

## PRODUCT CHANGE NOTICE

### PCN Form (D4-E000-73)

**PCN#19-049****NOTIFICATION DATE: April 22, 2019****MODEL(S) AFFECTED:**

MMIC Devices using Package types:

**MAV, MCLP, MXC, MXP, SOIC, SOT-143, SOT-23, SOT-89** *(see attached list for specific models)***EXTENT OF CHANGE:**

- Replacement of existing SnAgNi (tin-silver over nickel) plating with industry standard 100% Matte-Tin for RoHS + suffix part numbers

**EFFECT OF CHANGE:**

- No change to FIT (dimensions) or FUNCTION (electrical or process performance)
- Change to FORM in the surface plating used to interface with customer assembly
- Surface plating for affected models is evaluated and qualified per our standard process for solderability, joint reliability and tin whisker and is already in use with other existing Mini-Circuits MMIC products.

**REASON FOR CHANGE:**

Existing plating supplier shut-down, SnAgNi is unique to this supplier. Matte tin is a well-established RoHS compliant finish in the industry, and currently used extensively at Mini-Circuits on other MMIC products. Mini-Circuits will offer SnPb plating as a customer special for those with 'No Pure Tin' restrictions. Contact Sales for quoted delivery.

**EFFECTIVE DATE OF CHANGE:**

- Immediate based on exhaustion of stock or customer request
- For Samples if required, please contact your account manager or click on "[Contact Us](#)" to be contacted by a Mini-Circuits customer service representative

**LAST TIME BUY OF EXISTING SnAgNi PLATED PARTS:**

Acceptance of Last Time Buy Orders (as defined below) is subject to availability of existing SnAgNi plated parts ("Existing Parts") as determined by Mini-Circuits. All Last Time Buy Orders are non-cancellable and non-returnable. For purposes hereof, the term "Last Time Buy Orders" refers to orders for Existing Parts that are placed with Mini-Circuits on or after the notification date of this product change notice.

**ATTACHMENTS:**

List of applicable models

Qualification Report for the matte tin finish [Click on the paperclip to view report](#) Frequently Asked Questions [Click on the paperclip to view FAQ](#) **QUESTIONS?****[PLEASE CONTACT US.](#)**

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Attachment to PCN#19-049

| ** List of Affected Models ** |             |              |                |                 |
|-------------------------------|-------------|--------------|----------------|-----------------|
| AVA-183+                      | CY2-143+    | ERA-1SM-7    | ERA-3SM-22+    | ERA-5+          |
| AVA-183A+                     | D17IA+      | ERA-2 99+    | ERA-3SM-24+    | ERA-50SM+       |
| AVA-24+                       | D17W+       | ERA-2+       | ERA-3SM-30+    | ERA-50SM-4+     |
| AVA-24-1                      | D20C+       | ERA-21SM+    | ERA-3SM-31+    | ERA-50SM-6+     |
| AVA-24A+                      | D20C-3+     | ERA-2-3+     | ERA-3SM-32+    | ERA-51HIREL     |
| AVM-273HP+                    | EP2C+       | ERA-2-5      | ERA-3SM-38+    | ERA-51SM+       |
| AVM-273HPK+                   | EP2C-1+     | ERA-29SM     | ERA-3SM-39+    | ERA-51SM-18.2DB |
| BP2C+                         | EP2C-2+     | ERA-2HIREL   | ERA-3SM-40+    | ERA-5-2+        |
| BP2C1+                        | EP2C-6+     | ERA-2SM 99+  | ERA-3SM-8+     | ERA-5-3         |
| BP2G+                         | EP2K+       | ERA-2SM+     | ERA-4+         | ERA-59SM        |
| BP2G1+                        | EP2K-1+     | ERA-2SM-15   | ERA-4-2+       | ERA-59SM+       |
| BP2G-6+                       | EP2K-2+     | ERA-2SM-16+  | ERA-4SM 99+    | ERA-5SM+        |
| BP2P+                         | EP2W+       | ERA-2SM-16DB | ERA-4SM+       | ERA-5SM-10      |
| BP2P1+                        | EP2W1+      | ERA-2SM-18+  | ERA-4SM-10+    | ERA-5SM-13+     |
| BP2U+                         | ERA-1 99+   | ERA-2SM-20+  | ERA-4SM-11     | ERA-5SM-14      |
| BP2U1+                        | ERA-1+      | ERA-2SM-22+  | ERA-4SM-12     | ERA-5SM-15+     |
| BP4C+                         | ERA-1-3     | ERA-2SM-24+  | ERA-4SM-13     | ERA-5SM-16      |
| BP4C-1                        | ERA-1HIREL  | ERA-2SM-25+  | ERA-4SM-13.5DB | ERA-5SM-17      |
| BP4C1+                        | ERA-1SM 99+ | ERA-2SM-3+   | ERA-4SM-14.4DB | ERA-5SM-19      |
| BP4C-1+                       | ERA-1SM+    | ERA-2SM-5+   | ERA-4SM-15     | ERA-5SM-2       |
| BP4C1-2+                      | ERA-1SM-14+ | ERA-2SM-7    | ERA-4SM-16     | ERA-5SM-20DB    |
| BP4C1-3+                      | ERA-1SM-16+ | ERA-3+       | ERA-4SM-17+    | ERA-5SM-22      |
| BP4C-5                        | ERA-1SM-17+ | ERA-33SM+    | ERA-4SM-21+    | ERA-5SM-23      |
| BP4P+                         | ERA-1SM-18+ | ERA-33SM-1+  | ERA-4SM-6      | ERA-5SM-30      |
| BP4P1+                        | ERA-1SM-19+ | ERA-3-4+     | ERA-4SM-8      | ERA-5SM-32+     |
| BP4U+                         | ERA-1SM-4   | ERA-3HIREL   | ERA-4SM-9      | ERA-5SM-37+     |
| BP4U1+                        | ERA-1SM-5+  | ERA-3SM 99+  | ERA-4XSM+      | ERA-5SM-38+     |
| BP4U1-1+                      | ERA-1SM-6+  | ERA-3SM+     | ERA-4XSM-2+    | ERA-5SM-4       |

