



Level 8 VIBGYOR Towers  
C-62, Bandra Kurla Complex  
Bandra (East)  
Mumbai – 400 051  
Tel: +91 22 40907040  
Fax: +91 22 40907070  
info@quintelsolutions.com  
www.quintelsolutions.com

**QTL/2011/SS/02/01**  
**Date: 10<sup>th</sup> Feb. 2011**

**Telecom Regulatory Authority of India**

Mahanagar Door Sanchar Bhawan (Next to Zakir Hussain College)  
Jawaharlal Nehru Marg (Old Minto Road), New Delhi-110002

**Kind Attn: Mr. Lav Gupta**  
**Principal Advisor (Technology Development)**

**Subject: Consultation Paper on issues related to Telecommunication Infrastructure Policy**

Dear Sir,

Quintel shared antenna solutions is a new concept in antenna technology. These antennas are designed to support multiple RF carriers per operator and multiple operators through one antenna per sector. We have deployed this technology globally with major operators including Vodafone, AT&T, Hutchinson 3, Telefonica and MetroPCS.

India has to move to the next level in defining telecom infrastructure sharing. Antenna sharing can be one step in defining this, in addition to passive site elements. Since an antenna can be considered a passive element, antenna sharing can be included as part of passive infrastructure sharing with IP- I license provider, who can own the antenna & share it with various operators.

Now a days towers are becoming bottlenecks in network roll out as all operators are demanding for high population density sites due to this large number of antennas on a tower are creating problems like overloading, unsafe towers, EMF radiations and making it more complicated.

With antenna sharing, the existing site can be used by more operators. This will help in consolidation of antennas & reducing them at sites plus save more towers coming up in dense population's areas. It will also help in rural roll out by beginning capex & opex saving.

The benefits will also be more shared energy with more operators thus saving more diesel fuel, while benefitting the environment with reduced carbon emissions.

We are enclosing more details on Quintel shared antenna solutions.

We look forward to work jointly with TRAI in creating efficient value in telecom sector.

**Best Regards,**

**Sharad Sharma**

Quintel Technology Ltd.  
Level 6, JMD Regent Square  
Mehrauli Gurgaon Road,  
Gurgaon -122001

Tel: +91 124 471 1932  
Fax: +91 124 471 2001

Mobile: +91 98719 39888  
<http://www.quintelsolutions.com>



**Response to Q. No. 23 and 24 in TRAI Consultation paper on “Issues related to Telecommunications Infrastructure Policy” (14<sup>th</sup> January 2011).**

We welcome and approve of TRAI’s wishes to canvass industry stakeholder opinions and views regarding issues related to telecommunications infrastructure policy in India. Quintel is also delighted to have the opportunity to brief TRAI of our unique technology which will help introduce tower companies (IP-1’s) to launch antenna sharing services on CDMA, GSM and UMTS without burdening existing tower infrastructure operator. We hope TRAI finds that our technology can help speed up roll-out of new technologies and spectrum, whilst being responsible to tower loading and emerging zoning requirements.

**Quintel – Corporate Overview**

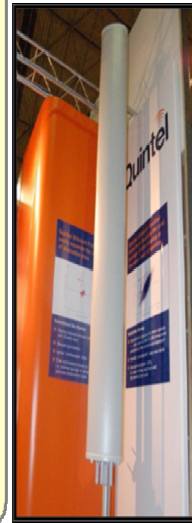
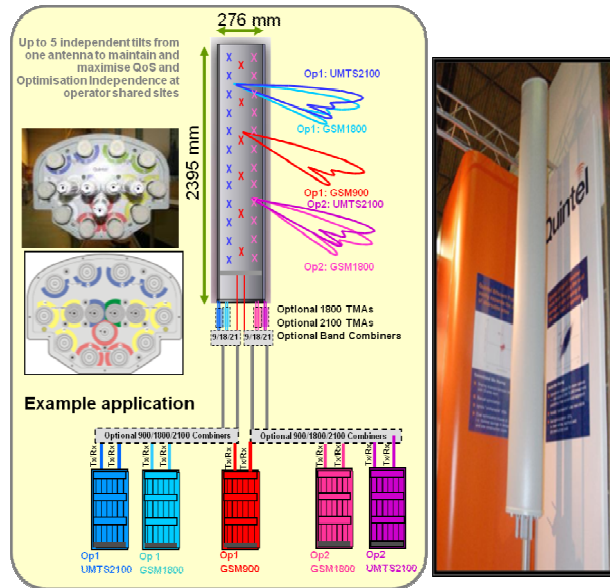
Quintel is a leading innovator in the design, development, and delivery of network-efficient antenna solutions for wireless operators worldwide. Our products and services break the bottleneck of network capacity to optimize wireless infrastructure, delivering maximum network performance at minimum cost and environmental impact. Quintel enables the most services on a single antenna, each with independent control, so operators can quickly deploy new services, share sites or consolidate networks. Quintel has deployed shared antenna products globally with operators that include Vodafone, Airtel, Vodafone India, AT&T, Telefonica, Hutchinson 3, Austria Mobilkom and MetroPCS.

