Bluetooth® + *Wireless LAN* +FM Module

Bluetooth® 3.0, 2.1+EDR
IEEE802.11b/g/n
FM

WYSBMVGX8

Brief Data Report

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Rev. record

17-Dec.-2012> Ver.1.0 Initial Release

Control No.		Control name
HD-AG-A091220	(1/1)	General Items

Scope

This specification ("Specification") applies to the hybrid IC for use Wireless LAN, Bluetooth®, FM module ("Product") manufacture by TAIYO YUDEN Co., Ltd. ("TAIYO YUDEN")

1. Part Number: WYSBMVGX8
2. Function: Radio frequency transfer Module. (***IEEE802.11bgn+BT+FM*** standard conformity)
3. Application: Cellular phone
4. RoHS Directive (2002/95/EC).comply
5. MSL : Level 3
6. Outline: 73-pin leadless chip carrier
7. Marking: Part Number, Lot Number
8. Features:
   - ***IEEE802.11bgn*** standard conformity
   - ***Bluetooth® 3.0, 2.1+EDR*** *(QDID: B016944)*
   - Interface: SDIO, UART, PCM, I2C, I2S
   - Embedded MPU for reducing loads on host processor
   - Built-in EEPROM
9. WLAN Channel Supported:
   1~13ch in 11bgn mode
10. WLAN Data Rate Supported:
    1/2/5.5/11 Mbps in 11b mode
    6/9/12/18/24/36/48/54 Mbps in 11g mode
    MCS0~MCS7 (HT20/HT40) in 11n mode
11. Host Interface: SDIO (4bits), upto 50MHz
12. Security: WEP (64/128), TKIP, AES, WPA, WPA2, WAPI
13. Packing:
    Packaging method: Tape and Reel
    Packaging unit: 1500pcs/reel

Control No.		Control name
HD-AM-A091220	(1/1)	Absolute maximum ratings

Absolute maximum ratings

Item	Symbol	Rating				Remark
		Min.	Typ.	Max.	Unit	
Supply voltage 1	VIO	-		4.0	V	
Supply voltage 2	1.8V	-		1.98	V	
Supply voltage 3	1.8V_1	-		1.98	V	
Supply voltage 4	3.3V	-		5.6	V	
Storage temperature range	Tstg	-30		100	Degrees C	
Operation temperature range	Topr	-20	25	70	Degrees C	

Recommendation operating range

Item	Symbol	Rating				Remark
		Min.	Typ.	Max.	Unit	
Supply voltage 1	VIO	1.62/2.97	1.8/3.3	1.98/3.63	V	
Supply voltage 2	1.8V	1.71	1.8	1.89	V	
Supply voltage 3	1.8V_1	1.71	1.8	1.89	V	
Supply voltage 4	3.3V	3.0	3.3	4.3	V	

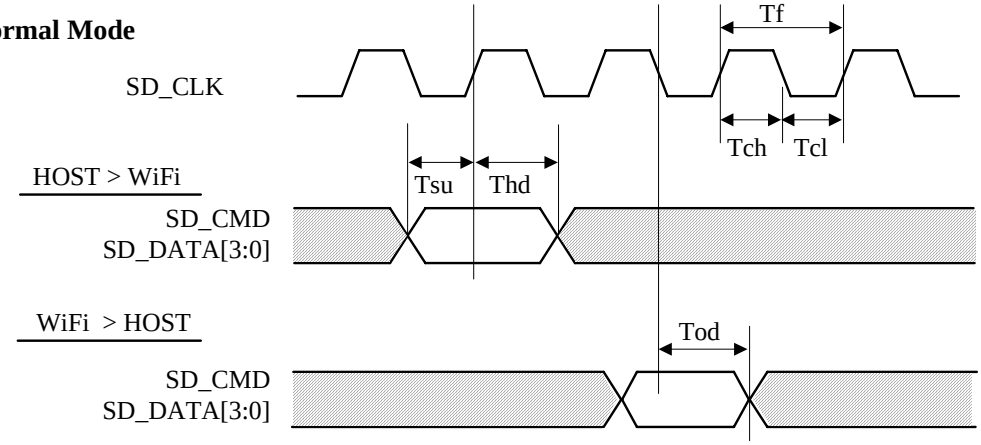
Control No.	Control name
HD-AE-A091220 (1/2)	Electrical characteristics

