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From: Director, CSIR-NPL
Tender No. 14-VIII/SKD(38-GTE)25PB/T-52

Dated: 25.08.2025

CORRIGENDUM

With reference to NPL's Global Tender ID: **2025_CSIR_806888_1** for "**Signal Generator with Power Amplifier with Vector Software**". **All the prospective bidders are hereby informed that some changes have been made in the technical specification of captioned tender. Revised specifications are as follows:**

S.N.	Parameter	Specifications
	Vector Signal Generator with Built in touch screen display	
1.	Fundamental frequency range	11 GHz to 20 GHz or better D band: 110 GHz to 170 GHz
2.	Aging	≤ 3 · 10–8 /year or Better
3.	Frequency Resolution	0.001 Hz or Better
4.	Switching Speed	< 5 msec or better
5.	Output Power	-50 dBm to +10dBm or Better
6.	Level Resolution:	0.01 dB or better
7.	SSB Phase noise @20 kHz offset	-120 dBc / Hz @ 20GHz or Better
8.	Harmonics	-30 dBc
9.	Wideband Noise (carrier offset > 30 MHz)	< –135 dBc
10.	Internal Digital Modulation Bandwidth	8 GHz or better
11.	Internal baseband memory depth	2 Gsample
12.	Vertical resolution	12 Bit or Better
13.	**Sampling rate**	**9.6 GS/s or better**
14.	Interfaces	USB, LAN
15.	Built-in Display with touch screen	Yes required
16.	**Internal Memory**	**>80 GB SSD or better (internal/external)**
17.	Warranty	3 year or better
	D Band Converter Spec	
18.	Frequency Range	110 To 170 GHz
19.	Internal RF Bandwidth	≥ 5 GHz or Better
20.	**Specified output level range**	**–40 dBm to –5 dBm or better**
21.	**Level error full frequency range**	**< 3.5 dB± 1 dB or better**
22.	**LO Suppression @ -15 dBm**	**-50 dBc ± 2 dBc or better**
23.	LO Source Frequency range	16 GHz or Better
24.	LO Source phase noise	-110 dBc/Hz CF= 16 GHz @ 10 KHz offset or better
25.	LO source max output level	+20 dBm
26.	**Internal Attenuator range**	**0 to 30 dB (External or Internal) with 1 dB step size**
27.	RF output connector	WR6.5, 50 ohms

28.	Reference input	10 MHz, 640 MHz, 1 GHz (Any one out of three)
29.	Recommended calibration interval	2 years
30.	Interface	LAN, USB
31.	Calibration to measurement plane when used with above mentioned signal generator	Required
32.	Converter Full control from base unit	Required
33.	**Operating temperature**	**+20°C to +30 °C**
34.	**D band Horn Antenna**	**Frequency: 110 to 170 GHz Gain: 20 dBi or better with Suitable Band pass Filters (Internal or External)**
35.	**Warranty**	**3 year**

Therefore, following extension in due date of submission & date of opening of the said tender may be read exactly as follows:

Due date & time of tender submission
For : 28.08.2025 up to 3:00 PM (IST)
Read as: 11.09.2025 up to 3:00 PM (IST)

Date & Time of Tender Opening
For : 29.08.2025 at 3:00 PM (IST)
Read as: 12.09.2025 at 3:00 PM (IST)

All other terms & conditions of said tender will remain the same.

Sr. Controller of Stores & Purchase

FORM TO BE FILLED BY IO WHILE CONVENING PRE-BID MEETING OF TSC.

File No.: 14-VIII/SKD(38-GTE)25PB **Date:05/08/2025**

Pre-bid Meeting (To be typed clearly by the I/O)

Name of Indenter: Satya Kesh Dubey
Item Description: Signal Generator with Power Amplifier with Vector Software (D-band, 110-170GHz)
No. of Budgetary Quotes: 3

(1) A pre-bid meeting of TSC was held on 05/08/2025.

Three OEMs along with their Indian representatives participated in the Pre-bid meeting in the online mode.

