



R&D CAPABILITY



Factory Address: Lot I-4b-6, N3 Street, HCMC Hi-Tech Park, Dist.9,
Saigon, Vietnam
Tel: (+84-28) 6286 3888

Email: sales@tce-ems.com

Website: www.tce-ems.com

- TCE has accrued a wide base of design and manufacturing knowledge from our work.
- Design the hardware as requirement: design the circuit and the PCB layout follow customer's requirement, RF circuit design
- Programming for the system as requirement:
 - RTOS programing for Microcontroller as: NXP, STM, Microchip, SILAB...
 - Embedded Linux programming for Chipset as: Mediatek, Broadcom, STM, Amlogic, Rockchip, ALI, MSTAR...

- **Hardware Design:**
 - Schematic and multi-layer (4-12 layers) PCB design.
 - Component selection optimized for performance, cost, and availability.
 - Worst case circuit analysis (WCCA), Signal integrity and EMI/EMC compliance, DFM (Design for Manufacturing) optimization
 - Expertise in analog/digital circuits, Highspeed design, FPGA design, power management, RF, microcontrollers, and communication interfaces (UART, SPI, I2C, etc.).
 - Re-design customer's products.
 - Design new products according to customer requirements.
- **Embedded Software Development:**
 - Firmware development for microcontrollers (ARM Cortex-M, STM32, PIC, etc.).
 - Development of device drivers and peripheral interfaces.
 - Integration of RTOS and development of real-time embedded applications.

- **Technology Research & Integration:**
 - Implementation of emerging technologies such as IoT in electronic devices.
 - Research on robotic control and its applications in projects
 - Technical feasibility studies, prototyping, and continuous innovation.
- **Product Testing & Validation:**
 - Circuit simulation and verification using advanced tools.
 - Hardware testing using professional instruments (oscilloscope, LCR meter, logic analyzer, etc.).
 - Compliance with electrical safety, and international quality standards.
- **R&D Project Management:**
 - Full product development lifecycle: from concept design to prototyping and mass production.
 - Engineering change management and design control processes.
 - Cross-functional coordination with manufacturing, sourcing, and quality teams.

- **Design Software:** Altium Designer, OrCAD/Allegro
- **Simulation Tools:** Proteus, Multisim, LTspice XVII, Advanced Design System , CST Studio, Sigrity
- **Programming Tools:** Keil, IAR Embedded Workbench, STM32CubeIDE, MPLAB X IDE, Arduino IDE, PIC C Compiler
- **Software:** Android Studio, Visual Studio



Sample Products & Projects

Here are examples of our Turnkey products and the disciplines required for Design and/or DFX and Manufacturing:

RESIDENTIAL AND OFFICE

- Wireless Routers
 - Wireless Router with MediaTek MT7628 Processor for Residential and Office use
- Set Top Boxes
 - The design and manufacturing of Set Top Boxes for Satellite, Terrestrial, Cable, combo hybrid and Android TV with IC Mstar, Ali, Broadcom, STM, Amlogic, Rockchip, Montage, NXP, Rafael.
- IoT Products aimed at Residential, and Industrial Markets
 - Produced a series of IoT products for the Consumer Market with IC NXP, STM
 - IoT and Door Locks with IC NXP, STM
 - Smoke Alarm system



Sample Products & Projects

- Electronic Door Locks:
 - High Quality NFC Smart Electronic Door Lock with NXP Chip for Residential and Hotel use
- Docking Station:
 - A device in which a laptop computer, smartphone, or other mobile device may be placed for charging, providing access to a power supply and to peripheral devices or auxiliary features.
- Automatic Coffee Machine Control Board:
 - A coffee maker that automates the entire coffee-making process, from grinding beans to brewing coffee.
- Robotic:
 - A 6-axis robotic arm used for through-hole soldering on PCBs

INDUSTRIAL

- Controls via Microcontroller based Designs
 - Atmel 8051, AVR (8-bit), AVR32 (32-bit), and AT91SAM (32-bit)
 - Microchip Technology PIC, (8-bit PIC16, PIC18, 16-bit dsPIC33 / PIC24), (32-bit

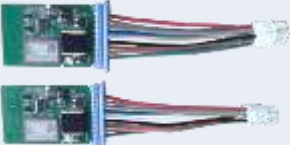
- IoT for Industrial and Manufacturing Applications
 - Embedded to obtain Manufacturing Data
 - Designs for Data Monitoring and Analysis
- Online Water Quality Monitoring Equipment for Aquaculture
 - System monitors 5 important parameters of Aquatic environment: ORP (Oxidation-Reduction Potential), DO (Dissolved oxygen), pH, EC (Electrical Conductivity) and Temperature
- Access Control System:
 - A security mechanism that determines who or what is allowed to access a specific area, resource, or data.

