

FOR APPROVAL

We are pleased in sending you herewith our specifications and drawings for your approval.

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COMMODITY : MINI DVB-T NIM FOR PORTABLE APPLICATION
MODEL NUMBER: DTN-709ATW/DTN-709HEU (U+VH BAND)

ISSUE DATE : 26th,May,2007
T-NIM VERSION: V2.0
APPROVED DATE: _____

APPROVED		SIGNATURES	
APPROVED	REVIEWED BY	CHECKED BY	

1. GENERAL DESCRIPTION

This Specification covers mobile diversity DVB-T T-NIM intended for application of car system. The T-NIM with compliant with ETSI 300 744 and included PLL & COFDM Demodulator in 2 single chips, lowest power consumption (1W) and only 10CC Size.

2. GENERAL SPECIFICATIONS

2 - 1	Receiving frequency range	UHF 470MHz ~ 862MHz VHF 174MHz ~ 230MHz
2 - 2	RF Input level	- 78dBm ~ -20dBm
2 - 3	RF Input connector	2 F-Terminal
2 - 4	Nominal input impedance	75 ohm
2 - 5	Channel selection system	Electronic tuning , PLL synthesizer
2 - 6	Step frequency	166.67kHz
2 - 7	Voltage Gain	35dB min.
2 - 8	IF frequency	Zero IF (IQ)
2 - 9	Band width	6/7/8MHz(software selectable)
2 - 10	COFDM-Demod. IC	DiB7070M DiBcom X2
2 - 11	Operating voltage and current	
	Supply voltage & current	DC 3V3 ± 0.15V 10mA Max. DC 1.8V±0.10V DC 600 mA Max.
2--12	Temperature	Operation -10 °C ~ 50°C Storage -20 °C ~ 70°C
2 - 13	Humidity	Operating Less than 85% Storage Less than 95%
2--14	TESTING CONDITION	
	Supply voltage	3.3 ± 0.1V 1.8v ± 0.1V
	Ambient temperature	25 °C ± 5 °C
	Ambient humidity	65% ± 10%

