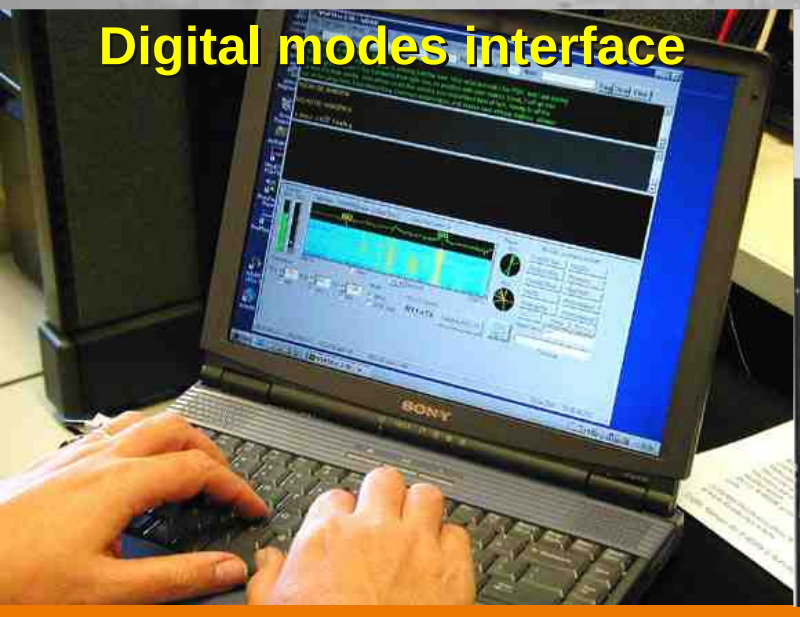
HAM-MAG

The first free & monthly E-magazine for amateur-radio, SWL...

PORTABLE E.M.E
By DL3OCH



Digital modes interface

Room 40 in WW1

NUMBER 2
FREE ISSUE

FEBRUARY 2009
http://www.ham-mag.com

Number two !

Dear YL, dear OM,

Every day, I receive a lot of E-mail.
E-mail of congratulations, E-mail with informations or articles, E-mail of subscription. Yes, HAM-MAG seems to be appreciated by many operators.
And it's only the begining. 26 pages for the first issue and 41 pages for the second one. 800 subscribers for the first issue and more than 2,700 for the second one.
This magazine is living thanks to you.
Gentlemen who send information, articles, DX-news and so on.
Gentlemen who subscribe and believe in this magazine.
Gentlemen who trust in HAM-MAg and send a donation (and become members of "hall of fame").

Subscribers come from all over the world. From a deep forest of south America to a warm desert of Australia. From a big city in U.S.A. to a foggy village of Scotland. Like the radio waves, this magazine crosses the sea in a few seconds and quietly arrives in your shack without QSB or QRM. This is the very next future and this is purely ecologic.

I'd like to offer more pages, more informations. And that's why your participation is important.
Don't forget, it's your magazine and all informations are welcome. You can send the story of your station, an article about a DX-expedition, activities of your local radio-club, etc.

So... dear YL, dear OM, I hope you'll enjoy this second issue and "rendez-vous" for the number 3!

Best regards and 73's
Vincent FAUCHEUX - F5SLD
HAM-MAG

HAM MAG N.2
FEBRUARY 2009

Table of contents

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The Amateur's Code
By VK3AHT, Geoff

ONE

The Amateur is Considerate. . . He never knowingly uses the air in such a way as to lessen the pleasure of others.

TWO

The Amateur is Loyal. . . He offers his loyalty, encouragement and support to his fellow radio amateurs, his local club and to the their country's national Amateur Organization, through which Amateur Radio is represented.

THREE

The Amateur is Progressive. . . he keeps his station abreast of science. It is well-built and efficient. His operating practice is above reproach.

FOUR

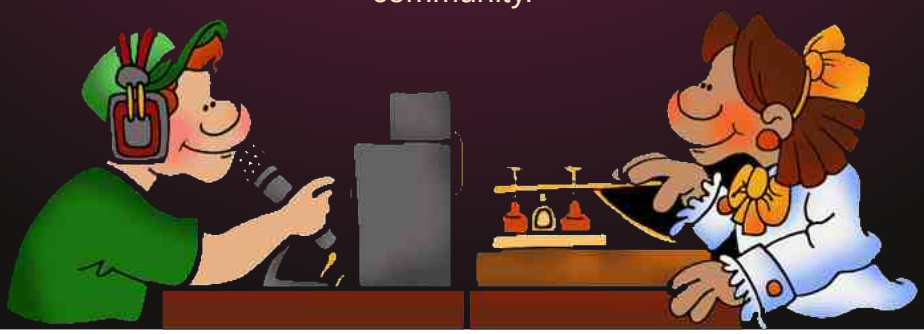
The Amateur is Friendly. . . Slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, cooperation and consideration for the interests of others; these are marks of the amateur spirit.

