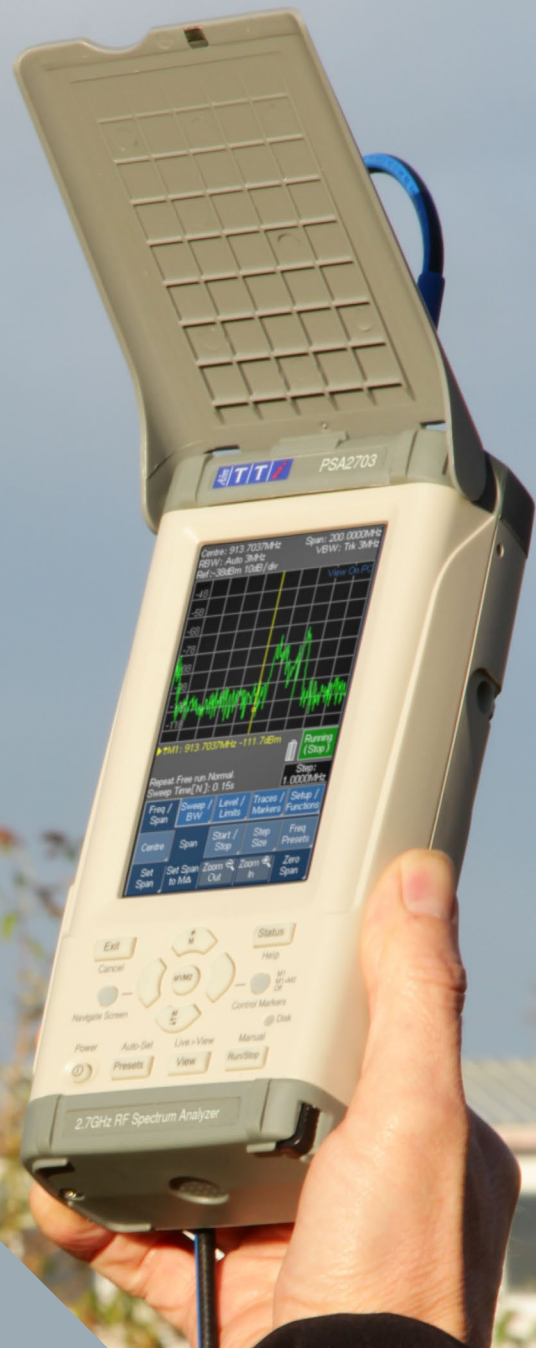




Measurably better value

**BIG ON PERFORMANCE
SMALL ON SIZE**

**1.3GHz and 2.7GHz
-105dBm Noise Floor
Touch or Hard Key Control**



PSA SERIES 3
PSA1303 & PSA2703
RF Spectrum Analyzers

BIG PERFORMANCE

-105dBm noise floor

Frequency pre-set and setup store

Trace modes, Normal, Peak
and Trace Average

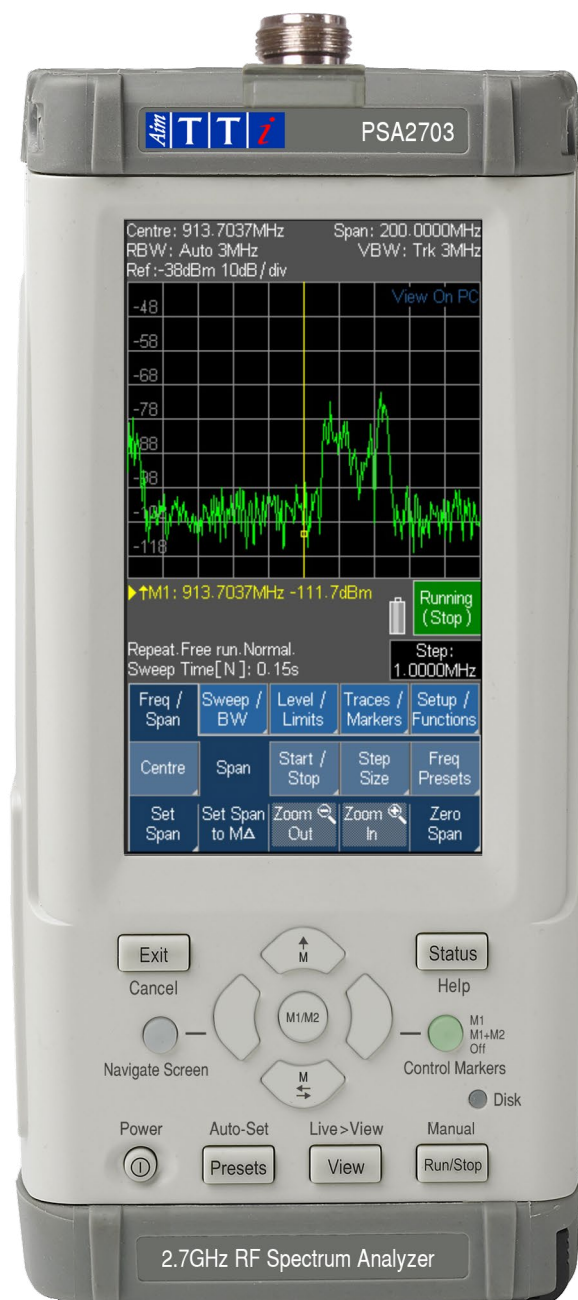
U01* Extended feature set:
limit lines, data logging,
sweep trigger Compensation
tables Custom presets

Twin markers, Peak
track smart markers

live view and reference traces

Resolution Bandwidths
300Hz to 10MHz 1:3:10

Truly portable, only 0.58 kg



A lightweight and truly handheld instrument that incorporates an extensive feature set. A ruggedized casing with a removable sun screen/screen protector to enhance field use. The 4.3" TFT with 3 row hierarchical menu system provides rapid access to all features. Additional Hard keys are provided for marker movement and short cuts to major functions. On time is almost instant with the first sweep available in under 2 seconds.

Addition of the U01 upgrade adds additional limit lines and patterns, data Logging, Sweep Triggers, Compensation tables, Custom Pre-sets and View on PC capability.

PRODUCT APPLICATIONS

The PSA S3 will find many applications within radio communication field environments such as:

