

Mike Kuo

From: SunHee Kim (HCT) [alondra@hct.co.kr]
Sent: Monday, April 26, 2010 3:28 AM
To: Mike Kuo
Cc: Claire Hoque
Subject: Re: Diffon corporation , FCC ID: XHG-U600, Assessment NO.: AN10T0282, Notice#1,2
Attachments: U600_Part 22 24_RF TestReport-2.pdf; U600_RF_INTERNAL PHOTO_rev2.pdf; U600_Operational Description_Rev.2.pdf; U600_User's manual_Rev.2.pdf

Hi, Mike
I hope you had great weekends.
Please find the revised files and replies are embeded below your questions.
Should you have any questions, please let me know.

Thank you.

=====
Best Regards,
SunHee Kim
Assistant Manager, SAR/HAC Team
HCT Co.,Ltd (Hyundai Calibration&Certification Technologies Co., Ltd.)
San 136-1, Ami-ri , Bubal-eup, Icheon-si, Kyounki- do, Korea (467-701)

TEL.: (82-31) 639-8565
FAX : (82-31) 639-8535
C.P: (82-10) 8838-9875

----- Original Message -----

From: [Mike Kuo](#)
To: [SunHee Kim \(HCT\)](#)
Cc: [??? ??\(HCT\)](#) ; [????? \(HCT\)](#) ; [??? \(HCT\)](#) ; [??? \(HCT\)](#) ; [??? \(HCT\)](#)
Sent: Friday, April 23, 2010 10:03 AM
Subject: RE: Diffon corporation , FCC ID: XHG-U600, Assessment NO.: AN10T0282, Notice#1

Dear Sun Hee:

I called HCT and found out you are sick today. I was trying to discuss with someone who is familiar with this application so we can move forward as soon as possible. I still have some questions and please help to address these questions:

Reply to your statement are embedded below:

Best Regards

Mike Kuo
UL CCS

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: SunHee Kim (HCT) [mailto:alondra@hct.co.kr]
Sent: Thursday, April 22, 2010 2:46 AM
To: Mike Kuo
Cc: 소재상 차장(HCT); 박근호과장 (HCT); 이종석 (HCT); 장영수 (HCT); 임지영 (HCT)
Subject: Re: Diffon corporation , FCC ID: XHG-U600, Assessment NO.: AN10T0282, Notice#1

Hello Mike,

Please find the revised files and replies are embedded below your questions.
Should you have any questions, please let me know.

Thank you.

=====
Best Regards,
SunHee Kim
Assistant Manager, SAR/HAC Team
HCT Co.,Ltd (Hyundai Calibration&Certification Technologies Co., Ltd.)
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----- Original Message -----
From: <mike.kuo@ccsemc.com>
To: <alondra@hct.co.kr>
Cc: <mike.kuo@ccsemc.com>
Sent: Friday, April 16, 2010 7:30 AM
Subject: Diffon corporation , FCC ID: XHG-U600, Assessment NO.: AN10T0282, Notice#1

> Question #1: Theory of operation: Only contains CDMA portion of description. Please provide WiMAX portion of theory of operation.

==> Please find the revised Operational Description.

[Mike Kuo] O.K.

> Question #2: Tune-up procedure: Only contains CDMA portion of information. Please provide WiMAX portion of information.

==> Please find the revised Tune-up procedure.

[Mike Kuo] O.K.

> Question #3: Internal Photos: Please indicate the location of CDMA main antenna, CDMA AUX antenna, WiMAX main antenna and WiMAX aux antenna in the internal photos. (it is noted that the antenna location is embedded in the

WiMAX pre-PBA file. Pre-PBA file is for TCB reference only and will not submit to FCC. Thus it is important to include antenna locations in the internal photos with proper confidential protection).

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> In the internal photos, please also clearly indicated the Antenna-to-antenna separation distance.

==> Please find the revised Internal photo.

