2) Check the cables and connectors to ensure that they have been properly connected and the cables/wires have not been crimped or impaired in some way during installation. (About 90% of component problems can be attributed to wiring and connector problems).
   a) Check Cable,
   b) Check connector,
   c) Check for solid connection,
   d) Check with site specific installation documentation
3) Make sure that all power cord is properly attached to each IP-RAN component. Be certain that all power cords are plugged into a functioning electrical outlet. Use the PWR LED's and the voltage meters to verify each unit is receiving power. Check intermediate breakers or fuses.
4) If the problem is isolated to something other than the IP-RAN, contact the appropriate parties responsible for that system.
5) Verify whether or not the problem is corrected. If not, go to Step 6 below. If the problem is corrected, continue with installation.
6) If the problem continues after completing Step 4 above, contact the Installation Project Manager to determine the next course of action. If the problem persists after review, then contact the AirWalk Customer Support Centre for assistance.

8.6.2 When Calling for Assistance

Please be prepared to provide the following information.

1) A complete description of the problem, including the following points:
   a) The nature and duration of the problem;
   b) Situations when the problem occurs;
   c) The components involved in the problem;
   d) Any particular application that, when used, appears to create the problem;
2) A record of changes that have been made to the IP-RAN configuration prior to the occurrence of the problem.
3) Any changes to system should all be noted.

9 Appendix A - Acronyms

Acronym	Description
2G	Second Generation in CDMA wireless network
3G	Third Generation in CDMA wireless network
AC	Alternating Current
Access Channel	A Reverse CDMA Channel used by mobile stations for communicating to the base station. The Access Channel is used for short signaling message exchanges, such as call originations, responses to pages and registrations. The Access Channel is a slotted random access channel.
ACH	Access Channel
AD	Analog to Digital
AFEU	Antenna Front End Unit
AGC	Automatic Gain Control
ANT	Antenna
AWGN	Additive White Gaussian Noise
Base Station (BS)	A fixed station used for communicating with mobile stations. Depending upon the context, the term base station may refer to a cell, a sector within a cell, an MSC, or other part of the wireless system.
BCCM	BTS Call Control Module
BHCA	Busy Hour Call Attempts
BLK	Blank
BS	Base Station
BSAP	Base Station Application Part
BSC	Base Station Controller
BSMAP	Base Station Management Application Part
BTS	Base station Transceiver Subsystem
CA	Call Agent
CAI	Common Air Interface
CC	Connection Confirm
CCM	Channel Control Module in BTS
CDMA	Code Division Multiple Access
CEC	Channel Elements Control Block
CED	Channel Elements Diagnostic Block
CLAP	Composite Link Analysis Platform
CPIB	BTS Channel and Call Processing Interface Board
CPU	Central Processing Unit
CR	Connection Request
CREF	Connection Refused
CSM5000	Cell Site Modulator 5000 (CDMA ASIC chip released by Qualcomm for cdma2000)
DA	Digital to Analog
DC	Direct Current
DCCH	Dedicated Control Channel
DCLI	Data Link Connection Identifier
DRS	Data Ready to Send
DT	Data Form
DTAP	Direct Transfer Application Part
EMI	Electro-Magnetic Interference
ESN	Electronic Serial Number

Acronym	Description
EVDO	Evolution Data Only
EVDV	Evolution Data and Voice
EVRC	Enhanced Variable Rate CODEC
FA	Frequency Assignment
FCC	Federal Communications Commission
F-CCH	Forward Common Control Channel
FCH	Fundamental Channel
F-DCCH	Forward Dedicated Control Channel
FDCH	Forward Dedicated Signaling Logical Channel
FER	Frame Error Rate
FM	Fault Management
FO	Frame Offset
Forward Traffic Channel	One or more code channels used to transport user and signaling traffic from the base station to the mobile station.
FSCH	Forward Common Signaling Logical Channel
GND	Ground
GPS	Global Positioning System
GRE	Generic Routing Encapsulation
HLR	Home Location Register
HO	Handoff
HPAU	High Power Amplifier Unit
IF	Intermediate Frequency
IMSI	International Mobile Subscriber Identity
ING	Inter Network Gateway
IOS	Interoperability System
IP	Internet Protocol
IPC	Inter Processor Communication
LAC	Link Access Control. Entity that provides assured mode or unassured mode delivery of information across the air interface between the mobile station and the base station.
LPA	Linear Power Amplifier
LTU	Logical Transmission Unit One or more Type 3 or Type 5 MuxPDUs with a 16bit CRC.
MAC	Medium Access Control Entity that controls the access to and from Upper Layer Signaling, Data Services and Voice Services to Physical Layer resources.
MAHHO	Mobile Assisted Hard Hand Off
MCC	Main Call Control module in IP-BSC
MG	Media Gateway
MIMO	Multi Input Multi Output
MIN	Mobile Identification Number
MMC	Man-Machine Command
MMS	Multimedia Messaging Service
MN	Mobile Node
MS	Mobile Station
MSC	Mobile Switching Center
MTBF	Mean Time between Failure
MTTR	Mean Time to Repair
NDSS	Network Directed System Selection
NGN	Next Generation Networks

