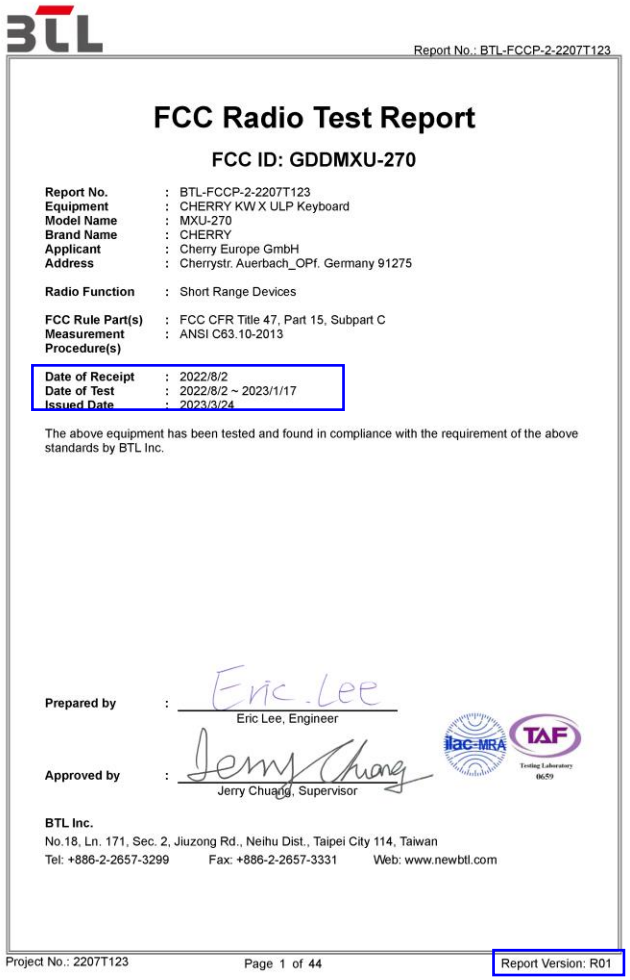
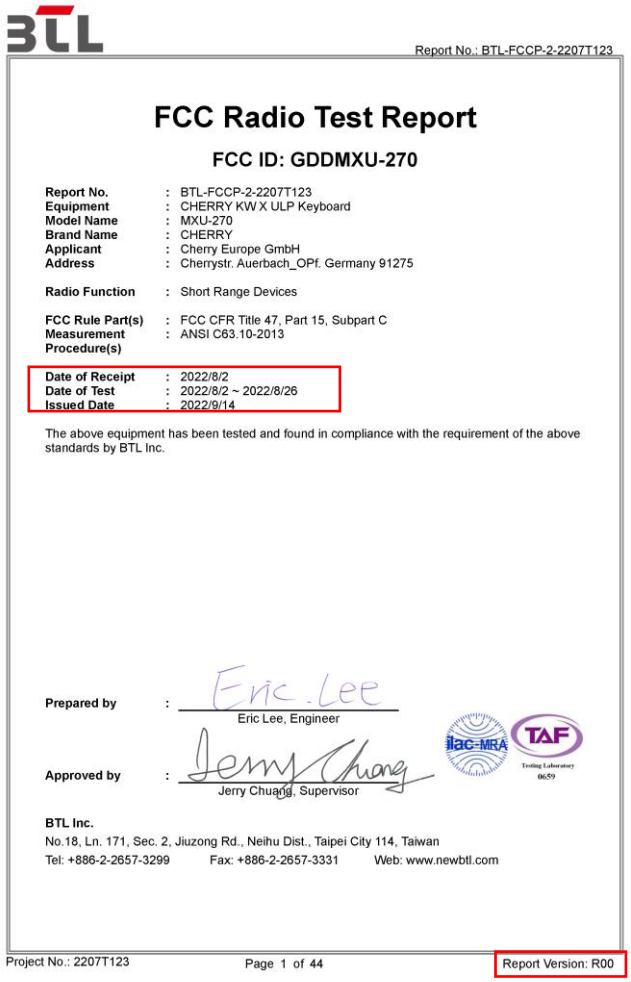
FCC ID: GDDMXU-270 DXX test report modification cross comparison chart

FCC ID	GDDMXU-270
Equipment Class	DXX
Radio Function	Short Range Devices
Report No.	BTL-FCCP-2-2207T123
Modified Page Number	1, 4, 6, 20, 28, 29; Total 6 pages.

