

**Dayalbagh Educational Institute  
(DEEMED TO BE UNIVERSITY)  
Dayalbagh, Agra**

Tender No. DEI/Science/Phy&Comp/KSD/2018-19/TDR-46

Date: March 01, 2019

**Single Tender Inquiry**

**Subject: Purchase of Vector Signal generator, Spectrum Analyzer, Connected Car Platform atleast upto 140 GHz**

The request has been received from **Dr. K. Soami Daya, Department of Physics & Computer Science**, Dayalbagh Educational Institute to purchase the above item from **M/s Keysight Technology India Pvt Ltd** on proprietary basis. The Proposal Submitted by **M/s Keysight Technology India Pvt Ltd** and quotation and departmental PAC certificate are attached.

The above documents are being uploaded for open information to submit objections, comments, if any, from any manufacturer regarding proprietary nature of the equipment/item within 15 Days from the date of issue of this notice giving reference no. **Tender No. DEI/Science/Phy&Comp/KSD/2018-19/TDR-46 dated 01-03-2019**. The necessary documents may be submitted to us in support of your intent/ comments/ objections for our consideration. The intent/ comments/ objections should be received by office of Registrar, Dayalbagh Educational Institute, Dayalbagh, Agra (e-mail: [registrar@dei.ac.in](mailto:registrar@dei.ac.in)) on or before **15-03-2019** up to 05.00 pm failing which it will be presumed that no other vender has any comments to offer, and the case will be decided on the merit.

REGISTRAR

Encl: As above

## PROPRIETARY ARTICLE CERTIFICATE

### Description of Goods / Services :

- Test Automation Platform (TAP) ,
- BenchVueLab Management Solution ,
- SystemVue Communication System Design & Simulation Platform with supported two channel Signalling Wireless Test Set , Two channel Arbitrary waveform Generator with 5GHz Bandwidth , 90GHz Vector Signal Analyzer with smart mixers & compatible mixer upto 140GHz,
- Vector Signal Generator with mmwave frequency extenders 60GHz to 140GHz ,
- 10bit digitizer & solution for Automotive Serial Triggering and Analysis (CAN, CAN-dbc, CAN FD, LIN) lab with hardware in loop testing and validation .

It is certified that :

- (i) The Goods are manufactured / services are provided only by KEYSIGHT TECHNOLOGIES, Inc, USA
- (ii) No other make or model /service provider is acceptable for the following reasons:
  - a. All offered software platforms support all hardware systems for automation and application specific testing and validation encompassing 5G New Radio, Connected Car and Intelligent Transport System Research Lab.
  - b. Keysight Technologies is a single Original Equipment Manufacturer having integrated compatible software solution with System Design & Simulation tool SystemVue , BenchVue Lab Management Solution, Test Automation Platform (TAP) , 16 license of Vector signal analysis software along with hardware dual channel Arbitrary waveform Generator with 5GHz Bandwidth,44GHz Vector signal Generator with frequency extender 60GHz to 140GHz , upto90GHz Vector Signal Analyzer with smart mixing & compatible mixer till 140GHz , two channel Signaling Wireless Test Set along with 10 bit digitizer & solution for Automotive Serial Triggering and Analysis (CAN, CAN-dbc, CAN FD, LIN) .
  - c. Signal Analysis Software bundle:The offered 16 license signal analysis software supports & capable to demodulate & analyze various standards and modulation types for cellular communication, wireless standards , Aerospace, defense ,satellite communication&automotive radar & Pulse analysis , debug signals to find the root cause of problems in time, frequency, and modulation domains with unlimited trace and markers with inbuilt record and playback signals for troubleshooting.  
The offered Signal analysis software runs on a PC or inside PC-based instruments and supports signal analyzers, oscilloscope as well as simulation software .
  - d. The 44GHz vector signal generation capability with offered dual channel Arbitrary Waveform Generator is extended to 2 GHz bandwidth up to 44 GHz carrier frequency and for IF signal generation, IQ bandwidth is up to 5GHz. The Arbitrary Waveform Generator provides 14 bit resolution with 8 GSa/s, 2 GSa Memory /Channel, Spurious Free Dynamic Range of upto 90 dBc which is optimized for serial data/time domain applications & to generate high bandwidth signals for mmwave 5G New Radio and Advanced Driver Assistance Systems (ADAS).
  - e. The 90GHz Signal Analyzer with Smart mixing capabilities enables automatic amplitude correction and transfer of conversion loss data through USB plug and play features, automatic LO amplitude adjustment to compensate for cable loss, vector correction data include magnitude and phase improving EVM measurement, wideband millimeter-wave signal analysis of more than 2 GHz. The wideband Vector Signal Analyzer is offered with a high-definition 10-bit digitizer both of which enable vector demodulation of 5G NR signals, FMCW signals
  - f. SystemVue design software:The communication system design models Physical Layer (PHY) architectures across multiple Baseband & RF domains, for better system designs.
    - It provides an implementation path to FPGA/DSP hardware
    - It enables cross-domain verification, connecting Baseband algorithm to RF tools, Standards references, and Test & Measurement.
    - The automotive radar library with Linear FMCW Multi-Targets Detection enables
    - Generate linear FM signal ,Combine target echo generation , Use mixer to get the beat frequency , Set ADC sampling rate to do FFT , Peak detection , Multi-target detection and display

