SAMSUNG	Data Sheet	Doc no: BB-WLAN2455-01

RF Division WLAN R&D G.		
WRITTEN	CHECKED	APPROVED
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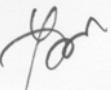
DATA SHEET

CUSTOMER	
PRODUCT NAME	Embedded Wireless LAN Module
MODEL NAME	SWL-2455C, SWL-2455SD
Part Number	

ISSUED BY	CHECKED BY	APPROVED BY

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Contents

0   Document

0.1   Declaration

This specification is intended for Samsung 11Mbps embedded wireless LAN module.

0.2   Revision History

1 Specification for WLAN CF Embedded Module

1.1 Identification

1.Samsung Product name	11Mbps WLAN CF/SDIO Embedded Module
2.Samsung Model name	SWL-2455C, SWL-2455SD
3.Samsung Part number	TBD

1.2 Hardware Specification

1.2.1 Card standard

1. Interface Standard	Compact Flash Specification electrically compliant (SWL-2455C) SDIO Specification electrically compliant (SWL-2455SD)
2. Form Factor	Customized Size
3. Operating Voltage	VCC : 3.0V ~ 3.3V VCCD : 1.8V ~ 3.3V VDDSHI : 1.8V ~ 3.3V ± 5%

1.2.2 RF Characteristics

RF Characteristics	Min	Typ	Max	Notes
1. Specification Compliance	IEEE 802.11b standard protocol (CSMA/CA)			
2. Antenna	External single antenna support			
3. Frequency Range	2.412Ghz~2.484Ghz			
4. TX output power		16dBm (40mW)		
5. Current Consumption		-Transmit:465mA -Receive:200mA -Standby:1mA		Continuous Transmit
6. RX sensitivity		- 85dBm		

Note : Sensitivity is based upon 1024 Bytes frame length, 11 Mbps data rate, 8% PER

1.2.3   Mechanical Specifications

1. Dimension	15 × 15 × 1.7
2. Weight	1g
3. Pin outs	52pin + 8 GND pattern SMT Type
4. Antenna Connector	SMT pads (Pin No.51)
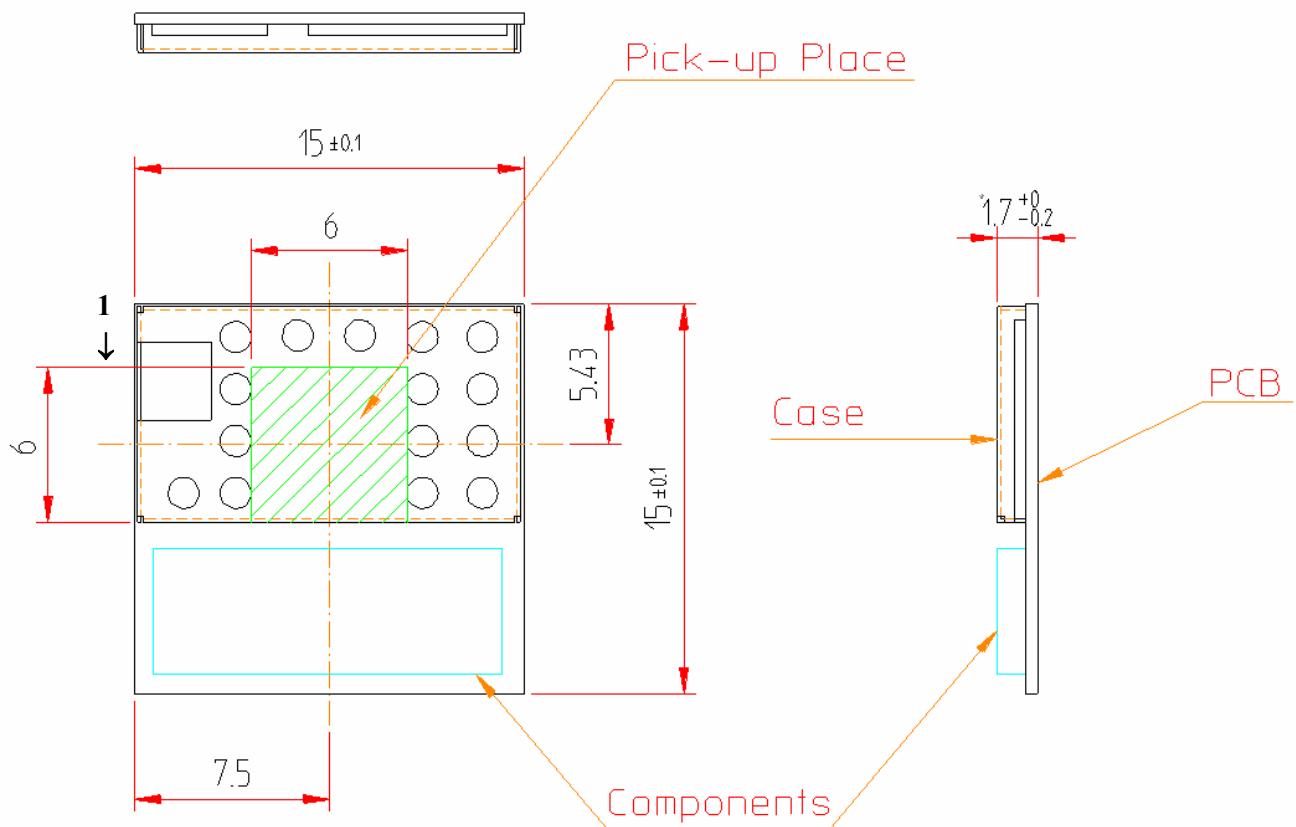
1.2.4 Recommended PCB Pad Design (Top View)

