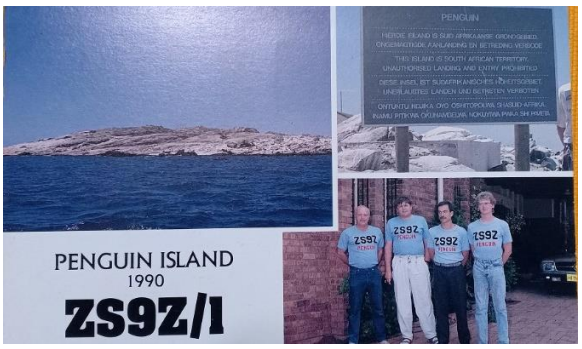
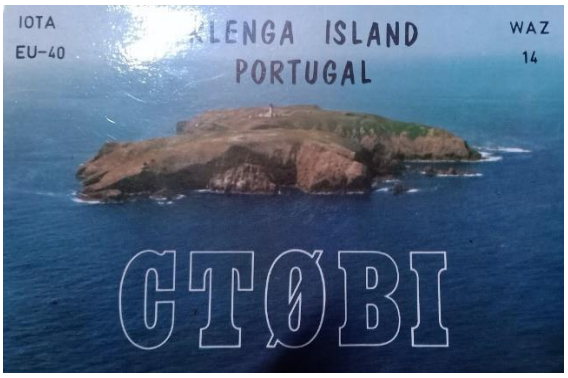
Ham RADIO News

Newsletter of the Amateur Radio Society of India (Indian Affiliate of IARU)

July 2021 Issue

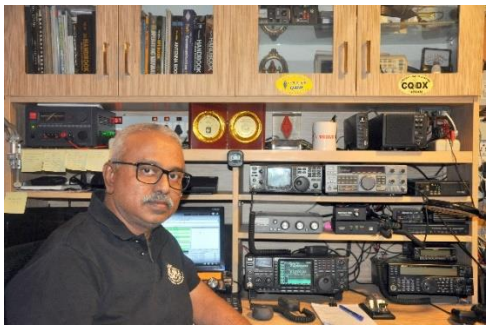




IOTA QSL cards – from VU2TS collection

CONTENTS

President's message



Wait for Better Times!

For the first time in 68 years, **Hamvention**, the largest Amateur Radio show in the world, which is generally held on the third weekend of May every year, was cancelled in 2020 due to the COVID-19 pandemic. Second year in a row, due to setbacks in the world's recovery from the pandemic, the event was called-off this year too. Hamvention was set to take place on May 21 - 23 in Xenia, Ohio.

The 45th Amateur Radio International exhibition, **Ham Radio Friedrichshafen** as is normally called, again was a virtual event for a second year in a row concluded on the 27 June 2021. Ham Radio Friedrichshafen is usually set for the last weekend of June, and is held in Friedrichshafen, a city on the shore of Lake Constance in southern Germany.

World Radiosport Team Championship (WRTC) is an on-site ham radio competition held every four years. Previous WRTCs were held in Seattle (1990), San Francisco (1996), Slovenia (2000), Finland (2002), Brazil (2006), Russia (2010), Boston (2014), and Germany (2018). Next WRTC was planned to be conducted in Italy in the year 2022, but has been postponed to 2023 by the WRTC Organizing Committee.

JARL Ham Fair is taking place on 2 & 3 October 2021. It will be the **44th JARL HAM Fair** this year and the theme is **"Jump out to the new era and bring new breath for Amateur Radio, Youngsters!!"**

JARL Ham Fair is a trade show held in Tokyo, held usually in the month of October. The JARL Ham Fair-2020 was cancelled due to COVID-19.

HamfestIndia, which is the largest annual Amateur Radio event in India, was planned to take place on 21 - 22 November 2020, at the scenic town of Vagamon, Kerala and was called off because of COVID-19. HamfestIndia draws Radio Amateurs and SWL from all parts of India and the neighbouring countries. This year it is scheduled for November 2021 in the City of Palaces in South India - **Mysore**.

Indeed the present seems to have come to a standstill. But then, there's a tomorrow that is waiting for us all, a future looking at us from not a very great distance. So let us keep holding on to our forts and keep our fingers crossed for things to return to normalcy soon.

73, de Ramesh Kumar, VU2LU

From the Editor's desk

IARU recently held a workshop on "The Future of Ham Radio". Though it was held by IARU Region-I, it applies to amateur radio worldwide, so I have included the information in this issue.

Band conditions continue to be generally poor with low solar activity. So far this year, the Sun has been blank for a total of 46 days.

