

Terahertz Technology Market by Type (Terahertz Imaging, Terahertz Spectroscopy, Terahertz Communication Systems), Application (Laboratory Research, Medical & Healthcare, Satellite Communication), and Geography (2022-2027)

<https://marketpublishers.com/r/T17D08BD8FEEN.html>

Date: May 2022

Pages: 237

Price: US\$ 4,950.00 (Single User License)

ID: T17D08BD8FEEN

Abstracts

The global terahertz technology market was valued at USD 0.6 billion in 2022 and is projected to reach USD 1.2 billion by 2027, registering a CAGR of 14.7% during the forecast period. The rise in demand for terahertz technology-based products is also attributed to stringent government regulations for public safety and homeland security, the rise in demand for terahertz technology in the medical sector, and the adoption of terahertz systems in the semiconductor industry.

Stringent government regulations for public safety and homeland security and a rise in demand for terahertz technology in the medical sector fuel the growth of the terahertz technology market. Likewise, the increasing demand for 6G communication is expected to create lucrative opportunities for the terahertz technology market.

“Terahertz Imaging: The fastest-growing segment of the terahertz technology market.”

The terahertz frequency range enables the detection of concealed weapons and other illegal explosives, even under clothing. Terahertz imaging is a scanning technique that uses extremely high-frequency waves to penetrate dense surfaces. They can pass through clothing, paper, cardboard, wood, masonry, plastics, and ceramics and penetrate fog and clouds. Their wavelength is shorter than microwaves and longer than infrared, which corresponds revealingly with biomolecular vibrations. These systems take images using transmission or reflection geometry. These factors are expected to propel the growth of the terahertz imaging in terahertz technology market.

“Satellite Communication: The highest growing application of terahertz communication system in terahertz technology market.”

Satellite communication application is expected to grow with the highest CAGR during the forecast period. Satellite communication plays a vital role in data transmission in the global telecommunication system. The key advantages of satellite communications are that wireless and mobile communication applications can be effortlessly established irrespective of the location, covers a wide geographical area of the earth with just one satellite, and enables point to multipoint communication. The high-frequency radio waves and microwaves used for satellite communications travel by line of sight and are expected to be obstructed by the earth's curve. Terahertz frequency offers greater communications bandwidth than radio waves and microwave frequencies. With the explosion of wireless data rates, the terahertz band (0.1–10 THz) is seen as a key to breaking the existing bandwidth blockage and satisfying the ever-increasing capacity demand. Terahertz band (0.1–10 THz) wireless communications enable high data rates on the order of Terabits per second. The use of terahertz technology facilitates larger bandwidth and, therefore, a higher transmission rate compared with microwave communications. Hence, satellite communications surge the demand for terahertz communications systems during the forecast period.

“North America: The largest region in the terahertz technology market in 2021.”

North America held the largest share of ~49% of the terahertz technology market in 2021, and a similar trend is expected to be observed during the forecast period. The growth of the terahertz technology market in North America is attributed to the factors such as the growing number of homeland security issues and investments in defense and terahertz communication systems. North America has a huge demand for terahertz technology-based products for industrial applications, such as paints and coatings defect identification, structure analysis of ceramics and composites, semiconductor and electronics wafer thickness measurement, electronic circuit inspection, and food quality inspection, in the US and Canada. The department of homeland security (DHS) and transportation security administration (TSA) have adopted terahertz technology for security screening of people at airports or big events.

Breakdown of primaries

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

Terahertz Technology Market by Type (Terahertz Imaging, Terahertz Spectroscopy, Terahertz Communication System...

By Company Type— Tier 1- 45%, Tier 2- 30% Tier 3 - 25%

By Designation— C level - 35%, Managers - 30%, Other Level - 35%

By Region— North America - 35%, Asia Pacific - 30%, Europe - 25%, RoW - 10%,

The terahertz technology market is dominated by a few globally established players such as ADVANTEST CORPORATION (Japan), Luna Innovations (US), TeraView Limited. (UK), TOPTICA Photonics AG (Germany), H?BNER GmbH & Co. KG (Germany).

The study includes an in-depth competitive analysis of these key players in the terahertz technology market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the terahertz technology market and forecasts its size, by volume and value, based on region (Asia Pacific, Europe, North America, and RoW), by type (Terahertz Imaging, Terahertz Spectroscopy, Terahertz Communication Systems), application (Laboratory Research, Medical & Healthcare, Medical & Healthcare, Military & Homeland Security, Industrial Non-destructive Testing (NDT), Satellite Communications, Tactical/Military Communications, and Outdoor/Indoor Wireless Communications).

The report also provides a comprehensive review of market drivers, restraints, opportunities, and challenges in the terahertz technology market. The report also covers qualitative aspects in addition to the quantitative aspects of these markets.

Key Benefits of Buying the Report:

The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. This report will help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the pulse of the terahertz technology market and provides them information on key market drivers, restraints,

challenges, and opportunities.

