I R T Electronics Pty Ltd A.B.N. 35 000 832 575
26 Hotham Parade, ARTARMON N.S.W. 2064 AUSTRALIA
National: Phone: (02) 9489 3744 Fax: (02) 9439 7439
International: +61 2 9439 3744 +61 2 9439 7439
Email: sales@irtelectronics.com

IRT Eurocard

Types VG-713

Pre-Emphasised Clipper

NOTICE

The Department of Transport and Communications requires that information concerning the decoding of Satellite Program Service signals be restricted to Television Stations using the Service. To this end information in this manual must not be conveyed to third parties.

Designed and manufactured in Australia

IRT can be found on the Internet at:
http://www.irtelectronics.com

IRT Eurocard

Types VG-713

Pre-emphasised Clipper

Instruction Book

Table of Contents

This instruction book applies to units later than S/N 9200000.

Operational Safety:

WARNING

Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Note that under certain conditions dangerous potentials may exist in some circuits when power controls are in the **OFF** position.
Maintenance personnel should observe all safety regulations.

Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

General Description

The VG 713 Clipper is designed to assist in the prevention of over deviation of signals when passed through a satellite transponder.

It does this by pre emphasising its input signal (in a manner similar to that done by an up link modulator) and then applying "black" and "white" clippers.

The signal is then de emphasised to restore the normal flat frequency response.

The VG 713 can be used as a non pre emphasised "hard" clipper by changing the positions of two internal links to bypass the emphasis circuits.

When this is done the white and black clippers may be readjusted to suit individual clipping requirements.

The VG 713 may be used with a signal other than composite NTSC/PAL in which case a signal must be provided to the sync input to drive the clamp.

In the case of EPAL signals, this sync signal can be obtained from a VG 712L EPAL Logic Decoder sync output.

Standard features:

- **Suitable for luminance or chroma clipping**
- **Ideal for satellite & microwave links**
- **NTSC & PAL operation**
- **Compatible with other IRT Eurocard products**
- **Prevents over-deviation of chroma signals**
- **Luminance black & white clipping**
- **Adjustable clipping levels**

Accessories available:-

FR-700 Eurocard module mounting frame	Mounts up to 12 Eurocard modules and one PT-700 Dual AC power supply side by side in 134 mm of standard rack space (3 Rack Units).
FR-722 1 RU chassis conversion/PSU	Converts Eurocards to a 1 rack unit format. The FR-722 can be fitted with either one or two Eurocards in a horizontal side by side format. A single AC power supply is included to power the cards.

TME-6 Eurocard extender board.

Instruction Book.

Technical Specifications
IRT Eurocard module
Type VG-713

Video input characteristics	
Input signal	NTSC/PAL composite video signal
Input level	1.0V p-p ± 0.2V
Input impedance	75 Ω terminating
Input connector	BNC
Sync input characteristics	Optional
Input signal	NTSC/PAL composite video signal
Input level	1.0V p-p ± 0.2V
Input impedance	75 Ω terminating
Input connector	BNC
Video output characteristics	
Output signal	2 x NTSC/PAL video signals
Output impedance	75 Ω source impedance
Output level	1V p-p
Output connectors	BNC connectors
Transfer characteristics	
Differential Gain	<0.5%
Differential Phase	<0.5°
Frequency response	±0.5 dB to 8 MHz
Controls:	Gain (front panel) White Clip Black Clip
General:	
Input power	28 Vac CT supplied from PT-700 (dual) or FR-722 (single)
Temperature range	0 - 50° C ambient
Mechanical	Suitable for mounting in IRT 19" rack chassis types FR-700 & FR-722 with input, output and power connections on the rear panel
Finish: Front escutcheon	Grey powder coat, silk-screened black lettering & red IRT logo
Rear assembly	Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals
Dimensions	6 HP x 3 U x 220 mm IRT Eurocard
Standard accessories	Operation manual
Optional accessories	TME-6 module extender card

Due to our policy of continuing development, these specifications are subject to change without notice.

