

## MMT UBChirp . Underwater Transducer Technology

# UBChirp stands for “Ultra Broadband Chirp-Ready”

**UBChirp** transducer technology finds many underwater (UW) applications and is particularly advantageous in broadband UW communications, UW imaging, bathymetry, subsurface profiling, and UW detection, location, classification and tracking of low signature objects, etc. It offers unmatched performance in terms of improved detection range, sensitivity and target resolution over conventional tone burst transducer technology especially in noisy environments including littoral water.

Over the past years, Microfine Materials Technologies Pte Ltd (Singapore) has developed a range of UBChirp transducers using PZT piezoceramics and PZN-PT single crystal. MMT UBChirp transducers cover a wide range of central frequency from 16 kHz to 200 kHz, with bandwidths (BW) of > 0.8 octave (>50%) for PZT-based transducers and >0.9 octave (>60%) for single-crystal-based transducers. The table below provides the bandwidths of the various Ultra Broadband Chirp-ready (UBC) and Ultra Broadband Chirp-ready Compact (UBCC) transducers and arrays being produced at MMT, where the figures in bold give the approximate central frequency (to  $\pm 3$  kHz). MMT single crystal UBCC transducers are compact in size, suitable for forming arrays including high-density arrays (for UBCC-30 & UBCC-40).

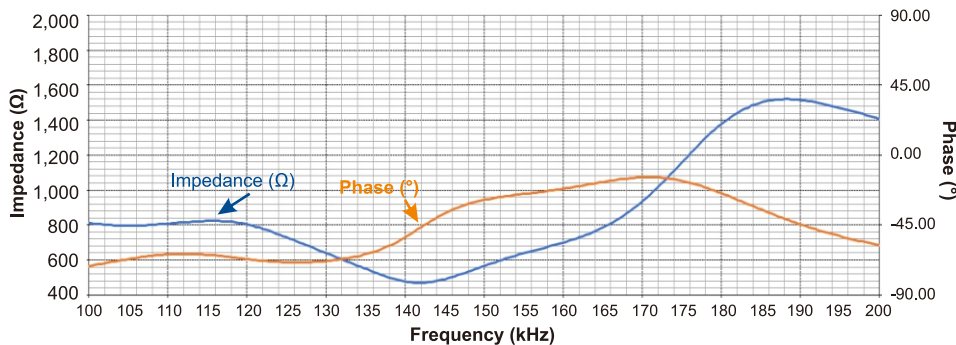
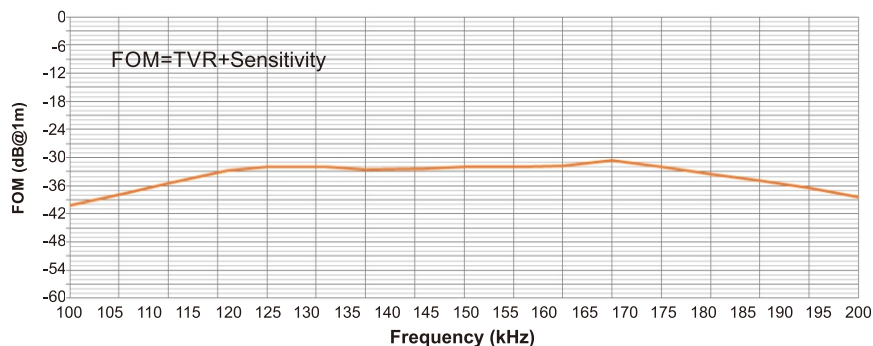
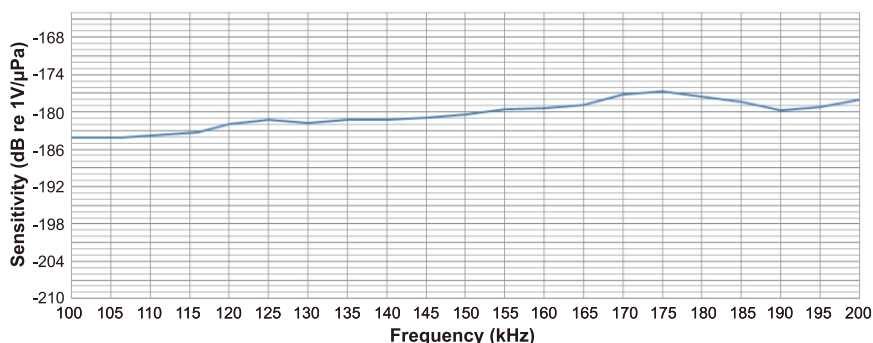
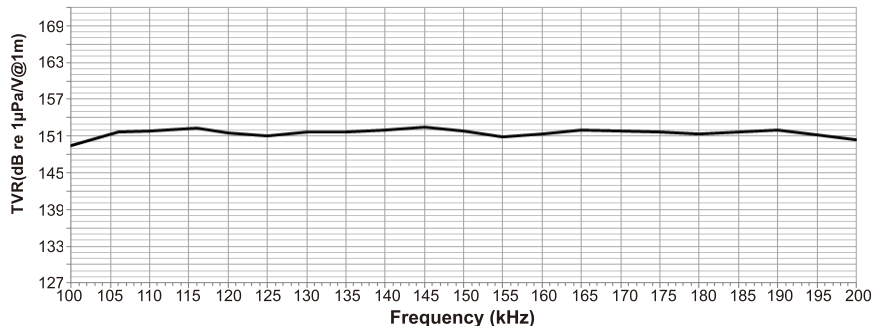
Table: Central frequencies and bandwidths of various MMT UBC & UBCC Transducers

