



## GT-8555A USB Peak Power Sensor 100 MHz to 20 GHz

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PC-based Universal Power Meter

# GT-8555A USB Peak Power Sensor

## Advanced Power Sensor Technology

- Peak and Pulse power measurements
- Outstanding accuracy and repeatability
- 2000 readings/sec exceptional speed
- Internal zero and cal - ideal for ATE



The Giga-tronics GT-8550A series USB Power Sensors are designed for fast measurement speed, wide dynamic range and high accuracy. The unique circuit topology is highly reliable, with performance that excels where extremes of measurement speed and accuracy are required. The PC based platform allows for lower cost than traditional power meters and power sensors, and with a laptop PC is ideal for field portable power measurement or remote monitoring applications.

The Giga-tronics GT-8550A series USB Power Sensors include the powerful application software, Measurement Xpress. Measurement Xpress software provides a suite of measurement capabilities in the familiar, easy-to-use Microsoft® Windows format, and allows for point and click selection of multiple power sensors and displays.

## GT-8555A USB Peak Power Sensor

### Advanced Power Sensor Technology

The Giga-tronics GT-8550A series USB Power Sensors offer accurate power measurement of RF and microwave signals. Fast measurement speed, wide dynamic range and low VSWR make these broadband power sensors ideal for R&D laboratory, manufacturing test, field installation and field maintenance applications.

The GT-8550A series USB Power Sensors are fully calibrated. Unlike traditional power meters and power sensors, there is no need to cal or zero the sensor prior to making measurements, eliminating sources of error and enhancing ease-of-use. The ruggedized body increases reliability and reduces damage from mishandling.

The Giga-tronics GT-8551A 100 MHz to 8 GHz, operational to 10 GHz, USB Power Sensor can be used in wireless communications and component testing wherever signals with modulation are present. Measurement modes include CW mode, modulated average power, burst average power, pulse average power and crest factor.

The Giga-tronics GT-8552A 100 MHz to 8 GHz and GT-8555A 100 MHz to 20 GHz USB Peak Power Sensors, feature pulse profiling for use in measuring pulse parameters for defense and communication applications wherever pulse waveforms are present. The pulse profiling application includes multiple markers and gate functions for accurate pulse characterization. The GT-8552A and GT-8555A USB Peak Power Sensor measurement modes include CW mode and modulation modes, as well as the Peak Power Mode.

The Giga-tronics GT-8888A USB Power Sensor with 10 MHz to 8 GHz frequency coverage, operational to 10 GHz, and the GT-8553A USB Power Sensor with 10 MHz to 18 GHz frequency range are both optimized for fast, accurate power measurement of continuous wave (CW) RF and microwave signals.



# GT-8555A USB Peak Power Sensor

## Technical Specifications

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### Specifications

Specifications apply over 0 °C to 50 °C unless otherwise indicated. Typical specifications describe expected but non-warranted performance.

### Frequency Range

Sensor Model	Specifications
GT-8555A	100 MHz to 20 GHz

### Dynamic Range

Sensor Model	Specifications
	100 MHz to 20 GHz
GT-8555A	-40 dBm to +20 dBm

### Maximum Peak Power (Damage Level)

Sensor Model	Specifications
GT-8555A	+23 dBm (200 mW)

Maximum input power: +20 dBm    Maximum input voltage: 25 Vdc

### VSWR

Sensor Model	Specifications	
	100 MHz to 10 GHz	10 GHz to 20 GHz
GT-8555A	1.20:1	1.29:1

### Recommended Calibration Cycle

Recommended calibration cycle is one (1) year

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### Accuracy

Measurement uncertainty is computed from the individual cal factor, mismatch, linearity, noise and temperature error factors, and can be computed as either worst case (sum of the applicable error terms) or RSS, representing the most probable error, where RSS is the square root of the sum of the squares of the error terms.

Accuracy is typically < 2.5% (RSS) mid-band with source VSWR 1.2:1 (or better) at 25 °C +/- 5 °C.

