Summary, Conclusions, and Final Proposals Regarding Mobile Access Networks Model 850A From Meeting March 8, 2006

Attendees: FCC – Rashmi Doshi, Joe Dichoso
Mobile Access – Steve Blum
ATCB – Tim Johnson

Intro:
Several Items were not apparent regarding approval of this device and were discussed during the meeting.

1. First is that the device itself will only receive licensed services from previously approved devices/systems.
2. All 802.11 b/g and 802.11a inputs are also from previously approved devices.
3. Only the 802.11b chain is amplified.
4. The licensed services and 802.11a services are only PASSIVELY coupled via a triplexer with the amplified 802.11b devices. Furthermore, the triplexer provides 40 dB of isolation between each service
5. The system is only professionally installed.
6. The system will always contain the 4 b/g/a access points per documentation with all b/g ports connected.

Much of this was only solidified in the final part of the meeting with Joe Dichoso (Rashmi Doshi was only present for the first ½ of the meeting).

Items discussed/confirmations:

Confirmation A:
Whether composite powers are necessary to consider for the 802.11b and various 802.11a bands?

> The FCC stated that as long as information is present in the application to show that the various 802.11b and 802.11a signals are not coordinated, that composite power does not apply.

FCC Comments: The device is a composite device consisting of multiple transmitters with absolutely no coordination between the transmitters either by design or installation(e.g. channel selection).
*At the meeting, the installation did not involve mix and matching access points and only one FCC identifier was acceptable because 4 identical access points were to always be used. However, the submitted installation instruction indicates that two access points(two fcc identifiers) are chosen and there is no limitation on the number of each that can be used. Multiple FCC identifiers will be required for each configuration. The installation guide must be consistent with what is filed for.

Confirmation B:
The FCC will allow labeling of the 850A instead of the access point. The new ID effectively replaces any FCC ID's on the access points. Ideally the FCC ID's on the access points should be covered/removed/or marked through.

FCC Comments: Section 15.19(a)4 requires the ID to go on the main unit. For transmitter/amp approvals, we have been requiring the FCC Identifier to go on the transmitter not the amp. The FCC identifier of the access points should be covered up(not scratched off) with the new label. It is ok to place another label on the amplifier as well.

Confirmation C:
Populating 802.11a inputs. Given the same access point contains both 802.11 g/b and a functionality, and the fact that the 802.11 a inputs are strictly passive connections through a triplexer and there is no depopulation of access points, the FCC stated that 802.11a connections are not fully necessary to be connected since this is only lack of a particular jumper cable from the access point to the 850A.

FCC Comments: Confirmed.

Confirmation D:
During conversations, the FCC felt it would be acceptable that MobileAccess verify through testing (at the full power expected) that additional licensed services are not affected and do not affect the 802.11b/g and 802.11 a results. Should these results be found to be worse than previous results, then a Class II PC application will be utilized as appropriate.

FCC Comments: You should test with a representative sample of licensed services signals.

Confirmation E:
Testing Requirements Expected by FCC. Licensed Services in Radiated tests are injected using an equivalent CW signal at what is considered maximum output power.

1) 802.11 b/g only tests. Complete compliance to all 15.247 rules should be shown for all applicable tests for just the 802.11 b/g operating at maximum configuration (4 x 802.11 b/g). This includes appropriate antenna conducted output tests and radiated tests as necessary.

2) 802.11a. It is assumed that all 802.11 b/g ports will always be connected per previous comments cited above. Therefore complete compliance to all 15.407 rules may be shown for all applicable tests for 15.407 operating at maximum configuration (4 x 802.11 a + 4 x 802.11b/g inputs attached). This includes appropriate antenna conducted output tests and radiated tests as necessary for compliance to 15.407. However depending on radiated results shown in 4) below, compliance for radiated portion may be able to be shown in a single combined test with licensed services therefore making separate 802.11a testing unnecessary.

3) Comparison of 802.11b/g signals (power and bandwidth) with and without licensed services as original required by Rich Fabina in the original 850 application. Note that Rich Fabina determined for the original application that the licensed services need not be tested by themselves due to the passive coupling and nature of being previously approved without an antenna:

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>Rich Fabian felt that it will be ok to leave the approval for the
>type-2 system (MA-1000) alone because it is not approved with an
>antenna anyway and that he only cares about the type-2 system
>relative to any additional intermodulations that might be created
>when combining with the type-15 (MA-850).   Although he understands
>that nothing occur here due to high isolation and passive nature of
>the triplexer, but he wants to see the test reports showing that
>this is the case.
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It is assumed that this comparison is only necessary for the 802.11b/g due to the amplifier and switching matrix present in the 850A. 802.11a signals are only passively coupled and not deemed necessary.

4) Complete system, 802.11 b/g + 802.11a + licensed tests. Radiated data showing spurious emissions compliance to licensed limit (i.e. 43+10 log = -13 dBm) or possibly meeting spurious 15.407 limits. If compliance of all spurious can be shown to meet 15.407 limits in this configuration, it is proposed that separate testing of spurious radiated for 2) above is deemed not necessary.

5) Antenna Conducted Tests – When multiple transmitters share the same antenna, the FCC requires additional antenna conducted data. The following tests are anticipated to be required:

a) Simultaneous TX of 802.11b/g + a. Antenna conducted tests to show compliance to -17/-27 dBm/MHz EIRP requirements (without licensed services operating). Limits are applied outside of all TX bands
b) Simultaneous TX of 802.11 b/g + 802.11a + licensed tests. Antenna conducted tests to show compliance to licensed spurious requirements (i.e. 43 + 10 log = -13 dBm limit) outside of all TX bands.

MobileAccess Comments:

MobileAccess has taken test data to comply with 1, 2, 3 and 4 above. However, testing for 5 a) and b) was done as a part of 4) as field strength for all services and calculated according to the requirements 15.407 (b). MobileAccess requests that the field strength test taken for 4) be acceptable for test 5) a) and b).

FCC Comments: The above should agree with the following. For radiated tests, all radiated emissions from devices must comply with applicable radiated rule part. Radiated testing must be performed with appropriate antennas.
For conducted tests, input and output of ports must be at maximum and all emissions from devices must comply with applicable rule part.

*Radiated tests cannot be substituted for simultaneous transmission conducted tests. This is needed because compliance is required regardless of antenna configuration.

The following configuration modes are tested.
1) Run complete tests, radiated and conducted, with only 802.11 b/g.
2) Run complete tests, radiated and conducted, with complete system(802.11 b/g + 802.11a + licensed tests). Use CW signal for licensed signal. *If 802.11a emissions comply here, no need for 802.11a individual tests.
3) Run complete tests without licensed services, radiated and conducted, with (802.11 b/g + 802.11a)
4) For worse case configuration in combined tests in 2, Run tests with representative samples of licensed signals.

Attachments

Professional Install Justification
Various Manual Information regarding configurations/setup