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| <b>** List of Affected Models **</b> |             |             |             |          |
|--------------------------------------|-------------|-------------|-------------|----------|
| ERA-5SM-40+                          | GALI-3+     | GALI-51+    | GALI-6-8+   | GAT-12+  |
| ERA-5SM-6+                           | GALI-3-10+  | GALI-5-1+   | GALI-6-9+   | GAT-15+  |
| ERA-5SM-7                            | GALI-3-16+  | GALI-51-11+ | GALI-6F+    | GAT-2+   |
| ERA-5SM-9                            | GALI-3-3    | GALI-51-12+ | GALI-6F-5+  | GAT-20+  |
| ERA-5XSM+                            | GALI-33+    | GALI-51-2+  | GALI-6F-7+  | GAT-2-1+ |
| ERA-6+                               | GALI-33-1   | GALI-5-12+  | GALI-74+    | GAT-2-2+ |
| ERA-6SM+                             | GALI-33-5+  | GALI-51-9+  | GALI-74-10+ | GAT-3+   |
| ERA-6SM-10+                          | GALI-33-6+  | GALI-51F+   | GALI-74-11+ | GAT-30+  |
| ERA-6SM-12+                          | GALI-3-6+   | GALI-51F-1+ | GALI-74-13+ | GAT-3-1+ |
| ERA-6SM-14+                          | GALI-3-7+   | GALI-52+    | GALI-74-15+ | GAT-3-2+ |
| ERA-6SM-15+                          | GALI-39+    | GALI-52-4+  | GALI-74-5+  | GAT-4+   |
| ERA-6SM-16+                          | GALI-39-10+ | GALI-5-3    | GALI-74-6+  | GAT-4-2+ |
| ERA-6SM-2+                           | GALI-39-11+ | GALI-5-3+   | GALI-74-7+  | GAT-5+   |
| ERA-6SM-8+                           | GALI-39-13+ | GALI-55+    | GALI-84+    | GAT-6+   |
| ERA-8SM+                             | GALI-39-14+ | GALI-55-1+  | GALI-84-1+  | GAT-6-1+ |
| ERA-8SM-1+                           | GALI-39-3+  | GALI-55-2+  | GALI-84-2+  | GAT-7+   |
| ERA-8SM-2+                           | GALI-39-8+  | GALI-5-8+   | GALI-84-4+  | GAT-8+   |
| ERA-9SM+                             | GALI-4+     | GALI-5-9    | GALI-84-7+  | GAT-9+   |
| GALI-21+                             | GALI-4-1+   | GALI-59+    | GALI-REP-1+ | GAT-9-1  |
| GALI-2-10+                           | GALI-4-10+  | GALI-59-3+  | GALI-S66+   | GP2S+    |
| GALI-21-1                            | GALI-4-11+  | GALI-59-5+  | GALI-S66-2+ | GP2S1+   |
| GALI-21-1+                           | GALI-4-13+  | GALI-5F+    | GALI-S66-4+ | GP2S1-5+ |
| GALI-21-3+                           | GALI-4-3    | GALI-5F-1+  | GALI-S66-5+ | GP2S-3+  |
| GALI-21-6+                           | GALI-4-6    | GALI-5F-2+  | GAT-0+      | GP2S-4+  |
| GALI-21-7+                           | GALI-4-8+   | GALI-6+     | GAT-0-1+    | GP2S-7+  |
| GALI-24+                             | GALI-49+    | GALI-6-11+  | GAT-0-2+    | GP2X+    |
| GALI-29+                             | GALI-4F+    | GALI-6-2+   | GAT-1+      | GP2X1+   |
| GALI-2-9+                            | GALI-5+     | GALI-6-3    | GAT-10+     | GP2X-1+  |