### GT-8555A Error Factors

Calibration Factor	100 MHz to 0.5 GHz	0.5 GHz to 12.5 GHz	12.5 GHz to 18 GHz	18 GHz to 20 GHz
-40 to +20 dBm	4%	2.6%	3.2%	3.5%

Linearity	100 MHz to 2 GHz	2 GHz to 20 GHz
+15 to +20 dBm	7%	6%
+5 to +15 dBm	5%	4%
-40 to +5 dBm	3%	2%

Noise <sup>1</sup>	100 MHz to 20 GHz
-30 to +20 dBm	0.25%
-40 to -30 dBm	0.50%

Note 1: Noise measured with a 5 second integration time

Temperature	0 °C to 10 °C	10 °C to 20 °C	20 °C to 30 °C	30 °C to 40 °C	40 °C to 50 °C
-40 to 20 dBm	2.5%	1.25%	0%	1.25%	2.5%

Zero Offset	100 MHz to 20 GHz
-40 to +20 dBm	0.25 nW typical at 25 °C, 0.75 nW typical 0 °C to 50 °C

# GT-8555A USB Peak Power Sensor

## Technical Specifications

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### Measurement Speed

Sensor Model	Specification
GT-8555A	2000 Reading/second typical

### Sample Rate

Sensor Model	Specification
GT-8555A	48 MS/s

### Video Bandwidth

Sensor Model	Specification
GT-8555A	10 MHz

### Maximum Peak-to-Average Ratio

Sensor Model	Specification
GT-8555A	55 dB typical

### Rise Time / Fall Time

Sensor Model	Specification
GT-8555A	< 55 ns (10% to 90%) at 4 GHz

### General Specifications

USB Voltage	+4.5 Volts to +5.5 Volts
USB Power <sup>2</sup>	450 mA typical, 500 mA maximum
Operating Temperature	0 °C to +50 °C
Storage Temperature	-20 °C to +75 °C
USB Cable Length	15 ft (5 m) maximum
Dimensions	2" H x 2.5" W x 3.5" D (50 mm H x 65 mm W x 90 mm D)
Weight	< 1 lbs (< 0.5 kg)
Environmental	MIL-PRF-28800F, Class 3 WEEE compliant, RoHS compliant
Safety	EN 61010 and CE compliant
Emissions	EN 61326 and FCC compliant

Note 2: a USB 2.0 Power Hub is recommended, particularly when using multiple sensors.

# GT-8555A USB Peak Power Sensor

## Technical Specifications

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### Measurement Capabilities

- Pulse Profiling Gated Measurements: Peak Power, Average Power, Crest Factor (Peak-to-Average Ratio), Droop, Overshoot, Rise Time, Fall Time, Duty Cycle, Pulse Repetition Frequency (PRF), Pulse Repetition Interval (PRI) and Pulse Width.
- Pulse Profiling Marker Measurements: Peak Power and Delta Markers
- Burst Average Power (BAP) Mode: Pulse Power, Peak Power, Average Power, Duty Cycle and Crest Factor
- Modulated Average Power (MAP) Mode: Peak Power, Average Power, Duty Cycle and Crest Factor
- Pulse Average Power (PAP) Mode: Duty Cycle Corrected Pulse Power, Peak Power, Average Power and Crest Factor
- Strip Chart mode: Multiple Sensor, Adjustable Rate and Duration, and Data Log Output File (CSV)
- Statistical Chart Mode: Adjustable Rate, Duration, Range and Resolution, Histogram, CDF and CCDF
- Math Functions: Ratio, Sum and Difference between sensors or between sensors and a constant

### General Measurement Capabilities

Selectable Power Units, Relative Function, Offset Function, Adjustable Averaging, Upper and Lower Alarm Limits and Min and Max Hold.

### Minimum Pulse Width<sup>4</sup>

Sensor Model	Specification
GT-8555A	100 ns typical

Note 4: The minimum pulse width is the recommended minimum pulse width viewable on the measurement display, where power measurements are meaningful and accurate, but not warranted.

