Ka-band 10W BUC

Model No. NJT5836L / NJT5836H

RF Frequency	:	27,652 to 28,388 MHz / 28,072 to 29,071 MHz
LO Frequency	:	26,600 MHz / 27,200 MHz
IF Frequency	:	1,052 to 1,788 MHz / 972 to 1,871 MHz
IF / Ref. (10MHz) Input	:	N-type Female Connector
DC Power Input	:	MS Connector
M&C Option	:	Ethernet Interface M&C

There are two frequency ranges, a high band unit and a low band unit, which operate in different parts of the O3b spectrum. The low band units operate in O3b channels 1, 2, and 3. The high band units operate in O3b channels 3, 4, and 5.

Specifications
Rev.1.0 March 24, 2016

Caution

1. NJRC strives to produce reliable and high quality microwave components. NJRC's microwave components are intended for specific applications and require proper maintenance and handling. To enhance the performance and service of NJRC's microwave components, the devices, machinery or equipment into which they are integrated should undergo preventative maintenance and inspection at regularly scheduled intervals. Failure to properly maintain equipment and machinery incorporating these products can result in catastrophic system failures.

2. To ensure the highest levels of reliability, NJRC products must always be properly handled. The introduction of external contaminants (e.g. dust, oil or cosmetics) can result in failures of microwave components.

3. NJRC offers a variety of microwave components intended for particular applications. It is important that you select the proper component for your intended application. You may contact NJRC's sales office or sales representatives, if you are uncertain about the products listed in the catalog and the specification sheets.

4. Special care is required in designing devices, machinery or equipment, which demand high levels of reliability. This is particularly important when designing critical components or systems whose foreseeable failure can result in situations that could adversely affect health or safety. In designing such critical devices, equipment or machinery, careful consideration should be given to, amongst other things, their safety design, fail-safe design, back-up and redundancy systems, and diffusion design.

5. The products listed in the catalog and specification sheets may not be appropriate for use in certain equipment where reliability is critical or where the products may be subjected to extreme conditions. You should consult our sales office or sales representatives before using the products in any of the following types of equipment.
   * Aerospace Equipment
   * Equipment Used in the Deep Sea
   * Power Generator Control Equipment (nuclear, steam, hydraulic)
   * Life Maintenance Medical Equipment
   * Fire Alarm/Intruder Detector
   * Vehicle Control Equipment (automobile, airplane, railroad, ship, etc.)
   * Various Safety Equipment

6. NJRC's products have been designed and tested to function within controlled environmental conditions. Do not use products under conditions that deviate from methods or applications specified in the catalog and specification sheets. Failure to employ NJRC's products in the proper applications can lead to deterioration, destruction or failure of the products. NJRC shall not be responsible for any bodily injury, fires or accidents, property damage or any consequential damages resulting from the misuse or misapplication of its products. PRODUCTS ARE SOLD WITHOUT WARRANTY OF ANY OF KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

7. The product specifications and descriptions listed in the catalog and specification sheets are subject to change at any time, without notice.