FIVE

The Amateur is Balanced. . . Radio is his hobby. He never allows it to interfere with any of the duties he owes to his home, his job, his school, or his community.

SIX

The Amateur is Patriotic. . . His knowledge and his station are always ready for the service of his country and his community.



ERRARE HUMANUM EST
- To err is human -
By YO4PX, Francisc

That aphorism by an ancient Roman philosopher contains an unexpressed thought: that man, recognizing his error, can correct it, surpass himself, and approach perfection.
And here is another term, circulated by the operators of rare DX stations who reside in exotic locations and by those who spend time and money on DXpeditions and contest operations. It is "European behaviour," this term is used by our friends across the pond and assumes too much. "European behaviour" negatively characterises the conduct of amateurs from more than 50 European nations, so different in origin, culture, language and temperament, that it is difficult to find for them a common denominator. These operators firmly allege that in most every occasion the much-trumpeted amateur spirit of friendship and international co-operation is forgotten, when arises Hamlet's question, To work or not to work a new one?
No wonder, say those exasperated amateurs, that many DXpeditioners, bored by the silly hodgepodge produced by European operators, prefer to turn their antennas toward the USA or Japan to maintain a reasonable QSO rate.
No wonder many amateurs resident in rare countries, stuck on believing amateur radio is still a hobby, hide on frequencies less monitored by DX'ers or simply go QRT when found and cornered by Europeans. They probably don't feel obligated to devote their leisure time to making thousands of rubber stamp QSOs and filling out thousands of QSL cards, because destiny threw them onto one of the rare islands on the DXCC countries list.
Blinded as we might be by our continental patriotism, we are forced to admit there is quite a lot of truth in the term. If someone compiled a classification of the manners on the amateur bands, he would be forced to put the European countries at the bottom of the list. We would have to console ourselves that YO amateurs aren't distinguished amongst their continental partners by deliberately or accidentally QRM'ing DX stations. The jamming champs are elsewhere, and we DX'ers know them. And, for the most courteous operators we look to Japan. Amidst the mayhem that constitutes "European behaviour" an attentive listener can discern a few, distinctive, types. Risking oversimplification, let's examine these DX'ers. They may occasionally provoke a smile, but too often spoil our fun.

THE MONOLOGIST

Prefers the microphone, but can sometimes be found on CW. He is usually equipped with very reliable and up to date equipment, with which he monitors the bands for his victims. It does not matter too much for him who will be his interlocutors, or what they say to him, he has too little patience to listen. The only role others have is to listen to what he says, despite its lack of content. Hopefully, the Monologist has VOX, so when the victim has nearly fallen asleep, he can save himself by shouting "Break!" and pretend he has to go QRT. After doing this it is recommended the victim does not show on the bands for the next few hours in case the Monologist finds him again.
The Monologist type of amateur is not generally interested in DX contacts or QSL cards, but still calls DXpeditions and involves them in long QSO's against their will. The illness of the Monologist is a chronic one, and has to be regarded rather like a natural calamity, which is beating you without any possibility of self-defense.

THE IMPATIENT

This one is under continuous strain. He is driven by an unhealthy curiosity. The Impatient posts himself on the DX station's transmitting frequency, despite the operator indicating he is listening up, and then starts to ask questions. He immediately wants to know the DX station's call, his QTH and QSL information, and in the process disturbs everyone trying to work the DX station. With a bit of patience the Impatient could hear the DX station provide this information every 10 or 15 QSOs, and spinning his VFO a bit he would find where others are calling. In nets the Impatient ignores net control's instructions and carries on calling, even though he is not located in the country requested by net control. He calls regardless of the situation, usually in the middle of your QSO. The best expedient, and one not usually advised by DX'ng experts, is to give him the information he wants, accept him, let him join the QSO, put him on the list. Otherwise he may continue to call and cause endless disturbance.

THE OMNISCIENT

This one knows he can teach everybody else. If he thinks an operation is failing he will not hesitate to interfere, nursing and lecturing the ignorant, setting the situation right from his vast store of knowledge and experience. Let's say a novice at working DX dares to ask something on the transmitting frequency of a DX station working split. That is enough for the Omniscient: vigilant and deeply worried about the destiny of the operation, he takes prompt action. He remains on frequency for hours and hours continuously sending or shouting "Up!" to reprimand intruders. His QRM completely covers the DX station and nobody can tell whom the DX station is answering. Despite his well-meaning intentions, one prefers hearing the novice's short questions than the "teacher's" repeated reprimands. There is no remedy for this "helpfulness". Hopefully he will get bored and move on to another crowded spot on the band. Attempts to silence him only redouble his claims of eminence.

