FREQ RANGE	ECR DESIGNATION	ECR SITE	PRF	PRI	PD
G1.49 - 1.76	A-02	LS4 (ES4)	349.8 - 349.8	2092 - 3392	4.0 - 6.2
G8.05 - 9.00	C-04	LS4 (ES4)	200.0 - 800.	1250 - 5000	1.6 - 2.6
G2.130 - 2.338	E-12	NATO SITE	314 - 816	1200 - 2865	0.6 - 5.1
G7.15 - 8.47	G-06	SS3(ES7)	44 - 1843	510 - 22727	0.2 - 1.4
G7.609 - 8.43	H-08	BEAR SITE	1303 - 3158	316.6 - 767.	0.3 - 0.7
G6.390 - 6.905	H-09	NATO SITE	316.4 - 934.1	1182. - 3160.	1.0 - 2.1
G8.55 - 9.66	I-05	LS1(ES1)	1737.9 - 4088.3	234.3 - 575.4	0.2 - 0.6
G14.5 - 15.5	J-1	NATO SITE	1900.0 - 6515.5	160 - 586.7	0.1 - 0.4
G6.985 - 7.37	J-17	Y-SITE	833.4 - 3044.1	297.2 - 1199.9	0.2 - 0.6
G14.7 15.0	J-25	Y-SITE	2460 - 2911	343.7- 948.0	0.1 - 0.5
G12.21 - 13.39	J-12	SS2	4409.1- 8840.2	113.2 - 226.8	3.2 - 10.0
G12.21 - 13.39	J-29	TOWER SITE 9	4409.1- 8840.2	113.2 - 226.8	3.2 - 10.0
G8.3 - 9.51	K-2	SS-3(ES7)	4739.36 - 5474.0	166.0 - 283.0	0.1 - 0.7
G12.05 -13.53	D-8	BEAR SITE	595.6 - 1004.	996 - 1679	2.7 - 3.8
10.15	J-19	BEAR SITE		CW	
16.55	J-21	BEAR SITE		625	
	J-18	BEAR SITE			
10 GHZ RANGE	RSDE Various	VARIOUS	Replicate		

Frequency (MHz)	Authority	Description		Remarks
2.5400	ACNTC RFA-202	HF		
2.8160	ACNTC RFA-202	HF		
3.2050	ACNTC RFA-202	HF		
3.3450	ACNTC RFA-202	HF		
4.6415	ACNTC RFA-202	HF		
4.9100	ACNTC RFA-202	HF		
5.2835	ACNTC RFA-202	HF		
5.5150	ACNTC RFA-202	HF		
6.8765	ACNTC RFA-202	HF		
6.9855	ACNTC RFA-202	HF		
38.2500	N60530	VHF/FM		Paul Revere
40.2500	N60530	VHF/FM		715 ELSG
41.7250	N60530	VHF/FM		Canadian Contingent
42.5000			Red (Alt)	JAG V
60.0000			Red (Pri)	JAG V
75.0000	N60530	VHF/FM		Canadian Contingent
123.1250	AF888512	VHF/AM		Edwards AFB Approves / Raytheon License 09CB5E
123.1500	AF888513	VHF/AM		Edwards AFB Approves / Raytheon License 09CB5F
139.2000	ACNTC RFA-202	VHF/FM		EC08 C2
139.7000	ACNTC RFA-202	VHF/AM		715 ELSG
140.2000	N60530	VHF/AM		Paul Revere
141.3500	ACNTC RFA-202	VHF/AM		SPARTA
142.7000	ACNTC RFA-202	VHF/FM		EC08 C2
143.1750	N60530	VHF/AM		PMA-231
148.9750	N60530	VHF/AM		AWACS
220.5000			Red (Alt)	VX-7 PTT
235.2750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
237.1750	Annex E5	UHF/AM		Paul Revere
240.2750	Annex E5	UHF/AM		Canadian Contingent
251.7750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
253.9250	Annex E5	UHF/AM		PMA-231
255.8750	Annex E5	UHF/AM		715 ELSG
257.4250	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
265.8000	Annex E5	UHF/AM		CAOC Primary (C/S - HARRODS)
265.8500	Annex E5	UHF/AM		Sentinel/ASTOR (MOD UK)
267.6500	Annex E5	UHF/AM		SPARTA
270.9750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
273.3250	Annex E5	UHF/AM		EC08 C2
274.9750	Annex E5	UHF		Harris Radio Link (Potts Peak to ECR) (5 MHz Wide)
276.2750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
278.1250	Annex E5	UHF/AM		EC08 C2
279.3750	Annex E5	UHF/AM		Sentinel/ASTOR (MOD UK)
281.6750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
283.8250	Annex E5	UHF/AM		715 ELSG
288.4750	Annex E5	UHF/AM		EA Contact
290.1250	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
294.8250	Annex E5	UHF/AM		EC08 C2
298.2250	Annex E5	UHF/AM		JSTARS Ground Coordination
302.3750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
305.3750	Annex E5	UHF/AM		715 ELSG
311.2500	Annex E5	UHF		Harris Radio Link (Potts Peak to ECR) (5 MHz Wide)
314.4250	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
324.7250	Annex E5	UHF/AM		Canadian Contingent
341.8750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
354.5250	Annex E5	UHF		Harris Radio Link (Potts Peak to ECR) (5 MHz Wide)
355.4750	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
361.0750	Annex E5	UHF/AM		Paul Revere
369.3250	Annex E5	UHF/AM		Airborne Common Use - Refer to SPINS
378.3250	Annex E5	UHF/AM		PMA-231

