

*IBS Experience Port Folio*

*Quality is the result of care*

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## **1. IBS Division – Introduction**

IET's IBS Division was formed in January 2007, after it came into existence it is actively working in U.A.E & Pakistan, core objective & services of this division is to provide quality services to its value customers i.e. Different Telecom Operators around the globe to enhance their existing Telecom setups so that the customers can experience services of high caliber.

In Pakistan IBS project has been running successfully since August 2007 under the supervision of Telecom Division. Currently Telecom Division of IET is providing its services in the field of IBS to UFONE on Huawei/Shenzhen GrenTech's Panel.

For this UFONE'S Project IET is actively working in three main regions of Pakistan i.e. South, Center & North.

Scope of Work for UFONE Project is as follows:

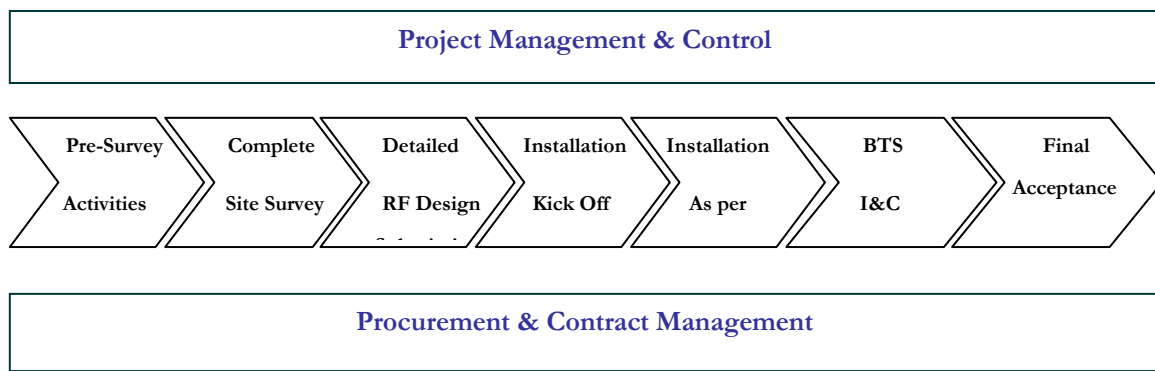
- **Initial Walk Test**
- **Layout Designing and Schematic Diagram**
- **Link Budgeting for the Schematic Diagram**
- **BOQ Preparation**
- **IBS Solution implementation**
- **Drive Test**
- **Maintenance**

**2. IET’s Standard Procedure:**

IET has devised a legitimate approach for the implementation of In-Building Solutions , this practice has been the standard procedure for the IBS Implementations around the globe , as per our core objective of providing quality services to our valued customers ,this paradigm has been successfully implemented and has yielded significant results.

IET’s standard implementation procedure is narrated in the below figure and best describes the cycle of the activities which needs to be completed to finish the implementation for a single IBS Job.

In following section these activities has been explained in brevity for the better understanding.



**Pre-Survey Activities:**

IBS Paradigm starts from Pre-Survey Activities, these activities involves the Site Acquisition Teams, CME Teams from telecom operator & IET RF Survey Teams, the basic objective is coordinate between different tiers of the IBS Project so that information like Site Address, Focal point of contact from the both sides and the date and time for the initial meeting for the survey can be escalated in a proper manner to avoid any chaos.

Thus this phase is important from coordination point of view.

**Complete Site Survey:**

After Pre-survey activities, IET RF Team conducts the Site Survey. The survey is based upon the following parameters:

- With the consent of site owner & Telecom operator’s point of contact decide the location of BTS.
- Check the space which is required to install BTS and its accessories.
- Observe the CME natured parameters and escalate them to Telecom Operator’s focal point of contact.
- Conduct RF Survey as per the standard device i.e. TEMS or PDA.

- After discussion with the Telecom Operator's focal point of contact escalate the number & position of the Antennas.
- Discuss cable routing and installation issues with the focal point.

**Detailed RF Design Submission:**

After the successful site survey, most important activity will be started i.e. preparation of site layouts, link Budgeting & Schematic Diagram, this activity is based on the following parameters:

- **Designing of site layout.**
- **Preparation of Schematic Diagram**
- **Coverage priority plan**
- **Antenna & Core Equipment location on the layout**
- **Link Budgeting**
- **Comprehensive BOQ Preparation**

**Installation Kick off Meeting:**

After the Designs has been approved by the focal point of contact , Installation kick off meeting will be called by Telecom Operator's point of contact, meeting's participants will be Telecom Operator's Point of contact , IET'S Implementation Team Lead & the site owner , in this meeting the parameters regarding site installation will be fixed and if there are any issues which might effect the activity than they are sorted out at this time with the collaboration of Telecom Operator's Point of Contact.