Contents

1 INTRODUCTION

1.1 STUDY OBJECTIVES

1.2 MARKET DEFINITION AND SCOPE

1.2.1 INCLUSIONS AND EXCLUSIONS

1.3 SCOPE

1.3.1 MARKETS COVERED

FIGURE 1 TERAHERTZ TECHNOLOGY MARKET SEGMENTATION

1.3.2 GEOGRAPHIC SCOPE

1.3.3 YEARS CONSIDERED

1.4 CURRENCY

1.5 STAKEHOLDERS

1.6 SUMMARY OF CHANGES

2 RESEARCH METHODOLOGY

2.1 RESEARCH DATA

FIGURE 2 TERAHERTZ TECHNOLOGY MARKET: RESEARCH DESIGN

2.1.1 SECONDARY DATA

2.1.1.1 List of key secondary sources

2.1.1.2 Secondary sources

2.1.2 PRIMARY DATA

2.1.2.1 Breakdown of primaries

2.1.2.2 Key data from primary sources

2.1.2.3 Key industry insights

2.2 FACTOR ANALYSIS

FIGURE 3 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 1 – TOP-DOWN (SUPPLY SIDE): REVENUES GENERATED BY COMPANIES FROM SALES OF TERAHERTZ TECHNOLOGY

FIGURE 4 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 2 – TOP-DOWN (SUPPLY SIDE): ILLUSTRATION OF REVENUE ESTIMATIONS FOR ONE COMPANY IN TERAHERTZ TECHNOLOGY MARKET

FIGURE 5 MARKET SIZE ESTIMATION METHODOLOGY: APPROACH 3 – BOTTOM-UP (DEMAND SIDE): DEMAND FOR TERAHERTZ TECHNOLOGY IN DIFFERENT REGIONS

2.3 MARKET SIZE ESTIMATION

2.3.1 BOTTOM-UP APPROACH

2.3.1.1 Approach for obtaining market share using bottom-up analysis (demand side)
FIGURE 6 MARKET SIZE ESTIMATION METHODOLOGY: BOTTOM-UP APPROACH

2.3.2 TOP-DOWN APPROACH

2.3.2.1 Approach for obtaining market share using top-down analysis
(supply side)

FIGURE 7 MARKET SIZE ESTIMATION METHODOLOGY: TOP-DOWN APPROACH

2.4 MARKET BREAKDOWN AND DATA TRIANGULATION

FIGURE 8 DATA TRIANGULATION

2.5 RESEARCH ASSUMPTIONS AND LIMITATIONS

2.5.1 ASSUMPTIONS

2.5.2 LIMITATIONS

2.6 RISK ASSESSMENT

3 EXECUTIVE SUMMARY

3.1 REALISTIC SCENARIO

3.2 OPTIMISTIC SCENARIO

3.3 PESSIMISTIC SCENARIO

FIGURE 9 GROWTH PROJECTIONS OF TERAHERTZ TECHNOLOGY MARKET IN REALISTIC, OPTIMISTIC, AND PESSIMISTIC SCENARIOS

FIGURE 10 TERAHERTZ IMAGING SEGMENT TO HOLD LARGEST SHARE OF TERAHERTZ TECHNOLOGY MARKET BY 2027

FIGURE 11 SATELLITE COMMUNICATIONS APPLICATION TO WITNESS LARGEST SHARE OF TERAHERTZ TECHNOLOGY MARKET FOR TERAHERTZ COMMUNICATION SYSTEMS DURING FORECAST PERIOD

FIGURE 12 LABORATORY RESEARCH SEGMENT OF TERAHERTZ IMAGING AND SPECTROSCOPY APPLICATIONS EXPECTED TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD

FIGURE 13 NORTH AMERICA TO LEAD TERAHERTZ TECHNOLOGY MARKET FROM 2022 TO 2027

4 PREMIUM INSIGHTS

4.1 ATTRACTIVE GROWTH OPPORTUNITIES IN TERAHERTZ TECHNOLOGY MARKET

FIGURE 14 GROWING ADOPTION OF TERAHERTZ SYSTEMS IN SEMICONDUCTOR INDUSTRY TO FUEL GROWTH OF TERAHERTZ TECHNOLOGY MARKET DURING FORECAST PERIOD

4.2 TERAHERTZ TECHNOLOGY MARKET, BY TYPE

FIGURE 15 TERAHERTZ IMAGING SEGMENT TO HOLD LARGEST SHARE OF TERAHERTZ TECHNOLOGY MARKET FROM 2022 TO 2027

4.3 TERAHERTZ TECHNOLOGY MARKET, BY TERAHERTZ COMMUNICATION SYSTEMS

FIGURE 16 SATELLITE COMMUNICATIONS TO WITNESS LARGEST SHARE OF TERAHERTZ TECHNOLOGY MARKET FOR TERAHERTZ COMMUNICATIONS SYSTEMS BY 2022

