

# E7000A Series (1MHz to 4.4GHz) E7100A Series (1MHz to 6.1GHz) Cable and Antenna Analyzer



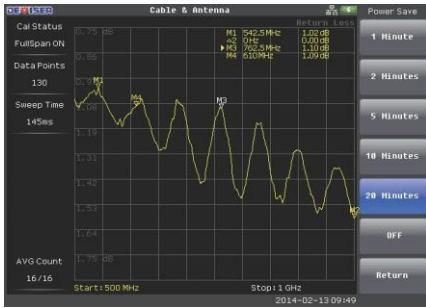
With the rapidly expanding demand for wireless data, the operators must install and maintain base stations efficiently and reliably. To achieve this goal, the field engineers and technicians require a test equipment that delivers outstanding performance in a hand-held unit.

Designed specifically for wireless communications networks, the E7000A Series of Cable & Antenna Analyzers provide all necessary measurement functions and performance to accurately diagnose and verify the site's cable feedline, connectors and antenna system, including signal reflections (return loss or VSWR), fault location (distance to fault), cable loss and RF transmission power in a light-weight, handheld instrument.

## Applications

- Measure signal reflections
- Determine fault locations using distance-to-fault (DTF) measurements
- Perform cable-loss measurements and characterization across various frequency bands
- Verify all cell site feed-lines and antenna parameters
- Verify RF transmission settings

## Benefits

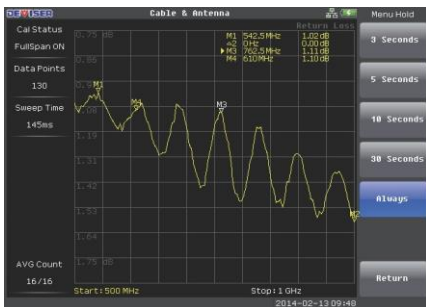


Rugged, dust and splash resistant, reliable, lightweight and portable E7000A Series Cable and Antenna Analyzer is rugged, dust and splash resistant, reliable, field proven and always ready, even if you're not. At under 2.2kg including battery, it's effortless to carry whether you are on level ground, climbing a large tower, or heading through a roof hatch, your E7000A easily goes along with you.

### Lasting power and intelligent power saving mode

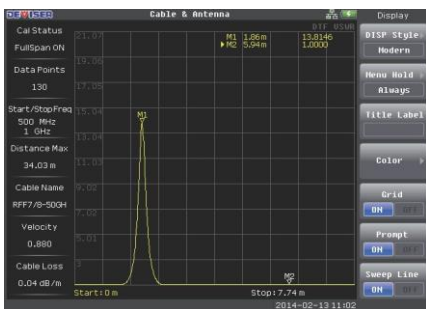
With the battery fully charged, you're ready for a full workday of measurements. It can work lasting more than six hours. You won't need to look for outlets or drag power supplies with you from site to site anymore. Now you can focus on the matters, measurements and getting the job completed.

The E7000A Series Cable and Antenna Analyzer also has intelligent power saving features to extend the operating time further. The power saving mode provides six options: 1 minute, 2 minutes, 5 minutes, 10 minutes, 20 minutes and turn off. If there's no key operating within the option time, the equipment will automatically dim the backlight brightness to save battery power. Select "Off", the screen's backlight will remain light.



### A lot of humanized design for example Menu Hold function

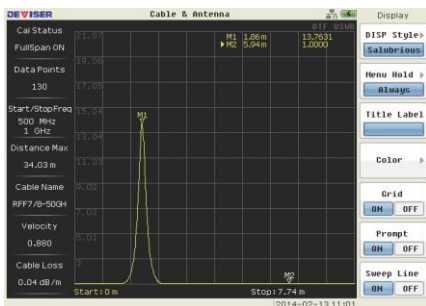
By this option, you can set to keep time for the menu on the screen. There are five options: 3 seconds, 5 seconds, 10 seconds, 30 seconds and always. If there's no key operating within the option time the menu will be hidden automatically to get a larger display measurement area. Select "always" the menu will be displayed on the screen all the time.



