



Product Change Notification / GBNG-04WJLP006

Date:

09-Jul-2021

Product Category:

16-Bit - Microcontrollers and Digital Signal Controllers, 32-bit Microcontrollers

PCN Type:

Manufacturing Change

Notification Subject:

CCB 3920.001, 3920.002 and 3920.003 Final Notice: Qualification of MMT as an additional assembly site for various products available in 64L QFN (9x9x0.9mm), 44L QFN (8x8x0.9mm) and 28L QFN-S (6x6x0.9mm) packages.

Affected CPNs:

[GBNG-04WJLP006_Affected_CPN_07092021.pdf](#)

[GBNG-04WJLP006_Affected_CPN_07092021.csv](#)

Notification Text:

PCN Status:

Final notification

PCN Type:

Manufacturing Change

Microchip Parts Affected:

Please open one of the files found in the Affected CPNs section.

NOTE: For your convenience Microchip includes identical files in two formats (.pdf and .xls).

Description of Change:

Qualification of MMT as an additional assembly site for various products available in 64L QFN (9x9x0.9mm), 44L QFN (8x8x0.9mm) and 28L QFN-S (6x6x0.9mm) packages.

Pre and Post Change Summary:

| | Pre Change | | Post Change | | |
|------------------------------------|---|---------|--------------------------------------|---------|--|
| Assembly Site | UTAC Thai Limited (UTL-1) LTD.(NSEB) | | UTAC Thai Limited (UTL-1) LTD.(NSEB) | | Microchip Technology Thailand Branch (MMT) |
| Wire material | Au | CuPdAu | Au | CuPdAu | Au |
| Die attach material | 8600 | 8200T | 8600 | 8200T | 3280 |
| Molding compound material | G700LTD | G770HCD | G700LTD | G770HCD | G700LTD |
| Lead frame material | EFTEC-64T | C194 | EFTEC-64T | C194 | C194 |
| Lead frame DAP Surface Prep | Ag | Bare Cu | Ag | Bare Cu | Bare Cu |
| Lead frame lead-lock | No | | No | | No (Note1) |
| | | | | | Yes (Note2) |
| Lead frame design | See attached pre and post change comparison | | | | |

Note1: Applicable for 64L (9x9x0.9mm) package.

Note2: Applicable for 44L QFN (8x8x0.9mm) and 28L QFN-S (6x6x0.9mm) packages.

Impacts to Data Sheet:

None

Change Impact:

None

Reason for Change:

To improve on-time delivery performance by qualifying MMT as an additional assembly site.

Change Implementation Status:

In Progress

Estimated First Ship Date:

July 30, 2021 (date code: 2131)

NOTE: Please be advised that after the estimated first ship date customers may receive pre and post change parts.

Time Table Summary:

| | July 2021 | | | | |
|--------------------------|-----------|----|----|----|----|
| Workweek | 27 | 28 | 29 | 30 | 31 |
| Qual Report Availability | | X | | | |

| | | | | | |
|-------------------------------|--|---|--|--|---|
| Final PCN Issue Date | | X | | | |
| Estimated Implementation Date | | | | | X |

Method to Identify Change:

Traceability code

Qualification Report:

Please open the attachments included with this PCN labeled as PCN_#_Qual_Report.

Revision History:

July 09, 2021: Issued final notification.

The change described in this PCN does not alter Microchip’s current regulatory compliance regarding the material content of the applicable products.

Attachments:

[PCN_GBNG-04WJLP006_Qual_Report.pdf](#)

[PCN_GBNG-04WJLP006_Pre and Post Change_Summary.pdf](#)

Please contact your local [Microchip sales office](#) with questions or concerns regarding this notification.

Terms and Conditions:

If you wish to receive Microchip PCNs via email please register for our PCN email service at our [PCN home page](#) select register then fill in the required fields. You will find instructions about registering for Microchips PCN email service in the [PCN FAQ](#) section.

If you wish to change your PCN profile, including opt out, please go to the [PCN home page](#) select login and sign into your myMicrochip account. Select a profile option from the left navigation bar and make the applicable selections.

