

22. INTERNATIONAL STATION 800MHZ BDA (80-330555-1)

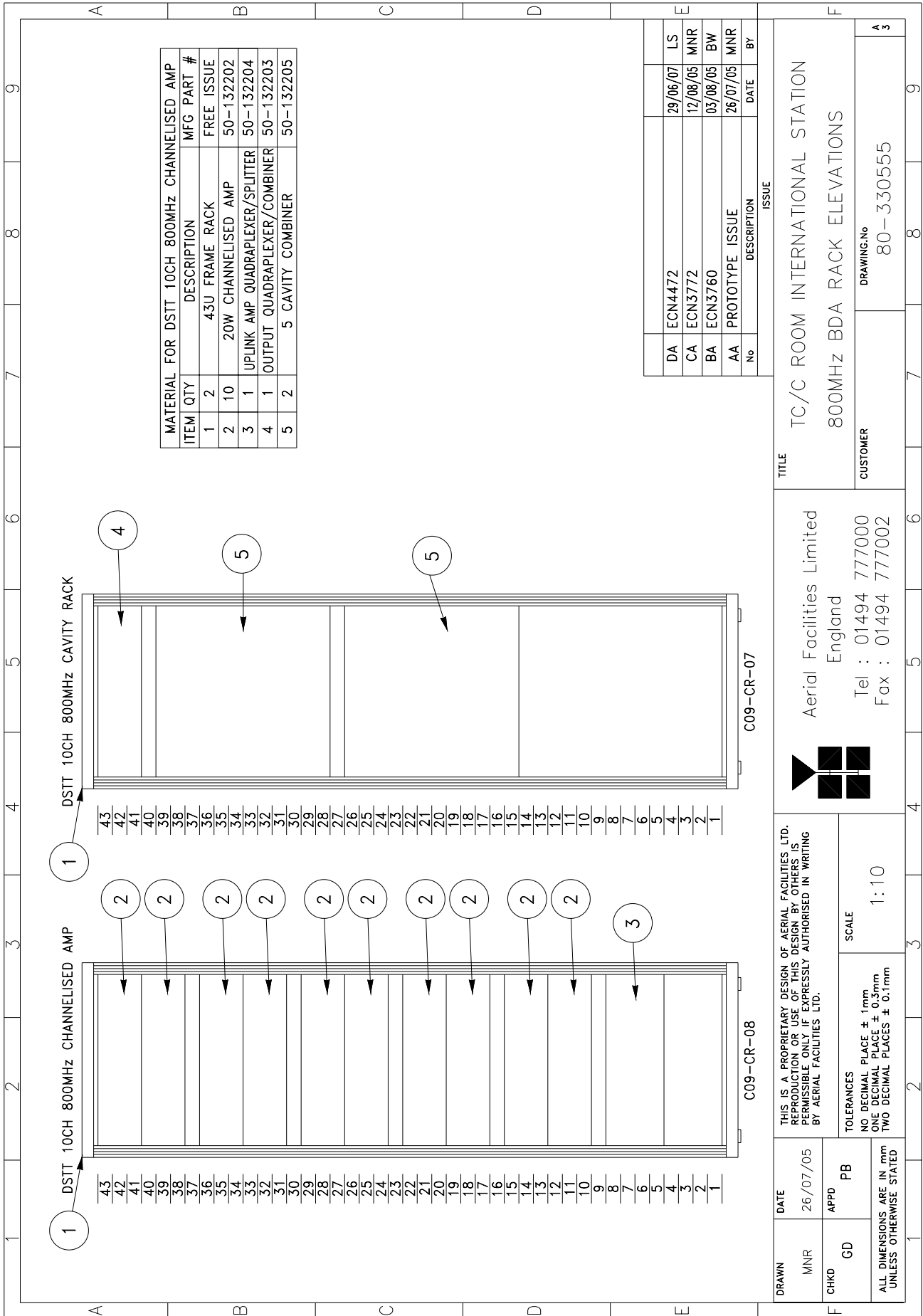
Rack number CR9-CR-07

International Station 800MHz BDA (80-330555-1)

Section	Component Part	Component Part Description	Qty Per Assembly
22.3.1.	50-132203	800MHz Output Quadplexer/Combiner	1
22.3.2.	50-132205	800MHz 5 Cavity Combiner System	2

