Programmes After Market Services
NSW-1 Series Transceivers

General Information and NAM Programming

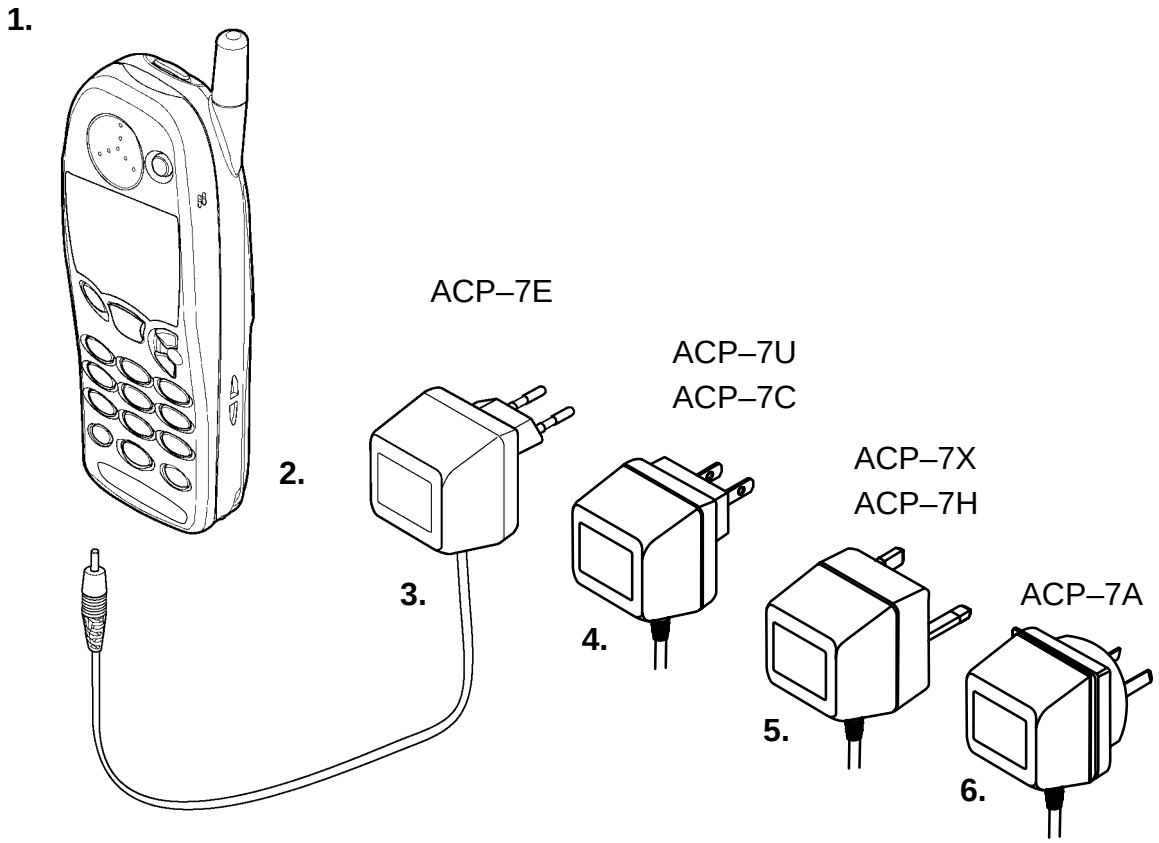
Issue 4 03/01

CONTENTS

Product Selection

Handportables

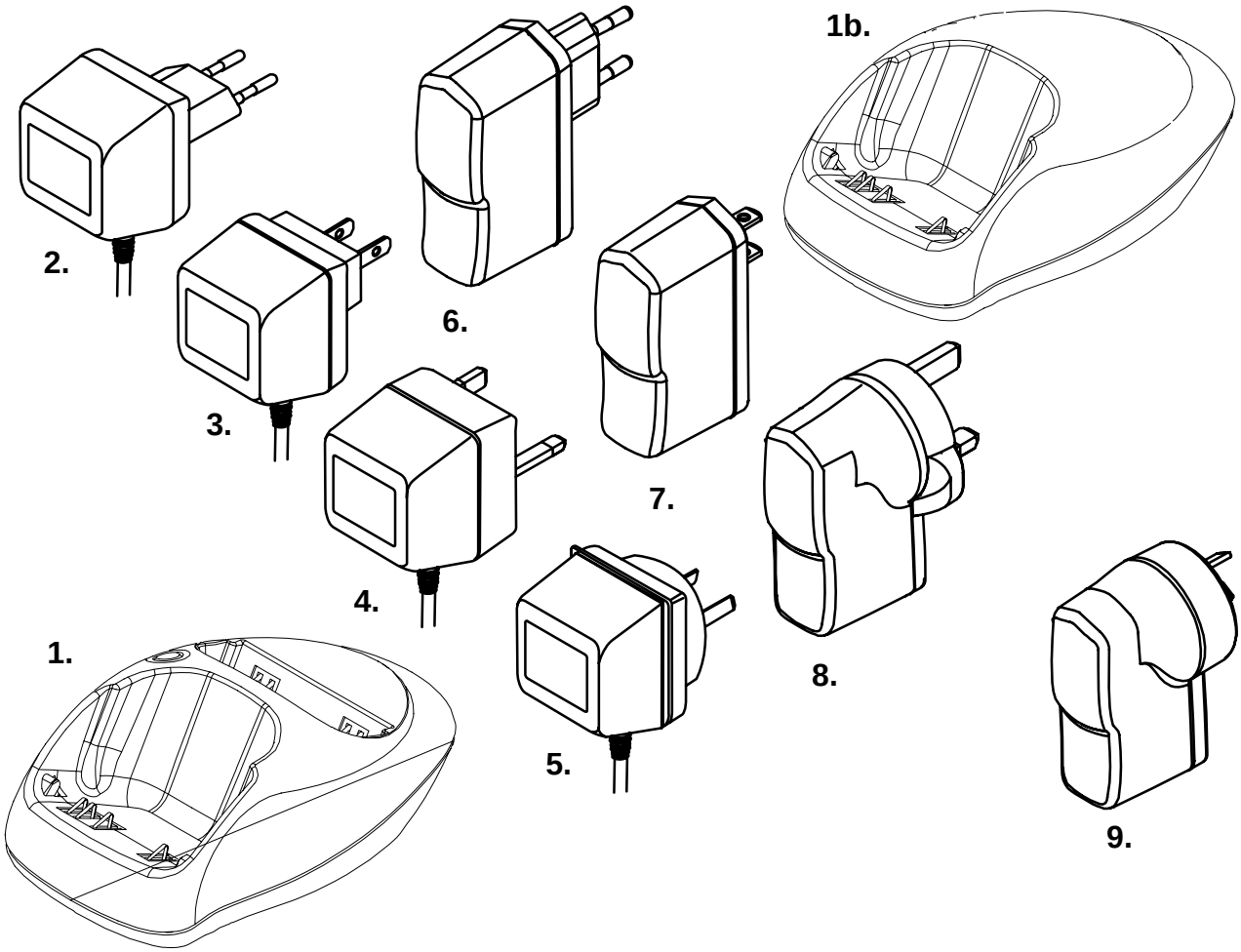
The NSW-1 is a handportable dualband/dualmode mobile telephone for the TDMA 800/ 1900 networks.