Affected Catalog Part Numbers (CPN)

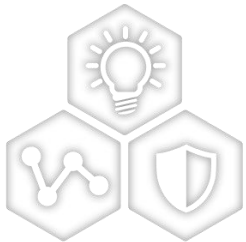
DSPIC33EP128MC206-E/MR
DSPIC33EP128MC506-E/MR
PIC24EP128MC206-E/MR
DSPIC33EP128GP506-I/MR
DSPIC33EP128MC206-I/MR
DSPIC33EP128MC506-I/MR
PIC24EP128GP206-I/MR
PIC24EP128MC206-I/MR
DSPIC33EP128MC206T-H/MR
DSPIC33EP128MC206T-H/MRVAO
DSPIC33EP128MC506T-H/MRVAO
DSPIC33EP128GP506-H/MR
DSPIC33EP128MC206-H/MR
DSPIC33EP128MC506-H/MR
PIC24EP128GP206-H/MR
PIC24EP128MC206-H/MR
DSPIC33EP128GP506T-I/MR
DSPIC33EP128MC206T-I/MR
DSPIC33EP128MC506T-I/MR
PIC24EP128GP206T-I/MR
PIC24EP128MC206T-I/MR
DSPIC33EV64GM106-E/MR
DSPIC33EV32GM006-E/MR
DSPIC33EV64GM006-E/MRVAO
DSPIC33EV128GM106-I/MR
DSPIC33EV64GM006-I/MR
DSPIC33EV64GM106-I/MR
DSPIC33EV32GM006-I/MR
DSPIC33EV32GM106-I/MR
DSPIC33EV64GM006-I/MRVAO
DSPIC33EV128GM106-H/MR
DSPIC33EV64GM106-H/MR
DSPIC33EV128GM006T-I/MR
DSPIC33EV128GM106T-I/MR
DSPIC33EV64GM006T-I/MR
DSPIC33EV64GM106T-I/MR
DSPIC33EV32GM006T-I/MR
DSPIC33EV32GM106T-I/MR
DSPIC33EV64GM006T-I/MRVAO
DSPIC33EV64GM006T-E/MRVAO
DSPIC33EV256GM006-E/MRVAO
DSPIC33EV256GM006T-E/MRVAO
DSPIC33EP128GS704-E/ML
DSPIC33EP128GS804-E/ML
DSPIC33EP64GS804-E/ML
DSPIC33EP128GS704-I/ML

DSPIC33EP128GS804-I/ML
DSPIC33EP64GS804-I/ML
DSPIC33EP128GS704T-I/ML
DSPIC33EP128GS804T-I/ML
DSPIC33EP64GS804T-I/ML
DSPIC33EP128GS704T-E/ML
DSPIC33EP128GS804T-E/ML
DSPIC33EP64GS804T-E/ML
PIC32MX230F256D-50I/ML
PIC32MX230F256D-I/ML
PIC32MX130F256D-50I/ML
PIC32MX130F256D-I/ML
PIC32MX230F256D-V/ML
PIC32MX130F256D-V/ML
PIC32MX230F256DT-V/ML
PIC32MX130F256DT-V/ML
PIC32MX230F256DT-50I/ML
PIC32MX230F256DT-I/ML
PIC32MX130F256DT-50I/ML
PIC32MX130F256DT-I/ML
PIC32MX130F064D-I/ML
PIC32MX130F064D-V/ML
PIC32MX130F064DT-V/ML
PIC32MX130F064DT-I/ML
DSPIC33EP64MC202-E/MMVAO
DSPIC33EP128GS702-E/MM
DSPIC33EP128GS702-I/MM
DSPIC33EP128GS702T-I/MM
DSPIC33EP128GS702T-E/MM

CCB 3920.001, 3920.002, 3920.003
Pre and Post Change Summary
PCN #: GBNG-04WJLP006