Modified	Original	Note
		On page 1, the **Date of Test** and **Issued Date** are updated, and the **Report Version** is updated to **R01** on every page due this modification.

BTL

Report No.: BTL-FCCP-2-2207T123

FCC Radio Test Report

FCC ID: GDDMXU-270

Report No. : BTL-FCCP-2-2207T123
Equipment : CHERRY KW X ULP Keyboard
Model Name : MXU-270
Brand Name : CHERRY
Applicant : Cherry Europe GmbH
Address : Cherrystr. Auerbach_OPf. Germany 91275

Radio Function : Short Range Devices

FCC Rule Part(s) : FCC CFR Title 47, Part 15, Subpart C
Measurement Procedure(s) : ANSI C63.10-2013

Date of Receipt : 2022/8/2
Date of Test : 2022/8/2 ~ 2023/1/17
Issued Date : 2023/3/24

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by : Eric Lee, Engineer

Approved by : Jerry Chuang, Supervisor

BTL Inc.
No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan
Tel: +886-2-2657-3299 Fax: +886-2-2657-3331 Web: www.newbtl.com

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BTL

Report No.: BTL-FCCP-2-2207T123

FCC Radio Test Report

FCC ID: GDDMXU-270

Report No. : BTL-FCCP-2-2207T123
Equipment : CHERRY KW X ULP Keyboard
Model Name : MXU-270
Brand Name : CHERRY
Applicant : Cherry Europe GmbH
Address : Cherrystr. Auerbach_OPf. Germany 91275

Radio Function : Short Range Devices

FCC Rule Part(s) : FCC CFR Title 47, Part 15, Subpart C
Measurement Procedure(s) : ANSI C63.10-2013

Date of Receipt : 2022/8/2
Date of Test : 2022/8/2 ~ 2022/8/26
Issued Date : 2022/9/14

The above equipment has been tested and found in compliance with the requirement of the above standards by BTL Inc.

Prepared by : Eric Lee, Engineer

Approved by : Jerry Chuang, Supervisor

BTL Inc.
No.18, Ln. 171, Sec. 2, Jiuzong Rd., Neihu Dist., Taipei City 114, Taiwan
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Project No.: 2207T123 Page 1 of 44 Report Version: R00

FCC ID: GDDMXU-270 DXX test report modification cross comparison chart

FCC ID	GDDMXU-270
Equipment Class	DXX
Radio Function	Short Range Devices
Report No.	BTL-FCCP-2-2207T123
Modified Page Number	1, 4, 6, 20, 28, 29; Total 6 pages.

Modified	Original	Note
Report No.: BTL-FCCP-2-2207T123 **REVISION HISTORY** Report No. | Version | Description | Issued Date | Note ~~BTL-FCCP-2-2207T123 | R00 | Original Report | 2022/9/14 | Invalid~~ BTL-FCCP-2-2207T123 | R01 | Revised report to address TAF Audit's comments. | 2023/3/24 | Valid Project No.: 2207T123 Page 4 of 44 Report Version: R01	Report No.: BTL-FCCP-2-2207T123 **REVISION HISTORY** Report No. | Version | Description | Issued Date | Note BTL-FCCP-2-2207T123 | R00 | Original Report. | 2022/9/14 | Valid Project No.: 2207T123 Page 4 of 44 Report Version: R00	On page 4, in the **Report REVISION HISTORY**, a Version **R01** description is added due this modification.

