MARL

Magazine by MARL

For Maltese and Gozitan Radio Amateurs

Number 12

February 2007

Smoking is prohibited

at the Centre

From the Editor

Friends,
I welcome you to another edition of this magazine for February 2007 which si the 12 th edition in this series.

This means that with this edition we have issued this magazine for two years.

Remember that this magazine is intended as a link to keep contact with the members and between our members and with all those who read it.

From our end it was a means to inform you about what MARL had succeeded to obtain for Maltese and Gozitan radio amateurs from the authorities.

Don't think that things are easy or that the authorities will give it to us as soon as we ask for it.

One can see this when he sees how many requests we have made to be given other frequencies that radio amateurs in other countries have and that we have still not been given.

We never give up although everyone knows how great is the bureaucracy and how there are not many who are willing to take decisions.

However, we can say that there were some things that as MARL we had succeeded in acquiring for you, although we wished to have acquired more.

Here I remind you that we have acquired the extension and authorisation to use the 7MHz frequency from 7 MHz to 7.2 MHz.

We have also acquired the removal of the Morse code requirement so that radio amateurs may use short-wave frequencies.

The only condition that theres is is that if they want to use Morse code they have to sit for its examination.

Therefore, the number of radio amateurs that have taken advantage of this acquisition has increased significantly.

We have succeeded in solving the question of reciprocal recognition with the USA so that Maltese radio amateurs will be allowed to work from there if they are on holiday.

We have also succeeded in preventing television stations from being given frequencies on 10 GHz.

We have saved this frequency from being lost or that whoever uses it would have to either create interference or to have to search for a frequency where there will be no interference with television stations.

There are other things that we have not yet succeeded to do, but you can rest assured that the committee will continue to do its utmost to acquire them.

At the beginning of this article I said that this magazine is also a link to also maintain contact between the members.

While thanking all those who send me some information and articles for this magazine, I wish that many more would give their contribution.

Therefore, I again appeal to anyone who has an article that is connected with our hobby to send it to me to enable this magazine to accomplish its aim of being a link between the members.

I again remind you that whoever works for the first time on a frequency with another station to give me the information so that it will be written and remains written for posterity.

If someone has made some equipment or antenna or something that has to do with our hobby and wants to can send me the details so that others would do likewise.

Do not forget that this month we have our Annual General Meeting and the election of the committee for the next two years.

We therefore hope that we have a good attendance and everyone gives his contribution so that MARL may be able to work more for you.

See you at the meeting.

Lawrence 9H1AV/9H9MHR

The 5 MHz Frequency

Today we have information regarding this frequency that there are a number of countries that are authorising their radio amateurs to work on it.

This information was sent by Paul, 9H1FQ via Frank 9H1BM, and one can say that it is an international list.

The frequencies are all in MHz and USB is used. For short they are using the numbers after 5 MHz as a channel, that is, if they are going on 5.102 MHz they say they are going on channel 102, if they are going on 5.167.5 MHz they say they are going on channel 167.5

5.102.0 Australia (WIA/WICEN Emergency)
5.1675 Alaska (Emergency)
5.1945 Germany Beacon DRA5
5.250 – 5.310 Bangladesh
5.258.5 UK, Canada Experimental
5.267.5 Canada Experimental
5.287.5 UK/Finland/Norway/Iceland
5.288.5 UK/Finland/Norway/Iceland, Canada Experimental (Beacons UK)
5.298.5 Finland
5.318.5 Canada Experimental
5.327.5 Canada Experimental
5.330.5 USA/Finland/Norway/Iceland/ St Lucia
5.346.5 USA/Finland/Norway/Iceland/ St Lucia
5.355.0 Australia WIA/WICEN
5.366.5 USA/Finland/Norway/Iceland
5.371.5 USA/Finland/Norway/Iceland / St Lucia
5.398.5 UK/Finland/Norway/Iceland. Canada Experimental
5.403.5 USA/UK/Norway/Iceland/St Lucia. Canada Experimental

1. These are frequencies that you will have on the radio. These are already compensated, because normally the channel centre is 1.5 kHz higher than the frequency on the radio.

