

Operational Description of FM Transmitter (One Chip)

(TX-1000)

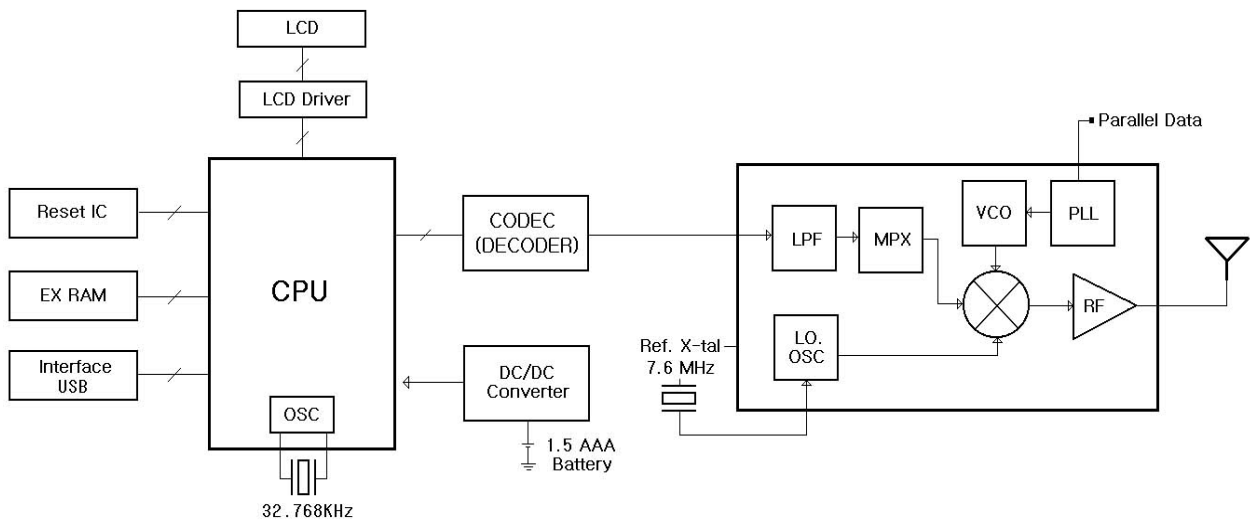
The basic operations of transmitter unit, BH1417F, are local oscillating with 7.6MHz, mixing and amplification. The transmitting of analog audio signal is performed by BH1417F chip after FM modulation. The analog signal to be modulated is fed by CPU after CODEC signal processing.

The transmitting frequency is adjusted by combination of the status of pin number 15 to 18.

See following table and pin description.

Control data				Frequency
D ₀ (Pin15)	D ₁ (Pin16)	D ₂ (Pin17)	D ₃ (Pin18)	
L	L	L	L	87.7MHz
H	L	L	L	87.9MHz
L	H	L	L	88.1MHz
H	H	L	L	88.3MHz
L	L	H	L	88.5MHz
H	L	H	L	88.7MHz
L	H	H	L	88.9MHz

Pin 1	R-ch audio source input terminal It cuts DC with the capacitor and it inputs R-ch audio signal.
Pin 2	Pre-emphasis time constant terminal It connects a capacitor for the time constant of pre-emphasis. $\tau=22.7k\Omega \times C$
Pin 3	LPF time constant terminal This is 15kHz LPF. It connects a 150pF capacitor.
Pin 4	Filter terminal It is a ripple filter for the reference voltage of the audio part.
Pin 5	Composite signal output terminal It connects to the FM modulator.
Pin 6	GND
Pin 7	PLL phase detector output terminal It connects to the PLL LPF circuit.
Pin 8	Power supply terminal
Pin 9	RF oscillator terminal This is the base terminal of the colpitts oscillator. It connects time constant of the oscillation.
Pin 10	RF GND
Pin 11	RF transmission output terminal It connects to the antenna through BPF.
Pin 12	PLL power supply terminal
Pin 13	X'tal oscillator terminal It connects a 7.6MHz crystal oscillator.
Pin 14	X'tal oscillator terminal It connects a 7.6MHz crystal oscillator.
Pin 15	Parallel data set up terminal D0
Pin 16	Parallel data set up terminal D1
Pin 17	Parallel data set up terminal D2
Pin 18	Parallel data set up terminal D3
Pin 19	Pilot signal adjust terminal
Pin 20	LPF time constant terminal This is 15kHz LPF. It connects a 150pF capacitor.
Pin 21	Pre-emphasis time constant terminal It connects a capacitor for the time constant of pre-emphasis. $\tau=22.7k\Omega \times C$
Pin 22	L-ch audio source input terminal It cuts DC with the capacitor and it inputs L-ch audio signal.



*** LPF**

Filtering the noise from CODEC(Decorder:MPU)

*** MPX**

Balancing the analog signals of R-CH and L-CH from LPF

*** OSCILLATOR**

The oscillator is designed by PLL circuit and controlled by parallel data. The reference frequency 7.6MHz is derived by itself. The output is generated via mixer and amplifier after comparison with the frequency adjusted by parallel data of Pin 15 to Pin 18.

*** AMPLIFIER**

Amplifying the signal from Mixer