

Goonhilly Heritage Society Aims

- To Create A Museum & Educational Centre.**
- To Display the Technology Developed Around Satellite Communications.**
- To Create Hands-on Communications Technology Workbenches For Education & Training Purposes.**
- To Obtain A Permanent Location**
- To Become A Charitable Incorporated Organisation (CIO)**
- To Preserve Goonhilly's Technical & Historical Heritage.**

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Heritage Documentation & Pictures



Christine sorting the technical books which have been donated

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Heritage Documentation & Pictures



Irene & Christine cataloguing documents

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Technology Items and Equipment

Some Of The Work and Ideas We Have For

Multi-Application

Communications Technology Workbenches (CTWs)

That We Will Use For Educational Activities

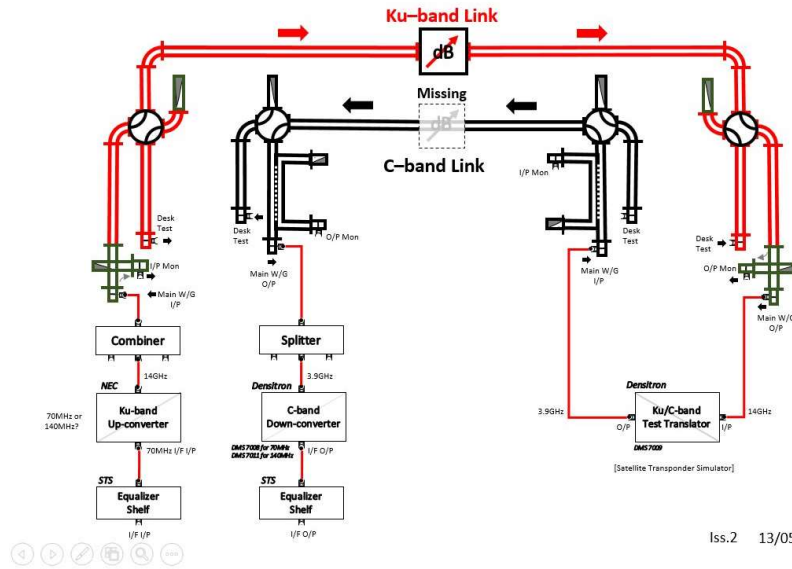
Follow....

