

**EMC Technologies Report Number: M060246\_Cert\_EYTF3CSFT\_WLAN**

## **APPENDIX G**

### **Bluetooth Specifications**

富士通 株式会社 殿

No. HD-SH-GT02032

受付 051215

New ~~Change~~

新規・変更

Specification report

## 納入仕様書

Module name

品名 EYTF3CSFT

一般事項書（本製品の供給期間について）、および外形外観図 B（FCC ID、IC ID）が未確定の箇所があります。

御社との合意、また ID が決定しましたら、その内容を反映しまして、納入仕様書の改訂をさせていただきます。

領印欄

We hereby the specification.

この書類の内容を確認し受領致しました。

Received by  
〈御受領印〉

DATE :

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DATE :

Submitted by TAIYO YUDEN Co.,Ltd.

太陽誘電株式会社 モジュール事業部 無線技術部

| APPROVED<br>品証承認            | DES.REVIEW<br>設計承認         | CHECKED<br>確認              | DESIGNED<br>担当           |
|-----------------------------|----------------------------|----------------------------|--------------------------|
| Dec. 20, 2005<br>M. Hoshino | Dec. 19, 2005<br>M. Takagi | Dec. 19, 2005<br>A. Sugita | Dec. 19, 2005<br>J. Sato |

|                            |                               |                          |                          |       |                        |
|----------------------------|-------------------------------|--------------------------|--------------------------|-------|------------------------|
| Control No.                | Control name                  | APPROVED                 | CHECKER                  | DRAWN | DESIGNE                |
| HD-SH-<br>GT02032<br>(1/2) | Specification report<br>納入仕様書 | Dec.19.2005<br>M. Takagi | Dec.19.2005<br>J. Sugita |       | Dec.19.2005<br>J. Sato |

(1) Revision history  
改訂経歴

| Revision No.<br>改訂経歴 | Designed<br>担当         | Rectification record<br>変更経歴 | Checked<br>確認            | Approved<br>承認           |
|----------------------|------------------------|------------------------------|--------------------------|--------------------------|
| New document<br>初版   | Dec.19.2005<br>J. Sato | Newly issued<br>新規作成         | Dec.19.2005<br>J. Sugita | Dec.19.2005<br>M. Takagi |
| A                    |                        |                              |                          |                          |
| B                    |                        |                              |                          |                          |
| C                    |                        |                              |                          |                          |
| D                    |                        |                              |                          |                          |
| E                    |                        |                              |                          |                          |
| F                    |                        |                              |                          |                          |
| G                    |                        |                              |                          |                          |
| H                    |                        |                              |                          |                          |
| J                    |                        |                              |                          |                          |
| K                    |                        |                              |                          |                          |
| L                    |                        |                              |                          |                          |
| M                    |                        |                              |                          |                          |
| N                    |                        |                              |                          |                          |
| P                    |                        |                              |                          |                          |
| Q                    |                        |                              |                          |                          |

| Control No.                | Control name                  | APPROVED                 | CHECKER                  | DRAWN | DESIGNE                |
|----------------------------|-------------------------------|--------------------------|--------------------------|-------|------------------------|
| HD-SH-<br>GT02032<br>(2/2) | Specification report<br>納入仕様書 | Dec.19.2005<br>M. Takagi | Dec.19.2005<br>S. Fujita |       | Dec.19.2005<br>J. Sato |

(2) Document constituent list  
構成書類リスト

| Control name<br>書類名                    | Control No.<br>書類番号 | Document page<br>構成ページ |
|----------------------------------------|---------------------|------------------------|
| General items<br>一般事項書                 | HD-AG-A051215       | 1/5 ~ 5/5              |
| Absolute maximum ratings<br>絶対最大定格書    | HD-AM-A031226       | 1/1                    |
| Electrical characteristics<br>電気的特性書   | HD-AE-A051215       | 1/3 ~ 3/3              |
| Electrical characteristics<br>電気的特性書   | HD-AE-B031226       | 1/1                    |
| Electrical characteristics<br>電気的特性書   | HD-AE-C031226       | 1/11 ~ 11/11           |
| Electrical characteristics<br>電気的特性書   | HD-AE-D031226       | 1/8 ~ 8/8              |
| Outline・Appearance<br>外形・外観図           | HD-AD-A051215       | 1/4 ~ 4/4              |
| Outline・Appearance<br>外形・外観図           | HD-AD-B051215       | 1/2 ~ 2/2              |
| Circuit schematic<br>内部回路図             | HD-MC-A051215       | 1/1                    |
| Pin layout<br>ピンレイアウト図                 | HD-BA-A051215       | 1/2 ~ 2/2              |
| Test circuit<br>検査回路図                  | HD-AT-A051215       | 1/1                    |
| Instruction for Lot Number<br>ロット番号解説書 | HQ-BL-043           | 1/1                    |
| Handling Precaution<br>取扱注意要領          | HQ-BA-503           | 1/2 ~ 2/2              |
| The Terms of Reliability<br>信頼性条件書     | RT5100-010A         | 1/2 ~ 2/2              |
| Packaging specification<br>梱包仕様書       | HD-BB-A051215       | 1/2 ~ 2/2              |

| Control No.                | Control name           | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                |
|----------------------------|------------------------|---------------------------|---------------------------|-------|-------------------------|
| HD-AG-<br>A051215<br>(1/5) | General items<br>一般事項書 | Dec. 2, 2005<br>M. Takagi | Dec. 2, 2005<br>S. Sugita |       | Dec. 2, 2005<br>Y. Sato |

(1) Scope

適用

This specification ("Specification") applies to the hybrid IC "EYTF3CSFT" for use **Bluetooth**® module ("Product") manufactured by TAIYO YUDEN Co., Ltd. ("TAIYO YUDEN")

本仕様書は、太陽誘電株式会社(“弊社”)により製造される **Bluetooth**®用ハイブリッド IC “EYTF3CSFT” (“本製品”)に適用する。

(2) Description

内 容

① Model name: EYTF3CSFT

型 番 : EYTF3CSFT

② Function: Radio frequency transceiver Module (power class2, **Bluetooth**® standard Ver 2.0+EDR conformity)

機 能 : 無線通信モジュール (出力 Class2、**Bluetooth**®規格 Ver 2.0+EDR 準拠)

③ Application: PC equipment with USB interface (for self-powered use only)

用 途 : USB インターフェイスを有したコンピュータ機器 (セルフ電源使用に限る)

④ Structure: Hybrid IC loaded with silicon monolithic semiconductor

構 造 : シリコンモノリシック半導体を用いた混成集積回路

Containment of hazardous substance in this Product

\* RoHS regulation substance (Pb, Cd, Hg, Cr+6, PBB, PBDE): Non use

本製品内の環境物質含有

\* RoHS 規制物質 (Pb, Cd, Hg, Cr+6, PBB, PBDE) : 未使用

⑤ Terminal: Data input-output ... 20pin FPC/FFC Connector (ニッケル下地金フラッシュメッキ)

RF input-output ... Antenna Connector

電 極 : データ入出力 ... 20 ピン FPC/FFC コネクタ (Flash Gold over Nickel Plating)

RF 入出力 ... ANT コネクタ

⑥ Appearance: a. Lot number on the shielding case

b. Barcode label on the bottom side

外 装 : 無外装

a. 基板上のシールドケースにロット表示

b. 基板裏面にバーコードラベル貼付

⑦ Mount : Mounted with M2 screw

取 付 : M2 のネジによる取り付け

The **Bluetooth**® word mark and logos are owned by the **Bluetooth**® SIG, Inc. and any use of such marks by TAIYO YUDEN CO., LTD. is under license.

| Control No.                | Control name           | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                |
|----------------------------|------------------------|---------------------------|---------------------------|-------|-------------------------|
| HD-AG-<br>A051215<br>(2/5) | General items<br>一般事項書 | Dec. 2. 2005<br>M. Takagi | Dec. 2. 2005<br>J. Sugita | /     | Dec. 2. 2005<br>J. Sato |

⑧ Note :  
その他 :

a. Limitation of Warranty

保証

- i) TAIYO YUDEN provide warranties only if the Product is operated under the condition set forth in this Specification.

Please note that TAIYO YUDEN shall not be liable for any defect and/or malfunction arising from use of the Product under the terms and conditions other than the operating conditions hereof. In addition when this Product is used under environmental conditions such as over voltage which are not guaranteed, it may be destroyed in short mode. To ensure the security of customer's product, please add an extra fuse or/and a protection circuit for over voltage.

本製品の保証使用条件は本仕様書の通りです。

本保証条件以外の条件で御使用になった結果発生した不良・不具合につきましては、弊社は責任を負い兼ねますので御了承下さい。また、過電圧等本保証条件以外の条件で御使用になった場合、ショートモードで破壊する場合があります。安全性の確保のために、フューズや過電流保護回路等の追加をお願い致します。

- ii) This Product is designed for use in products which comply with **Bluetooth®** Specifications (Ver 2.0+EDR) ("Bluetooth Specifications"). TAIYO YUDEN disclaims and is not responsible for any liability concerning infringement by this Product under any intellectual property right owned by third party in case the customer uses this Product in any product which does not comply with **Bluetooth®** Specifications (the "non-complying products"). Furthermore, TAIYO YUDEN warrants only that this Product complies with this Specification and does not grant any other warranty including warranty for application of the non-complying products.

本製品は **Bluetooth®** の規格 (Ver 2.0+EDR) に従って製造された製品であり、本製品の用途が **Bluetooth®** 規格以外もしくは当該規格に従わない製品 (**Bluetooth®** 規格外製品) への使用の場合、弊社は第三者の知的財産権の侵害に基づくいかなる責任を負いません。また、弊社は本製品が本仕様書に準拠することのみを保証するもので、上記 **Bluetooth®** 規格外製品への応用についての保証等いかなる保証を行うものではありません。

- iii) In some cases, TAIYO YUDEN may use replacements as component parts of Products. Such replacement shall apply only to component part of Products, which TAIYO YUDEN deems it possible to replace or substitute according to (i) Scope of Warranty provided in this specification (e.g. Electric Characteristics, Outline, dimension, Conditions of Use, Reliability Tests, Official Standard (Type Approvals, Bluetooth LOGO etc.)) and (ii) Quality of Products. TAIYO YUDEN also ensures traceability of such replacement on production lot basis.

本製品を構成する部材の一部について、代替品を使用する場合があります。代替使用は、本仕様書に記載された保証範囲 (特性、外形、使用条件、信頼性、公的規格 (電波法、Bluetooth LOGO 認証等))、および品質に照らし、弊社にて代替 (完全な置換え) が可能と判断致しました Bluetooth IC 以外の部材を対象とさせていただきます。

尚、使用した部材種についての追跡性は製造ロット毎に確保されます。

- iv) In this Product customer's USB ID (Vendor ID: 0x0c24 and Product ID: 0x000f) which is compliant with USB Driver is incorporated.

本製品には USB Driver に対応した USB ID (Vendor ID: 0x0c24, Product ID: 0x000f) が組み込まれております。

- v) A Bluetooth Device Address and a security code are installed in this Product.

本製品にはセキュリティーコードおよび Bluetooth デバイスアドレスが組み込まれております。

| Control No.                | Control name           | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                |
|----------------------------|------------------------|---------------------------|---------------------------|-------|-------------------------|
| HD-AG-<br>A051215<br>(3/5) | General items<br>一般事項書 | Dec. 2, 2005<br>M. Takagi | Dec. 2, 2005<br>J. Sugita |       | Dec. 2, 2005<br>J. Sato |

b. Instruction for Use (CAUTION)

使用上の注意事項

- i) Because Product is not designed for radiation durability, please refrain from exposing Product to radiation in the use.

本製品は、耐放射線設計をしておりませんので、放射線のストレスを受ける環境下での使用は避けて下さい。

- ii) Communication between this Product and other might not be established nor maintained depending upon radio environment or operating condition of this Product and other products with **Bluetooth®** wireless technology.

本製品と本製品又は他製品の通信は、周囲の電波環境及び機器環境により確立又は維持し難くなることがあります。

- iii) This Product operates in the unlicensed ISM band at 2.4GHz. In case this Product is used around the other wireless devices which operate in same frequency band of this Product, there is a possibility that interference occurs between this Product and such other devices. If such interference occurs, please stop the operation of other devices or relocate this Product before using this Product or do not use this Product around the other wireless devices.

本製品は 2.4GHz 帯の周波数を使用しています。本製品を本製品と同じ周波数を使用した他の無線機器の周辺でご使用になりますと、本製品とかかる他の無線機器との間で電波干渉が発生する可能性があります。電波干渉が発生した場合、他の無線機器を停止するか、本製品の使用場所を変えるなど電波干渉の生じない環境でご使用下さい。

- iv) This Product mentioned in this Specification is manufactured for use in PC and PDA only. Before using this Product in any special equipment (such as medical equipment, space equipment, air craft, disaster prevention equipment), where higher safety and reliability are duly required, the applicability and suitability of this Product must be fully evaluated by the customer at its sole risk to ensure correct and safety operation of those special equipments. Also, evaluation of the safety function of this Product even for use in general electronics equipment shall be thoroughly made and when necessary, a protective circuit shall be added in design stage, all at the customer's sole risk.

本仕様書に記載されている本製品は、PC、PDA 向けとして製造されております。従って、高度の安全性や信頼性が求められる医療用機器、宇宙用機器、あるいは防災機器等にお使いになるときには、本製品の適合性をお客様の独自の責任で十分に評価、検討され、判断下さい。又、一般機器において御使用になる場合にも、お客様の独自の責任で十分な安全性評価を実施され、必要に応じて設計時に保護回路等を追加してください。

- v) This product obtained the limited modular type approval for TELEC.

Please follow the instructions below on designing your product.

本製品は、特定アンテナとの組み合わせにおいて TELEC 認証済みの無線装置です。

御社製品に搭載される場合、下記内容を遵守願います

- i) Don't use its product with other antennas except the one mentioned below.

Antenna name

・ 2.45GHz zone film antenna (Three types)

・ 2.45GHz zone stick antenna

Please contact us if you need any detailed antenna information.

他のアンテナと組み合わせてご使用にならないで下さい。

アンテナ名称

・ 2.45GHz 帯フィルムアンテナ (3 種類)

・ 2.45GHz 帯スティックアンテナ

アンテナの詳細についてはお問い合わせ願います。

| Control No.                | Control name               | APPROVED                | CHECKED                  | DRAWN | DESIGNED              |
|----------------------------|----------------------------|-------------------------|--------------------------|-------|-----------------------|
| HD-AG-<br>A051215<br>(4/5) | General items<br><br>一般事項書 | Dec.2.2005<br>M. Takagi | Dec.2.2005<br>M. Nishida | /     | Dec.2.2005<br>Y. Sato |

ii) Please notify clearly below sentences on your product or in the product manual.

The radio system built-in this Product is certified by Japan Approvals Institute for Telecommunications Equipment (JAITE) and Telecom Engineering Center (TELEC).

Name of the radio system: EYXF3CS

Telecom Engineering Center (TELEC) certification number: 001NYDA1571

御社製品あるいはマニュアルに下記文言を明示願います。

本製品には財団法人電気通信端末機器審査協会及び財団法人テレコム

エンジニアリングセンターによる技術基準適合認証を受けた無線設備が内蔵されています。

無線設備名: EYXF3CS

財団法人テレコムエンジニアリングセンター 認証番号: 001NYDA1571

iii) Please design your set structure in which this module can be easily attached and taken off by end users (consumer public).

セット搭載方法は、エンドユーザー（一般消費者）にて本モジュールを容易に脱着できる構造として下さい。

iv) This module is certified by Telecom Engineering Center (TELEC) as "Computer Device with USB Interface". Please do not use other purposes except that of certified. Please contact Taiyo Yuden for more details of purposes of this product.

本モジュールの用途は、「USB インターフェイスを有したコンピュータ機器」として TELEC 認証を受けています。規定されている用途以外の機器へは使用しないで下さい。用途の詳細につきましては、弊社までお問い合わせ願います。

#### c. Term of Support

##### サポート条件

i) Customer are requested to fully check and confirm by the start of mass production of this Product that (1)no bug, defect or other failure is included in firmware incorporated in this Product ("Incorporated Software"), (2)no bug, defect or other failure arising from installation of this Product in which is contained Incorporated Software into customer's products is included in Incorporated Software, and that Incorporated Software fully meets customer's intended use, although TAIYO YUDEN sufficiently inspects or verifies quality of Incorporated Software. TAIYO YUDEN warrants that TAIYO YUDEN uses Incorporated Software which customer have inspected or verified and which customer and TAIYO YUDEN have agreed to incorporate in this Product.

弊社では、本製品に内蔵されているファームウェア（「内蔵ファームウェア」）について十分な品質評価・検証を行っておりますが、お客様におかれましては本製品の量産開始前までに、内蔵ファームウェアに瑕疵やその他品質上の不具合、お客様の製品への組み込み上の不具合がない事を十分に評価され、お客様での本製品の使用用途に合致するものであることをご確認頂けますようお願い申し上げます。弊社は、お客様において品質上の評価・検証がなされ、本製品に内蔵することについてお客様と合意したファームウェアを本製品に内蔵することと致します。

ii) Please note that TAIYO YUDEN is not responsible for any failure arising out of bugs or defects which you have not found in Incorporated Software prior to reaching an agreement of this Specification between customer and TAIYO YUDEN (including the bugs or defects found after customer's acceptance and evaluation), and that TAIYO YUDEN does not render any corrective services, including but not limited to updating or upgrading service for Incorporated Software in case such failures may occur.

納入仕様書の取り交わし前に未検証であったバグ等に起因する不具合（お客様にて評価、承認の上、量産後に発生した不具合）に関しては、弊社の保証範囲外とさせていただきますので、何卒ご了承ください。また、これらの不具合発生時における内蔵ファームウェアの書換え又はアップグレード等につきましても弊社では対応致しかねますので、予めご了承ください。

| Control No.                | Control name           | APPROVED                  | CHECKED                  | DRAWN | DESIGNED                |
|----------------------------|------------------------|---------------------------|--------------------------|-------|-------------------------|
| HD-AG-<br>A051215<br>(5/5) | General items<br>一般事項書 | Dec. 2. 2005<br>M. Takagi | Dec. 2. 2005<br>S. Saito |       | Dec. 2. 2005<br>Y. Sato |

- iii) In the case that customer requests TAIYO YUDEN to customize the hardware or software of this Product in order to meet such customer's specific needs, TAIYO YUDEN will make commercially reasonable effort to modify such hardware or software at customer's expense; provide however, the customer is kindly requested to agree it doesn't mean that TAIYO YUDEN has obligations to do so even in the case it is technically difficult for TAIYO YUDEN.

お客様の都合により、ハードウェアおよびソフトウェアのカスタム対応が必要となった場合、弊社はお客様の依頼により、有償にて本対応を行います。但し、カスタムの内容によりましては、対応できない場合がありますので、予めご了承ください。

- iv) Any failure arising out of this Product will be examined by TAIYO YUDEN regardless of before or after mass production. Customer agrees that once such failure is turned out not to be responsible for TAIYO YUDEN after aforesaid examination, some of the technical support shall be conducted by TAIYO YUDEN at customer's expense; provided however, exact cost of this technical support can be agreed through the negotiation by the parties.

お客様にて、量産適用前後を問わず、本製品に起因する問題が生じた場合、弊社は問題解決のために要因の検討を行います。この結果、問題の要因が弊社にないことが判明した後のお客様へのサポートにつきましては、一部有償とさせていただきますので、予めご了承ください。なお、この際のサポート費用につきましては、その都度両社協議の上、定めさせていただきます。

#### d. Caution for Export Control

##### 輸出注意事項

This Product may be subject to governmental approvals, consents, licenses, authorizations, declarations, filings, and registrations for export or re-export of the Product, required by *Japanese Foreign Exchange and Foreign Trade Law (including related laws and regulations)* and/or any other country's applicable laws or regulations related to export control.