# GT-8555A USB Peak Power Sensor

## Technical Specifications

### Trigger Functions

Rate	1 Hz to 750 kHz
Resolution	20.8 ns
Modes	Single or Continuous
Trigger Source	Internal or External
Internal Trigger Signal Level Range	-20 dBm to +20 dBm (Manual or Auto)
Trigger Input	TTL compatible, Rising or Falling Edge
Trigger Input Operating Levels	0.0 V to 0.8 V (low), 2.0 V to 5.0 V (high), +/- 10 $\mu$ A
Trigger Input Maximum Levels	-0.5 V (low) to 5.5 V (high)
Trigger-off Time <sup>5</sup>	1 $\mu$ s minimum

Note 5: If the internal trigger is set to detect the rising edge of a pulse-modulated signal, then the signal pulse-off time must be greater than 1  $\mu$ s for reliable triggering. If the internal trigger is set to detect the falling edge of a pulse-modulated signal, then the signal pulse-on (or Pulse Width) must be greater 1  $\mu$ s for reliable triggering.



# GT-8555A USB Peak Power Sensor

## Technical Specifications

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The Giga-tronics GT-8550A series USB Power Sensors are designed for use with a standard PC running Microsoft® Windows. The Giga-tronics GT-8550A series USB Power Sensors include the easy-to-use application software, Measurement Xpress. The Measurement Xpress software provides a suite of measurement capabilities which include remote control and multi-channel power measurements. Features include a graphical user interface (GUI) with easily selectable multi-channel displays.

### Pulse Measurements

**Pulse Profiling:** The pulse profiling mode is designed to measure power versus time of a pulsed waveform. Sweep time ranges from 5  $\mu$ s to 50 ms.

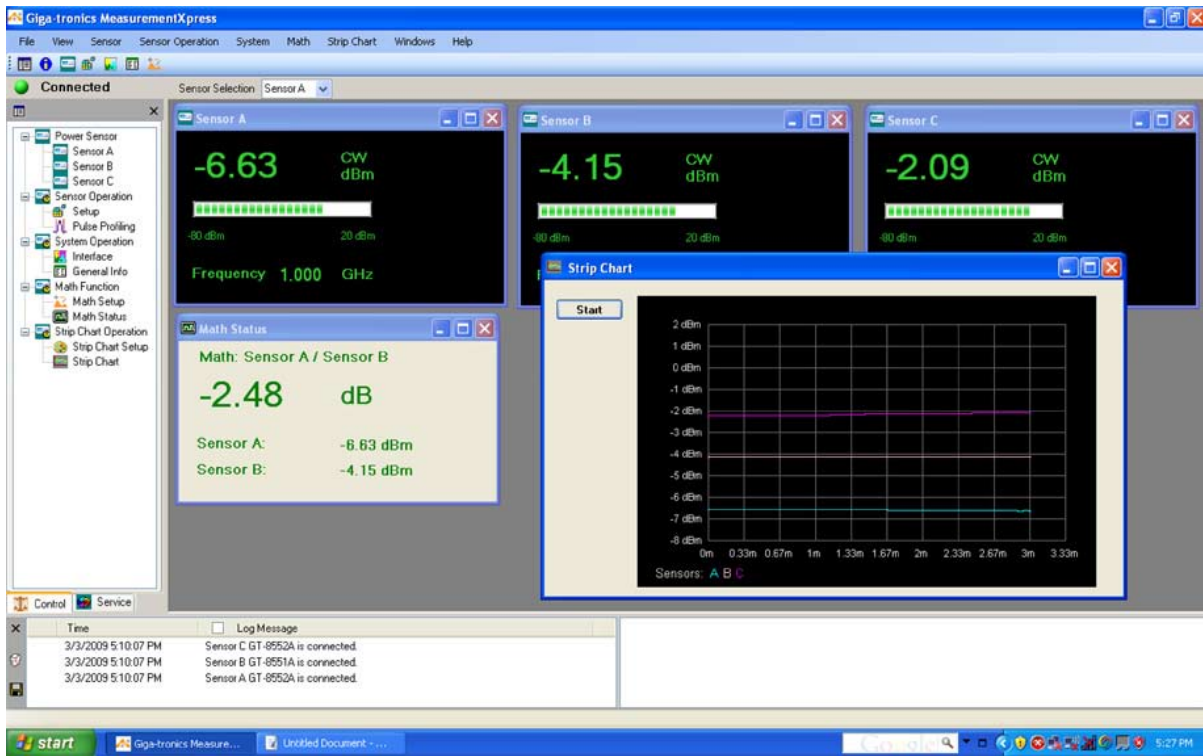
**Markers:** Up to ten markers with marker delta, peak, previous peak and next peak functions.