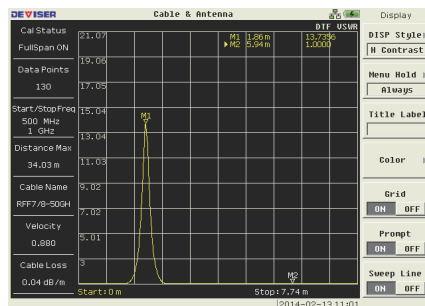
Modern

### Four DISP styles, convenient in measurement under various environment

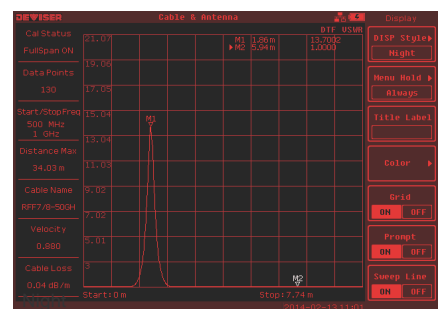
- Modern: This style is default in the system.
- Salubrious: The basic background is white in order to save ink when printing graphics and improve efficiency.
- High Contrast: This style increases displays contrast and the level of the display, more clear in outdoor environment.
- Night: This style will be used to display all in red, in order to overcome the problems by the light at night testing, optimize night viewing.

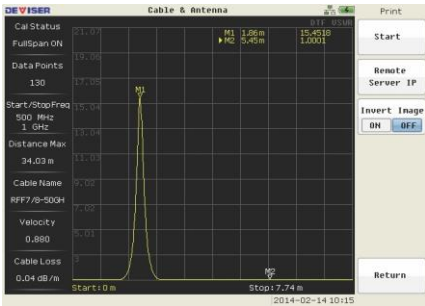


Salubrious

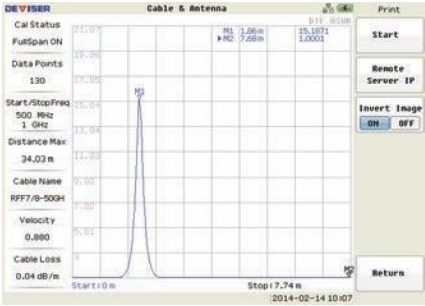


High Contrast





Close Invert Image



Open Invert Image



Useful Help function



OSL calibration

### More practical way of saving images(the example is in the Salubrious DISP Style)

This menu function is setting anti-color graphics switch. You can set the measure background, input character, grid, the measure curve datas and the limit line. This method can save ink when printing graphics and improve efficiency.

### Useful help function

An detailed, useful help menu launches with the press of the Help Key.

### OSL Calibration just got a lot easier

The E7000A guides you through the entire OSL or ECAL calibration process with not only text instructions, but also actual photos on the screen.

### Dual Channel Measurement

Dual channel display function can measure two different measurement types at the same time, which can be showed in two windows of one screen, the top and bot channels can perform all the measurement types, and cursor and qualified limit can be set to any channels.

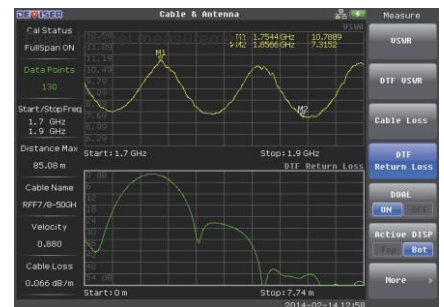
In the test Antenna system, we can set top channel to VSWR, the bot channel is set to the DTF Return Loss. Test of standing wave index can perform a fault location at the same time, greatly improve the test efficiency.

### Return Loss/VSWR

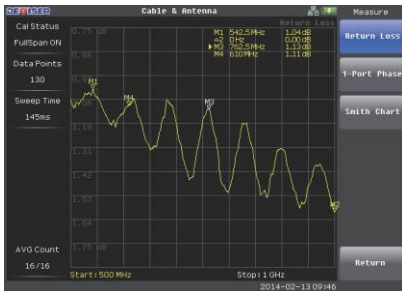
With >42 dB return loss dynamic range, E7000A series verifies the cable and antenna system which conform to performance specifications.



ECAL calibration



# Features



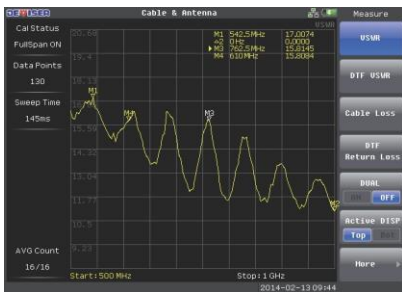
## Cable Loss

Cable loss function measures insertion loss within the cable feedline system. The E7000A series automatically calculates the average cable loss.