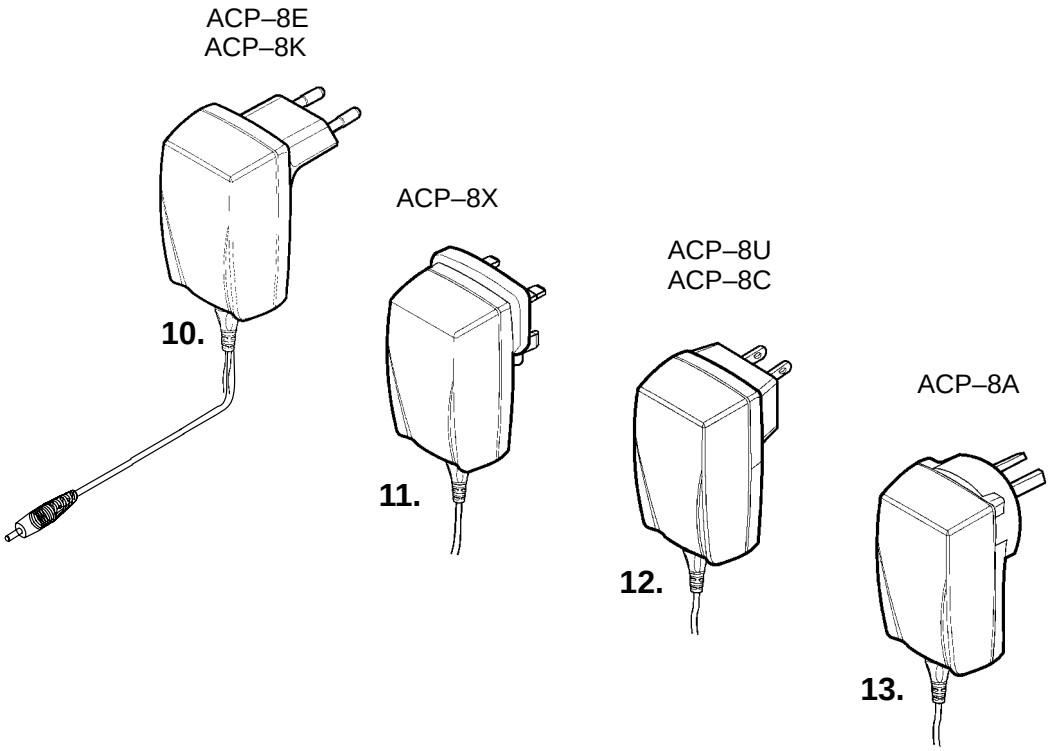
Item:	Name:	Type code:	Material code:
1.	Transceiver (See Variant Section)		
2.	Standard battery (NiMH 900 mAh)	BMS-2	0670203
3.	AC Travel Charger (Euro plug) 207-253 Vac	ACP-7E	0675144
4.	AC Travel Charger (US plug) 198-242 Vac	ACP-7C	0675158
5.	AC Travel Charger (UK plug) 207-253 Vac AC Travel Charger (UK plug) 180-220 Vac	ACP-7X ACP-7H	0675145 0675146
6.	AC Travel Charger (Australia) 216-264 Vac	ACP-7A	0675148

Desktop Option

The desktop option allows the user to charge the handportable and spare battery from mains.