	PZT/ Piezocomposite UBC [%BW]	Single Crystal UBCC [%BW]
HF	160-250 ( <b>205</b> $\pm$ 45) kHz [44%] UBC-205 100-200 ( <b>150</b> $\pm$ 50) kHz [67%] UBC-150	
MF	85-135 ( <b>107</b> $\pm$ 27) kHz [45%] UBC-110	
LF	30-50 ( <b>40</b> $\pm$ 10) kHz [50%] UBC-40 (*) 16-28 ( <b>24</b> $\pm$ 8) kHz [54%] UBC-24	40-80 ( <b>60</b> $\pm$ 20) kHz [67%] UBCC-60 (*) 30-50 ( <b>40</b> $\pm$ 10) kHz [50%] UBCC-40 (**) 24-38 ( <b>31</b> $\pm$ 7) kHz [50%] UBCC-30 (**) 16-32 ( <b>24</b> $\pm$ 8) kHz [67%] UBCC-24 (*) 11-21 ( <b>16</b> $\pm$ 5) kHz [63%] UBCC-16 (*)

(\*) suitable for forming arrays (\*\*) Miniaturized transducer elements suitable for forming high density array.



## UBC-150-PC 100-200 kHz [BW=67%]



Mircofine reserves the right to change specifications without notice.



