Chris Harvey

From: Y.G. Gwon [ykkwon@onetech.co.kr]
Sent: Thursday, September 15, 2005 4:00 AM
To: Chris Harvey
Cc: 'Mike Kuo'
Subject: Re: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#2

Dear Chris,

Thank you for your effort and cooperation.

Enclosed please find a file for our revised test report for clearing your comment, IM testing data.
I would like to inform I will upload this file to CCS Web Site also.

Best regards,

Y. G. Gwon
ONETECH Corp.
RF/EMC Team
TEL: +82-31-765-8289
FAX: +82-31-766-2904
email: ykkwon@onetech.co.kr

> ----- Original Message -----
> **From:** Chris Harvey
> **To:** 'Y.G. Gwon'
> **Cc:** 'Mike Kuo'
> **Sent:** Thursday, September 15, 2005 1:23 PM
> **Subject:** RE: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#2
>
> YG, I have had a chance to review the documentation and answers you have provided. There appears to be one item that still has not been addressed per the FCC requirements:
>
> In accordance to the original request #4 the revised test report has some intermodulation data, but it appears to not be sufficient. There are uplink and downlink bands of operation for this device, and with 2-tone tests being performed there need to be at least 4 plots of 2-tone intermodulation (uplink band low channels, uplink-high, downlink-low and downlink-high). Only Uplink-low and Downlink-middle channels were tested. This does not meet the FCC requirements for Intermodulation testing. Please provide test plots that comply with the FCC requirements for intermodulation testing copied here for your reference:
>
> > The FCC normally requires that the IM test(s) be done with three signals of equal magnitude - at their highest rated output level - for each type of modulation. The signals are spaced so that two are near to each other at one edge of the pass band and the other signal is alone at the other edge of the pass band. This placement will potentially produce both in-band and out-of-band IM products. A two-signal test is acceptable as a default, meaning that the three signal test could not be performed because of equipment shortages or other limitations. The two-signal test is = the second best choice - not an option of A OR B. When a two-signal test is used - both the upper and lower side of the band edge must be tested - meaning two tests are made in place of one three signal test. The three signal test is still considered to be the preferred/primary procedure. In both cases, all different emission modes should be tested.
>
> Please contact me if there are any further questions on this requirement.
>
> Best regards,
>
> Chris Harvey

9/15/2005

Charvey-tcb@ccsemc.com
charvey@ieee.org
cell 443-622-3300

-----Original Message-----
From: Y.G. Gwon [mailto:ykkwon@onetech.co.kr]
Sent: Wednesday, September 14, 2005 1:31 AM
To: Chris Harvey
Subject: Re: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

Dear Chris,

I would like to send our revised test report to clear bandedge problem in my previous email.
Enclosed please find a revised test report and upload status on the CCS website.
I think I clear all your kind comments, but I am not sure whether you will satisfy our revised test report and application documents or not.
Could you please review that at your earliest convenience at your earliest convenience. If you does not have any deviations in our above documents from you, please inform that to Mike. I have to send a certificate to our client until tomorrow.

Best regards,

Y. G. Gwon
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email: ykkwon@onetech.co.kr

----- Original Message -----
From: Y.G. Gwon
To: Chris Harvey
Sent: Wednesday, September 14, 2005 10:56 AM
Subject: Re: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

Dear Chris,

It was nice to talking with you.

I completed upload some files on CCS Home page to clear your kind comments just now. Please review revised all documents and then inform me, if there is any deviation from you ASAP. I really need your kind help to clear this project.

I would like to enclosed a file for part list in this email.

Best regards,

Y. G. Gwon
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email: ykkwon@onetech.co.kr

----- Original Message -----
From: Chris Harvey
To: 'Y.G. Gwon'
Sent: Wednesday, September 14, 2005 10:27 AM
Subject: RE: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086,

Notice#1

Dear YG Gwon, I responded to your e-mail on 9/12. I have attached a copy of that e-mail to this e-mail. Please let me know if you have any questions.

