Wireless LAN Module

IEEE802.11b/g/n

WYAAAVDX7-1

Data Report

Please note that this user manual should not be provided to end-users.
このマニュアルはエンドユーザには提出しないで下さい

DATE：Sept. 27, 2013
Submitted by TAIYO YUDEN CO., LTD.

TAIYO YUDEN

Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD－AG－ A１２１１７６ （1／6）	General items 一般事項書				2013.09.27

（1）Scope
適用

This specification (“Specification”) applies to the hybrid IC “WYAAAVDX7-1” for use ***Wireless LAN*** 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 ***Wireless LAN*** 用ハイブリッド IC “WYAAAVDX7-1” (“本製品”)に適用する。

（2）Description
内 容

① Part Number : WYAAAVDX7-1
品 名 : WYAAAVDX7-1

② Function : Radio frequency transceiver Module (***IEEE802.11bgn*** standard conformity)
機 能 : 無線通信モジュール（***IEEE802.11bgn*** 規格準拠）

③ Application : IC recorder
用 途 : IC レコーダー

④ Structure : Hybrid IC loaded with silicon and Gallium arsenide monolithic semiconductor
構 造 : ガリウムヒ素 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
*This product conforms to RoHS Directive (2002/95/EC).
本製品内の環境物質含有
*RoHS 指令(2002/95/EC)に適合しています。

⑤ Terminal : Data input-output : 19pin FPC Connector
503566-1900 (MOLEX)
電 極 : データ入出力 : 19 ピン FPC コネクタ
503566-1900 (MOLEX)

⑥ Appearance: Label on the bottom side
外 装 : 無外装
基板裏面にラベル貼付

⑦ Country of origin : China
製造国 : 中国

⑧ Notes :
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 ***IEEE802.11bgn*** 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 ***IEEE802.11bgn*** 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***IEEE802.11bgn,***の規格に従って製造された製品であり、本製品の用途が***IEEE802.11bgn***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***IEEE802.11bgn***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。

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 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 IC recorder. 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、IC レコーダー用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。

v) Japan Regulatory Information
日本規制情報

This product with a specific antenna is a radio system approved for Type Approval.
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工事設計認証を受けた無線設備です。
御社製品に搭載される場合、下記内容を遵守願います。

a) Please notify clearly below sentences, on your product or in the product manual.
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。

This product has a radio system which was approved as a radio station in a low power data communication system based on the Radio Law.
Name of the radio system: 001-A00415
本製品には、電波法に基づく小電力データ通信システムの無線局として、工事設計認証を受けた無線設備を内蔵しています。
無線設備名：001-A00415

b) Please design your set structure in which this module can be easily attached and taken off.
セット搭載方法は本モジュールを容易に脱着できる構造として下さい。

c) This module is certified by Type Approval as the device which has SDIO 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、SDIO インターフェイスを持つ装置として工事設計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。

vi) Canada Regulatory Information
カナダ規制情報

a) This device complies with Industry Canada licence-exempt RSS standards.
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.
Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisee aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioelectrique subi, meme si le brouillage est susceptible d'en compromettre le fonctionnement.

本装置は IC ライセンスを免除された RSS 標準に準じております。
動作は下記の 2 条件に従います。
(1) 本装置は、妨害波の原因とはなりません。
(2) 本装置は、好ましくない装置動作の原因となるどのような妨害波を受信した場合も受け入れます。

b) Please notify certified ID by either one of the following method in your product.
本製品を組み込む製品には、認証 ID を下記いずれかの方法で記載をお願いします。
-Contains Transmitter module IC：4389B-WYAAAVDX7
-Contains IC：4389B-WYAAAVDX7

vii) FCC Regulatory Information
FCC 規制情報

a) 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.
本装置は FCC 規則第 15 章に準拠しています。動作は下記の 2 条件に従います。
(1) 本装置は、有害な妨害波の原因とはなりません。
(2) 本装置は、好ましくない装置動作の原因となるどのような妨害波を受信した場合も受け入れます。

b) Please notify certified ID by either one of the following method.
本製品を組み込む製品には、認証 ID を下記いずれかの方法で記載をお願いします。
-Contains Transmitter Module FCC ID: RYYWYAAAVDX7
-Contains FCC ID: RYYWYAAAVDX7

