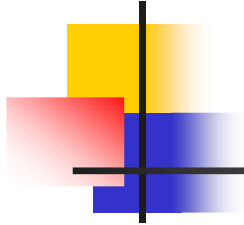




# Purple Edge

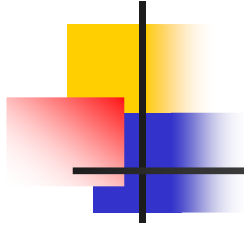
An Electronic Design Services Company



# Introduction

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- 1) Services Offered
  - a) Circuit design services
  - b) FPGA design services
  - c) Digital Signal Processing
  
- 2) More than 20 years of experience
  
- 3) Experience designing for low and high volume applications
  
- 4) High efficiency resulting in quick turn-around time



# Circuit Design Services

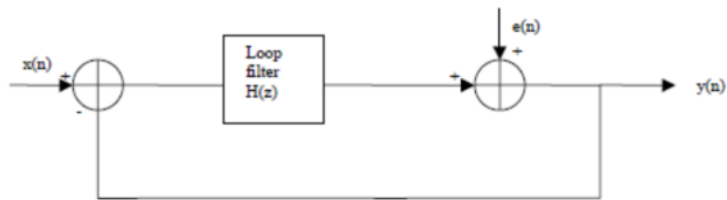
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- 1) Circuit Design
  - a) Architecture
  - b) Analog / Digital Circuit Design
  - c) Mixed- Signal Circuit Design
  - d) Board-level Design
  - e) Chip-level Design
  - f) System-level Design
  - g) PCB Layout
  - h) Analog to Digital / Digital to Analog Circuit Design
  - i) Filters
  - j) TX / RX
  - k) Requirements specification