378.7250	Annex E5	UHF		Airborne Common Use - Refer to SPINS
405.0000	(1)	UHF		Harris Radio Link (Potts Peak to ECR) (5 MHz Wide)
407.0000	(1)	UHF		DTRA
410.0000	(1)	UHF		Harris Radio Link (Potts Peak to ECR) (5 MHz Wide)
412.0000	(1)	UHF		DTRA
413.4000	(1)	UHF/FM		ASTOR Ground Coordination (LMR)
414.0000	(1)	UHF		DTRA
415.0000	(1)	UHF		Harris Radio Link (Potts Peak to ECR) (5 MHz Wide)
418.0000	(1)	UHF		DTRA
422.7500	N60530	UHF		EPLRS
425.0000			Red (Pri)	VX-7 PTT
425.7500	N60530	UHF		EPLRS
427.7500	N60530	UHF		EPLRS
428.7500	N60530	UHF		EPLRS
430.7500	N60530	UHF		EPLRS
431.7500	N60530	UHF		EPLRS
432.7500	N60530	UHF		EPLRS
434.7500	N60530	UHF		EPLRS
435.7500	N60530	UHF		EPLRS
437.7500	N60530	UHF		EPLRS
440.7500	N60530	UHF		EPLRS
442.7500	N60530	UHF		EPLRS
443.7500	N60530	UHF		EPLRS
445.7500	N60530	UHF		EPLRS
446.7500	N60530	UHF		EPLRS
447.7500	N60530	UHF		EPLRS
464.5000	FCC License	UHF		UAS GOLDEN EYE (AURORA)
464.5500	FCC License	UHF		UAS GOLDEN EYE (AURORA)
469.5000	FCC License	UHF		UAS GOLDEN EYE (AURORA)
469.5500	FCC License	UHF		UAS GOLDEN EYE (AURORA)
1443.1670	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1456.5000	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1468.8330	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1483.1670	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1496.5000	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1509.8330	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1716.0000	(1)	UHF		PMA-231/VRC-99 (Secondary)
1724.0000	(1)	UHF		PMA-231/VRC-99 (Primary)
1763.1670	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1776.5000	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1789.8330	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1803.1660	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1815.1670	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1828.5000	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
1841.8330	N60530	UHF/TTNT		Airborne Common Use - Consult Network Manager
3480.0000	(1)	SHF/S-BAND		UWB - 550MHz wide channel centered on frequency
4040.0000	(1)	SHF/C-BAND		UWB - 550MHz wide channel centered on frequency
4450.0000	AR900775	SHF/C-BAND		Harris Radio Link (Potts Peak to Mich Lab)
4500.0000	AR900773	SHF/C-BAND		Harris Radio Link (Potts Peak to Mich Lab)
4560.0000	(1)	SHF/C-BAND		UWB - 550MHz wide channel centered on frequency
4700.0000	AR910192	SHF/C-BAND		Harris Radio Link (Potts Peak to Mich Lab)
5260.0000	N60530	SHF/C-BAND		UAS C2 / Yellow Card
5280.0000	N60530	SHF/C-BAND		UAS C2 / Orange Card
5400.0000	N60530	SHF/C-BAND		UAS C2 / Yellow Card
5420.0000	N60530	SHF/C-BAND		UAS C2 / Orange Card
5710.0000	N60530	SHF/C-BAND		UAS C2 / Yellow Card
5775.0000	N60530	SHF/C-BAND		UAS C2 / Orange Card
5810.0000	N60530	SHF/C-BAND		UAS C2 / Yellow Card
5830.0000	N60530	SHF/C-BAND		UAS C2 / Orange Card
6120.0000	(1)	SHF/C-BAND		UWB - 550MHz wide channel centered on frequency
6969.0000	(1)	SHF/C-BAND		UWB - 550MHz wide channel centered on frequency

9760.0000	(1)	SHF/X-BAND		Sentinal/ASTOR CDL Link
9850.0000	N60530	SHF/X-BAND		CDL - U/L
9860.0000	(1)	SHF/X-BAND		Sentinal/ASTOR CDL Link
10250.0000	N60530	SHF/X-BAND		PMA-231 (NanoSAR Center Frequency)
10260.0000	(1)	SHF/X-BAND		Sentinal/ASTOR CDL Link
10287.0000	N60530	SHF/X-BAND		CDL - D/L
10360.0000	(1)	SHF/X-BAND		Sentinal/ASTOR CDL Link
14470.0000	N60530	SHF/Ku-BAND		CDL - D/L
14615.0000	N60530	SHF/Ku-BAND		CDL - D/L
14760.0000	N60530	SHF/Ku-BAND		CDL - D/L
15185.0000	N60530	SHF/Ku-BAND		CDL - U/L
15215.0000	N60530	SHF/Ku-BAND		CDL - U/L
15250.0000	N60530	SHF/Ku-BAND		CDL - U/L
16950.0000	N60530	SHF/Ku-BAND		P-3 LSRS
G1.71-G1.85		SHF/L-BAND		ROVER
G2.30-G2.5		SHF/S-BAND		ROVER
G4.40-G5.0		SHF/C-BAND		ROVER
G5.25-G5.85		SHF/C-BAND		ROVER
G9.02 - G9.28	Part 15 Device	SHF		UAS C2

(U) Senao SN-358 HPCP		
Item	**Senao SN-358 Base Unit**	**Senao SN-358 Handset**
Transmitter		
Frequency *	394 MHz	268 MHz
Output power	1W	450 mW
Harmonic	55dBc	55dBc
Current Drain	Standby: 100 mA Talk: 600 mA	Standby: 10 mA Talk: 350 mA
Receiver		
Frequency	268 MHz	394 MHz
Sensitivity at 12db SINAD:	Unknown	Unknown
(CCITT)	-122 dBm	-122 dBm
Adjacent Channel rejection	50dB	50dB
Spurious Response	55dB	55dB
Power Source:	AC 110 V-60 Hz AC 220-50 Hz DC 12 V	3.6 V/650 mAh Ni-mAh
Resistance of Antennae:	50 Ohm	50 Ohm
Frequency Deviation: +/-5 kHz	Unknown	Unknown
Channel Spacing	Unknown	Unknown
Specifications		
Range: 12 km	65,536 security codes (two-way)	Built-in voice scrambler
Two-way paging and hands free intercom	Walkie-talkie between handsets	FSK/DTMF interface
12KM range, the SN-358 booster can effectively extend operation range of SN-358. Die casting cover provides efficient heat radiation. Voltage Standing Wave Radio (VSWR) protection device. Built-in port for connecting external speakers. Built-in port for connecting car antenna. The booster can be used to extend the range of the following cordless phones: SG-3, SG-4, SG-7, SG-258 Plus, SN-258, SN-358, KT-368, KT-868U, HT-3, HT-4, HT-3 Plus, and HT-7.		

(U) Senao STAR 2000 HPCP		
Item	**STAR 2000 Base Unit**	**STAR 2000 Handset**
Transmitter		
Frequency *	**384MHz**	**258MHz**
Output power	**25W**	**4W**
Harmonic	**65dBc**	**50dBc**
Current Consumption		
Standby	**220mA**	**35mA**
Talk	**5A**	**1.1A**
Receiver		
Frequency	**258MHz**	**384MHz**
Sensitivity at 12 dB SINAD		
(CCITT) 25°C	**-124dBm**	**-123dBm**
-10°C~+50°C	**-122dBm**	**-122dBm**
Adjacent Channel Rejection	**60dB**	**60dB**
Spurious Responce	**65dB**	**65dB**
Power Source	**AC 110V~60Hz**	**DC 13.5V**
	AC 220V~50Hz	**7.2V/750mAh Ni-MH**
	DC 12V	**7.2V/2100mAh Ni-MH battery pack**
Modulation: FM/MSK	**Channel Spacing: 12.5KHz**	
Operating Temperature: -10°C~+50°C	**Number of Channels: 256 Channels AUTOSCAN**	

(U) Senao SN-568B HPCP		
Item	**Senao SN-568B Base Unit**	**Senao SN-568B Handset**
Transmitter		
Frequency *	380 MHz	254 MHz
RF Output power	40W	20W/12W
Harmonic	65dBc	65dBc
Current Consumption:		
Standby	220mA	110mA
Talk	8.5A	4.5A/3A
Receiver		
Frequency	254 MHz	380 MHz
Sensitivity at 12dB SINAD:		
(CCITT) 25°C	-124dBm	-122dBm
-10°C~+50°C	-122dBm	-118dBm
Adjacent channel rejection	60dB	60dB
Spurious	65dB	65dB
Power Source:	AC 110 V/60 Hz AC 220 V/50 Hz DC 12V	AC 110 V/60 Hz AC 220 V/50 Hz DC 12V
Current Drain	Standby: 220 mA Talk: 5 A	Standby: 110 mA Talk: 3/4 mA
Channel Spacing	25 kHz	25 kHz
PSTN Interface		
Line Voltage		32V
Line Impedance		600Ohms
Ring Output Level		45Vrms/50Hz
DTMF Input Level		-6/-8dBm
		(Hi/Lo Group)
Pulse Dial: Speed		10 or 20pps
I.D.T.		>300ms
Flash Time		100ms>FLASH>1 sec
Signal Output Level		-6dBm
Signal Input Level		-8dBm