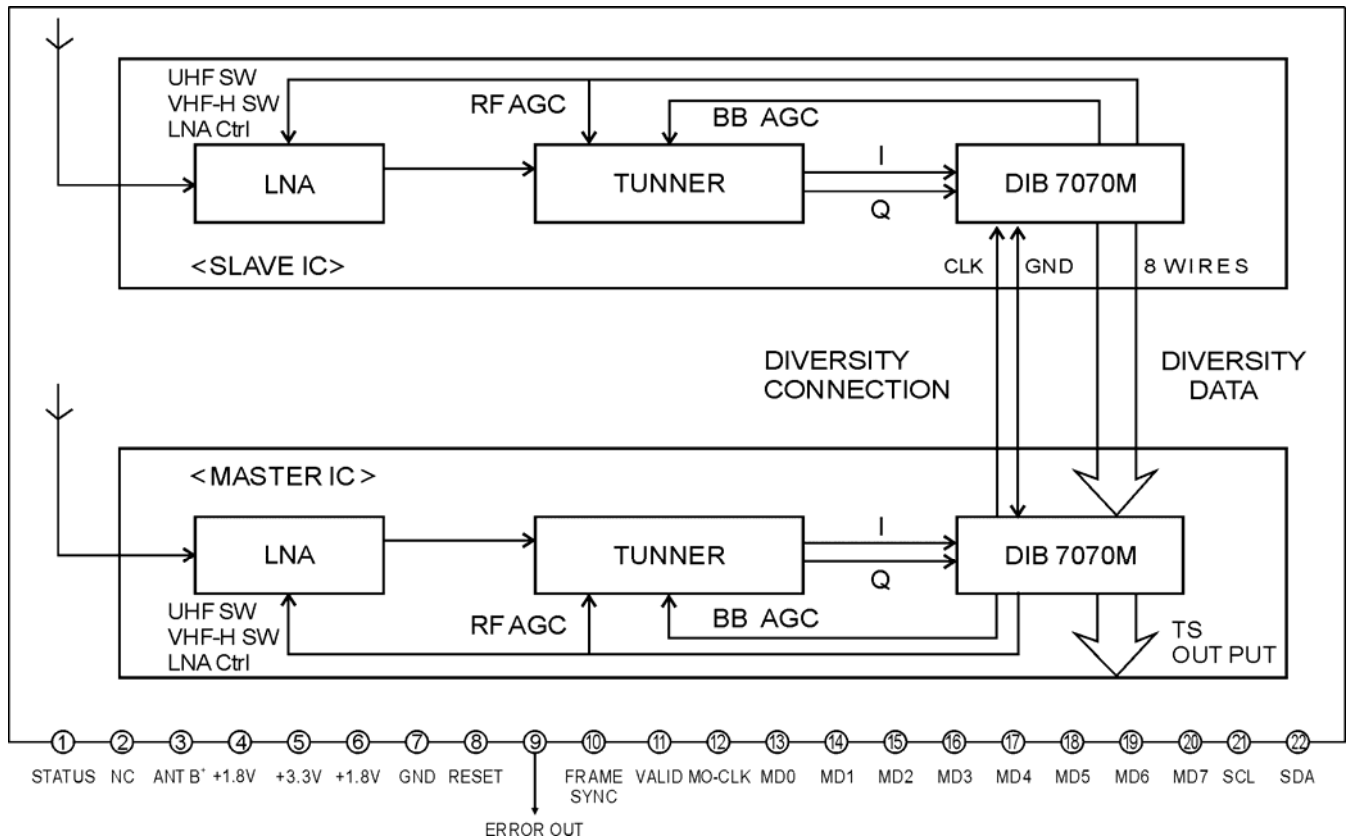
3.ELECTRICAL CHARACTERISTICS

NO	Item	Specification				Condition
		Min	TYP	MAX	Unit	
3-1	ANT Input Return Loss	5	8		dB	170 ~ 230, 470 ~ 862MHz
3-2	ANT leakage at input terminal			46	dBuV	150 ~ 950MHz
				54	dBuV	950 ~ 1750MHz
3-3	DVB-T TO DVB-T Image Rejection	28	35		dB	Input : -50dBm
3-4	PAL TO DVB-T Image Rejection	44	50		dB	Input : -50dBm
3-5	RF Sensitivity (Min. Input level)			-78	dBm	8k, 64QAM, 2/3 Code Rate 1/32 Guard Interval C/N OFF
	Max. Input Level			-20		
3-6	Active White Gaussian Noise condition			18.7	dB	BER 2×10^{-4} , -50dBm Input 8k, 64QAM, 2/3 Code Rate 1/32 Guard Interval
3-7	Image PAL-BG Interference Protection Ratio	-36			dB	8k mode, Input : -50dBm,
3-8	Adjacent PAL- BG Interference Protection Ratio(N+1)	-33			dB	8k mode, Input : -50dBm,
	Adjacent PAL-BG Interference Protection Ratio(N-1)	-33			dB	8k mode, Input : -50dBm,
	Adjacent DVB-T Interference Protection Ratio(N+1)	-28			dB	8k mode, Input : -50dBm,
	Adjacent DVB-T Interference Protection Ratio(N-1)	-28			dB	8k mode, Input : -50dBm,
3-9	Co-Channel PAL-I Interference Ratio C/I			+3	dB	8k mode,

4. PIN DISCRPTION

PIN	CONNECTION	PIN DESCRIPTION
1	STATUS	LOCK INDICATOR
2	NC	NC
3	ANT B+	ANT 5V POWER SUPPLY FOR ACTIVE ANTENA
4	+1.8V	DC 1.8V POWER SUPPLY
5	+3.3V	DC 3.3V POWER SUPPLY
6	+1.8V	DC 1.8V POWER SUPPLY
7	GND	GND
8	RESET(3.3V)	RESET PIN (SUPPORT 3.3V ONLY)
9	ERROR OUT	UNCORRECTABLE BLOCK INDICATOR
10	FRAME SYNC	MPEG OUT START SIGNAL
11	VALID	MPEG OUTPUT VALID
12	MO-CLK	MPEG OUTPUT CLOCK
13-20	MD0-MD7	MPEG DATA OUTPUT
21	SCL(3.3V)	I2C CLOCK (SUPPORT 3.3V PULL UP BY 3K3-4K7 ONLY)
22	SDA(3.3V)	I2C DATA (SUPPORT 3.3V PULL UP BY 3K3-4K7 ONLY)