**Installation as per Design and BTS I&C:**

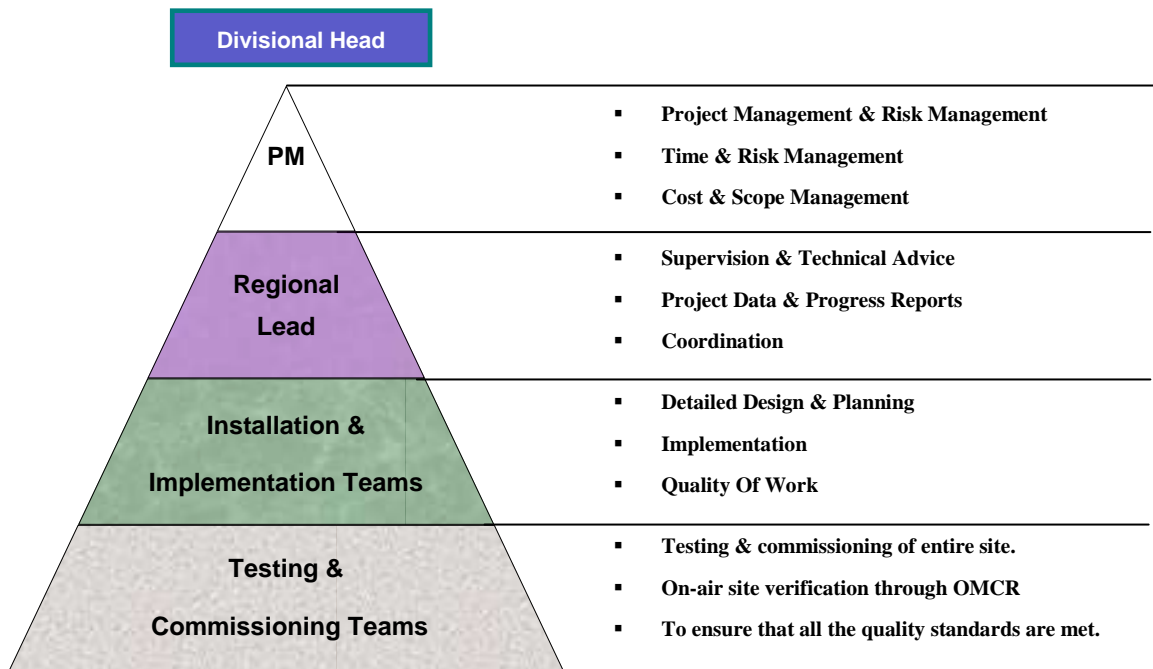
After the initial kick off meeting, it will be the responsibility of the IET's Implementation team to finish the installation as per the approved design with perfection, while keeping in mind all the factors concerning the quality assurance of the work.

After the installation has been finished, the BTS is properly checked i.e. the cards are properly installed and all the accessories are attached in a proper manner, than the BTS is commissioned and the site is made On-air in coordination with the OMCR, after the successful commissioning of the Site, the Final Walk Test or Drive Test is conducted and report will be send to the appropriate Focal Point Of Contact for the approval.