- Automotive Radar 3D Scanners: 3D scan array , 3D scan workplace (trajectory layer, antenna layer, signal layer) .Display target space distribution in 3D
  - it utilizes the hardware connectivity with offered arbitrary waveform generator, vector signal generator, and vector signal analyzer to compare and find meaningful correlations between simulation and measured data.
- g. Intelligent Transport System Test Bed: The offered GSM network emulator is capable to create two independent base stations for testing emergency call services and vehicle mobility use case of over the air network identity changes. The offered GSM network emulator will host public safety answering point server to decode transmission of minimum set of data from telematics module as per emergency call format and supports voice and SMS capabilities
- h. BenchVue Lab Manager and Lab Station are lab management software, it enables Efficient Lab Management, :
- Centralized lab configuration + support for non-Keysight instruments.
  - Remote monitoring and bench desktop sharing for student assistance.
  - Asset tracking and management with calibration updates
  - Preload lab and instrument settings.
  - Remote monitoring and remote teaching
  - Control instruments, capture data and screenshot, and view result easily.

(iii) The above items are solely manufactured by Keysight Technologies Inc, USA and not by any one else in the entire world and Keysight Technologies India Pvt Ltd is the wholly owned subsidiary of the OEM in India .

In view of Rule 159(iii) of GFR-2017 the notice will be published on the e-procurement site (CPP Portal), if the estimated cost of the equipment is above Rs.2.5 lac

*K. Soami Daya*  
PI/Concerned Teacher

Name: K. SOAMI DAYA

*[Signature]*  
REGISTRAR  
28/1/19.

*[Signature]*  
INTERNAL AUDITOR

*[Signature]*  
TREASURER

*[Signature]*  
DIRECTOR

Date : 25/02/2019



To,  
DayalBagh Educational Institute  
(Deemed University )  
Agra, Uttar Pradesh-282 005

Kind Attn: The Registrar

### QUOTATION

<b>Keysight Quotation No.</b> 1450734	<b>Date</b> 12 Feb 2019	<b>Page Number</b> 1
<b>Expiration Date/Days</b> 30 days	<b>Est Weeks Delivery</b> 26-28 weeks after PO receipt and sales order acknowledgement	
<b>Payment Terms</b> 70% Equivalent PBG with advance payment		
<b>Inco Terms</b> CIP-India		

For Enquiries regarding this quote please contact:

Name Tarun Prasad, Territory Manager, EMG  
KEYSIGHT TECHNOLOGIES INDIA PVT. LTD.  
Office no 404-A, Corporate One  
Plot no 5-Jasola , New Delhi 110 025  
Mobile : +91 98100 888 93

PLEASE PLACE PURCHASE ORDER & L/C TO:

KEYSIGHT TECHNOLOGIES SINGAPORE (SALES) PTE LTD  
COMPANY No. 199904761K  
NO. 1 YISHUN AVENUE 7,  
SINGAPORE 768923

**Tender Reference : Your Tender No: DEI/SC/PHY/KSD/2018-19/EOI for setting up a 5G and Telematics Lab , Bid Submission date 12<sup>th</sup> Feb 2019 , 11:00 Hrs , Bid opening date 12<sup>th</sup> Feb 2019 , 11:30 Hrs**