Interference Analysis

Antenna Alignment

Signal Strength Mapping

Covert Transmitter Detection

Spurious Emissions

EMC Frequency Evaluations



KEY FEATURES

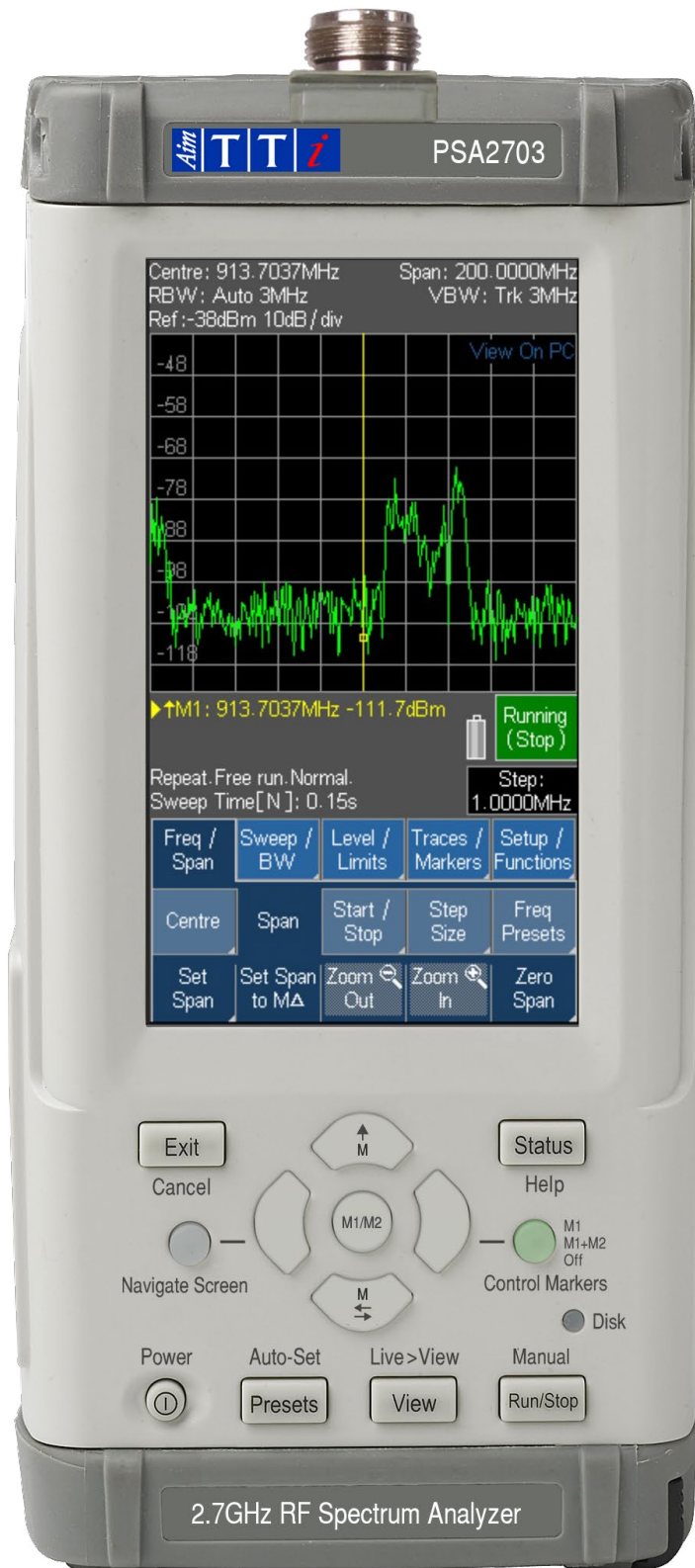
- ▶ 1MHz to 1300MHz or 2700MHz frequency range
- ▶ Resolution bandwidths of 300Hz to 10MHz 1:3:10
- ▶ -105dBm typical noise floor at -40dBm reference level
- ▶ Measurement in dBm or dBμV, mV or μW
- ▶ Zero span mode with AM and FM audio demodulation
- ▶ Trace modes of normal, peak hold and trace average
- ▶ Live, View and Reference traces in contrasting colours
- ▶ Twin markers with readout of absolute & difference values
- ▶ Smart marker movement with selectable peak tracking
- ▶ Frequency counter with 10Hz Resolution
- ▶ Frequency presets and independent state storage
- ▶ Auto-find automatically sets sweep parameters for the highest signal found
- ▶ Unlimited storage for waveforms, set-ups and screens
- ▶ User assignable file names, file stamping from real-time clock
- ▶ USB interfaces for Flash drives and PC connection
- ▶ Comprehensive status and context sensitive help screens
- ▶ More than 3 hours continuous operation from a charge
- ▶ Smaller and lighter than other spectrum analyzers (weight only 0.58 kg)

OPTION U01 ADDS:

- ▶ Limit lines and limit patterns with limits comparator
- ▶ Data logging of peak values, complete traces or screen images from timer, external trigger or limits comparator
- ▶ Sweep triggering from external trigger or limits comparator
- ▶ Compensation tables, fixed offsets and 75Ω compensation
- ▶ Custom Presets. Capability to show screen contents on a PC



SMALL ON SIZE...



BATTERY OPERATION OF MORE THAN 3 HOURS

The PSA Series 3 operates from a Li-ion rechargeable battery that can provide more than 3 hours of continuous operation.

Can also be set to switch off automatically after a set time from the last action.

For continuous bench top operation, powered from its AC adapter which also recharges the batteries in less than 3 hours.

On pressing the power button, the instrument comes to life almost instantly, with the first sweep available in under 2 seconds.

GENUINELY HAND-HELD

The PSA Series 3 is sufficiently small and lightweight to fit comfortably into the hand

A removable screen protector and sun-shield combines with rubberised buffers top and bottom to enhance its use in the field.

The casing of the PSA Series 3 includes rubberised buffers top and bottom to help resist knocks and scratches. The tilt stand can be moved to the top of the instrument to act as a screen protector when in transit. In this position it also acts as a sun-shield when in the field.

