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Eric Lin, DIGITIMES Research, February 2017

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REPORT SAMPLE (not for sale)

Introduction

1Q17 review

Digitimes Research forecasts smartphone application processor (AP) shipments to China in first-quarter 2017 will show an on-quarter drop of 15.9% due to factors such as the low season and Lunar New Year holidays arriving earlier in 2017 causing customers to prepare for shipments in December 2016 instead of in the first quarter of 2017.

Despite the fact that shipments of P20 has begun to increase since the fourth-quarter of 2016, the orders cannot make up for the lack of Cat.7 solutions for MediaTek, resulting in the company losing customers. Also due to the low season, MediaTek is expected to see first-quarter 2017 shipments in the China smartphone AP market show an on-quarter drop of 18.6%.

In first-quarter 2017, due to the low season factor, Qualcomm is expected to see an on-quarter shipment drop of 12% but the drop is less severe compared to MediaTek. Qualcomm is the only AP provider that has products that satisfy the Cat.7 standard; hence the on-quarter drop will be milder.

Spreadtrum's 16nm entry-level to mid-range 4G solution SC9860 began mass production but the company lacks stability so only a few customers are willing to use this particular product. Although the product fits the Cat.7 standard required by China Mobile, there are still software issues that have to be resolved, so it is difficult for the product to contribute positively to overall shipments of the firm. Due to seasonal factors and price competition from MediaTek, Spreadtrum is expected to see smartphone AP shipments to the China market show an on-quarter decrease of 15.6% in first-quarter 2017.

Key factors affecting China smartphone AP shipments

1Q17 forecast

Demand for MediaTek's 16nm mid-range solution has picked up but due to the lack of support for the Cat.7 standard, shipment growth is still limited. Rising demand cannot make up for falling shipments of older model LTE solutions as the firm loses customers.

Spreadtrum announced that shipments of its 16nm low price solution began in fourth-quarter 2016 and claims to support the Cat.7 standard but as the product lacks good firmware support, so a shipment increase is difficult to achieve at this point.

Qualcomm's high-end solution successfully secured customers such as Xiaomi, Oppo and Vivo (BBK's brand) but will still be affected by seasonal factors.

HiSilicon's new high-end solution Kirin 960 and its mid-range solution Kirin 6X0 have been benefitting from the popularity of Huawei's end-market products but will not be able to overcome the negative effects of seasonal factors.

Table 1: Key factors affecting China smartphone AP shipments in 1Q17

Factor	Item	Analysis	Influence on shipments
Chipmakers	Spreadtrum	The firm's 16nm solution lacks good firmware support hence has yet to see mass shipments.	↓ ★★★
	MediaTek	Low price 4G solutions continue to see strong shipments but the firm lacks solutions to fit China Mobile's Cat.7 standard. Demand for P20 is weaker than anticipated.	↓ ★★★
	Qualcomm	The only firm with a solution that fits China's Mobile's Cat.7 standard hence many major device makers issued orders for its mid-range to high-end solutions. The firm will still be affected by the low season.	↓ ★★★
	HiSilicon	Huawei's end-market new product has been popular while international shipments have been growing hence HiSilicon is expected to be less affected by seasonal factors.	↓ ★

Note: The more stars, the higher the influence. ↓ indicates negative influence, ↑ indicates a positive influence.

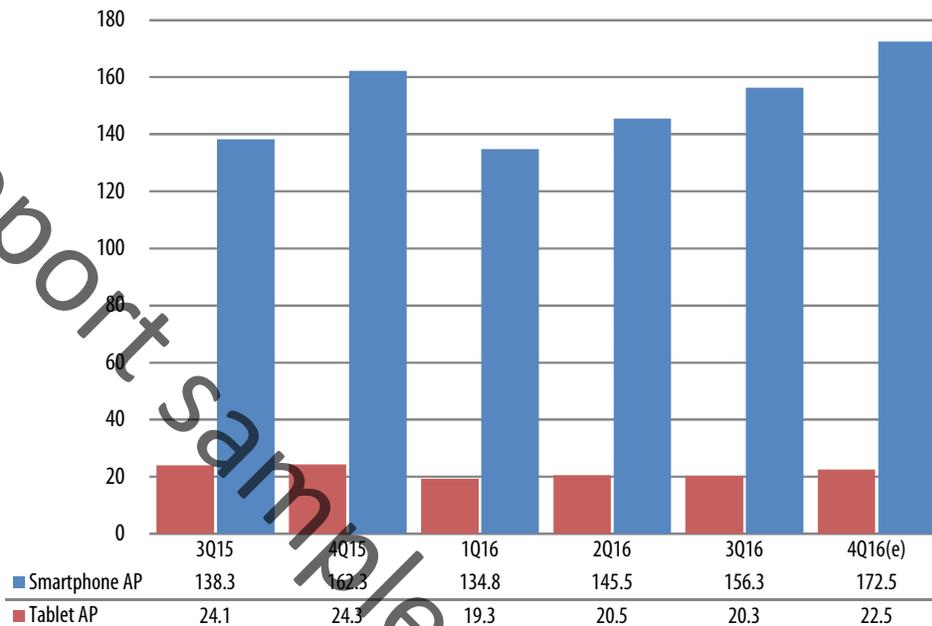
Source: Digitimes Research, February 2017

Report sample (not for sale)

Shipment breakdown

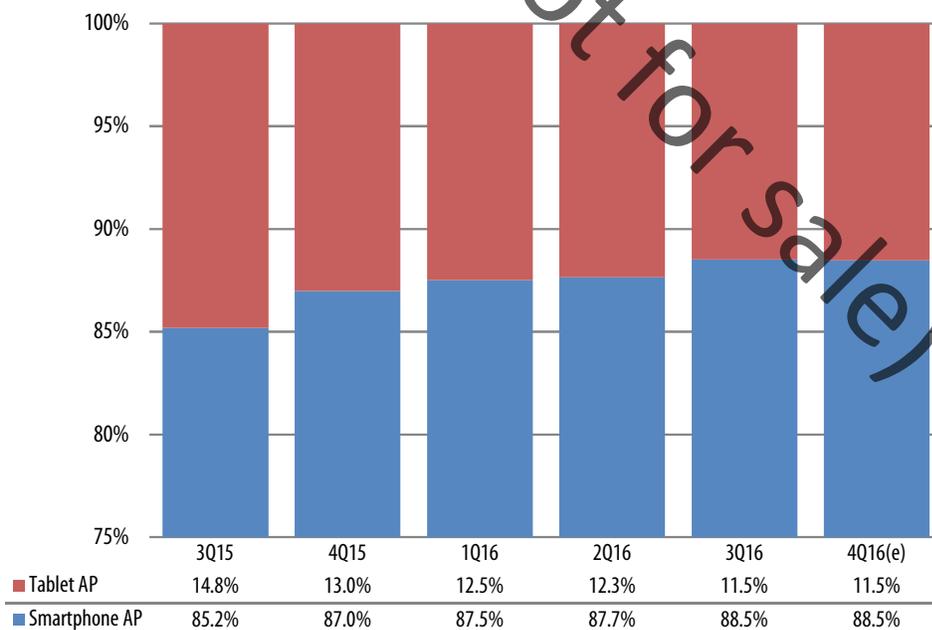
Smartphone/Tablet share of AP market

Chart 1: China AP shipments by application, 3Q15-4Q16 (m units)



Source: Digitimes Research, February 2017

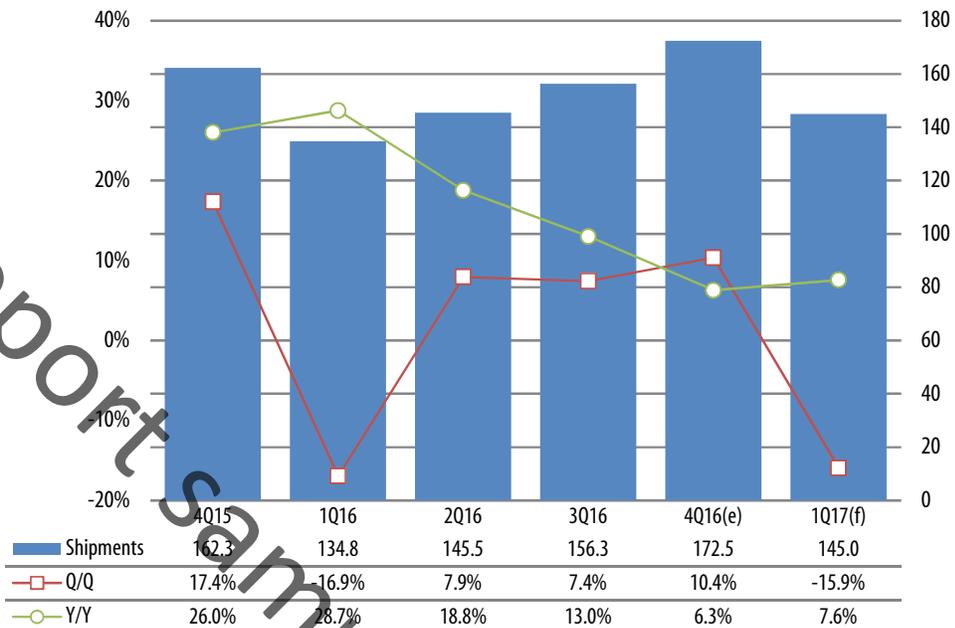
Chart 2: China AP shipment share by application, 3Q15-4Q16



