

User Manual

PRODUCT NAME : Bluetooth Class1 ROM Module

MODEL NAME : WB1BH5

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1. Features

WB1BH5 is the small size and low power module for Bluetooth 4.0.

WB1BH5 is based on TI CC2564B.

- Bluetooth 4.0 / Class I
- Size : 34mm x 19mm x 3.1 mm
- Internal PCB Printed Antenna
- UART with maximum rate of 4 Mbps interface
- Digital PCM-I2S codec interface
- Supports drivers for Windows 7, Vista, XP, 2000 and Linux
- Application : DTV, DVR, HD DVD Player, Blue-ray Disk Player, STB

2. Block Diagram

Confidential

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3. Certification condition

FCC approval

The satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product.

Contains Transmitter module FCC ID : **BEJ9QK-DMWB1BH5**

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 20cm between the radiating element of this device and the user. This device must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators and following statements shall be included to host user manual

- 1) The antenna must be installed such that 20cm is maintained between the antenna and users.
- 2) This module may not be co-located with any other transmitters or antennas.

As long as 2 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 with this module installed. In the event that these conditions cannot be met, then the FCC authorizations are no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product including this module and obtaining separate FCC authorizations.

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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 or more 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.

CE approval

Hereby, LG declares that this device is compliance with the essential requirements and other relevant provisions of directive 1999/5/EC.

CE0197

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<p>IC approval</p> <p>The host device must be labeled to display the Industry Canada certification number of the module. Contains transmitter module IC: 2703H-DMWB1BH5 Le dispositif d'accueil doivent être étiquetés pour afficher le numéro de certification d'Industrie Canada du module. Contient module émetteur IC : 2703H-DMWB1BH5 This device complies with Industry Canada license-exempt RSS standard(s). 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.</p> <p>Cet appareil est conforme avec Industrie Canada exempts de licence standard RSS (s). L'opération est soumise aux deux conditions suivantes: (1) cet appareil ne peut causer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris les interférences quipeuvent causer un mauvais fonctionnement de l'appareil.</p> <p>Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.</p> <p>Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépassepas l'intensité nécessaire à l'établissement d'une communication satisfaisante.</p> <p>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 radiating element of this device and the user. NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.</p> <p>Cet appareil est conforme aux limites d'exposition aux rayonnements d'Industrie Canada pour un environnement non contrôlé. Cet appareil doit être installé et utilisé à distance minimum de 20cm entre l'élément rayonnant de cet appareil et l'utilisateur. REMARQUE : LE FABRICANT N'EST PAS RESPONSABLE DES INTERFÉRENCES RADIOÉLECTRIQUES CAUSÉES PAR DES MODIFICATIONS NON AUTORISÉES APPORTÉES À CET APPAREIL. DE TELLES MODIFICATIONS POURRAIT ANNULER L'AUTORISATION ACCORDÉE À L'UTILISATEUR DE FAIRE FONCTIONNER L'APPAREIL</p>			

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4. Storage Conditions

Parameter	Min	Max	Unit
Storage Temperature	-10	+80	°C
Storage Humidity (@ 40°C)	-	90	%

Caution : The specifications above the Table define levels at which permanent damage to the device can occur. Function operation is not guaranteed under these conditions. Operating at absolute maximum conditions for extend periods can adversely affect the long-term reliability of the device.

- Other conditions
 - 1) Do not use or store modules in the corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are contained.
Also, avoid exposure to moisture.
 - 2) Store the modules where the temperature and relative humidity do not exceed 5 to 40°C and 20 to 60%.
 - 3) Assemble the modules within 6 months.
Check the soldering ability in case of 6 months over.

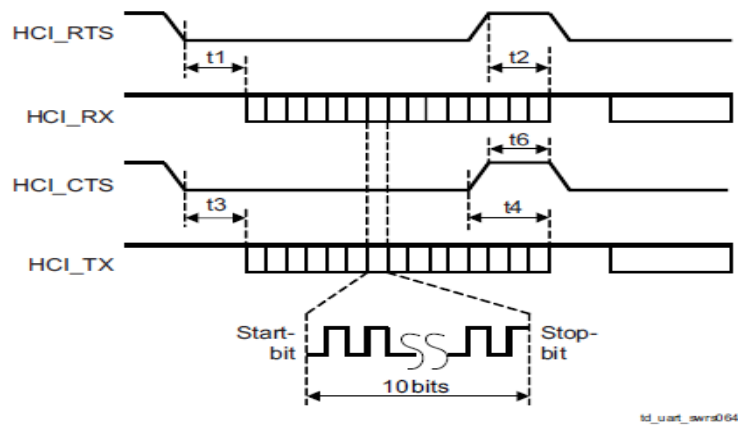
5. Operating Conditions

Parameter	Min	Typ	Max	Unit
Ambient Temperature	0	-	+70	°C
Operating Humidity (40°C)	-	-	85	%
Supply Voltage	3.15	3.3	3.45	Vdc