With a width of only 92mm (3.6") and a weight of only 580 grams (20 oz) the PSA fits comfortably into the hand.

TOUCH-SCREEN OR HARD-KEY CONTROL

The three-row hierarchical menu system provides rapid intuitive access to all functions. Additional hard keys are provided for marker movement and shortcuts to major functions. Alternatively, all of the functions can be operated with just the hard keys by using the five way navigator in a tab-enter-jog mode.

...BIG ON PERFORMANCE

PACKED WITH FEATURES

INTUITIVE MENU SYSTEM

Ease of use was a major consideration in the design of the PSA Series 3. The menu system provides rapid access to menu groups, each of which has sub menus, each with their own function keys.



Function keys perform direct actions or create pop-up menus or dialogue boxes. Frequencies can be set by direct numeric entry, or by a digit increment system.

Centre, Start and Stop can be stepped by any chosen increment. Span can be zoomed.

Single key shortcuts include Set to Peak, Set to Marker and Set between Markers (Start=M1, Stop=M2).

Frequency presets enable fast changes between frequently used sweep ranges.

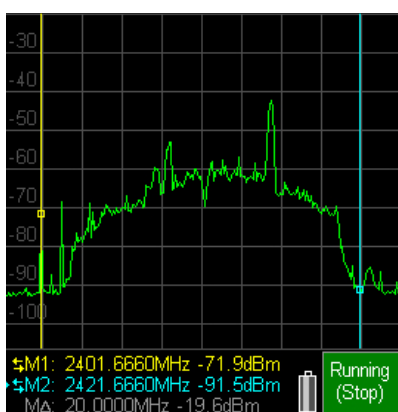
LIVE, VIEW AND REFERENCE TRACES



A view trace and reference trace can be displayed in addition to the live trace using contrasting colours for clarity. Any number of traces can be saved to memory and rapidly recalled to the screen. Trace states are saved in addition to the traces and can be recalled separately.

SMART MARKER MOVEMENT

Dual markers provide an on-screen readout of frequency and level including difference values.



The markers can be set to specified frequency values, scrolled across the screen, or set to automatically find peaks. A peak tracking mode is also provided which will track the highest peak in the sweep despite changing frequency.

Marker amplitude readout can be in graticule units (dBm or dBμV) or in linear units (mV or μW).

VERTICAL EXPANSION

The vertical resolution of 10dB per division can be expanded to 5dB, 2dB or 1dB with panning over the full dynamic range.

TRACE WRITE MODES

In addition to the normal mode, the trace can be set to display Peak-hold, or a Multi-sweep Average.

ZERO SPAN AUDIO DEMODULATION

The PSA Series 3 includes a zero span mode with both AM or FM audio demodulation. The audio signal, with variable volume and selectable low-pass filter, is available from the built-in loudspeaker or from a standard 3.5mm jack socket.

CONTEXT SENSITIVE HELP

Context sensitive help is available for every menu, along with a full topics list of help information.

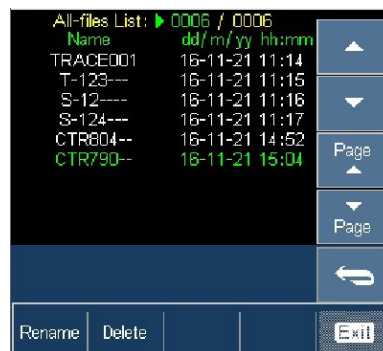
EXTENSIVE DATA STORAGE

The PSA Series 3 can store large amounts of data using its internal memory supplemented, if necessary, by USB Flash drives.

The filing system can store trace and state files, screen images, set-up files, logging files*, limit patterns* and compensation tables*.

Files are stored under either default file names, or user-chosen file names entered from an alpha-numeric keypad.

Files are time-stamped from the real-time clock, and can be listed by date or name.



The illustration is a truncated version of the real screen image which can list 20 files simultaneously. Each directory can contain up to 999 files.

*Logging files, limit patterns and compensation tables are only available with Option U01- see next page.

