GLOBAL SUPPLIER QUALITY MANUAL

This document is edited and controlled by the SENSATA Technologies Global Supplier Quality Organization. Printed versions are for reference only. It is the SUPPLIERS responsibility to assure that only the latest revision of this manual is used and all prior editions are identified as obsolete.
# GLOBAL SUPPLIER QUALITY MANUAL INDEX

For simplification, the ISO 9001 requirements are not repeated within this document; see Section 6.3 to obtain a copy of the standard.

SENSATA Technologies is required to flow down industry/Customer requirements to SUPPLIERS whose component is incorporated into SENSATA Technologies finished parts or other applications. These are identified throughout this document with an [A] for Aerospace-, [T] for Automotive-, [M] for Medical-, or [I] for Commercial/SENSATA’s End Customer - Business.

If there is no [A] or [T] or [M] or [I] noted, then the requirements are applicable to all SUPPLIERS irrelevant of end component use.

<table>
<thead>
<tr>
<th>PART</th>
<th>SECTION</th>
<th>TITLE</th>
<th>STARTING PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 -</td>
<td>INTRODUCTION</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.1</td>
<td>Purpose</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.2</td>
<td>Communication</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.3</td>
<td>Terms &amp; Conditions</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.4</td>
<td>Confidentiality</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>1.5</td>
<td>Warranty</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>2 -</td>
<td>SCOPE</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>3 -</td>
<td>SENSATA CODE OF CONDUCT</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>3.1</td>
<td>Ethics</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>3.2</td>
<td>Environment, Safety and Health [ESH]</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>4 -</td>
<td>QUALITY MANAGEMENT SYSTEM [QMS]</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>4.1</td>
<td>General Requirements</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>4.2</td>
<td>Industry Certification</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>4.3</td>
<td>Certification Exception</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>4.4</td>
<td>Control of Outsourced Processes Relationship</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>5 -</td>
<td>SUPPLIER MANAGEMENT PROCESS</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5.1</td>
<td>SUPPLIER Identification, Selection and Approval</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5.2</td>
<td>SUPPLIER New Component Sourcing</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5.3</td>
<td>SUPPLIER Performance Monitoring &amp; Improvement</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5.4</td>
<td>SUPPLIER Corrective Actions &amp; Escalation</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>5.5</td>
<td>Business Hold / SUPPLIER Disengagement</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>6 -</td>
<td>DOCUMENTATION AND RECORD MANAGEMENT</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>6.1</td>
<td>General Requirements</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>6.2</td>
<td>Product &amp; Process Document Control</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>6.3</td>
<td>Documents of External Origin</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>6.4</td>
<td>Control and Retention of Records</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>6.5</td>
<td>Configuration Management</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>7 -</td>
<td>MANAGEMENT RESPONSIBILITY OF THE SUPPLIER / -CUSTOMER SATISFACTION</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>7.1</td>
<td>Customer Satisfaction</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>7.2</td>
<td>Product and Process Special Characteristics - Key Characteristics [KPC&amp;KCC],part 1</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>7.3</td>
<td>Acceptance Criteria</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>7.4</td>
<td>SUPPLIER Escalation Process in Programs, Serial Production and Aftermarket [Service/ -Spare parts]</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>7.5</td>
<td>SUPPLIER Contingency Plans</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>7.6</td>
<td>Change Control, Notification and Approval</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>8 -</td>
<td>PROCUREMENT MANAGEMENT OF THE SUPPLIER</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>8.1</td>
<td>Purchasing Process</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>8.2</td>
<td>Regulatory Conformity</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>8.3</td>
<td>Verification of Purchased Products</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>PART</td>
<td>SECTION</td>
<td>TITLE</td>
<td>STARTING PAGE</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>-------</td>
<td>---------------</td>
</tr>
<tr>
<td>9</td>
<td>PRODUCT &amp; PROCESS DESIGN AND DEVELOPMENT</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>9.1</td>
<td>Risk Assessment</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>9.2</td>
<td>SENSATA Design Control</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>9.3</td>
<td>SUPPLIER Design Control</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>9.4</td>
<td>Advanced Product Quality Planning [APQP]</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>9.5</td>
<td>Special Characteristics SC [Key Product Characteristics KPC/Key Process Characteristic KCC], part 2</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>9.6</td>
<td>Failure Mode &amp; Effect Analysis [FMEA]</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>9.6.1</td>
<td>Design FMEA</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>9.6.2</td>
<td>Process FMEA</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>9.7</td>
<td>Control Plan</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>9.8</td>
<td>Statistical Process Control [SPC]</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>9.9</td>
<td>Work Instructions</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>9.10</td>
<td>Design- and Product Validation</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>9.11</td>
<td>Run @ Rate (Process Potential Study)</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>9.12</td>
<td>Control of Inspection, Testing and Equipment and Measurement Systems Analysis</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>9.14</td>
<td>Control Plan</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>9.14.1</td>
<td>Internal Laboratory Requirements</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>9.14.2</td>
<td>External Laboratory Requirements</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>9.15</td>
<td>Control of Initial Samples Related to a Program (New Product Development or Change Management)</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>9.15.1</td>
<td>Request for Initial Samples [RIS]</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>9.15.2</td>
<td>Sample Product Identification</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>9.16</td>
<td>Production Part Approval Process [PPAP]</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>9.16.1</td>
<td>Production Part Approval Process [PPAP]</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>9.16.2</td>
<td>PPAP Submission Level</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>9.16.3</td>
<td>PPAP Supplemental</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>9.16.4</td>
<td>Material Content Reporting via International Material Data System [IMDS]</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>9.16.5</td>
<td>First Article Inspection</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SERIAL PRODUCTION MANAGEMENT</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>10.1</td>
<td>Staffing Qualification</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>10.2</td>
<td>Receiving Inspection</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td>10.3</td>
<td>Safe Launch Control</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>10.4</td>
<td>Continual Improvement</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>10.4.1</td>
<td>Product- Process Performance Monitoring</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>10.4.2</td>
<td>Product &amp; Process Reaction Planning</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>10.5</td>
<td>Annual Product Qualification</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>10.6</td>
<td>Identification and Traceability</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>10.7</td>
<td>Preventive Maintenance - Equipment, Tooling and Inspection Equipment including SENSATA Owned Property</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>10.8</td>
<td>Production Tooling Management - including SENSATA Owned Tooling</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>PART</td>
<td>SECTION</td>
<td>TITLE</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>11</td>
<td>INVENTORY AND LOGISTICS MANAGEMENT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.1</td>
<td>Production Scheduling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.2</td>
<td>Storage and Inventory</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.3</td>
<td>[A] Validation of Production Processes and Service Provision</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11.4</td>
<td>Packaging and Transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>CONTROL OF NON-CONFORMING MATERIAL AND DEVIATION/DEROGATION - APPROVAL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.1</td>
<td>Control of Non-Conforming Material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.2</td>
<td>Request and Approval of Deviation - Derogation / Concession / Waiver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.3</td>
<td>Cost of Non-Conformity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12.4</td>
<td>Corrective Action Management by 8D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>QUALITY PERFORMANCE – ESCALATION AND SPECIAL STATUS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.1</td>
<td>SUPPLIER Performance Tracking &amp; Quality Data Recording</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.2</td>
<td>Performance KPI – Escalation Process</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.3</td>
<td>Controlled Shipment [CS]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.4</td>
<td>SUPPLIER Quality Development Improvement Process [SQIP]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.5</td>
<td>New Business Hold [NBH]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>AUDIT PROGRAM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.1</td>
<td>SENSATA Audits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.2</td>
<td>SUPPLIER Internal Quality Audits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.2.1</td>
<td>Process Audits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14.2.2</td>
<td>Product Audit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>SENSATA REFERENCE FORMS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>SENSATA TECHNOLOGIES PORTAL</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>ADDITIONAL INFORMATION</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Appendix A SENSATA Characteristics Symbol Identification and Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>GSQM AGREEMENT FORM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>GSQM REVISION HISTORY</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>SENSATA QUALITY POLICY</td>
<td></td>
</tr>
</tbody>
</table>
INTRODUCTION

1.1 Purpose

This Global SUPPLIER Quality Manual (GSQM) is designed to assist SENSATA Technologies’ (including its affiliated companies) global supply partners in promoting continual improvement in Quality, Delivery and Cost. It is also essential to have clear, documented requirements and descriptions of interaction processes between SENSATA and its SUPPLIERS defined.

It is our mission to provide our Customers with zero-defect products, on-time delivery and to supply them globally at the best cost.

This goal can only be achieved with the support and commitment between you, our SUPPLIER and us. We are convinced that with your understanding and proactive cooperation, we will increase our common competitiveness by adopting a partnership approach.

We look forward to a mutually beneficial business relationship with our SUPPLIERS.

1.2 Communication

The official business language for all documents and referenced in this GSQM shall be U.S. English.

All bilateral communication in U.S. English, notifications and questions are to be reviewed and handled through the SENSATA designated Purchasing Organization or, when appointed, by the assigned SENSATA SUPPLIER Quality Manager & Supplier Quality Engineering (SQM/SQE) on the following topics, such as but not limited to:

a) Status changes with the SUPPLIER Management Representative and business ownership
b) Status changes of the existing Quality Management System (i.e. new certification, de-certification, re-assessments, etc.)
c) Any deviation from the requirements, defined within this document, must be formally documented and approved prior to implementation.
d) Any request for quality requirements content clarification noted within this document

1.3 Terms & Conditions

In addition to the requirements noted within this document and purchase order clauses, all purchases made by SENSATA, are subject to SENSATA’s Standard Terms & Conditions of Purchase which can be found at: http://www.SENSATA.com/terms.htm

1.4 Confidentiality

SUPPLIERS shall ensure the confidentiality of SENSATA contracted products, projects under development and related product information.

Information is defined as specifications, technical data, drawings, testing requirements, lessons learned, similar shared and communicated information from SENSATA or SENSATA Customers, provided for reference or development of the SUPPLIERS processes, controls, as part of the contracted products and projects.

As such, no information shall be disclosed with any external party, without prior written approval of SENSATA (see section 1.2 Communication).
1.5 Warranty

SENSATA and SENSATA Customers expect the full product functionality and durability over the lifetime of the part.

The application of robust product validation during program phases, the use of proven standards during the production process, strict change control, regular product audits and the implementation of a continual improvement mindset, will ensure satisfaction of the final Customer and will avoid a negative “field-image” of SENSATA and SUPPLIERS.

In case of warranty quality issues, where the SUPPLIER- product is involved (evidence of a negative influencing factor within the SUPPLIER product), SENSATA will formally notify the SUPPLIERs management.

Upon notification, the SUPPLIERs shall implement the 8D- containment and corrective action process immediately without due delay.

Costs related to the financial warranty consequence may result in the SUPPLIERs reimbursement to SENSATA. This is justified due to the end Customer obligations related to warranty, field returns and re-calls, where the SUPPLIERs product has a direct negative influence, to the SENSATA product supplied.

2 SCOPE

SUPPLIERs are fully responsible for the **Quality, Delivery** and **Cost** of their products and services.

This document describes/establishes SENSATA SUPPLIER Management requirements for SUPPLIERs who design, and/or manufacture and/or control respective components in accordance with SENSATA design and product requirements.

The GSQM requirements apply to SUPPLIERs that provide SENSATA manufactured components, out sourced processes and special processes. The GSQM requirements are in addition/complimentary to those in purchase orders, contracts, specifications or drawings.

The word ‘**shall**’ indicates a mandatory requirement.

The word ‘**should**’ indicates a guideline (mandatory requirement with some flexibility allowed in compliance methodology).

SUPPLIERs choosing other approaches to satisfy a ‘**should**’, must be able to show that their approach meets the quality requirements of this document, and must be agreed upon prior to implementation.

SENSATA is required to flow down Industry and Customer requirements to SUPPLIERs whose component is incorporated into SENSATAs automotive/ aerospace/ medical / Customer finished part.

The flow down of these requirements are identified throughout the GSQM as **[A] for Aerospace, [T] for Automotive, [M] for Medical** or **[I] SENSATA’s End Customer/ Commercial Business.**

If no **[A] - [T] - [M]** or **[I]** are noted, and then the requirements are applicable to all SUPPLIERs irrelevant of end component use.

SENSATA expects that SUPPLIERs are experts of the industry specific standards and provide active support to SENSATA, to be able to deliver the perfect product and service to SENSATA Customers and end- consumers.

The content of the GSQM does not supersede or amend the terms of any policies of the company, which maybe more detailed or restrictive.
3 CODE OF CONDUCT

SENSATA’s corporate identity and partnerships are built upon a strong foundation of steadfast adherence to the highest business and personal ethical standards, as well as compliance with the laws that apply to our business. The SENSATA name must bring to mind honesty, integrity and trust for all Employees, Customers, Partners and Vendors, globally.

SENSATA expects its SUPPLIERs to maintain the fundamental values of fairness and integrity during their daily business interactions.

SENSATA’s Code of Conduct reflects these values, and SENSATA requires all SUPPLIERs to adhere to these values in complying with the requirements documented within this GSQM.

All SUPPLIERs are encouraged to visit our website where our Code of Conduct is located [Legal Policies]:

http://www.SENSATA.com/terms.htm

All sections of the GSQM are deemed significant to a positive, productive and rewarding SUPPLIER partnership.

Therefore, the SUPPLIERs non-compliance to the requirements contained within the scope of this GSQM, may drive the initiation of a SUPPLIER Management Review by SENSATA’s Business Management Team.

We strive for Excellence and Customer Satisfaction. That is our priority!

3.1 Ethics

SENSATA values the commitment of its SUPPLIER partners to ensure Excellence in Quality, Delivery, and Cost, but to operate also in the spirit that is based on Integrity and “Know what is right & Do what is right”, as referred to on SENSATA portal [Corporate Governance]:


The Code of Ethics provides a framework for making ethical business decisions in the course of SENSATA business, to establish the importance of exercising sound, ethical judgment and to recognize the shared values we have with our Customers, Stockholders, Employees, SUPPLIERs and other third parties with whom we do business. The principles outlined in the Code will be recognizable, for they reflect the fundamental values of fairness and integrity that are part of our daily lives.

- To our Customers, we are committed to providing top quality, service and innovative products.
- To our shareholders, we are committed to growing the value of the Company through sound and ethical business practices.
- To our employees, we are committed to fair and unbiased treatment, strict adherence to our policy against discrimination in the workplace and providing a safe and healthy working environment.
- To our SUPPLIERs and other third parties with whom we do business, we are committed to an ethical business relationship based on mutually beneficial long-term relationships.