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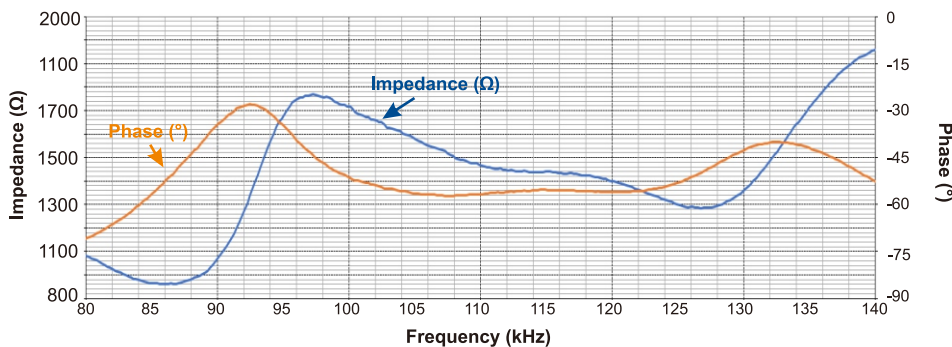
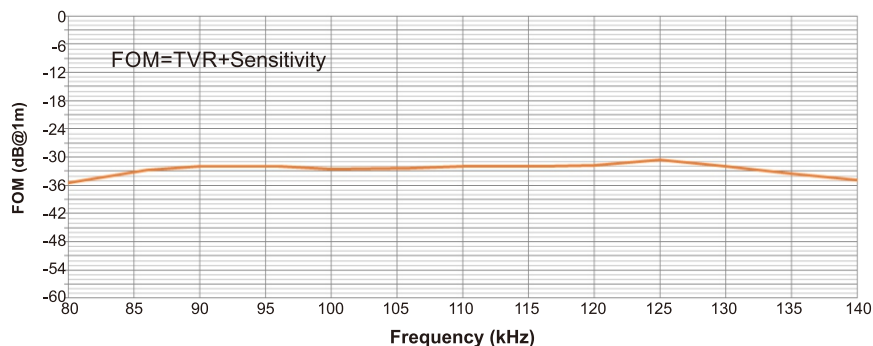
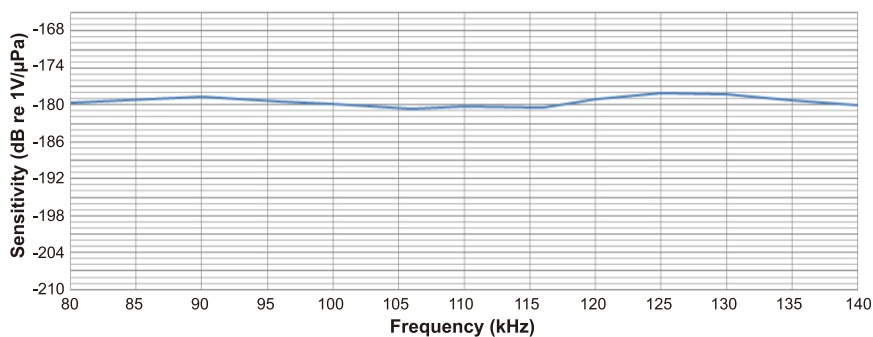
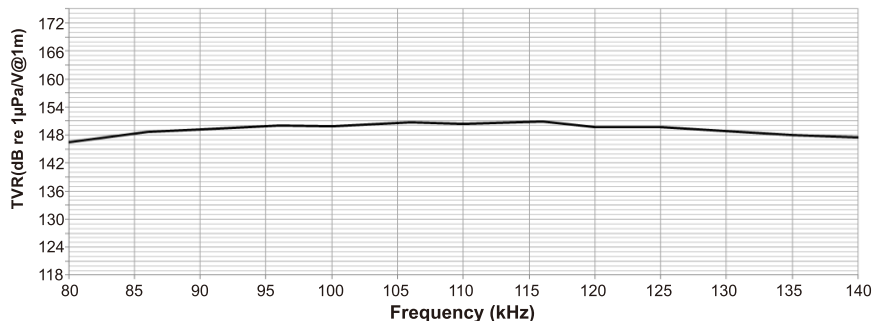
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## UBC-110-PC 80-134 kHz [BW=50%]



