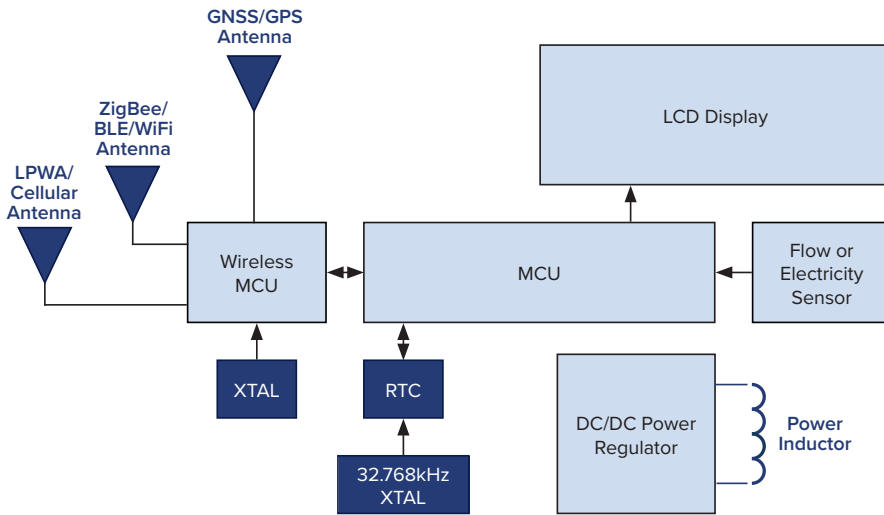
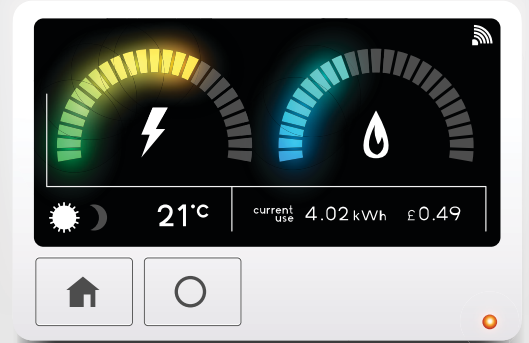


SMART METERING

ANTENNA APPLICATION GUIDE

OVERVIEW

Smart metering gives consumers more visibility into their water, gas and electric usage. Connected metering helps utilities reduce operational costs by creating simplified remote processes. This adds reliability and efficiency to the system while saving energy. Abracon offers an extensive range of antennas to support metering needs for commercial, residential or industrial spaces. This portfolio includes external and internal embedded solutions for various protocols including cellular, GNSS, LoRa, and Wifi/Bluetooth.



FEATURES

- Combinational antennas available for cellular/LTE, GNSS, WiFi/Bluetooth
- High accuracy multiband GNSS solutions
- Multiple input, multiple output (MIMO) options for LTE and WiFi
- Compact and low profile options
- Weather resistance capability (IP67 rated)
- High gain, low VSWR
- Integrated LNA + filter options
- Customizable mounting styles and cable length

ANTENNA TYPES



CHIP



PATCH



FLEXIBLE



EXTERNAL

LPWA/LoRA/SIGFOX/NB-IoT

SMART METERING

FEATURED PRODUCT



AEACAC195013-S915

The AEACAC254010-S915 external terminal antenna works for end devices in smart metering applications. In addition, it also works for other applications like remote technology, network devices, smart city, agriculture, environment, and consumer tracking.

- 915 MHz LPWA/ISM
- VSWR < 2.5
- Gain of 3 dBi
- 195.0 x Ø12.9 mm
- Linear polarization

