Ragchew

"The Voice of Branch 68"

October 2016

The North Canterbury Amateur Radio Club Inc.
PO Box 14, Woodend 7641

www.ncarcinc.weebly.com

Meetings are held at the Woodend Youth Centre, unless otherwise advised.

QTH

CLUB CALENDAR

Meetings start at 1930hrs, unless otherwise stated.

Host for October- ZL3GM
October 13 General Meeting - **"SDR Update" by Simon ZL4PLM**

Branch 01 Ashburton
October 10 General Meeting - **Jim ZL3ND is Host**

Branch 05 Christchurch
October 5 General Meeting - **"Terrestrial Trunked Radio (TETRA)" by Paul Isaacs**
20 Day meeting **(1300hrs)**

Branch 56 Christchurch West
October 12 Free & Easy **(1330hrs)**
25 General Meeting

CARDS
October 19 General Meeting

Nets and Frequencies

Canterbury 2M SSB Net 144.200MHz every Tuesday from 2000hrs (vertical polarisation)

Canterbury 6M Net 3850 6M Repeater Thursdays from 2000hrs (vertical polarisation)

Canterbury Area Net 5625 Repeater, 2000hrs on Sundays

National Broadcast last Sunday of the month at 2000hrs on 3.900MHz, National System, 6975 and 705 Repeaters

Secretary: *Colin Rowe ZL3COL* ***Phone*** *03 313 2303* ***Email:*** *colingr@xtra.co.nz*
Editor: *Tony Buckland ZL3HAM* ***Phone*** *03 312 5352* ***Email:*** *zl3ham@scorch.co.nz*

President's Report

I think I mentioned in an earlier report that I had been fortunate in being invited to participate in the VK9NZ DXpedition to Norfolk Island. The first group left this morning and I will be joining them in a weeks' time on the 2nd October, right in the middle of the Oceania DX contest.
Be sure to follow our exploits on https://vk9nz.wordpress.com/

And if you have HF capability have a look at the Oceania contest, it is the one contest when all the "big guns" are pointing our way. For more info: http://www.oceaniadxcontest.com/.

On a more local note we have a couple of interesting speakers coming up in the next 2-3 months, so check them out further in this issue.

WestFest, held in Murchison was again a great success, plenty of variety in the speakers, good weather and it is always good to catch with fellow hams from other parts of the country. Do try to get along to either EastFest which will be held in Ashburton next year or WestFest in 2018.

Do remember to use that radio.

Off to do some packing now.

73 Don ZL3DMC

AREC Report

Forest Rural Fire: (AREC supplied Comms / Logistics to Forestry Fire Teams).

Sun. 28/8/16. Two Forestry units called to a rubbish fire threatening a shelter belt within the fire boundary of Ashley Forest.

Fri. 2/9/16. One Forestry unit called to a tractor on fire within Fire Boundary of Mt. Thomas Forest, but were stood down on arrival as fire already extinguished by first responding NZFS unit.

Geoff ZL3QR, Dep. S/L.

Repeater Reports

Mt. Noble 6975

Trucking along still with a good signal. When the antenna shifts in the wind it changes the signal dramatically down at my house.

Mike ZL3AKZ

Mt. Grey 675

The repeater is working well with no known issues.

Geoff ZL3QR

Software Defined Radio (SDR) - Explained

The software defined radio, SDR, sometimes called a software radio has been the aim of many radio developments for a number of years. The roots of software defined radios can be traced back to the days when software was first used within radios and radio technology.

The basic concept of the SDR software radio is that the radio can be totally configured or defined by the software so that a common platform can be used across a number of areas and the software used to change the configuration of the radio for the function required at a given time. There is also the possibility that it can then be reconfigured as upgrades to standards arrive, or if it is required to meet another role, or if the scope of its operation is changed.

Software defined radio definition
Although it may sound a trivial exercise, creating a definition for the software defined radio is not as simple as it seems. It is also necessary to produce a robust definition for many reasons including regulatory applications, standards issues, and for enabling the SDR technology to move forwards more quickly.

Many definitions have appeared that might cover a definition for a software defined radio, SDR. The SDR Forum themselves have defined the two main types of radio containing software in the following fashion:

- ***Software Controlled Radio:*** Radio in which some or all of the physical layer functions are Software Controlled. In other words this type of radio only uses software to provide control of the various functions that are fixed within the radio.
- ***Software Defined Radio:*** Radio in which some or all of the physical layer functions are Software Defined. In other words, the software is used to determine the specification of the radio and what it does. If the software within the radio is changed, its performance and function may change.

