



DOW-KEY MICROWAVE CORPORATION PURCHASE ORDER QUALITY REQUIREMENTS

QR01 Certificate of Conformance: (Standard)

Certificate of Conformance shall accompany each shipment. This statement shall include, at a minimum, part number, serial number, lot/batch number, quantity, and reference to required specifications. This document must exhibit the signature of the supplier's authorized representative.

QR02 Identification of Packaging: (Standard)

All packages containing parts shall be clearly identified with a part number/identification, lot number, applicable revision, and quantity enclosed.

QR03 Dow-Key Microwave Drawings: (Standard)

All drawings supplied by Dow-Key Microwave (DKM) contain proprietary information and remain the property of DKM at all times. All drawings, parts lists, and/or applicable documentation shall be returned upon request by DKM.

QR04 Material Supplied by Dow-Key Microwave: (Standard)

Any material being supplied by DKM shall be identified with the original lot and purchase order numbers on the material. This establishes a positive means of traceability. Any unused material, after completion of order, shall be returned with all original marking information included.

QR05 Control of Special Processes: (Standard)

This note applies to any part that is DKM design and has special process(es) specified.

The supplier and any sub-tier supplier is required to have written processing and process control documentation for items supplied. Special processes include, but not limited to, liquid penetrant, heat treatment, welding, soldering, chemical films, plating, primer, and painting.

The supplier or any sub-tier must notify DKM of any changes to special processes prior to performing work on DKM product. The supplier or any sub-tier must obtain concurrence from DKM before changing any sub-tier special process provider.

Process certification must be provided with each First Article shipment. Certifications must be to the industry standard(s) and to required DKM process specifications. All other shipments require records on file with the supplier.

QR06 Request for Deviation/Wavier: (AS9100) (Standard)

Any departures from the referenced drawings or requirements shall be approved by submitting a written request to DKM purchasing prior to delivery of items to DKM. Use DKM form number 02-0040 when submitting requests.

If the supplier finds a nonconformance and determines it affects parts delivered, the supplier must notify DKM. In the event of any screening and or Group B failure all testing will stop at the point of failure and notify DKM within 48 hours.

QR07 Certifications, Traceability, and First Article:

Certifications are to be provided for all individual processes performed (identify) and/or material furnished by the supplier. Material certifications shall contain, at a minimum: adequate traceability, reference to applicable specifications, revision, lot number, and complete chemical/physical documentation. Special process certifications shall contain part number identification, serial number (if applicable), quantity, and reference to the applicable specifications noted. This document shall exhibit the signature of the supplier's authorized representative.

The supplier must maintain a system that provides the ability to trace all products back to the lot/batch of raw material from which those items were made. This requirement must be flowed down to sub-tier suppliers whose services alter the product through addition of materials (plating, coating, etc.).

A First Article Inspection Report must ship with each lot of parts manufactured to DKM specification. The report shall demonstrate conformance to all dimensions with tolerances +/- .001 inches or less performed on an AQL sample based on ANSI z1.4 General Inspection Level I, AQL 1.0, Single Normal or equivalent (ref DKM form 02-0086). This plan must be followed unless an alternate plan is submitted by the supplier and approved by DKM.

DKM considers EEE parts to be limited shelf life materials. The shelf life of EEE parts is to be, at a minimum, 5 years. All EEE parts on this order must be delivered with 75% of their shelf life remaining.

QR08 Inspection Requirements: (Standard)

General Inspection: The supplier shall generate and maintain records and data of all inspections and test performed. Records shall disclose the status of articles, materials, evidence of inspections, tests performed, and include dates. If sampling is used, the sampling plan shall meet ANSI/ASQC Z1.4-1993 requirements as a minimum except that no discrepant materials shall be acceptable without written approval of Dow-Key Microwave's Material Review Board.

QR09 Pre-screening: (Standard)

Prescreened components/parts shall be delivered with actual test data results with each product shipment (if required by drawing, and/or purchase order requirements).

QR10 Certifications and Traceability (standard)

The supplier must maintain a system that provides the ability to trace all products back to the lot/batch of raw material from which those items were made. This requirement must be flowed down to sub-tier suppliers whose products are integrated into an assembly or whose services alter the product through addition of materials (plating, coating, etc.).



DOW-KEY MICROWAVE CORPORATION PURCHASE ORDER QUALITY REQUIREMENTS

Upon request, and within 48 hours, the supplier must provide certifications for all individual processes performed and/or material furnished by the supplier or utilized in the manufacture of the product.

