MARL

Magazine by MARL

For Maltese and Gozitan Radio Amateurs

Number 4

October 2005

Smoking is Prohibited

at the Centre

***

From the Editur

Friends,
I hope that you have found the first three editions of this magazine useful. The answers that I had up to now were positive and encouraging.

You should know that I had the occasion to clarify things with the Wireless Telegraphy Office about foreign radio amateurs who come to Malta.

Everyone knows that now many countries allow radio amateurs who go there for a holiday to use their prefix followed by his/her callsign.

The question that I had to clarify was whether foreign radio amateurs can come to Malta and use 9H1/ or 9H3/ their callsign.

The answer from the Wireless Telegrapgy Office was NO.

This means that whoever does this will be operating illegally, and there is no doubt that they will be subject to legal action against them according to law.

Every foreign radio amateur who comes to Malta must have a licence issued by the Wireless Telegraphy Office after paying the prescribed fee[1], which licence is valid for three months.

They can apply for the licence before coming to Malta by sending a copy of their licence together with the application form that can be downloaded from the webpage of the Wireless Telegraphy Office together with the fee.

They can also go personally to the Wireless Telegraphy Office and present the necessary documents, pay and be issued with a licence with a 9H3 prefix.

Here we should look at another problem that is being created when foreign radio amateurs acquire a 9H3 callsign, work a lot of stations, and leave Malta.

MARL receives hundreds of QSL cards addressed to them, because the majority do not give their home callsign when they are communicating so that the cards would be sent there

This means that instead of the cards being sent to them in their country they are sent here and will not be delivered to them.

This is leading to a lot of QSL cards at MARL that cannot be delivered and whoever is sending them most probably will remain without a card.

Apart from this, if they do not pay their cards will not be delivered to their address, because MARL cannot pay for them, more so when Maltese radio amateurs pay for each card that they send from the MARL bureau.

MARL also cannot send the cards back to the sender because this would mean unnecessary expenses from MARL members' funds.

We are therefore bringing to the attention of foreign radio amateurs that they should ask for the home callsign when they contact a radio amateur with a 9H3 prefix so that they can send their card there.

This means that whoever sends a card will be sure that it is delivered to whom it is sent and there will be no cards at MARL which could not be delivered.

Lawrence
9H1AV / 9H9MHR

[1] Lm5.00 (Five Malta Liri)

Good News

7Mhz

Today we have good news for all Maltese and Gozitan radio amateurs.

After communicating with the Wireless Telegraphy Office on behalf of MARL on 12 September, it was confirmed that the 7Mhz band was extended and that Maltese and Gozitan radio amateurs can now communicate between 7Mhz and 7.2Mhz. This has also been communicated to the Secretary.

Although there are still broadcast stations between 7.1Mhz and 7.2Mhz they are not there all the time. If you try during the day or after midnight you will find clear spots where there is no interference from broadcast stations.

It is now possible that Maltese and Gozitan radio amateurs can communicate with radio amateurs in regions 2 and 3 and with other radio amateurs in region 1 directly on frequencies up to 7.2Mhz.

According to the same communication that I had with the Wireless Teleghraphy Branch, the changes will be reflected in the National Frequency Plan that will be published in the near future.

After succeeding in acquiring this extension, everyone should start using frequencies between 7.1Mhz and 7.2Mhz especially on SSB and AM. I have already had contacts between 7.1Mhz and 7.2Mhz, while this is a very good frequency especially for local contacts during the day.

136 khz

We have not as yet succeeded in acquiring this frequency, but we are still working just the same to be granted permission to use it.

500 khz

We have also not as yet succeeded in acquiring it, but like 136khz we are still working to be able to use it.

5Mhz

Like other frequencies, we are still trying to acquire it. Rest assured that as soon as we have something we will annmounce it forthwith.

70Mhz

Regarding 70Mhz I've had contacts with the Wireless Telegraphy Office to see whether we can work cross-band by listening on this frequency and transmitting on another frequency.

This is because for certain reasons I had to clarify the position so that everyone would know where he stands.

From the communications which I've had with this Office it is crystal clear that this cannot be done.

Therefore, such contacts are illegal and not only they cannot be made, but they also cannot be considered as having been made for any reason whatsoever.

