



SPECIFICATION

DVB-T Diversity Receiver

1.SCOPE

The DY-7K1MM is intended for the reception of DVB-T compliant MPEG2 signals (full TES 300 744 compliant)

in combination with the tuner ,all functions are integrated to deliver a corrected stream given DVB-T encoded signal(2k or 8k mode)with 6,7,8 MHz bandwidth.

The Receiver for mobile application.

2.GENERAL SPECIFICATIONS

2-1. RECEIVING FREQUENCY RANGE	:VHF 174~227MHz UHF 474~858MHz	
2-2. SUPPLY VOLTAGE	:B1 2.8V +/- 0.1V B2 1.2V $\begin{smallmatrix} 0 \\ +0.1 \end{smallmatrix}$ B3 2.8V +/- 0.1V	Ripple < 10mV Ripple < 7mV
2-3. CONSUMPTION CURRENT	:B1 2.8V 270 mA typ B2 1.2V 340 mA typ B3 2.8V 10 mA typ	

Note:

1.2V should always come before 2.8V whenever DVB-T STB is power-on under any circumstance, That 2.8V comes before 1.2V will burn out DiB7000P.

B3 power supply is for DiB7000 TS and Data TTL Driver Out.

The voltage could be 2.8V or 3.3V depending on back-end IC specification.

2-4. OPERATION AND STORAGE	TEMPERATURE 0~50°C
CONDITIONS FOR GUARANTEE	HUMIDITY 85% OR LESS

3.TEST CONDITIONS

3-1. TESTING AMBIENT CONDITIONS

DEFINED AS TEMPERATURE OF 25+/-2°C AND HUMIDITY OF 65+/-5% RH.

NOTE : THAT TEMPERATURES OF 5~30°C AND HUMIDITY OF 45~85% MAY BE REGARDED AS STANDARD.

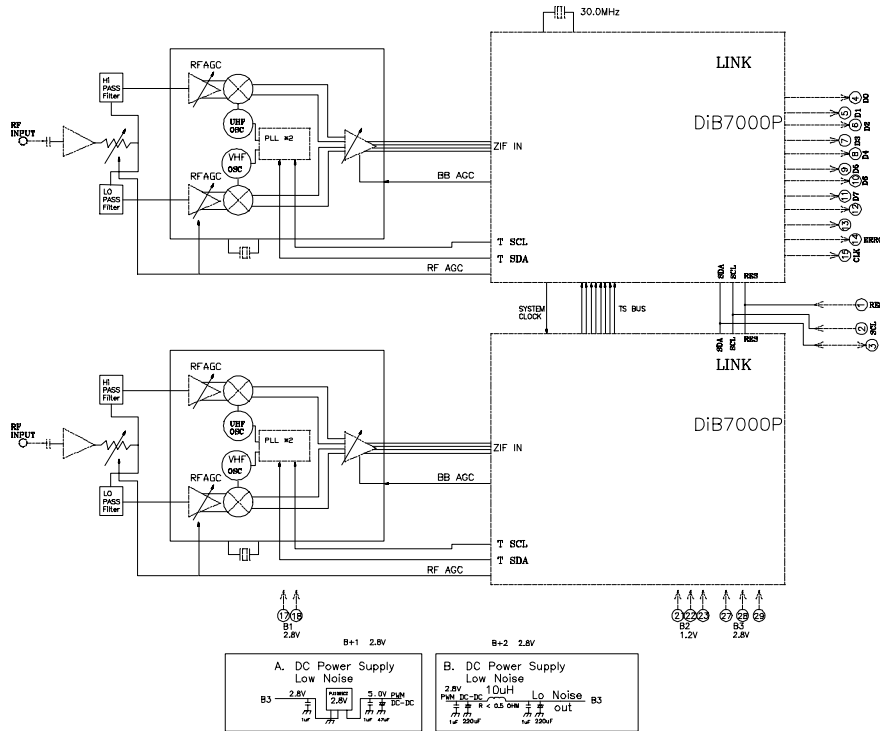
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DVB-T Diversity Receiver