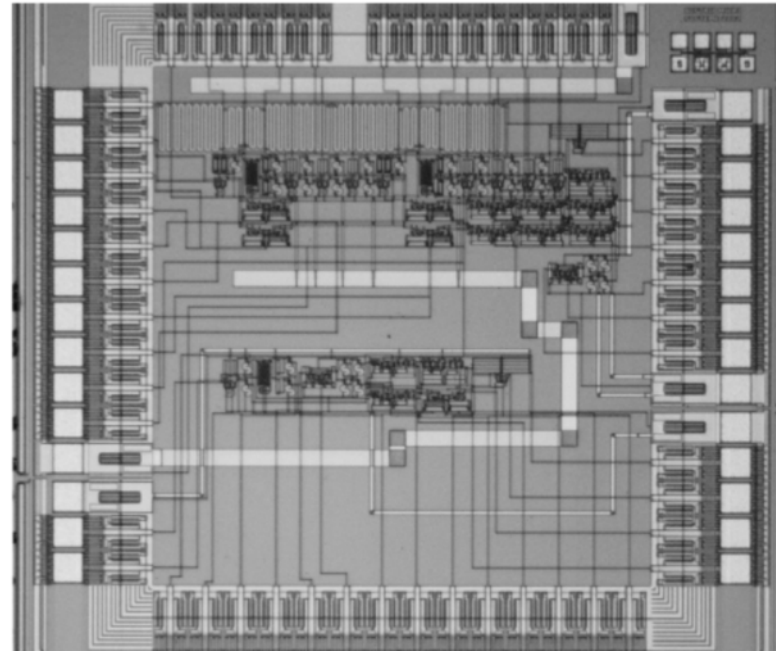


# Example - Past Projects

ADC – for a leading research institution



Sigma-delta ADC

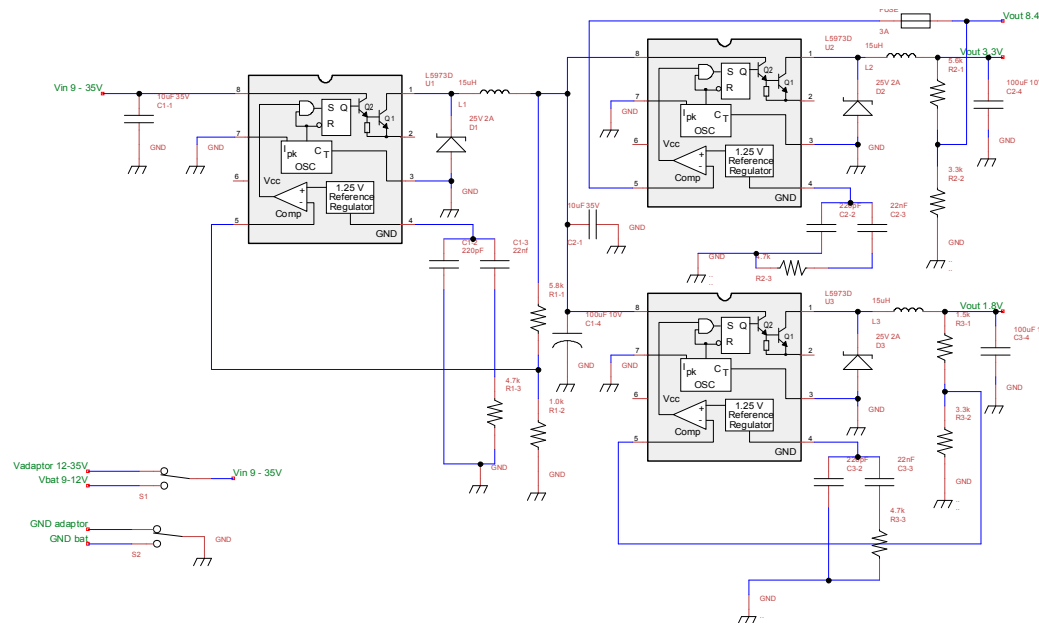


Micro-photograph of chip

Chip-level design for a high-speed sigma-delta ADC

# Example - Past Projects

- Power supply circuit – for an engineering company