Another definition that seems to encompass the essence of the Software Defined radio, SDR is that it has a generic hardware platform on which software runs to provide functions including modulation and demodulation, filtering (including bandwidth changes), and other functions such as frequency selection and if required frequency hopping. By reconfiguring of changing the software, then the performance of the radio is changed.

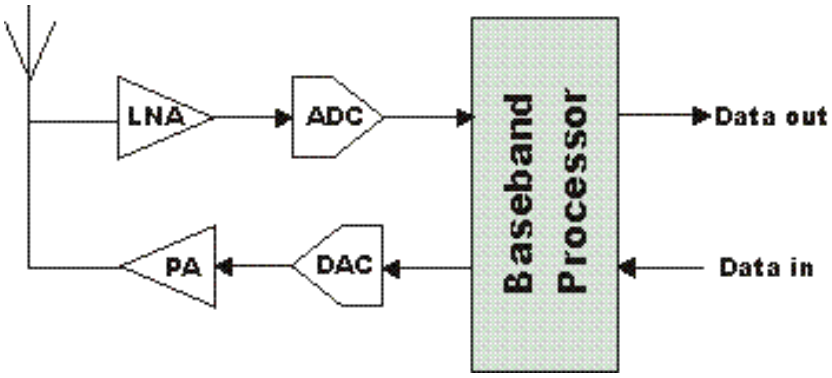
To achieve this the software defined radio technology uses software modules that run on a generic hardware platform consisting of digital signal processing (DSP) processors as well as general purpose processors to implement the radio functions to transmit and receive signals.

In an ideal world the signal at the final frequency and at the correct level would emanate, and similarly for reception, the signal from the antenna would be directly converted to digits and all the processing be undertaken under software control. In this way there are no limitations introduced by the hardware. To achieve this, the Digital to Analogue conversion for transmission would need to have a relatively high power, dependent upon the application and it would also need to have very low noise for receive. As a result full software definition is not normally possible.

Levels of SDR
It is not always feasible or practicable to develop a radio that incorporates all the features of a fully software defined radio. Some radios may only support a number of features associated with SDRs, whereas others may be fully software defined. In order to give a broad appreciation of the level at which a radio may sit, the SDR Forum (now called the Wireless Innovation Forum, WINNF) has defined a number of tiers. These tiers can be explained in terms of what is configurable.

- ***Tier 0:*** A non-configurable hardware radio, i.e. one that cannot be changed by software.
- ***Tier 1:*** A software controlled radio where limited functions are controllable. These may be power levels, interconnections, etc. but not mode or frequency.
- ***Tier 2:*** In this tier of software defined radio there is significant proportion of the radio is software configurable. Often the term software controlled radio, SCR may be used. There is software control of parameters including frequency, modulation and waveform generation / detection, wide/narrow band operation, security, etc. The RF front end still remains hardware based and non-reconfigurable.

- ***Tier 3:*** The ideal software radio or ISR where the boundary between configurable and non-configurable elements exists very close to the antenna, and the "front end" is configurable. It could be said to have full programmability.



- **Block diagram of an 'Ideal' Software Defined Radio**

- ***Tier 4:*** The ultimate software radio or USR is a stage further on from the Ideal Software Radio, ISR. Not only does this form of software defined radio have full programmability, but it is also able to support a broad range of functions and frequencies at the same time. With many electronic items such as cellphones having many different radios and standards a software definable multifunction phone would fall into this category.

Although these SDR tiers are not binding in any way, they give a way of broadly summarising the different levels of software defined radios that may exist.

NB. For further information see http://www.radio-electronics.com/info/rf-technology-design/sdr/software-defined-radios-tutorial.php

September Meeting

Last month Michael ZL3AX stepped in at very short notice and spoke on the construction of an Omega HF Transceiver. Michael re-commenced construction and now has nearly completed the project after an interval of 28 years. We had the opportunity to inspect the transceiver at close quarters, an example of very fine craftsmanship. Thanks Michael.

This month Simon ZL4PLM will give us an update on Software Defined Radio and present his Flex 6500 & Maestro, we look forward to that.

October Happy Birthday's

Colin ZL3COL
Ian ZL3CE

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CALENDAR for 2016

General Meeting - *Second Thursday at 1930 (7.30pm)*

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
-									13	11	8

Committee Meeting - *Fourth Thursday at 1930 (7.30pm)*

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
									27	25	-

Branch 68 Marketplace

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