Technical Description

See Drawing 803381.

The primary purpose of the input amplifier U 1 is to provide the correct source impedance for the pre-emphasis circuit and allows for some gain adjustment. Its output drives two paths, the sync path and the video path.

In the sync path the signal passes through LK 5 and buffer U 5 to a low pass filter comprising R 37 and C 24. U 6 is a sync separator, which also generates clamp pulses on its pin 5 that are used by the Clamp amplifier U 2.

U 2 output also feeds a pre-emphasis circuit similar to that used in satellite transmissions. C 6 couples this pre-emphasised signal to the Clamp amplifier, which sets the back porch to 0 volts, stabilising the clip levels.

Q 1, 2, 3 and U 7 form a Black clipper whose clipping level is set by RV 2. SIMILARLY, Q 4, 5, 6 and U 8 form a White clipper whose clipping level is set by RV 3.

U 3 is a buffer with high input impedance and low output impedance for driving the de-emphasis circuit, which restores the frequency response to flat.

U 4 is a line driver with two 75 Ohm outputs.

U 9 is a three terminal positive regulator for the +12 V supply and U 10 is for the -12 V supply. D 9 and R 45 ensure correct starting of U 9 should negative Volts appear at its output at start up.

If the module is used in an FR-600 Frame two feeds of 28V AC power are available. The arrangement of D 1 - 4 and D 5 - 8 allow either of both feeds to be used, providing redundancy of the power supply.

The factory settings of RV 1, RV 2, and RV 3 are such that if a 1 Vp-p signal is present at the output and the pre-emphasis and de-emphasis circuits are linked in, then a 100% colour bar signal will just pass through the VG-713 without clipping.

The VG-713 can be used as a non pre-emphasised clipper by changing the positions of LK's 1 to 4 to bypass the emphasis circuits. If this is done the White and Black clippers should be readjusted to suit your clipping requirements.

Should you wish to use the VG-713 with a signal other than composite PAL then you must change LK 5 to EXTNL and provide a signal to the Sync input to drive the Clamp U 2. In the case of EPAL signals this sync signal can be obtained from a VG-712L EPAL Logic Decoder sync output.

Internal Adjustments

LK 1 Pre-emphasised clipper - P position.
Black / white clipper - F position.
LK 2 Pre-emphasised clipper - P position.
Black / white clipper - F position.
LK 3 Pre-emphasised clipper - P position.
Black / white clipper - F position.
LK 4 Pre-emphasised clipper - P position.
Black / white clipper - F position.

LK 5 Internal sync - top position
External sync - bottom position.

RV 1 Input gain set.
RV 2 Black clipper clipping level.
RV 3 White clipper clipping level.

Note: The factory settings of RV 1, RV 2, and RV 3 are such that if a 1 Vp-p signal is present at the output and the pre-emphasis and de-emphasis circuits are linked in, then a 100% colour bar signal will just pass through the VG-713 without clipping.

Adjustment Procedure:

1. Connect 100% colour bars to input.
2. Place links into "P" + internal sync positions.
3. Turn RV 2 fully clockwise. Turn RV 3 fully anti-clockwise.
4. Adjust RV 1 for unity.
5. Adjust L 1 and L 2 for flat white level.
6. Adjust DC offset by selecting a resistor approx. (150 K-470 K) until less than 20 mV (resistor position just above C 7 (overlay).
7. Adjust white clip using RV 3 until the top of the biggest (top) packet just clips then turn back until clipping just stops.
8. Adjust black clip using RV 2 until the bottom of the biggest lower packet just clips then turn back until clipping just stops.

Configuration

The VG-713 can be used as a non pre-emphasised clipper by changing the positions of LK's 1 to 4 to bypass the emphasis circuits. If this is done the White and Black clippers should be readjusted to suit your clipping requirements.

Should you wish to use the VG-713 with a signal other than composite PAL then you must change LK 5 to EXTNL and provide a signal to the Sync input to drive the Clamp U 2.
In the case of EPAL signals, this sync signal can be obtained from a VG-712L EPAL Logic Decoder sync output.