Source: Digitimes Research, February 2017

Smartphone AP shipments in China

Chart 3: China smartphone AP shipments, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

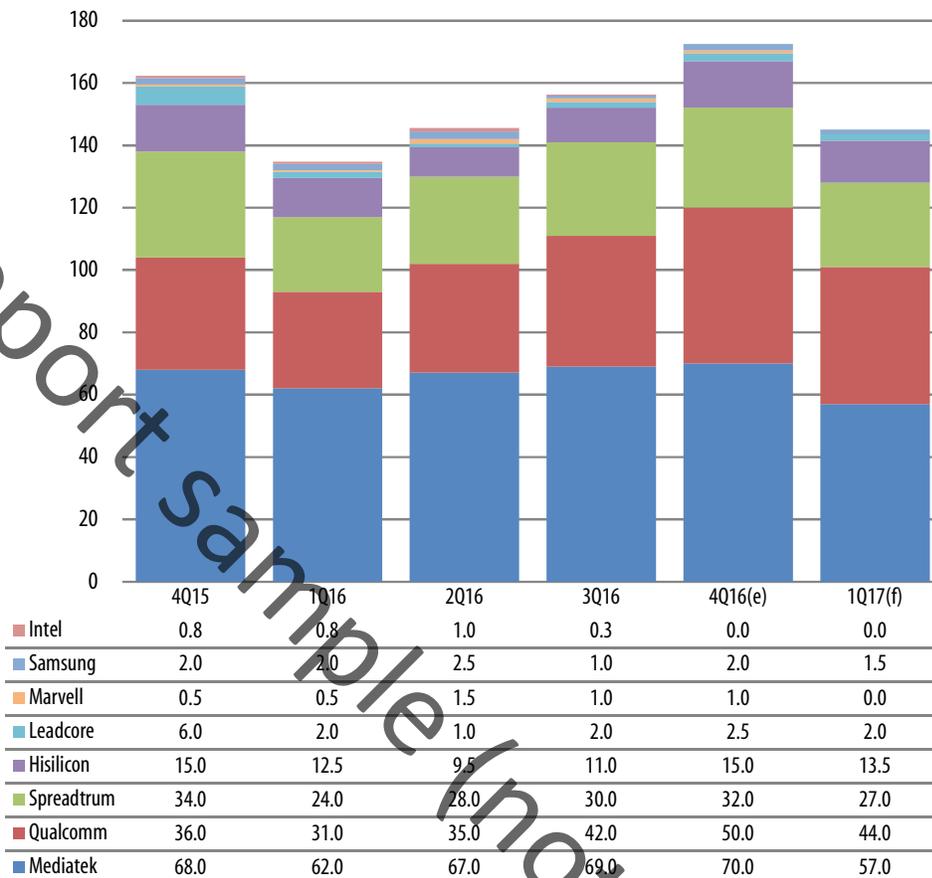
1Q17 forecast

China saw shipments of 172.5 million in the fourth quarter of 2016. Smartphone AP shipments are expected to show an on-quarter drop of 15.9% to total 145 million in the first quarter of 2017 due to the low season and early Lunar New Year holidays causing downstream firms to prepare components early.

Among the top three smartphone AP firms, MediaTek is expected to see the biggest on-quarter shipment drop of close to 20% while Spreadtrum is expected to see an on-quarter drop of 15.6%. Qualcomm has competitive solutions hence the on-quarter drop is expected to be 12%.

Shipments by supplier

Chart 4: Shipments by supplier, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

1Q17 forecast

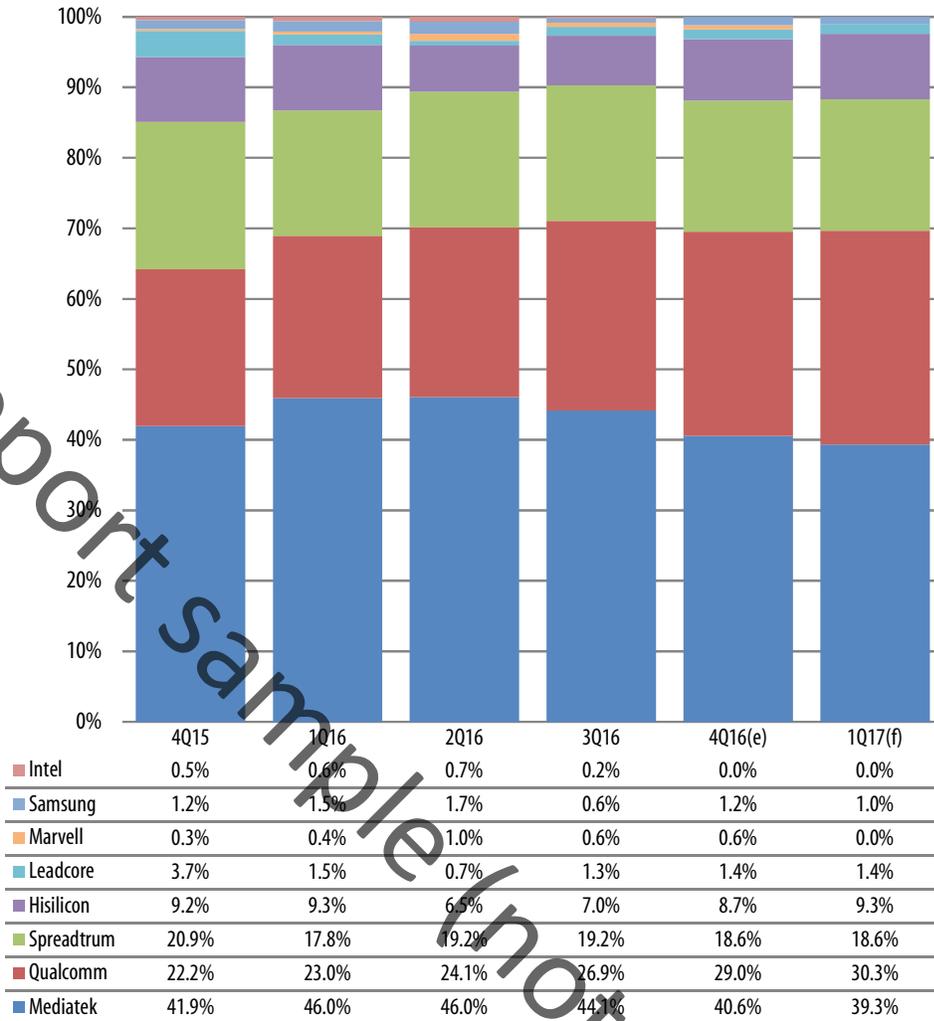
While overall shipments increased 10.4% in the fourth quarter of 2016, MediaTek saw its shipments only increase 1.4%, as the company lacked solutions that satisfied the market. In first-quarter 2017, MediaTek is expected to continue having troubles and the company is forecast to have the biggest on-quarter shipment drop of 18.6% and its related shipment share is expected to drop by 1.3pp percentage points.

Qualcomm has resolved royalty issues it has had with China players and the firm is currently the only firm to provide Cat.7 solution. In the fourth quarter, its shipments increased 19% well ahead of overall market growth, but moving into the first quarter its shipments will decrease on it being the low season.

However, its support for Cat.7 means that first- and second-tier downstream firms are continuing to issue orders to Qualcomm and its shipments will only drop 12% in the first quarter. This weakens the effect of the low season hence the firm is expected to see its shipment share increase 1.3% in first-quarter 2017.

Spreadtrum also lacks a Cat.7 solution but the company continues to have strong foothold in the low-price market. Its shipments increased 6.7% in the fourth quarter and first quarter shipments are expected to decrease 15.5% so its shipment share is expected to be flat compared to the previous quarter.

