

WYPAEBUX4

Wireless LAN

WYPAEBUX4

IEEE 802.11a/b/g/n

Users Manual

TAIYO YUDEN

Control No. HD - AG - A 1 0 0 0 3 7 (1 / 5)	Control name General items 一般事項書	APPROVED	CHECKED	DRAWN	DESIGNED

(1) Scope
適用

This specification (“Specification”) applies to the hybrid IC “WYPAEBUX4“ for use WLAN module (“Product”) manufactured by TAIYO YUDEN CO., LTD. (“TAIYO YUDEN”)
本仕様書は、太陽誘電株式会社により製造される WLAN 用ハイブリッド IC ”WYPAEBUX4 ”(“本製品”) に適用する。

(2) Description
内容

Part Number: W Y P A E B U X 4
型 番 : W Y P A E B U X 4

Function: Radio frequency transceiver Module.
WLAN IEEE 802.11 a/b/g/n conformity.
機 能 : 無線通信モジュール
WLAN IEEE 802.11 a/b/g/n 準拠

Application: Audio-Visual Equipment
用 途 : A V 機器

Structure: Hybrid IC loaded with silicon monolithic semiconductor and GaAs semiconductor.
構 造 : シリコン & GaAs 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

Outline : 41.0x45.0x7.8mm
4pin Connector I/F
外 形: 41.0x45.0x7.8mm
4 ピンコネクタ I / F 仕様

Marking: 2 Labels on shielding case and PCB.
表 示 : シールドケース上と P C B 上の貼り付けラベルに印字

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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ご使用になった場合、ショートモードで破壊する場合があります。安全性の確保の為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 **IEEE802.11abgn** 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 **IEEE802.11abgn** 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**IEEE802.11abgn**の規格に従って製造された製品であり、本製品の用途が

IEEE802.11abgn 規格以外もしくは当該規格に従わない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**IEEE802.11abgn** 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。

) 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, 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 WLAN 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。

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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 WLAN 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場合があります。

iii) This Product operates in the unlicensed ISM band at 2.4GHz and 5GHz. 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 帯および 5GHz 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 Audio-Visual Equipment. 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 suitability, or fitness for particular purpose 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、AV 機器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は、本製品の適用可能性、相応性、特定目的に対する適合性をお客様の独自の責任で十分に評価、検討され、御判断下さい。

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。

c. Term of Support

サポート条件

i) Internal Software and various configuration parameters (ex. PA parameter, MAC address, etc.) are written in OTP (One-Time PROM) and can not be changed or modified. Therefore Customer is requested to fully check and verify this Software in the evaluation phase of this Product.

内蔵ソフトウェア、PA パラメータ、MAC アドレス等の設定データは読み取り専用の OTP (ワンタイム PROM) に書き込まれています。よって、内蔵ソフトウェアの変更はできません。つきましては、本製品採用のご検討段階におかれましては、十分な評価・ご検証を頂けますよう、お願い申し上げます。

Control No. HD - AG - A 1 0 0 0 3 7 (4 / 5)	Control name General items 一般事項書	APPROVED	CHECKED	DRAWN	DESIGNED

)Do not alter Hardware and/or Software (OTP Data) of this Product.
Please note that TAIYO YUDEN shall not be liable for any problem if it is caused by customer's alteration of Hardware or/and Software without Taiyo Yuden's prior approvals
本製品は Hardware、及び Software(OTP 格納データ)の変更は行わないで下さい。
弊社の許可なく変更した場合に、その変更によって生じたすべての問題に対して弊社は一切責任を負いません。

) 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。

) 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。

Control No. HD - AG - A 1 0 0 0 3 7 (5 / 5)	Control name General items 一般事項書	APPROVED	CHECKED	DRAWN	DESIGNED

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する。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ない。

Control No. HD - AM - A100037 (1/1)	Control name Absolute maximum ratings 絶対最大定格書	APPROVED	CHECKD	DRAWN	DESIGNED

1. Absolute maximum ratings

絶対最大定格

Item	Symbol	Rating				Remark
		Min.	Typ.	Max.	Unit	
Supply voltage	VDD_5V	-0.3		6.0	V	
Input or Output pin	VIMAX,VIMIN	-0.5		3.6(TBD)	V	USB D+ D-
Storage temperature range	Tstg	-40	25	80	Degrees C	

2. Recommendation operating range

推奨動作条件

Item	Symbol	Rating				Remark
		Min.	Typ.	Max.	Unit	
Supply voltage	VDD_5V	4.5	5.0	5.5	V	
Operation temperature range	Topr	0	25	55(TBD)	Degrees C	Humidity=40%RH

Note:

Operation temperature range is set to satisfy products electrical characteristics for a short period of time.

