FCC

March 27, 2012

RE: FCC ID: SK6XI-N450, Correspondence Numbers: 41465 and 41466

Attention: Andrew Leimer

Please find our responses to your comments on this application below:

1) Note: This question replaces question 1 and 2 sent in a similar application EA 387224. Please submit updated external / enclosure FCC ID labeling to address the following. Consistent with the purpose to readily and unambiguously identify equipment in end-use conditions, in general different FCC IDs are required for differently-populated versions to be marketed of composite-system integral-multiple-transmitter products. Similarly, where a filing qualifies for modular or limited modular approval, and the module is intended to be installed and operated in M specific versions of multi-transmitter final-product enclosures with different quantities N (in example at hand of FCC IDs under grantee SK6XI-N300, N = 4, 8, 12, 16; M = 4), FCC has required M different FCC ID label versions. For example, the following response sent 5/23/08 in KDB inquiry 865127 to (mbriggs@elliottlabs.com) gives the same basic requirement. "In general, each configuration requires separate FCC IDs - in other words, for example the same FCC ID cannot be shown on enclosure if one radio is installed as when three radios are installed. One FCC ID cannot apply to one enclosure that optionally has one, two, or three 802.11abg radios installed. However another option may be to use Modular or Limited Modular Approval (FCC-DA-00-1407). If Limited Modular Approval (LMA) is applicable and appropriate, then for this example three versions of final-product FCC ID label are needed, each stating whether one, two, or three of the specific FCC ID LMA module are installed within the enclosure."

Response: See attached label exhibit. In the lower right corner of the host system label is a SKU number. The SKU number details the number and type of radios (2x2 or 3x3) that are installed.

The SKU number breakdown: XR-AAB0, where AA=60+# of radios installed, B=2 for SK6XI-N300 modules (2x2) or 3 for SK6XI-N450 modules (3x3).

It is our belief that this system is consistent with the intent of requirement stated in the KDB referenced.

3) If not already in the filing, please explain how compliance for the following 15.31(h) rule provision is addressed, and/or revise exhibit(s) accordingly where appropriate. 15.31(h) ... If an intentional radiator incorporates more than one antenna or other radiating source and these radiating sources are designed to emit at the same time, measurements of conducted and radiated emissions shall be performed with all radiating sources that are to be employed emitting. ...

Response: The approval for this device is a modular approval, not a product approval. Therefore, all measurements were performed with one module operating to show compliance of the module. The module is not capable of transmitting 2.4GHz and 5GHz at the same time.

In order to reduce test time, radiated spurious emissions tests were performed with multiple radios operating, as noted in the test reports.

4) Further to item 3), if not already in this or the original filing under this FCC ID, please explain compliance for how test-with-all-antennas-radiating is addressed for all supported combination variations of SK6XI-N300 and SK6XI-N450 devices, and/or revise exhibit(s) accordingly where appropriate.

Response: As mentioned in previous responses, a host system XR4000 (from original filing) or XR6000 (this C2PC) cannot have both SK6XI-N300 and SK6XI-N450 modules installed at the same time.

5) The basic op. desc. exhibit in the original FCC ID is for model "XR-4000"; as we understand 16-module versions are model "XR-6/7000". Consistent with 2.907(a), please submit suitably updated op. desc. exhibit(s).

Response: Refer to “XI-N300 XI-N450 Operational Description R1.3”

6) Given that EMC and radio-parameter testing was done with modules installed in host-product configuration(s), if not already in this or the original the filing under this FCC ID, please explain how compliance for the following 2.1033(b)(7) rule provision is addressed, and/or revise exhibit(s) accordingly where appropriate to show multi-module chassis assembly (16 modules for the configuration of this filing) and exterior FCC ID label. 2.1033(b)(7) A sufficient number of photographs to clearly show the exterior appearance, the construction, the component placement on the chassis, and the chassis assembly. The exterior views shall show the overall appearance, the antenna used with the device (if any), the controls available to the user, and the required identification label in sufficient detail so that the name and FCC identifier can be read.

Response: Photographs of the module were provided for the original certification. It is our understanding that photographs of the host system for a modular approval are

not required. Photographs of the XR4000 (up to 8 radio host of the original filing) were not requested during the original certification.

Internal and external photographs of the XR6000 host system have been uploaded for your reference.

7) The confid. request letter in this filing dated 7/27/2011 mentions "theory of operation"; however the single exhibit submitted under Form-731 "12 Operational Description" in this filing is a six-page document with heading "Xirrus Arrays Co-location ..." and which appears to be duplicate of pages 5 to 8 in the non-confidential Form-731 "11 RF Exposure Info" (same document is in this filing and in the original filing under this FCC ID). Pending response for item 5) of this corresp., confid. cover letter may need revision accordingly to identify specific exhibits which are requesting and qualify for confid.

Response: The documents uploaded as Operational Description “Attestation – Power Reduction.pdf” was included in the original filing. It was included as part of this C2PC for reference only. Since a revised operational description has been uploaded per comment 5 above, the request for confidentiality is still appropriate.

8) MPE estimate exhibit includes text: "Note: When compared to the 3x3 radio module that might be co-located with the 2x2 module, the 3x3 module has higher eirp than the 2x2 radio and so the MPE values for a host system containing both modules would use the 3x3 MPE values as a conservative estimate for the rf exposure hazard." It is unclear whether and how the MPE analysis in this filing has addressed this mix of "N300" and "N450" devices; please explain and/or revise all associated parts of filing where appropriate to clarify.

Response: I was unable to find this note in the “MPE 3x3.pdf” that was uploaded for this application. The MPE exhibit uploaded for the 2x2 application (SK6XI-N300) did contain this statement. It was removed in response to a comment from the FCC.

9) To support EIRP and MPE estimations, please provide details how nominal bare-element and/or in-situ antenna gain values of 2 dBi in 2.4 GHz band and 4 dBi in 5 GHz band are obtained.

Response: Refer to “XRant_FCC_2450.pdf” and “XRant_FCC_5150.pdf”

10) Page 4 of the MPE estimate and "aggregate power" exhibit includes the text: "Additional information is provided to show how the total output power with multiple radios operating in a band is still compliant with the limits." It is unclear whether and how that analysis in pages 4 to 8 remains applicable for host product populated with 16

radios, and including mix of "N300" and "N450" radios. Please explain and/or revise all associated parts of filing where appropriate to clarify.

Response: The information is still valid. As the number of radios in the host increased, there is still a limit on the number of non-overlapping channels available in any one band. For example, in the 2.4GHz band, there is a maximum of 3 non-overlapping 20MHz channels. The worse case condition is the 5470-5725MHz band, where there is 8 non-overlapping channels. The original MPE and aggregate power address this condition.

As stated in previous responses to comments, the 2x2 and 3x3 radio modules cannot be co-located in the same host device.

Regards,

Mark Hill
Staff Engineer

Uploaded Files:
802-0106-001A.pdf – Host system label exhibit
XI-N300 XI-N450 Operational Description R1.3
XR6000 external photographs
XR6000 internal photographs
Antenna Information