

Embedded GSM /UMTS antenna ANT-GXE474



Multiband SMD antenna on 24 mm x 5.5 mm x 4.4 mm only

The ANT-GXE474 multiband cellular antenna builds on the success of several SMD tri-band antennas, by extending functionality to cover all worldwide cellular bands between 800 MHz and 2200 MHz – GSM, CDMA, DCS, PCS, WCDMA, UMTS, HSPA, GPRS and EDGE.

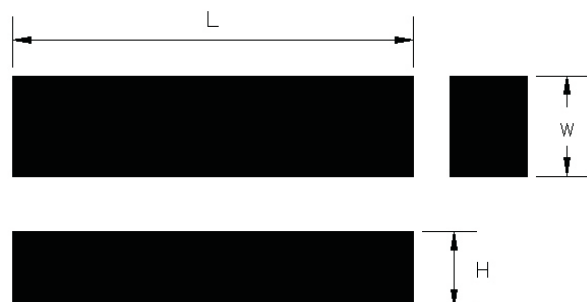
This IFA antenna is particularly suited for mounting on the edge of a PCB. It measures 24 mm x 5.5 mm x 4.4 mm and is delivered on tape and reel for efficient and accurate assembly.

If tuning is required it can be tuned for the device environment with no need for new tooling. The antenna is robust enough to meet all temperature and mechanical specifications required for automotive environments.

Typical applications include automotive, remote monitoring, M2M, telematics, telemedicine, AVL, utility metering, mobile devices, point-of-sale, navigation, location based services and communication products.

1 Mechanical specification

Electrode	Silver
Dimensions in mm (L x W x H)	24.0 x 5.5 x 4.4
Operating Temperature	-35 ~ +85



Unit: mm Tolerance 0.15 mm

2 Electrical Specifications

Item	GSM850/900	GSM 1800	GSM 1900	UMTS 2100
Frequency	824 ~ 960 MHz	1710 ~ 1850 MHz	1850 ~ 1990 MHz	1920 ~ 2170 MHz
VSWR	3.0 : 1 max.	3.0 : 1 max.	3.0 : 1 max.	3.0 : 1 max.
Peak Gain	1.5 dBi	3.5 dBi	3.5 dBi	3.5 dBi
Eff. [%] @ min.	50%	70%	60%	60%
Polarization	Linear			
Radiation Pattern	Omni-directional			
Nominal Impedance	50 Ohm			
Ground plane size	106 mm x 45 mm			
Matching tuning	Tuning by changed ground plane / matching circuit as option			

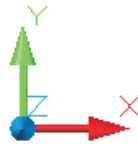
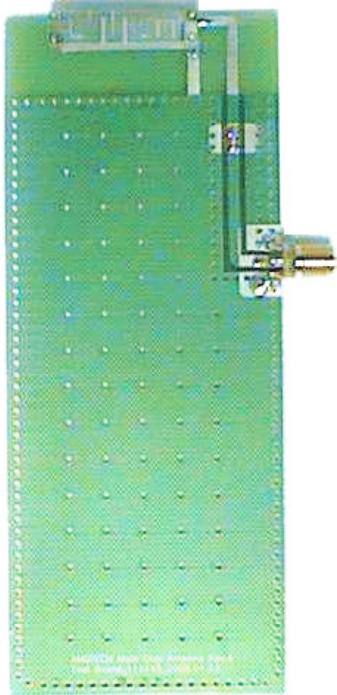
These values are measured on the matched reference test board version a.

Item	GSM850/900	GSM 1800	GSM 1900	UMTS 2100
Frequency	824 ~ 960 MHz	1710 ~ 1850 MHz	1850 ~ 1990 MHz	1920 ~ 2170 MHz
VSWR	3.0 : 1 max.	3.0 : 1 max.	3.0 : 1 max.	3.0 : 1 max.
Peak Gain	1.5 dBi	3.5 dBi	3.5 dBi	3.5 dBi
Eff. [%] @ min.	60%	77%	71%	55%
Polarization	Linear			
Radiation Pattern	Omni-directional			
Nominal Impedance	50 Ohm			
Ground plane size	100.5 mm x 45 mm			
Matching tuning	Matching circuit as option			

These values are measured on the matched reference test board version b.