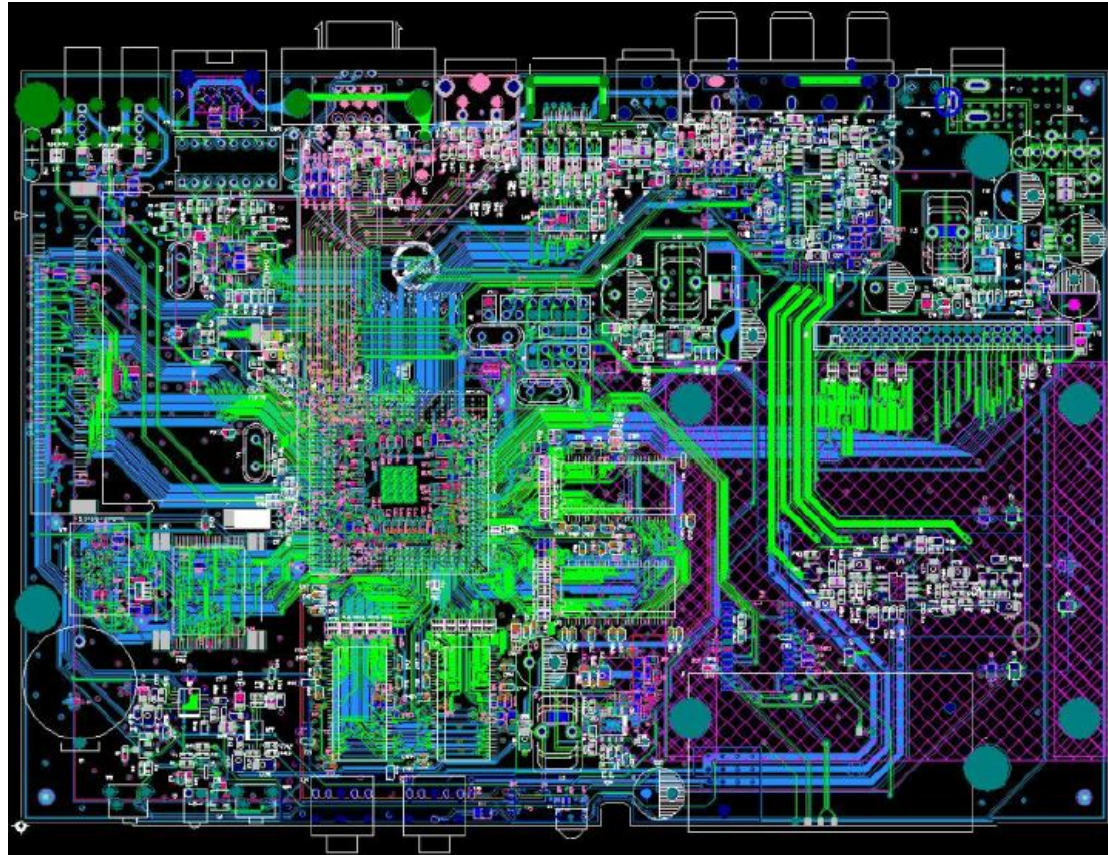


Board-level design for a power supply circuit used in a consumer device

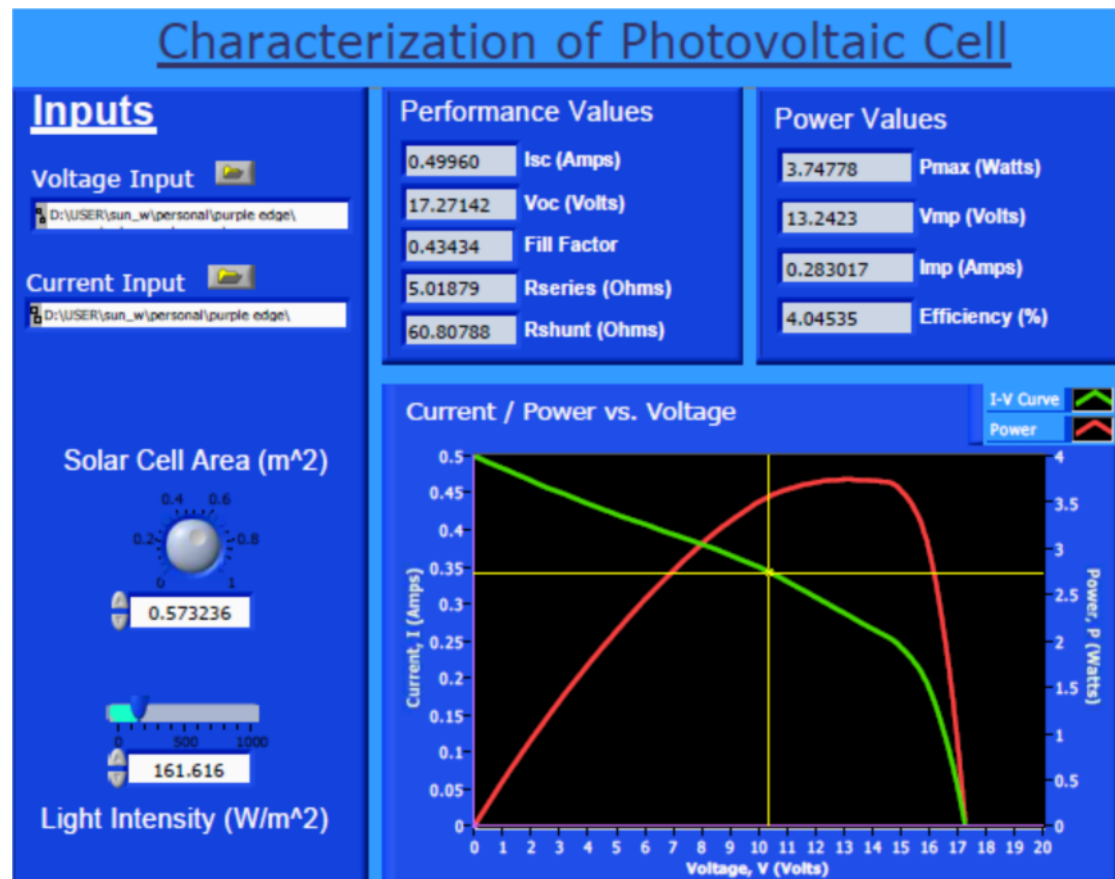


# Example - Past Projects

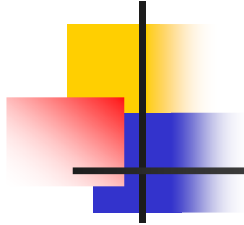
- PCB Layout – for use in consumer application