22.1. International Station 800MHz BDA (80-330555-1) Rack elevation

Drawing number 80-330555



TITLE
TC/C ROOM INTERNATIONAL STATION
800MHz BDA RACK ELEVATIONS

CUSTOMER
DRAWING.No
80-330555

Aerial Facilities Limited
England
Tel : 01494 777000
Fax : 01494 777002

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TOLERANCES
NO DECIMAL PLACE ± 1mm
ONE DECIMAL PLACE ± 0.5mm
TWO DECIMAL PLACES ± 0.1mm

SCALE
1:10

DRAWN
MNR

DATE
26/07/05

CHKD
GD

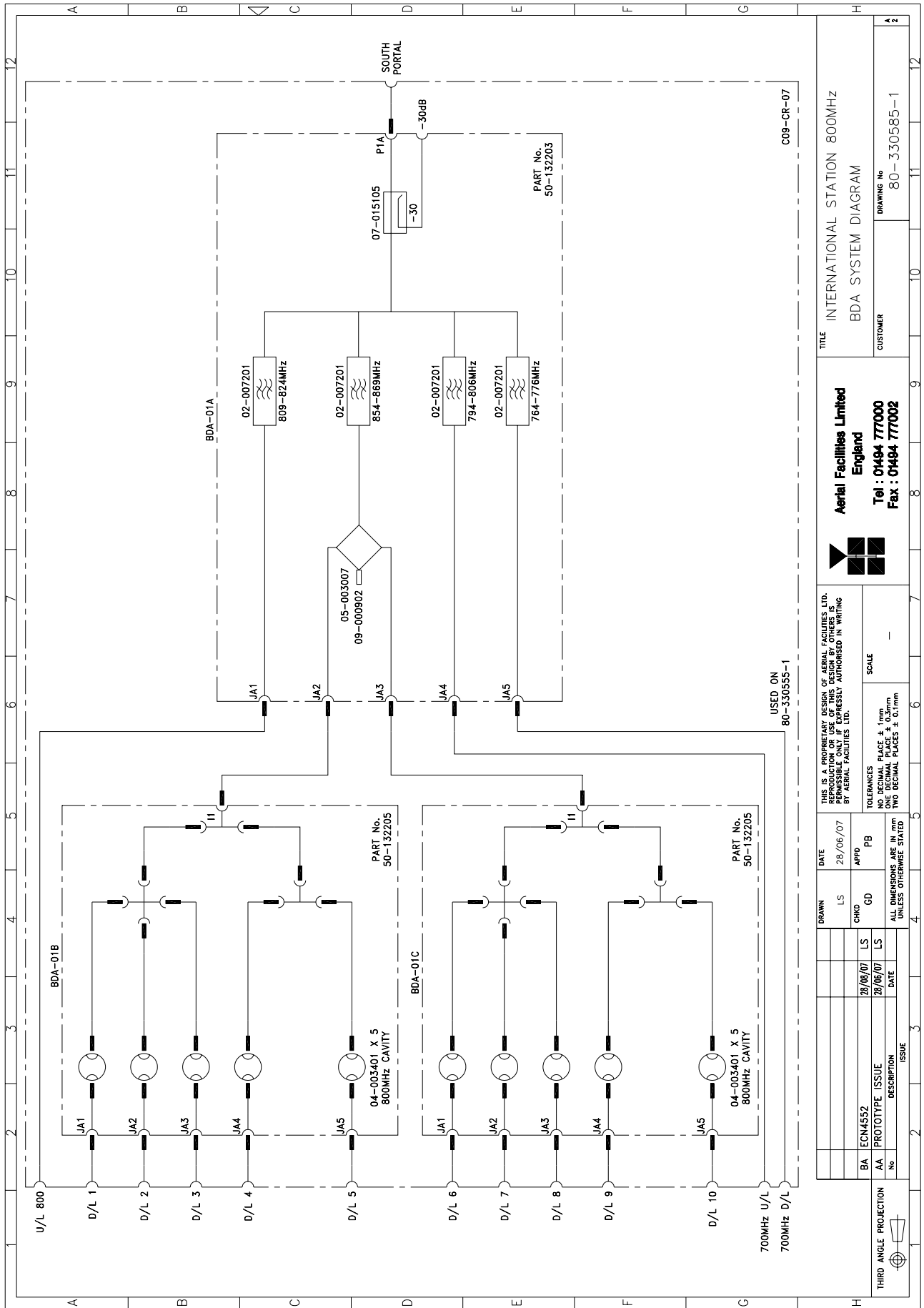
APPD
PB

PB

ALL DIMENSIONS ARE IN mm
UNLESS OTHERWISE STATED

22.2. International Station 800MHz BDA (80-330555-1) System diagram

Drawing number 80-330585-1



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DATE	28/06/07	APPD	PB
LS	CD	LS	LS
28/06/07	28/06/07		
DATE	DATE	DESCRIPTION	ISSUE
		AA PROTOTYPE ISSUE	
		BA ECA4552	

TOLERANCE
NO DECIMAL PLACE ± 10%
ONE DECIMAL PLACE ± 0.2mm
TWO DECIMAL PLACES ± 0.1mm

SCALE

TITLE INTERNATIONAL STATION 800MHZ
BDA SYSTEM DIAGRAM
CUSTOMER
DRAWING No 80-330585-1

22.3. International Station 800MHz BDA (80-330555-1) Major Components

22.3.1. 800MHz Output Quadplexer/Combiner (50-132203)

