

# SmartWindow™

Team: SherPak

## Connected Windows Connected Communities

### How a window could transform your lives?

Ever imagined that windows could be your gateway to the digital world? It's possible! SmartWindow provides a unique Quality-of-Experience (QoE) with an uninterrupted data connectivity for every urbanite in the future city. The inspiration behind the concept of SmartWindow is to employ glass windows as a communicating node, powered by solar energy. SmartWindow ushers in a new era of easily deployable and cost effective communication system for every house and building.

### What is SmartWindow?

The SmartWindow communication system is a "paste and play" solar powered solution that provides quad-play and cooperative network services to urbanites. Unlike existing telecom services which use conventional communication equipment, our solution is based on cooperative communication between windows, providing significant gain in terms of cost, energy, health impact and carbon footprint.

*"Paste and play";*  
*Wires go away;*  
*Keeps energy wastage at bay;*  
*Doesn't betray;*  
*Helps you convey;*  
*No delay;*  
*Pleasant to display;*  
*Start communicating straight away;*  
*Deploy it today;*  
*Use it! As you may;*

- Team SherPak

**GOODBYE** to the conventional bulky and resource hungry communication equipment.



### Advantages

- Reliability
- Energy efficient
- Easily deployable
- Esthetically pleasant
- Cooperative diversity
- Paste and play solution



## Connected Windows

### "Your gateway to the world"

### Why SmartWindow?

The increase in population and exponential growth of data users stimulates the deployment of wireless data connectivity modules in every building. Current wireless communication solutions are resource hungry, bulky and require extensive man power for deployment. These solutions possess less tendency to deal with the increasing demand of seamless wireless connectivity in a future city.

### Is it Safe?

The radiation exposure (Specific Absorption Rate: SAR) of the SmartWindow does not exceed 1 W/kg averaged over 1g of human body tissue. This value is 38% below the FCC regulations and poses no health risk to users.

## How SmartWindow works?

The ultra-thin sheets of photoelectric material (thin film) pasted on window frame would serve as solar cells for charging the battery. The transceiver module is directly energized by the solar panel while the charged battery would provide backup power when there is no sunlight. The transceiver module comprises of two parts:

- Circuit board consisting of a control unit and power management unit
- A planar transmitter / receiver antenna

The control unit will be responsible for executing the set of instructions related to data transmission and reception. Whereas, the power management unit will control the switching between two modes: 1) direct power from solar panel 2) power from battery backup when solar power is not available. The circuit will feed the antenna for cooperative communication between windows.

Cooperative communication will provide diversity which enhances reliability of the network. Transmission load is distributed among the SmartWindows in proximity which not only ensures data connectivity to users, but also allows wireless network coverage with optimal utilization of energy.

## Technical Specifications

### Electrical

Input Power : 1 Watt  
 Power consumption: 0.8 Watt  
 Backup battery: 1.2 Ah

### Physical Structure

Antennas: Planar micro-strip  
 Solar sheets: Planar ultra-thin  
 Antenna size: 20x20cm<sup>2</sup>  
 Solar sheet size: 30x30cm<sup>2</sup>  
 Weight: 150g  
 Pasting options: Sticker paste

### External connections

Power connector: Type BF

### Environment

Operating temp: -40°C to +70°C  
 Recycling materials: 80%  
 Carbon footprints: Very less

### Communication

Standard interface: LTE/4G  
 Optional interface: WiFi/CDMA  
 Supported protocols: IPv4, IPv6  
 Antennas: Embedded (x2)

### Security

Access control: Local  
 Devices / platform: Encrypted software SWIN v1

### Management

Configuration: Software SWIN v1

### Compliance and Certification

Environment: IEC 600068-2-64  
 US EMC: FCC CFR 47  
 EU R&TTE Directive: 62311, EN 510 311

### Safety:

US UL 60950-1, UL 60950-22  
 EU EN 60950-1, EN 60950-22  
 Carrier: Vodafone / CYTA  
 Marks: FCC, CE



### OUR PARTNERS

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