2015 North American
RF Matrix Switches for Satellite Communications
New Product Innovation Award
Contents

Background and Company Performance ...................................................................................................................... 2

Industry Challenges ......................................................................................................................................................... 2

New Product Attributes and Customer Impact of Quintech Electronics and Communications Inc. ........................................... 2

Conclusion ........................................................................................................................................................................ 4

Significance of New Product Innovation ...................................................................................................................... 5

Understanding New Product Innovation .................................................................................................................... 5

Key Benchmarking Criteria .......................................................................................................................................... 6

Best Practice Award Analysis for Quintech Electronics and Communications Inc. ......................................................... 6

Decision Support Scorecard ........................................................................................................................................... 6

New Product Attributes ................................................................................................................................................ 7

Customer Impact .......................................................................................................................................................... 7

Decision Support Matrix ............................................................................................................................................... 8

The Intersection between 360-Degree Research and Best Practices Awards ................................................................. 9

Research Methodology ................................................................................................................................................. 9


About Frost & Sullivan ..................................................................................................................................................11
Background and Company Performance

Industry Challenges

Radio frequency matrix switches, or RF matrix switches, are integrated electronic switching devices designed to route the radio frequency signal sent and received by earth station multiple input and output (I/O) points. These devices offer benefits such as reducing the number of electronic components to route multiple I/Os, providing more flexible communication, and enhancing signal integrity.

In larger communication applications such as central television broadcasting, governmental, and military communication earth station facilities, RF matrix systems can become quite large, requiring many kilometers of cable and consuming thousands of watts of power. Such requirements add significantly to the capital costs and operating expenses of RF matrix switches in large-scale communication network operations.

Quintech Electronics and Communications, Inc. based in Indiana, Pennsylvania, has designed its XTREME 256 Port L-Band RF matrix switch to serve large-scale communication networks using 90% less cabling and connectors, 80% less power, and a rack unit footprint that is 75% than that of competing legacy units.

New Product Attributes and Customer Impact of Quintech Electronics and Communications, Inc.

Match to Needs

Quintech Electronics and Communications designed and positioned its XTREME 256 Port L Band RF matrix switch to address customers’ desires for using less than the kilometers of expensive coaxial cabling and the thousands of watts of power that traditional RF matrix switch systems require.

Best practice example: The engineers at Quintech Electronics and Communications built a splitter/combiner technology into the XTREME 256 RF matrix switch that enables them to design systems measuring up to 256 x 256 configurable ports, without the need for external expansion modules. This design enables engineers to reduce significantly the number and length of cables and connections, power consumption, and rack unit footprint of the XTREME 256 RF matrix switch.

Reliability

All large ground segment antenna operators are acutely aware of customers who experience visual and/or audio service reception interruption. Quintech Electronics and Communications addressed this issue by making reliability a hallmark of its XTREME 256 Port RF matrix switch.

Best practice example: The design team equipped the XTREME 256 matrix switch with self-test diagnostics and tone generation. Such capabilities enable the XTREME 256
matrix switch to detect a fault, isolate it, and correct it seamlessly. In addition, Quintech Electronics and Communications has provided the RF matrix switch with redundant hot-swap control cards and an independent graphical user interface control system to ensure reliable performance and ease of use.

**Quality**

Quintech Electronics and Communications has provided the *XTREME 256 Port* RF matrix switch with a suite of features to provide broadcasters satellite and government teleport operators, using the technology with best-in-class quality of service and reliability. The features balance enhanced performance with ease of use.

Best practice example: Quintech Electronics and Communications designed an adjustable gain and attenuation function in the *XTREME 256* matrix switch, which enables the operator to set signal levels to achieve optimal performance. The RF matrix switch’s Q-ROUTE™ feature provides a redundant and dedicated internal signal path to maintain operation.

**Design**

Relying strongly on customer input, Quintech Electronics and Communications designed the *XTREME 256 Port* RF matrix switch to be agile and dexterous, even in ways that are not readily apparent to operators.