2. Radio amateurs worldwide use USB, although other types are also used.

3. USA. Speech with up top 2.8 kHz is authorised in the USA for General class and higher, and use equivalent power of 50 watts to a dipole.

4. UK. Speech, digital, and CW bandwidth up to 3 kHz, 200 watts are authorised in the UK for those authorised to experiment, known as NOV (notice of variation). The channels are stated as the channel centre (dial + 1500Hz), or designators “Foxtrot” FA – FB – FC – FE – FM. The beacon system on 5290 kHz is active for real-time ionospheric sounding.

5. Germany. Experimental beacon DRA5, operated by DARC (beacon group DK0WCY), transmits information about propagation (dial + 1500Hz) CW/RTTY/PSK31.

6. Canada. Experimental licence for members of the Marconi Club (VO1MRC). CW & SSB on 5260, 5269, 5280, 5290, 5319, 5400 & 5405 kHz with a power of 100 watts. Also some beacon tests on 5269.5 and CW QSO's on 5260.

7. Finland. Club stations may apply for authorisation to work on 5MHz channels with 50 watts USB only. Dial frequencies in Finland are: 5288.6, 5298.6, 5330.6, 5346.6, 5366.6, 5371.6, 5398.6 kHz.

8. Australia. Wireless Institute of Australia is licensed for two mobile 5MHz channels for use in emergencies by the Wireless Institute Civil Emergency Network. The call-signs used are not those of radio amateurs, and are AXF404 u AXF405, and equipment approved by ACMA (such as transceivers used for communications in unpopulated areas on the VKS737 HF net.

9. Remote bases and HF Echolink stations. Some USA remote base stations are working on 5371.5 kHz, using remote bases connected by internet or Echolink with audio squelch and/or remote UHF.

10. Evening and night guidelines. 5 MHz channels are resources used by many services. In many countries, radio amateurs are considered as secondary users and have to switch off (QRT) if there is a primary station on channel.

    For this reason, transmission time should be kept as short as possible, and it is better to wait for a few seconds before answering a QSO.

    Careful radio amateurs would not normally conduct lengthy transmissions during evening and night-times whenever activity is high and propagation open on a wide regional basis for 5MHz channels communications.

11. Iceland. 8 channels with a 3 kHz bandwidth, USB or CW with 100 watts.

12. Banagladesh. 5250 to 5310 kHz for radio amateurs. Experiments are being conducted with stations where such activities are permitted. Secondary Status.

13. Santa Lucia. (J6) they have 5 channels as the USA and are active.

14. Other countries. It is reported that there were other authorisations on 5MHz, such as the dxpeditions in 5Z4HW in Kenya, and ZD8I (G8WVW) in Ascension Island in April 2005.

Some experimental operations were reported from Russia, Columbia and Mexico.

We will give you further information later.

Multiband Dipole

This is a multi-band dipole, that is, it is used on more than one frequency.

This was sent to us by James, 9H1VC whom we thank.

Frequency Metres	Each leg Feet/inches	Vertical
10 - 40	26' 6''	14' 3''
10 – 80	51'	29' 6''
10 – 160	101' 6''	52'

Notes

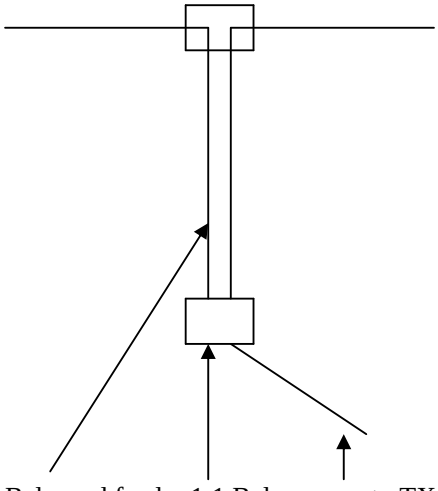
1. Use a minimum of 50 feet of coaxial cable (50 ohms), (James prefers RG-8X) for use from 10 to 40 metres and 100 feet for the others.
2. You can solder everything and seal everything to make it waterproof, and use a 1 : 1 balun between the parallel feeder and the coaxial feeder. 50 feet are around 15 metres while 100 feet are around 30 metres.