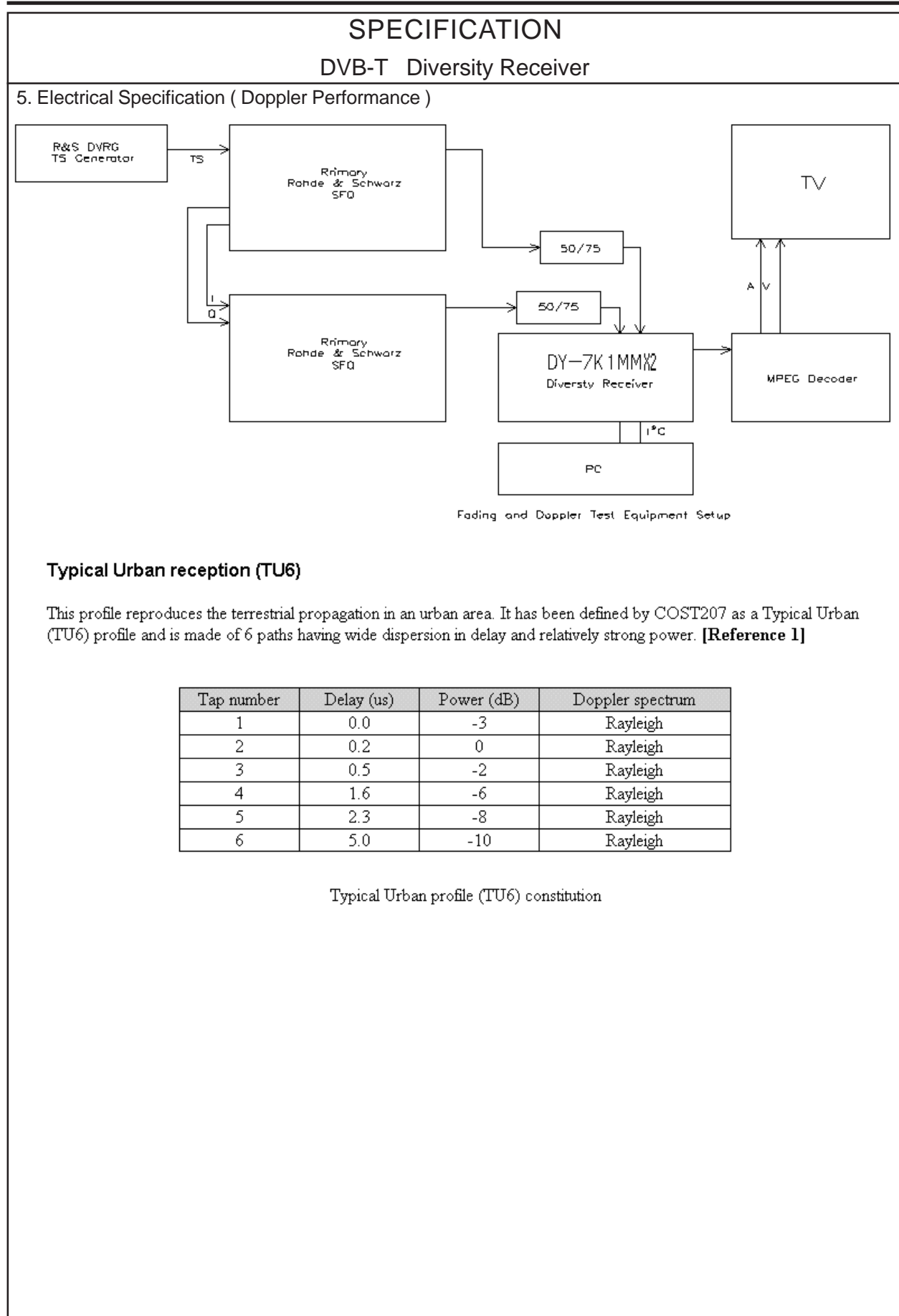
4. Electrical Specifications

Electrical Characteristics Control refer to DiBcom 7000P date sheet, and MT2266 data sheet

