

**National Institute of Metrology (Thailand)**

3/4-5 Moo 3, Klong 5, Klong Luang, Pathumthani, 12120, Thailand

Tel. +66 2577 5100 (Please contact : Customer Service Section Ext. 3101, 3102) Fax. +66 2577 3659 E-mail : cs@nimt.or.th Website : http://www.nimt.or.th

Price List

Item No.	Description	Range	Accuracy / Uncertainty	Price (THB)	Remark	Code
Calibration Fee						
Acoustics and Vibration Metrology						
1	Measurement Microphone type LS1P by the reciprocity technique (sensitivity level and phase level) at low frequency	20 Hz to 10 kHz	0.040 dB to 0.070 dB	10,630/piece		14010 - 11101
2	Measurement Microphone type LS1P by the reciprocity technique (sensitivity level and phase level) at low frequency	2 Hz to 20 Hz	- Sensitivity level : (0.04 - 0.20) dB - Phase level : (2.0 to 0.4) Degree	22,500/piece		14010 - 11104
3	Measurement Microphone type LS2P by the reciprocity technique (Pressure sensitivity level)	20 Hz to 20 kHz	0.040 dB to 0.10 dB	10,630/piece		14010 - 11102
4	Measurement Microphone by the insert voltage technique (pressure sensitivity level)	250 Hz and 1 kHz	0.10 dB	5,130/piece		14010 - 11103
5	Measurement Microphone by the comparison method (free-field sensitivity level)	31.5 Hz to 16 kHz 84 dB	0.30 dB to 0.40 dB	7,880/piece		14010 - 11201
6	Measurement Microphone type WS2 by the insert voltage technique (microphone sensitivity) and by The electrostatic actuator (frequency response)	20 Hz to 20 kHz	Sensitivity : 0.10 dB Frequency Response : 0.10 to 0.30 dB	7,500/piece		14010 - 11202
7	Measurement Microphone type WS3 by the insert voltage technique (microphone sensitivity) by The electrostatic actuator or coupler comparison (frequency response)	20 Hz to 20 kHz	Sensitivity : 0.10 dB Frequency Response : 0.10 to 0.30 dB	7,500/piece		14010 - 11203
8	Pistonphone or Sound Calibrator	74 dB to 124 dB 250 Hz, 1kHz	0.060 dB	4,880 first level 1,000 /next level		14010 - 12101
9	Multifunction Acoustic Calibrator or Multi-frequency Sound Calibrator	74 dB to 124 dB 31.5 Hz to 16 kHz	0.080 dB to 0.140 dB	16,880/piece		14010 - 12201
10	Sound Level Meter	Based on IEC 61672 Part 3	Class 1, 2	10,880/piece		14010 - 13101
11	Sound Level Meter (Free-field sound pressure response level and absolute sensitivity)	31.5 Hz to 16 kHz 84 dB	0.020 dB to 0.40 dB	7,880/piece		14010 - 13201
12	Acoustic Analyzer (based on IEC 61672 : 3) Additional Function of Band Pass Filter	31.5 Hz to 20 kHz	as specification	22,500/piece plus 10,000/piece		14010-13401
13	Sound exposure meter or Noise Dose Meter	63 Hz to 8 kHz	Class 1, 2	17,500/piece		14010-13301
14	Pure-tone audiometer with supra-aural earphone	125 Hz - 8 kHz	Type 1, 2, 3 and 4	7,500/piece		14010 - 14101

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15	Pure-tone audiometer with circumaural earphone	125 Hz - 8 kHz	Type 1, 2, 3 \pm 4	7,500/piece		14010 - 14201
16	Air-conduction audiometer coupler with insert earphone	125 Hz - 8 kHz	Type 1, 2, 3 \pm 4	7,500/piece		14010-14301
17	Ear Simulator	100 Hz - 16 kHz	100 Hz to 12.5kHz : 0.4 dB >12.5 kHz to 16 kHz : 0.5 dB	8,750/piece		14010-14401
18	Artificial Mastoid or Mechanical coupler for the measurement of bone vibrator	125 Hz - 8 kHz	Mechanical Impedance level : 0.5 dB Force sensitivity : 0.4 dB	17,500/piece		14010-14402
19	Bone-conduction pure-tone audiometer	250 Hz - 4 kHz	Type 1, 2, 3 \pm 4	7,500/piece		14010 - 14501
20	Octave Band Pass Filter	20 Hz - 20 kHz	Class 1, 2	7,500/piece		14010 - 17101
21	Preamplifier	20 Hz - 100 kHz	Input and insert parameter : 0.14 dB Frequency Response : 0.14 dB Inherent noise : 0.1 mV	5,000/piece		14010 - 17201
22	Sound Absorption Coefficients of Materials for low frequency	50 Hz - 1.6 kHz	3.8 %	5,000/piece		14010 - 67001
23	Sound Absorption Coefficients of Materials for high frequency	500 Hz - 6.4 kHz	3.8 %	5,000/piece		14010 - 67002
24	Sound Transmission Loss of Materials	50 Hz - 6.4 kHz	3.8%	8,750/piece		14010-67003
25	Tuning Fork	500 Hz - 5 kHz	0.8 Hz	3,125/piece		14010-67101
26	Qualification sound booth testing	125 Hz - 8 kHz	1 dB	15,000/piece		14010-67201
27	Dental Scaler (Noise measurement) Based on ISO 2234	20 Hz - 40 kHz	as specification	3,750/piece		14010-67301
28	Vibration Meter	1 m/s ² to 100 m/s ² 40 Hz to 5 kHz	1.0 %	10,000/piece		14020 - 11101
29	Vibration Meter	1 Hz to 160 Hz	2 % for velocity in vertical and horizontal vibration directions	10,000/piece		14020 - 11102
30	Vibration Meter for Low frequency by comparison with standard accelerometer.	1 m/s ² to 100 m/s ² 10 Hz to 5kHz	1.0%	15,000/piece		14020-11103
31	Low-frequency vibration sensor	Vertical direction:0.1 Hz to 100 Hz Horizontal direction: 0.1 to 80 Hz	1.0%	20,000 /piece		14020-11104
32	Vibration Calibrator	1 m/s ² to 100 m/s ² 40 Hz to 5 kHz	1 %	5,000 / first point 1,250 / next point		14020 - 12101