PART NUMBER	FREQUENCY (MHz)	GAIN PEAK (dBi)	POLARIZATION	PACKAGE SIZE (mm)
CHIP				
ACAJ-110-T	868, 915	2.5, 2.7	Linear	9.0 x 3.0 x 1.2
ACAG1204-433-T	433	-1.72	Linear	12.0 x 4.0 x 1.6
ACAG1204-915-T	915	3.42	Linear	12.0 x 4.0 x 1.6
ACAG1204-868-T	868	2.63	Linear	12.0 x 4.0 x 1.6
PATCH				
APAE868R2540JBDB2-T	868	-1.37	RHCP	25.0 x 25.0 x 4.0
APAE915R2540ABDB1-T	915		RHCP	25.0 x 25.0 x 4.0
APAES923R3640C16-T	923	1.5	RHCP	36.0 x 36.0 x 4.0
APAES915R6460C16-T	915	3.5	RHCP	62.5 x 62.5 x 6.0
APAES868R8060C16-T	868	5.0	RHCP	80.0 x 80.0 x 6.0
APAES915R80C16-T	915	5.0	RHCP	80.0 x 80.0 x 6.0
EXTERNAL				
AEACAC054010-S915	915	2.0	Linear	Ø10.0 x 45.9
AEACAC049018-S868	868	2.0	Linear	Ø18.6 x 49.9
AEACAC053010-S433	433	2.0	Linear	Ø10.4 x 53.4
AEACAC053010-S868	868	2.0	Linear	Ø10.4 x 53.4
AEACAD153029-S433	433 ~ 960	3.0	Linear	Ø29.4 x 153.3
AEACAQ190012-S868	868	3.5	Linear	Ø12.9 x 190.0
AEACAQ190012-S915	915	3.5	Linear	Ø12.9 x 190.0
AEACAC195013-S915	915	3.0	Linear	Ø12.9 x 195.0
AEACAC195013-S868	868	3.0	Linear	Ø12.9 x 195.0
AEACAC254010-S169	169	2.0	Linear	Ø10.9 x 254.0

5G/4G/LTE/3G/2G/GSM

SMART METERING

FEATURED PRODUCT



AEACBK081014-S698

The AEACBK081014-S698 external antenna works for end devices used for smart metering applications. This antenna can provide higher output power and antenna efficiency.

- 4G/LTE full band coverage
- IP67 Rated
- Gain of 3 dBi
- Ø81.3 x 14.6 mm
- Screw mount
- Linear polarization

PART NUMBER	FREQUENCY (MHz)	GAIN PEAK (dBi)	POLARIZATION	PACKAGE SIZE (mm)
CHIP				
ACAJ-109-T	824 ~ 960, 1710 ~ 2170	1.3 ~ 6.4	Linear	24.0 x 5.5 x 4.4
ACAR3005-S824	824 ~ 960, 1710 ~ 2170	3.12	Linear	30.0 x 5.0 x 5.0
ACAR3705-S698	700 ~ 960, 1710 ~ 2170, 2500 ~ 2700	-1.13	Linear	37.0 x 5.0 x 5.0
ACAR4008-S698	700 ~ 960, 1710 ~ 2170, 2500 ~ 2700	4.10	Linear	40.0 x 8.0 x 3.2
EXTERNAL				
AEACBA081014-M698 (MIMO)	698 ~ 960, 1710 ~ 2690	3.0	Linear	Ø81.6 x 14.5
AEACBK081014-M698 (MIMO)	698 ~ 960, 1710 ~ 2690	2.5	Linear	Ø81.6 x 14.5
AEACBK081014-S698	698 ~ 960, 1710 ~ 2690	3.0	Linear	Ø81.3 x 14.6
APAMS-119	890 ~ 960, 1710 ~ 1880	2.15	Linear	Ø12.0 x 78.0
AEACAD097015-S698	700 ~ 2700	5.0	Linear	Ø15.0 x 97.0
APAMS-118	890 ~ 960, 1710 ~ 1880	2.0, 3.0	Linear	Ø10.0 x 108.1
AEACCA115021-S698	698 ~ 960, 1710 ~ 2655	2.0	Linear	115.6 x 21.7 x 5.8
APAMS-102	820 ~ 960, 1710 ~ 2170	1, 2, 2.5, 3	Linear	138.0 x 21.0 x 6.0
AEACAC198013-S698	698 ~ 960, 1710 ~ 2655	3.0	Linear	Ø13.0 x 198.0
AEACAC198013-S5GNR	698 ~ 960, 1710 ~ 2690, 3300 ~ 3800	3.0	Linear	Ø13.0 x 198.0
FLEXIBLE				
AFAC110020-S698	698 ~ 960, 1710 ~ 2690	3.0	Linear	67.4 x 58.4 x 0.2
AFAC5867-S698	698 ~ 960, 1710 ~ 2690	2.0	Linear	110.0 x 20.0 x 0.2
AFAC240020-M698	698 ~ 960, 1710 ~ 2690	3.0	Linear	240.0 x 20.0 x 0.2

WIFI/BLUETOOTH/ZIGBEE

SMART METERING

FEATURED PRODUCT



AEACBK050048-SW2

The AEACBK050048-SW2 external antenna works in repeaters or access points mounted on utility poles. The access points receive data from the smart meter and transit the information back to the utility company.