DATA EXPORT AND TRANSFER

USB device and host connectors are provided enabling the PSA Series 3 to be linked directly to a PC for file transfer, and for the connection of USB Flash drives for data transfer or storage.

Trace files have a standard comma separated value (.csv) format which can be imported into other applications such as Excel or MathCad. Screen images are stored as standard bit-maps that can be manipulated and printed using a PC as well as being recalled to the PSA screen.

FULL STATUS DISPLAY

In addition to the extensive on-screen status information, a single button press reveals the complete set-up of the instrument as a screen listing.

All settings are retained when at power-down, and any number of set-up files can be stored under automatic or user names.

EXTENDED FEATURES

OPTION U01

Option U01 is a firmware upgrade that increases the capabilities of the PSA series 3 to include the following features

TRIGGERED SWEEP*

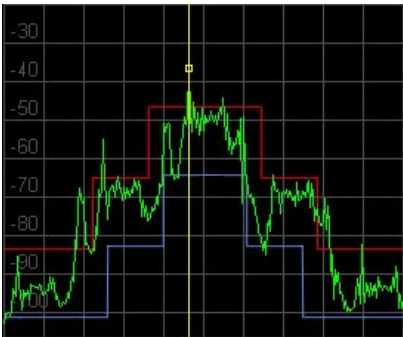
The standard sweep modes of continuous repeat and single shot can be extended to include triggered sweeps from an external signal or internal limits comparison.

LIMIT PATTERNS AND LIMITS COMPARATOR*

Limit lines and patterns can be defined which can be simply visual aids or create automatic actions. Zone restriction can be applied. A single or dual line limits comparator can be used to generate audible warnings, output signals, or to freeze or log the trace.

OFFSETS AND COMPENSATION TABLES*

The reference level, graticule and marker readouts can be set to compensate for external attenuation or gain to a resolution of 0.1dB. Compensation can also be added for signals emanating from a 75W source.



Tables can be loaded that compensate for variations of level with frequency for specific antennae or transducers. The tables can contain up to 100 points and are linearly interpolated between points.

DATA LOGGING*

The PSA Series 3 can log results in response to a variety of stimuli. Data is stored as files that can be transferred to a PC for analysis using PSA-Manager software.



Logging entries can be created by an internal timer (adjustable from seconds up to hours), the manual trigger key, the external trigger input, or the limits comparator.

VIEW ON PC*

View on PC enables the screen of the spectrum analyzer to be sent to a PC by USB. The screen image can be set to a user definable size and is particularly useful for education and training purposes.



TEST BRIDGE PSA

Test Bridge PSA is a free application operating under Windows that provides useful file display and creation facilities.

Test Bridge can display trace files which can be printed or exported to other applications.

For instruments with option U01 fitted, Test Bridge provides full display and analysis of logging files, create limit pattern files, channel marker lists, and compensation tables, display live PSA screen updates.

OPTIONS AND ACCESSORIES

► FIRMWARE UPGRADE U01

Option U01 is a firmware upgrade that can be purchased and installed by the user at any time. It increases the capabilities of the PSA1303 or PSA2703

Note: Option U01 is pre-installed within the PSA1303USC and PSA2703USC products.

► TELESCOPIC ANTENNA

This wideband antenna is intended for general purpose applications where absolute measurements of field strength are not required.

The antenna is a high quality unit with a knuckle joint hinge terminating with a BNC connector. An N to BNC adaptor is

provided for direct connection to the instrument.

The length is adjustable between 7.5cm and 35cm. The useful bandwidth is specified by the manufacturer as 30MHz to 1.8GHz. The resonant frequency as a quarter wave mono-pole is adjustable between approximately

200MHz and 1.0GHz.

Order Code: WB-ANT

Note: The antenna is included within the PSA1303USC and PSA2703USC products.

► VEHICLE CHARGER

A vehicle charger operating from either 12V or 24V supplies is available. It is capable of both recharging and operating the spectrum analyzer.

Order Code: PSA-VC

Note: The charger is included within the PSA1303USC and PSA2703USC products

► TRAVEL CASE

This soft fitted case offers high impact resilience. It provides protection for the PSA1303 or PSA2703 when in transit, and has storage space for the power adaptor, cables, and other accessories.