Circuit block diagram



NO.	ITEM	CNODITION	MIN.	TYP.	MAX.	NOTES.
5.0 Electrical Characteristics Control refer to DiB7000P data sheet						
5.1	C/N in AWGN 8MHz, G1/4, RF=50dBm RS uncorrected error=0	8K 64QAM R7/8		22.5		dB
		8K 64QAM R2/3		18.7		dB
		8K 64QAM R1/2		16.5		dB
		8K 16QAM R3/4		14.6		dB
		8K 16QAM R2/3		13.1		dB
5.2	Sensitivity in AWGN 8MHz, GI=1/4 RS uncorrected error=0	8K 64QAM R7/8		-72		dBm
		8K 64QAM R2/3		-76		dBm
		8K 64QAM R1/2		-80		dBm
		8K 16QAM R3/4		-81		dBm
		8K 16QAM R2/3		-84		dBm
5.3	C/N in 0dB Echo 8MHz, 658MHz, G1/4, RF=-50dBm Criticon: Picture Quality	8K 64QAM R3/4		27.6		dB
		8K 64QAM R2/3		23.2		dB
5.4	Echo Outside Guard Interval RS uncorrected error=0 8MHz, 658MHz, RF=-50dBm	8K 64QAM R=3/4 GI=1/4 -/+260uS		15		dB(PATH LOSS)
		8K 64QAM R=2/3 GI=1/8 -/+260uS		12		dB(PATH LOSS)
5.5	Frequency Offset	8K, 8MHz, 64QAM, R2/3, G1/8, -60dBm	-200		+200	KHz
5.6	Immunity to Digital ACI 8MHz, 658MHz RS uncorrected error=0	8K, 64QAM, R=2/3, GI=1/8(N+/-1)		28		dB
5.7	Mobile Performance RF Level=-50dBm, 658MHz 8MHz, C/N=OFF Average Packet Error Rate <math> < 5 \times 10^{-3}</math>	2K, 16QAM, R=3/4, GI=1/3		300		km/h
		8K, 64QAM, R=1/2, GI=1/4		105		km/h
		8K, 64QAM, R=2/3, GI=1/4		80		km/h



SPECIFICATION
DVB-T Diversity Receiver

Rural Area reception (RA6)

This profile reproduces the terrestrial propagation in a rural area. It has been defined by COST207 as a Rural Area (RA6) profile and is made of 6 paths having relatively short delay and small power. **[Reference 1]**

Tap number	Delay (us)	Power (dB)	Doppler spectrum
1	0.0	0	Rice
2	0.1	-4	Rayleigh
3	0.2	-8	Rayleigh
4	0.3	-12	Rayleigh
5	0.4	-16	Rayleigh
6	0.5	-20	Rayleigh

Table 2: Rural Area profile (RA6) constitution

0dB Echo with Doppler

This profile has been defined by member of the Motivate group. The 0dB echo profile is then made of two rays having the same power, delayed from half the Guard Interval value and presenting a pure Doppler characteristic. The Doppler frequency f_d is defined to be half the frequency separation of the two paths. **[Reference 1]**

Tap number	Delay (us)	Power (dB)	Doppler spectrum	Frequency ratio
1	0	0	Pure Doppler	-1
2	1/2 T _g	0	Pure Doppler	+1

Table 3: 0 dB echo with Doppler profile constitution

SPECIFICATION

DVB-T Diversity Receiver

Results

Typical Urban Reception (TU6) Results

The following results are the Doppler Frequency to achieve the point of failure of 1 picture artefact or error in a 20 second time period.