**Subject : Keysight Technologies Techno-commercial Proposal for 5G and Telematic Lab comprising of** comprising of BenchVue Lab Management Solution ,Test Automation Platform (TAP) , SystemVue Communication System Design & Simulation Platform with supported two channel Signalling Wireless Test Set , Two channel Arbitrary waveform Generator with 5GHz Bandwidth , 90GHz Vector Signal Analyzer with smart mixers & compatible mixer upto 140GHz, 44GHz Vector Signal Generator with mmwave frequency extenders 60GHz to 140GHz , 10bit digitizer & solution for Automotive Serial Triggering and Analysis (CAN, CAN-dbc, CAN FD, LIN) lab with hardware in loop testing and validation & Connected Car and Intelligent Transport System Research Lab.

S.no	Partnumber	Option	Description	Qty	Unit (USD) Price	Total Price(USD)
A.	BV9111B		<b>Keysight BenchVue Lab Management and Control Solution</b> • BV011xB BenchVue Lab  i. BV0110B BenchVue Lab Manager App – software application installed on the PC for centralized control, monitoring and management ii. BV0111B BenchVue Lab Client App – connects all the instruments at individual test benches.  • BV9101B BenchVue Education Control Collection iii. control unique instrument types: Vector Signal generator, Signal Analyzer , Arbitrary waveform generator , oscilloscope , wireless test set & other equipments iv. Test Flow feature – build automated test sequence blocks from multiple instruments with a drag-and-drop interface, without requiring programming v. Extensive data trace and measurement logging capabilities, with report generation vi. supports over five hundred Keysight test and measurement instruments and will also connect to non-Keysight test instruments that are compliant with the VISA connection protocol	1		
B.	E8740A		<b>FMCW Radar utility software</b> Automotive Radar Signal Analysis and generation for FMCW analysis and linearity measurements using Signal analysis software and IQ tools	1		
C.	KS8700A		<b>PathWave Test Environment</b> PathWave Test Environment , API, Test Spreadsheet, command plugin	1		

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Technologies  
Keysight Technologies India Private Limited

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D. SystemVue design software				
4	Communication system design models Physical Layer (PHY) architectures across multiple Baseband & RF domains. -implementation path to FPGA/DSP hardware -cross-domain verification, connecting Baseband algorithm to RF tools, Standards references, and Test & Measurement. -Automotive radar library with Linear FMCW Multi-Targets Detection enables -Generate linear FM signal, Combine target echo generation, Use mixer to get the beat frequency, Set ADC sampling rate to do FFT, Peak detection, Multi-target detection and display -Automotive Radar 3D Scan enables 3D scan array, 3D scan workplace (trajectory layer, antenna layer, signal layer) .Display target space distribution in 3D -Software utilizes the hardware connectivity with offered arbitrary waveform generator, vector signal generator, and vector signal analyzer to compare and find meaningful correlations between simulation and measured data.		1	
E. Automotive Serial Triggering and Analysis Lab				
	Automotive Serial Triggering and Analysis (CAN, CAN-dbc, CAN FD, LIN) lab solution using hardware-based architecture enables: -Solution for triggering on and analyzing CAN/CAN FD/LIN serial busses -trigger and decode ISO CAN FD and non-ISO CAN FD CAN-dbc and Lin-Idf symbolic trigger and decode by importing an industry-standard .dbc and .idf files (standard capability)		1	
F. Intelligent Transport System Test Bed comprising of PathWave Test for Automation :				
5	E7515A	E7515A	Wireless Test Set	1
5.1	E7515A	E7515A-504	Frequency range 300 MHz to 3.8 GHz	1
5.2	E7515A	E7515A-BA1	Digital baseband transceiver A	1
5.3	E7515A	E7515A-RA1	RF up-down converter A	1
5.4	E7515A	E7521A	GSM/GPRS/EGPRS Test Application	1
5.5	E7515A	E7521A-1FP	GSM/GPRS/EGPRS	1
5.6	E7521A	E7521A-FFP-0P1	IP data, fixed perpetual licens	1
5.7	E7515A	E7515A	USIM	10
5.8	E69511A	E69511A	E6951A PSAP Emulator	1
5.9	DUT for automotive with GPS and GSM capability			1
5.10	RF splitter /combiner			2
5.11	Antenna coupler with shield box			1