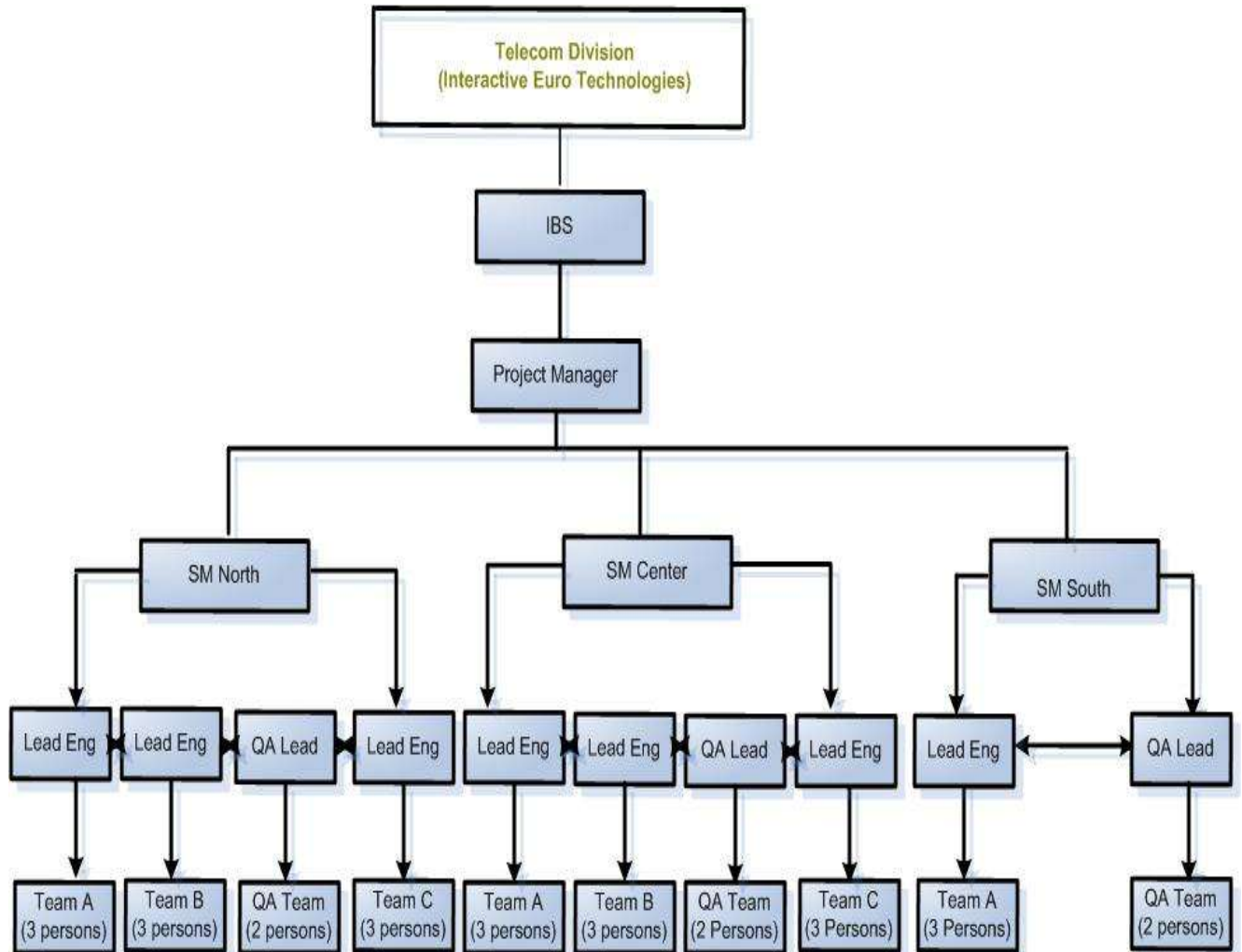
**Final Acceptance:**

In this final phase, activities regarding ATP's of the site are conducted in which quality will be assessed by IET's QA Teams, there is a point which needs to be elaborated i.e. the Quality Assurance activity will be a parallel activity carried on during the installation phase to assure that the installation is as per the standard and QA activity will come to its conclusion here.

**3. Team Structure & Hierarchy**



**Team Structure:**



**4. Acceptance Testing Procedures**

We at IET strictly believes in Quality that is why our professional approach revolves around a key factors like “Quality” & meeting “Dead Line” because that is the best way Customer satisfaction can be guaranteed.

In the following section ATP standards are listed in the form of “TEST CASES” which has been prepared in compliance to the standards in practice by Huawei, Since currently IET is working with Huawei in U.A.E and in Pakistan, thus following are the standard ATP Procedures for the IBS followed by Telecom Division, IET Pakistan, following ATP procedures revolves around Huawei core equipment for Ufone i.e. BTS3006C & APM 200