Best practice example: Understanding that RF matrix switches are usually installed in either large dark equipment enclosures or hubs and in remote locations, Quintech Electronics and Communications designed a Web browser interface into its *XTREME 256* matrix switch so an operator can remotely check the switch to determine if it is working properly and securely operate its control system.

**Customer Purchase Experience**

The Quintech Electronics and Communications design team crafted the *XTREME 256 Port* RF matrix switch to be scalable so customers are able to install a solution that is optimized to address their unique needs and serve their individual constraints.

Best practices example: By giving the *XTREME 256* matrix switch a compact and modular design, the device can provide 256 configurable ports in a 12U or 21 inch high rack unit space in both symmetric and industry exclusive (Patent Pending) asymmetric configurations (ie. 64x192 or 160x96) in a single chassis. The *XTREME 256* matrix switch can be expanded to 2048 x 2048 or configured to comprise as many as 248 outputs in that same 12 RU chassis for installations where space is at a premium.
Brand Equity

The **XTREME 256 Port** L-Band RF matrix switch will be able to leverage the high brand loyalty that other broadcast, cable, and satellite communication companies have exhibited towards other Quintech Electronics and Communications solutions.

Best practices example: Broadcast customers of Quintech Electronics and Communications' solutions include the major US commercial television networks ABC, CBS, NBC, and Fox. HFC cable network operators include Time Warner, Comcast and Charter and satellite communication companies such as ATT, DISH and Direct TV.

Conclusion

Commercial television broadcasters, government agencies and the armed forces want to leverage the advantages of RF matrix switches in their communication networks. However, costs associated with conventional switches have put a damper on their deployment. By providing industry-leading performance that is uniquely scalable, more energy-efficient with significantly reduced cabling needs, Quintech Electronics and Communications has earned the Frost & Sullivan North American New Product Innovation Award in RF matrix switches for the communications industry.
Significance of New Product Innovation

Ultimately, growth in any organization depends upon continually introducing new products to the market, and successfully commercializing those products. For these dual goals to occur, a company must be best-in-class in three key areas: understanding demand, nurturing the brand, differentiating from the competition. This three-fold approach to delivering New Product Innovation is explored further below.

Understanding New Product Innovation

Innovation is about finding a productive outlet for creativity—for translating ideas into high quality products that are of a consistently high quality and have a deep impact on the customer.
Key Benchmarking Criteria

For the New Product Innovation Award, we evaluated two key factors—New Product Attributes and Customer Impact—according to the criteria identified below.

**New Product Attributes**
- Criterion 1: Match to Needs
- Criterion 2: Reliability
- Criterion 3: Quality
- Criterion 4: Positioning
- Criterion 5: Design

**Customer Impact**
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

Best Practice Award Analysis for Quintech Electronics and Communications Inc.

**Decision Support Scorecard**

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation; ratings guidelines are illustrated below.

**RATINGS GUIDELINES**

The Decision Support Scorecard is organized by New Product Attributes and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.
The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key players in as Company2 and Company3.

DECISION SUPPORT SCORECARD FOR NEW PRODUCT INNOVATION AWARD (ILLUSTRATIVE)

<table>
<thead>
<tr>
<th>Measurement of 1–10 (1 = poor; 10 = excellent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Product Innovation</td>
</tr>
<tr>
<td>Quintech Electronics</td>
</tr>
<tr>
<td>Competitor2</td>
</tr>
<tr>
<td>Competitor3</td>
</tr>
</tbody>
</table>

New Product Attributes

Criterion 1: Match to Needs
Requirement: Customer needs directly influence and inspire the product’s design and positioning

Criterion 2: Reliability
Requirement: The product consistently meets or exceeds customer expectations for consistent performance during its entire life cycle

Criterion 3: Quality
Requirement: Product offers best-in-class quality, with a full complement of features and functionality

Criterion 4: Positioning
Requirement: The product serves a unique, unmet need that competitors cannot easily replicate