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| <b>** List of Affected Models **</b> |           |           |             |                 |
|--------------------------------------|-----------|-----------|-------------|-----------------|
| GP2X1-11+                            | GVA-62-2+ | K-LAT-1+  | LAT-4-6+    | LEE-9+          |
| GP2X1-12+                            | GVA-62-3+ | KXMA-1+   | LAT-4-7+    | LHA-1+          |
| GP2X1-2+                             | GVA-63+   | LAT-0+    | LAT-5+      | LHA-1H+         |
| GP2X1-3+                             | GVA-63-1+ | LAT-0-1+  | LAT-5-8+    | LLM-43-1+       |
| GP2X1-5+                             | GVA-63-2+ | LAT-0-2+  | LAT-6+      | LVA-123+        |
| GP2X1-6+                             | GVA-63-3+ | LAT-0-4+  | LAT-6-6+    | LVA-84-1+       |
| GP2X-2+                              | GVA-63-5+ | LAT-1+    | LAT-6-7+    | M3SWA-2-50DR10+ |
| GP2X-3+                              | GVA-63-6+ | LAT-10+   | LAT-7+      | M3SWA-2-50DR-8+ |
| GP2X-4+                              | GVA-81+   | LAT-10-6+ | LAT-7-5+    | M3SWA-2-50DRA+  |
| GP2X-5+                              | GVA-81-2+ | LAT-1-10+ | LAT-8+      | MAR-1+          |
| GP2X-6+                              | GVA-81-3+ | LAT-12+   | LAT-8-6+    | MAR-1-11        |
| GP2X-7+                              | GVA-81-5  | LAT-15+   | LAT-9+      | MAR-1-3         |
| GP2Y+                                | GVA-82+   | LAT-15-4+ | LEE-19+     | MAR-1-7         |
| GP2Y1+                               | GVA-82-2+ | LAT-1-8+  | LEE-19-3+   | MAR-1-8         |
| GP2Y-1+                              | GVA-82-3+ | LAT-1-9+  | LEE2-6+     | MAR-1-9         |
| GP2Y1-2+                             | GVA-83+   | LAT-2+    | LEE-29+     | MAR-1A          |
| GP2Y1-4+                             | GVA-83-1+ | LAT-20+   | LEE-29-4-1+ | MAR-1A+         |
| GP2Y1-5+                             | GVA-83-6+ | LAT-20-1  | LEE-29-7+   | MAR-1SM+        |
| GP2Y-3+                              | GVA-84+   | LAT-20-5+ | LEE-29-8+   | MAR-1SM-10      |
| GVA-123+                             | GVA-84-1+ | LAT-2-6+  | LEE-39+     | MAR-1SM-11+     |
| GVA-123-1+                           | GVA-84-2+ | LAT-2-8+  | LEE-39-10+  | MAR-1SM-2       |
| GVA-123-2+                           | GVA-84-3+ | LAT-3+    | LEE-39-11   | MAR-1SM-5       |
| GVA-123-3+                           | GVA-84-4+ | LAT-30+   | LEE-39-12+  | MAR-1SM-8       |
| GVA-123-4+                           | GVA-84-8  | LAT-3-10+ | LEE-39-3+   | MAR-2+          |
| GVA-60+                              | GVA-84-9+ | LAT-3-12+ | LEE-39-5+   | MAR-2-1         |
| GVA-60-1+                            | GVA-91+   | LAT-3-13+ | LEE-39-6+   | MAR-2-2         |
| GVA-62+                              | GVA-92+   | LAT-3-8+  | LEE-49+     | MAR-2-4         |
| GVA-62-1+                            | GVA-93+   | LAT-4+    | LEE-59+     | MAR-2SM+        |