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GHSWB001

Current Configuration For Workbench

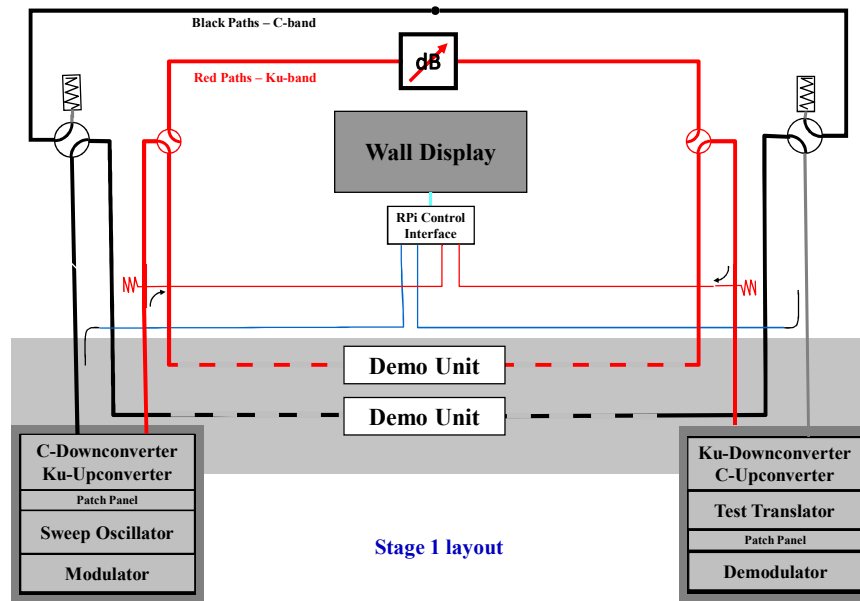


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GHSWB001

Microwave Workbench Physical



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GHSWB001

Microwave Workbench Physical



Antony & Des testing the Microwave Waveguide

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Microwave Test Workbench



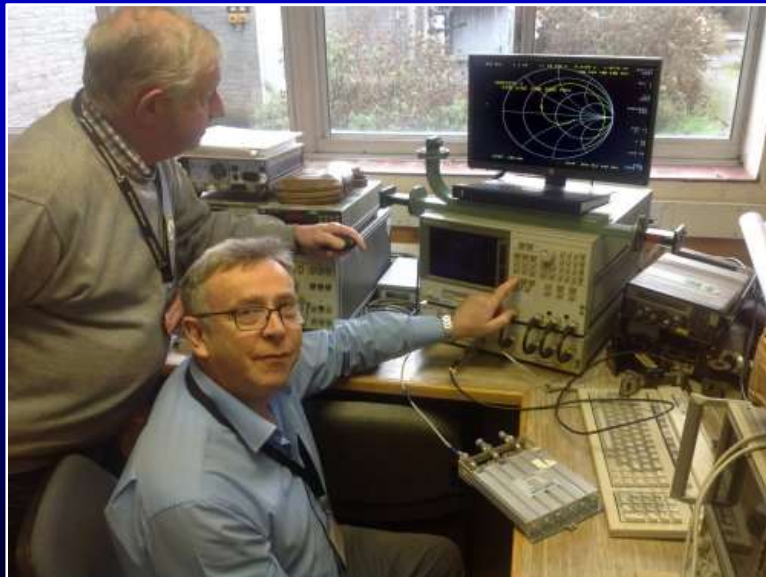
Robin testing equipment for the Workbench

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GHSWB002

Microwave Test Workbench



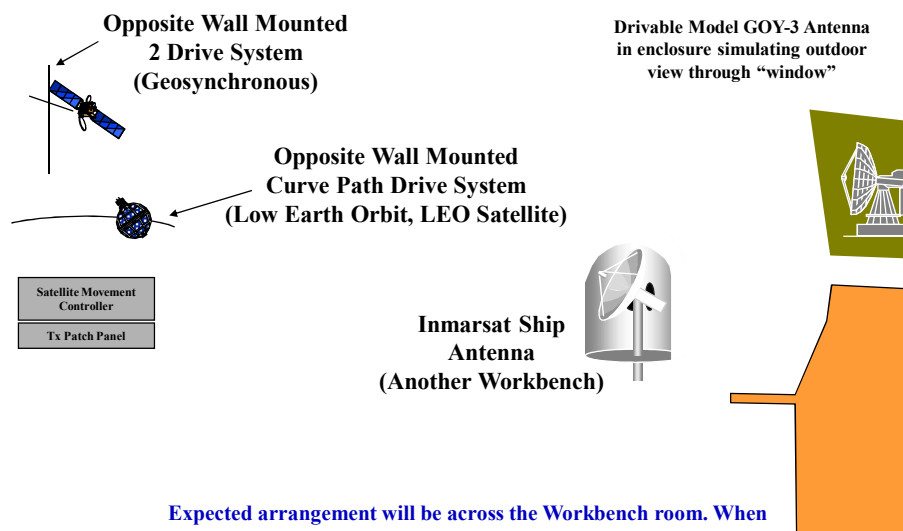
Les & Robin testing a component with the repaired Network Analyser