Order code: PSA-SC

Note: The case is included within the PSA1303USC and PSA2703USC products.



► USC VERSIONS

The PSA1303USC and PSA2703USC are extended versions of the product that include the firmware upgrade (U01), the travel case, telescopic antenna and car charger.

The firmware upgrade is pre-installed and all of the accessories, including the antenna and car charger, are supplied within the fitted case.

► CONNECTION KIT

The connection kit comprises a high quality SMA terminated cable along with SMA to N type adaptors for connection to the PSA and to a generator. The cable has low losses up to 6GHz.

A BNC to N type adaptor is also included enabling standard BNC cables to be used for lower frequency applications.

Order Code : PSA-CK



SUPPLIED ITEMS

► STANDARD PRODUCT

PSA1303 or PSA2703 spectrum analyzer.
Universal voltage mains adaptor/charger.
USB connection lead.
Spare stylus.
BNC converter for trigger input.
Safety documentation (multi-language)

► USC PRODUCT

All of the 'standard product' items are supplied plus the following:
Firmware Upgrade U01 (installed)
Telescopic Antenna WB-ANT
Vehicle Charger PSA-VC
Travel Case PSA-SC

TECHNICAL SPECIFICATION

FREQUENCY MEASUREMENT

FREQUENCY SPAN:	
Frequency Range:	1 MHz to 1300 MHz (PSA1303) 1 MHz to 2700 MHz (PSA2703)
Setting Modes:	Centre frequency plus Span, or Start frequency plus Stop frequency
Maximum Span:	1299 MHz (PSA1303) 2699 MHz (PSA2703)
Minimum Span:	27 kHz, or Zero Span with demodulation
Set. Resolution:	100 Hz at any frequency
Setting Accuracy:	Reference Frequency Accuracy for Start, Stop & Centre (Zero-Span) frequencies

REFERENCE FREQUENCY ACCURACY	
Initial Accuracy:	Better than ± 1 ppm at 20 °C
Stability:	Better than ± 1 ppm over 10 °C to 30 °C
Ageing:	Better than ± 1 ppm per year

PHASE NOISE (TYPICAL)	
Phase Noise	Phase noise at 100 kHz offset at 500 MHz typically -88 dBc/Hz

RESOLUTION BANDWIDTH	
RBW:	Selectable between 10 MHz and 300 Hz selectable in 1:3:10 sequence, or Auto
Video Filtering:	Selectable between 10 MHz and 300 Hz selectable in 1:3:10 sequence, or RBW Tracking

MARKERS	
No. of Markers:	One, Two (or None)
Resolution:	0.1 kHz at all frequencies
Marker Accuracy:	1/270th of Span \pm 10Hz plus reference frequency accuracy.
Readout:	The frequencies at the marker points and the frequency difference are displayed
Functions:	Normal (Scroll Mode) and Peak Find Mode (as standard) Peak Track Mode and Frequency Measurement (only with Option U01)

AMPLITUDE MEASUREMENT

AMPLITUDE RANGE	
Units:	Selectable as dBm or dB μ V
Display Range:	84 dB from reference level
Magnification:	x2, x5 or x10
Reference Level:	Selectable between -40dBm and +10 dBm (67dB μ V to 117dB μ V) in 1dB steps

AMPLITUDE ACCURACY	
Calibration Level Accuracy:	Better than ± 1 dB at 10dB below ref. level @ 2000MHz (20°C \pm 5°C)
Flatness:	Better than ± 1 dB relative to 2000MHz over the full operating frequency range
Linearity:	Better than ± 1 dB over 60dB range down from the reference level

MARKERS	
No. of Markers:	One, Two (or None)
Resolution:	0.1 dB
Readout:	The level at the marker points and difference are displayed.
Displayed Units:	dBm, dBuV, mV or uW
Functions:	Normal (Scroll Mode), Peak Find Mode, Peak Track Mode, Frequency Measurement