1. Model Number

- **N J T 5 8 3 6 L** **L : Low-band**
- **N J T 5 8 3 6 H** **H : High-band**

2. Electrical Specifications

2-1.	The BUC shall cover the entire O3b frequency band using one of two separate units.	
2-2.	Low-band output frequency Low-band Local frequency	27652 to 28388 MHz 26600 MHz
2-3.	High-band output frequency High-band Local frequency	28172 to 29071 MHz 27200 MHz
2-6.	Saturated Output Power	+40 dBm min. @ Ta = -20, +25 °C +39 dBm min. @ Ta = +55 °C
2-7.	ACPR Measured at 1.5 times the symbol rate from the carrier, when driven with a DVB-S2 waveform using 8PSK at a data rate of 1 Mbps.	-25 dBc max. @ Pout = +38 dBm
2-8.	Input Frequency Range [Low-band] [High-band]	 1,052 to 1,788 MHz 972 to 1,871 MHz
2-9.	Input Return Loss	10 dB min.
2-10.	IF Input Connector	N-type female connector
2-11.	Output interface	Waveguide, WR-28 (with Groove)
2-12.	Output Return Loss	10 dB min.
2-13.	Maximum IF input power Conversion Gain @ IF Gain Control 0dB	-20 dBm max. 61 dB min., 71 dB max. over temperature
2-14.	Gain Variation over the 216 MHz band @ fixed temperature	3 dBp-p max.
2-15.	Gain Stability over temperature @ fixed frequency	5 dBp-p max.
2-16.	Requirement for External Reference [Frequency] [Frequency Stability] [Input Power] [Phase Noise]	 10 MHz (sine-wave) +/-5 ppm max. over all conditions -5 to +5 dBm @ Input port -105 dBc/Hz max. @ 10 Hz -130 dBc/Hz max. @ 100 Hz -150 dBc/Hz max. @ 1 kHz -155 dBc/Hz max. @ 10 kHz
2-17.	Spurious emission excluding harmonics Tx noise output @ IF Gain Control 0dB IF harmonics(IDU)	-60 dBc max. @ Pout = +38 dBm -83 dBm/Hz max. -60 dBc max.
2-18.	L.O. Phase Noise	-60 dBc/Hz max. @ 100 Hz -73 dBc/Hz max. @ 1 kHz -83 dBc/Hz max. @ 10 kHz -93 dBc/Hz max. @ 100 kHz
2-19.	Group Delay over the 216 MHz band	+/-5 nsec max.
2-20.	The BUC Shall be unconditionally stable when powered but with no input drive or load.	
2-21.	An Ethernet port for Monitor and Control shall be provided via an external connector.	

Drawing No. CMSE-T5836(1)-1.0

2-22.	M&C monitor functions	Temperature Output Power LO Status
2-23.	M&C control functions [Gain control step] [Gain control range] [Power monitor dynamic range] [Power Monitor Accuracy]	 1dB 0 to 15 dB 12 dB @ Pout = +27 to +39 dBm +/- 1.0 dB typ.
2-24.	Output mute command [Mute On/Off Isolation] External Mute Control	 40 dB min. The BUC shall have an external mute control independent of the M&C function through access to connector pins. When an external open collector input is open, the BUC shall be muted. When this input is closed, the BUC shall be un-muted. ** Details of connector pins are mentioned on Input Interface Specifications.*
2-26.	DC power input	Power shall be applied through a separate MS connector.
2-27.	DC input voltage range	+22 to +56 VDC
2-29.	Power consumption	170 W max.
2-30.	Power consumption of the BUC when in the mute condition	 25 W max.
2-32.	Weight	4.5 kg max.
2-34.	Dimension	168(L) × 149.6(W) × 90(H) mm without interface connectors and screws
2-35.	MTBF Based on Ta = +40°C	90,000 hours min.

3. Input Interface Specifications

3-1. Input Interface

[IF Connector]
N-type, female
IF / Ref. Input

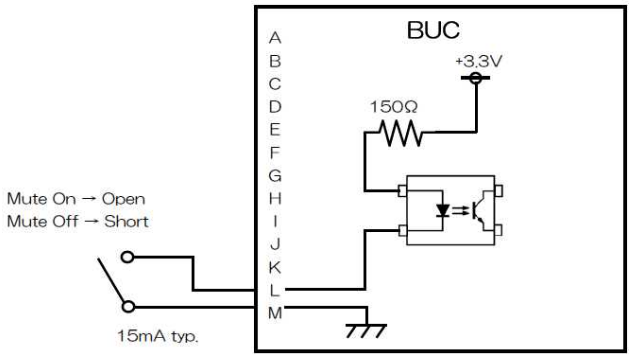
[DC Input]
MS Connector

- MS Connector -
Part No.: PT02E-14-12P (025)
Mating connector: PT06E-14-12S (470)
Assignment:

PIN #	Function
A	Tx - (Ethernet)
B	Tx + (Ethernet)
C	Rx + (Ethernet)
D	Rx - (Ethernet)
E	Option RTS (RS232)
F	Option CTS (RS232)
G	Option TxD (RS232)
H	Option RxD (RS232)
J	DC Power +
K	DC Power – (Return·GND)
L	Mute +
M	Mute - (Return)

DC Power is applied through MS Connector using J and K Pins.

[External Mute]
The BUC shall have an external mute control independent of the M&C function through access to connector pins. When an external open collector input is open, the BUC shall be muted. When this input is closed, the BUC shall be un-muted.