Criterion 5: Design
Requirement: The product features an innovative design, enhancing both visual appeal and ease of use

Customer Impact

Criterion 1: Price/Performance Value
Requirement: Products or services offer the best value for the price, compared to similar offerings in the market

Criterion 2: Customer Purchase Experience
Requirement: Customers feel like they are buying the most optimal solution that addresses both their unique needs and their unique constraints

Criterion 3: Customer Ownership Experience
Requirement: Customers are proud to own the company’s product or service, and have a positive experience throughout the life of the product or service
**Criterion 4: Customer Service Experience**
Requirement: Customer service is accessible, fast, stress-free, and of high quality

**Criterion 5: Brand Equity**
Requirement: Customers have a positive view of the brand and exhibit high brand loyalty

**Decision Support Matrix**
Once all companies have been evaluated according to the Decision Support Scorecard, analysts can then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.

DEcision SupportMatrix FOR NEW PRODUCT INNOVATION AWARD(ILLUSTRATIVE)
The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan’s 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often, companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry players and for identifying those performing at best-in-class levels.
**Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices**

Our awards team follows a 10-step process (illustrated below) to evaluate award candidates and assess their fit with our best practice criteria. The reputation and integrity of our awards process are based on close adherence to this process.

<table>
<thead>
<tr>
<th><strong>STEP</strong></th>
<th><strong>OBJECTIVE</strong></th>
<th><strong>KEY ACTIVITIES</strong></th>
<th><strong>OUTPUT</strong></th>
</tr>
</thead>
</table>
| 1        | Monitor, target, and screen | Identify award recipient candidates from around the globe | • Conduct in-depth industry research  
• Identify emerging sectors  
• Scan multiple geographies | Pipeline of candidates who potentially meet all best-practice criteria |
| 2        | Perform 360-degree research | Perform comprehensive, 360-degree research on all candidates in the pipeline | • Interview thought leaders and industry practitioners  
• Assess candidates’ fit with best-practice criteria  
• Rank all candidates | Matrix positioning all candidates’ performance relative to one another |
| 3        | Invite thought leadership in best practices | Perform in-depth examination of all candidates | • Confirm best-practice criteria  
• Examine eligibility of all candidates  
• Identify any information gaps | Detailed profiles of all ranked candidates |
| 4        | Initiate research director review | Conduct an unbiased evaluation of all candidate profiles | • Brainstorm ranking options  
• Invite multiple perspectives on candidates’ performance  
• Update candidate profiles | Final prioritization of all eligible candidates and companion best-practice positioning paper |
| 5        | Assemble panel of industry experts | Present findings to an expert panel of industry thought leaders | • Share findings  
• Strengthen cases for candidate eligibility  
• Prioritize candidates | Refined list of prioritized award candidates |
| 6        | Conduct global industry review | Build consensus on award candidates’ eligibility | • Hold global team meeting to review all candidates  
• Pressure-test fit with criteria  
• Confirm inclusion of all eligible candidates | Final list of eligible award candidates, representing success stories worldwide |
| 7        | Perform quality check | Develop official award consideration materials | • Perform final performance benchmarking activities  
• Write nominations  
• Perform quality review | High-quality, accurate, and creative presentation of nominees’ successes |
| 8        | Reconnect with panel of industry experts | Finalize the selection of the best-practice award recipient | • Review analysis with panel  
• Build consensus  
• Select winner | Decision on which company performs best against all best-practice criteria |
| 9        | Communicate recognition | Inform award recipient of award recognition | • Present award to the CEO  
• Inspire the organization for continued success  
• Celebrate the recipient’s performance | Announcement of award and plan for how recipient can use the award to enhance the brand |
| 10       | Take strategic action | Share award news with stakeholders and customers | • Coordinate media outreach  
• Design a marketing plan  
• Assess award’s role in future strategic planning | Widespread awareness of recipient’s award status among investors, media personnel, and employees |
About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best in class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages almost 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 31 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.