However, we are working to succeed in also acquiring this frequency which is used by a number of European countries and also in Africa and Asia where it can be used by radio amateurs.

We hope to have more good news to give you in the near future.

However, it is good to remind you that the more members we have the more we could speak for you and on your behalf. It is therefore in everyones' interest that whoever has fallen in arrears updates his membership.

See you at MARL Centre at Attard.

Lawrence

9H1AV/9H9MHR

ALC

I am sure that all new hams, (I include myself), are having to learn to handle the complexities of present day SSB transceivers.

Faced with the intimidating number of knobs, buttons, meters, connectors, displays, menus, etc. of today's transceivers, we gradually learn by experimenting, by asking our fellow hams, by reading the manuals, ham radio booklets and even consulting the web.

The mysteries of RIT, noise blanking, FM deviation, split frequency operation, doppler compensation when using satellites, repeater codes and offsets, DSP filters, etc. soon will be mastered.

However, are there some, like me, who are puzzled by the meter display ALC? What is ALC, why do I need to know what it is showing and what should it be.

My experience showed that no-one could really answer these questions, and manuals and text-books generally ignore this subject.

After several months of investigation, here are my own findings…maybe others have different views/answers, so let's see them in the letters to the editor in the coming MAR magazines.

ALC

The anacronym ALC means "Automatic Level Control", although other interpretations have been published. Anyway, this certainly does not refer to whether the equipment is mounted accurately to be horizontal.

The output stage of a transmitter (otherwise called the finals or the PA) or linear amplifier can easily be vaporised by excessive power dissipation if there is no protection designed-in.

Consequently an automated feedback mechanism is essential, which limits the amount of output power, so as not to exceed the rated values of the final transistors/valves.

The ALC meter essentially shows the amount of feedback being applied at any time.

That may explain what ALC is, but why is it given so much prominence in the displays? How should I interpret it, can I adjust it, and what is the best value for it?

Well, if we were interested in Hi-Fi transmission, the ALC should always be zero, since any modification to the linearity of the PA will cause amplitude and phase distortions to the transmitted RF signal.

However, in SSB speech communications (specifically ham radio) the objective is usually to exchange spoken information with good intelligibility, and not necessarily with maximum fidelity. So we need to go back to look at some of the basics of audio modulation and SSB communications, in order to understand why ALC and its effects are important.

We all know that when an AF modulation tone is applied to an RF oscillator, the result is that the carrier frequency is accompanied by two sideband signals (USB and LSB).

Ham transceivers are constructed using balanced modulators, connected so as to cancel the carrier, followed by filtering to remove the unwanted sideband and any remaining carrier. The amplitude of the selected SSB signal will vary linearly with AF modulation.

What happens now if the audio drive is increased and causes overmodulation? Well, mathematically, in addition to the wanted signal, other related sidebands are generated, and they may also be filtered out.

So the wanted sideband is still there, but it is no longer related to the amplitude of the modulating tone.

Some over-modulation is often considered desirable, since audio compression occurs and this results in an increase in the average RF power transmitted, at the expense of audio quality.

Unfortunately, the practice of extreme over-driving of balanced modulators causes unpredictable additional interfering signals to be generated, that may fall outside the filters' capabilities to atenuate. This is not really a valid operational condition.

So modern SSB ham equipment includes not only the capability to adjust (Microphone Gain) the amplitude of the audio drive to the modulator, but often also a controlled speech processor, providing adjustable logarithmic audio amplitude compression.

With suitable settings, dependent on the microphone performance and matching the operator's voice (and even language) characteristics, the process (sometimes called "punch-thru") can be controlled to give optimum modulation for maximizing the RF power at a given speech intelligibility.

The above discussion concerned only the audio modulation. ALC is a further non-linearity which the RF signal suffers, when the demands on the PA stage are exceeded. The effect is sometimed referred to as RF compression.

The user has no control of the ALC circuit characteristics; this is decided by the manufacturer in order to provide protection of the PA stages.

Not only does more ALC result in increasing RF amplitude compression, but also it will probably have fast attack and slow release characteristics.

Some hams even claim that they can identify the make of a SSB transceiver by listening to the audio when the ALC starts to act.

If the PA is driven so hard that ALC actually gets into saturation, then the transmitter will certainly give very undesirable "splatter".

