



Non-Terrestrial Networks (NTN) Test Solutions



Research & Development

Transmission characteristic,
group delay, return loss of devices and materials



ME7869A

Transmission characteristic
of optical devices



ME7838 series



ME7848A

Digital signal
quality



MP1900A

Signal source for
device and
antenna
evaluation



MG362x1A

Measurement & Monitoring for Radio Conditions

Real-time spectrum
measurement



MS2090A

Spectrum monitoring



MS2720xA

Spectrum measurement



MS2840A/MS2850A

Development & Production for Chipset and Devices

3G/4G device
development



MT8821C

4G protocol test



MD8430A

5G protocol test,
RF measurement



MT8000A

RF measurement
in production



MT8870A

Optical Communications

Optical spectrum,
wavelength, power



MS9740B

Eye pattern, bit error rate



MP2110A

Network Performance

Latency measurement



MT1000A

	Name	Model	Use
Research & Development	Distributed Modular 2-port Vector Network Analyzer	ME7869A	Transmission characteristic, group delay, and return loss measurement of microwave devices or antennas between two points at a distance
	Broadband Vector Network Analyzer	ME7838 series	Transmission characteristic, group delay, and return loss measurement of microwave devices or antennas
	Opto-Electronic Network Analyzer	ME7848A	Transmission characteristic measurement of optical devices
	Signal Quality Analyzer-R	MP1900A	Evaluating devices for digital communication such as PCIe, USB, Ethernet, etc.
	RF/Microwave Signal Generator	MG362x1A	RF signal source for microwave device and antenna tests
Measurement & Monitoring for Radio Conditions	Field Master Pro	MS2090A	Jamming and interference wave hunting
	Remote Spectrum Monitor	MS2720xA	Remote radio wave monitoring
	Signal/Spectrum Analyzer	MS2840A / MS2850A	Radio wave monitoring and Radar characteristics evaluation
	Radio Communication Analyzer	MT8821C	For RF performance and functional tests of 4G and NB-IoT devices
Development & Production for Chipset and Devices	Signalling Tester	MD8430A	For protocol tests of chipsets and devices for 4G and NB-IoT
	Radio Communication Test Station	MT8000A	For RF performance tests of 5G and NTN NR chipsets and devices, as well as functional and protocol tests of 5G chipsets and devices.
	Universal Wireless Test Set	MT8870A	For tests in production line of 4G, NTN NB-IoT devices
	Optical Spectrum Analyzer	MS9740B	Spectrum, wavelength and power measurement of optical devices
Optical Communications / Network Performance	BERTWave	MP2110A	Analyzing eye pattern and measuring bit error rate, and evaluating digital devices such as PCIe, USB, Ethernet, etc.
	Network Master Pro	MT1000A	Latency measurement for network or devices

The items evaluated in the development of the satellites, High Altitude Platform Stations (HAPS), and ground stations that comprise the NTN range from material properties to compliance with wireless communication standards.

S C X
Ku K Ka



Distributed Modular 2-port Vector Network Analyzer ME7869A

The ME7869A can evaluate amplitude and phase transmission characteristics even when the two measurement ends are far apart by connecting/ synchronizing two independent VNA ports with a dedicated optical cable.

- Phase synchronized measurement up to 43.5 GHz at points in the distance
- Radiation pattern evaluation for large-size antenna array



S C X Ku
K Ka Q V
W D G



Broadband Vector Network Analyzer

ME7838 series

Frequency response from 2 to 4 GHz (S-band) to 140 to 220 GHz (G-band) can be measured in a single sweep.

- Frequency characteristics of printed circuit boards and devices up to 220 GHz
- On-wafer measurement



S C X
Ku K Ka
Q V



Opto-Electronic Network Analyzer

ME7848A

For error-corrected transmission characteristics, group delay, return loss, etc. for E/O and O/E devices/components and subsystems used in optical communications.

- Transmission characteristic, group delay, return loss measurements up to 70 GHz



Signal Quality Analyzer-R

MP1900A

For digital signal quality evaluation and bit error measurement of devices/modules. Long-distance transmission/weather-related degradation of optical signals can be evaluated.

Tests can be performed according to many communication standards such as PCIe, USB, Ethernet, etc.