# Example - Past Projects



Tester for Solar Cells / Photovoltaic Cell



# FPGA/DSP Design Services

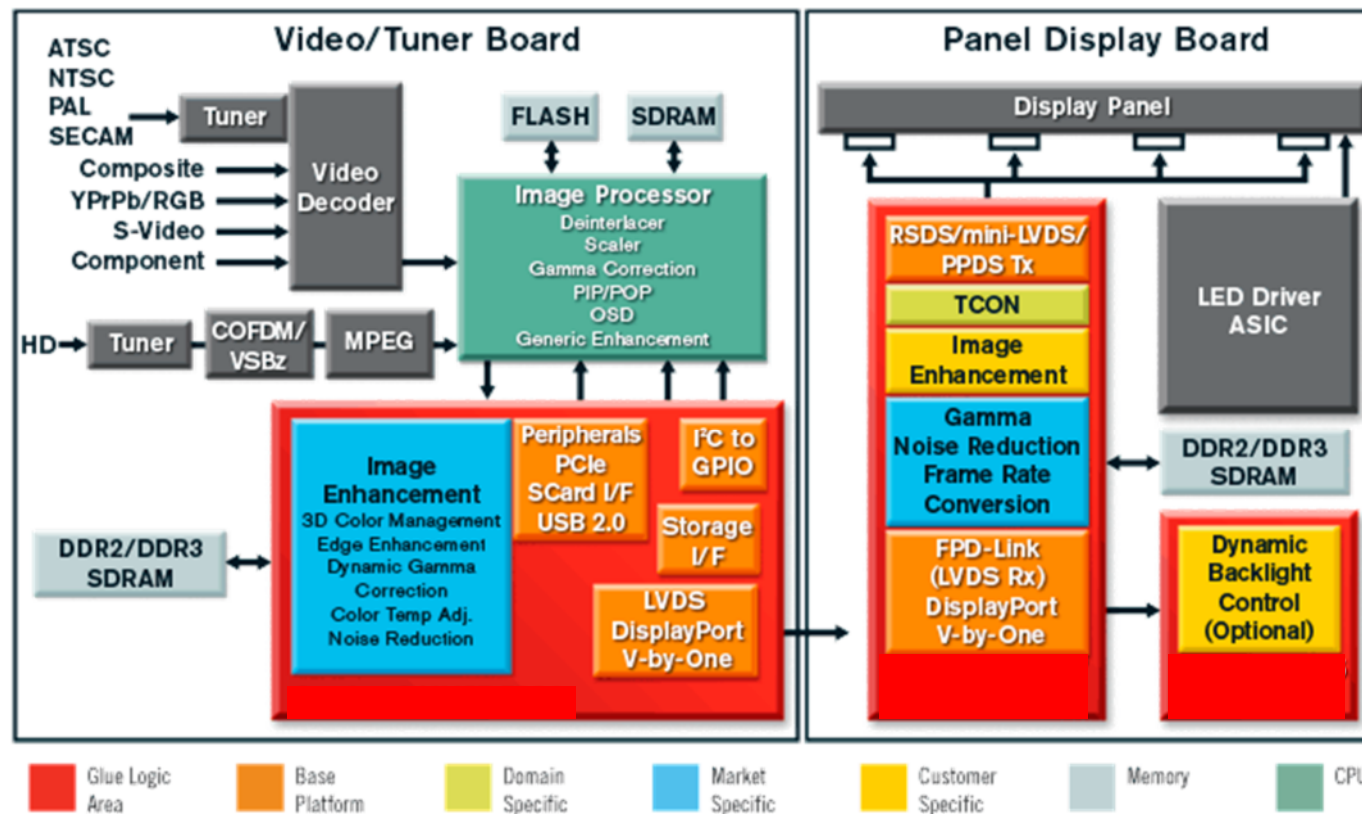
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- 1) Design for a broad range of applications
  - a) Broadcast
  - b) Consumer
  - c) Wired communications
  - d) Wireless Communications
  - e) Industrial
  
- 2) Vast design experience on platforms from major vendors
  - a) Xilinx
  - b) Altera
  - c) Atmel etc.
  - d) Texas Instruments DSP Processor
  - e) OMAP ( ARM + TI DSP)
  - f) PIC Microcontroller