To make it easier, James has also included a drawing of the antenna. Remember that you also have to put insulators at the ends.

The following are three drawings of these antennae, one which you can use from 10 to 4 metres, another from 10 to 80 metres, and you can use the other from 10 to 160 metres.

Regarding the balanced feeder, James found it at a radio amateur's equipment importer.

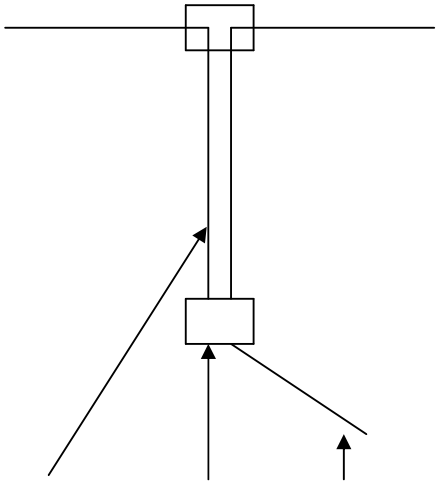
26' 6'' 10 – 40 Metres 26' 6''
Insulator



Balanced feeder 1:1 Balun, coax to TX

Each leg is 26' 6'' ~ 8 metres
Balanced feeder 300 ohms 14' 3'' ~ 4.3 metres
Used between 10 and 40 metres

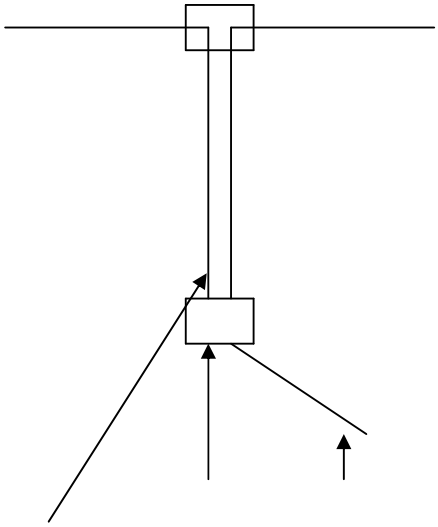
51' 10 – 80 Metres 51'
Insulator



Balanced feeder 1:1 Balun, coax to TX

Each leg is 51' ~ 15.45 metres
Balanced feeder 300 ohms 29' 6'' ~ 8.97 metres
Used between 10 and 80 metres

101' 6'' 10 – 40 Metres 101' 6''
Insulator



Balanced feeder 1:1 Balun, Coax to TX

Each leg is 101' ~ 30.8 metres
Balanced feeder 300 ohms 53' ~ 30.8 metres
Used between 10 and 160 metres

This antenna can also be made as an inverted V as is being used by James.

It is important to keep the balanced feeder part as vertical as possible and as far away as possible from iron or other metals.

We hope that you try this antenna and tell us how it worked at your home.

Batteries

Sometimes you hear radio amateurs saying that their equipment battery has gone u/s and it was useless when they tried to charge it.

Remember that batteries are made from different batteries (or rather cells) that are internally connected to give us the required voltage.

It may be that because a battery is old its time is up, but it may also be that there may be some internal batteries that may have shorted.

Here I remind you that I am using the term battery both for the whole battery as well as for individual batteries.

The proper words that should be used for individual batteries that make a battery are cell and cells, but I will continue to use the word battery because they are so known by many people.

As wise radio amateurs we should always do the maximum possible with the least expenses, and therefore I thought of giving you some things that you can do.

The first thing that you have to remember is that we should always leave the batteries fully charged.

If we are not going to use them for a long time we should charge them before storing them as well as every month.

It when we need to use them we find that they are not working properly, check the voltage after charging them to see if the voltage is correct.