## Distance-To-Fault

DTF (distance-to-fault) function troubleshoots systems and locate the problem.

E7000A series displays cable characteristic (VSWR and RETURN LOSS) versus distance. Using the tools, users can monitor small relative changes over time.



## Transmission Measurements (With E7000A-SA Option)

Transmission measurement enables you to measure gain, isolation and insertion loss as well as sector-to-sector isolation verification.

## USB Inline Power Meter Option

The USB inline power meter option provides RMS measurement for both CW and digital modulated signal. It supports 300MHz~4GHz frequency range and 0.2~150W average power range.

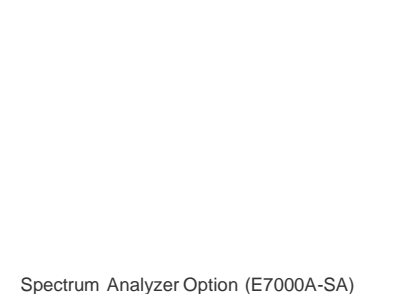
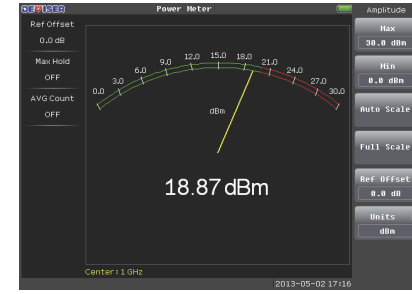
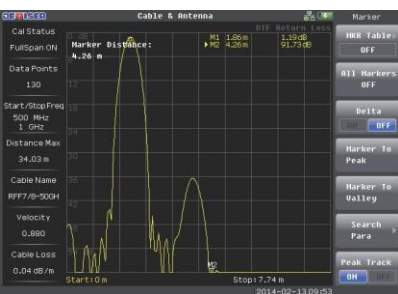
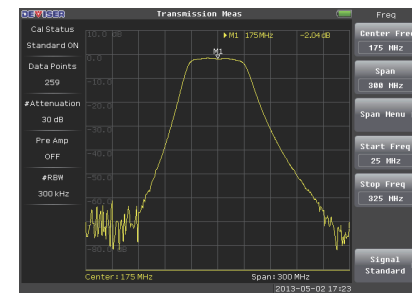
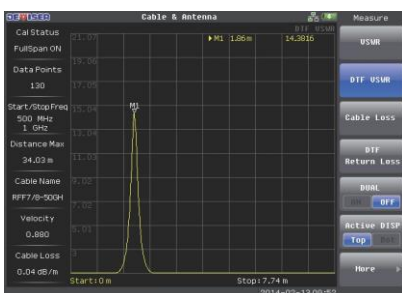
Return Loss/VSWR



## Spectrum Analyzer Option (E7000A-SA)

E7000A-SA covers 9 kHz to 3 GHz frequency range. With this option, E7000A series can provide spectrum analysis, power meter channel power, field strength, spectrogram display, ACPR, OBW and interference signal analysis functions. For detail, please refer to the specifications of E8000A spectrum analyzer.

Cable Loss



Distance-To-Fault

USB Inline Power Meter Option

Spectrum Analyzer Option (E7000A-SA)



# Physical Interface



## Soft Carrying Case

The E7000A can be operated while in the soft carrying case. On the back of the case is a large storage pouch for accessories and power supply