The pandemic seems to be easing but we need to continue the safety precautions for some more time. The 2021 HAMFEST planned to be held in November has been postponed.

73, de Ganesh VU2TS

Centenary Celebrations of Amateur Radio in India &

Hamfest India 2021, Mysuru

The global pandemic situation put a brake on the preparations and conduct of the Annual Amateur Radio get-together that was scheduled to be held during 2020 in Kerala. The HFI 2020 organizing committee gave up their option to postpone the event to 2021 and a call was given to select the host for the event in 2021. A deadline was set for sending in the nomination to host HFI 2021.

This being the 100th year of Amateur Radio in India – with available records showing the first licence to an Indian issued in the year 1921 – it was a prestigious occasion to be the host city for the Hamfest India. The occasion to celebrate 100 years of Amateur Radio and to host the Hamfest for the third time – the first two being as far back as in 1994 and 1999 – was something the hams connected to Mysuru could not let go.

It turned out that only two cities – Coimbatore/Pollachi and Mysuru were in the run. The selection was put to vote among the delegates who had fully paid registrations for the HFI 2020. The voting was in favour of Mysuru to host the 2021 event. VU2JIM on behalf of the HFI 2020 organizing committee made the official announcement.

The Amateur Radio operators in Mysuru immediately got into action – with OM Shanks (VU2SPK) as the General Convenor - planning for the event. Programme details, stall areas, sponsors, events, etc. were all discussed and a plan was put in place. A contest for an appropriate logo for the event was announced which evoked a lot of keen interest. This included entries from Amateur Radio operators & SWLs (which included XYLs & harmonics). A total of 18 designs from 11 entries were received. OM Madhu (VU2MUD) co-ordinated the Logo contest. The organizing committee voted democratically – the logos were shared to the group without disclosing the identity of the entrant. The Logo designed by SWL Abhishek (harmonic of VU3JIM), Bengaluru was an almost unanimous selection.

It was also decided to have a special callsign for the promotion of the event and OM Madhu (VU2MUD) applied for and received the special callsign AU2HFI (www.qrz.com/db/au2hfi). This was effective from 1st April, 2021 and was planned to be kept active until the culmination of the Hamfest India 2021 in November. He was active on HF & VHF and has made around 600 QSOs – mainly on CW on the HF bands and on the local VHF nets.

The website was also ready to be launched when the 2nd wave of the pandemic hit the nation throwing all plans to the winds. The uncertainty of the situation – delays in vaccination coverage, anticipated 3rd wave, continued travel restriction guidelines, under the roof assemblies, etc., the organizing committee waited until the end of June 2021 to finally decide on the postponement of the event to 2022. However, they have continued to prepare for the Centenary Celebrations of Amateur Radio in India around the same dates as decided for the Hamfest India 2021.

Preparations are in full swing to conduct the Centenary Celebrations in a grand way with an online event. Some interesting and informative sessions are being planned. **A personalized, very attractive & unique memento to commemorate the landmark year has been planned.** This memento is sure to demand a place of pride in every radio enthusiast's shack.

The Organizing committee of HFI2021 is deeply indebted to the fraternity for having reposed faith in the team and giving them the honour of organizing the events in Mysuru and anticipate the continued support for the revised schedule of Commemorative Centenary Celebrations in 2021 and the rescheduled Hamfest India 2022.

QRP Day 2021

Greeting to all from Amateur Radio Society of India, member Society of the International Amateur Radio Union - Region 3

The interest in QRP activities is everlasting in the amateur radio community worldwide. QRP radio communications demonstrates a high skill and knowledge level of radio amateurs, and offers advantages concerning, among others, through the reduction of man-made interference or QRM on the amateur bands.

At the 10th IARU Region-3 Conference held in September 1997 in Beijing a resolution was passed to recommend the following:

"That Region 3 Societies help to promote the IARU objectives for QRP operation, specifically:

- to promote the IARU objectives for QRP operation:
- to support QRP operation on June 17 each year;
- to foster QRP activities by their members;
- to encourage regular publication of QRP articles in their national magazines;
- to provide QRP sections in any national contests; and to assist other Societies with the promotion and development of QRP.

Ramesh Kumar VU2LU President, ARSI

The 'Future of Amateur Radio' workshop

On June 12 the **IARU Region 1** Workshop on the Future of Amateur Radio continued with a session addressing Strengths, Weaknesses, Opportunities and Threats.

IARU Region 1 and its Member Societies continued the Workshop addressing the Future of Amateur Radio. Member Societies prepared SWOT analysis (including Strengths, Weaknesses, Opportunities, Threats) on amateur radio.