If you have uderstood all that, then you still want to know how to set up the transceiver to meet your needs. So what are your needs?

Firstly, it must obligatory be to cause minimum interference to other users. But then, do you want to have good quality speech, so that other hams will be attracted to have a relaxed QSO with you easily?

Or do you want to have maximum punch-thru for getting through pile-ups?Or maybe somewhere between the two, for ease in working DX?

Most modern SSB transceivers give you three ocntrols to juggle with in order to achieve the appropriate setup.

Microphome Gain – audio drive to the modulator (metered as MOD)

Speech Processor – audio logarithmic compression law.
PA drive – output power level (metered as WATTS OUTPUT)

In addition you have the ALC meter to show the amount of RF compression, that the settings you have chosen are causing when you speak.

In practice, a properly modulated drive can probably more than double the average output power by using RF compression, although obviously speech quality suffers.

In SSB communication, RF power is output only when there is modulation. In normal speech there are pauses between syllables and between words, during which the RF output will be zero.

This will happen even with compression processing, and obviously reduces the average RF output power.

You may notice that the stations with most success in getting through a pile-up are those who speak loud and fast with a continuous flow of some of the phonetics letters of their call.

To be heard through the QRM, they are speaking so as to minimize gaps and choosing phonetics which have few high audio peaks in order to increase average power evn more, with little attempt to retain more than an absolute minimum of intelligibility.

Once initial contact is established and QRM has abated, more intelligible speech can be used.

Good kuch in choosing the settings to match your needs; I will not presume to tll you what they should be! Ayt least you know what the relevant knobs and meters do. Now its up to you!

The acquired radio equipment from the nautical school at Haywharf

With satisfaction and appreciation, I congratulate the club members who were responsible in the attainment of this radio equipment.

I suggest that such equipment shall be made use of in the club's radio room.

We can use the Dancom HF Marine Transmitter for our amateur work if we substitute some of the marine crystals in the 4, 6, 8, 12 and 16 Mhz bands.

Taking for example the marine band in the 4 Mhz range, we can install an amateur band crystal, say 3505 Mhz for 80 metres fundamental, 2nd harmonic will be 7010 Mhz on 40 metres, while the 4th harmonic will be 14.020 Mhz in the 20 metre band.

Of course we will be limited to crystal control, unless we make a vfo, but crystal control should also be satisfactory in getting the equipment to function on our frequencies.

The receiver which is in the same cabinet is ok. It is a general coverage synthesized receiver and we might as well make use of it. We can install it in the radio room near the Marconi Atalanta receiver.

Needless to say we need a very strong support as the weight of both the Dancom transmitter/receiver and the Atalanta receiver puts them in the heavyweight class.
Frank Micallef
9H1BM

Editor's comment

I fully agree with the idea as all equipment whatever its age should as far as possible be kept in working condition.

In fact, during a test where I was listening on the Marconi Atalanta receiver with about 20 feet of wire at head height in the club yard as an antenna to a QSO being conducted with a very modern transceiver connected to a 3-el yagi at the club, the signal received from the other station on the Atalanta was stronger and clearer. Further comments would be superfluous.

Foreign Radio Amateur Associations

As a service to you so that if you are overseas you would know whom you can contact, we are going to start publishing details about foreign radio amateur associations which are in Region 1. We hope that you find them useful.

AARA, Albanian Amateur Radio Association, P.O.Box 1501, Tirana, Albania.
Secretary: A.I. Nikolla Dedi, ZA1D
Telephone/fax: +355 42 64738 (ZA1B)
IARU liaison: Marenglen Mema, ZA1B, Ruga Bardhyl, Pallati.16, Shkalla 3, Ap.10, Tirana, Albania.
Telephone/fax: +355 4 364738
e-mail: genimema@atnet.com.al

AFVL, AMATEURFUNK VEREIN LIECHTENSTEIN PO Box 629, FL-9495, Triesen, Liechtenstein.
Telephone: +423 392 1665 HB0AB
e-mail: hq@afvl.li
President: Alois Buchel, HB0AB
Secretary: Gunter Marogg, HB0TC
IARU liaison: Secretary, HB0TC hb0tc@qsl.net