1. M/s Anritsu (Representative: Asheesh Kumar Sharma)
2. M/s Keysight (Representative: Sidharth Jain, Bhavin Khanpara)
3. M/s Rohde & Schwarz (Representative: Suvrat Verma)

Considering the various queries raised by the OEMs on the tendered specifications, it was unanimously decided that the firms will submit their responses via email/ Hard copy.

(2) Following queries were raised by participating Bidders via email till 11/08/2025, Only M/s M/s Anritsu (Representative: Asheesh Kumar Sharma) have not submitted any response against tender specifications

Name of the Firm	Queries Raised	Remarks, if any
Keysight	1. Request to change as: 9 KHz to 8.5 GHz or better	Since the bandwidth requirement is 5 GHz, we request consideration of frequency ranges up to 8.5 GHz or more which aligns with the 5 GHz bandwidth specification for the D-band.
Keysight	10. Request to change as: 5 GHz	As D-Band Bandwidth requirement is specified as 5 GHz (in row 19) , request to keep the base unit with same specification i.e. 5 GHz.
Keysight	13. Request to change as: 3 Gsa/s	Request to change, in line with Keysight product datasheet, sampling rate of offered solution is 3 Gsa/s
Keysight	20. Request to change as: -50 to -25 dBm	Request to change
Keysight	21. Request to remove	Not specified in datasheet.
Keysight	22. Request to remove	Not specified in datasheet.
Keysight	24. Complied at CF= 10 GHz and 20 KHz offset	Request to change as our datasheet is not specifying the Phase Noise at 16 GHz and 10 KHz offset. However we are meeting the tender specification of -110 dBc/Hz at CF=10 GHz @ 20 KHz offset.
Keysight	26. Request to change as: Internal/External attenuator range 0 to 30 dB	Our solution consist of external attenuator. We are meeting the tender specifications with external attenuator.
Keysight	28. Request to remove	Not applicable for our offered solution.
Keysight	33. Request to change as: 20 deg to 30 deg	Request to change in line with specification mentioned in product datasheet.

Rohde & Schwarz	16. Requested for External	
Rohde & Schwarz	19. Upgrade it to 8 GHz	
Rohde & Schwarz	Query related to Purchase rule	Forwarded to SO Purchase

Indentor's recommendation

1. The comments, as received from bidders during PBC, and our response is as follows:

Tender Specification and its number	Comment of bidder	Response of Indentor (Accepted/ Not accepted)	Revised specification (If any)	Justification for non-acceptance
1. Fundamental frequency range	M/s Keysight requested to change as: 9 kHz to 8.5 GHz or better D band : 110 GHz to 170 GHz	Not Accepted		Frequency Range of Base unit can not be reduced to 8.5 GHz because it will lower the D band System Performance. It is also evident from request to remove point no 21 and 22. M9484C with Option 520: 9kHz-21.6GHz; Pg 5 of datasheet is technically Complied. Lower Frequency is not appropriate for Frequency Extender Option. Minimum 17 GHz should be the basic frequency so that 10X multiplier will serve the purpose. Lowering it will require higher value multiplier which will lower the proposed system performance. As the tender specification is available with Option 520 there is no need to change it.
10. Internal Digital Modulation Bandwidth	M/s Keysight requested to change as: 5 GHz	Not Accepted		Internal Digital Modulation Bandwidth can not be reduced to 5GHz. A bandwidth of 8 GHz was selected for the tender. This decision was based on the requirements of the ordered Spectrum Analyzer, which needs a minimum of 20% additional band at both the start and end of the measurement range to ensure spectral purity. This additional band is necessary for accurate measurements on the analyzer. So, minimum 5.6 GHz bandwidth is