4.4 TERAHERTZ TECHNOLOGY MARKET, BY REGION

FIGURE 17 NORTH AMERICA TO HOLD LARGEST SHARE OF TERAHERTZ TECHNOLOGY MARKET IN 2027

4.5 TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY

FIGURE 18 INDIA TO RECORD HIGHEST CAGR IN OVERALL TERAHERTZ TECHNOLOGY MARKET DURING FORECAST PERIOD

5 MARKET OVERVIEW

5.1 INTRODUCTION

5.2 MARKET DYNAMICS

FIGURE 19 TERAHERTZ TECHNOLOGY MARKET: DRIVERS, RESTRAINTS, OPPORTUNITIES, AND CHALLENGES

5.2.1 DRIVERS

5.2.1.1 Stringent government regulations for public safety and homeland security

5.2.1.2 Rising demand for terahertz technology in medical sector

5.2.1.3 Growing adoption of terahertz systems in semiconductor industry

FIGURE 20 SEMICONDUCTOR INDUSTRY GROWTH, 2017–2022

FIGURE 21 TERAHERTZ TECHNOLOGY MARKET DRIVERS AND THEIR IMPACT

5.2.2 RESTRAINTS

5.2.2.1 Unavailability of skilled personnel

FIGURE 22 TERAHERTZ TECHNOLOGY MARKET RESTRAINTS AND THEIR IMPACT

5.2.3 OPPORTUNITIES

5.2.3.1 Increasing demand for 6G communication

5.2.3.2 Technological advancements in NDT and inspection techniques

FIGURE 23 TERAHERTZ TECHNOLOGY MARKET OPPORTUNITIES AND THEIR IMPACT

5.2.4 CHALLENGES

5.2.4.1 Limited manufacturing activities and supply chain disruptions caused by

COVID-19

5.2.4.2 Reluctance to adopt new and high-cost terahertz technology

FIGURE 24 TERAHERTZ TECHNOLOGY MARKET CHALLENGES AND THEIR IMPACT

5.3 SUPPLY CHAIN ANALYSIS

FIGURE 25 SUPPLY CHAIN OF TERAHERTZ TECHNOLOGY MARKET

5.4 TRENDS/DISRUPTIONS IMPACTING BUSINESSES OF MARKET PLAYERS AND RAW MATERIAL SUPPLIERS

5.4.1 REVENUE SHIFT AND NEW REVENUE POCKETS FOR PLAYERS IN TERAHERTZ TECHNOLOGY MARKET

FIGURE 26 REVENUE SHIFT IN TERAHERTZ TECHNOLOGY MARKET

5.5 TERAHERTZ TECHNOLOGY ECOSYSTEM

FIGURE 27 ECOSYSTEM OF TERAHERTZ TECHNOLOGY

TABLE 1 LIST OF TERAHERTZ TECHNOLOGY MANUFACTURERS AND SUPPLIERS

5.6 TECHNOLOGY ANALYSIS

5.6.1 COMPLEMENTARY TECHNOLOGY

5.6.1.1 Infrared technology

5.6.1.2 Cooled IR imaging

5.6.1.3 Uncooled IR imaging

5.7 PORTER'S FIVE FORCES ANALYSIS

TABLE 2 TERAHERTZ TECHNOLOGY MARKET: PORTER'S FIVE FORCES ANALYSIS

FIGURE 28 PORTER'S FIVE FORCES ANALYSIS

5.7.1 THREAT OF NEW ENTRANTS

5.7.2 THREAT OF SUBSTITUTES

5.7.3 BARGAINING POWER OF SUPPLIERS

5.7.4 BARGAINING POWER OF BUYERS

5.7.5 INTENSITY OF COMPETITIVE RIVALRY

5.8 KEY STAKEHOLDERS & BUYING CRITERIA

5.8.1 KEY STAKEHOLDERS IN BUYING PROCESS

FIGURE 29 INFLUENCE OF STAKEHOLDERS IN BUYING PROCESS FOR TOP THREE APPLICATIONS

TABLE 3 INFLUENCE OF STAKEHOLDERS ON BUYING PROCESS FOR TOP THREE APPLICATIONS (%)

5.8.2 BUYING CRITERIA

FIGURE 30 KEY BUYING CRITERIA FOR TOP 3 APPLICATIONS

TABLE 4 KEY BUYING CRITERIA FOR TOP 3 APPLICATIONS

5.9 CASE STUDY

5.9.1 SCALING UP NEW MAIL SECURITY PROGRAM

5.9.2 QUANTITATIVE ANALYSIS OF WATER CONTENT AND DISTRIBUTION IN PLANTS USING TERAHERTZ IMAGING.

5.9.3 HIGH-RESOLUTION, REAL-TIME TERAHERTZ IMAGING WITH TERACASCADE 1000

5.10 AVERAGE SELLING PRICE ANALYSIS

5.10.1 AVERAGE SELLING PRICES OF KEY PLAYERS FOR TERAHERTZ TECHNOLOGY, BY TYPE

TABLE 5 AVERAGE SELLING PRICES OF KEY PLAYERS FOR TERAHERTZ TECHNOLOGY, BY TYPE (USD)

5.10.2 AVERAGE SELLING PRICE TREND

TABLE 6 AVERAGE SELLING PRICES OF TERAHERTZ TECHNOLOGY, BY TYPE (USD)

FIGURE 31 AVERAGE PRICE: TERAHERTZ TECHNOLOGY MARKET, BY TYPE

5.11 TRADE ANALYSIS

5.11.1 IMPORT SCENARIO

TABLE 7 IMPORT DATA, BY COUNTRY, 2017–2021 (USD MILLION)

5.11.2 EXPORT SCENARIO

TABLE 8 EXPORT DATA, BY COUNTRY, 2017–2021 (USD MILLION)

5.12 PATENT ANALYSIS, 2012–2022

FIGURE 32 NUMBER OF PATENTS GRANTED FOR TERAHERTZ TECHNOLOGY MARKET, 2012–2021

FIGURE 33 REGIONAL ANALYSIS OF PATENTS GRANTED FOR TERAHERTZ TECHNOLOGY MARKET, 2021

TABLE 9 LIST OF FEW PATENTS IN TERAHERTZ TECHNOLOGY MARKET, 2020–2021

5.13 KEY CONFERENCES & EVENTS, 2022–2023

TABLE 10 TERAHERTZ TECHNOLOGY MARKET: DETAILED LIST OF CONFERENCES & EVENTS

5.14 TARIFFS AND REGULATIONS

TABLE 11 CODES AND STANDARDS RELATED TO TERAHERTZ TECHNOLOGY

6 TERAHERTZ TECHNOLOGY MARKET, BY TYPE

6.1 INTRODUCTION

FIGURE 34 TERAHERTZ TECHNOLOGY MARKET, BY TYPE

FIGURE 35 TERAHERTZ COMMUNICATION SYSTEMS TO RECORD HIGHEST CAGR IN TERAHERTZ TECHNOLOGY MARKET DURING FORECAST PERIOD

TABLE 12 TERAHERTZ TECHNOLOGY MARKET, 2018–2021

TABLE 13 TERAHERTZ TECHNOLOGY MARKET, 2022–2027

TABLE 14 TERAHERTZ TECHNOLOGY MARKET, BY TYPE, 2018–2021 (USD MILLION)