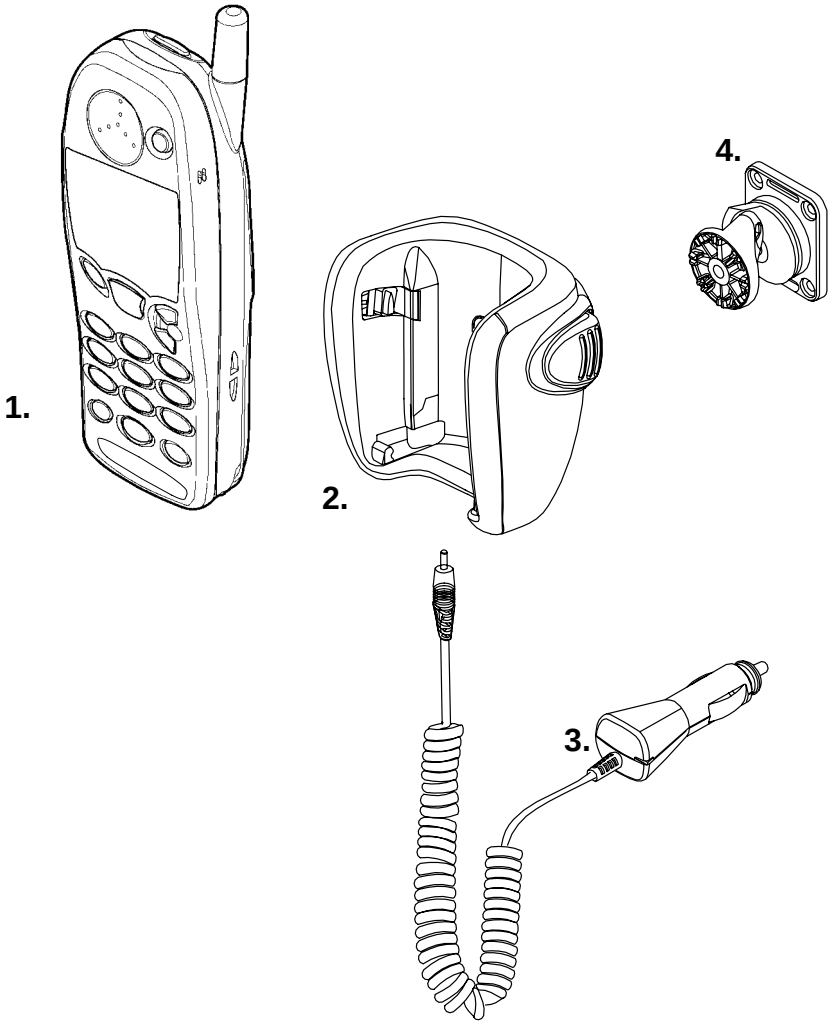


Item:	Name:	Type code:	Material code:
1.	Desktop stand	DCH-9	0675179
2.	Desktop stand	DCH-8	0675174
3.	AC Travel Charger (US plug) 108-132 Vac AC Travel Charger (US plug) 198-242 Vac	ACP-7U ACP-7C	0675143 0675158
4.	AC Travel Charger (UK plug) 207-253 Vac AC Travel Charger (UK plug) 180-220 Vac	ACP-7X ACP-7H	0675145 0675146
5.	AC Fast Travel Charger (Australia) 216-264 Vac	ACP-7A	0675148
6.	AC Fast Travel Charger (Euro plug) 90-264 Vac	ACP-9E	0675149
7.	AC Fast Travel Charger (US plug) 90-264 Vac	ACP-9U	0675151
8.	AC Fast Travel Charger (UK plug) 90-264 Vac	ACP-9X	0675150
9.	AC Fast Travel Charger (Australia) 90-264 Vac	ACP-9A	0675152



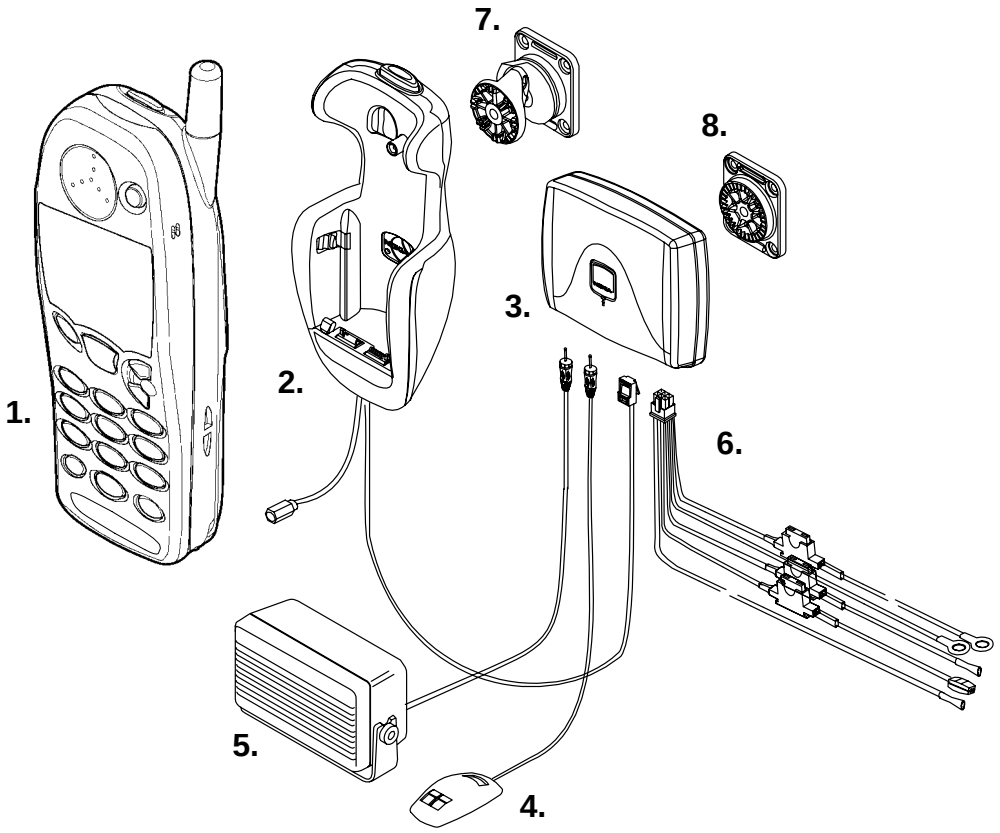
Item:	Name:	Type code:	Material code:
10.	Performance Travel Charger (Euro plug) 90-264 Vac	ACP-8E	0675195
10.	Performance Travel Charger (Korea plug) 90-264 Vac	ACP-8K	0675119
11.	Performance Travel Charger (UK plug) 90-264 Vac	ACP-8X	0675197
12.	Performance Travel Charger (US plug) 90-264 Vac	ACP-8U	0675196
12.	Performance Travel Charger (China plug) 90-264 Vac	ACP-8C	0675211
13.	Performance Travel Charger (Australia plug) 90-264 Vac	ACP-8A	0675214