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|                |             |                |               |              |
|----------------|-------------|----------------|---------------|--------------|
| MAR-2SM-5      | MAR-3SM-3   | MAR-4SM-2      | MAR-7SM-15+   | MAV-11-6     |
| MAR-2SM-6+     | MAR-3SM-31+ | MAR-4SM-3      | MAR-7SM-6     | MAV-11A+     |
| MAR-3+         | MAR-3SM-33+ | MAR-4SM-4      | MAR-7SM-8     | MAV-11BSM+   |
| MAR-3-10       | MAR-3SM-5   | MAR-4SM-6      | MAR-7SM-9     | MAV-11BSM-2+ |
| MAR-3-11       | MAR-3SM-6   | MAR-4SM-7      | MAR-7SM-HIREL | MAV-1A+      |
| MAR-3-12.0DB   | MAR-3SM-9   | MAR-6+         | MAR-8A+       | MAV-2A+      |
| MAR-3-16       | MAR-4+      | MAR-6-2.6DB    | MAR-8A-1+     | MAV-4SM      |
| MAR-3-3        | MAR-4-1     | MAR-6-2.6SM    | MAR-8ASM+     | MAV-4SM+     |
| MAR-3-4        | MAR-4-10    | MAR-6-8        | MAR-8ASM-10+  | MDA4-752H+   |
| MAR-3-5        | MAR-4-11    | MAR-6SM+       | MAR-8ASM-5+   | MDB-24H+     |
| MAR-3-7        | MAR-4-12    | MAR-6SM-11     | MAR-8ASM-6+   | MDB-73H+     |
| MAR-3SM 99+    | MAR-4-13    | MAR-6SM-17.7DB | MAR-8ASM-7+   | MDB-73H-2+   |
| MAR-3SM+       | MAR-4-14    | MAR-6SM-18.6DB | MAR-8ASM-9+   | MDB-73H-3+   |
| MAR-3SM-10     | MAR-4-15    | MAR-6SM-25+    | MAR-8SM-10    | MERA-533+    |
| MAR-3SM-11     | MAR-4-16+   | MAR-6SM-27     | MAR-8SM-17+   | MERA-556+    |
| MAR-3SM-12     | MAR-4-2     | MAR-6SM-29+    | MAR-8SM-18+   | MERA-7433+   |
| MAR-3SM-12DB-1 | MAR-4-3     | MAR-6SM-30+    | MAR-8SM-19+   | MERA-7433-1+ |
| MAR-3SM-14     | MAR-4-4     | MAR-6SM-31+    | MAR-8SM-21+   | MERA-7456+   |
| MAR-3SM-17     | MAR-4-5     | MAR-7+         | MAR-8SM-3     | MGVA-62+     |
| MAR-3SM-19     | MAR-4-7     | MAR-7-12.8DB   | MAR-8SM-6     | MGVA-62-1+   |
| MAR-3SM-20     | MAR-4-8     | MAR-7-4        | MAV-11+       | MGVA-63+     |
| MAR-3SM-21     | MAR-4-9     | MAR-7-5        | MAV-11-11     | MNA-2A+      |
| MAR-3SM-22     | MAR-4SM+    | MAR-7-6        | MAV-11-12     | MNA-2W+      |
| MAR-3SM-23     | MAR-4SM-11  | MAR-7SM+       | MAV-11-13     | MNA-3A+      |
| MAR-3SM-24+    | MAR-4SM-13  | MAR-7SM-12     | MAV-11-14     | MNA-4+TRH    |
| MAR-3SM-25     | MAR-4SM-15+ | MAR-7SM-13     | MAV-11-17     | MNA-4-3      |
| MAR-3SM-28     | MAR-4SM-16+ | MAR-7SM-13+    | MAV-11-18     | MNA-4A+      |
| MAR-3SM-29+    | MAR-4SM-17  | MAR-7SM-14+    | MAV-11-3      | MNA-4A-1+    |

