

FCC

August 29, 2012

RE: FCC ID: SK6XI-N450

Correspondence Reference Number: 42464

Form 731 Confirmation Number: EA188173

Attention: Jyun-Cheng Chen

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

1. Please improve the DFS expedited review request to clarify: Is the 3x3 (or 2x2) module's physical dimension different in various hosts even though the H/W and S/W designs may stay the same? The dimensions of different hosts (XR-1xxx, XR-2xxx, XR-4xxx, and XR-6xxx) are quite different, and we know for sure the host boards are not the same. If the modules are physically different for different hosts (including shielding and reflector/isolator), please present analysis/reasoning why the radiated TX and RX performance would be identical even if conducted measurements are.

Response: The modules are identical from host system to host system. The same 3x3 (or 2x2) module is used in the various host systems already submitted, XR4000, XR6000, and the two hosts systems within this C2PC application XR1000 and XR2000.

A revised DFS expedite letter has been uploaded for this application.

2. Please improve the DFS expedited review request to clarify: In the comparison table, provide detail on technologies used in the original filing versus the current application. List key components and their part numbers: antenna, transceiver IC, Atheros software release version, external PA and LNA, and the diplexer. If they are different, explain why measurable performance levels are the same.

Response: Please clarify if this comment in relation to the DFS results or the RF testing on the DFS bands.

The hardware details are described in the schematics filed during the original approval. These have not changed.

The technologies are the same as the previous filings.

3. Since you have different FCC ID labels for different SKUs, we would like to request that you simply state "Contain x SK6XI-N450" (for example, where x is the number of modules) on the label instead of somewhat encrypted in the model numbers. The formula "60+# of radios" you provided previously is not correct for the 2 SKUs in this application and requiring different formulas for different models do not seem reasonable.

Response: The current label is consistent with the label that was approved for the XR6000 C2PC. The labels were modified at that time based on the FCC's comments during that review. The label states the number of radio installed, directly below the "Contains FCC ID" and "Contains IC ID" statements.

Please confirm that the FCC is now requesting a change in the label previously approved.

4. To avoid confusion, we will note on the grant, if approved, that the 5.47-5.6, 5.65-5.725 are not two separate bands, implying not 250 mW maximum power in each, but rather a single band 5.47-5.725 GHz per Part 15.407. Notching out the 5.6-5.65 GHz segment does not create two new bands. Please present counter-argument if you disagree.

Response: At one point we were under the impression that we had to notch out the 5600-5650 MHz band on the FCC grant. If this not the case, we are perfectly fine with a single listing for the band.

5. It is incorrect to believe that modular approval does not require measurements with the product/host, especially when the host is part of grant conditions. In this case, the relationship is not readily clear among various hosts on radiated measurements and the host board's impact on performance when multiple radios are active at the same time. Similar to modular approval of some cellular modules, each host installation may require a separate C2PC if grant conditions are changed. (This does reduce the advantage of using modular approach although some test data can be still re-used.) This is why we are concerned with the host processor's involvement in DFS detection which is a problem if the CPU fails to perform as expected when multiple radios operate at the same time. Your 7/3 letter requests that 2x2 and 3x3 be reviewed at the same time by indicating the host is doing the entire DFS detection deepened this concern.

Response: The intent of the DFS expedite letter is not to imply that testing in the hosts can be waived. DFS test reports were submitted for both the XR1000 and XR2000 hosts system. The intent is to show the similarity (and differences) of this product to those already evaluated by the FCC during the original certification and subsequent C2PCs. Our desire is for the FCC to review the material and determine what, if any, DFS testing is required to be performed at the FCC, pre-grant. Also, to ensure that any testing at the FCC would be scheduled to address both hosts and both modules (SK6XI-N450 and SK6XI-N300) at the same time.

6. Per discussion in #5 above, please justify the DFS performance evaluated for one radio module remains the same when there are 2 or 4 radios active at the same time and in the closest frequency channels allowed by the software. Analysis alone may suffice if the reasoning is convincing enough, otherwise some sample test data should be presented to aid arguments.

Response: DFS testing was performed in accordance with previous FCC guidance for these modules in multi-radio hosts. The additional radios were all enabled. See the last paragraph of on page 12 of R86855 with additional details on page 13 for testing in the XR1000. Similar information for the XR2000 host is found on pages 13 and 14 of R86856.

7. On the same token and per Part 15.31(h), please justify the configuration of Part 15C and 15E EMC reports' radiated spurious emission test. In fact, due to the common ground plane and power source, it is not even clear whether the conducted measurements would remain the same between only one active radio and multiple actively transmitting radios.

Response: A similar question was asked during the review of the C2PC to add the XR6000 host. Our response at that time was “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.” This statement is still appropriate. Note – the DFS testing was performed with multiple radios, as noted in the DFS test reports.

The placing of multiple radio modules into a single host that is going to label the product with “Contains FCC ID” has always been considered an RF exposure issue. The requirements of 15.31(h) have not been applied previously when co-locating modules into a host.

Note – All responses, including uploaded exhibits, have been either provided by or reviewed by Xirrus.

Regards,



Mark Hill
Staff Engineer

Uploaded exhibits:
DFS Expedite letter

Uploaded Exhibits:
DFS Expedite letters