In case you will export or re-export this Product, you are strongly recommended to check and confirm, before exporting or re-exporting, necessary procedures for export or re-export of this Product which is required by applicable laws and regulations, and if necessary, you have to obtain necessary and appropriate approvals or licenses from governmental authority at your own risk and expense.

本製品は、日本国の「外国為替及び外国貿易法」（関連法令・規則を含む）及び／又は諸外国の輸出管理関連法規に基づく輸出（再輸出を含む）申請、承認又は許可の対象となる場合があります。本製品を輸出（再輸出）する場合には、必ず事前にこれら関連法規が定める手続をご確認頂き、必要な場合には、お客様の責任と費用において、適切な承認・許可をお取りください。

#### e. Term of Warranty

##### 保証期間

TAIYO YUDEN warrants only that this Product is in conformity with this Specification for one year after purchase and shall in no event give any other warranty.

弊社は納入後一年間、本製品が本仕様書を満足することを保証します。

本仕様書に記載のない事項については協議の上解決するものとします。

#### f. Items of the Specification

##### 仕様書の記載事項

- i) Any question arising from the Specification shall be solved in good faith through mutual discussion by the parties hereof.

本仕様書に疑義が生じた場合は、打ち合わせにより解決します。

- ii) The language of this "General items" is Japanese and this "General items" shall be interpreted by Japanese. Any copies of translation is a reference purpose only and is not binding on both parties hereto.

本一般事項書は、日本語の記載を主文とし、日本語で解釈されるものとします。翻訳による服本はあくまで参照の目的のみであり、両当事者を法的に拘束するものではありません。

|                                  |                                         |                           |                            |       |                           |
|----------------------------------|-----------------------------------------|---------------------------|----------------------------|-------|---------------------------|
| Control No.                      | Control name                            | APPROVED                  | CHECKD                     | DRAWN | DESIGNED                  |
| HD-AM-<br>A 0 3 1 2 2 6<br>(1/1) | Absolute maximum ratings<br><br>絶対最大定格書 | May. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Shimura |       | Mar. 3, 2005<br>M. Yasuda |

# 1. Maximum rating

| Item           | Symbol | MIN  | TYP | MAX     | Unit | Condition                          |
|----------------|--------|------|-----|---------|------|------------------------------------|
| Supply voltage | VDD    | -0.3 |     | 3.6     | V    | Ta=25°C, GND reference             |
| Input voltage  | Vin    | -0.3 |     | VDD+0.3 | V    | I/O terminals except USB interface |

# 2. Recommendation operating range

| Item                                  | Symbol | MIN  | TYP  | MAX  | Unit   | Condition             |
|---------------------------------------|--------|------|------|------|--------|-----------------------|
| Operating supply voltage              | VDD    | 3.15 | 3.30 | 3.45 | V      |                       |
| Supply voltage ripple and spike noise | VDD_m  |      |      | 30   | mV/p-p |                       |
| Operating temperature range           | Topr   | 0    | 25   | 70   | °C     | Humidity=40%RH Note1) |
| Storage temperature range             | Tstg   | -30  | 25   | 85   | °C     | Humidity=40%RH Note2) |

Note1) Operating temperature range is set to satisfy products electrical characteristics in the short term.

In terms of product life cycle when it is used in condition of varying from TYP standard in the long term, please refer to the reliability condition.

動作温度範囲は短期的に製品の電気的特性を満足する温度範囲です。

TYP 規格から大きく外れた条件で、長期ご使用の場合の製品寿命につきましては信頼性条件をご参照願います。

Note2) Storage temperature range is the condition for transportation and storage in temporary.

Please keep it under condition of "reference data" (HQ-BA-503) for long-term storage.

保存温度範囲は、輸送時や短期間の保管時の条件です。

長期保管時は、取扱注意要領の条件に従って保管して下さい。

|                            |                                          |                           |                           |       |                         |
|----------------------------|------------------------------------------|---------------------------|---------------------------|-------|-------------------------|
| Control No.                | Control name                             | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                |
| HD-AE-<br>A051215<br>(1/3) | Electrical characteristics<br><br>電気的特性書 | Dec. 2, 2008<br>M. Takagi | Dec. 2, 2008<br>J. Fujita |       | Dec. 2, 2008<br>J. Sato |

# Electrical characteristics

## DC Specifications

The Specification applies for T<sub>opr</sub>=25 degrees C, VDD 3.3V=3.3V

| No. | Parameter             | Condition                       | Symbol   | Min          | Typ | Max          | Unit | Remark       |
|-----|-----------------------|---------------------------------|----------|--------------|-----|--------------|------|--------------|
| 1   | Normal supply voltage |                                 | VDD_3.3V | 3.15         | 3.3 | 3.45         | V    |              |
| 2   | Input low voltage 1   | /RESET, PIO_X,<br>USB_DETACH    | VIL1     | -0.3         |     | 0.8          | V    |              |
| 3   | Input low voltage 2   | USB_DP,<br>USB_DM               | VIL2     | -            |     | 0.8          | V    |              |
| 4   | Input High voltage 1  | /RESET, PIO_X,<br>USB_DETACH    | VIH1     | 0.7xVDD_3.3V |     | VDD_3.3V+0.3 | V    |              |
| 5   | Input High voltage 2  | USB_DP,<br>USB_DM               | VIH2     | 2.0          |     | -            | V    |              |
| 6   | Output low voltage 1  | PIO_X                           | VOL1     | -            |     | 0.4          | V    | IOL<br>=4mA  |
| 7   | Output low voltage 2  | USB_DP,<br>USB_DM               | VOL2     | -            |     | 0.3          | V    |              |
| 8   | Output High voltage 1 | PIO_X                           | VOH1     | VDD_3.3V-0.4 |     | -            | V    | IOH<br>=-4mA |
| 9   | Output High voltage 2 | USB_DP<br>USB_DM                | VOH2     | 2.8          |     | -            | V    |              |
| 10  | Peak current          | Continuous Rx                   | Iccp1    |              | 60  | 180          | mA   |              |
| 11  | Average current1      | Sniff mode<br>(Slave only)      | Icca1    |              | 15  |              | mA   | Notes1,3     |
| 12  | Average current2      | Standby mode                    | Icca2    |              | 9   |              | mA   | Note3        |
| 13  | Average current3      | Send DM1packet<br>(Master)      | Icca3    |              | 46  |              | mA   | Note3        |
| 14  | Average current4      | Receive<br>DM1packet<br>(Slave) | Icca4    |              | 45  |              | mA   | Note3        |
| 15  | Average current5      | Hold mode<br>(Slave only)       | Icca5    |              | 12  |              | mA   | Note3        |
| 16  | Average current6      | Park mode<br>(Slave only)       | Icca6    |              | 13  |              | mA   | Notes2,3     |

## Notes:

- Sniff mode parameter.
 

|              |       |
|--------------|-------|
| Max interval | 0050h |
| Min interval | 0010h |
| Attempt      | 0005h |
| Timeout      | 0005h |
- Park mode parameter.
 

|              |       |
|--------------|-------|
| Max interval | 0100h |
| Min interval | 0010h |
- The consumption current might fluctuate with the condition of radio communication, host performance and test circuit.

| Control No.                | Control name                         | APPROVED                | CHECKED                 | DRAWN | DESIGNED              |
|----------------------------|--------------------------------------|-------------------------|-------------------------|-------|-----------------------|
| HD-AE-<br>A051215<br>(2/3) | Electrical characteristics<br>電気的特性書 | Dec.2.2005<br>M. Takagi | Dec.2.2005<br>V. Sugita |       | Dec.2.2005<br>J. Sato |

### AC Specifications

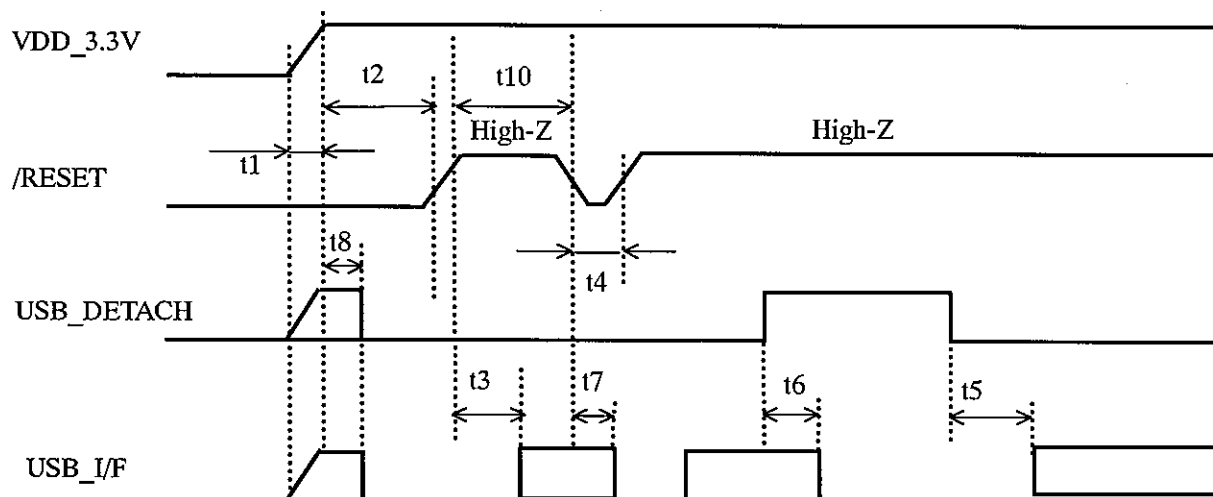
The Specification applies for Topr=25 degrees C, VDD\_3.3V=3.3V

| No. | Parameter                           | Condition | Symbol | Min  | Typ  | Max  | Unit | Remark    |
|-----|-------------------------------------|-----------|--------|------|------|------|------|-----------|
| 1   | VDD_3.3V Rise Time from 0V to 3.15V |           | t1     |      |      | 2    | ms   |           |
| 2   | VDD_3.3V= 3.15V to /RESET High      |           | t2     | 10   |      |      | ms   | Notes 1,2 |
| 3   | /RESET High to Module Ready         |           | t3     |      | (70) | 3000 | ms   | Notes 4,5 |
| 4   | /RESET Pulse Width                  |           | t4     | 6    |      |      | ms   |           |
| 5   | DETACH Low to USB_I/F Active        |           | t5     | 0    |      | 10   | ms   |           |
| 6   | DETACH High to USB_I/F High-Z       |           | t6     |      |      | 130  | ms   |           |
| 7   | /RESET Low to USB_I/F High-Z        |           | t7     | 0    |      | 10   | ms   |           |
| 8   | Power on to stable condition        |           | t8     |      |      | 2    | ms   | Note 3    |
| 9   | /RESET Low to VDD_3.3V Off          |           | t9     | 0    |      |      | ms   |           |
| 10  | /RESET High to /RESET Low           |           | t10    | 3000 |      |      | ms   | Notes 4,5 |

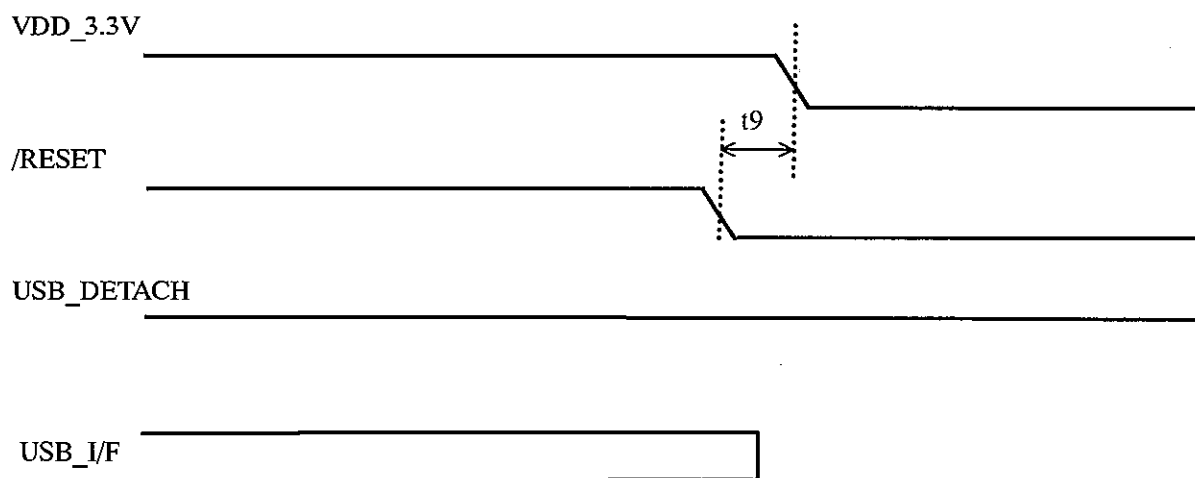
### Notes:

- This module has an internal flash memory and a function to erase/sort unnecessary data if certain HCI commands are issued and consume more than a certain level of free space in the flash memory. This operation occurs at every module initialization (power-on).  
If supply voltage becomes non-defined states during initialization or writing in flash memory, data in flash memory might be destroyed. If the data in flash memory is destroyed, module will not work correctly. Therefore please be sure to stabilize power source before RESET release.  
In addition please design module peripheral circuits to avoid temporary blackout of power source during operation.  
Please refer HD-AE-C 031226 for HCI command which rewrites flash memory data.
- Input /RESET signal of 10ms and more in condition of VDD\_3.3V at over 3.15V.
- During t5 input or output is unstable and this condition occurs at the following pins.(PIO\_X, USB\_DP, USB\_DM)  
This unstable condition of t5 continues until the internal power of 1.8V reaches its steady state after VDD\_3.3V supply. After that, it takes some time to discharge when the unstable condition of PIO pin is output high. Discharged time changes depending on the outside load. Please pull-down PIO pin with a 4.7k ohm resistor to reduce the discharged time.
- Some of User Settings are stored in flash memory writable memory area and flash memory free space is controlled by Firmware. When the free space in flash memory is lower than certain amount, Defrag automatically starts. Amount of time required for Defrag will vary depending on the environment. Please conduct enough verification for the time required for the customer's product under customer's environment before use.
- The Typ. is a reference value. The value may change depending on the firmware version, conditions of use and types of flash memory.

| Control No.                | Control name                         | APPROVED                  | CHECKED                  | DRAWN | DESIGNED                 |
|----------------------------|--------------------------------------|---------------------------|--------------------------|-------|--------------------------|
| HD-AE-<br>A051215<br>(3/3) | Electrical characteristics<br>電気的特性書 | Dec. 2, 2005<br>M. Takagi | Dec. 2, 2005<br>J. Saito |       | Dec. 2, 2005<br>J. Saito |



Timing Diagram for Power Up Sequence



Timing Diagram for Power Down Sequence

| Control No.                | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                  |
|----------------------------|--------------------------------------|---------------------------|---------------------------|-------|---------------------------|
| HD-AE-<br>B031226<br>(1/1) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Ohmura |       | Mar. 3, 2005<br>H. Yasuda |

Electrical characteristics

The Specification applies for Topr = 0 to +70°C, VDD=3.15~3.45V

#### RF Specifications

| No | Parameter                   | Symbol | Spec |     |      | Unit | Remark                    |
|----|-----------------------------|--------|------|-----|------|------|---------------------------|
|    |                             |        | Min  | Typ | Max  |      |                           |
| 1  | Frequency Range             |        | 2402 |     | 2480 | MHz  | 0~78ch(1MHz step)         |
| 2  | Initial Frequency Tolerance | IFT    | -48  | 0   | 48   | kHz  | DH5                       |
| 3  | Output Power                | POW    | -3.5 | 0   | 2.5  | dBm  | Ta=25±2°C<br>@Max Power   |
|    |                             |        | -6   | 0   | 4    | dBm  | @Max Power                |
| 4  | Modulation Characteristics  | MC1    | 140  | 160 | 175  | kHz  | Payload: 11110000 average |
|    |                             | MC4    | 115  | 160 |      | kHz  | Payload: 10101010 average |
| 5  | Spurious Emission           | SE2    |      | -65 | -47  | dBm  | 2 <sup>nd</sup> Harmonics |
|    |                             | SE3    |      | -65 | -47  | dBm  | 3 <sup>rd</sup> Harmonics |
| 6  | Sensitivity                 | SEN    |      | -80 | -75  | dBm  | BER<0.1%, Ta=25±2°C       |
|    |                             |        |      | -80 | -70  | dBm  | BER<0.1%                  |

Note:

RF output is suspended within 100msec after /RESET Active.

通信中に /RESET Active となった場合、RF 出力は 100msec 以下で停止します。

| Control No.                 | Control name                         | APPROVED                  | CHECKED                    | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|----------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(1/11) | Electrical characteristics<br>電気的特性書 | Mar. 3. 2005<br>M. Takagi | Mar. 3. 2005<br>Y. Okumura |       | Mar. 3. 2005<br>K. Saito |

### Supported HCI Commands / HCI Events

The **Bluetooth®** functions of this module is as written in the attached PICS. Depending on firmware version Upgrade, the **Bluetooth®** functions are subject to change without notice.

#### HCI COMMAND LIST

Firmware Version 19.2 (Build 1915)

| Command Description | OpCode | Group (Hex) | Command (Hex) | Parameters | Returns | Status | Notes |
|---------------------|--------|-------------|---------------|------------|---------|--------|-------|
|---------------------|--------|-------------|---------------|------------|---------|--------|-------|

#### LINK CONTROL

##### Inquiry

|                                |        |   |   |                   |        |     |  |
|--------------------------------|--------|---|---|-------------------|--------|-----|--|
| HCI_Inquiry                    | 0x0401 | 1 | 1 | LAP               |        | Yes |  |
|                                |        |   |   | Inquiry Length    |        |     |  |
|                                |        |   |   | Num Responses     |        |     |  |
| HCI_Inquiry_Cancel             | 0x0402 | 1 | 2 |                   | Status | Yes |  |
| HCI_Periodic_Inquiry_Mode      | 0x0403 | 1 | 3 | Max Period Length | Status | Yes |  |
|                                |        |   |   | Min Period Length |        |     |  |
|                                |        |   |   | LAP               |        |     |  |
|                                |        |   |   | Inquiry Length    |        |     |  |
| HCI_Exit_Periodic_Inquiry_Mode | 0x0404 | 1 | 4 | Num Responses     | Status | Yes |  |

#### Connection Management

|                                           |        |   |    |                           |         |     |         |
|-------------------------------------------|--------|---|----|---------------------------|---------|-----|---------|
| HCI_Create_Connection                     | 0x0405 | 1 | 5  | BD ADDR                   |         | Yes | a,b     |
|                                           |        |   |    | Packet Type               |         |     |         |
|                                           |        |   |    | Page Scan Repetition Mode |         |     |         |
|                                           |        |   |    | Page Scan Mode            |         |     |         |
|                                           |        |   |    | Clock Offset              |         |     |         |
|                                           |        |   |    | Allow Role Switch         |         |     |         |
| HCI_Disconnect                            | 0x0406 | 1 | 6  | Connection Handle         |         | Yes | b       |
|                                           |        |   |    | Reason                    |         |     |         |
| HCI_Add_SCO_Connection                    | 0x0407 | 1 | 7  | SCO Handle                |         | Yes | b,c,d,j |
|                                           |        |   |    | Packet Type               |         |     |         |
| HCI_Create_Connection_Cancel              | 0x0408 | 1 | 8  | BD ADDR                   | Status  | Yes | l       |
|                                           |        |   |    |                           | BD_ADDR |     |         |
| HCI_Accept_Connection_Request             | 0x0409 | 1 | 9  | BD ADDR                   |         | Yes |         |
|                                           |        |   |    | Role                      |         |     |         |
| HCI_Reject_Connection_Request             | 0x040A | 1 | A  | BD ADDR                   |         | Yes |         |
| HCI_Change_Connection_Packet_Type         | 0x040F | 1 | F  | Connection Handle         |         | Yes |         |
|                                           |        |   |    | Packet Type               |         |     |         |
| HCI_Setup_Synchronous_Connection          | 0x0428 | 1 | 28 | Connection Handle         |         | Yes | l,m,o   |
|                                           |        |   |    | Transmit Bandwidth        |         |     |         |
|                                           |        |   |    | Receive Bandwidth         |         |     |         |
|                                           |        |   |    | Max Latency               |         |     |         |
|                                           |        |   |    | Voice Setting             |         |     |         |
|                                           |        |   |    | Retransmission Effort     |         |     |         |
|                                           |        |   |    | Packet Type               |         |     |         |
| HCI_Accept_Synchronous_Connection_Request | 0x0429 | 1 | 29 | BD ADDR                   |         | Yes | l,m,o   |
|                                           |        |   |    | Transmit Bandwidth        |         |     |         |
|                                           |        |   |    | Receive Bandwidth         |         |     |         |
|                                           |        |   |    | Max Latency               |         |     |         |
|                                           |        |   |    | Content Format            |         |     |         |
|                                           |        |   |    | Retransmission Effort     |         |     |         |
|                                           |        |   |    | Packet Type               |         |     |         |
| HCI_Reject_Synchronous_Connection_Request | 0x042A | 1 | 2A | BD ADDR                   |         | Yes | l,m,o   |
|                                           |        |   |    | Reason                    |         |     |         |

| Control No.                 | Control name                         | APPROVED                  | CHECKED                    | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|----------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(2/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Shimura |       | Mar. 3, 2005<br>K. Saito |