S C X
Ku K Ka
Q V



RF/Microwave Signal Generator

MG362x1A

For signal quality evaluation of radars, transmitters, devices, antennas, AD converters, DA converters, components, etc.

- Frequency range up to 70 GHz



Measurement & Monitoring for Radio Conditions

To evaluate the environment in which stable communication is available via NTN, we should investigate and monitor radio wave conditions such as signal strength from satellites and HAPS, as well as interference waves.

Portable spectrum analyzers are suitable for these field radio environment surveys.

S C X Ku

K Ka Q



Field Master Pro

MS2090A

MS2090A has ability to measure in real-time from 2 to 4 GHz (S-band) to 26 to 40 GHz (Ka-band), up to 110 MHz bandwidth and can be used to measure instantaneous pulsed signals.

- Search for interference to ground stations with directional antennas
- Operational and interference wave measurement of ground station



S C X Ku

K Ka Q



Remote Spectrum Monitor

MS2720xA

Remote Spectrum Monitor allows users to operate a spectrum analyzer installed in the field over a network. For example, this long-term radio frequency monitoring can help analyze the cause of communication problems such as jamming/interference.

- Operational and interference wave measurement of ground station
- PC application software suitable for remote control



S C X Ku

K Ka



Signal/Spectrum Analyzer

MS2840A/MS2850A

The MS2840A/MS2850A can evaluate pulse/chirp signals that are difficult to capture with a sweep-type spectrum analyzer by capturing them with the FFT function.

- Radar pulse/chirp signal measurements for potential interferes



Microwave bands and frequency ranges are shown in the table on the right .

	Frequency (GHz)		Frequency (GHz)		Frequency (GHz)
S	2 to 4	K	18 to 26.5	W	75 to 110
C	4 to 8	Ka	26.5 to 40	D	110 to 170
X	8 to 12	U	40 to 60	G	140 to 220
Ku	12 to 18	V	50 to 75		



Development & Production for Chipset and Devices

IoT devices and smart phones used in NTN need to realize wireless performance and communication functions in line with their respective required standards in order to achieve stable communication.

Quality evaluation is required for each process from development to production of chipsets and devices.



Radio Communication Analyzer

MT8821C

Measurement instrument for development of User Equipment (UE) such as smart phones, tablet PCs, IoT modules

- Radio performance and function test of 4G (LTE) devices
- Building up test environment for NTN NB-IoT



Signalling Tester

MD8430A

By connecting the MD8430A with NTN devices for geostationary satellite GEO, it is possible to verify connectivity to NTN networks (4G, NTN NB-IoT) and roaming between ground and NTN networks.



Radio Communication Test Station

MT8000A

The MT8000A simulates a 5G and NTN NR and NTN NB-IoT base station and also supports both FR1 (to 7.125 GHz) and FR2 (millimeter wave band) bands, including Band n41 used in 5G, all in a single unit.

- Radio performance, functional and protocol testing of 5G chipsets and devices



Universal Wireless Test Set

MT8870A

The MT8870A can be used for building high-volume production and manufacturing lines for smartphones, IoT devices, and communication modules that support various wireless communication standards such as 4G and NTN NB-IoT.



Optical Communications, Network Performance

Using Optical communications is in progress to increase data transmission capacity in satellite communications. Evaluation items for devices used in optical communications include wavelength, signal waveform, and reception sensitivity.



Optical Spectrum Analyzer

MS9740B

For optical spectrum, wavelength, and power measurement of optical devices

- Wavelength characteristics of optical satellite communication devices
- Optical device evaluation used for terrestrial networks



BERTWave

MP2110A

BERTWave can analyze eye pattern and measure receiver sensitivity of optical receivers.

- Waveform quality evaluation for optical satellite communication devices
- Waveform quality evaluation for terrestrial network devices



In NTN that use satellites or HAPS, the latency of communication becomes larger. NTN operators must manage latency between base stations in the network, and with satellites must be managed.



Network Master Pro

MT1000A

Using two time-synchronized Network Master Pros at two remote points enables the measurement of network performance (throughput and latency), including both wireless and wired portions.

- Latency measurement of satellite communication
- Latency measurement of networks
- Throughput measurement of networks
- Test automation by creating scenarios



