X-Ninja-PIM: Scanned by Ninja
X-Ninja-Antispam: Policy 1 - Allowed - Custom Allow (Global) - 0,0,0 (0)
X-Ninja-AttachmentFiltering: (no action)
Subject: RE: RE: Proposed Test Plan for SHU
Date: Tue, 4 Sep 2007 17:09:05 -0400
Thread-Topic: RE: Proposed Test Plan for SHU
Thread-Index: AcfsNsVnR75LP9kERjm7j9NlLpteOAC5VVvQ
From: Tim Maguire <Tim.Maguire@fcc.gov>
To: Timothy R. Johnson <tjohnson@atcb.com>
Cc: Joe Dichoso <Joe.Dichoso@fcc.gov>, "Fitzgerald, Ari Q."
<AQFitzgerald@HHLAW.com>, "Seidl, Neal (GE Healthcare)"
<Neal.Seidl@med.ge.com>, LFeudi@ustech-lab.com, marianneb@atcb.com
X-OriginalArrivalTime: 04 Sep 2007 21:09:06.0710 (UTC) FILETIME=[D4485B60:01C7EF37]
Priority: Urgent

Tim,
After discussing this internally with the Lab, and reviewing the WMTS rulemaking, we agree that a QP measurement is permitted for WMTS devices operating in the 608-614 MHz band (95.1115(a)and (b). We do however, require the emission to be operating in a non-hopping mode during all testing, to get the true emission profile of the device.

We will also permit the use of an average detector to measure out-of-band emissions above 960 MHz. In keeping with the policy used in previous Certifications, this includes permitting the use of a duty cycle correction factor, which results in this case, since the device is in a non-hopping mode, a 5 ms/35 ms correction, or approximately -16.9 dB.

I hope this responds to your questions Tim, let Joe and I know if there are any other outstanding issues.
Regards,
Tim

*** Non-Public: For Internal Use Only ***
-----Original Message-----
From: Timothy R. Johnson [mailto:tjohnson@atcb.com]
Sent: Friday, August 31, 2007 9:24 PM
To: Tim Maguire
Subject: RE: RE: Proposed Test Plan for SHU

Thank You,

Tim J.

At 07:56 PM 8/31/2007 -0400, you wrote:
>Tim,
>
>I plan on discussing this with the Lab on Tuesday, I may be able to get
>back to that afternoon. I hope this helps.
>
>

>Tim Maguire
>Electronics Engineer
>Mobility Division
>Wireless Telecommunications Bureau
>(202) 418-2155
>tim.maguire@fcc.gov
>
>_____
>
>From: Timothy R. Johnson [mailto:tjohnson@atcb.com]
>Sent: Fri 8/31/2007 1:21 PM
>To: Tim Maguire; Joe Dichoso
>Cc: LFeudi@ustech-lab.com; marianneb@atcb.com
>Subject: RE: RE: Proposed Test Plan for SHU
>
>
>
>Tim M,
>
>Can you kindly provide some idea of timeline on this.....The
>manufacturer has to make logistical decisions (training, flights,
>shipping, hotels, etc) about moving an already scheduled install
>related to this device that was scheduled for around the 2nd week of
>September. Schedules have already been pushed previously several times
>and their management is now nearing a brick wall at 70 mph....
>
>Thank You,.
>
>Tim J.
>
>
>At 04:23 PM 8/29/2007 -0400, Tim Maguire wrote:
> >Tim,
> >
> >I thought we were clear about how to test the unit under the current
> >rules when we dealt with this issue months ago. Considering the
> >number of issues you raise, especially those regarding past FCC Lab
> >policy, I will need to consult with the lab and get back to you.
> >
> >Tim Maguire
> >Electronics Engineer
> >Mobility Division
> >Wireless Telecommunications Bureau
> >(202) 418-2155
> >tim.maguire@fcc.gov
> >
> >_____
> >
> >From: Timothy R. Johnson [mailto:tjohnson@atcb.com]
> >Sent: Wed 8/29/2007 3:30 PM
> >To: Tim Maguire; Joe Dichoso