TABLE 15 TERAHERTZ TECHNOLOGY MARKET, BY TYPE, 2022–2027 (USD MILLION)

6.2 TERAHERTZ IMAGING

6.2.1 TERAHERTZ IMAGING USES EXTREMELY HIGH-FREQUENCY WAVES TO PENETRATE DENSE SURFACES

6.2.1.1 Active terahertz imaging systems

6.2.1.2 Passive terahertz imaging systems

6.3 TERAHERTZ SPECTROSCOPY

6.3.1 TERAHERTZ SPECTROSCOPY IS NON-DESTRUCTIVE, NON-CONTACT, AND NON-INVASIVE TECHNOLOGY

6.3.1.1 Terahertz time-domain spectroscopy

6.3.1.2 Terahertz frequency-domain spectroscopy

6.4 TERAHERTZ COMMUNICATION SYSTEMS

6.4.1 TERAHERTZ COMMUNICATION IS ENVISIONED AS KEY WIRELESS TECHNOLOGY

6.4.1.1 Antennas

6.4.1.2 Emitters

6.4.1.3 Modulators

7 TERAHERTZ TECHNOLOGY, BY APPLICATION

7.1 INTRODUCTION

FIGURE 36 TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION

7.2 TERAHERTZ IMAGING & SPECTROSCOPY APPLICATIONS

FIGURE 37 LABORATORY RESEARCH TO WITNESS HIGHEST CAGR IN TERAHERTZ TECHNOLOGY IMAGING AND SPECTROSCOPY MARKET DURING FORECAST PERIOD

TABLE 16 TERAHERTZ TECHNOLOGY IMAGING AND SPECTROSCOPY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 17 TERAHERTZ TECHNOLOGY IMAGING AND SPECTROSCOPY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

7.2.1 LABORATORY RESEARCH

7.2.1.1 Terahertz technology is useful in experiments conducted for variety of purposes

7.2.1.2 Material characterization

7.2.1.3 Biochemistry

7.2.1.4 Plasma diagnostics

TABLE 18 LABORATORY RESEARCH: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 19 LABORATORY RESEARCH: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 20 LABORATORY RESEARCH IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 21 LABORATORY RESEARCH IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 22 LABORATORY RESEARCH IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 23 LABORATORY RESEARCH IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 24 LABORATORY RESEARCH IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 25 LABORATORY RESEARCH IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 26 LABORATORY RESEARCH IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 27 LABORATORY RESEARCH IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

7.2.2 MEDICAL & HEALTHCARE

7.2.2.1 Unique features make terahertz imaging attractive for medical applications

7.2.2.2 Oncology

7.2.2.3 Dentistry

7.2.2.4 Dermatology

7.2.2.5 Tomography

TABLE 28 MEDICAL & HEALTHCARE: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 29 MEDICAL & HEALTHCARE: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 30 MEDICAL & HEALTHCARE APPLICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 31 MEDICAL & HEALTHCARE APPLICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 32 MEDICAL & HEALTHCARE APPLICATIONS IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 33 MEDICAL & HEALTHCARE APPLICATIONS IN EUROPE: TERAHERTZ

TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 34 MEDICAL & HEALTHCARE APPLICATIONS IN ASIA PACIFIC:

TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 35 MEDICAL & HEALTHCARE APPLICATIONS IN ASIA PACIFIC:

TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 36 MEDICAL & HEALTHCARE APPLICATIONS IN ROW: TERAHERTZ

TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 37 MEDICAL & HEALTHCARE APPLICATIONS IN ROW: TERAHERTZ

TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

7.2.3 MILITARY & HOMELAND SECURITY

7.2.3.1 Terahertz waves find applications in airport passenger and baggage screening

7.2.3.2 Passenger screening

7.2.3.3 Landmine and improvised explosive device detection

TABLE 38 MILITARY & HOMELAND SECURITY: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 39 MILITARY & HOMELAND SECURITY: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 40 MILITARY & HOMELAND SECURITY IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 41 MILITARY & HOMELAND SECURITY IN NORTH AMERICA: TERAHERTZ TECHNOLOGY, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 42 MILITARY & HOMELAND SECURITY IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 43 MILITARY & HOMELAND SECURITY IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 44 MILITARY & HOMELAND SECURITY IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 45 MILITARY & HOMELAND SECURITY IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 46 MILITARY & HOMELAND SECURITY IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 47 MILITARY & HOMELAND SECURITY IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

7.2.4 INDUSTRIAL NON-DESTRUCTIVE TESTING (NDT)

7.2.4.1 Imaging and spectroscopic capabilities of terahertz technology make it suitable for investigating material integrity

7.2.4.2 Aerospace

7.2.4.3 Semiconductor and electronics

7.2.4.4 Pharmaceuticals

TABLE 48 INDUSTRIAL NDT: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 49 INDUSTRIAL NDT: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 50 INDUSTRIAL NDT IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 51 INDUSTRIAL NDT IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 52 INDUSTRIAL NDT IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 53 INDUSTRIAL NDT IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 54 INDUSTRIAL NDT IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 55 INDUSTRIAL NDT IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 56 INDUSTRIAL NDT IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 57 INDUSTRIAL NDT IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