AGRA, ASSOCIATION GABONAISE DES RADIO AMATEURS, B.P. 1826 Libreville, Gabon.
Telephone: +241 730 154
Fax: +241 702 425
e-mail: tr8ca@inet.ga , tr8ca@hotmail.com
President: Alain Combeuis, TR8CA
Secretary: Romuald Nang Otogo, TR8NOR
IARU liaison: Jean-Claude Villard, TR8JCV Box 4110, Libreville, Gabon. Tel: +241 702303

ARA, AMATEUR RADIO ALGERIENS
P.O Box 1, 16000 Alger Gare, Algeria.
Location: 7,Square Port Said, 16000 Alger, Algeria
Telephone: +213 21 667 702
Fax: +213 21 233 631
e-mail: 7x2ara@chez.com benlagha@hotmail.com
President: Mahmoud Amokrane, 7X2MA
Secretary: Arif Benlagha, 7X2RO
IARU liaison: Sadek Laskri, 7X2LS

ARAB, AMATEUR RADIO ASSOCIATION BAHRAIN
P O Box 22371, Muharraq, Bahrain, Arabian Gulf. e-mail: sm1th9@batelco.com.bh
President Dhiya al Sheroughi, A92DQ
Secretary: David Smith, A92GE

ARABiH, ASOCIJACIJA RADIOAMATERA BOSNE I HERCEGOVINE, P.O.BOX 61, BA 71001 SARAJEVO BOSNIA AND HERCEGOVINA

Location: Strossmayerova 1/11 BA-71001 Sarajevo
Telephone: +387 33 663 414
Fax: +387 33 663 414
e-mail: arabih@bih.net.ba
Web: http://www.arabih.org
President: Almas Krdzalic T91W
Secretary: Medzid Dautovic T95C
IARU liaison: Nusret Abadzic, T93N (t93n@aol.com)
ARAC, Association des Radio Amateurs du Congo President: Cyprien Kahundira cyprienkv@yahoo.fr , No address data

ARAD, ASSOCIATION DES RADIOAMATEURS DE DJIBOUTI
P.O.Box 1076 Djibouti
Telephone: +253 352 490
Fax: +253 355 757
President: Mohamed Omar Moussa, J28AP
Secretary: Fred Achoun, J28FA
IARU liaison: President

ARAI, ASSOCIATION DES RADIO AMATEURS IVOIRIENS, P.O.Box 2946, Abidjan 01, Ivory Coast
Telephone: +225 21 243 346
e-mail: tu2ci@arai-ci.org or jjniava@engineer.com
Web: http://www.qsl.net/tu2ci/
President: Jean-Jacques Niava, TU2OP
Secretary: Rahane Vieyra, TU5JF
IARU Liaison: President

ARAS, ASSOCIATION DES RADIO AMATEURS DU SENEGAL, P O Box 971, Dakar, Rep of Senegal
Location: Immeuble des Colis Postaux, Ave.El-Hadj
Telephone: +221 821 5956
Fax: +221 821 0405
E-mail: dkrimbo@sentoo.sn
Web: http://www.radio6W.org
Secretary: Monique Imbo 6W1OM
IARU Liaison: Monique Imbo 6W1OM

ARBF, ASSOCIATION DES RADIOAMATUERS DU BURKINA FASO c/o ONATEL, PO Box 01, Ouagadougou 10000, Burkina Faso
Telephone: +226 300 945
Fax: +226 300 930
President: Youssouf Kaba, XT2KY
Secretary: Alpha M Diakite Kaba

ARI, ASSOCIAZIONE RADIOAMATORI ITALIANI, Via Scarlatti 31, 20124 Milan,
Telehpone: +39 2 669 2192
Fax: +39 2 667 14809
e-mail: ari@micronet.it
Web site: http://www.ari.it
President: Alessio Ortona, I1BYH
Secretary: Daniele Talaiani, IV3TDM
IARU liaison: Mario Ambrosi, I2MQP, i2mqp@ari.it

ARM, ASSOCIATION DES RADIO AMATEURS DE MONACO, BP 2, MC-98001, Monaco Cedex
Telephone: +377 93 30 34 98 (Secretary)
Fax: +377 93 50 60 34 (att Claude Passet)
e-mail: arm@qsl.net
President: Robert Scarlot, 3A2CR
Secretary: Claude Passet, 3A2LF
IARU liaison: Henk van Klaveren, 3A2AH, 20-A Avenue, Crovetto, Monaco, MC98000.
Tel: +377 93 30 91