The pattern is symmetrical.

Refer to Appendix 1 for the pin numbering. Blue patterns are ground patterns and should be a part of **main analogue ground** plain. Blue patterns are excluded from pin numbering. **Place thermal through holes on blue boxes to diffuse heat from the WLAN module**.

As for the metal mask, make this hole size 30% of the PCB GND patterns to prevent the module from floating due to extra solders.
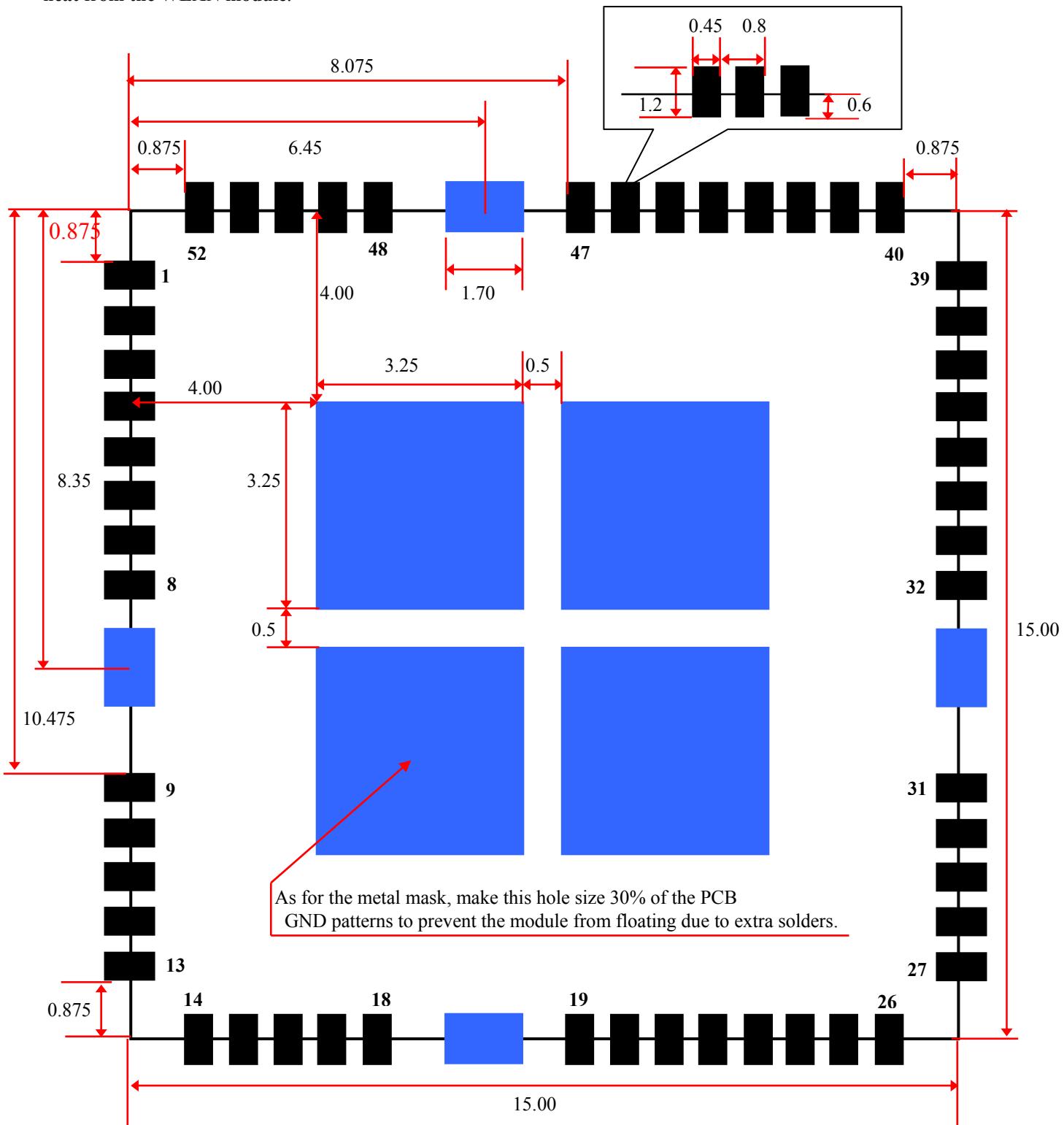
1.2.5 Regulation