FCC ID: GDDMXU-270 DXX test report modification cross comparison chart

FCC ID	GDDMXU-270
Equipment Class	DXX
Radio Function	Short Range Devices
Report No.	BTL-FCCP-2-2207T123
Modified Page Number	1, 4, 6, 20, 28, 29; Total 6 pages.

Modified	Original	Note
		On page 6, the Environment Condition of Radiated Emission (below 1GHz) is updated due this modification.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.
☒ C05 ☐ CB08 ☐ CB11 ☐ CB15 ☐ CB16
☒ SR05

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.
☐ C06 ☒ CB21 ☐ CB22

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k = 2**, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C05	CISPR	150 kHz ~ 30MHz	3.44

B. Radiated emissions test :

Test Site	Measurement Frequency Range	U_c(dB)
CB21	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

C. Conducted test :

Test Item	U_c(dB)
Bandwidth	0.5334

NOTE:
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	21 °C, 51 %	AC 120V	Jay Tien
Radiated emissions below 1 GHz	23 °C, 59 %	DC 5V	Mark Wang
Radiated emissions above 1 GHz	28 °C, 62 %	DC 5V	Mark Wang
Bandwidth	23.9 °C, 56 %	DC 5V	Paul Shen

1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.
☒ C05 ☐ CB08 ☐ CB11 ☐ CB15 ☐ CB16
☒ SR05

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan
The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.
☐ C06 ☒ CB21 ☐ CB22

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k = 2**, providing a level of confidence of approximately **95 %**. The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U (dB)
C05	CISPR	150 kHz ~ 30MHz	3.44

B. Radiated emissions test :

Test Site	Measurement Frequency Range	U_c(dB)
CB21	0.03 GHz ~ 0.2 GHz	4.17
	0.2 GHz ~ 1 GHz	4.72
	1 GHz ~ 6 GHz	5.21
	6 GHz ~ 18 GHz	5.51
	18 GHz ~ 26 GHz	3.69
	26 GHz ~ 40 GHz	4.23

C. Conducted test :

Test Item	U_c(dB)
Bandwidth	0.5334

NOTE:
Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Environment Condition	Test Voltage	Tested by
AC Power Line Conducted Emissions	21 °C, 51 %	AC 120V	Jay Tien
Radiated emissions below 1 GHz	28 °C, 62 %	DC 5V	Mark Wang
Radiated emissions above 1 GHz	28 °C, 62 %	DC 5V	Mark Wang
Bandwidth	23.9 °C, 56 %	DC 5V	Paul Shen

FCC ID: GDDMXU-270 DXX test report modification cross comparison chart

FCC ID	GDDMXU-270
Equipment Class	DXX
Radio Function	Short Range Devices
Report No.	BTL-FCCP-2-2207T123
Modified Page Number	1, 4, 6, 20, 28, 29; Total 6 pages.

Modified

Report No.: BTL-FCCP-2-2207T123

6 LIST OF MEASURING EQUIPMENTS

AC Power Line Conducted Emissions

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	TWO-LINE V-NETWORK	R&S	ENV216	101051	2022/6/15	2023/6/14
2	Test Cable	EMCI	EMCRG58-BM-BM-9000	210501	2022/5/2	2023/5/1
3	EMI Test Receiver	R&S	ESR 7	101433	2021/11/24	2022/11/23
4	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Radiated Emissions

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Preamplifier	EMCI	EMC330N	980850	2021/9/23 2022/9/19	2022/9/22 2023/9/18
2	Preamplifier	EMCI	EMC118A45SE	980819	2022/3/8	2023/3/7
3	Preamplifier	EMCI	EMC001340	980555	2022/4/6	2023/4/5
4	Test Cable	EMCI	EMC104-SM-SM-1000	220319	2022/3/15	2023/3/14
5	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2022/3/15	2023/3/14
6	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2022/3/15	2023/3/14
7	EXA Signal Analyzer	keysight	N9020A	MY57120120	2022/3/7	2023/3/6
8	Loop Ant	Electro-Metrics	EMCI-LPA600	274	2022/6/16	2023/6/15
9	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2022/5/18	2023/5/17
10	Horn Ant	Schwarzbeck	BBHA 9170D	1136	2022/5/18	2023/5/17
11	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2022/5/20	2023/5/19
12	6dB Attenuator	EMCI	EMCI-N-6-06	AT-N0625	2022/5/20	2023/5/19
13	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Bandwidth