Quintel is changing the way global operators view wireless infrastructure. Our innovative solutions are delivering measurable business results for operators who want to maximize coverage and quality of service (QoS), while minimizing environmental impact and costs. Operators deploying Quintel solutions are on the path to saving up to 40% of their annual expenses.

Behind our breakthrough technology, innovative solutions and successful deployments is a team of highly experienced wireless industry professionals committed to transforming the business of wireless communications.

Our core technologies originated in the United Kingdom’s Ministry of Defense, and is now deployed throughout the world. Our heritage extends from a world class research institute, QinetiQ PLC, which has produced hundreds of major innovations. Quintel currently has claims to over 150 patents in over 20 countries and is backed by Cody Gate Ventures. Quintel is headquartered in Mountain View, California and Oxford, UK with additional offices throughout North America, Europe and India.

Quintel has established Indian operations based out of Delhi and Mumbai. Quintel offers base station antenna solutions which allow multiple independently controlled beams from a single, conventionally sized, passive panel antenna platform. Our technology allows for example multiple operators to share the same antenna, yet provide each operator the ability to tilt-optimize their own coverage footprints and frequency planning, thus reducing the required number of sites and freeing up valuable tower space on existing sites, in particular at load limited and zoning limited tower and rooftop sites. We have been engaged with trials with a number of Indian operators, and Indian Tower Companies with our initial Indian 10-port antenna (delivering 5x services as 1x800/900 + 2x1800 + 2x2100 independent services) ahead of the 3G spectrum auctions. The image below depicts a schematic and photographs of our 10-port product for the Indian market.



### Q. 23 Should Sharing of mobile towers be mandated?

Our Opinion: Sharing of mobile towers should not be mandated. However, active and passive sharing should be allowed so that the telecommunications ecosystem including operators, tower companies and technology vendors can bring efficiencies to the market improving customer service and quality.

### Q.24 Should sharing of active infrastructure, created by themselves or infrastructure providers, be allowed?

Our Opinion: Yes, it should be allowed. As Quintel provides shared antenna systems, it shall help bring in the following advantages:

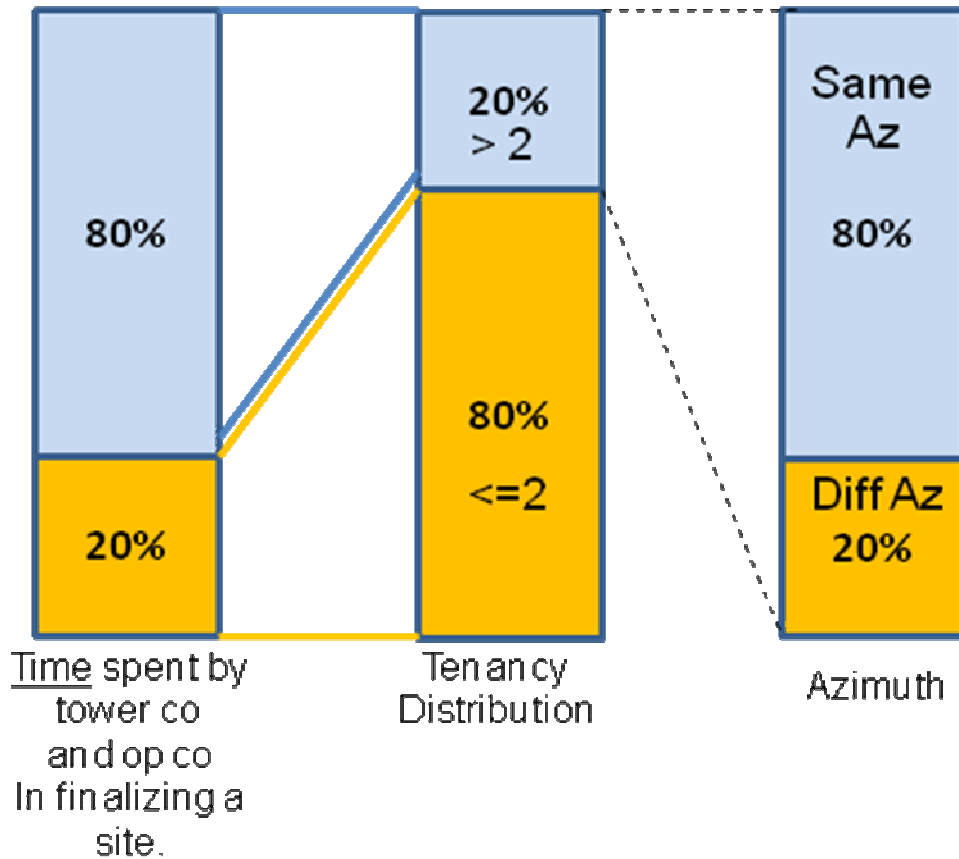
1. Increase in tenancy of existing towers will reduce the requirement of new towers. Hence resulting in a better skyline.
2. EMF reduction due to increase in average height of antennas and fewer sites required to cover the same area.
3. Reduced investment w.r.t new towers for IP-1's and GSM/UMTS/CDMA antenna's for service providers.
4. Fewer antenna's despite increased tenancy (P.S. Attachment -1 below)
5. Safe tower structures due to reduced wind load, hence defers the need for tower strengthening. (P.S. Attachment – 1 below)
6. Better coverage and capacity with reduced number of antennas. (P.S. Attachment -1 below)
7. Increased tenancy of towers allows the investment on renewable energy to be spread across more number of service providers sharing the tower.
8. Makes space for future technologies such as LTE/BWA/4G
9. 40% reduction in Diesel consumption due to optimal deployment of Air-Conditioning equipment.
10. Saves precious time lost in finalizing sites for roll-out.
11. Free up precious time of regulators to focus on core issues.