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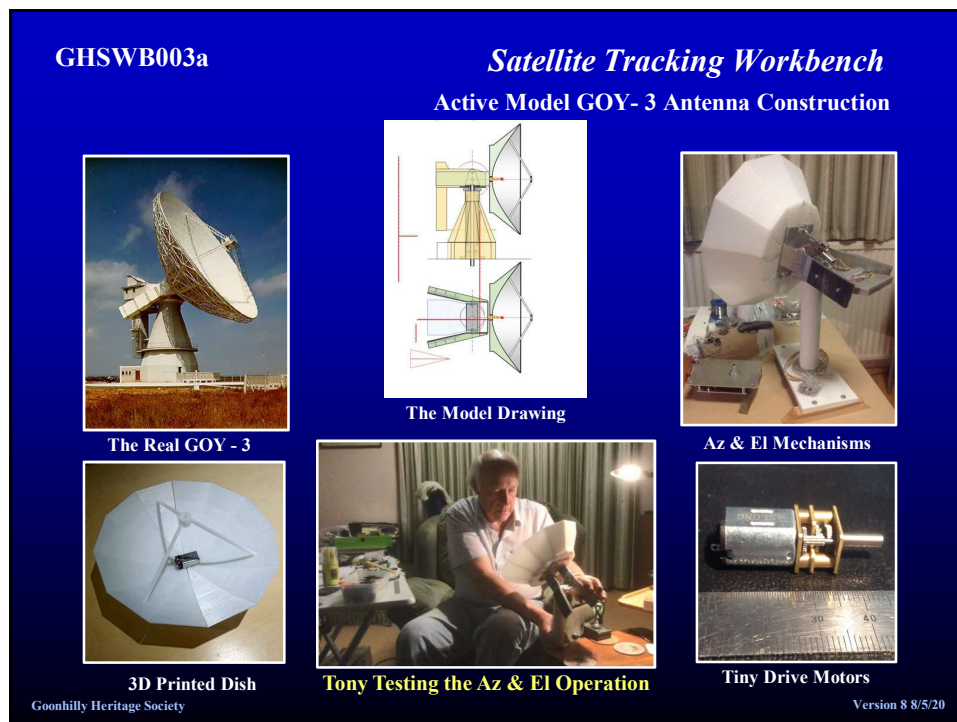
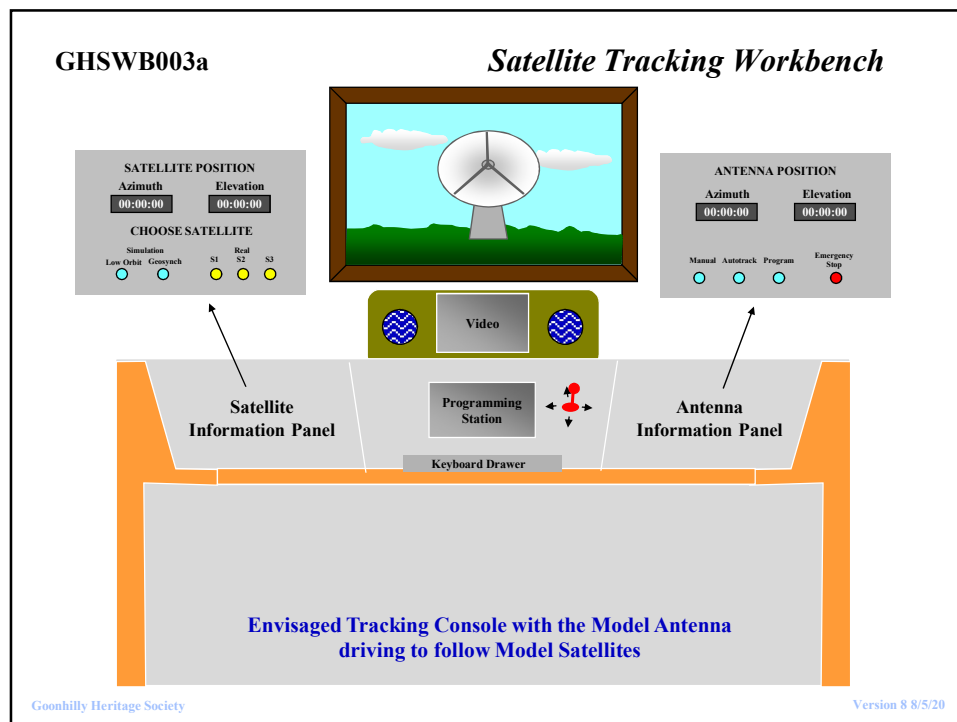
GHSWB003a