THE REVENGER

Tortured by feelings of frustration, by a real inferiority complex. He hasn't learned to be a good loser. Net control didn't call him first? The DX station didn't hear him, or, perhaps, some QRM when he called? That is enough for the Revenger; he switches his transceiver to the tune position and puts an endless carrier on the frequency. Like an incandescent nail it pierces the ears and brains of those digging out the weak DX station with their AF and RF levels at maximum. The Revenger injects various noises into his microphone - ever hear a vacuum cleaner on HF? Some Revengers are music lovers; they love to broadcast piano music on DXpedition frequencies. If you fail to answer the Revenger's call because you want to work DX, and answer a DX station, the Revenger waits for you to finish. Now he wants to work that UA9 you just finished with and if you do not give up the frequency you have occupied for the last hour, a heavy artillery barrage commences. Linear pushed beyond its limits and beam turned in your direction, the Revenger ruthlessly QRMs with a keyer stream or CQ'ing endlessly. In a rage, the Revenger is completely irrational. Dialogue is useless. The only solution is to QSY to another frequency, mode, or, better still, to another band.

THE AGGRESSIVE

In many respects related to the Revenger, but his attacks are direct, often without a call sign, and not under the guise of a CQ and noises. The Aggressive works with high power, but unfortunately doesn't use it very successfully. He calls desperately, for him the pile-up is a matter of life and death, a place where common sense goes untapped. If other well-equipped operators on frequency dare compete with him, he feels hurt. His reputation and his honour are endangered, and he will defend it his way. Discarding civility, the Aggressive splashes competitors with abuse. Polyglot in this field, he knows how to offend each in their mother tongue and indulges in chauvinist outbursts. He relies on the last word being his, because no one else will degrade himself to reply in like manner.

SUPER-DX-MAN

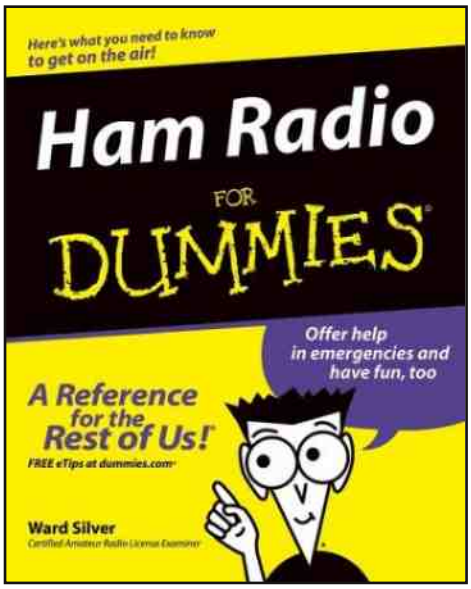
Endowed with the most sophisticated equipment, his linear and antennas are custom made to his pretensions. He usually lives in desert areas so he can surround his house with a thicket of towers and antenna systems, approaching in scale those of a broadcasting station. As he has nothing more to achieve on the higher bands, he indulges in 80 and 160 metres, stretching many thousands of metres of wire in all possible directions. He gives 59+20 dB signal reports to antipodean stations not even heard by others on the band. His signals bend S-meter needles as he breaks the hugest pile-ups, working the DX station on his first call. He doesn't even trouble to give his call sign, simply says, "Hello, Jackie," and Jackie, who is on an uninhabited island in the middle of the Pacific, immediately recognises his voice. Super-DX-Man is on the Honor Roll for ages and has worked everything workable. He doesn't like to chat with amateurs other than Super-DX-Men of his size, if someone else calls him he seems to have corked ears. He ceaselessly wonders how others have the patience to stay in nets for long hours to work a single DX station, as he boasts that not one of his 360 countries has been worked with anyone's help. It seems Super-DX-Man cannot fathom some people struggle to work with 10 watts, stretching out antennas each night, because they haven't permission to erect a poor ground plane on the roof of their flat. He only really becomes annoying when he stops to ask the operator of a DXpedition "What's new on Kingman Reef?" or "How's the weather on Peter I today?"

THE DISCONTENTED

He can be found in the stands of all the sport stadiums. In amateur radio he has a fondness for criticizing DXpeditions. He suffers omniscient kibitzer syndrome: he knows better than the player how the ball should have been passed and how the goal should have been kicked, better than the coach how the team should have been composed, and better than the zebra when a penalty should have been granted.

But a run from one end of the field to the other would bring on convulsions. From his comfortable chair the Discontented ham loudly declaims the DXpedition. He doesn't like the operators (they are lazy, deaf, incompetent); he doesn't like their organization (they didn't turn their antennas toward his QTH when he thinks the opening occurred); the DXpeditioners have materialistic preferences (they worked ten Japanese stations in a row, they requested, "North America only" - Aha, these QSO dealers!!! They want green stamps!!!); they didn't keep their word (starting later and departing earlier than announced). No matter the DXpedition crew assembled and then dismantled 20 antennas in extremes of heat or cold; made tens of thousands of QSOs; slept fitfully in tents; and made their meals from canned goods: all that plus paying, handsomely, for the honour of satisfying the Discontented - this all doesn't matter. If he missed the expedition his verdict is final and irrevocable: they are blunderers. An expedition was a success only if the Discontented got it in his log on nine bands and in all modes.