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP38	101139	2022/3/2	2023/3/1

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

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Original

Report No.: BTL-FCCP-2-2207T123

6 LIST OF MEASURING EQUIPMENTS

AC Power Line Conducted Emissions

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	TWO-LINE V-NETWORK	R&S	ENV216	101051	2022/6/15	2023/6/14
2	Test Cable	EMCI	EMCRG58-BM-BM-9000	210501	2022/5/2	2023/5/1
3	EMI Test Receiver	R&S	ESR 7	101433	2021/11/24	2022/11/23
4	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Radiated Emissions

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Preamplifier	EMCI	EMC330N	980850	2021/9/23	2022/9/22
2	Preamplifier	EMCI	EMC118A45SE	980819	2022/3/8	2023/3/7
3	Preamplifier	EMCI	EMC001340	980555	2022/4/6	2023/4/5
4	Test Cable	EMCI	EMC104-SM-SM-1000	220319	2022/3/15	2023/3/14
5	Test Cable	EMCI	EMC104-SM-SM-3000	220322	2022/3/15	2023/3/14
6	Test Cable	EMCI	EMC104-SM-SM-7000	220324	2022/3/15	2023/3/14
7	EXA Signal Analyzer	keysight	N9020A	MY57120120	2022/3/7	2023/3/6
8	Loop Ant	Electro-Metrics	EMCI-LPA600	274	2022/6/16	2023/6/15
9	Horn Antenna	RFSPIN	DRH18-E	211202A18EN	2022/5/18	2023/5/17
10	Horn Ant	Schwarzbeck	BBHA 9170D	1136	2022/5/18	2023/5/17
11	Log-bicon Antenna	Schwarzbeck	VULB9168	1369	2022/5/20	2023/5/19
12	6dB Attenuator	EMCI	EMCI-N-6-06	AT-N0625	2022/5/20	2023/5/19
13	Measurement Software	EZ	EZ_EMC (Version NB-03A1-01)	N/A	N/A	N/A

Bandwidth

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Date	Calibrated Until
1	Spectrum Analyzer	R&S	FSP38	101139	2022/3/2	2023/3/1

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

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Note

On page 20, in **Radiated Emissions, Item 1**, the dates of **Calibrated Date** and **Calibrated Until** are updated due this modification.

FCC ID: GDDMXU-270 DXX test report modification cross comparison chart

FCC ID	GDDMXU-270
Equipment Class	DXX
Radio Function	Short Range Devices
Report No.	BTL-FCCP-2-2207T123
Modified Page Number	1, 4, 6, 20, 28, 29; Total 6 pages.

Modified	Original	Note

Modified

Report No.: BTL-FCCP-2-2207T123

Test Mode	SRD	Test Date	2023/1/17
Test Frequency	2480MHz	Polarization	Vertical
Temp	23°C	Hum.	59%

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure-ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		181.0937	47.27	-13.52	33.75	43.50	-9.75	peak	
2		351.6520	45.46	-10.31	35.15	46.00	-10.85	peak	
3	*	533.2037	50.03	-5.91	44.12	46.00	-1.88	peak	
4		558.3913	44.56	-5.35	39.21	46.00	-6.79	peak	
5		714.6907	39.60	-2.50	37.10	46.00	-8.90	peak	
6		797.5933	39.04	-1.10	37.94	46.00	-8.06	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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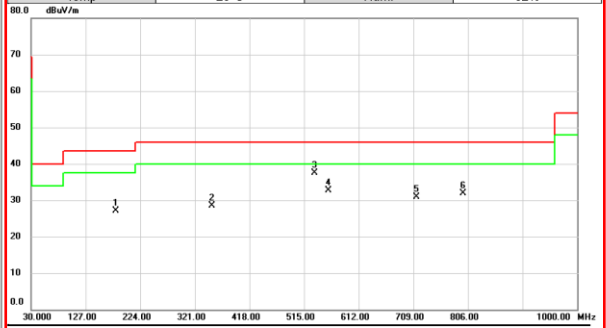
Original

