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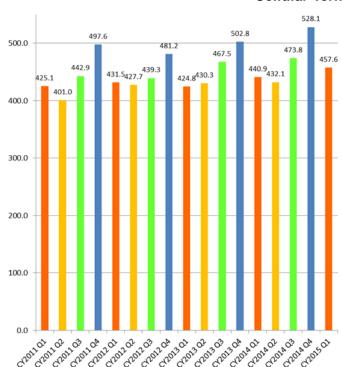
RF Devices/Modules For Cellular Terminal Quarterly Market Report Q2 2015

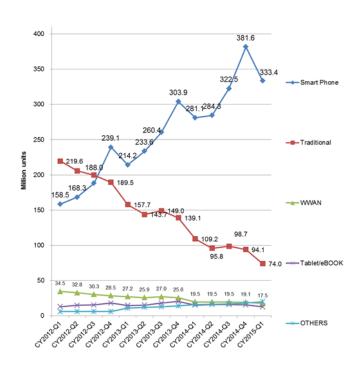
Released on November 16th 2015

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)
- 2 Antenna Switch (Main RF/Diversity) Power Amplifier Module 4 Duplexer
- **5**Band Pass Filter **6**TCXO

Cellular Terminal Shipment History













Report Sample

Cellular Terminal Annual Shipment History & Forecast CY2000-CY2015

- Compound Annual Growth Rate from year 2000 will be 11.0%.
- Aside from rapidly growing demands for low-priced Smartphones in markets of emerging nations such as China, demand expansion of LTE Smartphones, triggered by TD-LTE services gaining mome China, will be the engine for this.
- Notebook PC will take place around 2016.

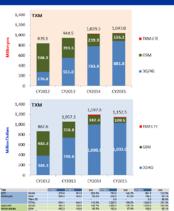


2Q 2015: TCXO Market Size



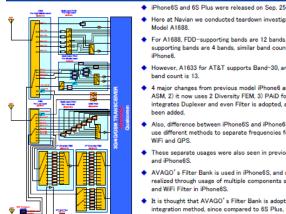
Chipset, currently 2 TOXO are used for Cellular and for GPS. Even the chipset by HiSilicon, Huawei's subsidiar showing strength in adoption in LTE and 3G, TCXO is adopted for RF and for GPS.

Market Forecast of TX Module in CY2015



- ◆ TX Module market size in 2015 is expected at 1.043.0 million pcs (YoY 101.3%) based on quantity, 1,152.5 million dollars (YoY 96.3%) based on amount. ◆ UMTS and TD-SCDMA that adopt TX
- Module as standard are decreasing due to LTE popularization, causing trend of sluggish demands for TX Module to surface Media Tek's reference design for their new
- platform for LTE adopted TX Module, but its share in LTE market is thought to be limited, thus its effect will not be significant enough to push up the entire TX Module market in 2015.
- ◆ Depending on how popular Media Tek's LTE Chipset will become, TX Module would still have the chance of demand growth. However, in mid to long-run, non-TX-Module FEM such as PAMiD and ASM have better chances of being adopted more

iPhone6S A1688 Block diagram



- Model A1688
- For A1688, FDD-supporting bands are 12 bands, and TDD supporting bands are 4 bands, similar band count as previous iPhone6.
- However, A1633 for AT&T supports Band-30, and FDD-supportin band count is 13.
- 4 major changes from previous model iPhone6 are: 1) it now uses 2 ASM, 2) it now uses 2 Diversity FEM, 3) PAID for high-band that integrates Duplexer and even Filter is adopted, and 4) Band-30 has been added.
- Also, difference between iPhone6S and iPhone6S Plus is that they use different methods to separate frequencies for Cellular and for WiFi and GPS.
- These separate usages were also seen in previous model iPhone
- AVAGO's Filter Bank is used in iPhone6S, and similar function realized through usage of multiple components such as EXTRACTOR and WiFi Filter in iPhone6S.
- It is thought that AVAGO's Filter Bank is adopted as a better integration method, since compared to 6S Plus, 6S has smaller

RF Devices/Modules For Cellular TerminalQuarterly Market Report Q2 2015

OThe date of issue November 16, 2015

The PDF file of 224 SLIDES: MS PowerPoint based/Excel data/JPEG files of Teardown photos OThe Documents of the report

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- 2. Cellular Terminal Quarterly Shipment by Product Type
- 3. Cellular Terminal Quarterly Shipment by Standard
- 4. Cellular Terminal Annual Shipment
- 5. History & Forecast CY2000-CY2015
- 6. Annual Cellular Terminal Shipment Trend by Product Type
- 7. Annual Cellular Terminal Shipment Trend by Cellular Standard

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- 2. Cellular Terminal Shipment by Maker & & Cellular Standard 1Q 2012-2Q2015
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- (2) Cellular Terminal Shipment by Manufacturer & Cellular Standard CY2012-CY2015
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- (1) UMTS RF Platform Market Share by Cellular Terminal Manufacturer