Installation

Pre-installation:

Handling:

This equipment may contain or be connected to static sensitive devices and proper static free handling precautions should be observed.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Power:

AC mains supply: Ensure that operating voltage of unit and local supply voltage match and that correct rating fuse is installed for local supply.

DC supply: Ensure that the correct polarity is observed and that DC supply voltage is maintained within the operating range specified.

Earthing:

The earth path is dependent on the type of frame selected. In every case particular care should be taken to ensure that the frame is connected to earth for safety reasons. See frame manual for details.

Signal earth: For safety reasons a connection is made between signal earth and chassis earth. No attempt should be made to break this connection.

Installation in frame or chassis:

See details in separate manual for selected frame type.

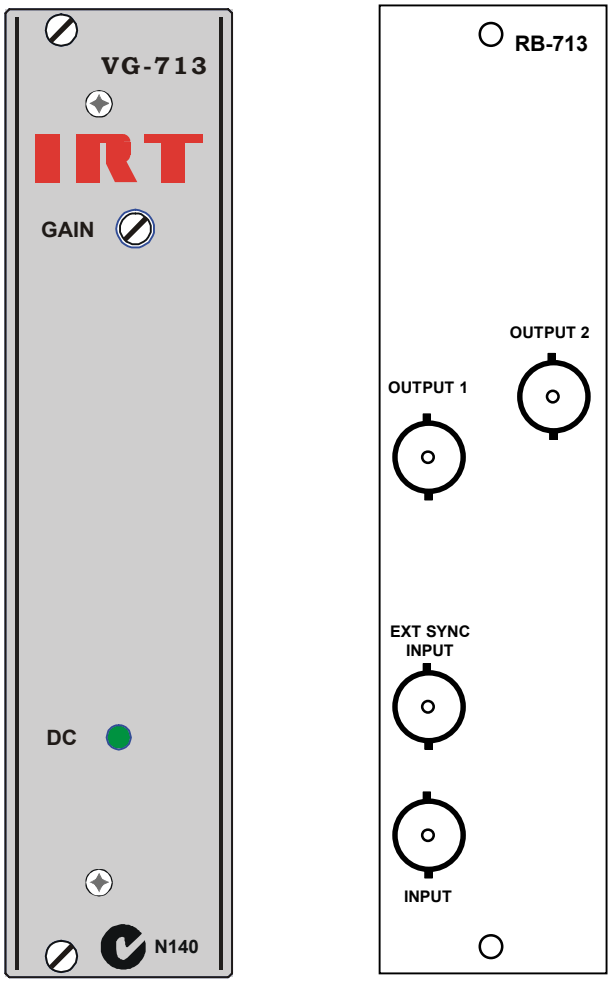
Connections:

Video:

Both video and external sync inputs are terminated in 75 Ohms and may not be looped to other equipment. The two video outputs are of 75 Ohm source impedance and must be terminated in a 75 Ohm input at the connected equipment to ensure correct operating levels.

Front & rear panel connector diagrams

The following front panel and rear assembly drawings are not to scale and are intended to show relative positions of connectors, indicators and controls only.



Maintenance & storage

Maintenance:

No regular maintenance is required.

Care however should be taken to ensure that all connectors are kept clean and free from contamination of any kind. This is especially important in fibre optic equipment where cleanliness of optical connections is critical to performance.

Storage:

If the equipment is not to be used for an extended period, it is recommended the whole unit be placed in a sealed plastic bag to prevent dust contamination. In areas of high humidity a suitably sized bag of silica gel should be included to assist deter corrosion.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Warranty & service

Equipment is covered by a limited warranty period of three years from date of first delivery unless contrary conditions apply under a particular contract of supply.

Equipment warranty is limited to faults attributable to defects in original design or manufacture. Warranty on components shall be extended by IRT only to the extent obtainable from the component supplier.

Equipment return:

Before arranging service ensure that the fault is in the unit to be serviced and not in associated equipment. If possible, confirm this by substitution.