c) CAUTION: changes or modifications not expressly approved by the party responsible for compliance could void the use's authority to operate the equipment
適合に責任を持つ当事者によって承認されていない変更や改造は、装置運用の認定が無効となります。

d) Product installs this device must be ensured compliance to all regulations to which the product applied, e.g. requirements for unintentional radiator.
本装置を組み込んでいる製品は、その製品に適用される全ての規制に準拠する必要があります。
（非意図放射器に対する規制等）

e) To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with minimum distance 20cm between the radiator and your body.
FCC の RF 被爆ガイドラインへの適合維持のため、放射器と人体の距離が最小で 20cm の範囲において、この装置は組み込まれまた動作されるべきです。

f) Please describe contents mentioned below in users manual of your company.

CAUTION: To maintain compliance with FCC's RF exposure guidelines, use only the supplied antenna.
Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

ユーザマニュアルには次の事項を記載してください

CAUTION: To maintain compliance with FCC's RF exposure guidelines, use only the supplied antenna.
Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

viii) CE Regulatory Information
CE 規制情報

Български [Bulgarian]	С настоящето *[TAIYO YUDEN]* декларира, че *[WYAAAVDX7-1]* отговаря на съществените изисквания и другите приложими изисквания на Директива 1999/5/ЕС.
cs Česky [Czech]	*[TAIYO YUDEN]* tímto prohlašuje, že tento *[WYAAAVDX7-1]* je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
da Dansk [Danish]	Undertegnede *[TAIYO YUDEN]* erklærer herved, at følgende udstyr *[WYAAAVDX7-1]* overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
de Deutsch [German]	Hiermit erklärt *[TAIYO YUDEN]*, dass sich das Gerät *[WYAAAVDX7-1]* in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
et Eesti [Estonian]	Käesolevaga kinnitab *[TAIYO YUDEN]* seadme *[WYAAAVDX7-1]* vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
en English	Hereby, *[TAIYO YUDEN]*, declares that this *[WYAAAVDX7-1]* is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
es Español [Spanish]	Por medio de la presente *[TAIYO YUDEN]* declara que el *[WYAAAVDX7-1]* cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
el Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ *[TAIYO YUDEN]* ΔΗΛΩΝΕΙ ΟΤΙ *[WYAAAVDX7-1]* ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
fr Français [French]	Par la présente *[TAIYO YUDEN]* déclare que l'appareil *[WYAAAVDX7-1]* est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
it Italiano [Italian]	Con la presente *[TAIYO YUDEN]* dichiara che questo *[WYAAAVDX7-1]* è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo *[TAIYO YUDEN]* deklarē, ka *[WYAAAVDX7-1]* atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo *[TAIYO YUDEN]* deklaruoja, kad šis *[WYAAAVDX7-1]* atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
nl Nederlands [Dutch]	Hierbij verklaart *[TAIYO YUDEN]* dat het toestel *[WYAAAVDX7-1]* in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
mt Malti [Maltese]	Hawnhekk, *[TAIYO YUDEN]*, jiddikjara li dan *[WYAAAVDX7-1]* jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
hu Magyar [Hungarian]	Alulírott, *[TAIYO YUDEN]* nyilatkozom, hogy a *[WYAAAVDX7-1]* megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EC irányelv egyéb elõírásainak.
pl Polski [Polish]	Niniejszym *[TAIYO YUDEN]* oświadcza, że *[WYAAAVDX7-1]* jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
pt Português [Portuguese]	*[TAIYO YUDEN]* declara que este *[WYAAAVDX7-1]* está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Român [Romanian]	Prin prezenta, *[TAIYO YUDEN]*, declară că aparatul *[WYAAAVDX7-1]* este în conformitate cu cerinţele esenţiale şi cu alte prevederi pertinente ale Directivei 1999/5/CE.
sl Slovensko [Slovenian]	*[TAIYO YUDEN]* izjavlja, da je ta *[WYAAAVDX7-1]* v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	*[TAIYO YUDEN]* týmto vyhlasuje, že *[WYAAAVDX7-1]* spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
fi Suomi [Finnish]	*[TAIYO YUDEN]* vakuuttaa täten että *[WYAAAVDX7-1]* tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
sv Svenska [Swedish]	Härmed intygar *[TAIYO YUDEN]* att denna *[WYAAAVDX7-1]* står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

c. Term of Support
サポート条件

i) You 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 and driver (collectively called “Software” in this document) used with this Product, (2) no bug, defect or other failure arising from installation of this Product into your product and (3) Software fully meets your intended use.
御社におかれましては本製品の量産開始前までに、適用されるファームウェア及びドライバに瑕疵やその他品質上の不具合、御社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、御社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。

ii) Do not alter Hardware and/or Software (EEPROM 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(EEPROM 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。

iii) Any failure arising out of this Product after mass production will be examined by TAIYO YUDEN. 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後、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.
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、必要な場合には適切な承認・許可をお取りください。

e. 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。翻訳による副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。