7.3 TERAHERTZ COMMUNICATION SYSTEM APPLICATIONS

FIGURE 38 SATELLITE COMMUNICATIONS TO WITNESS HIGHEST CAGR IN TERAHERTZ TECHNOLOGY MARKET DURING FORECAST PERIOD

TABLE 58 TERAHERTZ TECHNOLOGY COMMUNICATION SYSTEMS MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 59 TERAHERTZ TECHNOLOGY COMMUNICATION SYSTEMS MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

7.3.1 SATELLITE COMMUNICATIONS

7.3.1.1 Use of terahertz technology facilitates users with larger bandwidth

TABLE 60 SATELLITE COMMUNICATIONS: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 61 SATELLITE COMMUNICATIONS: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 62 SATELLITE COMMUNICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 63 SATELLITE COMMUNICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 64 SATELLITE COMMUNICATIONS IN EUROPE: TERAHERTZ

TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 65 SATELLITE COMMUNICATIONS IN EUROPE: TERAHERTZ

TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 66 SATELLITE COMMUNICATIONS IN ASIA PACIFIC: TERAHERTZ

TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 67 SATELLITE COMMUNICATIONS IN ASIA PACIFIC: TERAHERTZ

TECHNOLOGY, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 68 SATELLITE COMMUNICATIONS IN ROW: TERAHERTZ TECHNOLOGY

MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 69 SATELLITE COMMUNICATIONS IN ROW: TERAHERTZ TECHNOLOGY

MARKET, BY REGION, 2022–2027 (USD MILLION)

7.3.2 TACTICAL/MILITARY COMMUNICATIONS

7.3.2.1 Terahertz properties such as high frequency and short wavelength are suitable for military communication applications

TABLE 70 TACTICAL/MILITARY COMMUNICATIONS: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 71 TACTICAL/MILITARY COMMUNICATIONS: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 72 TACTICAL/MILITARY COMMUNICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 73 TACTICAL/MILITARY COMMUNICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 74 TACTICAL/MILITARY COMMUNICATIONS IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 75 TACTICAL/MILITARY COMMUNICATIONS IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 76 TACTICAL/MILITARY COMMUNICATIONS IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 77 TACTICAL/MILITARY COMMUNICATIONS IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 78 TACTICAL/MILITARY COMMUNICATIONS IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 79 TACTICAL/MILITARY COMMUNICATIONS IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

7.3.3 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS

7.3.3.1 Terahertz waves can be used for short-distance outdoor/indoor wireless communication applications

TABLE 80 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 81 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

TABLE 82 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 83 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 84 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 85 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 86 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 87 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

TABLE 88 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 89 OUTDOOR/INDOOR WIRELESS COMMUNICATIONS IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

8 TERAHERTZ TECHNOLOGY: SOURCES AND DETECTORS

8.1 INTRODUCTION

8.2 THZ SOURCES

8.2.1 QUANTUM-CASCADE LASER (QCL)

FIGURE 39 STATE TRANSITION OF ELECTRON IN CONVENTIONAL SEMICONDUCTOR LASERS

FIGURE 40 QUANTUM-CASCADE ELECTRON TRANSITION STRUCTURE

8.2.2 FREQUENCY MULTIPLIER

8.2.3 GLOBAR

8.2.4 PHOTOCONDUCTIVE ANTENNA (PCA)

FIGURE 41 WORKING PRINCIPLE OF PHOTOCONDUCTIVE ANTENNA (PCA)

8.2.5 STIMULATED TERAHERTZ AMPLIFIED RADIATION (STAR)

8.3 DETECTORS

8.3.1 SCHOTTKY DIODE

8.3.2 HIGH ELECTRON MOBILITY TRANSISTOR (HEMT)

8.3.3 NANOWIRE

8.3.4 PYROELECTRIC DETECTOR

8.3.5 GOLAY CELL

FIGURE 42 GOLAY CELL CONSTRUCTION

8.3.6 BOLOMETER AND SUPERCONDUCTIVE HOT-SPOT AIR-BRIDGE
BOLOMETER (SHAB)

9 GEOGRAPHIC ANALYSIS

9.1 INTRODUCTION

FIGURE 43 REGIONAL SPLIT OF TERAHERTZ TECHNOLOGY MARKET

FIGURE 44 ASIA PACIFIC TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD

TABLE 90 TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 91 TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

9.2 NORTH AMERICA

FIGURE 45 NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET SNAPSHOT

TABLE 92 NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 93 NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

FIGURE 46 LABORATORY RESEARCH TO LEAD TERAHERTZ TECHNOLOGY MARKET FOR IMAGING AND SPECTROSCOPY IN NORTH AMERICA DURING FORECAST PERIOD

TABLE 94 IMAGING AND SPECTROSCOPY IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 95 IMAGING AND SPECTROSCOPY IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 96 COMMUNICATION SYSTEMS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 97 COMMUNICATION SYSTEMS IN NORTH AMERICA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.2.1 US

9.2.1.1 US is home to many global terahertz technology manufacturers

TABLE 98 IMAGING AND SPECTROSCOPY IN US: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 99 IMAGING AND SPECTROSCOPY IN US: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 100 COMMUNICATION SYSTEMS IN US: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 101 COMMUNICATION SYSTEMS IN US: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.2.2 CANADA

9.2.2.1 Provides higher contrast in clinical diagnostics

TABLE 102 IMAGING AND SPECTROSCOPY IN CANADA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 103 IMAGING AND SPECTROSCOPY IN CANADA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 104 COMMUNICATION SYSTEMS IN CANADA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 105 COMMUNICATION SYSTEMS IN CANADA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.2.3 MEXICO

