



## Buet trio's maiden attempt

### Develops first tetra band microstrip patch antenna

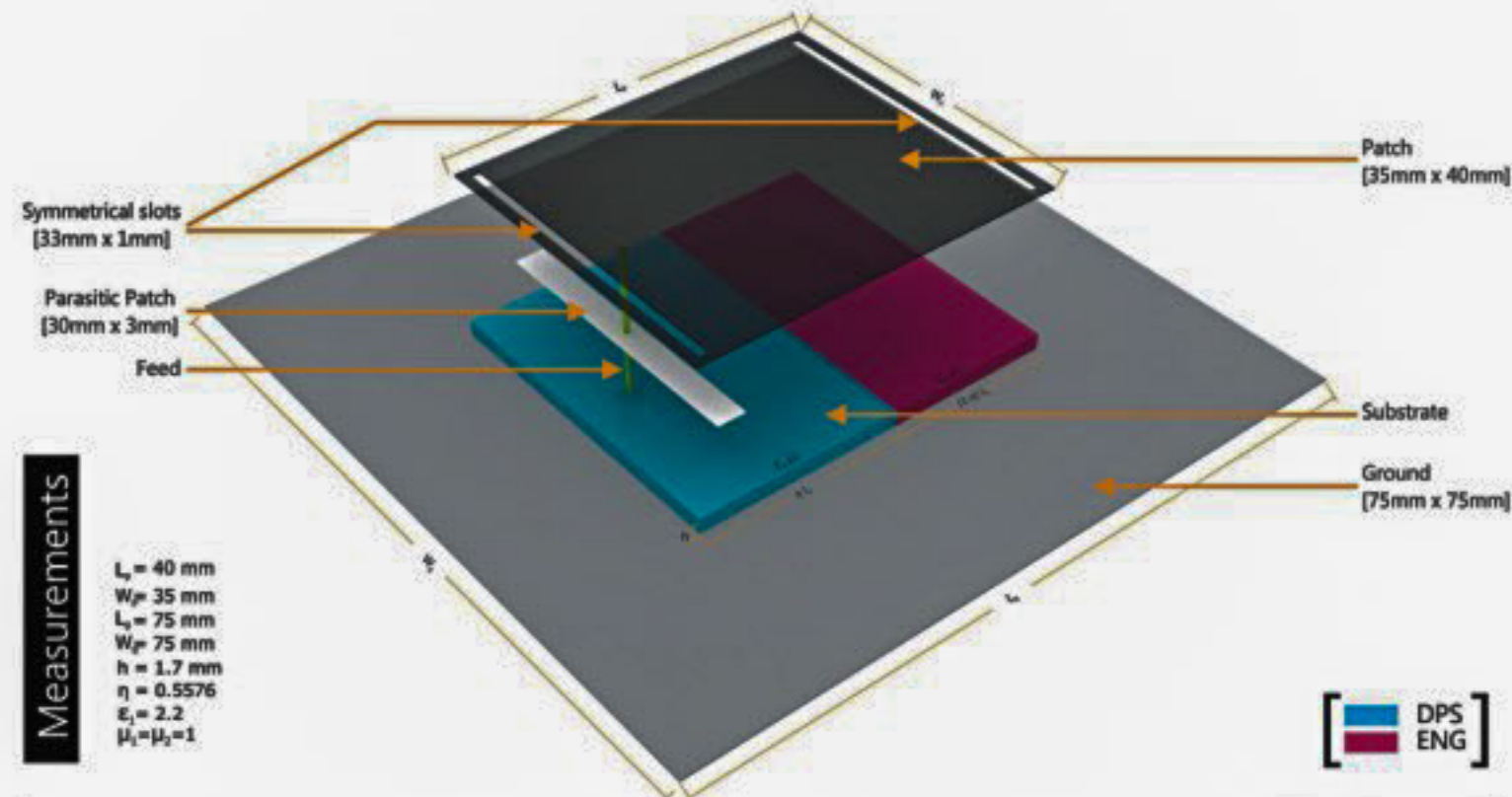
FAUZIA SULTANA

We all know the ancient history of the Battle of Marathon where Pheidippides, the messenger who ran from the battle field of Marathon to Athens to announce the defeat of the Persians in the battle. In today's world of Wi-Fi and cell phones, where communication needs no running feet, this historic anecdote surely sounds like a fib.

Be it the television or internet, communication all over the globe is made fast at the speed of light! But to watch the BBC news here on your TV, at the same time as it is broadcasted in London, special devices are required which help convey the radio waves or rather information through space.

Antennas are required by any radio receiver or transmitter in order to couple its electrical connection to the electromagnetic field. Cell phone base stations, televisions, mobile phones, military communication stations all require this device to convey signals for communication.