1. Europe	Not yet submitted
2. USA,Canada	Not yet submitted
3. Others	Not yet submitted

1.2.6 Environmental requirements

1. Operating Temperature	-10°C ~ +70°C
2. Storage Temperature	-20°C ~ +80°C
3. Operating Humidity	0% ~ 90%(RH)

2   Software specifications

2.1   OS Support & Driver

2.1.1   Available drivers

[SWL- 2455C]
- Windows XP(Test purpose Only)
- Windows CE.NET 4.2, 5.0
- Pocket PC 2003(SE) and higher
- Linux

[SWL- 2455SD]
- Windows CE.NET 5.0
- Pocket PC 2005 and higher
- Linux
-

2.2   Security
- WEP
- TKIP,AES
- 802.1x
- WPA
- CCX
- WPA2

2.3   Utility
- RF TEST TOOL
- WLAN status program

2.4   Other Feature
- WME

3 RF Test Results

General Specifications	Specifications					Measured Results			Notes
	MIN	TYP	MAX	UNITS	TEMP	MIN	TYP	MAX	
Physical Layer Data Rate		1		Mbps	FULL				
		2		Mbps	FULL				
		5.5		Mbps	FULL				
		11		Mbps	FULL				
Frequency Range	2412		2484	MHz	FULL				
Operating Voltage	3.0		3.3	V	FULL				
Operating Temp Range	-10		+70	C	FULL				
Storage Temp Range	-20		+80	C	FULL				
Standby Current			1	mA	25C				
Receiver									
Sensitivity, 8% PER		-85		dBm	25C		-85		11Mbps, connected via cable
RX Supply Current, with signal		200		mA	25C		201		3.3V, during valid packet
RX Supply Current, no signal		185		mA	25C		187		3.3V, no signal applied
Transmitter									
Average Output Power		16		dBm	25C		15.8		3.3V, connected via cable
Transmit Spectral Mask			-30	dBc	25C		-38.1		First side-lobe, 3.3V
Transmit Spectral Mask			-50	dBc	25C		-57.0		Second side-lobe, 3.3V
Out band spurious			-32	dBm	25C		-55.2		
TX Supply Current		465		mA	25C		470		3.3V, Continuous TX

4 Packing Information

NO	PART NAME	Q'TY	MATERIAL	FINISH	REMARK

PIN 1

TRAILAR

LEADER(MIN 400mm)

EMPTY POCKET
(MORE THAN 10 PITCH)

EMPTY POCKET
(MORE THAN 10 PITCH)