> >Cc: LFeudi@ustech-lab.com; marianneb@atcb.com
> >Subject: RE: RE: Proposed Test Plan for SHU
> >
> >
> >Tim M.,
> >
> >Any response. Can I or we call to discuss this sometime this afternoon.
> >
> >Tim
> >
> >
> >At 03:45 PM 8/28/2007 -0400, Timothy R. Johnson wrote:
> >
> >
> > Tim,
> >
> > I am very thankful for your quick responses. It does appear
> > that the lab may need to do some retest based on the info below.
> > Therefore we want clear guidance on the averaging as you stated
> > below as it will affect the testing and we need to be certain the
> > method meet the FCC's requirements...
> >
> > First, as a reminder - this device utilizes Access Points
> > under Part 95 H WMTS that use a Frequency Hopping scheme from a
> > company that has also build many 15.247 frequency hopping systems.
> > Additionally, the first AP that they build for the 608 band was
> > approved back when the WMTS rules were still under Part
> > 15.242 and later re-approved under 95H (with I believe the same data set).
> >
> > Upon moving the rules from Part 15.242 to WMTS back around
> > 2002 - one would think that this was done to allow more flexability
> > - to add additional bands of 1.4 GHz, etc. to licensed users.
> > However in the information we have discussed regarding use of the QP
> > detector and averaging detectors, it appears that levels/limits are
> > actually more stringent now under 95H than used to occur under Part
> > 15.....Please note that originally under 15.242, the following was
> > stated:
> >
> > QP Detector:
> > Before:
> > 15.242(c) The field strength of the fundamental emissions
> > shall not exceed 200 mV/m, as measured at a distance of 3 meters
> > using a quasi-peak detector. Manufacturers should note that a
> > quasi-peak detector function indicates field strength per 120 kHz of
> > bandwidth ±20 kHz. Accordingly, the total signal level over the band
> > of operation may be higher than 200 mV/m.
> >
> > Now:
> > 95H....QP can only be used if the signal is < 120 kHz. Note
> > the same limit still applies...
> >

> > This means that the benefit of QP used under 15 per 120 kHz
> > bandwidth is no longer allowed under Part 95...
> >
> >
> > Average Detector:
> > Before:
> > 15.35 Could be applied, similar to 15.247 FHSS systems for
> > levels needing to meet average limits. This includes peak
> limiting as well.
> >
> > Now:
> > 95H...Can only average over period that the TX is on....
> >
> > This means that the averaging once available to spurious
> > emissions, etc. - is not longer available under 95H...
> >
> >
> >
> > Please note that I am respectful of any final decisions that
> > the FCC makes, but I am not sure if the intent to was to make these
> > levels harder to meet.....Additionally, I know that several of
> > the designs that made use of the QP and averaging statements under
> > Part 15 were also subsequently certified under Part 95 as well -
> > likely using the same data sets and original Part
> > 15 justifications and therefore complicates matters - especially
> > since the device now being reviewed may use some of these access
> > points. This can be seen by looking at one of the early 2002 95H
> > WMTS approvals which states the following in the reports:
> >
> > For QP:
> > Note: Conducted output power is typically about +12 dBm
> > (15.8 mW) when measured at the output of the module
> > using wide RBW/VBW settings (i.e. 1 MHz). Occupied bandwidth
> > is specified as 300 kHz. Measuring with
> > a QP detector (120 kHz) yields results slightly more that
> 3 dB lower.
> >
> > For Averaging:
> > Part 95.1115(b)(2) stipulates using and average detector.
> > However the emissions of
> > this device are considered pulsed in nature due to the
> > frequency hopping nature of
> > the TX. The FCC has historically not accepted average
> > measurements on pulsed
> > transmitters. Therefore the measurements device was
> > corrected for duty cycle as
> > normally acceptable to the FCC for testing of other types of
> > transmitter with pulsed
> > emissions.
> >
> > Duty Cycle Correction During 100 msec:

> > The system is designed that the system hops at 35 msec per
> > channel. The system will only
> > be on one channel in any 100 msec period of time. During
> > this 35 msec per channel, each
> > transmitter is allotted only a small duration of this period
> > (5 msec max).
> > Therefore the worse case duty cycle is:
> > Duty Cycle Correction = 20 log (0.05) = -26.0 dB
> >
> >
> > Now the rules exist under Part 95 and we must abide by
> > this....The current application can use several different model
> > Access points, some of which I believe are still from the 2002 time
> > period. In these cases, please note that in this current case, any
> > access point that this device will use behaves such that the dwell
> > time per channel is about 35 msec (as a system), but each
> > transmitter of the system will only operate for 5 msec per 35 msec
> > block (per channel). For averaging under Part 15 - we would
> > typically apply correction factors based on worse case period per
> > channel in 100 msec.
> >
> > Your response earlier today implies that duty cycle
> > corrections may not be allowed for averaging. Note that we could
> > define TX on time as several variations (see A, B, C below)....and
> > need further guidance on this point as well.
> >
> > A) average only period TX is on per channel (i.e. only look
> > at averaging over the 5 msec burst) - would give almost no
> > correction compared to peak value an would require looking over 5
> > msec burst only...
> > B) average time TX is on only - but factor in per channel
> > duty correction. For example, each TX will TX 5 msec per channel
> > across 8 channels. This would look at a correct factor per channel
> > based only on TX on periods only - but is distributed over the hop
> > set (i.e. 1/8 correction per channel = 20 log (0.125) = 18 dB of
> > benefit). This correction would be actual correction per frequency
> > based upon only periods the TX is on - but looking only at a
> > specific frequency for measurement (i.e. single channel).
> > C) as a true frequency hopper (i.e. using 15.247 duty cycle
> > corrections over worse case 100 msec periods). In this case this
> > yields 5 msec per channel TX on any 100 msec period (i.e. 20 log
> > (0.0.05) = 26 dB of correction)
> > D) Some alternative method..
> >
> > Please help define what is acceptable in this situation.
> > Part of the concern would be that a portion of the WMTS rules
> > originated under Part 15. it appears that levels, limits, and
> > detectors are more stringent, despite the limits themselves
> not changing.
> > Additionally, please explain if the use of averaging is
> > relative only to the fundamental, < 960 MHz Spurious, and/or > 960