Specifications		
Range: Up to 80 km in town	65,536 sets of two-way security codes	Two-way paging
Modulation: FM/MSK	Channel Spacing: 12.5KHz	
Operating Temperature: -20°C~+50°C	Number of Channels: 256 Channels AUTOSCAN	

(U) 6150 HPCP		
Item	**6150 Base Unit**	**6150 Handset**
Transmitter		
Manufacturers	(U) Baotong (BT-6150), (U) Henghui (HH-6150), (U) Kenwei (KW-6150), (U) Wintel (WT-6150)	
(U) BT-6150, HH-6150 , KW-6150, WT-6150	115.378 MHz Base Station Receive	115.37 MHz Handset Transmit
(U) Documented for WT-6150	133.0 MHz Base Station Receive	133.0 MHz Handset Transmit
(U) Wintel/Al-Bash WT-6150	115.852 MHz Base Station Receive	115.852 MHz Handset Transmit
(U) Wintel/Al-Basha WT-6150	147.039 MHz Base Station Receive	147.039 MHz Handset Transmit
(U) Wintel WT-6150	147.244 MHz Base Station Receive	147.244 MHz Handset Transmit
(U) BT-6150	147.26 MHz Base Station Receive	147.26 MHz Handset Transmit
(U) HH-6150	147.247 MHz Base Station Receive	147.247 MHz Handset Transmit
(U) KW-6150	147.253 MHz Base Station Receive	147.253 MHz Base Station Receive
(U) Documented for WT-6150	173.0 MHz	173.0 MHz
Minimum Radio Frequency	(U) 115.378 MHz	
Maximum Radio Frequency	(U) 147.253 MHz	
Number of bands	(U) 2	
Modulation	(U) FM	
Antenna Impedance	50 Ohms	50 Ohms
Residual Radiation	60dB	60dB
Transmit Current	1500mA	5OOm
Frequency Deviation	5KHz	5KHz
RF Output Power	6 W	1.5 W
Receiver		
Minimum output power	(U) 0.7 W (BT-6150 base station)	
Other output power	(U) 0.9 W (WT-6150, Wintel/Al-Basha WT-6150)	
Other output power	(U) 1.0 W (HH-6150 base station)	
Maximum output power	(U) 0.5 W (WT-6150 handset (documented))	
Maximum output power	(U) 1.0 W (handset (documented) BT-6150)	
Maximum output power	(U) 1.1 W (KW-6150 base station)	
Sensitivity	(U) -119.0 dBm (base station)	
RF bandwidth	(U) 8.0 kHz (handset at 3 dB)	
RF bandwidth	(U) 9.5 kHz (base at 3 dB)	
Number of VF channels	(U) 1	

Peak frequency deviation (Wintel/Al-Basha, WT-6150 base station)	**(U) 3.9 kHz**	
Peak frequency deviation (KW-6150 base station)	**(U) 4.2 kHz**	
Peak frequency deviation (KW-6150 handset)	**(U) 4.2 kHz**	
Peak frequency deviation (BT-6150 base station)	**(U) 4.4 kHz**	
Peak frequency deviation (HH-6150 base station)	**(U) 4.7 kHz**	
Peak frequency deviation (BT-6150 handset)	**(U) 4.8 kHz**	
Peak frequency deviation (HH-6150 and WT-6150 handset)	**(U) 5.0 kHz**	
Peak frequency deviation (Wintel/Al-Basha, WT-6150 handset)	**(U) 5.1 kHz**	
Sensitivity (Duplex)	**0.25uV**	**0.25uV**
Standby	**60mA**	**20mA**
Anti-Interference	**70dB**	**70dB**
Rated Voltage	**12V-I5V, 13.8 V (base station via DC jack), 220 AC V (base station)**	**6.0V-7.2V,**
Power Source	**(U) AC (base station), (U) DC (base station via DC jack)**	**(U) AC (handset resting inside charger), battery (handset), cigarette adapter (handset)**
Power Supply Frequency	**50 Hz (base station and handset)**	

Power Consumption	**(U) 0.1 W (handset standby with backlight off), 1.4 W (HH-6150 handset transmit with backlight off), 1.9 W (WT-6150 handset transmit with backlight off), 2.2 W (BT-6150 handset standby with backlight off), 2.5 W (KW-6150 handset transmit with backlight off)**	**(U) 1.0 W (Wintel/Al-Basha WT-6150 base station standby), 1.9 W (BT-6150 base station standby), 2.1 W (HH-6150, KW-6150, WT-6150 base station standby), 6.1 W (Wintel/Al-Basha, WT-6150 base station transmit), 6.5 W (KW-6150 base station transmit), 6.9 W (WT-6150 base station transmit), 7.5 W (HH-6150 base station transmit), 8.0 W (BT-6150 base station transmit)**
Communication Distance\Range:	**Urban 5-15 km**	
Communication Distance\Range:	**Rural 20-50 km (open field)**	

(U) This type of High Power Cordless Phone is referred to as the 6150 because of the handset's striking resemblance to the European Nokia cellular phone model 6150. However, this phone is not a cellular phone and it operates only with the paired base station. There were five "versions" of the 6150 HPCP the Baotong BT-6150, the Henghui HH-6150, the Kenwei KW-6150, and the Wintel WT-6150. Another Wintel WT-6150 has a manual included with Al-Basha on the cover. The Al-Basha name is referenced in all manuals on the handset standby screen with the words "ALBASHA 6150", but this particular phone has Al-Basha listed on the cover of the manual. This version will be referred to as Wintel/Al-Basha WT-6150.

(U) The basic operation of the 6150 is similar to other HPCPs. The base station operator and the handset operator can communicate via page functions or the handset operator can place calls or receive incoming phone calls if the base station is connected to an active telephone line.
However, unlike the documentation suggests, the base station cannot join a phone call already in progress between the handset and the outside line.

(U) The base station has very few features and calling capabilities (no extra RJ-11 port to make external calls, no 3-way calling which is indicated in the manual as a feature, and no CID). Its primary functions are to relay telephone calls to and from a handset and to be in direct communication with a handset via the page functions.