**Gating:** Set up to six gates around specific areas of interest on the pulse or multiple pulses. Gate functions include overshoot and droop, average power, peak power and crest factor.

### Benefits of Measurement Xpress

- Familiar Microsoft® Windows Interface
- Easy to read numbers and bar graphs
- Fast update rate allows real time circuit tuning
- Internal zero and cal – powers up ready to measure

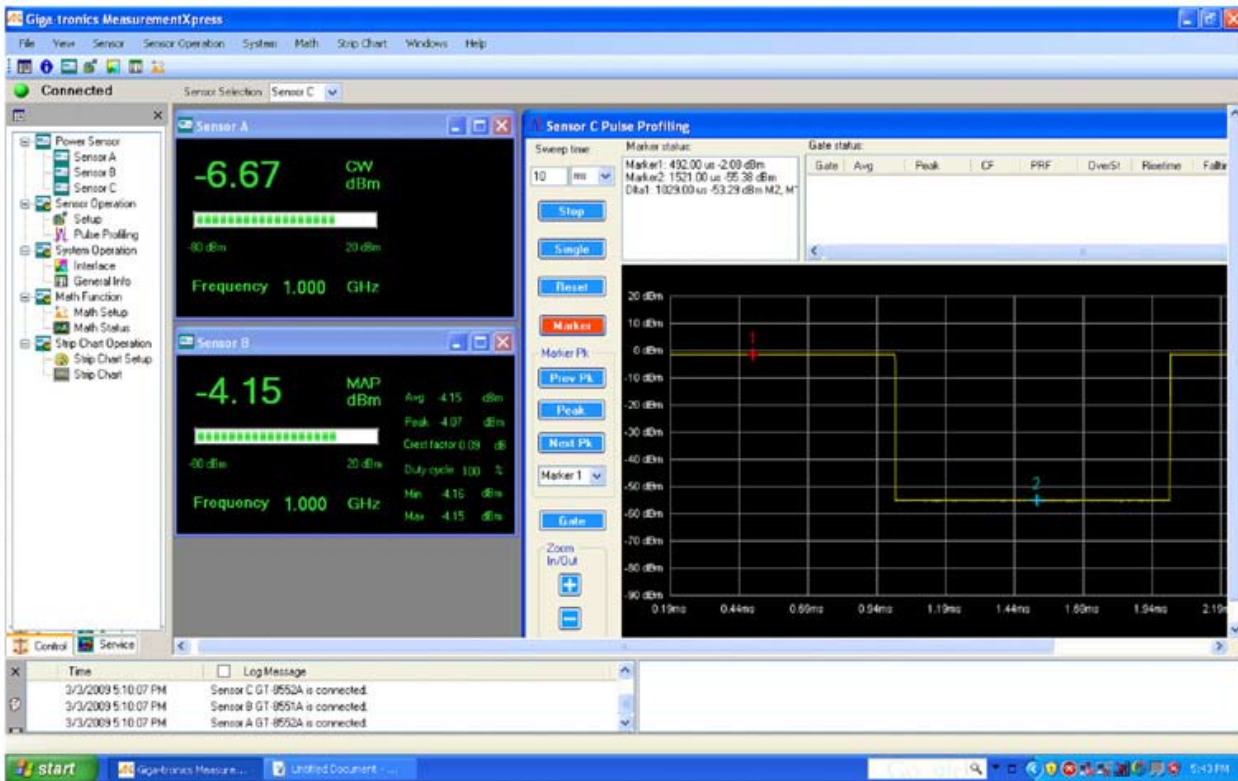




**Figure 1 - Measurement Xpress is optimized for ease of use with multiple sensors**

In this display, we see three simultaneous CW power measurements. Math functions display the ratio of any of multiple sensors. In the example we see the ratio of Sensor A to Sensor B, a very common measurement in many test applications. Multiple USB power sensors can eliminate the need for multiple traditional power meters, with significant savings in cost and space.