3 Measurement

Set for measurement with test board version a.

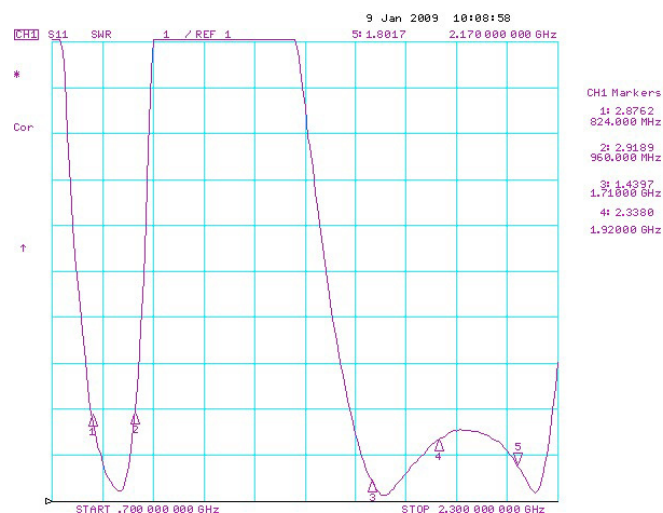


Board size: 114x45mm
Antenna Radiation the coordinate system
[X axis: the axis of rotation]

3.1 Electrical Characteristic

Antenna matching on the reference test board version a.

S11(Return loss & VSWR) Quad Band (GSM850, DCS, PCS, UMTS)



ANT-GXE474

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Version 1.0
Author: Harald Naumann
Date: 01.04.2009

4 Radiation Characteristic

Measurement setup ,6 m x 3 m x 3 m Anechoic Chamber, Matching on the standard test board (114 mm x 45 mm) ,Temperature 25 °C / Humidity 50~55%

EGSM (GSM850)

@836MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-0.11	-16.96	0.54	-15.29
Elevation ZX	-2.96	-18.69	0.96	-14.31
Elevation ZY	-2.98	-14.91	0.38	-10.67

@881MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-0.07	-17.98	0.56	-16.67
Elevation ZX	-3.01	-19.86	0.49	-15.13
Elevation ZY	-2.20	-13.68	0.24	-8.74

DCS (GSM1800)

@1747MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-2.77	-7.02	-1.05	-3.02
Elevation ZX	-1.14	-11.00	3.71	-7.31
Elevation ZY	-2.20	-7.29	2.46	-3.27

@1842MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-2.21	-8.86	0.03	-4.49
Elevation ZX	-1.82	-11.41	4.22	-6.61
Elevation ZY	-3.23	-5.06	2.00	-0.52

PCS (GSM1900)

@1880MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-3.27	-10.10	-0.80	-6.53
Elevation ZX	-2.03	-11.02	4.15	-6.85
Elevation ZY	-3.49	-4.75	2.31	-0.86

@1960MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-4.56	-12.65	-0.52	-7.32
Elevation ZX	-1.40	-10.64	4.20	-5.87
Elevation ZY	-3.08	-4.28	2.49	-0.31

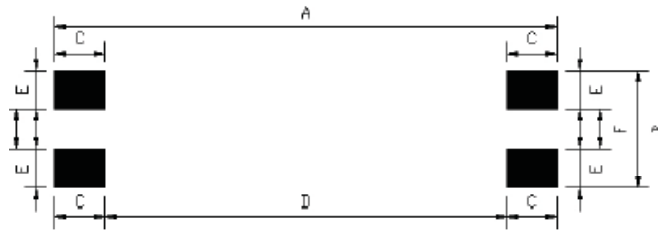
UMTS (WCDMA2100)

@1960MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-4.56	-12.65	-0.52	-7.32
Elevation ZX	-1.40	-10.64	4.20	-5.87
Elevation ZY	-3.08	-4.28	2.49	-0.31

