EMC Technologies Report Number: M070615_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頂きます。

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 :

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 品証承認	DES.REVIEW 設計承認	CHECKED 確認	DESIGNED 担当
Dec. 20, 2005	Dec. 19. 2005	Dec. 19. 2005	Dec. 19. 2005
M. Hoshi	M. Takagi	A. Sugita	J. Sato

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

(1) Revision history
改訂経歴

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

(2) Document constituent list
構成書類リスト

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

Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD－AG－ A051215 （1／5）	General items 一般事項書	Dec.2.2005 M.Takagi	Dec.2.2005 Y.Sugita		Dec.2.2005 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

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頂きます。
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。

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。

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 (JATE) 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も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頂きますので、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。

iii) In the case that customer requests TAIYO YUIDEN 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 agrees 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、一部有償とさせて戴きますので、予めご了承願います。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、定めさせて頂きます。

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.
本仕様書に疑義の生じた場合は、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－ A031226 (1／1)	Absolute maximum ratings 絶対最大定格書	Mar.3,2005 M. Takagi	Mar.3,2005 J. Shimura		Mar.3,2005 M. Yasuda

1．Maximum rating

Item	Symbol	MIN	TYP	MAX	Unit	Condition
Supply voltage	VDD	-0.3		3.6	V	Ta=25℃, 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_rn			30	mV/p-p	
Operating temperature range	Topr	0	25	70	℃	Humidity=40%RH Note1)
Storage temperature range	Tstg	-30	25	85	℃	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－ A0512215 （1／3）	Electrical characteristics 電気的特性書	Dec. 2. 2005 M. Takagi	Dec. 2. 2005 J. Suzuta		Dec. 2. 2005 J. Sato

Electrical characteristics
DC Specifications
The Specification applies for Topr=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, USB_DETACH	VIL1	-0.3		0.8	V	
3	Input low voltage 2	USB_DP, USB_DM	VIL2	-		0.8	V	
4	Input High voltage 1	/RESET, PIO_X, USB_DETACH	VIH1	0.7xVDD_3.3V		VDD_3.3V +0.3	V	
5	Input High voltage 2	USB_DP, USB_DM	VIH2	2.0		-	V	
6	Output low voltage 1	PIO_X	VOL1	-		0.4	V	IOL =4mA
7	Output low voltage 2	USB_DP, USB_DM	VOL2	-		0.3	V	
8	Output High voltage 1	PIO_X	VOH1	VDD_3.3V -0.4		-	V	IOH =-4mA
9	Output High voltage 2	USB_DP USB_DM	VOH2	2.8		-	V	
10	Peak current	Continuous Rx	Iccp1		60	180	mA	
11	Average current1	Sniff mode (Slave only)	Icca1		15		mA	Notes1,3
12	Average current2	Standby mode	Icca2		9		mA	Note3
13	Average current3	Send DM1packet (Master)	Icca3		46		mA	Note3
14	Average current4	Receive DM1packet (Slave)	Icca4		45		mA	Note3
15	Average current5	Hold mode (Slave only)	Icca5		12		mA	Note3
16	Average current6	Park mode (Slave only)	Icca6		13		mA	Notes2,3

Notes:

1. Sniff mode parameter. Max interval 0050h
   Min interval 0010h
   Attempt 0005h
   Timeout 0005h

2. Park mode parameter. Max interval 0100h
   Min interval 0010h

3. The consumption current might fluctuate with the condition of radio communication, host performance and test circuit.

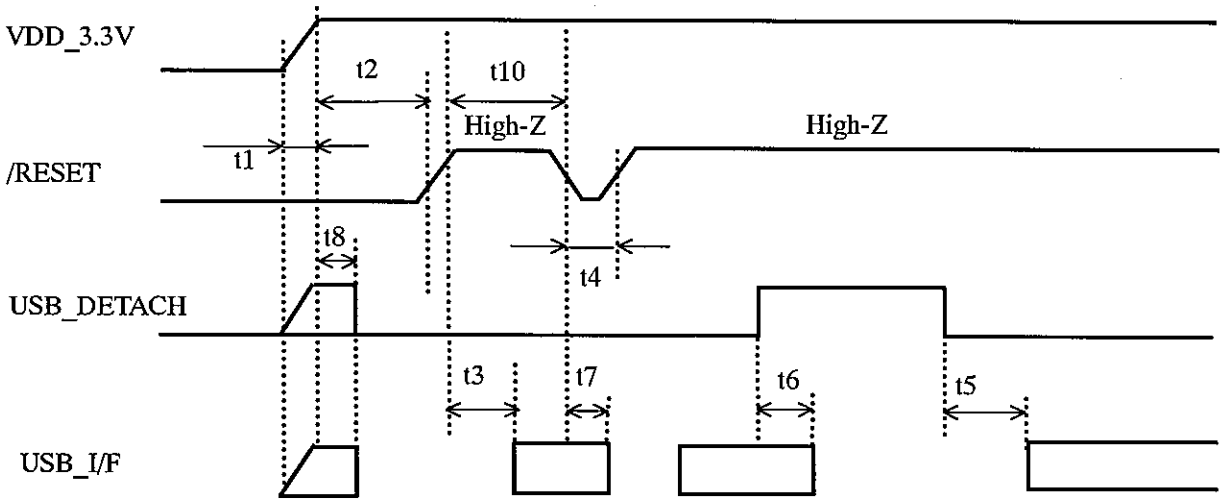
AC Specifications

The Specification applies for Topr=25 degrees C, VDD_3.3V=3.3V

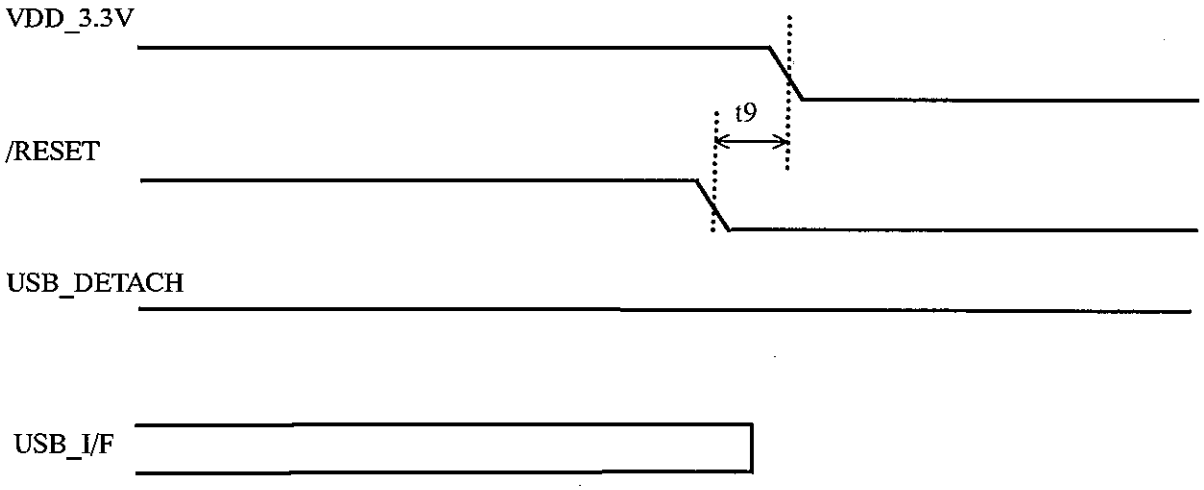
No.	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	VDD_3.3V Rise Time from 0V to 3.15V		t1			2	ms	
2	VDD_3.3V= 3.15V to /RESET High		t2	10			ms	Notes 1,2
3	/RESET High to Module Ready		t3		(70)	3000	ms	Notes 4,5
4	/RESET Pulse Width		t4	6			ms	
5	DETACH Low to USB_I/F Active		t5	0		10	ms	
6	DETACH 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:

1. 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.
2. Input /RESET signal of 10ms and more in condition of VDD_3.3V at over 3.15V.
3. 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.
4. 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.
5. The Typ. is a reference value. The value may change depending on the firmware version, conditions of use and types of flash memory.