Refer reliability, condition to check the product life cycle if you use this module for a long period of time in the condition other than the TYP. standard.

The standard operation for product is possible within the operation temperature range, but the electric characteristic will fluctuate due to temperature. (The electric characteristic is stipulated as 25 degree.)

使用温度範囲は、短時間、製品電気特性を満たすように設定されています。

本モジュールを Typ.以外の状況で長時間使用する場合、製品のライフサイクルをチェックする為信頼性条件を使用して下さい。また、使用温度範囲内では製品の基本動作は可能ですが、温度特性による電気的特性の変動が生じます。(電気的特性は 25 にて規定しております。)

Control No. H D - A E - A 1 0 0 0 3 7 (1 / 2)	Control name Electrical characteristics 電気的特性書	APPROVED	CHECKED	DRAWN	DESIGNED
				/	

Electrical characteristic

DC Specifications

The Specification applies for Topr.= 25 degrees C, VDD = 5.0V

No.	Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
1	Operating Voltage		VDD_5V	4.75	5.0	5.25	V	
2	Input Low Voltage	USB_DATA+	VIL	-	-	1.0	V	
3	Input High Voltage	USB_DATA-	VIH	4.0	-	-	V	
4	Output Low Voltage	USB_DATA+	VOL	-	-	1.0	V	
5	Output High Voltage	USB_DATA-	VOH	4.0	-	-	V	
6	Peak current I	Continuous WLAN Tx	Iccp 1	-	450	-	mA	Note1

Notes:

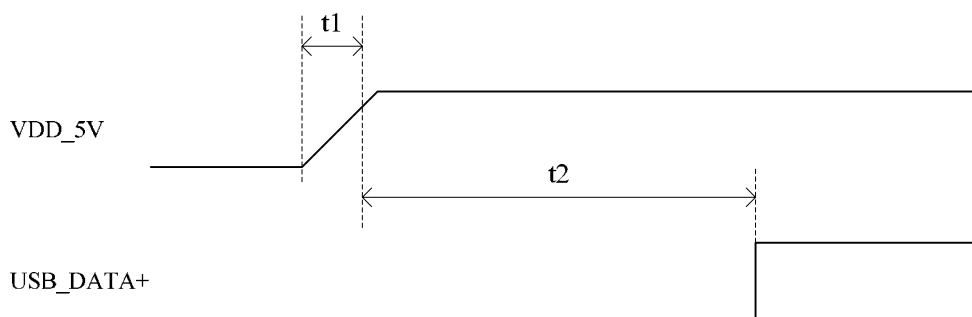
1. Please note that these electrical characteristics were measured under Taiyo Yuden evaluation environment. Above value may vary under customer's evaluation environment or each WLAN Driver.

Control No. HD - AE - A 1 0 0 3 7 (2 / 2)	Control name Electrical characteristics 電気的特性書	APPROVED	CHECKED	DRAWN	DESIGNED

AC Specifications

The Specification applies for Topr.=25 degrees C

No.	Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
1	VDD_5V rise time (0V to 4.75V)		t1	0		2	ms	
2	VDD_5V ON to USB_DATA+ pull-up		t2	-		80	ms	



Power ON Timing

Control No. HD - AE - B 1 0 0 0 3 7 (1 / 3)	Control name Electrical characteristics 電気的特性書	APPROVED	CHECKED	DRAWN	DESIGNED

The Specification applies for Topr.=25 degrees C, Supply voltage =5V
ANT0 and ANT1 commonness (SISO)