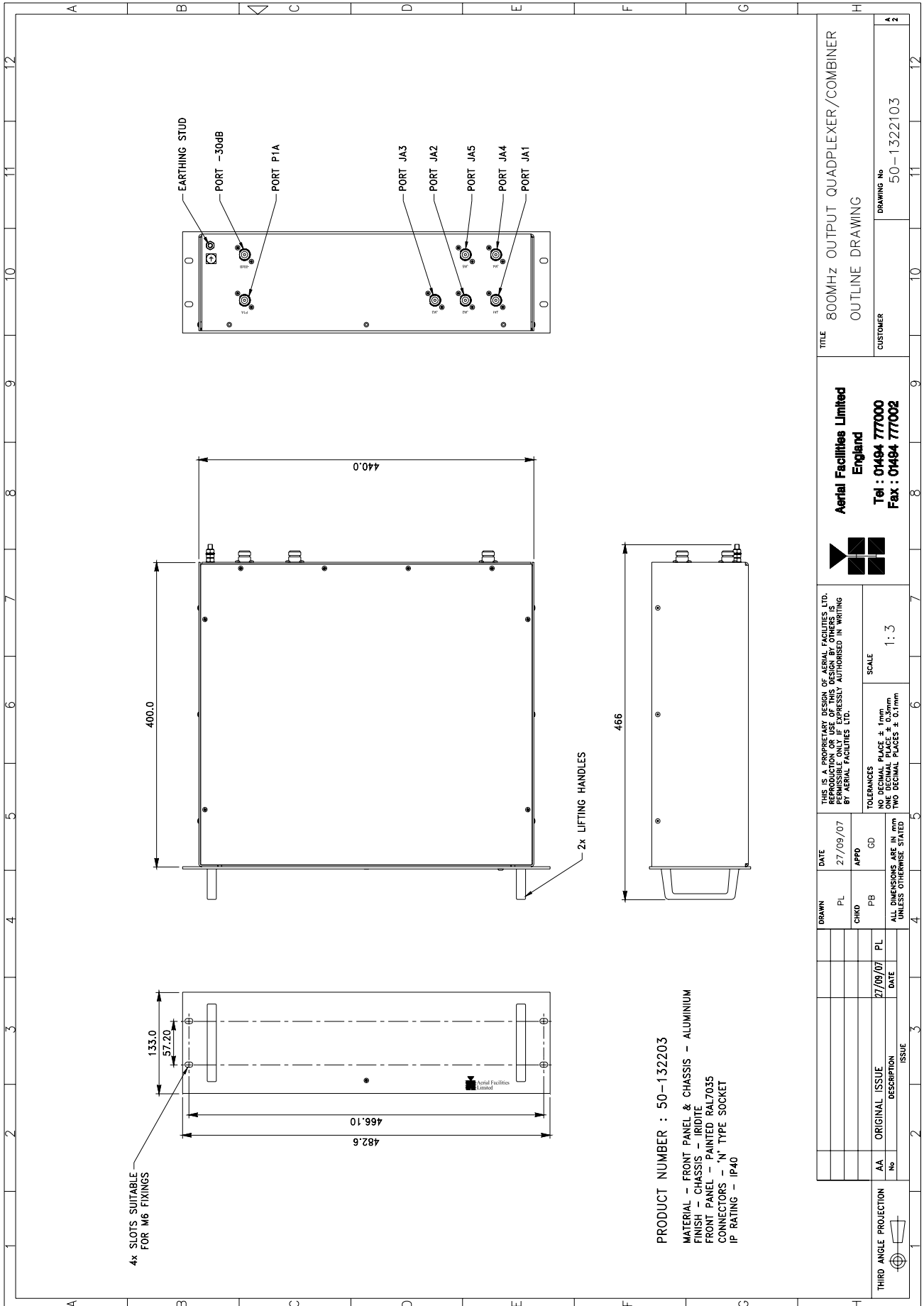
3U rack mount tray

800MHz Output Quadplexer/Combiner (50-132203) List of major Components

Section	Component Part	Component Part Description	Qty Per Assembly
22.3.1.3.	02-007206	Bandpass Filter	4
