CFW-2231
CFW-2232

AurusPRO

Release 16 Mid Gain
Outdoor CPE

Product Summary

+ Versatile compact outdoor 5G/LTE CPE designed for professional installations (Consumer, Enterprise & IoT Markets)

+ Supports a wide range of 3GPP Frequency Bands from 600MHz up to 4.2GHz, it is suitable for deployment in the majority of regions globally

+ Includes an integrated 4x4 MIMO Mid-Gain Directional Antenna

+ Powered via standards compliant Power Over Ethernet (802.3af), it is compatible with third party standards compliant PoE Sources and Consumer/Enterprise Gateways, PoE Injector included as standard

+ Integrated Power Over Ethernet K.21 compliant lightning surge protection in the CPE, K.21 compliant Power Over Ethernet injector, provides protection without the expensive installation of electrical ground cabling

+ Remotely manageable (FM, CM, PM, SM) via BBF TR-069, SSH and HTTP/S

+ Robust IP67 design for longevity supporting a wide operating temperature range and harsh environments

+ Additional Installation Tools and Smartphone Applications available to provide efficient installation processes

Technical Specifications

Model Numbers
+ CFW-2231 (Global, excluding North America)
+ CFW-2232 (North America)

3GPP Release
+ Release 16

Technologies Supported
+ LTE, 5G NSA (EN-DC), 5G SA
+ 3GPP CN Options 1, 3x, 2
+ **NSA Mode**: PDCP UL & DL

Frequency Bands – CFW-2231
NR
+ n1, n3, n5, n7, n8, n20, n28, n38, n40, n41, n75, n76, n77, n78
LTE
+ B1, B3, B5, B7, B8, B20, B28, B32, B38, B40, B41, B42, B43
+ Dynamic Spectrum Sharing Support on FDD bands

Frequency Bands – CFW-2232
NR
+ n2, n5, n7, n12, n13, n14, n25, n26, n29, n30, n38, n41, n48, n66, n71, n77, n78
LTE
+ B2, B4, B5, B7, B12, B13, B14, B17, B25, B26, B29, B30, B38, B41, B42, B43, B48, B66, B71
+ Dynamic Spectrum Sharing Support on FDD bands

Device Category
LTE
+ **Uplink**: 2CA Single TX, 256QAM
+ **Downlink**: 5CA MIMO 4x4, 256QAM
NR
+ **Uplink**: MIMO 2x2 Single Carrier Up to 100MHz, 256QAM
+ **Downlink**: MIMO 4x4 Dual Carrier Up to 120MHz, 256QAM

5G Subcarrier Spacing (SCS)
+ 15kHz FDD Bands only
+ 30kHz TDD Bands only

Antenna Characteristics
Antenna Type
+ Dual-Polarized 4x4 MIMO Directional
Frequency Coverage
+ 600 – 4200MHz
Antenna Gain
+ 617 – 960 MHz – 2x2 (Up to 4dBi)
+ 1432 – 1517 MHz – 4x4 (Up to 7.75dBi)
+ 1700 – 2500 MHz – 4x4 (Up to 8.5dBi)
+ 2500 – 2700 MHz – 4x4 (Up to 8.5dBi)
+ 3300 – 4200 MHz – 4x4 (Up to 11dBi)

See the ANTENNA PERFORMANCE section for more details.

CBRS Support (CFW-2232 Only)
+ CBRS End User Device (EUD)
+ Max 23dBm/10MHz EIRP

Conducted RF Output Power (PRE-ANTENNA)
LTE
+ 23dBm single TX UL
+ 26dBm single TX UL (B41, B42, B43 Only)
NR
+ **NSA**:
  + 23dBm single TX UL
+ **SA**:
  + 29dBm single TX UL (n41, n77, n78)
  + 26dBm single TX UL (n38)
  + 23dBm single TX UL all other bands
  + 2x26dBm MIMO 2x2 UL (n41, n77, n78)
  + 2x23dBm MIMO 2x2 UL (n38, n40)

Interfaces
+ 1 x 2.5Gbit Base-T Ethernet RJ45 port
+ BLE (Bluetooth Low Energy) for connection to installation app

GPS
+ Embedded GPS/GLONASS/Galileo/Beidou

SIM Card Reader
+ Supports 2FF and 4FF SIM cards

Operating System
+ Based on Embedded Linux

Operating Temperature
+ **CFW-2231**: -30°C to +55°C
+ **CFW-2232**: -40°C to +55°C

Enclosure
+ IP67 rated
+ Wind speeds up to Tornado EF1 (110mph / 177kph)

Safety
+ Surge and lightning protection (K.21 compliant) Ethernet Port on the CPE
+ K.21 compliant PoE Injector