**Tools required for effective ATP:**

No.	Type	Description	Remark
1	<b>Measuring Tools</b>	50 m ribbon tape	
2		5 m measuring tape	
3		400 mm level bar	
4		Socket, current capacity > 15 A)	
5	<b>Fastening Tools</b>	Phillips screwdrivers (respectively of 4', 6', and 8')	
6		Straight screwdrivers (respectively of 4', 6', and 8')	
7		Adjustable wrenches (respectively of 6', 8', 10', and 12')	
8		Combination wrenches (respectively of 17' and 19')	
9		Inner hexagon spanners	
10	<b>Auxiliary Tools</b>	socket wrenches	
11		sharp nose pliers (8')	
12		diagonal pliers (8')	
13		slip joint pliers (8')	
14		ladder	
15		antistatic wrist strap	
16		Socket, current capacity > 15 A)	
17	<b>Instruments</b>	Multi meters	
18		Ground resistance meter	
19		Laptop	
20		Site Master (ANRITSU or Bird)	
21	<b>Others</b>	Cable ties	
22		Water-proof tape	
23		Insulating Adhesive PVC Tape	





**TEST CASES**

**IBS-TC01 Cabinet Installation**

<p><b>Objective:</b></p> <p>Verify that the cabinet installation meets the engineering requirements.</p> <p>The drawing of site layout and floor plan will be attached as reference.</p>		
<p><b>Result:</b></p> <p><input type="checkbox"/>Pass   <input type="checkbox"/>Fail   <input type="checkbox"/>Not Run</p>		
<p><b>Comment &amp; Remark:</b></p>  		
<p><b>Prerequisites</b></p> <ul style="list-style-type: none"> <li>• The cabinet is installed.</li> <li>• A level bar is kept at hand.</li> </ul>		
Procedure	Expected result	Result
1. <b>Check the installation site.</b>	The installation site meets the requirements of the engineering design.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
2. <b>Check the exterior paint of the cabinet.</b>	The exterior paint is undamaged. Each label is correct, clear, and complete.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
3. <b>Check the horizontal error and vertical error of the cabinet.</b>	The horizontal error is less than 3 mm and the vertical error is not larger than 3 mm.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
4. <b>Check all the screws, flat washers, and spring washers.</b>	All the screws are secured and the spring washers are between the flat washers and the screws.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
5. <b>Check the sanitation in and out of the cabinet.</b>	There is no dust in or out of the subrack. The outer side of the cabinet is brushed and all the labels are well attached, complete, and legible.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
6. <b>Check the front door of the cabinet.</b>	The front door open and close easily.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run



**IBS-TC02 Antenna System Installation**

<p><b>Objective:</b></p> <p>Verify that the antenna system installation meets the engineering requirements.</p> <p>The engineering parameters of antenna are as following:</p>		
<p><b>Result:</b></p> <p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>		
<p><b>Comment &amp; Remark:</b></p>		
<p><b>Prerequisites</b></p> <p>The antenna system is installed.</p>		
Procedure	Expected result	Result
1. <b>Check the feeder connections</b>	The feeders are properly connected to the antenna of the corresponding sector.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
2. <b>Check the feeders grounding</b>	The feeders are grounded at a minimum of three points from the tower top to the equipment room and a minimum of three points from the roof top to the equipment room.  The grounded parts are securely bound. They are provided waterproof treatment.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
3. <b>Check the feeder Arrangements</b>	The feeders are arranged neatly and properly.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
4. <b>Check the feeder Labels</b>	The labels are attached according to sector requirements	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
5. <b>Check the feeders clamping</b>	The installed feeder clamps are spaced evenly and oriented in the same direction.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
6. <b>Check the feeders distorting</b>	The feeders are not broken or twisted. No copper skin is exposed. No sharp bend can be found.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
7. <b>Check the grounding bar Grounding</b>	The outdoor grounding bar is connected to the underground grounding net through a reliable special route.  The indoor grounding bar is connected to the outdoor grounding bar or the near ground.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run



<p><b>8. Check the grounding bar Grounding Insulation</b></p>	<p>The grounding bar is isolated from the wall. The grounding cable is as short as possible.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>9. Check the encapsulation of the feeder window</b></p>	<p>The feeder window is properly encapsulated.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>10. Check the antenna support</b></p>	<p>The antenna support is securely installed on the tower or on the rooftop.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>11. Check the antenna mounts</b></p>	<p>The galvanization of antenna mounts is normal.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>12. Check the antenna tightening</b></p>	<p>The antenna is tightened with the antenna support reliably.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>13. Check the jumper Connectors</b></p>	<p>All the connectors of the outdoor jumpers are waterproof and encapsulated.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>14. Check the jumpers bend</b></p>	<p>The bending radius of the jumper is no less than 20 times of the diameter.  The jumpers are not broken or twisted. No copper skin is exposed.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>15. Check the jumpers on the cabling rack</b></p>	<p>The jumpers must be routed separately.</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>16. Check the space for feeder inlet of feeder window</b></p>	<p>The space are properly filled with fillers on silicon</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>17. Check the antenna installation.</b></p>	<p>The antenna installation meets the engineering requirements. For example, the installation positions, azimuth, and pitch angle of antennas.  The installation locations of the antennas are in compliance with the design document.  The antenna lies within the protection coverage of the lightning rod (a deviation of 30° downward from the top of the lightning rod).</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>