DISPLAYED AVERAGE NOISE LEVEL (DANL)	
DANL:	Better than - 105 dBm (2 dBuV) average displayed noise floor (ref. level = - 40 dBm, RBW = 10 kHz, VBW = 1 kHz, span 1 MHz) for frequency range 1MHz to 2.7MHz
Noise per Hz:	Better than -145 dBm/Hz equivalent

DISTORTION AND SPURII	
3rd Order Intermodulation:	< -60dBc for two signals at 10dB below reference level, (500MHz and 502MHz); typically <-65dBc
Harmonic:	< -60dBc at 10dB below reference level (100MHz)
Other Signal Related Spuri:	<-57 dBc for signals 10 dB below the reference level
Residual Spuri:	<-70 dB below the reference level

SIGNAL INPUT	
Input Connector	N Type, 50 Ω
VSWR:	1.3 : 1 typical
Maximum Level:	+ 23 dBm, (130 dB μ V) >50MHz; +/-50V DC

SWEEP	
Sweep Method:	Detection for 271 points per sweep. The amplitude value (as determined by the detection mode) from each sub-span is stored (sub-span = span/270)
Signal Detection Modes:	Alternate Peak (default), Positive Peak, Negative Peak, Sample, Linear Average, Log Average or RMS
Sweep Time:	Sweep time is an automatic function of Span and RBW/VBW. A speed-up function enables the time to be reduced by a factor of up to ten.
Sweep Modes:	Repeat (continuous) or Single Shot.
Sweep Trigger (only with Option U01)	Trigger Source: External input or Limits Comparator.

DEMODULATION (ZERO SPAN MODE)

AUDIO DEMODULATION	
Modes:	AM or FM
Internal Audio:	Internal loudspeaker with adjustable volume and mute.
Audio Out:	30 mW into 32 Ω mono or stereo headphones, adjustable volume, 3.5mm jack socket
Audio Filter:	Switchable 3kHz Low Pass Filter.
Carrier Display:	Horizontal line at carrier level.

DISPLAY & TRACES	
Display Type:	4.3 inch (10.9 cm) backlit TFT LCD, 480 x 272 pixels total, 16 colors, resistive touch screen.
Trace Area:	232 x 272 pixels.
Graticule:	8.5 x 10 divisions, light grey graticule.
Displayed Points:	271 points per sweep.
Live Trace:	Dot-joined trace from current sweep.
Trace Modes:	Normal (overwrite), Peak Hold, or Average (2 to 48 sweeps).
View Trace:	Buffered "instance" of the live trace.
Reference Trace:	Stored trace recalled from a trace file.
Dual Trace Mode:	For Peak Hold and Average modes, processed and un-processed traces can be displayed simultaneously.

DATA LOGGING (ONLY WITH OPTION U01)	
Data Types:	Peak level, Centre Level, Full Trace or Screen Image.
Data Entries:	Up to 25,000 entries per file (2500 for Images).
Trigger Source:	Entries can be made every sweep or in response to Manual Trigger key, External Trigger, Internal Timer or Limits Comparator
Internal Timer:	Adjustable from 2secs. to 100mins per entry.

INTERNAL STORAGE	
Internal Disk:	1.8GB of internal memory.
External Storage:	USB host interface for removable USB Flash drives.
Store Trace:	Up to 999 traces can be stored under either default file names or user entered file names. Traces are stored as tables of amplitude versus frequency and can be imported into other programs, as well as being recalled to the screen.
Recall Trace:	Recalls any stored trace to the reference trace of the display.
Store Set-up:	Up to 999 instrument set-ups can be stored under either default file names or user entered file names. All settings of the instrument are saved.
Recall Set-up:	Recalls any stored set-up, overwriting the existing settings of the instrument.
Store Screen:	This function copies the whole screen area to memory as a bit-map. Up to 999 screens can be stored under either default file names or user entered file names.
Recall Screen:	Recalls any stored screen as an image.

CONNECTOR	
RF Input:	Standard N Type connector.
DC Power:	1.3 mm power socket for external power supply/charger
USB Host:	Standard USB type A connector for connection of USB Flash drives.
USB Device:	Mini USB connector for connection to a PC.
Audio Out:	3.5 mm jack socket for demodulated audio out (accepts mono or stereo plugs).
Trigger In/Out:	For use with option U01 only.