Quintel would appreciate the opportunity to engage direction with TRAI on this important opportunity for the people of India. We look forward to engaging with Indian operators, trade associations and TRAI, as necessary to help make active infrastructure sharing a reality in India.

ATTACHMENT -1

In our opinion IP-1's should be allowed to import and install active infrastructure and share the same across various service providers. Quintel offers its 10 port shared antenna system for the same.

In our experience in India so far we have observed that GSM antennas on 80% of sites with tenancy  $\geq 2$  have same azimuth but different heights. The difference in height is mainly due to lack of available space at the desired height. Secondly, 80% of the roll-out time is spent on 20% of the sites where tenancy is 2 and above.

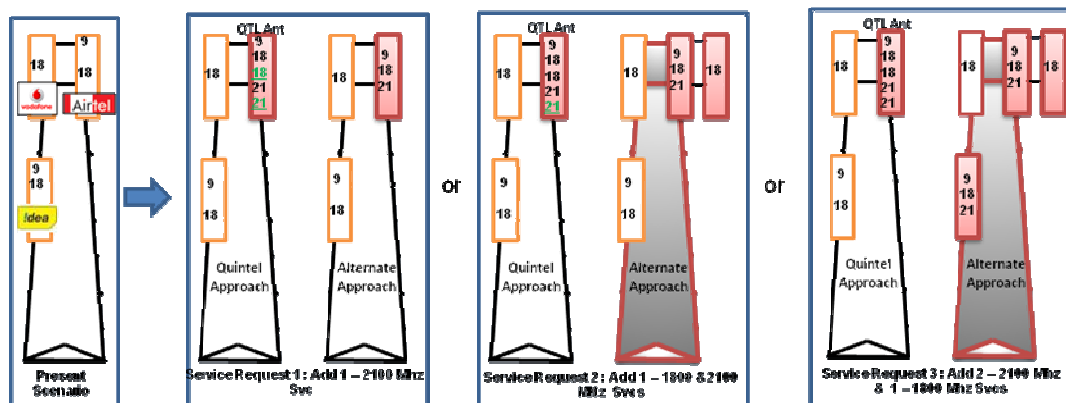


Let us take an example to demonstrate a few benefits mentioned earlier.

Shared Antenna Solution Assumptions:

- Sites have 3 tenants: (NOTE: Same for 2 tenant sites if no single band 1800 op co present)  
Case: Dual Band (900&1800) op co's – 2 nos. ; Single band (1800) op co – 1 Nos
  - 1 nos. each Single band and dual band at same height and same azimuth
  - 1 nos. dual band at different height and same azimuth
- Antenna's for each of the above are as follows:
  - Dual band (900 & 1800) - 4 port
  - Single band (1800) - 2 port
- Numerals 9,18,21 indicate 900 MHz, 1800 MHz, 2100 MHz respectively
- "Service" means request for 2 ports of specified band (i.e., 2 ports of 1800 is 1x1800)
- Comparisons made against standard single band (2 port), dual band (4 port) and tri band (6 port)
- Quintel antenna has similar form factor and loading to dual band and tri-band antennas
- 3G services to be rolled out either by swapping existing M/W with IP capable radios or using fiber network
- Although word tenant is used for 2100 MHz, there is no operator looking to host only 2100
- Frequency bands underlined in **GREEN** indicate free ports for those bands. Ex. **18/21**.
- Antenna's shaded in **PINK** indicate new purchases
- Tower shaded in **BLACK** indicates cost to be incurred towards tower upgrade
- Letter s in **BLACK** within the box indicate ports utilized in a particular band

### Shared Antenna Solution



	Service Request 1: Add 1 – 2100 Mhz Svc		Service Request 2: Add 1 – 1800 & 2100 Mhz Svc		Service Request 3: Add 2 – 2100 Mhz & 1 – 1800 Mhz Svc	
New Request for :	1 x 2100		1 x 2100 and 1 x 1800		2 x 2100 and 1 x 1800	
Added/Changed Antennas :	1	1	1	2	1	3
Total Antennas on Tower :	3	3	3	4	3	4
Wind Surface of GSM Antenna (sq. m.):	4.602	5.088	4.602	5.802	4.602	6.288
Tower Strengthening Required :	No	No	No	Yes	No	Yes