SENSATA values people regardless of race, color, religion, creed, disability, minority, national origin, gender, age, military status, or any other category of persons protected by applicable law.
3.2 Environment, Safety and Health [ESH]

SENSATA consistently complies with applicable Environmental, Safety and Health (ESH) regulations as well as to SENSATA's Customers, community responsibility and other governmental requirements. Consequently, SUPPLIERs must be aware of and adhere to these standards for materials/components supplied to SENSATA (example: material/chemical content requirements, hazardous material handling, re-use of material, waste, data recording...)

SENSATA commits to continual improvement of its operations, progressively reducing the potential ESH impact of its activities, by focusing on: the health, safety and productivity of employees and processes, and on efficient use of natural resources and prevention of pollution.

SUPPLIERs are required to maintain a certified Environmental Management System to ISO14001. SUPPLIERs who are not certified must have a working plan to become certified to ISO14001, unless there is an agreed upon written exception between SENSATA and the SUPPLIER.

4 QUALITY MANAGEMENT SYSTEM [QMS]

4.1 General Requirements

For simplification, the ISO 9001 requirements are not repeated within this document (see section 6.3 to obtain a copy of the standard).

SENSATA requests that SUPPLIERs maintain a certificate to the latest revision of ISO9001, issued by an accredited third party certification body.

SENSATA will evaluate 2nd party results (such as VDA 6.3-, CQI-, MMOG-, BIQ-, - audits etc.) as performed by qualified auditors (Customer, SENSATA) to confirm the SUPPLIERs QMS performance assessment.

This information is to be made available upon request by the SENSATA Purchase Manager or SUPPLIER Quality Team (SQM/ SQE).

SUPPLIERs shall demonstrate that the QMS system is in place and its effectiveness is continually monitored against the SENSATA requirements, as stated in this GSQM content, issued drawings/-specifications, purchase orders, etc.

Demonstration of effectiveness may include internal audit results and improvements to the QMS.

It is the responsibility of the SUPPLIER to ensure the following concerning QMS certificates:

Certificate Validity: The certificate submitted to SENSATA must be valid and not fraudulent. When it is identified that the certificate is fraudulent, SENSATA will be required to take immediate action by initiating a corrective action request from the SUPPLIER.

Certificate Scope: The scope of the QMS must be consistent with the component being submitted for the site(s), including any remote support locations, which may interface with the manufacturing sites (i.e., design centers, Customer service, logistics, outsourcing, etc.).

For any questions related to this topic, SUPPLIERs are requested to contact their third party registrars.
4.2 Industry Certification

**Automotive Component SUPPLIERS**

[T] SUPPLIERS whose component is incorporated into SENSATAs automotive finished parts must (at a minimum) be registered to the latest revision of ISO 9001.

[T] SUPPLIERS, shipping to SENSATA sites, that are registered to the latest revision of IATF 16949, shall also demonstrate compliance to the latest revision of IATF 16949.

Second party - (Customer or SENSATA) or third party (Registrar) audit results, submitted to the assigned SENSATA Purchase Manager and/or on request to the assigned SQE, may demonstrate compliance.

**Commercial, Aerospace, HVOR, Component SUPPLIERS**

SENSATA strongly recommends SUPPLIERS to maintain third party-registration to the latest revision of ISO 9001 by an accredited third party certification body or as alternative/additional a valid industry specific QMS certificate.

4.3 Certification Exception

For those SUPPLIERS who are unable to demonstrate third-party certificates, a documented compliance plan must be submitted to the assigned SENSATA Purchase Manager or on request to the assigned SUPPLIER Quality Team (SQM/SQE) for review, acceptance (by SENSATA SQM, SQE) and monitoring.

The agreed plan, must define the projected timeline, responsibilities and actions to achieve a QMS certification by a third party Registrar. SUPPLIERS are responsible and accountable for the execution of the SENSATA accepted plan. SUPPLIERS who are unable to execute upon the plan, may require SENSATA to initiate an escalation process against the SUPPLIER (see section 5.4 & 13.2 -13.5 for more details).

SUPPLIERS, who are not registered to an industry quality management standard as noted above, must have a QMS-system in place to ensure they meet SENSATA’s Quality, Delivery and Cost excellence expectation.

SENSATA may schedule/request QMS- compliance checks [SENSATA Process Assessment SPA] to measure the gap between fundamental QMS expectation and the reality at the SUPPLIERS site, to evaluate risks for SENSATA and SENSATA Customers. The Supplier has to correct identified weaknesses during a period defined by SENSATA.

4.4 Control of Outsourced Processes Relationship

SUPPLIERS shall ensure full control over outsourced processes. SUPPLIERS shall notify SENSATA regarding the outsourcing projects, prior approval by SENSATA Purchasing Manager is mandatory and required.

The control over such a TIER 2 SUPPLIER processes does not absolve the TIER 1 SUPPLIER of the responsibility for product conformity to all of SENSATA requirements, but also includes costs incurred by SENSATA due of quality nonconformance incidents and delivery disruptions (see section 12 for more details).

For a selected TIER 2 SUPPLIER, the same rules are applicable as described in section 4.1. through 4.3.

SUPPLIERS shall notify SENSATA Purchasing Manager and SQM/ SQE prior to implementation of any change in the outsourced process relationship between the SUPPLIERS and their respective TIERs.

Notification after implementation may warrant SENSATA to initiate a Corrective Action and Escalation process.
5 SUPPLIER MANAGEMENT PROCESS

SENSATA SUPPLIER Management Process shall maintain the following activities:

5.1 SUPPLIER Identification, Selection and Approval

All potential new SUPPLIERS are evaluated to determine if an adequate quality system, development experience and technology/manufacturing capabilities are in place, to continuously supply high quality performance towards SENSATA.

The identified SUPPLIERS are assessed to the requirements defined in the SENSATA design, process and system documentation. This assessment may include a SUPPLIER self-survey, a SUPPLIER validation review and/or an on-site audit.

5.2 SUPPLIER New Component Sourcing

Component development for production is managed by the SENSATA Component Sourcing Process, which aligns and interfaces those requirements such as, but not limited to, Customer and End-User Industry requirements, the Product Development and Mass- Production Processes, etc.

Selected SUPPLIERS are expected to have the technical competence and proactive leadership, during program phases and mass-production to ensure that all applicable requirements are met as required, prior to releasing product or information to SENSATA.

5.3 SUPPLIER Performance Monitoring & Improvement

SUPPLIERS must demonstrate ongoing performance compliance to the agreed upon requirements. SUPPLIERS performance are monitored in key performance indicator areas including Quality, Delivery and Cost, to demonstrate continual improvement and ongoing capability.

5.4 SUPPLIER Corrective Actions & Escalation

SUPPLIERS shall establish and maintain a Quality System to protect SENSATA and our Customers from receiving non-conforming material, components, assemblies and services, see section 4.

In case the SUPPLIERS delivery performance has an adverse effect on the SENSATA/ Customer requirements or key performance indicators, the 8D-Corrective Action Process, CS (Controlled Shipment) or a SQIP (SUPPLIER Quality Improvement Plan/Process) shall be applied.

If corrective and preventive actions are not effective, delayed or ongoing adverse effects continue demonstrating no improvement or weaknesses cannot be eliminated in a robust way (re- occurrence of same issues), an Escalation Process will be initiated (see section 13.2/ 13.3/ 13.4 for more details).

5.5 SUPPLIER Business Hold / SUPPLIER Disengagement

In the event SUPPLIER’s performance does not demonstrate improvement during the Escalation Process, a disengagement process will be considered. This process will be initiated and communicated by the SENSATA Purchasing Team, including the launch of the New Business Hold status as a first stage or disengagement as end-stage.
6 DOCUMENTATION AND RECORD MANAGEMENT

6.1 General Requirements

SUPPLIERS shall establish and maintain a procedure/structure, to control all documents that relate to product and process requirements and the expectation of this SENSATA GSQM.

The process to control documents must include the origination, review, use, safe storage and change control of all documents. Document changes (latest revisions) are to be communicated to the impacted processes to ensure that the operations are being performed, to meet product and process requirements.

Document change history must be clearly noted.

Documents can be in any type of media, such as paper copies or in an electronic format.

Documents may include:

a) SENSATA Purchase Order and related documentation
b) Drawings, Customer and SENSATA Specifications, Component Specifications (form, fit & function)
c) Failure Mode Effects Analysis (FMEA), Control Plan, Work Instructions, Inspection/Testing Instructions/Plans, Control Charts, etc.

[T] SUPPLIERS shall clearly demonstrate the relationship between the requirements and the documented procedures in their own Quality Management System.

6.2 Product & Process Document Control

SENSATA requires SUPPLIERS to coordinate and obtain approval from SENSATA SQE, when previously production approved document changes are made that impact product function, testing and control methods.

These documents may include but not limited to: Failure Mode Effects Analysis (FMEA), Control Plan, Inspection/Testing Method and Frequency, Equipment refurbishment frequency, etc.
6.3 Documents of External Origin

SUPPLIERS shall refer to the latest revision of the documents of external origin noted below, as applicable:

Table 1 – Document of External Origin Listing

<table>
<thead>
<tr>
<th>REQUIREMENT</th>
<th>TITLE</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9001</td>
<td>Quality management systems – Requirements</td>
<td><a href="http://www.iso.org">www.iso.org</a></td>
</tr>
<tr>
<td>ISO 10007</td>
<td>Quality management systems – Guidelines for configuration management</td>
<td><a href="http://www.iso.org">www.iso.org</a></td>
</tr>
<tr>
<td>ISO14001</td>
<td>Environmental management systems</td>
<td><a href="http://www.iso.org">www.iso.org</a></td>
</tr>
<tr>
<td>IATF 16949</td>
<td>Automotive Quality Management System Standard</td>
<td><a href="http://www.iaob.org">www.iaob.org</a></td>
</tr>
<tr>
<td>AS 9102</td>
<td>Aerospace Standard – First Article Inspection Requirements</td>
<td><a href="http://www.sae.org">www.sae.org</a></td>
</tr>
<tr>
<td>AS 9103</td>
<td>Aerospace Standard – Variation Management</td>
<td><a href="http://www.sae.org">www.sae.org</a></td>
</tr>
<tr>
<td>AS 9006</td>
<td>Aerospace Standard – Software Supplement for AS 9100</td>
<td><a href="http://www.sae.org">www.sae.org</a></td>
</tr>
<tr>
<td>ISO 26262</td>
<td>Road Vehicles - Functional Safety Automotive E/E Systems</td>
<td><a href="http://www.iso.org">www.iso.org</a></td>
</tr>
<tr>
<td>ECMP</td>
<td>Electronic Component Management Plan</td>
<td><a href="http://www.sae.org">www.sae.org</a></td>
</tr>
<tr>
<td>APQP</td>
<td>AIAG – Advanced Product Quality and Control Plan</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>FMEA</td>
<td>AIAG - Potential Failure Modes and Effects Analysis</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>PPAP</td>
<td>AIAG - Production Part Approval Process</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>SPC</td>
<td>AIAG – Statistical Process Control</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>MSA</td>
<td>AIAG – Measurement Systems Analysis</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>CQI-12</td>
<td>Special Process: Coating System Assessment</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>CQI-17</td>
<td>Special Process: Soldering System Assessment</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>CQI-23</td>
<td>Special Process: Molding System Assessment</td>
<td><a href="http://www.aiag.org">www.aiag.org</a></td>
</tr>
<tr>
<td>Example: USCAR 21</td>
<td>Performance Specification for Cable-to-Terminal Electrical Crimps [see also other Customer specific standards of such application]</td>
<td><a href="http://www.sae.org">www.sae.org</a></td>
</tr>
<tr>
<td>ASME Y14.5M</td>
<td>ANSI - Dimensioning and Tolerancing</td>
<td><a href="http://www.ansi.org">www.ansi.org</a></td>
</tr>
<tr>
<td>Americas – E9898 Europe - QMS01106181</td>
<td>SENSATA Engineering Specification</td>
<td>Contact respective SENSATA Design Engineering business center and SENSATA Supplier Quality Engineer</td>
</tr>
</tbody>
</table>
6.4 Control and Retention of Records

SUPPLIERS shall establish and maintain a procedure defining the identification, collection, access, filing, storage and disposal of quality records.

Quality records shall be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system.

All quality records shall be stored and retained in such a way, that they are readily retrievable and accessible, within an environment that provides safe storage conditions, a suitable environment to prevent damage and deterioration to prevent loss.

The specified retention periods shall be considered “minimums” and do not supersede any governmental or Customer requirement (see Table 2).

SUPPLIERS shall be responsible for notifying and flow down to their SUPPLIERS the responsibility, to retain all documents and records referred to in this section.

If SENSATA record retention requirements for a specific product vary from those listed, special requirements shall be specified in the SENSATA requirements and purchase order for that product.

In the event of a termination of business, all SUPPLIERS shall be contacted in order to transfer any applicable records pertaining to raw parts/services provided to SENSATA.

SUPPLIERS shall make records available for review when requested by the SENSATA Purchasing team or the SENSATA SUPPLIER Quality team.
### Table 2 - Record Retention

[Minimum periods, governmental law, Customer- and industry specific standards to respect at any time]

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Review</td>
<td>3 years</td>
<td>3 years</td>
<td>3 years</td>
<td></td>
</tr>
<tr>
<td>Product Development Records including (Design Verification, Control Plans-[Prototype, Launch, Production and Safe Launch], FMEAs)</td>
<td>3 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years</td>
<td></td>
</tr>
<tr>
<td>Change Management and Engineering Changes</td>
<td>3 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years</td>
<td></td>
</tr>
<tr>
<td>Quality Performance Records (e.g. control charts, inspection and test results)</td>
<td>3 years</td>
<td>Current year + 5 years (min. 15 years)</td>
<td>15 years</td>
<td></td>
</tr>
<tr>
<td>Internal Audits</td>
<td>3 years</td>
<td>3 years</td>
<td>3 years</td>
<td></td>
</tr>
<tr>
<td>Traceability</td>
<td>3 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years</td>
<td></td>
</tr>
<tr>
<td>Purchase Orders and Amendments</td>
<td>Year of Expiration plus 10 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years</td>
<td></td>
</tr>
<tr>
<td>Purchase Orders for Customer Owned Tooling</td>
<td>Year of Expiration plus 10 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years</td>
<td></td>
</tr>
<tr>
<td>First Article Inspection</td>
<td>n.a.</td>
<td>n.a.</td>
<td>15 years [A]</td>
<td></td>
</tr>
<tr>
<td>Production Part Approval</td>
<td>Year of Expiration plus 10 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years [M]</td>
<td></td>
</tr>
<tr>
<td>Annual Validation</td>
<td>n.a.</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>Tooling Preventive Maintenance</td>
<td>1 year</td>
<td>1 year</td>
<td>3 years</td>
<td></td>
</tr>
<tr>
<td>Engineering Changes</td>
<td>3 years</td>
<td>Product Active Life + 1 year (minimum 15 yrs)</td>
<td>15 years</td>
<td></td>
</tr>
</tbody>
</table>

### 6.5 Configuration Management

[A] SUPPLIERS shall establish, document and maintain a configuration management process appropriate for the component.