@2140MHz	Ave. gain (dBi)		Peak. Gain (dBi)	
	E-plane	H-plane	E-plane	H-plane
Azimuth XY	-7.99	-12.33	-3.23	-6.32
Elevation ZX	-2.89	-14.24	2.46	-10.02
Elevation ZY	-4.88	-6.62	0.82	-2.75

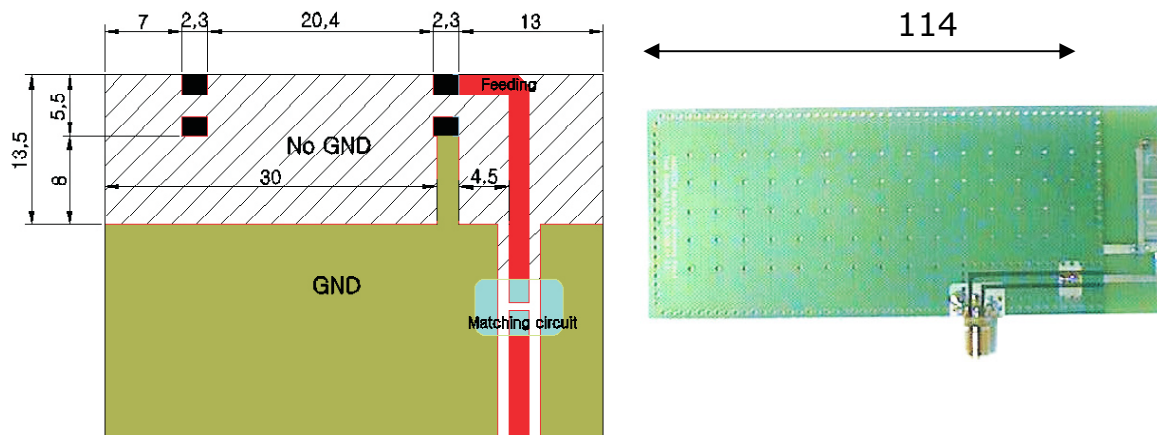
5 Soldering recommendations

5.1 Soldering Land Pattern

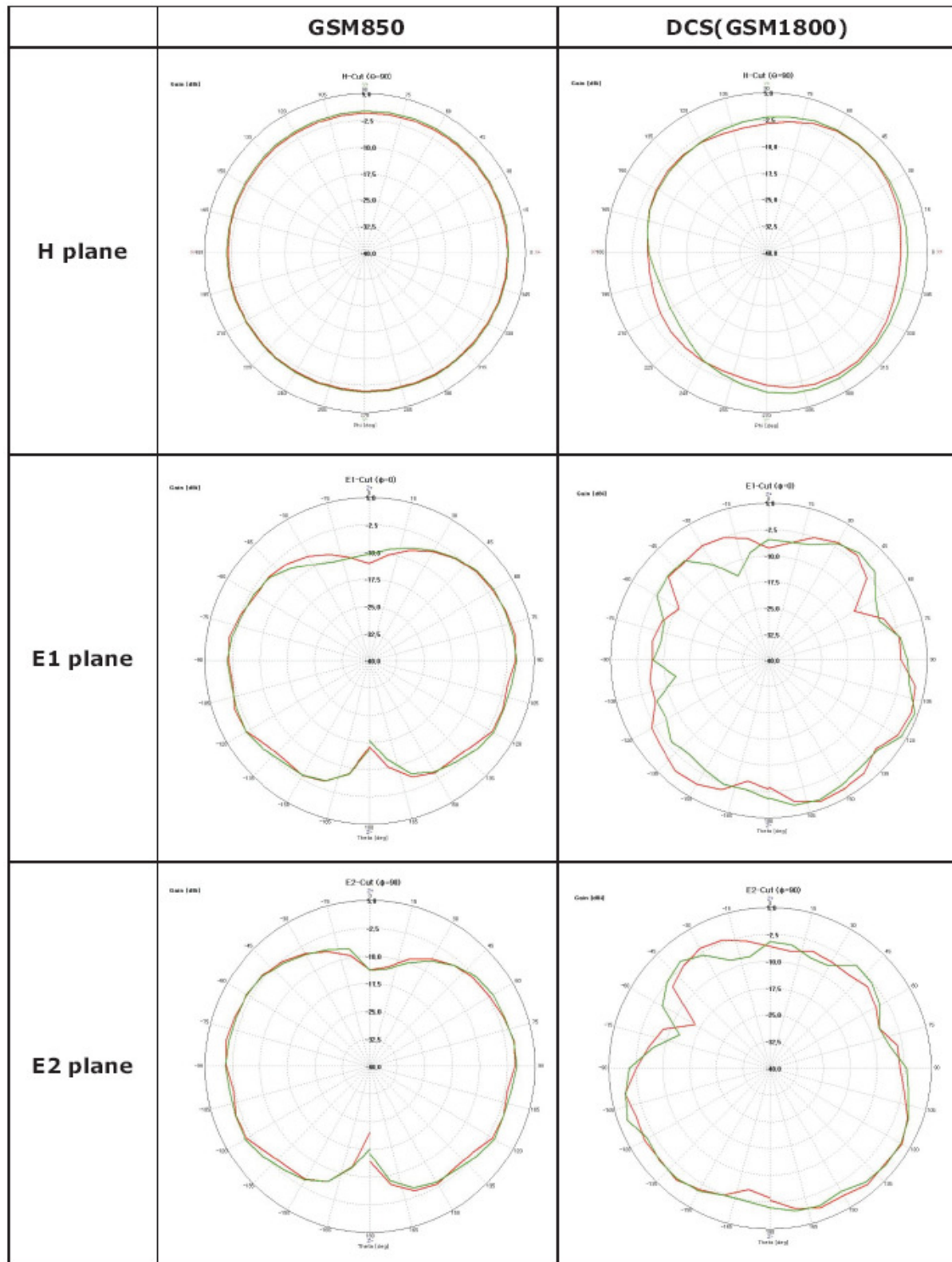


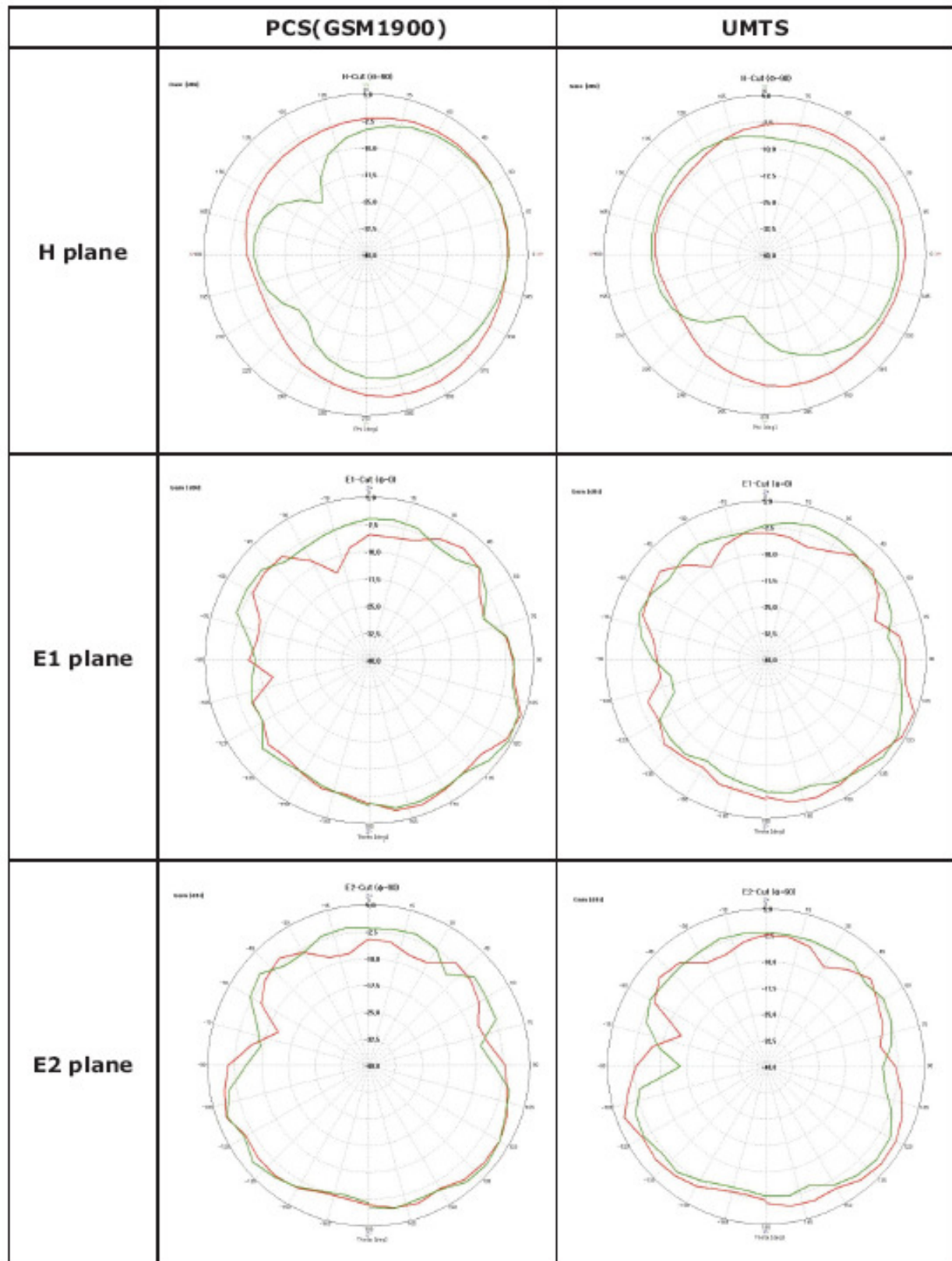
A	25
B	5.5
C	2.3
D	20.4
E	1.8
F	1.9

5.2 Placing of antenna and free space version a



6 Gain pattern measurement data