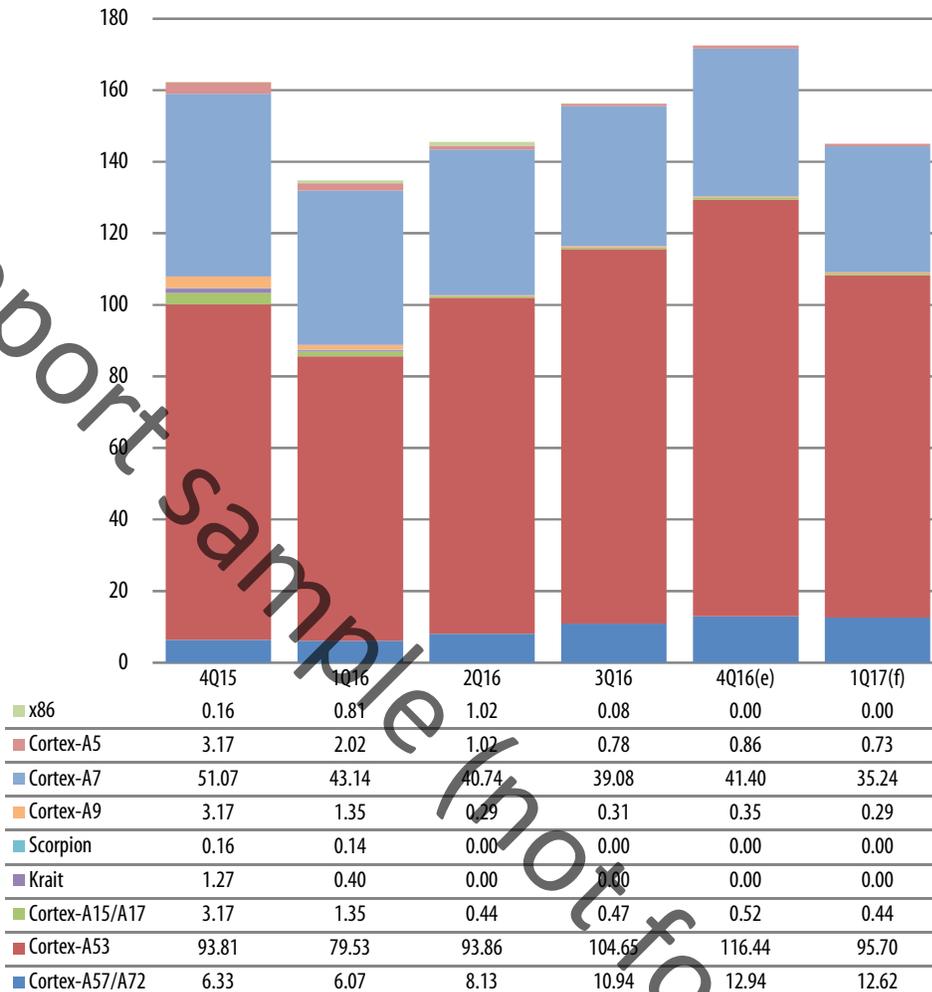
Chart 5: Shipment share by supplier, 4Q15-1Q17



Source: Digitimes Research, February 2017

Shipments by architecture

Chart 6: Shipments by architecture, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

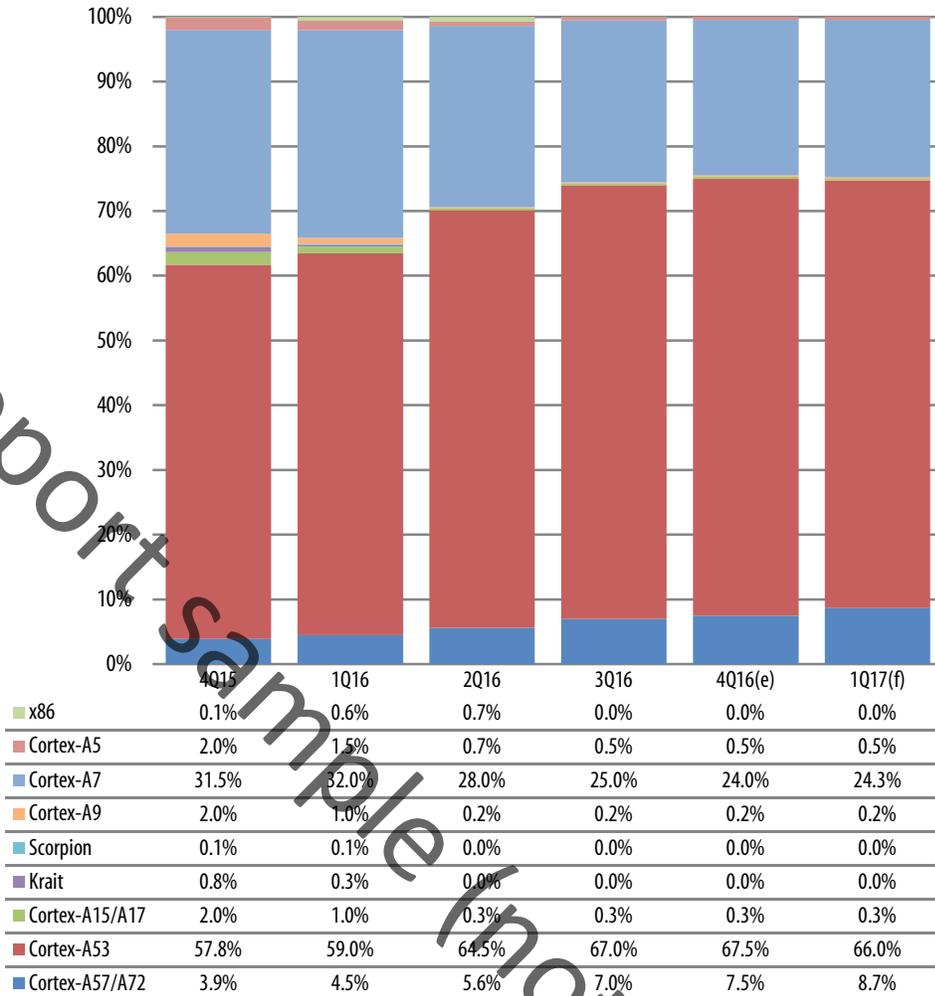
1Q17 forecast

In the fourth quarter of 2016, the Cortex-A53 peaked as the mainstream architecture in the market, capturing 67.5% of the market. However, while it will remain the mainstream architecture among all shipments in the first quarter, but as mid-range to high-end solutions move toward Cortex-A72 and Cortex-A73, the shipment share is expected to drop by 0.5%.

Cortex-A7 is the main architecture for entry-level 3G and 4G products and entry-level 4G solutions showed the most severe shipment drop in fourth-quarter 2016, hence shipment share of Cortex-A7 is expected to be 24.3% in first-quarter 2017.

Cortex-A72 and Cortex-A73 will have a combined shipment share in first-quarter 2017 that increases 1.2pp due to mid-range to high-end solution shipments from suppliers such as MediaTek, Qualcomm and HiSilicon.

Chart 7: Shipment share by architecture, 4Q15-1Q17

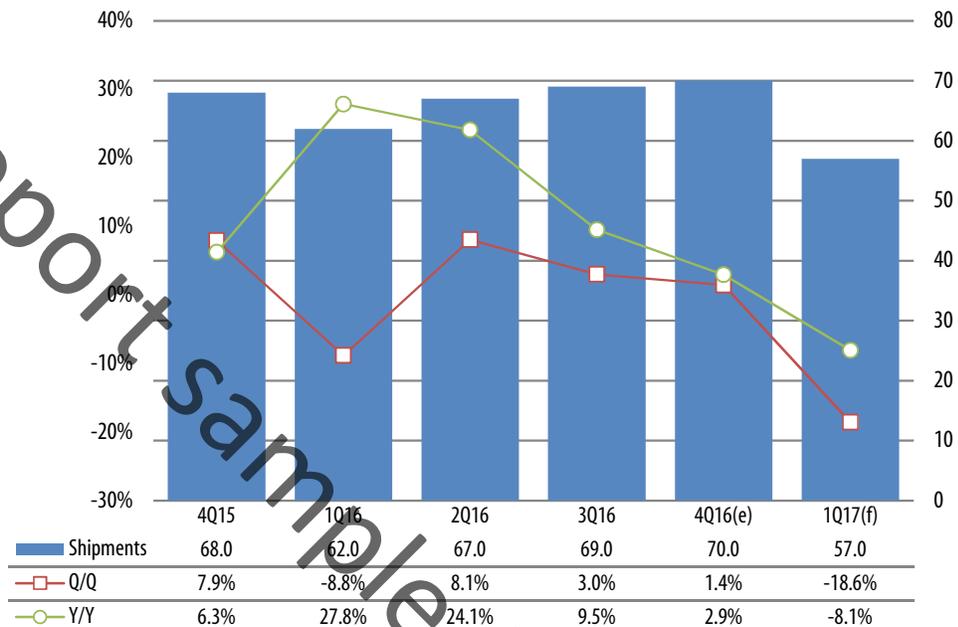


Source: Digitimes Research, February 2017

Supplier analysis

MediaTek

Chart 8: MediaTek smartphone AP shipments, 4Q15-1Q17 (m units)