ARM, Asociata Radioamatorilor din Republica Moldova, PO Box 1414, MD-2043, Kishinev, Moldova
Telephone: +373 2 552 776
President: Alexey Borets, ER1FF
Secretary: Valery Gribincea, ER1BF
e-mail: er1da@mail.ru ,
Web: http://www.arm.moldtelecom.md/index.htm
IARU Liaison, Valery Metaxa, ER1DA, P.O.Box 6637, Kisinev,
MD-2050 Moldova. Tel: +373 2 511190

ARRAM, ASSOCIATION ROYALE DES RADIO AMATEURS DU MAROC, P.O. Box 299, Rabat, Location: 12 Rue Ahmed Arabi, Agdal-Rabat 10100
Telephone: +212 37 67 37 03
Fax: +212 37 674 757
President: Housni Benslimane, CN8BE
Secretary: Ahmed el Bachar, CN8EG
Web: http://www.geocities.com/cn8hb/arram.html
IARU Liason: Kacem el Kaoukabi, CN8LR

ARRSM, ASSOCIAZIONE RADIOAMATORI DELLA REPUBBLICA DI SAN MARINO, P.O. Box 77, RSM 47890, San Marino
Telephone: +378 906 790 (T77J).
Telefax: +378 906 790
President: Julian Gaicomoni, T77J
Secretary: John Cecchetti, T77CD
E-mail: ggiacomoni@omniway.sm
Web: http://www.arrsm.org
IARU Liaison: Julian Giacomoni, T77J, Box 1, Dogana, 47031 Rep. of San Marino.
Tel: +378 903494

ARSK, AMATEUR RADIO SOCIETY OF KENYA, P O Box 45681, Nairobi 00100, Kenya
Telephone: +254 2 891 302
Fax: +254 2 891 302
Chairman & Secretary: Ted Alleyne, 5Z4NU
Deputy Chairman: Hemant Patel, 5Z4HP
Treasurer: Jeremy Rowe, 5Z4JW
Email: alleyne@africaonline.co.ke
Web: http://qsl.net/arsk
IARU Liaison: Max Raicha, 5Z4MR, P.O.Box 1641,
KISUMU 40100, Kenya
Tel: +254 35 40906/44099 Fax: +254 35 21400, max@raicha.com

ARTJ, Association des Radio Amateurs du Cameroun, Ecole Nationale Superieuse des Postes et Telecom, BP 6132, Yaounde, Cameroun
Fax: +237 23 37 48
President: Francois Kamgam, TJ1KF
Email: ARTJCameroun@hotmail.com

ASTRA, ASSOCIATION TUNISIENE DES RADIO AMATEURE, POB 339, Tunis/Mahrajen 1082
Tel: + 216 71 79 05 01
Fax: +216 71 79 12 06
Chairman: Mohamed Triki
Secretary: Laasaad El Ouchi
IARU Liaison: Mustapha Landoulsi DL1BDF
E-mail: DL1BDF@t-online.de

BARS, BOTSWANA AMATEUR RADIO SOCIETY, P O Box 1873, Gaborone.
President: Anu Sulu, A22YL
Secretary: Christoper Colledge, A24CC
IARU Liaison: Secretary
Telephone: +267 325 485

BFRA, BULGARIAN FEDERATION OF RADIO AMATEURS, P.O. Box 830, BG1000 Sofia. Bulgaria. Location: Tzarigradsko Chausee 7th km, IZOT-BIC Building, Room 717, BG-1784, Sofia, Bulgaria.
Telephone: +359 2 91969 ext 512, +359 899 600438
Fax: +359 2 980 1458
E-mail: bfra_hq@hotmail.com
Web: http://www.bfra.org
President: Milcho Milanov, LZ1RF lz1rf@mtt.bg
Secretary: Zdravka Buchkova, LZ1ZQ
IARU Liaison: Panayot Danev, LZ1US
panayotdanev@yahoo.com

Microwaves and dB's

How much power is needed? What about cable losses? What happens to the signal when it leaves the transmitting antenna? What sort of calculations are needed to predict whether or not a planned microwave Microwave system will work?