Best regards,

Chris Harvey

Chris Harvey EMC Consultants, Inc.
charvey@ieee.org
cell 443-622-3300

-----Original Message-----
From: Y.G. Gwon [mailto:ykkwon@onetech.co.kr]
Sent: Tuesday, September 13, 2005 8:24 PM
To: Chris Harvey
Subject: Re: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

Dear Chris,

Did you receive my below previous email?

Could you please inform me whether you got the email or not at your earliest convenience.

Thank you.

Best regards,

Y. G. Gwon
ONETECH Corp.
RF/EMC Team
TEL: +82-31-765-8289
FAX: +82-31-766-2904
email: ykkwon@onetech.co.kr

----- Original Message -----
From: Y.G. Gwon
To: Chris Harvey
Sent: Tuesday, September 13, 2005 9:56 PM
Subject: Re: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

Dear Chris,

Thank you for your kind information and cooperation.

I would like to clear you all comments except bandedge test as following. If you have any comments, please inform me that at your earliest convenience.
I am sorry to inform that we have to send your certificate to our client until Sep. 15th in Korean time. Please help me.

Q1. Enclosed please find a revised confidential letter.
Q2. Enclosed please find a revised manual.
Q3 & Q7. Enclosed please find a zip file for clearing your comments no 3th and 7th.
Q4, Q5, Q6 and Q8. Enclosed please find a revised test report, but please understand bandedge test data for high frequency.
We received the sample today evening and we know that the product will be supplied to the Sprint, but the Sprint does not use frequency band, 1905~1910MHz and 1985~1990MHz, so our client block the frequency band by software. We cannot access the frequency band by software, so we cannot make test

data for high frequency band edge. The client shall be visit our company tomorrow morning and then modify software on the EUT. After completing test for high frequency bandedge at each mode and then re-send the data to you so, please inform me whether there is any deviation in our test report from you or not except bandedge test data. Or if you can accept our test data for high frequency bandedge, I am really happy, because I am sure the EUT shall meet the requirement the bandedge limit as low frequency.

Please understand we have to send your certificate to our client on Sep. 15th in Korean time.

Best regards,

Y. G. Gwon
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RF/EMC Team
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----- Original Message -----
From: Chris Harvey
To: 'Y.G. Gwon'
Sent: Monday, September 12, 2005 6:53 PM
Subject: RE: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

Dear YK Gwon,

I am not too busy to assist you in understanding the FCC Policy for intermodulation. I have attached a document the FCC provided in 2004 regarding the compliance requirements for Amplifiers and Boosters. This test is required for a device that generates or uses more than one RF carrier.

The document can be found at the FCC's web site at the following address: http://gullfoss2.fcc.gov/prod/oet/cf/kdb/forms/FTSSearchResultPage.cfm?id=20286&switch=P

I have extracted the Intermodulation portion of this document here for your convenience:

Intermodulation –Test all modulation types [TDMA, CDMA, and FM (covers GSM and F1D)]

- CW signal rather than typical signal is acceptable (for FM).
- At maximum drive level, for each modulation: one test with three tones, or two tests (high-, low-band edge) with two tones
- Limit usually is -13dBm conducted.
- Not needed for Single Channel systems.
- Combination of modulation types not needed.

I have also found the following guidance from the FCC at: http://gullfoss2.fcc.gov/prod/oet/cf/kdb/forms/FTSSearchResultPage.cfm?id=20395&switch=P

> For, for units handling multiple signals, an Inter-modulation (IM) test is required as follows: We consider that Inter-modulation (IM) products are spurious emissions and are covered by the general emissions limitations (mask) in each radio service. This normally refers to the IM products produced by the transmitter / amplifier carrying two or more signals at the same time. Section 2.1051 requires that measurements be made for spurious emissions at the antenna terminals while the transmitter is modulated. (Note we consider an amplifier to be a transmitter - since it is transmitting and is licensed. The word amplifier does not exist in Part 2 and many of the licensed radio services.) The FCC normally requires that the IM test(s) be done with three signals of equal magnitude - at their highest rated output level - for each type of modulation. The signals are spaced so that two are near to each other at one edge of

the pass band and the other signal is alone at the other edge of the pass band. This placement will potentially produce both in-band and out-of-band IM products. A two-signal test is acceptable as a default, meaning that the three signal test could not be performed because of equipment shortages or other limitations. The two-signal test is = the second best choice - not an option of A OR B. When a two-signal test is used - both the upper and lower side of the band edge must be tested - meaning two tests are made in place of one three signal test. The three signal test is still considered to be the preferred/primary procedure. In both cases, all different emission modes should be tested.