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| <b>** List of Affected Models **</b> |            |           |           |           |
|--------------------------------------|------------|-----------|-----------|-----------|
| MNA-4W+                              | PAT-1+     | PAT-15+   | PAT-3+    | PAT-4-5   |
| MNA-5-1                              | PAT-10+    | PAT-15-1  | PAT-30+   | PAT-4-8   |
| MNA-5A+                              | PAT-10-1   | PAT-15-2  | PAT-30-3+ | PAT-5+    |
| MNA-6-1                              | PAT-10-11+ | PAT-15-3  | PAT-30-4+ | PAT-5-10+ |
| MNA-6-2+                             | PAT-10-13+ | PAT-15-7+ | PAT-30-5+ | PAT-5-11+ |
| MNA-6-3                              | PAT-10-14+ | PAT-15-8+ | PAT-3-10  | PAT-5-2   |
| MNA-6-6+ LTB                         | PAT-10-15+ | PAT-15-9+ | PAT-3-11  | PAT-5-3   |
| MNA-6A+                              | PAT-10-17+ | PAT-1-6   | PAT-3-14  | PAT-5-4   |
| MNA-6A-1+                            | PAT-10-2   | PAT-1-8   | PAT-3-18  | PAT-5-5   |
| MNA-6A-2+                            | PAT-10-5   | PAT-2+    | PAT-3-2   | PAT-5-6   |
| MNA-6W+                              | PAT-10-6   | PAT-20+   | PAT-3-20+ | PAT-5-9+  |
| MNA-7-11+                            | PAT-10-7   | PAT-20-1  | PAT-3-22+ | PAT-6+    |
| MNA-7-3                              | PAT-10-9+  | PAT-20-2  | PAT-3-23+ | PAT-6-1   |
| MNA-7-4                              | PAT-1-1    | PAT-20-3  | PAT-3-24+ | PAT-6-10  |
| MNA-7-6+                             | PAT-1-11   | PAT-20-6+ | PAT-3-4   | PAT-6-12  |
| MNA-7A+                              | PAT-1-14+  | PAT-20-7+ | PAT-3-5   | PAT-6-13+ |
| MNA-7A-1+                            | PAT-1-16+  | PAT-20-8+ | PAT-3-7   | PAT-6-15+ |
| MPGA-105+                            | PAT-1-17+  | PAT-20-9+ | PAT-3-8   | PAT-6-16+ |
| MSW-2-20+                            | PAT-1-18+  | PAT-2-10  | PAT-3-9   | PAT-6-17+ |
| MSW-2-20-7+                          | PAT-12+    | PAT-2-12+ | PAT-4+    | PAT-6-18+ |
| MSW-2-20-8+                          | PAT-12-1   | PAT-2-13+ | PAT-4-10  | PAT-6-19  |
| MSWA-2-20+                           | PAT-12-2   | PAT-2-14+ | PAT-4-12+ | PAT-6-2   |
| MSWA-2-20-6+                         | PAT-12-4+  | PAT-2-15+ | PAT-4-13+ | PAT-6-5   |
| MTX2-73+                             | PAT-12-5+  | PAT-2-2   | PAT-4-14+ | PAT-6-6   |
| PAT-0+                               | PAT-12-6+  | PAT-2-3   | PAT-4-15+ | PAT-6-7   |
| PAT-0-1                              | PAT-1-3    | PAT-2-4   | PAT-4-2   | PAT-7+    |
| PAT-0-3+                             | PAT-1-4    | PAT-2-5   | PAT-4-3   | PAT-7-1   |
| PAT-0-4+                             | PAT-1-5    | PAT-2-6   | PAT-4-4   | PAT-7-2   |

