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Certificate of Calibration

EQUIPMENT : DEFIBRILLATORS, EXTERNAL, MANUAL

ID CODE : PTP02204

MANUFACTURER : PHILIPS

MODEL : HeartStart MRx (M3535A)

SERIAL No. : US00566825

LOCATION : Ambulance

SUBMITTED BY : PHYATHAI PHAHOLYOTHIN HOSPITAL

670/1 Phaholyothin Road, Samsen Nai, Phaya Thai, Bangkok 10400

Tel: 02-271-7000 Fax: -

CALIBRATED DATE : 16 APRIL 2024

ISSUE DATE : 1 MAY 2024

Performed by:

3,1074

d by : ______ Approved by : ______ USANEE CHALONGPHOKSILCHAI PHUWASIN YIWKIM

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CONDITION OF THIS RESULT OF TEST

1. REFERENCE STANDARD INSTRUMENT:

MASTER	MANUFACTURER	MODEL	SERIAL NO.	CERTIFICATE NO.	DUE DATE
CARBON	GASCO AFFILIA	PRECISION GAS	-	PO20220615	15 Jul 2026
DIOXIDE	TES,LLC.	MIXTURE			
NITROGEN 5%					
CARBON	GASCO AFFILIA	PRECISION GAS	-	=	18 Sep 2026
DIOXIDE	TES,LLC.	MIXTURE			
NITROGEN 10%					
Defibrillator	Fluke	Impulse 7000DP	2079335	23MD775	7 Jun 2024
Analyzer					
Vitalsign Simulator	Fluke	ProSim8	2541031	23MD777	7 Jun 2024

2. THIS CERTIFICATION IS TRACEABLE TO:

- GASCO AFFILIATES,LLC.
- GASCO AFFILIATES,LLC.
- Technology Promotion Association (Thai-Japan)
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3. THIS RESULT OF TEST WAS FOUND ACCURATE AS SHOW ON DATE AND PLACE OF TEST ONLY



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DATE OF CALIBRATION : 16 APRIL 2024

ENVIRONMENT : TEMPERATURE 25 °C

RELATIVE HUMIDITY 55 %

PROCEDURE USED:

This instrument was calibration by comparison with standard

MEASURMENT RESULT:

/	Without Adjustment		Before Adjustment		After Adjustment
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Output Energy				
UUC* Setting	Standard Reading	Error	% Error	Uncertainty
(Joule)	(Joule)	(Joule)	(%)	(Joule)
10	9.70	-0.30	-3.00	± 0.1400
100	98.30	-1.70	-1.70	± 0.2800
200	197.70	-2.30	-1.15	± 0.5500

Output Energy (Energy after 50 Sec (Manual Mode) ≥85%)					
UUC* Setting	Standard Reading	Error	% Error	Uncertainty	
(Joule)	(Joule)	(Joule)	(%)	(Joule)	
100	98.30	-1.70	-1.70	± 0.2800	

Heart Rate					
Standard Setting	UUC* Reading	Error	% Error	Uncertainty	
(BPM)	(BPM)	(BPM)	(%)	(BPM)	
60	60.00	0.00	0.00	± 0.0150	
80	80.00	0.00	0.00	± 0.0170	
120	120.00	0.00	0.00	± 0.0150	

%Spo2				
Standard Setting	UUC* Reading	Error	% Error	Uncertainty
(%SPO ₂)	(%SPO ₂)	(%SPO ₂)	(%)	(%SPO ₂)
90	90.00	0.00	0.00	± 0.1039
96	96.00	0.00	0.00	± 0.1109



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%Spo2 (Continues)					
Standard Setting	UUC* Reading	Error	% Error	Uncertainty	
(%SPO ₂)	(%SPO ₂)	(%SPO ₂)	(%)	(%SPO ₂)	
100	100.00	0.00	0.00	± 0.1155	

Systolic					
Standard Setting	UUC* Reading	Error	% Error	Uncertainty	
(mmHg)	(mmHg)	(mmHg)	(%)	(mmHg)	
60	66.00	6.00	10.00	± 0.9238	
120	123.00	3.00	2.50	± 1.2702	
200	196.00	-4.00	-2.00	± 1.7321	

Diastolic				
Standard Setting	UUC* Reading	Error	% Error	Uncertainty
(mmHg)	(mmHg)	(mmHg)	(%)	(mmHg)
30	35.00	5.00	16.67	± 0.7506
80	84.00	4.00	5.00	± 1.0393
150	148.00	-2.00	-1.33	± 1.4434

Gain				
Standard Setting	UUC* Reading	Error	% Error	Uncertainty
(mm/mV)	(mm/mV)	(mm/mV)	(%)	(mm/mV)
5	5.00	0.00	0.00	± 0.0577
10	10.00	0.00	0.00	± 0.0577
20	20.00	0.00	0.00	± 0.0577

Amplitude				
Standard Setting	UUC* Reading	Error	% Error	Uncertainty
(mV)	(mV)	(mV)	(%)	(mV)
1	1.00	0.00	0.00	± 0.0042
2	2.00	0.00	0.00	± 0.0042

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Paper Speed				
Standard Setting	UUC* Reading	Error	% Error	Uncertainty
(mm/sec)	(mm/sec)	(mm/sec)	(%)	(mm/sec)
25	25.00	0.00	0.00	± 0.2887

Heart Rate(Noninvasive Pacing)						
Standard Setting	UUC* Reading	Error	% Error	Uncertainty		
(PPM)	(PPM)	(PPM)	(%)	(PPM)		
60	60.00	0.00	0.00	± 0.0150		
180	180.80	0.80	0.44	± 0.1500		

Current (Noninvasive Pacing)						
Standard Setting	UUC* Reading	Error	% Error	Uncertainty		
(mA)	(mA)	(mA)	(%)	(mA)		
60	59.90	-0.10	-0.17	± 0.6929		
140	140.50	0.50	0.36	± 1.6166		

Note: Carbon Dioxide Concentration 5% (36.8 mmHg) ±2.6 mmHg = 37 mmHg Carbon Dioxide Concentration 10% (73.6 mmHg) ±5.2 mmHg = 75 mmHg

UUC*: Unit Under Calibration

The reported uncertainty of measurement was based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%

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