6. Interface Specification

1) UART

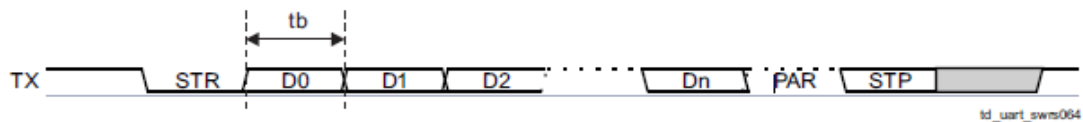
Figure 11-1 shows the UART timing diagram. Table 11-1 lists the UART timing characteristics. Figure 11-2 shows the UART data frame. Table 11-2 describes the symbols used in Table 11-2.



[Figure 11-1. UART Timing]

Symbol	Characteristics	Condition	Min	Typ	Max	Unit
	Baud rate		37.5		4000	kbps
	Baud rate accuracy per byte	Receive and transmit	-2.5		1.5	%
	Baud rate accuracy per bit	Receive and transmit	-12.5		12.5	%
t3	CTS low to TX_DATA on		0	2		μs
t4	CTS high to TX_DATA off	Hardware flow control			1	byte
t6	CTS-high pulse width		1			bit
t1	RTS low to RX_DATA on		0	2		μs
t2	RTS high to RX_DATA off	Interrupt set to 1/4 FIFO			16	byte

[Table 11-1. UART Timing Characteristics]



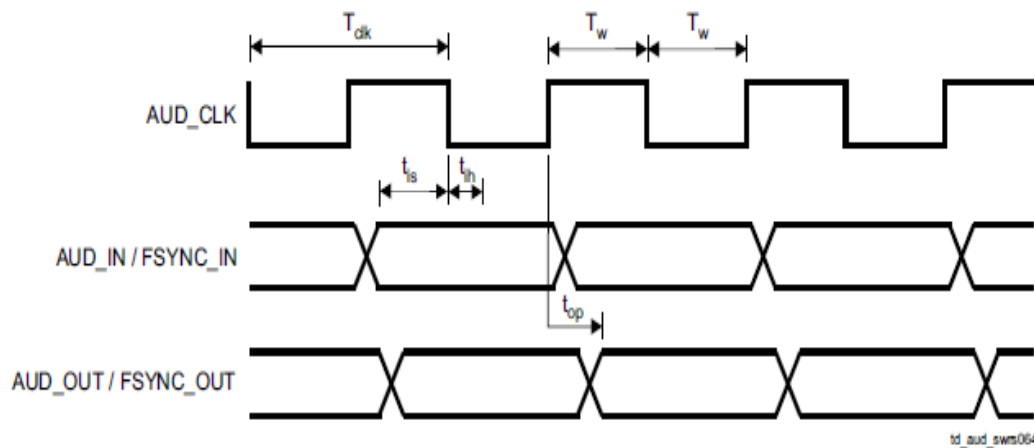
[Figure 11-2. Data Frame]

Symbol	Description
STR	Start-bit
D0...Dn	Data bits (LSB first)
PAR	Parity bit (optional)
STP	Stop-bit

[Table 11-2. Data Frame Key]

2) PCM

Figure 11-3 shows the interface timing for the PCM. Table 11-3 and Table 11-4 Lists the associated master and slave parameters.