Home	bl_indented_title	bl_item_object_type	bl_config_string	bl_rev_release_status_list	bl_sequence_no	bl_part_source	bl_uom	bl_ref_designator	bl_all_notes	bl_variant_state	bl_rev_has_variants	bl_variant_condition	bl_is_occ_configured	bl_has_date_effectivity	bl_rev_checked_out	fnd0bl_has_active_markup
2	169182/ rev 09-Cover	Item	Working()		30		each		UG NAME,UG ENTITY HANDLE,UG REF SET	Y			Y			
3	1159088/rev 4-PBA Logger Main	Item	Working()		50		each		UG NAME,UG ENTITY HANDLE	Y			Y			
6	169288/rev 01-Battery Li-ion PL-603048-10C	Item	Working()		70		each		UG NAME,UG ENTITY HANDLE,UG REF SET	Y			Y			
11	169349/rev 01-Housing with connectorpads	Item	Working()		100		each		UG NAME,UG ENTITY HANDLE	Y			Y			
12	169178/rev 03-Connector-pad x 12	Item	Working()		10		each		Packed Notes	Y			Y			
13	169175/rev 13-Housing	Item	Working()		20		each		UG NAME,UG REF SET,UG ENTITY HANDLE	Y			Y			
14	169350/rev 01-Loctite Super Glue IDH 304018 x 26	Item	Working()		30		each		Packed Notes	Y			Y			
15	169351/rev 01-3M UMHW Polyethylene Tape 5423	Item	Working()		30		each		Packed Notes	Y			Y			

Capture CIS Standard Bill Of Materials - Standard separate line per part
Report Created on Friday Jan 04 10:58:18 2013