[Mike Kuo] Page 4 of internal photos provide misleading information. ANT1 is WiMAX TX/RX antenna but ANT2 indicates it is WiMAX RX antenna. As mentioned previously, ANT2 should be TX/RX antenna as well. Please make necessary correction
==>Please find the revised Internal photo.

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> Question #4: TCB application form: Based upon the measured ERP / EIRP output power listed in the test report, the max. ERP for cellular band is 0.382 W (TCB application form listed 0.327 W) , PCS band is 0.383 W (TCB application form listed 0.264 W). Please confirm.

==> We had confirm.[Mike Kuo] O.K.

>

> Question #5: Part 22/24 test report: In cellular band, the test mode selected for final test is RC1/SO2. For PCS band, it is RC1/SO55. Please note this is data device, the radio configuration and service option used for final tests must be in agreement with the type of data services. For CDMA 2000 data device, it is expected to measure RC3/SO32. Please provide your rational in selecting the mode as indicated in the test report.

==> Test results for this mode is the worst case.[Mike Kuo] The worst case is based upon output power measurement ? If this is case, then for PCS band, RC1/SO55 does not have highest output power.

==>You are right. It is not worst case for PCS band RC1/SO55. The worst case is RC3/SO02 for PCS band. I revised RF report. I checked Conducted power and EIRP again. The Conducted power and EIRP result are very much similar to previous results. The issue was mistaking typing in RF report. I am sorry. Thank you for your comment.

>

> Question #6: User Manual: User manual does not include WiMAX portion of description, please include such information in the final user manual.

==> Please find the revised User's manual.[Mike Kuo] Page 37, SAR Information: this is data modem not a phone, please make necessary correction. The highest near body SAR value indicates in the manual is 1.18 W/kg but the highest reported SAR value is 1.19 W/kg. Please make necessary correction.

==> Please find the revised User's manual

>

> Question #7: Can CDMA and WiMAX transmit simultaneously ? Please document the simultaneous transmitting condition in the theory of operation.

==> CDMA & WiMAX don't transmit simultaneously.[Mike Kuo] Please update this statement in the theory of operation.

==> Please find the revised theory of operation

==> We send the revised FCC ID label.[Mike Kuo] you disclosed the distributor name in the revised ID label format, is it what you want ?

Please recheck the attachment file.

==> Yes, we want

> Question #8: Section 3.6 of SAR test report, please provide 2600 MHz body liquid components.

==> Please find the revised SAR Report.[Mike Kuo] O.K.

>

> Question #9: Section 6 measurement uncertainty budget:

> Please explain why the axial and hemispherical atrophy are 4.7% and 9.6% respectively

> Please explain why Linearity is 4.7 %.

==> We referred to the manufacturer's user manual.(speag)

[Mike Kuo] Cannot base upon user manual but should be based upon Probe Calibration certification that you used for the measurement.

==> I agree with your opinion that Calibration report should be based.

However, it is hard to find value from plot image and seems unclear so we thought that representing uncertainty, according to manufacturer information, is more rational

Specifications of manufacturer in the manual and calibration data are almost same and they don't affect uncertainty data.

	Manual	Calibration Result (Plot Image)	Uncertainty ($k = 2$)	
Axial Isotropy	0.2 dB (4.7 %)	0.2 dB (4.7 %)	0.5 %	0.02 dB
Linearity	0.2 dB (4.7 %)	0.2 dB (4.7 %)	0.6 %	0.03 dB
Hemispherical Isotropy	0.4 dB (9.6 %)	0.4 dB (9.6 %)	2.6 %	0.11 dB

> Measured conductivity and permittivity do not match with measured result as stated in section 8.1

==> Please find the revised SAR Report.[Mike Kuo]

O.K.

>

> Note: FCC is auditing many SAR test reports have focus on the measurement uncertainty budget. All SAR test report shall include MU budget based upon each individual test.

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> Question #10: Body SAR: Please explain why the test mode for CDMA body SAR is EVDO rev.0. Please make sure you are following KDB 941224 which the default test mode is RC3/SO32 and additional EVDO based upon output power measurement.