Configuration Management is a process for establishing and maintaining consistency of a product’s performance, its functional and physical attributes with its requirements, design and operational information throughout its life.

Guidance on configuration management is provided in ISO 10007.
7  Management Responsibility of the SUPPLIER/Customer Satisfaction

7.1  Customer Satisfaction

SUPPLIERS shall ensure that SENSATA requirements are determined and met with the intent of enhancing Customer satisfaction, monitoring trends within the processes, production and quality systems in place, to assure effectiveness and efficiency.

7.2  Product and Process Special Characteristics SC - or Key Characteristics, Part 1

(KPC Key Product Characteristic & KCC Key Control Characteristic)

Throughout the product lifecycle (development, pre-launch, serial production and service parts) the SUPPLIER shall establish and document the method of identifying and controlling the flow down of all product Special Characteristics [Key Product Characteristics (KPC) and Key Control Characteristics (KCC)] that are Customer, SENSATA and SUPPLIER identified.

Control is considered by means of interface dimensions, functional testing, aging and simulation tests, re-qualification frequency and scope, etc. The identification and control requirements must flow down to the operator level, such as in: work instructions, visual aids, inspection and testing plans. The identification and control shall also be considered throughout all stages of the product quality/control plan development, such as prototype, pre-launch, safe launch and serial/mass-production.

The required inspection details, testing acceptance criteria (including sample size, frequency documentation and actions to launch in case of non-conformity), machine parameter follow up, tooling and maintenance status, shall be detailed in the Control Plan/ documented in procedures & instructions.

7.3  Acceptance Criteria

SUPPLIERS shall pro-actively initiate the identification of acceptance criteria requirements throughout the product lifecycle for the component, commodity and equipment/tooling being sourced. This includes all relationships involved between SUPPLIERS, Sub-tier and SENSATA. SENSATA SUPPLIER Quality Engineering will support and require that acceptance criteria and standards are defined to avoid misunderstanding and vagueness.

Together with the assigned SENSATA SQE, the SUPPLIERS shall clarify acceptance criteria at least for Special Characteristics and the methods to control them, such as measurement and test procedures, checking frequencies, failure catalogues, boundary samples, gage selection, including the required documentation.

Approved criteria sample representative(s) that are provided by SENSATA containing a permanent signature and date, are to be retained in a manner to preserve the integrity of initial part condition.

7.4  SUPPLIER Escalation Process in Programs, Serial Production and Aftermarket [Service/ Spare parts]

SUPPLIERS shall establish a robust escalation process, to ensure advance notification to SUPPLIER management and SENSATA to mitigate issues that may jeopardize the key deliverables, such as but not limited to: Quality, Program Deliverables and Delivery (Line Shut or Stoppage, etc.).

A proactive notification to the assigned SENSATA Purchasing Manager and SQM by the SUPPLIERS, where the risk to SENSATA or its Customers' final products and programs are impacted, including any products previously shipped, referred to warranty or field, is expected.

This Escalation Process and the related advance notification is also to apply, because of issues resulting from the SUPPLIER’s sub-SUPPLIERs (related to sub-components, sub-materials and contracted services).

7.5  SUPPLIER Contingency Plans

SUPPLIERS shall maintain a contingency plan to satisfy SENSATA requirements in order to maintain continuity of quality product delivery in the event of an emergency.
These plans are to be made available upon request of SENSATA. Emergencies may include but are not limited to natural or human disasters, utility interruptions, labor shortages, raw material or sub-component shortages, key tooling or equipment failures and field returns. Contingency plans shall consider communication methods and contacts necessary to facilitate a timeliness exchange between SUPPLIERS and SENSATA.

7.6 Change Control, Notification and Approval

SUPPLIERS shall have a **process to control and react to changes** that are initiated internally and externally, including those initiated by SENSATA. Such changes that affect the product realization and related processes shall include: product design, process design, manufacturing, etc. For proprietary design, impact on form, fit and function (including performance and/or durability) shall be reviewed with the assigned SENSATA SQE, so that the effect can be properly evaluated and assessed for risk.

Any change, initiated by the SUPPLIERS and sub-SUPPLIERS that affect SENSATA product and process requirements throughout all stages of the product lifecycle, initial production release, development, serial production and service require notification and **prior** approval of SENSATA Purchase and SENSATA SUPPLIER Quality Engineering.

**Typical MAJOR changes may include but not limited to:**

a) **MOVEMENT** | Facility, equipment, warehousing, etc.
b) **CHANGING** | Component material, SUPPLIER source, testing method/frequencies, etc.
c) **IMPROVEMENT** | “Lean”- efforts, Continual Improvement projects (HOSHIN,KVP), Six Sigma actions, etc.
d) **ADDITIONS & REMOVALS** | Add or removal of tooling and equipment, etc.

In case of questions, contact SENSATA Purchasing and the assigned SQE, if there are doubts if an official, written notification of SENSATA is needed or not.

**REMINDER:** SUPPLIERS are required to notify and obtain approval prior to implementation of the identified **major changes** from the SENSATA Purchasing Manager and SQE. This notification shall occur at the conception of potential change(s) within the SUPPLIERS or Sub-SUPPLIER, to provide ample review and approval timing by SENSATA and their Customers prior to the implementation of the change.

SUPPLIERS shall use the **SUPPLIER Request for Engineering Approval (SREA)** to communicate with SENSATA Purchasing Manager and SQE for review, documentation and potential approval. SENSATA expects SUPPLIERS to include as part of SREA a risk assessment/mitigation plan and validation plan. Risk assessment should consider the 6M-factor methodology (machine, man, method, materials, environment and measurement).

In certain situations, SUPPLIER change notifications are required to meet SENSATA Customer change notification and timing of submission before implementation of any change.

Typically, the lead-time ranges between 6 – 18 months, depending on the significance of the change. SUPPLIERS must consider those circumstances when notifying SENSATA about planned changes.

**Examples that do not require notification to SENSATA,** but require before and after inspection records as well as lot control record includes: equipment and tool maintenance; repair of broken tooling or equipment; or replaced expendable tooling or fixtures; change of manpower and new lots of approved materials; or similar.

All changes noted in section 7.6 above, shall be managed, monitored, measured and recorded throughout pre- and post-change process, with consideration to all affected Special Characteristics (product&process) or relevant parameters, including validation plans and results. Change of validation plans and results must be made available to SENSATA SUPPLIER Quality Engineering and SENSATA Customer Quality Engineering, upon request.

Recording of Change description in the history for product & process documentation shall be controlled (see Table 2 - Record Retention).
8 PROCUREMENT MANAGEMENT OF THE SUPPLIER

8.1 Purchasing Process

SUPPLIERS shall use the organization and/or SENSATA and SENSATA Customer’s approved sources when specified on prints or purchase orders.

All SUPPLIERS and Sub-SUPPLIERS must conform to Quality Management System requirements as described in section 4, including SENSATA designated sub-SUPPLIERS. This does not absolve the SUPPLIERS from the responsibilities to ensure qualification and requirement compliance.

8.2 Regulatory Conformity

SUPPLIERS shall comply with the statutory and regulatory requirements, including recycling, environmental impact and characteristics identified as a result of the SUPPLIERS knowledge of governmental law and Customer- and industry specific standards, related to the product and manufacturing processes.

SUPPLIERS shall provide the component material information as requested by the assigned SENSATA Purchase Team and SENSATA SQE, such as but not limited to:

[T] Guidance on statutory and regulatory requirements is provided in End of Life Vehicle - International Material Data System Directive (ELVD) 2000/53/EU, as required as part of the Production Part Approval Process – PPAP, (see section 9.16).

Regulation compliance to EC 1907/2006 on Registration, Evaluation, Authorization (and Restriction) of Chemicals (REACH).

17 CFR Parts 229 and 249 Conflict Minerals Reporting requires that materials or production process for those components purchased by SENSATA or SENSATA third party SUPPLIERS meet the conflict mineral reporting per the requirements set forth in section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010.

Because of the complexity of regulatory specifications in addition to the above, it is highly recommended if in question of requirements please contact the SENSATA SQE and Design Engineering team.

8.3 Verification of Purchased Products

SUPPLIERS are responsible for purchased products. Therefore, SUPPLIERS shall have a process to assure the quality of purchased products that may include, but is not limited to:

- a) Obtaining objective evidence of quality of products from sub-SUPPLIERS (e.g., accompanying documentation, certificate of conformity, test reports, statistical records, process control)
- b) Inspection and audit at sub-SUPPLIERS premises
- c) Review of the required documentation
- d) Inspection of products upon receipt
- e) Delegation of verification to the SUPPLIER, or SUPPLIER certification
- f) Utilize Corrective Action Methodology when Sub-SUPPLIER provides Non-Conforming raw material and -sub-components
- g) Monitor sub-SUPPLIER for on going performance and ensure Continual Improvement

Purchased product shall not be used or processed until it has been verified as conforming to specified requirements, unless it is released under positive recall methods or procedures.
9  PRODUCT & PROCESS DESIGN AND DEVELOPMENT PLANNING

The following sections apply to new, derivate or changed, product and process development activities.

9.1  Risk Assessment

SUPPLIERS shall have a risk assessment and mitigation process to review and document the associated risks of a product or program related to: new technology, reduction in program timing, frequent or late changes, resource/staffing requirements and qualification, manufacturing feasibility, definition of special characteristics (incl. pass thru-characteristics), functional and dimensional challenges, product quality, delivery conditions, cost saving opportunities, etc.).

SUPPLIERS are to initiate, when requested by SENSATA Purchasing, the Design For Manufacturability [DFM] - or as alternative the Traffic Light Procedure [TLP] process, to identify potential risks related to the component being sourced by SENSATA. The purpose of the DFM/ TLP is to proactively identify risks early within the development stages, prior to (not after!) production release.

SUPPLIERS are to interact with SENSATA Design Engineering and/or the SENSATA SQE, in the DFM/TLP evaluation process to review the risks and opportunities associated with the component being sourced.

In the case where risks have been identified a mitigation action plan must be documented and managed by the SUPPLIERS to drive closure to resolution.

9.2  SENSATA Design Control

The component is completely designed, developed and specified by SENSATA.

SUPPLIERS are expected to collaborate throughout the product lifecycle from development to serial production stages, as a technical expert in the component or process being sourced by SENSATA.

This partnership is to provide an opportunity to proactively contribute in the robust design of SENSATA designed products. Objectives should focus on risk mitigation, DFM, FMEA, Lessons Learned from previous projects or designs, process and special requirements, value added options, etc., to prevent a negative impact throughout the whole supply chain to the final Customer or User.

9.3  SUPPLIER Design Control

A component/product/service completely or partly designed, developed and specified by the SUPPLIERS is required, to meet the SENSATA and SENSATA Customer expectation related to Quality, Delivery and Cost.

SUPPLIERS shall have a process to manage and control the design development activities, ensuring a robust design of its products by the use of the following: risk analysis/mitigation, lessons learned from designs, process requirements, value-added options, Six Sigma, etc. The objective is to avoid risks throughout the product lifecycle, ensuring ongoing quality, reliability and durability expectations and specifications to meet SENSATA and Customer expectations.

SUPPLIERS design activities are to include the following: development and maintenance of dFMEA’s and pFMEA’s, design reviews, product validation related to quality, reliability and durability challenges of the product.

SENSATA encourages a collaborative exchange with the SUPPLIERS throughout the product lifecycle from development to serial production stages, to promote technical improvement and risk mitigation by all parties.
9.4 Advanced Product Quality Planning [APQP]

SUPPLIERS are to have an understanding and working application of APQP methodologies and tools during the Product Lifecycle from development through serial production, in the review of new products and processes and changes to products and processes, (see section 7.6).

APQP is an integral part of product design and development, tooling and equipment design and selection manufacturing methods and inspection procedures.

The target is to build in Quality with inputs into the design of a product, as well into the process that will produce the product.

Key outputs of APQP are for example the Failure Mode Analysis (FMEA), the Control Plan and Production Part Approval Process or [A] First Article Inspection.

SUPPLIERS shall utilize internal cross functional teams to prepare the production of new or changed products. Those teams typically include Design, Manufacturing, Engineering, Quality, Logistic, Production and Purchasing personnel.

SUPPLIERS shall make available the evidence required to support the APQP deliverables (see section 6.4 Table 1 Record Retention) examples of such evidence may include but not limited to the following:

- Review of SENSATA Customer applicable requirements and standards
- Review of SENSATA requirements, drawings and applicable specifications
- Review and application of “Lessons- Learned” of previous projects
- Use of a defined project plan, defining schedule, responsibilities including SENSATA timeline and milestones throughout the development and production release phases
- Identification and control of Critical and Significant Characteristics, including, where applicable, flow down to Sub-Tier SUPPLIERS
- Conducting a complete manufacturing feasibility study (Risk Assessment) and mitigation plan, including tool life determination under mass- production conditions
- Identifying the tool life and method of control, as identified and agreed by SENSATA Purchasing Team
- Development and management of FMEAs, including actions to reduce any risk
- Development and management of Control Plans at all stages, prototype, prelaunch, production stages within the Project plan
- Identification, sourcing, control, and qualification of all applicable gauges, test equipment throughout the Product Life Cycle, incl. their development and production release phases
- Define, control and validate the methods of measurement systems and testing facilities used during Project plan
- Identify, select and approve release of Sub-SUPPLIERs including the control of requirements, as well as any changes (see also section 4 and 7.6).
- Validation of Product Design and Process Design
- Perform and record results of production trials throughout the development and pre-launch stages (RUN@RATE), with presence of valid representatives
- Review and define controls for packaging specification including validation to ensure product preservation, and when applicable packaging approval (ie: PPAP/FAI)
- Document and control PPAP/FAI requirements at all stages of component management including SENSATA and Sub-SUPPLIER
- Define, control and document Safe Launch Control to protect SENSATA during ramp up of production stages (Temporary Quality Walls/ Controlled Shipment, additional laboratory inspection, etc.)
- Identify a Cross Functional Team to manage, review, document and take action at all stages of the SENSATA project efficiently (including 8D, PDCA action plan, Single List of Issues (SLI), etc.)
- Define the Escalation process with identified responsibilities (see section 7.4).