Basic Car Kit (CARK-64) Options



Item:	Name:	Type code:	Material code:
1.	Transceiver		See variant Appendices
2.	Mobile Holder	MBC-1	0700060
3.	Cigarette Lighter Charger	LCH-9	0657120
4.	Swivel Mount	HHS-9	0620037

Advanced Hands Free Car Installation (CARK-91) Options



Item:	Name:	Type code:	Material code:
1.	Transceiver		See variant Appendices
2.	Mobile Holder	MCC-1	0620043
3.	Hands Free Unit	HFU-2	0694049
4.	Hands Free Microphone	HFM-8	0690016
5.	Hands Free Speaker	HFS-12	0692008
6.	Power Cable	PCH-4J	0730055
7.	Swivel Mount	HHS-9	0620037
8.	Mounting Plate	MKU-1	0620036

Product List

Unit/type:	Product code:
Transceiver NSW-1	See variant Appendixes
Slim Battery BLS-2 900 mAh	0670206
Standard Battery BMS-2 900 mAh	0671323
Standard Battery BMS-2S 900 mAh NiMH	0670225
Vibrator Battery BMS-2V 900 mAh +	0670204
Extended Battery BLS-4 1500 mAh	0670207
AC Travel Charger ACP-7E (EUR) 207-253 Vac	0675144
AC Travel Charger ACP-7U (US) 108-132 Vac	0675143
AC Travel Charger ACP-7C (US) 198-242 Vac	0675158
AC Travel Charger ACP-7X (UK) 207-253 Vac	0675145
AC Travel Charger ACP-7H (UK) 180-220 Vac	0675146
AC Travel Charger ACP-7X (AUS) 216-264 Vac	0675148
Fast Travel Charger ACP-9E (EUR) 90-264 Vac	0675149
Fast Travel Charger ACP-9U (US) 90-264 Vac	0675151
Fast Travel Charger ACP-9X (UK) 90-264 Vac	0675150
Fast Travel Charger ACP-9A (AUS) 90-264 Vac	0675152
Performance Travel Charger ACP-8E (EUR) 90-264 Vac	0675195
Performance Travel Charger ACP-8K (KOR) 90-264 Vac	0675199
Performance Travel Charger ACP-8X (UK) 90-264 Vac	0675197
Performance Travel Charger ACP-8U (US) 90-264 Vac	0675196
Performance Travel Charger ACP-8C (CHINA) 90-264 Vac	0675211
Performance travel Charger ACP-8A (AUS) 90-264 Vac	0675214
Cigarette Lighter Charger LCH-9	0675174
Desktop Stand DCH-9	0675174
Desktop Stand DCH-8	
Mobile Holder MBC-1	0700060
Mobile Holder MCC-1	0620043
Handsfree Unit HFU-2	0694049
Power Cable PCH-4J	0730055
HF Microphone HFM-8	0690016
HF Speaker HFS-12	0692008

Mounting Plate MKU-1	0620036
Swivel Mount HHS-9	0620037
Headset HDC-9	0694053
Headset HDC-9P	0694063
Belt Clip BCH-12	0720098
External Antenna Cable XRC-1	0730103
External Antenna Cable XRC-2	0730180