To get a significant outcome, many asked their members for extensive input. These results were shared in the meeting, showing that, over the Region, there are many common issues but also differences, dependent on the particular environment in which the society operates and its geographical location. To understand the differences on a more detailed level, South Africa (SARL), Serbia (SRS), Tunisia (ARAT) and Spain (URE) shared their findings in a more

extensive-manner.

In the afternoon, the session continued in break-out groups leading to interactive discussions, refining the outcome of the morning presentations. With this valuable information, a good foundation has been laid for the upcoming sessions including the final Workshop in October later-this-year.

The slide showing the Strengths, Weakness, Opportunities and Threats identified from the survey held by the RSGB and other member societies can be seen at

https://www.iaru-r1.org/2021/workshop-future-of-amateur-radio-continues-with-a-session-addressing-strengths-weaknesses-opportunities-and-threats/

BARC is back with a BANG !!!!!!

After having successfully conducted a workshop for **VU-SDR** wherein 15 SDR kits were assembled and tested on the air in a weekend, the Bangalore Amateur Radio Club - BARC Team was always on the lookout for interesting products which could find worthy space in a ham shack.

OM Sreedhar, VU3GLS, Treasurer of BARC was busy running thoughts over in his mind about a project which was worthy of its members. After great deal of thought, he finalised upon the **Triband QRP Transciever** uSDX - based on the design of OM Guido PE1NNZ - and improved By OM Barb WB2CBA.

A quick announcement on the *WhatsApp* group resulted in overwhelming response with over 50 fellow hams showing interest in the group build project In spite of the challenges being faced due to Covid pandemic and resulting shortage of components, Sreedhar and the In-house Rig Doctor Ganesh/ VU3VTK managed to put together all the components, assemble, test and certify the 50 kits fit to be ON AIR within short span of two months. Group build helped to source the components at attractive prices, and keep the cost of the project as low as Rs2600/= for a fully assembled and tested kit.

What better occasion than the **World QRP Day** to commemorate the completion of the project? OM Ramesh Kumar VU2LU, President ARSI was kind enough to preside over the function dedicating this project to Indian Hams and released the first batch of the 'Little Genius'

rigs and was also the proud recipient of the first Rig. In an impromptu response to this launch, OM Ganesh VU2TS took up a special CW QRP net on 40 meters the same evening when quite a few proud owners of these rigs came on air and exchanged reports.

BARC acknowledges the creators of this kit OM Guido PE1NNZ, Barb WB2CBA and also thanks VU2POP, VU3GDP and others for testing out the prototypes, giving feedback and technical inputs.

73, Sreedhar VU3GLS
Treasurer BARC

Radio Museum Making a wave

An article in the *New Indian Express* reports: A radio set shaped like a globe, a 1955-made model that retailed for Rs.9,000 back then, or a Crown Talking Machine, which was made in 1907... Here's your chance to see these and 100 other unique radio sets, of which 80 per cent are in working condition, at the newly-opened Short Wave Radio Museum and Knowledge Centre. The museum, located in Basaveshwar Nagar, in Bengaluru, is the brainchild of 56-year-old Uday Kalburgi, whose love for radio began way back when he was 9 or 10 years old.

"I've listened to them since childhood and now, I want to showcase this bygone technology to today's younger generation," says the telecom engineer, who has dedicated an entire floor of a four-story building (a space of 600-800 sq ft) to his museum.

Each radio set carries a short note with its name, country of origin and description. Started on Feb. 13 (World Radio Day), the museum has already seen 16-17 genuine visitors, who share a keen ear for these vintage pieces.

For Kalburgi, what started with merely listening to radio eventually led to collecting different sets, repairing them and now, restoring them too. The lockdown played a role too, with the radio-lover getting many calls and requests for radio restoration, some even from Gujarat and

Mizoram. “One person wanted an old set repaired for his father’s birthday,” says Kalburgi, who started collecting sets after TVs became a mainstay in the ’80s.

While neatly lined on shelves in the museum today but back then, these sets took up different nooks and crannies of Kalburgi’s home. “My family used to tell me I might pick up some bad luck also associated with these old sets but for me, the passion and joy I felt was greater,” he says

Kalburgi’s love for radios seems to have been noticed by the universe too. “I have a connection with radios, either I go in search of them or they find me,” he says. Case in point: A Philips BX 998A radio weighing 27 kg, which he acquired through someone in Mumbai. “The radio belonged to the man’s father-in-law and he was ready to sell it for `12,000. When I consulted my mentor and fellow radio restorer, Pandu Rajan, he told me to not think twice. On eBay, the same model retails for 2,000 euro!” exclaims Kalburgi. Many sets come with stories like this, including the Pilot G 744, which was gifted by Padmanabha Varma of the Travancore Royal Family, after Kalburgi restored it for him.