**IBS-TC03 Board Installation**

<b>Objective:</b> Verify that the installation of boards meets the engineering requirements.		
<b>Result:</b> <input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run		
<b>Comment &amp; Remark:</b>  		
<b>Prerequisites</b> <ul style="list-style-type: none"> <li>• The board installation is complete. The slots without boards are installed with dummy panels.</li> <li>• Idle ports for power cables are protected with caps.</li> </ul>		
Procedure	Expected result	Result
<b>1. Check whether the installation positions of the DDRM, DDPM, and DMCM are correct.</b>	All the concerned cards are installed properly and the sites are running well.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>2. Check whether the screws are secure</b>	The screws are in secure connection with the subrack..	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run

**IBS-TC04 Installation of Trunk Cables**

<b>Objective</b> Verify that the installation of trunk cables meets the engineering requirements.		
<b>Result:</b> <input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run		
<b>Comment &amp; Remark</b>		
<b>Prerequisites</b> None.		
Procedure	Expected result	Result
<b>1. Check the layout of trunk cables</b>	The layout meets the engineering requirements. The cables are arranged neatly for easy maintenance and future capacity expansion with no crossover and no damage on the sheath. The trunk cables are separated from the power cables.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>2. Check the cables ties.</b>	The cable ties point to one direction and are in a horizontal line.  The ends of the cable ties are cut even.  The cable ties do not overlap.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>3. Check the cables on the cabling rack</b>	The cables on the cabling rack are tied securely.  The cables are arranged neatly with even space between cable ties.  The E1 cables must be routed separately.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>4. Check the cables in the cabling trough.</b>	The cables laid in the cabling trough need not be tied. They need to be laid in and along the trough with no crossover. If needed, the cables are tied in the entrance and exits or the turning points.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>5. Check the labels.</b>	Both ends of the trunk cables are attached with engineering labels. The labels used are made by Huawei and attached 20 mm behind the plugs.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>6. Check the labeling at DDF</b>	The labels of DDF ports are marked properly.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run



**IBS-TC05 Installation of Power Cables and PGND Cables**

<b>Objective:</b> Verify that the power cables and PGND cables are properly made and arranged.		
<b>Result:</b> <input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run		
<b>Comment &amp; Remark:</b>		
<b>Prerequisites</b> None.		
Procedure	Expected result	Result
<b>1. Check the specifications of the power cables and GND cables.</b>	The PGND cables are yellow and green. The DC grounding cables are black. The –48 V power cables are blue. The cross sectional area of the PGND cables is 25 mm <sup>2</sup> . The cross sectional area of the GND and –48V cables is 16 mm <sup>2</sup> . The power cables and the GND cables are made of complete segments of cables and the sheath of the cables have no damages.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>2. Check the labels</b>	All power & grounding cables must be labeled on termination points	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>3. Check the following terminals:</b> <ul style="list-style-type: none"> <li>➤ <b>Power</b></li> <li>➤ <b>GND cables</b></li> <li>➤ <b>Wiring</b></li> <li>➤ <b>Terminals</b></li> </ul>	The lugs at both ends of the power cables and GND cables are welded or pressed tight.  The bare wire near the wiring terminals and the lugs are wrapped with insulating tapes or heat-shrink tubes.  The wiring terminals are securely installed with flat washers and spring washers and with good contact.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>4. Check the arrangement</b>	The power cables and GND cables are separate to other cables with the extra parts cut and no coil.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>5. Check whether the power cables and GND cables and their labels are intact.</b>	The power cables and GND cables are not damaged or broken, and both ends are attached with labels.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run