[Figure 11-3. PCM Interface Timing]

Symbol	Parameter	Condition	Min	Max	Unit
T_{clk}	Cycle time		244.14 (4.096 MHz)	15625 (64 kHz)	ns
T_w	High or low pulse width		50% of T_{clk} min		
t_{is}	AUD_IN setup time		25		
t_{ih}	AUD_IN hold time		0		
t_{op}	AUD_OUT propagation time	40-pF load	0	10	
t_{op}	FSYNC_OUT propagation time	40-pF load	0	10	

[Table 11-3. PCM Master]

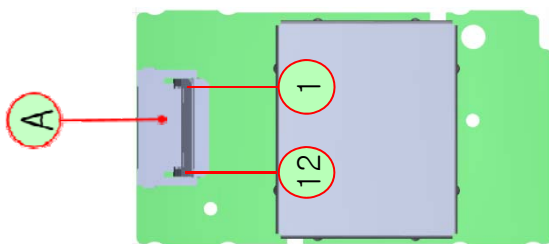
Symbol	Parameter	Condition	Min	Max	Unit
T_{clk}	Cycle time		66.67 (15 MHz)		ns
T_w	High or low pulse width		40% of T_{clk}		
T_{is}	AUD_IN setup time		8		
T_{ih}	AUD_IN hold time		0		
t_{is}	AUD_FSYNC setup time		8		
t_{ih}	AUD_FSYNC hold time		0		
t_{op}	AUD_OUT propagation time	40-pF load	0	21	

[Table 11-4. PCM Slave]

7. Pin Description

Pin No	Name	I/O	Pin Description
1	VDD(+3.3V)	I	Digital Supply
2	Ground	-	Digital Ground
3	PCM_GPIO	O	PCM Model (Master/Slave)
4	UART Tx	O	HCI UART Transmit Output
5	Ground	-	Digital Ground
6	UART Rx	I	HCI UART Receiver Input
7	Ground	-	Digital Ground
8	PCM_FSYNC	I/O	PCM Frame Sync in or out
9	PCM_In	I	PCM Data IN
10	PCM_Out	O	PCM Data OUT
11	PCM_CLK	I/O	PCM Clock in or out
12	Reset	I	nSHUT_DOWN

< TOP View >



< Bottom View >



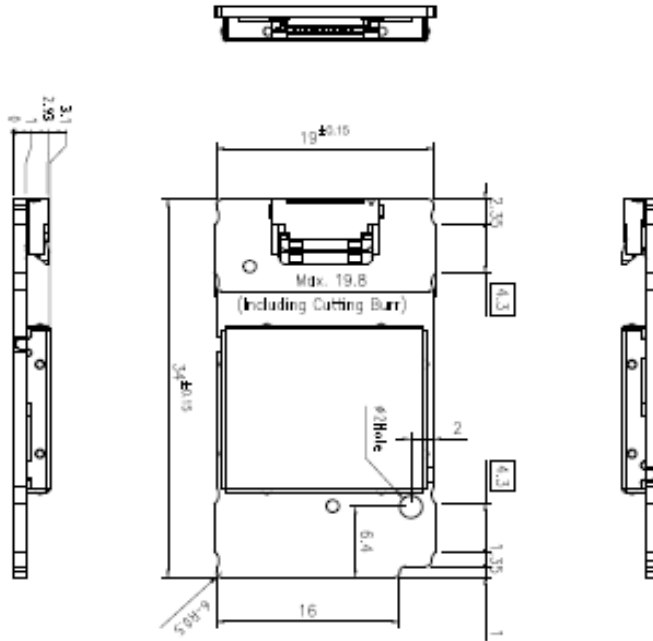
Note.

- 1) Recommend a Module install sequence for prevent USB device failure
 - Supply 3.3V power
 - Connect to data signal (UART TX, RX)

- 2) Connector: 12Pin SMD Connector (A)