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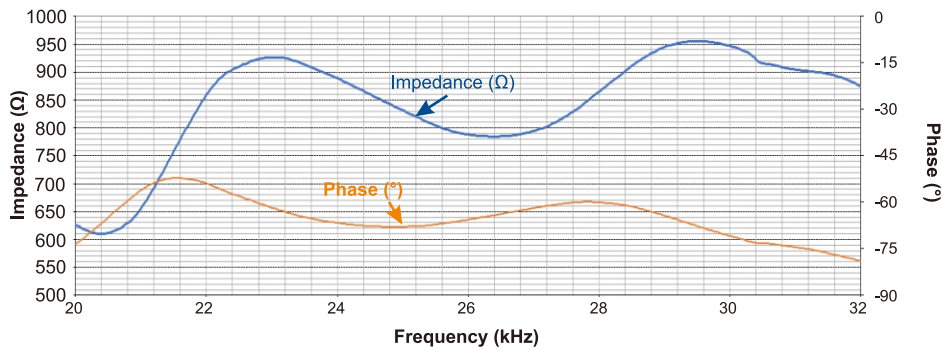
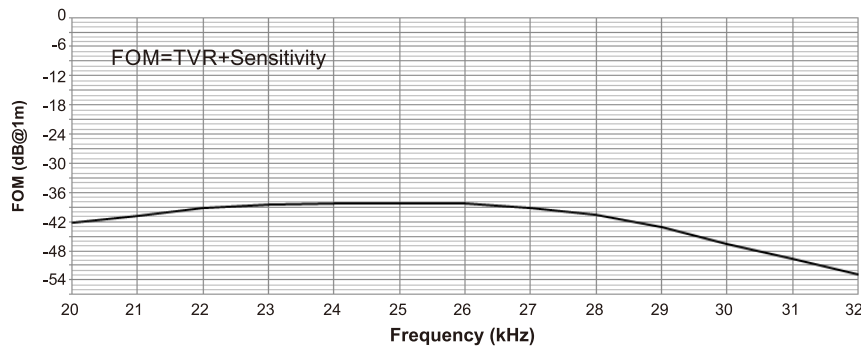
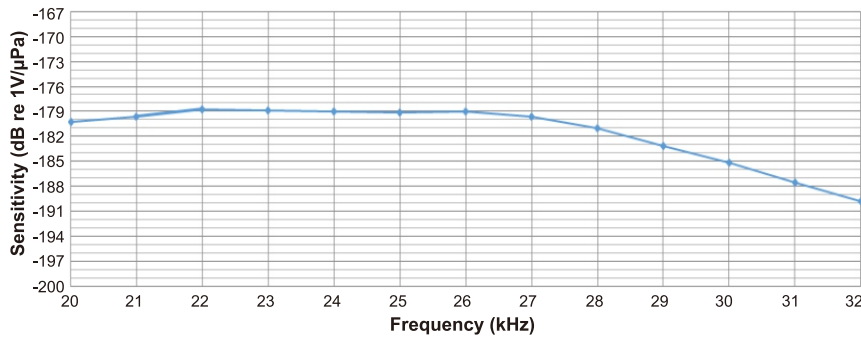
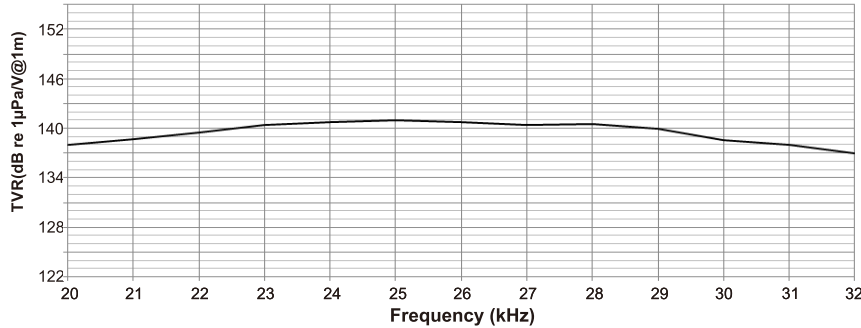
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# UBC-26-PZT 20-32 kHz [BW=46%]