#### Authentication / Pairing

|                                     |        |   |    |                                        |                   |     |  |
|-------------------------------------|--------|---|----|----------------------------------------|-------------------|-----|--|
| HCI_Link_Key_Request_Reply          | 0x040B | 1 | B  | BD_ADDR<br>Link Key                    | Status<br>BD_ADDR | Yes |  |
| HCI_Link_Key_Request_Negative_Reply | 0x040C | 1 | C  | BD_ADDR                                | Status<br>BD_ADDR | Yes |  |
| HCI_PIN_Code_Request_Reply          | 0x040D | 1 | D  | BD_ADDR<br>PIN Code Length<br>PIN Code | Status<br>BD_ADDR | Yes |  |
| HCI_PIN_Code_Request_Negative_Reply | 0x040E | 1 | E  | BD_ADDR                                | Status<br>BD_ADDR | Yes |  |
| HCI_Authentication_Requested        | 0x0411 | 1 | 11 | Connection Handle                      |                   | Yes |  |
| HCI_Change_Connection_Link_Key      | 0x0415 | 1 | 15 | Connection Handle                      |                   | Yes |  |

#### Encryption

|                               |        |   |    |                                        |  |     |  |
|-------------------------------|--------|---|----|----------------------------------------|--|-----|--|
| HCI_Set_Connection_Encryption | 0x0413 | 1 | 13 | Connection Handle<br>Encryption Enable |  | Yes |  |
| HCI_Master_Link_Key           | 0x0417 | 1 | 17 | Key Flag                               |  | Yes |  |

#### Remote Information

|                                     |        |   |    |                                                                        |                                                       |     |   |
|-------------------------------------|--------|---|----|------------------------------------------------------------------------|-------------------------------------------------------|-----|---|
| HCI_Remote_Name_Request             | 0x0419 | 1 | 19 | BD_ADDR<br>Page Scan Repetition Mode<br>Page Scan Mode<br>Clock Offset |                                                       | Yes |   |
| HCI_Remote_Name_Request_Cancel      | 0x041A | 1 | 1A | BD_ADDR                                                                | Status<br>BD_ADDR                                     | Yes | 1 |
| HCI_Read_Remote_Supported_Features  | 0x041B | 1 | 1B | Connection Handle                                                      |                                                       | Yes |   |
| HCI_Read_Remote_Extended_Features   | 0x041C | 1 | 1C | Connection Handle<br>Page Number                                       |                                                       | Yes | 1 |
| HCI_Read_Remote_Version_Information | 0x041D | 1 | 1D | Connection Handle                                                      |                                                       | Yes |   |
| HCI_Read_Clock_Offset               | 0x041F | 1 | 1F | Connection Handle                                                      |                                                       | Yes |   |
| HCI_Read_LMP_Handle                 | 0x0420 | 1 | 20 | Connection Handle                                                      | Status<br>Connection Handle<br>LMP_Handle<br>Reserved | Yes | 1 |

| Control No.                 | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(3/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

# LINK POLICY

|                                        |        |   |    |                              |                              |     |     |
|----------------------------------------|--------|---|----|------------------------------|------------------------------|-----|-----|
| HCI_Hold_Mode                          | 0x0801 | 2 | 1  | Connection Handle            |                              | Yes |     |
|                                        |        |   |    | Hold Mode Max Interval       |                              |     |     |
|                                        |        |   |    | Hold Mode Min Interval       |                              |     |     |
| HCI_Sniff_Mode                         | 0x0803 | 2 | 3  | Connection Handle            |                              | Yes |     |
|                                        |        |   |    | Sniff Mode Max Interval      |                              |     |     |
|                                        |        |   |    | Sniff Mode Min Interval      |                              |     |     |
|                                        |        |   |    | Sniff Attempt                |                              |     |     |
|                                        |        |   |    | Sniff Timeout                |                              |     |     |
| HCI_Exit_Sniff_Mode                    | 0x0804 | 2 | 4  | Connection Handle            |                              | Yes |     |
| HCI_Park_State                         | 0x0805 | 2 | 5  | Connection Handle            |                              | Yes | k   |
|                                        |        |   |    | Beacon Max Interval          |                              |     |     |
|                                        |        |   |    | Beacon Min Interval          |                              |     |     |
| HCI_Exit_Park_State                    | 0x0806 | 2 | 6  | Connection Handle            |                              | Yes | k   |
|                                        |        |   |    | Connection Handle            |                              |     |     |
|                                        |        |   |    | Flags                        |                              |     |     |
|                                        |        |   |    | Service Type                 |                              |     |     |
|                                        |        |   |    | Token Rate                   |                              |     |     |
|                                        |        |   |    | Peak Bandwidth               |                              |     |     |
|                                        |        |   |    | Latency                      |                              |     |     |
|                                        |        |   |    | Delay Variation              |                              |     |     |
| HCI_Role_Discovery                     | 0x0809 | 2 | 9  | Connection Handle            | Status                       | Yes |     |
|                                        |        |   |    |                              | Connection Handle            |     |     |
|                                        |        |   |    |                              | Current Role                 |     |     |
| HCI_Switch_Role                        | 0x080B | 2 | B  | BD ADDR                      |                              | Yes |     |
|                                        |        |   |    | Role                         |                              |     |     |
| HCI_Read_Link_Policy_Settings          | 0x080C | 2 | C  | Connection Handle            | States                       | Yes |     |
|                                        |        |   |    |                              | Connection Handle            |     |     |
|                                        |        |   |    |                              | Link Policy Settings         |     |     |
| HCI_Write_Link_Policy_Settings         | 0x080D | 2 | D  | Connection Handle            | States                       | Yes |     |
|                                        |        |   |    | Link Policy settings         | Connection Handle            |     |     |
| HCI_Read_Default_Link_Policy_Settings  | 0x080E | 2 | E  |                              | Status                       | Yes | l   |
|                                        |        |   |    |                              | Default Link Policy Settings |     |     |
| HCI_Write_Default_Link_Policy_Settings | 0x080F | 2 | F  | Default Link Policy Settings | Status                       | Yes | l   |
|                                        |        |   |    | Connection Handle            |                              |     |     |
|                                        |        |   |    | Flags                        |                              |     |     |
|                                        |        |   |    | Flow direction               |                              |     |     |
|                                        |        |   |    | Service Type                 |                              |     |     |
|                                        |        |   |    | Token Rate                   |                              |     |     |
|                                        |        |   |    | Token Bucket Size            |                              |     |     |
|                                        |        |   |    | Peak Bandwidth               |                              |     |     |
|                                        |        |   |    | Access Latency               |                              |     |     |
| HCI_Flow_Specification                 | 0x0810 | 2 | 10 |                              |                              | No  | l,m |

| Control No.                 | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(4/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

### HIST CONTROLLER & BASEBAND

|                                        |        |   |    |                              |                              |     |     |
|----------------------------------------|--------|---|----|------------------------------|------------------------------|-----|-----|
| HCI_Set_Event_Mask                     | 0x0C01 | 3 | 1  | Event Mask                   | States                       | Yes |     |
| HCI_Reset                              | 0x0C03 | 3 | 3  |                              | States                       | Yes |     |
| HCI_Set_Event_Filter                   | 0x0C05 | 3 | 5  | Filter Type                  | States                       | Yes |     |
|                                        |        |   |    | Filter Condition Type        |                              |     |     |
|                                        |        |   |    | Condition                    |                              |     |     |
| HCI_Flush                              | 0x0C08 | 3 | 8  | Connection Handle            | States                       | Yes |     |
|                                        |        |   |    | Connection Handle            |                              |     |     |
| HCI_Read_PIN_Type                      | 0x0C09 | 3 | 9  |                              | States                       | Yes |     |
|                                        |        |   |    |                              | PIN Type                     |     |     |
| HCI_Write_PIN_Type                     | 0x0C0A | 3 | A  | PIN Type                     | States                       | Yes |     |
| HCI_Create_New_Unit_Key                | 0x0C0B | 3 | B  |                              | States                       | Yes |     |
| HCI_Read_Stored_Link_Key               | 0x0C0D | 3 | D  | BD ADDR                      | States                       | Yes |     |
|                                        |        |   |    | Read All Flag                | Max Num Keys                 |     |     |
|                                        |        |   |    |                              | Num Keys Read                |     |     |
| HCI_Write_Stored_Link_Key              | 0x0C11 | 3 | 11 | Num Keys To Write            | States                       | Yes | n   |
|                                        |        |   |    | BD ADDR [I]                  | Num Keys Written             |     |     |
|                                        |        |   |    | Link Key [I]                 |                              |     |     |
| HCI_Delete_Stored_Link_Key             | 0x0C12 | 3 | 12 | BD ADDR                      | States                       | Yes | n   |
|                                        |        |   |    | Delete All Flag              | Num Keys Deleted             |     |     |
| HCI_Write_Local_Name                   | 0x0C13 | 3 | 13 | Local Name                   | States                       | Yes | f,k |
| HCI_Read_Local_Name                    | 0x0C14 | 3 | 14 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Local Name                   |     |     |
| HCI_Read_Connection_Accept_Timeout     | 0x0C15 | 3 | 15 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Conn Accept Timeout          |     |     |
| HCI_Write_Connection_Accept_Timeout    | 0x0C16 | 3 | 16 | Conn Accept Timeout          | States                       | Yes |     |
| HCI_Read_Page_Timeout                  | 0x0C17 | 3 | 17 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Page Timeout                 |     |     |
| HCI_Write_Page_Timeout                 | 0x0C18 | 3 | 18 | Page Timeout                 | States                       | Yes |     |
| HCI_Read_Scan_Enable                   | 0x0C19 | 3 | 19 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Scan Enable                  |     |     |
| HCI_Write_Scan_Enable                  | 0x0C1A | 3 | 1A | Scan Enable                  | States                       | Yes |     |
| HCI_Read_Page_Scan_Activity            | 0x0C1B | 3 | 1B |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Page Scan Interval           |     |     |
|                                        |        |   |    |                              | Page Scan Window             |     |     |
| HCI_Write_Page_Scan_Activity           | 0x0C1C | 3 | 1C | Page Scan Interval           | States                       | Yes |     |
|                                        |        |   |    | Page Scan Window             |                              |     |     |
| HCI_Read_Inquiry_Scan_Activity         | 0x0C1D | 3 | 1D |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Inquiry Scan Interval        |     |     |
|                                        |        |   |    |                              | Inquiry Scan Window          |     |     |
| HCI_Write_Inquiry_Scan_Activity        | 0x0C1E | 3 | 1E | Inquiry Scan Interval        | States                       | Yes |     |
|                                        |        |   |    | Inquiry Scan Window          |                              |     |     |
| HCI_Read_Authentication_Enable         | 0x0C1F | 3 | 1F |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Authentication Enable        |     |     |
| HCI_Write_Authentication_Enable        | 0x0C20 | 3 | 20 | Authentication Enable        | States                       | Yes |     |
| HCI_Read_Encryption_Mode               | 0x0C21 | 3 | 21 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Encryption Mode              |     |     |
| HCI_Write_Encryption_Mode              | 0x0C22 | 3 | 22 | Encryption Mode              | States                       | Yes |     |
| HCI_Read_Class_of_Device               | 0x0C23 | 3 | 23 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Class of Device              |     |     |
| HCI_Write_Class_of_Device              | 0x0C24 | 3 | 24 | Class of Device              | States                       | Yes |     |
| HCI_Read_Voice_Setting                 | 0x0C25 | 3 | 25 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Voice Setting                |     |     |
| HCI_Write_Voice_Setting                | 0x0C26 | 3 | 26 | Voice Channel setting        | States                       | Yes |     |
| HCI_Read_Automatic_Flush_Timeout       | 0x0C27 | 3 | 27 | Connection Handle            | States                       | Yes |     |
|                                        |        |   |    |                              | Connection Handle            |     |     |
|                                        |        |   |    |                              | Flush Timeout                |     |     |
| HCI_Write_Automatic_Flush_Timeout      | 0x0C28 | 3 | 28 | Connection Handle            | States                       | Yes |     |
|                                        |        |   |    | Flash Timeout                | Connection Handle            |     |     |
| HCI_Read_Num_Broadcast_Retransmission  | 0x0C29 | 3 | 29 |                              | States                       | Yes |     |
|                                        |        |   |    |                              | Num Broadcast Retransmission |     |     |
| HCI_Write_Num_Broadcast_Retransmission | 0x0C2A | 3 | 2A | Num Broadcast Retransmission | States                       | Yes |     |

| Control No.                 | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(5/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

|                                           |        |   |    |                                   |                                 |     |       |
|-------------------------------------------|--------|---|----|-----------------------------------|---------------------------------|-----|-------|
| HCI_Read_Hold_Mode_Activity               | 0x0C2B | 3 | 2B |                                   | States                          | Yes |       |
| HCI_Write_Hold_Mode_Activity              | 0x0C2C | 3 | 2C | Hold Mode Activity                | Hold Mode Activity              | Yes |       |
| HCI_Read_Transmit_Power_Level             | 0x0C2D | 3 | 2D | Connection Handle                 | States                          | Yes |       |
|                                           |        |   |    | Type                              | Connection Handle               |     |       |
|                                           |        |   |    |                                   | Power Level                     |     |       |
| HCI_Read_Synchronous_Flow_Control_Enable  | 0x0C2E | 3 | 2E |                                   | States                          | No  | c,d,k |
|                                           |        |   |    |                                   | Synchronous Flow Control Enable |     |       |
| HCI_Write_Synchronous_Flow_Control_Enable | 0x0C2F | 3 | 2F | Synchronous Flow Control Enable   | States                          | No  | c,d,k |
| HCI_Set_Controller_To_Host_Flow_Control   | 0x0C31 | 3 | 31 | Flow Control Enable               | States                          | Yes | k     |
| HCI_Host_Buffer_Size                      | 0x0C33 | 3 | 33 | Host ACL Data Packet Length       | States                          | Yes |       |
|                                           |        |   |    | Host SCO Data Packet Length       |                                 |     |       |
|                                           |        |   |    | Host Total Num ACL Data Packets   |                                 |     |       |
|                                           |        |   |    | Host Total Num SCO Data Packets   |                                 |     |       |
| HCI_Host_Number_Of_Completed_Packets      | 0x0C35 | 3 | 35 | Number of Handles                 |                                 | Yes |       |
|                                           |        |   |    | Connection handle [I]             |                                 |     |       |
|                                           |        |   |    | Host Num of Completed Packets [I] |                                 |     |       |
| HCI_Read_Link_Supervision_Timeout         | 0x0C36 | 3 | 36 | Connection Handle                 | States                          | Yes |       |
|                                           |        |   |    |                                   | Connection Handle               |     |       |
| HCI_Write_Link_Supervision_Timeout        | 0x0C37 | 3 | 37 | Link Supervision Timeout          | States                          | Yes |       |
|                                           |        |   |    |                                   | Link Supervision Timeout        |     |       |
| HCI_Read_Number_Of_Support_IAC            | 0x0C38 | 3 | 38 |                                   | States                          | Yes |       |
|                                           |        |   |    |                                   | Num Support IAC                 |     |       |
| HCI_Read_Current_IAC_LAP                  | 0x0C39 | 3 | 39 |                                   | States                          | Yes |       |
|                                           |        |   |    |                                   | Num Current IAC                 |     |       |
|                                           |        |   |    |                                   | IAC LAP [I]                     |     |       |
| HCI_Write_Current_IAC_LAP                 | 0x0C3A | 3 | 3A | Num Current IAC                   | States                          | Yes |       |
|                                           |        |   |    | IAC LAP [I]                       |                                 |     |       |
| HCI_Read_Page_Scan_Period_Mode            | 0x0C3B | 3 | 3B |                                   | States                          | Yes |       |
|                                           |        |   |    |                                   | Page Scan Period Mode           |     |       |
| HCI_Write_Page_Scan_Period_Mode           | 0x0C3C | 3 | 3C | Page Scan Period Mode             | States                          | Yes |       |
| HCI_Read_Page_Scan_Mode                   | 0x0C3D | 3 | 3D |                                   | States                          | Yes | j     |
|                                           |        |   |    |                                   | Page Scan Mode                  |     |       |
| HCI_Write_Page_Scan_Mode                  | 0x0C3E | 3 | 3E | Page Scan Mode                    | States                          | Yes | h,j   |
| HCI_Set_AFH_Host_Channel_Classification   | 0x0C3F | 3 | 3F | AH Host Channel Classification    | Status                          | Yes | l     |
| HCI_Read_Inquiry_Scan_Type                | 0x0C42 | 3 | 42 |                                   | Status                          | Yes | l     |
|                                           |        |   |    |                                   | Inquiry Scan Type               |     |       |
| HCI_Write_Inquiry_Scan_Type               | 0x0C43 | 3 | 43 | Inquiry Scan Type                 | Status                          | Yes | l     |
| HCI_Read_Inquiry_Mode                     | 0x0C44 | 3 | 44 |                                   | Status                          | Yes | l     |
|                                           |        |   |    |                                   | Inquiry Mode                    |     |       |
| HCI_Write_Inquiry_Mode                    | 0x0C45 | 3 | 45 | Inquiry Mode                      | Status                          | Yes | l     |
| HCI_Read_Page_Scan_Type                   | 0x0C46 | 3 | 46 |                                   | Status                          | Yes | l     |
|                                           |        |   |    |                                   | Page Scan Type                  |     |       |
| HCI_Write_Page_Scan_Type                  | 0x0C47 | 3 | 47 | Page Scan Type                    | Status                          | Yes | l     |
| HCI_Read_AFH_Channel_Assessment_Mode      | 0x0C48 | 3 | 48 |                                   | Status                          | Yes | l     |
|                                           |        |   |    |                                   | AFH Channel Assessment Mode     |     |       |
| HCI_Write_AFH_Channel_Assessment_Mode     | 0x0C49 | 3 | 49 | AFH Channel Assessment Mode       | Status                          | Yes | l     |

| Control No.                 | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(6/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Ohmura |       | Mar. 3, 2005<br>K. Saito |