While this may be a passion project, it is one that he takes seriously, especially when it comes to restoring radios to almost the same state they were in when they were produced. Kalburgi is an active member of Radiomuseum.org, or as he jokes says, “A forum with other mad men like me”, where one can find a repository of information about radios and spare parts. “I usually get 2-3 replies within 30 minutes of putting up a post. The beauty of the internet is such that it helps maintain this technology of a bygone era.”

Uday Kalburgi, Radio collection Kalburgi, IND, Salvador de L (radiomuseum.org)

The great geomagnetic storm of May 1921

Hundred years ago - on May 15, 1921, the biggest geomagnetic storm – *commonly referred to as a* ***solar storm*** - of the 20th century hit Earth. Around 02:00Z that Sunday morning a telegraph exchange in Sweden burst into flames. Across the Atlantic, the same thing was going on in New York. Flames engulfed the switchboard at the Brewster station of the Central New England Railroad and quickly spread to destroy the whole building. Telephone lines burnt out in New Brunswick. Voltages on telegraph lines spiked as high as 1,000 Volts. Believe it or not, AURORAS (commonly known as Northern Lights) were sighted by ships at sea, over the equator!

The outburst occurred towards the end of solar cycle 15. Sunspot numbers were low but suddehly one big sunspot appeared (sunspot # 1842) in mid May and triggerred off several huge coronal mass ejections that were unknown to scientists of the period. Solar storms affect the daytime hemisphere of the Earth.

Around the world, magnetometers went off scale, almost everything electrical stopped working. Earth's magnetic field was battered - and when magnetic field changes suddenly, electricity flows through all conductors in the area due to magnetic induction. Telegraph offices were set on fire.

What are the effects if such a solar storm occurred today?

It would totally black-out regional power grids, disable GPS and knock off all exposed satellites in orbit. Air travellers will be exposed to dangerous levels of radiation. Losing GPS would be the worst of the problems. Mobile phone networks depend on GPS to sync their towers. There are a hundred systems that depend on GPS these days - such as high speed financial market transactions including ATMs, TV and Radio, Weather reporting, seismographs - you name it. All electronic clocks and watches will stop working. In short, we will be back in the 19th century! Scary, if you ask me!

Scientists say such storms occur once 50 or 60 years - so we are overdue.

Suggested further reading: https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2019SW002195

WOODEN SATELLITES? YOU MUST BE JOKING!

No, it's no joke. This was pioneered by the Japanese. Kyoto University jointly with a forestry company are developing what they hope will be the world's first satellites made out of wood - by 2023. The partnership has begun experimenting with different types of wood in extreme environments on Earth.

Space junk is becoming an increasing problem as more satellites are launched into the atmosphere. According to the researchers, wooden satellites would burn up without releasing harmful substances into the atmosphere or raining debris on the ground when they plunge back to Earth.

Wooden satellites would burn up without releasing harmful substances into the atmosphere or raining debris on the ground when they plunge back to Earth.

Meanwhile, a company in Finland – *Arctic Astronautics* is launching the world's first **wooden satellite** into space by the end of this year. The satellite, **WISA Woodsat**, is a cube-sat made up of birch plywood and has sensors developed by the European Space Agency. The move is aimed to test if wood as a material can survive the vacuum, cold, heat and radiation in space.

The wood used in the satellite has been vacuum-dried to lose the humidity that can cause trouble in space. The non-wood parts outside the wooden satellite are a metal selfie stick and corner aluminium rails for the purpose of its deployment in space. Nine small solar cells will power the satellite, which will orbit at an altitude of 500 – 550 kilometers

The satellite will be launched from New Zealand on a rocket **Electron** -developed by Rocket Lab, an American aerospace manufacturer. There have been successful pre-flight testing of WISA Woodsat in orbit as high as 500-600 kilometres.

ESA is deploying a suite of sensors such as a pressure sensor, which will identify the local pressure in onboard cavities, and a contamination monitoring tool that will measure any sensitive deposits happening on either the circuit board or the wooden body of the satellite.

Read the full ARRL story at [Wooden Satellite to Launch by Year's End (arrl.org)]

***Woodsat** has attracted attention from corporations and media around the world and elicited cooperation from the European Space Agency.*

Arctic Astronautics, which normally focuses on tiny educational satellite kits for schools, builds Woodsat. A Finnish company, UPM Plywood, provides high-quality wood for the craft and covers the launch cost.

