

EMONA INSTRUMENTS

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November 12, 2014

Dr. Valentine A Aalo

Department of Computer & Electrical Engineering

Florida Atlantic University

777 Glades Road

Boca Raton, Florida 33431

Dear Dr. Aalo,

Proposal to add TIMS FO/CDMA/SS/WIRELESS CH Experiments to the Department's lab: FAU111214/MOD

I would like to thank you for your continued interest in the Emona TIMS signals modelling equipment. Further to your email request, please find following options to add more FO,CDMA, S&S and Wireless Ch experiments to the Department's existing TIMS-301C Systems.

This proposal is divided into five sections.

Section "A" & "B" include the modules required for experiment *Fibre Optics* and *DS-CDMA*.

Section "C" lists the modules required for *Fourier Series & Convolution experiment*.

Section "D" includes the modules required for experiment D8-01 -- Time-Invariant Fading Channel Characteristics.

Section "E" lists the accessory option.

Please feel free to call Shiela Woodson (1- 877-237 8181) or email me (abreznik@emona.com.au) for further details, clarification, or to assist with experiment and module selection to suit your requirements.

ITEM	QTY	EACH	TOTAL
A - TIMS MODULES FOR FIBRE OPTICS EXPERIMENT			
1 TIMS-148 AUDIO OSCILLATOR	1		already purchased by the Dep't
2 TIMS-153 SEQUENCE GENERATOR	1		already purchased by the Dep't
3 TIMS-156 UTILITIES	1		already purchased by the Dep't
4 TIMS-425 QUADRATURE UTILITIES	1		already purchased by the Dep't
5 TIMS-503R Fiber optic Tx (red)	2	\$525.00	\$1,050.00
6 TIMS-503G Fiber Optic Tx (grn)	1	\$525.00	\$525.00
7 TIMS-504 Fiber Optic Rx	2	\$525.00	\$1,050.00
8 TIMS-505 Fiber Optic COUPLER	2	\$575.00	\$1,150.00
9 TIMS-506 Fiber Optic WDM Filters	1	\$575.00	\$575.00
10 TIMS-510S FIBER OPTIC LEAD SET	1	\$157.00	\$157.00

- Experiments requested:

L-52 Fibre optic transmission

L-90 WDM - wave division multiplexing

L-88 Optical signal splitting & combining

L-91 Optical losses + PICO

L-89 Fiber optic bi-directional comm.

B - TIMS MODULES FOR DS-CDMA EXPERIMENT

11	TIMS-147 ADDER	1		already purchased by the Dep't
12	TIMS-148 AUDIO OSCILLATOR	1		already purchased by the Dep't
13	TIMS-150 MULTIPLIER	1		already purchased by the Dep't
14	TIMS-153 SEQUENCE GENERATOR	2	\$525.00	\$525.00
15	TIMS-154 TUNEABLE LPF	1		already purchased by the Dep't
16	TIMS-157 VCO	1		already purchased by the Dep't
17	TIMS-158 60kHz LPF	1		already purchased by the Dep't
18	TIMS-405 ERROR COUNTING UTILITIES	1	\$525.00	\$525.00
19	TIMS-408 NOISE GENERATOR	1		already purchased by the Dep't
20	TIMS-424 DIGITAL UTILITIES	1	\$525.00	\$525.00
21	TIMS-427 MULT SEQUENCES SOURCE	1	\$525.00	\$525.00
22	TIMS-428 CDMA DECODER	1	\$525.00	\$525.00

- Experiments requested:

- L-62 CDMA - introduction - detailed
- L-63 CDMA - processing gain - detailed + PICO
- L-64 CDMA - 2 channel - detailed + PICO

C - TIMS MODULES FOR *Fourier Series & Convolution* EXPERIMENT

23	TIMS-148 AUDIO OSCILLATOR	1		already purchased by the Dep't
24	TIMS-150 MULTIPLIER	1		already purchased by the Dep't
25	TIMS-151 PHASE SHIFTER	1		already purchased by the Dep't
26	TIMS-153 SEQUENCE GENERATOR	1		already purchased by the Dep't
27	TIMS-154 TUNEABLE LPF	1		already purchased by the Dep't
28	TIMS-156 UTILITIES	1		already purchased by the Dep't
29	TIMS-157 VCO	1		already purchased by the Dep't
30	TIMS-418 INTEGRATE & DUMP	1	\$525.00	\$525.00
31	TIMS-424 DIGITAL UTILITIES	1		included in Section B
32	TIMS-443 z-TRANSFORM V2	1	\$525.00	\$525.00
33	TIMS-444 Triple ADDER V2	1	\$525.00	\$525.00
34	TIMS-445 PC-modules controller	1	\$525.00	\$525.00

- Experiments capability (the requested experiments are highlighted in BOLD):

- S&S v2 1 - Introduction to the S & S V2 module set
- S&S v2 4 - Unraveling convolution**
- S&S v2 5 - Integration, correlation & matched filters
- S&S v2 6 - Exploring complex numbers and exponentials**
- S&S v2 7 - Build a Fourier series analyzer**
- S&S v2 8 - Spectrum analysis of various signal types
- S&S v2 10 - Sampling and aliasing
- S&S v2 12 - Discrete-time filters - Finite Impulse Response
- S&S v2 13 - Poles and zeros in the z plane: IIR Systems

D - TIMS MODULES FOR *Wireless Channel Modeling* EXPERIMENT

35	TIMS-155 TWIN PULSE GENERATOR	1		already purchased by the Dep't
36	TIMS-424 DIGITAL UTILITIES	1		included in Section B
37	TIMS-427 MULTI SEQUENCES SOURCE	1		included in Section B
38	TIMS-446 MULTI-PATH CH MODULE	1	\$525.00	\$525.00

- Experiments requested:

E - TMS MODULE STORAGE BOX OPTION

39 TMS-250 Stackable Perspex Module Storage	2	\$275.00	\$550.00
40 Door-to-door shipping and insurance			\$449.00
TOTAL FOR ALL OF THE ABOVE:			\$10,756.00

TERMS:

- 1) Warranty period is 24 months from date of invoice. Support is co-ordinated by our approved service provider, Shiela Woodson, in Milliken, CO.
- 2) Delivery charge quoted is for a single delivery to the Department.
- 3) Prices quoted exclude State and Federal Taxes.
- 4) Payment Terms: 30 days from date of invoice.
- 5) Availability: 6 weeks after receipt of order.
- 6) This quotation originates from Emona's Australian office. The quotation may be accepted by emailing or faxing your order to Emona at sales@qpsk.com or fax 011-61-2-9550-1378. Fax orders sent to the toll free 877-751-0232 fax number will be forwarded to Emona Instruments' Australian office.

Alfred Breznik

Technical Director

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