### INFORMATIONAL PARAMETERS

|                                    |        |   |   |             |                                     |     |   |
|------------------------------------|--------|---|---|-------------|-------------------------------------|-----|---|
| HCI_Read_Local_Version_Information | 0x1001 | 4 | 1 |             | Status                              | Yes |   |
|                                    |        |   |   |             | HCI Version                         |     |   |
|                                    |        |   |   |             | HCI Revision                        |     |   |
|                                    |        |   |   |             | LMP Version                         |     |   |
|                                    |        |   |   |             | Manufacturer Name                   |     |   |
| HCI_Read_Local_Supported_Commands  | 0x1002 | 4 | 2 |             | LMP Subversion                      | Yes | 1 |
|                                    |        |   |   |             | Status                              |     |   |
| HCI_Read_Local_Supported_Features  | 0x1003 | 4 | 3 |             | Supported Commands                  | Yes |   |
|                                    |        |   |   |             | Status                              |     |   |
| HCI_Read_Local_Extended_Features   | 0x1004 | 4 | 4 | Page number | LMP Features                        | Yes | 1 |
|                                    |        |   |   |             | Status                              |     |   |
|                                    |        |   |   |             | Page number                         |     |   |
|                                    |        |   |   |             | Maximum Page Number                 |     |   |
| HCI_Read_Buffer_Size               | 0x1005 | 4 | 5 |             | Extended LMP Features               | Yes |   |
|                                    |        |   |   |             | Status                              |     |   |
|                                    |        |   |   |             | HC ACL Data Packet Length           |     |   |
|                                    |        |   |   |             | HC Synchronous Data Packet Length   |     |   |
|                                    |        |   |   |             | HC Total Num ACL Data Packet        |     |   |
| HCI_Read_Country_Code              | 0x1007 | 4 | 7 |             | HC Total Num Synchronous Data Packe | Yes | j |
|                                    |        |   |   |             | Status                              |     |   |
| HCI_Read_BD_ADDR                   | 0x1009 | 4 | 9 |             | Country Code                        | Yes |   |
|                                    |        |   |   |             | Status                              |     |   |
|                                    |        |   |   |             | BD ADDR                             |     |   |

### STATUS PARAMETERS

|                                  |        |   |   |                   |                        |     |   |
|----------------------------------|--------|---|---|-------------------|------------------------|-----|---|
| HCI_Read_Failed_Contact_Counter  | 0x1401 | 5 | 1 | Connection Handle | Status                 | Yes |   |
|                                  |        |   |   |                   | Connection handle      |     |   |
|                                  |        |   |   |                   | Failed Contact Counter |     |   |
| HCI_Reset_Failed_Contact_Counter | 0x1402 | 5 | 2 | Connection Handle | Status                 | Yes |   |
|                                  |        |   |   |                   | Connection handle      |     |   |
| HCI_Read_Link_Quality            | 0x1403 | 5 | 3 | Connection Handle | Status                 | Yes | k |
|                                  |        |   |   |                   | Connection Handle      |     |   |
|                                  |        |   |   |                   | Link Quality           |     |   |
| HCI_Read_RSSI                    | 0x1405 | 5 | 5 | Connection Handle | Status                 | Yes |   |
|                                  |        |   |   |                   | Connection Handle      |     |   |
|                                  |        |   |   |                   | RSSI                   |     |   |
| HCI_Read_AFH_Channel_Map         | 0x1406 | 5 | 6 | Connection Handle | Status                 | Yes | 1 |
|                                  |        |   |   |                   | Connection Handle      |     |   |
|                                  |        |   |   |                   | AFH Mode               |     |   |
|                                  |        |   |   |                   | AFH Channel Map        |     |   |
| HCI_Read_Clock                   | 0x1407 | 5 | 7 | Which Clock       | Status                 | Yes | 1 |
|                                  |        |   |   | Connection Handle | Connection Handle      |     |   |
|                                  |        |   |   |                   | AFH Mode               |     |   |
|                                  |        |   |   |                   | AFH Channel Map        |     |   |

### TESTING

|                                   |        |   |   |               |               |     |     |
|-----------------------------------|--------|---|---|---------------|---------------|-----|-----|
| HCI_Read_Loopback_Mode            | 0x1801 | 6 | 1 |               | States        | Yes |     |
|                                   |        |   |   |               | Loopback Mode |     |     |
| HCI_Write_Loopback_Mode           | 0x1802 | 6 | 2 | Loopback Mode | States        | Yes | g,i |
| HCI_Enable_Device_Under_Test_Mode | 0x1803 | 6 | 3 |               | States        | Yes |     |

| Control No. | Control name | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|-------------|--------------|---------------------------|---------------------------|-------|--------------------------|
|             |              | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Ohmura |       | Mar. 3, 2005<br>K. Saito |

Notes:

- a) Up to seven connections: a slave of up to two masters, and/or a master of up to seven slave.  
Some operations restricted or non-functional in a scatternet.
- b) Chip resource limits constrain the rate at which ACL and SCO connections can be made and broken to approximately 20 per 15 seconds. The time limit can be configured.
- c) Up to three SCO links. Each SCO link can be routed over the chip's PCM interface or over HCI/BCSP.  
Preliminary Support for SCO over USB or H4 is in place, but testing has been light.
- d) No HCI SCO Host Controller to Host flow control support.  
No HCI SCO Host to Host Controller flow control support.
- e) Limited support for "best effort" and "guaranteed" Qos only.
- f) Initial device name taken from PS Keys, and so is maintained through a reset/reboot.
- g) HCI Reset does not work if the device is in local loopback mode.
- h) Optional Paging schemes are not supported.
- i) Remote ACL loopback sometimes deadlocks when the device's flow control mechanisms assert to each other.
- j) Bluetooth v1.1 specification command, deprecated in the v1.2 specification, or later; support retained for backwards compatibility.
- k) Bluetooth v1.1 specification command, renamed in the v1.2 specification, or later.  
Park Mode ---> Park State  
Exit Park Mode ---> Exit Park State  
Set Host Controller To Host Flow Control ---> Set Controller To Host Flow Control  
Change Local Name ---> Write Local Name  
Read SCO Flow Control Enable ---> Read Synchronous Flow Control Enable  
Write SCO Flow Control Enable ---> Write Synchronous Flow Control Enable  
Get Link Quality ---> Read Link Quality
- l) Command not in the Bluetooth v1.1 specification.
- m) Underlying Flow Specification functionality the same as for QoS\_Setup.
- n) Command which rewrites FROM in module
- o) CVSD not available with 3EV3 or 3EV5 EDR packets.

| Control No.                 | Control name                         | APPROVED                  | CHECKED                    | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|----------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(8/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Shimizu |       | Mar. 3, 2005<br>K. Saito |

### HCI EVENT LIST

| Event Description | OpCode | Parameters | Status | Notes |
|-------------------|--------|------------|--------|-------|
|-------------------|--------|------------|--------|-------|

#### *Inquiry*

|                          |      |                               |     |   |
|--------------------------|------|-------------------------------|-----|---|
| Inquiry_Complete         | 0x01 | Status                        | Yes |   |
| Inquiry_Result           | 0x02 | Num Responses                 | Yes |   |
|                          |      | BD ADDR [I]                   |     |   |
|                          |      | Page Scan Repetition Mode [I] |     |   |
|                          |      | Page Scan Period Mode [I]     |     |   |
|                          |      | Page Scan Mode [I]            |     |   |
|                          |      | Class of Device [I]           |     |   |
| Inquiry_Result_with_RSSI | 0x22 | Clock Offset [I]              | Yes | b |
|                          |      | Num Responses                 |     |   |
|                          |      | BD ADDR [I]                   |     |   |
|                          |      | Page Scan Repetition Mode [I] |     |   |
|                          |      | Page Scan Period Mode [I]     |     |   |
|                          |      | Page Scan Mode [I]            |     |   |
|                          |      | Class of Device [I]           |     |   |
|                          |      | Clock Offset [I]              |     |   |
|                          |      | RSSI [I]                      |     |   |

#### *Connection Management*

|                                 |      |                       |     |   |
|---------------------------------|------|-----------------------|-----|---|
| Connection_Complete             | 0x03 | Status                | Yes |   |
|                                 |      | Connection Handle     |     |   |
|                                 |      | BD ADDR               |     |   |
|                                 |      | Link Type             |     |   |
| Connection_Request              | 0x04 | Encryption Mode       | Yes |   |
|                                 |      | BD ADDR               |     |   |
|                                 |      | Class of Device       |     |   |
|                                 |      | Link Type             |     |   |
| Disconnection_Complete          | 0x05 | Status                | Yes |   |
|                                 |      | Connection Handle     |     |   |
|                                 |      | Reason                |     |   |
| Synchronous_Connection_Complete | 0x2C | Status                | Yes | b |
|                                 |      | Connection Handle     |     |   |
|                                 |      | BD ADDR               |     |   |
|                                 |      | Link Type             |     |   |
|                                 |      | Transmission Interval |     |   |
|                                 |      | Retransmission Window |     |   |
|                                 |      | Rx Packet Length      |     |   |
|                                 |      | Tx Packet Length      |     |   |
| Synchronous_Connection_Changed  | 0x2D | Air Mode              | Yes | b |
|                                 |      | Status                |     |   |
|                                 |      | Connection Handle     |     |   |
|                                 |      | Transmission Interval |     |   |
|                                 |      | Retransmission Window |     |   |
|                                 |      | Rx Packet Length      |     |   |
|                                 |      | Tx Packet Length      |     |   |

#### *Authentication / Pairing*

|                         |      |                   |     |  |
|-------------------------|------|-------------------|-----|--|
| Authentication_Complete | 0x06 | Status            | Yes |  |
|                         |      | Connection Handle |     |  |
| Return_Link_Keys        | 0x15 | Num Keys          | Yes |  |
|                         |      | BD ADDR [I]       |     |  |
|                         |      | Link Key [I]      |     |  |
| PIN_Code_Request        | 0x16 | BD ADDR           | Yes |  |
| Link_Key_Request        | 0x17 | BD ADDR           | Yes |  |
| Link_Key_Notification   | 0x18 | BD ADDR           | Yes |  |
|                         |      | Link Key          |     |  |

| Control No.                 | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|-----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(9/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Ohmura |       | Mar. 3, 2005<br>K. Saito |

#### Encryption

|                                     |      |                   |     |  |
|-------------------------------------|------|-------------------|-----|--|
| Encryption_Change                   | 0x08 | Status            | Yes |  |
|                                     |      | Connection Handle |     |  |
|                                     |      | Encryption Enable |     |  |
| Change_Connection_Link_Key_Complete | 0x09 | Status            | Yes |  |
|                                     |      | Connection Handle |     |  |
| Master_Link_Key_Complete            | 0x0A | Status            | Yes |  |
|                                     |      | Connection Handle |     |  |
|                                     |      | Key Flag          |     |  |

#### Remote Information

|                                          |      |                       |     |   |
|------------------------------------------|------|-----------------------|-----|---|
| Remote_Name_Request_Complete             | 0x07 | Status                | Yes |   |
|                                          |      | BD ADDR               |     |   |
|                                          |      | Remote Name           |     |   |
| Read_Remote_Supported_Features_Complete  | 0x0B | Status                | Yes |   |
|                                          |      | Connection Handle     |     |   |
|                                          |      | LMP Features          |     |   |
| Read_Remote_Version_Information_Complete | 0x0C | Status                | Yes |   |
|                                          |      | Connection Handle     |     |   |
|                                          |      | LMP Version           |     |   |
|                                          |      | Manufacture Name      |     |   |
|                                          |      | LMP Subversion        |     |   |
| Read_Remote_Extended_Features_Complete   | 0x23 | Status                | Yes | b |
|                                          |      | Connection Handle     |     |   |
|                                          |      | Page Number           |     |   |
|                                          |      | Maximum page number   |     |   |
|                                          |      | Extended LMP Features |     |   |

#### Link Policy

|                             |      |                   |     |     |
|-----------------------------|------|-------------------|-----|-----|
| QoS_Setup_Complete          | 0x0D | Status            | Yes |     |
|                             |      | Connection Handle |     |     |
|                             |      | Flags             |     |     |
|                             |      | Service Type      |     |     |
|                             |      | Token Rate        |     |     |
|                             |      | Peak Bandwidth    |     |     |
|                             |      | Latency           |     |     |
|                             |      | Delay Variation   |     |     |
| Role_Change                 | 0x12 | Status            | Yes |     |
|                             |      | BD ADDR           |     |     |
|                             |      | New Role          |     |     |
| Mode_Change                 | 0x14 | Status            | Yes |     |
|                             |      | Connection Handle |     |     |
|                             |      | Current Mode      |     |     |
|                             |      | Interval          |     |     |
| Flow_Specification_Complete | 0x21 | Status            | Yes | b,c |
|                             |      | Connection Handle |     |     |
|                             |      | Flags             |     |     |
|                             |      | Flow direction    |     |     |
|                             |      | Service Type      |     |     |
|                             |      | Token Rate        |     |     |
|                             |      | Token Bucket Size |     |     |
|                             |      | Peak Bandwidth    |     |     |
|                             |      | Access Latency    |     |     |

| Control No.                  | Control name                         | APPROVED                | CHECKED                  | DRAWN | DESIGNED               |
|------------------------------|--------------------------------------|-------------------------|--------------------------|-------|------------------------|
| HD-AE-<br>C031226<br>(10/11) | Electrical characteristics<br>電気的特性書 | Mar.3.2005<br>M. Tabagi | Mar.3.2005<br>Y. Shimura |       | Mar.3.2005<br>K. Saito |

#### General

|                             |      |                             |     |   |
|-----------------------------|------|-----------------------------|-----|---|
| Command_Complete            | 0x0E | Num HCI Command Packets     | Yes |   |
|                             |      | Command Opcode              |     |   |
|                             |      | Return Parameters           |     |   |
| Command_Status              | 0x0F | Status                      | Yes |   |
|                             |      | Num HCI Command Packets     |     |   |
|                             |      | Command Opcode              |     |   |
| Hardware_Error              | 0x10 | Hardware Code               | Yes |   |
| Number_Of_Completed_Packets | 0x13 | Number of Handles           | Yes |   |
|                             |      | Connection Handle [I]       |     |   |
|                             |      | HC Num HCI Data Packets [I] |     |   |
| Data_Buffer_Overflow        | 0x1A | Link Type                   | No  | a |
| Max_Slots_Change            | 0x1B | Connection Handle           | Yes |   |
|                             |      | LMP Max Slots               |     |   |
| Read_Clock_Offset_Complete  | 0x1C | Status                      | Yes |   |
|                             |      | Connection Handle           |     |   |
|                             |      | Clock Offset                |     |   |

#### Host Controller & Baseband

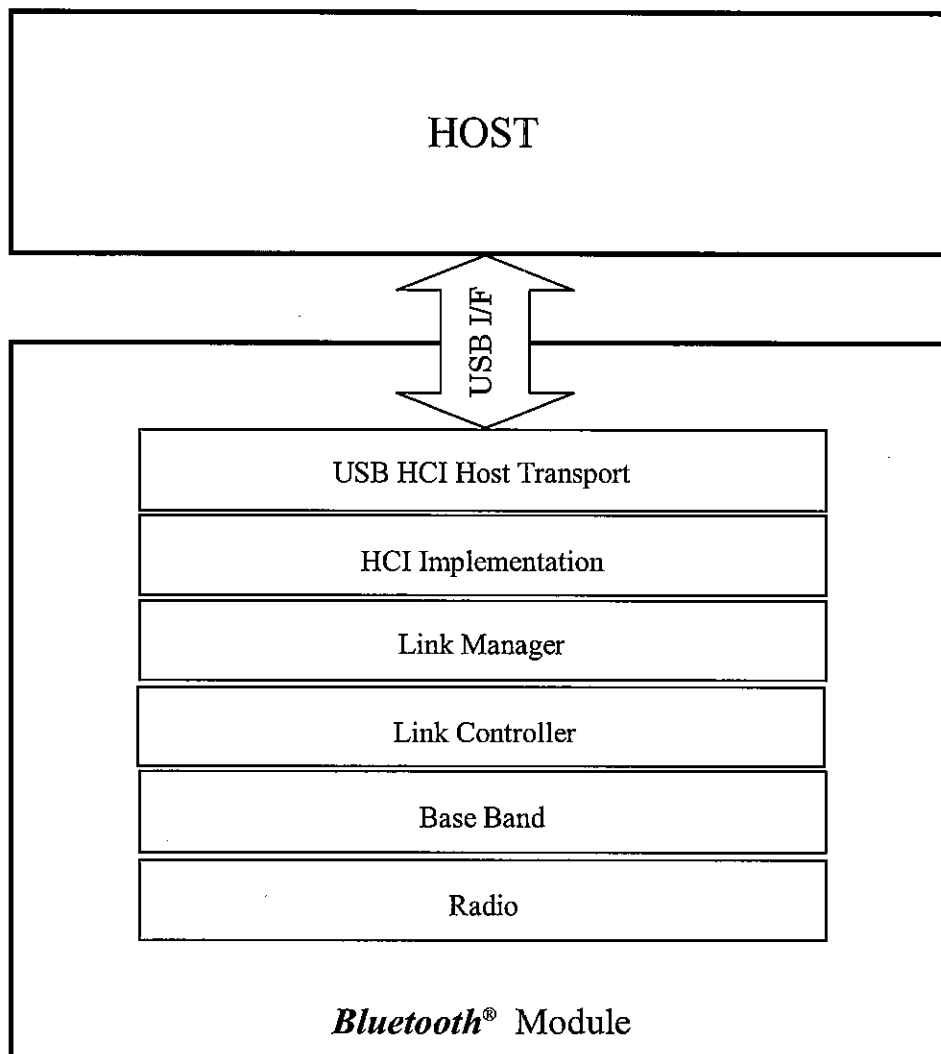
|                                  |      |                           |     |   |
|----------------------------------|------|---------------------------|-----|---|
| Flush_Occurred                   | 0x11 | Connection Handle         | Yes |   |
| Loopback_Command                 | 0x19 | HCI Command Packet        | Yes |   |
| Connection_Packet_Type_Change    | 0x1D | Status                    | Yes |   |
|                                  |      | Connection Handle         |     |   |
|                                  |      | Packet Type               |     |   |
| QoS_Violation                    | 0x1E | Connection Handle         | No  |   |
| Page_Scan_Mode_Change            | 0x1F | BD ADDR                   | No  | d |
|                                  |      | Page Scan Mode            |     |   |
| Page_Scan_Repetition_Mode_Change | 0x20 | BD ADDR                   | Yes |   |
|                                  |      | Page Scan Repetition Mode |     |   |

#### Notes:

- Significance and expected recovery procedure is ill defined.
- Event not in the Bluetooth v1.1 specification.
- Event provoked by local Flow Specification command, even through the command is not implemented.
- Optional paging schemes not supported. Bluetooth v1.1 specification only.

| Control No.                  | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|------------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>C031226<br>(11/11) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

# Module Stack



## Note:

The protocol stack in the module is compliant with the Specification of the **Bluetooth®** System V.2.0+EDR

| Control No.                | Control name                             | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|----------------------------|------------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>D031226<br>(1/8) | Electrical characteristics<br><br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>J. Ohmura |       | Mar. 3, 2005<br>K. Saito |

### PICS for **Firmware Version 19.2 (Build 1915)**

The **Bluetooth**® functions of this module are as below. Depending on firmware version upgrade, the **Bluetooth**® functions are subject to change without notice.

## SUMMARY

**Table 2-1: Controller Core Specification**

| Item | Specification Name                                               | Support |
|------|------------------------------------------------------------------|---------|
| 1    | Core Spec Version 1.1, Adopted 5 Feb 2001 (Ver. 1.1)             | No      |
| 2    | Core Spec Version 1.2, Adopted 5 Nov 2003 (Ver. 1.2)             | No      |
| 3    | Core Spec Version 2.0, Adopted 4 Nov 2004 (Ver. 2.0)             | No      |
| 4    | Core Spec Version 2.0 + EDR, Adopted 4 Nov 2004 (Ver. 2.0 + EDR) | Yes     |

**Table 2-2: EDR Features**

Prerequisite: 2-1/4 (Ver. 2.0 + EDR)

| Item | Feature                                       | Support |
|------|-----------------------------------------------|---------|
| 1    | EDR for asynchronous transports (single slot) | Yes     |
| 2    | EDR for asynchronous transports (multi-slot)  | Yes     |
| 3    | EDR for synchronous transports                | Yes     |

## RF

### RF Capabilities (based on PICS proforma for Radio):

**Table A.1: RF Capabilities**

| Item | Capability                            | Status | Support | Values  |           |
|------|---------------------------------------|--------|---------|---------|-----------|
|      |                                       |        |         | Allowed | Supported |
| 1    | Power Class (1,2 or 3)                | M      | Yes     | 1 .. 3  | 2         |
| 2    | Power Control                         | C.1    | Yes     | -       | -         |
| 3    | 1-slot packets supported              | M      | Yes     | -       | -         |
| 4    | 3-slot packets supported              | O      | Yes     | -       | -         |
| 5    | 5-slot packets supported              | O      | Yes     | -       | -         |
| 6    | 79 Channels                           | M      | Yes     | -       | -         |
| 7    | Support for GFSK modulation           | M      | Yes     | -       | -         |
| 8    | Support for $\pi/4$ -DQPSK modulation | C.2    | Yes     | -       | -         |
| 9    | Support for 8DPSK modulation          | C.3    | Yes     | -       | -         |

C.1: Mandatory to support if Power Class 1 is supported, optional to support if Power Class 2 or 3 is supported.