Absolute maximum ratings

Item	Symbol	Rating				Remark
		Min.	Typ.	Max.	Unit	
Supply voltage1	VCC	-0.3		5.0	V	
Supply voltage2	VIO	-0.3		4.0		
Supply voltage3	VLDO	-0.3		5.0		
Storage temperature range	Tstg	-30		100	Degrees C	
Operation temperature range	Topr	-10	25	80	Degrees C	Note1

*Note1 周囲温度ではなく無線モジュール付近の基板又はデバイス上の温度といたします。
動作温度範囲を超えないよう放熱対策を施した上で動作させてください。

Recommendation operating range

Item	Symbol	Rating				Remark
		Min.	Typ.	Max.	Unit	
Supply voltage1	VCC	3.0	3.3	3.6	V	Note2
Supply voltage2	VIO	1.62/2.97	1.8/3.3	1.98/3.63		
Supply voltage3	VLDO	2.1	3.3	3.6		

*Note2 各入力電圧の推奨値は、モジュールコネクタ部における入力電圧といたします。

Electrical characteristic

DC Specifications

Current / Power consumption

The Specification applies for Topr.=25 degrees C, Supply voltage=Typical voltage

No.	Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
1	Peak Current1	VIO	Ip1	-	-	5	mA	
2	Peak Current2	VCC	Ip2	-	-	200	mA	
3	Peak Current3	VLDO	Ip2	-	-	200	mA	
4	Power consumption1	Burst Tx (72Mbps)	Pc1	-	362	420	mW	Duty 2.4%
5	Power consumption2	Continuous Rx (72Mbps)	Pc2	-	421	475	mW	
6	Power consumption3	Burst Tx (54Mbps)	Pc3	-	429	490	mW	Duty 25.4%
7	Power consumption4	Continuous Rx (54Mbps)	Pc4	-	414	465	mW	
8	Power consumption5	Burst Tx (11Mbps)	Pc5	-	538	600	mW	Duty 43.4%
9	Power consumption6	Continuous Rx (11Mbps)	Pc6	-	408	460	mW	
10	Power consumption7	Deep Sleep	Pc7	-	1.2	-	mW	VIO=1.8V
11	Power consumption8	Power Save[*1] (DTIM=1 / Beacon Interval =100mS)	Pc8	-	17.6	-	mW	VIO=1.8V

*1 AP:CG-WLR300GNH(COREGA)

Digital Pad Ratings

No.	Parameter	Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
1	Input Low Voltage	SD_D[3:0], SD_CLK, SD_CMD, PDn, RESETn	VIL	-0.3	-	0.3*VIO	V	
2	Input High Voltage		VIH	0.8*VIO	-	VIO+0.3	V	
3	Output Low Voltage	SD_D[3:0],SD_CMD HOST_WL_WKUP	VOL	-	-	0.4	V	
4	Output High Voltage		VOH	VIO-0.4	-	-	V	