So far dual band antennas have been in use that operates at different bands, and efforts are being made by researchers all over the globe to reduce the antenna size. Aware of the current status of the work in progress, Mahdy, Zuboraj and Noman, graduates from the Department of Electrical and Electronics Engineering, Buet (Bangladesh University of Engineering and Technology), developed the first ever tetra band microstrip patch antenna. Their work started as a departmental thesis project



Exploded view of tetra band rectangular microstrip patch antenna loaded with metamaterials (above) and the Buet trio (left)

and little did they know then that their research on 'Novel Theory and Design Procedure of Multiband Rectangular Patch Antennas Loaded with Metamaterial' would turn into a work of appreciation. "For years, researchers in the US and all over the world could not make progress in size reduction of antennas," said the three. Reduction in antenna size was initially a project supported by the US Air Force Office of Scientific Research (AFOSR). Two research teams made attempts to solve the project, separately, but eventually failed. "We chose this particular topic because it was difficult to believe that something wouldn't just work. Of course we received negative responses, because the

project clearly stated that it was a failure," says the three. The trio started their speculation by changing the material of construction. They considered metamaterial, an artificially engineered material with properties that may not be found in nature, as a parameter. While Mahdy formulated the mathematical model required for the construction of the smaller metamaterialised antenna, Zuboraj and Noman gave the model a realistic shape through computer simulations--the outcome of which is the world's first ever tetra band microstrip patch antenna, that is smaller in size and is metamaterialised. In addition to a size reduction of 55 percent, their antenna is three

times more efficient compared to the dual band antennas in use. Most importantly, their research has led to the development of the first ever tetra band patch antenna in the world. "Generally, we use dual band antennas for all purposes that receive or transmit two signals simultaneously. However to operate four signals simultaneously, two individual antennas are required. But using the mathematical model and the simulations that we developed it is possible to construct a single antenna that is smaller in size and capable of dealing with four signals of different frequencies, simultaneously," they shared.

The research work of the three has been published in international journals and IEEE (Institute of Electrical and Electronics Engineers) Antennas and Wireless Propagation Letters. Recently, EuCAP 2011, the top-ranking international Conference on Antennas and Propagation held in Italy, published a conference paper on their research.

Regarding the future of their invention the trio said, "The tetra band antenna can be used for Wi-Fi systems, mobile phones, security surveillance, spacecrafts or even satellites. We believe our invention can contribute significantly to the defence academy of Bangladesh."

Undoubtedly, the achievement of this talented trio is the affirmation that hard work and sincere effort surely bring out the best at the end.

For more information read the next issue of Star Campus on Sunday.

## SAMSUNG GALAXY S II Smarter, powerful & bold

IT, TELECOM PREVIEW

Just another Galaxy model from Samsung, that's what we honestly thought when we first heard about the Galaxy S II. But in reality when we had the chance to experience it for a few days, it blew our minds away.

Samsung's Galaxy S II is expected to hit the Bangladeshi market this week and the early taste of the phone hits all the high notes, making the handset Samsung's most advanced and successful smartphone to date.

The latest member in the Galaxy series has a dual-core processor, a large 4.3-inch Super AMOLED Plus display, an 8-megapixel rear-facing camera and a 2-megapixel front-facing camera.

It runs on the latest Android OS, version 2.3.3 Gingerbread.

Samsung's custom TouchWiz 4.0 interface adds some extra visual perks and three new hubs for gaming, e-reading and music resources.

It also has 4G support in HSPA+, which makes an already top-shelf device. Overall, the Galaxy S II is a comprehensive piece of mobile machinery.

The Galaxy S II is slimmer and squarer than its predecessors and comes on strong with a glossy black surface and large touch screen with textured back cover.

It's a big phone at 4.9 inches tall by 2.6 inches wide, but also very lean, just 0.3 inch thick. Light for its size, the Galaxy S II weighs only 4 ounces and feels just right in your hands.

The first thing you notice when you

power up the device is the magnificent display, which takes mobile display into a whole new level, 4.27-inch display with Samsung's proprietary Super AMOLED Plus touch screen has a WVGA 480x800-pixel resolution and support for 16 million colors. It makes photos more realistic and videos more captivating.

The Plus technology adds 50 percent more subpixels (each pixel is further broken into subpixels) resulting in noticeably smoother, sharper, more vibrant, and more colorful text and images. Videos

play back beautifully, especially when the high-quality (HQ) setting on sites like YouTube is turned on. The screen is blazingly bright even when in the lower-power automatic mode.

The motion tilt zooming of photos and websites make the browsing and viewing experience handier.

As with the Droid Charge, which also features the Plus version of the screen, the Galaxy S II's Super AMOLED Plus screen is less washed out in direct sunlight than other models.

The Galaxy S II can become a portable hot spot for up to eight devices. In some global markets, it will come equipped with NFC (Near Field Communication).