Timing Diagram for Power Up Sequence



Timing Diagram for Power Down Sequence

Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD－AE－ B031226 (1／1)	Electrical characteristics 電気的特性書	Mar.3.2005 M. Takeya	Mar.3.2005 T. Ohmura		Mar.3.2005 T. Yasuda

Electrical characteristics

The Specification applies for Topr = 0 to +70℃,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℃ @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	2nd Harmonics
		SE3		-65	-47	dBm	3rd Harmonics
6	Sensitivity	SEN		-80	-75	dBm	BER<0.1%、Ta=25±2℃
				-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。

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 Version19.2 (Build1915)

Command Description	OpCode	Group (Hex)	Command (Hex)	Parameters	Returns	Status	Notes
LINK CONTROL							
Inquiry							
HCI _Inquiry	0x0401	1	1	LAP Inquiry Length Num Responses		Yes	
HCI _ Inquiry_ Cancel	0x0402	1	2		Status	Yes	
HCI_ Periodic_ Inquiry _Mode	0x0403	1	3	Max Period Length Min Period Length LAP Inquiry Length Num Responses	Status	Yes	
HCI _Exit _Periodic _Inquiry _Mode	0x0404	1	4		Status	Yes	
Connection Management							
HCI _Create_ Connection	0x0405	1	5	BD ADDR Packet Type Page Scan Repetition Mode Page Scan Mode Clock Offset Allow Role Switch		Yes	a,b
HCI _Disconnect	0x0406	1	6	Connection Handle Reason		Yes	b
HCI _Add _SCO _Connection	0x0407	1	7	SCO Handle Packet Type		Yes	b,c, d,j
HCI _Create _Connection _Cancel	0x0408	1	8	BD ADDR	Status BD_ADDR	Yes	l
HCI _Accept _Connection _Request	0x0409	1	9	BD ADDR Role		Yes	
HCI _Reject _Connection _Request	0x040A	1	A	BD ADDR		Yes	
HCI _Change _Connection _Packet _Type	0x040F	1	F	Connection Handle Packet Type		Yes	
HCI _Setup _Synchronous _Connection	0x0428	1	28	Connection_Handle Transmit_Bandwidth Receive_Bandwidth Max_Latency Voice_Setting Retransmission_Effort Packet_Type		Yes	l,m,o
HCI _Accept _Synchronous _Connection _Request	0x0429	1	29	BD ADDR Transmit_Bandwidth Receive_Bandwidth Max_Latency Content Format Retransmission_Effort Packet_Type		Yes	l,m,o
HCI _Reject _Synchronous _Connection _Request	0x042A	1	2A	BD ADDR Reason		Yes	l,m,o

Authentication / Pairing

HCI_Link_Key_Request_Reply	0x040B	1	B	BD ADDR Link Key	Status BD ADDR	Yes	
HCI_Link_Key_Request_Negative_Reply	0x040C	1	C	BD ADDR	Status BD ADDR	Yes	
HCI_PIN_Code_Request_Reply	0x040D	1	D	BD ADDR PIN Code Length PIN Code	Status BD ADDR	Yes	
HCI_PIN_Code_Request_Negative_Reply	0x040E	1	E	BD ADDR	Status 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 Encryption Enable		Yes	
HCI_Master_Link_Key	0x0417	1	17	Key Flag		Yes	

Remote Information

HCI_Remote_Name_Request	0x0419	1	19	BD ADDR Page Scan Repetition Mode Page Scan Mode Clock Offset		Yes	
HCI_Remote_Name_Request_Cancel	0x041A	1	1A	BD_ADDR	Status 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 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 Connection Handle LMP_Handle Reseved	Yes	1

LINK POLICY

HCI _Hold _Mode	0x0801	2	1	Connection Handle Hold Mode Max Interval Hold Mode Min Internal		Yes	
HCI _Sniff _Mode	0x0803	2	3	Connection Handle Sniff Mode Max Interval Sniff Mode Min Interval Sniff Attempt Sniff Timeout		Yes	
HCI _Exit _Sniff _Mode	0x0804	2	4	Connection Handle		Yes	
HCI _Park _State	0x0805	2	5	Connection Handle Beacon Max Interval Beacon Min Interval		Yes	k
HCI _Exit _Park _State	0x0806	2	6	Connection Handle		Yes	k
HIC _QoS _Setup	0x0807	2	7	Connection Handle Flags Service Type Token Rate Peak Bandwidth Latency Delay Variation		Yes	e,m
HCI _Role _Discovery	0x0809	2	9	Connection Handle	Status Connection Handle Current Role	Yes	
HCI _Switch _Role	0x080B	2	B	BD ADDR Role		Yes	
HCI _Read _Link _Policy _Settings	0x080C	2	C	Connection Handle	States Connection Handle Link Policy Settings	Yes	
HCI _Write _Link _Policy _Settings	0x080D	2	D	Connection Handle Link Policy settings	States Connection Handle	Yes	
HCI _Read _Default _Link _Policy _Settings	0x080E	2	E		Status Default Link Policy Settings	Yes	l
HCI _Write _Default _Link _Policy _Settings	0x080F	2	F	Default Link Policy Settings	Status	Yes	l
HCI _Flow _Specification	0x0810	2	10	Connection Handle Flags Flow direction Service Type Token Rate Token Bucket Size Peak Bandwidth Access Latency		No	l,m

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

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

INFORMATIONAL PARAMETERS

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

STAUS PARAMETERS

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

TESTING

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

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.

HCI EVENT LIST

Event Description	OpCode	Parameters	Status	Notes
Inquiry				
Inquiry _Complete	0x01	Status	Yes	
Inquiry _Result	0x02	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]	Yes	
Inquiry _Result _with _RSSI	0x22	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]	Yes	b
Connection Management				
Connection _Complete	0x03	Status Connection Handle BD ADDR Link Type Encryption Mode	Yes	
Connection _Request	0x04	BD ADDR Class of Device Link Type	Yes	
Disconnection _Complete	0x05	Status Connection Handle Reason	Yes	
Synchronous _Connection _Complete	0x2C	Status Connection Handle BD ADDR Link Type Transmission Interval Retransmission Window Rx Packet Length Tx Packet Length Air Mode	Yes	b
Synchronous _Connection _Changed	0x2D	Status Connection Handle Transmission Interval Retransmission Window Rx Packet Length Tx Packet Length	Yes	b
Authentication / Pairing				
Authentication _Complete	0x06	Status Connection Handle	Yes	
Return _Link _Keys	0x15	Num Keys BD ADDR [I] Link Key [I]	Yes	
PIN _Code _Request	0x16	BD ADDR	Yes	
Link _Key _Request	0x17	BD ADDR	Yes	
Link _Key _Notification	0x18	BD ADDR Link Key	Yes	

Encryption

Encryption _Change	0x08	Status Connection Handle Encryption Enable	Yes	
Change _Connection _Link _Key _Complete	0x09	Status Connection Handle	Yes	
Master _Link _Key _Complete	0x0A	Status Connection Handle Key Flag	Yes	

Remote Information

Remote _Name _Request _Complete	0x07	Status BD ADDR Remote Name	Yes	
Read _Remote _Supported _Features _Complete	0x0B	Status Connection Handle LMP Features	Yes	
Read _Remote _Version _Information _Complete	0x0C	Status Connection Handle LMP Version Manufacture Name LMP Subversion	Yes	
Read _Remote _Extended _Features _Complete	0x23	Status Connection Handle Page Number Maximum page number Extended LMP Features	Yes	b

Link Policy

QoS _Setup _Complete	0x0D	Status Connection Handle Flags Service Type Token Rate Peak Bandwidth Latency Delay Variation	Yes	
Role _Change	0x12	Status BD ADDR New Role	Yes	
Mode _Change	0x14	Status Connection Handle Current Mode Interval	Yes	
Flow _Specification _Complete	0x21	Status Connection Handle Flags Flow direction Service Type Token Rate Token Bucket Size Peak Bandwidth Access Latency	Yes	b,c

General

Command _Complete	0x0E	Num HCI Command Packets Command Opcode Return Parameters	Yes	
Command _Status	0x0F	Status Num HCI Command Packets Command Opcode	Yes	
Hardware _Error	0x10	Hardware Code	Yes	
Number _Of _Completed _Packets	0x13	Number of Handles Connection Handle [I] HC Num HCI Data Packets [I]	Yes	
Data _Buffer _Overflow	0x1A	Link Type	No	a
Max _Slots _Change	0x1B	Connection Handle LMP Max Slots	Yes	
Read _Clock _Offset _Complete	0x1C	Status Connection Handle Clock Offset	Yes	