NGIC 105853 UNCLASSIFIED

NGIC 105850 UNCLASSIFIED

(U) ALCON CT-88 HPCP		
Item	**ALCON CT-88 Base Unit**	**ALCON CT-88 Handset**
Transmitter		
Output Power	25W	25W
Frequency	382.100 MHz	256.100 MHZ
Modulation Type	FM	FM
Spurious Emission	-60 dB	-50 dB
Receiver		
Frequency	256.100 MHz	382.100 MHz
Sensitivity at 12dB SINAD	-125dBm	-125dBm
Audio Distortion	<5%	<5%
Image/Harmonic	-70 dB	-70 dB
Adjacent Channel Rejection	-70 dB	-70 dB
Spurious Response	-70 dB	-70 dB
Power Source	AC 110V/60Hz	
	AC 220V/50Hz	
	Output: DC13.6V/8A Ni-Mh Battery	
With increased power the CT-88 has an effective communications range of up to 60 Km to include data (i.e. fax, modem). CT-88 transmission bands had 20 channels (2 control and 18 traffic) with 25 KHz channels separation.		
Specifications		
Range: 60-100 km	Radio frequency stability and durability	40 Channel auto scan
Two-way paging and intercom system	Universal interface on the remote and mobile for fax, data, or other telecommunication equipment use	Handset both cellular phone/cordless phone dial mode
Multi-base (up to 9) wireless PBX function; multi-handset (up to 90)		

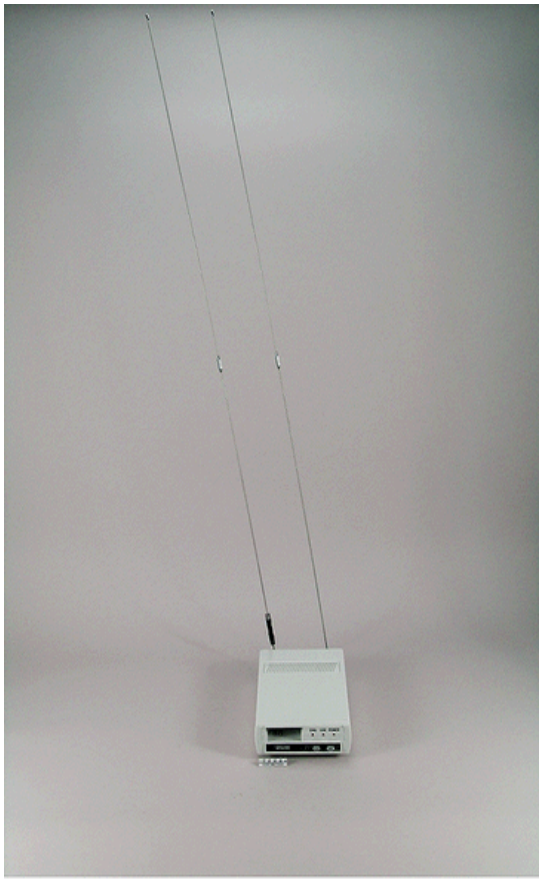
(U) ALCON CT-505HSI HPCP		
Item	**ALCON CT-505HSI Base Unit**	**ALCON CT-505HSI Handset**
Transmitter		
Frequency Documented	47.0 MHz Base Set Transmit	71.0 MHz Handset Transmit
Frequency Measured	47.909 MHz Base Set Transmit	69.599 MHz Handset Transmit
RF Output Power Documented	0.8 W (base station (documented))	(U) 0.4 W (handset (documented))
RF Output Power Measured	(U) 1.0 W (base station (measured))	
Receiver		
Frequency Documented	71.0 MHz Base Set Recieve	47.0 MHz Handset Receive
Frequency Measured	69.599 MHz Base Set Recieve	47.909 MHz Handset Receive
Power source	(U) AC (base station (measured))	(U) DC (handset (measured))
DC voltage required	(U) 4.8 V (handset)	
AC voltage required		(U) 220 V (base station)
Power-supply frequency	(U) 50 Hz (base station)	
Power consumption	(U) 0.48 W (base station standby), 5.16 W (base station transmit)	(U) 0.096 W (handset standby), 3.504 W (handset transmit)
Minimum radio frequency	(U) 47.909 MHz (base station transmit and handset receive)	
Maximum radio frequency	(U) 69.599 MHz (handset transmit and base station receive)	
Number of bands	(U) 2	
Modulation	(U) FM (voice), (U) FSK (call signaling)	
Sensitivity	(U) -120.4 dBm (base station, 10 dB SINAD)	
RF bandwidth	(U) 10.3 kHz (base station transmit at 6 dB)	(U) 7.7 kHz (handset transmit at 6 dB)
Number of RF channels	(U) 40 (documented)	
RF-channel spacing	(U) 160.375 kHz (documented)	
Number of VF channels	(U) 1	
Peak frequency deviation	(U) 5.0 kHz (base station)	(U) 6.6 kHz (handset)
Specifications		
Identified as HPCP, but specific ranges not provided	Two-way call between base and handset unit	Optional external antenna for expanded coverage
1,000,000 sets of security codes		

Specifications

(U) The CT-505HSI is a basic cordless telephone manufactured by Tamagawa Electric Co., Ltd. in Japan and distributed by Superfone in Cyprus. The documentation for the system (although there are some discrepancies) is much better than documentation with KO systems and despite its unsophisticated technology seems reliable as a generic cordless telephone.
Unique features of this system not seen with other HPCP systems is operation in the VHF range (base Tx around 40 MHz and handset Tx around 70 MHz) including separate whip antennas for transmission and reception on the base, and the ability to change the BSID manually using switches found on the handset and base.
The base station is mostly made of molded white plastic. The front of the base station has a slot to charge the handset battery.
The handset has the shape, size and style of early 1980s cordless telephones. The top of the handset has a telescopic antenna that extends to 819 mm. The front of the handset has an internal speaker at the top and an internal microphone on the bottom. The middle of the handset has a standard numeric keypad. Below the keypad is the label "Superfone CT-505HSI."

(U) Basic operation requires the handset operator to use the slide switch on the front to select "ON AIR." If the base station's "INT.COM" key (a toggle key) is in the pressed position (a green light will also be illuminated), then the handset operator will communicate with the base station operator. If the "INT.COM" key is depressed on the base station, then the handset will connect to the PSTN and hear a dial tone via the base station.
If the handset operator hears the dial tone but wants to speak with the base station operator, he presses the "CALL" key which sounds a horn internal to the base station (different from the voice speaker). The base station operator then presses the "INT.COM." key to enable the microphone and speaker on the base station.
(During an incoming call or when the base station presses the "CALL" key, the handset will ring (if in "STD-BY" mode). The handset operator then slides the switch to "ON AIR" to speak with the caller.

(U) The base station and handset have DIP switches that can be used to change the BSID. The DIP switch positions must match on the base station and handset for communications to be established. Like other HPCPs the base station terminates communications with the handset if the handset frequency is not detected for 20 seconds.



NGIC 105879 UNCLASSIFIED

NGIC 105874 UNCLASSIFIED

(U) Engenius EP-490 HPCP		
Item	**Engenius EP-490 Base Unit**	**Engenius EP-490 Handset**
Transmitter		
Output Power	**708 mW**	**708 mW**
Frequency	**928 MHz**	**902 MHz**
Receiver		
Frequency	**902 MHz**	**928 MHz**
Power Source	**120 V / 7 V AC/DC Adapter**	**4.8 V, 750 mAh, Ni-Mh Battery**
Current Drain	**Unknown**	**Unknown**
Channel Spacing	**Unknown**	**Unknown**
Specifications		
Range: Open air up to 1 km, operating up to 250,000 square feet in manufacturing plants, warehouses and hospitals; up to 12 floors in-building penetration; up to 3,000 acres on farms, ranches, school, and university campuses.	**100,000 security of security codes**	**Two-way radio and intercom capability between base station and handset(s), operating even when out of range of base unit**
Multi-line 4-Port wireless network communication system	**Optional indoor/outdoor external antenna for optimal coverage and optional rugged case to protect handset**	**Auto power management works off analog co lines or behind PBX off analog ports**
DSS technology with digital privacy and clarity, operating frequency hopping security 200 times per second	**Three-way conference calling**	
Notes: EP-490 Discontinued and replaced with DuraFon 4X		

