

薄膜バルク弾性波共振子 (FBAR) フィルタの開発とその 4G, 5G システムへの応用
 Development of Thin Film Bulk Acoustic Resonator Filters and Their Applications for 4G and 5G Systems

日時: 2017年3月10日 (金曜日) 15:30~16:30

10 March 2017 (Friday) 15:30~16:30

参加無料, 事前申込不要 Admission free, No advanced registration required

場所: 東北大学 青葉山キャンパス マイクロ・ナノマシニング研究教育センター 3階 セミナー室
 Tohoku University, Aobayama Campus, Micro-Nanomachining Research & Education Center (MNC),
 3rd floor, Seminar room

(田中(秀)研究室ウェブサイト「アクセス」ページの地図上 A14 の建物)

(Building A14 on the map at http://www.mems.mech.tohoku.ac.jp/access/index_e.html)

主催: 田中(秀)研究室, マイクロ・ナノマシニング研究教育センター

Organized by S. Tanaka Laboratory and MNC, Tohoku University

講師:

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Dr. Masanori Ueda (TAIYO YUDEN Mobile Technology Co., Ltd., Board Director / TAIYO YUDEN Co., Ltd.)



Dr. Masanori Ueda received his B.S. and M.S. degrees in Material Engineering in 1986 and 1988, respectively, from Muroran Institute of Technology, Japan, and he received his Dr. of Eng. degree in 2009 from Chiba University, Japan. In 1988, he joined FUJITSU LIMITED. He was a director of FUJITSU MEDIA DEVICES LTD. in 2003 and a research fellow of FUJITSU LABORATORIES LTD in 2008. He joined TAIYO YUDEN CO., LTD. in 2010, and is now a general manager of microdevice R&D dept. and he is a member of the board of TAIYO YUDEN Mobile Technology Co. Ltd. Dr. Ueda serves as a TPC member of the IEEE Ultrasonics Symposium and a member of technical committee IEEE MTT-2

microwave acoustics, and is a member of the Institute of Electronics, Information, and Communication Engineers of Japan, and a member of IEEE.

要旨:

Requirements for RF devices in 4th generation (4G) mobile phones have been getting more stringent, especially in multiband / carrier aggregation systems (Fig. 1). In addition, discussions on 5th generation (5G) system have been progressing toward Tokyo Olympic (Fig. 2). The performance of acoustic wave devices is strongly dependent on Q factor, electro-mechanical coupling factor (K^2) and the temperature coefficient of frequency (TCF), which are being continuously enhanced by a lot of R&D efforts. In this seminar, I will first introduce the system trend and requirements of 4G and 5G, and then briefly explain the key technologies of the state-of-the-art film bulk acoustic resonator (FBAR) filters (Fig. 3 to 5).

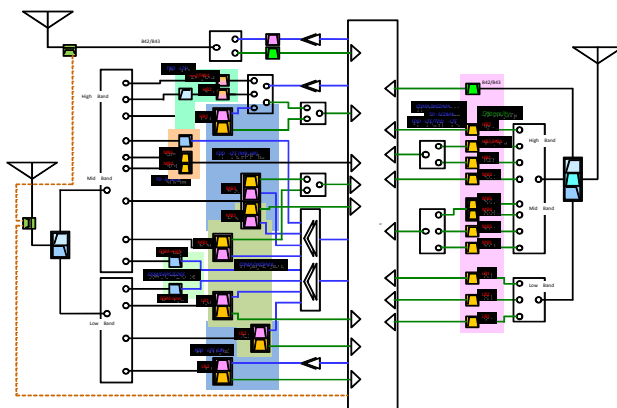


Fig. 1 RF circuit structure for 4G

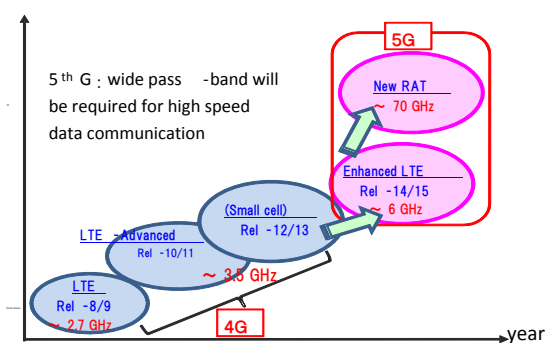


Fig. 2 System evolution from 4G to 5G



Fig. 3 FBAR filter die

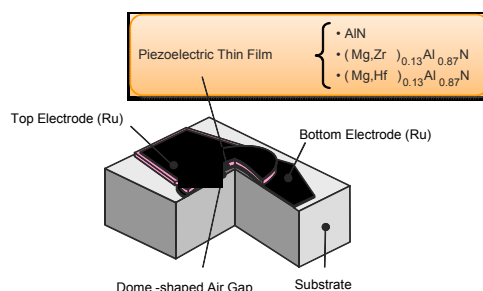


Fig. 4 Structure of FBAR

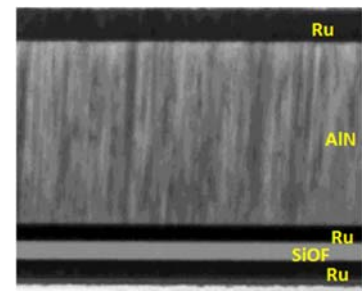


Fig. 5 Cross section of FBAR