AC Specifications

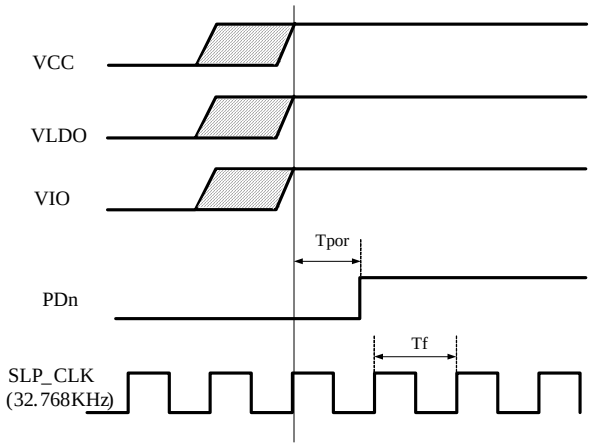
Power-on timing / SLP_CLK

	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	Valid Power / Clock to PDn de-asserted		Tpor	300			ms	
2	Input SLP_CLK frequency		Tf	-250 ppm	32.768	+250 ppm	KHz	
3	Input SLP_CLK high voltage		V_{IH}	0.8	1.8	1.98	V	
4	Input SLP_CLK low voltage		V_{IL}	0.0		0.25	V	
5	Input SLP_CLK slew rate limit (10-90%)		SR			100	ns	
6	Input SLP_CLK duty cycle tolerance		DC	20		80	%	

<Power-on sequence>

PDn must remain asserted for minimum of Tpor after VCC, VLDO, VIO and SLP_CLK are stable.

RESETn must be inactive value (asserted high) when PDn is de-asserted.

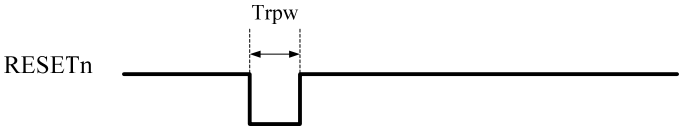


External reset(RESETn), power down(PDn)

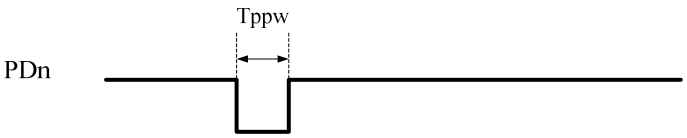
	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	RESETn pulse width		Trpw	1			ms	
2	PDn pulse width		Tppw	300			ms	

Note 1: PDn and RESETn is pulled up to VIO internally.

RESETn should be asserted while VCC, VLDO, VIO and SLP_CLK are stable and PDn is de-asserted (high level).



PDn should be asserted while VCC, VLDO, VIO and SLP_CLK are stable and RESETn is de-asserted (high level).

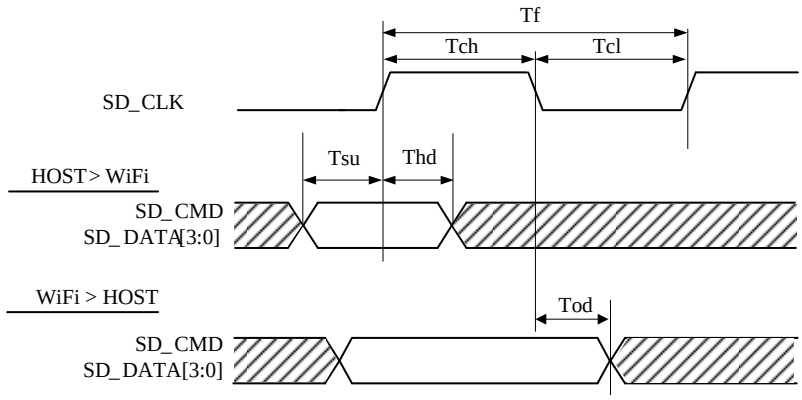


For lowest current consumption, apply all power rails to the module during the assertion of PDn pin.