8. Outline Drawing

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Internal Use Only



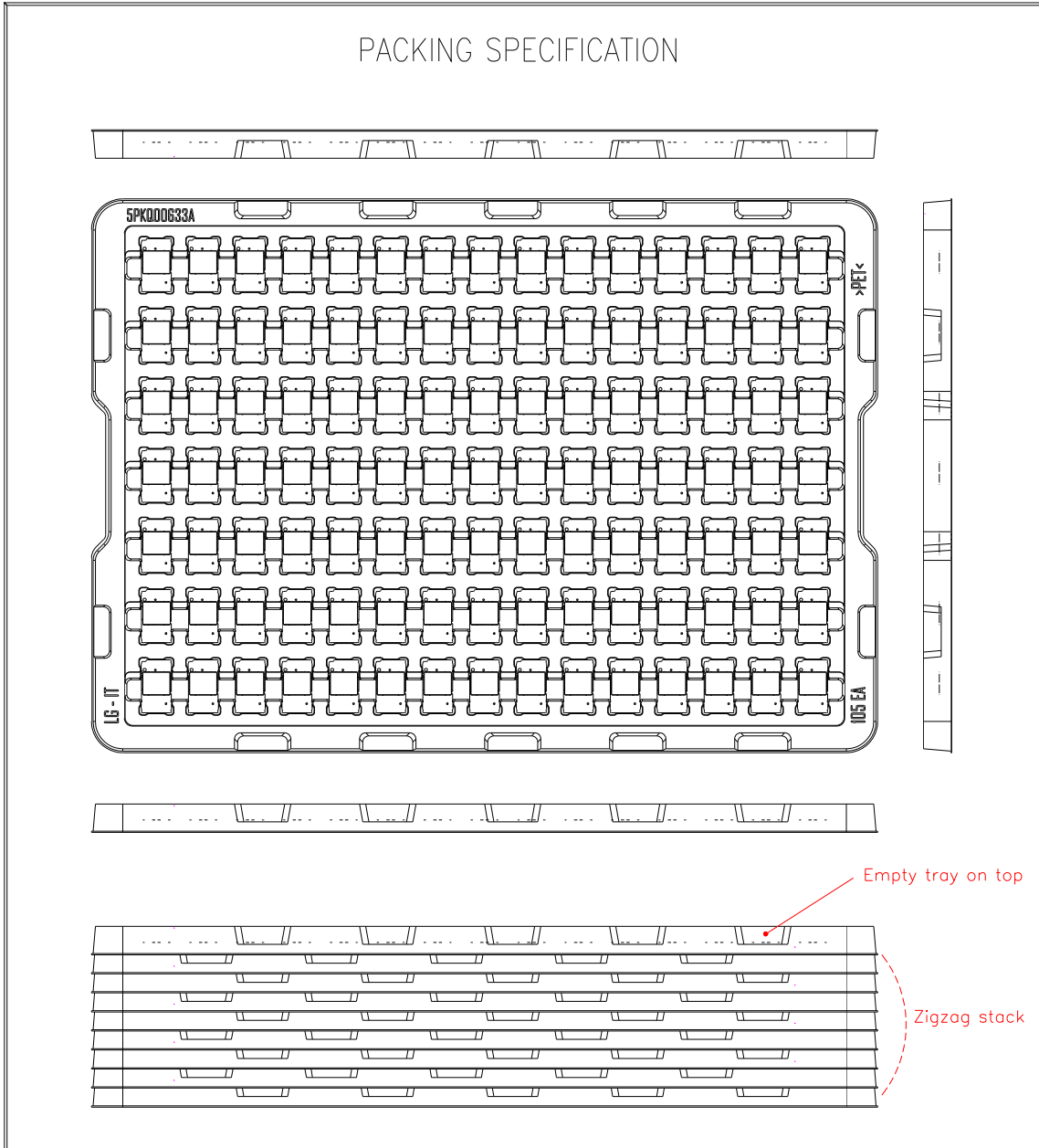
3D View(2:1)

- Notes
1. Tolerances are ±0.3. Rats are 0.5, unless otherwise specified.
 2. Lit No. shall be confirmed to LIT indicated specification.
 3. As long as the outer appearance doesn't affect the performance of the product, it can be changed without prior notice.
 4. DIM these dimension inside of the square are cutting area.

		NO	DESCRIPTION	MATERIAL	FINISH	DATE/REV	NOTE
		SCALE	UNIT	DRAWN	NO. 0015	ITEM NAME	
	2:1			JE Yang	Outline Drawing		
				KJ Yu			
				Approved	ITEM NO		
					TWBU-1001D / WIFI		
					Dwg No		
					1/1		

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9. Packing Information



PART NO.	NAME	MATERIAL	SPEC.	FINISH	A4 SIZE
○		⊕	UNIT mm	SCALE N/A	5PKQ00633A
		APPD.	CHKD.	DSGD.	DRAW.
		/	'14.09.05 Yang J. E.	'14.09.05 Yu K. J.	'14.09.05 Muhamad Wiradinata
○	DATE OR NO.	APPD	CHKD	DSGD	TITLE Packing Tray
○					DOCUMENT NO. 1/2