Unless otherwise stated in writing by SENSATA Purchasing and SUPPLIER Quality Engineering, all APQP elements shall be implemented which is dependent on the SUPPLIERs level of involvement in the component design control (see section 9.2 and 9.3).

The APQP process elements are to be controlled and managed by SUPPLIERs as a living process. The elements may require updates and changes to reflect the current product design and process and shall be documented within the SUPPLIER change management process and SENSATA as noted in section 7.6.

According to the nature of the component and depending on the specified requirements, the appropriate statistical tools and techniques for each process shall be identified during the advanced quality planning and product realization processes and documented in the Control Plan.

9.5 Special Characteristics Identification and Control, Part 2

A **Special Characteristic** is a product characteristic (material, dimension, performance) or a process parameter whose variation can affect compliance.

**Critical Characteristic [Safety & Regulation] - CC:**
- Compliance with safety requirements for the user of a vehicle or a product
- Compliance with regulations (environment, safety)

**Significant Characteristic - SC:**
- Do not relate to safety or regulatory considerations, but relate to Fit, Form or Function
- Compliance to SENSATA and SENSATA CUSTOMER product requirements related to quality, reliability or durability

SUPPLIERs shall have a method to identify and control the flow down of this designated Special Characteristic as identified by SENSATA, SENSATA CUSTOMER and SUPPLIER, including Sub-SUPPLIER.

The flow down is to include, but not limited to, the following process steps and control documents, drawings, specifications, Key Characteristics list [including Pass Thru Characteristics], FMEAs, Control Plan and Work Instructions, equipment and process parameter control sheets, etc.

SENSATA requires SUPPLIERs to comply with the “Characteristics Symbol Identification and Control” table (see also Appendix A), unless agreed upon in writing by the assigned ST Design Engineering and/or SQE.

9.6 Failure Mode & Effects Analysis [FMEA]

The FMEA is a preventive analysis methodology, aimed at reducing the risks throughout the product lifecycle. The process is initiated at the product and process design stage, taking into consideration those effects that affect functional specification compliance. FMEAs are considered as living documents and should continually reflect the product and process lifecycle (see AIAG FMEA manual and VDA 4.2 Product & Process FMEA).

SUPPLIERs must have a process to apply the FMEA methodologies related to design, reliability, safety, process, quality and durability challenges of the product. The FMEA process shall consider development, action prioritization, change control and monitoring action management for the failure modes identified.

SUPPLIER FMEAs shall include those CC/SC and other relevant characteristics, identified by SENSATA and SENSATA Customer, as part of the risk identification and mitigation.
The FMEA analysis process must be performed by a cross functional team, considering the three factors related to the potential risk and the assigned ranking. The multiplication of all three rankings result in the [RPN] Risk Priority Number.

\[ \text{RPN} = \text{S} \times \text{O} \times \text{D} \]

The use of an RPN threshold is NOT a recommended practice for determining the need for actions. Applying thresholds assumes that the PRNs are a measure of relative risk (which they are not) and that continuous improvement is not required (which it is).

SUPPLIERS are to take action on the failure modes with the highest RPN, however, prioritization of actions should take into consideration those failure modes with the highest individual ranking of [10-9] of all three factors: S | O | D.

The actions to reduce the risks shall be directly related to the failure mode, such as, but not limited to, design changes, controls, process prevention, Poka-Yoke implementation, error proofing, mistake catching, etc.

SUPPLIERS shall consider a pareto-principle methodology for implementing improvement actions on those failure modes of S | O | D with [8 -6].

SUPPLIERS are expected to have continual improvement efforts to achieve SENSATA quality expectations (Zero Defects or 0 ppm) with focus on reducing risks that serve SUPPLIER, SENSATA and SENSATA Customers (Example: Top 10 Worst Detection Cases).

9.6.1 Design FMEA [dFMEA]

Identifies potential failures of the product design during the complete life cycle of the product (part manufacturing, sub-components assembly, part handling, car assembly, final Customer use, product end of life etc.). It applies to all products designed by and for SENSATA.

SUPPLIERS shall review the dFMEA with each product design change to validate the impact of the change on the failure mode [S | O | D] of the product.

9.6.2 Process FMEA [pFMEA]

Identifies potential failures of the product due to the manufacturing process from raw material through the production, as well as distribution to Customer use i.e. subcomponent manufacturing (electronics, injection molding, machining, etc.), subcomponents assembly, transportation, part handling, product assembly etc., and applies to all products manufactured by the SUPPLIER and/or Sub-SUPPLIERS.

SUPPLIERS shall review the pFMEA with each process change to validate the impact of the change on the failure mode [S | O | D] of the product and process. (Example: Process changes, new process, changes in layout of process flow, material changes, Sub- SUPPLIER addition or changes etc.).

Reviews and potential updates of FMEA’s are also part of an 8D process (after claims – CARES -, etc.).

---

2 AIAG Potential Failure Mode and Effects Analysis – FMEA (min.4th Edition)
9.7 Control Plan

SUPPLIERS shall establish and maintain a process that identifies product and process parameter controls for the Special Characteristics (CC/SC) and other relevant characteristics from receiving inspection through shipment.

SUPPLIERS shall ensure that those characteristics are stipulated in the process flow and the Control Plan, describing the measurement control method of the part/process, typically referred to as a Product Inspection Standard, and must be made available for review and approval by the assigned SENSATA SUPPLIER Quality Engineering team.

Control plans are considered living documents and should continually reflect the product- and process lifecycle.

Typical content of a Control Plan are:

- What to check?
- How to check?
- The checking frequency and the sample size
- The acceptance criteria
- Documentation of results
- The reaction in case of non-conformity

SUPPLIERS must develop and submit for review the Control Plan and process flowchart/diagram for the product to the assigned SENSATA SQE.

During the pre-launch trials (Run@Rate), the SUPPLIERS must conduct testing, process analyses and validation to support the contents of the Control Plan. During the Process and Product validation process, the control plan to be reviewed/updated to reflect changes necessary to control the process.

Submissions of changes to the Control Plan during the pre-launch phase and after PPAP/FAI must be submitted by the SUPPLIERS and approved by the assigned SENSATA SQE.

9.8 Statistical Process Control [SPC]

Depending upon the nature of the component and depending on the specified requirements, the appropriate statistical tools/techniques for each process shall be identified, during the Advanced Quality Planning, Product Realization Processes and documented in the Control Plan/Work Instruction.

SUPPLIERS shall initiate a reaction plan from the Control Plan for characteristics that are either not statistically capable or are unstable.

- The reaction plans shall include containment of the product and 100% inspection, as appropriate (in case short term/long term capability indicators are below target, see section 17)

SUPPLIERS reaction plans must identify specific timing and assigned responsibilities to ensure that the process achieves the stable and capable requirements. Corrective actions shall be implemented by the SUPPLIER to permanently sustain the capability requirements defined by SENSATA.

The plans shall be reviewed with and approved by the assigned SENSATA SQE.

SUPPLIERS shall submit upon request the SPC capability data (Ppk, Cpk) on CC/SC and SPC controls within 24 hours from the request made by the SENSATA SQE.

This process shall result in the following records to be retained by the SUPPLIERS, according to section 6.4, reaction plan, corrective actions and effective date of process changes.
9.9 Work Instructions

SUPPLIERS shall document and control work instructions for all employees having responsibilities for the processes that affect conformity to product requirements.

Work instructions shall be derived from FMEAs and Control Plans and accessible for use at the workstations. Any media method maybe used to document and control work instructions.

9.10 Design and Product Validation

SUPPLIERS shall perform product design and development validation in accordance to the program timing and in close collaboration with the assigned SENSATA Purchase/ SUPPLIER Quality team and SENSATA Design Engineering.

The validation plan and results for component testing/-verification shall provide evidence of the achievement of requirements of drawings and related SENSATA and SENSATA Customer specifications.

9.11 RUN@RATE (Process Potential Study)

SUPPLIERS shall have the ability to perform full speed tests to provide a preliminary study of the ability of the serial production equipment, process, people, etc. to produce the product to achieve the required capability targets, including special characteristics confirming production readiness.

SUPPLIERS are to schedule accordingly to the program timing, the RUN@RATE study in coordination with the SENSATA SUPPLIER Quality Engineer.

SUPPLIERS shall document the full speed test studies using the SENSATA “RUN@RATE worksheet QMS-1006309”. The documentation is to include objectives for the manufacturing process capability, reliability, maintainability and availability, as well as acceptance criteria of characteristics.

Results of the RUN@RATE are to be shared with the assigned SENSATA SUPPLIER Quality Engineering team and Purchasing Program Manager, in a timely manner.

The results of the RUN@RATE status will required the following:

- **RED & YELLOW**: Process capability targets not confirmed – corrective actions required - new RUN@RATE should be planned until the status changes to level GREEN.

- **GREEN**: Process capability targets achieved and confirmed – continual process capability monitoring as agreed with the assigned SENSATA SQE.

**NOTE**: RUN@RATE studies are to consider Special Characteristic capability as defined in APPENDIX A – SENSATA Characteristics Symbol Identification and Control.

9.12 Control of Inspection, Testing and Equipment and Measurement Systems Analysis

All devices used to test and measure production parts according to product specifications and requirements (drawings, inspection standards, process control requirements or other quality standards) are to be controlled throughout product lifecycle from development, serial production to manufacturing of service parts/aftermarket products.

SUPPLIERS shall have a defined process to identify, control and maintain inspection related tools such as checking fixtures, gages, or other inspection/test equipment, which are used to measure product requirements against defined specifications and Control Plan.
All inspections, tests and equipment must be calibrated annually, at a minimum. Shorter frequencies may be warranted, when supported by the SUPPLIERs Measurement Systems Analysis (MSA) process or equipment wear risk.

SUPPLIERs shall define the methods - instructions to handle – and perform the measurement and testing to avoid negative variability impact or differences, as agreed upon with SENSATA SQE and Design Engineering. SUPPLIERs are to refer to the AIAG Measurement Systems Analysis Reference Manual.

SUPPLIERs shall have a process defining the manner of recall when an inspection, testing or equipment is found to be out of calibration or error in testing method. This process shall consider all products produced within the defined timeframe, including notification of SENSATA SQE (see section 12).

9.13 Calibration/Verification Records

SUPPLIERs shall maintain a record/register of the calibration/verification activity for all gages, measuring and test equipment needed to provide evidence of conformity of product to determined requirements, including employee and Customer owned equipment.

The record/register shall include:

a) Unique equipment identification  
b) GRR study results (equipment! and users!)  
c) The measurement standard against which the equipment is calibrated  
d) Revisions following engineering changes  
e) Any out-of-specification readings as received for calibration/verification  
f) An assessment of the impact of out-of-specification condition  
g) Statements of conformity to specification after calibration/verification  
h) Notification if suspect product or material has been shipped, because of poor measurement equipment.

9.14 Laboratory Management

9.14.1 Internal Laboratory Requirements

SUPPLIERs internal laboratory facilities shall have a documented scope of its capabilities to perform the required inspection, test or calibration services. SUPPLIERs shall specify and implement within the laboratory, at a minimum, the technical requirements and management for:

a) Adequacy of laboratory procedures  
b) Competency of laboratory personnel  
c) Testing of the product, capability to perform these services correctly, traceability to the relevant process standards (such as ASTM, EN, etc.)  
d) Review and control of related records

9.14.2 External Laboratory Requirements

External/commercial/independent laboratory facilities used for inspection, test or calibration services by the SUPPLIERs shall have a defined laboratory scope that includes the capability to perform the required inspection, test or calibration, and either an:

a) External laboratories shall be certified to ISO/IEC 17025 or national equivalent or,  
b) Documented approval of the external laboratory by SENSATA SQE
9.15 Control of Initial Samples Related to a Program (New Product Development or Change Management)

9.15.1 Request for Initial Samples - RIS

SUPPLIERS shall have a process to manage requests for initial samples. Initial samples are considered as a small quantity of parts, produced on serial production equipment, tooling under serial process conditions, where parts are assured to meet the relevant dimensional/functional requirements.

Latest at this stage, the required PSW/ISIR submission report level should be defined (see section 9.16.2).

Upon request for initial samples from SENSATA Purchasing or SENSATA SQE using the RIS (Request for Initial Samples) QMS-1006304, SUPPLIERS shall provide the following according to the information provided on the RIS Form:

a) Distribution and process capability indicators, for the defined special characteristics or relevant characteristics indicated on the drawing
b) Process flow diagram
c) Control Plan
d) Initial Sample inspection report

When a product criterion is detected to be out of tolerance during the initial sample inspection, SUPPLIERS shall notify SENSATA SQE for disposition resolution. Potential deviation approval must be granted prior to shipping product.

SUPPLIERS shall have a process to recall product already shipped to SENSATA, including prior notification of SENSATA SQE (see section 12 for more details):

- Non – conforming material or
- Deviation- Derogation request/ Concession / Waiver

9.15.2 Sample Product Identification

SUPPLIERS shall have a process to clearly identify initial samples from serial production shipments. All sample products must be identified/labeled as follows:

- Individually numbered
- Name of the SUPPLIER, location and contact name
- Part description
- Part number
- Quantity
- Release level
- Production date /lot number
- Inspection status
- Derogation/ Concession number/-details

9.16 Product Approval Process Management

Due to the various industry markets served by SENSATA and our SUPPLIERS, it is imperative that both parties understand the requirements and ensure compliance to the product approval process expected within these industries.

In certain cases, First Article Inspection (FAI) approval process (see 9.16.5) may be acceptable versus the Production Part Approval Process (PPAP), such as Heavy Off-Road, Agricultural, and Construction industries. **Note:** END Customer Specific Requirements will dictate the production approval process required for the components being sourced for the finished part.

SUPPLIERS are requested to collaborate with SENSATA SQE directly for clarification as to Product Approval Process applicable to the component being sourced by SENSATA, related the industry market and END CUSTOMER requirements.
9.16.1 [T] Production Part Approval Process [PPAP]

To ensure that all SENSATA design and specifications are properly met and the SUPPLIERs can demonstrate serial production readiness (example: confirmed Run@Rates - serial tools), resulting in a Production Part Approval Process that applies to new and existing products, PPAP is the confirmed result of the completed APQP process or a workflow summary of smaller changes.