9.2.3.1 Terahertz technology can be used for excavation and restoration purposes

TABLE 106 IMAGING AND SPECTROSCOPY IN MEXICO: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 107 IMAGING AND SPECTROSCOPY IN MEXICO: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 108 COMMUNICATION SYSTEMS IN MEXICO: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 109 COMMUNICATION SYSTEMS IN MEXICO: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3 EUROPE

FIGURE 47 EUROPE: TERAHERTZ TECHNOLOGY MARKET SNAPSHOT

TABLE 110 EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 111 EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

FIGURE 48 LABORATORY RESEARCH TO LEAD TERAHERTZ TECHNOLOGY MARKET IN EUROPE DURING FORECAST PERIOD

TABLE 112 IMAGING AND SPECTROSCOPY IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 113 IMAGING AND SPECTROSCOPY IN EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 114 COMMUNICATION SYSTEMS IN EUROPE: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 115 COMMUNICATION SYSTEMS IN EUROPE: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3.1 UK

9.3.1.1 Terahertz technology market in UK propelled by adoption of organic and inorganic growth strategies

TABLE 116 IMAGING AND SPECTROSCOPY IN UK: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 117 IMAGING AND SPECTROSCOPY IN UK: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 118 COMMUNICATION SYSTEMS IN UK: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 119 COMMUNICATION SYSTEMS IN UK: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3.2 GERMANY

9.3.2.1 Germany holds largest share of terahertz technology market in Europe

TABLE 120 IMAGING AND SPECTROSCOPY IN GERMANY: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 121 IMAGING AND SPECTROSCOPY IN GERMANY: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 122 COMMUNICATION SYSTEMS IN GERMANY: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 123 COMMUNICATION SYSTEMS IN GERMANY: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3.3 FRANCE

9.3.3.1 France employs terahertz technology for detecting hidden objects

TABLE 124 IMAGING AND SPECTROSCOPY IN FRANCE: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 125 IMAGING AND SPECTROSCOPY IN FRANCE: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 126 COMMUNICATION SYSTEMS IN FRANCE: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 127 COMMUNICATION SYSTEMS IN FRANCE: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3.4 ITALY

9.3.4.1 Consumer applications of terahertz technology-based products began with industrial growth

TABLE 128 IMAGING AND SPECTROSCOPY IN ITALY: TERAHERTZ TECHNOLOGY

MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 129 IMAGING AND SPECTROSCOPY IN ITALY: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 130 COMMUNICATION SYSTEMS IN ITALY: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 131 COMMUNICATION SYSTEMS IN ITALY: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3.5 SPAIN

9.3.5.1 Researchers at universities are working toward adoption of terahertz technology

TABLE 132 IMAGING AND SPECTROSCOPY IN SPAIN: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 133 IMAGING AND SPECTROSCOPY IN SPAIN: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 134 COMMUNICATION SYSTEMS IN SPAIN: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 135 COMMUNICATION SYSTEMS IN SPAIN: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.3.6 REST OF EUROPE

9.3.6.1 Growth in medical and healthcare applications to propel terahertz technology market

TABLE 136 IMAGING AND SPECTROSCOPY IN REST OF EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 137 IMAGING AND SPECTROSCOPY IN REST OF EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 138 COMMUNICATION SYSTEMS IN REST OF EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 139 COMMUNICATION SYSTEMS IN REST OF EUROPE: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.4 ASIA PACIFIC

FIGURE 49 ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET SNAPSHOT

TABLE 140 ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2018–2021 (USD MILLION)

TABLE 141 ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY COUNTRY, 2022–2027 (USD MILLION)

FIGURE 50 LABORATORY RESEARCH TO LEAD TERAHERTZ TECHNOLOGY MARKET IN

ASIA PACIFIC DURING FORECAST PERIOD

TABLE 142 IMAGING AND SPECTROSCOPY IN ASIA PACIFIC: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 143 IMAGING AND SPECTROSCOPY IN ASIA PACIFIC: TERAHERTZ

TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)
TABLE 144 COMMUNICATION SYSTEMS IN ASIA PACIFIC: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 145 COMMUNICATION SYSTEMS IN ASIA PACIFIC: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.4.1 JAPAN

9.4.1.1 Introduction of game-changing devices and technologies in field of terahertz technology driving market

TABLE 146 IMAGING AND SPECTROSCOPY IN JAPAN: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 147 IMAGING AND SPECTROSCOPY IN JAPAN: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)
TABLE 148 COMMUNICATION SYSTEMS IN JAPAN: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 149 COMMUNICATION SYSTEMS IN JAPAN: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.4.2 CHINA

9.4.2.1 Growing adoption of terahertz technology in semiconductor industry
TABLE 150 IMAGING AND SPECTROSCOPY IN CHINA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 151 IMAGING AND SPECTROSCOPY IN CHINA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)
TABLE 152 COMMUNICATION SYSTEMS IN CHINA: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 153 COMMUNICATION SYSTEMS IN CHINA: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.4.3 INDIA

9.4.3.1 Several startups are developing terahertz technology-based products in India
TABLE 154 IMAGING AND SPECTROSCOPY IN INDIA: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 155 IMAGING AND SPECTROSCOPY IN INDIA: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2022–2027 (USD MILLION)
TABLE 156 COMMUNICATION SYSTEMS IN INDIA: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2018–2021 (USD MILLION)
TABLE 157 COMMUNICATION SYSTEMS IN INDIA: TERAHERTZ TECHNOLOGY
MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.4.4 SOUTH KOREA

9.4.4.1 South Korea presents huge opportunities for terahertz technology market

TABLE 158 IMAGING AND SPECTROSCOPY IN SOUTH KOREA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 159 IMAGING AND SPECTROSCOPY IN SOUTH KOREA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 160 COMMUNICATION SYSTEMS IN SOUTH KOREA, TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 161 COMMUNICATION SYSTEMS IN SOUTH KOREA: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.4.5 REST OF ASIA PACIFIC