These material and process certifications shall contain, at a minimum: adequate traceability, reference to applicable specifications, revision, lot number, and complete chemical/physical documentation. These documents shall exhibit the signature of the supplier's authorized representative.

QR11 Suppliers Inspection System:
Shall comply with MIL-I-45208A.

QR12 Suppliers Quality System:
Shall be ISO 9001 or AS9100 certified.

QR13 Suppliers Quality System:
Shall comply with NASA 8739.3.

QR14 Surveys, Audits, Evaluation and Inspection: (Standard)
The operations and work of the supplier are subject to evaluation, review, audit, survey, and inspection by DKM or its customers, to determine that the supplier meets purchase order requirements and the materials, articles, and related services are of satisfactory quality and meet the drawing requirements.

QR15 Source Inspection:
The supplier shall notify the DKM purchasing agent to arrange for source or inspection prior to delivery of materials. The supplier shall provide DKM personnel, with documentation adequate to ascertain compliance of the materials to the design documents and purchase order requirements. Acceptance by the source inspector in no way relieves the supplier of his responsibility to provide quality materials that are 100% compliant with all technical documents and contractual requirements relevant to the contract, nor does it relieve the supplier of responsibility for any non-conformances discovered after delivery of materials.

QR16 Precap Inspection:
The supplier shall notify the DKM purchasing agent prior to installation of the cover on the products to arrange for precap inspection. The supplier shall provide DKM with facilities, equipment, personnel, and documentation adequate to ascertain the quality and compliance of the materials. Acceptance by the source inspector in no way relieves the supplier of the responsibility to provide quality materials that are 100% compliant with all technical documents and contractual requirements relevant to the contract, nor does it relieve the supplier of responsibility for any non-conformances discovered after delivery of materials.

QR17 Raw Material Certifications:

All products delivered against this order shall be accompanied by actual chemical and physical analysis reports for the raw materials used in the manufacture of the articles.

QR19 Control of Age Sensitive Materials: (Standard)

All items with limited shelf life shall be clearly marked with the manufacturer's name, type of material, shelf life, date of manufacture, and usability limiting date. A minimum of 75% of shelf life shall be remaining on all items on this order at time of receipt.

QR20 Control of Electrostatic Discharge Sensitive Materials: (Standard)

All ESD sensitive materials shall be processed in accordance with MIL-STD-1686 or ANSI/ESD S20.20 and packaged in ESD protective packaging per Mil-B-81705 and labeled as ESD sensitive. ESD sensitive materials received in an unacceptable packaging will be rejected and returned at the supplier's expense. **Pink poly or clear plastic bags are strictly prohibited.**

QR21 Mercury-Free Materials: (Standard)

Materials delivered against this order cannot contain and cannot have come in contact with the element mercury (MC) or mercury compounds known to be chemically or thermally unstable. Mercury contamination shall be the cause for rejection of the materials.

QR22 Government Source Inspection:

All work on this purchase order is subject to inspection and test by the government at any time. The government quality representative whom has been delegated quality assurance functions on this procurement shall be notified immediately upon receipt of this order. The government representative shall be notified 48 hours in advanced of the time that articles or materials are ready for inspection or test. The following statement must be amended to the purchase order: "Government inspection is required prior to shipment from your plant. Upon receipt of this order, promptly notify the government representative who normally services your plant so that the appropriate planning of government inspection can be accomplished."

QR24 Solder Workmanship: (Standard)

Unless otherwise specified, workmanship shall comply with IPC610 class 3.

QR29 Government Priority Rating:

This purchase order is a rated order certified for national defense use. The supplier is required to follow all provisions of the Defense Priorities and Allocations System regulation 15 CFR 700. The supplier shall pass down this requirement to



**DOW-KEY MICROWAVE CORPORATION
PURCHASE ORDER QUALITY REQUIREMENTS**

any other suppliers subcontracted for this order. See the purchase order for the applicable priority rating.

QR30 Dimensions apply: after plating.

QR31 Dimensions apply: before plating.

QR32 Burr Free: (Standard)

This note applies to any part that is DKM design.

Parts shall be free of burrs. Parts are subject to inspection under 10 x magnifications. Definition of burr: Any irregularities observed which affects the specified surface finish, a dimensional requirement, and/or has raised material.