				required in lower frequency range. **M/s Keysight have quoted M8195A with 25 GHz Bandwidth in quotation via email dated 05 May 2025 (Copy attached).** As 8 GHz was lowest bandwidth offered during quotation from both quoting party hence we have enhanced it to 8 GHz as both OEM were technically complied. However, in the mail after Prebid, Firm M/s Keysight has quoted model M9484C with request to change Internal Digital Modulation Bandwidth from 8 GHz to 5 GHz. However, 10 GHz Internal Digital Modulation Bandwidth option is available with M9484C as per datasheet page number 25 with option CB5 with channel bonding. M/s Keysight is technically qualified as per tendered specification. Hence there is no need to change in tender specification as both OEM are technically complied.
13. Sampling rate	M/s Keysight requested change as: 3 Gsa/s	Accepted	9.6 GS/s	Sampling rate is 9.6 GS/s based on band width x 1.2 as mentioned in point no 10, 8x1.2 =9.6 GS/s. As per Page number 25 of M/s Keysight data sheet, 1.2X Bandwidth is the sample rate. M/s Keysight with M9484C with CB5 option it would be 9.6 GS/S. We reduce it to 9.6 GS/s for 8 GHz bandwidth and it can be divided per channel in case of channel bonding option.
16. Internal Memory	M/s Rohde & Schwarz requested for external memory inclusion	Accepted	>80 GB SSD or better (internal/external)	Can be considered.
19. Internal RF Bandwidth	M/s Rohde & Schwarz requested to upgrade to 8GHz	Taken into considerations		As Firm is already technically Complied

20. Specified output level range	M/s Keysight requested to change as: -50 to -25 dBm	Accepted	–40 dBm to –5 dBm or better	It can be complied using Low Noise Amplifier available with firm as per email dated 07/08/25 and Preamplifier is available With R & S too. Considering requirement of High Power, we have revised it.
21. Level error full frequency range	M/s Keysight requested to remove	Accepted	< 3.5 dB ± 1 dB or better	Additional tolerance limit provided
22. LO Suppression @ -15 dBm	M/s Keysight requested to remove	Accepted	-50 dBc ± 2 dBc or better	Additional tolerance limit provided
24. LO Source phase noise	M/s Keysight Complied at CF= 10 GHz and 20 KHz offset	Firm is technically complied		as per email dated 11/08/2025 Firm is technically complied For LO signal, providing external signal source which is Model NumberAP5011A. There is no need to change in Specification.
26. Internal Attenuator range	M/s Keysight requested to change as: Internal/External attenuator range 0 to 30 dB.	Accepted	0 to 30 dB (External or Internal) with 1 dB step size	External is allowed with 1 dB step size Variation option.
28. Reference input	M/s Keysight requested to remove	Taken into considerations	10 MHz, 640 MHz, 1 GHz (Any one out of three)	At least one reference point must be provided for frequency locking
33. Operating temperature	M/s Keysight requested to change as: 20 deg to 30 deg	Accepted		Can be considered.
34. D band Horn Antenna				Frequency: 110 to 170 GHz Gain: 20 dBi or better with Suitable Band pass Filters (Internal or External)

Final recommended specifications are as attached at Annexure 1 and signed by I/O:

Corrigendum to Tender may be issued/ may not be issued.

Recommended Revised Date of Tender submission (if any) is _____

The specifications are generic and broad based and after revision of specifications budgetary cost of equipment will not change.

Submitted to TSC for necessary approvals.

FORM TO BE USED BY TSC FOR FINALISING PRE-BID MINUTES

File No.: 14-VIII/SKD (38-GTE)25PB **Date:05/08/2025**

TSC Minutes (To be typed clearly by the I/O)

Based on the Pre-bid meeting and recommendation of I/O, following changes have been made in the specifications:

Annexure 1: Original Specifications for Signal generator (D-band, 110GHz-170GHz) with vector software