All PPAPed Special Characteristics are required to achieve the minimum capability index of 1.67 for (short-term capability), unless other approved by SENSATA SQE, as specified by project (see section 17).

The SENSATA SQE must approve serial products, prior to shipment by the SUPPLIERs to the SENSATA manufacturing location.

SUPPLIERs shall not proceed with shipments of production material without PPAP approval, unless a SENSATA signed concession, deviation, or interim approval has been issued.

Interim approval allows the SUPPLIERs to ship only for a defined timeframe or quantity, as approved by the SENSATA SQE. It is the responsibility of the SUPPLIER to manage the interim approval timing and quantities granted.

NOTE: Unapproved products and changes are unacceptable for SENSATA, as they may cause serious disruptions and risks to SUPPLIERs, SENSATA, and SENSATA Customer relationships. SUPPLIER is required to adhere to the Change Control expectations defined in section 7.6.

SENSATA requires SUPPLIERs to follow the applicable industry revision of the AIAG·PPAP manual for American OEMs/Tiers and “Production Process and Product Approval PPA”, VDA volume 2 and ISIR for German OEMs/Tiers.

9.16.2 [T] PPAP Submission Levels

The Part Submission Warrant (PSW) or Initial Sample Inspection Report (ISIR) are the formats summarizing the Product Approval Package, documenting and confirming form – fit and function, including durability.

SUPPLIERs are required to submit either the PSW or ISIR to SENSATA SQE, requesting the reason for submission (New product, design change, annual revalidation, etc.) and the PPAP submission level, as defined below:

Level 1 - PSW report only (cover page), submitted to SENSATA.
Level 2 - PSW with product samples and limited supporting data.
Level 3 - PSW with product samples and complete supporting data.
Level 4 - PSW and other requirements as defined by the SENSATA SQE.
Level 5 - PSW with product samples and complete supporting data available for review at the SUPPLIER’s manufacturing location.

SENSATA SQE will determine and communicate the required PPAP submission level based on the reason requested by SUPPLIERs. The PSW/ISIR is the formal communication record between SENSATA SQE and SUPPLIERs. When additional requirements beyond product quality are required related to the PSW/ISIR, these are to be closely communicated and documented as necessary and may be done so using SENSATA Purchase Order Clauses.

SENSATA requires at a minimum a Level 3 PSW/ISIR from SUPPLIERs, unless communicated otherwise by SENSATA SQE.

In case of [I] – ST Commercial, a PSW level 4 is required; defining specific PSW/ISIR expectations of SENSATA linked to this business (see also QMS-1006304 - RIS (Request for Initial Samples) as first guideline).

SUPPLIERs are required to submit all Level required documents either electronically or hard copy in an organized manner.

All Level required documentation must correspond with the samples provided (see section 9.15.2).

The SENSATA SQE and SUPPLIERs will agree upon the initial sample due date and the required product sample quantity, especially the quantity of numbered samples documented in dimensional PPAP documents.
SUPPLIERS shall ensure that all requirements related to the PPAP documentation submission is fully understood and compliant at submission.

SUPPLIERS shall ensure that all related documents related to the PSW/ISIR request are retained in a manner to allow easy accessibility throughout the product lifecycle. The PPAP master representative sample(s) are to be stored in a manner to preserve the product integrity for the duration of the PPAP retention period (see section 6.4 Table 2).

### 9.16.3 [T] PPAP - Supplemental

SUPPLIERS are to demonstrate and ensure the following with regards to PAPP submissions, and when in doubt request clarification from the SENSATA SQE.

a) All data provided to SENSATA must be current.

b) General statements indicating, “Parts conform to specification”, or similar, are not acceptable for SENSATA.

c) When the SUPPLIER does not have access to laboratory or test equipment to supply detailed information, outside resources should be employed at the SUPPLIERs expense.

d) Rejection and return of test data or dimensional reports indicating, that the representative production lot from which samples were taken and accompanying documentation does not meet SENSATA requirements.

e) Corrected products and documentation must be resubmitted for approval, prior to production quantities being accepted by SENSATA.

f) If complete data or correct samples cannot be provided the PPAP/ PSW- ISIR will be rejected.

g) In case of PSW/ ISIR approval, SENSATA will sign and return the document to the SUPPLIER, which will indicate the successful PPAP submission.

h) After initial approval, SUPPLIERS are responsible for assuring that future products continue to meet SENSATA requirements.

i) Using continuous improvement techniques and proactive management at the SUPPLIERs, non-conformance is eliminated or the process is optimized permanently.

j) Any improvement change, including process and manufacturing facility location, should require resubmission for approval and new components, reflecting current quality, held as retain master (see also section 7.6).

### 9.16.4 [T] Material Content Reporting via International Material Data System [IMDS]

In the IMDS, all materials present in finished automobile manufacturing are collected, maintained, analyzed and archived. IMDS facilitates meeting the obligations placed on automobile manufacturers, and thus on their SUPPLIERS, by national and international standards, laws, and regulations (www.imdsystem.com).

Prior to PPAP submission, SUPPLIERS shall enter all component Material and Substance Data using the International Material Data System (IMDS).

SUPPLIERS shall ensure that there is a trained representative available for submitting entries into the IMDS system.

SUPPLIERS IMDS submission will be reviewed and approved by the SENSATA Regional Material Content Reporting Group. SENSATA SQE will work with SUPPLIERS to resolve any potential concerns related to the IMDS entry status.
9.16.5 [A] First Article Inspection

SUPPLIERS shall conduct a First Article Inspection (FAI) to the requirements defined in the AS9102 standard. The FAI Report (FAIR) must be approved by SENSATA Precision Products Material Review Board (MRB) on production samples on new or changes to, current production parts or processes.

In addition to AS9102 standards, SENSATA Precision Products requires a new FAI for the following:

- If a change on design affecting form, fit, or function of the part
- A change in manufacturing sources, processes, inspection methods, locations of manufacture, tooling and materials that can potentially affect fit, form, or function
- A change in numerical control programs that can affect fit, form, or function
- A natural or manmade event, which may adversely affect the manufacturing process
- A lapse in production for 2 years or specified by SENSATA.

SUPPLIERS are requested to collaborate with SENSATA SQE directly for clarification as to the FAI requirements specific to the product being sourced.
10 SERIAL/MASS-PRODUCTION MANAGEMENT

SUPPLIERS are responsible for assuring that serial products continue to meet SENSATA requirements at all times. SUPPLIERS are to manage an effective serial product production, through the use of Product- and Process Controls and active continual improvement culture.

SUPPLIERS have to anticipate and understand the industry market expectations and requirements for the components being sourced by SENSATA.

SENSATA is to flow down to SUPPLIERS, SENSATA Customer specific requirement, specification and expectations related to the component or part being sourced, through various methods, such as but not limited to:

- Drawings
- Specifications
- Purchase order clauses
- Contract/agreements
- Requirements (see section 6.3 Table 1)

SUPPLIERS shall demonstrate the inclusion of the following sections in the serial product production processes.

10.1 Staffing Qualification

SUPPLIERS shall define a process to manage human resources as follows:

a) Selection and qualification of employees according to the requirements of their job responsibilities
b) Documented job descriptions
c) Provide a retention and sustainment of employees required for the operational processes
d) Assessment of competency and qualifications through employee development and personal growth at a minimum annual basis
e) Address the assessment development actions required to help employees achieve their competency expectations
f) Provide training plans for all employees from top management to operator levels with focus on:
   - Safety, Quality, Delivery, Cost efficiency
   - SENSATA requirements and expectations
   - Product and process nonconformity recognition and reaction plans
   - Define a staffing contingency plan for to ensure a high level of performance in case of urgency or missing regular employees

10.2 Receiving Inspection

Purchased material and products shall be subject to inspection after receipt.

SUPPLIERS shall determine the risk associated with the definition of the sample frequency or size selected to support the incoming inspection plan, examples including:

- New products, no PPAP release yet
- Receiving’s after complaints (by Customers – like SENSATA)
- Poor performing SUPPLIERS, critical products
- Re- occurrence issues
- Skip lot
SUPPLIERS shall document the instructions, correct measurement tools, methods, reaction plans and records used within the receiving inspection process. Operators shall be qualified to perform those tasks assigned within the roles of responsibilities in the receiving inspection process.

SUPPLIERS shall not rely solely on “Receiving Inspection” as a method to control nonconforming product. This does not absolve the SUPPLIER’s liability for shipping a non-conforming product to SENSATA. SUPPLIERS shall implement throughout the serial product production process the methods of controls to prevent nonconformance escapes to SENSATA.

10.3 Safe Launch Control

The Safe Launch process is the introduction of additional temporary controls and measures throughout a process. “Safe Launch Control” will be performed, documented and managed by SUPPLIERS, because of the launch of a new product or the change of an existing product. It is the purpose to ensure/protect the ramp up period for the SUPPLIERS, SENSATA and the SENSATA Customers.

SUPPLIERS must have a documented Safe Launch control process that can be implemented during the introduction of a new product or after a change. The Safe Launch control process must include what, when, where, how, by whom is a criteria to check.

SUPPLIERS must obtain written approval of the Safe Launch Control Plan by SENSATA SQE prior to implementation.

The purpose of Safe Launch is:

a) Document the SUPPLIER’s efforts to verify control of its processes during ramp up of serial production.

b) Ensure that any quality issues identified during the safe launch period are contained and corrected at SUPPLIER’s location and prevent escape to SENSATA.

c) Involvement of SUPPLIERS top management to proactively monitor and provide feedback on progress of the safe launch.

SUPPLIERS shall document the safe launch plan, which should contain the following at a minimum:

a) Criteria to be checked including both product and process special characteristics (Example: KPC 1, KPC 2, KCC 1, SC 1, etc.)

b) Frequency and quantity to be checked per shipment (Example: 100% visual, five parts destructive, etc.)

c) Timeframe and logic start date of the Safe Launch phase (Example: Three month before/during SOP period, five shipments, a defined OK quantity etc.)

d) Reaction plans when non-conformity is detected (Example: Five OK shipments after one NOK finding/shipment, etc.)

e) Identification and traceability for products produced under Safe Launch Controls (example: Labeling product/packaging, etc.)

f) Exit criteria approved by both parties SUPPLIER and SENSATA SQE

SUPPLIERS shall use the following SENSATA prescribed safe launch control timeframe/quantity as a reference when establishing the Safe Launch Control Plan for SENSATA components:

- Timeframe = 3 months (90 calendar days) from a continuous production cycle
- Quantity = 250,000 total pieces from a continuous production cycle

SENSATA takes into consideration that lower volume production may require negotiation on safe launch control timing and quantities.
Exiting safe launch control phase requires SUPPLIERS to demonstrate that all activities within the plan have been implemented, documented, recorded and results reviewed and are approved by SENSATA SQE prior to exiting the Safe Launch Control.

In cases, where Safe Launch Controls have detected nonconformities, SENSATA will require an extension to the Safe Launch Control phase timing or quantity, until the nonconformities are eliminated/ permanent and efficient corrective actions are implemented.
This will require updating the Safe Launch Control plan currently in place.

10.4 Continual Improvement Process

SUPPLIERS shall have a process for driving Continual Improvement (CI) activities at all facilities, which are to be documented, tracked, and provide evidence of “before and after”.

SENSATA promotes continual improvement and requests SUPPLIERS to ensure that any Continual Improvement activities are in compliance with section 7.6 Change Management of this GSQM.
SUPPLIERS are requested to contact SENSATA SQE in case of questions or doubts before the CI-actions are implemented.

It is SENSATA’s mission to provide its Customers with zero-defect products, on-time delivery and global continuity of supply at the best cost.
SUPPLIER supports this mission by implementing and complying with basic serial production practices including:

- Adherence to product and process requirements and specifications
- Built in quality both for process and product
- Monitoring of process capability
- Reacting in timely manner to nonconformities
- Driving continual improvement in product and process activities

SUPPLIERS shall ensure that SENSATA requirements are determined and met with the aim of enhancing Customer satisfaction, risk reduction, monitoring trends within the processes, product and quality system to assure their effectiveness and efficiency.

Performance indicators shall be based on objective evidence data and includes, but is not limited to:

- SUPPLIERS notification to SENSATA related to quality (incl. rework and scrap), warranty/field issues, including disruptions to continuity of supply that impact SENSATA production and line-shutdowns,
- Corrective action (8D) progress response and monitoring, GATEBUSTERS/Re-occurrence and ppm.
- Delivery schedule performance (including incidents of NOTD not-on-time-delivery)

SUPPLIERS have to monitor Sub-SUPPLIER quality and delivery performance and take action when objectives are not achieved, including those that affect SENSATA requirements.

10.4.1 Product & Process Performance Monitoring

SUPPLIERS shall utilize a methodology such as but not limited to: Man, Machine, Material, Method, Measurement and Environment [6M], to establish and monitor product & process performance considering quality performance production processes (one-piece flow...), active stock level management, and highly qualified employees.

SUPPLIERS shall perform process studies on all new and existing manufacturing (including assembly or sequencing) processes to confirm process capability and provide additional input for process controls.
SUPPLIERS shall document the results of process studies in specifications, where applicable, for means of production, measurement, test, and maintenance instructions.

These documents shall include objectives for manufacturing process capability, reliability, maintainability, and availability, as well as acceptance criteria for GOOD and BAD products and processes.
SUPPLIERS shall maintain manufacturing process capability or performance as specified in the Production Part Approval Process (PPAP) requirements noted in section 9.16 and section 17 of this manual.

Proven processes and routines must be defined with continual adherence and evaluated applying suitable methods to ensure top quality, identify risks and discover and eliminate weaknesses. For example:

- Defined process parameters (e.g., pressures, temperatures, times, speeds)
- Data for machines, tools, tooling aids
- Machine and process capability records
- Strict application of Control Plan
- Acceptance criteria
- Verification of production start with Ok first piece (Work environment and Product)
- Mistake Proof/Avoidance - Poka Yoke and Testers (Avoiding defects/catching defects)
- Work instruction & Self inspection Tasks (incl. Stop@Defect)
- Statistical process control charts and reaction plans, incl. control limits and long term capability calculation
- Final Inspection (Incl. Quality Walls – Safe Launch Control)
- Handling of non-conforming material (incl. Rework under Control) and corrective actions in case of internal Scrap
- Internal supervision and –auditing (product audit, layered audit, process audit, system audit)
- Problem Solving Methods

10.4.2 Product & Process Reaction Planning

SUPPLIERS shall identify product and process associated risks from the development process and document the reactions plans to mitigate and prevent the nonconformance for characteristics in the Control Plan during serial production that are either not statistically capable or are unstable.