1, 2.4GHz Band RF Specifications

No.	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark	
1	RF frequency range		FREQ2	2402		2482	MHz		
2	TX Power	11Mbps	Po2-1	6.0	8.0	10.0	dBm		
		54Mbps	Po2-2	12.5	14.5	16.5			
			@1ch	9.5	11.5	13.5			
			@11ch	8.5	10.5	12.5			
		MCS=7, 20MHz BW	Po2-3	10.5	12.5	14.5			
			@1ch	7.5	9.5	11.5			
@11ch	9.5		11.5	13.5					
MCS=7, 40MHz BW	Po2-4	10.0	12.0	14.0					
3	Spectrum Mask @11Mbps	1 st Side Lobe	M2-1	-		-30	dBc		
		2 nd Side Lobe	M2-2	-		-50			
4	Spectrum Mask @54Mbps	1 st Side Lobe	M2-3	-		-20	dBc		
		2 nd Side Lobe	M2-4	-		-28			
		3 rd Side Lobe	M2-5	-		-40			
5	Frequency tolerance		Ft2	-25		25	ppm		
6	EVM	11Mbps 100chip Peak	EVM2-1	-	25.0	35.0	%		
		54Mbps RMS	EVM2-2		3.0	5.6			
		MCS=7, RMS,, LGI	EVM2-3		2.8	4.0			
7	Rx sensitivity	11Mbps	SEN2-1			-88.5	-76.0	dBm	PER<8%
		54Mbps	SEN2-2			-74.5	-65		
		6Mbps	SEN2-3			-87.0	-82		
		MCS=7, 20MHz BW, LGI, Mixed Mode	SEN2-4			-71.0	-64		PER<10%
		MCS=0, 20MHz BW, LGI, Mixed Mode	SEN2-5			-87.0	-82		
		MCS=7, 40MHz BW, LGI, Mixed Mode	SEN2-6			-66.0	-61		
		MCS=0, 40MHz BW, LGI, Mixed Mode	SEN2-7			-85.0	-79		
8	Maximum Input Level	11b, PER<8%	MIL2-1	-10		-	dBm		
		11g/n, PER<10%	MIL2-2	-20		-	dBm		

Note:

The above electrical characteristics are specified based on using W-LAN Driver file.

If the W-LAN Driver file is changed to the other version, all 3 companies (Customer, IC manufacturer and Taiyo Yuden) should confirm and agree on the module characteristics with the new W-LAN Driver file.

Control No. HD - AE - B 1 0 0 0 3 7 (1 / 3)	Control name Electrical characteristics 電気的特性書	APPROVED	CHECKED	DRAWN	DESIGNED

2, 5GHz Band RF Specifications

No.	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	RF frequency range	Mid Band	FREQ5-M	5170		5330	MHz	
		Hi Band	FREQ5-H	5490		5835		
2	TX Power	54Mbps, Mid Band	Po5-1	9.5	11.5	13.5	dBm	
			@36ch	7.5	9.5	11.5		
			@53-60ch	11.0	13.0	15.0		
		54Mbps, Hi Band	Po5-2	11.5	13.5	15.5		
			@100ch	9.0	11.0	13.0		
			@104-136ch	11.0	13.0	15.0		
		MCS=7, Mid Band 20MHz BW	@140ch	5.5	7.5	9.5		
			Po5-3	9.5	11.5	13.5		
			@36ch	7.5	9.5	11.5		
		MCS=7, Hi Band 20MHz BW	@52ch	10.5	12.5	14.5		
			@53-60ch	10.0	12.0	14.0		
			Po5-4	10.0	12.0	14.0		
		MCS=7, Mid Band 40MHz BW	@100ch	8.5	10.5	12.5		
			@140ch	5.0	7.0	9.0		
			Po5-5	10.5	12.5	14.5		
MCS=7, Hi Band 40MHz BW	@38ch	6.5	8.5	10.5				
	@62ch	7.5	9.5	11.5				
	Po5-6	11.0	13.0	15.0				
			@104-136ch	9.5	11.5	13.5		
			@102ch	5.5	7.5	9.5		
3	Spectrum Mask@54Mbps	1 st Side Lobe	M5-1	-		-20	dBc	
		2 nd Side Lobe	M5-2	-		-28	dBc	
		3 rd Side Lobe	M5-3	-		-40	dBc	
4	Frequency tolerance		Ft5	-20		20	ppm	
5	EVM	54Mbps, RMS	EVM5-1	-	3.0	5.6	%	
		MCS=7, RMS	EVM5-2		3.5	4.0		
6	Rx sensitivity	54Mbps	SEN5-1		-73.0	-65.0	dBm	PER<10%
		6Mbps	SEN5-2		-87.0	-82.0		
		MCS=7, 20MHz BW, LGI, Mixed Mode	SEN5-3		-70.0	-64.0		
		MCS=0, 20MHz BW, LGI, Mixed Mode	SEN5-4		-87.0	-82.0		
		MCS=7, 40MHz BW, LGI, Mixed Mode	SEN5-5		-67.0	-61		
		MCS=0, 40MHz BW, LGI, Mixed Mode	SEN5-6		-85.0	-79		
7	Maximum Input Level	PER<10%	MIL	-30		-	dBm	