SDIO Interface Specifications

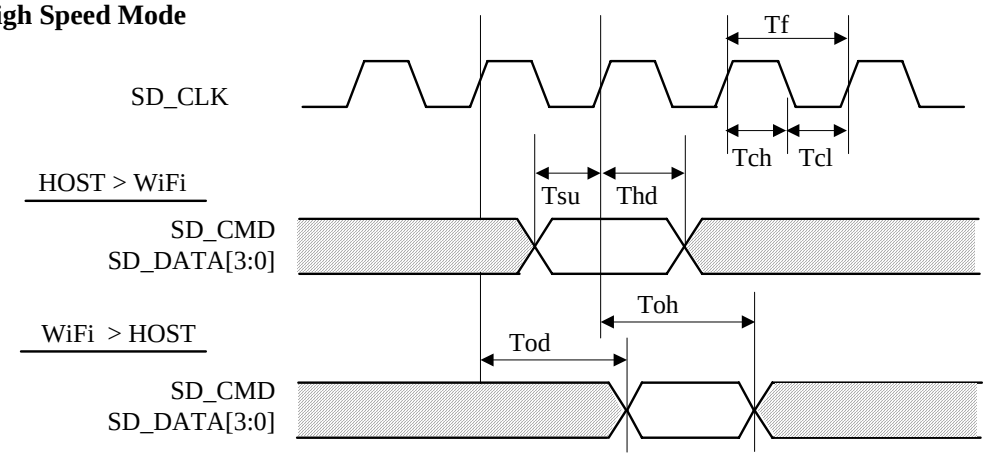
The Specification applies for Topr.= -20 to 70 degrees C , Supply voltage=Typical voltage

	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



Control No.		Control name
HD-AE-A091220	(2/2)	Electrical characteristics

WLAN RF Specification

		Condition	Value	Unit
11b(11Mbps)	Tx	Power	15	dBm
	Rx	Sensitivity	-86	dBm
11g(54Mbps)	Tx	Power	13	dBm
	Rx	Sensitivity	-72	dBm

BT RF Specification

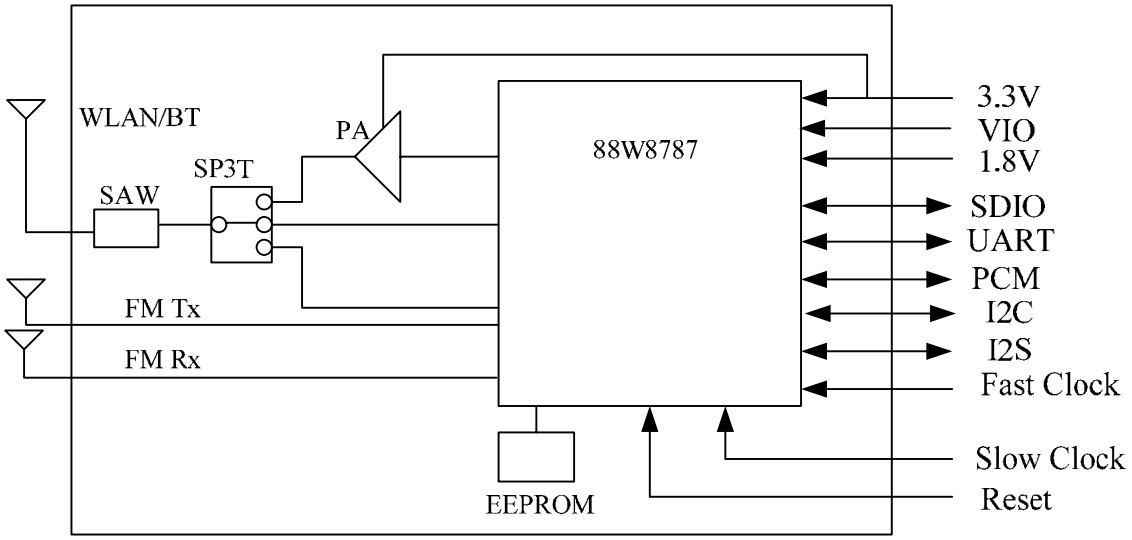
		Condition	Value	Unit
Basic Rate	Tx	Power	5	dBm
	Rx	Sensitivity	-86	dBm

Power Consumption

	Condition	Value	Unit
WLAN Tx	11b / 11Mbps	405	mW
WLAN Rx	11b / 11Mbps	230	mW
BT	Basic Rate	50	mW
Low Power	Deep Sleep	3.0	mW