22.3.1.4.	05-003007	4 Port Hybrid Coupler	1
22.3.1.5.	07-015105	Wideband Asymmetric Coupler	1
22.3.1.6.	09-000902	Dummy load	1

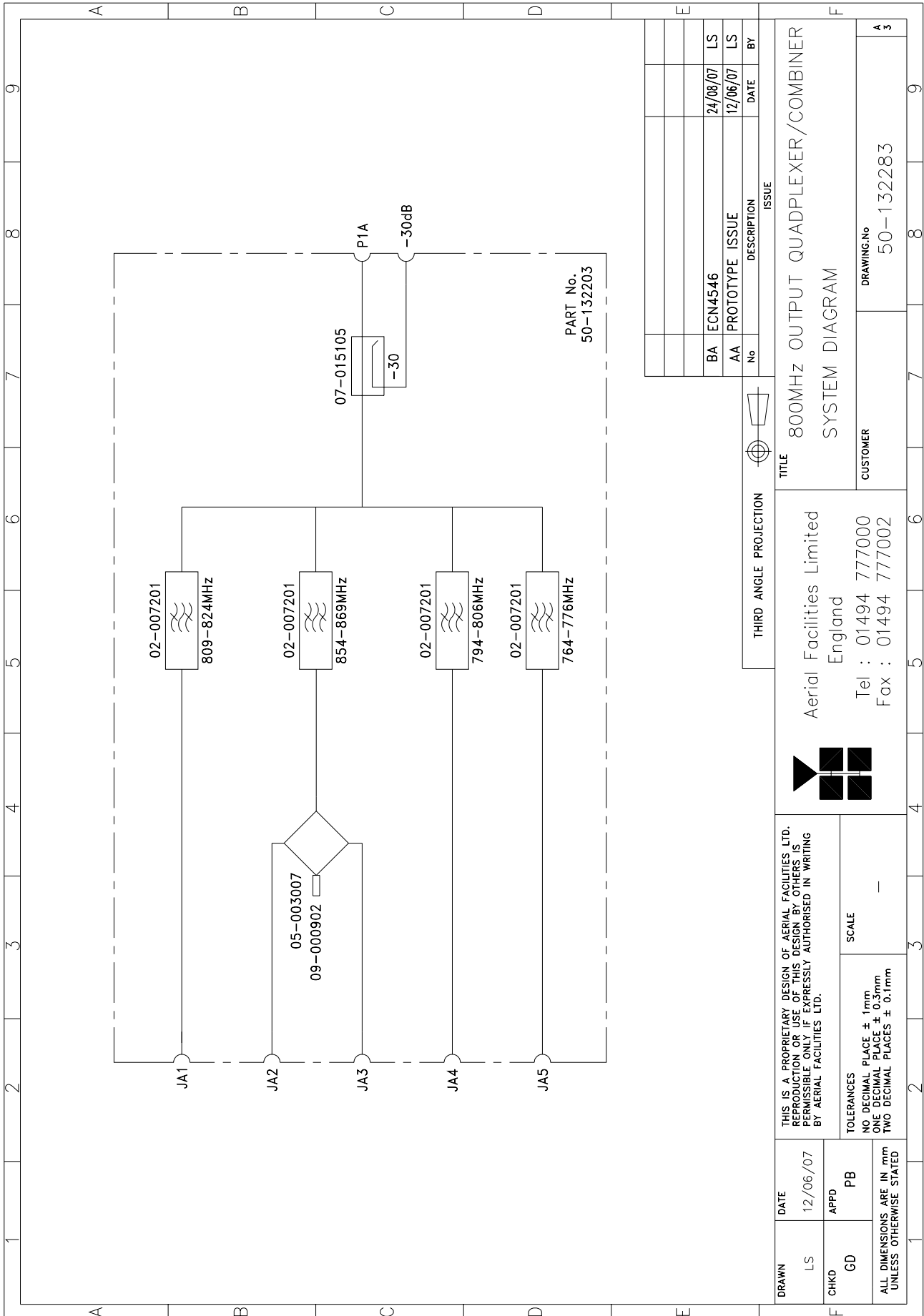
22.3.1.1. 800MHz Output Quadplexer/Combiner (50-132203) Outline Drawing

