

# Navian Marketing Report

## RF Devices/Modules For Cellular Terminal

### Quarterly Market Report Q3 2016

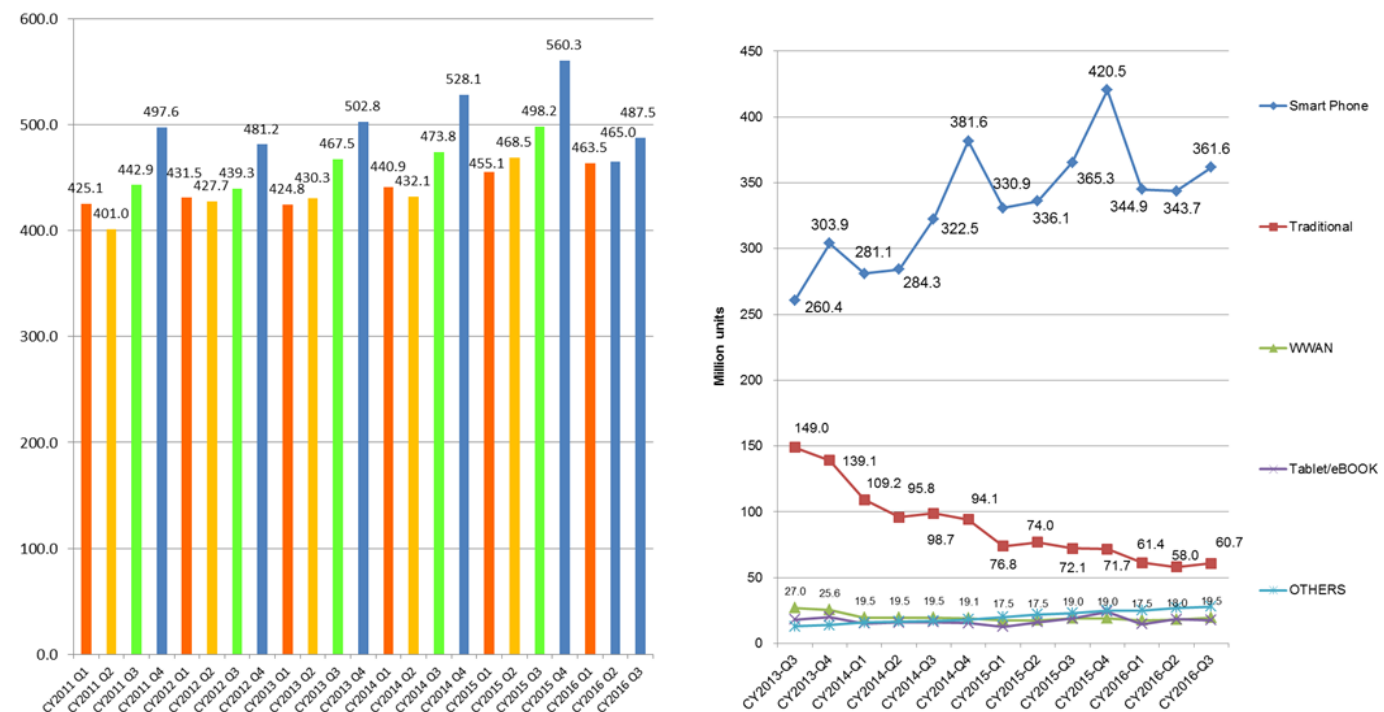
Released on January 28, 2017

# Report Sample

### RF Devices/Modules for Cellular Terminal in the report

- ① Front end Module (ASM·RX Module·TX Module·PAiD·FEMiD·All-in-One FEM·PAMiD·FILTER BANK·Duplexer Bank·Multiplexer)
- ② Antenna Switch (Main RF/Diversity) Power Amplifier Module
- ④ Duplexer
- ⑤ Band Pass Filter
- ⑥ TCXO