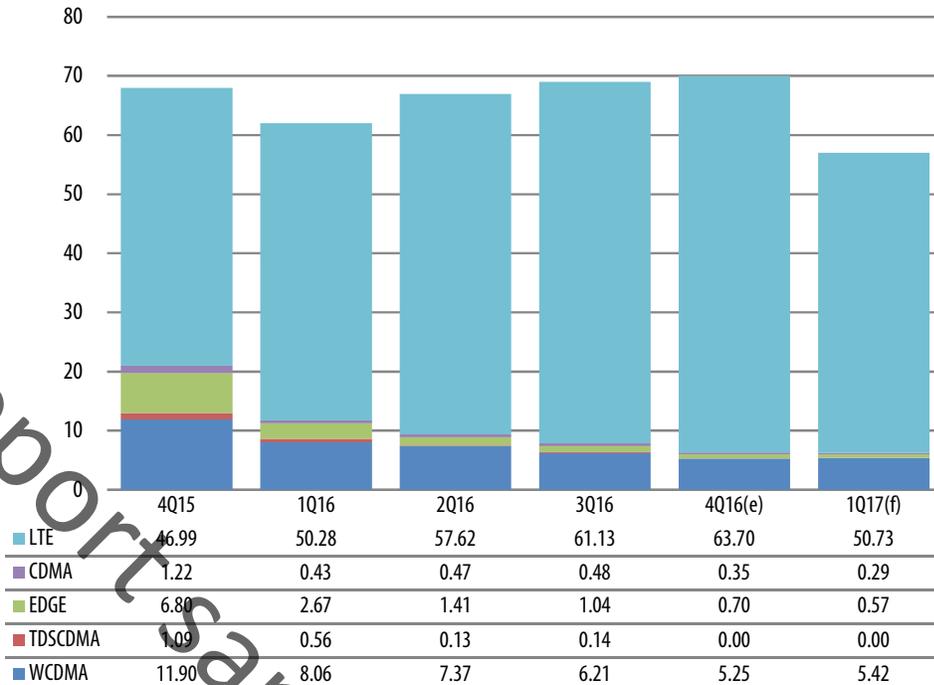


Source: Digitimes Research, February 2017

1Q17 forecast

MediaTek lacks Cat.7 solutions so it has been losing customers. Its shipment growth of 1.4% in the fourth quarter trailed the overall market and the company will have to deal with the negative effects of the low season in first-quarter 2017, so shipments are expected to see an on-quarter decrease of 18.6%.

Shipments of high-end X20 and X25 and mid-range P10 have been slowing down. The new product, P20, lacks Cat.7 support hence cannot make up for the loss of customers. Shipments of P20 are ineffective to stimulate overall shipment growth in first-quarter 2017.

Chart 9: MediaTek shipments by baseband type, 4Q15-1Q17 (m units)

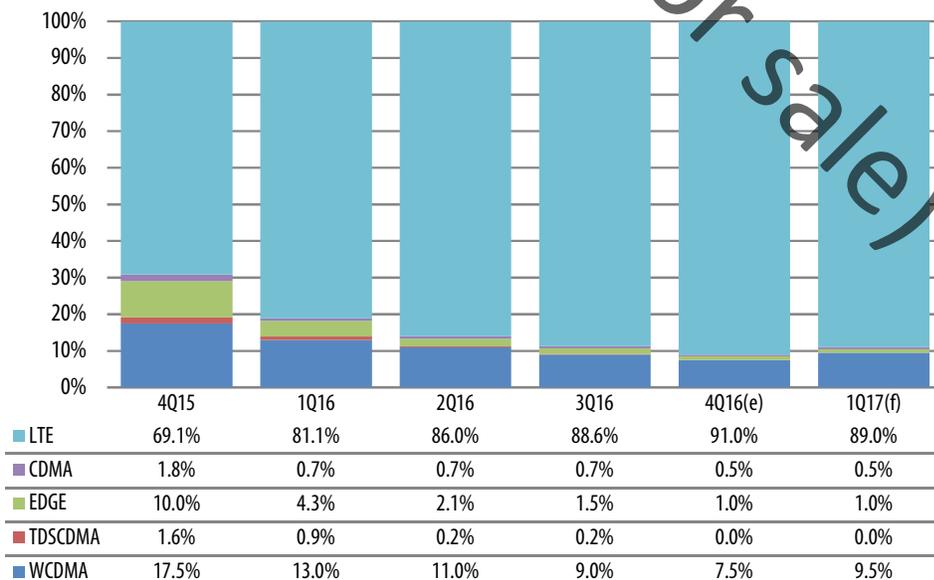
Source: Digitimes Research, February 2017

1Q17 forecast

MediaTek's 3G solutions continue to face strong low price competition from Spreadtrum but as the firm lowers the price, customer base has been quite stable.

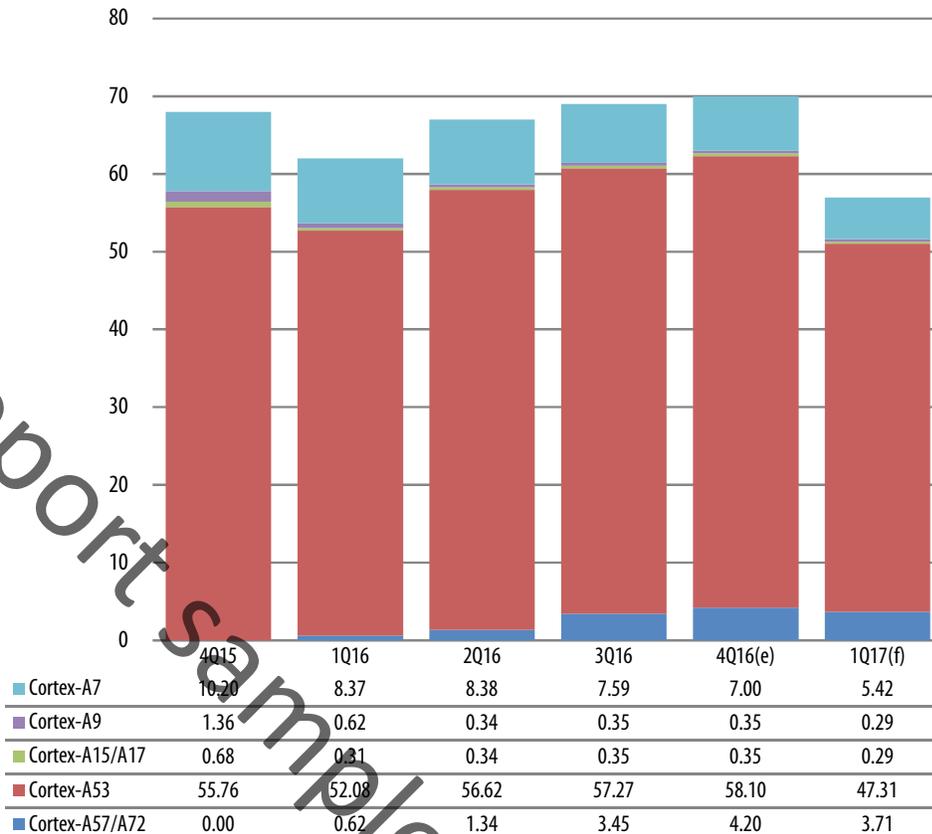
MediaTek's 4G solution shipment share is expected to fall by 2pp due to the loss of customers.

The company's WCDMA shipments will be its biggest growth area in the first quarter. Shipments will increase 3.2% after dropping more than 15% in each of the previous two quarters.