Drawing number 50-1322103



22.3.1.2. 800MHz Output Quadplexer/Combiner (50-132203) System Diagram

Drawing number 50-132283



22.3.1.3. Bandpass Filter (02-007206)

The bandpass filters are multi-section designs with a bandwidth dependent upon the passband frequencies, (both tuned to customer requirements). The response shape is basically Chebyshev with a passband design ripple of 0.1dB. The filters are of slot coupled, folded combline design, and are carefully aligned during manufacture in order to optimise the insertion loss, VSWR and intermodulation characteristics of the unit. The tuned elements are silver-plated to reduce surface ohmic losses and maintain a good VSWR figure and 50Ω load at the input and output ports.

Being passive devices, the bandpass filters should have an extremely long operational life and require no maintenance. Should a filter be suspect, it is usually most time efficient to replace the module rather than attempt repair or re-tuning.

No adjustments should be attempted without full network sweep analysis facilities to monitor both insertion loss and VSWR simultaneously.

02-007206 Specification

PARAMETER		SPECIFICATION
Response type		Chebyshev
Frequency range		800 - 950MHz *
Bandwidth		25MHz *
Number of sections		8
Insertion loss		1.2 dB
VSWR		better than 1.2:1
Connectors		SMA female
Power handling		100W max
Temperature range	operation	-20°C to +60°C
	storage	-40°C to +70°C
Weight		3 kg (typical)

*tuned to Customer's specification

22.3.1.4. 4 Port Hybrid Coupler (05-003007)

This transmitter hybrid coupler is a device for accurately matching two or more RF signals to single or multiple ports, whilst maintaining an accurate 50Ω load to all inputs/outputs and ensuring that the insertion losses are kept to a minimum. Any unused ports should be terminated with an appropriate 50Ω load. In this specific instance one port of 4 Port Hybrid Coupler (05-003007) is terminated with Dummy load 09-000902 (see below).

05-003007 Specification

PARAMETER		SPECIFICATION
Frequency range		700-900MHz
Bandwidth		200MHz
Rejection		>14dB
Insertion loss		6.5dB (in band, typical)
Connectors		SMA
Weight		<1.0kg
Temperature range	operational	-10°C to +60°C
	storage	-20°C to +70°C

22.3.1.5. Wideband Asymmetric Coupler (07-015105)

The purpose of Wideband Asymmetric Coupler (07-015105) is to tap off a known portion (in this case 30dB) of RF signal from transmission lines and to combine them, for example through splitter units for different purposes (alarms/monitoring etc.), whilst maintaining an accurate 50Ω load to all ports/interfaces throughout the specified frequency range. They are known formally as directional couplers as they couple power from the RF mainline in one direction only.

07-015105 Specification

PARAMETER		SPECIFICATION
Construction		Inductive air gap
Frequency		800-2500MHz
Through loss		0.4dB (typical)
Coupling level		-30dB ±0.5dB
Isolation		N/A
Weight		<1.0kg
Connectors		SMA, female
Temperature range	operation	-20°C to +60°C
	storage	-40°C to +70°C

22.3.1.6. Dummy load 09-000902

When a combiner system is used to split or combine RF signals, in many cases it is most cost effective to use a standard stock item 4, 6 or 8 port device where, in fact, only a 3 or 6 port device is needed. In this case 4 Port Hybrid Coupler (05-003007) has one of its ports terminated with an appropriate Dummy Load in order to preserve the correct impedance of the device over the specified frequency range.