If the voltage is correct it means that we do not have batteries that have shorted internally.

In this case, try charging and discharging them a number of times, because they may have lost their capacity because we were not using them.

If the voltage is not correct and is less than it should be probably it means that one of the batteries may have shorted internally.

If it is possible we should open the battery and find out the individual battery or batteries that have shorted.

This is easy because the battery will not have any voltage when we try to read its voltage.

If it doesn't have voltage we can try to read its resistance which would be 0 ohms because it would be shorted.

What would have happened is that inside the battery metallic threads would have grown between its plates that have punctured the insulation between the plates that form the positive and negative poles of the battery that will be shorting the battery internally.

In this case, what we can do is to take a car battery or car battery charger to try and remove these threads.

Here we have to either remove the battery from the rest or be careful to only touch the battery that had shorted.

What we have to do is to momentarily apply the car battery voltage to the shorted battery.

This causes a heavy current which raptures the internal threads similarly to the rapture of a fuse when a heavy current passes through a circuit.

This is why we use a car battery because it has the capacity of supplying a high current.

It may be that we have to do more than once, but we have to be careful that the battery we want to repair does not overheat because it can burst.

Each time we should check if the battery we want to repair is still shorted and stop as soon as we see that it is no longer shorted.

Then we have to charge the battery and if we had removed it from the others and charge it separately it will be better because all will be in a different state of charge.

If we had left it with the others we have to charge them just the same and it may be that we have to charge them 3 or 4 time to bring up its capacity.

The probability is that the battery will still be good and we can use it as we previously did.
I
Another thing that can happen is that we can find some batteries that may have a reverse charge.

In this case, we should either remove the form the others and charge them individually properly and afterwards reconnect them or work out how we can charge them.

In this case where the polarity of the batteries has been reversed we always have to charge them individually and then charge the whole battery.

It may be that the battery has reached its end of life and therefore we will have to change it.

However you will find that a battery costs a lot if you buy an original one.

You can therefore open up the battery case and change the internal batteries.

Many times you can make batteries with a higher capacity than the original ones because the batteries that are being developed have a higher capacity than the previous ones.

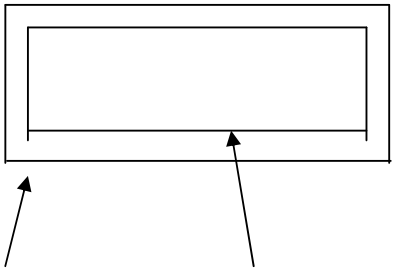
You can also use batteries that cause less environmental damage and you would be as we say in Maltese, killing two birds with one stone.

It may be that the battery case cannot be opened by the removal of screws, and in this case you have to cut it from underneath or some other place.

Probably you will find somewhere along the box, probably underneath, that there is a deeper part spaced internally by the thickness of the box.

The method I use in this case is to use a broken hacksaw blade or penknife to cut around the deeper part of the box.

Different boxes require different techniques, but you always have to be careful not to injure yourselves.



Battery box deeper channel
From underneath

You have to be careful to do a good job so that you can change the batteries more than once.

When we have changed all the batteries we can reseal the case by sticking its parts with two-tube resin/glue.

If we would want to open the case again we could cut it again where there is the glue or heat the glue which will give way when it is well-heated.

If it is a case where we cannot open the battery, we can do the same treatment, in this case to the whole battery.

In this case it may be more difficult because the other batteries will somewhat limit the current unless we use a rather higher voltage and unless there is some internal current limiting circuit.

I hope that you will find this information useful and not throw a battery before trying to repair it.

Lawrence
9H1AV / 9H9MHR

Old Equipment

Many people would not switch on their equipment or acquire some equipment which would not have been used for a long time.

This means that the electrolytic capacitors, either if the equipment uses valves that work with high voltages, as well as modern one that word with low voltages, would require reformation.

If this is not done we can end up with an explosion and other damages to the equipment that may be disastrous.

This is apart from the equipment may become damp especially high voltage transformers.