Chart 10: MediaTek shipment share by baseband type, 4Q15-1Q17

Source: Digitimes Research, February 2017

Chart 11: MediaTek shipments by architecture, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

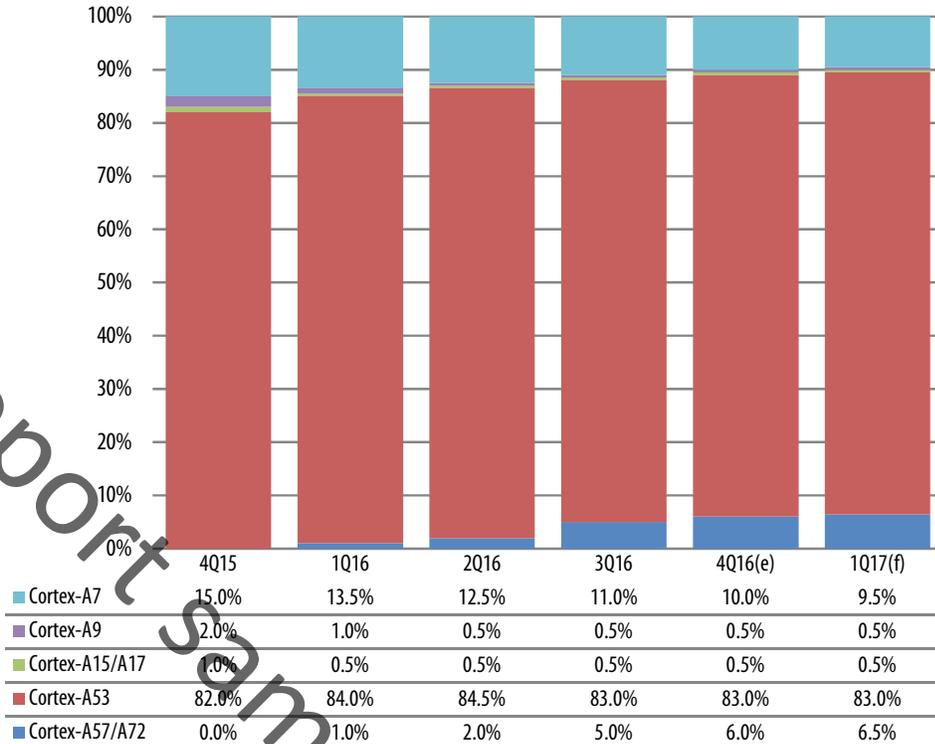
1Q17 forecast

Among all MediaTek shipments in first-quarter 2017, the combined share of Cortex-A57 and Cortex-A72 is expected to be 6.5% due to shipments of X20 and X25.

Even though the P20 solution has begun shipments, the number of customers is limited. In addition, shipments of existing solutions such as P10 have been showing signs of slowing down, hence the shipment share of Cortex-A53 is expected to be flat compared to the fourth quarter of 2017.

There are no new products that carry Cortex-A7, with the existing ultra level 3G and 4G solutions that still carry the architecture, the shipment share in first-quarter 2017 is expected to be 9%, showing an on-quarter drop of 1%.

Chart 12: MediaTek shipment share by architecture, 4Q15-1Q17



Source: Digitimes Research, February 2017

Qualcomm

Chart 13: Qualcomm smartphone AP shipments, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

1Q17 forecast

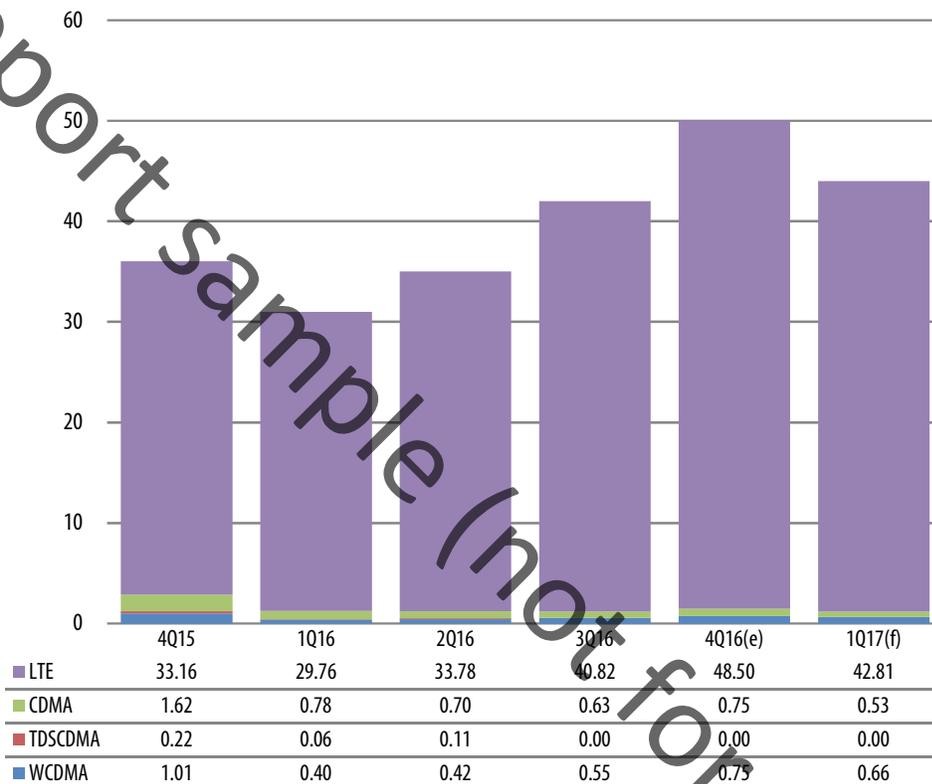
Qualcomm saw fourth-quarter 2016 shipments increase significantly due to four factors: strong sales of its high-end 800 series, customers such as Xiaomi and Oppo issued orders for its 600 series, the firm provides products that fit China Mobile's Cat.7 standard and downstream firms stocked up inventories early.

In first-quarter 2017, despite the strong popularity of Qualcomm's products, due to the low season, shipments are expected to show an on-quarter decrease.

Qualcomm is expected to see first-quarter 2017 shipments show an on-quarter drop of 12%.

First-quarter 2017 shipments are expected to show an on-year growth of 41.9%.

Chart 14: Qualcomm shipments by baseband type, 4Q15-1Q17 (m units)



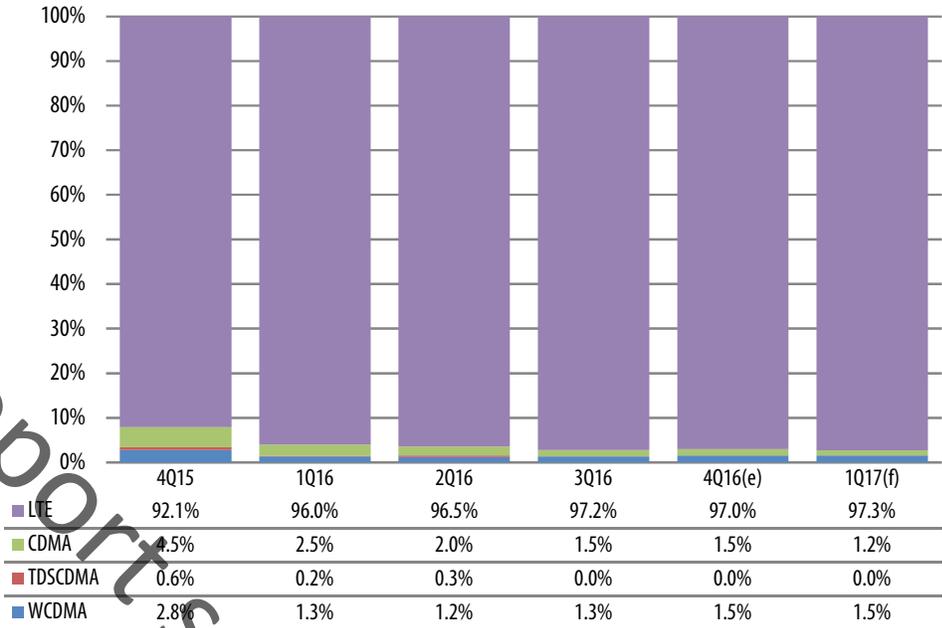
Source: Digitimes Research, February 2017

1Q17 forecast

Qualcomm's first-quarter 2017 shipments are almost all LTE solutions; hence the shipment share is expected to increase slightly by 0.3% on quarter.