Satellite Tracking Workbench Schematic



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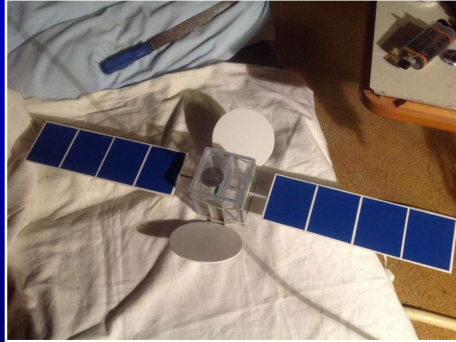
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GHSWB003a

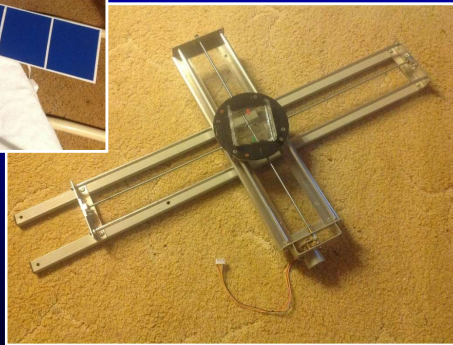
Satellite Tracking Workbench

Active Model Satellite Construction



The Model Satellite takes shape

The Analemma Drive under construction



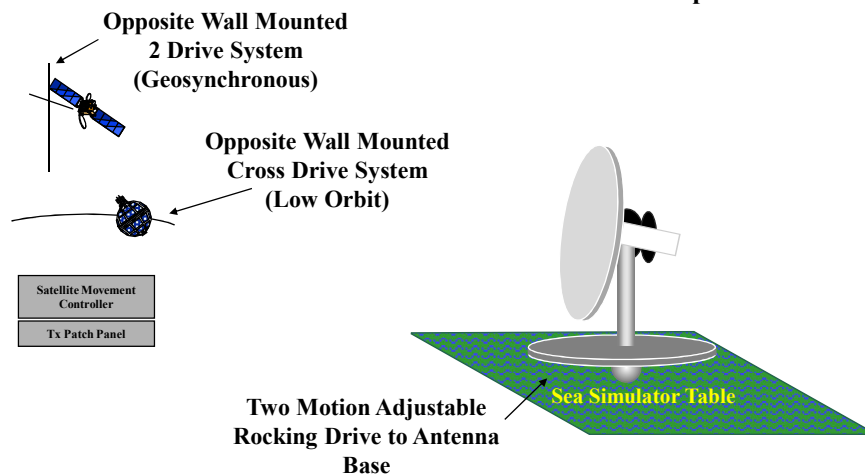
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GHSWB003b

Satellite Tracking Workbench 2b Schematic

Inmarsat Ship Antenna



Expected arrangement will be on a table in the centre of the Workbench room

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GHSWB003b

Satellite Tracking Workbench 2b **Inmarsat Ship Antenna**



Andy fault finding the Antenna Power Supply

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GHSWB004a

Star Trekking Activity



Paula, Simon & Robin preparing backdrop artwork

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GHSWB004a

Star Trekking Activity



Des & Tony at Truro High School (also with Paula & Paul)

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GHSWB004a

Star Trekking Activity



Students at Summer School event at Goonhilly

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GHSWB004b

Satellite Trekking Activity



GES Ltd Education Officer at Goonhilly requested an alternative display to the Trekking Activity for Schools events, this time for Satellites.

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GHSWB004b

Satellite Trekking Activity



Sense & Activation Control Board



Track Animation Cct for LEO Satellites

Control Printed Circuits created for activation of displays, and wiring to back of display.