(U) SN-188 Knockoff HPCP		
Item	**SN-188 Base Unit**	**SN-188 Handset**
Transmitter		
Frequency *	**147.324 MHz Base Station Transmit**	**226.974 MHz Handset Transmit**
Output power	**(U) 9.0 W (base station transmit)**	**(U) 2.4 W (handset transmit)**
Receiver		
Frequency	**226.974 MHz Base Station Receive**	**147.324 MHz Handset Receive**
AC voltage required	**(U) 220 V (base station)**	
DC voltage required	**(U) 13.8 V (base station)**	**(U) 4.8 V (handset)**
Power Source	**(U) AC (base station)**	**(U) Ni-MH battery (handset)**
	DC (alternate power source for base station)	**Cigarette adapter (alternate power source for handset)**
Power-supply frequency	**(U) 50 Hz (base station)**	
Power consumption	**(U) 1.5 W (base station standby)**	**(U) 0.096 W (handset standby)**
Maximum planning range	**(U) 13.0 km (Estimated)**	
Minimum radio frequency	**(U) 147.324 MHz (base station transmit and handset receive)**	
Maximum radio frequency	**(U) 226.974 MHz (handset transmit and base station receive)**	
Number of bands	**(U) 2**	
Modulation	**(U) FM/MSK**	
Minimum output power	**(U) 2.0 W (base station)**	
Maximum output power	**(U) 4.8 W (base station)**	
Sensitivity	**(U) -124.6 dBm (base station)**	
RF bandwidth	**(U) 12.2 kHz (base station)**	
RF bandwidth	**(U) 8.0 kHz (handset)**	
Number of VF channels	**(U) 1**	
Peak frequency deviation	**(U) 4.7 kHz (handset)**	
Peak frequency deviation	**(U) 6.3 kHz (base station)**	

Specifications

(U) The SN-188 knock-off is not manufactured by Senao even though all the outward appearances would suggest that Senao built the phone. Quanzhou Lisheng Electronics Co. Ltd. is the manufacturer of this particular SN-188 handset. The SN-188 has an identical form factor as the Samsung SGH-N188. Both the base station and handset has a LCD display screen. The LCD screen on the base station has a dark blue background and the characters appear on the screen in a bright yellow.

The basic operation of the SN-188 is similar to other HPCPs. The base station operator and the handset operator can communicate via page functions or the handset operator can place calls or receive incoming phone calls if the base station is connected to an active telephone line. The base station has another RJ-11 port to connect a local phone to receive and place telephone calls as well. This handset has a call waiting feature and a call conference (3-way) feature.

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(U) Senao SN-189 Knockoff HPCP		
Item	**Senao SN-189 Base Unit**	**Senao SN-189 Handset**
Transmitter		
Frequency *	145 MHz –149 MHz	225 MHz –230 MHz
Output power	Base: 5W	Handset: 1W
Receiver		
Frequency	145 MHz –149 MHz	225 MHz –230 MHz
Power Source	AC 220 V	4.8 V
Current Drain	Standby: 60 mA Talk: 1 A	Standby: 15 mA Talk: 500 mA
Channel Spacing	Unknown	Unknown
Specifications		
Max # Handsets	9	
Open Range	200 km	
City Range	5 – 20 km	
Caller ID	Yes	
Max # Channels	Unknown	
Walkie-Talkie b/t Handsets	Yes	
Transfer calls b/t Handsets	Unknown	
Range: Urban 6-45 km, Open 200 km	100,000 sets of security codes	FSK/DTMF interface

(U) SN-258 PLUS HPCP				
Item	SN-258 Knockoff Base Unit	SN-258 Knockoff Handset	SN-258 Plus Base Unit	SN-258 Plus Handset
Transmitter				
Frequency	390 MHz	264 MHz	388 MHz	262 MHz
Output Power	1 W	350 mW	1 W	350 mW
Spurious Emission	55 dBc	55 dBc	55 dBc	55 dBc
Current Consumption				
Standby	100 mA	60 mA	100 mA	7-12 mA
Talk	600 mA	350 mA	600 mA	350 mA
Receiver				
Frequency	264 MHz	390 MHz	262 MHz	388 MHz
Sensitivity at 12 dB SINAD (CCITT)	-122 dBm	-122 dBm	-122 dBm	-122 dBm
Adjacent Channel rejection	50 dBc	50 dBc	50 dBc	50 dBc
Spurious Responce	55 dBc	55dBc	55 dBc	55dBc
Power Source	AC 110V/60Hz AC 220/50Hz DC 8V	4.8V/800 mAh Ni-Cd Battery	AC 110V/60Hz AC 220/50Hz DC 12V	4.8V/750 mAh Ni-Mh Battery
Dimension	LxWxH (m/m) 200x180x60	LxWxH (m/m) 157x160x32	LxWxH (m/m) 195x145x51	LxWxH (m/m) 150x53x32
Weight	620g	290g	500g	210g

(U) Senao SN-289 PLUS Knockoff HPCP		
Item	**Senao SN-289 PLUS Base Unit**	**Senao SN-289 PLUS Handset**
Transmitter		
Frequency *	**145 MHz –149 MHz**	**225 MHz –230 MHz**
Output power	**Base: 5W**	**Handset: 1W**
Receiver		
Frequency	**145 MHz –149 MHz**	**225 MHz –230 MHz**
Power Source	**AC 220 V**	**4.8 V**
Current Drain	**Standby: 60 mA Talk: 1 A**	**Standby: 15 mA Talk: 500 mA**
Channel Spacing	**Unknown**	**Unknown**
Specifications		
Max # Handsets	**9**	
Open Range	**200 km**	
City Range	**5 – 20 km**	
Caller ID	**Yes**	
Max # Channels	**Unknown**	
Walkie-Talkie b/t Handsets	**Yes**	
Transfer calls b/t Handsets	**Unknown**	
Range: Urban 6-45 km, Open 200 km	**100,000 sets of security codes**	**FSK/DTMF interface**

(U) Senao SN-458R Ultra HPCP		
Item	**Senao SN-458R Ultra Base Unit**	**Senao SN-458R Ultra Handset**
Transmitter		
Frequency *	**343.5125-344 MHz**	**307.5125-308 MHz**
RF Output power	**4 W**	**450 mW**
Receiver		
Frequency	**307.5125-308 MHz**	**343.5125-344 MHz**
Power Source:	**DC 12 V/1500 mAh**	**Li-Ion 3.6 V, 750 mAh**
Current Drain	**Standby: 300 mA Talk: 1100 mA**	**Standby: 9-75 mA Talk: 500 mA**
Channel Spacing	**Unknown**	**Unknown**
Specifications		
Range: Urban 3-8 km, Open 25 km	**FSK/DTMF interface**	