**IBS-TC06 Lightning Protection and Grounding**

<b>Objective:</b> Verify that the lightning protection and grounding are normal.		
<b>Result:</b> <input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run <input type="checkbox"/> Zapped		
<b>Comment &amp; Remark:</b>  		
<b>Prerequisites</b> None.		
Procedure	Expected result	Result
1. Check the lightning protection of the antennas and feeders.	The grounding of the antennas, feeders, and jumpers meets the lightning protection requirements.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
2. Check the grounding conditions.	The working ground, protection ground, and lightning protection grounding share one grounding conductor.  The grounding network of the tower, the equipment room, and the power distribution transformer (within 30 m from the equipment room) must form a uniform grounding network.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run



**IBS-TC07 DC Power Distribution**

<b>Objective:</b> Verify that the DC power distribution of the BTS3006Cc cabinet works normally.		
<b>Result:</b> <input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run		
<b>Comment &amp; Remark:</b> <ul style="list-style-type: none"> <li>The test engineers must wear an antistatic wrist strap.</li> </ul>		
<b>Prerequisites</b> <ul style="list-style-type: none"> <li>The external -48 VDC power supply system works normally.</li> </ul>		
Procedure	Expected result	Result
<b>1. Check the voltage of external -48 VDC</b>	(            )VDC Normal range: -40V DC~60V DC	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>2. Check the DC power cables of the DSEM.</b>	The OT terminals at two ends of blue power cable are separately connected to the DSEM and the NEG(-) terminal of auxiliary equipment.  The OT terminals at two ends of black power cable are separately connected to the DSEM and the RTN(+) terminal of auxiliary equipment.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>3. Check the installation of modules.</b>	The cabinet is configured with only the power module and the DMCM.  The connections of modules and backplanes are good.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>4. View the indicator on the DMCM.</b>	If the state of the RUN indicator on the DMCM changes from off to on (including the sate of flashing), the DMCM is powered on and works normally.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run





**IBS-TC08 FAN**

<b>Objective:</b> Verify that the fans run normally.		
<b>Result:</b> <input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run		
<b>Comment &amp; Remark:</b> <ul style="list-style-type: none"> <li>The test engineers must wear an antistatic wrist strap.</li> <li>Pay attention to the running status of the indicators on the DMCM and the DDRM when the BTS is being powered on or reset..</li> </ul>		
<b>Prerequisites</b> <ul style="list-style-type: none"> <li>The external –48 VDC power supply system works normally.</li> </ul>		
Procedure	Expected result	Result
<b>1. Correctly install the fan and connect the cables of the fan.</b>	The cables of the fan are led from the waterproof module at the bottom of the cabinet into the cabinet, and then the cables are connected to corresponding ports of the fan on the DDRM.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run
<b>2. Configure the DDRM of the fan, and then power on the DDRM.</b>	After the DDRM works normally for a while, the fan starts to run.	<input type="checkbox"/> Pass <input type="checkbox"/> Fail <input type="checkbox"/> Not Run



**IBS-TC09 Board Indicators**

<p><b>Objective:</b> Verify that the indicators on boards display normally when the system is running.</p>		
<p><b>Result:</b> <input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>		
<p><b>Comment &amp; Remark:</b></p> <ul style="list-style-type: none"> <li>Pay attention to the running status of the indicators on the DMCM and DDRM when the BTS is powered on or reset.</li> </ul>		
<p><b>Prerequisites</b> The BTS is working normally.</p>		
Procedure	Expected result	Result
<p><b>1. Check the indicators of DMCM</b></p>	<p>RUN: Slow flash (1 s on, 1 s off) MOD: Indicates the selection of the transmission mode( On, E1 transmission mode) ACT: ON PLL: Fast flash (0.5 s on, 0.5 s off) LIU(1-4):OFF (E1 cable is connect with the port) transmission normal</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>2. Check the indicators of DDRM</b></p>	<p>RUN: Slow flash (1 s on, 1 s off) ACT: ON ALM: OFF RF_IND: OFF</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>
<p><b>3. Check the indicators of DDPM</b></p>	<p>RUN: Slow flash (1 s on, 1 s off) ALM: OFF VSWRA: OFF VSWRB: OFF</p>	<p><input type="checkbox"/>Pass <input type="checkbox"/>Fail <input type="checkbox"/>Not Run</p>