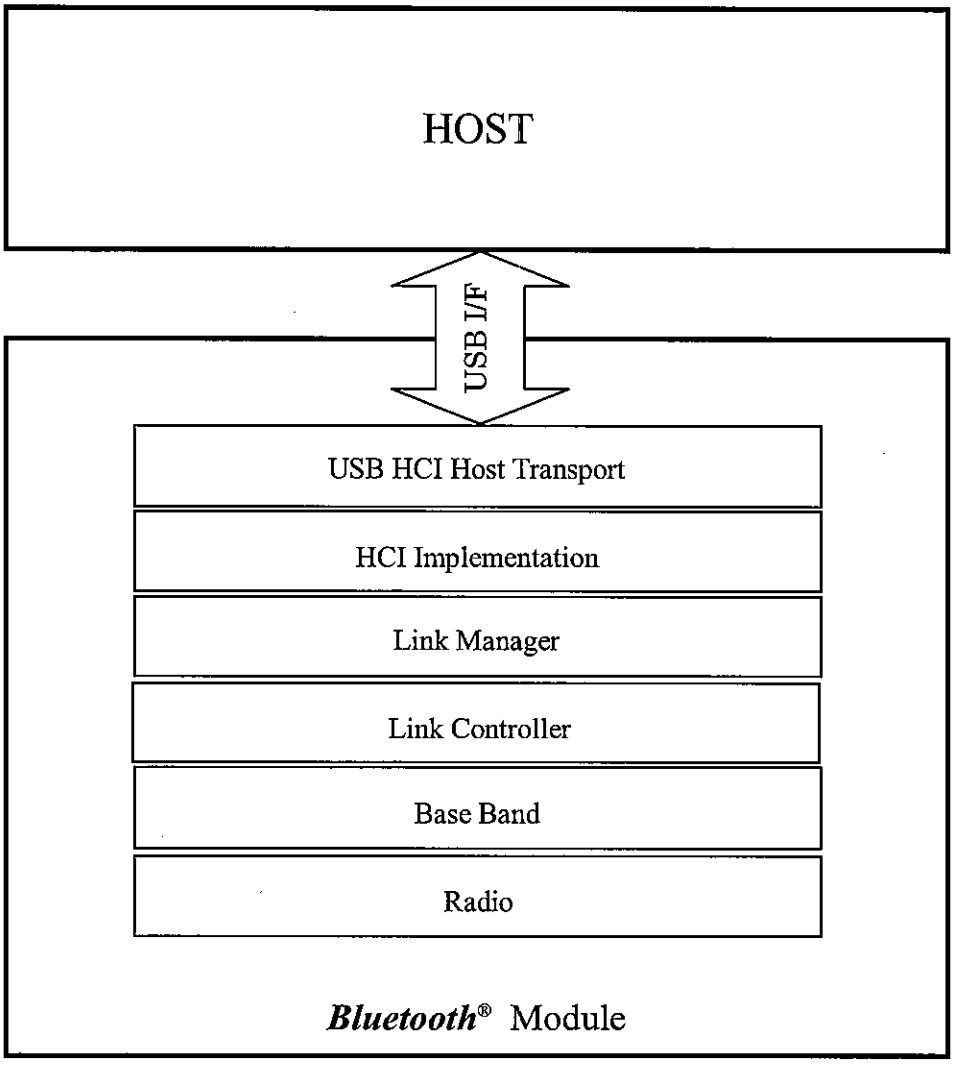
Host Controller & Baseband

Flush _Occurred	0x11	Connection Handle	Yes	
Loopback _Command	0x19	HCI Command Packet	Yes	
Connection _Packet _Type _Change	0x1D	Status Connection Handle Packet Type	Yes	
QoS _Violation	0x1E	Connection Handle	No	
Page _Scan _Mode _Change	0x1F	BD ADDR Page Scan Mode	No	d
Page _Scan _Repetition _Mode _Change	0x20	BD ADDR Page Scan Repetition Mode	Yes	

Notes:

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

Module Stack



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

PICS for **Firmware Version19.2 (Build1915)**

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 π/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.

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.

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 >= 1	O	Yes
2	Supports Npage >= 128	O	Yes
3	Supports Npage >= 256	M	Yes

Note: The master should use Npage >= 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

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

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

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.

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, sa 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:

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".

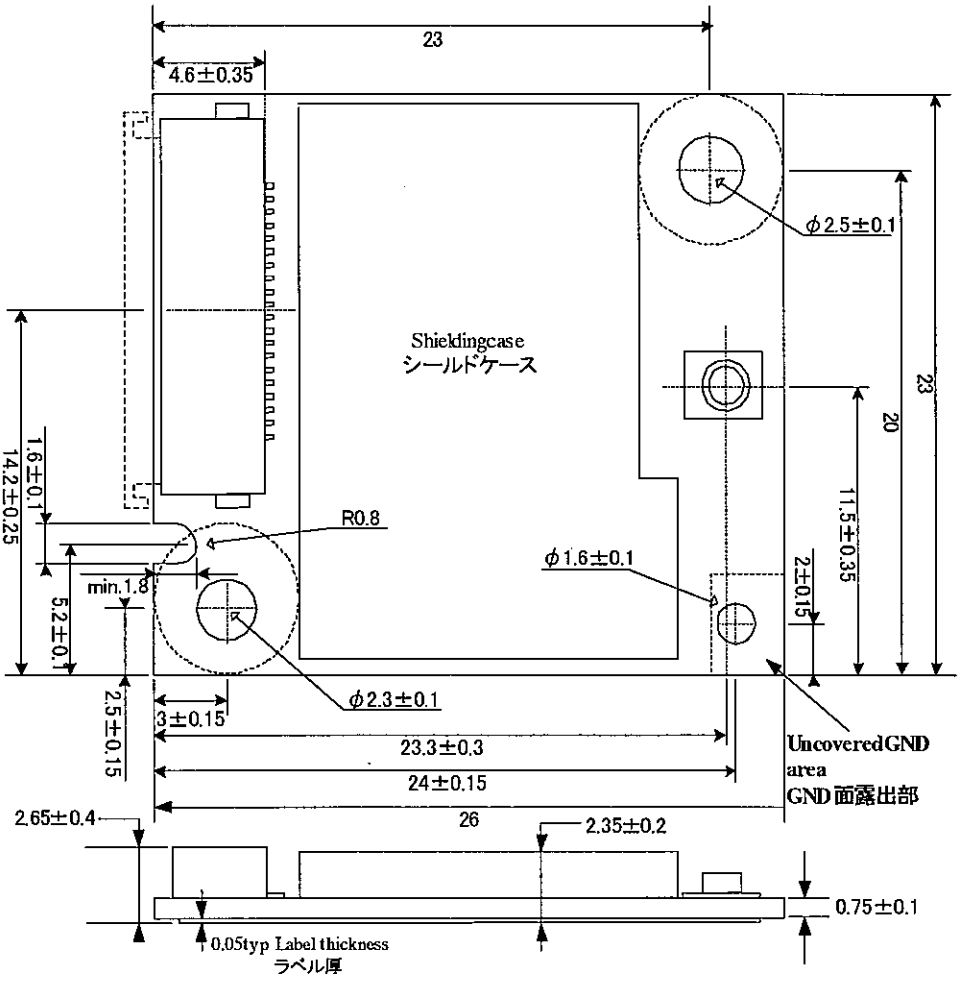
Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD−AD− A051215 (1/4)	Outline・Appearance 外形・外観図	Dec.2.2005 M.Takagi	Dec.2.2005 V.Sujita		Dec2.2005 J.Sato

Unit：mm，Tolerances unless otherwise specified ：±0.2mm
単位：mm，一般公差：±0.2mm

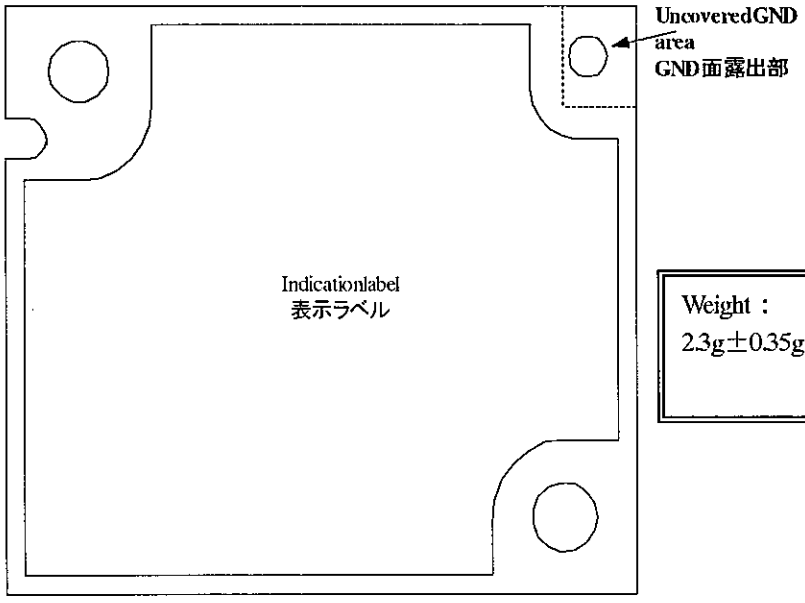
Note1: The lengthwise on module has a cut (an insection) in the corner of board.
Do not use the corner of board for positioning (layout).
注意 1）製品縦方向（23mm 側）は、基板コーナー部に切り込みがあります。
基板コーナー部分を位置決め用等に使用しないで下さい。