Module List

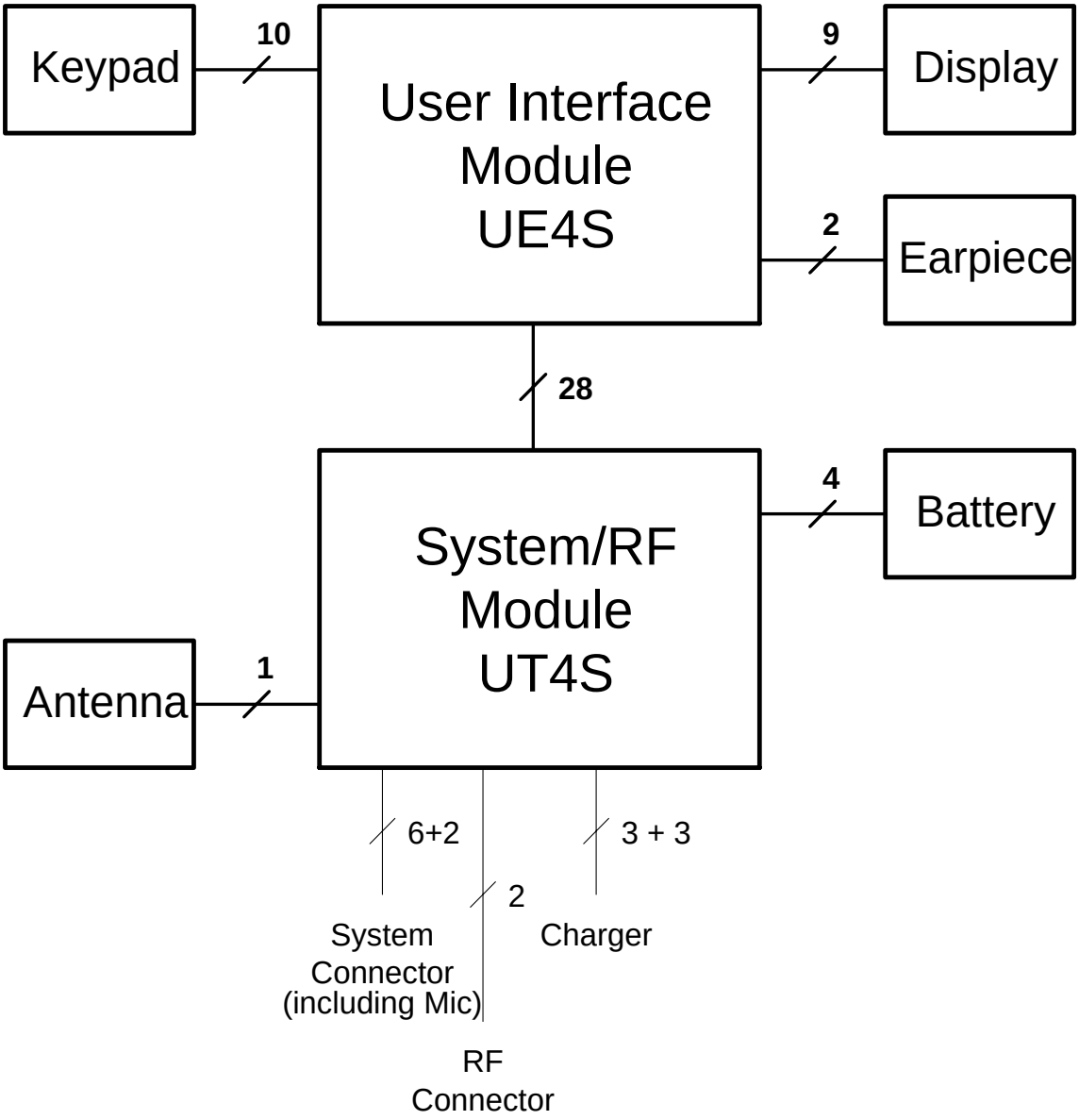
Name of module	Type code:	Material code:	Notes
Basic transceiver	**NSW-1**	0501948	Basic TR and recess for logo plate
- System/RF module	UT4S	0201301	
- User interface module	UE4S	0201360	
- Mechanics assembly parts	MNSW1	0261802	Common parts for NSW-1
- A-cover assembly parts		9456243	Night blue, recess for logo label
- Blue A-cover assembly		9490242	LCD/speaker gasket/power key/key-mat
- Grey A-cover assembly		9490247	LCD/speaker gasket/power key/key-mat
- SBC blue A-cover assembly		9491941	LCD/speaker gasket/power key/key-mat
- Window assembly parts		9457839	
- Antenna		0660167	
- Keymat		9790318	
- Software module (Basic SW)		0240647	On flash memory

Standard Color front covers

Color:	Part code:
Tango Orange	0261857
Antiqua Red	0261858
Gheko Green	0261859
Bermuda Blue	0261860
Dolphin Blue	0261861

Red Dazzle	9451938
Green Gleam	9451937
Bronze Armor	9451936
Sea Spray Blue	9451935
Blue Indigo	9451934
Turning Pink	9451933
Glacier White	9451932
Yellow Spin	9451931
Gold Tone	9451930

