

Mobility Solutions

Internal Customer Success Story

Solution *NNNN CPRI* for Customer *X* for Problem *Interference Hunting*

As you prepare answers to the questions below, please consider the following:

The way this win demonstrates that X is a trusted advisor to the customer – delivering on the mobility value proposition:

- 1) Monetizing the network or generating new revenue opportunities
- 2) Creating satisfaction for the end customer, helping our customers keep theirs
- 3) Reducing operational costs or improving operational processes

Customer Details

Who is the customer?

Customer name, business type, division within the company, who we dealt with (title), nature of prior relationship with the customer.

X, the wireless service arm of X is gearing up for a country-wide launch of LTE services with VoLTE. They completed a soft launch in select areas end of December 2015, and are gearing towards service turn-on around spring of 2016. They have over 125K base stations already installed and in the process of commissioning.

Critical business challenge

What were they facing or what problem were they trying to solve for which X was considered?

X plan is a pure LTE network without any CSFB, and it is critical for them to have VoLTE services available from the start.

X operations team, who is responsible of ongoing Network Operations and Optimization, face very high acute 'Uplink Interference issues', at multiple sites, in Bagdogra, Siliguri and Kurseong-Darjeeling, in North Eastern region of India, close to Nepal Border.

It was reported that more than 35-40 GBT/RTT towers, in towns of Bagdogra, Siliguri and Kurseong-Darjeeling were reporting high UL RSSI for 24 hrs in sectors pointing towards Nepal Border and interestingly, fixed PRBs (2310-2315 MHz, 2314 MHz) were reporting high RSSI among these sectors, were affected for entire day.

Due to this, X has seen 25% of the total capacity degradation in Uplink, as well as, throughput reported in Uplink was been below benchmark threshold value.

X was using Anritsu BTS Master and Spectrum Analyzer (822x series) to investigate the cause of Interference in Uplink, but they were unable to figure the root cause of problem and unable to furnish credible proof to WMO (Wireless Monitoring Organization) to take the matter to resolution.

In order to solve above issue, X Operations team invited us to investigate the problem, find out sources of Interference and provide credible proof to take up the matter further with WMO for resolution.

It was very critical exercise initiated by X Operation CTO office.

Solution Description

What is the solution that the customer purchased?

We used X785B CPRI Interference Hunting feature, along with Antenna Advisor Directional finder to investigate the issue. X has not yet purchased CellAdvisor, we are in discussion for procurement.

How does the solution work?

We used X785B with RFoCPRI Uplink Interference Hunting feature to monitor the uplink at specific sites in city of Bagdogra, Siliguri and Kurseong-Darjeeling. We monitored Uplink in sectors, pointing towards Nepal border direction, on CPRI and recorded spectrum, RSSI and Spectrogram.

At Bagdogra Airport site, which was 60m GBT tower, we monitored Sec-3, which was pointing towards Nepal Border (little away from India-Nepal International Border) was reporting very high avg RSSI in entire 20 MHz band for TD-LTE Band 40, and also reporting fixed PRB Interference (2310-2315 MHz), at Antenna height. The interference was completely absent at ground/clutter level, but could only be recorded at above clutter or Antenna height (40-60m). Another challenge was that 95% of the sites in the area were 50m and above GBT towers, making it very tough to do Interference hunting.

Traditionally, X X field team, who were using Anritsu Spectrum Analyzer, used to send field technicians to tower top up to Antenna height (50m above ground) with directional Antenna, to record Interference in Uplink. This method was very risky (as tower technician has to climb tower and follow safety instructions), time consuming, and full of errors, as tower technicians aren't fully aware of feature of Spectrum Analyzers, limiting the functionality. Moreover in places like Kurseong-Darjeeling, which are into Himalayan Mountain range, climbing 40m or 50m tower during winters was nearly impossible, so there was no-way X team could investigate the Interference in field.

We proposed and showed X785B RFoCPRI equipment, by connecting it to Uplink CPRI cables on affected sectors, and recorded clear Uplink Spectrum, RSSI and Spectrogram, which not only showed high RSSI in entire 20 MHz Channel Bandwidth, but also showed risen Noise Floor peaks for 2310-2315 MHz clearly. This was clear and credible proof X X was looking since long time.

Apart from Bagdogra Airport, we have tested the assumption @NaxalBari and @Kurseong Sites (very close to Nepal Border) and recorded similar observations on sectors pointing towards Nepal border, confirming our claims on Interference coming from far away Nepal towers, who we suspect are transmitting WiMAX in 2310-2315 MHz Band.

Also, in Sec-2 @Bagdogra Airport, we observed Radar peaks (ON-OFF Beacon) hitting @2314 MHz, confirming X Claims of fixed PRB Interference @Sec-2 of the site. We used RFoCPRI Spectrogram and RSSI feature to confirm the nature of signal and ground level Interference hunting with Antenna Advisor to confirm the claims. These Radar beacon signals, interestingly were not detected or invisible @ground level, but could only be recorded @Antenna height (50m). This was coming from Airforce Radar, closely located from GBT site.