Before returning equipment contact should be made with IRT or your local agent to determine whether the equipment can be serviced in the field or should be returned for repair.

The equipment should be properly packed for return observing antistatic procedures.

The following information should accompany the unit to be returned:

1. A fault report should be included indicating the nature of the fault
2. The operating conditions under which the fault initially occurred.
3. Any additional information which may be of assistance in fault location and remedy.
4. A contact name and telephone and fax numbers.
5. Details of payment method for items not covered by warranty.
6. Full return address.

Please note that all freight charges are the responsibility of the customer.

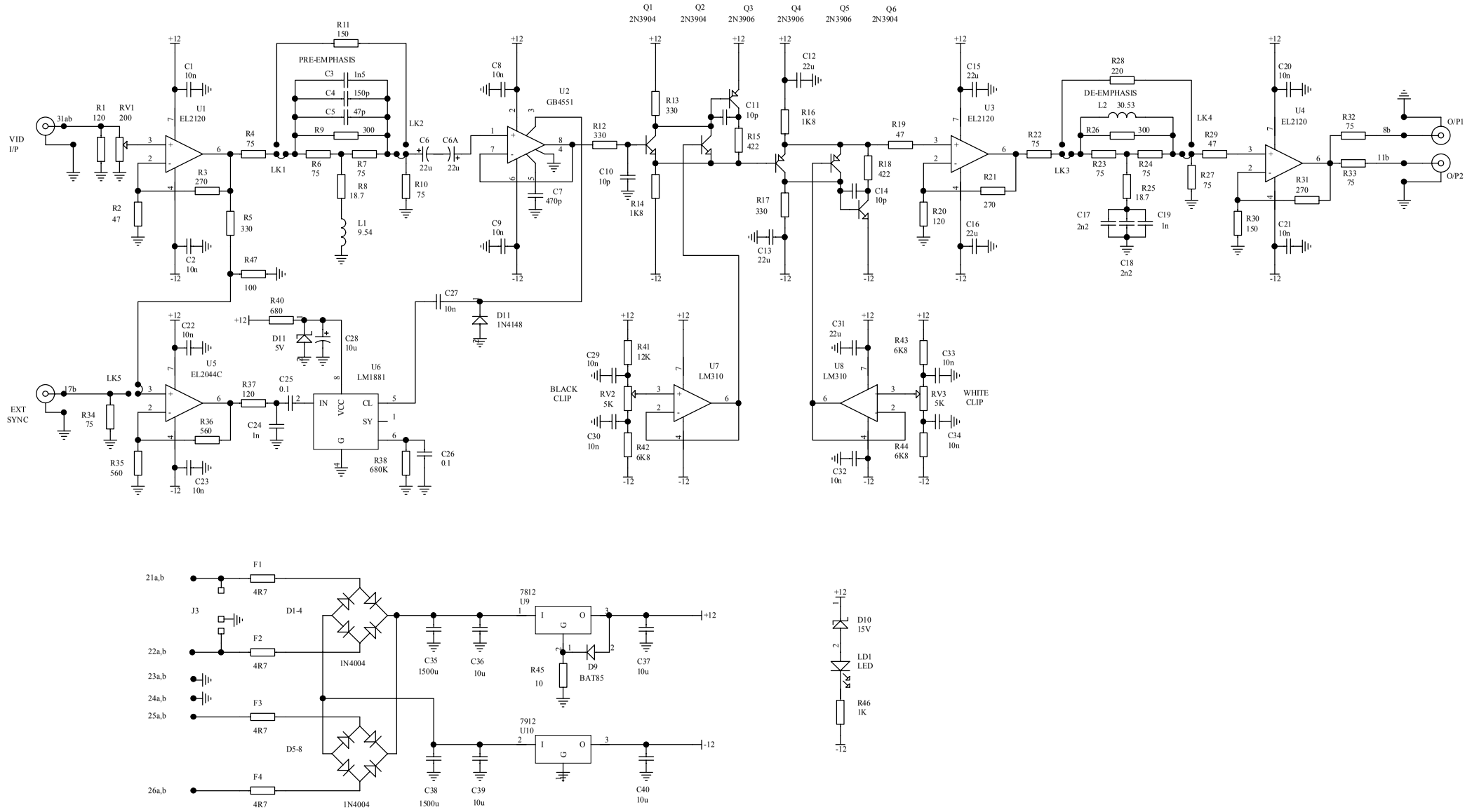
The equipment should be returned **to the agent who originally supplied the equipment or, where this is not possible**, to IRT direct as follows.