Interconnection Diagram



External interfaces

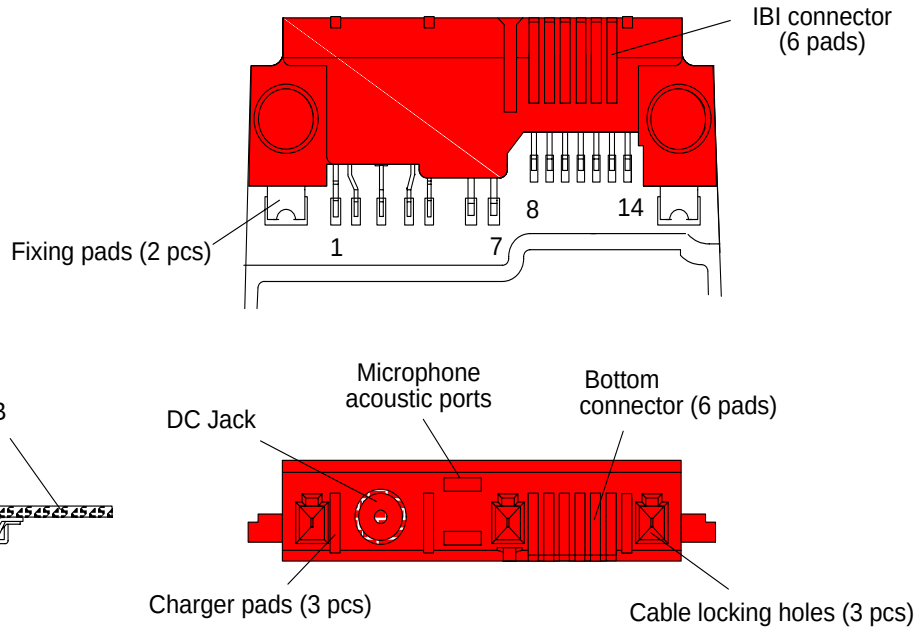
System connector

System connector provides:

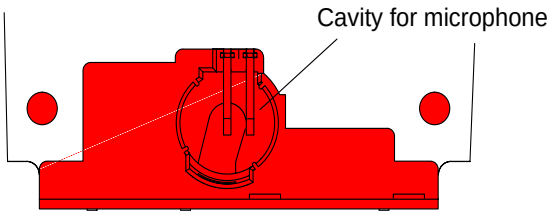
- Nine contact pads — (three for charging [+, - and charging control]; six for accessory interface [also for IBI connection; connector bads are bent on the battery side])
- 3-wires round DC-jack for charging purposes

- Microphone recess with two contact springs
- Two NC-microphone channels in the connector body.

B side view



A side view

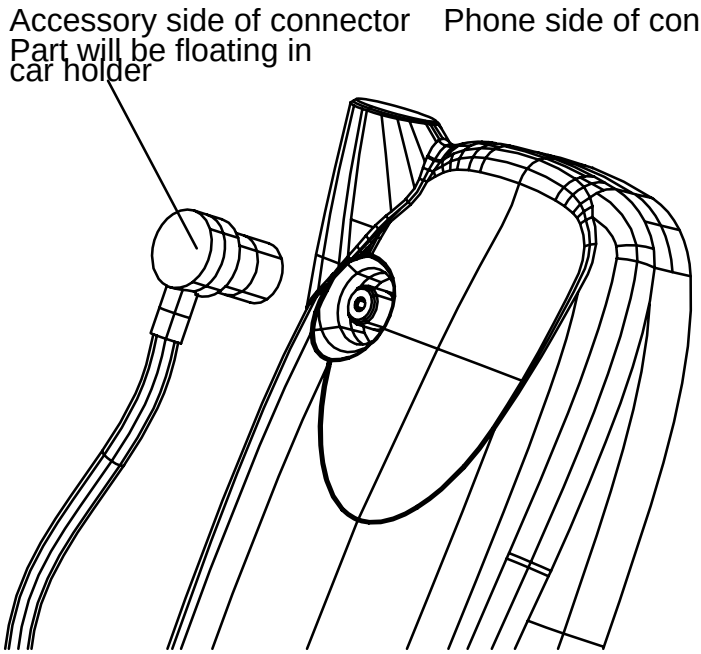


Pin	Name	Function	Description
1	V_IN	Bottom charger contacts	Charging voltage
2	L_GND	DC Jack	Logic and charging ground
3	V_IN	DC Jack	Charging voltage
4	CHRG_CTRL	DC Jack	Charger control
5	CHRG_CTRL	Bottom charger contacts	Charger control
6	MICP	Microphone	Microphone signal, positive node
7	MICN	Microphone	Microphone signal, negative node
8	XMIC	Bottom and IBI connectors	Analog audio input
9	SGND	Botton and IBI connectors	Audio signal ground
10	XEAR	Botton and IBI connectors	Analog audio output
11	MBUS	Botton and IBI connectors	Bidirectional serial bus

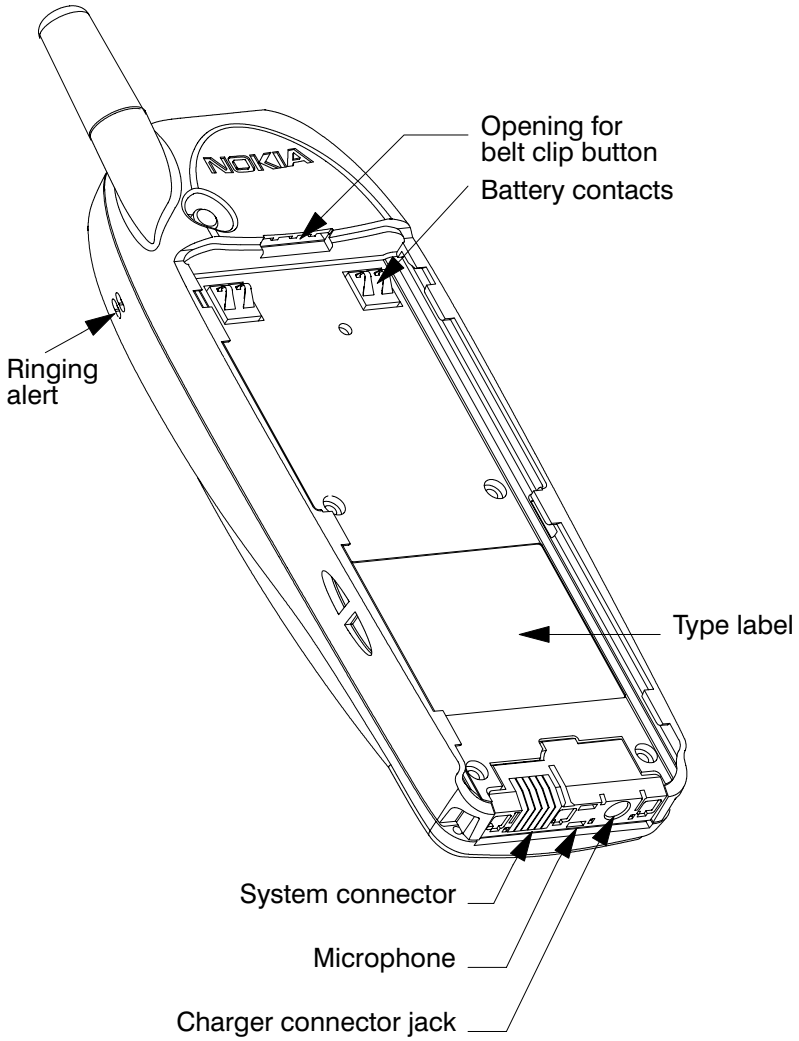
Pin	Name	Function	Description
12	FBUS_RX	Botton and IBI connectors	Serial data in
13	FBUS_TX	Botton and IBI connectors	Serial data out
14	L_GND	Bottom charger contacts	Logic and charging ground