# Specifications

Module	E7000A	E7100A
Measurement	VSWR/Return Loss/Cable Loss/Distance-to-Fault (DTF) Return Loss/Distance-to-Fault (DTF) VSWR/1-Port Phase/Smith Chart	
Frequency range	1MHz ~ 4.4GHz, 1~25MHz Optional	
Frequency resolution	1kHz(1MHz~4.4GHz) 2kHz(4.4GHz~6.1GHz)	
Frequency accuracy	±5 ppm	
Output power level	≥0dBm (1MHz~4.4GHz) ≥-5dBm (4.4GHz~6.1GHz)	
Sweep time	1.5mS/point (Return Loss) 2.5mS/point (DTF)	
Data points	130,259,517,1033,2065	
RF immunity	+13 dBm within ±10 kHz of the carrier frequency +20 dBm @ >1.0 MHz from carrier frequency	
Corrected directivity	≤-42dB (after standard calibration) ≤-38dB (after full band calibration)	
Return loss		
Range	0.00-60.00dB	
Resolution	0.01dB	
VSWR		
Range	1-65	
Resolution	0.01	
Cable loss		
Range	0.00-30.00dB	
Resolution	0.01dB	
DTF		
Return loss range	0.00-60dB	
VSWR range	1-65	
Length	0 to (data points-1)/(span×2) × Vp × C Span=frequency range	
Resolution (m)	=Vp × C /(span×2)	
Data points	130,259,517,1033,2065	
RF output port	Nf type	
Impedance	50Ω	
Display	6.5" TFT LCD, 640*480	
Interface	1 USB2.0, 1 mini USB 1 10M/100M LAN port	
Storage space	1GB memory, >2000 trace files	
Operation temperature	-10 ~ +55°C	
Store temperature	-20 ~ +80°C	
Weight	2.2kg	
Size(LxWxH)( mm)	258 x 173 x74	
Power supply		
Battery	11.1V, 5.2AH	
Continuous Work Time	Typ.> 6 hours	
AC adapter output	15-19VDC	
AC adapter input	100-240VAC, 50-60Hz	
Language	English, Chinese, French etc.	
<b>Spectrum Analyzer Option</b>		
Frequency Range	9 kHz to 3000 MHz	
Frequency Reference		
Aging	± 1 ppm per year	
Stability	± 1 ppm	
Temperature Stability	± 2 ppm (0 to +50°C)	
Marker Count Accuracy (S/N 25 dB, RBW/span 0.01)		
Accuracy	±2 ppm, ±1 count	
Counter Resolution	1 Hz	
Frequency Span		

Module	E7000A	E7100A
Range	0 Hz (zero span), 100Hz to 3000 MHz	
Sweep and Trigger		
Range	1mSec to 250 sec (span ≠ 0 Hz) 10 µSec to 250sec (span = 0 Hz)	
Accuracy	< ± 1%	
Trigger Type	free run, single, video, TV	
Resolution Bandwidths		
Range	1Hz to 3 MHz in 10% sequence 1Hz to 100Hz Optional	
Bandwidth Accuracy	< ± 15%	
Selectivity (60 dB/3 dB Bandwidth Ratio)	< 5:1	
Video Bandwidths		
Range	1 Hz to 3 MHz in 10% sequence	
Stability		
Phase Noise	< -105dBc/Hz @ 100 kHz offset from CW signal < -95 dBc/Hz @ 10 kHz offset from CW signal < -85 dBc/Hz @ 1 kHz offset from CW signal	
<b>Amplitude Specifications</b>		
Measurement Range	displayed average noise level to maximum safe input level	
Input Attenuator		
Range	0 dB to 55 dB	
Step	5dB	
Internal Preamp		
Frequency Range	1 MHz to 3000 MHz	
Gain	18 dB	
Noise Figure	4 dB	
Max Safe Input	+30dBm (peak power/input attenuation >15 dB), 100 VDC	
Displayed Average Noise Level (Input Terminated, 0 dB Attenuator, RBW=1Hz, VBW=1Hz, Sample Detector)		
preamp OFF (typical)	< -152 dBm 1MHz ~ 1GHz < -148 dBm 1GHz ~ 3GHz	
preamp ON (typical)	-165 dBm@10Hz 1MHz ~ 1GHz -161 dBm@10Hz 1GHz ~ 3GHz	
Spurious Responses		
Second Harmonic	≤ -70dBc for -20 dBm signal at input mixer	
TOI	> +13dBm (two -20 dBm signals at input mixer with > 1 MHz separation and att=0)	
Residual Responses (Input Terminated and 0 dB Attenuator)	≤ -85 dBm 1 MHz to 3000 MHz	
Display Range		
Log Scale	0.1 to 0.9 dB/div in 0.1 dB step 1 to 40 dB/div in 1 dB step	
Linear Scale	10 divisions	
Scale Units	dBm, dBmV, dBµV, mV	
Marker Readout Resolution	0.03 dB for log scale 0.03% of ref level for linear scale	
Traces	6 traces	
Trace Detector	sample, posi-peak, neg-peak, normal, average,	
Marker Functions	peak, next peak, marker to center, marker to ref, etc.	
Marker Display	normal, delta, fix marker & frequency counter	
Reference Level	-130 dBm to +40 dBm	
Level Accuracy	< ± 1 dB @ +25°C (typical)	
<b>Inputs/Outputs</b>		
RF INPUT		
Input	N connector	
Input Impedance	50Ω	
VSWR	< 1.8 typical(10MHz~3000MHz-Attenuation≥10dB)	

