

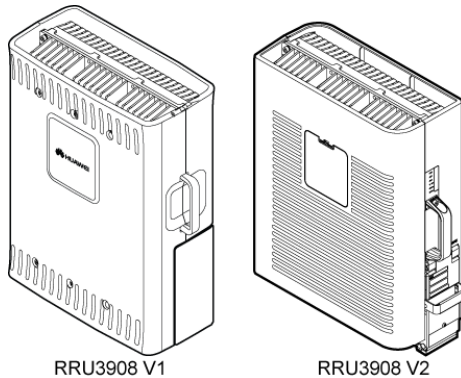
1.1 RRU3908

The RRU3908 is an outdoor RF remote radio unit, which performs modulation, demodulation, data processing, and combining and dividing for baseband signals and RF signals.

1.1.1 Appearance of the RRU3908

Figure 1-1 shows the RRU3908.

Figure 1-1 RRU3908



1.1.2 Ports on the RRU3908

The RRU3908, which has a modular structure, has its external ports located at the bottom of the module and in the cabling cavity.

Ports on the RRU3908 V1

Table 1-1 Ports on the RRU3908 V1

Port	Quantity	Description
CPRI_E	1	Eastward optical or electrical port, 1.25Gbit/s
CPRI_W	1	Westward optical or electrical port, 1.25Gbit/s
EXT_ALM	1	Alarm port
ANT_TX/RXA	1	RF TX/RX port A
ANT_TX/RXB	1	RF TX/RX port B
RX_IN/OUT	1	Inter-RRU port
RET	1	Port for the RET antenna communication

Table 1-2 Buttons and terminals on the RRU3908 V1

Label	Description
RST	Reset button
VSWR	-
RTN+	Terminals for power cables
NEG-	

Ports on the RRU3908 V2

Table 1-3 Ports on the RRU3908 V2

Port	Quantity	Description
TX RX CPRI_0	1	Optical/electrical port 0, 1.25Gbit/s or 2.5Gbit/s
TX RX CPRI_1	1	Optical/electrical port 1, 1.25Gbit/s or 2.5Gbit/s
EXT_ALM	1	Alarm port
ANT_TX/RXA	1	RF TX/RX port A
ANT_TX/RXB	1	RF TX/RX port B
RX_IN/OUT	1	Inter-RRU port
RET	1	Port for the RET antenna communication

Table 1-4 Buttons and terminals on the RRU3908 V2

Label	Description
RTN(+)	Terminals for power cables
NEG(-)	
RTN(+)	Cascaded power supply port
NEG(-)	

1.1.3 Typical Configuration of RRU3908

 **NOTE**

- The GSM power is measured when the modulation scheme is GMSK. If the modulation scheme is 8PSK, the output power is 1.8 dB less than that in GMSK mode.
- The RRU3908 at 1800 MHz of the current version only supports the GSM mode in terms of software. The RRU3908 at 1800 MHz supports the UMTS and LTE modes in terms of hardware.
- When RRU3908 is located in the area at an altitude of 3500 m to 4500 m, the output power back-off is 1 dB. When RRU3908 is located in the area at an altitude of 4500 m to 6000 m, the output power back-off is 2 dB.

Table 1-5 lists the typical configurations of the RRU3908 V1 at 900MHz/850MHz/1800MHz/1900MHz in compliance with the specifications for multi-carrier base station (Class 2) in 3GPP TS 45.005 V9.0.0.

Table 1-5 Typical configuration of the RRU3908 V1 (900MHz/850MHz/1800MHz/1900MHz, Class 2)

Number of GSM Carriers	Number of UMTS Carriers	Output Power per GSM Carrier (W)	Output Power per UMTS Carrier (W)
1	0	40	0
2	0	40	0
3	0	20	0
4	0	15	0
5	0	12	0
6	0	10	0
1	1	40	30
1	1	30	40
1	2	30	20
2	1	20	30
2	1	15	40
2	2	15	20
3	1	10	30
3	2	10	10
4	1	7.5	20
4	2	7.5	10
5	1	6	20
0	1	0	40
0	2	0	30
0	3	0	20

Number of GSM Carriers	Number of UMTS Carriers	Output Power per GSM Carrier (W)	Output Power per UMTS Carrier (W)
0	4	0	15

Table 1-6 lists the typical configurations of the RRU3908 V1 at 900MHz/1800MHz in compliance with ETSI TS 100 910 V8.20.0.