SUPPLIERS shall include in the reaction plan, timing, responsibilities, containment and corrective action process throughout the supply chain (internal and external) as appropriate to issue, including containment of the product, traceability, re-inspection, and verification to assure that the process becomes stable and capable.

The reaction plan may include the following application and methodologies: CONTAINMENT definition, PDCA, 8D, QRQC, 6-Sigma techniques, Quality Circles to drive permanent elimination of issues, and to promote KAIZEN.

10.5 [T] Annual Product Qualification

SENSATA requires SUPPLIERS to provide annual product qualification data to confirm and support product form-fit-function compliance to requirements.

SUPPLIERS shall submit a product annual qualification report for all active products being purchased by SENSATA.

Unless otherwise defined by SENSATA, a Level 3 PSW or a VDA2 ISIR is expected to be submitted to the SENSATA SQE by SUPPLIERS annually.

SUPPLIERS are requested to reference the latest version of the AIAG Manual “Advance Product Quality Planning and Control Plan” or VDA2.

For Cpk/ Ppk-studies the values of the last three month or previous three lots can be used.
10.6 Identification and Traceability

Identification and traceability provides a rapid response when it is required to locate products, components within the product lifecycle within the SUPPLIERS manufacturing operations, Sub-SUPPLIER outsourcing process, warehousing, in-transit, and when a containment of non-conforming product and/or lots is required.

SUPPLIERS shall have a defined and documented process for the identification and traceability of products throughout the product lifecycle throughout all stages from incoming raw components, sub-assemblies to the in-process transportation within manufacturing to inventory management, warehouse and shipping. Identification and traceability is to consider the following: lot numbers, production shifts, manufactured volumes, sequence numbering, product id/rev., and shipping locations.

Non-production trial sample (i.e., prototypes, etc.) shipments are to identify in a clear manner that the content is not for production use. There may be situations that require SENSATA SQE to prescribe the identification and traceability method as required by the program/product requirements (see section 9.15.2).

SUPPLIERS shall maintain the associated traceability records for the defined period as noted in section 6.4. in a manner to preserve their integrity. SUPPLIERS shall make such records available upon request by the SENSATA Purchasing Manager and/or SQE.

Any and all requests for deviations to the retention periods, must be reviewed and approved by SENSATA SQE as SENSATA Customer and Regulatory requirements must be adhered too.

10.7 Preventive Maintenance - Equipment, Tooling and Inspection Equipment including SENSATA Owned Property

SUPPLIERS are responsible for the maintenance of all tooling, testing, and inspection equipment, to ensure a high level of quality product over lifetime to avoid damage or accelerated wear.

SENSATA Owned Property (Equipment, Tooling, Inspection equipment): SUPPLIERS shall establish and maintain a process for permanently marking SENSATA owned property which may include: tools, manufacturing, test-, inspection tooling and equipment. Ownership of each item must be visible and able to be determined.

SUPPLIERS shall have a preventive maintenance program that includes the following: maintenance plans, spare parts, qualified staff and records of maintenance performed.

10.8 Production Tooling Management - including SENSATA Owned Tooling

SUPPLIERS shall establish and implement a production tooling management system that includes the following:
   a) SENSATA Owned Tooling (tools, manufacturing, testing and inspection tooling and equipment) shall be permanently marked (visible to determine ownership)
   b) Maintenance, repair facilities and resources
   c) Storage & recovery
   d) Set-up, repair and changes
   e) Tool-change programs for perishable tools
   f) Tool design modification documentation, including engineering change level
   g) Tool modification and revision of documentation
   h) Defining tool identification status, such as production, repair and disposal.

SUPPLIERS shall ensure the documentation of all tools affecting a SENSATA product throughout life of the tool. The documentation shall be in a measureable format and submitted to SENSATA Purchasing on request. SENSATA reserves the right to inspect the status of the tooling, testing, and inspection equipment at any time.
11 Inventory and Logistics Management

11.1 Production Scheduling

Production shall be scheduled in order to meet SENSATA requirements, such as just-in-time, supported by information systems that permits access to production information at key stages of the process and is order driven.

11.2 Storage and Inventory

Where applicable, the SUPPLIERS shall provide provisions for preservation of product in accordance with component specifications and/or applicable regulations, for:

- Cleaning
- Prevention, detection and removal of foreign objects
- Special handling for sensitive products
- Marking and labeling including safety warnings
- Shelf life control and stock rotation
- Special handling for hazardous materials
- Ensuring that documentation required by the contract/order to accompany the product is present at delivery, is protected against loss and deterioration.

SUPPLIERS shall have a process to assess the condition of product in stock to at appropriate planned intervals to detect deterioration.

SUPPLIERS shall utilize an inventory management system to optimize inventory turnover time and assure stock rotation, such as “First-In - First-Out” (FIFO), including the status of products considered to be obsolete. Control of obsolete product shall be controlled in a manner similar to the nonconforming product process, to prevent the shipment.

11.3 [A] Validation of Production Processes and Service Provision

SUPPLIERS shall document, maintain, and if required, submit (as specified on the drawing) a certificate of conformance containing the following items as a minimum:

- SENSATA part number
- Revision of part number
- Standards listed with revisions per the print, when applicable
- Lot or batch ID or certification number
- Age control, when applicable
- SUPPLIER part number or COTS item with revision, when applicable.
11.4 Packaging and Transport

The choice of packaging can have a significant effect on product quality. SUPPLIERS must ensure that parts are packaged in a manner which preserves the product in storage, handling and transit.

Unless otherwise stated by SENSATA, packaging requirements will be noted on a detailed packaging instruction. Back-up packaging plans need to be tested and defined.

This will be agreed with the SENSATA Purchasing Department/SENSATA SQE before mass-production shipments.

SUPPLIERS shall have a defined process for the handling of packaging materials within the Logistics Management process that considers the following:

- Appropriate clean packaging
- Assessment of any deterioration due to poor/dirty packaging and reaction plan
- Special freight transportation selection (by taxi, by plane, etc.), as required and approved by SENSATA, violation of this item may cause a SENSATA claim/ CARE (see also section 12.4).

SUPPLIERS shall ensure that the following information is contained on each package or supply container:

- SUPPLIER name and address
- SENSATA location and address
- Part number, part description
- Quantity
- Lot number
- Engineering level

Prior to shipping products linked to a SENSATA approved Engineering Change; the SUPPLIERS shall ensure that the first three shipments are:

- Clearly identified
- Contain delivery documents, as appropriate
- Part number
- Revision level
- Lot number
- Reason statement, such as “Engineering Change XXXX – Shipment”
- And any additional requirement agreed upon between the SUPPLIERS and the SENSATA SQE
12 Control of Non-Conforming Material and Deviation/Derogation – Approval

12.1 Control of Non-Conforming Material

SUPPLIERS shall establish and maintain documented procedures to protect SENSATA from receiving non-conforming material, components, and assemblies. The control system for non-conforming material procedures should include:

a) Identification methods – clearly distinguishing the status of the material – OK, NOT OK, SUSPECT, etc.
b) Segregation manner – separating materials in a way to prevent re-introduction into the process or shipment, including containers, cages, etc.
c) Material review responsibility – clear authority level for the disposition of the non-conforming material, including release
d) Disposition status control – identify and segregate the material after disposition when it is to be re-worked, regraded, scrapped, etc.
e) Disposition documented instructions – provide clear direction to authorized and competent operators to reinstate the material to an acceptable status and available at point of use
f) Inspection documented instructions – provide clear direction to authorized and competent operators or inspectors to re-inspect the repair, rework, regraded material and available at point of use
g) Release and approval instructions – when required, final authorization for release of repair, rework, regraded material and available at point of use

SUPPLIERS shall ensure that all personnel involved in the handling and dispositioning of nonconforming product are competent and trained.

SENSATA guidance on control of nonconforming material:

a) May forbid rework to be performed, unless prior authorization is approved by SENSATA SQE
b) Reworked products shall be re-inspected to the original acceptance criteria and in accordance with the Control Plan or documented procedures.
c) Records of all activities related to the repair/rework shall be retained and include the following information part details, batch numbers, personnel who completed process, and re-inspection records.
d) Installation of additional check points, Quality Walls to sort poor quality before shipping to SENSATA
e) Tracking and monitoring of recording of all non-conformances to permit defect analysis and the generation of internal corrective action plans.
f) All records are to be made available to SENSATA SQE upon request.

12.2 Request and Approval of Deviation- Derogation / Concession / Waiver

SENSATA expects that all products supplied, meet all specification and all contractual requirements.

Written approval is required prior to shipment of product, which does not conform to drawing or specification.

SUPPLIERS are required to submit in writing the deviation request with supporting information to the SENSATA Purchasing and/or the assigned SUPPLIER Quality Engineering team. All deviations requests shall be submitted using SUPPLIER Request for Deviation Form QMS-1006304 [SREA].

Until obtaining SENSATA deviation approval, the SUPPLIERS shall initiate all necessary controls to prevent the product from being shipped to SENSATA.
Upon receipt, SENSATA will review the request, supporting information, assess the risk associated and provide written approval or rejection to the SUPPLIERs, outlining the timing of deviation, quantities and as required the implementation of corrective actions.

A validation plan and a risk assessment, build by the SUPPLIERs, considering the 6M- factor analysis, is part of the SREA documentation.

A SUPPLIER deviation request must contain the following information:

a) SUPPLIER Part number
b) SENSATA Part number
c) SUPPLIER concession number (if applicable)
d) Description of deviation requested (Include photos of deviation if applicable)
e) Impact to SENSATA if the deviation request would be rejected
f) Confirm that deviation does not affect functionality the product, evidence required!
g) Total number of parts requested to be produced at this level and/or
h) Time period requested to be produced at this level
i) Confirm how all products under the concession are identified (Picture of identification required)
j) SUPPLIER authorized quality representative signature

SUPPLIERs shall include a copy of the SENSATA SQE approved deviation request form with all deviation shipments to SENSATA as part of the packaging documentation.

The copy of the deviation request must show the following:

a) Total products allowed, or a time period to be shipped under deviation.
b) Quantity of product in the shipment.
c) Total quantity of product shipped under concession to date.
d) See also section 9.15.2

If and when the quantity or timing is different than the original deviation request, an additional deviation request must be submitted for approval by the SENSATA SQE prior to shipment.

SUPPLIERs shall maintain a record of the approved deviation/concession request. SUPPLIERs shall ensure compliance with the original or superseding specification and requirements when the authorization expires.

12.3 Cost of Non-Conformity

SUPPLIERs shall be responsible for any charges and costs incurred in the following cases associated with shipment of nonconforming product to SENSATA that are directly impacted by the SUPPLIERs:

- Violate the agreed acceptance criteria, drawing requirements, SENSATA and SENSATA Customer specifications, PPAP approvals.
- Production slow down or line stops at SENSATA and SENSATA Customer
- SENSATA recalls
- SENSATA Customer recalls

SENSATA SUPPLIER Cost Complaint Reports may also include costs caused by SUPPLIER, such as but not limited to:

- Problem investigation
- Administrative activities handling the complaint
- SENSATA internal sorting costs, as far as SENSATA is not supported actively by the SUPPLIER

Title: Global Supplier Quality Manual
Doc#: QMS-1004255 | G-SM-01
Date: Mar 09, 2017
Rev: N
• Material/ Productivity lost because of Scrap or Rework of sub- components/ finished goods
• Additional or unexpected transport activities. Tool and Equipment crash at ST because of poor SUPPLIER product etc.
• Business trips / audits of SENSATA members to contain damage and ensure Customer satisfaction
• Warranty cases

SENSATA Purchasing will be informed and involved when the SUPPLIERS are notified of cost incurrence, based on specific SUPPLIER Cost complaint/- debit note reports.

12.4 Corrective Action Management by 8D

SUPPLIERS shall have a documented process to drive root cause analysis of noncompliance to requirements both internally and externally. The process shall include response time, root cause analysis methodologies (8D, 5Why, etc.), systemic look across and preventive/ curative risk elimination.

When the SUPPLIERS protection system fails, non- conforming material, components or assemblies is detected at any point of the supply chain, at SENSATA or at the SENSATA Customer, a claim [e.g.: CARE] will be issued by SENSATA to SUPPLIERS.

SENSATA EXPECTS from its SUPPLIERS:

• FAST PROTECTION - top priority when a claim is issued by SENSATA and SENSATA Customer
• FAST RESPONSE - rigor and speed in all aspects, communication, actions, etc., ensuring that SENSATA and SENSATA Customers maintain continuity of OK part shipments
• CONTROL – Effective actions to avoid reoccurrence of the claim issue

Detection and Notification: SUPPLIERS will be notified within 24hrs of the detected NOK (products) by the SENSATA SQE/ Incoming Inspection department.

SUPPLIER Initial Response: Upon notification, SUPPLIERS shall implement without delay an immediate action to contain any additional defects from being shipped to SENSATA.

Containment: SUPPLIER shall have a process to effectively contain the claim issue, which shall include all stages of the supply chain, including but not limited to inventory, in-process, and in-transit. Containment is to remain in place until appropriate actions are launched to eliminate root- causes and corrective actions are in place and effective.

Corrective Action Methodology: Unless otherwise specified, the SENSATA 8D- process described below is to be followed by the SUPPLIER, using the SUPPLIER Corrective Action – 8D form QMS01108101 (see section 15).

Within 24h after notification

D1 Problem Solving Team
• Cross- functional team of the SUPPLIER
• Empowered to define containment actions and to drive the problem solving process

D2 Problem Description
• Review of the problem description provided by SENSATA
• SUPPLIERs viewpoint : Re- define the problem description (as detailed as possible)
• (What happened/- is the problem, Why, Where, Who, When, How detected, How many,...)  
• Risk for other products, plants, etc.
D3 Containment Actions

- Actions to ensure that SENSATA and Customers receive OK parts as quick as possible
- Sorting of stocks (At the Customer, at SENSATA, at the Supplier, safety stocks, warehouses, WIP, etc.)
- Actions defined for parts on transit
- Check of Supplier purchase material
- Review of current production process and inspection methods ("Why not seen internally")
- Re-enforcement of inspection process, adding Quality Walls
- Request of 3rd party support
  - Definition of CLEAN- POINTS
  - Agreement of labeling for OK products
  - 8D- feedback of D3 actions launched towards SENSATA in writing
  - Review of actions SUPPLIERS and SENSATA, driven by the SUPPLIERS

Within 14 calendar days (10 workdays)

D4 Root Cause Analysis (Non-Detection – why did the SUPPLIER not detect the issue?)