RF-connector

The RF-connector is needed to utilize the external antenna with car cradle. The RF-connector is located on the back side of the transceiver on the top section. The connector is plug type connector with special mechanical switching.



Battery contacts



Pin	Name	Function	Description
1	BVOLT	Battery voltage	Battery voltage
2	BSI	Input voltage	Input voltage
3	BTEMP	Battery temperature indication Phone power up Battery power up PWM to VIBRA BATTERY	Input voltage Input voltage Output voltage PWM output signal frequency
4	BGND		Ground

Technical Specifications

General Specifications of Transceiver NSW-1

Parameter	Unit
Cellular system	TDMA/NADC 800/1900
RX frequency band	869.04 ... 893.97 MHz 1930.05 ... 1989.99 MHz
TX frequency band	824.04 ... 848.97 MHz 1850.01 ... 1909.95 MHz
Output power	up to 600 mW
Duplex spacing	45 MHz / 80.04 MHz
Number of RF channels	831 / 1997
Channel spacing	30 kHz
Number of TX power levels	2 to 7 in analog, 2 to 10 in digital modes
Frequency control	VCTCXO; AFC used in analog and digital modes
Receiver type	Double conversion, common IF frequencies in all modes
Modulator type	I/Q modulation in digital modes, FM modulation in analog modes

Nokia 5160/5120 cellular telephone (NSC-1*/NSW-1*) NAM programming instructions

All Nokia 5160/5120 cellular telephones (with software version 1.6 or later) are capable of supporting both Random and Default authentication methods. The programmer must decide which form of A-Key is desired for use. There are two methods to program the NAM described below.

If a RANDOM A-Key is desired for use, use the Easy NAM 1 programming sequence.

If a DEFAULT A-Key is required, then use the Easy NAM 2 sequence. The clear key can be used to correct mistakes.

Menu Driven Easy NAM Programming

1 Turn on the phone and enter the Programming Access Code
***#6391#** for NAM1 with a random A-key value
***#6392#** for NAM2 with a default A-key value

2 Enter the 10 digit Area Code and Phone Number
and press the TALK key (or the "OK" softkey in the display)

3 Enter the System ID Code (SID) supplied by the cellular service provider
(1 -5 digit SID) and press the TALK key (or "OK" softkey in the display)

– Optional settings are Language and Lock Code (see below)
– Programming is completed
– The phone automatically powers off and then back on

NOTE: Change the Lock code by adding a pound sign (#) and the new lock code after the SID. (Example: 175#7788; Lock code = 7788).

Change the Language by adding a pound sign and new language code after the code (Example: 175#0; Language = English).
Language Code: 0 (default) = English, 1 = French, 2 = Spanish, 3 = Portuguese.

Change the Lock Code and Language code by separating each set of numbers by a pound sign (Example: 175#7788#2; Where the SID = 00175, Lock code = 7788, Language = Spanish).

Complete NAM Programming Instructions

Access NAM Programming Mode:

1 Turn the phone on.

2 Enter the NAM access code.
Factory default is: *** 3 0 0 1 # 1 2 3 4 5** #

3 If the screen to the right appears, the access code was entered correctly.

If after several attempts you cannot access NAM programming, it is possible that the NAM 2 access code has been changed, or the phone is in need of service.

MAIN MENU Selection

4 Press the [Scroll-Key] up or down until the indicator points at the desired menu option. Select from the following:

NAM 1	NAM 2	Security	Emergency
SW version	Serial No.	Field Test	

5 Press the **[Select]** softkey to access the Sub-Menu from and of the above Main Menu selections.

Programming NAM 1 and 2

6 If the value is incorrect, press the **[Select]** softkey and use the keypad to enter new information.

Home system ID	**Home SOC (when unlocked)**	Own number	Alpha tag	**PSID/RSID lists**	Change defaults

Change Defaults (sub-menu from above)			
NAM Status (Enable/Disable)	Access method	Local option	Primary paging channel
Secondary paging ch	Dedicated A cch	Dedicated A cch number	Dedicated B cch
Dedicated B cch number	Overload class	Group ID	SID alpha tag control
A-key code			

7 Use the **[OK]** softkey to store the new information that has been entered.

8 Repeat steps 6 and 7 for the remaining NAM parameter options to be viewed and/or changed.

9 To program other NAM, press [Back] to return to the Main Menu. Select NAM 2 Once the Home System ID and Own number are programmed, the phone will automatically set the NAM Status to enabled.