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33	Mobile vibration calibrator based on ISO16063-44	1 m/s ² to 100 m/s ² 40 Hz to 5 kHz	1.2 % for Acceleration 1 % for Frequency 1 % for Distortion	35,000 /first 8 points 5,000/next point		14020 - 12102
34	Accelerometer by Laser Interferometry (charge sensitivity)	10 m/s ² to 200 m/s ² 40 Hz to 800 Hz	0.50 %	13,750/piece		14020 - 13101
		10 m/s ² to 370 m/s ² > 800 Hz to 5 kHz	0.80 %			
35	Accelerometer by comparison to reference transducer (Charge sensitivity)	1 m/s ² to 100 m/s ² 40 Hz to 5 kHz	1.0%	8,750 first point 1,250/next point		14020 - 13102
36	Shock Acceleration for Shock Table	50 m/s ² to 2000 m/s ²	5.5%	35,000/piece		14020-13121
37	3-axis Vibration Testing (on-site)	10 m/s ² to 100 m/s ² 10 Hz to 5 kHz	1.5 %	37,500/piece		14020-13111
38	Shock Transducer by Laser interferometry	20 g to 500 g	1.0%	11,250 /piece		14020 - 13201
39	Acceleration of Two Axis and Triaxial for Vibration Table	5 m/s ² to 100 m/s ² 40 Hz to 5 kHz	Horizontal Axis ±3.0% Vertical Axis ±3.0%	30,000 first Axis 7,500/ Next Axis		14020-13211
40	Low shock by comparison to a reference accelerometer based on ISO 16063-22 (Voltage and Charge sensitivity in modulus)	50 m/s ² to 2000 m/s ² Duration Time 1.6 ms to 6.0 ms	2.0%	15,000 / first 3 points 3,000/ next point		14020-13300
41	Accelerometer by Laser Interferometry (voltage sensitivity)	10 m/s ² to 200 m/s ² 40 Hz to 800 Hz	0.50 %	13,750/piece		14020-13301
		10 m/s ² to 370 m/s ² > 800 Hz to 5 kHz	0.80 %			
42	Accelerometer by Laser Interferometry (Voltage sensitivity in modulus)	0.3 m/s ² to 10 m/s ² 1 Hz to 160 Hz	1.0%	13,000/piece		14020-13302
43	Accelerometer by Laser Interferometry (Phase shift of Voltage transducer type)	0.3 m/s ² to 10 m/s ² 1 Hz to 160 Hz	1.0 degree	13,000/piece		14020-13303
44	Accelerometer by Laser Interferometry (Voltage sensitivity in modulus with Phase shift)	0.3 m/s ² to 10 m/s ² 1 Hz to 160 Hz	1.0% and 1.0 degree	15,000/piece		14020-13304
45	Accelerometer by comparison to reference transducer (voltage sensitivity)	0.3 m/s ² to 10 m/s ² 1 Hz to 80Hz	1.0%	8,750/piece		14020-13305
46	Accelerometer by comparison to reference transducer (voltage sensitivity) Modulus	1 m/s ² to 100 m/s ² 40 Hz to 5 kHz	1.0%	10,000/piece		14020-13306