DIRECTION OF FEED

MODEL.
Q.TY,   1000 EA
USER CODE
USER MODEL.
LOT NO,
SAMSUNG ELECTRO MECHANICS CO.,LTD

φ330

* REEL MATERIAL,ABS
* FEEL STRENGTH,20~70gms
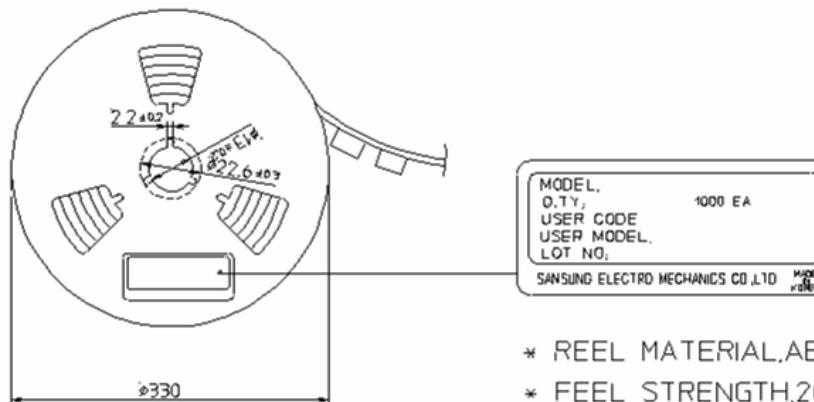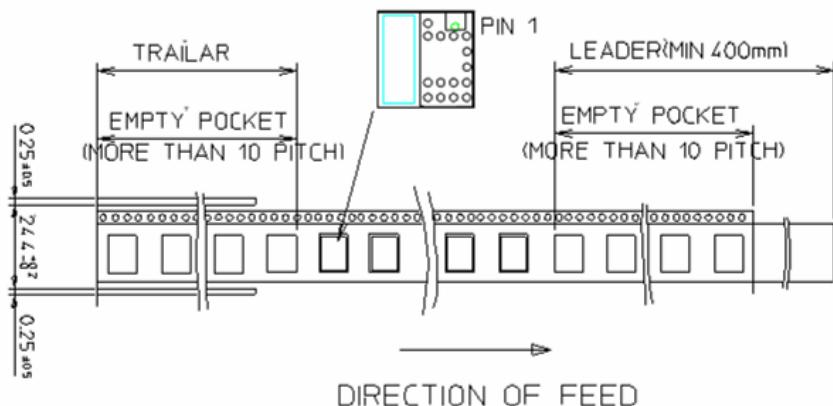
1 THE TAPE END WILL HAVE A EMPTY POCKET AT THE LEADER
  AND TRAILER OF CARRIER TAPE.

2 THE TAPE END WILL NOT BE STICKED BY GLUE IN ORDER TO MAKE IT
  EASIER TO PEEL OFF FROM REEL

3 THE FEEDING ROUND HOLE WILL BE ON THE RIGHT SIDE AGAINST THE
  LEADING DIRECTION

Rev	DATE	WRITTEN BY	CHECKED BY	REVISION RECORD					REMARK

UNIT	m/m	DRAW	DESIGNED	CHECKED	APPROVED	N A M E	PART NAME	PACKING METHOD	
SCALE	N/S	CAD					MODEL NAME		
TOLERANCE							SEMCO P/N		

SAMSUNG ELECTRO-MECHANICS

3RD ANGLE PROJECTION

NO

S-10-012 (93.05)