Equipment Service
IRT Electronics Pty Ltd
26 Hotham Parade
ARTARMON
N.S.W. 2064
AUSTRALIA

Phone: 61 2 9439 3744 Fax: 61 2 9439 7439
Email: service@irtelectronics.com

Drawing Index

Drawing #	Sheet #	Description
803381	1	VG-713 main circuit schematic
803381	2	VG-713 block diagram



PCB 803382

6 06/04/98 ECR916

5 25/10/96 ECR759

4 14/03/93 ECN205

DRAWN

CHECKED

ENG. APP.

CONTRACT No.

IRT

SIZE

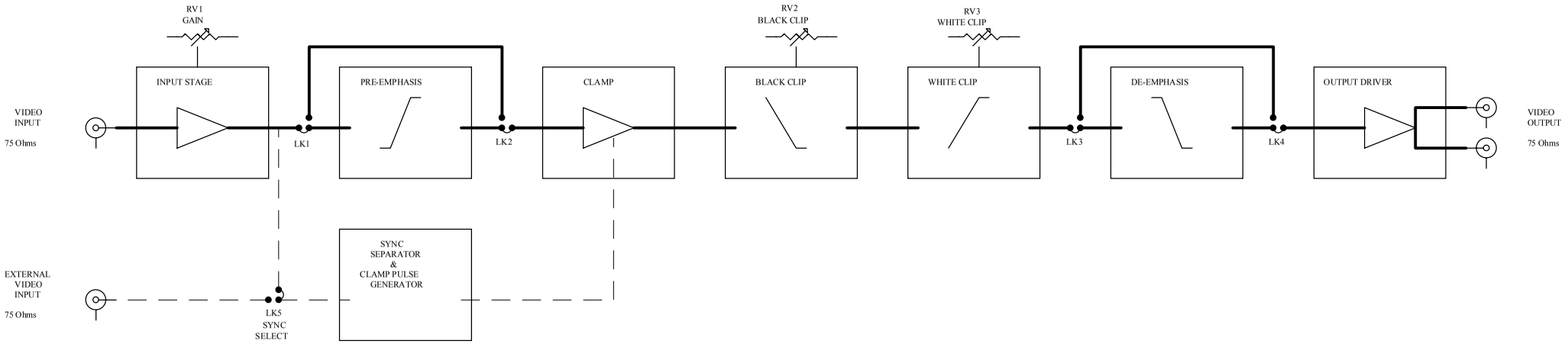
TITLE VG-713
PRE-EMPHASISED
CLIPPER

SCALE

DRAWING No. 803381

SHEET 1 OF 1

IRT Electronics Pty. Ltd.
ARTARMON NSW AUSTRALIA 2064



FACTORY SETTINGS

1. PRE-EMPHASIS IN
2. DE-EMPHASIS IN
3. INTERNAL SYNC
4. CLIP LEVELS
   100% COLOR BARS
5. GAIN, 1V P-P IN
   1V P-P OUT

NOTE: IF PRE-EMPHASIS AND DE-EMPHASIS BYPASSED CLIP LEVELS MUST BE RESET

1 10/02/93

DRAWN RBB
CHECKED
ENG. APP.
CONTRACT No.

IRT

SIZE
TITLE VG-713 PRE-EMPHASISED CLIPPER
SCALE
DRAWING No. 803381
SHEET 2 OF 2

IRT Electronics Pty. Ltd.
ARTARMON NSW AUSTRALIA 2064