==> We referred to page 10 of the KDB941225 and Please check the attached revised SAR Report.[Mike Kuo] O.K.

> Question #11: In the SAR test report for WiMAX portion, it is not clear how many traffic symbols were transmitting at the max. power and what is the condition of control symbols. It is critical to clearly document that condition of DL:UL ratio of 29:18 during the tests. In one area, you indicated there are 15 traffic symbols thus use $15 \times 102.86\mu s / 5000\mu s$ to calculate the duty factor and crest factor. In one area, you indicated there are 18 traffic symbols and three control symbols are not activated. Please review your SAR test report again. Make sure you are presenting consistent information.

>

> It is suggested to indicate number of traffic symbols at max. power and the condition of control symbols in each vector wave form file.

==> Please find the revised SAR Report. ..[Mike Kuo] My suggestion is not taken into consideration in page 23. I will not ask to modify this page again. However, it is important to identify the DL:UL ratio of 29:18, the first three control symbols were not used nor activated, 15 traffic symbols were transmitting at the max. power.

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> Question #12: Based upon the block diagram, the WiMAX antenna is TX diversity. What is the RF conducted power for main and diversity Antenna? During SAR evaluation, which antenna portion was activated? Due to antenna distance within the dongle, main SAR distribution will be different than diversity antenna. Please provide additional SAR measurement to ensure main and diversity SAR distribution are covered.

==> Please find the revised SAR Report. ..[Mike Kuo] Based upon the internal photos, block diagram and output power measurement. The ANT1 and ANT2 are the same surface of PCB board, the only difference is the diversity switch for ANT1 and ANT2, the RF conducted output power measured at ANT1 and ANT2 are most the same power level. However,

the measured SAR value at ANT2 are significantly lower than ANT1. ANT2 SAR value shows about 10% of ANT1 SAR value. Please explain.

==> Gains of ANT1 & ANT2 are different. We can find out submitted information "U600 Ant.Spec(WIMAX).pdf. " and gain of ANT2 is lower than gain of ANT1.

Therefore, we measure front of antenna and get almost same date for RF conducted outpower but test will be performed with emission of antenna for SAR so ANT2 has lower value than ANT1 for value of SAR.

In addition, All ANT1 and ANT2 SAR measurement were done on March 26, system validation and liquid calibration were all done on March 26. Initially, SAR report submitted only performed on ANT1 on March 26. Questions were sent to you on April 16. At this time, it is cleared that ANT2 SAR were not performed on March 26. Please explain why all ANT2 test date on March 26 and there is no more system validation and liquid calibration were made after March 26.

==>Usually, we do overwork when we have many urgent projects and U600 is also the same case.

The reason why not include in the previous SAR report about ANT 2, we thought that the worst case when using the ANT 1 .

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> Question #13: Please separate WIMAX SAR test report from CDMA SAR test report. Do not combine WIMAX and CDMA into single SAR test report.

==> Please find the revised SAR Report. ..[Mike Kuo] Thanks.

> Question #14: As indicated in the internal photos, there are modifications made on the device. Please confirm the following:

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> 1. Please issue a modification report and signed by the applicant to agree the modifications made on the product units.

>

> 2. Are these modifications made the dongle before SAR tests or after SAR tetss ? SAR evaluation is performed on the unit with or without the modification?

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> 3. What is the purpose of modifications?

==>Sample used for test and sample in photos are the same. There is no change in U600 Device. ..[Mike Kuo] As indicated in the internal photos, EMI gasket were placed on the EUT which are used to reduce EMI. As I indicated in my questions, please submit a modification report signed by the applicant to agree to implement the EMI gasket in the final production.

==> There is no modifications of U600 device . Even though PBA sample has EMI gasket front case, rear case & internal photo missed in the PBA report.

Every test was performed with EMI gasket such as RF_Internal photo. Therefore, our client believes that they don't need modification report issued.

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> Best Regards

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> Mike Kuo / CCS

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> 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.

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