Take for example the transmitter to antenna coaxial cable losses at 2GHz. RG-58 has an attenuation of 0.35dB per foot. If the cable run is 30 feet the attenuation would be 30 x 0.35 = 10.5dB. This of course would be intolerable for a microwave system at 2GHz. But the point I am making here is that by using dB for the calculations, the calculations are fairly easy.

Doing it the other way where 0.35dB represents a ratio of about 0.92:1. This means that 92% of the power at 2GHz gets through 1 foot of RG-58. Now to work out 2 feet of cable 92% of 92% of the power gets through. For 4 feet the power throughput would be 92% of 92% of 92% of 92% of the input power. In other words, there is a loss of 8% of the input power for every foot of cable.

How about carrying on out to 30 feet of cable. No way! Using the old tried and true maths here is not such a good idea. I personally prefer the dB method.

How about microwave antennas? Their gains typically run from about 3 to 36dB. (I have seen them as high as 50dB). Here again, these are ratios running from 2:1 to 4000:1 which translates to gains of from 2 to 4000. Besides being a very wide range of numbers, the gains would have to be multiplied by the power from the coaxial cable to get EFR (effective radiated power). Using dB, all I have to do is add cable losses and antenna gain to the transmitted power to get the EFR stated in dBW.

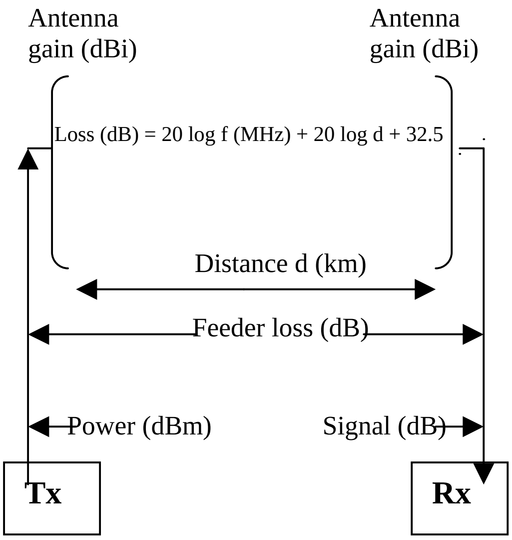
Did you ever wonder why they started specifying maximum allowable power in dBW rather than Watts? Well lets have a look at what the signal is doing traveling through space. The signal is not actually attenuated in free space (vacuum) In air it is negligible.

Actually it is its spreading which results in signal intensity decreasing. The rate of spreading happens to be the inverse square of the distance and is determined by the antenna gain. It's easy to see that working this out with the old "tried and true" maths would be horrendous to say the least. Again, the dB to the rescue.

At the receiver end we are concerned with what the signal level is. Being used to microvolts, calculations using them would still be a problem. Since most modern receivers have a common input impedance of 50 ohms, there is no reason why we can't specify input signal levels in terms of power rather than volts. The dBW, or better yet dBm (dB with respect to one milliwatt) seems to fit the bill rather nicely.

So there we are, all of the relevant microwave parameters specified in dB. No more multiplying awkward numbers, just add the dB's to predict a microwave system performance. An example of such a set of calculations can be found below.

Calculation for a microwave system



System Model

Example: Using the data below, calculate the receiver signal input level

Transmitter		Receiver	
1Watt = +30 dBm (0dBW)		Antenna gain	12 dB
Freq. 2300 MHz		Feeder loss	- 2 dB
Feeder loss	– 3dB	Connector loss (2x)	- 2 dB
Connector loss (2x)	- 2 dB		
Antenna gain	+ 15 dB	Distance (d) 3.8 km	

Notes:
1. When doing calculations all losses are – dB
2. Gain > than 1 is dB
3. Gain = 1 is 0dB
4. Gain < 1 is – dB
5. Allow a loss of – 1dB for each connector in the system
6. dBi is the gain when compared to an isotropic radiator[2]
7. There is no obstructions between transmitter and receiver

First calculate space loss between transmitter and receiver.

20 x log (f) = 67 dB
20 x log (d) = 11.6 dB
Space loss = 67 + 11.6 +32.5 dB = 111 dB
Since this is a loss it is – 111 dB

Next, starting at the transmitter, add up all the dBs to find the signal input to the receiver.