C.2: Mandatory if SUMMARY, 2-1/4 is claimed; Optional if SUMMARY, 2-1/3 is claimed; Excluded otherwise.

C.3: Mandatory if SUMMARY, 2-1/4 is claimed; Else Optional if (RF, 1/8 AND SUMMARY, 2-1/3) is claimed; Excluded otherwise.

## Baseband

### Baseband Capabilities (based on PICS proforma for Baseband)

**Table B.1: Physical Channel**

| Item | Capability                                | Status | Support |
|------|-------------------------------------------|--------|---------|
| 1    | Support frequency band and 79 RF channels | M      | Yes     |
| 2    | Adaptive Frequency Hopping Kernel         | M      | Yes     |

**Table B.1a: Modulation schemes**

| Item | Capability                                   | Status | Support |
|------|----------------------------------------------|--------|---------|
| 1    | Basic Data Rate, 1 Mbps payload data rate    | M      | Yes     |
| 2    | Enhanced Data Rate, 2 Mbps payload data rate | C.1    | Yes     |
| 3    | Enhanced Data Rate, 3 Mbps payload data rate | C.2    | Yes     |

C.1: Mandatory if (SUMMARY, 2-1/4) is claimed; Optional if (SUMMARY, 2-1/3) is claimed; Excluded otherwise.

C.2: Mandatory if (SUMMARY, 2-1/4) is claimed; Optional if (BB, 1a/2 AND SUMMARY, 2-1/3) is claimed; Excluded otherwise.

| Control No.                | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>D031226<br>(2/8) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

**Table B.2: Link Types**

| Item | Capability                               | Status | Support |
|------|------------------------------------------|--------|---------|
| 1    | Support of ACL link                      | M      | Yes     |
| 2    | Support of SCO link                      | O      | Yes     |
| 3    | Support of eSCO link                     | O      | Yes     |
| 4    | Support of Enhanced Data Rate ACL links  | C.1    | Yes     |
| 5    | Support of Enhanced Data Rate eSCO links | C.2    | Yes     |

C.1: Mandatory IF (SUMMARY, 2-2/1 OR SUMMARY, 2-2/2) is claimed;

ELSE Optional IF (SUMMARY, 2-1/3 OR SUMMARY, 2-1/4) is claimed; Excluded otherwise.

C.2: Mandatory IF SUMMARY, 2-2/3 is claimed; ELSE Optional IF (SUMMARY, 2-1/3 OR SUMMARY, 2-1/4) is claimed;

Excluded otherwise.

**Table B.3: SCO Link Support**

Prerequisite: B.2/2 (Support of SCO link)

| Item | Capability                       | Status | Support | Values  |           |
|------|----------------------------------|--------|---------|---------|-----------|
|      |                                  |        |         | Allowed | Supported |
| 1    | SCO links to same Slave          | C.1    | Yes     | 1..3    | 3         |
| 2    | SCO links to different Slaves    | O      | Yes     | 1..3    | 3         |
| 3    | SCO links from same Master       | C.1    | Yes     | 1..3    | 3         |
| 4    | SCO links from different Masters | O      | No      | 2       | -         |

C.1: Mandatory to support at least 1 link.

Prerequisite: B.2/3 (Support of eSCO link)

| Item | Capability                        | Status | Support | Values  |           |
|------|-----------------------------------|--------|---------|---------|-----------|
|      |                                   |        |         | Allowed | Supported |
| 5    | eSCO links to same Slave          | C.2    | Yes     | (1..6)  | 6         |
| 6    | eSCO links to different Slaves    | O      | Yes     | (2..5)  | 3         |
| 7    | eSCO links from same Master       | C.2    | Yes     | (1..6)  | 6         |
| 8    | eSCO links from different Masters | O      | No      | (2..)   | -         |

C.2: Mandatory to support at least 1 link.

**Table B.4: Common Packet Types**

| Item | Capability                  | Status | Support |
|------|-----------------------------|--------|---------|
| 1    | Support of ID packet type   | M      | Yes     |
| 2    | Support of NULL packet type | M      | Yes     |
| 3    | Support of POLL packet type | M      | Yes     |
| 4    | Support of FHS packet type  | M      | Yes     |
| 5    | Support of DM1 packet type  | M      | Yes     |

**Table B.5: ACL Packet Types**

| Item | Capability                  | Status | Support |
|------|-----------------------------|--------|---------|
| 1    | Support of DH1 packet type  | M      | Yes     |
| 2    | Support of DM3 packet type  | O      | Yes     |
| 3    | Support of DH3 packet type  | O      | Yes     |
| 4    | Support of DM5 packet type  | O      | Yes     |
| 5    | Support of DH5 packet type  | O      | Yes     |
| 6    | Support of AUX1 packet type | O      | Yes     |

**Table B.5a: Enhanced Data Rate ACL packet types**

Prerequisite: B.2/4 (Support of Enhanced Data Rate ACL links)

| Item | Capability                | Status | Support |
|------|---------------------------|--------|---------|
| 1    | Support 2-DH1 packet type | C.1    | Yes     |
| 2    | Support 2-DH3 packet type | C.2    | Yes     |
| 3    | Support 2-DH5 packet type | C.2    | Yes     |
| 4    | Support 3-DH1 packet type | C.3    | Yes     |
| 5    | Support 3-DH3 packet type | C.4    | Yes     |
| 6    | Support 3-DH5 packet type | C.5    | Yes     |

C.1: Mandatory IF (SUMMARY, 2-2/1 OR SUMMARY, 2-2/2) is claimed; ELSE Optional IF BB, 1a/2 is claimed;

Excluded otherwise.

C.2: Mandatory IF SUMMARY, 2-2/2 is claimed; ELSE Optional IF BB, 1a/2 is claimed; Excluded otherwise.

C.3: Mandatory IF (SUMMARY, 2-2/1 OR SUMMARY, 2-2/2) is claimed; ELSE Optional IF BB 1a/3 is claimed;

Excluded otherwise.

C.4: Mandatory IF SUMMARY, 2-2/2 is claimed; ELSE Optional IF (BB, 5a/2 AND BB, 5a/4) is claimed;

Excluded otherwise.

C.5: Mandatory IF SUMMARY 2-2/2 is claimed; ELSE Optional IF (BB, 5a/3 AND BB, 5a/4) is claimed; Excluded otherwise.

|                            |                                      |                           |                           |       |                          |
|----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| Control No.                | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
| HD-AE-<br>D031226<br>(3/8) | Electrical characteristics<br>電気的特性書 | Mar. 3. 2005<br>M. Takagi | Mar. 3. 2005<br>Y. Ohmura |       | Mar. 3. 2005<br>K. Saito |

**Table B.6: SCO and eSCO Packet Types**

Prerequisite for items 1-4: B.2/2 (Support of SCO link)

| Item | Capability                 | Status | Support |
|------|----------------------------|--------|---------|
| 1    | Support of HV1 packet type | M      | Yes     |
| 2    | Support of HV2 packet type | O      | Yes     |
| 3    | Support of HV3 packet type | O      | Yes     |
| 4    | Support of DV packet type  | M      | Yes     |

Prerequisite for items 5-7: B.2/3 (Support of eSCO link)

| Item | Capability                 | Status | Support |
|------|----------------------------|--------|---------|
| 5    | Support of EV3 packet type | M      | Yes     |
| 6    | Support of EV4 packet type | O      | Yes     |
| 7    | Support of EV5 packet type | O      | Yes     |

**Table B.6a: Enhanced Data Rate eSCO packet types**

Prerequisite: B.2/5 (Support of Enhanced Data Rate eSCO links)

| Item | Capability                | Status | Support |
|------|---------------------------|--------|---------|
| 1    | Support 2-EV3 packet type | C.1    | Yes     |
| 2    | Support 2-EV5 packet type | C.2    | Yes     |
| 3    | Support 3-EV3 packet type | C.3    | Yes     |
| 4    | Support 3-EV5 packet type | C.4    | Yes     |

C.1: Mandatory IF SUMMARY, 2-2/3 is claimed; ELSE Optional IF BB, 1a/2 is claimed; Excluded otherwise.

C.2: Optional IF BB, 1a/2 is claimed; Excluded otherwise.

C.3: Mandatory IF SUMMARY, 2-2/3 is claimed; ELSE Optional IF BB, 1a/3 is claimed; Excluded otherwise.

C.4: Optional IF BB, 1a/3 is claimed; Excluded otherwise.

**Table B.7: Page Procedures**

| Item | Capability                                | Status | Support |
|------|-------------------------------------------|--------|---------|
| 1    | Support paging                            | M      | Yes     |
| 2    | Support page scan                         | M      | Yes     |
| 3    |                                           |        |         |
| 4    |                                           |        |         |
| 5    | Supports Interlaced Scan during page scan | O      | Yes     |

**Table B.8: Paging Schemes**

| Item | Capability                    | Status | Support |
|------|-------------------------------|--------|---------|
| 1    | Supports mandatory scan mode) | M      | Yes     |

**Table B.9: Paging Modes**

| Item | Capability              | Status | Support |
|------|-------------------------|--------|---------|
| 1    | Supports paging mode R0 | C.1    | Yes     |
| 2    | Supports paging mode R1 | C.1    | Yes     |
| 3    | Supports paging mode R2 | C.1    | Yes     |

C.1: At least one of the paging scan modes must be supported.

**Table B.9 (b): Paging Train Repetition**

| Item | Capability                | Status | Support |
|------|---------------------------|--------|---------|
| 1    | Supports Npage $\geq 1$   | O      | Yes     |
| 2    | Supports Npage $\geq 128$ | O      | Yes     |
| 3    | Supports Npage $\geq 256$ | M      | Yes     |

Note: The master should use Npage  $\geq 256$  unless it knows what SR mode the slave uses.

**Table B.10: Inquiry Procedures**

| Item | Capability                                   | Status | Support |
|------|----------------------------------------------|--------|---------|
| 1    | Support inquiry                              | O      | Yes     |
| 2    | Inquiry scan with first FHS                  | O      | Yes     |
| 3    |                                              |        |         |
| 4    |                                              |        |         |
| 5    | Supports the dedicated inquiry access code   | O      | Yes     |
| 6    | Supports Interlaced Scan during inquiry scan | O      | Yes     |

| Control No.                | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>D031226<br>(4/8) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

**Table B.11: Piconet Capabilities**

| Item | Capability                      | Status | Support | Values   |           |
|------|---------------------------------|--------|---------|----------|-----------|
|      |                                 |        |         | Allowed  | Supported |
| 1    | Broadcast messages              | O      | Yes     | N/A      | -         |
| 2    | Point-to-multipoint connections | O      | Yes     | (2 .. 7) | 7         |

**Table B.12: Scatternet Capabilities**

| Item | Capability                                                   | Status | Support |
|------|--------------------------------------------------------------|--------|---------|
| 1    | Act as Master in one piconet and as Slave in another piconet | O      | Yes     |
| 2    | Act as Slave in more than one piconet                        | O      | Yes     |

**Table B.13: Synchronous Coding Schemes**

Prerequisite: B.2/2 (SCO link Support)

| Item | Capability                   | Status | Support |
|------|------------------------------|--------|---------|
| 1    | A-law                        | O      | Yes     |
| 2    | u-law                        | O      | Yes     |
| 3    | CVSD                         | O      | Yes     |
| 4    | Transparent Synchronous Data | O      | Yes     |

## Link Manager

### Link Manager Capabilities (based on PICS proforma for Link Manager)

**Table C.1: Response Messages**

| Item | Capability     | Status | Support |
|------|----------------|--------|---------|
| 1    | Accept message | M      | Yes     |
| 2    | Reject message | M      | Yes     |

**Table C.2: Supported Features**

| Item | Capability                       | Status | Support |
|------|----------------------------------|--------|---------|
| 1    | 3-slot packets                   | O      | Yes     |
| 2    | 5-slot packets                   | O      | Yes     |
| 3    | Encryption                       | O      | Yes     |
| 4    | Slot offset                      | O      | Yes     |
| 5    | Timing accuracy                  | O      | Yes     |
| 6    | Role switch (Master/Slave)       | O      | Yes     |
| 7    | Hold mode                        | O      | Yes     |
| 8    | Sniff mode                       | O      | Yes     |
| 9    | Park mode                        | O      | Yes     |
| 10   | Power Control                    | C.1    | Yes     |
| 11   | Channel quality driven data rate | O      | Yes     |
| 12   | SCO link                         | O      | Yes     |
| 13   | RSSI                             | O      | Yes     |
| 14   | Broadcast encryption             | O      | Yes     |
| 15   | eSCO link                        | O      | Yes     |
| 16   | Adaptive frequency hopping       | M      | Yes     |
| 17   | Enhanced Data Rate ACL           | C.2    | Yes     |
| 18   | Enhanced Data Rate eSCO          | C.3    | Yes     |

C.1: If Power Class 1 is supported (RF, 1/1=1) then Mandatory, else Optional.

C.2: Mandatory IF (SUMMARY 2-2/1 OR SUMMARY 2-2/2) is claimed;

ELSE Optional IF (SUMMARY 2-1/3 OR SUMMARY 2-1/4) is claimed; Excluded otherwise.

C.3: Mandatory IF SUMMARY 2-2/3 is claimed; ELSE Optional IF (SUMMARY 2-1/3 OR SUMMARY 2-1/4) is claimed; Excluded otherwise.

**Table C.3: Authentication**

| Item | Capability                                          | Status | Support |
|------|-----------------------------------------------------|--------|---------|
| 1    | Initiate authentication before connection completed | O      | Yes     |
| 2    | Initiate authentication after connection completed  | O      | Yes     |
| 3    | Respond to authentication request                   | M      | Yes     |

| Control No.                | Control name                         | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                 |
|----------------------------|--------------------------------------|---------------------------|---------------------------|-------|--------------------------|
| HD-AE-<br>D031226<br>(5/8) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Ohmura |       | Mar. 3, 2005<br>K. Saito |

**Table C.4: Pairing**

| Item | Capability                                              | Status | Support |
|------|---------------------------------------------------------|--------|---------|
| 1    | Initiate pairing before connection completed            | O      | Yes     |
| 2    | Initiate pairing after connection completed             | O      | Yes     |
| 3    | Respond to pairing request                              | M      | Yes     |
| 4    | Use fixed PIN and request responder to initiator switch | C.1    | Yes     |
| 5    | Use variable PIN                                        | C.1    | Yes     |
| 6    | Accept initiator to responder switch                    | C.2    | Yes     |

C.1: Mandatory to support at least one of Pairing /4 and Pairing /5.

C.2: Mandatory to support if Pairing /5 AND (Pairing /1 OR Pairing /2) is supported.

**Table C.5: Link Keys**

| Item | Capability                             | Status | Support |
|------|----------------------------------------|--------|---------|
| 1    | Creation of link key - Unit Key        | C.1    | Yes     |
| 2    | Creation of link key - Combination Key | C.1    | Yes     |
| 3    | Initiate change of link key            | O      | Yes     |
| 4    | Accept change of link key              | M      | Yes     |
| 5    |                                        |        |         |
| 6    |                                        |        |         |
| 7    | Accept pairing with Unit Key           | O      | Yes     |

C.1: Mandatory to support at least one of the key types.

**Table C.6: Encryption**

Prerequisite: C.2/3 (Encryption supported)

| Item | Capability                 | Status | Support |
|------|----------------------------|--------|---------|
| 1    | Initiate encryption        | O      | Yes     |
| 2    | Accept encryption requests | M      | Yes     |
| 3    |                            |        |         |
| 4    |                            |        |         |
| 5    | Key size negotiation       | M      | Yes     |
| 6    | Start encryption           | M      | Yes     |
| 7    | Accept start of encryption | M      | Yes     |
| 8    | Stop encryption            | M      | Yes     |
| 9    | Accept stop of encryption  | M      | Yes     |

**Table C.7: Clock Offset Information**

| Item | Capability                       | Status | Support |
|------|----------------------------------|--------|---------|
| 1    | Request clock offset information | O      | Yes     |
| 2    | Respond to clock offset requests | M      | Yes     |

**Table C.8: Slot Offset Information**

Prerequisite: C.2/4 (Slot offset)

| Item | Capability                   | Status | Support |
|------|------------------------------|--------|---------|
| 1    | Send slot offset information | C.1    | Yes     |

C.1: Mandatory to support if support if Role Switch/1 (Master/Slave switch) otherwise optional.

**Table C.9: Timing Accuracy Information**

Prerequisite: C.2/5 (Timing accuracy)

| Item | Capability                                      | Status | Support |
|------|-------------------------------------------------|--------|---------|
| 1    | Request timing accuracy information             | O      | Yes     |
| 2    | Respond to timing accuracy information requests | M      | Yes     |

**Table C.10: LM Version Information**

| Item | Capability                                 | Status | Support |
|------|--------------------------------------------|--------|---------|
| 1    | Request LM version information             | O      | Yes     |
| 2    | Respond to LM version information requests | M      | Yes     |

|                            |                                      |                           |                            |       |                          |
|----------------------------|--------------------------------------|---------------------------|----------------------------|-------|--------------------------|
| Control No.                | Control name                         | APPROVED                  | CHECKED                    | DRAWN | DESIGNED                 |
| HD-AE-<br>D031226<br>(6/8) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Shimura |       | Mar. 3, 2005<br>K. Saito |

**Table C.11: Feature Support**

| Item | Capability                             | Status | Support |
|------|----------------------------------------|--------|---------|
| 1    | Request supported features             | C.1    | Yes     |
| 2    | Respond to supported features requests | M      | Yes     |
| 3    | Request extended features mask         | C.2    | Yes     |
| 4    | Respond to extended features Request   | C.2    | Yes     |

C.1: Mandatory to support if any of the optional features in Supported Features /1-3, Supported Features /5, Supported Features /7-12, Supported Features /14-16, Adaptive Frequency Hopping /1 is requested by the IUT otherwise optional.

C.2: Mandatory if a feature requiring another features page is supported, otherwise optional.

**Table C.12: Name Information**

| Item | Capability               | Status | Support |
|------|--------------------------|--------|---------|
| 1    | Request name information | O      | Yes     |
| 2    | Respond to name requests | M      | Yes     |

**Table C.13: Role Switch**

Prerequisite: C.2/6 (Role switch)

| Item | Capability                          | Status | Support |
|------|-------------------------------------|--------|---------|
| 1    | Request Master Slave switch         | O      | Yes     |
| 2    | Accept Master Slave switch requests | M      | Yes     |

**Table C.14: Detach**

| Item | Capability        | Status | Support |
|------|-------------------|--------|---------|
| 1    | Detach connection | M      | Yes     |

**Table C.14a: Setting up and Removing Enhanced Data Rate ACL Connection**

| Item | Capability               | Status | Support |
|------|--------------------------|--------|---------|
| 1    | Enter Enhanced Data Rate | C.1    | Yes     |
| 2    | Exit Enhanced Data Rate  | C.1    | Yes     |

C.1: Mandatory if LMP, 2/17 supported, otherwise excluded.