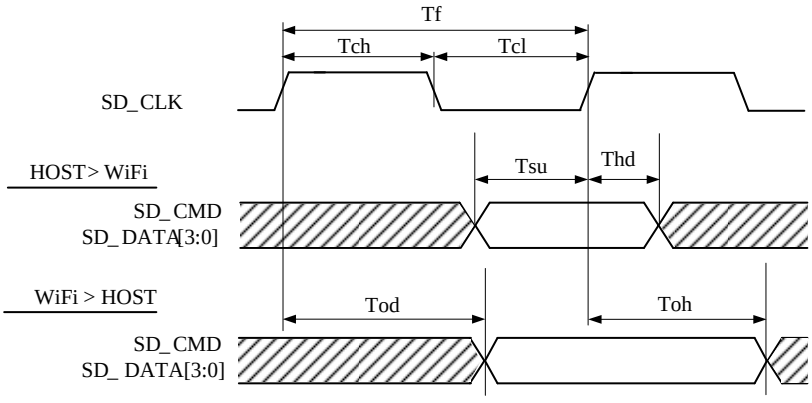
SDIO Interface Specifications

	Parameter	Symbol	Condition	Min	Typ	Max	Unit	Remark
1	Input SDIO_CLK Frequency	Tf	Normal	0	-	25	MHz	
			High Speed	0	-	50		
2	Input SDIO_CLK High Time	Tch	Normal	10	-	-	ns	
			High Speed	7	-	-		
3	Input SDIO_CLK Low Time	Tcl	Normal	10	-	-	ns	
			High Speed	7	-	-		
4	Input SDIO_CMD, DATA[3:0] Setup time	Tsu	Normal	5	-	-	ns	
			High Speed	6	-	-		
5	Input SDIO_CMD, DATA[3:0] Hold time	Thd	Normal	5	-	-	ns	
			High Speed	2	-	-		
6	Output SDIO_CMD, DATA[3:0] Delay time	Tod	-	-	-	14	ns	
7	Output SDIO_CMD, DATA[3:0] Hold time	Toh	High Speed	2.5	-	-	ns	

Normal Mode



High Speed Mode



RF Specifications (WLAN 11n/72.2Mbps, OFDM)

The Specification applies for Ta=25 degrees C, Supply voltage =Typical voltage.

No.	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	RF frequency range		FREQ	2412		2472	MHz	
2	TX Power		Po	9	11	13	dBm	
3	Spectrum Mask	1st Side Lobe	M1	-		-20	dBc	
		2nd Side Lobe	M2	-		-28	dBc	
		3rd Side Lobe	M3	-		-45	dBc	
4	Symbol clock tolerance		Ft	-25		25	ppm	
5	Frequency tolerance		Ft	-25		25	ppm	
6	EVM	Rms	EVM	-		-28	dB	
7	TX Out of band spurious1	30MHz to 1GHz	TOS1	-		-36	dBm	
8	TX Out of band spurious2	1GHz to 12.75GHz	TOS2	-		-30	dBm	
9	TX Out of band spurious3	1.8GHz to 1.9GHz 5.15GHz to 5.3GHz	TOS3			-47	dBm	
10	Rx sensitivity	PER<10%	SEN	-	-69	-64	dBm	
11	Maximum Input Level	PER<10%	MIL	-20		-	dBm	
12	RX Out of band spurious1	30MHz to 1GHz	ROS1	-		-57	dBm	
13	RX Out of band spurious2	1GHz to 12.75GHz	ROS2	-		-47	dBm	

RF Specifications (WLAN 11g/54Mbps, OFDM)

The Specification applies for Ta=25 degrees C, Supply voltage =Typical voltage.

No.	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	RF frequency range		FREQ	2412		2472	MHz	
2	TX Power		Po	9	11	13	dBm	
3	Spectrum Mask	1st Side Lobe	M1	-		-20	dBc	
		2nd Side Lobe	M2	-		-28	dBc	
		3rd Side Lobe	M3	-		-40	dBc	
4	Symbol clock tolerance		Ft	-25		25	ppm	
5	Frequency tolerance		Ft	-25		25	ppm	
6	EVM	Rms	EVM	-		-25	dB	
7	TX Out of band spurious1	30MHz to 1GHz	TOS1	-		-36	dBm	
8	TX Out of band spurious2	1GHz to 12.75GHz	TOS2	-		-30	dBm	
9	TX Out of band spurious3	1.8GHz to 1.9GHz 5.15GHz to 5.3GHz	TOS3			-47	dBm	
10	Rx sensitivity	PER<10%	SEN	-	-72	-65	dBm	
11	Maximum Input Level	PER<10%	MIL	-20		-	dBm	
12	RX Out of band spurious1	30MHz to 1GHz	ROS1	-		-57	dBm	
13	RX Out of band spurious2	1GHz to 12.75GHz	ROS2	-		-47	dBm	

RF Specifications (WLAN 11b/11Mbps, CCK)