Note2: Pulled slider from connector runs off the edge.
注意 2）
スライダをコネクタから引き出すと基板からはみ出します。

Note3: Contact area of 20pin FPC/FFC Connector is Au plated.
If you use a FPC/FFC cable, please use the cable with Au plated contact area.
注意 3）
20pin FPC/FFC Connector の接触部は、金メッキ処理されています。このため、FPC/FFC ケーブルご使用の際は、導体部が金メッキ処理されたケーブルをご使用ください。



Note4: As for the position of "Indication Label" , please have a concavity for 0.15mm and more deep at the chassis that the module will be attached.
Please refer to HD-AD-B051114(1/2) for the label measurement.
注意 4）
表示ラベルが貼られる位置は、筐体等が直接接触しない様 0.15mm 以上深さ方向にざぐりを入れてください。
ラベル寸法は HD-AD-B051215(1/2)に記入してあります。



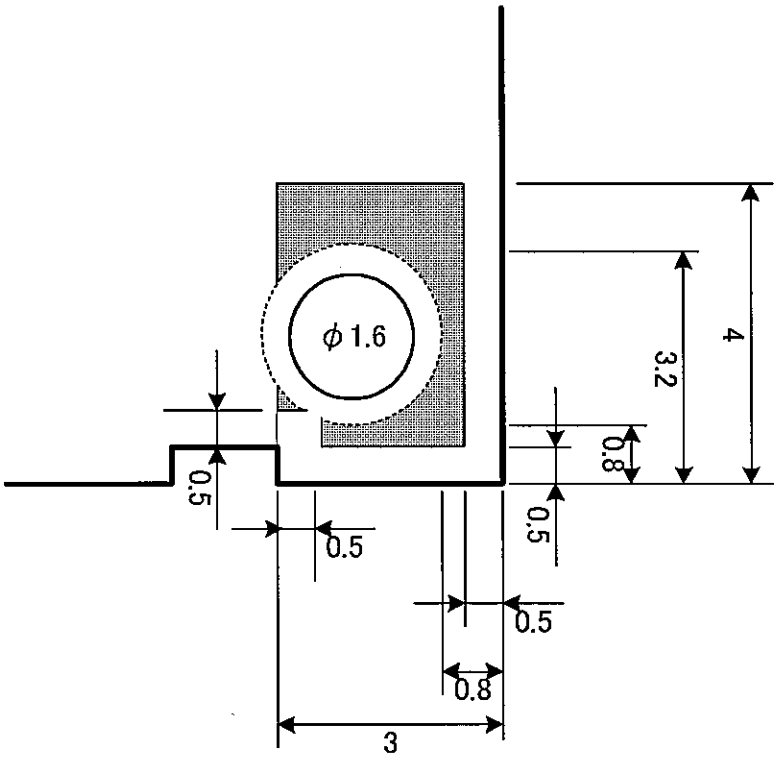
Weight：
2.3g±0.35g

Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD−AD− A051215 (2/4)	Outline・Appearance 外形・外観図	Dec.2.2005 M Takagi	Dec 2.2005 J. Sugita		Dec2 2005 J Sato

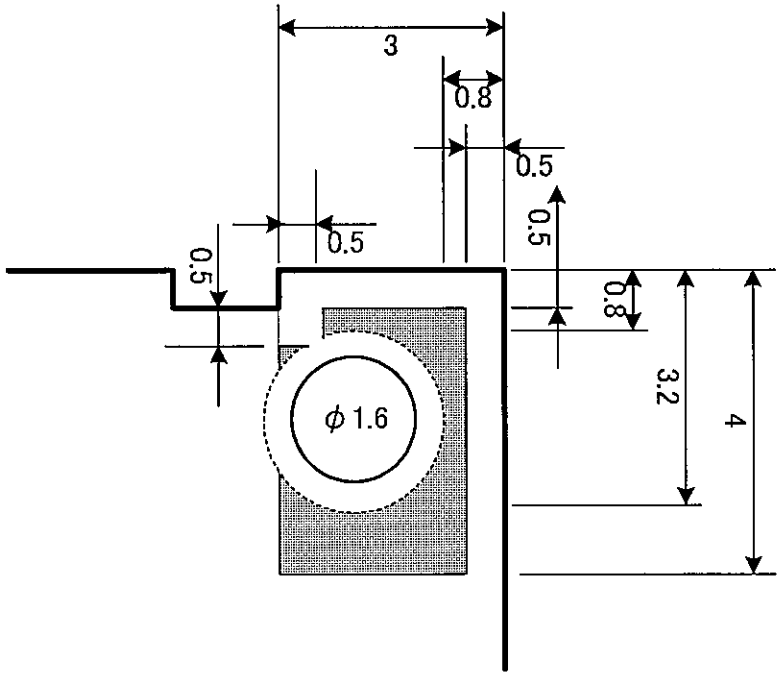
Enlarged view of uncovered GND area
φ1．6穴の位置決め穴とGND露出部の拡大図

Top side
表面

Unit : mm
単位 : mm



Bottom side
裏面



Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD−AD− A051215 (3/4)	Outline・Appearance 外形・外観図	Dec. 2. 2005 M. Takagi	Dec. 2. 2005 M. Sugita		Dec. 2. 2005 J. Sato

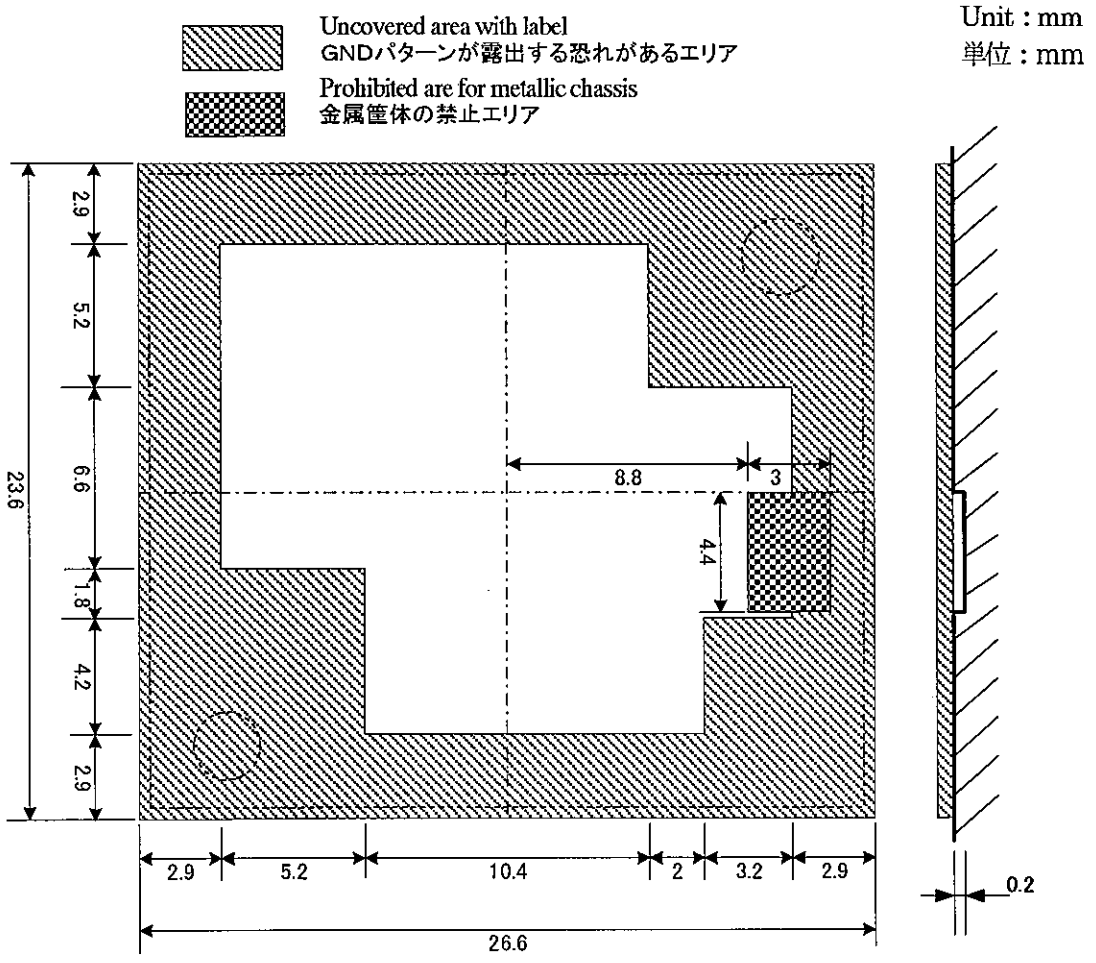
Instruction: fix module in metallic chassis
金属筐体に固定する場合の注意点