Therefore, one of the precautions which is said that ought to be made is that the equipment should be connected to a variac transformer, and that we start from a very low voltage which should be slowly increased over a long time.

This is a good recommendation, but can one do if he does not have a variac transformer which are not easy to find and cost a lot of money?

The answer is simple and costs little.

Not only, but as I am going to show it can be used on all equipment to protect it from the heavy inrush current whenever the equipment is switched on.

The first thing that one should do is to check that the mains lead is in good condition and that there is no short or condensers that have low resistance especially on the side which is connected to the house electrical mains.

We also check that the transformer is not shorted. If everything is correct we can proceed to the next step.

The next step is to connect a small lamp, internally if we have space, in the equipment and leave it on with the equipment closed for about two days so as to dry any dampness.

This system is used on ship equipment by having a resistor that when the equipment is switched off it is automatically connected to maintain some warmth so that humidity is excluded from the equipment.

What one has to do now is to connect a lamp in series with the equipment.

The less powerful the equipment the lower wattage lamp that we should use, even one of those used in night-lamps which normally is 5 watts.

At first when you switch on the equipment, the lamp will light up brightly like its normal brightness because the electrolytic capacitors in the equipment would not be charged and the equipment would try to take a lot of current, and then the brightness will reduce slowly.

The use of the lamp limits both the initial current as well as the normal working current.

The fact that the lamp lights up brightly means that it is dropping the voltage and current that is being taken by the equipment transformer, and automatically the voltage and current in the equipment circuit.

When the lamp reduces its brilliance it means that the current passing through it has reduced, the voltage reduced by the lamp is less, thereby the equipment will be taking more voltage and less current.

The lamp will not be burned, because even if the transformer is shorted, it will simply have the mains house voltage that it normally works with.

If lamp brilliance remains low, you can probably be sure that there are no problems.

If we is space we can again put the lamp inside the equipment to help dry out any dampness.

The lamp will not be hot but it will only be warm.

After some hours we can change the lamp and insert a higher wattage one and each time leave it for a few hours before changing it. If we started with a 5-watt one we can then use a 15 watt one, then 25 watts, then 60 watt and 100 watts.

We will find that the greater the wattage the less it will light because as you know its resistance will be less.

The equipment should be left on with the lamp for two or three days.

If everything remains ok we can try it but with the lowest wattage lamp in series.

If it is a transmitter the output power will be low because the lamp will be limiting the current, but at least you will know that the equipment is working.

If there is a fault in the equipment the current will be limited by the lamp.

If everything is ok we can increase the wattage of the lamp each time and try it again. If everything remains ok, we can remove the lamp and give it full mains voltage.

In case of a receiver we may find that it will work just the same, although it may not work on all frequencies and output may be a little low and not that sensitive.

For equipment that works on 12 volts or other low voltages we can use a lamp of the same voltage and low power and size so that if possible it can be put in the equipment while using the same system.

Since equipment which works on low voltages especially if it is a transmitter takes heavy current, when we use it we have to use a high power lamp to limit the current, such as from car headlamps.

Previously I said that we can use this system to also prevent damage to our equipment by limiting the heavy current that results whenever we switch on the equipment.

All we have to do is to make a lamp as I have said above in series with the equipment, make a switch to short the lamp, and when the lamp dims we switch the switch on. Thus equipment will take its normal current.

The only thing that we have to remember is that when we switch off the equipment we also switch off the switch otherwise the equipment will be without protection.

The solution is to make a circuit that after a time suitable for our equipment will automatically short the lamp.

Circuits for this purpose cost little and may be found in different books.

It is better if we make this protection separately for individual equipment, although it can be made on a number of equipment that is switched on together.

A practical solution that costs little to protect our equipment and pockets from damages which could cost us considerable sums.

Sunspots

As you know, presently we are at the bottom of the sunspot cycle, which as you also know is approximately 11 years.

This means that propagation on short waves is not all that good.

On the other hand, propagation on the lower frequencies is at its peak, because the ionised layers are not strongly ionised.