- Basic question “Why not seen internally, but SENSATA did ”
- What did we learn from the containment activities D3?
- Inspection process not defined, inspection process unclear, no audits?
- Acceptance criteria unclear, no gauge R&R (variable data and attributive data)?
- Inspection time (cycle time) not matching with real workload?
- Operators not qualified, missing skills?
- Missing observation of the team, missing audit robustness?
- Testing / measurement equipment not reliable?
- OK 1st piece validation routines not effective?
- Rework not under control?
- etc.

D4 Root Cause Analysis (Occurrence – why did the issue occur at the SUPPLIER?)

- What did we learn from the containment activities D3?
- Process Parameters not defined/not respected/by- passed?
- Operators not qualified, missing skills, no clear definition in work instructions?
- Standardized Work not defined/ not respected?
- Rework not under control or mix up with NOK products?
- Un- coordinated changes (6M)? Poor tool changes/poor tool life management
- Missing robust validation of design and process?
- Identification/ traceability not defined or not respected?
- Poor packaging?
- etc.

When the SUPPLIERS identify the root cause, SENSATA requires that the SUPPLIERS reproduce the defect by applying the previous situation vs. the new definition, to re-create the problem (Example: “Turning ON / Turning OFF” the problem), to demonstrate the confirmation of the root cause.
D4  **Root Cause Analysis** (System – why did the controls at the SUPPLIER not effectively avoid the escape/ occurrence of the issue?)

- Incorrect production planning?
- APQP of new programs not respected (Control Plan, Run@Rate, etc.)?
- Un-coordinated changes?
- Real root-causes not found (re-occurrence issues)?
- “5 Why” principle not applied?
- Guessing, instead of application of the principle: Real parts! – Real place! – Real data!
- Insufficient application of Lessons Learned?
- Missing observation of the production process by the team, no audit robustness?
- etc.

D5+D6  **Corrective Actions**

- Definition of actions to eliminate/ control negative influencing factors/ root-causes
- Non-Detection actions
- Occurrence actions
- System actions
- Weaknesses detected during the 5Why - process
- Definition of owners and timing
- Follow up of defined actions, strict management in case of delays
- Checking of the effectiveness of implemented actions
- In case of poor/ no impact of corrective actions the real root cause is not detected, a new loop of D4 is needed
- In case of working corrective actions, containment actions to review/ to stop
- 8D sheet updated by the SUPPLIERs and shared with SENSATA, at least weekly if nothing else is defined. Daily communication is strongly recommended.
- etc.

D7  **Prevention of Reoccurrence**

- Completion of D5 + D6, all corrective actions are implemented and verified, with effectiveness measure on going
- Update of all documentation (FMEA, Control Plan, Work Instructions, Parameter sheets, Samples, audit structures etc.)
- Finalization of operator trainings
- Creation of Lessons Learned sheets for Non-Detection-/ Occurrence- and System weaknesses
- Look across/ fan down
- Introductions of LL-sheets (Lessons Learned) to SENSATA and SUPPLIER internal to support non-re-occurrence and detection.

SUPPLIERs shall have a method to track and monitor the actions implemented throughout the processes impacted by the corrective actions. This process must be demonstrated as part of the corrective action record.
D8 Final Meeting and Closure of the 8D, within 60 calendar days (~ 40 workdays)

- Lessons Learned sheets distributed, accepted and understood (SUPPLIER internal & SENSATA)
- Confirmation by the SUPPLIER management that all corrective actions have been implemented, verified and measured for effectiveness
- Final approval of SENSATA SQE
- Final update of the 8D and sharing with SENSATA
- Congratulate the team

The respect of the 24h – 14 days – 60 days 8D- milestones and the quality of the 8D will be reflected in SENSATA SUPPLIER ratings.

SUPPLIERS shall have a process in place, which minimizes the 8D-cycle time, to support fast containment, problem solving, to demonstrate full cooperation in investigating and solving problems at SENSATA and Customers in case of impact by a purchased component, material, etc.

In the event of critical situations the standard timing might be reduced.

Effectiveness of Actions Taken: It is understood by SENSATA that some action may exceed the closure timing target of 60 calendar days therefore, SUPPLIERS shall notify SENSATA SQE of the timing required to measure the effectiveness of the actions taken, subject to SENSATA’s approval.

13 Quality Performance - Escalation and Special Status

13.1 SUPPLIER Performance Tracking & Quality Data Recording

SENSATA will monitor and track the SUPPLIER performance against individual targets to provide a “Worst/Best SUPPLIER” Overview.

The KPIs will be used to initiate:

- Schedule audits
- Launch escalation process
- SUPPLIER improvement actions [SQIP]
- Potential new business offerings or -holds

The performance tracking overview may consider more than one of the following aspects below:

- Score of a system or process audit [Example: MMOG, VDA 6.3, BIQ, etc.]
- Score of any other kind of a SENSATA audit [ppm audit, 8D audit, Risk Assessment, Technology Audits etc.]
- Number of escalation cases [ALERT] in Programs and Serial Production [risk of line shut down, line stops, etc.]
- Number of claims [CARES] for a 12 month period
- Re- Occurrence issues [GATE-BUSTER] for a 12 month period
- Reactivity, delays in D3 [24h] – D5 [14 calendar days] – D8 [60 calendar days] for 12 month period
- 8D Quality [SENSATA 8D- Assessment] for 12 month rolling average %
- SUPPLIER ppm 12 month rolling
- Soft skills: Transparency, Pro- activity, Respect, Reliability, Quick response
13.2 Performance KPI - Escalation Process

Excellence in performance is the expectation to our SUPPLIERS, to avoid negative impact to SENSATA sites and Customers.

SENSATA will launch an escalation process in case of performance indicators are far from target, the commodity average or corrective actions agreed during audits, visits and reviews are not implemented or have a significant delay which may cause risks for programs and serial production.

The escalation process shall ensure that:

- The severity is more clear within the SUPPLIERS organization
- That the adequate Controlled Shipment level is announced (see section 13.3)
- The adequate management level is involved (at SENSATA and the SUPPLIERS)
- That an escalation announced by a Customer is addressed also to an involved SUPPLIER.
- That help by third parties or SENSATA is initiated
- That certification bodies are informed about a major issue
- To speed up the communication process between SUPPLIERS and SENSATA
- To avoid the final escalation stage New Business Hold [NBH] (see chapter 13.5)

De-escalation stages will be announced in case of proven evidence, that the SUPPLIER is in line with expectation and agreed achievement steps.

13.3 Controlled Shipment

SENSATA reserves the right to escalate and re-enforce protection actions if implemented containment and corrective actions do not adequately protect SENSATA, this is referred as Controlled Shipping (CS).

CS activities are to be incurred at the SUPPLIER’s expense. The duration of the initial CS status or quantity to inspect will be defined by the SENSATA SQE.

[Example: CS 1 or CS2 effective date is MM/DD/YYYY and material received at SENSATA must be defect free for a period of minimum XX calendar days / or until MM/DD/YYYY, or a quantity of XXXXXX parts, to confirm the robustness of implemented actions.]

Notification: SUPPLIERS will be notified in writing by the SENSATA Purchasing with the approval of the SENSATA SQE. The notification will provide details and the scope of the escalated actions required.

Actions Required - Controlled Shipping level-1 (CS-1)

SUPPLIERS are required to add at a minimum an additional 100% inspection/ Quality Wall to ensure containment at their facility using their own personnel for the quality incident.

Actions Required - Controlled Shipping level-2 (CS-2)

SUPPLIERS are required to add at a minimum an additional 100% inspection using an independent 3rd party inspection operation at a defined location (at the SUPPLIER and/or at the SENSATA site/SENSATA Customer site). SUPPLIERS have full responsibility to coordinate and manage all 3rd-party arrangements.

Continuity of Supply under CS Status:

SUPPLIERS shall have a process to manage all CS-activities in a manner that will not affect the continuity of supply or affect the delivery status to SENSATA and SENSATA Customers.
Reporting of CS Status:
SUPPLIERS shall report out on a weekly basis the results of the sorting activities. Mitigation actions will be launched by the SUPPLIERS, if the sorting results demonstrate a negative performance.

Exiting CS Status:
SUPPLIERS shall demonstrate that the problem solving actions are effectively implemented and there have been no escapes or further issues identified by SUPPLIER and/or a 3rd party.
SENSATA SQE will review the SUPPLIERS performance, the SUPPLIERS robust action plan/ 8D management, and in case no NOK parts have been found during the agreed period, SENSATA SQE may allow exit of the CS1 status or a de-escalation from CS2 to CS1.

[Example: Confirmation of defect free receiving’s at SENSATA for a period of minimum XX calendar days / or until MM/ DD/ YYYY, or a quantity of XXXXXX parts]
To be finally removed from CS1, the SUPPLIERS must provide a request to the SENSATA purchase/ SQE contact person. If all criteria are met, SENSATA will accept the request indicating the date of the exit.

13.4 SUPPLIER Quality (Development) Improvement Process [SQIP]
SENSATA reserves the right to initiate the SQIP process when the SUPPLIERS cannot demonstrate effective CS status exit and requires additional development activities. SQIP is a formal management review process, requiring the SUPPLIERS management to formally agree to the SQIP plan, resources and timing. SUPPLIERS will be notified by the SENSATA Purchasing, or after ST internal approval, by the SENSATA SQE Manager, if and when SQIP will be implanted at the SUPPLIERS.

13.5 New Business Hold [NBH]
SENSATA reserves the right to place SUPPLIERS on New Business Hold (NBH), when the SUPPLIERS:
- Continually demonstrate negative performance trending against SENSATAs quality and delivery KPIs
- Cannot successfully exit CS status according to plan and timing
- Cannot successfully demonstrate improvement within the SQIP process
The SENSATA Purchasing Manager and/or Commodity Procurement Team will formally notify SUPPLIERS.
NBH is defined as the complete cessation of new business awards.

14 AUDIT PROGRAM
14.1 SENSATA Audits
SENSATA may require an on-site SUPPLIER Quality Audit to assess the SUPPLIERS Excellence status related to Quality, Cost, and Delivery.

AUDIT PURPOSE:
Audits can be announced ad-hoc because of poor performance, to check potential risks or as a planned preventive, repetitive action.

AUDIT LOCATIONS:
Audits will be conducted at the SUPPLIERS facility or development center and may include any sub- SUPPLIER.
AUDIT SCOPE:
Audits can be carried out for the following reasons:

- Planned System/Process audit
- Quality Alert Audit
- SUPPLIER claim/ppm audit
- Production Readiness Check
- New Business opportunities
- Conformation of Continues Improvement
- De-Escalation

AUDIT TIMING/FREQUENCY:
SENSATA SQE will coordinate with SUPPLIER to define the audit dates and duration. SUPPLIERs audit frequency (VDA 6.3) is based on the following factors (orientation):

- Every 5 years – If there is an A score
- Every 3 years – In case of a B score
- Quarterly – In case of a C score until B score is achieved
- Strategic SUPPLIERS
- Key Technology SUPPLIERS
- Significant Business Impact

SUPPLIERs audit frequency may be increased due to quality issues and poor performance, as warranted by SENSATA SQE Management.

AUDIT RESULTS:
SENSATA SQE shall provide the audit report, including scoring and findings, to the SUPPLIERs. SUPPLIERs shall address the audit weaknesses detected during the audit using the FAST RESPONSE process to contain the finding with a defined containment within 24 hours of its detection. SUPPLIERs shall address the audit results within 7 calendar days from the receipt of the audit report. All responses must follow the 8D methodology and timing, see section 12.4.

14.2 SUPPLIERs Internal Quality Audits
SUPPLIERs shall have a documented audit program that includes planning, auditor competency, and reporting. The audit program shall ensure assessment of compliance to the SENSATA requirements as specified in this GQSM, product specifications, etc. as well as the applicable industry QMS requirements associated with the part being purchased by SENSATA.

SUPPLIERs audit program shall utilize tools and techniques such as but not limited to: risk based audits process approach, Customer or certification body audit questionnaires (Example: AIAG CQI, BIQ, VDA 6.3), check sheets, process approach tools, flow charts or any similar methods to support audits of the Quality Management System requirements.

14.2.1 Process Audits
SUPPLIERs shall audit each manufacturing process to determine its effectiveness against process requirements.