+30dBm – 3dB – 2dB + 15dBi – 111dB + 12 dBi – 2dB – 2dB = - 63dBm
The –63dBm signal level input power is stated as 63 dB below one milliwatt.

Note that:

SRE = Tx Power + Cable loss + antenna gain = 40dBm = 10dBw = 10 Watts

Most of us are used to receiver signal input levels being stated in microvolts (uV). Converting dBm's to uV's is a bit messy, so care is needed.

Notice that the maths were fairly simple so far. Finding the log (base 10) of a few numbers, multiplying them by 20, adding results, etc.

However, most of us are used to input receiver signals beig stated in microvolts instead of power.

To make conversions from dBm to micro volts can be quite messy even though the RAE covers most of the techniques. The process is to convert dBm to Watts, and then calculate the signal across a 50-ohm impedance to get Volts.

$$\text{dBm} = 10 \times \log \frac{\text{Signal Power}}{0.001\text{W}}$$

---

[2] An isotropic antenna or radiator is an imaginary antenna which radiates equally well in all directions similar to a globe

Signal power = 0.001 x $\log^{-1} \frac{\text{dBm}}{10}$ *[3]

One should be able to see the advantages of working in dB's rather than Watts, Volts, etc. But let's carry on anyway and plug in –63dBm to get Watts.

Signal power = 0.001 x $\log^{-1} – \frac{63}{10}$ = $5x10^{-10}$ Watts

= 0.5 billionths of a watt.[4]

The worst is over. Now to find the microvolts.

Remembering that Power $= \frac{V^2}{R}$

With some Algebra juggling V = $\sqrt{\text{Power x R}}$

Since R = 50 ohms (receiver input impedance) at P= $5x10^{-10}$ Watts

Plugging in these values yields **V=158 microvolts**. Pretty hefty signal after all.

From Stanley Grixti
9H1LO

Emergency

There is no doubt that everyone hears about some disaster in other parts of the world as well as the help given by radio amateurs in such cases.

We can say that in many cases it will only be radio amateurs who may provide the necessary communications because other services cease to operate due to the lack of electricity supply.

The Tampere Convention

This help has been given for many years in other countries, so much so that there is a Convention, known as the Tampere Convention because it was held in Tampere in Finland between 16 and 17 June 1998, whose aims are about the provision of telecommunication sources during disasters.

This was made to facilitate the provision of telecommunication apparatus and the status of operators, non-governmental organisations, and the reduction of burocracy. Malta had signed this Convention on 18 June 1998.

This Convention entered into force on 8 January 2005 after it was ratified by 30 countries.

Whoever wants to can download this Convention from this webpage:
http://www.reliefweb.int/

or directli in English from
http://www.reliefweb.int/telecoms/tampere/icet98-e.htm

As an MS Word 6 document
http://www.reliefweb.int/telecoms/tampere/icet98-e.doc

As ASCII text
http://www.reliefweb.int/telecoms/tampere/icet98-e.txt

As a PDF document in a number of languages
http://www.reliefweb.int/telecoms/tampere/icet98-e.pdf

Malta

Although we do not usually have natural disasters in Malta as happens in other countries except in winter where some places are flooded, we should consider whether we can do something to help in case the need arises.

Earthquakes were sometimes felt in Malta, although not cauding damages or loss of life. It would therefore be better if one is prepared for all events.

In the case of Malta, the Civil Defence is regulated by the Civil Defence Act, Chapter 411 of the Laws of Malta as well as Legal Notice 95/2003.

Organisations

For this purpose, there are organisations in other countries that have radio amateurs who offer their services voluntarily. A similar organisation can and should be established in Malta.

This organisation could unite the radio amateurs and organise their work for this purpose, as well as hold talks with the authorities to carry out training and the

[3] Note. Log^{-1} means Antilog
[4] In this case, billionth means when 1 watt is divided into one thousand million

necessary cooperation so that everyone will be trained in case the need arises.

Therefore, what is now required is that radio amateurs show their intention that they will give their help to establish this organisation within MARL and that they will be ready to give their help in case of an emergency or disaster.

Apparatus requirements

What would be required to participate and provide communications in case it is required?

If one thinks about it he will see that in case of a natural disaster, the electricity supply would probably be cut off.

