

James Cook University
Electrical and Computer Engineering
EE4306 Assignment 2

Introduction

This assignment is worth 15% of the total of the course and covers RF electronics.

This assignment reinforces team-work, project planning and the knowledge and practice of RF design.

Task

Do a complete design, including a printed circuit layout using Protel, for a receiver board for part of the GMS Meteorological Satellite High Resolution data receiver. The board to be designed has an input signal of -60 dBm at a frequency of 133.6 MHz and an impedance of 50 ohm. The input signal occupies a 2.0 MHz bandwidth. That signal is to be frequency shifted, filtered and amplified to produce a 0.5 Volt pp signal into 800 ohms at an 18.48 MHz centre frequency. The frequency conversion requires stable local oscillators, the first one must be capable of being frequency controlled in 25 kHz steps over a 1 MHz frequency range. The design is to occupy one Eurocard (100mm by 220mm) printed circuit board.

Note: Filtering to firstly ensure that, no extraneous signals can cause erroneous operation and secondly to ensure that, only the required 2 MHz signal bandwidth appears at the output must be included.

The class is to form 5 groups as allocated. Each group is to submit a complete design for the above circuit board, including circuit diagrams, parts lists, netlist-checks, documentation, printed circuit board layout, drill files etc. Each group should elect a group leader, plan a timeline of the project and allocate tasks and deadlines to ensure the project is completed. These planning proposals are to be submitted by 5pm on the 30th of August.

The final documentation must include the group name, a list of the group members and a detailed description of the tasks carried out by each team member, and is to be submitted by 10am Friday the 26th of October. In addition each member of the group is to give a mark for this assignment to every other member of the group and email that to me before the submission deadline. Please ensure that our email includes the group name. The marks to be awarded must satisfy the following grading criteria: HD (above 85%), D (75-84%), C (65-74%), P (50-64%), P- (47%-50%), N (less than 47%). One must not award more than one mark above 85%, two marks above 75%, four marks above 65%.

On Monday the 29th of October and Tuesday the 30th of October, each group will present a seminar outlining their design and defending their design methodology.

C. J. Kikkert
2 Aug 2001

Assignment Groups

Group1

ALTOFT DANIEL GEORGE
BACCARI DANNY
BATT SHELLIE SARAH
BEATTIE BENJAMIN JAMES
BOULTON JILLIAN THERESE
BRADLEY SARAH CATHERINE
BRODIE MATTHEW JAMES

Group2

BUTLER CLAIRE LOUISE
CARE CARSON
CLOONAN MICHAEL PATRICK
CORNISH LUKE
CROCOMBE NICHOLA SUSAN
FITCH PETER GERALD
FORNO AARON CRAIG

Group3

GRIMSLEY SCOTT PETER
HARDIE CHRISTOPHER ANDREW
HARE THOMAS GEORGE
HUNTER KEVIN ANDREW
JACKLYN ANDREW
JOHNSTON CARMEL
KORA AISAKE QIOKATA

Group4

LAING DAVID ANTHONY
LOWE DARRYN WILSON
LUDLOW TROY DAVID
MCKELL PETER JOHN
MENEGON MARK ANTHONY
MULLER ROBERT LYALL
NAVIN NIALL THOMAS

Group5

OVERS GREG DARRYL
PIPER MATTHEW ROBERT
POLI LUKE TIMOTHY
RACKLIFF SIMON RICHARD
ROGOIMURI SAIMONE
SCOTT DAVID EDWARD
STEBBENS KYLE RYAN