Win Details

What was the total deal size?

We are working closely with customer to finalize the plans on procurement.

What products were purchased?

In discussion to procure X785B with RFoCPRI Interference Analysis.

What services were purchased?

Not yet, but it will need training to regional and central operations teams.

Customer Need

What were the critical issues being faced by the customer that X resolved?

Customer has seen 1/4th of its Uplink capacity, in 2305-2325 MHz (20 MHz TD-LTE Band 40), at 35-40 sites, in City of Bagdogra and Siliguri, getting affected, due to uplink Interference. Due to this, X was not in position to allocate, 25% of its Uplink capacity (PRBs) for VoLTE or even Data services.

Given that if VoLTE call allotted in affected PRBs section or data user allotted affected PRBs in Uplink, they saw reduction in Uplink throughput and call-setup-success degraded.

Behind the Win

What was involved with securing the win?

Consistent pursuit with customer and building confidence with Customer team involved over X CellAdvisor series product, especially requirement of RFoCPRI Testing.

Customer has often raised concerns over need of RFoCPRI testing, given the fact that they are using Anritsu Spectrum Analyzer, especially for In-band interference.

It took while for us to convince customer over need of CPRI based Uplink analysis, avoiding need of climbing tower, but finally customer did see the value.

What other vendors were in the running?

Anritsu BTS Master and Spectrum Analyzer.

What type of relationship, if any, did X have with the account prior to the win?

X Wireless had no deep relationship with customer, and customer did not see us any serious player in Wireless Space. However, the successful RFoCPRI trial has customer convinced about CellAdvisor and RFoCPRI, now sees us credible and serious player in Wireless space, on whom they can rely for challenging Optimization issues.

What, if anything, did X do to really provide standout service?

We demonstrated consistency and grit in our approach towards given problem and shown credible technical expertise in providing solution to X team.

Key Product Highlights Impacting Purchase Decision

What 3-5 functions does our product perform that help the customer?

1. RFoCPRI Uplink Interference Analysis with Spectrum, RSSI and Spectrogram.
2. Interference Analyzer with Antenna Advisor DF Handle
3. RFoCPRI TD-LTE Signal Analysis
4. TD-FD LTE Signal Analysis (regular mode).
5. Spectrum recording function

What are the three technical aspects they liked?

1. Uplink Spectrum Monitoring (on RFoCPRI) at BBU level (ground), without climbing the tower and accuracy of measurements.
2. TD and FD Signal Analysis on CPRI and regular mode.
3. RFoCPRI Uplink RSSI and Spectrogram.

What are the three benefits they liked?

1. Easy of using RFoCPRI and observing Antenna uplink, without climbing tower (no-risk testing) and time it saves to provide more accurate results.
2. TD-LTE Signal Analysis, especially demodulation of DL LTE PCI, which provides strength to providing clear proofs to claims.
3. Spectrogram and RSSI recording on CPRI Uplink, clearly highlight nature of Interferer.

Sealing the Deal: The X Difference

What were the measurable results that the customer achieved by using X and how will they benefit as a result?

With successful demonstration of RFoCPRI Uplink Interference hunting, X would be in position to improve the Uplink Network capacity by at least 20% (by eliminating the Interfering source through WMO), which would also help them to improve VoLTE Call Setup success rate and improve Uplink Throughput by at least 50% in TD-LTE band.

How You Can Repeat This Success

What was unique about the win that contributed to the customer's selection of X, and can this be recreated for other products/services?

We believe following are the USPs for successful demonstrations:

1. Working very closing with customer before going for field trials, gathering all relevant and important data about Site/sector, Interference statistics, nature and levels. This one-step proved very critical in devising right approach for field-testing.
2. Selection of right sites and sectors, where we thought would provide high chances of success or clear visibility into Interference or source. This selection was based on data gathered before visiting the sites.
3. Good know-how about our product X785B, especially RFoCPRI features of CellAdvisor, proved very important in building trust with customer and pursuing them to go for trial on CPRI.

What internal resources/teams can be utilized to help close the sale?

1. X785B RFoCPRI User Guide Ver 7.0

The Future

What plans does the customer have to continue utilizing X products and services?

X operations team is currently finalizing its procurement plans to procure X785B RFoCPRI equipment and product training. We will shortly come to know about it.

Are there any projects coming up that require X assistance in the form of products or services?

We are working closing with Operations team for VoLTE and Data Testing with our TrueSite Matrix product. This demo has been carried out for data successfully and VoLTE testing is due now.

Apart from this, we are working closing with X RAN CORE Planning team for 5 GHz Wi-Fi Interference testing with X785A/B Interference Analyzer and working out to demo the specific solution to them.