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<b>G.</b>						
44GHz Vector Signal Generator with mmwave 60 to 140 GHz frequency extender module , Two channel Arbitrary waveform generator 5GHz with PC controller						
6	M8190A	M8190A	Arbitrary Waveform Generator 14 Bit / 8GSa/s and 12 Bit / 12 GSa/s	1		
6.1	M8190A	M8190A-002	Arbitrary Waveform Generator, 2 Channels , Keysight care support	1		
6.2	M8190A	M8190A-02G	Upgrade from 128 MSa to 2 GSa Memory /Channel	2		
6.3	M8190A	M8190A-14B	14 bit resolution with 8 GSa/s	1		
6.4	M8190A	M8190A-BU2	Bundle 2 consisting of one M9502A 2-slot AXIe Chassis with USB Option	1		
6.5	M8190A	M8190A-811	Cable Assembly Coaxial-50Ohm, SMA to SMA, 1220mm Length	4		
6.6	M8190A	M8190A-820	Connector-RF, SMA Termination, Plug Straight, 50Ohm, 12.4GHz, 0.5W	4		
6.8	E8267D	E8267D	PSG vector signal generator	1		
6.9	E8267D	E8267D-016	Wideband differential external I/Q inputs	1		
6.10	E8267D	E8267D-544	Frequency range from 250 kHz to 44 GHz , Keysight care,internal baseband generator 64Msa	1		
6.11	E8267D	E8267D-H18	Wideband Modulation less than 3.2 GHz	1		
Millimeter-Wave Source Module, 60 to 90 GHz						
6.12	E8257DV	E8257DV12	60-90GHz multiplier with 9VDC supply	1		
Millimeter-Wave Source Module, 90 to 140 GHz						
6.13	E8257DV	E8257DV12	90-140GHz multiplier with 9VDC supply			
<b>H.</b>						
2Hz to 50GHz Signal Analyzer, Multi-touch with smart mixers up to 90GHz and Frequency extender 90GHz to 140GHz						
7	N9030B	N9030B	Signal Analyzer, Multi-touch			
7.1	N9030B	N9030B-550	Frequency Range, 2 Hz to 50 GHz , Keysight care support , 25MHz BW	1		
7.2	N9030B	N9030B-CR3	Connector rear, wideband IF output	1		
7.3	N9030B	N9030B-EXM	External mixing	1		
7.4	N9030B	N9030B-MPB	Microwave preselector bypass	1		
7.5	M1971E	M1971E	Waveguide Harmonic Mixer, 55-90 GHz , Keysight care support	1		
7.6	M1971E	M1971E-301	Jackstand Accessories , local oscillator , USB cable	1		
7.7	N9029A	N9029AXX	WR-08 ,90-140 GHz Harmonic Mixer	1		



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7.8	N9029AH	N9029AH12	WR-12 Std gain horn antenna (60-90 GHz)	2		
7.9	N9029AH	N9029AH08	WR-08 Std gain horn antenna (90-140 GHz)	2		
I.	DSQS104A Oscilloscope - Infiniium S Series 1 GHz 4 channel , ADC 10 bits, 20 GSa/s (2 channels) , 200 Mpts (2 channels)			1		
J	DSOX3034T oscilloscope 350 MHz 4-channel InfiniVision			1		
K	Accessories					
8	2.4 mm (f) -2.4mm (f) – 2 qty ; 2.4mm (f) -2.92mm(f) – 2 qty ; BNC to BNC male cable 4 qty ; 2.4mm male to male cable : 2.92mm male to male cable : RF attenuator 3.5mm 20dB/40Db : 3.5mm male to male cable 6 qty ; N(m) to 3.5mm (f) adapter 6 qty			1		
L	System Software for 5G Generation & Analysis :					
9	89600	89600	89600 Vector Signal analysis Software	1		
9.1	89600EDU	89600EDU-E15	Signal Demodulation software , 16 Quantity license	1		
9.2	89600EDU	PS-S20	Startup assistance, daily	1		
9.3	N7631C	N7631EMBC	Signal Studio Pro for 5G NR, waveform playback	1		
9.4	N7609C	N7609EMBC	Signal Studio for Global Navigation Satellite System (GNSS), waveform playback	1		
			After Keysight Technologies Special Grant & Discount (US Dollars ) One time Special Prices , CIP-India			351,610.00

**Terms & Conditions:**

1. All Prices quoted are one time special prices for DayalBagh University.
2. Payment Terms: with advance payment , equivalent PBG would be provided.
3. Delivery: 26-28 weeks after PO receipt and order acknowledgment .
4. Part shipment would be allowed , owing to high frequency equipment's & End user statement would be requested subject to license approval requirements.
5. Warranty 3 Years on mmwave 5G , intelligent Transport System & 1 years on cables,conector,consumables accessories
6. Installation Report to be provided along with supply of materials.
7. Performance Bank guarantee as per Dayalbagh University norms would be provided.
8. Custom clearance and applicable duty would be the responsibility of DayalBagh University.