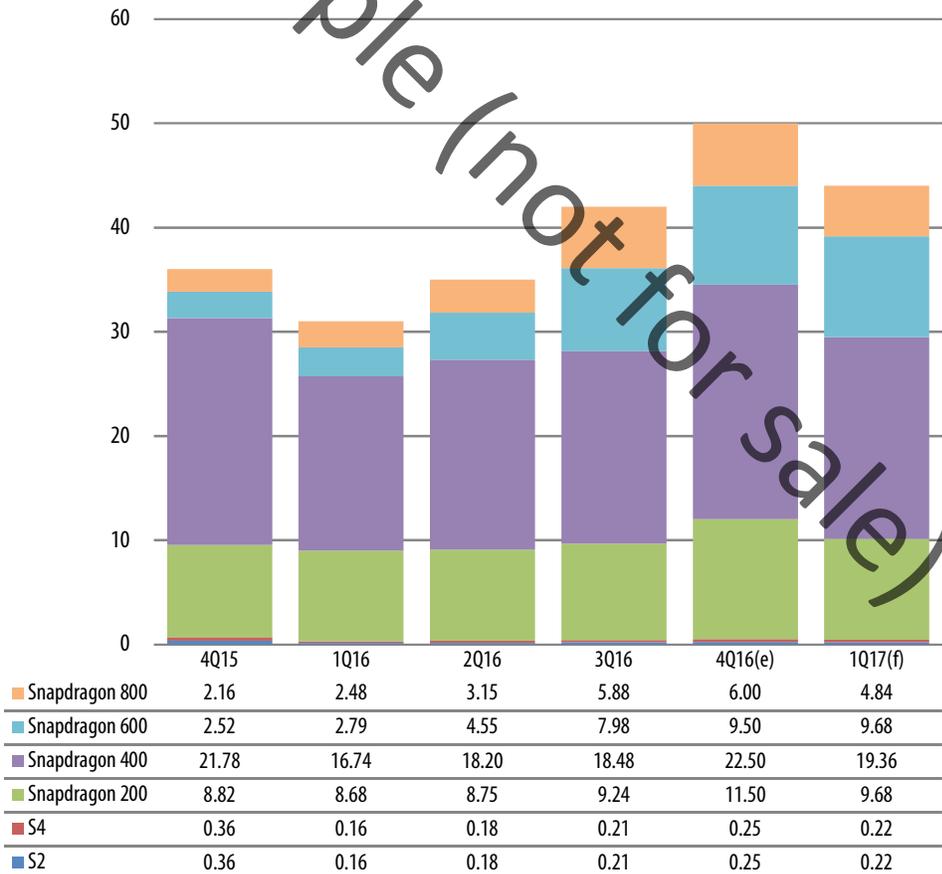
Qualcomm's 3G solution lacks price and cost competitiveness hence has not been favored by China-based customers with just a minor volume of shipments so the shipment share is expected to fall 0.3pp on quarter in first-quarter 2017.

Chart 15: Qualcomm shipment share by baseband type, 4Q15-1Q17



Source: Digitimes Research, February 2017

Chart 16: Qualcomm shipments by architecture, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

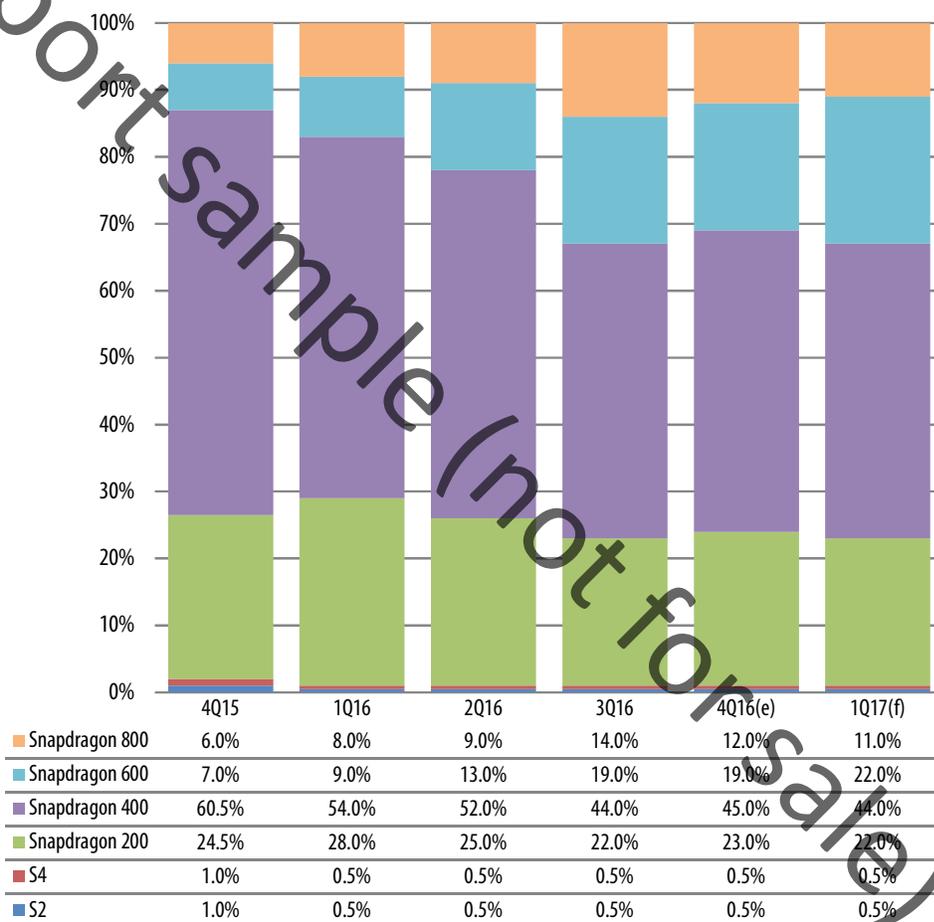
1Q17 forecast

Qualcomm's entry-level to mid-range products already support the Cat.7 standard set by China Mobile so the company has received orders from large-size handset firms such as Oppo and Vivo. In particular, Qualcomm's S600 series have been seeing strong shipment increases and the related shipment share in first-quarter 2017 is expected to show an on-quarter increase of 3pp.

The high-end S800 series will see a new product (the S835) introduced, while older models such as S820 and S821 are seeing shipments slowing down, so the shipment share of S800 series in first-quarter 2017 is expected to show an on-quarter drop of 1pp.

Qualcomm introduced a remodeled version of Snapdragon 427 which supports Cat.7 standard but demand has yet to be shown in the market so the shipment share of the S400 series in first-quarter 2017 is expected to show a drop of 1pp on quarter.

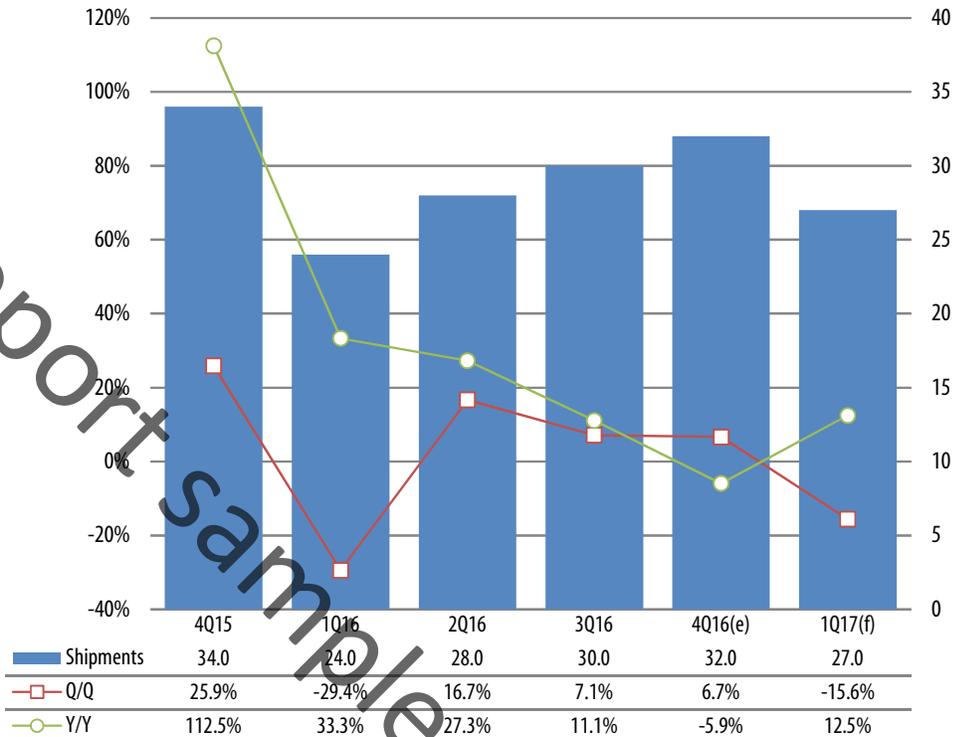
Chart 17: Qualcomm shipment share by architecture, 4Q15-1Q17