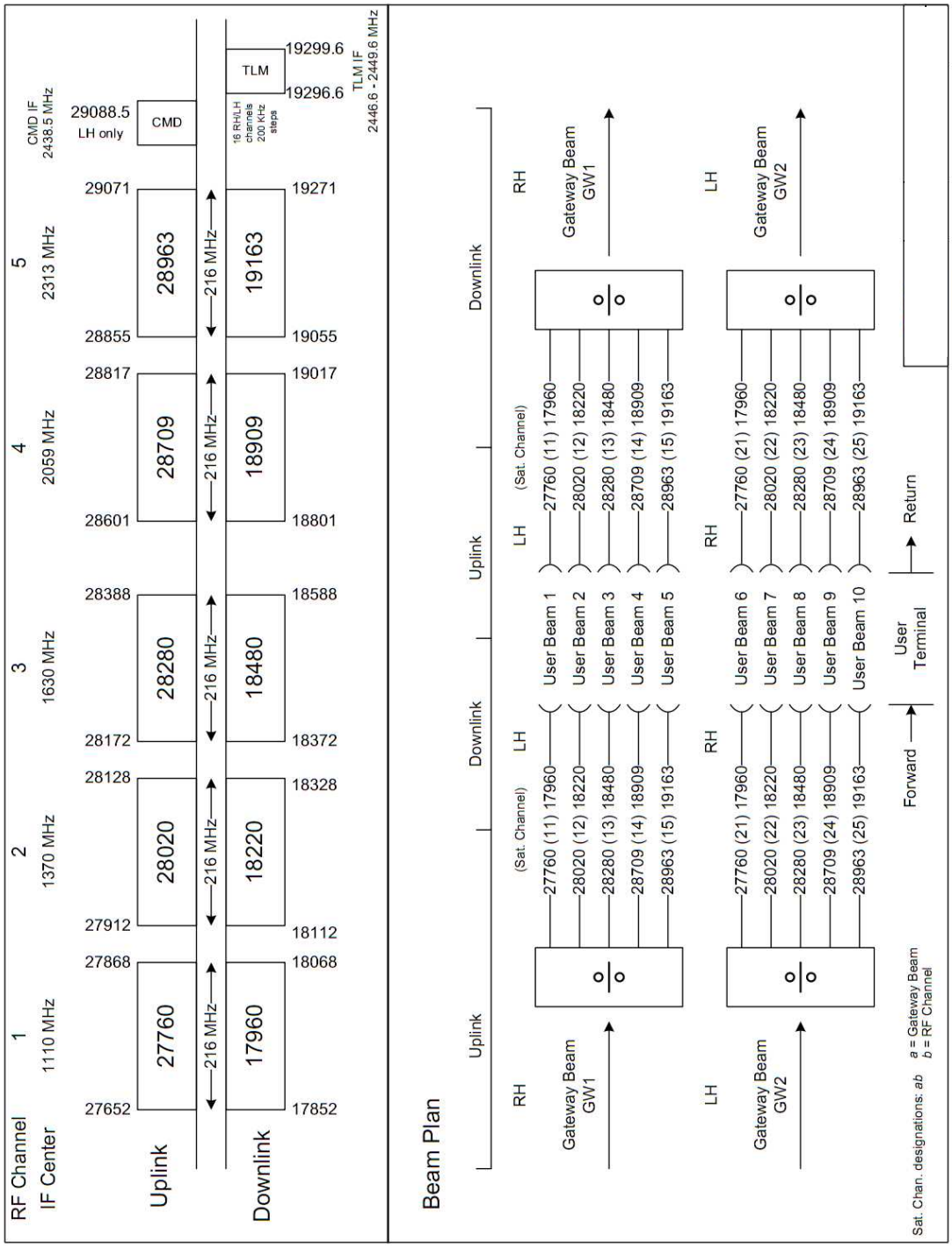


The terminal 'L' is pulled up to 3.3V by 150 ohm resister and photocoupler in the BUC.