QR34 Homogenous Lot Certification:

Supplier shall supply to DKM one homogenous lot. All pieces supplied against a purchase order shall be from one lot and must be homogeneous relative to materials, piece parts, manufacturing processes, and special processing. NOTE: Certificate of Conformance must state "all parts supplied against this purchase order are from one material and process lot."

QR35 Post Bake Requirements: (Standard)

This note applies to any part that is DKM design.

All metallic parts that are plated with gold, silver, copper, electroless nickel, and/or electro-deposited nickel, individually or in any combination, shall be subjected to a post-plating bake process unless otherwise specified. Bake temperature and duration for the various material combinations are specified in Table 1.

Note: The plating supplier's certificate of conformance shall state the post plating bake times, and temperature.

Table 1: Post Plating Bake Requirements			
Finish	Base Material	Bake Temperature	Bake Duration
Any combination of Gold, Silver, Copper, Electroless Nickel, and/or Electro-deposited Nickel	Aluminum	250 ± 10°F	60 to 90 minutes
	Copper/Brass	300 ± 10°F	60 to 90 minutes
	Iron/Steel	350 ± 15°F	60 to 90 minutes

QR36 First Article Requirements:

This note applies to any part that is DKM design.

All parts manufactured by a supplier, for the first time or manufactured to a newer revision, require a First Article Inspection Report (FAIR) be submitted with shipment. The SAE AS9102 may be used or the supplier's equivalent FAIR format. Actual values of all characters and notes of the

drawing must be recorded, and the first article piece shall be tagged "First Article". **Raw material and process certificates** shall accompany the FAIR. A delta First Article is required for revision changes. The supplier is required only to record the actual changes (delta) to the latest revision, providing the supplier has a DKM-approved FAIR to the previous revision on file. Failure to provide a FAIR will result in a rejection of the parts.

QR37 Distributor:

A Certificate of Compliance shall accompany each shipment. The statement shall include at a minimum: part number/item identification, part description, quantity, and reference to applicable specifications.

QR38 Product Change Approval: (AS9100) (Standard)

The supplier shall not make any changes to design, materials, processes, manufacturing facility location, and/or methods of assembly, including changes of their external providers, without written approval from DKM. The supplier shall contact the DKM buyer with the change request.

QR39 Supplier Corrective Action: (Standard)

When it is determined that the supplier is responsible for a non-conformance, they may be issued a Supplier Corrective Action Request (SCAR). The SCAR must be completed by the due date assigned. Failure to respond to the SCAR by the due date may result in the supplier placement on payment hold or removal from the Approved Supplier List. Extensions to due dates can be granted by the DKM Quality Department.

QR40 Resubmittal of Rejected Items: (Standard)

Material, part, or products rejected by DKM and subsequently resubmitted by the supplier shall be clearly identified as resubmitted and shall contain a statement that the material, part, or product was reworked or replaced and reference the DKM non-conforming report number (NCR).

QR41 Supplier Preservation and Packaging: (Standard)

The supplier's quality control shall be responsible for ensuring that items of this procurement are packaged in such a manner that the dimensional integrity is preserved, contamination and corrosion are prevented, and no physical damage occurs, or when specified, that packaging is in accordance with the applicable packing, handling, storage, and transportation and requirements documentation cited in and attached to the order.



DOW-KEY MICROWAVE CORPORATION PURCHASE ORDER QUALITY REQUIREMENTS

QR42 RoHS Compliance (Standard):

DKM services the military and aerospace market and therefore cannot accept product processed with lead free solder unless specifically authorized by DKM.

For parts that DKM specifically requires RoHS compliance the following applies:

The Reduction of Hazardous Substances (RoHS) Directive 2002/95/EC of the European Parliament and the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment has been adopted. Article 4 requires from 1 July 2006, new electrical and electronic equipment put on the market **shall not contain** the following elements/substances of 0.1% by weight:

- 1) Lead
- 2) Mercury
- 3) Cadmium
- 4) Hexavalent Chromium
- 5) Polybrominated Biphenyls (PBB)
- 6) Polybrominated Diphenyls Ether (PBDE)
- 7) Bis(2-ethylhexyl) phthalate (DEHP)
- 8) Butyl Benzyl Phthalate (BBP)
- 9) Dibutyl Phthalate (DBP)
- 10) Diisobutyl Phthalate (DIBP)

A) RoHS Compliance Plan:

If the supplier is **not** currently RoHS compliant, the supplier shall report to DKM buyer the implementation plan to eliminate the listed elements/substances and the target date for incorporation.