Table 1-6 Typical configuration of the RRU3908 V1 (900MHz/1800MHz, ETSI)

Number of GSM Carriers	Number of UMTS Carriers	Output Power per GSM Carrier (W)	Output Power per UMTS Carrier (W)
1	0	20	0
2	0	20	0
3	0	15	0
4	0	15	0
5	0	10	0
6	0	10	0
1	1	20	40
2	1	15	30
3	1	10	30
2	2	10	20
1	2	20	20
3	2	10	15
0	1	0	40
0	2	0	30
0	3	0	20
0	4	0	15

Table 1-7 lists the typical configurations of the RRU3908 V2 at 900MHz/850MHz in compliance with the specifications for multi-carrier base station (Class 2) in 3GPP TS 45.005 V9.0.0.

Table 1-7 Typical configurations of the RRU3908 V2 (900MHz/850MHz, Class 2)

Number of GSM Carriers	Number of UMTS Carriers	Output Power per GSM Carrier (W)	Output Power per UMTS Carrier (W)
1	0	40	0
2	0	40	0

Number of GSM Carriers	Number of UMTS Carriers	Output Power per GSM Carrier (W)	Output Power per UMTS Carrier (W)
3	0	20	0
4	0	20	0
5	0	13	0
6	0	13	0
7	0	10	0
8	0	10	0
1	1	40	40
2	1	20	40
2	1	30	20
3	1	13	40
4	1	10	40
1	2	40	20
2	2	20	20
3	2	13	20
4	2	10	20
0	1	0	40
0	1	0	2 x 40 (MIMO)
0	2	0	40
0	2	0	2 x 20 (MIMO)
0	3	0	20
0	3	0	2 x 10 (MIMO)
0	4	0	20
0	4	0	2 x 10 (MIMO)



NOTE

Only RRU3908 V2 modules support the V2 specifications.

Table 1-8 lists the typical configurations of the RRU3908 V2 at 900MHz in compliance with ETSI TS 100 910 V8.20.0.

Table 1-8 Typical configurations of the RRU3908 V2 (900MHz, ETSI)

Number of GSM Carriers	Number of UMTS Carriers	Output Power per GSM Carrier (W)	Output Power per UMTS Carrier (W)
1	0	30	0
2	0	30	0
3	0	20	0
4	0	20	0
5	0	13	0
6	0	13	0
7	0	10	0
8	0	10	0
1	1	30	40
2	1	20	40
2	1	30	20
3	1	13	40
4	1	10	30
1	2	20	20
2	2	20	20
3	2	13	20
4	2	10	20
0	1	0	60
0	1	0	2 x 40 (MIMO)
0	2	0	40
0	2	0	2 x 20 (MIMO)
0	3	0	20
0	3	0	2 x 10 (MIMO)
0	4	0	20
0	4	0	2 x 10 (MIMO)



NOTE

Only RRU3908 V2 modules support the V2 specifications.

1.2 Technical Specifications of the DBS3900

Table 1-9 describes the technical specifications of the DBS3900.