- Dualband 2.4/5.5GHz WiFi
- IP67 Rated
- VSWR < 2.5
- 48.0 x Ø50.0 mm
- Screw mount
- Linear polarization

PART NUMBER	FREQUENCY (MHz)	GAIN PEAK (dBi)	POLARIZATION	PACKAGE SIZE (mm)
CHIP				
ACAG0201-2450-T	2450	2.7	Linear	2.0 x 1.25 x 0.6
ACAR0301-SW2	2400 ~ 2500, 5150 ~ 5825	1.0, 2.5	Linear	3.05 x 1.6 x 0.55
ACAG0301-2450-T	2450	5.19	Linear	3.2 x 1.6 x 1.2
ACAG0301-24505500-T	2400 ~ 2500, 5150 ~ 5850	2.23, 4.05	Linear	3.2 x 1.6 x 1.2
AMCA31-2R450G-S1F-T	2450	0.5	Linear	3.2 x 1.6 x 1.2
ACAG0301-5500-T	5500	4.5	Linear	3.2 x 1.6 x 1.2
ACAG0801-2450-T	2450	7.29	Linear	8.0 x 1.0 x 1.0
PATCH				
APARN1204-S2450	2400 ~ 2500	2.0	Linear	12.0 x 12.0 x 4.0
APAKN1304-S5517-T	5150 ~ 5885	6.0	Linear	13.0 x 13.0 x 4.0
APAKN2504-S2448-T	2412 ~ 2484	7.0	Linear	25.0 x 25.0 x 4.0
APARC2505-S2450	2450	0.5	RHCP	25.1 x 25.1 x 5.5
PCB				
ABAR1504-S2450	2400 ~ 2500	1.5 ~ 2.2	Linear	15.0 x 4.0 x 0.8
FLEXIBLE				
AFAG2220-SW2	2400 ~ 2500, 5100 ~ 5900	1.0 ~ 2.0	Linear	22.0 x 20.0
EXTERNAL				
AEACAC025009-S2400	2400 ~ 2483.5	2.0	Linear	Ø9.5 x 25.9
AEACBK050048-MW2 (MIMO)	2400 ~ 2483.5, 4900 ~ 5825	2.0	Linear	Ø50.0 x 48.0
AEACBK050048-SW2	2400 ~ 2483.5, 4900 ~ 5825	2.0	Linear	Ø50.0 x 48.0
APAMBJ-135	2.4, 5.0	2.0	Linear	Ø10.0 x 54.4
APAMBJ-145	2.4, 5.1 ~ 5.9	5.0, 2.0	Linear	Ø36.5 x 77.3
APAMS-121	2350 ~ 2450, 5700 ~ 5900	2.0	Linear	Ø10.0 x 86.0
AEACAQ190012-S2400	2400 ~ 2483.5	5.0	Linear	Ø12.9 x 190.0