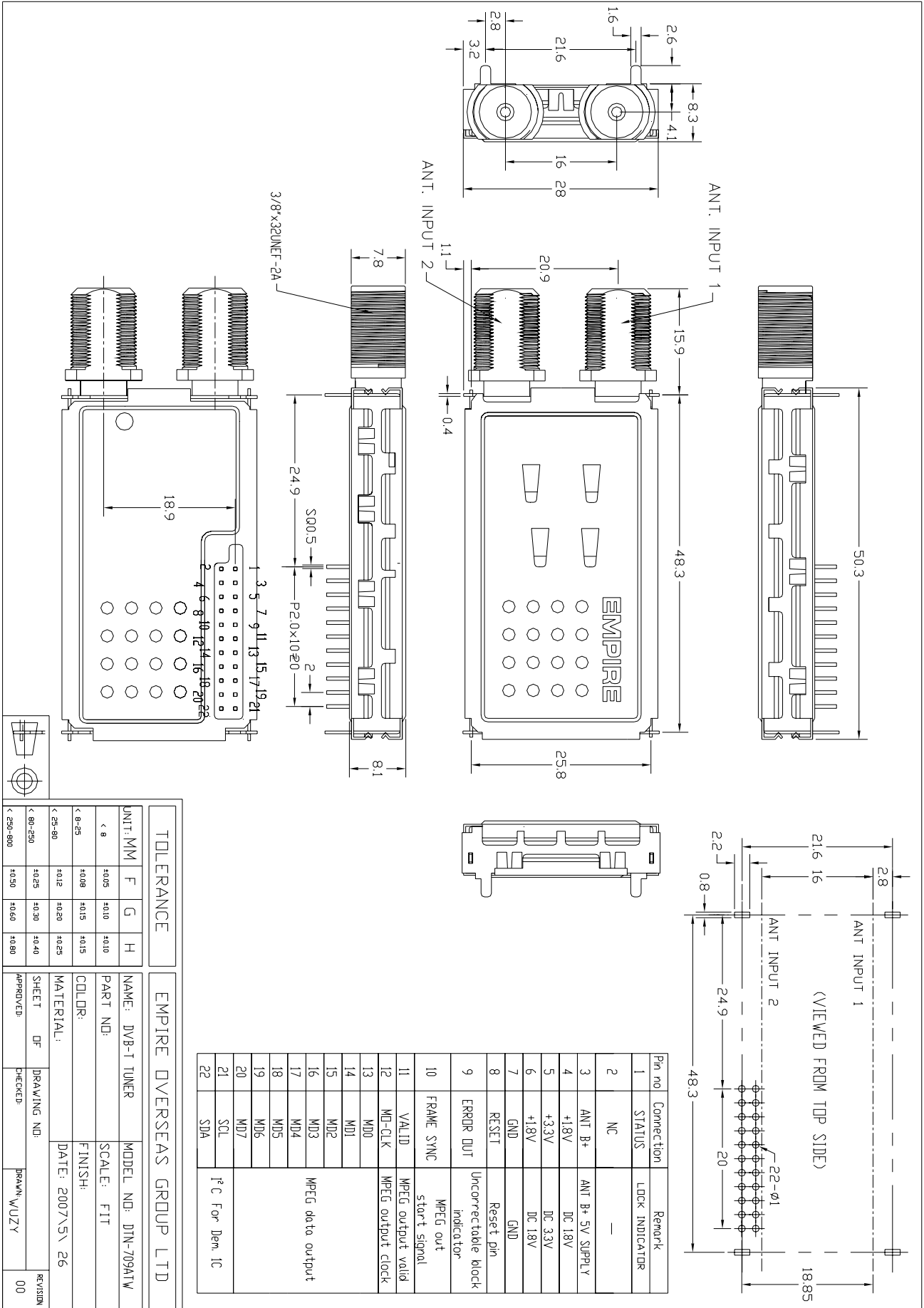
5. BLOCK DIAGRAM



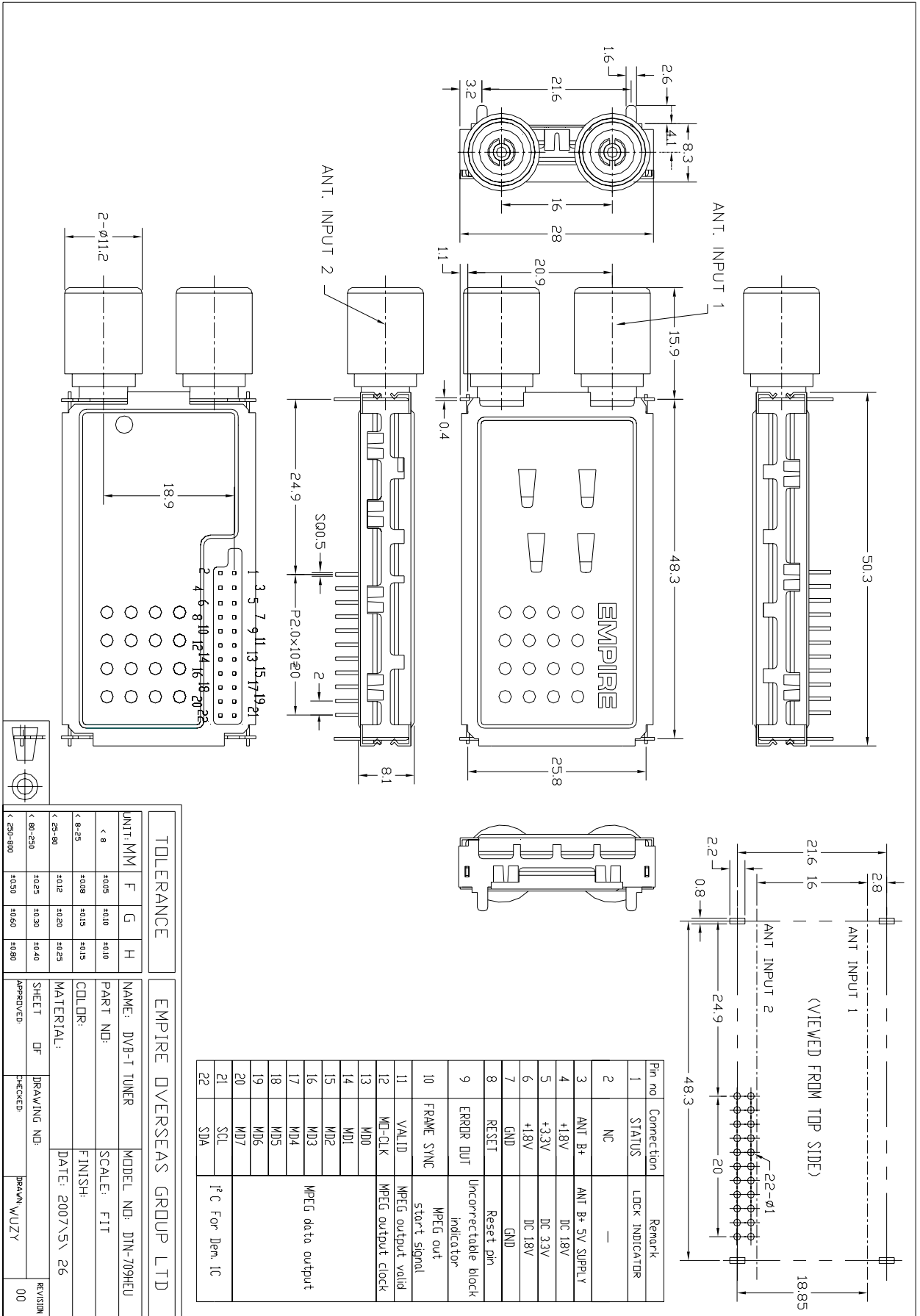
6. SAFETY AND RELIABILITY

No.	ITEM	TEST CONDITIONS	SPECIFICATIONS
1	COLD TEST	-20° C, 96 HR	<p>Gain Variation:< ± 3dB</p> <p>Wave Variation :< $\pm 30\%$</p>
2	HIGH TEMPERATURE LOAD TEST	+60° C, 96 HR WITH STD POWER SUPPLY	
3	HUMIDITY TEST	+40° C ,95%RH, 96 HR	
4	HUMIDITY& TEMPERATURE LOAD TEST	+40° C ,95%RH, 96 HR , WITH STD POWER SUPPLY	
5	VIBRATION TEST	Frequency ranging from 5 to 55Hz, amplitude 2mm, 40 minutes in each direction of X,Y,Z.	
6	Life Test	<ol style="list-style-type: none"> 1) Take measurements in standard test condition. 2) Leave samples for 1000 hours, in nominal ambient with standard power supply. 3) Take measurements within 1 hour. 	
7	ESD protection	<ol style="list-style-type: none"> 1) The tuner contains components that can be damaged by static discharge. 2) Observe these precautions. 3) Ground yourself before handling the tuner. 4) Do not touch the tuner connector pins without ESD protection 	

7. MECHANICAL DRAWING (FOR DTN-709ATW HORIZONTAL TYPE)



8. MECHANICAL DRAWING (FOR DTN-709HEU HORIZONTAL TYPE)



TOLERANCE

EMPIRE OVERSEAS GROUP LTD

UNIT: MM	F	G	H
< 8	±0.05	±0.10	±0.10
< 8-25	±0.08	±0.15	±0.15
< 25-80	±0.12	±0.20	±0.25
< 80-250	±0.25	±0.30	±0.40
< 250-800	±0.50	±0.60	±0.80

NAME: DVB-T TUNER	MODEL NO: DTN-709HEU
PART NO:	SCALE: FIT
COLOR:	FINISH:
MATERIAL:	DATE: 2007\5\ 26
SHEET OF	DRAWING NO:
APPROVED:	CHECKED:
DESIGNER: WUZZY	REVISION: 00