Therefore, the first thing that one should think about is having the required apparatus that either works on batteries or that he has electricity generators with enough capacity for his equipment.

Every apparatus, especially that which can be used in an emergency, should be kept in working order to be used as soon as the need arises.

If the apparatus used batteries it should be kept with the batteries charged and if possible other batteries should be available to be used while the others are being charged.

One should keep in mind that he should communicate with apparatus using as low a power as possible so that the batteries or generators will last as much as possible.

However, he should also have apparatus with the highest power according to his licence to reduce the difficulties if it is being used in places from where it is difficult to communicate

Trasmission modes

FM transmissions are easy to use and offer good transmission quality. However, there may be difficulties if the signals are not strong.

SSB and CW transmissions are a little more difficult for those who do not know how to use them well, but radio amateurs should not have any difficulty in using them. SSB and CW may be used for different reasons.

One is that these systems use a lot less power from the batteries or generators, although the instantaneous power may be great.

Another reason is where communications are required not to be intercepted by the public in general, although nowadays many receivers are able to receive SSB and computer programmes can be used to recognise the Morse code.

However, especially in the use of the Morse Code, if there is no electricity supply there will not be many persons from the public who can used the computer to listen to what is being said.

This menas that the morse code can be used where the person sending the message does not want it to be generally available to the public, or at least is not intercepted by someone who does not know this code.

Therefore, it would be wise that one would know and practice the Morse code so that if it is required he would be able to communicate well with it.

Frequencies

Although all frequencies may be used, it would be better if there are frequencies that one could use to provide an emergency service so that if the need arises everyone would go there.

There should also be a frequency or frequencies on which one can leave a receiver switched on so that if an emergency arises an alarm can be raised and whoever would be listening can answer immediately.

One should know that there are internationally known frequencies that are used for emergency communications. Later we will give you these frequencies as well as other information which one may find useful.

Other frequencies may be used, but they should be good for communications according to the particular place, which in the case of Malta all radio amateur frequencies may be used in view of our small size.

Very high frequencies, that is those known as VHF and also UHF, are best because there will be little interference from foreign stations.

In case communications are required with foreign stations outside Malta which cannot be reached on VHF and UHF, other frequencies such as short waves which all radio amateurs know about can be used.

Other Apparatus

There may be places where in spite of having the best apparatus, it would be difficult to communicate from them. Therefore there may be the need for repeaters that everyone who is acquainted with radio knows what they are.

Radio amateurs have repeaters on VHF, UHF and SHF frequencies, as have other services. Normally they would have a battery so that in case of power failure they would continue to operate.

However, one should not forget that after a certain time the battery will be discharged, as well as it can happen that the repeater apparatus may not be able to be used for other reasons, among which is that the building may collapse.

There should therefore be a repeater or repeaters which need not be high powered together with antennas and batteries that could be transported and used at different places as required.

This is not something difficult because it could be made as a project by our Club where a number of apparatus that can be used as repeaters by radio amateurs may be built.

Today, a lot of VHF and UHF equipment may be used as a repeater from one frequency to another.

What remains to be done is that radio amateurs be authorised to use their equipment in this way, that is as repeaters without having to pay another license.

Antennas

One should not forget that the equipment should have all the necessary accessories, as well as antennas for the frequencies that are going to be used.

Antennas for VHF and UHF frequencies are small and are easier to use in cars or places where space is restricted.

However, antennas for low frequencies on short wave may be simple and effective, especially when used with apparatus that matches their impedance with that of the transmission apparatus.

After this introduction about the provision of a good emergency service it would be good to give your opinion on the subject.

Lawrence,
9H1AV/9H9MHR

Wisdom

He who knows and knows that he knows is a wise man - seek him

He who knows and knows not that he knows is asleep - wake him

He who knows not and knows that he knows not is a child - teach him

He who knows not and knows not that he knows not is a fool - avoid him

Found somewhere

Activity at MARL

After a number of members expressed their wish for a day during which anyone interested can bring apparatus which he does not need to sell it, we have decided to accede to their wish.

This is a good opportunity for those who have something which they do not need as well as for those who want to buy something which they may need.

Therefore, on Sunday 27th November 2005 from 10.00 onwards, anyone can bring what he wants to sell at the MARL Club.

Whoever wants to buy something should take the opportunity and call at the Club.

See you.