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頂きます。



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−A051215 (4/4)	Outline・Appearance 外形・外観図	Dec. 2.2005 M.Takagi	Dec.2.2005 J.Sujita		Dec.2.2005 J.Sato

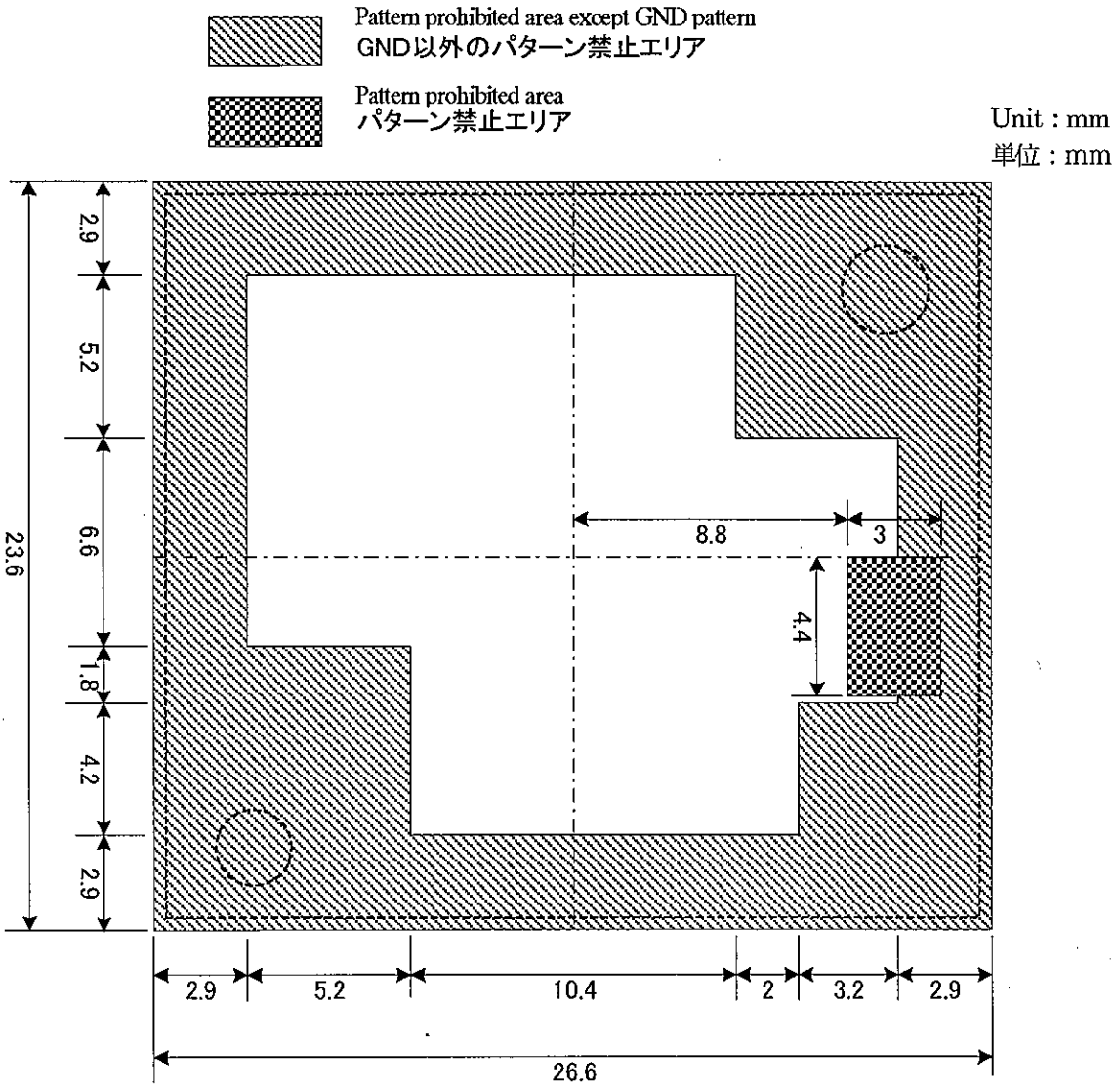
Instruction: fix module in PCB
マザーボード設計上の注意点

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。

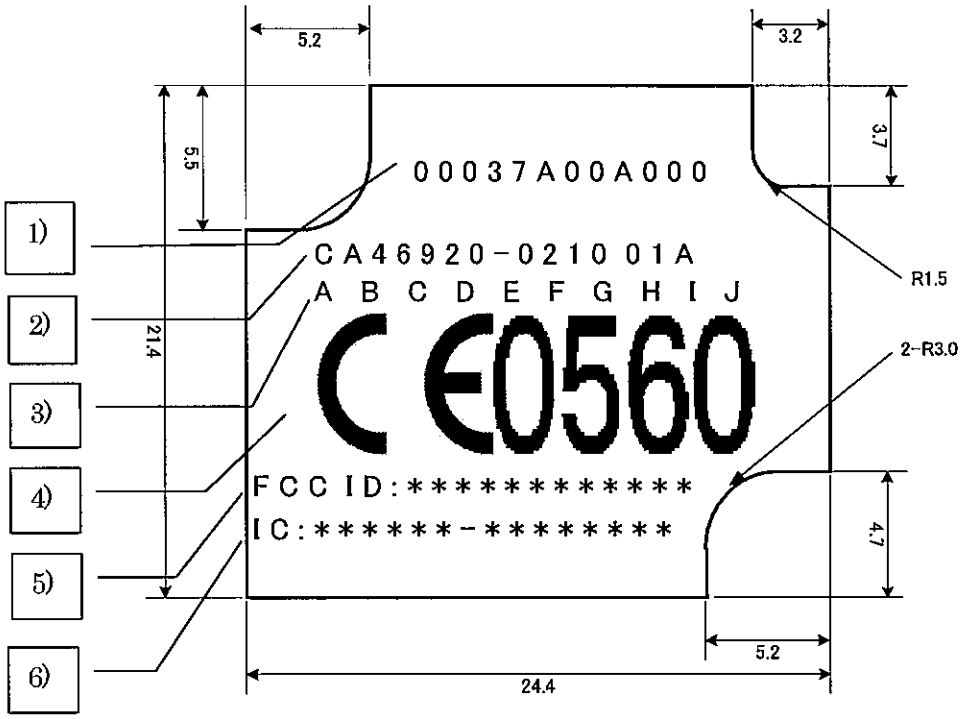
つきましては、下図のようにマザーボード設計上の制約をさせて頂きます。



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

1．Label indication description
ラベル表示内容

1）BD address number ： ００００３７A◇◇◇◇◇◇ (Refer to「Instruction for lot number」)
BD アドレス番号 ： ００００３７A◇◇◇◇◇◇ (ロット番号解説書参照)
2）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
3）Revision ID：ABCDEFGHIJ
改訂 ID ：ABCDEFGHIJ
4）CE Marking for R&TTE : CE0560
5）FCC ID ：**********
6）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－B051215 (2／2)	Outline・Appearance 外形・外観図	Dec.19.2005 M.Takagi	Dec.19.2005 J.Sugita		Dec.19.2005 T.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