14.2.2 Product Audit
SUPPLIERs shall audit products at appropriate stages of production and delivery to verify conformity to all specified requirements, such as product dimensions, functionality, packaging and labeling, at a minimum of once per year. A product audit standard within the SUPPLIER factory is applied.
15  SENSATA REFERENCE FORMS AND LINKS

SENSATA Reference Forms – contact the assigned SENSATA SUPPLIER Quality team for the latest revision:

<table>
<thead>
<tr>
<th>DOCUMENT #</th>
<th>SEQUENCE #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>QMS01108101</td>
<td>-----</td>
<td>Global 8D Instructions &amp; Template, Containment Instructions &amp; Worksheets</td>
</tr>
<tr>
<td>QMS-1006304</td>
<td>G-SM-24</td>
<td>SUPPLIER Request for Engineering Approval &amp; Deviation Approval Form [SREA]</td>
</tr>
<tr>
<td>QMS-1006309</td>
<td>G-SM-29</td>
<td>Run @ Rate Audit &amp; Worksheet</td>
</tr>
<tr>
<td>QMS-1004961</td>
<td>G-SM-14</td>
<td>RIS/ISER Form (Initial Sample Evaluation Request)</td>
</tr>
<tr>
<td>QMS-1004438</td>
<td>G-NP-19</td>
<td>Traffic Light Procedure [Project Risk Evaluation]</td>
</tr>
<tr>
<td>QMS-1006310</td>
<td>G-SM-30</td>
<td>SUPPLIER Material Content Reporting Worksheet</td>
</tr>
<tr>
<td>QMS 1004255</td>
<td>G-SM-01</td>
<td>Global SUPPLIER Quality Manual GSQM</td>
</tr>
<tr>
<td>QMS-1004436</td>
<td>G-SM 08</td>
<td>Global SUPPLIER Quality Manual Agreement Form</td>
</tr>
</tbody>
</table>

16  SENSATA Technologies Portal

SENSATA has made available a SUPPLIER Portal to obtain the latest communication on requirements.

http://www.SENSATA.com/SUPPLIER/

Sensata’s History

- **2000** Launch MEMS pressure sensors for diesel particulate filters
- **2005** Lillehammer award for environmental benefits of cylinder pressure sensor (CPS)
  Launch of force sensor for electromechanical braking-by-wire system
- **2006** We are bought by Bain Capital and get our name, Sensata Technologies
- **2007** ST symbol listing on NYSE
- **2008** Launch of force sensor for electromechanical braking-by-wire systems
- **2009** Introduce 24–volt direct switchable circuit breaker for marine applications
- **2010** Launch anti–freezing urea pressure sensor
- **2010** Hubble telescope upgraded with our switches and thermostats
- **2012** Launch Gen 2 DPS to reduce diesel exhaust emissions
- **2013** Introduce UL recognized arc fault detector for solar arrays
- **2014** Launch oil–filled MEMS sensor for industrial applications
- **2016** Signs strategic partnership with Quanergy to jointly develop, manufacture and sell leading solid state LiDAR sensors for autonomous driving applications
- **2016** Signs strategic partnership with Quanergy to jointly develop, manufacture and sell leading solid state LiDAR sensors for autonomous driving applications
- **2017** We acquire First Technology, Airpax, Honeywell’s Automotive On Board (AoB), Sensor–NTE, Watts CTL, Wabash Technologies, Magnum Energy, Daltiez Controls, Schreider & CST’s Sensing Portfolio
### APPENDIX A – SENSATA Characteristics Symbol Identification and Control

<table>
<thead>
<tr>
<th>Characteristic Name</th>
<th>Characteristic Definition</th>
<th>Document Symbol</th>
<th>Drawing Symbol</th>
<th>Capability&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 26262 Safety Related Special</td>
<td>A characteristic of an item, element or production process for which reasonably foreseeable deviation could affect, contribute to or cause any potential reduction of functional safety&lt;sup&gt;3&lt;/sup&gt;.</td>
<td>SCC</td>
<td>+</td>
<td>≥ 1.67*</td>
</tr>
<tr>
<td>Critical</td>
<td>Control Item products have Critical Characteristics that may affect safe vehicle/product operation and/or compliance with government regulations. Unique symbols identifying safety and regulatory characteristics.</td>
<td>CC</td>
<td>V</td>
<td>≥ 1.67*</td>
</tr>
<tr>
<td>Significant</td>
<td>Significant Characteristics are those product parameters and requirements that are important for Customer satisfaction (form, fit and function) and for which Quality Planning actions must be addressed on a Control Plan.</td>
<td>FF or SC</td>
<td>S</td>
<td>≥ 1.67*</td>
</tr>
<tr>
<td>SPC</td>
<td>Used to specify ongoing SPC methodologies to be performed. Ongoing capability requirements are defined per 1 of the following guidelines: a) section 9.8 of this procedure b) AIAG APQP reference manual latest revision c) noted on the print by the Design Engineering d) this symbol may be used in conjunction with any of the other characteristic designations noted within this table or standard characteristics. e) In cases where statistical capability is required by this symbol, but verification is unfeasible. 100% measurement or go/no-go gauging is an acceptable substitute.</td>
<td>S</td>
<td>S</td>
<td>≥ 1.67*</td>
</tr>
<tr>
<td>Standard</td>
<td>Non-Key characteristic - Standard dimension vs. standard (incl. tolerance) a) first article inspection (dimensional data) for production release</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Capability values shown are minimums. Required values might be elevated, depending upon SENSATA end Customer or SENSATA product requirements (Example: electronic components). Such increases shall be documented on the drawing of the component or assembly. All capability agreements must be clearly documented between SENSATA and SUPPLIER.

Further guidance on characteristic controls refer to AIAG APQP reference manual.

In case "SPC capability" is not obliged or can not be achieved, indicate which other controls will be used to assure that the specification will be met over production lifetime. The checking method, frequency and quantity chosen must be logic in relation to process variation / tool wear of the installed production process, see also section 9.8 “● Reaction plan”

Example of Characteristic and SPC noted on drawing:

---

<sup>2</sup> AIAG Advanced Product Quality Planning and Control Plan Reference Manual (latest revision)

18 GSQM AGREEMENT FORM

"Global SUPPLIER Quality Manual GSQM “

To complete by Sensata Technologies:

Sensata Contact Name: ___________________________ Date of Submission: ___________
Supplier Company Name: ___________________________
GSQM Acceptance Due Date: _______________________

To complete by the Supplier:

Supplier Contact Name: ___________________________ Date of Agreement: ___________
Title: ___________________________ Signature: ___________________________
Address: ___________________________ City: ___________
State: ___________ Zip: ___________ Country: ___________
Phone: ___________________________ Fax: ___________ Email: ___________________________

Sensata Technologies,
Sincerely,

[Name, Function]

SenSata Technologies
Site Name ___________________________
Contact Name ___________________________
Address Line 1 ___________________________
Address Line 2 ___________________________
City, State Zip 000.000.0000 000.000.0000
E-mail address www.sensata.com
## 19 Revision History

*This document is edited and controlled by the SENSATA Technologies Global Supplier Quality Organization.*

*It is the SUPPLIERS responsibility to assure that only the latest revision of this manual is used and all prior editions are identified as obsolete.*

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Description of Revision</th>
<th>Revised by</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>04/15/05</td>
<td>Initial New Release – Sensor Products Business</td>
<td>MDM</td>
</tr>
<tr>
<td>B</td>
<td>02/07/01</td>
<td>Revised entire document; incorporated Controls Business, aligned with Global SUPPLIER Management Process, flowed down industry (auto/aerospace) requirements.</td>
<td>S&amp;C SMP Team</td>
</tr>
<tr>
<td>C</td>
<td>03/12/08</td>
<td>As a result of corrective action related to 3rd party audit conducted by DnV. Added: Section 4.1.1.3 statement to clarify requirements for TS compliance for those SUPPLIERS who are not registered; i.e. plan.</td>
<td>S. Zhou &amp; SMP Team</td>
</tr>
<tr>
<td>D</td>
<td>11/21/08</td>
<td>Updated Section 4.4 clarified the retention of Automotive [TS] records to ensure flow down of Customer requirements in this area. Product Life + 1 year (minimum 15 years)</td>
<td>SMP Team</td>
</tr>
<tr>
<td>E</td>
<td>06/26/09</td>
<td>Blue Text notes changes made to document. Added: New section 1.1 Code of Conduct. Deleted: 1.2.2 “goals of zero defects, and” Added: 1.2.2 “&lt; 2 ppm for automotive component”. Added: New section 1.2.3. Deleted: 1.3 quality policy and renumbered following section. Added: 2.1 wording “reference in ... specifications and drawings. Added: 2.2.1 “Business”. Revised: 3.2 SMP Life Cycle Diagram. Added: 4.1.1 “latest revision of ISO 9001. Deleted: 4.1.1 reference to December 2006 and ISO/TS 16949: 2000...Added: 4.1.1.1 “demonstrate compliance”. Added: 4.1.1.1.1, 4.1.1.2, 4.2.2 reference to “latest revision”. Added: 4.2.2 word “product” and sentence “this includes costs incurred by SENSATA related to as a result of quality nonconformance incidents and delivery disruptions. (see Section 9.1)”. Added: new section 4.2.2. Added: 4.3.5 Table CQI requirements (9-11-12) and REACH. Deleted: 4.4 Record Table – Master Production Samples; Added: 4.4 Record Table Master Sample to PPAP Record. Added: 7.1.2 new section “Information is defined as specifications, ..... without prior written approval of SENSATA Technologies Business Unit Management Representative. Added: 7.2.2 “driving process capability and measurement controls”. Added: 7.3.4 “Design Engineering” Deleted: 7.3.5.1 sentence referencing Global ESH and G-SM 30. Added: 7.4.2 REACH requirement. Revised: 7.4.3 “conformity to compliance” Added: 7.4.2 see section 4.1.1.2 – 4.1.1.3. Added: 7.4.4 “SUPPLIER responsible for purchased product. Added: 7.5.2 “product and process characteristics”. Added: 7.5.4 “SENSATA owned tooling” and see section 7.5.9. Added: 7.5.4.1 new sub-section a) Added: new section 7.5.6 Storage and inventory. Revised: 7.6.1.1-7.6.1.7 with a – g. Added: 8.2.1.c NO TD Added: 8.5.2 new sentence “When requested the assigned SQE, the SUPPLIER shall submit annual Cpk .....SPC dimensions. Revised: 8.2.7 section. Deleted: 8.4.1 Annex B. Revised: 8.4.3.3.f. Deleted: 10 reference G-SM-30 Material Data Sheet. Added: new section 11 SUPPLIER Portal.</td>
<td>SMP Team</td>
</tr>
<tr>
<td>F</td>
<td>03/30/10</td>
<td>Added: Section 7.3.5.2 requirements including process capability as noted in”. Added: New section 7.5.3 work instructions and section 7.5.4 Verification of job set-ups. Reumbered following sections. Added: New section 7.5.7 production scheduling. Reumbered following sections. Added: Section 10 1006310 – G-SM-30 SUPPLIER Material Content Reporting Worksheet</td>
<td>SMP Team</td>
</tr>
<tr>
<td>G</td>
<td>06/11/12</td>
<td>Reaction to Customer-audits Feb-Apr 2012. Revised : section 1.2.2 deleting reference to “ppms”. Added: section 1.2.2 text regarding “zero defects and 100% OTD commitment (by Customer requirements on mindset)” Removed: section 1.2.3: Already covered in sections 3.4-3.6. Added: 7.1.3.3 on change lead time (and “change” also includes termination of supply, by definition). Added: section 7.4.1 text regarding “sub-SUPPLIERS ... of this sub-SUPPLIER.”</td>
<td>A. van Oosten</td>
</tr>
<tr>
<td>H</td>
<td>08/11/12</td>
<td>Revisions noted in B LUE TEXT: Entire document: Removed all “Make” references. Reviewed and corrected all section-references inside GSQM Cover Page: Reviewed: “Sensors &amp; Controls” by &quot;SENSATA Technologies...&quot; Revised: Section 3 (deleted: picture and clarified description)...Deleted: ISO9001 revs...Revised: section 3.3, 3.4, 3.5 and 3.6...Deleted: section 4.2 : title &quot;supplemental&quot;...Add: ISO14001and ISO 26262 to table of standards...Revised: section 4.1.5: [A/T] general requirement...Revised: retention periods in Record Retention table a] PO storage Byrs...[b] FAI also for automotive to Life+1 yr (same as PPAP)...[i] Tooling preventive maintenance records down to 1 yr...[d] Added: ISO 14001, CQI-15, CQI-17...Deleted: retention period for Master Samples...Revised: section 6.1.1 to include contingency plan review when requested and examples of emergencies. Added: section 7.2.2 Functionality &amp; Feasibility Study of Characteristics...Revised: section 7.3.3...Revised: section 7.3.6 Added new sections referring to AS9012 and 3 years to 2 years...Revised: section 8.4.2...Deleted: Section 9.2.2 ISO/TS16949 revision level. Revised: Section 8.3.4 G-SM-20 G-SM-24 as G-SM-26 is obsolete... Reviewed: Section: 8.4.4.3: NBH applicable in general. Removed reference to CS and BDs.</td>
<td>A. van Oosten</td>
</tr>
<tr>
<td>Revision</td>
<td>Date</td>
<td>Description of Revision</td>
<td>Revised by</td>
</tr>
<tr>
<td>----------</td>
<td>----------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>J</td>
<td>09/01/13</td>
<td>Revisions noted in BLUE TEXT: Added: 1.1.2 Terms &amp; Conditions....Added: 4.2.5 Table 1: 17 CFR Parts 229 and 249 Conflict Minerals, E9898.....Added: New. Section 4.3.1...Revised Table 4.3.2 deleted records: Management Review, Internal audits, PO &amp; Amendments...Consolidated Engineering Changes with Change Management...Added: Product Development &amp; Advanced Product Quality Planning Records and revised retention periods...with new records..Product Design Development, Change Management, Annual Validation...7.3.2 and 7.5.2.e...added: safe launch controls....Revised: 7.3.3 Special Characteristics ....7.4.2: as follows....Added: 7.4.2.2 sentence was originally part of 7.4.2.1....New: Added: 7.4.2.3 &quot;17 CFR Parts 229 and 249 Conflict Minerals Reporting....&quot;Added: 8.4.5 &quot;demonstrate use of: 8.4.5.a such as but not limited to 8D, 5Why,...&quot;)</td>
<td>K. Dunn, S&amp;C Design Directors, China SQE Manager (M. Xu, C. Yuan)</td>
</tr>
<tr>
<td>K</td>
<td>08/25/14</td>
<td>As a result of an external audit corrective action- the following revisions are noted in BLUE TEXT: section 4.1.1.1 a-b.</td>
<td>Y. Etienvre</td>
</tr>
<tr>
<td>L</td>
<td>10/01/2014</td>
<td>Revisions noted in BLUE TEXT: section Table 1: added: CQI-23; section 7.1.4: added New statement regarding program planning escalation process; section 7.2.2 Revised referenced procedure from Functionality &amp; Feasibility Study of Characteristics (also known as Traffic Light Procedure) to Traffic Light Procedure (TLP) for Design Feasibility</td>
<td>J. Castañeda O. Ghani</td>
</tr>
<tr>
<td>M</td>
<td>01/20/2017</td>
<td>Added &quot;In the event of a termination of business, all SUPPLIERS shall be contacted in order to transfer any applicable records pertaining to raw parts/or services provided to SENSATA.&quot; to Section 4.3.2 (6.4 in revision &quot;N&quot;)</td>
<td>Krystyna Holz</td>
</tr>
<tr>
<td>N</td>
<td>03/09/2017</td>
<td>All sections of the manual have been reviewed and revised.</td>
<td>A. Kloeckner, J. Kipker, D. O’Shea-Kerr, A. Lister, Global SQE-team</td>
</tr>
</tbody>
</table>
SENSATA Quality Policy

WE WILL ACHIEVE BUSINESS EXCELLENCE BY:

Encouraging and expecting the creative involvement of every SENSATA employee.

Listening to our Customers and meeting their needs.

Continually improving our processes, products and services.

[Signature]
Martha Sullivan
President and CEO, Sensata Technologies