1.4 Specifications

The MS2601A specifications are listed below.

<Frequency>

■ Measurement range

10 kHz to 2.2 GHz

■ Setting range

0 to 2210 MHz

■ Setting mode

Center-span, Start-span

■ Center frequency

. Readout accuracy

±(100 Hz +2% of frequency span + tuning frequency x reference frequency accuracy)
Frequency span ≧10 kHz, after automatic calibration

. Resolution 20 Hz

■ Start frequency

. Readout accuracy

Same as center frequency readout accuracy

. Resolution 20 Hz

■ Frequency span

. Setting range

1 kHz to 2000 MHz (1-2-5 sequence) and 2-digit, and 0 kHz settings

. Readout accuracy ≦±2%

■ Resolution bandwidth

. 3 dB Bandwidth

30 Hz to 1 MHz variable in 1, 3 sequence

. Accuracy ±20%

. Selectivity

≦15:1 (60 dB/3 dB bandwidth ratio)

■ Stability

. Residual FM

≦20 Hzp-p/0.1 s (frequency span ≦500 kHz)

. Drift

≦300 Hz/min. (frequency span ≦500 kHz, 1 hr after power-on, constant ambient temperature)

■ Sideband noise

≦-80 dBc (resolution bandwidth 100 Hz, video bandwidth 1 Hz, 10 kHz away from signal)

■ Reference oscillator

. Frequency 10 MHz

. Stability

Starting characteristics: $\leqq \pm 5 \times 10^{-8}$ (20 min. after power-on with frequency 1 hr after power-on as reference)

Aging rate: $\leqq \pm 2 \times 10^{-8}$/day, $\leqq \pm 1 \times 10^{-7}$/year (referred to frequency after 24 hr operation)

Temperature characteristic: $\leqq \pm 5 \times 10^{-8}$ (0° to 50°C referred to frequency at 25°C)

. External reference input

Frequency: 10 MHz

Level: 2 to 5 Vp-p

■ Marker

. NORMAL

Indicates marker point frequency

Readout accuracy: Same as center frequency accuracy

. Δ (delta)

Indicates frequency difference between two marker points

Readout accuracy: Same as frequency span accuracy

. Count

Indicates receiving signal frequency on the marker

. Resolution

1, 10, 100 Hz, switchable

. Accuracy

Readout frequency x reference oscillator frequency accuracy ±(2 counts or 20 Hz)

<Amplitude>

■ Measurement range

-130 to +20 dBm

■ CRT display range

. Scale

Scale line at top of screen is reference level
Vertical axis 8 divs at 10 dB/div
10 divs at other dB/div

. LOG display

10 dB/div: reference level -70 dB
5 dB/div: reference level -50 dB
2 dB/div: reference level -20 dB
1 dB/div: reference level -10 dB

. LIN display

10%/div of reference level (units V)

. Linearity

After automatic calibration (resolution bandwidth 100 Hz to 1 MHz)
LOG: ±1 dB for 0 to -70 dB (10 dB/div, resolution bandwidth 100 Hz to 100 kHz)
±0.5 dB for 0 to -50 dB (5 dB/div)
±0.3 dB for 0 to -20 dB (2 dB/div)
±0.2 dB for 0 to -10 dB (1 dB/div)
LIN: ±3% of reference level (full scale)

■ Frequency response

≦±0.5 dB (100 kHz to 2.0 GHz, input ATT 20 dB, temperature range from 20° to 30°C)

■ Reference level accuracy

. Setting range

LOG: +20 to -100 dBm (resolution 0.1 dB)
LIN: 2240 mV to 2.2 μV

. Accuracy

After automatic calibration (frequency 50 MHz, frequency span ≦2 MHz; resolution bandwidth, video bandwidth, sweep time and input attenuator settings in AUTO)
≦±0.3 dB (0 to -50 dBm)
≦±0.75 dB (+20 to -70 dBm)

■ Resolution bandwidth switching deviation

≦±0.3 dB (after automatic calibration)

■ Dynamic range

. Average noise level

≦-120 dBm (resolution bandwidth 300 Hz, video filter 1 Hz, frequency 1 MHz to 2 GHz)

. 2nd and 3rd harmonics

≦-75 dB (input level -30 dBm, input attenuator 0 dB, frequency 5 to 800 MHz)

. Residual response

≦-100 dBm (frequency ≧500 kHz, input attenuator 0 dB, input 50 Ω termination)

■ Marker

. NORMAL

Displays marker position level

. Δ (delta)