Acronym	Description
NMS	Network Management System
OAM	Operation, Administration, and Maintenance
OCNS	Orthogonal channel Noise Simulator
OS	Operating System
OTD	Orthogonal Transmit Diversity
OUNS	Other User Noise Source
PACA	Priority Access Channel Assignment
Paging Channel	A code channel in a Forward CDMA Channel used for transmission of control information and pages from a base station to a mobile station
PBA	Printed Board Assembly
PBX	Private Branch Exchange
PCB	Printed Circuit Board
PCF	Packet Control Function in IP-BSC
PCH	Paging Channel
PCM	Pulse Code Modulation
PCPM	Primary BSC Call Processing Board
PDSN	Packet Data Serving Node
PDU	Protocol Data Unit. An atomic set of data, header information, and control information that are provided by a service user to a service provider.
PER	Packet Error Rate
Physical Channel	Radio transmission link
Pilot Channel	An un-modulated, direct-sequence spread spectrum signal transmitted by a CDMA base station or mobile station. A pilot channel provides a phase reference for coherent demodulation and may provide a means for signal strength comparisons between base stations for determining when to handoff.
PLD	Program Loaded Data
PN	Pseudo Noise
PSA	Power Supply Assembly
PSTN	Public Switched Telephone Network
QCELP	Qualcomm Code Excited Linear Prediction
QOF	Quasi-Orthogonal Function
QOF	Quasi Orthogonal Function
QoS	Quality of Service
RAN	Radio Access network
RC	Radio Configuration
RCC	Radio interface Call Control
RDCH	Reverse Dedicated Signaling Logical Channel
Reverse Traffic Channel	A traffic channel on which data and signaling are transmitted from a mobile station to a base station. The Reverse Traffic Channel is composed of up to one Reverse Dedicated Control Channel, up to one Reverse Fundamental Channel, zero to two Reverse Supplemental Channels, and zero to seven Reverse Supplemental Code Channels.
RF	Radio Frequency
RLC	Release Complete
RLP	Radio Link Protocol. Connection-oriented, negative-acknowledgement-based data delivery protocol.
RLSD	Released
RP	Radio Network – PDSN
RPSU	Remote RF Power Supply Unit
RRCU	Remote RF Control Unit

Acronym	Description
RRM	Radio Resource Management Block
RRP	Registration Reply Message
RRQ	Registration Request Message
RSCH	Reverse Common Signaling Logical Channel
RSSI	Received Signal Strength Indication
RTP	Real-Time Transport Protocol
RU	Remote RF Unit
RUpd	Registration Update Message
SAP	Service Access Point Conceptual point at the interface between two adjacent layers where services are provided to the upper layer and data and protocol information is exchanged between layers.
SAR	Segmentation and Reassembly
SCCH	Supplemental Code Channel
SCCP	Signaling Connection Control Protocol
SCH	Supplemental Channel
SDU	Selection and Distribution Unit
SEU	Sector Expansion Unit
SIGTRAN	Signaling Transport processing module in IP-BSC
Slotted Mode	An operation mode of the mobile station in which the mobile station monitors only selected slots on the Paging Channel
SMS	Short Message Service
SMV	Selectable Mode VOCODER
SRBP	Signaling Radio Burst Protocol. An entity that provides connectionless protocol for Signaling messages.
SRU	Sector Reduction Unit
SS	Soft Switch
STS	Space Time Spreading
Sync Channel	A code channel in the Forward CDMA Channel which transports the synchronization message to the mobile station
TCC	Traffic Channel Control Block
TCE	Traffic Channel Element
TCM	Traffic Control Module in BTS
TCP	Transmission Control Protocol
TOD	Time of Day
TP	Traffic processing and Path Control module in IP-BSC
TPTL	Transmit Power Tracking Loop
UART	Universal Asynchronous Receiver/Transmitter
UDP	User Datagram Protocol
VSWR	Voltage Standing Wave Ratio
XCV	Base Station Transceiver Control Block
XCVR	Transceiver Board

10 Appendix B - Installation Checklist

OneRAN Site Installation Check List for:	*{Customer Name}*	
Address	**Installer Name (s)**	**Customer Contact (s)**
{OneRAN SERIES IP-RAN Installation Address}		

ITEM #	Description	Date Complete	Time	Customer Contact Initials	Installer Initials
1	Verify Customer Contact & Equipment location				
2	Contact Customer				
3	Locate OneRAN IP-RAN Equipment				
4	Locate and verify Floor Space				
5	Uncrate and arrange for packing material disposal				
6	Verify location of all distribution points (main and intermediate)				
7	Power Check				
8	Power Location				
9	Verify Connector				
10	Voltage				
11	Amps				
12	LAN Facilities check				
13	Location				
14	Verify IP Address				
15	Verify Connector				
16	Ping IP Address				
17	Prepare IP addressable device diagram				
18	Post IP diagram at: i) site; ii) customer; iii) Airwalk Customer Service				

ITEM #	Description	Date Complete	Time	Customer Contact Initials	Installer Initials
20	Move OneRAN IP-RAN to location				
21	Secure OneRAN IP-RAN in designated location (rack)				
22	Verify all internal System connections				
23	External System Connections				
24	Connect Power to Cabinet				
25	Connect DC distribution panel (If applicable)				
26	Connect AC distribution panel (If applicable)				
27	Connect BSC/BTS Communications Facilities (Ethernet)				
30	Power-up RU amplifier system, check LEDs/voltmeters				
31	Power-up IP-RAN main unit, check LEDs/voltmeters				
	System Configuration				
33	Connection PC to Ethernet				
34	Configure BTS boot parameters				
35	Configure BSC boot parameters				
36	Reboot systems and confirm download and normal operation				
37	Verify GPS Check eventually locks onto satellites				
	Operation Tests				
42	Perform additional tests as requested by system/planning engineers				
	Site Clean Up & Documentation				
45	Dispose of all packing material				
46	Clean-up site				
47	Update Installation Checklist				
48	Obtain Signature on Installation Certification Document				

11 Appendix C - Installation Certification Document

Date

Subject:

The subject OneRAN Series IP-RAN has been installed and proper system operation has been verified on this date.

Installation Team Representative	Date
Authorized Carrier Representative	Date

This Page Marks End Of Document