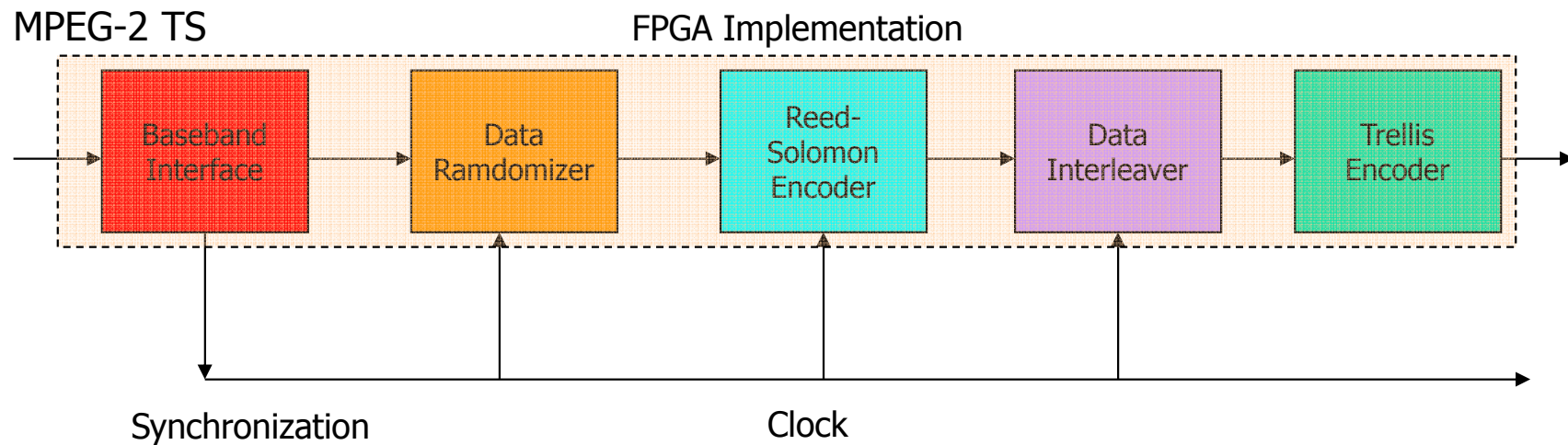
# FPGA Applications – Consumer Electronics

- 1) Digital displays
  - a) Image enhancement
  - b) Dynamic Backlight Control



# FPGA Applications - Broadcast

- Forward Error Correction (FEC)





# FPGA Applications

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## Broadcast

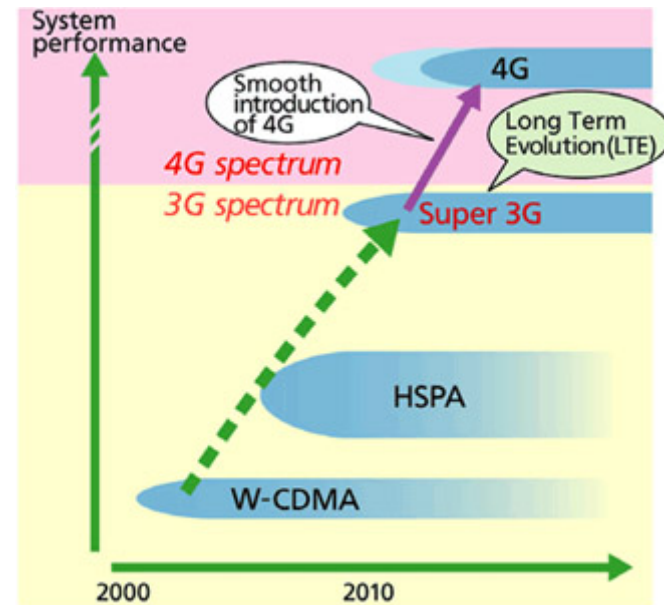
- Forward Error Correction (FEC)
- Broadcast transmission
- Fast Fourier Transform (FFT)
- Finite Impulse Response (FIR) filters
- MPEG



