

Corporate Overview

Corporate Mission	CommScope's mission is to be the leading global developer, producer and seller of high performance communication solutions for deployment by communication providers and enterprise users. We strive to be recognized for the superior quality and performance of our products, outstanding service to our customers, excellence of our employees and the value we provide to our stockholders.
Corporate Structure	CommScope is structured based on three business units: Enterprise, Wireless and Digital Broadband. Some suppliers will provide product across multiple business units, while others will be business unit specific.
Corporate Website	www.commscope.com

Introduction

Our Suppliers	Welcome to the CommScope Inc. team. As one of our suppliers, you play a vital role in ensuring CommScope's success in meeting our commitment to meet or exceed our customers' requirements and to continually improve our products and services. As an extension of our own operations, we rely on our suppliers to provide material, products and services which meet or exceed all of the requirements of the CommScope contracts, applicable specifications and the quality management requirements outlined herein.
Purpose	<p>This manual provides a framework and some guidelines for several key processes that must take place between suppliers and customers. By better defining these processes, communication will be improved and simplified, thereby allowing us to strive for world class performance.</p> <p>This manual is not intended to cover every aspect of the supplier/customer relationship. Contingencies and situations will develop that may not be specifically addressed by the framework and guidelines in this manual. In these instances, communication and coordination are the keys to an effective and efficient supplier/customer relationship.</p>
Scope	This manual applies to all suppliers providing materials (raw, WIP or finished goods), products, processing and related services to CommScope, a subsidiary or an end customer of CommScope. The general requirements outlined within this document do not supersede conflicting requirements in the CommScope contract, or drawing, including engineering specifications and process specifications.
Questions	Questions concerning this manual or its contents could be directed to your respective CommScope buyer or category manager.

- **SUPPLIER CODE OF CONDUCT**

Suppliers will be asked to review and sign the CommScope Supplier Code of Conduct (CTV-74-005-06). Suppliers shall ensure operations are being performed in a manner that is appropriate, as it applies to their ethical, legal, environmental, and social responsibilities. Below are the basic requirements:

- **Compliance with Local Laws and Regulations**

Suppliers must adhere to the laws and regulations in the locality in which they reside as well as the US. Law where applicable. This includes all local, state, and federal laws/regulations in the country of origin. Supplier must also consider the countries in which they export/sell and from which they import/buy and adhere to the laws and regulations within that country as well. Product which is sold in one country that is being used for assembly into another product that is exported globally, must comply with the country regulations and laws of the finished exported product.

- **Compliance with Environmental, Health, and Safety Laws**

The Supplier must maintain and operate its manufacturing/production facilities and processes in accordance with local, state, and federal laws/regulations in the country of origin. At no time shall any CommScope person be exposed to hazardous materials or unsafe conditions as a result of supplier shipments to a CommScope location, or while visiting a supplier's location. For items with inherent hazards, safety notices must be clearly visible. As applicable, documented safety handling and protection information must be provided.

- **Product Safety**

In all instances where a product is manufactured to a new design, for a new system, or for a new product, it is important that supplier and CommScope allocate responsibility for assuring that all performance, endurance, maintenance, safety and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

- **Non-Discrimination**

Suppliers shall not discriminate against race, color, sex, religion, age, physical disability, political affiliation, or other defining characteristics as prohibited by local, state, and federal laws/regulations in the country of origin.

- **Child Labor**

Suppliers shall employ workers of minimum legal age in accordance with local, state, and federal laws/regulations in the country of origin. Child labor laws must be followed.

- **Forced/Indentured Labor**

Suppliers shall not practice the use of forced or indentured labor.

- **Work Hours/Days**

Suppliers shall not exceed the daily and weekly working hours as permitted by local, state, and federal laws/regulations in the country of origin.

- **Wages and Benefits**

Suppliers shall compensate workers in accordance with local, state and federal laws/regulations within the country of origin. This includes minimum legal wages, overtime wages and benefits as required by law.