4. Environmental Specifications

4-1.	Temperature Range (ambient) [Operating] [Storage]	 -20 to +55 °C -20 to +55 °C
4-2	Humidity	0 to 100 %
4-3.	Altitude	10,000 feet (3,048 m)
4-4.	Lightning protection	+/-5 kV max.
4-5.	Electrostatic discharge	+/-15 kV max.
4-6.	All exposed fasteners should be stainless or galvanized.	
4-7.	The BUC must be able to operate in dry and dusty environments typical of arid locations.	
4-8.	The BUCs must be able to withstand salty environments typical of coastal locations. Cosmetic staining, oxidation, and/or tarnishing of the hardware may occur but shall not impact system operation or performance. MIL-STD-810G METHOD 509.3 Salt Fog Condition 5 ± 1 percent salt solution 35 ±2°C 48 hours of exposure Criteria No corrosion	
4-9.	The packaged BUCs shall survive with no damage under normal shock and vibration encountered in land, air, and sea transport.	

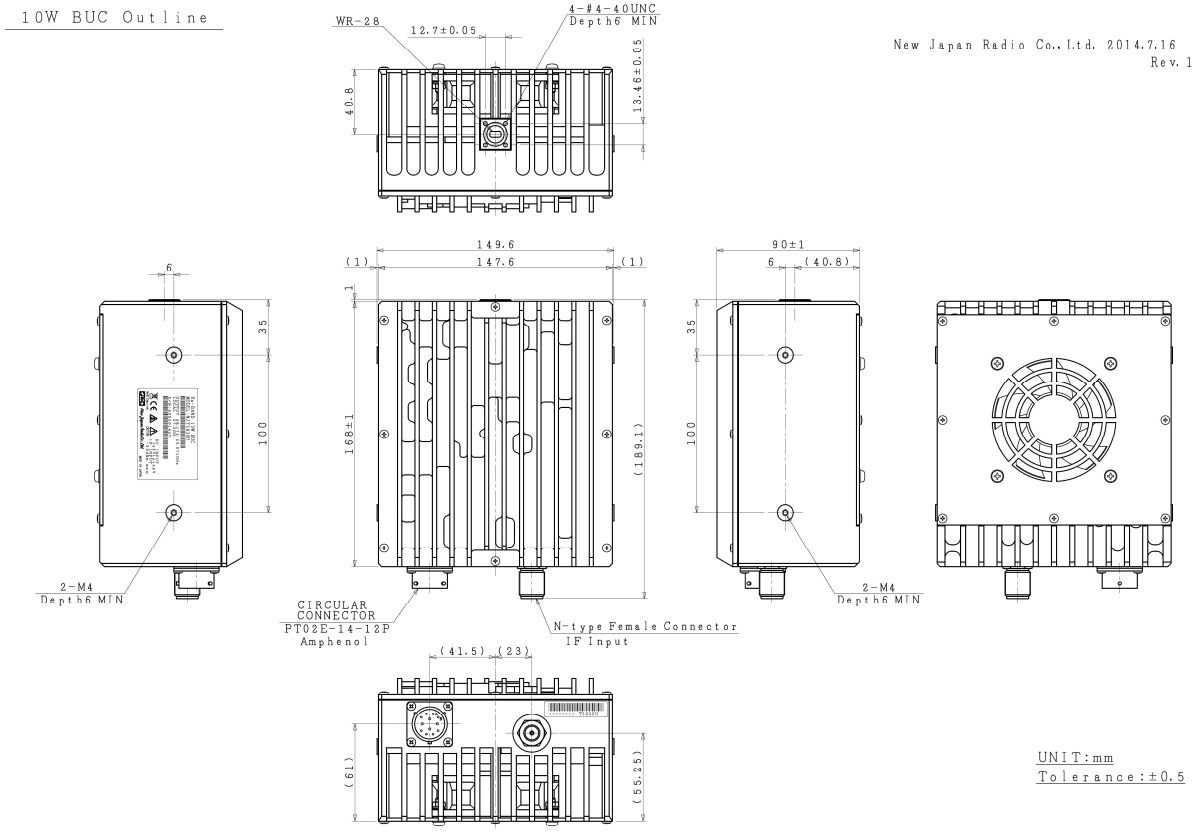
5. O3b Frequency Plan



Drawing No. CMSE-T5836(5)-1.0

6. Outline Drawing

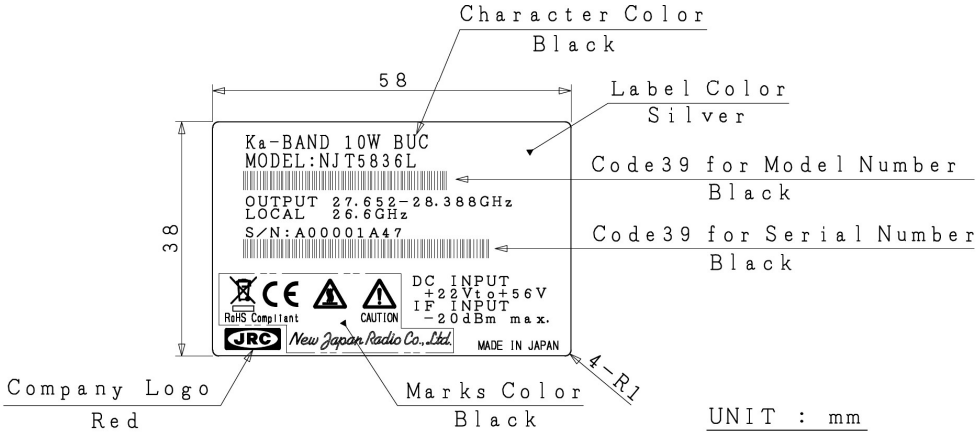
- IF / Ref. Input: N-type Female Connector
- MS Connector equipped



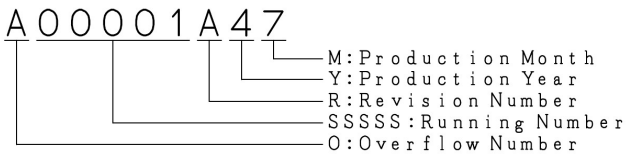
Drawing No. CMSF-T5836(1)-1.0

7. Label

Product Label
Model:NJT5836L



Serial Number(OSSSSSRYM)-ALPHANUMERIC(9 characters)



O:Overflow Number-ALPHABET(1 character)
"A" to "Z", e.g.:A99999⇒B00001

SSSSS:Running Number-NUMBER(5 digits)
"00001" to "99999"

R:Revision Number-ALPHABET(1 character)
"A" to "Z"

Y:Production Year-NUMBER(1 digit)
Calendar Number, e.g.:2009:9, 2010:0, 2011:1, 2012:2・・・

M:Production Month-ALPHANUMERIC(1 character)
"1" to "9", "X" as October, "Y" as November, "Z" as December

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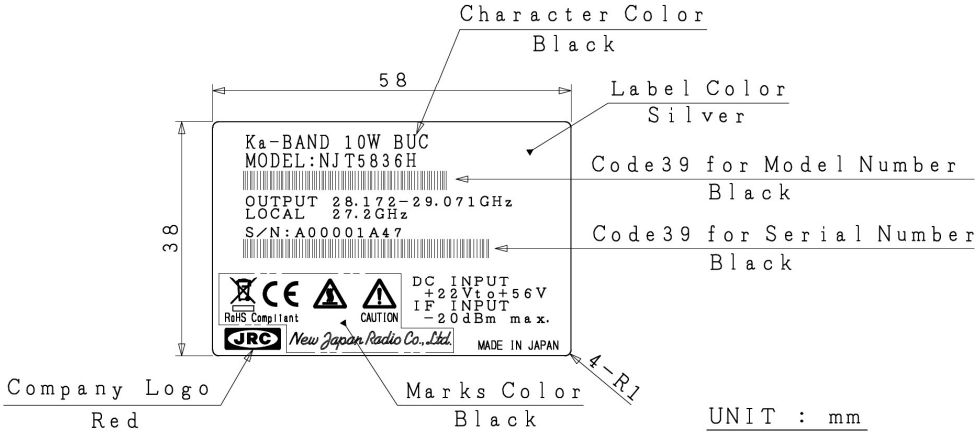
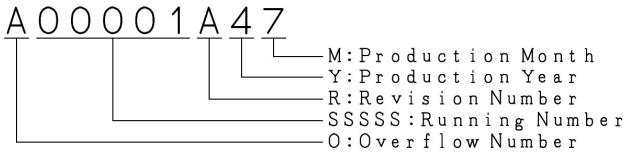
Product Label