TABLE 162 IMAGING AND SPECTROSCOPY IN REST OF ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 163 IMAGING AND SPECTROSCOPY IN REST OF ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 164 COMMUNICATION SYSTEMS IN REST OF ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 165 COMMUNICATION SYSTEMS IN REST OF ASIA PACIFIC: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.5 REST OF THE WORLD (ROW)

TABLE 166 ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2018–2021 (USD MILLION)

TABLE 167 ROW: TERAHERTZ TECHNOLOGY MARKET, BY REGION, 2022–2027 (USD MILLION)

FIGURE 51 LABORATORY RESEARCH TO LEAD TERAHERTZ TECHNOLOGY MARKET IN

ROW DURING FORECAST PERIOD

TABLE 168 IMAGING AND SPECTROSCOPY IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 169 IMAGING AND SPECTROSCOPY IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 170 COMMUNICATION SYSTEMS IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 171 COMMUNICATION SYSTEMS IN ROW: TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.5.1 MIDDLE EAST & AFRICA (MEA)

9.5.1.1 R&D activities have proven to be a boon for Middle East & Africa
TABLE 172 IMAGING AND SPECTROSCOPY IN MIDDLE EAST & AFRICA:
TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD
MILLION)

TABLE 173 IMAGING AND SPECTROSCOPY IN MIDDLE EAST & AFRICA:
TERAHERTZ TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD
MILLION)

TABLE 174 COMMUNICATION SYSTEMS IN MIDDLE EAST & AFRICA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 175 COMMUNICATION SYSTEMS IN MIDDLE EAST & AFRICA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.5.2 SOUTH AMERICA

9.5.2.1 Terahertz technology market in South America is growing slowly
TABLE 176 IMAGING AND SPECTROSCOPY IN SOUTH AMERICA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 177 IMAGING AND SPECTROSCOPY IN SOUTH AMERICA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

TABLE 178 COMMUNICATION SYSTEMS IN SOUTH AMERICA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2018–2021 (USD MILLION)

TABLE 179 COMMUNICATION SYSTEMS IN SOUTH AMERICA: TERAHERTZ
TECHNOLOGY MARKET, BY APPLICATION, 2022–2027 (USD MILLION)

9.6 COVID-19 IMPACT ON TERAHERTZ TECHNOLOGY MARKET IN VARIOUS REGIONS

9.6.1 MOST IMPACTED REGION: NORTH AMERICA
FIGURE 52 PRE- AND POST-COVID SCENARIO OF TERAHERTZ TECHNOLOGY
MARKET IN NORTH AMERICA

9.6.2 LEAST IMPACTED REGION: ASIA PACIFIC
FIGURE 53 PRE- AND POST-COVID SCENARIO OF TERAHERTZ TECHNOLOGY
MARKET IN ASIA PACIFIC

10 COMPETITIVE LANDSCAPE

10.1 OVERVIEW

10.2 MARKET EVALUATION FRAMEWORK

TABLE 180 OVERVIEW OF STRATEGIES DEPLOYED BY KEY TERAHERTZ
TECHNOLOGY MANUFACTURING COMPANIES

10.2.1 PRODUCT PORTFOLIO

10.2.2 REGIONAL FOCUS

10.2.3 MANUFACTURING FOOTPRINT

- 10.2.4 ORGANIC/INORGANIC STRATEGIES
- 10.3 MARKET SHARE ANALYSIS, 2021
 - TABLE 181 TERAHERTZ TECHNOLOGY MARKET: MARKET SHARE ANALYSIS (2021)
- 10.4 5-YEAR COMPANY REVENUE ANALYSIS
 - FIGURE 54 5-YEAR REVENUE ANALYSIS OF TOP 5 PLAYERS IN TERAHERTZ TECHNOLOGY MARKET, 2017–2021
- 10.5 COMPANY EVALUATION QUADRANT
 - 10.5.1 STAR
 - 10.5.2 EMERGING LEADER
 - 10.5.3 PERVASIVE
 - 10.5.4 PARTICIPANT
 - FIGURE 55 TERAHERTZ TECHNOLOGY MARKET: COMPANY EVALUATION QUADRANT, 2021
- 10.6 STARTUPS/SMALL AND MEDIUM-SIZED ENTERPRISES (SME) EVALUATION MATRIX
 - TABLE 182 TERAHERTZ TECHNOLOGY MARKET: DETAILED LIST OF KEY STARTUPS/SMES
 - TABLE 183 STARTUPS/SMALL AND MEDIUM-SIZED ENTERPRISES (SME) IN TERAHERTZ TECHNOLOGY MARKET
 - TABLE 184 TERAHERTZ TECHNOLOGY MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/SMES (TYPE FOOTPRINT)
 - TABLE 185 TERAHERTZ TECHNOLOGY MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/SMES (APPLICATION FOOTPRINT)
 - TABLE 186 TERAHERTZ TECHNOLOGY MARKET: COMPETITIVE BENCHMARKING OF KEY STARTUPS/SMES (REGION FOOTPRINT)
 - 10.6.1 PROGRESSIVE COMPANY
 - 10.6.2 RESPONSIVE COMPANY
 - 10.6.3 DYNAMIC COMPANY
 - 10.6.4 STARTING BLOCK
 - FIGURE 56 STARTUP/SME EVALUATION MATRIX
- 10.7 COMPANY FOOTPRINT
 - TABLE 187 COMPANY FOOTPRINT
 - TABLE 188 COMPANY TYPE FOOTPRINT
 - TABLE 189 COMPANY APPLICATION FOOTPRINT
 - TABLE 190 COMPANY REGION FOOTPRINT