(U) VX7R PTT Transceiver	
Item	**VX7R PTT Transceiver**
Transmitter	
Power source	(U//FOUO) Battery, External DC
Power-source nomenclature	(U//FOUO) FBA-23 (2 X AA Cell battery case), FNB-80LI (Lithium-Ion)
DC voltage required	(U//FOUO) 10.0 V (min, external DC)
DC voltage required	(U//FOUO) 13.8 V (nominal, external DC)
DC voltage required	(U//FOUO) 16.0 V (max, external DC)
DC voltage required	(U//FOUO) 7.4 V (nominal)
Power consumption	(U//FOUO) 11.8 W (5-W transmit, 50 MHz)
Power consumption	(U//FOUO) 12.6 W (5-W transmit, 144 MHz)
Power consumption	(U//FOUO) 14.1 W (5-W transmit, 430 MHz)
Power consumption	(U//FOUO) 7.4 W (0.3-W transmit, 220 MHz)
Antenna type	(U//FOUO) Whip
Application	(U//FOUO) Mobile HF/VHF/UHF Comms
Platform	(U//FOUO) Handheld
Special feature	(U//FOUO) repeater shifts (MHz): 0.6 (144 MHz), 1.6 (222 MHz)
Special feature	(U//FOUO) repeater shifts (MHz): 1.6/5/7.6 (430 MHz)
Radio frequency range	(U//FOUO) 0.5 to 18.0 MHz (receive, BC band)
Radio frequency range	(U//FOUO) 1.8 to 30.0 MHz (receive, SW band)
Radio frequency range	(U//FOUO) 108.0 to 137.0 MHz (receive, Air band)
Radio frequency range	(U//FOUO) 137.0 to 174.0 MHz (receive)
Radio frequency range	(U//FOUO) 144.0 to 146.0 MHz (transmit)
Radio frequency range	(U//FOUO) 144.0 to 148.0 MHz (transmit)
Radio frequency range	(U//FOUO) 174.0 to 222.0 MHz (receive, VHF-TV)
Radio frequency range	(U//FOUO) 222.0 to 225.0 MHz (USA version)
Radio frequency range	(U//FOUO) 222.0 to 420.0 MHz (receive, EXP version)
Radio frequency range	(U//FOUO) 225.0 to 420.0 MHz (receive, USA version)
Radio frequency range	(U//FOUO) 30.0 to 59.0 MHz (receive, USA version)
Radio frequency range	(U//FOUO) 30.0 to 76.0 MHz (receive, EXP version)
Radio frequency range	(U//FOUO) 420.0 to 470.0 MHz (receive)
Radio frequency range	(U//FOUO) 430.0 to 440.0 MHz (transmit)
Radio frequency range	(U//FOUO) 430.0 to 450.0 MHz (transmit)

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Radio frequency range	**(U//FOUO) 470.0 to 729.0 MHz (receive, UHF-TV, USA version)**
Radio frequency range	**(U//FOUO) 470.0 to 800.0 MHz (receive, UHF-TV, EXP version)**
Radio frequency range	**(U//FOUO) 50.0 to 54.0 MHz**
Radio frequency range	**(U//FOUO) 59.0 to 108.0 MHz (receive, USA version)**
Radio frequency range	**(U//FOUO) 76.0 to 108.0 MHz (receive, EXP version)**
Radio frequency range	**(U//FOUO) 800.0 to 999.0 MHz (receive, cellular blocked)**
Minimum radio frequency	**(U//FOUO) 0.5 MHz (receive)**
Minimum radio frequency	**(U//FOUO) 50.0 MHz (transmit)**
Maximum radio frequency	**(U//FOUO) 450.0 MHz (transmit)**
Maximum radio frequency	**(U//FOUO) 999.0 MHz (receive)**
Number of bands	**(U//FOUO) 13 (receive)**
Number of bands	**(U//FOUO) 4 (transmit)**
Modulation	**(U//FOUO) AM**
Number of bands	**(U//FOUO) FM**
Minimum output power	**(U//FOUO) 0.05 W (50/144/430 MHz)**
Minimum output power	**(U//FOUO) 1.0 W (50 MHz AM)**
Maximum output power	**(U//FOUO) 0.3 W (222 MHz)**
Maximum output power	**(U//FOUO) 1.0 W (50 MHz AM)**
Maximum output power	**(U//FOUO) 5.0 W (50/144/430 MHz)**
RF-channel spacing	**(U//FOUO) 10.0 kHz**
RF-channel spacing	**(U//FOUO) 100.0 kHz**
RF-channel spacing	**(U//FOUO) 12.5 kHz**
RF-channel spacing	**(U//FOUO) 15.0 kHz**
RF-channel spacing	**(U//FOUO) 20.0 kHz**
RF-channel spacing	**(U//FOUO) 25.0 kHz**
RF-channel spacing	**(U//FOUO) 5.0 kHz**
RF-channel spacing	**(U//FOUO) 50.0 kHz**
RF-channel spacing	**(U//FOUO) 9.0 kHz**
Number of preset channels	**(U//FOUO) 450 (standard memory)**
Number of VF channels	**(U//FOUO) 1**

(U) Marine Navigation Radars

SL-120 Vessel

Furuno FR-1510 Mark 3
– **Transmit Power: 12 kW**
– **RF: 9382.0 – 9388.1 MHz**
– **Antenna: 6.5 ft slotted array**
– **Mode Q1**
• **PD: 0.093 usec**
• **PRI: 324.0 – 357.9 usec**
– **Mode Q2**
• **PD: 0.181 usec**
• **PRI: 348.9 – 370.8 usec**
– **Mode Q3**
• **PD: 0.389 usec**
• **PRI: 685.8 – 728.7 usec**
– **Mode Q4**
• **PD: 0.5557 – 0.573 usec**
• **PRI: 998.6 – 1086.7 usec**
– **Mode Q5**
• **PD: 0.749 usec**
• **PRI: 1023 – 1086.7 usec**
– **Mode Q6**
• **PD: 1.19 usec**

Furuno XN13A
– **Transmit Power: 10 kW**
– **RF: 9399.4 – 9399.9 MHz**
– **Antenna: 5.9 ft slotted array**
– **Mode P1**
• **PD: 0.116 usec**
• **PRI: 469.3 – 498.7 usec**
– **Mode P2**
• **PD: 0.314 usec**
• **PRI: 824.7 – 0851.5 usec**
– **Mode P3**
• **PD: 0.805 usec**
• **PRI: 1642.7 – 1745.4 usec**

Furuno FA-150 AIS Transponder (Transponder 1)
– **RF: 162.025 MHz and 161.975 MHz**
– **Transmit Power: 12.5 W**
– **Modulation: MSK**
– **MMSI Number: 999999099 (unregistered*)**
– **Vessel Name: AAA**
– **Requires crew-member acknowledgement wavier to satisfy USSID 18**
– **Confirm it's on-board**

INMARSAT Mini-M Transceiver (portable, need mounting)
–RF: 1.6365 to 1.645 GHz (A), 1.626 – 1.647 GHz (B)
–Transmit Power: TBD
–Modulation: TBD
–FTIN: 60672A (update as required) Talk to Dave E
–RTIN: D4CB3C (update as required)

(U) Marine Navigation Radars

ATLAS Vessel

Furuno FR-8122	Furuno FR-1733
– Transmit Power: 12 kW	– Transmit Power: 4 kW
– RF: 9410 MHz (+/- 30 MHz)	– RF: 9410 MHz (+/- 30 MHz)
– Antenna: slotted array	– Antenna: dome
– Horiz. Beamwidth: 1.35 deg	– Horiz Beamwidth: 4 deg
– Vert. Beamwidth: 22 deg	– Vert Beamwidth: 22 deg
– Sidelobe attenuation: <-28dB	– Sidelobe attenuation: <-28dB
– Mode A1	– Mode B1
• PD: 0.08 usec	• PD: 0.08 usec
• PRI: 476.1 usec	• PRI: 476.1 usec
– Mode A2	– Mode B2
• PD: 0.3 usec	• PD: 0.3 usec
• PRI: 833.3 usec	• PRI: 833.3 usec
– Mode A3	– Mode B3
• PD: 0.8 usec	• PD: 0.8 usec
• PRI: 1666.6 usec	• PRI: 1666.6 usec

Furuno FA-150 AIS Transponder (Transponder 3)
– RF: 162.025 MHz and 161.975 MHz
– Transmit Power: 12.5 W
– Modulation: MSK
– MMSI Number: 999999097 (unregistered*)
– Vessel Name: CCC
– Requires crew-member acknowledgement wavier to satisfy USSID 18
– Confirm it's on-board

Quantity: 1 ea

(U) INMARSAT STORM M4

The operating frequencies for the M4 are transmit at 1626.5 - 1660.5 MHz and receive at 1525 - 1559 MHz.