Model:NJT5836H



Serial Number(OSSSSSRYM)-ALPHANUMERIC(9 characters)



O:Overflow Number-ALPHABET(1 character)
"A" to "Z", e.g.:A99999⇒B00001

SSSSS:Running Number-NUMBER(5 digits)
"00001" to "99999"

R:Revision Number-ALPHABET(1 character)
"A" to "Z"

Y:Production Year-NUMBER(1 digit)
Calendar Number, e.g.:2009:9, 2010:0, 2011:1, 2012:2・・・

M:Production Month-ALPHANUMERIC(1 character)
"1" to "9", "X" as October, "Y" as November, "Z" as December

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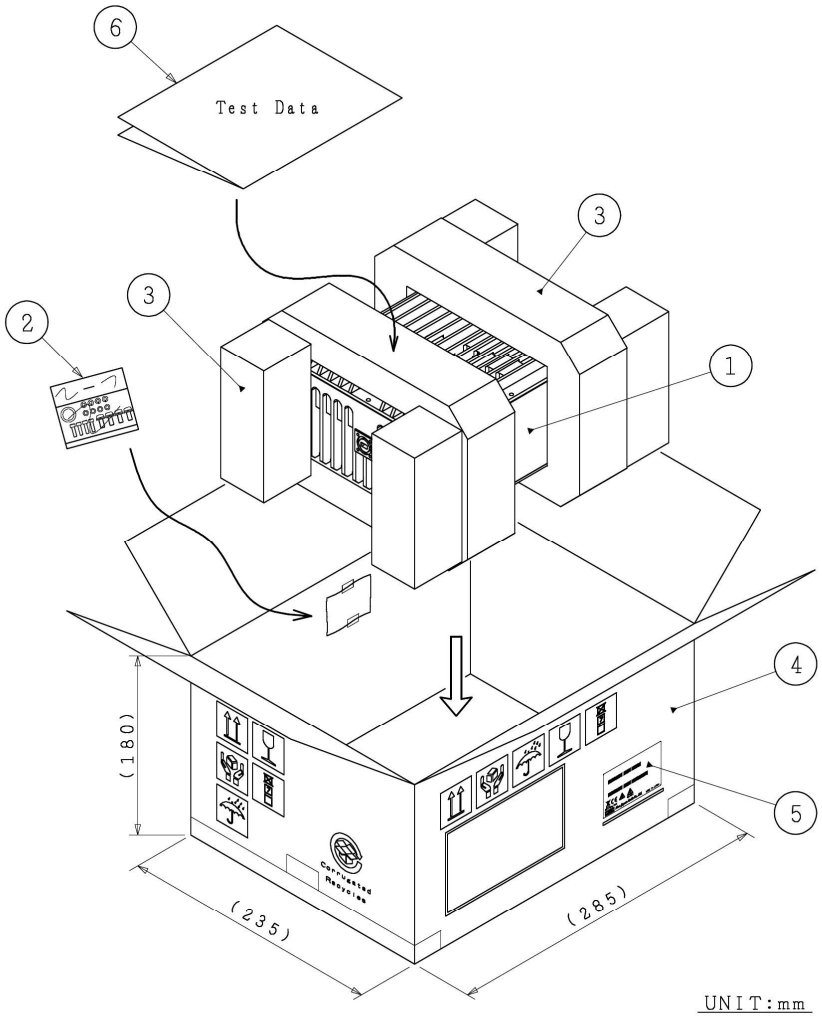
8. Packaging Container



①:BUC
②:Accessories
・O-RING
・Hexagon Socket Head Bolts
#4-40×3/8Inch 4pieces(SUS) for Waveguide Flange Holes
・Plain Washers
M2.6 type 4pieces(SUS) for Weveguide Flange Holes
・Spring lock washers
M2.6 type 4pieces(SUS) for Weveguide Flange Holes
・Cross Recessed Head Screws
M4×10 4 pieces(SUS, SW and W)
③:Polyethylene Foam For Package Cushioning
④:Corrugated Fibreboard(Double Wall)
⑤:Label
⑥:Test Data

Drawing No. CMSP-T5836(1)-1.0