THE LID



The name given to the amateurs whose working methods leaves much to be desired. Lids are very numerous and often originate from those amateurs who got their licenses without too much trouble, and who did not bother to go through a learning process before getting on the air. The Lid never understands what is happening, tunes up interminably on a DX station's frequency, not because he wants to disturb anybody, but without first checking the frequency.
The Lid doesn't listen before calling CQ, and gives the impression he doesn't have a receiver because he doesn't hear "QSY" from the people he QRMs, nor hears the weak DX station on frequency. He calls the DX station on his transmitting frequency, despite the DX station stating he is listening up, because the Lid doesn't know what "up" means. The Lid calls the DX station when he comes back to someone else, or even while the DX station is transmitting. If the DX station catches a suffix only and states he is only listening for that station you can be sure that some Lids will call, even though their call signs bear absolutely no resemblance to that suffix.
The Lid continues to call the DX station even when the DX station comes back to him, because he doesn't realize it. When he eventually understands he will ask the DX station to repeat his call sign several times. Then he wants all the other details, as he has not heard when the DX station repeated them periodically.
The European Lid answers "CQ DX" calls from other European stations, because he doesn't know what "DX" means. On CW the Lid sends much faster than he can read, causing the other station to send his name and QTH several times, because he refuses to request "QRS." The Lid inadvertently works split, not to keep his frequency clear, but because he doesn't realise his clarifier has to be switched off. The Lid will call you when you are calling in a pile-up, and worse still, will start the contact without waiting to see if you have come back to him, or will end it without knowing whether you have logged him or not. He confuses YO with YA and Bucharest with Budapest. The Lid is able to send CQ 25 times and his call sign only once. The inventiveness of the Lid, in that he does everything upside down, is inconceivable and exhaustless. Now, to end this enumeration, let's try to discern why there are so many Lids on the amateur bands - because we are pretty sure the majority of amateurs branded with "European behaviour" are not Revengers or the Aggressives, but Lids.

Is it human nature to make mistakes? Of course, especially when one is not prepared. It begs the question why the European novice does not learn about on-air procedures before using his new call sign. After passing the examination he shouldn't be left to his own devices to find out about procedures on the air. He should be advised that he should initially listen for 90% of the time to avoid finding himself suddenly in the middle of crowded amateur bands, exposing himself to the risk, unintentionally, of the shame and reputation of a Lid.

It was different aforetime. Long before getting his transmitter license the amateur started by being a short wave listener. For many months he only listened to the contacts of other hams and undoubtedly he enjoyed it, since some amateurs, for some reason, remained SWLs. (Let's not forget those living under dictatorial regimes, who would like to become transmitters and aren't allowed to do it.) Reception was the best school for learning our written and unwritten laws. Then came the day full of excitement for the first QSO made from the club station, under the instructor's attentive guidance, then other contacts, the first DX stations, the participation in contests. And, only when the young amateur accumulated some experience, and he built his own station started to work from home with his own call sign. The Internet offers study and work tools to help get novices on the air while avoiding the epithet "lid." They should use them diligently - knowledge is not innate. Errare humanum est, perseverare diabolicum (To err is human, to persevere is devilish).

This text was published in the Romanian magazine Radiocommunications and Amateur Radio and on the independent website www.radioamator.ro

General Coverage Receiver
LW, MW and SW bands
By ON6MU

It's based on the principle of the ZN414 only much higher coverage. The sensitivity and selectivity is relative good (especially on the LF and MW bands) as can be expected with this "simple" design. The reception on the broadcast bands, LW(longwave) & MW(mediumwave) needs no external antenna! Just a ferrite rod which can be recovered from an old portable MW/LW radio which tuned from approximately 540 - 1600kHz on MW and 140kHz-240kHz for LW. If you find such a radio you'll wont need to make your own coils for those bands.

An AM radio receiver is fundamentally a very simple device. In its simplest form, a resonant circuit builds up a signal if there is one in space at the frequency to which it is tuned. A crystal (galena and cat-whisker) then rectifies the signal, which reproduces the modulation. All the energy comes from the received electromagnetic wave. A good receiver must combine sensitivity and selectivity. Sensitivity is obtained by amplification in several stages, while selectivity is obtained by a narrow bandwidth of the amplifiers. There is a severe problem if the receiver must tune over a reasonable interval, such as the medium-wave broadcast band from 550 kHz to 1.65 MHz. The filters of the several stages of amplification cannot track well enough as their frequency is varied if the bandwidth is narrow, so one must choose between sensitivity and selectivity in such a tuned-RF receiver. There are other problems as well, such as the variation in selectivity as the circuits are tuned over a wide range.

This radio also covers shortwave bands form 2.5Mc up to 24MHz. All shortwave frequencies needs an external antenna. C1 acts as a very simple tuning unit to avoid the receiver being saturated at higher frequencies (shortwave) when using a longwire or any other "large" antenna that isn't resonant. Using a real antenna tuner would be even better... The sensitivity is not as good as on MW and LW though.