GNSS/GPS/GLONASS/BEIDOU/GALILEO SMART METERING

PART NUMBER	FREQUENCY (MHz)	GAIN PEAK (dBi)	POLARIZATION	PACKAGE SIZE (mm)
CHIP				
ACAR0301-SG3	1561 ~ 1610	1.69 -1.81 1.43	Linear	3.05 x 1.6 x 0.55
ACAG0301-1575-T	1575	4.18	Linear	3.2 x 1.6 x 0.6
PATCH				
APAEA1575R0940K14-T	1606	-1	RHCP	9.0 x 9.0 x 4.0
APAE1575R1240ABDD1-T	1575.42	0.6	RHCP	12.0 x 12.0 x 4.0
APAKN1304-C2G-T	1575.42 1602	2.6 2.4	RHCP	13.0 x 13.0 x 4.0
APAE1575R1540AZDB2F-T	1575.42	1.2	RHCP	15.0 x 15.0 x 4.0
APARM1504-SG3	1561, 1575, 1602	-3, -4.5, 0.8	RHCP	15.0 x 15.0 x 4.0
APAE1575R1820ABDC1-T	1575.42	3.3	RHCP	18.0 x 18.0 x 2.0
APARM1804-SG3	1561, 1575, 1602	3.0, 2.0, 4.0	RHCP	18.0 x 18.0 x 4.0
APAKN1804-C2G-T	1575.42 1602	2.8 2.9	RHCP	18.0 x 18.0 x 4.0
APAE1575R1840BADB1F-T	1575.42	3.3	RHCP	18.0 x 18.0 x 4.0
APAE1575R2040ABDD2-T	1575.42		RHCP	20.0 x 20.0 x 4.0
APAE1575R2520ABDD7-T	1575.42	4.3	RHCP	25.0 x 25.0 x 2.0
APAE1575R2540AADBE-T	1575.42	4.5	RHCP	25.0 x 25.0 x 4.0
APAKN2504-C2G-T	1575.42 1602	3.6	RHCP	25.0 x 25.0 x 4.0
APARM2504-SG3	1561, 1575, 1602	2.5, 1.5, 3.5	RHCP	25.1 x 25.1 x 4.0
APARM3503-SG3	1561, 1575, 1602	4.0, 3.0, 4.5	RHCP	35.0 x 35.0 x 3.0
APAGM3606-SG3	1561, 1575, 1602	4.0	RHCP	36.0 x 36.0 x 6.0
STACKED PATCH				
APAKM2507S-SGL5	1575.42, 1176.45	L1: 4.0 L2: -3.0	RHCP	25.0 x 25.0 x 7.5
APARM2508S-SGL2L5	1575.42, 1176.45	L1: 3.8 L2: -0.3 L5: -0.5	RHCP	25.0 x 25.0 x 8.0
APARM2508S-SG3L5	1575.42, 1176.45, 1577, 1602, 1561.098	L1: 0.6 L5: 0.5 Galileo: 0.6 GLONASS: 3.4 BeiDou: 2.4	RHCP	25.1 x 25.1 x 8.0
APAKM3513-SGL2	1224, 1574	L1: 3.1 L2: 1.2	Circular	35.6 x 35.6 x 13.5

GNSS/GPS/GLONASS/BEIDOU/GALILEO SMART METERING

PART NUMBER	FREQUENCY (MHz)	GAIN PEAK (dBi)	POLARIZATION	PACKAGE SIZE (mm)
ACTIVE PATCH				
APAM0968JL03V2.0	1575.42	-3	RHCP	9.0 x 9.0 x 6.8
APAM1268JL02V2.0	1575.42	0	RHCP	12.0 x 12.0 x 6.8
APAM1568YE15V2.0	1575.42	1.5	RHCP	15.0 x 15.0 x 6.8
APARC1807A-SG3	1561 ~ 1610	-6.5, -6.0, -6.5	RHCP	18.0 x 18.0 x 7.6
APAM1866YA18	1575.42	2.5	RHCP	18.0 x 18.0 x 7.0
APAKC2506A-SG3	1555 ~ 1615	-1.5, -1.0, -2.5,	RHCP	25.0 x 25.0 x 6.9
APARC2504A-SG3	1561, 1575.42, 1602	-1.0, -2.5, -1.5	RHCP	25.0 x 25.0 x 7.4
APAM2764YK0175	1575.42	2.5	RHCP	27.0 x 27.0 x 7.0
APAKC3508A-SG3	1555 ~ 1615	3.0, 2.8, 2.5, 3.0	RHCP	35.0 x 35.0 x 8.7
FLEXIBLE PCB				
AFAG4330-SG3	1550 ~ 1620	6.3	Linear	40.0 x 10.0
EXTERNAL ACTIVE				
APAMP-114	1575.42	1.0	RHCP	26.0 x 23.0 x 12.0
APAMP-127	1576.44	5.0	RHCP	38.0 x 34.0 x 12.0
APAMP-111	1575.42	5.0	RHCP	38.3 x 35.0 x 12.0
APAMP-115	1575.42	3.5	RHCP	40.0 x 35.0 x 15.1
APAMPJ-132	1575.42	4.0	RHCP	41.0 x 34.0 x 14.5
APAMP-116	1575.42	5.0	RHCP	44.0 x 37.0 x 14.5
APAMPG-117	1575.42 1594 ~ 1610	5.0	RHCP	44.0 x 14.5
AEACBA045015-SG2	1575 ~ 1602	5.0	RHCP	45.2 x 35.8 x 15.2
APAMP-112	1575.42	5.0	RHCP	46.0 x 38.0 x 15.0
AEARBA048014-SG3	1561, 1575, 1602	5.78, 4.27, 5.65	RHCP	48.5 x 47.0 x 14.0
APAMP-106	1575.42	5.0		48.6 x 39.2 x 15.2
APAMP-122	1576.44	5.0	RHCP	48.6 x 39.2 x 15.2
AEACBA050018-SG3	1561 ~ 1602	5.0	RHCP	50.0 x 50.0 x 18.0
AEACBA050018-SG4L2L5	1561 ~ 1602 1176 ~ 1227	3.0	RHCP	50.0 x 50.0 x 18.0
APAMP-109	1575.42	5.0	RHCP	50.6 x 50.6 x 15.1
APAMP-108	1575.42	5.0	RHCP	54.5 x 44.5 x 14.8
AEAGMK148060-S1575	1164 ~ 1610	4.5	RHCP	Ø148.0 x 60.0
AEACMK0660746-SG4	1561 ~ 1602	5.0	RHCP	Ø66.0 x 76.0