Dimensions & Weight
Dimensions
+ 301.0 mm x 301.0 mm x 152.3 mm (includes mounting bracket)
Weight
+ 1.255kg (including mounting bracket)

Mounting Options
+ Elevation adjustable mount Adjustable +/- 24°
+ Suitable for 25-60 mm circular poles
+ Can also be directly wall mounted

Power
Supply
+ Power over Ethernet per IEEE 802.3af Mode A and B
Consumption
+ Peak operating power: 15.4W

Cellular WAN Networking
+ Up to 6 APN Configurations
+ Up to 8 Bearers & Traffic Classes
+ 4G/5G PCI Lock
+ Automatic/Manual cellular band selection
+ Automatic/Manual operator selection

Device Management
+ HTTP/S Web-based User Interface (Local & Remote Support)
+ TR-069/TR-143/TR-181 Support for CM, PM, FM, SM
+ Firmware upgrade remotely Over-The-Air (TR-069)
+ Installation Support via Smartphone App
+ Diagnostics & Metrics
+ Secure Shell (SSH)
+ Remote syslog
+ Ping diagnostic tool
+ NTP Client
+ Geo Fence support
+ Service Assurance Diagnostic
+ Field Test screen

Technical Specifications Cont.

Lan Network & Routing

+ IPv4, IPv6, IPv4v6
+ IP Passthrough / Handover
+ VLAN support
+ Static routing
+ DHCP server
+ Port forwarding
+ IP / MAC / Port filtering
+ Firewall
+ VPN Passthrough
+ Policy Based Routing

Regulatory Certifications

CFW-2231
+ CE
+ RCM
+ RoHS
+ REACH
+ WEEE
+ Energy Efficiency (ErP-EU CoC)
+ Anatel

CFW-2232
+ FCC
+ IC
+ CA65
+ TSCA

Included Accessories

Power Over Ethernet Injector

An 802.3af compliant 15.4W Power over Ethernet Injector is included for providing data and power connectivity from indoors to the outdoor CPE.

+ 100-240VAC Universal Input/Full Range
+ Low power devices receive only the power they need
+ Plug and play installation

Technical Specifications

Ethernet Ports

+ 1 x 10/100/1000/2500 Base-T Residential Gateway Port
+ 1 x 10/100/1000/2500 Base-T PoE PSE

Ac Input Power

+ AC Powered: 100-240VAC / 50-60Hz
+ 1 x Three pin plug (IEC C6) socket

PoE Standard

+ 802.3af 56Vdc 15.4W
+ Pin-out 3/6(+), 1/2(-)

Led Indicator

+ 1 x LED indicator for power, data and PoE faults

Operating Environment

+ **Operating temperature range**: -20ºC - +50ºC
+ **Relative humidity**: 10% - 90%

MTBF

+ 100K Hours

Weight

+ 123g

Dimensions

+ 114.8 mm (L) x 53 mm (W) x 35 mm (H)

Safety Certifications

+ UL, CL, CB, CE

Antenna Performance

Bands Info

Antenna	Isolation (dB)
Ant 1 & 2	<-10
Ant 3, 4, 5, 6	<-23
Ant 7, 8, 9, 10	<-26

3GPP Low Bands (Sub6GHz)

Omni Directional	Antenna 1		Antenna 2	
Frequency (MHz)	Gain (dBi)	Efficiency (%)	Gain (dBi)	Efficiency (%)
610	2.05	52	1.91	64
650	1.81	64	3.11	78
700	4.17	79	4.15	92
750	4.67	84	4.62	90
800	4.72	81	4.97	85
850	4.59	78	3.83	85
900	5.17	78	4	79
950	4.38	67	3.99	73
960	4.12	66	3.62	72

3GPP Mid Bands (Sub6GHz)

Directional	Antenna 3			Antenna 4		
Frequency (MHz)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)
1450	6.09	62.5	74.7	6.28	70.3	42.3
1500	5.87	173.8	74.7	5.96	70.1	52.8
1700	6.26	28.7	79	6.23	90.1	46.3
1800	6.49	93.1	97.9	6.88	56.5	48.2
1900	7.36	25.8	75.4	7.7	61.8	28.2
2000	8.07	60.3	54.9	8.24	56.7	32.1
2100	8.15	43	56.1	8.14	55.8	37.6
2200	7.77	54.8	62.2	7.68	72.9	99.7
2300	7.86	38.6	80.9	7.62	75.7	35.4
2400	7.86	29.3	60.2	7.75	60.6	98
2500	7.77	34	60.8	7.76	69.7	63.4
2600	7.54	38.3	60.8	7.84	61.5	112.6
2700	8.46	36.3	62.2	9.04	53.9	31.4