Modulation Mode	typ
8K 64QAM, FEC 1/2 and Guard Band 1/8	45Hz
8K 64QAM, FEC 2/3 and Guard Band 1/8	26Hz
2K 64QAM, FEC 2/3 and Guard Band 1/32	128Hz
2K 16QAM, FEC 3/4 and Guard Band 1/32	195Hz

Rural Area Reception (RA6) Results

The following results are the Doppler Frequency to achieve the point of failure of 1 picture artefact or error in a 20 second time period.

Modulation Mode	typ
8K 64QAM, FEC 1/2 and Guard Band 1/8	30Hz
8K 64QAM, FEC 2/3 and Guard Band 1/8	20Hz
2K 64QAM, FEC 2/3 and Guard Band 1/32	86Hz
2K 16QAM, FEC 3/4 and Guard Band 1/32	119Hz

0dB Echo With Doppler Reception (0dB) Results

The following results are the Doppler Frequency to achieve the point of failure of 1 picture artefact or error in a 20 second time period.

Modulation Mode	typ
8K 64QAM, FEC 1/2 and Guard Band 1/8	50Hz
8K 64QAM, FEC 2/3 and Guard Band 1/8	43Hz
2K 64QAM, FEC 2/3 and Guard Band 1/32	160Hz
2K 16QAM, FEC 3/4 and Guard Band 1/32	233Hz



SPECIFICATION

DVB-T Diversity Receiver

6. Electrostatic discharge

6.1 **Test**

Each front-end must be capable of normal performance following its subsection to the following tests:

MIL STD 883C HBM

Test is performed with a voltage discharge from a 100 **PF** capacitor over a 1500 **OHM** series resistance in the discharge path. There is a direct contact between the test probe head and the unit under test, using the test points and conditions detailed below:

- o Test to pins 1 through 30:
 - 3 successive ESD discharges of **+/-2 KVDC** between each pin and the front-end frame.

IEC 1000-4-2

Test is performed with a voltage discharge from a 150 **PF** capacitor over a 330 **OHM** series resistance in the discharge path. There is a direct contact between the test probe head and the unit under test, using the test points and conditions detailed below:

- o Test for antenna input socket **+/-8 KVDC**

6.2 **Handling**

Anyone handling a front-end must wear a properly grounded anti-static discharge bracelet to minimize **ESD** damage.

After each front-end is aligned and tested, it will be packed with anti-static poly foam or material prior to transportation and storage. This protective foam is to remain in place until the front-end is assembled and soldered onto the receiver main board.

SPECIFICATION

DVB-T Diversity Receiver

7 **Reliability test procedure & conditions**

Note: Room temperature = 25°C +/- 2°C

7.1 **Heat load test**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 60 °C
Period = 500 hrs
Cycle = 1.5 hrs on; 0.5 hrs off
Quantity = 10 pcs

- o Cool-down 0,5 hr at room temperature, then measured the DUTs within 1 hr
- o The test shall be continued to 1000 cycles for information only

7.2 **Humidity load test**

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 40 +/- 5 °C
Period = 24 hrs
Cycle = constantly on
Quantity = 24 pcs

- o Cool-down 0.5 hr at room temperature, then measured the DUTs within 1 hr
- o Load the DUTs again into chamber of following conditions:

Temperature = 40+/-5°C
Humidity = 90 to 95%
Period = 500 hrs
Cycle = 1.5 hrs on; 0.5 hrs off
Quantity = 20 pcs

- o Cool down 0.5hr at room temperature, then measured the DUTs within 1 hr

SPECIFICATION
DVB-T Diversity Receiver

7.3 Cold test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:
 - Temperature = -2 +/-5 °C
 - Period = 500 hrs
 - Cycle = constantly on
 - Quantity = 10 pcs

