



900-0067-Co4-

Cielo - Suppliers Quality

Requirements - En

## Index of contents

1. General.....	3
2. Requirements from the quality assurance system .....	3
3. Design control .....	4
4. Acquisition.....	4
5. Traceability .....	4
6. Special Processes .....	6
7. Special processes in the electronic industry .....	7
8. Process control.....	7
9. Control of measurement and test equipment.....	9
10. Preserving and Delivering a product.....	9
11. Inappropriate product control.....	12
12. Attached documents.....	12
13. Appendix.....	12

## 1. General

- 1.1. This document defines the practical quality Al Cielo Inertial Solution demands of its suppliers (Will be defined as "Al Cielo" as follows.)
- 1.2. Al Cielo's demands include standards, engineering information, and process specification the supplier must meet. The supplier is required to always use the latest version of the specifications or the standards regarding the date the order is due.
- 1.3. It is the responsibility of the supplier to comply a documented and specified review, to define supporting processes, to ensure and perform application. Specific exceptions demand an official approval from Al Cielo.
- 1.4. To customers and representatives of Al Cielo, the Government and Law enforcement have the right to have free access to the supplier's facilities or the facilities of his contractors, anywhere the manufacturing and testing processes are being performed for Al Cielo's order.
- 1.5. It is the responsibility of the supplier to inform the professional employees under him and his subcontractors of their contribution to the suitability of the product or service, and of their contribution to the safety of the product, as well as the importance of ethical code.

## 2. Requirements from the quality assurance system


- 2.1. The supplier will manage the quality assurance system according to the AS 9100 standard or ISO9001, the supplier will immediately inform any change in his commission to AS9100 and/or ISO 9001.
- 2.2. The supplier is required to save and store the documents for a period of seven years from the termination of the contract. By requirement, the supplier will hand a copy from every document related to an order between the supplier and Al Cielo in seven days after receiving the application.
- 2.3. In any case of contradiction between the documents/requirements of the supplier and the documents/requirements of Al Cielo, documents of Al Cielo will be preferred.

## 3. Design control

- 3.1. The supplier will initiate middle control according to AS 9100 standards and this document. In orders including middle, the supplier is required to approve the middle in front of Al Cielo. When ready, Al Cielo reserves the right to take part in any development process.
- 3.2. The responsibility of the design will be valid for a period that is no less than 10 years since the first date of supplying the first item.

## 4. Acquisition

- 4.1. The supplier will acquire the materials, processes and services that are not supplied by Al Cielo from verified sources only.
- 4.2. Special attention is required to avoid acquiring fake materials and components. Components must be purchased only from the original component manufacturer (OCM) or the original equipment manufacturer (OEM) or the authorized vendor by the manufacturers and which has a traceable pedigree from the production process.  
  
If it is not possible to purchase a material or component from a certified source, the supplier must verify the authenticity of the component and its propriety according to standard AS6174/AS5553 and in subject of Al Cielo's approval.
- 4.3. The supplier will deliver to all its sub-suppliers all applicable Al Cielo requirements (flow down).
- 4.4. It is the responsibility of the supplier to perform an audit on products or processes. The frequency and content of the audit will be determined by the supplier. The minimum audit required is an examination of the compatibility of the paperwork of the product or process with the demand.
- 4.5. The supplier is responsible for complying with storage requirements for shelf products purchased according to the manufacturer's specifications.
- 4.6. The supplier will update the customer within a reasonable period of time on an item that is intended to be deducted from supply or production. A reasonable period of time is the time in

 Cielo - Suppliers Quality Requirements - En		Updated: 28/11/2021
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which the client can stock up items for Last Buy or find a fitting replacement for the deducted item, the earliest of both.

## 5. Traceability

5.1. The supplier is required to maintain full traceability between the final product and its production processes, raw materials (whether by the supplier or by its subcontractors).

- This note also applies to assemblies such as electronic cards (even when there isn't Full Turn Key method and the material is provided by the customer).

## 6. Special Processes

6.1. Special processes are processes whose output cannot be verified by subsequent measurement.

6.2. To avoid late identification of defects, the supplier is responsible to define validation processes in any process of the production. The method and frequency of validation will be defined by the vendor and a declaration of the validity of the process will be sent to Cielo together with the product/service or on a regular basis after the re-validation process.

6.3. Special processes will be performed only by qualified suppliers (for the specific process) by one of the following options:

- (1) Supplier approved by Al-Cielo. A list of approved sources is defined by "Cielo Approved Process Sources - 913-0068".
- (2) Supplier approved by Rafael ("Rafael Advanced Defense Systems Ltd."). A list of approved sources is defined in the Catalog Items document that can be obtained from the Rafael suppliers' portal (AML system - "Processes").
  - The list of approved sources can be obtained from the Al-Cielo Q.A Manager.
  - In addition, it is possible to rely on a valid process certification of the subcontractor performing the process.