Woodsat also offers a unique chance to transmit messages around the globe only by bouncing a radio signal off the satellite.

To use that feature, members of the public must have what is known as a LoRa-capable amateur radio operating at a 70-centimeter wavelength. **LoRa** (short for long range) is a spread spectrum modulation technique derived from chirp spread spectrum (CSS) technology. Semtech's **LoRa** devices and wireless radio frequency technology is a long range, low power wireless platform that is the de facto wireless platform of Internet of Things (IoT).

The WoodSat team have applied for IARU satellite frequency coordination

http://www.amsatuk.me.uk/iaru/formal_detail.php?serialnum=805

News from Pune, Maharashtra

Pune's Maharashtra Education Society launches WebSDR

The *Hindustan Times* reports radio amateur **Vilas Rabde VU2VPR** has created a Web-based Software Defined Radio (WebSDR) for school students

The newspaper says:

In a unique initiative city-based MES Sou Vimlabai Garware High School, Junior College, which is run by the Maharashtra Education Society (MES), Pune, has launched a web radio to make learning more interesting and fun for school students.

The web radio “MES Subodhvani” was launched on Republic Day (January 26).

“It is an android app and web-based radio, free to air and will be broadcast three days in a week on Tuesday, Thursday and Saturday from 7am to 8am,” said Anandi Patil, chairperson, Vimlabai Garware High School, Junior College committee.

“The programmes that have been planned are mostly infotainment and based on science and education, where educational concepts will be explained using interesting stories and simplified for students from Class 5 to 10,” said Patil.

Asha Wadekar, history teacher at MES Sou Vimlabai Garware High School, Junior College, along with five other teachers will be responsible for creating content for the web radio.

The idea was initiated before Covid-19 when one of their alumni Vilas Rabde VU2VPR, an electronic engineer and ham radio operator and radio enthusiast, thought of creating a web-based radio for school children.

Read the full story at

https://www.hindustantimes.com/cities/others/punes-maharashtra-education-society-launches-web-radio-101611763496755.html

17th MAY - WORLD TELECOM DAY

Pune Hams celebrated World Telecom day on YouTube Live on Monday 17th May 2021 in association with IETE Pune.

International theme for 2021 is “ Accelerating Digital Transformation in challenging times”

Shri Vineet Mathur, ex-Deputy Director General (T E R M) Deptt. Of Telecommunications, Ministry of Communications & IT - Pune spoke on **"Telecom – an enabler for equitable and sustainable growth"**. The 40 min presentation followed by Q&A was streamed on YouTube live for the benefit of Engineering Students, staff and SWLs.

Tech Talk on Sunday, June 06 on "RADIO SCOUTING" by OM Gopi Shetty, VU2JGA

Radio Scouting is a unique combination of amateur radio with the Scouting programme. Scouts study radio communication and electronics among other things and can earn a number of Radio Scouting-related badges like the Communicator Activity Badge which is the badge containing an amateur radio component. It also helps Scouts to learn Radio Direction Finding Techniques.

73, Vilas Rabde VU2VPR

Sickness that sticks!

By Kiran VU2XE

I am giggling as I start writing this article. As major Covid19's second wave pass by, I was one of numerous people who got sick this time. After probably 5-6 weeks of recovery, I could not resist myself but to write about what dominated my mind during Covid days. Ham radio as a hobby for me is a lifelong sickness I thought.

During CQ WPX CW contest which happened in last week of May, I was at a place which was not thought to be a ham operation site for me at all. Long absence from radio, idle time and tinkering from couple of friends prompted me to do some operation. Within a week, I could gather basic equipment required for the contest with help for ham friends. I knew it is going to be minimalistic time to be spent. And it was fun on 20m for whatever little time spent on air to gather 100+ Qs with somewhat vertically oriented wire on apartment roof. Now, contest

experience is not what I wanted to share here. It is about intriguing part of contest antenna setup.

Few years ago, during CQWW I had great time with homebrewed vertical for 40 meters and piling up hundreds of DX Qs with that simple looking antenna. But same antenna was not performing great for regional Qs and net check-ins when tried. My interest on vertical antennas goes back to VU4KV DXpedition where our team had erected several vertical dipole arrays, phased arrays etc. We had observed vast difference between two element Hex beam at around 24-30 feet inland vs vertical dipole array (again two element halfwaves, but vertically oriented) on the water's edge. Then, subsequently at many small operations I have experienced the awe of seawater facing verticals.