Title = SCHEMATIC SCA Fast Track Logger 3G

RevCode = 4

Doc = SCH159093 SCA Fast Track Logger 3G

Part	Refere	Quantity	Value	Description	AML	Farnell	Digi-Key
A1		1	PCB1159093 REV 4	PCB			
ANT1		1	GXE474	Round Solutions GmbH & Co KG			
C1		1	68u	CAP TAN 68UF 20% 10V LOW ESR	AVX TPSW686K010R0150		
C2		1	100n	CAP CER 100NF 10% 10V X7R 0402			
C3		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C4		1	68u	CAP TAN 68UF 20% 10V LOW ESR	AVX TPSW686K010R0150		
C5		1	100n	CAP CER 100NF 10% 10V X7R 0402			
C6		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C7		1	100n	CAP CER 100NF 10% 10V X7R 0402			
C8		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C9		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C10		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C11		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C12		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C13		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C14		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C15		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C16		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C17		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C18		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C19		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C20		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C21		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C22		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C23		1	10p	CAP CER 10PF 5% 50V NP0 0402			
C24		1	10p	CAP CER 10PF 5% 50V NP0 0402			

C26	1 10p	CAP CER 10PF 5% 50V NP0 0402	
C27	1 10p	CAP CER 10PF 5% 50V NP0 0402	
C28	1 DNM		
C29	1 DNM		
C30	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C31	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C32	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C33	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C34	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C35	1 1.0n	CAP CER 1NF 10% 50V X7R 0402	
C36	1 1.0u	CAP CER 1UF 10% 16V X5R 0603	
C37	1 2.2u	CAP CER 2.2U 10% 16V X5R 0603	
C38	1 10u	CAP CER 10UF 10% 6.3V X5R 0805	
C39	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C40	1 10p	CAP CER 10PF 5% 50V NP0 0402	
C41	1 10p	CAP CER 10PF 5% 50V NP0 0402	
C42	1 10p	CAP CER 10PF 5% 50V NP0 0402	
C43	1 1.0u	CAP CER 1UF 10% 16V X5R 0603	
C44	1 1.0u	CAP CER 1UF 10% 16V X5R 0603	
C45	1 10p	CAP CER 10PF 5% 50V NP0 0402	
C46	1 100p	CAP CER 100PF 5% 50V NP0 0402	
C48	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C49	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C50	1 100n	CAP CER 100NF 10% 10V X7R 0402	
C51	1 22p	CAP CER 22PF 5% 50V NP0 0402	
C52	1 22p	CAP CER 22PF 5% 50V NP0 0402	
C53	1 100n	CAP CER 100NF 10% 10V X7R 0402	
D1	1 SML-511DWT86R	LED 40MCD ORANGE 0603	1685072
D2	1 ASMT-YTB2-0BB02	LED TRICOLOR SMD	1863243
D3	1 BAT54CXV3T1G	DIODE SC CC 30V 0.2A SC89	1887067
D4	1 PMEG2010	DIODE SC 10V 2A SOD523	8737878
D5	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160
D6	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160

D7	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D8	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D9	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D10	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D11	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D12	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D13	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D14	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
D15	1 5V6	DIODE TS 5.6V 0402	EPCOS B72590D0050H160	
J1	1 DNM			
J2	1 14P HEADER	CONN PIN 14P 1.27MM STRGHT THD	Multicomp 2206PA-20G-739	1577759
J3	1 2x5P HEADER	CONN PIN 2X5P 1.27MM STRGHT THD		
J5	1 DNM			
J6	1 DNM			
J7	1 RF_CON		HIROSE U.FL-R-SMT-1(10)	1688077
L1	1 DNM			
L2	1 10u	FILTER EMI 220OHM@100MHZ 0805	Murata BLM21PG221SN1	
L3	1 DNM			
Q1	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q2	1 SIB437EDKT	TRANS PCH 8V 9A SC-75-6L-SINGLE		2056688
Q3	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q4	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q5	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q7	1 FDG6321C	TRANS NCH PCH 25V 0.5A SC70-6		3380324
Q10	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q11	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q12	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q13	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q14	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q15	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q16	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q17	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q18	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121