**6.4.** Employees employed in special processes shall be trained and certified to the relevant standards by a qualified instructor.

**6.5.** List of special processes:

- (1) Heat treatment
- (2) Coating and painting
- (3) Production of composite parts and adhesives
- (4) Non-destructive testing

## **7. Special processes in the electronic industry**

**7.1.** Employees engaged in electronic manufacturing processes including card development, PCB design, PCB production, name cards, inspection, and usability testing will be trained and certified to the relevant IPC standards by a qualified instructor.


**7.2.** List of processes:

- (1) Soldering
- (2) PCB manufacturing
- (3) Electronic cards Assemblies manufacturing and Conformal coating
- (4) ESS – Environmental Stress Screening

**7.3.** List of main standards:

- (1) "Requirements of Soldering of Electrical and Electronic Assemblies" – Class 3, J-STD-001
- (2) "Accepting of Electronic Assemblies" – Class 3, PIC-A-610
- (3) "Requirements and Acceptance for Cable and Wire Harness Assemblies" – IPC620 Class 3

## **8. Process control**

 Cielo - Suppliers Quality Requirements - En		Updated: 28/11/2021
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- 8.1.** Pre-production audit - Orders for the production of electronic cards/Assy. requires customer approval for the production process (before actual production begins).The supplier will perform First Article Inspection (FAI) – according standard AS9102, the FAI report will be sent to Al Cielo for approval on magnetic media or E-mail. The original report will be kept by the supplier.
- 8.2.** In-process audit: The supplier is required to define process control and measurement processes to prevent late detection of deviations.
- 8.3.** Final audit: as a minimal requirement, the supplier must make a sampling plan. The supplier is required to check 100% of the measurements/values required in the final audit on a sample of the produced batch. The size of the sample will be defined by ANSI/ASQ Z1.4 AQL = 1.0 level III, a reference table appears in Appendix A.
- 8.3.1.** In the event that an item is found to exceed one or more of the sampling quantity to a certain value, the whole batch shall be examined only for the purpose of the requirement found exceeding the requirements.
- 8.3.2.** From time to time Al Cielo will perform random inspections. In case of findings of a material that does not fit the requirements of Cielo, Cielo will considerate to examine the batch by itself or by a third party, and the supplier will be charged for this inspection.

## 9. Control of examination, measurement and testing equipment

- 9.1. Control of monitoring and measurement equipment will be performed by the supplier in accordance with the AS 9100 standard and the requirements of this document.
- 9.2. All equipment used for a product inspection shall be calibrated and verified by an accredited calibrations laboratory.
- 9.3. The equipment chosen for testing must be in the accuracy which is enough for the tolerance of the testing measure. The result of the measurement will be counted as PASS only if it withstands the tolerance of the measurement in correlation with the tolerance of the willingness of the tool. The willingness is defined under the equipment specification. The resolution of the display does not testify for high or low willingness.
- 9.4. Tools supplied by the client for production or testing will go through an auditory period according to the routing card supplied by the client. A copy of the auditory report will be transferred to Al Cielo right after the completion of the audit. Do not use a tool that has expired.

## 10. Preserving and delivering a product

- 10.1. As applicable, the preservation shall include identification, transportation, packaging, cooling, storage and the taking of adequate measures for the protection and preservation of the product during storage and delivery.

- 10.1.1. Compliance with temperature and humidity requirements in storage according to the manufacturer's specifications.
- 10.1.2. The parts shall be packed in such a way as to prevent the penetration of FOD corrosion and mechanical damage.
- 10.1.3. The following details shall be recorded on the package: supplier's name, customer order number, batch number, customer part number and quantity of products in the package.
- 10.2. On materials/products limited to shelf life, an expiration date shall be specified on each packaging including production date and special storage conditions if required. Materials/items with shelf life limitations shall be provided with not less than 2/3 of their shelf life.
- 10.3. Each batch will contain material/components that are all from the same production batch. Exceptions from this requirement must meet approval from Al Cielo.
- 10.4. Requirements for electronic components/cards:
- 10.4.1. Meeting storage temperature and moisture requirements set by the manufacturer.
- 10.4.2. Electronic components with long legs coming out from the bottom of the component (such as capacitors, transistors, etc.) will be packed in protective enclosures.
- 10.4.3. For electronics components (including PCBs), the age of the product is important and therefore the maximum approved age for supply is set:
- "Active" components will be provided for up to 3 years from the date code (date code).

- "Passive" components up to 4 years from date of manufacture (Date code).
- PCB - up to one month from date of manufacture (Date code).