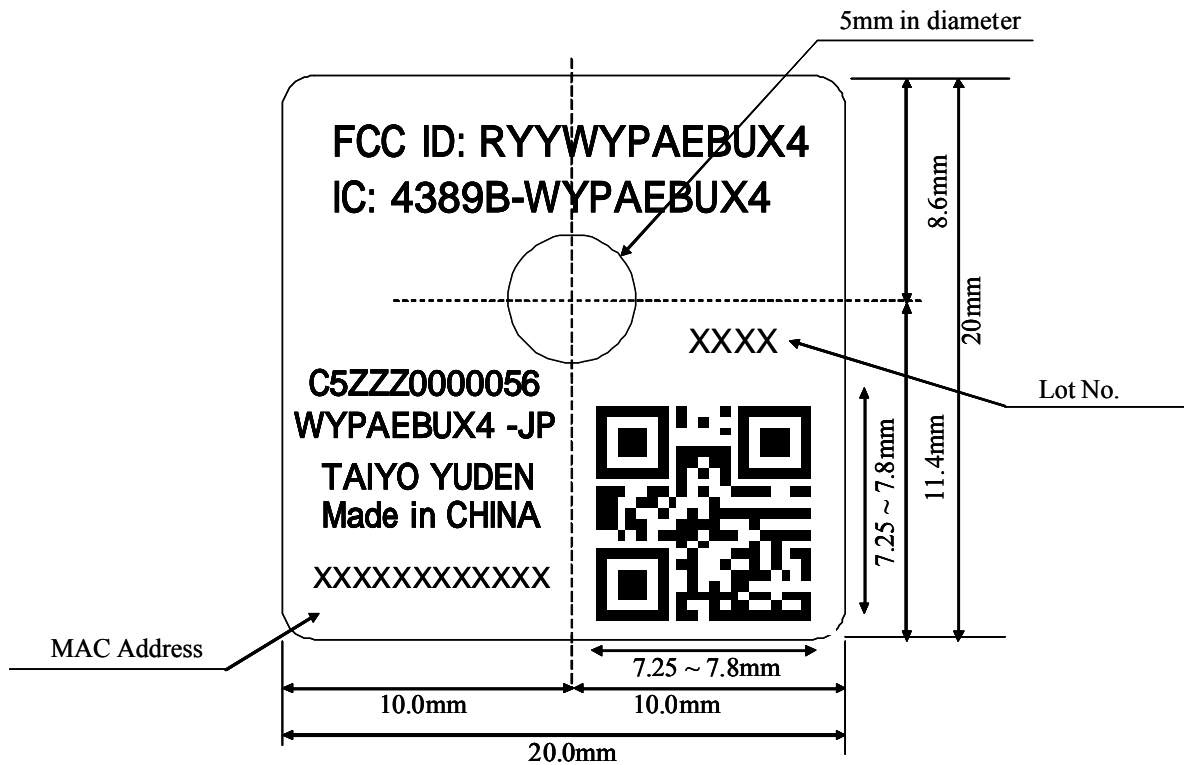
Note:

The above electrical characteristics are specified based on using W-LAN Driver file.

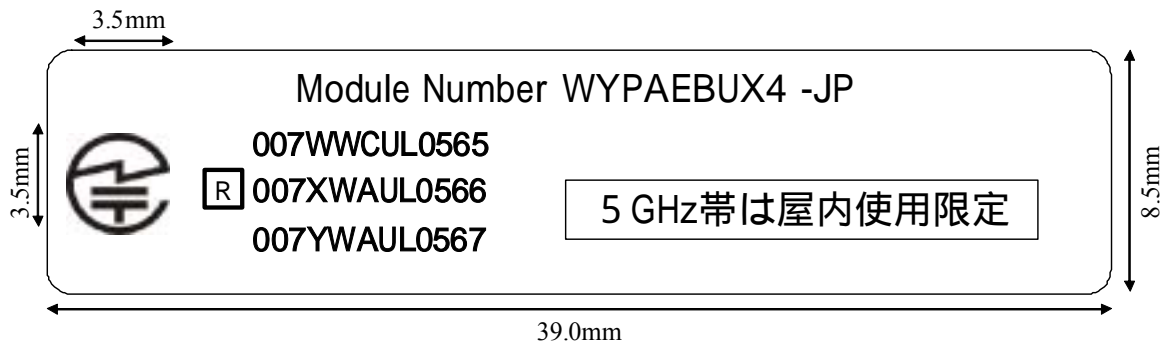
If the W-LAN Driver file is changed to the other version, all 3 companies (Customer, IC manufacturer and Taiyo Yuden) should confirm and agree on the module characteristics with the new W-LAN Driver file.