GPS TECHNOLOGIES

- GPS Products
 - Tracking Devices for Automobiles, Motorcycles/Bicycles/ Individual with IC Mediatek

Picture	Product	Function	Status	Launching Date
	TAPS	8 WAY MULTIMEDIA TAPS (for CATV)	Mass production (Research time is 3 months)	04/2011
	SPLITTERS	OUTDOOR POWER PASS SPLITTERS (for CATV)	Mass production (Research time is 3 months)	06/2011
	TC-PAC600	TC TECH POWER SUPPLY - MODEL: TC-PAC600 A/B (for CATV)	Mass production (Research time is 2 months)	05/2011
	Power supply	Power of Amplifier 60VAC (for CATV)	Mass production (Research time is a month)	06/2011
	FIBER OPTIC WORKSTATION	FIBER OPTIC WORKSTATION - MODEL: TC8600-A4 (for CATV)	Mass production (Research time is 6 months)	02/2012

Picture	Product	Function	Status	Launching Date
	FIBER OPTIC RECEIVER	FIBER OPTIC RECEIVER - MODEL: TC8618 (for CATV)	Mass production (Research time is 6 months)	04/2012
	OUTDOOR AGC AMPLIFIER	AGC AMPLIFIER - MODEL: TC-8636 (for CATV)	Mass production (Research time is 6 months)	06/2012
	OUTDOOR AMPLIFIER	AMPLIFIER - MODEL: TC-8630 (for CATV)	Mass production (Research time is 3 months)	08/2012
	Indoor Amplifier	Indoor Amplifier TC-8630FI indoor (for CATV)	Mass production (Research time is 2 months)	10/2012

Picture	Product	Function	Status	Launching Date
	Power supply	Power supply with Display for Singapore	Prototype (Research time is 4 weeks)	04/2014
	Board Elevator controller	Board Elevator controller for Russia customer	EMS	05/2014
	Boiler controller	Board controller for water heater	EMS	08/2014
	Board sensor		EMS	09/2014
	Board Thermostat		EMS	11/2014

Picture	Product	Function	Status	Launching Date
	Board Dial Module		EMS	12/2014
	Board Driver		EMS	04/2015
	Board U2E-HW001		EMS	05/2015
	Board Wood Moisture Meter		EMS	06/2015
	Board Led		EMS	06/2015

Picture	Product	Function	Status	Launching Date
	Board Base Station		EMS	06/2015
	GPS tracking		EMS	07/2015
	Board Soap Dispenser		EMS	10/2015
	Street lamp		EMS	06/2016
	LED LIGHT Tube		EMS	06/2016

Picture	Product	Function	Status	Launching Date
	Set Top Box DVB-C	Set Top Box DVB-C SD Chipset Ali M3202C CAS Sumavision TC-2012C	Prototype (Research time is 2 years)	12/2012
	Set Top Box DVB-T2	Set Top Box DVB-T2 SD Chipset Ali M3105D FTA HN1200T2-SD	Mass production (Research time is 3 months)	09/2013
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Ali M3812 FTA HN1200T2-HD	Mass production (Research time is 3 months)	10/2013
	Set Top Box DVB-C	Set Top Box DVB-C HD Chipset Broadcom BCM7581 CAS Conax TC-388	Mass production (Research time is 4 months)	08/2014
	Set Top Box DVB-S2	Set Top Box DVB-S2 SD Chipset Ali M3105D FTA TC-568S	Mass production (Research time is 4 months)	11/2014

Picture	Product	Function	Status	Launching Date
	Set Top Box DVB-S2	Set Top Box DVB-S2 HD Chipset Mstar MSD7802 FTA TC-688	Mass production (Research time is a year)	12/2014
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Mstar MSD7802 FTA TC-377VS	Mass production (Research time is 6 months)	06/2015
	Set Top Box DVB-S2	Set Top Box DVB-S2 HD Chipset Montage M88CS6001 FTA TC-588M	Mass production (Research time is 3 months)	07/2015
	Set Top Box DVB-T2&S2	Set Top Box DVB-T2&S2 HD COMBO Chipset Montage M88VT6000 FTA TC-777	Mass production (Research time is 3 months)	08/2015
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Mstar MSD7802 FTA TC-211	Mass production (Research time is 3 months)	09/2015

Picture	Product	Function	Status	Launching Date
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Mstar MSD7T01 FTA TC-211	Mass production (Research time is 3 months)	11/2015
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Mstar MSD7T01 FTA TC-377S	Mass production (Research time is 3 months)	11/2015
	Androi TV Box	Androi TV Box Chipset Amlogic S812, 2GB RAM, 4GB FLASH, OS Android 4.2.2 TC-111A	Mass production (Research time is a year)	01/2016
	Set Top Box DVB-C	Set Top Box DVB-C HD Chipset Mstar MSD5029 CAS NSTV TC-388	Mass production (Research time is 3 months)	06/2016
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Mstar MSD7T01 FTA TC-377VN	Mass production (Research time is 3 months)	07/2016

Picture	Product	Function	Status	Launching Date
	Android TV Box	Android TV Box Chipset Amlogic S905, 2GB RAM, 8GB FLASH, OS Android 5.1 TC-112A	Mass production (Research time is 6 months)	08/2016
	Set Top Box DVB-T2	Set Top Box DVB-T2 HD Chipset Mstar MSD7T01 FTA TC-377VS	Mass production (Research time is 3 months)	09/2016
	Set Top Box DVB-C	Set Top Box DVB-C HD Chipset STi273 CAS Conax HDC17-s	Mass production (Research time is 3 months)	03/2017
	Android TV Box	Android TV Box Chipset Amlogic S912, 2GB RAM, 8GB ROM, OS Android 6.0	Prototype (Research time is 4 months)	05/2017
	Android TV Box	Android TV Box Chipset Amlogic S905X, 2GB RAM, 8GB ROM, OS Android 6.0	Prototype (Research time is 4 months)	06/2017