## Ordering Information

	Items/Description	Model	Order No.
Model	4.4GHz Cable & Antenna Analyzer	E7000A	0121.7000.02
	4.4GHz Cable & Antenna Analyzer with 3.0GHz Spectrum Analyzer	E7000A-SA	0121.7000.26
	6.1GHz Cable & Antenna Analyzer	E7100A	0121.7100.02
	6.1GHz Cable & Antenna Analyzer with 3.0GHz Spectrum Analyzer	E7100A-SA	0121.7100.26
Options	Power Adaptor Plug Cord (CN)	DS2500-705	6190.0501.05
	Power Adaptor Plug Cord (US)	DS2500-700	6190.0500.08
	Power Adaptor Plug Cord (EU)	DS2500-701	6190.0500.34

	Items/Description	Model	Order No.
Options	Power Adaptor Plug Cord (UK)	DS2500-703	6190.0500.36
	Power Adaptor Plug Cord (AUS)	DS2500-702	6190.0500.35
	Transmission Measurement	E7000A-0010	2121.7000.27
	GPS Module (USB Connector)	DS2500-704	2121.8000.28
	Power Meter ( Software )	E7000-800	2121.7000.32
	Terminal Power Meter	E7000A-0040	2121.7000.30
	Inline Power Meter	E7000A-0050	2121.7000.31
	eCal Calibration Module, 38 dB, 1MHz to 6GHz, N(m), 50Ω	E7000-600	2121.7000.33
	1MHz Frequency Expansion Option	E7000A-0000	2121.7000.29
	Test Extension Cable, 1.5m, N(f) to N(f), 6GHz, 50Ω	E7000-703	6190.0501.08
	RF Test Port Cable, Armored, Phase Stable, 1.5m, N(m) to N(f), 18GHz, 50Ω	E7000-739	6190.0501.09
	RF Test Port Cable, Armored, Phase Stable, 1.5m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	E7000-740	6190.0501.10
	RF Test Port Cable, Armored, Phase Stable, 1.5m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	E7000-729	6190.0501.11
	RF Test Port Cable, Armored, Phase Stable, 3.0m, N(f) to N(f), 18GHz, 50Ω	E7000-730	6190.0501.12
	RF Test Port Cable, Armored, Phase Stable, 3.0m, N(m) to 7/16 DIN(f), 18GHz, 50Ω	E7000-731	6190.0501.13
	RF Test Port Cable, Armored, Phase Stable, 3.0m, N(m) to 7/16 DIN(m), 18GHz, 50Ω	E7000-732	6190.0501.166
	RF Test Port Cable, Unarmored, Phase Stable, 1.5m, N(m) to N(f), 6GHz, 50Ω	E7000-704	6190.0501.14
	RF Test Port Cable, Unarmored, Phase Stable, 1.5m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	E7000-705	6190.0501.15
	RF Test Port Cable, Unarmored, Phase Stable, 1.5m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	E7000-706	6190.0501.16
	RF Test Port Cable, Unarmored, Phase Stable, 3.0m, N(f) to N(f), 6GHz, 50Ω	E7000-707	6190.0501.17
	RF Test Port Cable, Unarmored, Phase Stable, 3.0m, N(m) to 7/16 DIN(f), 6GHz, 50Ω	E7000-708	6190.0501.18
	RF Test Port Cable, Unarmored, Phase Stable, 3.0m, N(m) to 7/16 DIN(m), 6GHz, 50Ω	E7000-709	6190.0501.19
	Precision "Y" Open/Short/Load Calibration Combination, N(m), DC-6GHz	E7000-700	6190.0501.01
	Precision "Y" Open/Short/Load Calibration Combination, N(f), DC-6GHz	E7000-710	6190.0501.20