Programming the Security Code:

10 From the Main Menu, use the Scroll keys to select the “Security” Sub-Menu, press **[Select]** and the current 5-digit security code will appear in the display. Default is 12345

11 If you wish to change the Security Code at this time, use the numeric keys to enter the new value.

12 Press the softkey **[OK]** to store changes. Note: The Lock Code will be automatically changed to the last 4 digits of the new Security Code.

Programming Emergency numbers:

13 From the Main Menu use the Scroll key to select the ”Emergency” Sub-Menu, press the **[Select]** softkey to access the emergency numbers.

Emergency number 1 (911)
Emergency number 2 (*911)
Emergency number 3 (None)

14 If you wish to change the displayed value, use the Scroll key to select the emergency number you wish to change and press **[Select]**. Then use the numeric keys to enter the new values

15 To save the value, press the softkey **[OK]**.

16 Press **[Back]** to exit the menu.

Serial Number (ESN):

17 From the Main Menu, use the Scroll key to display the “Serial No.” or ESN of the phone.

18 Press **[Back]** to exit the menu.

Programmed: (Date the phone is first programmed)

19 From the Main Menu, use the key to display the “Programmed” menu.

20 Press **[Select]** and enter a four digit number that corresponds to the month and year the phone is sold. Example (mmyy)

0199 = January 1999, 0401 = April 2001.

NOTE: This menu location can be programmed only one time. Once the date has been entered it cannot be changed. Any attempt to enter the menu once it has been programmed will receive a short beep and the message “Date already saved”.

Exiting NAM Programming:

21 To exit the NAM programming mode, turn the phone off and leave it off for five seconds.

Field test:

The Field Test Display Mode is used to investigate how the phone and the cellular network are interfacing together.

The Field Test Display Mode reports valuable information about the signal strength, battery charging status, cellular state, and encryption status.

The information is organized to display information relating to Analog Control Channels, Digital Control Channels, Analog Voice Channels, and Digital Voice channels. All the information provided in this display is in accordance with IS-136.

To activate the Field Test Display Mode you must be in NAM programming. Instructions for entering NAM programming are on the previous pages.

From the Main Menu use the Scroll key to display the ”Field test” menu and press the [**Select**] softkey.

Use the Scroll key to select “Enable” and press the [**OK**] softkey.

Turn the 5160/5120 off, then back on. The FIELD TEST display will begin automatically after wake-up as long as the user does not enter any characters into the display.

Scroll through the 6 different displays using the Scroll key.

To disable the FIELD TEST mode. Return to NAM programming and disable the function

under the FIELD TEST menu.

Programming PSIDS and RSIDS:

The Nokia 5160/5120 provides the option to program Private (PSIDs) and Residential (RSIDs) System IDs as prescribed by IS-136. The PSID / RSID list is programmed to support system selection / re-selection processes, and SID display functions. The Nokia 5160/5120 product will support up to 15 different Private or Residential Systems. These instructions allow a person to program 5 of the 15 available locations. The other 10 locations are reserved to ensure locations are available for automatic programming.

Using the NAM programming menu to program the PSID / RSID is just one of several ways that this information can be programmed. The phone also supports automatic programming of the PSID / RSID values via registration accept message from a Public & Private system, manually prompting with System Scan sub-menu option “New Search”, or via Over the Air Programming. Follow these instructions to program the PSID / RSID lists.

1 Enter the NAM programming menu and select NAM 1 (or the desired NAM). (Note: PSID / RSID is currently only available in the NAM 1 location. PSID / RSID locations for NAM 2 are reserved for future use.)

2 Use the Scroll key to display “PSID / RSID LISTS” then press **[Select]**.

3 Use the Scroll key to select the PSID / RSID 1 or the desired PSID / RSID (1 through 5). Press the **[Select]** softkey.

4 Each list contains:

System type: Select Private or Residential system type.

PSID / RSID: System ID of the Private or Residential system. Indicates which PSID / RSID the mobile will respond to.

Connected System ID: Connected System ID. The SID to which the PSID / RSID is connected.

Alpha tag: The name of the Private or Residential SID that will be displayed when the phone uses the PSID / RSID. The micro system can overwrite the alpha tag once the phone is using the system with its network broadcast name.

Operator code (SOC): (SOC) This is the System Operator Code.

US	
AWS	= 2049,

Canada	
Rogers Cantel Inc.	= 2050,
Bell South Cellular	= 2051,
Southwestern Bell Mobile Systems	= 004,
Vanguard	= 007,
Century Cellunet	= 008,
Pacific Telecom Cellular	= 009,
Midwest Wireless Communications	= 010,

These (inter)national SOC values are only an approximation from available information. Please call Customer Service (888-Nokia-2U) with corrections.

Country code: Enter the Country Code of the PSID / RSID.

Public service profiles: Contains up to four channel and color code values for each private or residential system. This information is necessary to initiate scanning for the Private or Residential System.

Private operating frequencies: Enter the channel number(s) of the private system. The parameters allow for up to four channels per PSID / RSID.