Table 1-9 Technical specifications of the DBS3900

Item	Specification		
RRU3908 V1	Frequency Band	RX Band (MHz)	TX Band (MHz)
	900 MHz	890 to 915	935 to 960
		880~905	925~950
	850 MHz	824 to 849	869 to 894
	1800 MHz	1,710 to 1,755	1,805 to 1,850
		1,740 to 1,785	1,835 to 1,880
	1900 MHz	1,850 to 1,890	1,930 to 1,970
1,870 to 1,910		1,950 to 1,990	
RRU3908 V2	900 MHz	890 to 915	935 to 960
		880 to 915	925 to 960
	850 MHz	824 to 849	869 to 894
Capacity	GSM	BBU3900: S24/24/24 RRU3908 (V1) : Each RRU3908 supports six TRXs . RRU3908 (V2, ETSI): Each RRU3908 supports six TRXs. RRU3908 (V2, Class 2) : Each RRU3908 supports eight TRXs Each sector supports a maximum of 24 carriers.	
	UMTS	BBU3900: S8/8/8 (1,536 CEs in the UL and 1,536 CEs + 15 × 24 HSDPA codes in the DL) RRU3908 : Each RRU3908 supports four TRXs Each sector supports a maximum of eight carriers.	
	GSM+UMTS	BBU3900: GSM S24/24/24+UMTS S8/8/8 (1,536 CEs in the UL and 1,536 CEs + 15 × 24 HSDPA codes in the DL) RRU3908 (V1): G5U1 or G4U2 RRU3908 (V2, ETSI): G3U2 RRU3908 (V2, Class 2): G4U2	

Item	Specification			
Receiver sensitivity	UMTS	-125.5 dBm	As recommended in 3GPP TS25.104, the receiver sensitivity (full band) is measured at the antenna connector on condition that the channel rate reaches 12.2 kbit/s and the BER does not exceed 0.001. Frequency band (MHz): 890 to 915, 935 to 960,1800 MHz	
		-126.2 dBm	The receiver sensitivity is measured on the center frequency at the antenna connector on condition that 12.2 kbit/s Adaptive Multi Rate (AMR) service is in progress and the BER does not exceed 0.001. Frequency band (MHz): 890 to 915, 935 to 960,1800 MHz	
		-125.3 dBm	As recommended in 3GPP TS25.104, the receiver sensitivity (full band) is measured at the antenna connector on condition that the channel rate reaches 12.2 kbit/s and the BER does not exceed 0.001. Frequency band (MHz): 880 to 915, 925 to 960	
		-126.0 dBm	The receiver sensitivity is measured on the center frequency at the antenna connector on condition that 12.2 kbit/s Adaptive Multi Rate (AMR) service is in progress and the BER does not exceed 0.001. Frequency band (MHz): 880 to 915, 925 to 960	
	GSM	-113.5 dBm	Frequency band (MHz): 890 to 915, 935 to 960	
		-113.3dBm	Frequency band (MHz): 880 to 915, 925 to 960	
		-113.8 dBm	1800 MHz	
	Transmission port	GSM	GTMU	4 E1s/T1s, 1 FE electrical port, 1 FE optical port
		GSM+UMTS	WMPT	4 E1s/T1s, 1 FE electrical port, 1 FE optical port
			GTMU	4 E1s/T1s, 1 FE electrical port, 1 FE optical port
UTRP2			2 FE/GE optical ports	
UTRP3			8 E1s/T1s	
UTRP4			8 E1s/T1s	
UTRP6			1 STM-1/OC-3 port	
UTRP9			4 FE/GE electrical ports	
UMTS		WMPT	4 E1s/T1s, 1 FE electrical port, 1 FE optical port	
		UTRP2	2 FE/GE optical ports	
	UTRP3	8 E1s/T1s		

Item	Specification		
		UTRP4	8 E1s/T1s
		UTRP6	1 STM-1/OC-3 port
		UTRP9	4 FE/GE electrical ports
Clock synchronization	Line clock, GPS clock, BITS clock, clock of the Oven Controlled Crystal Oscillator (OCXO) in free-run mode, and IP clock		
Dimension (H x W x D)	BBU3900: 86 mm × 442 mm × 310 mm RRU3908: 485 mm × 380 mm × 170 mm (with the housing) RRU3908: 480 mm × 356 mm × 140 mm (without the housing)		
Weight	BBU3900 ≤ 12 kg (in full configuration) BBU3900 ≤ 7 kg (in typical configuration) RRU3908: 21 kg (without the housing) RRU3908: 23 kg (with the housing)		
Input power	BBU3900: -48 V DC; voltage range: -38.4 V DC to -57 V DC RRU3908: -48 V DC; voltage range: -36 V DC to -57 V DC		