This does not mean that they are always like this, but you should always try to communicate because propagation varies and it will not br the first time that you will find that there is good propagation.

Remember that you have to call because if everyone is listening there will be no one to be heard.

Here you have predictions of how it is expected that the sunspot numbers will be as well as 10.7cm radio flux and other details.

From these predictions you will see that the lowest level is being predicted to be in July this year.

All those therefore who want to work on low short wave frequencies should do so now because conditions are best.

As I have already said, this does not mean that you cannot communicate at other times, but conditions will not be so good.

On the other hand, those who like to work on higher frequencies would find the best conditions in about six years time, that is, 2012-2013.

I hope that you will find this information useful.

Notes.

Number of predicted sunspots and radio flux: predicted text.

Created 3 January 2007 1600 UTC

Prepared by the United States Department of Commerce, NOAA, Space Environment Centre (SEC)

Please send your suggestions and comments to sec.webmaster@noaa.gov

Sunspot numbers : S.I.D.C. sunspot numbers Brussels.

10.7cm Radio flux value: Pentincton, B.C. Canada.

Prediction values are based on cycle 23 ISES predictions for consecutive 13-month smoothed values

Current interpolation prepared by IPS Radio and Space Services, Australia.

Missing or not applicable data: -1.0

Predicted sunspot numbers and flux values with expected variations

Columns:
1 Year
2 Month
3 Predicted (Pre)
4 Highest (Hi)
5 Lowest (Lo)
6 Predicted (Pre)
7 Highest (Hi)
8 Lowest (Lo)

Columns 1 and 2 are common
Columns 3 to 5 are sunspot numbers
Columns 6 to 8 radio flux at 10.7cm

	-Sunspot numbers-			-10.7cm radio flux-		
Year	Month	Pre	Hi	Lo	Pre	Hi	Lo
2006	07	14.8	15.8	13.8	79.7	80.7	78.7
2006	08	14.4	17.4	11.4	78.9	81.9	75.9
2006	09	14.2	19.2	9.2	78.3	83.3	73.3
2006	10	13.0	20.0	6.0	77.3	84.3	70.3
2006	11	11.4	19.4	3.4	76.1	85.1	67.1
2006	12	10.6	19.6	1.6	75.3	86.3	64.3
2007	01	10.2	20.2	0.2	74.8	87.8	61.8
2007	02	10.0	21.0	0.0	74.4	89.4	60.0
2007	03	9.9	21.9	0.0	74.0	91.0	60.0
2007	04	10.1	23.1	0.0	73.9	92.9	60.0
2007	05	10.1	24.1	0.0	73.6	94.6	60.0
2007	06	10.3	25.3	0.0	73.0	95.0	60.0
2007	07	9.5	24.5	0.0	72.0	95.0	60.0
2007	08	11.2	26.2	0.0	73.0	96.0	60.0
2007	09	13.3	28.3	0.0	74.3	97.3	60.0
2007	10	15.6	30.6	0.6	75.7	98.7	60.0
2007	11	18.3	33.3	3.3	77.4	100.4	60.0
2007	12	21.3	36.3	6.3	79.4	102.4	60.0

Note

10.7cm radio flux means the strength of signals emanating from the sun on a frequency of 3.210 GHz.

Measurements

Many radio amateurs like to construct some of their equipment.

Previously aluminium or steel was used that had to be drilled, and then enlarged where required.

Today, more than before, many small components are used and printed circuits that have to be drilled with small-sized holes.

Hole-sizes are normally given in fractions of an inch if the circuits are British, American and some others, while they are given in metric sizes if they are European.

This means that if one, for example, does not have the indicated twist drill sizes, he will have to see how he can find their equivalent.

Therefore, to lighten your work, I am going to give you a table which shows the sizes when given in fractions of an inch, decimals of an inch, as well as their equivalents in millimetres.

I think that although it is not an electronic table which one would expect to find in an electronics magazine, I have no doubt whatsoever that you will find it useful.

Notes.