10.4.4. To allow proper storage of PCB, the cards must be packed with a vacuum seal. The packaging should be appropriate in terms of WVTR (Water Vapor Transmission Rate), contain a desiccant and meet the J STD 033 standard.

#### 10.4.5. Electrostatic discharge (ESD)

Supplier which supplies components or material that are sensitive to static electricity, must define a plan for preventing static electricity damage at all stages of the product. This program will include employee training, marking and identifying sensitive components, implementing ESD protections at all stages and using protected packaging.

10.4.6. Electronic cards must be packed within a bag that prevents the transfer or generation of static electricity. "Bubble" bag in order to prevent mechanical damage.

Packaging sample:



10.4.7. The packaging must have an appropriate ESD sign



## 11. Inappropriate product control

The supplier will report to the customer any unusual product (which does not comply with the requirements) using the MRB form. The customer's MRB/Survey Committee is responsible for determining the designation of inappropriate products. Attach an MRB tag containing the MRB number provided by the customer.

## 12. Attached documents

The supplier must supply the following documents with each process/product:

- (A) Certificate of Conformance - Certificate of conformity of the manufacturer of the item or process supplier (the certificate shall include the production order).
- (B) "First item inspection" report – FAI as detailed in "Process control"
- (C) Final inspection report – dimensional testing – as detail in "Process control"

- (D) ATR – Acceptance Test Report for complex systems (for example: accelerometer).
- (E) ATR – Acceptance Test Report for optic components (such as: Passive components, fibers, laser diode, wafers).
- (F) MRB report copies (When applicable).
- (G) Calibration certificate (measurement equipment).
- (H) Certificate of Special Process Validation

### **13. Appendix A**

SAMPLE SIZE CODE LETTERS							
Lot Size	General Inspection Levels			Special Inspection Levels			
	I	II	III	S1	S2	S3	S4
2 to 8	A	A	B	A	A	A	A
9 to 15	A	B	C	A	A	A	A
16 to 25	B	C	D	A	A	B	B
26 to 50	C	D	E	A	B	B	C
51 to 90	C	E	F	B	B	C	C
91 to 150	D	F	G	B	B	C	D
151 to 280	E	G	H	B	C	D	E
281 to 500	F	H	J	B	C	D	E
501 to 1200	G	J	K	C	C	E	F
1201 to 3200	H	K	L	C	D	E	G
3201 to 10000	J	L	M	C	D	F	G
10001 to 35000	K	M	N	C	D	F	H
35001 to 150000	L	N	P	D	E	G	J
150001 to 500000	M	P	Q	D	E	G	J
500001 and over	N	Q	R	D	E	H	K

ANSI/ASQ Standard Z1.4 - 2008

SINGLE SAMPLING PLANS FOR NORMAL INSPECTION													
Sample Size Code Letter	Sample Size	Acceptable Quality Levels (Normal Inspection)											
		0.065	0.10	0.15	0.25	0.40	0.65	1.0	1.5	2.5	4.0	6.5	
		Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	Ac Re	
A	2											0 1	
B	3											0 1	
C	5											0 1	
D	8											0 1	
E	13											1 2	
F	20											2 3	
G	32											3 4	
H	50											5 6	
J	80											7 8	
K	125											10 11	
L	200											14 15	
M	315											21 22	
N	500												
P	800												
Q	1250												
R	2000												

↑ Use first sampling plan above arrow, if sample size equals or exceeds lot or batch size, do 100 percent inspection.  
 ↓ Use first sampling plan below arrow      AC : Acceptance number      Re : Rejection number

Revision History:

Rev	Date	Prepared by	Approved by	The Change
AO1	12/11/2017	Avi Hofi	ECO 1061	Initial version
BO1				No change. Rev B was skipped in order to match the document in Hebrew
CO1	02/05/2018	Avi Hofi	ECO 1092	Expanding the list of qualified suppliers for special processes Para. 6.3 Remove Section - Process Control - PRR Update Section 9 - Calibration Clarify Shelf Life Requirements. Para. 10
CO2	11/11/2019	Avi Hofi	ECO 1232	<ul style="list-style-type: none"> <li>Add Certificate for Special Process Validation- Para. 6.2 &amp; 12</li> <li>Pre-production inspection for electronic Assy- . Para. 8.1 Clarify general requirements for electronics - Para. 10.4.3</li> </ul>
CO3	07/10/2020	Ofir Zur	ECO 1301	<ul style="list-style-type: none"> <li>Requirement for ESD packing electronic cards- Para. 10.4.5&amp;6&amp;7</li> <li>Removing section Business requirements</li> <li>Add Traceability section</li> </ul>
CO4	24/11/2021	Shlomo Zilberstein	Eco 1411	<ul style="list-style-type: none"> <li>Add responsibility of the supplier about safety, suitability of the product and Ethical code. Para. 1.5</li> </ul>