Quarterly data: 1Q 2012-2Q2015 Annual data: CY2011-CY2015

(2) UMTS RF Platform Market Share by Cellular Terminal Manufacturer

Quarterly data: 1Q2011-2Q2015 Annual data: CY2011-CY2015

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For Cellular Market Trend

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- (2) Annual Front End Module Market Trend by CY2015
- (3) Detailed Data of Front End Module Marke
- (4) 2Q2015: Front End Module Market Size & Trend by Product
- 1)Antenna Switch Module
- ②RX Module
- ③TX Module
- 4FEMiD
- ⑤All-in-One FEM

- 6PAMiD
- 7PAiD
- **®Filter Bank**
- 9 Duplexer Bank
- 2. Antenna Switches
- (1) Antenna Switch Market Size in 2Q2015

Antenna Switch TOTAL Market Size

Antenna Switch for Main RF Market Size by Throw Count Antenna Switch for Main RF Market Size by Substrate Antenna Switch for Diversity Market Size by Substrate

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- (2) Market Forecast of Power Amplifier Module by Product Type in CY2015
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- (2) Market Forecast of Duplexer by Band in CY2015
- (3) Annual Detailed Data of Duplexer Market
- 5. Band Pass Filters
- (1) Band Pass Filter Market Size in 2Q2015
- (2) Market Forecast of Band Pass Filter in CY2015
- 6. TCXOs
- (1) TCXO Market Size in 2Q2015
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PHASE 4.RF COMPONENT/MODULE **KEY MANUFACTURER TEREND**

- 1. Front End Modules
- (1) Antenna Switch Module

ASM Market Share for Q2 Result & CY2015 Forecast ASM Market Share Breakdown per Product Type

(2) RX Module

RX Module Market Share for Q2 Result & CY2015 Forecast RX Module Market Share Breakdown per Product Type

- (3) TX Module
 - TX Module Market Share for Q2 Result & CY2015 Forecast TX Module Market Share Breakdown per Product Type
- (4) FEMiD

FEMiD Market Share for Q2 Result & CY2015 Forecast

FEMiD Market Share Breakdown per Product Type

(5) PAiD

PAiD Market Share for Q2 Result & CY2015 Forecast PAiD Market Share Breakdown per Product Type

(6) Filter Bank

Filter Bank Market Share for Q2 Result & CY2015 Forecast Filter Bank Market Share Breakdown per Product Type

Duplexer Bank Market Share for Q2 Result & CY2015 Forecast

- 2. Antenna Switches
- (1) Antenna Switch Market Share for Q2 Result & CY2015 Forecast Antenna Switch for Main RF
 - Antenna Switch for Main RF => SP7T
- (2) Quarterly Antenna Switch for Main RF Market Share Breakdown

per Product Type

- (3) Annual Antenna Switch for Main RF Market Share Breakdown per Product Type
- (4) Quarterly Antenna Switch for Diversity Market Share Breakdown per Product Type
- (5) Annual Antenna Switch for Diversity Market Share Breakdown per Product Type
- (6) Antenna Switch Supply chain
- 3. Power Amplifier Module
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- 6. TCXOs
- (1) TCXO Market Share for Q2 Result & CY2015 Forecast Forecast
- (2) TCXO Market Share Breakdown per Product Type
- (3) TCXO Supply chain

PHASE 5.Hot Products Teardown

1. Teardown Summary

Product outline: Product type/Release date/price/Network

- RF Components / Modules useage
- 2. S Meizu m2 note M571M
- 5 mode Smart phone with MTK NEW Platform "MT6753"-
- (1) RF Circuit Block-diagram Estimation
- (2) Motherboard pictures & Major components/modules
- (3) RF Section pictures & RF Components / Modules
- 3. Xiaomi Redmi 2A 4G
- 3 mode Smart phone, the first modes using the LC1860 chipset-
- (1) RF Circuit Block-diagram Estimation
- (2) Motherboard pictures & Major components/modules
- (3) RF Section pictures & RF Components / Modules
- 4. LeTV LE1 X600
 - High-end 5 mode Smartphone with MTK Helio X10 platform -
- (1) RF Circuit Block-diagram Estimation
- (2) Motherboard pictures & Major components/modules
- (3) RF Section pictures & RF Components / Modules
- 5. Lenovo K80M

6. Lenovo A1900

- 5 mode Smart phone with Intel platform -
- (1) RF Circuit Block-diagram Estimation
- (2) Motherboard pictures & Major components/modules
- (3) RF Section pictures & RF Components / Modules
- Low-end 3G Smartphone with Spreadtrum chipset -
- (1) RF Circuit Block-diagram Estimation
- (2) Motherboard pictures & Major components/modules
- (3) RF Section pictures & RF Components / Modules
- 7. iPhone 6S A1688
- Tentative Report -



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