	Precision "T" Open/Short/Load Calibration Combination, 7/16 DIN(m), DC-6GHz	E7000-711	6190.0501.21
	Precision "T" Open/Short/Load Calibration Combination, 7/16 DIN(f), DC-6GHz	E7000-712	6190.0501.22
	Open/Short, N(m), DC to 18GHz, 50Ω	E7000-713	6190.0501.23
	Open/Short, N(f), DC to 18GHz, 50Ω	E7000-714	6190.0501.24
	Precision Load, 42dB, N(m), 6GHz, 50Ω	E7000-715	6190.0501.25
	Precision Load, 42dB, N(f), 6GHz, 50Ω	E7000-716	6190.0501.26
	Adapter Kit, 50Ω (NFNF, NFD, NPDF, NTF)	E7000-727	6130.0500.01
	Adapter DIN 7/16 (f) to N(m), DC to 7.5GHz, 50Ω	E7000-717	6190.0501.27
	Adapter DIN 7/16 (f) to N(f), DC to 7.5GHz, 50Ω	E7000-718	6190.0501.28
	Adapter DIN 7/16 (m) to N(f), DC to 7.5GHz, 50Ω	E7000-719	6190.0501.29
	Adapter DIN 7/16 (m) to N(m), DC to 7.5GHz, 50Ω	E7000-720	6190.0501.30
	Adapter DIN 7/16 (m) to DIN 7/16(m), DC to 7.5GHz, 50Ω	E7000-721	6190.0501.31
	Adapter DIN 7/16 (f) to DIN 7/16(f), DC to 7.5GHz, 50Ω	E7000-722	6190.0501.32
	Adapter DIN 7/16 (f) to DIN 7/16(m), DC to 7.5GHz, 50Ω	E7000-723	6190.0501.33
	Precision Adapter Kit, 50Ω (PNFNF, PNFD, PNPDF, PNTF)	E7000-728	6130.0500.02
	Precision Adapter, N(m) to N(m), DC to 18GHz, 50Ω	E7000-724	6190.0501.34
	Precision Adapter, N(f) to N(m), DC to 18GHz, 50Ω	E7000-725	6190.0501.35
	Precision Adapter, N(f) to N(f), DC to 18GHz, 50Ω	E7000-733	6190.0500.12
	Precision Adapter, N(f) to 7/16 DIN N(m), DC to 6GHz, 50Ω	E7000-734	6190.0500.17
	Precision Adapter, N(f) to 7/16 DIN N(f), DC to 6GHz, 50Ω	E7000-735	6190.0500.24
	Precision Adapter, N(f) to SMA(f), DC to 6GHz, 50Ω	E7000-736	6190.0500.42
	English Users Guide (Hard Copy)	E7000-0100	6190.0600.73
	Intelligent Battery Charger	E8000-700	6190.0700.15
10W, 6dB, Bi-Directional, DC-6.0GHz, N(f) to N(m)	E7000-737	6190.0501.67	
50W, 30dB, Bi-Directional, DC-6.0GHz, N(f) to N(m)	E7000-738	6190.0501.68	
100W, 40dB, Bi-Directional, DC-6.0GHz, N(f) to N(m)	E7000-726	6190.0501.36	
Rechargeable Li-Ion Battery, 11.1V, 5.2Ah	E8000-0300	6190.0100.05	
eCal Calibration Module, 38 dB, 1MHz to 4.4GHz, N(m), 50Ω	E7000-1000	2121.7000.28	
Adapter DIN 7/16 (f) to N(m), DC to 6GHz, 50Ω	E7000-701	6190.0501.02	
Test Extension Cable, 1.5m, N(m) to N(f), 6GHz, 50Ω	E7000-702	6190.0501.03	
Product Maintenance Card & Certification of Quality	DS1001-000	6190.0600.02	
E7000 series Disk (Site WorkBench + User Manual)	E7000-0200	6190.0600.72	
Crossover LAN Cable (1.5m)	DS8831-706	6190.0500.19	
AC-DC Adapter	FSP065-RAB	6190.0700.06	
Automotive Cigarette Lighter Adapter, 12V DC Adapter	E8000-0400	6190.0700.14	
USB A, 5-pin mini B-cable	A-MiniB	6290.0900.05	
E7000A series Fast Operation Guide	E7000-0110	6190.0600.74	
Soft Carry Case	E7000-0600	6190.0600.51	
Accessories			