The strip chart accommodates multiple sensors. The strip chart setup window allows the user to select the desired sensor or sensors to be displayed, as well as setting the time parameters. The strip chart data can easily be saved to a user-defined file for further analysis or record retention.



**Figure 2 - Measurement Xpress is optimized for ease of use with multiple sensors**

In this display, we see three different sensors simultaneously measuring a CW signal, a modulated signal and a pulse waveform. Sensor A is measuring a CW signal. Sensor B is making a MAP (Modulated Average Power) measurement. Sensor C is measuring a pulsed waveform with the marker function displaying the high and low power levels and the delta power.

The Windows™ explorer display format allows easy and independent selection of sensor setup, operation mode, math functions and the strip chart for the individual sensors.

# GT-8555A USB Peak Power Sensor

## Technical Specifications

### Recommended PC Requirements

Parameter	Specification
Operating System	Microsoft® Windows XP, Windows Vista (32) or Windows 7 (32 or 64)
Processor Speed	> 500 MHz
Hard Disk Space	> 50 MB
USB Interface	USB 2.0

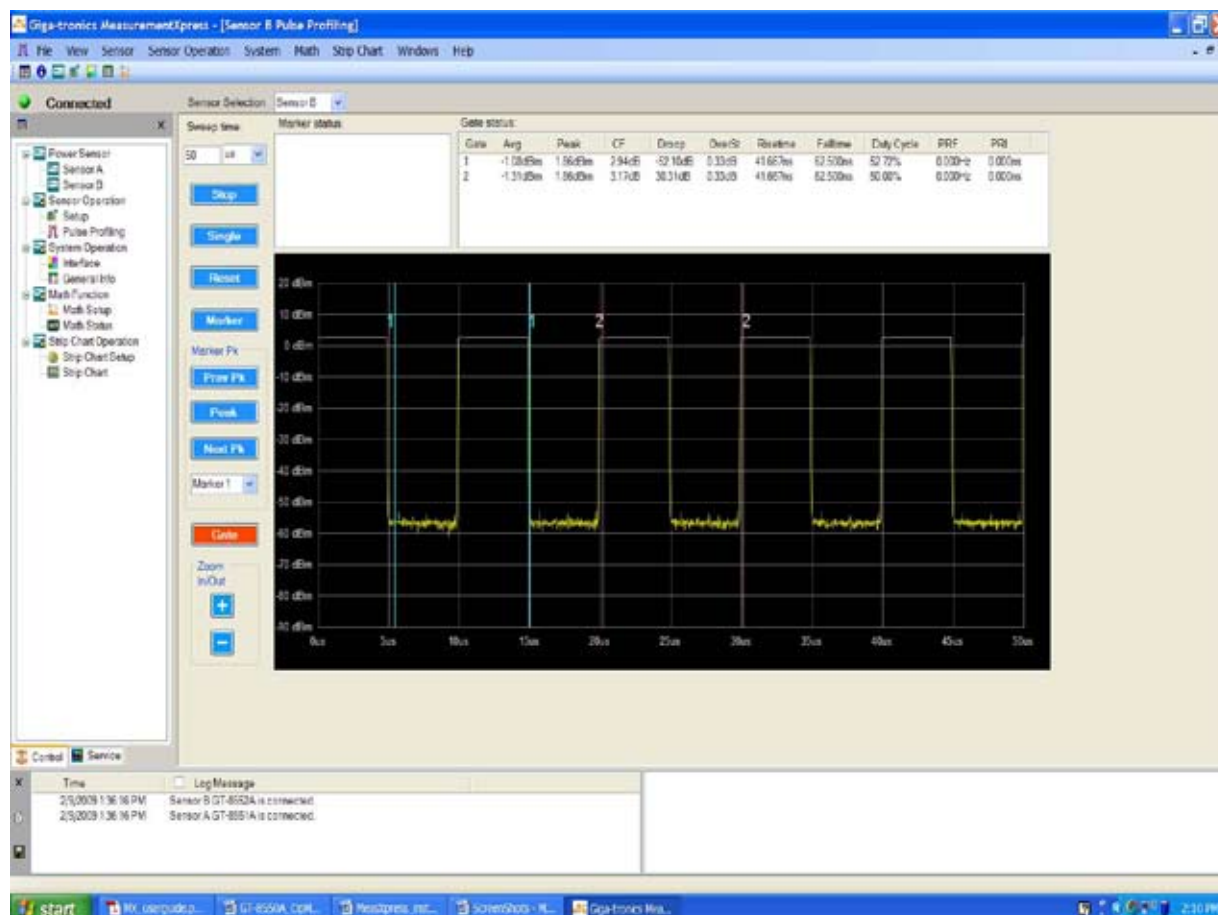


Figure 3 - The gate function measures many useful pulse parameters

# GT-8555A USB Peak Power Sensor

## Technical Specifications

### GT-8555A Front Connections

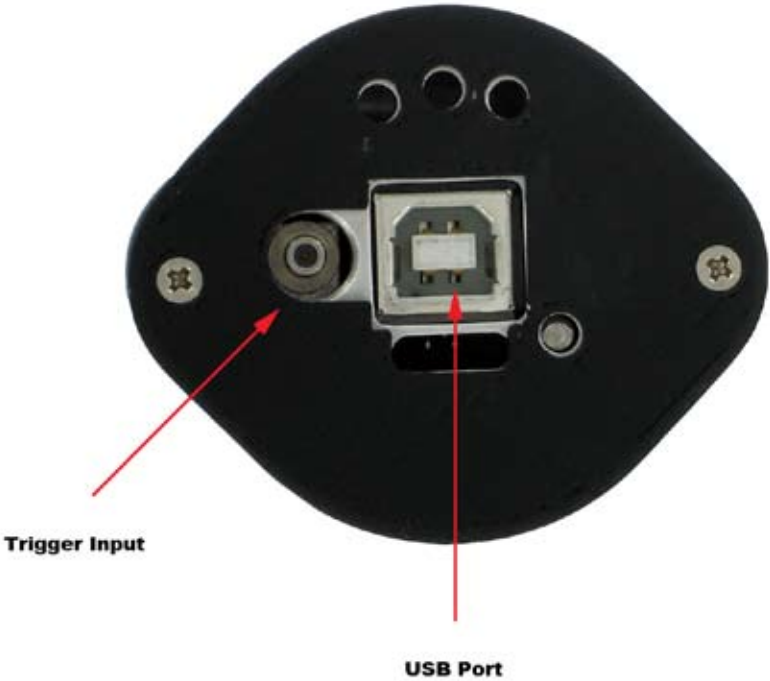
Connection	Description
RF Input	Low VSWR RF input. SMA (m) connector

### GT-8555A Rear Connections

Connection	Description
USB Port	Rugged 4-Pin USB
Trigger Input	SMB (m) snap-on