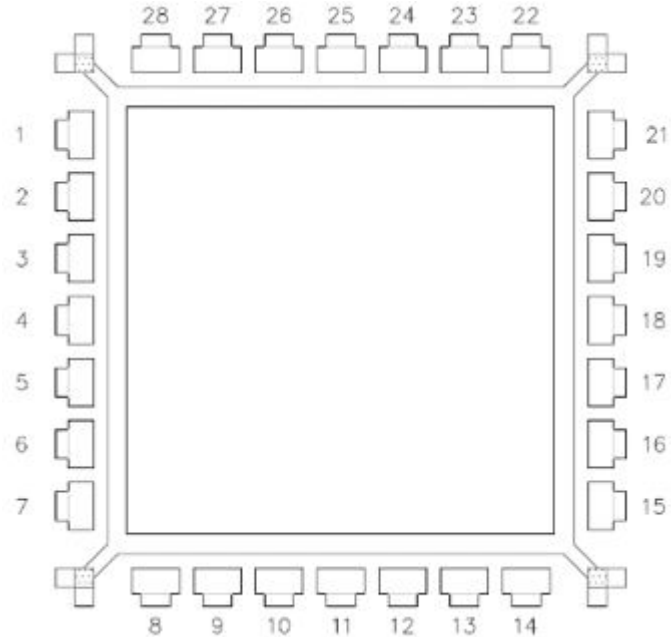
A Leading Provider of Smart, Connected and Secure Embedded Control Solutions



SMART | CONNECTED | SECURE

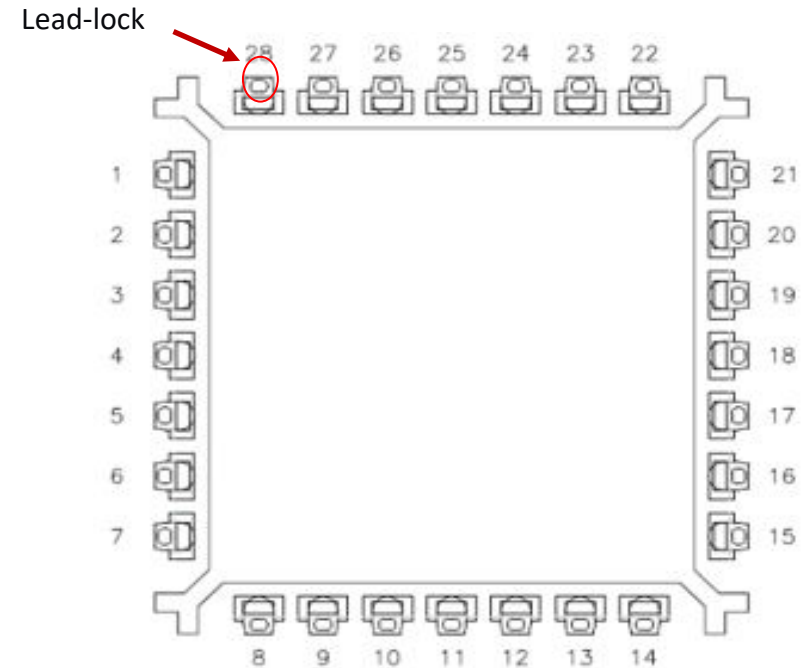
LEAD FRAME COMPARISON: 28L QFN-S

NSEB



| | |
|-----------------------------|----|
| Lead frame DAP surface prep | Ag |
| Lead-lock | No |

MMT



| | |
|-----------------------------|---------|
| Lead frame DAP surface prep | Bare Cu |
| Lead-lock | Yes |

Note: Mold compound materials fills the [lead lock hole](#), which provides improved protection against moisture penetration along the edge of the leads (pins) of the package.



QUALIFICATION REPORT SUMMARY
RELIABILITY LABORATORY

PCN #: GBNG-04WJLP006

Date
Feb 25, 2020

Qualification of MMT as an additional assembly site for various products available in 64L (9x9x0.9mm) package. The selected products available in 44L (8x8x0.9mm) and 28L (6x6x0.9mm) QFN packages will qualify by similarity. This is a Q100 grade 0 qualification.



MICROCHIP

PACKAGE QUALIFICATION REPORT

| | |
|----------------------------|---|
| Purpose | Qualification of MMT as an additional assembly site for various products available in 64L (9x9x0.9mm) package. The selected products available in 44L (8x8x0.9mm) and 28L (6x6x0.9mm) QFN packages will qualify by similarity. This is a Q100 grade 0 qualification. |
| CCB No. | 3920.001, 3920.002 and 3920.003 |
| CN | ES327968 |
| QUAL ID | Q19171 Rev. A |
| MP CODE | TLAB1JR4XLHD |
| Part No. | DSPIC33EP512GP506T-H/MR |
| Bonding No. | BDE-005767 Rev. 01 |
| <u>Package</u> | |
| Type | 64L QFN |
| Package size | 9x9x0.9 mm |
| <u>Lead Frame</u> | |
| Paddle size | 264 x 264 mils |
| Material | C194 |
| Surface | Bare Cu on DAP |
| Process | Etched |
| Lead Lock | No |
| Part Number | 10106409 |
| <u>Material</u> | |
| Epoxy | 3280 |
| Wire | Au wire 0.8 mil |
| Mold Compound | G700LTD |
| Plating Composition | Matte Tin |