- **Ethics**
Evidence of corruption, bribes, improper advantage or any other form of illegal activities/practices by the supplier or an associated operation will terminate all relations with CommScope. Suppliers will conduct business in a manner that meets the CommScope Inc. of North Carolina “Code of Ethics” policy.
- **Code of Conduct and Policy Enforcement**
This policy applies to suppliers and their sub-tier suppliers. It is the responsibility of the supplier to verify and monitor the compliance of this code within their operations as well as their sub-tier suppliers’ operations.
- **Confidentiality**
The supplier shall ensure the confidentiality of CommScope contracted products and any projects under development, any related product information, as well as the intellectual property shared as the result of this partnership/relationship.

- **QUALITY SYSTEM REQUIREMENTS**

Suppliers to CommScope are expected to implement and document a robust quality management system (QMS) that promotes defect free products through prevention, monitoring and ongoing process improvements. It is preferred that the supplier be certified by an accredited third-party body to the latest version of one or more of the following:

- ISO 9001
- TL9000
- ISO/TS 16949

In the absence of third-party certification, depending on the product, its application, value and risk, the CommScope procurement and quality representative may authorize the acceptance of other evidence of compliance which will include a CommScope audit and/or a self assessment to the applicable criteria above.

As part of the compliance of documenting a QMS, upon request the supplier shall supply CommScope with a copy of the supplier’s Quality Management System Manual, which must be current and approved by the supplier’s management team. The QMS documentation shall include the supplier’s quality policy and their quality objectives. These objectives and measurements shall address customer expectations and be achievable within a defined period of time. The supplier shall promptly notify the CommScope quality representative of any relevant changes to the QMS or personnel.

- **SUPPLIER APPROVAL PROCESS**

All new suppliers will be approved prior to the issuance of contracts or shipments (EXCEPTIONS MAY APPLY). All Tier 1 Suppliers must be approved by Commscope, regardless of approvals given by customers or other entities. CommScope reserves the right to approve sub-tier suppliers where critical processes are involved.

- **Supplier Assessment – Phase 1**

- Financial stability, manufacturing footprint
- Equipment and process capability
- NDA
- Business license
- RoHS/WEEE, REACH compliance

- **On-Site Assessment – Phase 2**

- **Technical Assessment** – to determine whether the supplier has the needed technical resources, including production and inspection equipment, facilities, engineering resources, CommScope specified computer-aided design language/format, electronic communication capability, etc.
- **Business and Manufacturing Assessment** – to determine whether the Supplier has the financial resources, production capacity and other business resources needed to fulfill CommScope demand/volume production needs and continuity of supply.
- **Quality Management System** – to evaluate whether the suppliers QMS meets one or more of the applicable standards and is functioning effectively.
 - **Sub-Tier Supplier Control** – to evaluate the effectiveness of the suppliers sub-tier management processes to ensure that products or services procured from the sub-tier sources and delivered to CommScope conform to all applicable CommScope requirements.
 - **Continuous Improvement and Corrective Action** – to determine if the suppliers' culture, methods and skills are present to actively pursue continuous improvement activities.
- **Corporate Compliance** – an audit of the suppliers EHS (environmental, health and safety) activities to ensure that supplier meets applicable requirements.

- **Product Qualification and Approval – Phase 3**

Generally, when a supplier is certified to a related standard as noted in section titled “Quality System Requirements” above, CommScope will not conduct an on-site assessment of the suppliers’ QMS against the same criteria. However, CommScope and/or its customers, due to product/process complexity, risk, criticality and/or region, may elect to conduct on-site assessments of a supplier’s product or process capabilities.

All new CommScope “special process” suppliers require an on-site assessment by CommScope prior to approval. Special processes include plating, painting, PCBA and PCB.