Item	Specification				
Power consumption	RRU3908 V1, 900MHz, Class2	Configuration	Output Power per Carrier (W)	Typical Power Consumption (W)	Maximum Power Consumption (W)
	GSM	3 × 2	20	760	910
		3 × 4	20	730	1,070
		3 × 6	12	730	1,070
	GSM+UMTS	GSM 3 × 2 + UMTS 3 × 1	20/20	870	1,090
		GSM 3 × 4 + UMTS 3 × 1	10/20	820	1,050
		GSM 3 × 4 + UMTS 3 × 2	10/10	820	1,050
	UMTS	3 × 1	20	490	590
		3 × 2	20	640	790
		3 × 3	20	880	1,100
		3 × 4	15	880	1,110
	RRU3908 V1, 900MHz, ETSI	Configuration	Output Power per Carrier (W)	Typical Power Consumption (W)	Maximum Power Consumption (W)
	GSM	3 × 2	20	650	840
		3 × 4	10	790	980
		3 × 6	10	1,000	1,350
	GSM+UMTS	GSM 3 × 1 + UMTS 3 × 1	20/20	770	890
		GSM 3 × 2 + UMTS 3 × 1	10/20	810	990
		GSM 3 × 3 + UMTS 3 × 1	10/20	890	1,130
	RRU3908 V2, 900MHz/850 MHz, Class2	Configuration	Output Power per Carrier (W)	Typical Power Consumption (W)	Maximum Power Consumption (W)
	GSM	3 × 2	20	510	670
		3 × 4	20	780	1,180
		3 × 6	15	740	1,150

Item	Specification					
	GSM+UMTS	GSM 3 x 2 + UMTS 3 x 1	20/40	900	1,170	
		GSM 3 x 3 + UMTS 3 x 1	15/40	870	1,160	
		GSM 3 x 4 + UMTS 3 x 1	13/40	870	1,170	
	UMTS	3 x 1	20	400	490	
		3 x 2	20	550	720	
	RRU3908 V2, 900MHz, ETSI	Configuration	Output Power per Carrier (W)	Typical Power Consumption (W)	Maximum Power Consumption (W)	
	GSM	3 x 2	20	510	670	
		3 x 4	20	720	1,130	
		3 x 6	10	600	930	
	GSM+UMTS	GSM 3 x 2 + UMTS 3 x 1	20/40	880	1,150	
		GSM 3 x 3+ UMTS 3 x 1	10/40	780	1,050	
	UMTS	3 x 1	20	400	490	
		3 x 2	20	550	720	
	NOTE <ul style="list-style-type: none"> • The typical power consumption for GSM is reached when the base station works with 30% load and power control and DTX are enabled. The maximum power consumption for GSM is reached when the base station works with 100% load. • The typical power consumption for UMTS is reached when the base station works with 50% load. The maximum power consumption for UMTS is reached when the base station works with 100% load. • The GSM output power per carrier is sharing power in compliance with the specifications for multi-carrier base station (Class2). • The GSM output power per carrier is non-sharing power in compliance with ETSI. 					
	Operating temperature	BBU3900	-20°C to +55°C			
RRU3908		-40°C to +45°C (with solar radiation)				
		-40°C to +50°C (without solar radiation)				
Relative humidity	BBU3900	5% RH to 95% RH				
	RRU3908	5% RH to 100% RH				

Item	Specification	
Air pressure	70 kPa to 106 kPa	
Protection rating	BBU3900	IP20
	RRU3908	IP65
Max distance	40km (between BBU and RRU)	
Storage	ETSI EN300019-1-1 class1.2 "Weather protected, not temperature-controlled storage locations"	
Transportation	ETSI EN300019-1-2 class 2.3 "Public transportation"	
Anti-seismic performance	IEC 60068-2-57 (1999-11) Environmental testing -Part 2-57: Tests -Test Ff: Vibration-Time-history method	
EMC	<p>The DBS3900 meets the Electro Magnetic Compatibility (EMC) requirements and complies with the following standards:</p> <ul style="list-style-type: none"> • R&TTE Directive 1999/5/EC • R&TTE Directive 89/336/EEC • ETSI EN 301489-1/8/23 • 3GPP TS 25.113 • ETSI EN 301908-1 • ITU-T SM 329-10 • FCC PART15 	