**Table C.14b: Setting up and Removing Enhanced Data Rate eSCO Connection**

| Item | Capability                                           | Status | Support |
|------|------------------------------------------------------|--------|---------|
| 1    | Enter and exit eSCO using Enhanced Data Rate Packets | C.1    | Yes     |

C.1: Mandatory if LMP, 2/18 supported, otherwise excluded.

**Table C.15: Hold mode**

Prerequisite: 2/7 (Hold mode)

| Item | Capability                    | Status | Support |
|------|-------------------------------|--------|---------|
| 1    | Force hold mode               | O      | Yes     |
| 2    | Request hold mode             | C.1    | Yes     |
| 3    | Respond to hold mode requests | M      | Yes     |
| 4    | Accept forced hold mode       | M      | Yes     |

C.1: Mandatory to support if LMP, 15 /1 (Force hold mode) is supported, otherwise optional.

**Table C.16: Sniff mode**

Prerequisite: C.2/8 (Sniff mode)

| Item | Capability                                             | Status | Support |
|------|--------------------------------------------------------|--------|---------|
| 1    |                                                        |        |         |
| 2    | Request sniff mode                                     | O      | Yes     |
| 3    | Respond to sniff mode requests (renegotiate or reject) | M      | Yes     |
| 4    |                                                        |        |         |
| 5    | Request un-sniff                                       | C.1    | Yes     |
| 6    | Accept un-sniff requests                               | M      | Yes     |

C.1: If LMP, 16/2 (Request sniff mode) is supported then mandatory to support, otherwise optional.

|                                               |                                                          |                            |                           |       |                          |
|-----------------------------------------------|----------------------------------------------------------|----------------------------|---------------------------|-------|--------------------------|
| Control No.<br><br>HD-AE-<br>D031226<br>(7/8) | Control name<br>Electrical characteristics<br><br>電気的特性書 | APPROVED                   | CHECKED                   | DRAWN | DESIGNED                 |
|                                               |                                                          | Mar. 3, 2005<br>M. Tohyama | Mar. 3, 2005<br>J. Ohmura |       | Mar. 3, 2005<br>K. Saito |

**Table C.17: Park mode**

Prerequisite: C.2/9 (Park Mode)

| Item | Capability                                  | Status | Support |
|------|---------------------------------------------|--------|---------|
| 1    |                                             |        |         |
| 2    | Request park mode                           | O      | Yes     |
| 3    | Respond to park mode requests               | M      | Yes     |
| 4    |                                             |        |         |
| 5    | Set up broadcast scan window                | O      | Yes     |
| 6    | Accept changes to the broadcast scan window | M      | Yes     |
| 7    | Modify beacon parameters                    | O      | Yes     |
| 8    | Accept modification of beacon parameters    | M      | Yes     |
| 9    | Request Unpark using PM_ADDR                | C.1    | Yes     |
| 10   | Request Unpark using BD_ADDR                | C.1    | Yes     |
| 11   | Slave requested Unpark                      | O      | Yes     |
| 12   | Accept Unpark using PM_ADDR                 | M      | Yes     |
| 13   | Accept Unpark using BD_ADDR                 | M      | Yes     |

C.1: If LMP, 17/3 (Respond to park mode requests) is supported then at least one of LMP, 17/9 (Unpark using PM\_ADDR) or LMP, 17/10 (Unpark using BD\_ADDR) is mandatory to support, otherwise optional.

**Table C.18: Power Control**

Prerequisite: C.2/13 (RSSI)

| Item | Capability                | Status | Support |
|------|---------------------------|--------|---------|
| 1    | Request to increase power | M      | Yes     |
| 2    | Request to decrease power | M      | Yes     |

Prerequisite: C.2/10 (Power control)

| Item | Capability                     | Status | Support |
|------|--------------------------------|--------|---------|
| 3    | Respond when max power reached | M      | Yes     |
| 4    | Respond when min power reached | M      | Yes     |

**Table C.19: Link supervision Timeout**

| Item | Capability                              | Status | Support |
|------|-----------------------------------------|--------|---------|
| 1    | Set link supervision timeout value      | O      | Yes     |
| 2    | Accept link supervision timeout setting | M      | Yes     |

**Table C.20: Quality of Service**

| Item | Capability                                                   | Status | Support |
|------|--------------------------------------------------------------|--------|---------|
| 1    | Channel quality driven change between DM and DH packet types | C.1    | Yes     |
| 2    | Force/Request change of Quality of Service                   | M      | Yes     |
| 3    | Request change of Quality of Service                         | M      | Yes     |

C.1: Mandatory to support if support of LMP, 2/11 is stated in the feature request, otherwise optional.

**Table C.21: SCO Links**

Prerequisite: C.2/12 (SCO link)

| Item | Capability                               | Status | Support |
|------|------------------------------------------|--------|---------|
| 1    | Initiate SCO links, as Master            | O      | Yes     |
| 2    | Initiate SCO links, as Slave             | O      | Yes     |
| 3    | Accept SCO links                         | O      | Yes     |
| 4    | Remove SCO link, as Master               | C.1    | Yes     |
| 5    | Remove SCO link, as Slave                | C.2    | Yes     |
| 6    | Negotiate SCO link parameters, as Master | C.3    | Yes     |
| 7    | Negotiate SCO link parameters, as Slave  | C.4    | Yes     |

C.1: Mandatory to support if LMP, 21/1 (Initiating SCO links, as Master) is supported, otherwise optional.

C.2: Mandatory to support if LMP, 21/2 (Initiating SCO links, as Slave) is supported, otherwise optional.

C.3: Mandatory to support if LMP, 21/1 (Initiating SCO links, as Master) or LMP, 21/3 (Accept SCO links) is supported, otherwise optional.

C.4: Mandatory to support if LMP, 21/2 (Initiating SCO links, as Slave) or LMP, 21/3 (Accept SCO links) is supported, otherwise optional. Comments:

|                            |                                      |                           |                            |       |                          |
|----------------------------|--------------------------------------|---------------------------|----------------------------|-------|--------------------------|
| Control No.                | Control name                         | APPROVED                  | CHECKED                    | DRAWN | DESIGNED                 |
| HD-AE-<br>D031226<br>(8/8) | Electrical characteristics<br>電気的特性書 | Mar. 3, 2005<br>M. Takagi | Mar. 3, 2005<br>Y. Shimura |       | Mar. 3, 2005<br>K. Saito |

**Table C.22: Multi-Slot Packages**

| Item | Capability                                           | Status | Support |
|------|------------------------------------------------------|--------|---------|
| 1    | Accept maximum allowed number of slots to be used    | C.1    | Yes     |
| 2    | Request maximum number of slots to be used           | C.1    | Yes     |
| 3    | Accept request of maximum number of slots to be used | C.1    | Yes     |

C.1: Mandatory to support if LMP, 2 /1 and/or LMP, 2 /2 is supported in the feature request, otherwise optional.

**Table C.23: Paging Scheme**

| Item | Capability                      | Status | Support |
|------|---------------------------------|--------|---------|
| 1    | Request page mode to use        | O      | Yes     |
| 2    | Accept suggested page mode      | O      | Yes     |
| 3    | Request page scan mode to use   | O      | Yes     |
| 4    | Accept suggested page scan mode | O      | Yes     |

**Table C.24: Connection Establishment**

| Item | Capability                                                     | Status | Support |
|------|----------------------------------------------------------------|--------|---------|
| 1    | Create connection for higher layers                            | M      | Yes     |
| 2    | Respond to requests to establish connections for higher layers | M      | Yes     |
| 3    | Indicate that link set-up is completed                         | M      | Yes     |

**Table C.25: Test Mode**

| Item | Capability                                                             | Status | Support |
|------|------------------------------------------------------------------------|--------|---------|
| 1    | Activate test mode                                                     | O      | Yes     |
| 2    | Ability to reject activation of test mode if test mode is disabled     | M      | Yes     |
| 3    | Control test mode                                                      | O      | Yes     |
| 4    | Ability to reject test mode control commands if test mode is disabled. | M      | Yes     |

**Table C.26: Adaptive Frequency Hopping**

Prerequisite: C.2/20 (AFH)

| Item | Capability                                            | Status | Support |
|------|-------------------------------------------------------|--------|---------|
| 1    | Support of AFH switch as master                       | O      | Yes     |
| 2    | Support of AFH switch as slave                        | M      | Yes     |
| 3    | Support of Channel Classification reporting as master | C.1    | Yes     |
| 4    | Support of Channel Classification reporting as slave  | C.2    | Yes     |
| 5    | Support channel classification from host              | C.3    | Yes     |
| 6    | Support of Channel Classification                     | O      | Yes     |

C.1: Optional if LMP, 26/6 is supported, otherwise excluded.

C.2: Mandatory if LMP, 26/6 is supported, otherwise excluded.

C.3: Mandatory if LMP, 26/1 or LMP, 26/4 is supported, otherwise optional.

Notes:

This Data Report is based on "1846\_BC4-Ext\_RF.ICS-2.0.E.0", "1847\_HCIStack2.0EDR\_BB.ICS-2.0.E.0", "1848\_HCIStack2.0EDR\_LMP.ICS-2.0.E.0" and "SUM.ICS-2.0.E.4".



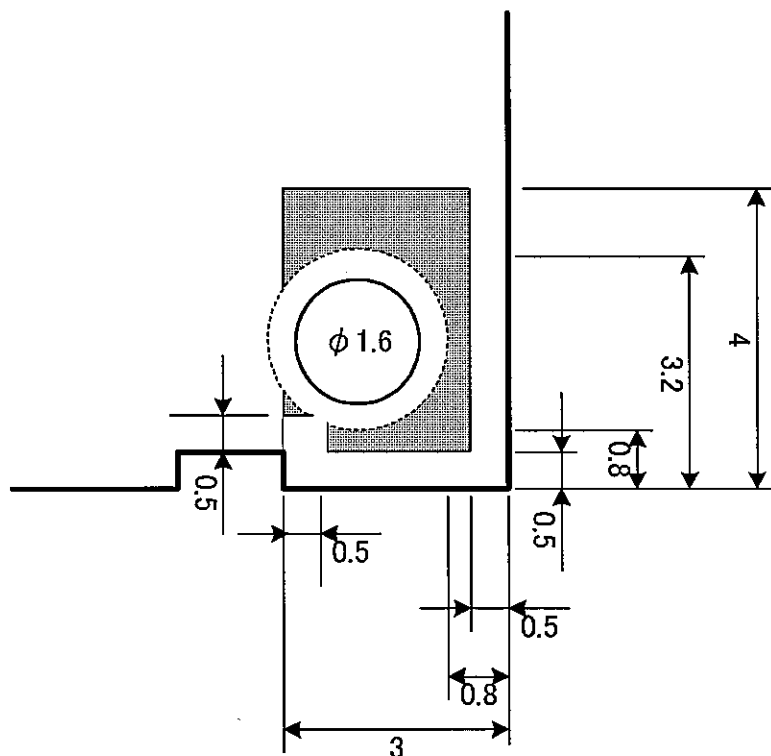
| Control No.                | Control name                 | APPROVED                  | CHECKED                   | DRAWN | DESIGNED                |
|----------------------------|------------------------------|---------------------------|---------------------------|-------|-------------------------|
| HD-AD-<br>A051215<br>(2/4) | Outline・Appearance<br>外形・外観図 | Dec. 2, 2005<br>M. Takagi | Dec. 2, 2005<br>S. Sugita |       | Dec. 2, 2005<br>J. Sato |

Enlarged view of uncovered GND area

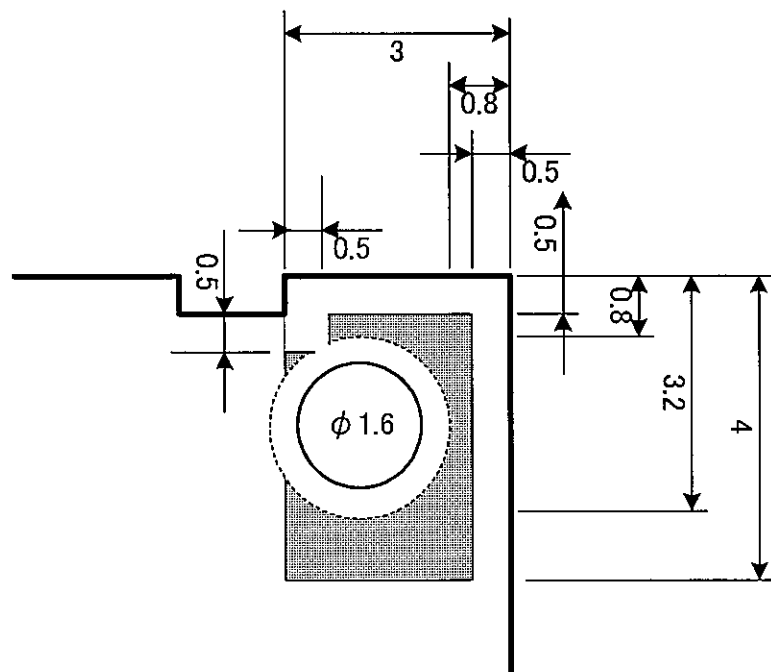
φ1.6穴の位置決め穴とGND露出部の拡大図

Top side  
表面

Unit : mm  
単位 : mm



Bottom side  
裏面



| Control No.                | Control name                     | APPROVED                 | CHECKED                   | DRAWN | DESIGNED                |
|----------------------------|----------------------------------|--------------------------|---------------------------|-------|-------------------------|
| HD-AD-<br>A051215<br>(3/4) | Outline・Appearance<br><br>外形・外観図 | Dec. 2. 2005<br>M. Takag | Dec. 2. 2005<br>J. Sugita |       | Dec. 2. 2005<br>J. Sato |

# Instruction: fix module in metallic chassis

## 金属筐体に固定する場合の注意点

Although the indication label is stuck on the bottom of module, there are some covered GND areas with thin resin because the label is smaller than module.

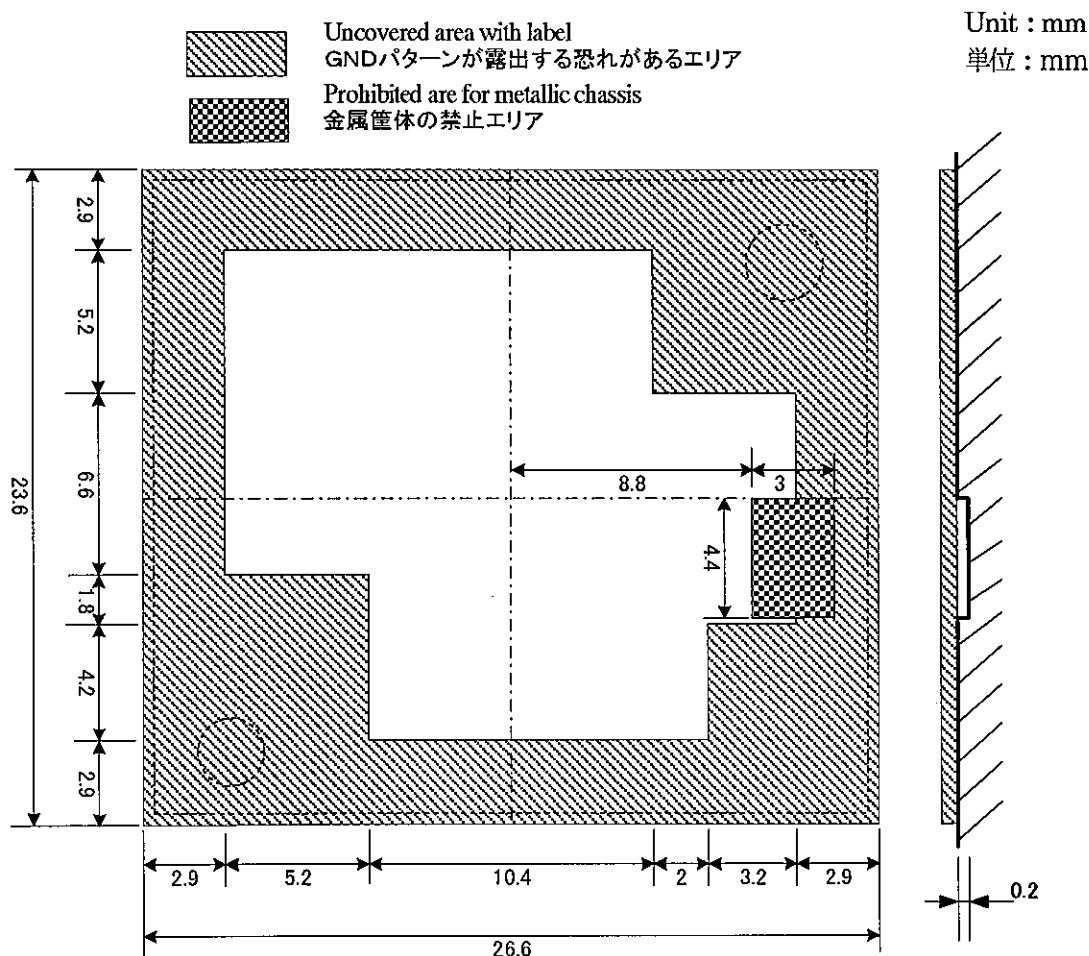
There is RF monitor pad on the bottom of module; therefore, RF performance should be degraded if module was set on metallic chassis directly without space.

Please follow the guideline below.

モジュール基板裏面に絶縁を兼ねたラベルが貼られますが、全面を覆うことが出来ない為、レジストで覆われたGNDパターンが露出します。(但し、御社指定のGND露出部においては、GNDパターンはレジストで覆われません。)

また、モジュール基板裏面には出荷検査時のRFモニタ端子が配置されており、その直下に金属筐体が配置されますと高周波特性が変動する恐れがあります。

つきましては、下図のように筐体の制約をさせていただきます。



Metallic portion of prohibited area should be kept away from the bottom of module for 0.2mm or more.  
金属筐体の禁止エリア直下の金属部は、基板裏面から0.2mm以上離して下さい。

| Control No.                | Control name                     | APPROVED                  | CHECKED                  | DRAWN | DESIGNED                 |
|----------------------------|----------------------------------|---------------------------|--------------------------|-------|--------------------------|
| HD-AD-<br>A051215<br>(4/4) | Outline・Appearance<br><br>外形・外観図 | Dec. 2, 2005<br>M. Takagi | Dec. 2, 2005<br>S. Saito |       | Dec. 2, 2005<br>J. Saito |

# Instruction: fix module in PCB

## マザーボード設計上の注意点

Although the indication label is stuck on the bottom of module, there are some covered GND areas with thin resin because the label is smaller than module.