### Items included with the GT-8555A

The GT-8555A USB Peak Power Sensor includes the following: 2 M (6 foot) USB cable; a USB flash drive containing the installation guide, user’s manual and the Measurement Xpress software; and a Calibration Certification certificate.



## Ordering Information

Giga-tronics has a network of RF and Microwave instrumentation sales engineers and a staff of factory support personnel to help you find the best, most economical instrument for your specific applications. In addition to helping you select the best instrument for your needs, our staff can provide quotations, assist you in placing orders, and do everything necessary to ensure that your business transactions with Giga-tronics are handled efficiently.

Model Number	Description
GT-8555A	USB Peak Power Sensor, 100 MHz to 20 GHz, CW and Pulse

### Available Options and Accessories

Option	Description
01	Add 5 meter (15 foot) extra-long USB cable
05	Soft Carrying Case (Large case for laptop computer and sensors)

P/N 21460-003	SMB (f) snap-on to BNC 2 M (6 foot) cable
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## Giga-tronics Support Services

At Giga-tronics, we understand the challenges you face. Our support services begin from the moment you call us. We help you achieve both top-line growth and bottom-line efficiencies by working to identify your precise needs and implement smart and result orientated solutions. We believe and commit ourselves in providing you with more than our superior test solutions. For technical support, contact:

Tel: 1-800-726-GIGA (4442) or (925) 328-4669  
Email: [support@gigatronics.com](mailto:support@gigatronics.com)

## Updates

All data is subject to change without notice. For the latest information on Giga-tronics products and applications, please visit our website:

<http://www.gigatronics.com>

