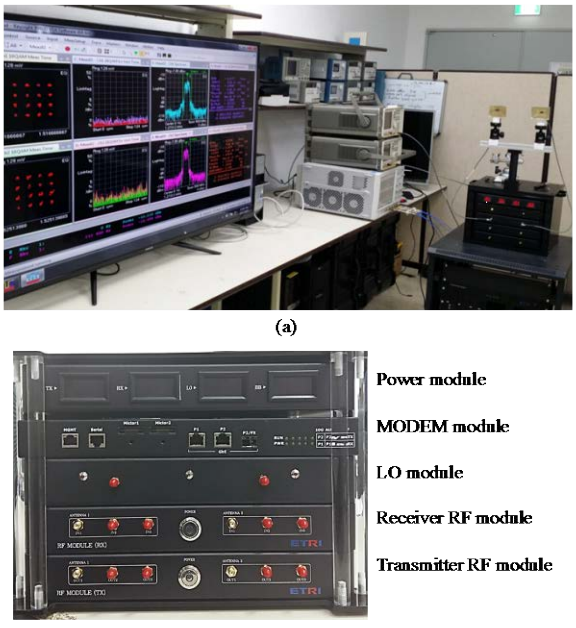

Fig. 11. Photographs of the developed system: (a) system setup for demonstration and (b) system platform.

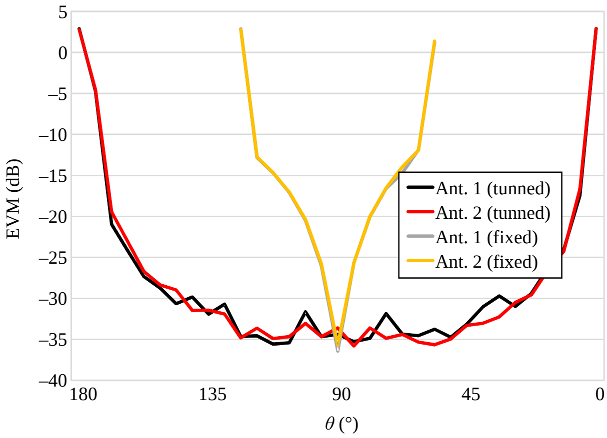

Fig. 12. Measured EVM performance.

to the theoretical performance of a 16-QAM in an additive white Gaussian noise channel.[10)] Figure 15 shows that the BER performance degrades slightly as θ diverges from $\pi/2$. The reason for the BER degradation is that the proposed alignment mismatch compensation method separates the signals from transmitters 1 and 2, but underperforms the SVD in terms of the SNR.

10) Figure 3 shows that the BER performance of the LoS MIMO system is maximized when there is no amplitude difference. Thus, signal-to-interference ratio is equal to 0 dB in a LoS MIMO link. This causes a loss in resolution of 1 bit at ADC for the signal in the desired channel. Additionally, the resolution of ADC degrades by approximately 4 bits due to noise in the digital board. Consequently, the effective resolution of ADC is limited to 7 bits. Through simulation, it was verified that the ADC resolution degradation causes approximately 1.5 dB in additional degradation at a BER of 10^{-5}, in addition to an implementation loss of 1 dB in a conventional wireless communication system.

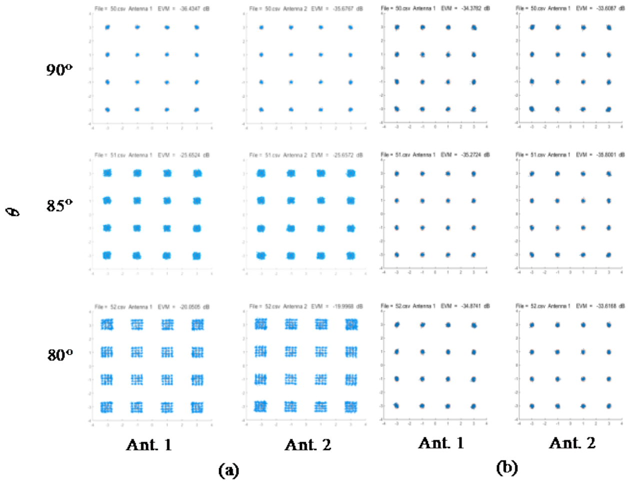

Fig. 13. Constellation measurement results when the alignment mismatch compensation is (a) not used and (b) used.

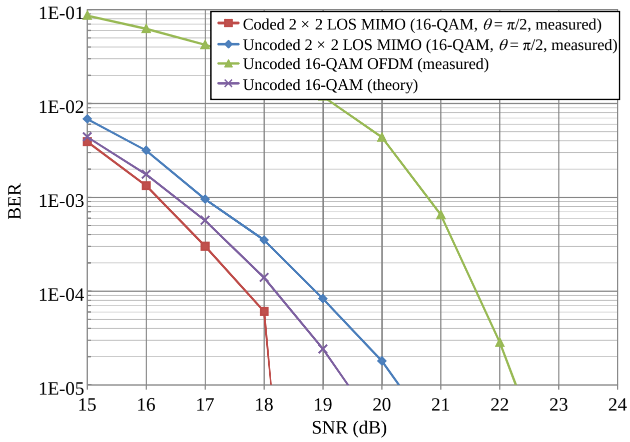

Fig. 14. Measured BER performance.

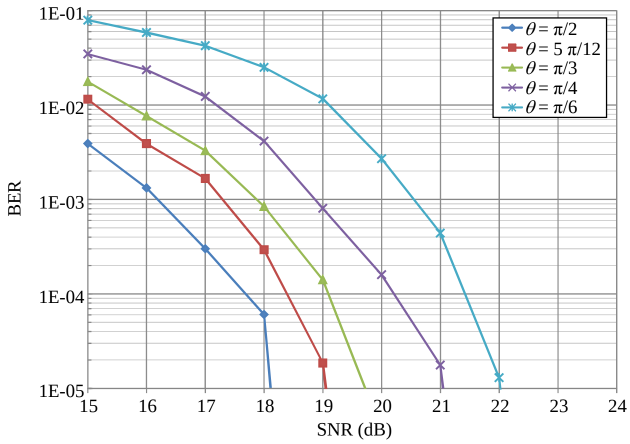

Fig. 15. Relationship between BER performance and θ.

VI. Conclusion

We presented a K-band (18 GHz) 16-QAM OFDM-based