- o Warm up for 2 hrs at room temperature, then measured the DUTs within 1 hr

7.4 Thermal shock

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:
 - Temperature = -25°C for 60 min
 ↓ ↑
 80°C for 60 min
 - Period = 200 cycles
 - Power = power off
 - Quantity = 10 pcs

- o Cool-down 0,5 hr at room temperature then measured the DUTs within 1 hr

7.5 Temperature cycle test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:
 - Temperature = -5°C for 16 hrs then 60°C for 8 hrs
 - Period = 500 hrs
 - Cycle = constantly on
 - Quantity = 10pcs

- o Cool down 0.5 hr at room temperature, then measured the DUTs within 1 hr
- o Load the DUTs again into chamber of the following conditions:
 - Temperature = 40 +/- 5°C
 - Humidity = 90 to 95%
 - Period = 500 hrs
 - Cycle = 1.5 hrs on; 0.5 hrs off
 - Quantity = 10 pcs

- o Cool down 0.5 hr at room temperature, then measured the DUTs within 1hr

SPECIFICATION**DVB-T Diversity Receiver****7.6 Vibration test**

- o Frequency: 3,5 Hz
- o Vertical amplitude: 15 to 25 mm
- o Duration: 1 hr
- o Quantity: 1 carton

7.7 Drop test

- o Packaged apparatus: <or = 50 kg
- o Height: depend on weight
- o 1 corner + 3 edger + 6 faces

Drop on the weakest corner (point G)

Drop on the shortest edge on contact with point G

Drop on average edge in contact with point G

Drop on the longest edge in contact with point G

Drop flat wise on the side of minimum surface

Drop flat wise on the side of opposite minimum surface

Drop flat wise on the side of average surface

Drop flat wise on the side of opposite average surface

Drop flat wise on the side of maximum aurface

Drop flat wise on the side of opposite maximum surface

- o Quantity :1 carton

7.8 Life test

- o Measure the DUTs at room temperature
- o Load the DUTs into chamber of the following conditions:

Temperature = 60 °C

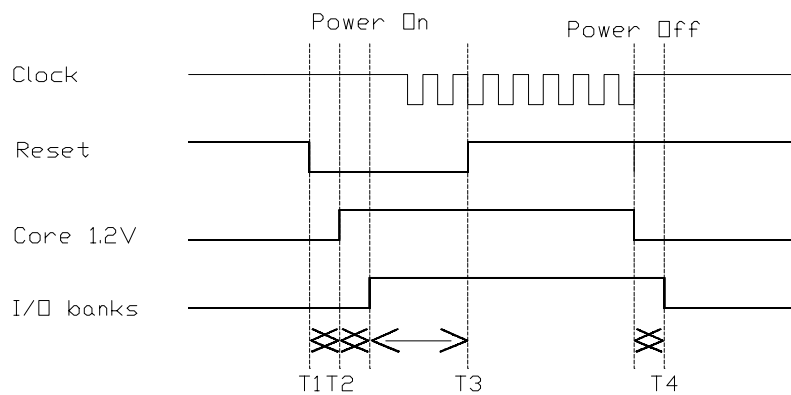
Period = 500 hrs

Cycle = constantly on

Quantity = 20 pcs

- o Cool down 0.5 hr at room temperature, then measured the DUTs within 1hr

SPECIFICATION
DVB-T Diversity Receiver

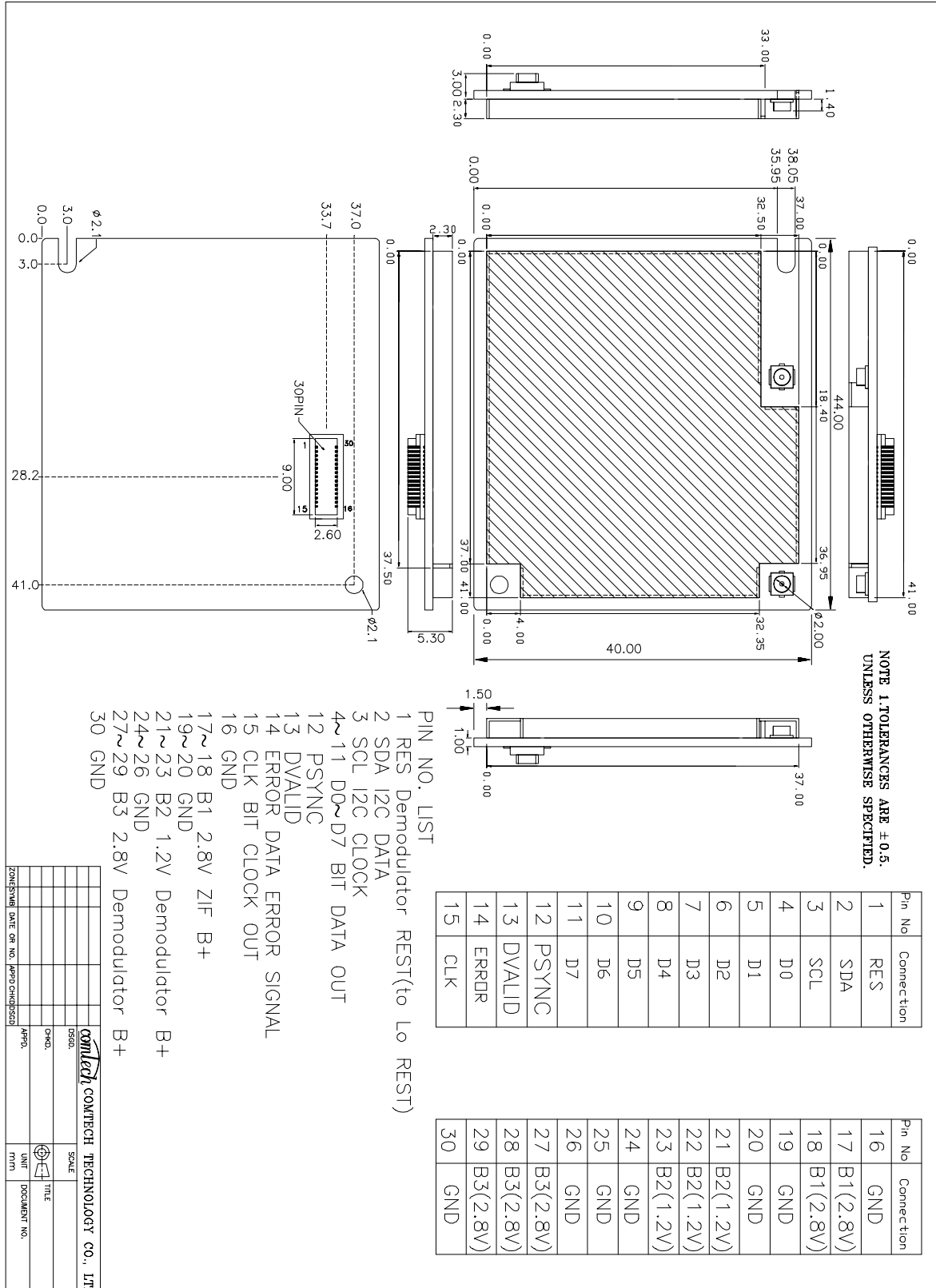


power on and off sequence

1. DiB IC can support I2C clock up to 1MHZ
2. After reset release,you can send immediatly I2C messages.Maybe wait 1-2 clock cycle before sending I2C message,just to be sure.
3. The only limit is $T3 > 10ms$.

SPECIFICATION

DVB-T Diversity Receiver



DATE	DR NO.	APPD.	CHKD.	SCALE	TITLE
COMTECH TECHNOLOGY CO., LTD.			UNIT		
ZONES/STAGE			MM		
DATE OR NO.			DOCUMENT NO.		