Cellular Terminal Shipment History



### PAMiD Market Share for 3Q CY2016 Result & CY2016 Forecast 2/2

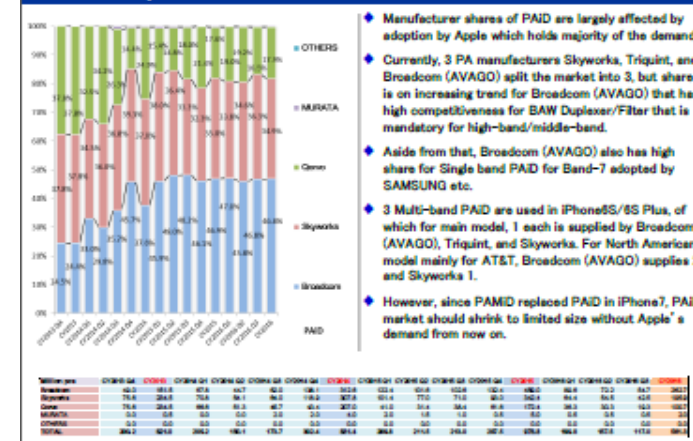
- The key to strength in PAMiD market is competitiveness of middle-band PAMiD.
- And key part of middle-band PAMiD is Multiplexer, and Duplexer is its composing element.
- Broadcom has monopolistic share of Duplexer for Band-25, said to be the most difficult.
- There are companies other than them that mass-produce Band-25 Duplexer, but they have limited record.
- Factor behind this is that they cannot beat Broadcom Duplexer in terms of product features.
- Furthermore, Broadcom has produced this compound component (categorized under FEMiD in our report) that combines 2 Duplexers and GPS Filter, called "Quadplexer", for Dual band CDMA/PCS/US Cellular) in North American market.
- This design technology is used effectively in their Multiplexer.
- Meanwhile, MURATA developed new Duplexer "HP" for Band-25, based on their SAW technology that implements product features as good as Broadcom's SAW Duplexer, and are developing Middle-band PAMiD using this.
- However, while MURATA has overwhelming share in market of SAW Duplexer, the standard component for low-band Duplexer, they do not stand out as much as Skyworks in low-band Duplexer market.
- For business expansion, MURATA should face challenges on both the product and application side of their Power Amplifier in the near future.

Smartphones	High-band	Middle-band	Low-band	Integrated Multiplexer
GALAXY S5	Broadcom	Broadcom	Skyworks/MURATA	-
GALAXY S7	Broadcom	Broadcom/Qorvo	Skyworks/MURATA	10.254 Multiplexer
Huawei P9	Skyworks	Skyworks	Skyworks	10.204 Switching Multiplexer
iPhone7	Broadcom	Skyworks/Qorvo	MURATA	10.254 Multiplexer

### PAMiD Market Share Breakdown per Product Type

Product Type	High-band	Middle-band	Low-band	Integrated Multiplexer
Smartphones	...	...	...	...
Tablets	...	...	...	...
Other	...	...	...	...

### PAiD Market Share for 3Q CY2016 Result & CY2016 Forecast



### PAiD in Successive iPhones

iPhone Model	PAiD Manufacturer	PAiD Type
iPhone 2G	Broadcom	PAiD
iPhone 3G	Broadcom	PAiD
iPhone 3GS	Broadcom	PAiD
iPhone 4	Broadcom	PAiD
iPhone 4S	Broadcom	PAiD
iPhone 5	Broadcom	PAiD
iPhone 5S	Broadcom	PAiD
iPhone 5C	Broadcom	PAiD
iPhone 6	Broadcom	PAiD
iPhone 6 Plus	Broadcom	PAiD
iPhone 6S	Broadcom	PAiD
iPhone 6S Plus	Broadcom	PAiD
iPhone SE	Broadcom	PAiD
iPhone 7	Broadcom	PAiD
iPhone 7 Plus	Broadcom	PAiD

**e-Book Reader**  
**Tablet PC**

**WWAN Terminal**  
**Adapter**

**Embedded Module**

**Smart Phone**

**Traditional Handset**  
**Mobile Phone**

**Fixed Wireless Terminal**

■ Outline of the report

### RF Devices/Modules For Cellular Terminal Quarterly Market Report Q3 2016

-CD-ROM (PDF file)-

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**PHASE 1. CELLULAR TERMINAL SHIPMENT AND UPDATE**

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Report Title	Price	Initial
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