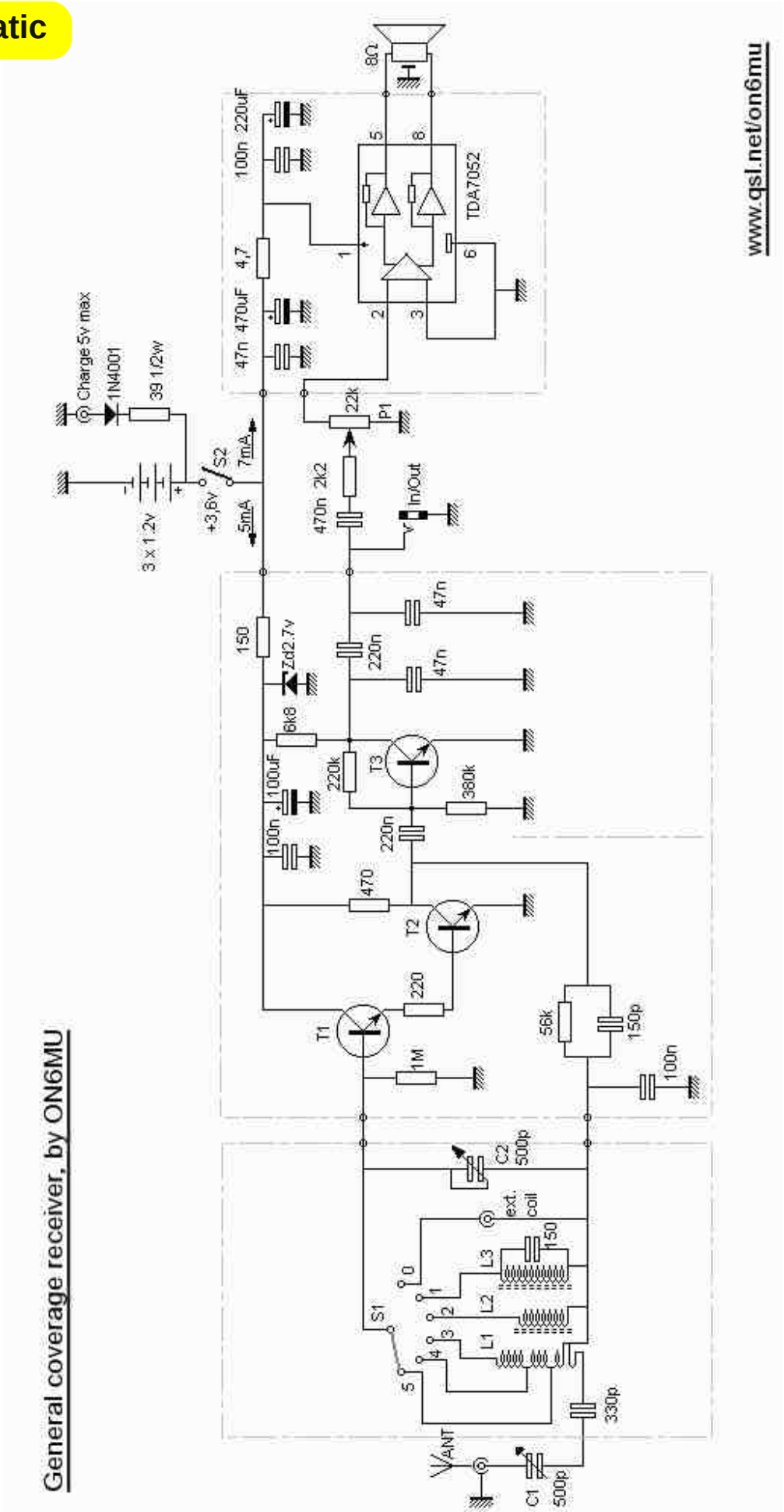
It doesn't need a external power supply as the total current is very low (total 12mA) and can be fed with just 3 (chargeable) batteries.
Transistor T3 has a dual purpose; it performs demodulation of the RF carrier whilst at the same time, amplifying the audio signal. Audio level varies on the strength of the received station but I had typically 10-40 mV. This will directly drive the TDA7052 and drives a 8 Ohm speaker up to 0.5 watt @ 3.6volts.
T1 and T2 form a compund transistor pair featuring high gain and very high input impedance. This is necessary so as not to unduly load the tank circuit. T1 operates in emitter follower, T2 common emitter, self stabilizing bias is via the 56k resistor, the 150pF capacitor and the tuning coil.

P1 set the audio volume.
All connections should be short, a veroboard or tagstrip layout are suitable. The tuning capacitor has fixed and moving plates. The moving plates should be connected to the "cold" end of the tank circuit, this is the base of T1, and the fixed plates to the "hot end" of the coil, the juction of 56k/150p/100n. If connections on the capacitor are reversed, then moving your hand near the capacitor will cause unwanted stability and oscillation.