MICROCHIP PACKAGE QUALIFICATION REPORT

Manufacturing Information

| Assembly Lot No. | Wafer Lot No. | Date Code | QTY In | QTY Out | Assembly Yield |
|-------------------|-------------------|-----------|--------|----------------------|----------------|
| MMT-203001220.000 | TC11920211760.312 | 19438AD | 700 | 700 | 100.00% |
| MMT-203001221.000 | TC11920211760.311 | 19438AE | 700 | 697 | 99.57% |
| MMT-203100313.000 | TC11920211760.310 | 19448AG | 695 | 695 | 100.00% |
| | | | | Average Yield | 99.86% |

Result

Pass Fail _____

64L QFN (9x9x0.9 mm) assembled by MMT pass reliability test per QCI-39000. This package was qualified the Moisture/Reflow Sensitivity Classification Level 1 at 260°C reflow temperature per IPC/JEDEC J-STD-020E standard.

PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard / Method | Qty. (Acc.) | Def/SS | Result | Remarks |
|--|---|---|----------------|---|--------|-----------------|
| Precondition Prior Perform Reliability Tests (At MSL Level 1) | Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750 Bake 150°C, 24 hrs System: CHINEE 85°C/85%RH Moisture Soak 168 hrs. System: TABAI ESPEC Model PR-3SPH 3x Convection-Reflow 265°C max System: Vitronics Soltec MR1243 Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750 | JESD22- A113 JIP/ IPC/JEDE C J-STD- 020E | 693(0) | 693 693 693 693 0/693 | Pass | Good Devices |

PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard/ Method | Qty. (Acc.) | Def/SS. | Result | Remarks | |
|-------------------------|---|------------------|---------------|---------|--------|---|--|
| Temp Cycle | Stress Condition: -55°C to +150°C, 1000 Cycles System : TABAI ESPEC TSA-70H | JESD22-A104 | | 231 | | Parts had been pre-conditioned at 260°C | |
| | Electrical Test : +85°C, 125°C and 150°C System: J750 | | 231(0) | 0/231 | Pass | 77 units / lot | |
| | Stress Condition: -55°C to +150°C, 2000 Cycles System : TABAI ESPEC TSA-70H | | | 231 | | | |
| | Electrical Test : +85°C, 125°C and 150°C System: J750 | | 231(0) | 0/231 | Pass | | |
| | Decap Inspection (Information Only) (With 1 lot decap on MMT-203001220.000) | | 5(0) Units | 0/5 | Pass | | |
| UNBIASED-HAST | Stress Condition: +130°C/85%RH, 96 hrs. System: HAST 6000X | JESD22-A118 | | 231 | | Parts had been pre-conditioned at 260°C | |
| | Electrical Test: +25°C System: J750 | | 231(0) | 0/231 | Pass | 77 units / lot | |
| | Decap Inspection (Information Only) (With 1 lot decap on MMT-203001220.000) | | 5(0) Units | 0/5 | Pass | | |
| HAST | Stress Condition: +130°C/85%RH, 96 hrs. Bias Volt: 3.6 Volts System: HAST 6000X | JESD22-A110 | | 231 | | Parts had been pre-conditioned at 260°C | |
| | Electrical Test : +25°C, 85°C, 125°C and 150°C System: J750 | | 231(0) | 0/231 | Pass | 77 units / lot | |
| | Decap Inspection (Information Only) (With 1 lot decap on MMT-203001220.000) | | 5(0) Units | 0/5 | Pass | | |