- **GENERAL REQUIREMENTS**

The following set of general quality requirements apply to all suppliers

- Compliance to contractual requirements
- CommScope designated sources
- Control of sub-tier suppliers
- Control and release of CommScope supplied documents
- Electronic documents
- Business continuity
- Product qualification
 - First Article Inspection (FAI) – consists of
 - Raw material verification
 - Inspection of all dimensions along with any requirements given in the note section of the drawings
 - Surface treatment (all metal layers and their thickness and adhesion)
 - RoHS, REACH, WEEE
 - First Article Evaluation (FAE) – includes
 - FAI
 - Trial build, including functional testing according to specification
 - Reliability tests as defined in the Qualification Test Plan (QTP) (examples are thermal cycle, salt fog, vibration, etc.)
 - Process flow chart
 - Process control plan
 - Bill of materials
 - Sub tier supplier matrix
 - Certification and test reports
 - Dimensional results – for each unique manufacturing process (line, mold, cavity, etc), a record of actual variable dimensional results for all characteristics
 - Material and performance test results – for all parts and product materials with chemical, physical, metallurgical and functional performance requirements
 - Sample product – actual samples as required by CommScope
 - Master sample – supplier must retain a master sample, when required by CommScope and make it available upon request
 - Test fixture calibration records – copies of records indicating that variable and fixed (go/no) test fixtures have been calibrated

- **PROCESS CONTROL**

- Critical to Quality Characteristics (CTQ)
- Error-proofing
- Work instructions
- Control of monitoring and measuring devices

- Statistical process control – When specified by the drawing (marked as a critical characteristic), the supplier is required to apply effective statistical process controls.
- Preventive maintenance – Supplier should identify key processes/equipment and provide resources such as consumables, for machine/equipment maintenance activities and develop an effective planned preventive maintenance system.
- Source inspection – Supplier’s products may be subject to source inspection by CommScope, a representative of CommScope or a regulatory agency such as Underwriters Laboratory (UL). Source inspection may apply to any and all operations performed by the supplier or the supplier’s sub-tier sources. The supplier shall provide the necessary access, equipment and resources required to effectively accomplish the source inspection.
- Shelf-life control
 - Materials – The supplier shall furnish data that shows (a) the cure or manufacturing date (b) expiration date or shelf life, (c) lot or batch number and (d) when applicable any special handling or storage requirements with each delivery of material or products that have a limited or specified shelf life. For all shelf-life limited materials or products delivered to CommScope, the remaining shelf-life shall be a minimum of 75% of the total shelf life, unless otherwise specified by contract or temporary deviation.
 - Lot control traceability – raw material
- Inspection – Supplier is responsible to ensure that product is complaint with all testing and dimensional requirements prior to delivering to CommScope.
- Electro-Static Discharge (ESD) control – Suppliers authorized to provide ESD sensitive devices to CommScope shall, prior to processing product, establish, document and implement an Electrostatic Discharge (ESD) Control Program plan in compliance with the requirements of MIL-STD-1686 or equivalent.

- **CHANGE CONTROL**

Supplier is responsible for controlling changes and notifying the CommScope procurement manager of all changes to the approved part design, manufacturing process, site or sub-tier changes of the same.

- Change control process – The supplier shall have processes to ensure that the relevant versions of the applicable documents furnished by CommScope are available at points of use. The supplier is responsible for the timely review, distribution and implementation of all CommScope engineering standards/specifications and changes. The supplier shall maintain a record of the date on which each change is implemented in production. Implementation shall include updated documents.
- Supplier change requests – Suppliers shall not make changes to their processes, location, facilities, equipment, material, product design (or any change which may affect product design or function) without written approval from the CommScope Supplier Evaluation Team (SET). The SET is led by a CommScope procurement representative. Changes that must be submitted and approved by CommScope include the following:

- Product modified by a CommScope engineering change
- Any planned changes by the supplier to their design, process or manufacturing location – changes would include:
 - Use of other material than what was previously approved through the part and/product approval process
 - Production from new, additional, replacement or modified tools, dies, molds, patterns, etc.
 - Production following any upgrade or rearrangement of existing tooling or equipment
 - Production from tooling and equipment transferred to a different plant site or from an additional plant
 - Change of sub-tier supplier for parts, non-equivalent materials or services.
 - Product produced after tooling has been inactive for production for 12 months or more
 - Change to test/inspection method – new technique
 - For bulk material: new source of raw material from new or existing supplier or change in product appearance attributes

Changes listed above require a temporary deviation, an FAI or FAE approval from CommScope.

To eliminate the possibility of mixing “old and new” revision-level product, all suppliers will be required to purge their systems of the “old” product prior to shipping the new revision level. This purging can be in the form of: (1) scrap or (2) ship all old-level product before shipping new level product. Suppliers must notify CommScope in writing when the “old” material is exhausted and when the “new” level revision starts. The initial shipping schedule of the “new” product and disposition of “old” product will be coordinated through the CommScope purchasing team.