POWER SOURCES

BATTERY	
Battery Type:	Li-ion 3.7V 3000mA-hr
Battery Life:	Greater than 3 hours continuous
Recharge Time:	< 3 hours from fully discharged
Auto Off Mode:	To conserve battery life, the system can be set to automatically switch off after a defined time from the last key press. This can be set between 5 mins and 60 mins (or never).
Battery Status:	Multi-segment battery status indicator.

AC LINE OPERATION/ CHARGING

The instruments can be operated continuously from mains power using the AC line adaptor provided. This powers and recharges the instrument simultaneously.

Voltage Range:	100V to 240V nominal 50Hz/60Hz
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MECHANICAL	
Size:	192mm high x 92mm wide x 49mm deep (height excludes RF input connector)
Weight:	580 grms.
Tilt Stand:	Built-in tilt stand for bench use which angles the unit at 40 degrees to the horizontal.
Stylus:	Casing incorporates plug-in stylus.

ENVIRONMENTAL AND SAFETY

Operating Range:	+5°C to + 40°C, 20% to 80% relative humidity and non-condensing
Storage Range:	-10°C to +50°C
Environmental:	Use at altitudes to 2000m, Pollution Degree 2.
Electrical Safety:	Complies with EN61010-1.
EMC:	Complies with EN61326.

OPTION U01

Option U01 is a firmware upgrade that provides additional capabilities as follows:

MARKERS	
Functions:	Peak Track Mode, Frequency Measurement

LIMIT LINES AND PATTERNS	
Limits:	Up to two limits can be displayed together. Lines are defined by dB value, Patterns are created as files by PSA-Manager and loaded from memory (999 files maximum).
Comparator:	Comparison of trace or trace segment with limits (above/below/between/outside) can generate trigger signal, pulse, or audio alert.

DATA LOGGING	
Data Types:	Peak level, Centre Level, Full Trace or Screen Image.
Data Entries:	Up to 25,000 entries per file (2500 for Images).
Trigger Source:	Entries can be made in response to Manual Trigger key, External Trigger, Internal Timer (2s to 100m per entry) or Limits Comparator

SWEEP TRIGGER	
Source:	External Trigger or Limits Comparator.

OFFSETS AND COMPENSATION TABLES	
Fixed Offsets:	Compensation for external gain or attenuation from -50.0dB to +50.0dB.
75 Ohm:	Compensation for signals from a 75W source.
Tables:	Compensation for variations of level with frequency for antennae or transducers. Tables are created as files by PSA-Manager and loaded from memory (999 files maximum).

CUSTOM PRESETS

Enables rapid switching between setups for repetitive testing.

VIEW ON PC

Enables the screen of the spectrum analyzer to be sent to a PC via USB and displayed at a user-defined size.

Thurlby Thandar Instruments Ltd. Operates a policy of continuous development and reserves the right to alter specifications without prior notice.

EXCELLENCE THROUGH EXPERIENCE

Aim-TTi is the trading name of Thurlby Thandar Instruments Ltd. (TTi), one of Europe's leading manufacturers of test and measurement instruments.

The company has wide experience in the design and manufacture of advanced test instruments and power supplies built up over more than thirty years.

The company is based in the United Kingdom, and all products are built at the main facility in Huntingdon, close to the famous university city of Cambridge.

TRACEABLE QUALITY SYSTEMS

TTi is an ISO9001 registered company operating fully traceable quality systems for all processes from design through to final calibration.



ISO9001:2015

Certificate number FM 20695

WHERE TO BUY AIM-TTI PRODUCTS

Aim-TTi products are widely available from a network of distributors and agents in more than sixty countries across the world.

To find your local distributor, please visit our website which provides full contact details.

Designed and built in Europe by:



Thurlby Thandar Instruments Ltd.

Glebe Road, Huntingdon, Cambridgeshire.

PE29 7DR United Kingdom

Tel: +44 (0)1480 412451 Fax: +44 (0)1480 450409