PACKAGE QUALIFICATION REPORT

| Test Number (Reference) | Test Condition | Standard/ Method | Qty. (Acc.) | Def/SS. | Result | Remarks |
|--------------------------------------|--|---------------------|-----------------------|------------------|--------|---|
| High Temperature Storage Life | Stress Condition: Bake 175°C, 500 hrs System: SHEL LAB | JESD22-A103 | | 45 | | 45 units |
| | Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750 | | 45(0) | 0/45 | Pass | |
| | Stress Condition: Bake 175°C, 1000 hrs System: SHEL LAB | | | 45 | | |
| | Electrical Test :+25°C, 85°C, 125°C and 150°C System: J750 | | 45(0) | 0/45 | Pass | |
| Solderability Temp 215°C | Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping: Solder Temp.215°C Solder material: SnPb Sn63,Pb37 System: ERSA RA 2200D Visual Inspection: External Visual Inspection | J-STD-002 | 22 (0) | 22 22 0/22 | Pass | |
| Solderability Temp 245°C | Steam Aging: Temp 93°C,8Hrs System: SAS-3000 Solder Dipping: Solder Temp.245°C Solder material:Pb Free Sn 95.5Ag3.9 Cu0.6 System: ERSA RA 2200D Visual Inspection: External Visual Inspection | J-STD-002 | 22 (0) | 22 22 0/22 | Pass | |
| Bond Strength Data Assembly | Wire Pull (> 2.50 grams) | M2011 | 30 (0) Wires Ppk>1.67 | 0/30 Ppk=1.95 | Pass | See attachment 2 Wire pull & bond shear data assembly |
| | Bond Shear (>12.60 grams) | JESD22-B116 | 30 (0) bonds Ppk>1.67 | 0/30 Ppk=3.07 | Pass | |

Attachment 1

| Wire Pull & Ball Shear After TC 2000 Cycles (Q19171) | | | | | | | | | | | | | |
|---|-----------------------------------|------|------|------|------|------|------------------|------------------------------------|------|-------|------|-------|------|
| Sub group | Wire Pull Strength (Grams) | | | | | | Sub group | Ball Shear Strength (Grams) | | | | | |
| | wire | mode | wire | mode | wire | mode | | Ball | mode | Ball | mode | Ball | mode |
| 1 | 5.93 | 5 | 6.02 | 5 | 6.28 | 5 | 1 | 26.81 | 2 | 27.56 | 2 | 26.73 | 2 |
| 2 | 5.80 | 5 | 5.95 | 5 | 5.88 | 5 | 2 | 27.70 | 2 | 27.02 | 2 | 26.18 | 2 |
| 3 | 6.20 | 5 | 6.08 | 5 | 6.14 | 5 | 3 | 28.32 | 2 | 27.84 | 2 | 26.95 | 2 |
| 4 | 6.95 | 5 | 5.98 | 5 | 5.99 | 5 | 4 | 27.78 | 2 | 30.21 | 2 | 27.96 | 2 |
| 5 | 6.04 | 5 | 5.88 | 5 | 6.21 | 5 | 5 | 27.58 | 2 | 27.93 | 2 | 28.17 | 2 |
| MIN. | 5.80 | | | | | | MIN. | 26.18 | | | | | |
| MAX | 6.95 | | | | | | MAX | 30.21 | | | | | |
| AVG. | 6.09 | | | | | | AVG. | 27.65 | | | | | |
| STD. | 0.27 | | | | | | STD. | 0.93 | | | | | |
| SPEC | 2.50 | | | | | | SPEC | 15.00 | | | | | |

WIREPULL FAILURE MODE CRITERIA

MODE 1 = LIFTED WELD <Reject>
 MODE 2 = LIFTED BALL <Reject>
 MODE 3 = BROKEN AT MID-SPAN
 MODE 4 = BROKEN AT WELD
 MODE 5 = BROKEN AT BALL-NECK
 MODE 6 = CRATERING <Reject>