The first column is the size in fractions of an inch. (Red)

The second column is the size of the first column in decimals of an inch. (Blue)

The third column is the size of the first column equivalent in millimetres. (Green)

Columns		
1	**2**	**3**
1/64	0.0156	0.397
1/32	0.0313	0.794
3/64	0.0469	1.191
1/16	0.0625	1.588
5/64	0.0781	1.984
3/32	0.0938	2.381
7/64	0.1094	2.778
1/8	0.1250	3.175
9/64	0.1406	3.572
5/32	0.1563	3.969
11/64	0.1719	4.366
3/16	0.1875	4.763
13/64	0.2031	5.159
7/32	0.2188	5.556
15/64	0.2344	5.953
1/4	0.2500	6.350
17/64	0.2656	6.747
9/32	0.2813	7.144
19/64	0.2969	7.541
5/16	0.3125	7.938
21/64	0.3281	8.334
11/32	0.3438	8.731
23/64	0.3594	9.128
3/8	0.3750	9.525
25/64	0.3906	9.922
13/32	0.4063	10.319
27/64	0.4219	10.716
7/16	0.4375	11.113
29/64	0.4531	11.509
15/32	0.4688	11.906
31/64	0.4844	12.303
1/2	0.5000	12.700
33/64	0.5156	13.097
17/32	0.5313	13.494
35/64	0.5469	13.891
9/16	0.5625	14.288
37/64	0.5781	14.684
19/32	0.5938	15.081
39/64	0.6094	15.478
5/8	0.6250	15.875
41/64	0.6406	16.272
21/32	0.6563	16.669
43/64	0.6719	17.066
11/16	0.6875	17.463
45/64	0.7031	17.859
23/32	0.7188	18.256
47/64	0.7344	18.653
3/4	0.7500	19.050
49/64	0.7656	19.447
25/32	0.7813	19.844
51/64	0.7969	20.241

13/16	0.8125	20.638
53/64	0.8281	21.034
27/32	0.8438	21.431
55/64	0.8594	21.828
7/8	0.8750	22.225
57/64	0.8906	22.622
29/32	0.9063	23.019
59/64	0.9219	23.416
15/16	0.9375	23.813
61/64	0.9531	24.209
31/32	0.9688	24.606
63/64	0.9844	25.003
64/64	1.0000	25.400

As you can see, sizes in fractions of an inch do not correspond exactly when they are changed to millimetres.

Therefore, one would have to choose the nearest one to the required size which may be a little smaller of bigger.

This table is taken from the ARRL Handbook for Radio Amateurs.

Lawrence 9H1AV / 9H9MHR

Information

We are going to publish a list with details of radio amateurs holding a Maltese call-sign.

This has been done years ago and it is required that we have new details since there are many new radio amateurs.

Apart from this, some may have married and moved somewhere else, some who have been 9H5's are now 9H1's, as well as some that have become silent keys.

For the time being we are going to publish what details we have. Whoever wants to change some of his details should write to us so that we can amend it.

Whoever knows of someone who is not on the list and wants to be included should also write to us so that he may be included.

Included in this list are e-mails as well as web pages where we have managed top find them. Whoever has an e-mail and/or webpage and is not on the list and wants us to include these details as well as other details should write to us so that we can include them.

This list will also be published on our webpage so that whoever talks to Maltese stations would have all the details.

Apart from this, whoever has any information about 9H3 prefix stations and their home call-sign should pass this information to us to publish so that whoever talks with them would know where he should send his QSL's.

So perhaps we will not continue to receive cards for them and whoever had talked to them would not remain without a QSL.

Lawrence 9H1AV / 9H9MHR

MARL Activities

Membership Fee
The Financial Secretary will be waiting for you to pay your Lm10.00 2007 membership fee.

Do not forget that whoever has not paid will not be able to vote for the committee at the AGM.

Annual General Meeting
The committee would like to remind the members that the AGM will be held on Sunday 25 February 2007 at 10.00

We remind you that if there is no quorum the meeting will be held with the members present.

Do not forget that the committee election has to be held this year and therefore the signed nominations have to be received not later than 10 days before the AGM

See you.