10.8 COMPETITIVE SITUATIONS AND TRENDS

10.8.1 PRODUCT LAUNCHES

TABLE 191 PRODUCT LAUNCHES, JANUARY 2019–FEBRUARY 2022

10.8.2 DEALS

TABLE 192 DEALS, JANUARY 2019–FEBRUARY 2022

10.8.3 OTHERS

TABLE 193 OTHERS, JANUARY 2019–FEBRUARY 2022

11 COMPANY PROFILES

11.1 KEY PLAYERS

(Business Overview, Products/Solutions/Services Offered, Recent Developments, and MnM View)*

11.1.1 ADVANTEST CORPORATION

TABLE 194 ADVANTEST CORPORATION: BUSINESS OVERVIEW

FIGURE 57 ADVANTEST CORPORATION: COMPANY SNAPSHOT

TABLE 195 ADVANTEST CORPORATION: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 196 ADVANTEST CORPORATION: PRODUCT LAUNCHES

TABLE 197 ADVANTEST CORPORATION: DEALS

TABLE 198 ADVANTEST CORPORATION: OTHERS

11.1.2 LUNA INNOVATIONS

TABLE 199 LUNA INNOVATIONS: BUSINESS OVERVIEW

FIGURE 58 LUNA INNOVATIONS: COMPANY SNAPSHOT

TABLE 200 LUNA INNOVATIONS: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 201 LUNA INNOVATIONS: DEALS

11.1.3 TERAVIEW LIMITED.

TABLE 202 TERAVIEW LIMITED.: BUSINESS OVERVIEW

TABLE 203 TERAVIEW LIMITED.: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 204 TERAVIEW LIMITED.: PRODUCT LAUNCHES

TABLE 205 TERAVIEW LIMITED.: DEALS

11.1.4 TOPTICA PHOTONICS AG

TABLE 206 TOPTICA PHOTONICS AG: BUSINESS OVERVIEW

TABLE 207 TOPTICA PHOTONICS AG: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 208 TOPTICA PHOTONICS AG: PRODUCT LAUNCHES

11.1.5 H?BNER GMBH & CO. KG

TABLE 209 H?BNER GMBH & CO. KG: BUSINESS OVERVIEW

TABLE 210 H?BNER GMBH & CO. KG: PRODUCT/SOLUTIONS/SERVICES

OFFERINGS

TABLE 211 H?BNER GMBH & CO. KG: PRODUCT LAUNCHES

TABLE 212 H?BNER GMBH & CO. KG: DEALS

TABLE 213 H?BNER GMBH & CO. KG: OTHERS

11.1.6 MENLO SYSTEMS

TABLE 214 MENLO SYSTEMS: BUSINESS OVERVIEW

TABLE 215 MENLO SYSTEMS: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 216 MENLO SYSTEMS: PRODUCT LAUNCHES

TABLE 217 MENLO SYSTEMS: DEALS

TABLE 218 MENLO SYSTEMS: OTHERS

11.1.7 TERA SENSE GROUP INC.

TABLE 219 TERA SENSE GROUP INC.: BUSINESS OVERVIEW

TABLE 220 TERA SENSE GROUP INC.: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 221 TERA SENSE GROUP INC.: PRODUCT LAUNCHES AND DEVELOPMENTS

TABLE 222 TERA SENSE GROUP INC.: DEALS

TABLE 223 TERA SENSE GROUP INC.: OTHERS

11.1.8 GEN TEC ELECTRO-OPTICS

TABLE 224 GEN TEC ELECTRO-OPTICS: BUSINESS OVERVIEW

TABLE 225 GEN TEC ELECTRO-OPTICS: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

TABLE 226 GEN TEC ELECTRO-OPTICS: OTHERS

11.1.9 QMC INSTRUMENTS LTD.

TABLE 227 QMC INSTRUMENTS LTD.: BUSINESS OVERVIEW

TABLE 228 QMC INSTRUMENTS LTD.: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

11.1.10 TERA VIL LTD

TABLE 229 TERA VIL LTD: BUSINESS OVERVIEW

TABLE 230 TERA VIL LTD: PRODUCT/SOLUTIONS/SERVICES OFFERINGS

* (Business Overview, Products/Solutions/Services Offered, Recent Developments, and MnM View might not be captured in case of unlisted companies.

11.2 OTHER PLAYERS

11.2.1 VIRGINIA DIODES, INC.

11.2.2 MICROT ECH INSTRUMENTS, INC.

11.2.3 TRAY CER SYSTEMS, INC.

11.2.4 DEL MAR PHOTONICS, INC.

11.2.5 INSIGHT PRODUCT CO.

11.2.6 BATOP GMBH

- 11.2.7 LYTID SAS
- 11.2.8 TYDEX
- 11.2.9 QUANTUM DESIGN INC.
- 11.2.10 RAYSECUR, INC.
- 11.2.11 SPECTRAL SCIENCES, INC.
- 11.2.12 BRIDGE12 TECHNOLOGIES, INC.
- 11.2.13 BRUKER
- 11.2.14 SCIENCETECH INC.
- 11.2.15 THORLABS, INC.

12 APPENDIX

- 12.1 DISCUSSION GUIDE
- 12.2 KNOWLEDGE STORE: MARKETSSANDMARKETS' SUBSCRIPTION PORTAL
- 12.3 AVAILABLE CUSTOMIZATIONS
- 12.4 RELATED REPORTS
- 12.5 AUTHOR DETAILS

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