# FPGA Applications

## Wireless

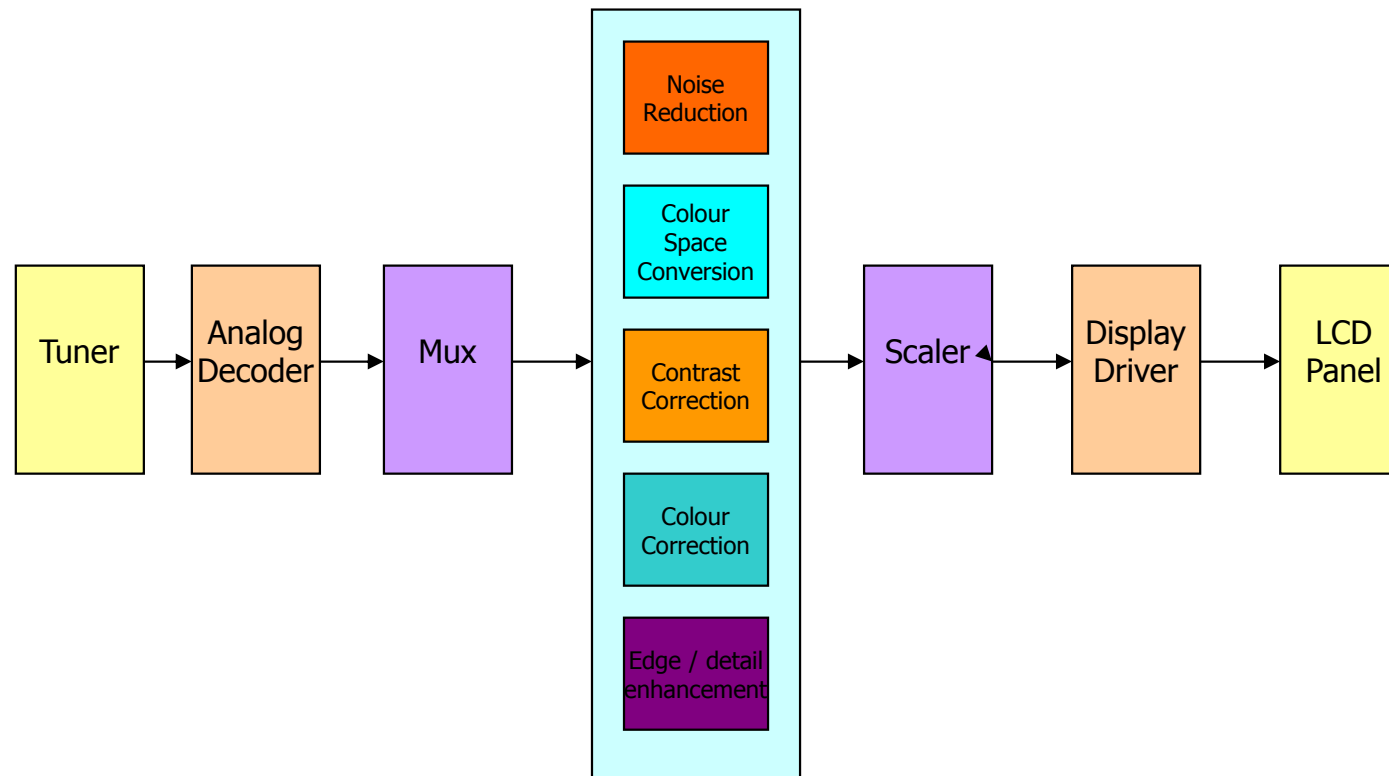
- Digital Up-Converter (DUC)
- Digital Down-Converter (DDC)
- LTE
- WCDMA / HSPA
- WIMAX
- TD-SCDMA





# Example - Past Projects

Picture Quality Enhancement – for a leading Consumer Electronics Company



Implementation of picture quality enhancement on FPGA for plasma and LCD televisions



# DSP Application

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- Modulation / Demodulation
- IQ Imbalance Compensation
- Synchronization
- Filtering
- Error control
- Interleaving
- Signal Analysis
- Speech Compression



# Example - Past Projects

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- HF/VHF Decoder
  - **AIS** ( VHF, GMSK, CRC, Automatic Identification of Ship )
  - **HC-ARQ** ( HF, Haegelin-Cryptos simplex ARQ, a mode used by UN and Red Cross services )
  - **ICAO selcal** ( HF, International Civil Aviation Organization, each address consist of 2 pair of tones )
  - **MIL-STD-188-110 Appendix B** ( VHF, 39 tone QDPSK, tone spacing 56.25Hz, Reed Solomon Code , interleaving )
  - **MIL-STD-188-141A** ( HF, Automatic Link Establishment, 8-ARY FSK, Golay Code, interleaving)

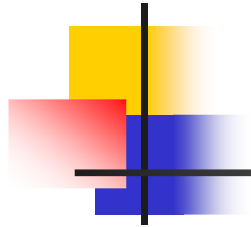




# Example - Past Projects

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- Signal Analysis
  - Analysis report on unknown Signal Transmission
    - classification on modulation type
    - length of burst transmission
    - bandwidth of transmission
    - baud rate ( from instantaneous frequency )
- Modulation / Demodulation
  - Multi carrier
  - OQPSK / M-QAM
  - ASK, FSK, PSK



# Contact Info

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For project discussions and quotation:

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[www.PurpleEdge.com.sg](http://www.PurpleEdge.com.sg)