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|-------------------------------|-------------|---------------|-----------|--------------|
| PAT-7-3                       | PGA-103-11+ | PHA-22-2+     | RAM-4+    | TAV-541+     |
| PAT-7-6+                      | PGA-103-12+ | PHA-22H+      | RAM-4-14+ | TAV-551+     |
| PAT-7-7+                      | PGA-103-2+  | PMA2-153LN+   | RAM-4-7   | TAV-581+     |
| PAT-7-8+                      | PGA-103-3+  | PMA2-33LN+    | RAM-6A+   | TP2G-1+      |
| PAT-8+                        | PGA-103-4+  | PMA2-43LN+    | RAM-6A-1+ | TP2G-3+      |
| PAT-8-1                       | PGA-103-5+  | PMA3-83LN+    | RAM-7+    | TSS-53LNB+   |
| PAT-8-10+                     | PGA-103-8+  | PMA3-83LN-10+ | RAM-7-10  | TSS-53LNB-2+ |
| PAT-8-2                       | PGA-103-9+  | PMA3-83LN-3+  | RAM-7-11+ | TSS-53LNB3+  |
| PAT-8-3                       | PGA-105+    | PMA3-83LN-4+  | RAM-8A+   | TSS-53LNB-4  |
| PAT-8-4                       | PGA-105-1+  | PMA3-83LN-5+  | RAM-8A-1+ | TSS-53LNB-5+ |
| PAT-8-8+                      | PGA-105-2+  | PMA3-83LN-6+  | SP-2C+    | VAM-3+       |
| PAT-8-9+                      | PGA-105-3+  | PMA3-83LN-7+  | SP-2C1+   | VAM-6+       |
| PAT-9+                        | PGA-105-6+  | PMA3-83LN-8+  | SP-2C-1+  | VAM-7+       |
| PAT-9-1                       | PGA-105-7+  | PMA3-83LN-9+  | SP-2C-2+  | VAM-7-2+     |
| PAT-9-10+                     | PGA-106-75+ | PMA4-33GLN+   | SP-2G+    | VAM-77+      |
| PAT-9-11+                     | PGA-122-75+ | PMA-545+      | SP-2G1+   | VAM-93+      |
| PAT-9-12+                     | PHA-1+      | PMA-5451+     | SP-2L+    | VNA-28B+     |
| PAT-9-2                       | PHA-101+    | PMA-5452+     | SP-2L-1+  | WP4A+        |
| PAT-9-4                       | PHA-1-1+    | PMA-5453+     | SP-2L-2+  | WP4A-1       |
| PAT-9-5                       | PHA-1-12+   | PMA-5454+     | SP-2P+    | WP4C+        |
| PAT-9-6                       | PHA-1-15+   | PMA-5455+     | SP-2P1+   | WP4C1+       |
| PAT-9-9+                      | PHA-1-20+   | PMA-5456+     | SP-2U+    | WP4C1-2+     |
| PGA-102+                      | PHA-1-22+   | PMA-545G1+    | SP-2U1+   | WP4F+        |
| PGA-102-3+                    | PHA-1-4+    | PMA-545G1-2   | SP-2U2+   | WP4F1+       |
| PGA-102-4+                    | PHA-1-6+    | PMA-545G1-3+  | SP-2U2-1+ | WP4G+        |
| PGA-103+                      | PHA-1H+     | RAM-1+        | SP-2W+    | WP4G1+       |
| PGA-103-1+                    | PHA-22+     | RAM-2+        | SP-2W1+   | WP4G-1+      |
| PGA-103-10+                   | PHA-22-1+   | RAM-3+        | SP-2W1-1+ | WP4G1-1+     |

## PRODUCT CHANGE NOTICE

### PCN Form (D4-E000-73)

Attachment to PCN#19-049

| ** List of Affected Models ** |            |          |
|-------------------------------|------------|----------|
| WP4L+                         | XLF-122-1  | YSF-162+ |
| WP4M+                         | XLF-123-2+ | YSF-272+ |
| WP4N+                         | XLF-133+   | YSF-322+ |
| WP4P+                         | XLF-133-1+ | YSF-382+ |
| WP4P1+                        | XLF-14+    |          |
| WP4P1-1+                      | XLF-151+   |          |
| WP4R+                         | XLF-173+   |          |
| WP4R-1                        | XLF-173-1+ |          |
| WP4R1+                        | XLF-173-2+ |          |
| WP4S+                         | XLF-192+   |          |
| WP4S-1                        | XLF-221+   |          |
| WP4U+                         | XLF-252+   |          |
| WP4U1+                        | XLF-252-1+ |          |
| WP4W+                         | XLF-332+   |          |
| WP4W1+                        | XLF-421+   |          |
| XBF-282+                      | XLF-551+   |          |
| XBF-282-1                     | XLF-63+    |          |
| XHF2-1162+                    | XLF-73+    |          |
| XHF2-1352+                    | XLF-73-1+  |          |
| XHF2-153+                     | XLF-732+   |          |
| XHF2-1832+                    | XLF-762+   |          |
| XHF-23+                       | XLF-861+   |          |
| XHF-252+                      | XLF-962+   |          |
| XHF2-912+                     | XLF-962-1+ |          |
| XHF-392+                      | XLF-982+   |          |
| XLF-122+                      | YSF-122+   |          |
| XLF-123+                      | YSF-2151+  |          |
| XLF-123-1+                    | YSF-232+   |          |