Switch between the coils (being the frequency bands) with S1. I've put a RCA/Cinch-connector (or better, a BNC-connector) at the band switch to allow experiments with different types of coils for different frequency ranges. The tapping points on the coil allow the set to be tuned to different frequencies by adjusting the position of tap-switch S1.

Frequency coverage
LW : 140 - 240 KHz
MW: 520 -1600 KHz
SW1: 2500 - 6000 KHz
SW2: 5 Mhz - 14 MHz
SW3: 12 MHz - 24 MHz
External coil: use any type of coil for experimental frequency ranges

Schematic


General coverage receiver, by ON6MU
www.qsl.net/on6mu
8Ω
TDA7052
100n
220uF
4,7
47n
470uF
22k
P1
2k2
470n
In/Out
Charge 5v max
1N4001
39 1/2w
3 x 1.2v
+3,6v
S2
7mA
5mA
150
Zd2.7v
6k8
100uF
100n
220k
T3
380k
220n
47n
470
T2
220
T1
1M
56k
150p
100n
C2
500p
ext. coil
L3
L2
L1
S1
330p
ANT
C1
500p

Details - Coils

L1: total of 37 turns of 0.65mm on a 18mm diameter plastic tube of 30 mm height:
taps at 24 turns, 8 turns, 3 turns, 2 turns
L2: 4 mH, 550 turns on a 9/10mm ferrite rod OR MW 'loopstick' antenna scrapped from an old transistor radio
L3: 310 uH, 65 turns on a 9/10mm ferrite rod OR LW 'loopstick' antenna also 'recycled' from an old transistor radio (both L2 and L3 are on the same ferrite core)

The loopstick antenna coil is best wound on a bit of cardboard or plastic tube around the ferrite rod. The coil can then be slid along the rod to adjust the tuning range. Use this to set the low-frequency end of the band. If you need to set the upper end of the band then place a capacitor across the tuning cap and re-adjust the low end of the band again (in schematic L3 150pF).

S1: 6 position switch
Transistors
T1, T2, T3 = BC547 NPN
Specs
Frequency range: 140 kHz - 24 MHz (LW & MW needs no external antenna)
U = 3...12 volts *Battery or external power operated
3 x 1.2 volt chargeable batteries
I = 12mA @ 3.6volts
Output LF power: 500mW @ 3.6volts, 1Watt @ 12 volts
External coil connector
PL259 connector for external antenna (used for the shortwave bands)
In/OUT connector - used for external LF amplifier, headphone
IN/Out connector - OR can be used as an little LF amplifier (TDA7052) with an LF input source (when SW1 is at position 0 (using no ext.coil)).

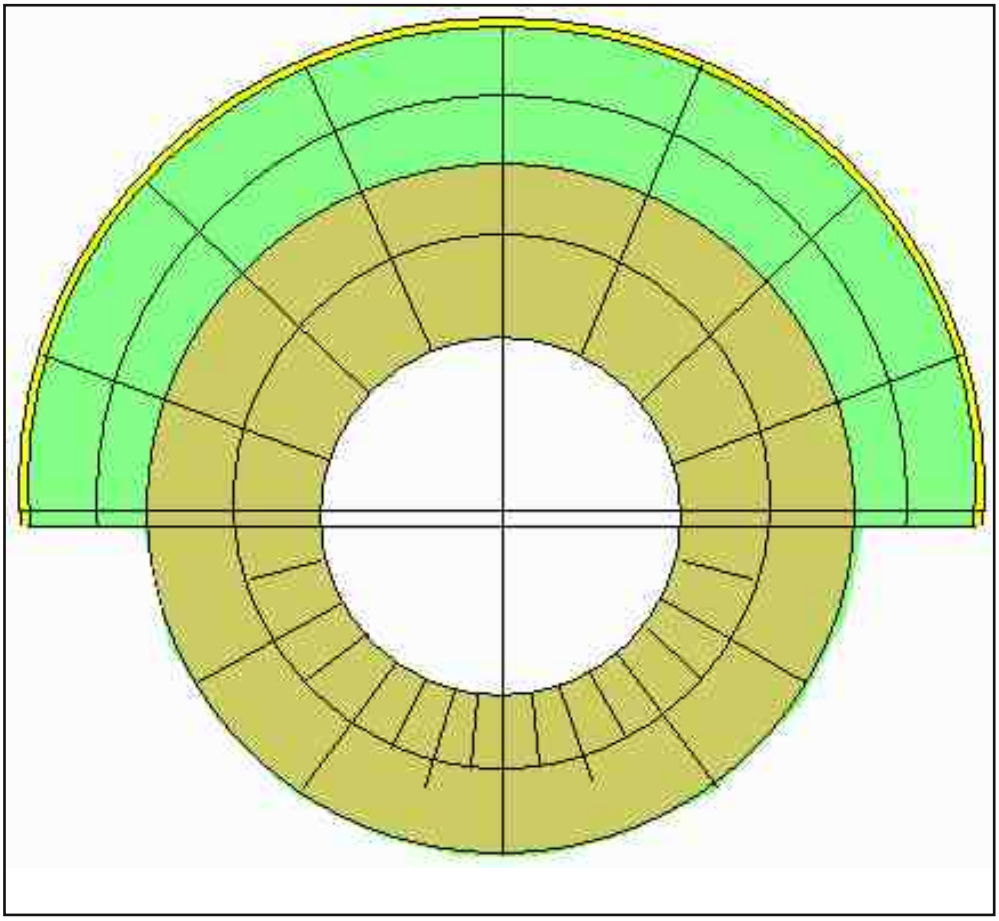
The receiver sensetivity and selectivity is more then fair on LW and MW bands. However, the higher you go in frequency (> 2 Mhz) the less sensitivity and selectivity the radio will have. this could be solved by using a selective pre-amp between the shortwave bands (S1: position 3,4,5).