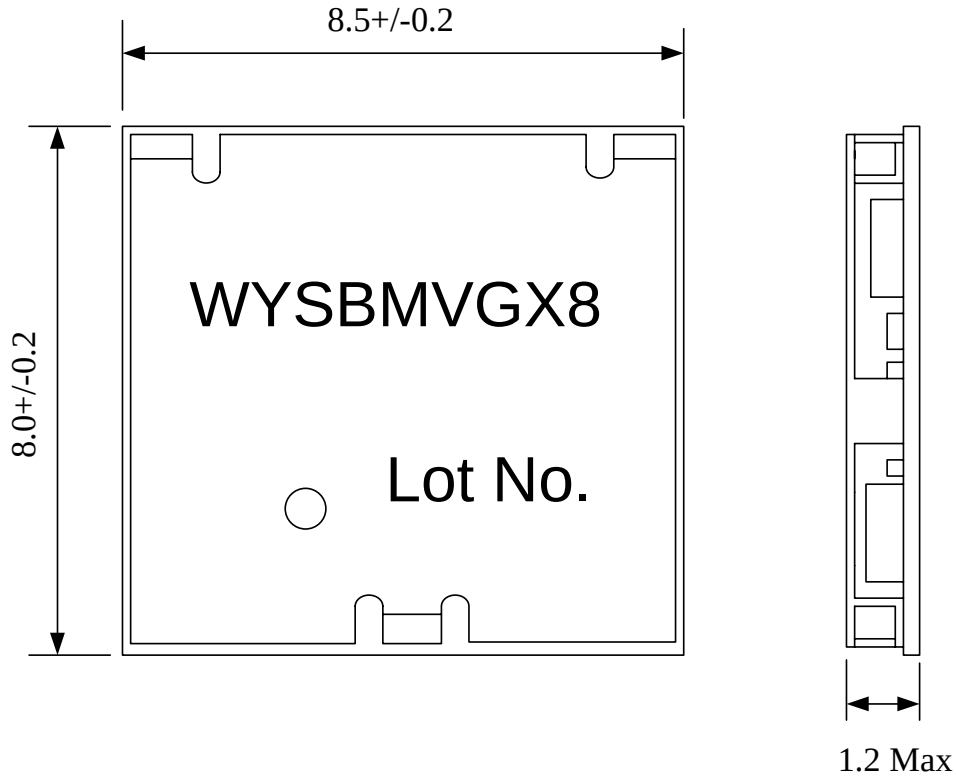
Control No.		Control name
HD-MC-A091220	(1/1)	Circuit Schematic