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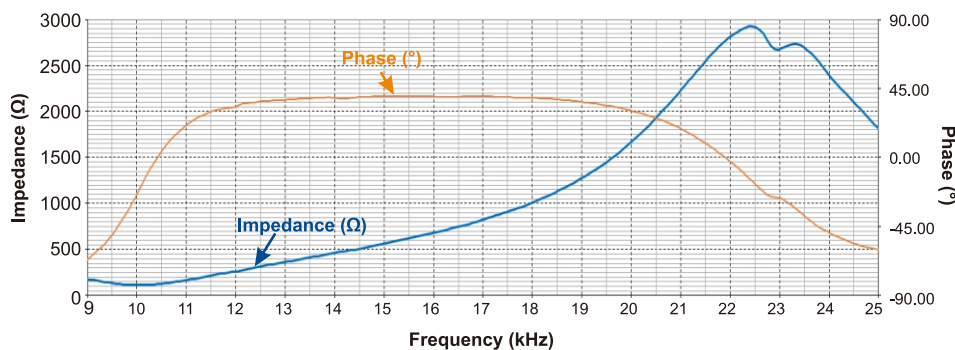
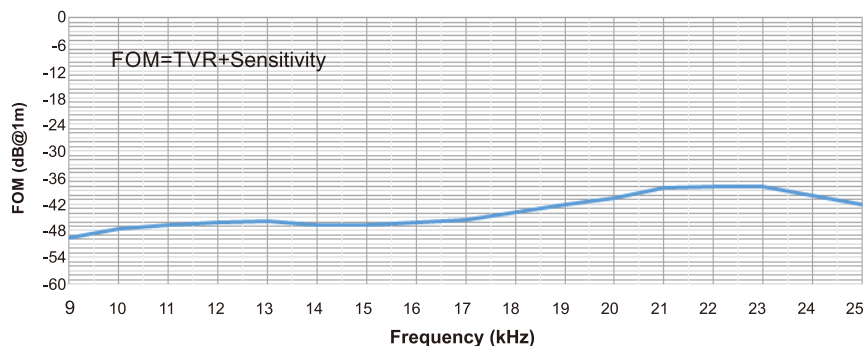
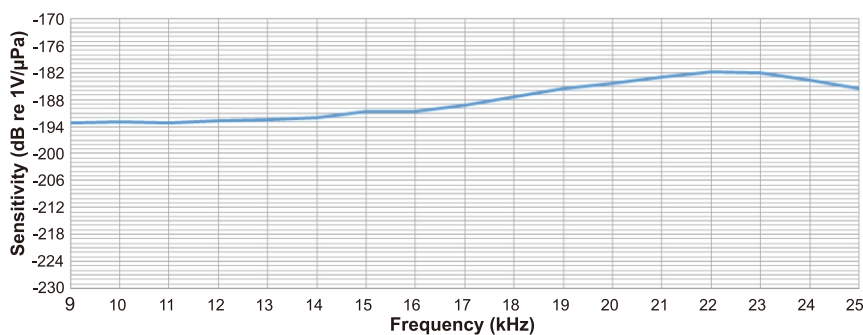
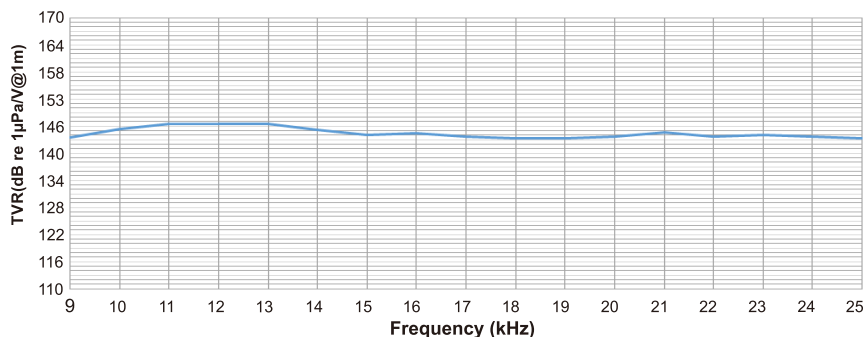
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# UBCC-15-SC

## 9-21 kHz [BW=80%]



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