> > MHz Spurious. Part of the concern is that when these rules were
> > under Part 15, the averaging of C) above could be applied to meet
> > the 500 uV/m average limit. If use of the averaging techniques
> > above are not allowed, then this would mean that the spurious
> > emissions, especially > 960 MHz are now subject to much more
> > stringent requirements than Part 15 requires.
> >
> > We need a clear picture of what will be allowed for
> > averaging and QP detectors. Does the old use as given in 15.242(c)
> > still abide for the current 95H WMTS. If not, then we need specific
> > guidance for whether A), B), C), or D) above is to be applied, and
> > if this is applicable only to the Fundamental, or also includes any
> > spurious < 960 MHz and > 960 MHz.
> >
> > Thank You in advance,
> >
> > Tim Johnson
> >
> >
> >
> > At 09:31 AM 8/28/2007 -0400, Tim Maguire wrote:
> >
> >
> > Hello all,
> > I concur with Joe's statements below with regard
> to testing.
> > Regards,
> > Tim
> >
> >
> > *** Non-Public: For Internal Use Only ***
> > -----Original Message-----
> > From: Joe Dichoso
> > Sent: Tuesday, August 28, 2007 9:03 AM
> > To: 'Timothy R. Johnson'; Tim Maguire; Joe Dichoso
> > Cc: LFeudi@ustech-lab.com
> > Subject: RE: RE: Proposed Test Plan for SHU
> >
> > Hello Tim,
> > All interpretations must come from Wireless.
> > As stated again average detector is used. I believe
> > this should be done
> > only during transmission periods that do not include
> > off time but this
> > needs to be confirmed by Tim Maguire who I have
> > copied in this e-mail.
> > -Joe
> >
> > -----Original Message-----
> > From: Timothy R. Johnson [mailto:tjohnson@atcb.com
> > <mailto:tjohnson@atcb.com>]

> > Sent: Monday, August 27, 2007 9:00 PM
> > To: Joe Dichoso
> > Cc: LFeudi@ustech-lab.com
> > Subject: RE: RE: Proposed Test Plan for SHU
> > Importance: High
> >
> > Joe,
> >
> > Thanks.....Their bandwidth is about 240 kHz compared
> > with the 120 kHz
> > used by QP detectors in this range, so it appears
> > that using QP is not
> > allowed in this case. The manufacturer has been
> > working on this since
> > January, and now has reached a crisis level to wrap
> > up ASAP. We are
> > almost complete with the review except for a few
> > various items - and
> > therefore just need to confirm that average
> > techniques are acceptable
> > for comparison to the QP limits as given in
> > 1) below since QP will not be allowed. Kindly
> > confirm ASAP so the lab
> > can adjust the report with the appropriate data set
> > in time for a very
> > important meeting with the manufacturer tomorrow afternoon.
> >
> > Thank You,
> >
> > Tim Johnson
> >
> > At 01:52 PM 8/27/2007 -0400, you wrote:
> > >Hi Tim J.
> > >1) applies and was coordinated with Tim Maguire in
> > the Wireless
> > >Telecommunication Bureau.
> > >It is needed because the narrow QP detector
> > bandwidth would not capture
> > >
> > >the full power of wideband transmitters.
> > >
> > >Thanks,
> > >Joe
> > >
> > >_____
> > >
> > >From: Timothy R. Johnson [mailto:tjohnson@atcb.com
> > <mailto:tjohnson@atcb.com>]
> > >Sent: Thu 8/23/2007 12:29 AM
> > >To: Joe Dichoso; Louis A. Feudi
> > >Cc: Tim Maguire; Jeff Tobias; Rashmi Doshi; Steven