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GHSWB004b

Satellite Trekking Activity



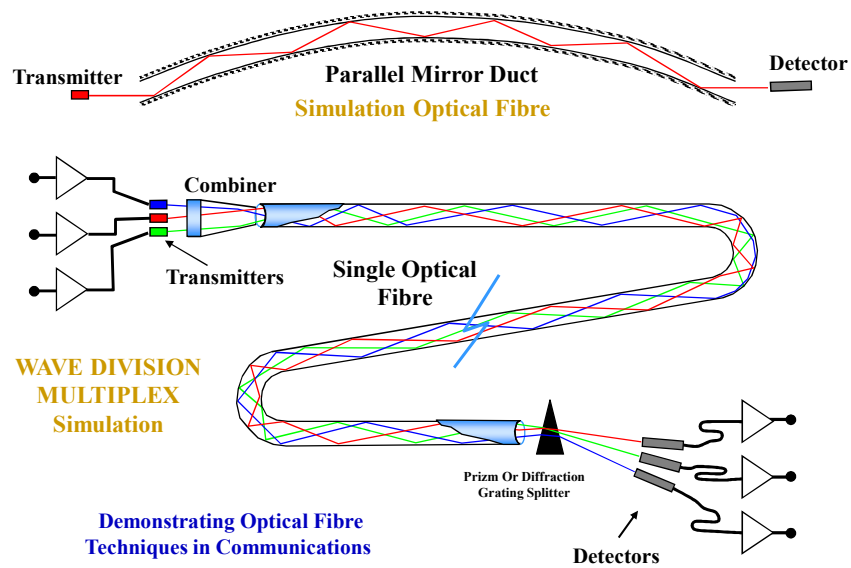
The Final Assembled display showing historical satellites worked by Goonhilly.

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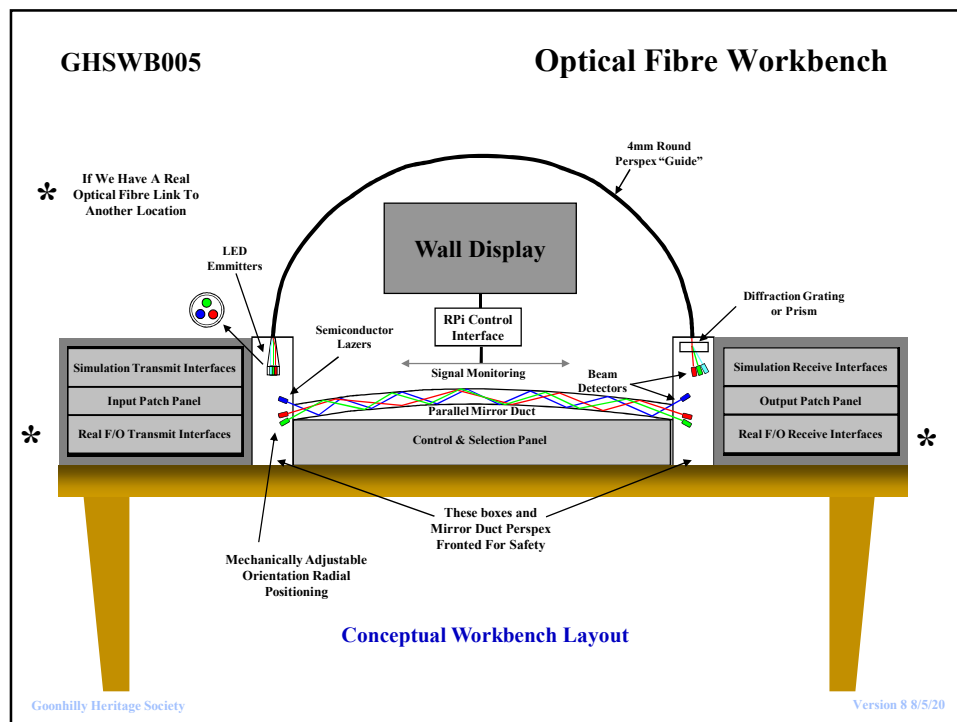
GHSWB005