INMARSAT - M4 (SA330)

Modulation

Rx Modulation	**5.6 kbps O-QPSK, SCPC (voice, data, fax)** **6 kbps BPSK-TDM** **134.4 kbps 16QAM, SCPC (data)**
Tx Modulation	**5.6 kbps O-QPSK, SCPC (voice, data, fax)** **3 kbps BPSK-TDMA** **134.4 kbps 16QAM, SCPC (data)**

Specifications: TT-3080A Capsat Messenger (Thrane & Thrane)
· **Voice: 4.8 kbps AMBE, 64 kbps broadcast.**
· **Async. Data Rate: 2.4 kbps, 56 kbps, and 64 kbps.**
· **Phone Interface: 2-wire 600W CCITT Rec. G.473, standard DTMF telephones, RJ-11 modular jack.**
· **Fax Interface: 2-wire 600W CCITT Rec. G.473, T.30 Groups III Fax, RJ-11 modular jack.**
· **Data Interface: Serial EIA compatible standard RS-232E, built-in Hayes compatible modem, up to 115**
· **Euro ISDN Interface: ISDN NT1 S/T bus, ITU-T I.430, ISO 8877 compliant RJ 45 connector.**
· **Audio Input: Phono connector, broadcast quality voice.**
· **Audio Output: Headphone stereo jack, 48W, Ø 3.5mm.**
· **SIM Card Interface: Standard plug for user PID card, ISO-7816.**
· **PCMCIA Interface: Type 2.**
· **USB Interface: USB slave interface.**
· **Antenna Connector: 50W QLA.**
· **Power Supply: 9.5 V - 18.5 VDC.**
· **Power Consumption: Rx Idle < 0.1 W, Tx active 40 W, average at high speed data operation (Max. 60 W).**
· **Battery Capacity: 2h broadcast quality voice/ 4h Mini-M voice, 45 min. high speed data/fax or 2h Mini-M**
· **Standard AC adapter: 90-264 VAC, 47-63 Hz, 65 W.**
· **Ambient Temperature: -25°C to +55°C operating; -40°C to +80°C storage.**
· **Relative Humidity: IME: 95% non-condensing at +40°C, EME: 100% condensing.**
· **Dimension of Transceiver: HxWxD: 43 mm x 205 mm x 200 mm.**
· **Weight of Transceiver: 1.8 kg (including battery and handset).**

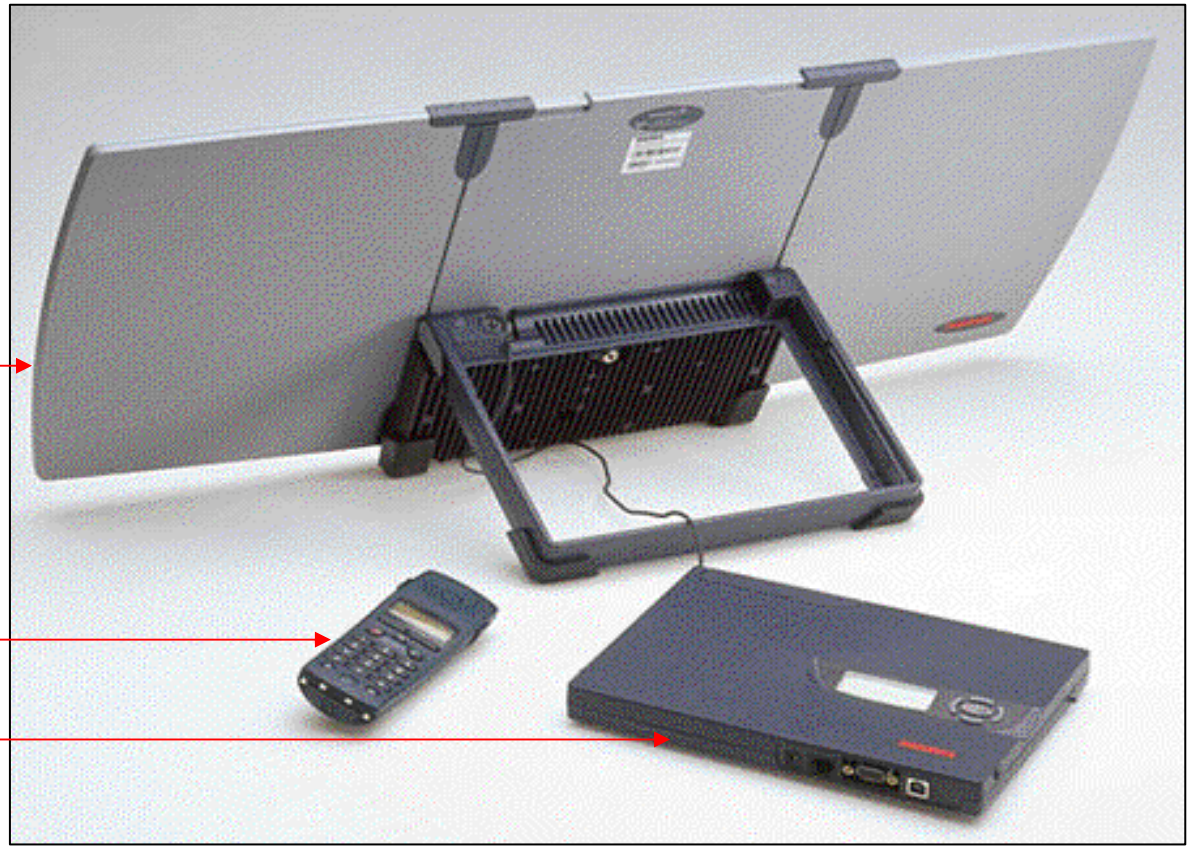
· **Dimension of Antenna (Closed): 437 mm x 271 mm x 41 mm**
· **Dimension of Antenna (Open): 414.5 mm x 753 mm x 12 mm**
· **Weight of Antenna: 3 Kg.**

Antenna
open

Antenna folded

Specifications: M4 World Communicator (Nera)
The Nera WorldCommunicator works a PC, Palmtop or laptop. The transceiver base station provides full portability for voice through cordless handsets, which can be used up to 300 meters away from transceiver.
Key Features:
· 64 kbps data
· 4,8 kbps compressed voice (low cost)
· ISDN compatibility
· USB (Universal Serial Bus) interface
· Infrared interface
· Self explanatory man machine interface (graphic LCD and keypad)
· Built in Lithium-Ion battery
· Handy cordura bag supplied with the terminal
· Built-in DECT base station
With the appropriate software and hardware, the INMARSAT M4 World Communicator service supports the following applications:
· Web access
· Internet e-mail
· G3 fax (14.4 kbps)
· Large file transfer (ftp)
· WAN connectivity
· Video conferencing
· Image transfer
· Store-and-forward video
· Broadcast quality audio