BALL SHEAR FAILURE MODE CRITERIA

MODE 1 = BALL LIFT <Reject>
 MODE 2 = BALL SHEAR
 MODE 3 = BALL PAD LIFT
 MODE 4 = CRATERING <Reject>

Note: Average ball diameter = 1.95 Mils

Attachment 2

| Wire Pull & Ball Shear Strength Assembly Data (64L QFN) | | | | | | | | | | | | | |
|--|----------------------------|--------------|------|------|------|------|--------------|-----------------------------|------|-------|------|-------|------|
| REL # Q19171 | | CN# ES327968 | | | | | | | | | | | |
| MPC#TLAB1JR4XLHD WF# TC11920211760.310 | | | | | | | | | | | | | |
| Sub group | Wire Pull Strength (Grams) | | | | | | Sub group | Ball Shear Strength (Grams) | | | | | |
| | wire | mode | wire | mode | wire | mode | | Ball | mode | Ball | mode | Ball | mode |
| 1 | 3.80 | 5 | 4.00 | 5 | 4.60 | 5 | 1 | 28.00 | 2 | 28.40 | 2 | 22.40 | 2 |
| 2 | 4.00 | 5 | 4.60 | 5 | 4.20 | 5 | 2 | 26.70 | 2 | 26.60 | 2 | 24.80 | 2 |
| 3 | 4.40 | 5 | 3.80 | 5 | 3.80 | 5 | 3 | 28.80 | 2 | 26.80 | 2 | 28.10 | 2 |
| 4 | 4.10 | 5 | 4.60 | 5 | 4.20 | 5 | 4 | 26.50 | 2 | 24.60 | 2 | 26.10 | 2 |
| 5 | 4.40 | 5 | 4.80 | 5 | 3.80 | 5 | 5 | 26.70 | 2 | 28.10 | 2 | 28.00 | 2 |
| 6 | 4.40 | 5 | 3.80 | 5 | 4.00 | 5 | 6 | 26.80 | 2 | 24.70 | 2 | 26.10 | 2 |
| 7 | 4.00 | 5 | 3.80 | 5 | 4.10 | 5 | 7 | 26.80 | 2 | 25.60 | 2 | 24.20 | 2 |
| 8 | 4.20 | 5 | 4.00 | 5 | 4.20 | 5 | 8 | 27.60 | 2 | 28.10 | 2 | 24.60 | 2 |
| 9 | 4.10 | 5 | 4.40 | 5 | 4.60 | 5 | 9 | 28.20 | 2 | 26.00 | 2 | 26.80 | 2 |
| 10 | 4.00 | 5 | 4.20 | 5 | 4.20 | 5 | 10 | 26.80 | 2 | 26.10 | 2 | 28.60 | 2 |
| MIN. | 3.80 | | | | | | MIN. | 22.40 | | | | | |
| MAX | 4.80 | | | | | | MAX | 28.80 | | | | | |
| AVG. | 4.17 | | | | | | AVG. | 26.59 | | | | | |
| STD. | 0.29 | | | | | | STD. | 1.52 | | | | | |
| Ppk. | 1.95 | | | | | | Ppk. | 3.07 | | | | | |
| SPEC | 2.50 | | | | | | SPEC | 12.60 | | | | | |

WIRE PULL FAILURE MODE CRITERIA

MODE 1 = LIFTED WELD <Reject>
 MODE 2 = LIFTED BALL <Reject>
 MODE 3 = BROKEN AT MID-SPAN
 MODE 4 = BROKEN AT WELD
 MODE 5 = BROKEN AT BALL-NECK
 MODE 6 = CRATERING <Reject>

BALL SHEAR FAILURE MODE CRITERIA

MODE 1 = BALL LIFT <Reject>
 MODE 2 = BALL SHEAR
 MODE 3 = BALL PAD LIFT
 MODE 4 = CRATERING <Reject>

Attachment 3

| Ball Diameter | | | |
|----------------------|-------------------|-------------------|-------------------|
| | Q19171-01 | Q19171-02 | Q19171-03 |
| Item | MMT-203001220.000 | MMT-203001221.000 | MMT-203100313.000 |
| | Mils | Mils | Mils |
| 1 | 1.90 | 1.90 | 1.90 |
| 2 | 2.00 | 1.90 | 1.90 |
| 3 | 1.90 | 1.90 | 1.90 |
| 4 | 1.90 | 1.90 | 1.90 |
| 5 | 2.00 | 2.00 | 2.00 |
| 6 | 2.00 | 2.00 | 2.00 |
| 7 | 2.00 | 2.00 | 2.00 |
| 8 | 2.00 | 1.90 | 2.00 |
| 9 | 1.90 | 1.90 | 2.00 |
| 10 | 2.00 | 1.90 | 2.00 |
| | | MIN | 1.90 |
| | | MAX | 2.00 |
| | | Average | 1.95 |
| | | STD | 0.05 |