Control No. HD - AD - A 1 0 0 0 3 7 (2 / 2)	Control name Outline・Appearance 外形・外觀図	APPROVED	CHECKED	DRAWN	DESIGNED

LABEL1



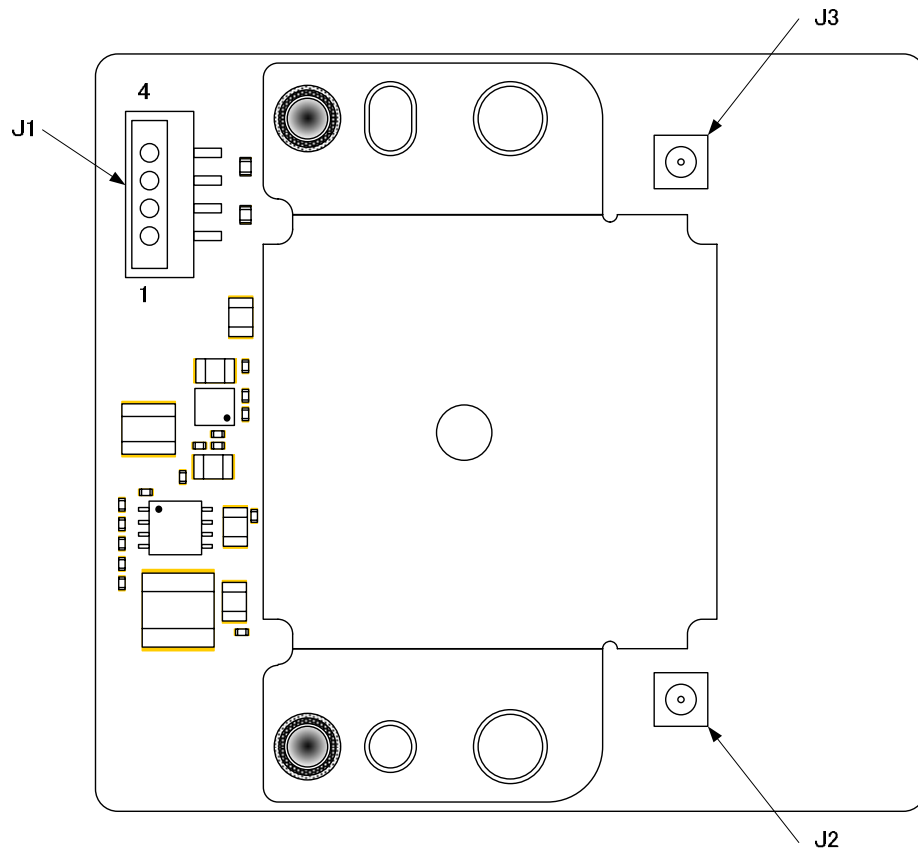
LABEL2



TAIYO YUDEN CO., LTD.

Control No. HD - BA - A 1 0 0 0 3 7 (1 / 2)	Control name Pin layout ピンレイアウト図	APPROVED	CHECKED	DRAWN	DESIGNED

Top View



Pin Description of module

J1

No.	Pin Name	I/O	Description
1	VDD_5V	I	DC5V power supply
2	USB_DATA-	I/O	USB interface port DATA-
3	USB_DATA+	I/O	USB interface port DATA+
4	GND	-	Ground

J2

No.	Pin Name	I/O	Description
1	RF_1	I/O	RF IN/OUT port ANT1
2	GND	-	Ground

J3

No.	Pin Name	I/O	Description
1	RF_0	I/O	RF IN/OUT port ANT0
2	GND	-	Ground

WYPAEBUX4

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FCC Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Operations in the 5.15-5.25GHz band are restricted to indoor usage only.

WYPAEBUX4

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in US, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: RYYWYPAEBUX4".

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

WYPAEBUX4

Canadian Regulatory Wireless Notice

This device complies with RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions:

- 1) this device may not cause interference and
- 2) this device must accept any interference, including interference that may cause undesired operation of the device

Caution:

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems.

High power radars are allocated as primary users (meaning they have priority) of 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

WYPAEBUX4

This device is intended only for OEM integrators under the following conditions:

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna,
- 3) For all products market in CANADA, OEM has to limit the operation channels in CH1 to CH11 for 2.4G band by supplied firmware programming tool. OEM shall not supply any tool or info to the end-user regarding to Regulatory Domain change.

As long as 3 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the CANADA authorization is no longer considered valid and the CANADA ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate CANADA authorization.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC : 4389B-WYPAEBUX4".

Manual Information To the End User

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.