S.N.	Parameter	Specifications
	Vector Signal Generator with Built in touch screen display	
1.	Fundamental frequency range	11 GHz to 20 GHz or better D band: 110 GHz to 170 GHz
2.	Aging	≤ 3 · 10–8 /year or Better
3.	Frequency Resolution	0.001 Hz or Better
4.	Switching Speed	< 5 msec or better
5.	Output Power	-50 dBm to +10dBm or Better
6.	Level Resolution:	0.01 dB or better
7.	SSB Phase noise @20 kHz offset	-120 dBc / Hz @ 20GHz or Better
8.	Harmonics	-30 dBc
9.	Wideband Noise (carrier offset > 30 MHz)	< –135 dBc
10.	Internal Digital Modulation Bandwidth	8 GHz or better
11.	Internal baseband memory depth	2 Gsample
12.	Vertical resolution	12 Bit or Better
13.	Sampling rate	12 GS/s or better
14.	Interfaces	USB, LAN
15.	Built-in Display with touch screen	Yes required
16.	Internal Memory	>80 GB SSD or better
17.	Warranty	3 year or better
	D Band Converter Spec	
18.	Frequency Range	110 To 170 GHz
19.	Internal RF Bandwidth	≥ 5 GHz or Better
20.	Specified output level range	–40 dBm to –15 dBm or better
21.	Level error full frequency range	< 3.5 dB
22.	LO Suppression @ -15 dBm	-50 dBc or better
23.	LO Source Frequency range	16 GHz or Better
24.	LO Source phase noise	-110 dBc/Hz CF= 16 GHz @ 10 KHz offset or better
25.	LO source max output level	+20 dBm
26.	Internal Attenuator range	0 to 30 dB
27.	RF output connector	WR6.5, 50 ohms
28.	Reference input	10 MHz, 640 MHz, 1 GHz
29.	Recommended calibration interval	2 years

30.	Interface	LAN, USB
31.	Calibration to measurement plane when used with above mentioned signal generator	Required
32.	Converter Full control from base unit	Required
33.	Operating temperature	+5°C to +40 °C
34.	D band Horn Antenna	Frequency: 110 to 170 GHz Gain: 20 dBi or better
35.	Warranty	3 year or better

Annexure 2: Final Specifications for Signal generator (D-band, 110GHz-170GHz) with vector software

Date: 19/08/2025

S.N.	Parameter	Specifications
	Vector Signal Generator with Built in touch screen display	
1.	Fundamental frequency range	11 GHz to 20 GHz or better D band: 110 GHz to 170 GHz
2.	Aging	≤ 3 · 10–8 /year or Better
3.	Frequency Resolution	0.001 Hz or Better
4.	Switching Speed	< 5 msec or better
5.	Output Power	-50 dBm to +10dBm or Better
6.	Level Resolution:	0.01 dB or better
7.	SSB Phase noise @20 kHz offset	-120 dBc / Hz @ 20GHz or Better
8.	Harmonics	-30 dBc
9.	Wideband Noise (carrier offset > 30 MHz)	< –135 dBc
10.	Internal Digital Modulation Bandwidth	8 GHz or better
11.	Internal baseband memory depth	2 Gsample
12.	Vertical resolution	12 Bit or Better
13.	**Sampling rate**	**9.6 GS/s or better**
14.	Interfaces	USB, LAN
15.	Built-in Display with touch screen	Yes required
16.	**Internal Memory**	**>80 GB SSD or better (internal/external)**
17.	Warranty	3 year or better
	D Band Converter Spec	
18.	Frequency Range	110 To 170 GHz
19.	Internal RF Bandwidth	≥ 5 GHz or Better
20.	**Specified output level range**	**–40 dBm to –5 dBm or better**
21.	**Level error full frequency range**	**< 3.5 dB ± 1 dB or better**
22.	**LO Suppression @ -15 dBm**	**-50 dBc ± 2 dBc or better**
23.	LO Source Frequency range	16 GHz or Better
24.	LO Source phase noise	-110 dBc/Hz CF= 16 GHz @ 10 KHz offset or better
25.	LO source max output level	+20 dBm
26.	**Internal Attenuator range**	**0 to 30 dB (External or Internal) with 1 dB step size**
27.	RF output connector	WR6.5, 50 ohms

28.	Reference input	10 MHz, 640 MHz, 1 GHz (Any one out of three)
29.	Recommended calibration interval	2 years
30.	Interface	LAN, USB
31.	Calibration to measurement plane when used with above mentioned signal generator	Required
32.	Converter Full control from base unit	Required
33.	**Operating temperature**	**+20°C to +30 °C**
34.	**D band Horn Antenna**	**Frequency: 110 to 170 GHz Gain: 20 dBi or better with Suitable Band pass Filters (Internal or External)**
35.	Warranty	3 year

The file is forwarded to Purchase Section for uploading the final specifications and TSC minutes on the website and CPPP Portal.

Declaration: We hereby declare that we have no conflict of interest with any of the bidder in this tender.