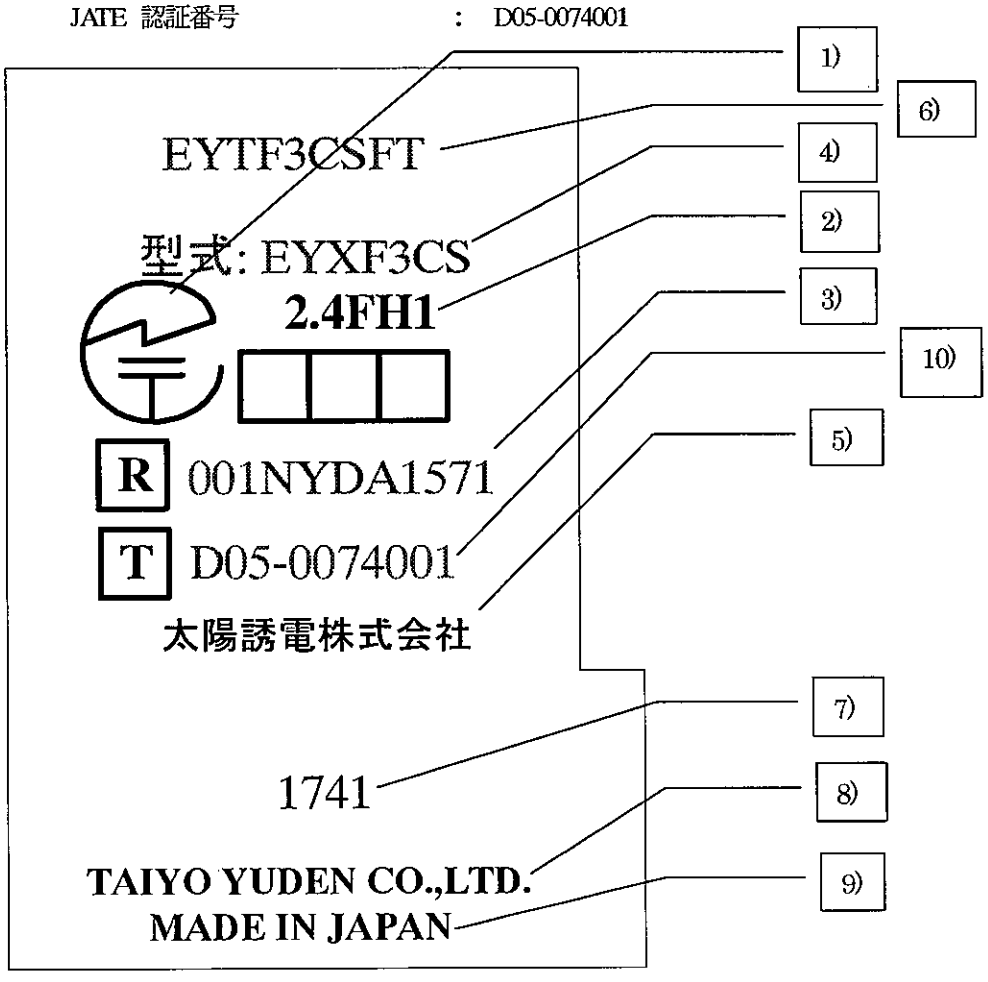
6）Taiyo Yuden product name : EYTF3CSFT
太陽誘電製品管理品名 : EYTF3CSFT

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.

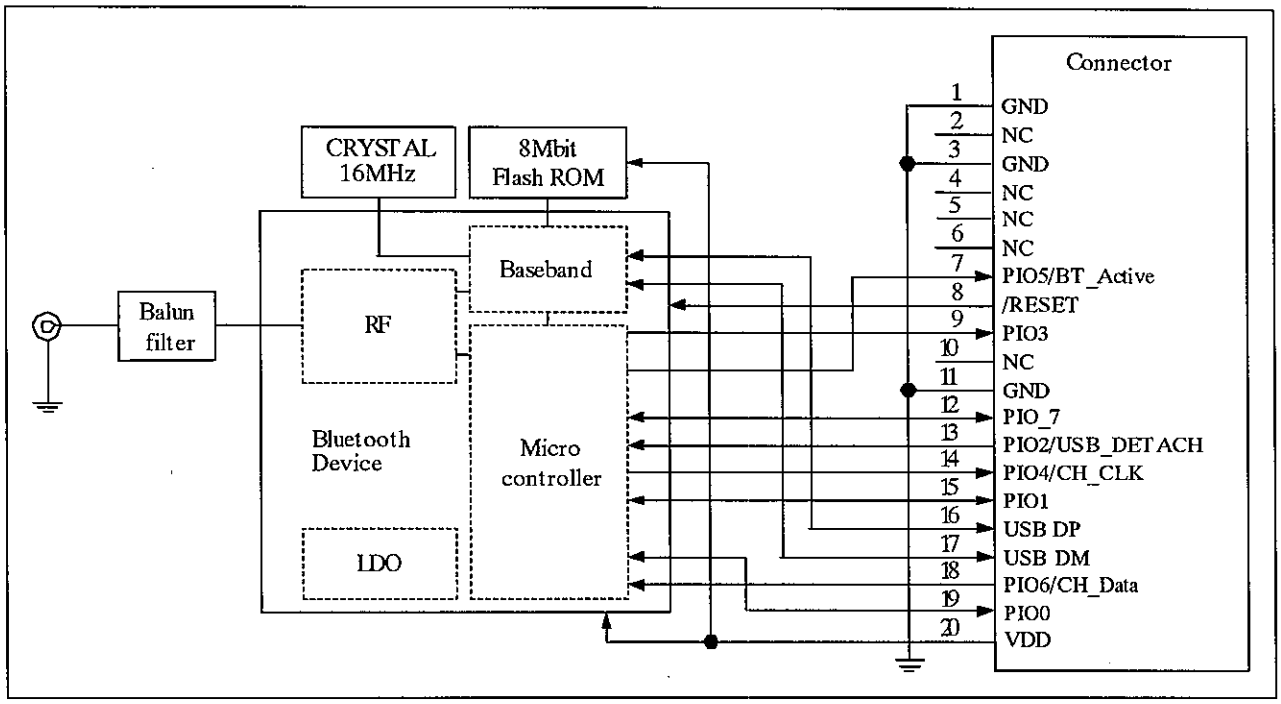
9）Country of manufacture : MADE IN JAPAN

10）JATE qualification number : D05-0074001
JATE 認証番号 : D05-0074001



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

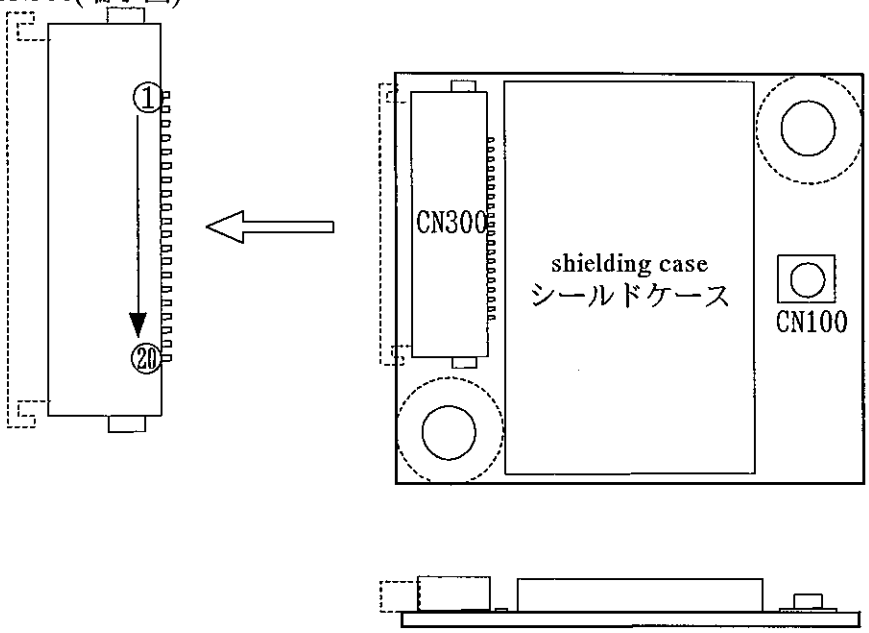
Block diagram, Terminal layout diagram
ブロック図、端子配置



Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD−BA− A051215 (1/2)	Pin layout ピンレイアウト図	Dec. 2 2005 M. Takeg	Dec. 2. 2005 J. Sugita		Dec 2 2005 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－ A051215 (2／2)	Pin layout ピンレイアウト図	Dec. 2. 2005 M. Takagi	Dec. 2. 2005 J. Sugita		Dec. 2. 2005 T. Sato