CONTROL OF NONCONFORMING PRODUCT

- A supplier shall not knowingly ship product that deviates from the drawing, specification limits, or design intent without prior written authorization from the CommScope buyer. If such a condition exists, the supplier may petition the CommScope buyer, in writing, to allow shipment of the product under a written nonconformance deviation. If requested by CommScope SMT, the supplier must send samples of such nonconforming items to CommScope for evaluation. The cost of shipping, inspection, and testing to determine the potential acceptability of such product will be charged to the supplier.
- In the event that non-conforming product or services reach CommScope or an end user of CommScope product, a Supplier Corrective Action Request (SCAR) may be issued to the supplier. The SCAR will contain a detailed description of the non-conformance and any applicable information needed for immediate containment. An SCAR reference number will also be provided. This number needs to be referenced on all future communications involving the indicated SCAR.

- Within 24 hours (the next working day) of receiving notification of an SCAR, the supplier shall contact the issuing party to acknowledge receipt of the SCAR and to communicate any containment actions taken, if required.
- The supplier is then required to use a structured problem solving approach, preferably in a team environment, to determine the root cause of the non-conformance and to implement a permanent corrective action. Any generally recognized corrective action process (PDCA, 8-D, 5-Why, etc.) is acceptable.
- The final resolution of an SCAR must be communicated to the responsible CommScope issuing party within 30 days of the initial receipt of the SCAR, or it will be considered a late response. Late responses can negatively impact the supplier's quality rating. Extensions may be requested and will be considered on a case-by-case basis.
- In all cases, the supplier shall fully contain all product suspected of being nonconforming. In addition, nonconforming product may be returned to the supplier at supplier expense, or the supplier may be required to sort any suspect product already shipped to CommScope sites or be charged back for the cost of sorting by CommScope. Any parts shipped to CommScope that have been approved for deviation shall be clearly identified as such externally on the box, container, or other packaging and on shipping documentation. Inside of each box shall contain a copy of the CommScope-approved deviation document.
- Request for Nonconformance Deviation
 - CommScope's goal is to utilize product that meets all product specifications, both specific and implied. However, in the event that non-conforming material is produced, the supplier can request a deviation to allow for the shipment of the known suspect or non-conforming material.
 - Supplier's name and address
 - Person requesting the deviation and their contact information
 - CommScope part number and material description
 - Description of non-conforming material involved
 - Root cause of non-conformance

Fax or email the information above to the appropriate quality representative along with any other supporting documentation (example - pictures).

The CommScope quality representative will internally route the request for the necessary review and approval.

The CommScope quality representative will send the approved/rejected request back to the supplier. If approved, the request will detail any special instructions for the handling, marking or shipment of the material. **Material received under an approved deviation will not affect a supplier's quality rating if the approval is received prior to the delivery of any material.**

- Control of Reworked Product
Rework is defined as additional operations that are not part of the basic production process flow which will bring product to full compliance with applicable drawings and specifications. Instructions for rework, including re-inspection requirements, shall be accessible to and utilized by the Suppliers appropriate personnel. All rework shall be documented and accepted by CommScope Quality.

PACKAGING, LABELING, DELIVERY & RECORD RETENTION

Preservation, packaging, labeling, and shipping methods must comply with common industry practices and CommScope requirements specified on the contract.

Preservation

In order to detect deterioration, the condition of product in stock should be assessed at appropriate planned intervals. The supplier should use an inventory management system to optimize inventory turns over time and should assure stock rotation, such as “first-in-first-out” (FIFO).

Packaging

The supplier must adequately plan for packaging designed to prevent product contamination, deterioration or loss and to eliminate shipping damage. Suppliers should provide expendable packaging or returnable containers, where appropriate, that provide for sufficient density and protection from any likely damage that may occur. Wood (pallets), expendable materials and packaging must meet local and national standards for safe disposal and/or recycling. Wood packaging material (pallets) used for importing and exporting purposes must meet local, national as well as the standards for the country in which it is being exported.