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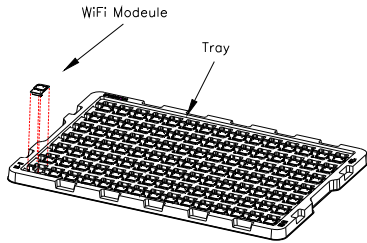
REV.NO : 1.0

REV. DATE : 2014.10.29

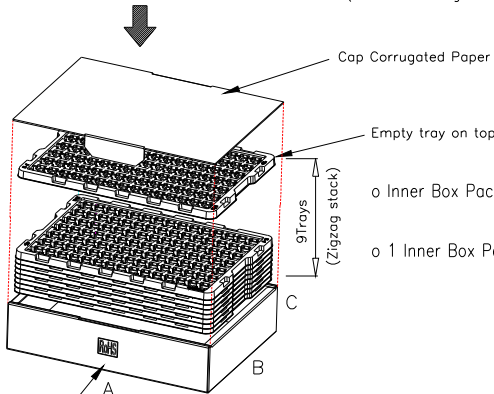
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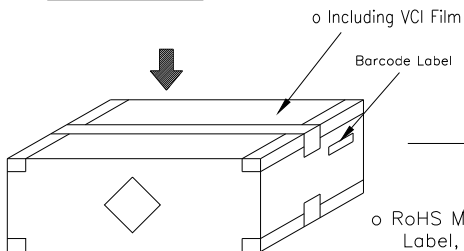
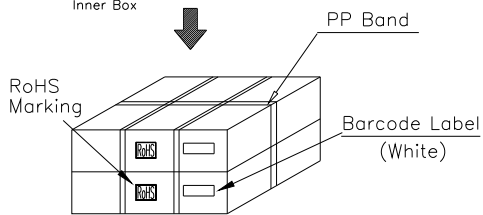
PACKING SPECIFICATION



- o 1 Tray Packing Q'ty : 105EA
- o Size : W X D X H : 503 * 355 * 18.2
- o 1 Tray Packing Weight : 0.48±0.1kg
(1 Module Weight : 2.62±1g)



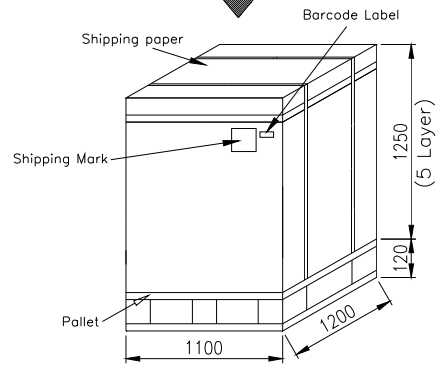
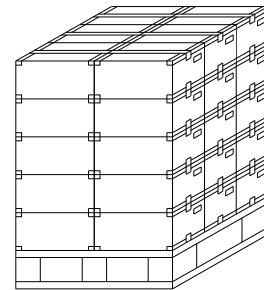
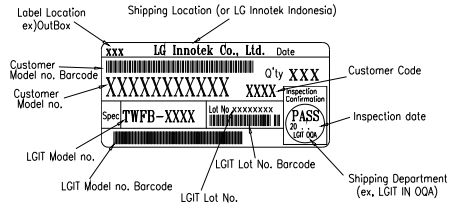
- o Inner Box Packing Q'ty : 840EA
- o 1 Inner Box Packing Weight : 4.6±0.5kg



- o Carton Box Packing Q'ty : 1,680EA
- o Size : W X D X H : 514 * 394 * 248
- o 1 Carton Box Packing Weight : 10.0±0.8kg

- o RoHS Marking : Label, Stamp, Printing
- o Marking Color : Gray or Red for Stamp, Label, Printing on the Board and etc. Black only for Printing on Label.

BARCODE LABEL SPECIFICATION



(CARTON BOX : 30EA)

- o Box Material : Corrugated Paper
- o Total Packing Q'TY : 50,400FA
- o Total Packing Weight : 302±5kg

PART NO.		NAME		MATERIAL		SPEC.		FINISH		A4
						UNIT mm	SCALE N/A	TWBU-T001D TWBI-H001D		
						DSGD.	DRAW.	TITLE EXP. Packing Specification		
						APPD.	CHKD.	DOCUMENT NO.		2/2
ZONE	SYMB	DATE OR NO.	APPD	CHKD	DSGD	'14.09.05 Yang J. E.	'14.09.05 Yu K. J.	Muhamad Wiradinata		