The Certificate of Compliance shall declare the restricted element/substances used in the materials, processes or products furnished in this order.

B) RoHS Full Compliance:

Suppliers which are currently in full RoHS compliance shall include a statement on the Certificate of Compliance that the materials, parts, or products furnished on this order are RoHS compliant.

C) REACH compliance 2011/65/EU

Dow-Key will communicate all REACH compliance requirements to suppliers per customer requirements. All RoHS parts will be evaluated for REACH compliance and SVHC (Substance of Very High Concern) are identified. REACH compliance must meet the current Directive 2015/863 amendment to 2011/65/EU.

QR43 Deleted

QR44 DFARS Clause 252.225-7008, Restriction on Acquisition of Specialty Metals:

This clause restricts the prime contractor and all suppliers at every tier from incorporating "specialty metals" (as defined in

the clause) into military parts, components, and/or end item deliverables unless the specialty metals have been melted in the United States, its outlying areas, or a qualifying country listed in DFARS 225.872-1. Articles manufactured in a qualifying country, regardless of where the specialty metal may have been melted, are not subject to the requirement, but the United States is *not* a qualifying country for this purpose. Note that you are required to flow DFARS clause 252.225-7008 down to your suppliers with instructions that they must in turn flow the clause down to their suppliers.

QR45 Right to Access: (AS9100) (Standard)

Work under this purchase order/contract is subject to government, customer or regulatory authority surveillance and or inspection at the Supplier's facility. Access to all facilities involved in the order and all applicable records must be made available upon request. The Supplier will be notified if a surveillance and or inspection is to be conducted.

QR46 Suspect Counterfeit Parts (04/04/2007): (Standard)

1). "Suspect/Counterfeit Parts" are parts that may be of new manufacture but labeled to represent a different class of parts or used and/or refurbished parts with false labeling representing them as new parts or a manufacturer other than the actual manufacturer. Examples of suspect/counterfeit parts that have been prominent include:

(a) fasteners, including bolts and nuts, made of carbon steel (designated as grade five or grade eight) or stainless steel, with head marks or stamps shown on the head mark list prepared by the United States Customs Service (see latest revision),

(b) electrical or electronic parts and components that are falsely identified and/or labeled, or properly identified, but passed as acceptable product when it is known to be nonconforming to specified OEM requirements,

(c) piping, valves and flanges bearing labels that falsely indicate that the items meet recognized ASME, ASTM, or other consensus standards, or falsely bear independent testing laboratory markings; and

(d) used or refurbished molded-case electrical circuit breakers or similar type switch gear.

2). Supplies furnished to DKMC under this contract shall not include suspect/counterfeit parts nor shall such parts be used in performing any work under this contract whether on or off the facility site.

3). If suspect/counterfeit parts are furnished under this purchase order and are found in any of the goods delivered hereunder, such items will be impounded by appropriate DKM personnel. The Seller shall disclose the source of parts if the parts should become the subject of a legal or counterfeit issue. The Seller shall promptly replace such suspect/counterfeit parts with parts acceptable to the Buyer and the Seller shall be liable for any and all costs relating to the removal and replacement of said parts, including without limitation Buyer's external and internal costs of removing such



DOW-KEY MICROWAVE CORPORATION PURCHASE ORDER QUALITY REQUIREMENTS

counterfeit parts, of reinserting replacement parts and of any testing necessitated by the reinstallation of Seller's goods after counterfeit parts have been exchanged. Seller shall be fully liable for all such costs, even if such cost might be considered indirect, special, or consequential damages. Seller's liability for suspect/counterfeit parts shall not expire until the product is found to be in satisfactory operation after delivery for its implied warranty only if the product is used for non-space application (e.g., ground or airborne). At Buyer's request, Seller shall return any removed counterfeit parts to Buyer in order that Buyer may turn such parts over to its Government customer for further investigation. Seller agrees that any Government or quasi-Government directive, such as a GIDEP alert, DOE, or a directive from DKM indicating that such parts are counterfeit, shall be deemed definitive evidence that Seller's parts contain counterfeit parts and such reports may be referred to the Department of Justice.

4) The rights of DKM in this clause are in addition to any other rights provided by law or under this contract.