3GPP Mid Bands (Sub6GHz)

Directional	Antenna 5			Antenna 6		
Frequency (MHz)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)
1450	6.87	43.9	57.8	6.98	66.8	127.9
1500	6.39	43.4	63	6.5	65.4	35.3
1700	6.6	31.5	67	6.55	89.4	54.9
1800	6.94	37.5	71.9	6.97	72.3	50.3
1900	7.5	46.4	76.8	7.69	58.9	24.1
2000	7.67	49.3	58.2	8.19	61.3	27.6
2100	7.86	52.8	80.2	7.92	65.6	38.4
2200	7.4	56.6	68.8	7.42	81.7	82.5
2300	7.51	44.1	74.6	7.27	74.5	60
2400	7.65	54.1	59	7.53	62.6	95.6
2500	7.61	41.1	61.1	7.44	65.3	72.6
2600	7.57	80.1	61.3	7.54	61.2	63.5
2700	8.7	51.1	54.2	8.99	58.2	140.3

Antenna Performance Cont.

3GPP High Bands (Sub6GHz)

Directional	Antenna 7			Antenna 8		
Frequency (MHz)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)
3300	9.79	55.1	57	10.63	62.2	45.3
3400	9.8	72.3	58.8	10.43	54.2	56.6
3500	9.39	66.8	60.5	10.17	63.2	81.9
3600	9.49	35.7	59.1	10.16	59.1	59.4
3700	9.82	45.7	54.2	10.24	54	90.1
3800	10.19	31.6	58.3	10.23	57.9	63
3900	10.36	40.5	54.3	10.15	53.8	19.6
4000	10.77	45.9	53.8	10.07	53.3	18.3
4100	10.92	45.5	50.6	9.99	47.5	24.8
4200	10.91	63.9	51.2	10.27	44.1	25.5

3GPP High Bands (Sub6GHz)

Directional	Antenna 9			Antenna 10		
Frequency (MHz)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)	Gain (dBi)	H Beamwidth (°)	V Beamwidth (°)
3300	10.29	58.3	56.6	9.63	80.2	58.5
3400	10.21	55.9	50.7	9.63	73.8	63.9
3500	9.86	53.1	26.1	9.21	41.7	62.6
3600	9.87	50.6	46.7	9.41	28.3	60.1
3700	10.06	47.5	20.9	9.82	35.2	54.8
3800	10.12	53.8	23.9	10.16	70.6	56.2
3900	9.96	49.9	24.5	10.34	45.4	49.2
4000	10.22	48.3	27.1	10.64	44.7	45.9
4100	10.39	47.5	23.2	10.68	42.1	44.9
4200	10.38	43.4	25.8	10.85	42.2	42.6

GPS

Directional	GPS			
Frequency (MHz)	Gain (dBi)	Efficiency (%)	H Beamwidth (°)	V Beamwidth (°)
1555	3.36	73	74.2	44.3
1560	3.39	72.8	72.9	42.4
1565	3.44	72.7	70.4	42.2
1570	3.45	72.3	66.6	42.6
1575	3.45	72	63.2	41.8
1580	3.45	71.7	60.3	41.7
1585	3.49	71.3	56.2	43.9
1590	3.51	70.7	51.8	46.2
1595	3.59	70.4	48.4	46.5
1600	3.69	70.5	47.1	41.9

Uplink Antenna

Frequency Range (MHz)	Uplink Antenna	Uplink Antenna (MIMO only)
617 - 960	Antenna 2	Antenna 1
1450 - 1500	N/A	N/A
1700 - 2700	Antenna 3	Antenna 6
3300 - 4200	Antenna 10	Antenna 7

Optional Accessories

The following accessories can assist in the installation and alignment of the Outdoor CPE

CTL-2000 Smart Install Tool

The CTL-2000 integrates a Wi-Fi 802.11b/g/n access point operating on the 2.4GHz band, to connect to a smartphone enabling the installer to get detailed signal readings. The smartphone app provides a clear diagnostic and troubleshooting for an interactive and reliable configuration of the Outdoor Unit, finding the best location at the premises.

The CTL-2000 connects directly to the Outdoor Unit via Ethernet.

Delivering power over Ethernet thanks to its removeable rechargeable battery, the Smart Installation Tool offers the needed portability for an efficient site survey.

AuroraPRO Smartphone Installation Application

This advanced business process support application for Google devices is designed to aid professional installation.

It provides guidance and measurements during site survey to meet predefined service goals.

It supports the installer through to final installation including post installation service measurements and creates automated final installation reports which can be used to provide remote support and maintenance over the device's life span.

Contact DZS today
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DZS CFW-2231 & CFW-2232 Data Sheet Rev 9