Labeling

Labeling and bar code requirements may vary among CommScope divisions. The CommScope procurement and packaging engineer will provide the supplier with the necessary specifications during the FAI process.

RECORD RETENTION

The supplier shall retain quality records for a time period specified by the CommScope contract or related reference documents. Upon request, the supplier shall be capable of retrieving and delivering required records to CommScope within 48 hours from time of request by CommScope.

SHIPPING DOCUMENTATION FOR DIRECT SHIP CONTRACT MANUFACTURERS

In some cases, contract manufacturers will not ship the products to a CommScope facility but will direct ship to the end customer. In these cases, the contract manufacturer will be required to provide specific information on the shipping documentation. CommScope must be listed as the shipping facility when issuing the bill of lading, packing list, pick list or any other shipping documents deemed necessary by the contract manufacturer, the final customer or CommScope. The contract manufacturers' name shall not appear on any of the shipping documents nor should any extraneous information; i.e., sales price or cost, be added to the documents without the express written consent of CommScope. When the purchase order (PO) is issued to the contract manufacturer, a second PO number will be listed in the "ship to" area of the document. This PO number should be referenced on all the shipping documents. Prior to releasing the first shipment to the customer, a CommScope representative (engineering or quality) must perform a first article inspection of these documents. Please contact your CommScope purchasing representative to schedule this inspection or to verify whether your company is a third-party direct ship vendor.

PROTECTION OF INTELLECTUAL PROPERTY (IP)

The supplier shall have an IP procedure that covers the following areas:

- IP protection program, including controlling and limiting access to internal and external IP information such as product designs, drawings, specifications, test requirements and/or other standards.
- Signed nondisclosure agreements with personnel having access to the IP, visitors to facilities, and any third-party sources that contribute to the manufacturing of the product for CommScope, including providing components parts or materials embodying the IP.
- Third-party IP standard which ensures that the supplier has authorization and/or license to use the tools, equipment and software that is directly or indirectly a factor during the manufacturing of product for CommScope or one of its subsidiaries.
- If providing packaging, labels or product inserts to CommScope, must have appropriate trademark and copyright license from CommScope. If packaging, labels or product inserts provided by third-party source, must receive written permission from CommScope to extend trademark and copyright license to third-party source.

Evidence of these requirements shall be provided upon request.

Note: in some cases, we may request that the production personnel not be knowledgeable regarding production trade secrets. Please discuss these limitations with the CommScope engineer assigned to your project.

PERFORMANCE MEASURES

QUALITY

This metric defines the Rejected Parts per Million (RPPM) shipped using the following formula. The definition of “rejected parts” is the total number of parts returned to the supplier for any valid quality reason (including those caused by shipping and administrative errors):

$$RPPM = \left(\frac{\text{Count of Parts Rejected}}{\text{Count of Parts Received}} \right) \times 1,000,000$$

DELIVERY

This metric defines the delivery performance rating using the following formula: “On time” is based on the first commit date, or *Kanban* signal

$$DELIVERY = \left(\frac{\text{Count of Parts Received On-Time}}{\text{Count of Parts Received}} \right) \times 100$$

Change Level	Date	Revisions
1 thru 10	—	(For revision history older than 11, archived document may be made available for reference only – pending VP, Supplier Quality approval)
11	02 May 2011	Section 7.2 – reverse of change 9.0 above – quality acceptance for all suppliers set at 99.85% • Remove reference to the CM organization – no longer a department
12	15 Dec 2011 • Rev 12	Section 3.0 – Changed ISO 9001:2000 to ISO 9001:2008 • Section 3 – Supplier Approval Process – removed previous info and replaced with process map as in CTV 74-005 • Section 5.0 – added copy of contact list form • Section 6.0 removed reference to Raw Material Specification Form Section 7.0 Supplier rating system – changed wording regarding the issuance of monthly reports • Section 8.0 – Documentation and Corrective action – changed response time from 20 days to 30 days • Section 9.0 – Deviations – added copy of deviation form • Section 12 – removed reference to Andrew and left CommScope only
13	06 Jan 2015 • Rev 13	Format change, additional information added for control of sub-tier suppliers. Significant content changes.