5) Supplier shall only purchase products to be delivered or incorporated as work to DKM directly from the Original Component Manufacture (OCM)/Original Equipment Manufacturer (OEM), or through an OCM/OEM authorized distributor chain. Work shall not be acquired from independent distributor or brokers unless approved in advance in writing by DKM.

6) Supplier shall establish and maintain a Counterfeit Parts Prevention and Control Plan using Industry Standard AS-5553 as a guideline. The purpose of this document shall be to prevent the delivery of counterfeit parts and control parts identified as counterfeit.

7) Suppliers eligible for utilization of the Government-Industry Data Exchange Program ("GIDEP") shall utilize the GIDEP process to alert the industry of encountered counterfeit parts.

QR47 Sub-Tier Suppliers: (AS9100) (Standard)

The Supplier must flow down any applicable requirements to direct and sub-tier suppliers.

QR48 Foreign Object Debris/Damage Prevention: (Standard)

The supplier shall develop and maintain a Foreign Object Debris/Damage (FOD) prevention program for manufacturing areas to prevent introduction of foreign objects into any item delivered under this purchase order. The supplier shall employ appropriate housekeeping practices to assure timely removal of residual/debris generated, if any, during manufacturing operations and normal daily tasks. The supplier shall determine if sensitive areas that may have a high probability for introduction of foreign objects should have special emphasis controls in place appropriate for the manufacturing environment. The supplier shall determine the

need for, and implement, FOD prevention awareness training programs.

QR49 Export Controlled Technical Data: (Standard)

All DKM technical data (drawings, specification, test procedures, etc.) will be marked as Export Controlled Information, as required.

This information is subject to the controls of the International Traffic in Arms Regulations (ITAR). This information shall not be provided to non-U.S. persons or transferred by any means to any location outside the United States without advanced permission from DKM and approval from the United States Department of State.

QR50 Records: (Standard)

All records required to show conformance to the requirements of the purchase order, drawings, process specifications, etc., are to be retained by the supplier for a minimum 10 years. Upon request for records from DKM, the supplier must present the requested records within 2 business days.

Records for current off the shelf (COTS) parts shall be retained by the supplier in accordance with the supplier's quality system.

Records shall be dispositioned to destroy after retention period unless otherwise specified per contract.

QR51 RF Connector Test Data:

RF data showing conformance to specification must be provided for each lot of RF connectors in accordance with DKM RF Connector Screening Test Procedure (STP-10070). Vendors may use their own screening test procedure upon receiving approval from DKM. Connectors will not be accepted without RF data unless waiver is granted by DKM.

QR52 DFARS Non-COTS Magnets:

Magnets purchased for programs that require adherence to DFARS 252.225-7009, Restriction on Acquisition of Specialty Metals, which are not commercially available off-the-shelf (COTS), must be certified as produced in a qualifying country, in accordance with DFARS 225.003.

QR53 Vendors Providing Calibration Services:

This clause is only applicable to vendors performing calibration on Dow-Key equipment. All vendors will provide a Certificate of Calibration, traceable to the National Institute of Standards and Technology, (NIST). The calibration services performed will be compliant with ANSI Z.540-1, ISO-10012-1, MIL-STD-45662A, ISO 17025 or equivalent calibration standard. The standard under which the calibration was performed must be listed on the Certificate of Calibration. Any items found to be out of tolerance shall be returned to DKM with a copy of Dow-Key form 09-0089 (Out of Tolerance



Notification Form) after the calibration services are completed.

QR54 Ozone-depleting substance: (Standard)

"Ozone-depleting substance," as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR Part 82 as—

- Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or
- (2) Class II, including, but not limited to hydrochlorofluorocarbons.

Seller shall label products which contain or are manufactured with ozone-depleting substances in the manner and to the extent required by 42 U.S.C. 7671j (b), (c), and (d) and 40 CFR Part 82, Subpart E, as applicable:

- Warning Contains *_____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.
- Warning Manufactured with *_____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere.

* Seller shall insert the name of the substance(s).

DKM requires that the provisions/requirements set forth above be included in Seller's direct supply contracts as well as the obligation that they be flowed to the sub-tier supply chain.

QR55 Plating Adhesion Test:

All plated parts shall be tested by crimp, crush, or swage to check plating adhesion prior to shipment to DKM. A single sample is required per plating lot. The sample shall accompany the shipment.