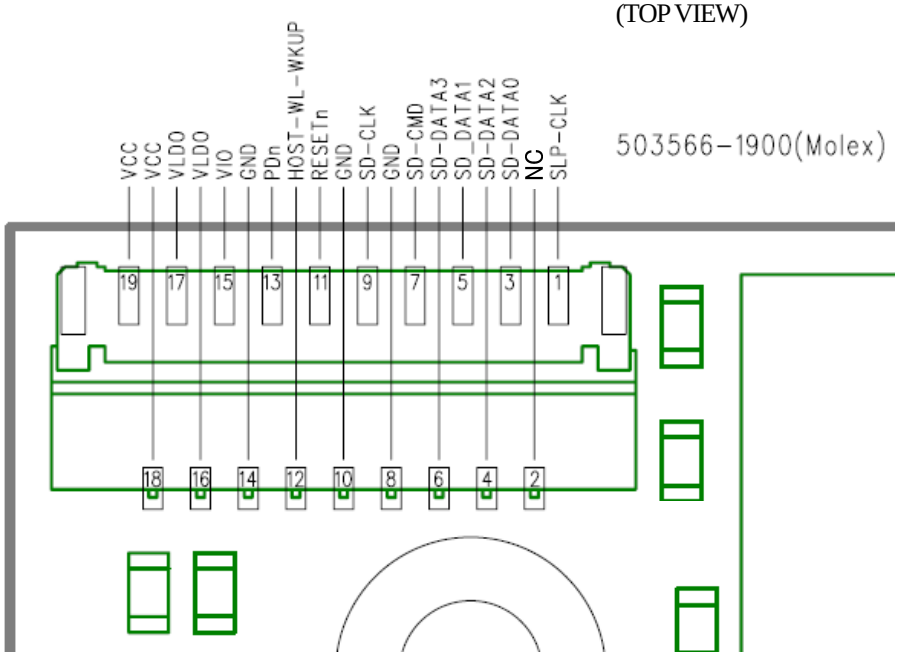
The Specification applies for Ta=25 degrees C, Supply voltage=Typical voltage.

No.	Parameter	Condition	Symbol	Min	Typ	Max	Unit	Remark
1	RF frequency range		FREQ	2412		2472	MHz	
2	TX Power		Po	9	11	13	dBm	
3	Spectrum Mask	1st Side Lobe	M1	-		-30	dBc	
		2nd Side Lobe	M2	-		-50	dBc	
4	Power up-down rump	Power up	TU	-		2	us	
		Power down	TD	-		2	us	
5	Frequency tolerance		Ft	-25		25	ppm	
6	EVM	Peak	EVM	-		35	%	
7	TX Out of band spurious1	30MHz to 1GHz	TOS1	-		-36	dBm	
8	TX Out of band spurious2	1GHz to 12.75GHz	TOS2	-		-30	dBm	
9	TX Out of band spurious3	1.8GHz to 1.9GHz 5.15GHz to 5.3GHz	TOS3			-47	dBm	
10	Rx sensitivity	PER< 8%	SEN		-86	-76	dBm	
11	Maximum Input Level	PER< 8%	MIL	-10			dBm	
12	RX Out of band spurious1	30MHz to 1GHz	ROS1	-		-57	dBm	
13	RX Out of band spurious2	1GHz to 12.75GHz	ROS2	-		-47	dBm	

Control No.	Control name	APPROVED	CHECKED	DRAWN	DESIGNED
HD－BA－ A１２１１７６ （1/1）	Pin layout ピンレイアウト図				2012.10.02

Terminal layout drawing
端子配置図

(TOP VIEW)



No.	Pin Name	I/O	I/O Vol-lvl	Description
1	SLP_CLK	I	1.8V	Sleep clock input (32.768kHz)
2	NC	-	-	No Connect
3	SD_DATA0	I/O	VIO	SDIO DATA0
4	SD_DATA2	I/O	VIO	SDIO DATA2
5	SD_DATA1	I/O	VIO	SDIO DATA1
6	SD_DATA3	I/O	VIO	SDIO DATA3
7	SD_CMD	I/O	VIO	SDIO Command
8	GND	-	GND	GND
9	SD_CLK	I	VIO	SDIO CLOCK
10	GND	-	GND	GND
11	RESETn	I	VIO	Reset (active low). Pulled up to VIO.
12	HOST-WL-WKUP	O	VIO	WLAN -> Host wakeup
13	PDn	I	VIO	Power Down (H: normal operation, L: power down). Pulled up to VIO.
14	GND	-	GND	GND
15	VIO	I	VIO	1.8V/3.3V I/O Power Supply
16	VLDO	I	VLDO	LDO Supply Voltage
17	VLDO	I	VLDO	LDO Supply Voltage
18	VCC	I	VCC	Main Supply Voltage
19	VCC	I	VCC	Main Supply Voltage