Fujitsu Limited, FCC ID: EJE-WB0060, Assessment NO.: AN08T8090, Notice#1

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from **Donna** <donna@emctech.com.au>
reply-to donna@emctech.com.au
to tim.dwyer@ccsemc.com
cc chieu@emctech.com.au
date Thu, Jul 10, 2008 at 2:19 AM
subject Fujitsu Limited, FCC ID: EJE-WB0060, Assessment NO.: AN08T8090, Notice#1

Subject: Fujitsu Limited, FCC ID: EJE-WB0060, Assessment NO.: AN08T8090, Notice#1

Please find additional information/clarification below as requested:

Q1: The block diagram shows only two antennas in 1x2 MISO configuration. The antenna detail document shows three antennas. Please explain or revise.

A1. The Antenna detail document is common for 2 of Intel's similar WLAN modules, SP 512_AN (1x2 - MISO) and SP 533_AN (3x3 - MIMO) as shown on the cover page of this document. Please ignore Tx 3 Antenna (Antenna 3)in this document for this application. Also refer attached Tx010 Ant Positions document.

Q2: The summary statement on page 21 of SAR Report M080506_ Cert_512AN_SAR_2.4 FCC and Attachment1_RF Exposure Information state the highest measured SAR was 0.108 mW/g. The data table in the SAR report shows a measurement of 0.208 mW/g. Please explain or revise.

A2. Please refer to revised test report M080506_Cert_512AN_SAR_2.4 FCC attached. The worst case is 0.108mW/g.

Q3: The FCC grant for PD9512ANH states that 2.4GHz and 5GHz Transmitters are capable of simultaneous transmission. Please clarify whether simultaneous transmission is possible in the configuration documented for this filing.

A3. This is exactly the same module as certified under PD9512ANH. Hence, same conditions (the last statement on Intel grant .."Both transmitters may operate simultaneously with respect to 1.1307 and 2.1091" is unclear.

Best regards,

Donna Lennon
Per Chieu Huynh
EMC Technologies Pty Ltd

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3 attachments — Download all attachments

Tx010_Ant_Positions for SP 1x2.xls
107K View as HTML Open as a Google spreadsheet Download

Tx010_Ant_Positions for SP 3x3.xls
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M080506_Cert_512AN_SAR_2.4 FCC -B&W - 03-06-08.pdf
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from **Tim Dwyer** <Timothy_Dwyer@ieee.org>
to Mike Kuo <mike.kuo@ccsemc.com>
cc Chris Harvey <charvey@ieee.org>
date Thu, Jul 10, 2008 at 1:09 PM
subject Fwd: Fujitsu Limited, FCC ID: EJE-WB0060, Assessment NO.: AN08T8090, Notice#1
mailed-by gmail.com

Hi Mike,

I received replies to my questions for the first set of Fujitsu applications (EJE-WB0060 AN08T8090-92-94). I need some guidance on how to proceed.

Before we move any further on these applications, I think Intel needs to provide more clarification on the operation of the module.

I copied Chris because there are other pending unassigned Fujitsu applications to which this subject is relevant.

Following are my observations so far:

1. The reply to Q3 (see below) indicates to me that EMCT & Fujitsu are not clear on the detailed operation of the module. I have also looked at the FCC Grants for Intel PD9512ANH and PD9533ANH. The operation of the modules regarding simultaneous transmission is not clear in the applications except for the last part of the grant condition. Some additional detail may be present in confidential documents, but I think we have access to the confidential information in the Fujitsu-CCS applications.

2. In the applications pending at CCS, the Operation description (CONFIDENTIAL) describes a hardware architecture which appears to allow simultaneous 2.4 & 5GHz transmitter operation with a single antenna. It also mentions "Cliffside" operation in "different channel" and "same channel" modes. The different channel mode appears to allow simultaneous transmitter operation in different bands with shared antenna.

3. FCC KDB 616217 clause 8) Simultaneous-transmission EMC / radio parameter evaluation is required when transmitters share a common antenna or coordinate transmissions.