> > Dayhoff; Tim
> > >Harrington; Joe Dichoso; William Hurst
> > >Subject: RE: RE: Proposed Test Plan for SHU
> > >
> > >
> > >Joe,
> > >
> > >I am reviewing this complicated project now and
> > wanted to confirm one
> > >item from your response below. While I understand
> > the engineering
> > >reasoning behind 1) below, keep in mind this device
> > is a licensed
> > >device (Part 95 WMTS) and the rules cite explicitly
> > to use QP detector.
> >
> > >Given the phrasing in the rules regarding use of
> > the QP detector -
> > >would QP apply regardless of the bandwidth of the
> > signal since the
> > >rules appear to dictate it's use?
> > >
> > >I'm asking because there may be some re-measurement
> > issues involved
> > >with my review and want to ensure whether Wireless
> > will want QP
> > >regardless - or if 1) below still applies.
> > >
> > >Please clarify ASAP.
> > >
> > >Thanks,
> > >
> > >Tim
> > >
> > >
> > >At 02:22 PM 5/4/2007 -0400, Joe Dichoso wrote:
> > >
> > >
> > > > Hello Louis,
> > > > Here are the comments to the test
> > plan. You can submit the
> > > > changes at www.fcc.gov/labhlep if you need a
> > confirmation of the final
> > > plan.
> > > > Thanks all,
> > > > Joe
> > > >
> > > > 1) When measuring the fundamental
> > field strength, a
> > > > Quasi-peak (QP)detector is used if the bandwidth
> > of the signal is

> > > less than the bandwidth of the QP instrumentation.
> > The bandwidth of
> > > the QP instrumentation is based on the frequency
> > of measurement. E.g.
> >
> > > Per ANSI C63.4, the QP detector bandwidth is 100
> > kHz from 30-1000 MHz
> > > and 1 MHz above 1 GHz. When the emission
> > bandwidth is greater than
> > > the QP instrumentation bandwidth, an average
> > detector is used and the
> > > RBW of the analyzer must be greater than the
> > emission bandwidth.
> > > 2) When an Access point is connected
> > to multiple
> > > antennas and is sending the same information on
> > the same channel to
> > > all antennas, the field strength to all connected
> > antennas must be
> > > aggregated and compared to the field strength limit.
> > > 3) Please specify all antennas and
> > the FCC identifiers
> > > of the access points used with the device.
> > > 4) For out of band emissions tests, test each
> > > modulation type and each antenna type, test at the
> > maximum input on
> > > the lowest, a middle and the highest channel.
> > The lowest and highest
> >
> > > channels is to show compliance at the bandedges.
> > The grant will list
> > > each emission designator and the allowed frequency
> > range from the
> > > lowest to the highest center frequency.
> > > 5) Provide the professional
> > installation instructions
> > > to ensure that it agrees with the test plan. Make
> > any necessary
> > > corrections or modifications to ensure that they
> > agree. The
> > > instructions should include the type of access
> > point, antenna and
> > > output power adjustments necessary to meet all
> > appropriate limits.
> > > 6) The test plan indicates an input
> > range of 5-15 dBm,
> > > testing must be done at maximum input.
> > > 7) FYI...The test plan indicates an
> > output of 17 dBm.
> > > With a O dBi antenna, the EIRP would be 17 dBm and
> > would not meet the

> > > field strength limit.
> > >
> > >
> > >
> > >_____
> > >
> > > From: Louis A. Feudi [
> > mailto:lfeudi@ustech-lab.com
> > > < mailto:lfeudi@ustech-lab.com
> > <mailto:lfeudi@ustech-lab.com> >]
> > > Sent: Tuesday, April 24, 2007 9:13 AM
> > > To: Joe Dichoso; 'Timothy R. Johnson'
> > > Cc: Tim Maguire; Jeff Tobias
> > > Subject: RE: RE: Proposed Test Plan for SHU
> > >
> > > Joe,
> > >
> > > Hello.
> > >
> > > Word Document attached.
> > >
> > > Lou
> > >
> > >
> > >
> > >
> > >_____
> > >
> > > From: Joe Dichoso [
> > mailto:Joe.Dichoso@fcc.gov
> > > < mailto:Joe.Dichoso@fcc.gov
> > <mailto:Joe.Dichoso@fcc.gov> >]
> > >
> > > Sent: Tuesday, April 24, 2007 8:53 AM
> > >
> > > To: Timothy R. Johnson;
> > LFeudi@ustech-lab.com
> > >
> > > Cc: Tim Maguire; Jeff Tobias
> > >
> > > Subject: RE: RE: Proposed Test
> > Plan for SHU
> > >
> > > Tim,
> > >
> > > Can you please send me the test
> > plan as a word
> > > document so that comments can be made directly on it.
> > >
> > > Thanks,
> > >

