



Title	Third harmonic generation due to free carrier in InSb using a terahertz free electron laser
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THIRD HARMONIC GENERATION DUE TO FREE CARRIER IN InSb USING TERAHERTZ FREE ELECTRON LASER: SUPPLEMENTAL DOCUMENT

Here we show the raw experimental data for the spectra shown in Fig. 2 (b) and Fig. 3 of the main text. Figure S1 shows three time-domain waveforms measured by reflection-type terahertz (THz) time domain spectroscopy (Advantest, TAS7500 TS) for the reference signal and the THz waves reflected from the InSb sample at 100 and 300 K. The reflectance spectra in Fig. 2(b) were calculated from the Fourier transform of these waveforms. The main signals and the multiple reflection signals in the sample appear at 26 ps and 39 ps, respectively. The multiple reflection signals were excluded by truncating the waveform before the first multiple-reflected pulse before the Fourier transformation. Figure S2 shows the interferogram signals of the free electron laser (FEL) output and its third harmonic measured using a Michelson-type interferometer. The Fourier transforms of these signals provide the spectra shown in Fig. 3.

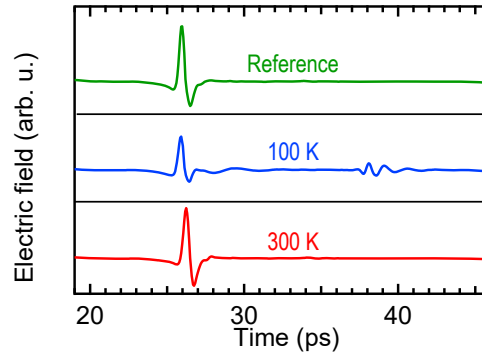


Fig. S1. Time-domain waveforms of the THz waves reflected from InSb obtained by reflection-type terahertz time domain spectroscopy.

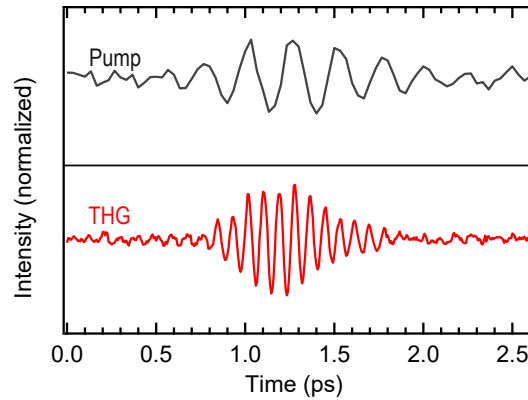


Fig. S2. Interferogram signals of the THz-FEL output and its third harmonic measured using a Michelson-type interferometer used for the calculation of the spectra shown in Fig. 3.