Picture	Product	Function	Status	Launching Date
	Wifi Router	Wifi Router Chipset MediaTek MT7621	Prototype (Research time is 6 months)	06/2017
	GPS Tracker	GPS Tracker GT02 for Motorbike	Mass production (Research time is 8 months)	08/2017
	GPS Tracker	GPS Tracker TC-99 for Car	Mass production (Research time is a year)	08/2017
	Wifi Router	Wifi Router Chipset MediaTek MT7628 TC-811	Mass production (Research time is 8 months)	08/2017
	Android TV Box	Android TV Box Chipset Rockchip RK3229, 2GB RAM, 8GB, OS Android 6.0 TC-122	Mass production (Research time is 3 months)	10/2017

Picture	Product	Function	Status	Launching Date
	IoT	ONLINE WATER QUALITY MONITORING SYSTEM FOR AQUACULTURE	Mass production (Research time is 2 years)	11/2017
	Android TV Box	Android TV Box Chipset Rockchip RK3229, 1GB RAM, 8GB, OS Android 6.0 TC-121	Prototype (Research time is 3 months)	12/2017
	Power Adapter	Power Adapter 5V/2A, 12V/1A, 12V/2A using IC FDHISI	Prototype (Research time is 3 months)	12/2017
	Set Top Box DVB-S2	Set Top Box DVB-S2 HD Chipset Mstar MSD7802 FTA TC-588S	Mass production (Research time is 3 months)	10/2017
	Warning Light	Board Warning Light	Prototype (Research time is a months)	11/2017

Picture	Product	Function	Status	Launching Date
	Set Top Box DVB-S2	Set Top Box DVB-S2 HD Chipset Mstar MSD7S01 FTA TC-677	Mass production (Research time is 3 months)	03/2018
	IP Video Door Phone	TCTEK Android Intercom System	Prototype (Research time is 6 months)	05/2018
	Hotel Electronic Door Locks	TCTEK TC-1803 Hotel Electronic Door Locks (NFC Card + Mechanical key) using MCU NXP	Prototype (Research time is 3 months)	06/2018

Picture	Product	Function	Status	Launching Date
	Hotel Electronic Door Locks	Smart Lock using MF1 Card (Mifare Card, 13.56MHz) and mechanical lock, model TC-1807	Prototype (Research time is 3 months)	11/2018
	Home Electronic Door Locks	Smart Lock using Touch keyboard, MF1 Card (Mifare Card, 13.56MHz) and mechanical lock, model TC-1861	Prototype (Research time is 6 months)	01/2019
	Home Electronic Door Locks	Smart Lock using Touch keyboard, Bluetooth, MF1 Card (Mifare Card, 13.56MHz) and mechanical lock, model TC-1863	Prototype (Research time is 3 months)	01/2019

Picture	Product	Function	Status	Launching Date
	ESD Control system	Control the person's ESD when entering the factory	Prototype (Research time is 1 year)	01/2021
	Insect Killer Torch	Flickering Flame Light Attracts and kills insects (Using battery and outdoor)	Mass production (Research time is 3 months)	04/2021
	Infrared thermometer	Measure human body temperature	Prototype (Research time is 3 months)	03/2022

Picture	Product	Function	Status	Launching Date
	Data Logger	Collect temperature and humidity	Prototype (Research time is 4 months)	07/2022
	Product counter	Counting products on the production line	Prototype (Research time is 3 months)	10/2022
	Insect Killer Light Bulb	Attracts and kills insects (Using 120V AC)	Prototype (Research time is 2 months)	11/2022

Picture	Product	Function	Status	Launching Date
	Smoke Alarm (Gateway)	Communicate with lora. Received alarm from device and send to server	Prototype (Research time is 3 months)	03/2023
	Smoke Alarm (Device)	Communicate with lora. Detect smoke and send alarm to gateway	Prototype (Research time is 3 months)	03/2023
	Home Electronic Door Locks Ver 1.0.2	Smart Lock using Touch keyboard and mechanical lock, model TC-1863	Prototype (Research time is 2 months)	05/2023

Picture	Product	Function	Status	Launching Date
	Home Electronic Door Locks Ver 1.0.2	Smart Lock using keyboard and mechanical lock, model TC-1864	Prototype (Research time is 2 months)	05/2023
	Vending Machine		Prototype (Research time is 3 months)	06/2023
	Docking		Design board (6 months)	03/2024

Picture	Product	Function	Status	Launching Date
	Automatic Coffee Machine Control Board		Prototype (Research time is 4 months)	08/2024
	Barrier Control		Design control board (2 months)	12/2024
	Automatic soldering robot		Programming and operation (3 months)	05/2025

We invite you to visit TCE. Thank you!