> > > Joe
> > >
> > >
> > >
> > >_____
> > >
> > > From: Timothy R. Johnson [
> > mailto:tjohnson@atcb.com
> > > < mailto:tjohnson@atcb.com <mailto:tjohnson@atcb.com> >]
> > >
> > > Sent: Tuesday, April 24, 2007 3:14 AM
> > >
> > > To: Joe Dichoso; LFeudi@ustech-lab.com
> > >
> > > Cc: Tim Maguire; Jeff Tobias;
> > tjohnson@atcb.com
> > >
> > > Subject: Fwd: RE: Proposed Test
> > Plan for SHU
> > >
> > >
> > >
> > > Joe,
> > >
> > >
> > > Attached is a test plan generated
> > by U.S. Tech and
> > > their client for the GE Part 95 application
> > previously discussed.
> > > Please help comment on the proposed plan. Note I
> > am sending due to
> > > this being related to our previous Certification
> > questions but am
> > > actually not involved with the test matrix side of
> > this. However any
> > > particular concerns please address to Lou Feudi @
> > U.S. Tech,
> > > LFeudi@ustech-lab.com and simply keep me copied to
> > stay in the loop.
> > > I have also copied Tim Maguire and Jeff Tobias in
> > case you require any
> >
> > > discussion with them as well.
> > >
> > >
> > > Many thanks for the previous help
> > on this.....
> > >
> > >
> > > Timothy R. Johnson, NARTE
> > Certified EMC Engineer (No.

> > > EMC-002205-NE)
> > >
> > > Examining Engineer
> > >
> > > American TCB, Inc.
> > >
> > > 6731 Whittier Ave.
> > >
> > > McLean, VA 22101
> > >
> > >
> > > email: tjohnson@ATCB.com
> > >
> > > alternate
> > email: timothyrjohnson@comcast.net
> > >
> > > USA direct number: 404-414-8071
> > >
> > > USA corporate phone: 703-847-4700
> > >
> > > USA corporate fax: 703-847-6888
> > >
> > >
> > >
> > > X-Ninja-PIM: Scanned by Ninja
> > >
> > > X-Ninja-Antispam: Policy 1 -
> > Allowed - Final Score
> > > - 0,0,-45 (-45)
> > >
> > > X-Ninja-AttachmentFiltering:
> > Policy 3 - no action
> > > (inbound)
> > >
> > > From: Louis A. Feudi
> > <lfeudi@ustech-lab.com>
> > >
> > > To: 'Timothy R. Johnson'
> > <tjohnson@AmericanTCB.com>
> > >
> > > Cc: 'Sandi'
> > <smcenery@ustech-lab.com>, 'Alan Ghasiani'
> > >
> > >
> > <aghasiani@ustech-lab.com>, "'Zielinski, Lee
> > > (GE Healthcare)"'
> > >
> > >
> > <Leo.Zielinski@med.ge.com>, "'Kindschi,
> > > Matthew (GE Healthcare)"'
> > >

> > >
> > <Matthew.Kindschi@med.ge.com>, 'Al Patrick'
> > > <apatrick@cirronet.com>,
> > >
> > > "'Seidl, Neal (GE Healthcare)'"
> > > <Neal.Seidl@med.ge.com>
> > >
> > > Subject: RE: Proposed Test Plan for SHU
> > >
> > > Date: Mon, 23 Apr 2007 15:28:54 -0400
> > >
> > > X-Mailer: Microsoft Office Outlook 11
> > >
> > > Thread-Index:
> > > AceAUoVa5hoY4RoRRFCkIf6hmDbQvAAA24vAAVMyeTAAB3y4cAAHHeQg
> > >
> > > X-OriginalArrivalTime: 23 Apr
> > 2007 19:29:48.0281
> > > (UTC) FILETIME=[C16DBE90:01C785DD]
> > >
> > >
> > > Tim
> > >
> > > As we discussed, the test plan is
> > attached in PDF
> > format.
> > >
> > >
> > >
> > > Please forward to Joe Dichoso at
> > FCC, since he is
> > > expecting this from you.
> > >
> > >
> > >
> > > Call with any further questions.
> > >
> > >
> > >
> > > Lou
> > >
> > >
> > >
> > >