09-000902 specification

PARAMETER	SPECIFICATION
Frequency Range	0 - 2500 MHz
Power Rating	25 Watts continuous
VSWR	Better than 1.1:1
Impedance	50 Ohms
Temperature Range	-20 to +60°C
RF Connectors	N Type female
Dimension	110.3mm x 38.1mm x
Weight	485 grams
Finish	Black Anodised
RF Connector	N Type male
Environmental	IP66
MTBF	>180,000 hours

22.3.2. 800MHz 5 Cavity Combiner System (50-132205)

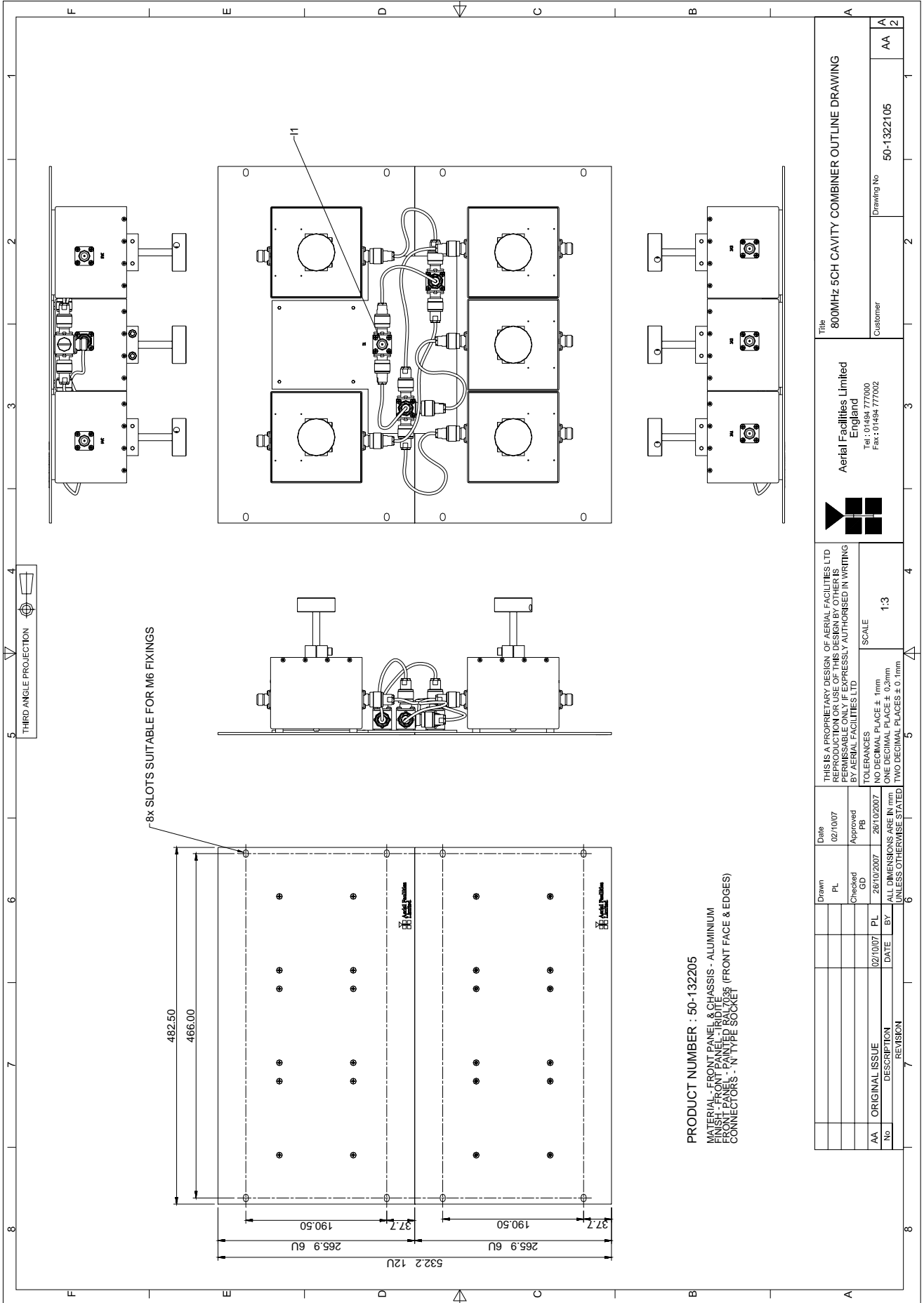
800MHz 5 Cavity Combiner System (50-132205) consists of 5 Dielectric Cavity Resonators mounted on two 3U rack mount panels, three on one panel and two on the other

