11,5,42,64,17,62,
51,20,30

e) Equal Use of Frequencies:

Response:

The FHS (frequency hop selection) packet is transmitted by a sending unit. It contains UAP (upper address part)/LAP (lower address part) as well as clock information which is updated before retransmission in the inquiry state. When in hybrid state, the UAP/LAP is used together with the clock to select the sequence. The output from the selection box constitutes a pseudo-random sequence covering 79 hops for US operation. For inquiry mode, the selection scheme chooses a segment of 32 hop frequencies from the 79 hops spanning about 64 MHz and visits these hops once in a random order. Next, a different 32-hop segment is chosen, etc. Refer to chapter 11 of the Bluetooth specification for a more through explanation of the hopping structure.

f) Receiver input bandwidth:

Response: The receiver bandwidth in hybrid mode (32 hopping channels) is equal to the receiver bandwidth in the 79 hopping channel mode which is 1 MHz.

g) Receiver Synchronization with the acquisition signal:

Response: Synchronization within a piconet uses a system of beacon channels generated by the master unit with the remaining slave units periodically waking up and listening on a beacon channel. Beacon channels are designated by the master unit in page mode to identify channels for slave units to listen to. The beacon channel packet also contains the synchronization information required for the slave to sync with the master unit. In page mode the same 32-hop segment is used all the time and the segment is selected by the address with different units having different paging segments. Although they are referred to as beacon channels, they are designated as beacons only for purpose of assisting the listening function for establishing a connection. The master unit is continually hopping through all 32 channels in the page mode. When two Bluetooth devices establish contact for the first time, one of the devices is sending out an inquiry access code, and the other party is scanning for this inquiry access code. If the two devices have been connected previously, and want to start a new session, a similar procedure takes place. The only difference being that instead of the inquiry access code, an access code derived from the paged unit's address is used. If the two Bluetooth devices

have exchanged information during the last five hours, the typical time it takes to establish the connection is reduced considerably due to the ability of the paging unit to estimate at what frequency the other unit will perform the page scan. For further information see chapter 10 of the Bluetooth specification.

II. The following is in response to Item 6 of the same email dated 7/25/2000, summarized as follows:

6) With regard to the device operating in the data mode as a FHSS transmitter, please specifically address the following.

[a] 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. Provide a list of channel frequencies and a sample of a few sequences.

Response: The derivation of the hopping sequence is described in **Part Ic** above.

The following are two examples of possible 79 channel hopping sequences with channels identified as 1 through 79. The channel numbering scheme starts with channel 2 at 2402 MHz with the 79th channel then appearing at 2480 MHz as channel 80.

Sequence a:
2,17,68,55,4,77,56,27,70,80,22,33,57,34,29,79,44,50,3,71,66,36,78,20,67,30,24,11,37,69,23,7,41,38,63,14,31,59,40,13,6,25,65,15,61,73,58,47,19,28,54,76,74,48,52,75,5,42,64,72,62,51,60,18,45,53,16,39,46,32,49,43,8,21,9,12,10,26,35

Sequence b:
50,6,41,57,64,14,42,33,79,3,20,38,56,69,75,21,80,23,31,40,45,68,32,28,4,15,34,59,71,61,70,5,72,13,48,70,39,54,78,7,77,62,30,2,8,55,10,63,12,16,37,11,43,66,25,51,58,74,17,47,9,29,65,19,53,18,52,36,27,26,44,22,49,24,35,60,73,76,67

[b] Each frequency must be used equally on the average by each transmitter. Each new transmission cannot start on the same point in a sequence(except for voice systems.) Some transmissions may need only a few frequency hops to be completed and 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. Therefore, describe where the next transmission starts when a sequence is not completed in a previous message.

Response: The only case that the frequency band usage would not be uniform would be if the transmission was periodic with a period exactly equal to (a multiple of) the size of the Bluetooth clock (i.e. transmission every N*2^^27 slot), in which case only one frequency would be used. However, this is impossible since Bluetooth requires that transmissions take place much more often. Since the random sequence continues for each transmission (whether it is repeated or not) uniform usage of the band is ensured under any transmission scenario.

[c] 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?

Response: Please refer to Exhibit J "Description of Frequency Hopping System" for the details of these operational requirements. Exhibit J addresses the input bandwidths, pseudorandom hopping system, the frequencies, time slots, equal frequency usage, bandwidths and other details of operation. This information is taken directly from the Bluetooth specification, which has been written to conform to FCC FHSS and DSS requirements of Part 15.