COMBINATIONAL ANTENNAS

SMART METERING

PART NUMBER	FREQUENCY (MHz)	GAIN PEAK (dBi)	POLARIZATION	PACKAGE SIZE (mm)	FEATURES
CHIP					
ACAG0301-15752450-T	1575, 2450	1.21, 3.18	Linear	3.2 x 1.6 x 1.2	WiFi, GPS
ACAR3705-SB	698 ~ 960	0.61	Linear	37.0 x 5.0 x 5.0	2G/3G, 4G/LTE, GSM, ISM, LPWA/LORA/SigFox
ACAR3005-C2WB	824 ~ 960, 2400 ~ 2500	2.61	Linear	30.0 x 5.0 x 5.0	LPWA/LORA/SigFox, NB-IoT, WiFi, Bluetooth, Zigbee
FLEXIBLE					
AFAC120050-U6G	698 ~ 6000	5.0	Linear	120.0 x 50.0 x 0.2	2G/3G, 4G/LTE, Bluetooth, CDMA, GPS, GSM, ISM, UMTS, Wi-Fi, ZigBee
EXTERNAL					
AEACBK046014-C2WG	1575.42, 2400 ~ 2483.5, 4800 ~ 5825	2.0	RHCP Linear Linear	Ø46.6 x 14.5	Active GPS, Dual Band WiFi
AEACBK050048-C2LG	698-960, 1710-2690, 1575.42	2.0 2.0	Linear RHCP	Ø50.0 x 48.0	2G/3G, 4G/LTE, GPS, GSM, IP67 Certified
APAMPS-106	1575.42, 806 ~ 960, 1710 ~ 1880	5.0 -1.0 1.0	RHCP Linear	Ø75.0 x 14.1	GSM, Active GPS
APAMPS-105	1575.42, 806 ~ 960, 1710 ~ 1880	5.0 -1.0 1.0	RHCP Linear	Ø76.8 x 15.5	GSM, Active GPS
APAMSJ-147	850 ~ 960, 1700 ~ 2100, 1575 ~ 1610	1.5, 0.5	Linear RHCP	Ø77.0 x 12.0	GSM, Active GPS/GLONASS, IP67 Certified
APAMPSBJ-144	791 ~ 960, 1710 ~ 2960, 1572 ~ 1610	2.0, 3.0	Linear RHCP	Ø77.3 x 66.5	4G/LTE/3G, GSM, WiFi, GPS/GLONASS, Active GPS/GLONASS
AEACBA081016-C2LG	698-960, 1710-2690, 1575.42	2.5 2.0	Linear RHCP	Ø81.6 x 16.2	2G/3G, 4G/LTE, GPS, GSM, IP67 Certified
APAMPSLJ-142	1572 ~ 1610, 380 ~ 500, 824 ~ 2497	2.2, 2.0, 2.0	RHCP Vertical	92.0 x 52.0 x 157.0	GSM, Active GPS/GLONASS, WiFi
AEACBK110053-MLWG (MIMO)	698-960, 1710-2690, 1575.42-1610, 2400-2483.5, 4900 - 5825	3.0 28 2.0	Linear RHCP Linear	Ø110.0 x 53.0	GPS/GLONASS, LTE MIMO, WiFi MIMO, IP67 Certified
APAMSTJ-138	380 ~ 500, 824 ~ 900, 1800 ~ 2500	2.2	Linear	126.5 x 22.0 x 6.7	TETRA, GSM, WiFi
APAMPSLJ-140	1559 ~ 1606, 699 ~ 960, 1710 ~ 2690	3.0	Linear	196.0 x 38.0 x 13.8	4G/LTE, GSM, WiFi, GPS/GLONASS