### IBS-TC10 VSWR of the Antenna System

<p><b>Objective:</b></p> <p>Verify that the voltage standing wave ratio (VSWR) of the antenna system complies with the requirements.</p>	
<p><b>Result:</b></p> <p><input type="checkbox"/>Pass   <input type="checkbox"/>Fail   <input type="checkbox"/>Not Run</p>	
<p><b>Comment &amp; Remark:</b></p> <p>The VSWR of each feeder must be no more than 1.5</p> <p>Site master (ANRITSU or Bird) Should be used for VSWR test.</p>	
<p><b>Prerequisites</b></p> <p>The BTS operates normally.</p>	
Procedure	Expected result
<ol style="list-style-type: none"> <li>1. <b>Switch off the DDRM power of the tested cell. Disconnect the connection between the tested feeder and the BTS. Connect the feeder port with the VSWR meter.</b></li> <li>2. <b>Read the VSWR in the meter and record the test result in the Acceptance Item Selection Table.</b></li> <li>3. <b>Test the VSWR of the antenna system with the method introduced in steps 1 and 2. Recover the connection after the test.</b></li> </ol>	<p>The feeder connects well with the meter and the standing wave ratio is measurable.</p> <p>The standing wave ratio of the antenna system is not more than 1.5. If it is a moved BTS, the value should not be less than that of the BTS before moved.</p> <p>The test result is the same with that of step 2.</p>



**Antenna VSWR Test result:**

Cell	Feeder	VSWR	Result
Cell1	Cell1A		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell1B		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell1C		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell1D		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell1E		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell1F		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Cell2	Cell2A		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell2B		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell2C		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell2D		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell2E		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell2F		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
Cell3	Cell3A		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell3B		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell3C		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell3D		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell3E		<input type="checkbox"/> Pass <input type="checkbox"/> Fail
	Cell3F		<input type="checkbox"/> Pass <input type="checkbox"/> Fail



**The criteria for the RF transmit power (DDRM ANT Port):**

DDRM Type	DDRM Transmit Power(dBm)	Combine-Type	Attenuation (dB)	Lowest Limit(dBm)	Highest Limit(dBm)	Standard Value(dBm)
20W	43.0	No combining	1.0	40.0	44.0	42.0
		2-way combining	4.5	36.5	40.5	38.5
		4-way combining	8.0	33.0	37.0	35.0
30W	44.8	No combining	1.0	41.8	45.8	43.8
		2-way combining	4.5	38.3	42.3	40.3
		4-way combining	8.0	34.8	38.8	36.8
40W	46.0	No combining	1.0	43.0	47.0	45.0
		2-way combining	4.5	39.5	43.5	41.5
		4-way combining	8.0	36.0	40.0	38.0

**Transmit Power Test Result:**

TRX No.	DDRM Type	Combine Mode	Normal Range(dBm)	Measured value	Result
0	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
1	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
2	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
3	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
4	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
5	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
6	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
7	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
8	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
9	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
10	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail
11	20W	No Combining	40.0—44.0	( )dBm	<input type="checkbox"/> Pass <input type="checkbox"/> Fail

**5. Huawei & UFONE IBS Project:**

Huawei & UFONE IBS Project was started August 2007 , since than IET is providing is services in order to install the core equipment of Huawei for UFONE and additional equipment i.e. Couplers , RF Cables ,Connectors , Splitters & Antenna for the same project supplied by Shenzan GrenTech.

**5.1 Milestones:**

In the past 10 months IET has completed more than 150 Sites, The main categories of these site are as follow:

- Complete IBS solution for the single site
- Swap activity of replacing old Huawei's BTS 3002 with the new BTS 3006C and all its accessories.
- Dismantling the IBS site's equipment.

## 5.2 Prominent Sites:

For IBS Project for UFONE, IET has provided its services on most sensitive and most prominent sites in all the regions as well , the list of such sites are as follows:

- Marriot Hotel Islamabad
- Marriot Karachi
- PC Lahore
- Sarena Hotel Islamabad
- MCB building Lahore
- Ufone DHA Office Lahore
- MSC OMCR Ufone G 9/2 Islamabad
- Nawaz Sharif House Lahore
- Nadara Office Islamabad
- Reckit Benakiser Sadder Karachi
- Salleem Medical Complex Quetta
- Unilever Walls Factory 46km Lahore
- Unilever Tea Factory Khanewal
- Pace Gujranwala
- Sethi Plaza Sialkot
- Damneh Koh Islamabad

**Note: The list of the Completed Sites by IET can be provided as an excel sheet which can provide comprehensive details about the sites completed.**

## 6. Our Work