CN300 (FPC / FFC connector)

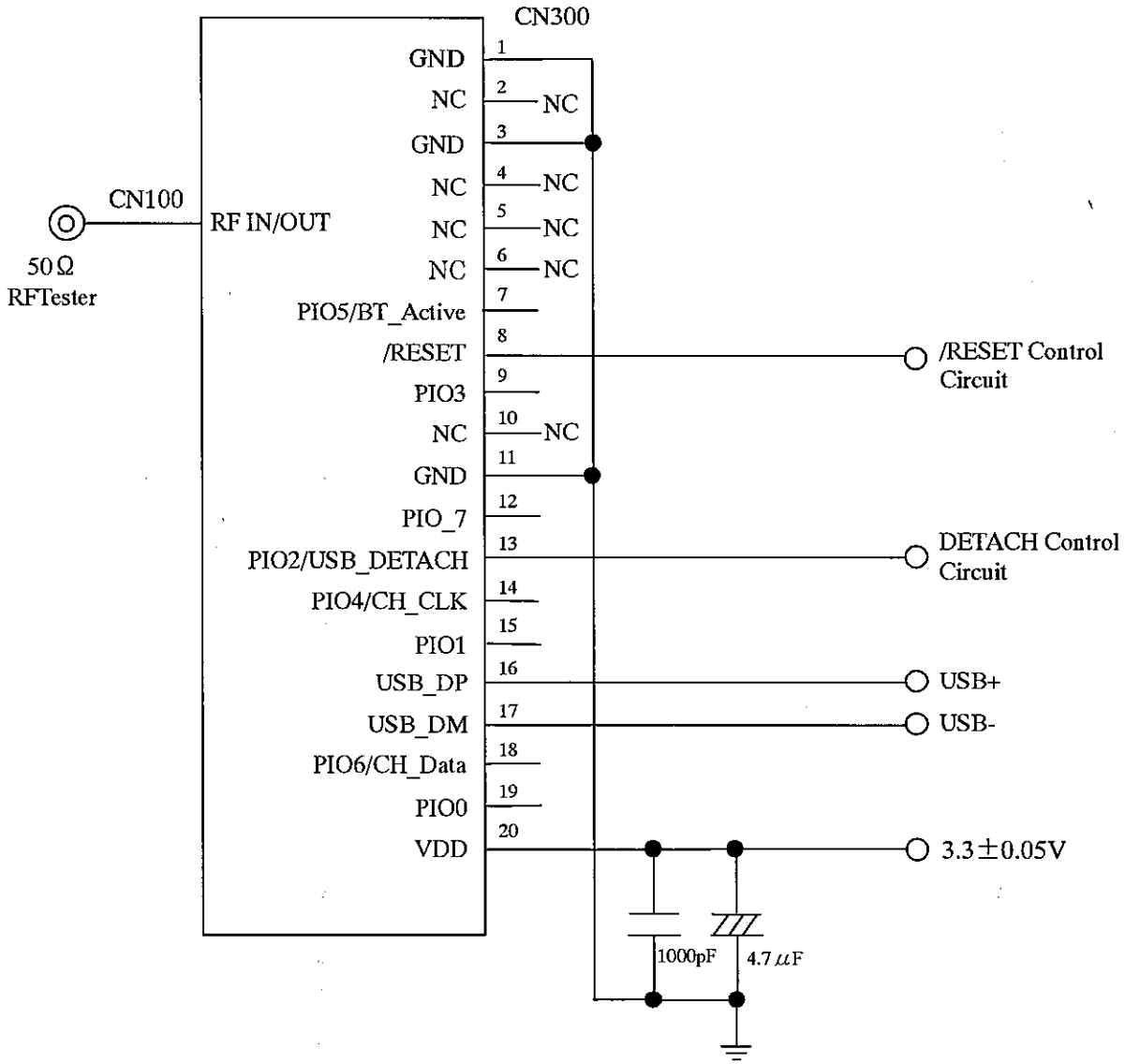
Terminal No.	Terminal name	Input/Output	Description	Remark
1	GND	-	Ground	
2	NC	-	No connection	
3	GND	-	Ground	
4	NC	-	No connection	
5	NC	-	No connection	
6	NC	-	No connection	
7	PIO5/ BT_Active	Input/Output	Reserved, Keep on set side terminal open. Bi-directional with programmable strength internal pull-up/down. (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. 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. Bi-directional with programmable strength internal pull-up/down.	Note 1
13	PIO2/USB_DE TACH	Input	DETACH signal input Low USB connect 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. 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. 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－ A051215 (1／1)	Test circuit 検査回路図	Dec.2.2005 M.Takagi	Dec.2.05 J.Sugeta		Dec.2.2005 J.Sato

test circuit
検査回路図



書類番号 Control No.	書類名 Control name	承認 APPROVED	確認 CHECKED	写図 DRAWN	担当 DESIGNED
HQ－BL －043 (1/1)	ロット番号解説書 Instruction for Lot Number	Jul.6.2001.	Jul.6.2001		Jul.6.2001

1．ロット番号の読み方
How to read lot number.

ロット番号は、下記方法により製造年月日を表します。
Lot Number represents production year, month and date as follows.

例 ex.

8　D　G（1）

（1）製造日、（製造区分）
Production date、(Classification)
（2）製造月
Production month
（3）製造年
Production year

（1）製造日、製造区分
Production date and Classification
製造日は下表による数字、または英字記号で表す。
製造区分（同一日、複数ロット製造時の区分等）は、必要ある場合に1から連番で表示する。
Use following chart to represent production date.
Classification should be marked when multiple lots has manufactured in the same day, and the number starts from 1 in the sequence order.

日 date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
記号 code	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G

日 date	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
記号 code	H	K	L	M	N	P	Q	R	S	T	V	W	X	Y	Z

（2）製造月
Production month
下表による数字、または英字記号で表す。
Use following chart to represent production month.

月 month	1	2	3	4	5	6	7	8	9	10	11	12
記号 code	1	2	3	4	5	6	7	8	9	O	N	D

（3）製造年
Production year
西暦年末尾で表す。
Use last digit of dominical year to represent production year.

2．BDアドレス形式
BD address format

0 0 0 3 7 A　□①　□②　□③　□④　□⑤　□⑥

メーカーコード：０００３７A→太陽誘電コード(固定)
Manufacturer code: 00037A →Fixed TAIYO YUDEN's code

（1）コードの詳細（①～⑥）
Code description（①～⑥）
コードは全て１６進法を用いる。
１６進法にて "００A０００" から順にシリアルNo．を付与する。
All the code must be in hexadecimal.
Assign the serial No. in hexadecimal notation starts from "00A000".

（2）表示方法
Display procedure
・BTモジュールのシールドケース表面にBDアドレスをシリアルNo．として表示する。
Mark BD address as a serial number on the sealed case.
・①～⑥の１６進法シリアルNo．において、割り振れることのできる全てのコードを割り振った場合は新しいメーカーコードを付与する。但し、御社に対して事前に変更通知を行うこととする。
When all the serial No. has allocated to ① thought ⑥ in hexadecimal notation, new manufacturer code should be allocated. However, manufacturer must be notified beforehand.

Control No.	Control name	APPROVED	CHECKED	DRAWN	PREPARED
HQ-BA-503 (1/2)	Handling Precaution 取扱注意要領	Aug.30.2002 M.Akaishi	Aug.30.2002 T.Tsumita		Aug.30.2002 T.Tsumita

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で保管して下さい。

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 mechnical 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 .
取り扱う作業者(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。

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 sticked 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 (1/2)	The Terms of Reliability Tests 信頼性条件書	30.nov.'05 T. Matsushima	30.nov.'05 T. Fukasawa		30.Nov.'05 M. Sakurai

Tests 試験項目	Testing Methods 試験条件	Judgment criteria 判定基準
High Temperature Test (Non Biased) 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 ℃) environment for 250 hours, while no voltage is applied. 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. 電気的特性に異常ないこと。
Low Temperature Test (Non Biased) 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 ℃) environment for 250 hours, while no voltage is applied. -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. 電気的特性に異常ないこと。
Humidity Test (Non Biased) 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 ℃ for 250 hours, while no voltage is applied. 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. 電気的特性に異常ないこと。
Humidity Test (Biased) 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 ℃ for 100 hours, operating the receiver and transmitter electric circuit of devices. 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. 電気的特性に異常ないこと。
High Temperature Test (Biased) 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 ℃) environment for 100 hours, operating the receiver and transmitter electric circuit of devices. 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. 電気的特性に異常ないこと。
Thermal Shock Test (Air) 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 ℃) in the atmosphere for 30 minutes respectively and this cycle is repeated 100 times. 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. 電気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 (2/2)	The Terms of Reliability Tests 信頼性条件書	30.nov.'05	30.nov.'05		30.Nov.'05