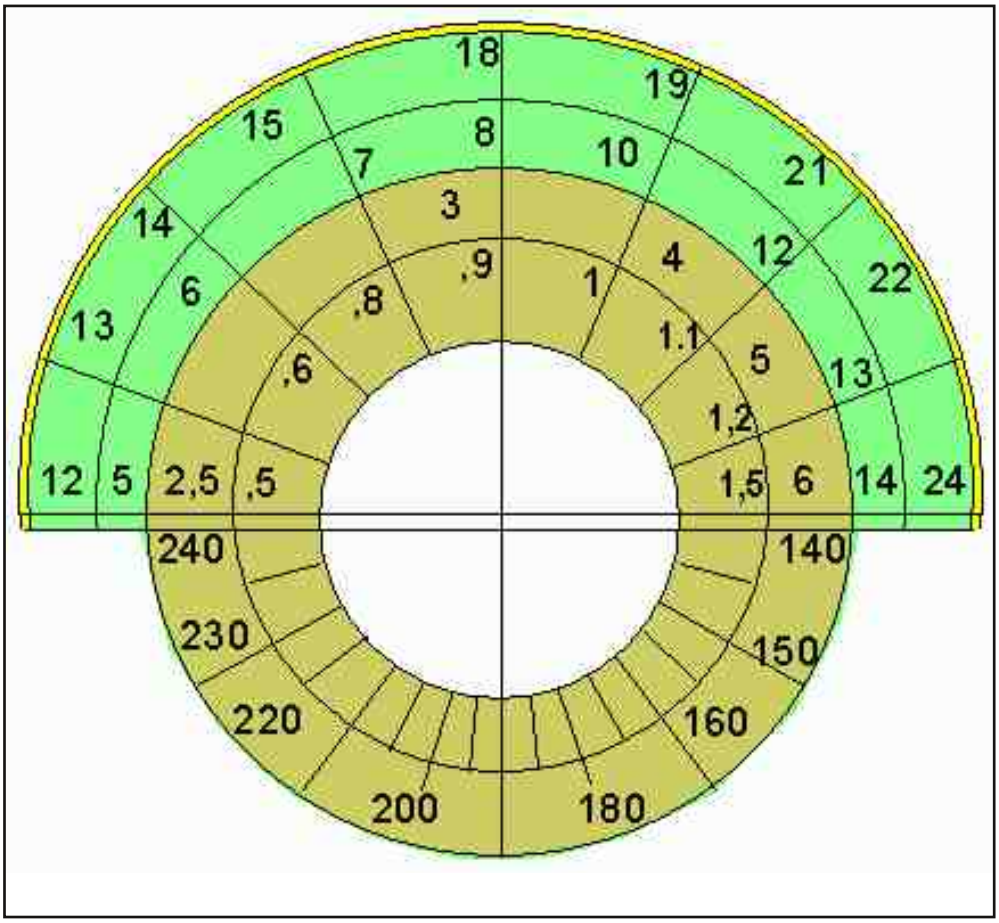
TOP VIEW

INSIDE VIEW 1

INSIDE VIEW 2

DIAL SCALE

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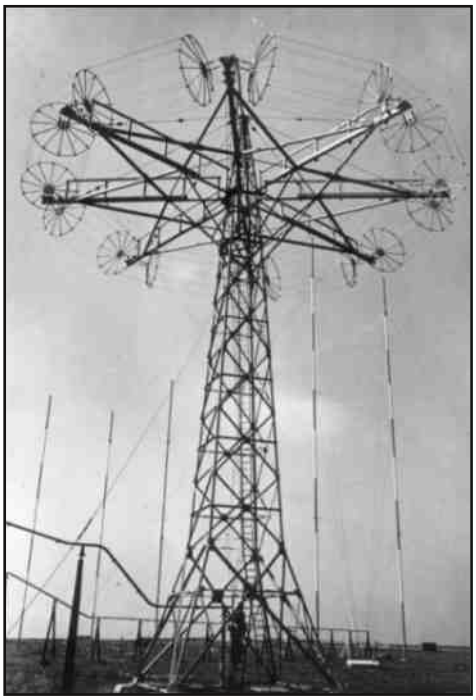
240
140
230
150
220
160
200
180