A4(297X210)
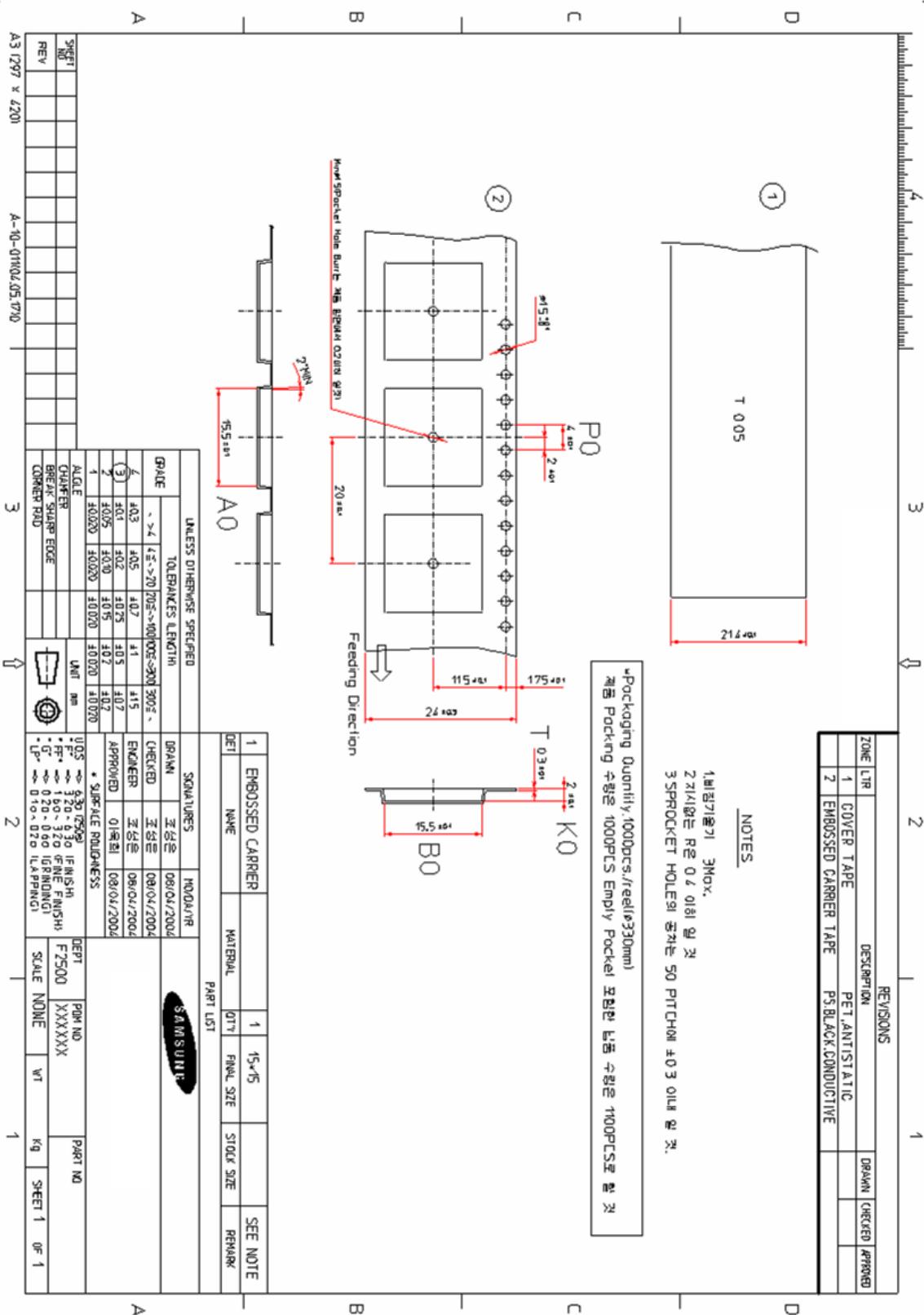
■ Packing quantity : 1000PCS/reel

■ Total pocket quantity is 1100PCS including empty pockets.

PACKING METHOD
1000EA/ CARRIER

SHIELDING BAG
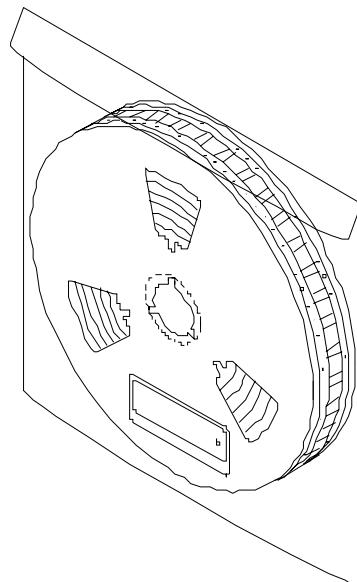
Individual BOX.
1 Reel(1000EA) / Individule BOX
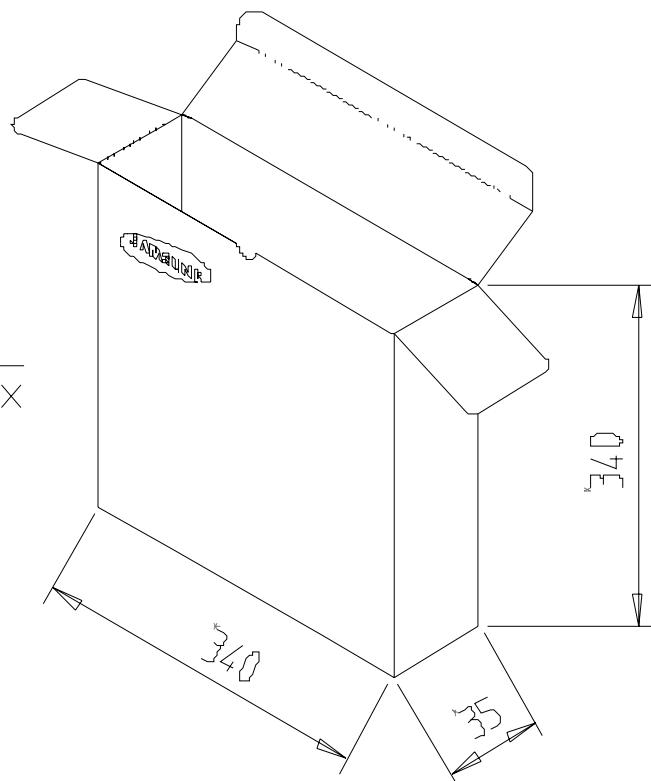
◆ Max storage condition : -40   ~ 80