4. Grants PD9512ANH (1x2) and PD9533ANH (3x3) were Modular Approvals for mobile category. These do not appear to include any special evaluation (MPE/EMC/Radio) for simultaneous transmitters with shared antenna.

5. TCB exclusion list 628591 4/9/2008 item (2)(f)(ii) excludes this type of operation from TCB approval for portable devices.

So far, I have reviewed two sets of Fujitsu applications: EJE-WB0060/AN08T8090-92-94 and EJE-WB0058/AN08T9095-96-98. Both applications include notebook and tablet operation and use the Intel modules. One application set is for the 1x2 MISO and the other is for 3x3 MIMO.

As information. I have also picked up EJE-WB0057/AN08T8106-07-08 but am not very far in the review. It appears only to be for notebook configuration. It has 1 of 3 antennas in the base of the display so SAR applies. I have not determined at this point if simultaneous SAR applies. There is one additional application set yet unassigned. I have been picking them up one at a time. The good news is that except for this simultaneous transmitter issue, there were only some minor questions.

If you want to call, I am available all day today. 860-558-1791.

Best regards,

Tim

--------- Forwarded message ---------
From: **Donna** <donna@emctech.com.au>
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FW: Intel Cliffside Technology implementation on Shirley Peak 1x2 and 3x3 FCC approved modules

Mike Kuo show details 7:36 PM (21 hours ago) Reply

to Timothy, Chris

Hi Tim and Chris:

Below is the reply from Intel in explaining the Cliffside operation.

Best Regards

Mike Kuo
Compliance Certification Services
47173 Benicia Street
Fremont, CA 94538
Direct: (510) 771-1105
Fax: (510) 661-0888
Main: (510) 771-1000
e-mail:mike.kuo@ccsemc.com
Web Site:www.ccsemc.com

From: Paxman, Robert [mailto:Robert.Paxman@intel.com]
Sent: Thursday, July 10, 2008 2:39 PM
To: Mike Kuo
Cc: Christine Vu
Subject: RE: Intel Cliffside Technology implementation on Shirley Peak 1x2 and 3x3 FCC approved modules

Hi Mike,

Here is the following concerning Cliffside operation:

Does not operate in 5GHz due to the fact we do not have radar detection and we would be considered a master device due to the ability to initiate networks other than the intitial association with AP.

In the case of the 1x2 it is a single transmit and dual receive so there is no co-location as there is only 1 transmit chain. It would switch between data transfer between the AP and cliffside device.

In the case of the 3x3 please see the RF exposure sheets where the 3 chain Tx mode was calculated for MPE.

Cliffside and data transfer with an AP does not happen at the same time through a single transmit chain.

Please let me know if more information is still needed.

Thanks

Robert

From: Mike Kuo [mailto:mike.kuo@ccsemc.com]
Sent: Thursday, July 10, 2008 2:28 PM
To: Paxman, Robert
Cc: Christine Vu
Subject: Intel Cliffside Technology implementation on Shirley Peak 1x2 and 3x3 FCC approved modules

Hi Robert:

During TCB review process, one of our technical reviewer is questioning the Cliffside technology which will allow Shirley peak 1x2 and 3x3 to transmit simultaneously on different frequencies band, and different networks at the same time via single common antenna.

We have reviewed the Elliott test report and could not find any co-located simultaneously RF conducted spurious emission and radiated spurious emission tests were performed. Below are the questions from CCS technical reviewer which are related to above issues:

2. In the applications pending at CCS, the Operation description (CONFIDENTIAL) describes a hardware architecture which appears to allow simultaneous 2.4 & 5GHz transmitter operation with a single antenna. It also mentions "Cliffside" operation in "different channel" and "same channel" modes. The different channel mode appears to allow simultaneous transmitter operation in different

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Request:

1. Is Cliffside technology implemented in Shirley Peak 1x2 and 3x3 ?
2. Did co-located EMC tests performed during final tests?

Best Regards

Mike Kuo
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