800MHz 5 Cavity Combiner System (50-132205) List of Major Components

Section	Component Part	Component Part Description	Qty Per Assembly
22.3.2.3.	04-003401	Dielectric Cavity Resonator	5

22.3.2.1. 800MHz 5 Cavity Combiner System (50-132205) Outline Drawing

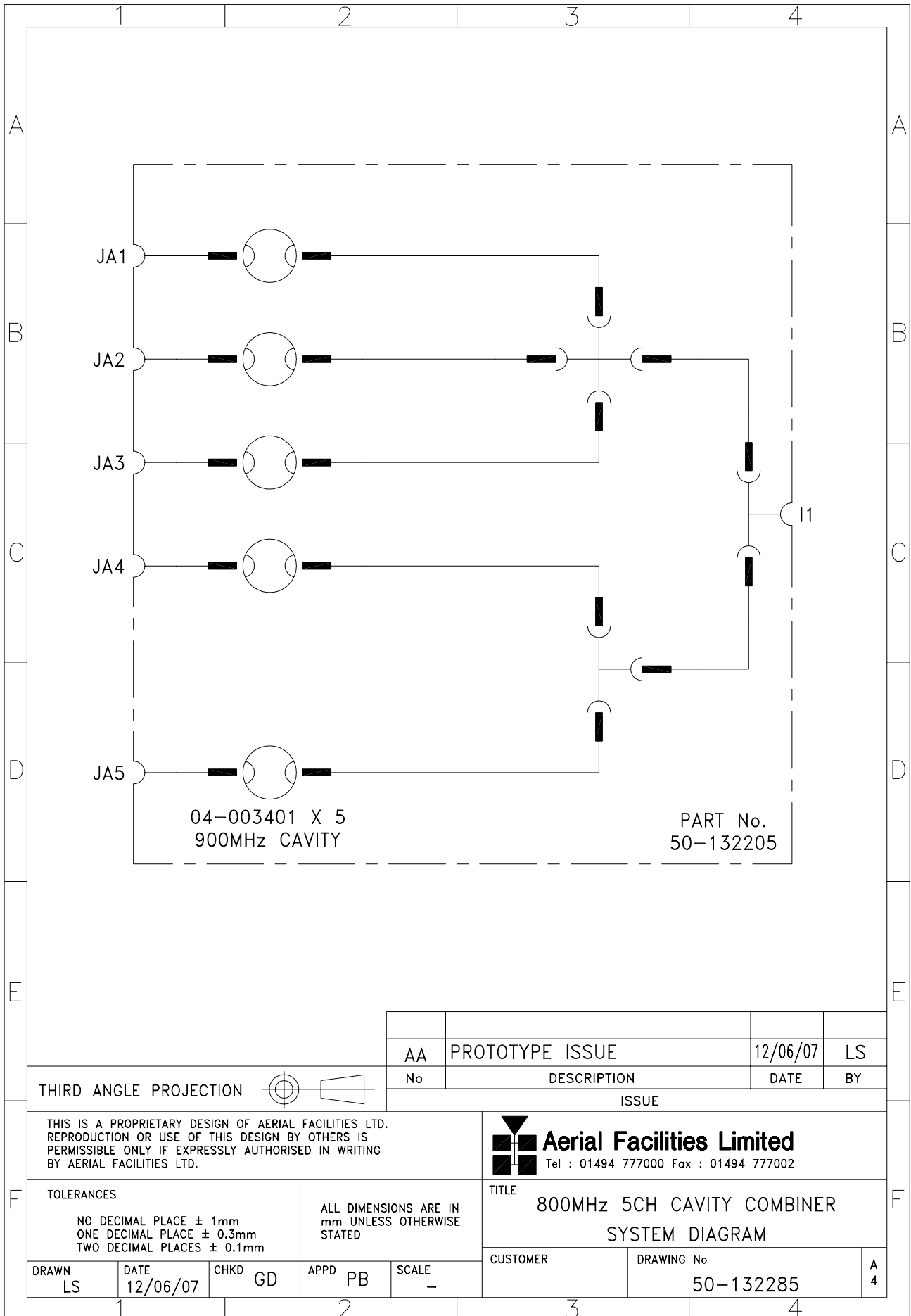
Drawing number 50-1322105



Title		800MHz 5CH CAVITY COMBINER OUTLINE DRAWING	
Customer		50-1322105	
Drawing No		50-1322105	
Aerial Facilities Limited England Tel: 01494 77000 Fax: 01494 77002		Aerial Facilities Limited England Tel: 01494 77000 Fax: 01494 77002	
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Drawn	Date	THIS IS A PROPRIETARY DESIGN OF AERIAL FACILITIES LTD REPRODUCTION OR USE OF THIS DESIGN BY OTHER IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORISED IN WRITING BY AERIAL FACILITIES LTD	
PL	02/10/07	TOLERANCES NO DECIMAL PLACE ± 1mm ONE DECIMAL PLACE ± 0.1mm TWO DECIMAL PLACES ± 0.1mm	
Checked	Approved	SCALE 1:3	
GD	PR	THIS IS A PROPRIETARY DESIGN OF AERIAL FACILITIES LTD REPRODUCTION OR USE OF THIS DESIGN BY OTHER IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORISED IN WRITING BY AERIAL FACILITIES LTD	
26/02/2007	26/10/2007	TOLERANCES NO DECIMAL PLACE ± 1mm ONE DECIMAL PLACE ± 0.1mm TWO DECIMAL PLACES ± 0.1mm	
PL	PL	SCALE 1:3	
02/10/07	02/10/07	THIS IS A PROPRIETARY DESIGN OF AERIAL FACILITIES LTD REPRODUCTION OR USE OF THIS DESIGN BY OTHER IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORISED IN WRITING BY AERIAL FACILITIES LTD	
DATE	DATE	TOLERANCES NO DECIMAL PLACE ± 1mm ONE DECIMAL PLACE ± 0.1mm TWO DECIMAL PLACES ± 0.1mm	
BY	BY	SCALE 1:3	