E-mail, maps, voice navigation, search, chat, Latitude and YouTube, plus basic tools like a calendar, a calculator, an alarm clock, a world clock, a stopwatch, and a timer comes with the S II not to mention the social hub, which gets all your notifications in one place. There's also voice search and a gaming hub.

Overall the phone is simply awesome and we have nothing else to say but 'Go grab it'.



## Nokia brings dual SIM phones

### Introduces new business phone E6 with Symbian Anna

IT, TELECOM DESK

Nokia has recently introduced two new Dual SIM handsets- Nokia X1-01 and Nokia C2-00 in Bangladesh, says a press release.

"The Nokia X1-01 and Nokia C2-00 boast more memory, extended battery life and far richer SIM swapping experience and entertainment features than other Dual SIM products currently in the market," said Abu Daud Khan, country manager, Nokia Emerging Asia,

He also said that with the vision and campaign of 'Connecting the next billion', announced this year, Nokia aims to connect the next billion of people who are yet to own a mobile handset.

With the Nokia X1-01 each SIM card can have its own logo, music signature or ringtone personalisation features. Nokia says the phone also offers what is simply the best Dual SIM music experience in the market. With up to 16GB of memory support, the phone also features dedicated



music side keys and a battery which lasts for up to 36 hours of continued music playback.

The Nokia C2-00 is the first to Dual SIM phone to have Easy Swap, which offers you the convenience of changing SIM cards without the need to turn off the phone or remove the battery. Just open the SIM door at the side of the phone and swap your SIMs.

With 32 GB of memory, the Nokia C2-00 lets you keep thousands of photos, videos and music files with you all the time.

In addition to their various unique features, both the phones remember settings for up to five separate SIM cards.

Nokia also launched E6, its latest from E series, in the local market.

The QWERTY and touch business smartphone E6 runs on latest Symbian Anna software. One of the unique features of this phone is the touch and type option, which makes it distinctive.

The E6 has a pricetag of Tk 30,500.

## Exploring the treasure trove

### Champs21 re-launches the website

RAKIBUL HASAN

Except for a chosen few, most of the students are known to dread facing the exams and longer hours of study. As nowadays students are more interested in chatting on social networking sites or playing online games rather than going through the agonies of memorising a number of tedious textbooks, the internet has often been accused of distracting students from their studies.

However, with its collection of enormous academic resources, internet can become a treasure trove to acquire knowledge if explored by the students.

Though the concept of e-learning is still quite new for many students in Bangladesh, the idea is gradually earning popularity with the advent of Champs21.com, the first ever e-learning web portal exclusively designed for the Bangladeshi students.

After successfully organising the first ever inter-school online quiz competition in Bangladesh, 'Brain Brats 2011', Champs21 has recently re-launched its website with a number of new and exciting features through which students can make learning a fun experience.

In the new Champs21 website students of class 3 to 10 from both Bengali and English medium schools will get to build up their science and math skills through a number of tests, quizzes, puzzles and study lessons with explanations.

The science and math tests are designed according to the school syllabus so that a student can relate to them very easily and can outsmart his



or her friends in class while having fun. Besides lessons from the textbooks, Champs21 has also introduced many other exciting features for the young students such as math games, stories, comic serials and online encyclopaedia which will help the students to become true champions.

With a view to making people aware about the benefits of e-learning, Champs21 volunteers have visited a number of schools within Dhaka city where the students as well as their teachers and parents could get new insights about the role of internet in education. Here students became familiar with all the attractive features of Champs21.

ASUS, the famous multinational computer products manufacturer and Intel the leading microchip developer in Bangladesh have also got involved with the awareness programme aiming to change the education scenario in Bangladesh by

introducing students with the benefits of internet based education.

Commenting on the functions and objectives of the awareness programme, Russell T Ahmed the CEO of Champs21 said, "We are trying to introduce students to the fantastic world of e-learning by communicating with them directly. To clarify the process of e-learning we are presenting live audio-visual demonstrations in schools so that students can get a first hand idea about how can they explore the internet for study purpose. We are getting overwhelming response from the students. We are also collecting their feedbacks to know about the expectations of these young learners so that we can enrich our website accordingly."

To make learning more engaging and interactive the unique e-learning web portal has created an online community of young learners where they can share their ideas and improve their knowledge.

**TECHPHOTO**

### RoboDance

Dancer Matt Del Rosario from Pilobolus performs a scene from "SERAPH" along with robots created in partnership with the engineers, programmers, and pilots of the MIT Computer Science and Artificial Intelligence Laboratory during a dress rehearsal at the Joyce Theater in New York. The work explores the relationship between human and machine in a pastoral fable involving a solo performer and two flying robots.

PHOTO: AFP

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