Report No.: BTL-FCCP-2-2207T123

Test Mode	SRD	Test Date	2022/8/18
Test Frequency	2480MHz	Polarization	Vertical
Temp	28°C	Hum.	62%



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure-ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		181.0937	47.27	-20.08	27.19	43.50	-16.31	peak	
2		351.6520	45.46	-16.97	28.49	46.00	-17.51	peak	
3	*	533.2037	50.03	-12.57	37.46	46.00	-8.54	peak	
4		558.3913	44.56	-11.85	32.71	46.00	-13.29	peak	
5		714.6907	39.60	-8.79	30.81	46.00	-15.19	peak	
6		797.5933	39.04	-7.04	32.00	46.00	-14.00	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

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Note

On page 28, the test result is replaced with new test result which is applied with amended correct factors.

FCC ID: GDDMXU-270 DXX test report modification cross comparison chart

FCC ID	GDDMXU-270
Equipment Class	DXX
Radio Function	Short Range Devices
Report No.	BTL-FCCP-2-2207T123
Modified Page Number	1, 4, 6, 20, 28, 29; Total 6 pages.

Modified	Original	Note

Modified

Report No.: BTL-FCCP-2-2207T123

Test Mode	SRD	Test Date	2023/1/17
Test Frequency	2480MHz	Polarization	Horizontal
Temp	23°C	Hum.	59%

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		95.6690	44.53	-16.86	27.67	43.50	-15.83	peak	
2	*	180.7056	50.22	-13.47	36.75	43.50	-6.75	peak	
3		266.0980	48.68	-12.44	36.24	46.00	-9.76	peak	
4		351.0376	49.10	-10.33	38.77	46.00	-7.23	peak	
5		531.0050	43.57	-5.94	37.63	46.00	-8.37	peak	
6		711.6190	41.18	-2.57	38.61	46.00	-7.39	peak	

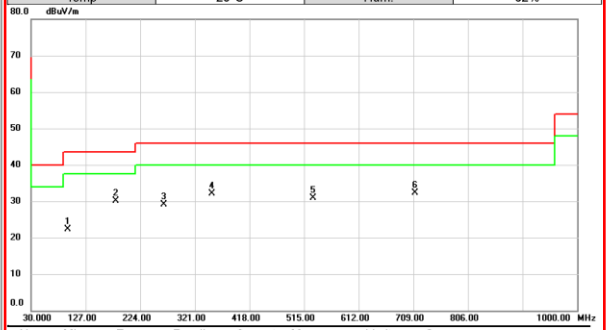
REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Project No.: 2207T123 Page 29 of 44 Report Version: R01

Original

Report No.: BTL-FCCP-2-2207T123

Test Mode	SRD	Test Date	2022/8/18
Test Frequency	2480MHz	Polarization	Horizontal
Temp	28°C	Hum.	62%



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		95.6690	44.53	-22.16	22.37	43.50	-21.13	peak	
2	*	180.7056	50.22	-20.04	30.18	43.50	-13.32	peak	
3		266.0980	48.68	-19.50	29.18	46.00	-16.82	peak	
4		351.0376	49.10	-16.99	32.11	46.00	-13.89	peak	
5		531.0050	43.57	-12.63	30.94	46.00	-15.06	peak	
6		711.6190	41.18	-8.86	32.32	46.00	-13.68	peak	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Project No.: 2207T123 Page 29 of 44 Report Version: R00

Note

On page 29, the test result is replaced with new test result which is applied with amended correct factors.