Out of numerous antennas hams use to get on air, vertical seems to be one of most straightforward to me at first sight. But,… they also turn out to be most complex ones as I try to understand them better. For those who want to stick it and work it, it gives some joy for sure. But crunching best benefit out of it(or any other antenna) definitely requires next level of understanding. At my Bangalore QTH, I had used two elevated radials beneath 33ft tall vertical on my terrace. We had a good success with elevated radials at my previous low band portable operation outing. But similar one was not performing at my native QTH above Mangalore Tile roof. So, I shall share my practical experience on exactly worked/failed for me. This mileage varies as per terrain, immediate ground, surroundings etc.

1. Goal – is your goal to have nice QSO within 1000 Km or so? Or to have DX?

    a. When you have goal, it is easier to choose what antenna to use. Easy to put dipoles at lower than ½ wavelength high or inverted Vee or sloping wires are right for local/regional contacts. DX stations will no longer form QRM to you HI HI!. The main radiation lobe will mostly be over 25 Degrees above horizon. Sometimes, when you hear DX stations with such setup, it is because high angle multi hop signals.
    b. When your focus is DX, then low angle radiation and antennas that produce such signals will dominate the domain. Dipole above ½ wavelength high, yagis, quads or verticals might be of choice.

2. Space – City dwellers often don't have space to spread 40m dipole legs fully across the property. Or due to some restrictions they will not be able to spread horizontally. In such cases inverted Vee with center support is the better choice for regional QSO and they have no other go than vertical for DX. Some form of loading the antenna either with coils, capacitance hat and combination of these is another way to reduce the size. Reduction of size often introduces some loss in efficiency, but hey.., when it is the only way one can get on air, it works way better than cribbing! When space is not constraint and if one can spend little more, yagis are other better choice.

3. Location – This shall be of much interest for portable operators as they have flexibility of setup. However, again where they operate, and goals matters for them as well. For example, if one goes to hilltop location for HF field day, dipoles hung over tall trees near edge of the hills can be extreme DX performer. Antennas such as End Fed Half Wave dipoles, provide many probable orientations to perform both DX as well as local coverage. If location is next to salt-water, probably there is no better option than gang of verticals for very low angle DX signals.

4. Know your antenna and station well – This matters if you want to change something at your location or you go to some other location to operate with your antenna setup. For

example: we built set of resonant vertical antenna radials for 40m which worked great at one of the river edge location. But same antenna when erected over my Mangalore tiles roof, it did not behave well. Why?. Many reasons, distance from the roof became uneven to the radial field, nearby metallic and building structures detuned the wires every now and then. Ensuring a good separation of 4ft or more above roof became critical for operation. Antenna analyzer showing R, X components along with SWR is must if one is serious about antenna setup. Small little tweaks such as folding back wires or height adjustment of radials or placing right amount of choking on coax etc can bring drastic benefits.

5. Wrong choice – Actually there is no such thing as wrong choice. The antenna and setup one can afford and put up is the best choice for the moment. However, when I think about some station setup I carried out on beach or hill top field days, I feel, there is always a better way. I learnt that hard way. For example, if I pay for a location for a limited contest or field day, experimenting there with antennas or filters/switches is great waste of time. Rather I should be having fun in group and on air. In my last year's beach side single person operation, I ventured into designing and putting triband vertical dipole array, 40m parasitic array etc. Which consumed numerous hours prior to contest. Such experimentation, cutting/tuning wires etc could have been done over few weekends near home QTH rather than at remote place. Lesson was learnt – "Go out for experiencing the thrill than for experimenting!" Rather, when experiment is small part of well oiled primary setup, one shall enjoy better.

6. Bite only what you can digest! – In last few years, I have done many attempts in portable setup. Homebrewed multiple transmission line and antenna related utilities thinking of serious contesting. Stubs, switching networks, filters, multiplexers, chokes etc. but ultimately when comes to practice, I found that unless there is larger group operation these projects only added to my knowledge improvement. We all in the hobby for some or other aspect which bring joy to us. I experience joy with every QSO I make on air whenever I activate the station.

   Ultimately, I come to realization that how complex it can be to make a simple antenna that works for the moment. And that is exactly what I did in CQ WPX CW this year. My setup was a loaned 20m dipole wire one leg hung out from terrace and other leg lying on aluminum sloping sheet roof with ugly choke (coax wound). With telegraph straight key and speed no more than 15WPM, barefoot in a congested contest band. I rewound back to days when I had first received my license 25 years ago 0020 and relaxed!