I hope this has been helpful. Please contact me if you have any further questions.

Best regards,

Chris Harvey
Chris Harvey EMC Consultants, Inc.
charvey@ieee.org
cell 443-622-3300

-----Original Message-----
From: Y.G. Gwon [mailto:ykkwon@onetech.co.kr]
Sent: Sunday, September 11, 2005 11:14 PM
To: Compliance Certification Services
Subject: Re: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

Dear Mr. Harvey,

Did you have a nice weekend?

Thank you for your kind comments regarding above subject project.

First of all, I would like to ask some question regarding your comments before clearing your all comments.
I know you are busy, but please advice me your kind advice in detail to clear your comments.

Q#4. You requested intermodulation test data according to FCC policy. Could you get the policy and then know the test procedure and setup so on.
I checked some test reports in the FCC home page, but several products does not have intermodulation test data. For example the FCC ID for the product is PSBWLR-1900BE.

Best regards,

Y. G. Gwon
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email: ykkwon@onetech.co.kr

----- Original Message -----
From: "Compliance Certification Services" <charvey-tcb@CCSEMC.com>
To: <ykkwon@onetech.co.kr>
Cc: <charvey-tcb@CCSEMC.com>
Sent: Tuesday, September 06, 2005 3:25 PM
Subject: Wireless Data Communication Co., Ltd., FCC ID: THPWDCTCER200, Assessment NO.: AN05T5086, Notice#1

> Dear YK Kwon,
>
> I have reviewed the above referenced TCB application and find that the following items need to be addressed before this review can be completed:
>
> 1. Please submit a revised confidentiality letter using the correct FCC ID number and Applicant company name.
>
> 2. The User's Manual indicates that the Uplink RF Power is 16dBm; however the test report indicates 18dBm. Please determine which is correct and update the incorrect exhibit.
>
> 3. The resolution of the Schematic Diagrams exhibit is too low and does not allow the text to be legible. Please submit a complete schematic diagram that is legible.
>
> 4. There is no Intermodulation data in the report, but no indication that this device is for single channel use only. If so, how does the unit restrict operation to single channel if there is a presence of more than one signal? If this device is capable of handling more than one signal, please provide Intermodulation data in accordance with FCC policy.
>
> 5. The test data shows plots for 'band edge' frequencies of 1852.5, 1907.5, 1932.5 and 1987.5 MHz. How does this device restrict operation of the standard CDMA channels at the frequencies of 1851.25, 1908.75, 1931.25 and 1988.75 MHz which are closer to the band edges?
>
> 6. Please provide the plots of the input signals used for this testing. The FCC requires a comparison of the input versus output signals for repeaters and boosters.
>
> 7. Please submit a Parts list and Tune-Up information, as well as the DC Voltages and currents for the final amplifier stages of this device exhibits for this application as required by the FCC 2.1033.
>
> 8. The Test Report states that the Measurement Procedure used is ANSI C63.4:2003 but does not mention the substitution method of EIA/TIA 603B. The text describing the Field -strength of Spurious Radiation seems to describe the substitution method of EIA/TIA 603B method. For future applications, please use the method of EIA/TIA 603B and reference this standard in the test report.
>
> Best regards,
> Chris Harvey
> charvey-tcb@ccsemc.com
>
> The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information within 30 days of the original e-mail date may result in application dismissal and forfeiture of the filing fee. Also, please note that partial responses increase processing time and should not be submitted. Any questions about the content of this correspondence should be directed to the e-mail address listed below the name of the sender.