Source: Digitimes Research, February 2017

Spreadtrum

Chart 18: Spreadtrum smartphone AP shipments, 4Q15-1Q17 (m units)



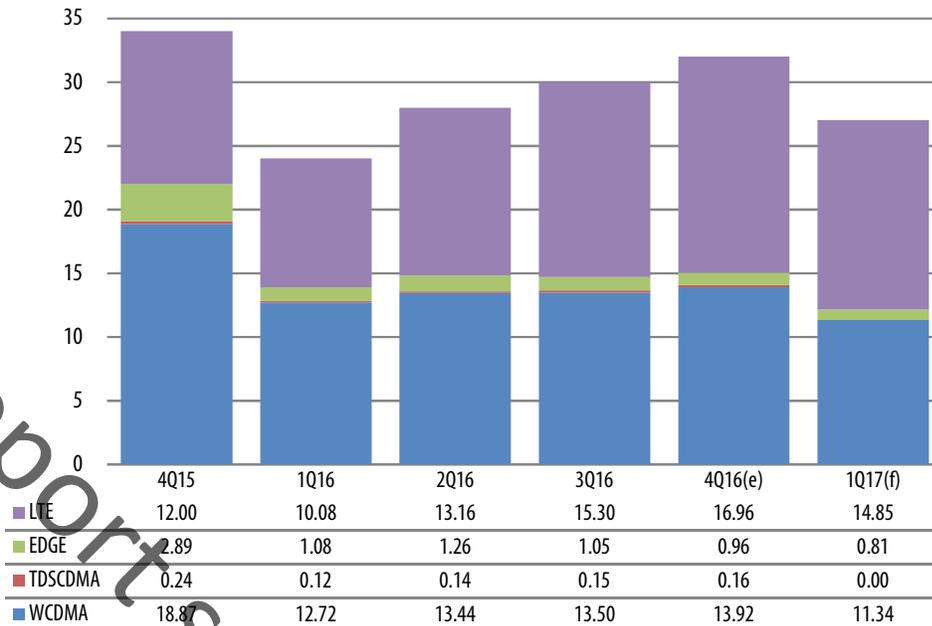
Source: Digitimes Research, February 2017

1Q17 forecast

In first-quarter 2017, Spreadtrum is forecast to see its shipments drop by 15.6% on quarter. This is because low price solutions have reached the lowest possible price level and it will be hard for the firm to increase shipments by using a pricing strategy.

Spreadtrum's 16nm mid-range 4G solution SC9860 still has room for improvement on product stability so it will be difficult to contribute to shipment growth for now.

Low priced solutions continues to be price competitive but due to the lack of significant price differences with competitors, shipments are unlikely to show strong growth and this is especially obvious in the low season (first-quarter 2017).

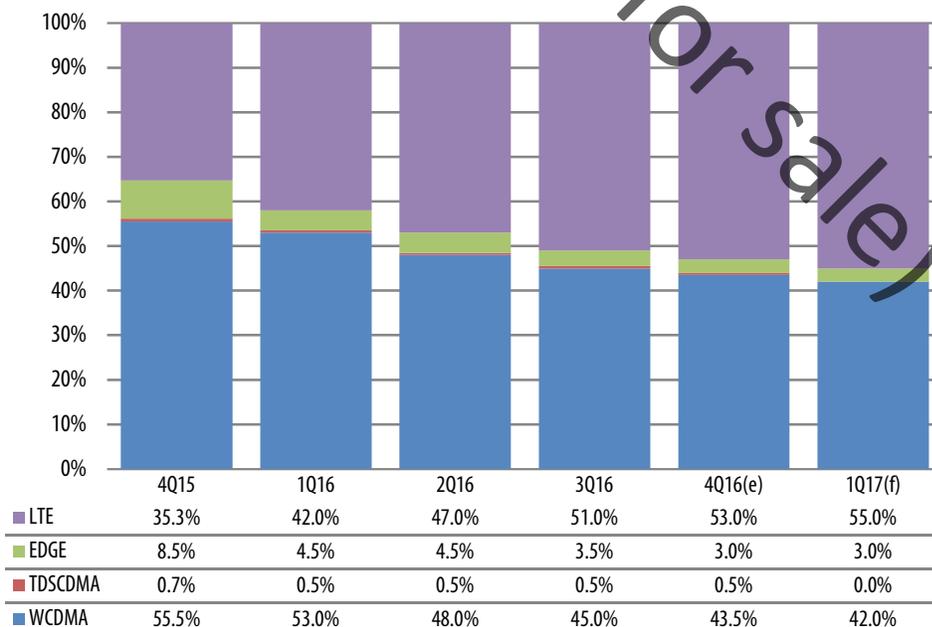
Chart 19: Spreadtrum shipments by baseband type, 4Q15-1Q17 (m units)

Source: Digitimes Research, February 2017

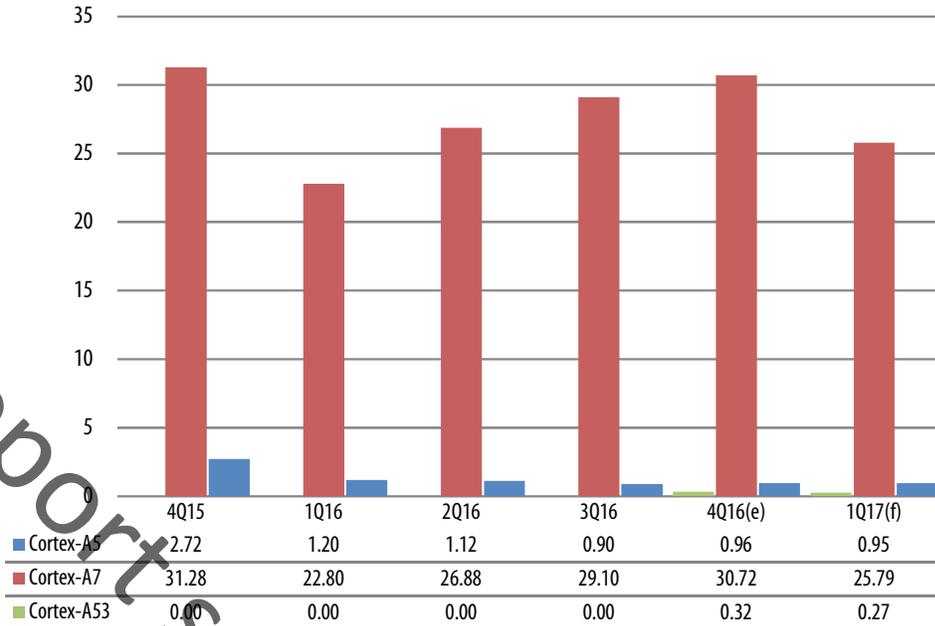
1Q17 forecast

Spreadtrum's low price LTE solutions are expected to continue seeing strong shipments in first-quarter 2017. In addition to demand from China's domestic market, emerging markets also have strong demand for low priced 4G solutions hence the shipment share of LTE solutions is expected to account for 55% in first-quarter 2017.

The shipment share of WCDMA among all Spreadtrum shipments in first-quarter 2017 is expected to be 42% as the firm's downstream China based customers continue to see strong performance in emerging markets.