VU2XE Kiran

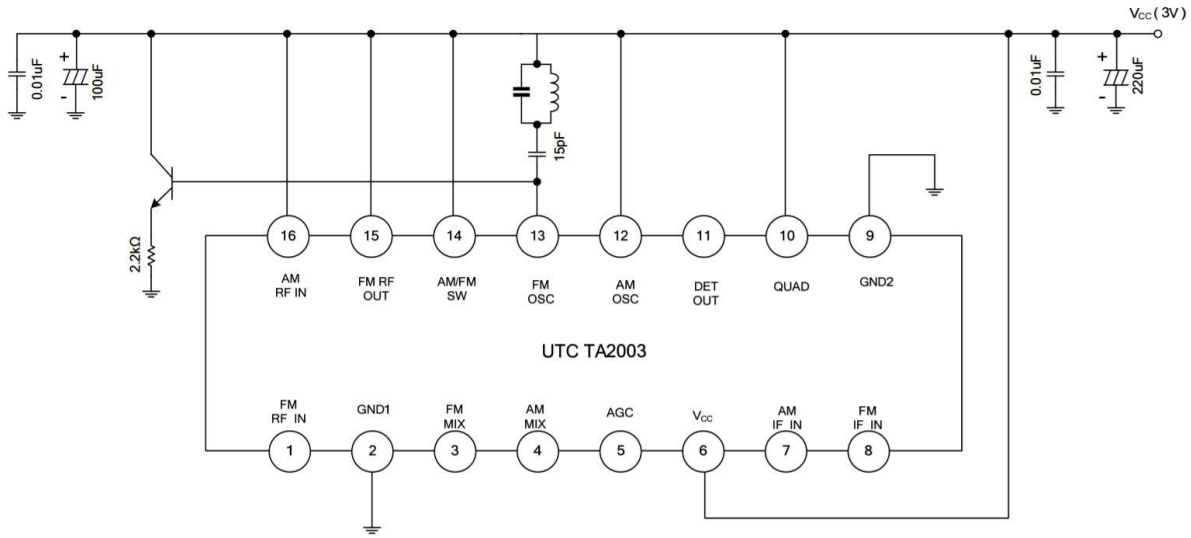
A Crystal Oscillator with TA2003

by Daniel Romila VE7LCG

TA2003, in its various name versions (CD2003 and others) is a cheap AM/FM radio integrated circuit. It works power supplied from 1.8V up to 7V. In its through the holes package it has 16 pins.

I tried several times to use it for something, for ham radio purposes, and also for commercial radio projects. It was always a disappointment; it works, but it does not work well for anything. So I got a bunch of TA2003 and close to nothing to do with them.

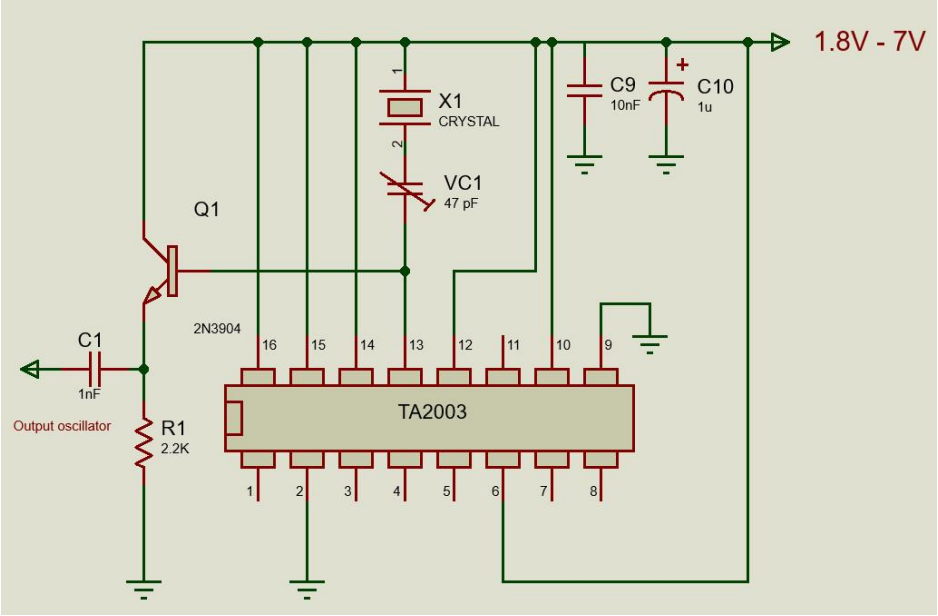
The datasheet shows a FM oscillator test schematics:



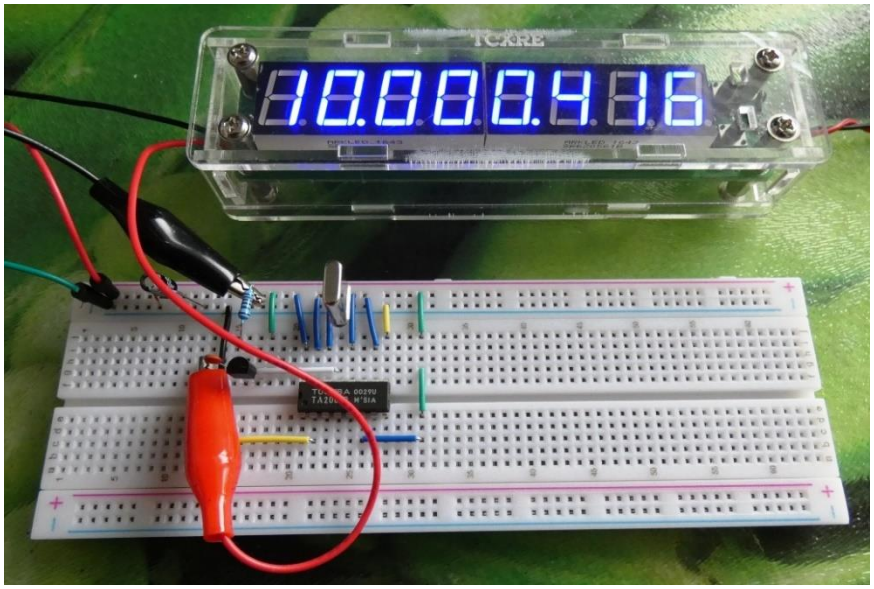
A bipolar transistor was put in the schematics as repeater for the oscillator, otherwise the probe of the oscilloscope, when connected to the 13 pin of the integrated circuit, will take it out of oscillation. The signal is probed from the emiter of the transistor used as repeater, instead of taking it directly from the pin 13. And indeed, the internal oscillator of TA2003 is very easy to be taken out of oscillation.

The good part of the story is that the oscillator LC circuit is connected to the IC with a capacitor of 15 pF in series, so no DC is necessary to be connected to the 13 pin. That means a quartz crystal can be connected to TA2003.

I verified with crystals between 10 MHz and 32 Mhz, and it works. I was not able to make it oscillate with 8 MHz crystals. I intentionally make it on the breadboard, too, where the parasite capacitance between adjacent lines (6 pF) might eventually take out of oscillation TA2003.



I obtained solid oscillation on the breadboard, too. For test purposes the crystal can be connected between the pin 13 of IC and GND or +Vdd, without the series adjustable capacitor.



The fact the integrated circuit can be used completely separately for the FM part, with crystal stabilized oscillator instead of VFO, opens the door for using TA2003 as a second conversion, intermediary frequency amplification and FM detection for a ham radio or commercial FM receiver.

73, Daniel VE7LCG

OFFICE BEARERS

PRESIDENT
Ramesh Kumar K G VU2LU
Care of Linux Learning Centre Pvt. Ltd.
635, 6th Main, Hanumanthanagar
Bengaluru KA 560019
e-mail: president@arsi.info

VICE PRESIDENT
Saravana G VU2ETS
364. 6th Cross / Kamakshi Hospital Road
Kuvempunagar, Mysuru KA 570009
e-mail : vicepresident@arsi.info

SECRETARY
Govind Girimaji VU2GGM
36, Sneha Colony
Chikkallasandra, Bengaluru KA 560061
e-mail: secretary@arsi.info

TREASURER
Krishna Kumar R VU3UNO
466, 19th Main / 36th Cross
4-T Block Jayanagar
Bengaluru KA 560041
e-mail: treasurer@arsi.info

EDITOR
Ganesh T S VU2TS
Watapi, B R Hills
Karnataka KA 561441
e-mail: editor@arsi.info

QSL MANAGER
Ramesh Kumar K G VU2LU
Care of Linux Learning Centre Pvt. Ltd.
635, 6th Main, Hanumanthanagar
Bengaluru KA 560019
e-mail: qslburo@arsi.info

Monitoring Systems Co-Ordinator
Sanil M.Deep VU3SIO
"Daylight" 23/1862, Kannanchery Road,
Kozhikode KE 673003

Contests and Awards Manager
Prakash (Kash) Srinivas VU2IBI
"Vauhini" 61, 11th Cross Indiranagar,
Bengaluru, KA 560038

The address of the Society to which all correspondence is to be mailed:
Ramesh Kumar K G VU2LU
Care of Linux Learning Centre Pvt. Ltd.
635, 6th Main, Hanumanthanagar
Bengaluru KA 560019