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47	Angular accelerometer by comparison to reference transducer (voltage sensitivity) Modulus and Phase	1 °/s – 5,300 °/s 1 Hz to 200 Hz	1.0% 1.5 degree	15,000/piece		14020-13603
48	Laser Vibrometer by comparison to reference vibrometer (modulus)	10 m/s ² to 50 m/s ² 40 Hz to 5 kHz	0.50%	50,000/piece		14020-13401
49	Laser Vibrometer base on ISO 16063-41 for low frequency	0.1 Hz to less than 0.4 Hz 0.4 Hz to 40 Hz more than 40 Hz to 160 Hz	1.0 % 0.5% 2.0%	50,000/piece		14020-13402
50	Laser Vibrometer base on ISO 16063-41 for medium frequency	50 Hz to 15 kHz more than 15 kHz to 20 kHz	0.5% 1.0%	50,000/piece		14020-13403
51	Pendulum Shock (on-site)	500 m/s ² to 5000 m/s ²	5 %	31,250/piece		14020-13601
52	Tachometer (Beam of infrared LED technique)	900 RPM to 99,000 RPM	1.0%	5,000/piece		14020 - 18102
53	Stroboscope	210 RPM to 7500 RPM	1.0%	5,000/piece		14020 - 18103
54	Displacement (Unloaded scaler), Frequency (Dental scaler)	0.1 μm to 220.0 μm.	5.0%	11,250/piece		14020-18104
		18 kHz to 20 kHz	2.0%			
55	Tachometer (Engine Ignition Signal with Sparking Plug (Simulation Set))	120 RPM to 36,000 RPM	1.0%	5,000 /piece		14020-18105
56	Conditioning Amplifier (Charge Amplifier)	10 Hz to 10 kHz	0.03 %	5,380/piece		14020 - 19101
57	Conditioning Amplifier (Voltage Amplifier)	40 Hz to 5 kHz	0.03 %	6,250/piece		14020 - 19102
58	Conditioning Amplifier (IEPE Amplifier)	10 Hz to 10 kHz	0.03%	6,250/piece		14020 - 19103
59	Electrical Controller	Analog Input Voltage: 23 mV to 6 V analog input charge 15 to 7000 pC Frequency: 10 hz to 100 kHz	±0.5 mV/V for Frequency 10 – 40 Hz ±0.4 mV/V for Frequency 40 Hz – 1 kHz ±0.5 mV/V for Frequency 1 – 20 kHz ±0.8 mV/V for Frequency 20 – 50 kHz ±1.6 mV/V for Frequency 50 – 100 kHz ±0.7 fC/pC for Frequency 10 – 40 Hz ±0.6 fC/pC for Frequency 40 Hz – 1 kHz ±0.7 fC/pC for Frequency 1 – 20 kHz ±1.0 fC/pC for Frequency 20 – 50 kHz ±1.8 fC/pC for Frequency 50 – 100 kHz	60,000 /piece		14020 - 19104

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60	Ultrasound Power Meter (ultrasound power-ultrasound power meter)	0.5 W to 10 W 1 MHz	6.0%	10,000/piece		14030 - 11101
		0.5 W to 4 W 3 MHz	7.0%			
		0.5 W to 2 W 5 MHz	8.0%			
61	Ultrasonic Transducer (ultrasonic transducer and generator)	0.5 W to 10 W 1 MHz	6.0 %	12,500/piece		14030 - 11102
		0.5 W to 4 W 3 MHz	7.0%			
		0.5 W to 2 W 5 MHz	7.0%			
62	Immersion Ultrasonic Transducer (Planar Scanning Method)	1 MHz to 15 MHz 50 kPa to <20 Mpa	14.40 % to 15.30 %	7,500/piece		14030-13101
63	Ultrasonic Sonic Monitor	0.5 W to 10 W 1 MHz	14%	5,625/piece		14030-14101
		0.5 W to 4 W 3 MHz				
		0.5 W to 2 W 5 MHz				
64	Ultrasonic Power (Therapeutic Ultrasound) - Onsite Service	0.5 W to 10 W 1 MHz to 3 MHz	5.0%	3,000/piece		14030-15101
65	Ultrasonic Processor	40 Hz to 300 kHz Amplitude Displacement [µmp-p]	1.5% for Frequency 4.5% for Displacement	15,000/piece		14030-19101
66	Ultrasound Check Source	10 mW, 100 mW and 1 W 3.5 MHz	6.0 %	10,000/piece		14033-13111
67	Needle hydrophone (free-field sensitivity - hydrophone)	1 MHz to 15 MHz 50 kPa to <20 Mpa	14.0 % to 15.0 %	24,375/piece		14033-11101
68	Ultrasound transducer for physiotherapy (Planar Scanning Method)	1 MHz , 3 MHz 50 kPa to <20 MPa	17.0 %	7,500/point		14033-63301
69	Electrical Safety Test - Based On IEC 60601-1	Acceptance Test for Medical Electrical Equipment and Systems	Mains Voltage: 6 V Equipment Current: 2.5 A Protective Earth Resistance: 0.02 Ohm Insulation Resistance: 11 MOhm Earth Leakage Current: 1.5 uAAC+DC Enclosure Leakage Current: 1.5 uAAC+DC	5,625/piece		14030-67001
70	Adjustment Charge			25 % of the calibration cost of each range		14000 - 10001