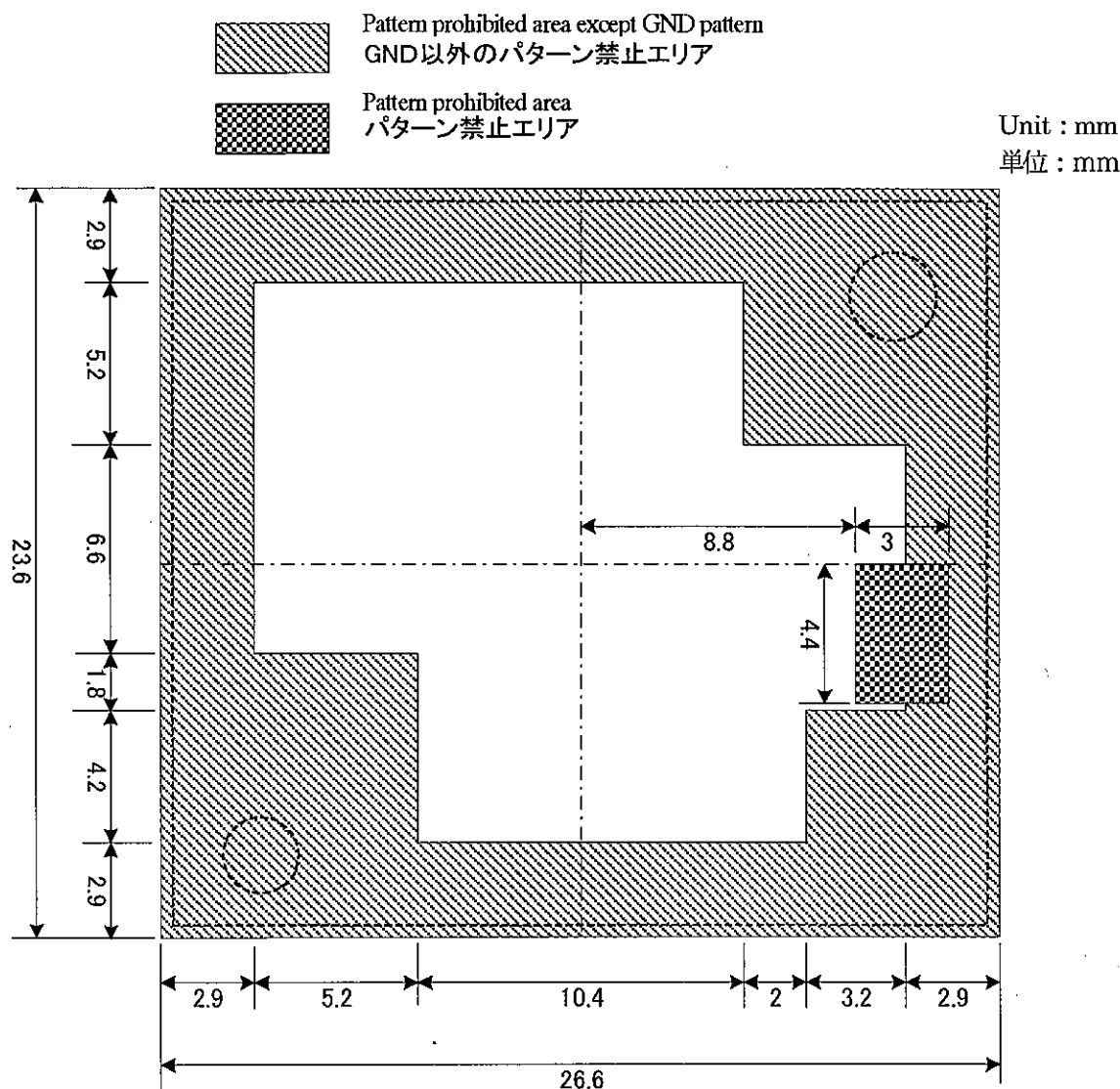
There is RF monitor pad on the bottom of module; therefore, RF performance should be degraded if module was set on metallic chassis directly without space.

Please follow the guideline below.

モジュール基板裏面に絶縁を兼ねたラベルが貼られますが、全面を覆うことが出来ない為、レジストで覆われたGNDパターンが露出します。(但し、御社指定のGND露出部においては、GNDパターンはレジストで覆われません。)

また、モジュール基板裏面には出荷検査時のRFモニタ端子が配置されており、その直下にマザーボード側のパターンが配置されますと高周波特性が変動する恐れがあります。

つきましては、下図のようにマザーボード設計上の制約をさせていただきます。

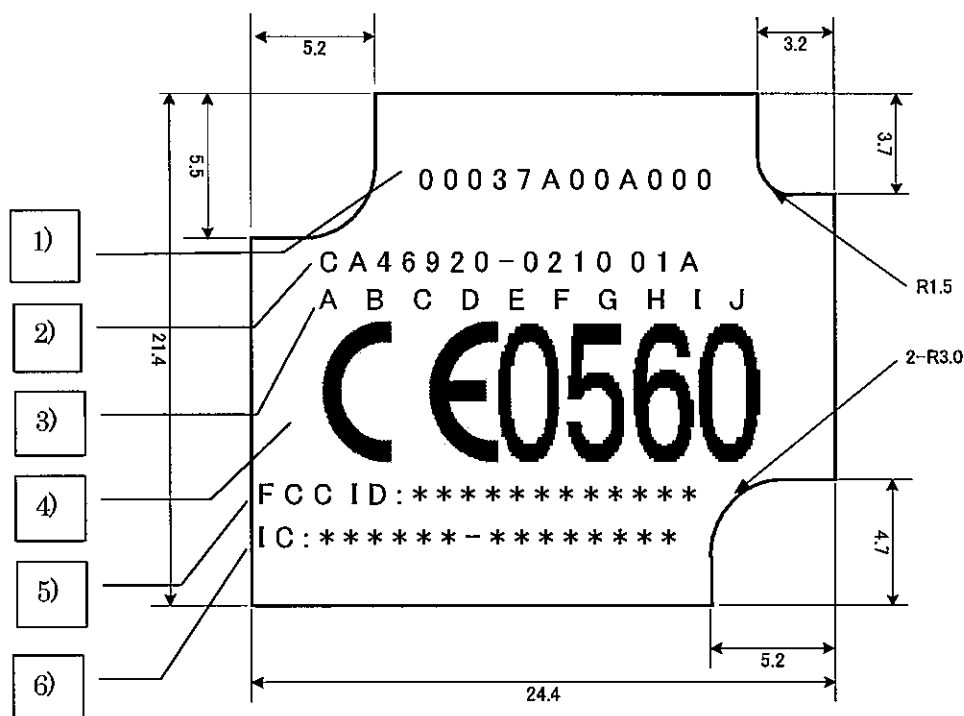


| Control No.                | Control name                 | APPROVED                 | CHECKED                  | DRAWN | DESIGNED               |
|----------------------------|------------------------------|--------------------------|--------------------------|-------|------------------------|
| HD-AD-<br>B051215<br>(1/2) | Outline・Appearance<br>外形・外観図 | Dec.19.2005<br>M. Takagi | Dec.19.2005<br>J. Sugita |       | Dec.19.2005<br>J. Sato |

# 1. Label indication description

ラベル表示内容

- BD address number : 00037A◇◇◇◇◇◇ (Refer to 「Instruction for lot number」)  
BD アドレス番号 : 00037A◇◇◇◇◇◇ (ロット番号解説書参照)
- Fujitsu CA Diagram Number and Revision Status Number : CA46920-0210 01A  
富士通殿 CA 図番、版数管理記号 : CA46920-0210 01A
- Revision ID : ABCDEFGHIJ  
改訂 ID : ABCDEFGHIJ
- CE Marking for R&TTE : CE0560
- FCC ID : \*\*\*\*\*
- IC ID : \*\*\*\*\*



Material : PET (UL969) / Label color : White / Printing : Black  
材質 : PET (UL969) / ラベル色 : 白 / 印字 : 黒

| Control No.                | Control name                     | APPROVED                 | CHECKED                  | DRAWN | DESIGNED               |
|----------------------------|----------------------------------|--------------------------|--------------------------|-------|------------------------|
| HD-AD-<br>B051215<br>(2/2) | Outline・Appearance<br><br>外形・外観図 | Dec.19.2005<br>M. Takagi | Dec.19.2005<br>J. Sugita |       | Dec.19.2005<br>J. Sato |

## 2. Shielding case indication description

シールドケース表示内容

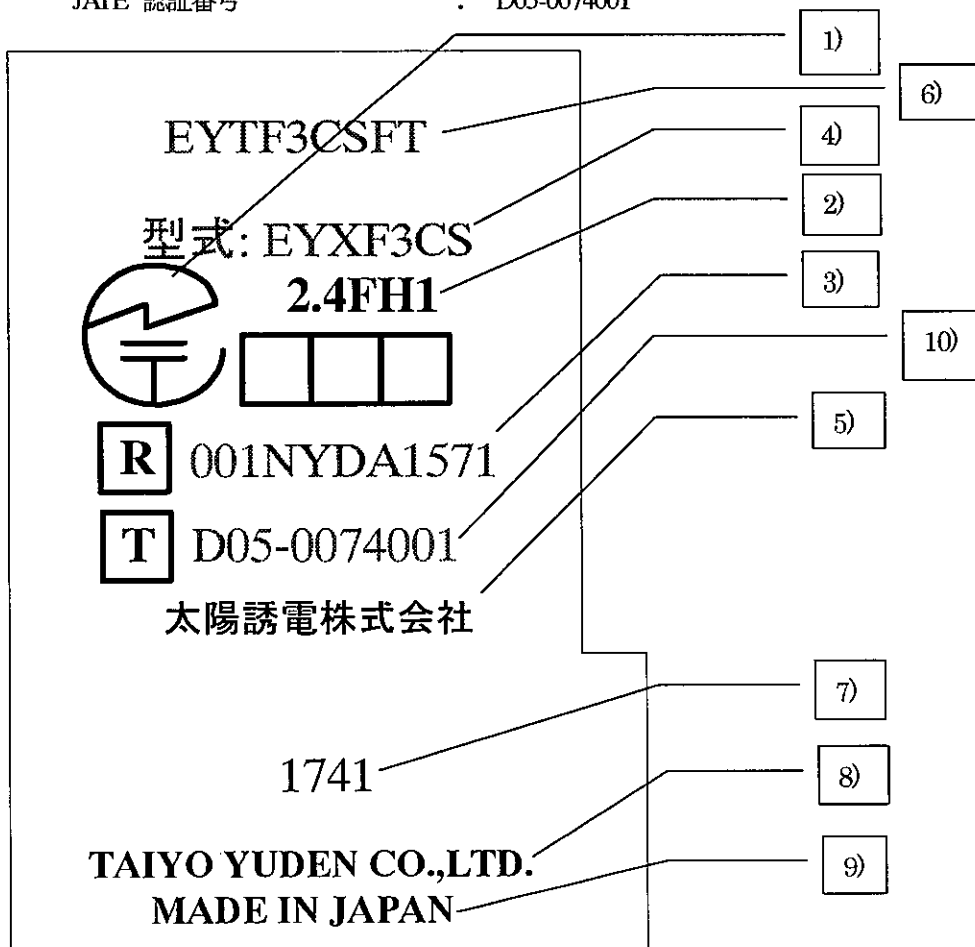
### TELEC

- |                               |                                  |
|-------------------------------|----------------------------------|
| 1) TELEC logo mark            | : Specified logo mark            |
| TELEC ロゴマーク                   | : 規定ロゴマーク                        |
| 2) Actual indication          |                                  |
| 現品表示                          | : 「第二世代小電力データ通信システム無線設備」であることを表記 |
| 3) TELEC qualification number | : 001NYDA1571                    |
| TELEC 認証番号                    | : 001NYDA1571                    |
| 4) Product number for TELEC   | : EYXF3CS                        |
| 申請設備の型式名                      | : EYXF3CS                        |
| 5) Manufacture (Japanese)     | : 太陽誘電株式会社                       |

### Others

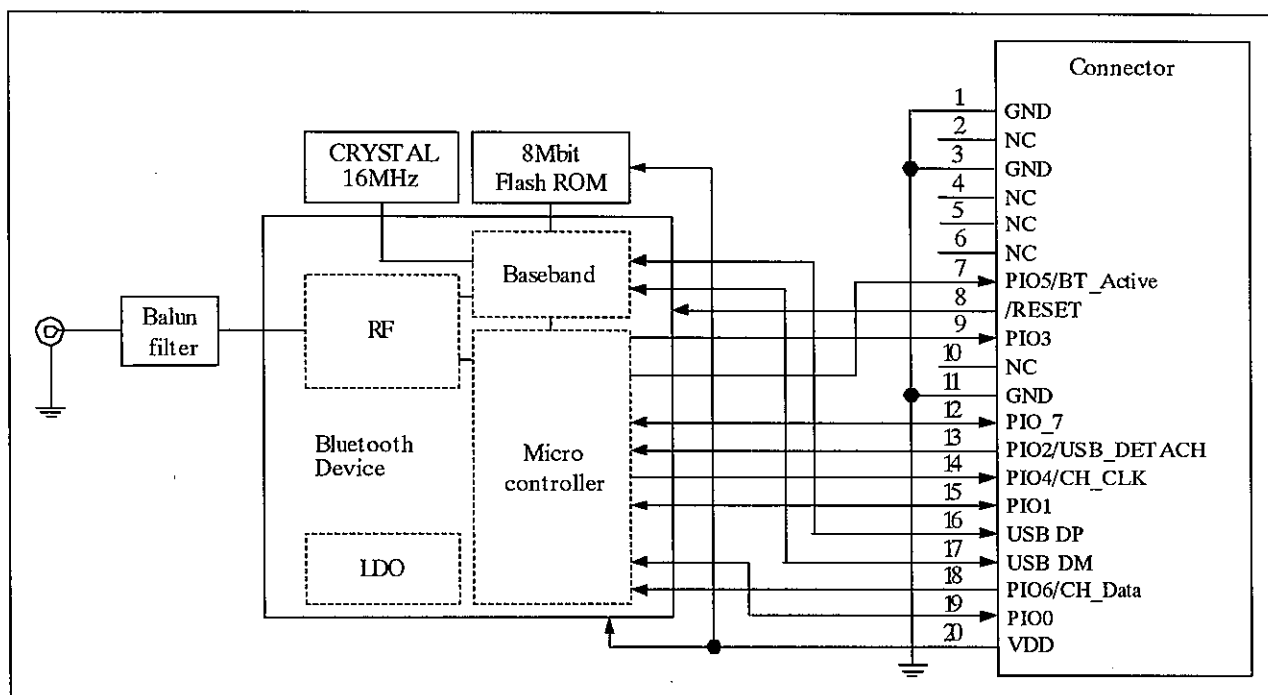
その他

- |                               |                                                         |
|-------------------------------|---------------------------------------------------------|
| 6) Taiyo Yuden product name   | : EYTF3CSFT                                             |
| 太陽誘電製品管理品名                    | : EYTF3CSFT                                             |
| 7) Product Lot number         | : Four digits (Refer to 「Instruction for lot number .」) |
| 製造 Lot 番号                     | : 4桁 (ロット番号解説表参照)                                       |
| 8) Manufacture (English)      | : TAIYO YUDEN CO.,LTD.                                  |
| 9) Country of manufacture     | : MADE IN JAPAN                                         |
| 10) JATE qualification number | : D05-0074001                                           |
| JATE 認証番号                     | : D05-0074001                                           |



| Control No.                | Control name               | APPROVED                | CHECKED                 | DRAWN | DESIGNED              |
|----------------------------|----------------------------|-------------------------|-------------------------|-------|-----------------------|
| HD-MC-<br>A051215<br>(1/1) | Circuit schematic<br>内部回路図 | Dec.2.2005<br>M. Takagi | Dec.2.2005<br>J. Sugita |       | Dec.2.2005<br>J. Sato |

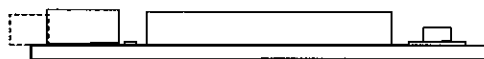
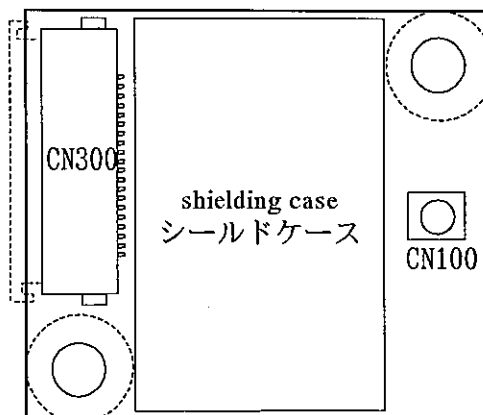
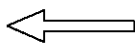
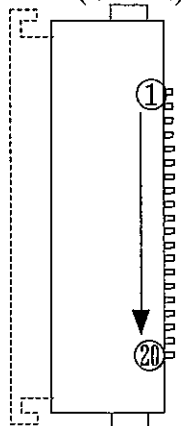
Block diagram, Terminal layout diagram  
ブロック図、端子配置



| Control No.                | Control name           | APPROVED                | CHECKED                  | DRAWN | DESIGNED              |
|----------------------------|------------------------|-------------------------|--------------------------|-------|-----------------------|
| HD-BA-<br>A051215<br>(1/2) | Pin layout<br>ピンレイアウト図 | Dec. 2 2005<br>M. Takag | Dec. 2 2005<br>J. Fujita |       | Dec 2 2005<br>J. Sato |

(1) Terminal layout drawing  
端子配置図

CN300(Terminal drawing)  
CN300(端子図)



(2) Terminal function  
端子機能  
CN100 (ANT connector)

| Terminal No. | Terminal name | I/O | Description     | Remark           |
|--------------|---------------|-----|-----------------|------------------|
| (CN100)      | RF IN/OUT     | I/O | RF input-output | 50Ω input-output |

|                            |                        |                          |                           |       |                         |
|----------------------------|------------------------|--------------------------|---------------------------|-------|-------------------------|
| Control No.                | Control name           | APPROVED                 | CHECKED                   | DRAWN | DESIGNED                |
| HD-BA-<br>A051215<br>(2/2) | Pin layout<br>ピンレイアウト図 | Dec. 2, 2005<br>M. Takeg | Dec. 2, 2005<br>S. Sijeta |       | Dec. 2, 2005<br>J. Sato |

CN300 (FPC/FPC connector)

