Nov. 13, 2008

To: Mr. Steven Dayhoff

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FCC Application

Processing Branch

Applicant: Redline Communications Inc

FCC ID: QC8-AN80IE

Form 731 Confirmation Number: EA446859

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Dear Mr. Dayhoff,

Thank you for your letter dated November 06, 2008 in regards to our application referenced above.

Q-1. Please explain how this system would work in the presence of another system using 802.11y protocol and provide us with any simulation to show sharing between such systems - coexistence analysis similar to that recommended by 802.19.

A-i. **Our CBP for FCC Band 3.65-3.7 GHz is based on Collision Avoidance by changing the channel to another channel; that is contention free. Our CPB is unlike 802.11 based systems operating on Carrier Sense Multiple Access/Collision Avoidance (same channel). Here is a quick summary of our CBP for AN-80i 3.5:**

The AN-80i system employs a protocol that is designed to detect signals and interference from other systems and to avoid co-channel operation with these systems. Both the master unit and slave unit are equipped with this detection capability; it is based on collision avoidance.
When the device intends to transmit, the master unit performs a ***Channel Clearance Check*** (CCC) (i.e. it will first check if another station is already transmitting or not). A positive detection is defined as a reception of a signal/interference at the sensing threshold. The time period of a CCC; T(ccc) is a random interval between 5 and 10 seconds. The randomization of the CCC period for each system ensures that no repeated collision would occur between different systems. With this mechanism, other systems with similar or dissimilar protocols can both be detected including 802.11 based systems; therefore causing the link not to be established on the same channel as an existing system.
If no signal/interference is detected during this initial check, the master unit will send a registration beacon (slave enabling signal) to invite authorized/pre-provisioned slave units to transmit and register with the master unit. If signal/interference is detected, the master unit will continue to perform channel clearance check for T(CCC) intervals on either its current channel or on a different channel without initiating any wireless transmission. The AN-80i master will randomly (uniformly distributed) choose a channel out of the 3.65 to 3.70GHz band and start performing the CCC on the new channel.

After a successful link establishment, both the master unit and the slave unit(s) using the contention based protocol continue to monitor the operating channel to ensure that there is no new

signals/interference transmitted from other systems. A ***contention detection check*** (CDC) period T(CDC) is assigned between each TDD transmit and receive window. A positive detection is defined as a reception of a signal/interference at the antenna with a power level of -64dBm. The CDC period T(CDC) is a random interval between 5 and 10µs. The randomization of the CDC period for each system ensures that no repeated collision would occur between different systems. With this mechanism, other systems with similar or dissimilar protocols can both be detected.

If the master unit detects the presence of interference from other systems, it will immediately cease data transmission and enter into the CCC state. The scheduled nature of slave unit transmission guarantees that no further slave data transmission will occur as the master unit will not transmit further scheduling info to the slave unit(s). The master and slave transmission shut down time is guaranteed to be less than 250ms.

Again, after completing a CDC successfully, on the same channel frequency or on another frequency, both the master and the slave unit will again go through the Link Establishment procedure as selected by the user as described above.
If the master unit did not detect any interference, the master device will send a small request/scheduling event to slave (slaves). If the slave senses that the medium is clear, it starts to transmit as scheduled. Both Master and Slave units will continue to detect collision/interference during their own scheduled transmitting events.

Same behavior will be noticed with the unit configured as a slave. More details could be found on CBP document submitted with Form 731 application.

With the collision avoidance mechanism described above, our AN-80i 3.5 system would work in the presence of another system using 802.11y protocol in the full 3650-3700 MHz band.

A-ii. Since the purpose of 802.19 is to facilitate co-channel operation of two systems, while the AN-80i CBP avoids co-channel operation and guarantees that AN-80i will only operate in a contention free channel and thus leaving other systems' operation and performance intact, we do not consider simulation in this case to be applicable.

Q-2. Please explain how you determine the sensing threshold of -64 dBm being adequate. Our current UNII rules for 5 GHz uses the same thresholds for radar detection, but 802.11y is requiring 10 dB lower threshold.

A-2. Sensing threshold of -64 dBm at the Receiver side of AN-80i 3.5 is based on the fact our AN-80i is designed for backhaul applications and uses using directional antennas with a gain of 15 dBi or higher. This translates to signal sensing levels below -79 dBm at the antenna. On the other hand, 802.11 based systems are designed to cover small local areas and typically use Omni antennas with gains of 5 dBi or less. This means, our AN-80i system in fact can detect weaker signals at the antenna when compared with 802.11 based systems. Furthermore, please note that our protocol for AN-80i is not identical to 802.11/11y and /or 802.16d/16h, rather it uses a proprietary protocol designed to meet the requirements of FCC band 3.65-3.70 GHz. FCC CBP currently does not define any specific sensing thresholds but if required, we are prepared to meet a new lower (or higher) sensing level requirement through changes of the AN-80i software.

You can contact the undersigned if you have any questions.

Sincerely Yours,

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