Tests 試験項目	Testing Methods 試験条件	Judgment criteria 判定基準
ESD 静電破壊	C = 200pF, R = 0 Ω, ±100V, each 5 times. 200pF, 0Ω, ±1 00 V　各5回実施後測定。	Devices should show no abnormal electrical performance. 電気的特性に異常ないこと。
Vibration Test 振動	Devices are fixed to a vibration table. total amplitude of vibration:1.5mm at f=10～82Hz acceleration of vibration:196m/s^2 (20G) at f=82～2000Hz sweep time:4 minutes (f=10～2000～10Hz) X,Y and Z axis for 2 hours each for a total of 6 hours. 10～82Hz: 全振幅1.5mm, 82～2000Hz: 加速度196m/s^2 {20G}、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. 電気的特性・外観に異常ないこと。

To: FUJITSU LIMITED　　Part No :EYTF3CSFT　　**30.11.2005**

TAIYO YUDEN CO.,LTD.

Control No.	TiTle	Approved	Checked	Drawn	Prepared
HD－BB－ A051215 (1/2)	Packaging Specification 梱包仕様書	25.Nov.2005 Y.Tsuruta	25.Nov.2005 Y.Tsuruta		25.Nov.2005 Y.Tsuruta

Packaging Specification
梱包仕様

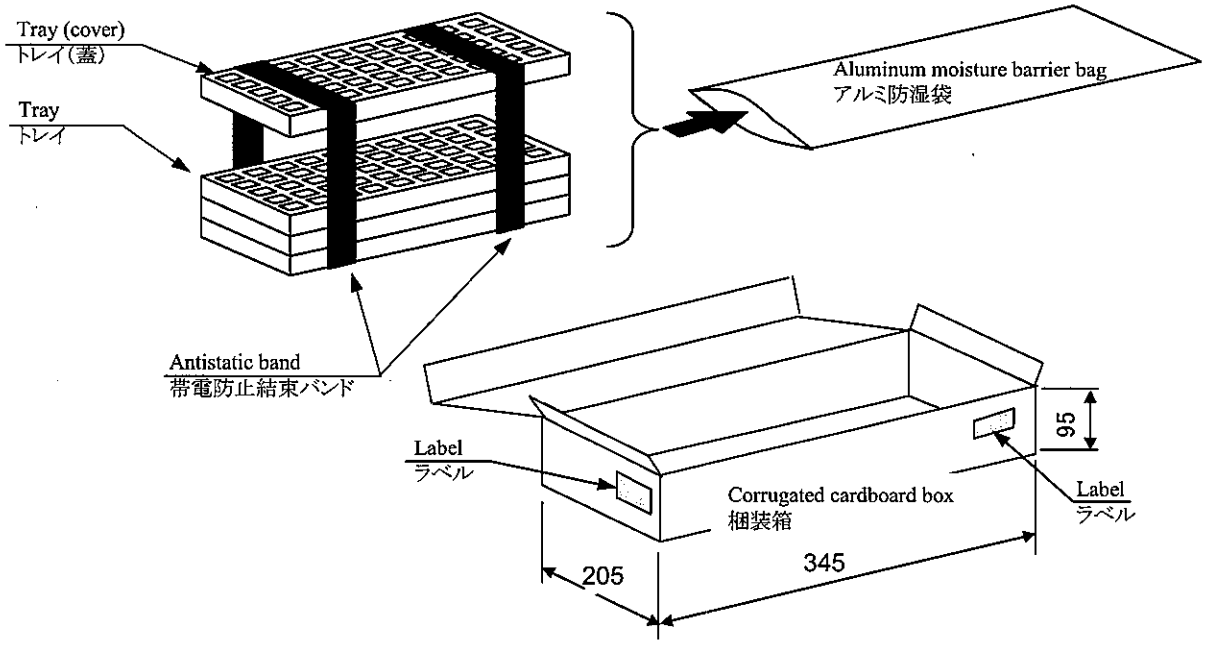
(1) Packaging Material
梱包材料

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

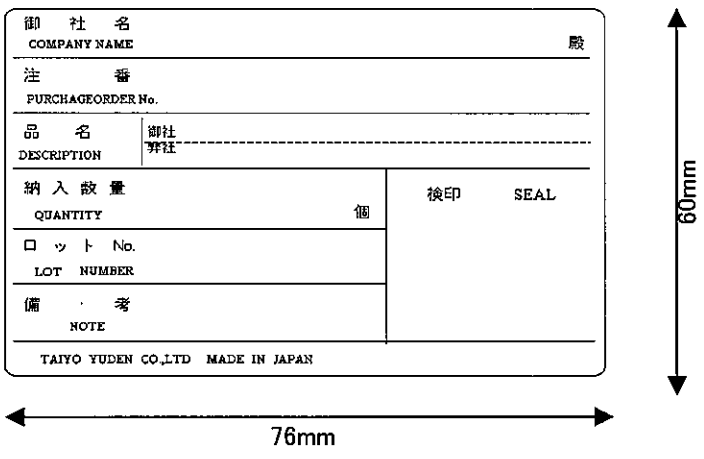
(2) Packaging Unit
梱包数量

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

(3) Packaging Figure

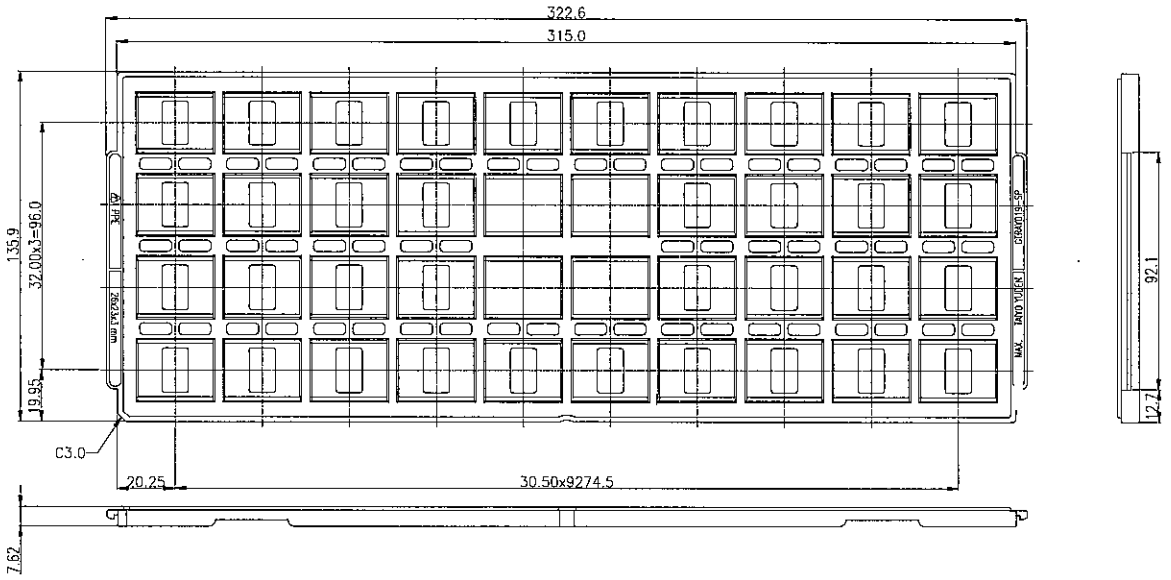


(4) Label
ラベル

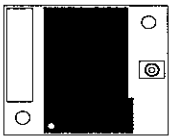


Control No.	TiTle	Approved	Checked	Drawn	Prepared
HD－BB－ A051215 (2/2)	Packaging Specification 梱包仕様書	25.Nov.2005 Y.Tsumita	25.Nov.2005 Y.Tsumita		25.Nov.2005 Y.Tsumita

Tray Figure
トレイ図面



Direction
収納方向



Note
備考

- *SURFACE ELECTRICAL RESISTIVITY : 10^5 ～10^{11} Ω/□ (BY TEST ASTM D257)*
- *WARPAGE:LESS THAN 0.8mm*

- 表面抵抗 : 10^5～10^{11}Ω/□
- 反りは、0.8mm以下