Recommended to be kept in room temperature.

Appendix 1. Pin description.

* I/O : Digital Input/Output, I : Digital Input, O : Digital Output, A : Analog, PU : Pull up

No.	Compact Flash	SDIO	Type	Internal Resister	Description
1	GND	GND	Ground		Ground
2	D03	NC	I/O	100K PU	CF : Data line 3
3	D04	NC	I/O	100K PU	CF : Data line 4
4	D05	NC	I/O	100K PU	CF : Data line 5
5	D06	NC	I/O	100K PU	CF : Data line 6
6	D07	NC	I/O	100K PU	CF : Data line 7
7	CE1#	NC	I	100K PU	CF Card Enable 1, This enables even-numbered address bytes.
8	**MOD1**	**MOD1**	I/O		Host interface mode configuration 1 This pin is used as configuration to set parameters a following a reset. To set a configuration bit to 0, attach a 100Kohm resister from this pin to ground. No external circuitry is required to set a configuration bit to 1 After reset is completed, this pin is used for AGC output in module
9	OE#	SD_CMD	I	100K PU	CF : Output Enable. It is used to read data from the Card in Memory mode and to read the CIS and configuration registers. SD 1-bit/4-bit mode : Command/Response
10	A09	SD_DAT[2]	I	100K PU	CF : Address line 9 SD 4-bit mode : Data line bit 2 or Read wait(optional) SD 1-bit mode : Read Wait(optional) SPI mode : Reserved
11	A08	NC	I	100K PU	CF : Address line 8
12	A07	NC	I	100K PU	CF : Address line 7
13	**VCCD**	**VCCD**	Power		Digital core power
14	A06	NC	I	100K PU	CF : Address line 6
15	A05	NC	I	100K PU	CF : Address line 5
16	A04	NC	I	100K PU	CF : Address line 4
17	A03	NC	I	100K PU	CF : Address line 3
18	A02	NC	I	100K PU	CF : Address line 2
19	A01	NC	I	100K PU	CF : Address line 1
20	A00	NC	I	100K PU	CF : Address line 0
21	D00	NC	I/O	100K PU	CF : Data line 0
22	D01	NC	I/O	100K PU	CF : Data line 1
23	D02	NC	I/O	100K PU	CF : Data line 2
24	IOIS16#	NC	O	100K PU	CF : I/O mode A low signal indicates that a 16bit or odd byte only operation can be performed at the addressed port
25	**BT_PRIORITY**	**BT_PRIORITY**	I		Bluetooth Priority Asserted 1 during local BT RX and TX slots.
26	**BT_STATE**	**BT_STATE**	I		Bluetooth State 0 = normal priority, Rx 1 = high priority, Tx