Nera M4 World Communicator



Nera M4 World Communicator System specification:	Interfaces:
· Tx frequency: 1626.5 - 1660.5 MHz	· ISDN (RJ45)
· Rx frequency: 1525 - 1559 MHz	· RS-232 (9-pin DSUB)
· Channel spacing: 5/40 kHz	· IR port
· EIRP: 25 dBW	· USB port
· DECT: 1880 - 1900 MHz	· 19 VDC input
· Dimensions collapsed: H=68mm W=275mm D=355mm	
· Antenna folded out: H=340mm W=774mm D=12mm	**Power consumption:**
· Weight: 3.9kg including battery	· Standby time: >100 hours
3.4kg without battery	· Transmit: 40 W maximum
	· Charging: 40 W maximum

(U) IRIDIUM SAT PHONES

Quantity: 4 ea	
IRIDIUM	
Frequency Range:	**L-band (1616 - 1626.5 MHz)**

The constellation

The Iridium system requires 66 active satellites in orbit to complete its constellation, with spare satellites in orbit to fill in case of failure. Satellites are in low Earth orbit at a height of approximately 485 miles (780 km) and inclination of 86.4°. Satellites communicate with neighbouring satellites via intersatellite links. Each satellite can have four intersatellite links: two to neighbors fore and aft in the same orbital plane, and two to satellites in neighboring planes to either side. The satellites orbit from pole to pole with an orbit of roughly 100 minutes. This design means that there is excellent satellite visibility and service coverage at the North and South poles, where there are few customers. Because satellites use an over-the-pole orbital constellation design there is a "seam" where satellites in counter-rotating planes next to one another are travelling in opposite directions. Cross-seam intersatellite-link handoffs would have to happen very rapidly and cope with large Doppler shifts; Iridium only supports intersatellite links between satellites orbiting in the same direction.

The cellular lookdown antenna has 48 spot beams arranged as 16 beams in three sectors. The four intersatellite cross links on each satellite operate at 10 Mbit/s. The cross links were originally envisioned to be optical, and future satellites may be equipped with optical links. Such cross-links are unique in the satellite telephone industry as other providers such as Globalstar depend on local base stations and do not relay data between satellites. Iridium's use of cross-links means that calls between satellite phones are cheaper, as many such calls never get passed through a ground-based repeater station.

The existing constellation of 66 satellites is expected to remain operational until at least 2014, with many satellites expected to remain in service until the 2020s. Iridium is planning a new generation of satellites with improved bandwidth to be operational by 2016. This system will be backward compatible with the current system.

The satellites

The satellites each contain seven Motorola/Freescale PowerPC 603E processors running at roughly 200 MHz. Processors are connected by a custom backplane network. One processor is dedicated to each cross-link antenna ("HVARC"), and two processors ("SVARC"s) are dedicated to satellite control—one being a spare. Late in the project an extra processor ("SAC") was added to perform resource management and phone call processing.

The original design envisioned a completely static 1960s "dumb satellite" with a set of control messages and time-triggers for an entire orbit that would be uploaded as the satellite passed over the poles. It was found that this design did not have enough bandwidth in the space-based backhaul to upload each satellite quickly and reliably over the poles. Therefore, the design was scrapped in favor of a design that performed dynamic control of routing and channel selection late in the project, resulting in a one year delay in system delivery.

Each satellite can support up to 1100 concurrent phone calls[5] and weighs about 700kg.[6]

Air Interface

Communication between satellites and handsets is done using a TDMA and FDMA based system using L-band spectrum between 1616 and 1626.5 MHz, however Iridium exclusively controls 7.775MHz of this and shares a further 0.95MHz. In 1999 Iridium agreed to timeshare a portion of spectrum allowing radio astronomers to observe hydroxyl emissions but the amount of shared spectrum was recently reduced from 2.625MHz.[7][8]

The type of modulation used is QPSK[9] and each timeslot is 8.28ms long and sits in a 90ms frame. Within each FDMA channel there are four TDMA channels in each direction. The TDMA frame starts off with a 20.32ms period used for simplex messaging to devices such as pagers and to alert Iridium phones of an incoming call, followed by the four upstream slots and four downstream slots. Small guard periods are used in between timeslots. Channels are spaced at 41.666KHz and each channel occupies a bandwidth of 31.5KHz - this allows space for doppler shifts[10]

Earth base-stations

Iridium routes phone calls through space. There are four earth stations and the space-based backhaul routes phone call packets through space to one of the downlinks ("feeder links"). Station-to-station calls can be routed directly through space with no downlink. As satellites leave the area of an Earth base station the routing tables change and frames are forwarded to the next satellite just coming into view of the Earth base station.

(U) JAGUAR-V Radio Equipment

DESCRIPTION: (U) The British company Racal (Thales) produced the JAGUAR-V VHF frequency frequency-hopping transceiver. This transceiver operates over the 30 to 88 MHz frequency band and has features that include a medium frequency hopping rate, partial/full band hopping, embedded encryption, and barred band selection. It is the among the most widely deployed frequency hopping radio throughout the Middle East and South Asia.

Quantity: 4 ea (3 manpack and 1 vehicle mounted)	
JAGUAR-V	
Frequency Range:	**30 to 88 MHz frequency band**

NGIC_11513 UNCLASSIFIED

AN/PRC-112G® CSAR Transceiver

General Radio Characteristics
Frequency range:
118–125 MHz;
225–320 MHz;
340–390 MHz Tx*7,8*
406 SARSAT*5*
Tuning Increments
25 KHz steps; 5 KHz steps
Modulation:
AM voice AM swept-tone beacon
Transpond mode:
BPSK/OOK
HOOK mode:
MSK 1200 BPS
Data burst 455 ms
Operating modes:
Voice
Swept-tone beacon:
• 121.5 MHz
• 243 MHz
DME transpond
GPS Interrogation
406 SARSAT
UHF SATCOM
Battery life:
>4 days, predicted CSAR operational
Scenario

Serial #'s: B105246 & B105296 Training Freqs.: (NON-SARSAT) 236.0 & 251.9 MHz

Receiver Characteristics

Sensitivity (dBm)
–100 (VHFAMvoice)
typical –104 (UHF AM voice)
–138 (UHF SATCOM data)

IF selectivity
<6 dB@Fo ± 30 KHz
>50 dB@Fo ±140 KHz
Spurious response Typically 50 dB
Image response –40 dB min.
Audio response 500 Hz to 3500 Hz
Distortion Typically 5 percent
Audio output 50 milliwatts

GPS General Characteristics
Type 12-channel parallel
L1, CA code
Navigation up to 250 waypoints
Coordinate system Geodetic (lat./long.)
GEO, GEO2,
UTM, MGRS
Accuracy < 25 meters without SA*6*

Transmitter Characteristics
Average power 1 Watt – UHF
output*11* 100 mW Tx – VHF
406 SARSAT 5.0W min.
UHF SATCOM 5.0W ± 2 dB
Modulation 86% AM
Harmonics -30 dB below carrier
Distortion 10% typical at 86% modulation