Optical Fibre Workbench Schematic



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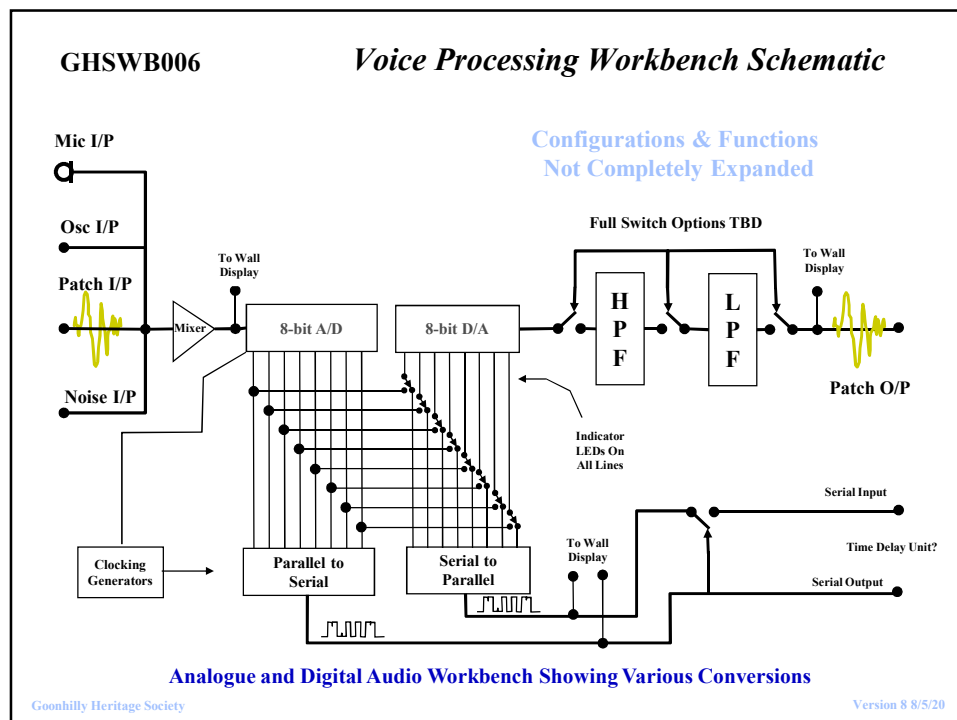
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Some Other Workbenches For Future Development

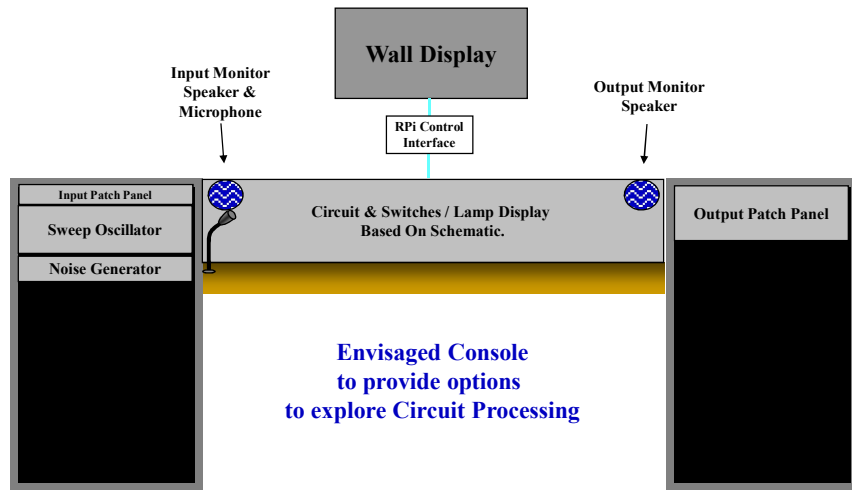
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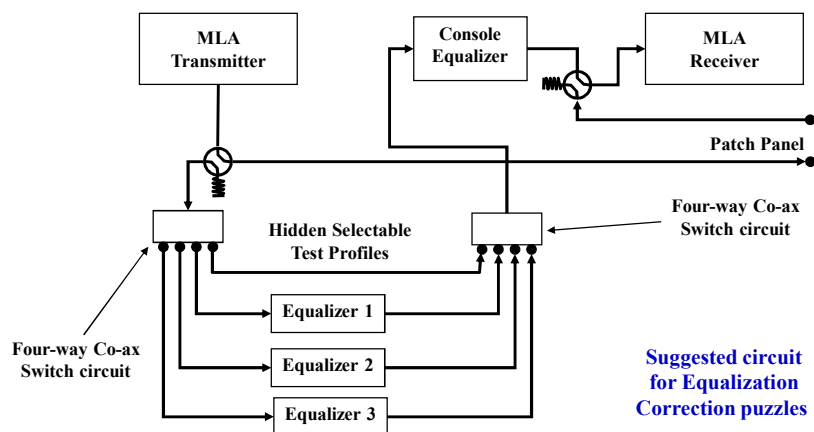
GHSWB006