					Priority is signaled after BT-PRIORITY has beed asserted. After priority signaling. BT_STATE indicates the Tx/Rx mode of BT radio
27	D11	NC	I/O	100K PU	CF Data line 11
28	D12	NC	I/O	100K PU	CF Data line 12
29	D13	NC	I/O	100K PU	CF Data line 13
30	D14	NC	I/O	100K PU	CF Data line 14
31	D15	NC	I/O	100K PU	CF Data line 15
32	CE2#	SD_CLK,	I	50K PU	CF : Card Enable 2, This enables odd-numbered address bytes. SDIO 1-bit/4-bit mode : Clock SPI mode : Clock
33	**WL_ACTIVE**	**WL_ACTIVE**	O	50K PU	WL_ACTIVE Transmission Confirmation to BT, active low signal. 0 = BT can transmit. Once asserted, it stays asserted until the BT device completes the transmission. Once allowed to transmit, BT device cannot stop in the middle of a packet. If asserted during BT transmission slot so that the Tx has not been started, the BT module shall not active the transmitter during the rest of the Tx period. Note : In WLAN Sleep mode, all I/O PADs are powered down. This PAD must stay at a low state even in power down mode.
34	IORD#	SD_DAT[1]	I	100K PU	CF : I/O Read strobe SDIO 4-bit mode : Data line bit 1 SDIO 1-bit mode : Interrupt SPI mode : Reserved
35	IOWR#	SD_DAT[3]	I	50K PU	CF : I/O Write strobe SDIO 4-bit mode : Data line bit 3 SDIO 1-bit mode : Reserved SPI mode : Card Select
36	WE#	NC	I	100K PU	CF : Write enable
37	IREQ#	NC	O	100K PU	CF : Interrupt Request
38	VCC	VCC	Power		Power
39	**PD#**	**PD#**	I	200K PU	Full power down
40	**MOD2**	**MOD2**	I/O		Host interface mode configuration. This pin is used as configuration to set parameters a following a reset. To set a configuration bit to 0, attach a 100Kohm resister from this pin to ground. No external circuitry is required to set a configuration bit to 1 After reset is completed, this pin is used for AGC output in module
41	RESET	RESET	I	100K PU	RESET, active high
42	WAIT#	NC	O	100K PU	CF : Wait signal This is driven low by CF module to signal the host to delay completion of a momory or I/O cycle that is in progress
43	INPACK#	NC	O	100K PU	CF : Input Acknowledge signal
44	REG#	NC	I	100K PU	CF : REG This signal is used during Attribute memory accesses or I/O accesses.
45	**LED_OUT#**	**LED_OUT#**	I/O	200K PU	GPIO for LED Blinking : AP scanning ON (Low): Link
46	**VDDSHI**	**VDDSHI**	Power		This power supplies power to the IO cells.

47	D08	NC	I/O	100K PU	CF Data line 8
48	D09	NC	I/O	100K PU	CF Data line 9
49	D10	NC	I/O	100K PU	CF Data line 10
50	GND	GND	Ground		Ground
51	RF_INOUT	RF_INOUT	A		RF Input/Output
52	NC	SD_DAT[0]	I/O	100K PU	SDIO 4-bit mode : Data line bit 0 SDIO 1-bit mode : Data line SPI mode : Data output

* **'#' means that the signal is low active.**
* VCCD power voltage range is from 1.8V to 3.3V. Its current consumption has no relation with its voltage. It means that the lower the input voltage is the smaller power it consumes. It may be tied to the VCC, if you want to use the same voltage for both power inputs.
* VDDSHI : Digital I/O Power Supply. When using CF interface, this pin must be connected to same supply as VCC. When using SDIO, this pin can be between 1.8 and 3.3V depending on the host interface I/O supply
* PD# signal in CF interface is not matched with CF standard pin outs. This signal replaced the CSEL# signal in CF specification, and is used to set the full power down state. When this signal is connected to 0V, the module will be set to the full power down state. If you don't use this function, just connect this pin to the main power.
* LED_OUT# signal in CF interface is not matched with CF standard pin outs. This signal replaced the SPKR signal in CF specification, and is used to control the external LED. This signal is low active.
* Pin No.25,26,33 are for the Bluetooth co-existence interface. If you connect these to the Bluetooth correctly, WLAN and Bluetooth will not conflict each other.
* NC pins are used for test procedure or reserved for future use. These signal replaced the unused signals in CF specification. Just leave them unconnected. **Connect CD1, CD2, VS1 from CF host to GND and leave VS2, SPKR, CSEL, STSCHG, A10 from CF host unconnected.**
* Host Interface mode configuration