Q19	1 PMZ390	TRANS NCH 30V 0.2A SOT883	NXP PMZ390UN,315	1758121
Q20	1 TEM7100X01	Photo Trans PCB-SMD FIL 870NM	Farnell	1779653
R9	1 820	RES 820R 1% 0.063W 0402		
R10	1 DNM	RES NOT MOUNTED 0402		
R11	1 1.0k	RES 1K0 1% 0.063W 0402		
R12	1 1.0k	RES 1K0 1% 0.063W 0402		
R13	1 1.0k	RES 1K0 1% 0.063W 0402		
R14	1 1.0M	RES 1M0 1% 0.063W 0402		
R16	1 1.0M	RES 1M0 1% 0.063W 0402		
R18	1 1.0M	RES 1M0 1% 0.063W 0402		
R19	1 1.0M	RES 1M0 1% 0.063W 0402		
R28	1 100k	RES 100K 1% 0.063W 0402		
R31	1 100k	RES 100K 1% 0.063W 0402		
R38	1 270	RES 270R 1% 0.063W 0402		
R39	1 15	RES 15R 1% 0.063W 0402		
R40	1 27	RES 27R 1% 0.063W 0402		
R43	1 1.0M	RES 1M0 1% 0.063W 0402		
R45	1 33k	RES 33K 1% 0.063W 0402		
R50	1 10k	RES 10K 1% 0.063W 0402		
R51	1 1.0k	RES 1K0 1% 0.063W 0402		
R52	1 160k	RES 160K 1% 0.063W 0402		
R53	1 160k	RES 160K 1% 0.063W 0402		
R54	1 1.0M	RES 1M0 1% 0.063W 0402		
R55	1 100k	RES 100K 1% 0.063W 0402		
R56	1 120k	RES 120K 1% 0.063W 0402		
R57	1 1.0M	RES 1M0 1% 0.063W 0402		
R58	1 1.0M	RES 1M0 1% 0.063W 0402		
R59	1 1.0M	RES 1M0 1% 0.063W 0402		
R60	1 100k	RES 100K 1% 0.063W 0402		
R61	1 1.0k	RES 1K0 1% 0.063W 0402		
R63	1 100k	RES 100K 1% 0.063W 0402		
R64	1 82k	RES 82K 1% 0.063W 0402		
R73	1 82k	RES 82K 1% 0.063W 0402		

R74	1 10k	RES 10K 1% 0.063W 0402
R75	1 16k	RES 16K 1% 0.063W 0402
R76	1 10k	RES 10K 1% 0.063W 0402
R77	1 0	RES 0R0 0402
R78	1 DNM	
R79	1 DNM	
R80	1 140k	RES 140K 1% 0.063W 0402
R81	1 75k	RES 75K 1% 0.063W 0402
R82	1 75k	RES 75K 1% 0.063W 0402
R83	1 100k	RES 100K 1% 0.063W 0402
R84	1 33k	RES 33K 1% 0.063W 0402
TP1	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP3	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP4	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP5	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP6	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP7	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP8	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP9	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP10	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP11	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP12	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP13	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP14	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP15	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP16	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP17	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP18	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP19	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP20	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP21	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP22	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM
TP23	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM

TP24	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM		
TP25	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM		
TP26	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM		
TP27	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM		
TP28	1 1.5X1.5MM	TESTPOINT 1.5X1.5MM		
U1	1 HE910			
U2	1 chipSIM	IC SIM VODAFONE SON		
U3	1 ATmega64L		ATMEL ATMEGA64L-8MU	1455125
U4	1 DNM	EEPROM 1MBIT WLCSP	AT M95M01-RCS6	
U5	1 LTC4063	IC CHRG CNTR AND LDO		1648038
U6	1 LIS331DLM	ACCELEROM 3-AXIS LGA16		497-8832-ND
U7	1 TPS78223	IC LDO 2.3V 230MA SOT23-5	TI TPS78223DDCT	1710834
U9	1 INA333	IC INST AMP DGK	TI INA333AIDGKT	1645386
U10	1 AT25DF321A	MEMORY, FLASH, SERIAL, 32MBIT, 8SOIC	Atmel AT25DF321A-SH-B	1841583
U11	1 TPS3836K33			
U12	1 SN74LVC3G07		TI SN74LVC3G07YZPR	
U13	1 SN74LVC3G07		TI SN74LVC3G07YZPR	
U14	1 SN74LVC3G07		TI SN74LVC3G07YZPR	
U15	1 TLV70518YFPT			2078541
Y1	1 3.6864M	XTAL 3.6864MHZ 30PPM 20PF SMD		1641055