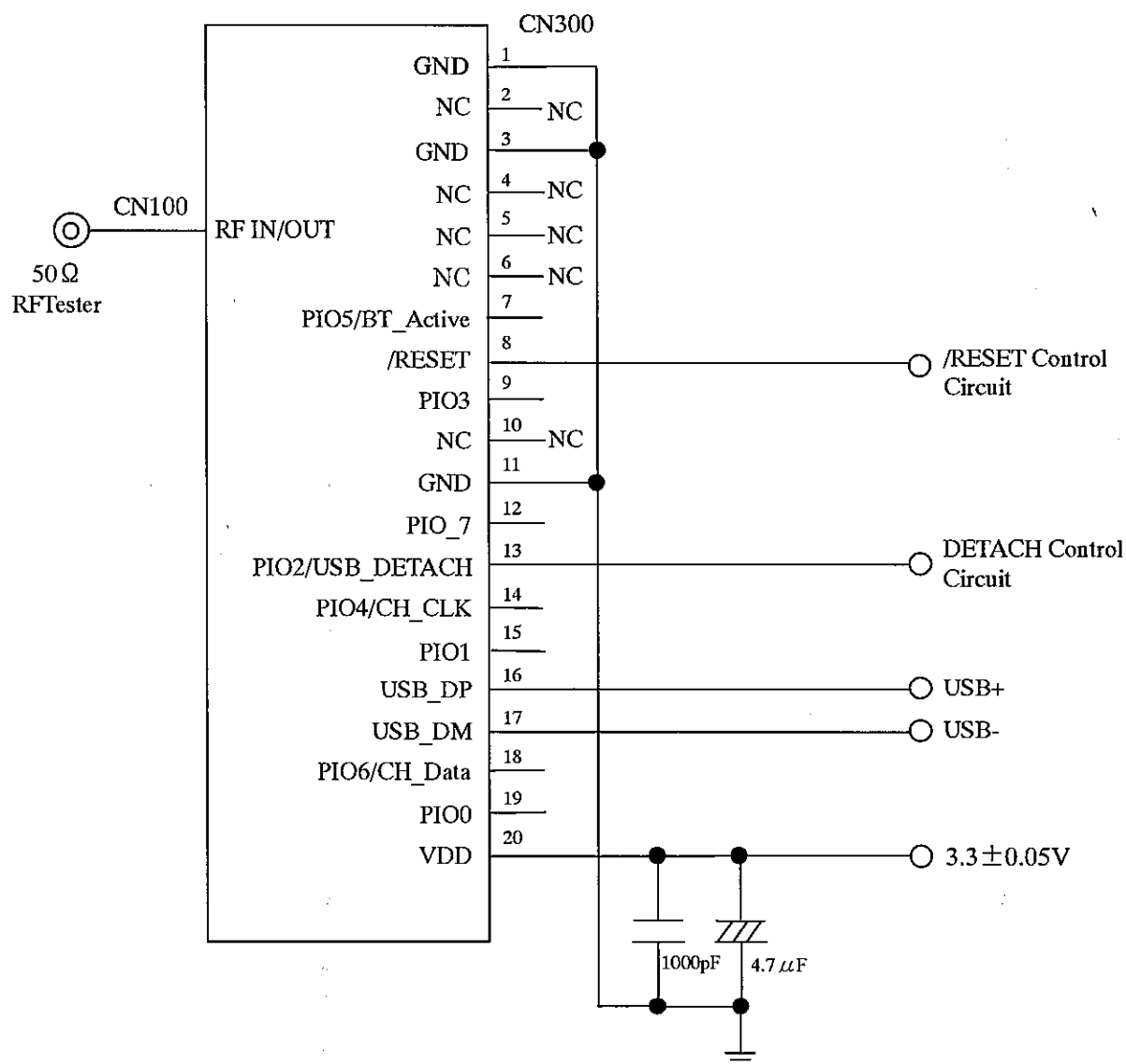
| Terminal No. | Terminal name       | Input/Output | Description                                                                                                                                                     | Remark |
|--------------|---------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1            | GND                 | -            | Ground                                                                                                                                                          |        |
| 2            | NC                  | -            | No connection                                                                                                                                                   |        |
| 3            | GND                 | -            | Ground                                                                                                                                                          |        |
| 4            | NC                  | -            | No connection                                                                                                                                                   |        |
| 5            | NC                  | -            | No connection                                                                                                                                                   |        |
| 6            | NC                  | -            | No connection                                                                                                                                                   |        |
| 7            | PIO5/<br>BT_Active  | Input/Output | Reserved, Keep on set side terminal open.<br>Bi-directional with programmable strength internal pull-up/down.<br>(BT_Active output for co-existence signaling.) |        |
| 8            | /RESET              | Input        | Active low RESET signal with internal weak pull-up                                                                                                              | Note 2 |
| 9            | PIO3                | Input/Output | Reserved, Keep on set side terminal open.<br>Bi-directional with programmable strength internal pull-up/down.                                                   | Note 1 |
| 10           | NC                  | -            | No connection                                                                                                                                                   |        |
| 11           | GND                 | -            | Ground                                                                                                                                                          |        |
| 12           | PIO7                | Input/Output | Reserved, Keep on set side terminal open.<br>Bi-directional with programmable strength internal pull-up/down.                                                   | Note 1 |
| 13           | PIO2/USB_DE<br>TACH | Input        | DETACH signal input<br>Low USB connect<br>High USB disconnect                                                                                                   |        |
| 14           | PIO4/CH_CLK         | Output       | BT_Priority/CH_CLK output for co-existence signaling                                                                                                            |        |
| 15           | PIO1                | Input/Output | Reserved, Keep on set side terminal open.<br>Bi-directional with programmable strength internal pull-up/down.                                                   | Note 1 |
| 16           | USB_DP              | Input/Output | USB data (Positive) input-output                                                                                                                                |        |
| 17           | USB_DM              | Input/Output | USB data (Negative) input-output                                                                                                                                |        |
| 18           | PIO6/CH_Data        | Input        | WLAN_Active/CH_Data input for co-existence signaling                                                                                                            |        |
| 19           | PIO0                | Input/Output | Reserved, Keep on set side terminal open.<br>Bi-directional with programmable strength internal pull-up/down.                                                   | Note 1 |
| 20           | VDD_3.3V            | Input        | DC3.3V Power supply                                                                                                                                             | Note 3 |

Note

1. Strength pull-downs (pull-ups) are equivalent to a few tens of kOhms resistance, but are more accurately modeled as a 40uA current drain (source).
2. Weak pull-ups can be thought of 1M Ohm connections to VDD\_3.3V, but are more accurately modeled as a 1 uA current source.
3. Pin20 (VDD\_3.3V) is used for power supply of BT module. (MAX 200mA).

| Control No.                | Control name          | APPROVED                | CHECKED                 | DRAWN | DESIGNED              |
|----------------------------|-----------------------|-------------------------|-------------------------|-------|-----------------------|
| HD-AT-<br>A051215<br>(1/1) | Test circuit<br>検査回路図 | Dec.2.2005<br>M. Takagi | Dec.2.2005<br>J. Sugita |       | Dec.2.2005<br>J. Sato |

test circuit  
検査回路図





| Control No.        | Control name                  | APPROVED                  | CHECKED                    | DRAWN | PREPARED                   |
|--------------------|-------------------------------|---------------------------|----------------------------|-------|----------------------------|
| HQ-BA-503<br>(1/2) | Handling Precaution<br>取扱注意要領 | Aug. 30. 2002<br>M. Hwang | Aug. 30. 2002<br>T. Sumita |       | Aug. 30. 2002<br>T. Sumita |

This document describes the handling instructions for modules.  
本書類では特に取扱い時の注意事項について記載します。

1. The storage condition for module  
本製品の保管条件

- 1) Store the components at 5~30deg / 40~60%RH.  
温度5~30℃ 湿度40~60%RHで保管して下さい。
- 2) Store the components where no poison gas occurred and less dust .  
特に有害なガスの発生がなく、塵埃の少ない雰囲気保管して下さい。
- 3) Please store it in the state of shipped packing from our company.  
弊社出荷時梱包状態にて保管願います。
- 4) Please make sure that dew condensation of moisture should not occurred  
due to a rapid temperature change and so on.  
保管時、急激な温度変化等により、水分の結露が起きないようにして下さい。
- 5) Performance degradation of package and etc and the fall of the contact nature of connector terminal  
may arrive in the long term storage. As for the reason, please avoide to store it in the long term.  
長期保管をしますと、パッケージなどの性能劣化やコネクタ端子電極の接触性の低下が生じる  
おそれがあります。長期保管は避けて下さい。

2. Shipping condition for this module and handling condition for unit (case) of module and etc.  
本商品の運送条件、及び、本商品組入れユニット等の輸送条件

- 1) Please make sure that there are lessen mechanical vibration and shock for this module, and do not drop it.  
機械的振動、衝撃を極力少なくし、落下させない様にして下さい。
- 2) Please do not generate static electricity for conveyance container, vibration or etc.  
Please use a conductive container etc. and prevent electrification and static electricity.  
運搬容器や振動等の影響により帯電し、静電気を発生させない様にして下さい。  
又、導電性容器やアルミ箔等を使用し、帯電や静電気を防止して下さい。
- 3) The worker (human body) who handles grounds through high resistance (1M-100Mohm),  
and please discharge static electricity .  
取り扱う作業員(人体)は高抵抗(1M~100MΩ)を介して接地し、静電気を放電させておいて下さい。

| Control No.        | Control name                  | APPROVED                  | CHECKED                    | DRAWN | PREPARED                   |
|--------------------|-------------------------------|---------------------------|----------------------------|-------|----------------------------|
| HQ-BA-503<br>(2/2) | Handling Precaution<br>取扱注意要領 | Aug 30. 7 2002<br>M. Akai | Aug 30. 2002<br>Y. Tsumita |       | Aug 30. 2002<br>Y. Tsumita |

### 3. The condition of attaching module

本商品の組み付け条件

- 1) In order to avoid the stress to components, please attach its module with concerning about avoiding to bend .  
素子へのストレスを避けるために、商品は反ったり曲がったりしないように取り付けて下さい。
- 2) Please connect the module to attaching components without adding a superfluous stress.  
組み付け部品(コネクタ等)には勘合に必要な力以上のストレスを加えないよう取り付けてください。
- 3) Please do not perform any process of soldering, resin coating and etc... to this module.  
本商品に対し、半田付け、樹脂類の塗布、等の加工は行わないで下さい。
- 4) Please rewrite firmware only by the method agreed in both companies .  
ファームウェアの書き換えについては、両社にて合意された方法のみで行って下さい。

### 4. Use Conditions for this module

本製品の使用条件

- 1) Please do not use this product except for the absolute maximum rating and use of specification described.  
本製品は本仕様書記載の用途、絶対最大定格、以外ではご使用に成らないで下さい。
- 2) Please do not use it under the conditions that moisture, ionic substances, dew condensation water and dust are stucked to.  
また、結露水・ほこり等の水分・イオン性物質の付着する条件下ではご使用に成らないで下さい。
- 3) This module should not be cleaned .  
本製品本体は洗浄しないで下さい。
- 4) This module is the products for general electric devices.  
(For example, AV equipment, general household-electric-appliances, and office apparatus, information, communication apparatus, etc.)  
Therefore, if you use this module for the products that request high safety and high reliability, please contact Taiyo Yuden.  
(For Example, medical treatments, universes, nuclear relation apparatus, and disaster prevention.)  
Even if you use it for general electric device in demand of safely, equipment of highly reliability requested, circuit and others, please operate the evaluation safely enough and add a protection circuit and others if it's necessary.

本製品は一般電子機器(AV機器、一般家電、事務機器、情報、通信機器等)向け商品となっております。従って、高度の安全性や信頼性が求められる医療用機器、宇宙用機器、原子力関係機器、あるいは防災機器等にお使いになる時は、弊社までお問い合わせ下さる様お願い致します。  
尚、一般電子機器においても安全性や信頼性の要求が高い機器、回路等にご使用になる場合は、十分な安全性評価を実施され、必要に応じて保護回路等を追加して下さい。

| Control No           | Control Name                             | APPROVED                          | CHECKED                          | DRAWN | DESIGNED                        |
|----------------------|------------------------------------------|-----------------------------------|----------------------------------|-------|---------------------------------|
| RT5100-010A<br>(1/2) | The Terms of Reliability Tests<br>信頼性条件書 | 30.nov.'05<br><i>J. Harashina</i> | 30.nov.'05<br><i>J. Fukasawa</i> |       | 30.Nov.'05<br><i>M. Sakurai</i> |

| Tests<br>試験項目                                     | Testing Methods<br>試験条件                                                                                                                                                                                                                                                                              | Judgment criteria<br>判定基準                                                    |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| High Temperature Test<br>(Non Biased)<br><br>高温保存 | Devices are left for 2~24 hours in the normal temperature and humidity after being placed in a high temperature (110 °C) environment for 250 hours, while no voltage is applied.<br><br>110℃の雰囲気中に250時間放置後取り出し、常温常湿中に2~24時間放置後測定。                                                                    | Devices should show no abnormal electrical performance.<br><br>電氣的特性に異常ないこと。 |
| Low Temperature Test<br>(Non Biased)<br><br>低温保存  | Devices are left for 2~24 hours in the normal temperature and humidity after being placed in a Low temperature (-40 °C) environment for 250 hours, while no voltage is applied.<br><br>-40℃の雰囲気中に250時間放置後取り出し、常温常湿中に2~24時間放置後測定。                                                                     | Devices should show no abnormal electrical performance.<br><br>電氣的特性に異常ないこと。 |
| Humidity Test<br>(Non Biased)<br><br>高温高湿保存       | Devices are left for 2~24 hours in the normal temperature and humidity after being exposed to 85% humidity at 85 °C for 250 hours, while no voltage is applied.<br><br>85℃、85%RHの雰囲気中に250時間放置後取り出し、常温常湿中に2~24時間放置後測定。                                                                                | Devices should show no abnormal electrical performance.<br><br>電氣的特性に異常ないこと。 |
| Humidity Test<br>(Biased)<br><br>高温高湿連続バイアス       | Devices are left for 2~24 hours in the normal temperature and humidity after being exposed to 95% humidity at 60 °C for 100 hours, operating the receiver and transmitter electric circuit of devices.<br><br>60℃、95%RHの雰囲気中で100時間送受信共連続動作後取り出し、常温常湿中に2~24時間放置後測定。                                   | Devices should show no abnormal electrical performance.<br><br>電氣的特性に異常ないこと。 |
| High Temperature Test<br>(Biased)<br><br>高温連続動作   | Devices are left for 2~24 hours in the normal temperature and humidity after being placed in a high temperature (70 °C) environment for 100 hours, operating the receiver and transmitter electric circuit of devices.<br><br>70℃の雰囲気中で100時送受信共連続動作後取り出し、常温常湿中に2~24時間放置後測定。                          | Devices should show no abnormal electrical performance.<br><br>電氣的特性に異常ないこと。 |
| Thermal Shock Test<br>(Air)<br><br>温度サイクル         | Devices are left for 2~24 hours in the normal temperature and humidity after being placed at two different temperature (-30~85 °C) in the atmosphere for 30 minutes respectively and this cycle is repeated 100 times.<br><br>気中で、-30℃(30分)⇄常温10秒以内⇄85℃(30分)に順次入れこれを100サイクル繰り返した後、常温常湿中に2~24時間放置後測定。 | Devices should show no abnormal electrical performance.<br><br>電氣的特性に異常ないこと。 |

To: FUJITSU LIMITED

Part No :EYTF3CSFT

30.11.2005

TAIYO YUDEN CO.,LTD.

| Control No           | Control Name                             | APPROVED                           | CHECKED                          | DRAWN | DESIGNED                        |
|----------------------|------------------------------------------|------------------------------------|----------------------------------|-------|---------------------------------|
| RT5100-010A<br>(2/2) | The Terms of Reliability Tests<br>信頼性条件書 | 30.nov.'05<br><i>T. Matsushima</i> | 30.nov.'05<br><i>T. Fukasawa</i> |       | 30.Nov.'05<br><i>M. Sakurai</i> |

| Tests<br>試験項目        | Testing Methods<br>試験条件                                                                                                                                                                                                                                                                                                                                                     | Judgment criteria<br>判定基準                                                                                      |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| ESD<br>静電破壊          | C = 200pF, R = 0 $\Omega$ , $\pm 100V$ , each 5 times.<br>200pF, 0 $\Omega$ , $\pm 100V$ 各5回実施後測定。                                                                                                                                                                                                                                                                          | Devices should show no abnormal electrical performance.<br>電気的特性に異常ないこと。                                       |
| Vibration Test<br>振動 | Devices are fixed to a vibration table.<br>total amplitude of vibration: 1.5mm at f=10~82Hz<br>acceleration of vibration: 196m/s <sup>2</sup> (20G) at f=82~2000Hz<br>sweep time: 4 minutes (f=10~2000~10Hz)<br>X, Y and Z axis for 2 hours each for a total of 6 hours.<br>10~82Hz: 全振幅1.5mm, 82~2000Hz: 加速度196m/s <sup>2</sup> {20G}、<br>周期4分でX, Y, Z各方向2時間、計6時間振動させた後測定。 | Devices should show no abnormal electrical performance and no unusual external appearance.<br>電気的特性・外観に異常ないこと。 |

| Control No.                | Title                            | Approved                     | Checked                      | Drawn | Prepared                     |
|----------------------------|----------------------------------|------------------------------|------------------------------|-------|------------------------------|
| HD-BB-<br>A051215<br>(1/2) | Packaging Specification<br>梱包仕様書 | 25. Nov. 2025<br>Y. T. Saito | 25. Nov. 2025<br>Y. T. Saito |       | 25. Nov. 2025<br>Y. T. Saito |

### Packaging Specification

#### 梱包仕様

(1) Packaging Material  
梱包材料

| Name<br>部材名                             | Outline<br>概要      | Materials<br>材質          | Note<br>備考                 |
|-----------------------------------------|--------------------|--------------------------|----------------------------|
| Tray<br>トレイ                             | 315×135.9×7.62(mm) | Conductive PPE<br>導電性PPE | 40 pieces/tray<br>40 個/トレイ |
| Antistatic band<br>帯電防止結束バンド            | 8mm wide<br>8mm幅   | Antistatic PP<br>帯電防止 PP |                            |
| Aluminum moisture barrier bag<br>アルミ防湿袋 | 260×460(mm)        | (AS)PET/AL/NY/PE(AS)     |                            |
| Label<br>ラベル                            | 60×76(mm)          |                          |                            |
| Corrugated cardboard box<br>梱装箱         | 345×205×95(mm)     |                          |                            |

(2) Packaging Unit  
梱包数量

40 pieces/tray × 10 tray = 400 pieces  
40 個/トレイ × 10 トレイ = 400 個

(3) Packaging Figure

Tray (cover)  
トレイ(蓋)

Tray  
トレイ

Aluminum moisture barrier bag  
アルミ防湿袋

Antistatic band  
帯電防止結束バンド

Label  
ラベル

Corrugated cardboard box  
梱装箱

345

205

95

Label  
ラベル

(4) Label  
ラベル

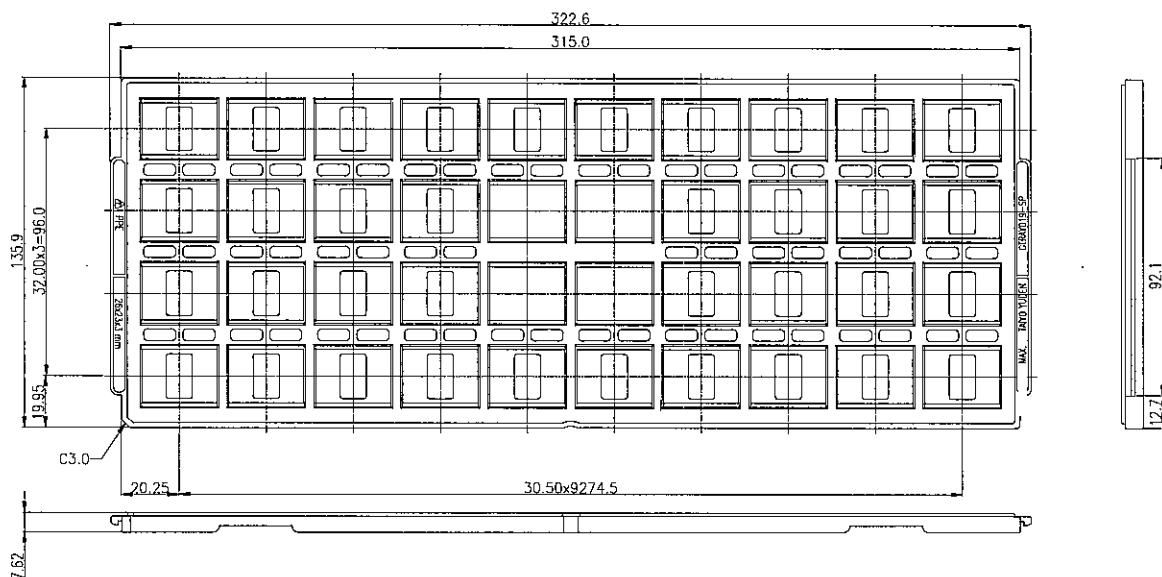
|                                     |          |         |
|-------------------------------------|----------|---------|
| 御 社 名<br>COMPANY NAME               |          | 股       |
| 注 番<br>PURCHASE ORDER No.           |          |         |
| 品 名<br>DESCRIPTION                  | 御社<br>貴社 |         |
| 納 入 数 量<br>QUANTITY                 | 個        | 検印 SEAL |
| □ ッ ト No.<br>LOT NUMBER             |          |         |
| 備 考<br>NOTE                         |          |         |
| TAIYO YUDEN CO., LTD. MADE IN JAPAN |          |         |

76mm

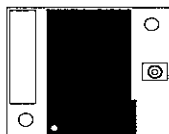
60mm

|                                           |                                           |                                       |                                      |            |                                       |
|-------------------------------------------|-------------------------------------------|---------------------------------------|--------------------------------------|------------|---------------------------------------|
| Control No.<br>HD-BB-<br>A051215<br>(2/2) | Title<br>Packaging Specification<br>梱包仕様書 | Approved<br>25.Nov.2005<br>Y. Tsunota | Checked<br>25.Nov.2005<br>Y. Tsunota | Drawn<br>/ | Prepared<br>25.Nov.2005<br>Y. Tsunota |
|-------------------------------------------|-------------------------------------------|---------------------------------------|--------------------------------------|------------|---------------------------------------|

Tray Figure  
トレイ図面



Direction  
収納方向



Note  
備考

・SURFACE ELECTRICAL RESISTIVITY:  $10^5 \sim 10^{11} \Omega/\square$   
(BY TEST ASTM D257)  
・WARPAGE: LESS THAN 0.8mm

・表面抵抗:  $10^5 \sim 10^{11} \Omega/\square$   
・反りは、0.8mm以下