Displays level difference between two markers

■ Video bandwidth

1 Hz, 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, OFF

■ Level units

dBm, dBμV, dBmV, V, dBμV (emf), dBμV/m

■ QP detection

. 6 dB bandwidth

200 Hz, 9 kHz, 120 kHz

. Electrical charging time constant

45 ms (6 dB bandwidth 200 Hz, frequency range 10 to 150 kHz)

1 ms (6 dB bandwidth 9 kHz, 120 kHz, frequency range 150 kHz to 1 GHz)

. Electrical discharging time constant

500 ms (6 dB bandwidth 200 Hz, frequency range 10 to 150 kHz)

160 ms (6 dB bandwidth 9 kHz, frequency range 150 kHz to 30 MHz)

550 ms (6 dB bandwidth 120 kHz, frequency range 30 MHz to 1 GHz)

. Mechanical time constant

160 ms (6 dB band width 200 Hz, 9 kHz, frequency range 10 to 30 MHz)

100 ms (6 dB bandwidth 120 kHz, frequency range 30 MHz to 1 GHz)

■ RF input

. Impedance

VSWR ≤1.5 (50 Ω, ATT ≧10 dB, frequency ≧30 kHz)

. Maximum input

+25 dBm (ATT ≧10 dB), 50 Vdc

■ RF input attenuator

. Attenuation

0 to 50 dB, 10 dB steps

. Switching accuracy

±1 dB (100 kHz to 1.5 GHz),
±2.0 dB (1.5 to 2 GHz)

<Sweep>

■ Time

50 ms to 100 s variable
Variable in 1, 1.5, 2, 3, 5, 7 second step sequence

■ Trigger

FREE RUN, LINE, VIDEO, SINGLE, EXT TRIGGER

■ Sweep range

Normal: Entire range swept

Zone marker sweep: Range indicated by zone marker swept

<CRT display>

■ CRT

6 inch, magnetic deflection (amber)

■ Display items

Scale (grid), waveform data, setting conditions, menu, functions

■ Display method

Digital storage, 2 channels (A and B)

Horizontal axis 501 points

■ Direct plotting

Data on CRT screen hard-copied onto plotter or printer via GP-IB

■ Calibration

. ALL CAL

LEVEL CAL1, LEVEL CAL2, FREQ CAL calibrations

. LEVEL CAL1

Total level, LOG scale linearity error calibrations

. LEVEL CAL2

Resolution bandwidth switching deviation, reference level deviation calibrations

. FREQ CAL

LO frequency error, resolution bandwidth center frequency error calibrations

■ Function memory

Internal memory: 6 setting conditions

PMC (32 kbytes): 12 setting conditions, measured waveform

<External control>

■ GP-IB functions

All functions except power switch, INTENSITY, PMC management, direct plotting, and GP-IB address controllable

Interface: SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0

<External output>

■ TG output

. FIRST LOCAL

Frequency: 2.5214 to 4.7214 GHz

. SECOND LOCAL

Frequency: 2.5 GHz

■ X-Y-Z axes

X-axis output: Left end 0 V to right end approx. 10 V

Y-axis output: Bottom 0 V to top approx. 1 V

Z-axis output: TTL level

■ Check output signal

. Frequency	50 MHz
. Output level	-2 dBm
. Output impedance	50 Ω

■ IF OUTPUT

. Frequency 3.6 MHz

. Output level
0 dBm (at reference level line on screen)

. Output impedance 50 Ω

■ Video output
Composite, separate

■ Probe power supply
Power supply : +5, +15, -15 V

<Dc operation>

■ Dc power supply
Dedicated battery pack MZ144A or Dc-Dc converter MZ145B)

<External memory>

■ PMC*

. Memory card	SRAM** card BS32C1-A-30
. Dimensions	85.6H x 54W x 3.5D mm
. Storage capacity	32 kbytes
. Power supply	Built-in back-up battery

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* PMC: Plug-in-Memory Card

** SRAM: Static Random Access Memory

<General specifications>

- Operating temperature range 0° to 50°C
- Power requirement **V +10% or -15%, 50/60 Hz
- Power consumption ≤145 VA
- Dimensions and weight
  177H x 284W x 451D mm, ≤18.5 kg

<Option 01 (or 04)>

- PTA
  - Software
    PTL high level language software: ROM base
  - Keyboard 1 (Option 01 only)

<Option 02>

- RS-232C interface
  - Baud rate 1200 baud