Chart 20: Spreadtrum shipment share by baseband type, 4Q15-1Q17

Source: Digitimes Research, February 2017

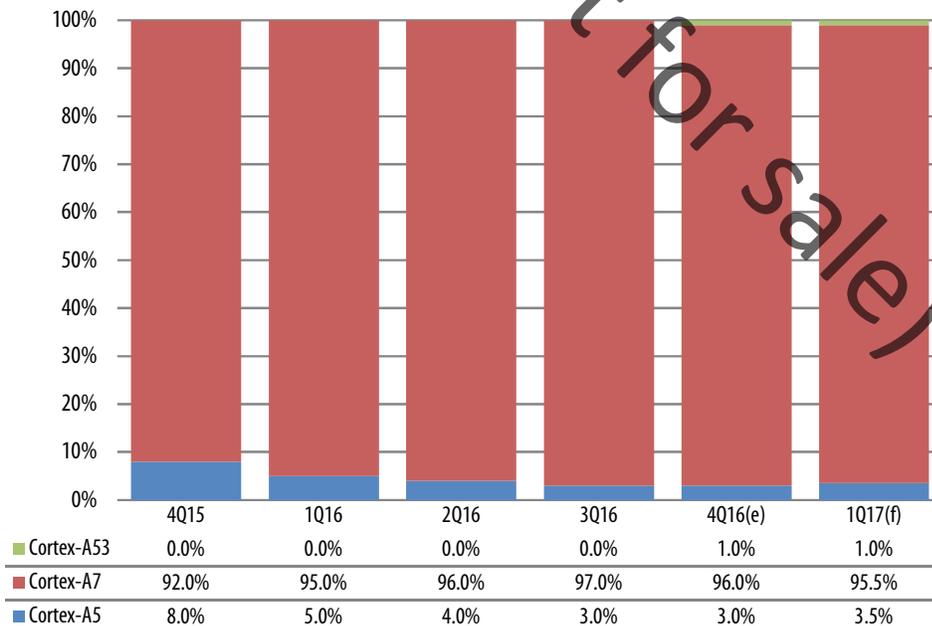
Chart 21: Spreadtrum shipments by architecture, 4Q15-1Q17 (m units)

Source: Digitimes Research, February 2017

1Q17 forecast

Cortex-A7 will continue to be the main architecture for Spreadtrum shipments in first-quarter 2017 but the shipment share is expected to fall slightly.

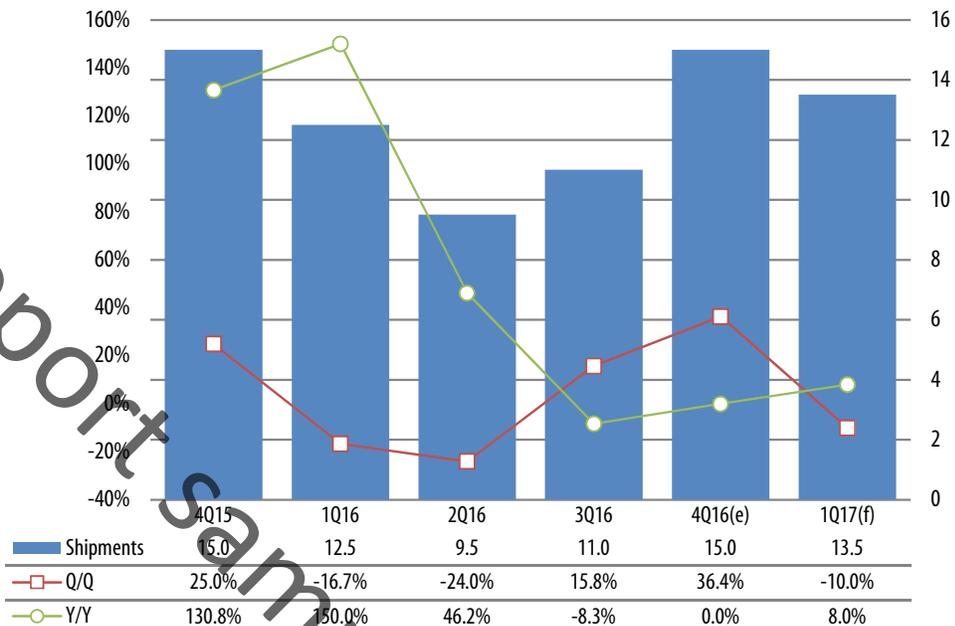
In fourth-quarter 2016, Spreadtrum's 16nm SC9860 began shipments but only a few second-tier firms issued orders so the shipment share is unlikely to show strong growth in first-quarter 2017.

Chart 22: Spreadtrum shipment share by architecture, 4Q15-1Q17

Source: Digitimes Research, February 2017

HiSilicon

Chart 23: HiSilicon smartphone AP shipments, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

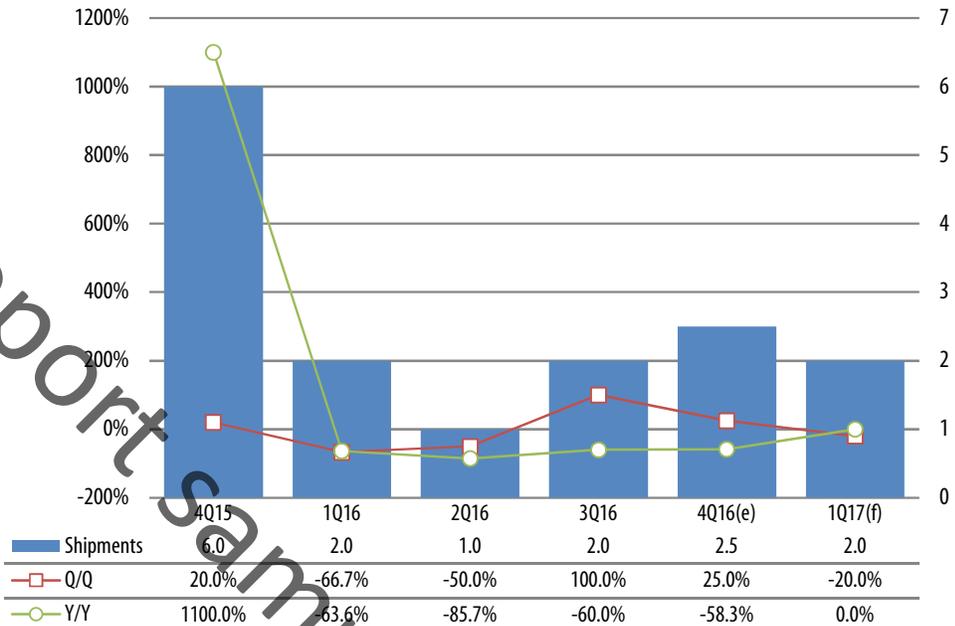
1Q17 forecast

Huawei increased shipments of entry-level to mid-range products in fourth-quarter 2016 and even increased procurement of chips from Spreadtrum, MediaTek and Qualcomm. However, as the first quarter of 2017 is the low season, Huawei is expected to procure the majority of the chips from HiSilicon hence the latter firm is expected to see its shipment share increase among all Huawei handsets.

HiSilicon is expected to continue promoting its mid-range Kirin 650 and high-end Kirin 960 solutions in first-quarter 2017 and as the firm's share among overall Huawei devices is expected to rise, despite the low season, the firm is likely to see a milder on-quarter shipment drop compared to other smartphone AP firms.

Leadcore

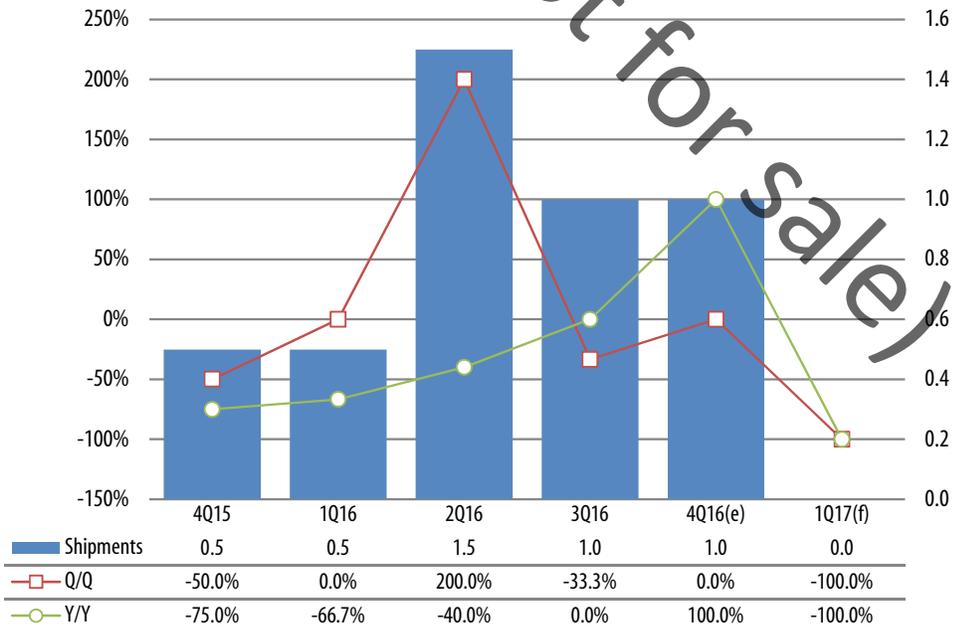
Chart 24: Leadcore smartphone AP shipments, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017

Marvell

Chart 25: Marvell smartphone AP shipments, 4Q15-1Q17 (m units)



Source: Digitimes Research, February 2017