REVISION	REVISION	THIS IS A PROPRIETARY DESIGN OF AERIAL FACILITIES LTD REPRODUCTION OR USE OF THIS DESIGN BY OTHER IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORISED IN WRITING BY AERIAL FACILITIES LTD	
No	No	TOLERANCES NO DECIMAL PLACE ± 1mm ONE DECIMAL PLACE ± 0.1mm TWO DECIMAL PLACES ± 0.1mm	
AA	AA	SCALE 1:3	
ORIGINAL ISSUE	ORIGINAL ISSUE	THIS IS A PROPRIETARY DESIGN OF AERIAL FACILITIES LTD REPRODUCTION OR USE OF THIS DESIGN BY OTHER IS PERMISSIBLE ONLY IF EXPRESSLY AUTHORISED IN WRITING BY AERIAL FACILITIES LTD	

22.3.2.2. 800MHz 5 Cavity Combiner System (50-132205) System Diagram

Drawing number 50-132285



22.3.2.2. Dielectric Cavity Resonator (04-003401)

Cavity resonators are used in this system for their high Q factor response and power handling characteristics. Being finely tuned items, they can be prone to being de-tuned by mechanical shock or vibration therefore these units should be handled, stored and installed with care.

Note that the cavities are coupled together using critical length harnesses. If any cable is to be changed the exact same length and type of cable should be used for replacement.

04-003401 Specification

Specification		Parameter
Frequency Range		800 - 950MHz *
Bandwidth		25 kHz*
Insertion Loss		< 1.0 dB
Return Loss		> 15 dB (at both ports)
Attenuation		> 10 dB at $F_c \pm 1$ MHz
Power Handling (CW)		20W
Environmental		IP54
Size		124mm x 158mm x 157mm**
Weight		1.5 kg
Connectors		N female
Temperature range	operation	-20°C to +60°C
	storage	-40°C to +70°C

*Tuned to Customer's specification

**Height is dependant upon position of tuning plunger