2455	MOD1	MOD2
CF	No connect	Connect 100K ohm Pull down
SDIO	Connect 100K ohm Pull down	No connect

Appendix 2. Block Diagram
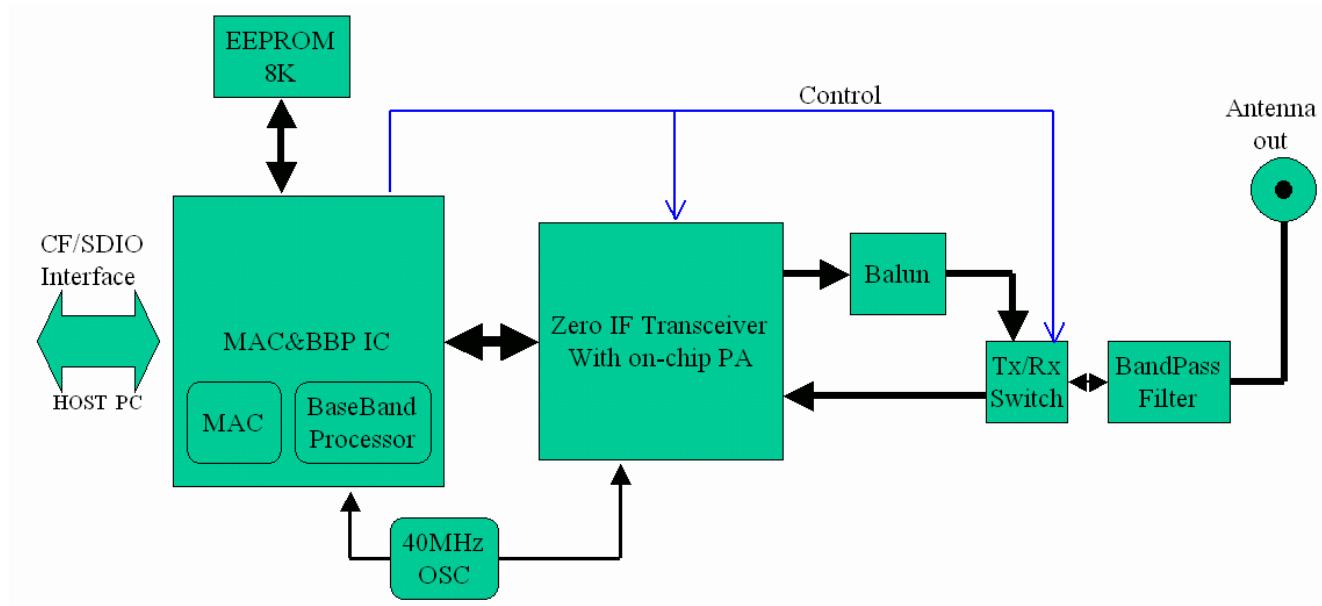
Appendix 3. Reliability test conditions

Test Item	Condition
●**Environmental Test**	
Normal Temperature Stability Test	24 , 4Hr (FTP Server Get/Put 30Mbyte)
High Temperature Operating Test	80 , 48Hr (FTP Server Get/Put 30Mbyte)
Low Temperature Operating	-20 , 48Hr (FTP Server Get/Put 30Mbyte)
High Temperature Storage Test	110 , 120Hr, Recovery Time 2Hr
Low Temperature Storage Test	-40 , 120Hr, Recovery Time 2Hr
High Temp./Humidity Storage Test	85 , 85%RH, 120Hr, Recovery Time 4Hr
Thermal Shock Storage Test	-40 /30min↔110 /30min, 50Cycle, Recovery Time 4Hr
Pressure Cooker Test	121 , 100%RH, 2Kf/ , 24Hr, Recovery Time 24Hr
●**Mechanical Test**	
Vibration Test	Random:20~2000Hz, PSD 0.053g²/Hz, X,Y,Z 15min/direction
Drop Test	Module:152Cm, Steel floor, 12times, Free Drop
	Jig:120Cm(12times), 152Cm(19times) Total 31times Free Drop
●**Electrical Test**	
ESD Test	HBM Class 1A :100pF, 1500Ω, ±500V,Contact/Air 3times
●**Packing Distribution Test**	
Packing Vibration	5~55Hz, Amplitude:1m(p-p) X,Y,Z Each Axis/1Hr
Packing Drop	150Cm, 1Corner, 3edges, 6faces 1times Drop
Total 15 Items TEST	