Voice Processing Workbench Physical



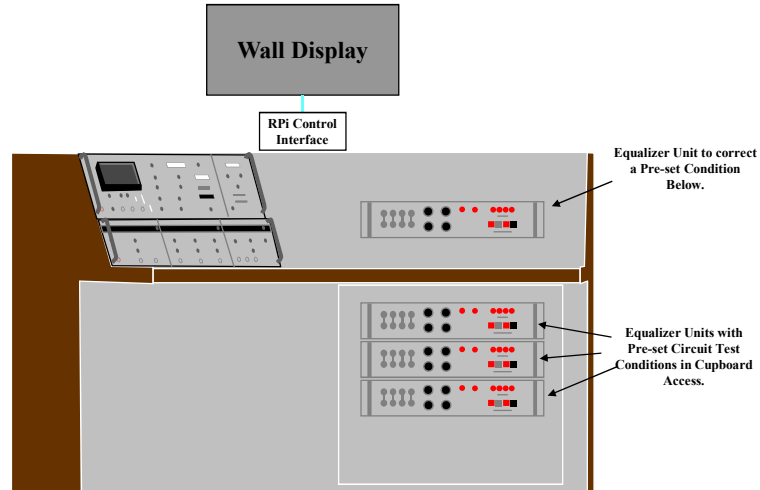
GHSWB007

Equalization Using Microwave Link Analyser



GHSWB007

Equalization Using Microwave Link Analyser



Conceptual Workbench Layout

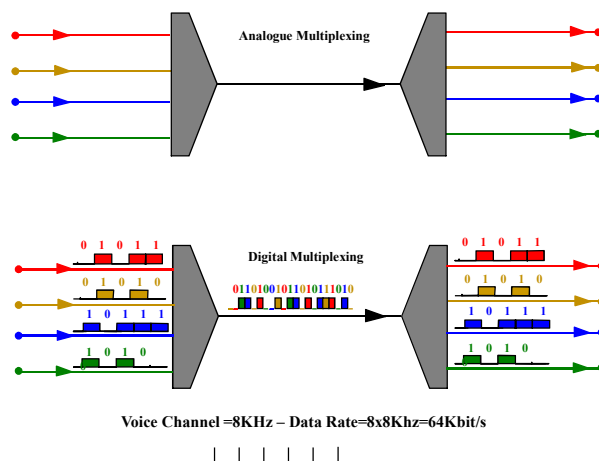
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GHSWB008

Channel Multiplexing Workbench

No Development Yet



Up to 31,000 grouped ccts Voice / Data / Fax bundled & networked by Optical Fibre
Uses PDH or SDH

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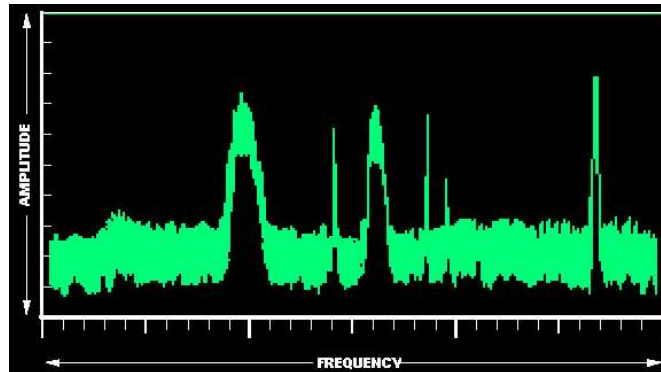
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GHSWB009

RF Modulation Types Workbench

SSB, DSB, Suppressed Carrier
Efficiencies?
A/M – Disadvantages?
F/M – Noise Benefits?

A/M & F/M Analogue
& Digital Considerations.



