

# Technical Specifications - PSA3605 & PSA6005

## FREQUENCY MEASUREMENT

### Frequency Span

Frequency Range: 10 MHz to 3600 MHz (PSA3605)  
10 MHz to 6000 MHz (PSA6005)

Setting Modes: Centre frequency plus Span,  
or Start plus Stop frequencies

Maximum Span: 5990 MHz (PSA6005)  
3590 MHz (PSA3605)

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  $\pm 1$  ppm at 20 °C  
Stability: Better than  $\pm 1$  ppm over 10 °C to 30 °C  
Ageing: Better than  $\pm 1$  ppm per year

### Phase Noise (Typical)

Carrier at 1 GHz: -83 dBc/Hz at 30 kHz offset  
-99 dBc/Hz at 100 kHz offset  
-116 dBc/Hz at 1 MHz offset

Carrier at 3 GHz: -94 dBc/Hz at 30 kHz offset  
-109 dBc/Hz at 100 kHz offset  
-117 dBc/Hz at 1 MHz offset

Carrier at 6 GHz: -83 dBc/Hz at 30 kHz offset  
(PSA6005 only) -97 dBc/Hz at 100 kHz offset  
-114 dBc/Hz at 1 MHz offset

### 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), Peak Find Mode,  
Peak Track Mode, Frequency Measurement

### Marker Frequency Counter

Frequency counted at the current active marker (M1 or M2) in  
sweep or zero-span mode

Resolution: 10Hz, 100Hz or 1kHz

Accuracy: Reference frequency accuracy  $\pm$  1 count  
for signal > noise level +25dB

### Channel Markers (only with Option U02)

Channel markers are a special case of Limit Patterns (see  
Amplitude Limits within next section). Channel markers are  
vertical lines at frequency points defined within a file. Most  
commonly they will be used to mark channel centre frequencies  
or channel boundaries.

No. of Points: Up to two files, each containing up to 49  
points, can be displayed in differing colours.

Marker Files: Files are created using PSA-Manager  
software. Up to 999 files can be stored.

## AMPLITUDE MEASUREMENT

### Amplitude Range

Units: Selectable as dBm or dB $\mu$ V

Display Range: 84 dB from reference level

Magnification: x2, x5 or x10

Reference Level: Selectable between -40dBm and +20 dBm  
(67dB $\mu$ V to 127dB $\mu$ V) in 1dB steps

### Amplitude Accuracy

Calibration Level

Accuracy: Better than  $\pm 1$  dB at 10dB below ref.  
level @ 2000MHz (20°C  $\pm$  5°C)

Flatness: Better than  $\pm 1$  dB relative to 2000MHz  
over the the full operating frequency range

Linearity: Better than  $\pm 1$  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 -120 dBm (-13 dBuV) average  
displayed noise floor (ref. level = -40 dBm  
RBW = 10 kHz, VBW = 1 kHz, span 1 MHz)  
for frequency range 10MHz to 5.5GHz

Noise per Hz Better than -160 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)

Signal Images:  
< -55dBc, typically < -60dBc in 'Normal' image rejection mode  
for RBWs between 300Hz and 3MHz

Other Signal Related Spurii:  
< -60 dBc for signals 10 dB below the reference level

Residual Spurii:  
< -70 dB below the reference level

## Amplitude Limits (only with Option U02)

Limit Types: Limit lines from numeric values, or limit  
patterns from files.

No. of Limits: Up to two limits can be displayed in differing  
colours.

Limit Patterns: Pattern files are created using PSA-Manager  
software. Patterns are linearly interpolated  
from up to 40 frequency/amplitude points.  
Up to 999 patterns can be stored.

Limits Comparator: Conditions of above, below, inside or outside  
of limits, creating actions of message, beep,  
stop sweep, log sweep and pulse out.

## Amplitude Compensation (only with Option U02)

Offset: Amplitude can be offset by up to  $\pm$ 50 dB to  
compensate for external attenuation or gain.

75  $\Omega$  Comp.: Compensation can be made for inputs from  
75  $\Omega$  source impedance.

Tables: Linearly interpolated compensation tables  
of up to 40 frequency/amplitude points can be used. Up to 999  
tables can be stored. Table files are created using PSA-Manager  
software.

## SIGNAL INPUT

Input Connector: N Type, 50  $\Omega$

VSWR: 1.5 : 1 typical

Maximum Level: +25 dBm, (132 dB $\mu$ V);  $\pm$ 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

Signal Image Rejection Modes:  
Real-time rejection with automatic or manual re-alignment  
or Data Comparison based rejection.

Sweep Time:  
Sweep time is a 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 U02)

Trigger Source: External input or Limits Comparator.

## Scan Mode (only with Option U02)

Scan Method:  
High resolution capture of up to 210,000 points defined by  
span and RBW. Number of points = 3 x (Span/RBW) + 1.

Scan Display:  
Over-view display of whole scan with Zoom and Pan capability  
to magnify view up to 1 display point per capture point.

Marker:  
Moveable marker with frequency readout. Pan/Zoom around  
marker point. Amplitude readout at maximum magnification.

File Storage:  
Scan files can be saved under automatic or user defined names  
and recalled to the screen or exported to external programs.

## 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  $\Omega$  mono or stereo headphones,  
adjustable volume, 3.5mm jack socket

Audio Filter: Switchable 3kHz Low Pass Filter.

Carrier Display Horizontal line at carrier level.

Waveform Demodulation (only with Option U02)

Display Modes: AM modulation waveform  
FM modulation waveform  
Carrier waveform (against timebase)  
Carrier level (horizontal line)

Timebase: 5 us/div to 20 ms/div (1:2:5 sequence)

Trigger: Rising Edge / Falling Edge, Auto or Free Run

Markers: Twin markers with delta readout

Marker Readout: AM - absolute depth and difference depth  
FM - absolute deviation and difference dev.  
Carrier - absolute time and difference time

Marker Resolution: 0.01% AM, 10Hz FM

AM Measurement: Modulation rate - 35 Hz to 100 kHz  
Modulation depth: - 5% to 100%  
Scale - 5% to 100% full scale, 1:2:5 sequence

FM Measurement: Modulation rate - 35 Hz to 100 kHz  
Deviation: - 1 kHz to 1 MHz  
Scale - 1kHz to 1MHz full scale, 1:2:5 sequence

## DISPLAY & TRACES

Display Type: 4.3 inch (10.9 cm) backlit TFT LCD, 480 x 272  
pixels total, 16 colours, resistive touch screen.

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 U02)

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.

## MEMORY 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.

## CONNECTORS

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 U02 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

## MECHANICAL, ENVIRONMENTAL & SAFETY

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