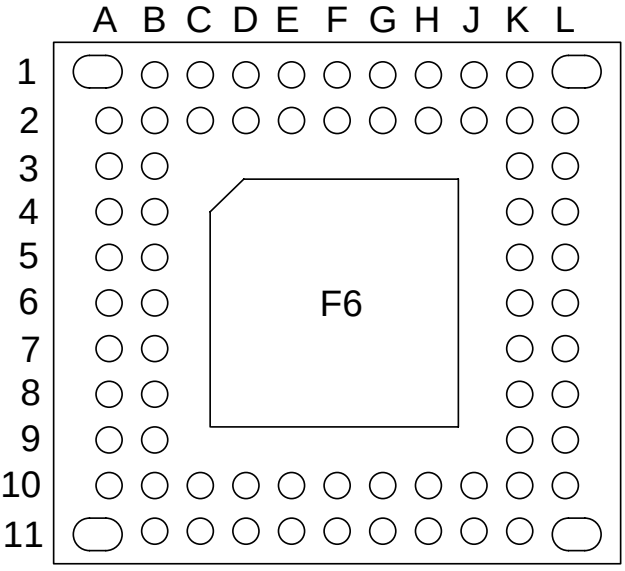
Block Diagram



Control No.		Control name
HD-AD-A091220	(1/1)	Outline/Appearance

OUTLINE





Bottom View

Control No.	Control name
HD-BA-A091220 (1/2)	Pin Layout

Pin Descriptions

Loc.	Pin Name	I/O	Type	Pwr Domain	Description
A1	GND	P	ground	GND	-
A2	GPIO0	IO		VIO	GPIO0
A3	GPIO4	IO		VIO	GPIO4
A4	SD_CMD	IO		VIO	SDIO command
A5	SD_CLK	I		VIO	SDIO clock input
A6	SD_DATA2	IO		VIO	SDIO data-2
A7	SLP_CLK	I		1.8V	Sleep clock input
A8	FM_ANT_RF_GND	P	ground	GND	FM RF Receive Antenna Ground
A9	FM_ANT_RX	I		1.8V	FM RF Receive Antenna
A10	FM_ANT_TX	O		1.8V	FM RF Transmit Antenna
A11	GND	P	ground	GND	-
B1	VIO	P	power	VIO	1.8V/3.3V Digital I/O Supply
B2	1.2V_OUT	P	power	1.2V	LDO 1.2V Voltage Output
B3	1.2V	P	power	1.2V	LDO 1.2V Voltage Intput
B4	SD_DATA3	IO		VIO	SDIO data-3
B5	SD_DATA1	IO		VIO	SDIO data-1
B6	SD_DATA0	IO		VO	SDIO data-0
B7	GND	P	ground	GND	-
B8	GND	P	ground	GND	-
B9	GND	P	ground	GND	-
B10	GND	P	ground	GND	-
B11	FM_AD_IN_R	I		1.8V	FM Audio input Right
C1	3.3V	P	power	3.3V	3.3V Supply Voltage
C2	VDD30	P	power	VDD30	3.0V for decupling
C10	GND	P	ground	GND	-
C11	FM_AD_OUT_R	O		1.8V	FM Audio output Right
D1	1.8V	P	power	1.8V	1.8V Supply Voltage
D2	GPIO16	IO		VIO	WLAN -> Host wakeup
D10	GND	P	ground	GND	-
D11	FM_AD_IN_L	I		1.8V	FM Audio input Left
E1	GND	P	ground	GND	-
E2	GND	P	ground	GND	-
E10	GND	P	ground	GND	-
E11	FM_AD_OUT_L	O		1.8V	FM Audio output Left
F1	RES				(Reserved)
F2	GND	P		GND	
F6	GND	P	ground	GND	-

Control No.	Control name
HD-BA-A091220 (2/2)	Pin Layout

Loc.	Pin Name	I/O	Type	Pwr Domain	Description
F10	TDI	I		VIO	JTAG TDI
F11	GND	P	ground	GND	-
G1	REF_CLK	I		1.8V	Oscillator / System clock Input.
G2	GND	P	ground	GND	-
G10	PDN	I		VIO	Power down
G11	I2C_DAT	IO		VIO	I2C slave-compatible interface data signal
H1	1.8V_1	P	power	1.8V_1	1.8V Supply Voltage for WLAN
H2	PCM_SYNC	IO		VIO	PCM_SYNC(input/output), I2S_LRCLK(input/output)
H10	GPIO18	IO		VIO	GPIO18
H11	I2C_CLK	IO		VIO	I2C slave-compatible interface clock signal
J1	PCM_CLK	IO		VIO	PCM_CLK(input, output), I2S_BCLK(input, output)
J2	PCM_DIN	IO		VIO	PCM_DIN(input), I2S_DIN(input)
J10	GND	P	ground	GND	-
J11	GND	P	ground	GND	-
K1	PCM_DOUT	IO		VIO	PCM_DOUT(output), I2S_DOUT(output)
K2	UART_RTS	IO		VIO	UART_RTSn(output)(active low)
K3	UART_SIN	IO		VIO	UART_SIN(input)
K4	I2S_DOUT	IO		VIO	I2S_DOUT(output) Separate I2S interface
K5	I2S_DIN	IO		VIO	I2S_DIN(input) Separate I2S interface
K6	I2S_BCLK	IO		VIO	I2S_BCLK(input/output) Separate I2S interface
K7	RESETN	I		VIO	Reset(active low)
K8	TDO	IO		VIO	JTAG TDO(output)
K9	TMS	I		VIO	JTAG TMS(input)
K10	GND	P	ground	GND	-
K11	WLBT_ANT	IO	-	-	WLAN BT Antenna
L1	GND	P	ground	GND	-
L2	UART_SOUT	IO		VIO	UART_SOUT(output)
L3	UART_CTS	IO		VIO	UART_CTSn(input)(active low)
L4	I2S_LRCLK	IO		VIO	I2S_LRCLK(input/output) Separate I2S interface
L5	I2S_MCLK	IO		VIO	I2S_CCLK(input/output), PCM_MCLK(optional, output)
L6	HM	I		VDD30	Host mode select
L7	RES				(Reserved)
L8	RES				(Reserved)
L9	TCK	IO		VIO	JTAG TCK(input)
L10	GND	P	ground	GND	-
L11	GND	P	ground	GND	-