To Be Developed

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Workbench Ideas List (1)

Details	Lead or raised by:	Workbench
Channel Multiplexing	Tony	Channel Multiplexing
TDMA	Tony	Channel Multiplexing
Clocking Recovery / Synchronisation	Tony	Digital
Doppler Shift effects of Satellite	Tony	Digital
Antony to look at "proof of concept" for a Raspberry Pi dongle to provide the display capability that Tony James is envisaging	Antony	Displays
Bit-stream representations (using Raspberry Pi)	Tony	Displays
Digital modulation vector diagrams (using Raspberry Pi)	Des	Displays
Satellite tracking (using Raspberry Pi)	Tony	Displays
Simulation of past functional things using today's computer modules like Raspberry Pi	Antony	Displays
Spectrum Analyser TV wall display unit (using Raspberry Pi)	Antony	Displays
"Mobile" Tracking - Inmarsat M ship antenna	Andy	Inmarsat
Inmarsat Antenna Stability platform (Inmarsat B Ship Antenna)		Inmarsat

Green Colour – Support for Workbenches

Red Colour – Currently being worked on

Blue Colour – Decided Workbenches

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Workbench Ideas List (2)

Details	Lead or raised by:	Workbench
Basic Waveguide link	Tony	Microwave
Frequency response and group delay	Des	Microwave
Horn antennas - interference?	Tony	Microwave
Microwave precision measurements	Robin	Microwave
Possible external connection from antenna system to satellite (GES?)	Robin	Microwave
Signal to noise effects and data recovery	Tony	Microwave
VSWR Measurements	Robin	Microwave
Waveguide principles: Ideal Transmission Line representation	Tony	Microwave
Analogue Modulation	Des	Modulation
FM / AM comparison	Robin	Modulation
Optical fibre basics	Tony	Optical Fibre
Optical fibre link	Tony	Optical Fibre
Wave Division Multiplexing	Tony	Optical Fibre

Red Colour – Currently being worked on

Blue Colour – Decided Workbenches

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Workbench Ideas List (3)

Details	Lead or raised by:	Workbench
Radar principles (e.g. via acoustic radar display of near area)	Tony	Radar
Weather station	Tony/Des	Radar
"Figure-of-8" generation to simulate satellite tracking	Tony	Satellite Track
Manual Tracking - joystick control following a simulation satellite	Tony	Satellite Track
Orbital Variations	Tony	Satellite Track
Step Tracking	Antony	Satellite Track
Microwave Link Analyser	Robin	Transmission Quality
Scalar Network Analyser	Des	Transmission Quality
Analogue TV - advantages vs disad	Simon	Video
Analogue TV - cable equalisation effects	Des	Video
Analogue video link (FM)	Simon	Video
Digital TV - advantages vs disad (e.g. frame store freezing)	Antony / Simon	Video
Digital Video link (DVB) [Variable-rate with noise & interference]	Des Prouse	Video

Red Colour – Currently being worked on

Blue Colour – Decided Workbenches

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Workbench Ideas List (4)

Details	Lead or raised by:	Workbench
Use of pen plotters for illustrative demos	Robin	Monitor
A>D>A link - bit loss distortions (companding channels)	Tony	Voice Process
Working Voice Channels	Tony	Voice Process
Digital Video Broadcasting Loop Around	Antony / Simon	Transmission Simulator
Add a variable phase-shifter to the above rain-attenuation simulator (for DVB Loop-round)	Antony / Simon	Transmission Simulator
Drive a variable attenuator from a program running a typical rain-fade attenuation situation	Antony	Transmission Simulator
Variable transmission path delay simulator - try WAN-EM from TATA	Antony	Transmission Simulator
Chinese satellite for AMSAT	Robin	Services
Deriving functional transfer curves (recalled from a past apprentices' project).	Simon	
Dynamic Tracking Filters (from D Wain, WestWing)	Tony	
Parametric Amplifiers		
SCPC	Tony	

Red Colour – Currently being worked on

Blue Colour – Decided Workbenches

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Further Ideas and Volunteers Welcome



**Please Contact Us
If You Are Interested**

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