Keysight Technologies India Private Limited



### QUOTATION


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#### Comments

ADVISING BANK: -  
Citibank N.A. Singapore Branch  
8 Marina View  
21-00 Asia Square Tower 1  
Singapore 018960  
Account No: 0858158125  
Swift Code: CITISGSG

Looking forward to receive your valued order .

Thanking you

  
Tarun Prasad  
Territory Manager  
Keysight Technologies India Pvt. Ltd  
+91-9810088893

Name of Manufacturer (O.E.M.): Keysight Technologies India Pvt. Ltd.





Keysight Technologies, Inc.  
1400 Fountaingrove Parkway  
Santa Rosa, CA 95403

www.keysight.com

  
Certified True Copy  
**KELVIN TAY**  
Managing Counsel

May 1, 2014

To Whom It May Concern:

We certify that Keysight Technologies Singapore (Sales) Pte Ltd and Keysight Technologies India Private Limited will be wholly owned subsidiaries of Keysight Technologies, Inc. and that Keysight Technologies Singapore (Sales) Pte Ltd will be solely authorized by Keysight Technologies, Inc. with effect from 1 August 2014 to sell, distribute and support Keysight products which are sold on an indent basis in India.

We further certify that Keysight Technologies India Private Limited is authorized by us to provide Keysight Technologies Singapore (Sales) Pte Ltd with assistance in the indent sales and tender exercises, including but not limited to, assistance with the bid/negotiation process relevant to the sale, distribution and support of Keysight products in India. All indent sales agreements shall be entered into by Keysight Technologies Singapore (Sales) Pte Ltd and signed by the authorized representatives thereof.

We confirm that all payment for indent sales orders placed in India with Keysight Technologies Singapore (Sales) Pte Ltd shall be made out to Keysight Technologies Singapore (Sales) Pte Ltd as the Letter of Credit beneficiary and that Citibank Singapore be the advising bank.

KEYSIGHT TECHNOLOGIES, INC.



Jeffrey K. Li  
Vice President, Assistant General Counsel and Assistant Secretary

Phone } 06782-272801  
12 phones } 06782-274207

Fax } 06782-272072  
Fax } 06782-272168



TR is an ISO 9001:2008 Certified Organisation

भारत मिति संस्था (भारतीय मिति संस्था)  
Government of India, Ministry of Industry  
अनुसंधान एवं विकास विभाग  
Research & Development, Government of India

एकीकृत परीक्षण परिसर  
**Integrated Test Range**

पानवेल, बंगलूर - 500 081 (हैदराबाद)  
Panvel, Bangalore - 500 081 (Hyderabad)

दिनांक : Date

17 October 2014

To,

**M/S Keysight Technologies (India) Pvt. Ltd.  
My Home Hub, 3<sup>rd</sup> Floor,  
3<sup>rd</sup> Block, Madhapur,  
Hyderabad - 500 081  
Tel: (040) 4431 2213, 090008 82286**

**REGISTRATION OF FIRM AS APPROVED VENDOR**

**CERTIFICATE OF REGISTRATION**

Dear Sir,

1. The name of your firm has been included in the list of approved vendors.
2. Registration number allotted to your firm

**REGISTRATION NO : ITR/MMG/REGD/05/SE/2014**

**REGISTRATION VALID UPTO : 31<sup>ST</sup> OCTOBER 2019**

to supply the following category of stores to this laboratory whenever required

**CATEGORY : SCIENTIFIC EQUIPMENTS**

3. Kindly quote the Vendor Registration No. while submitting the quotation.

Yours faithfully,

(P. N. Panda)  
Sc 'E'  
Head IMMD  
For DIRECTOR, ITR

(For Terms & Condition See Overleaf)