AM radio is broadcast on several frequency bands:

Long wave is 153–279 kHz; it is not available far into the Western Hemisphere, and European 9 kHz channel spacing is generally used (historically frequencies as high as 413 kHz were used but currently there are no terrestrial LW broadcasters above 279 kHz).
Medium wave is 520–1,610 kHz. In the Americas (ITU region 2) 10 kHz spacing is used; elsewhere it is 9 kHz. ITU region 2 also authorizes the Extended AM broadcast band between 1610 and 1710 kHz.
Short wave is 2.3–26.1MHz, divided into 15 broadcast bands. Shortwave broadcasts generally use a narrow 5 kHz channel spacing.
The allocation of these bands is governed by the ITU's Radio Regulations and, on the national level, by each country's telecommunications administration (the FCC in the U.S., for example) subject to international agreements.
Long wave is used for radio broadcasting in Europe, Africa, Oceania and parts of Asia (ITU regions 1 and 3). In the United States and Canada, Bermuda and U.S. territories this band is mainly reserved for aeronautics, though a small section of the band could theoretically be used for microbroadcasting under the United States Part 15 rules. Due to the propagation characteristics of long wave signals, the frequencies are used most effectively in latitudes north of 50°.
Medium wave is by far the most heavily used band for commercial broadcasting. This is the "AM radio" that most people are familiar with.
Short wave is used by audio services intended to be heard at great distances from the transmitting station. The long range of short wave broadcasts comes at the expense of lower audio fidelity. The mode of propagation for short wave is different (see high frequency). AM is used mostly by broadcast services — other shortwave users may use a modified version of AM such as SSB or an AM-compatible version of SSB such as SSB with carrier reinserted. In many parts of the world short wave radio also carries audible, encoded messages of unknown purpose from numbers stations.



Frequencies between the broadcast bands are used for other forms of radio communication, such as baby monitors, walkie talkies, cordless telephones, radio control, "ham" radio, etc.
AM radio signals can be severely disrupted in large urban centres by concrete bridges with metal reinforcements, other Faraday cage structures, tall buildings and sources of radio frequency interference (RFI) and electrical noise, such as electrical motors, fluorescent lights, traffic signals, or lightning. As a result, AM radio in many countries has lost its dominance as a music broadcasting service, and in many cities is now relegated to news, sports, religious and talk radio stations although some musical genres — particularly country, oldies, nostalgia and ethnic/world music — survive on AM, especially in areas where FM frequencies are in short supply or in thinly populated or mountainous areas where FM coverage is poor.

ON6MU

THE DX NEWS

From the Web (tnx opdx, 425 dx news, arrl...)

UGANDA, 5X

Peter, DL8SBQ is QRV as 5X4X from Arua until June. Activity is on 40 to 10 meters SSB. He is active up until 20.00utc each day. QSL via DF5GQ.

GERMANY, DA

Special event station DR09ANT is QRV during 2009 from the Upper Bavaria district for International Polar Year. They are active on as many bands and modes as possible. QSL via DL5MHQ.

THAILAND, HS

Joerg, DL1MJF is QRV as HS0ZGQ from Koh Samui Island, IOTA AS-101, until February 12. QSL to home call.

DOMINICA, J7

Seth, SM0CCM will be QRV as J79XBI until April 1 while on holiday. Activity will be on the HF bands using only SSB. QSL via SM0XBI.

LITHUANIA, LY

To mark the Millennium of Lithuania, a number of club members are QRV with the prefix LY1000 until March 1. Activity is on all bands and modes. QSL via operators' instructions.

TURKEY, TA

Sadao, JA1PBV is QRV as TA7/KI6TIU until February 11. He expects to be active from Cappadocia, Antalya, Izmir and possibly others locations within Turkey as well. QSL to home call.

BERMUDA, VP9

In celebration of the 400th anniversary of the settlement of Bermuda, amateur radio operators here will use the special prefix VP9400 during 2009.

CANADA - SPECIAL PREFIXES

Look for Canadian amateurs to use the following special prefixes between January 1st and February 28th to celebrate the 400th anniversary of Galileo using of optical instruments to inspect the universe. Also, please note that this year is the International Year of Astronomy (IYA). Some Canadian amateurs will exchange their prefixes as follows:

VE changes to CG VO changes to CH |For example: VE7DAO = CG7DAO
VA changes to CF VY changes to CI | VA3DAO = CF3DAO

The following are announced operations using the special prefix callsigns for the IYA:

CG3OIJ - Operator Darin, VE3OIJ; on 80m-70cm (WW Loc. FN25EJ). QSL via VE3OIJ, by the Bureau, eQSL or direct to: P. Darin Cowan, 674 Southmore Dr. W, Ottawa, ON K1V 7A1, Canada.), or CG9NC - Paul, VE9NC, from Hampton, New Brunswick; mainly on 20 meters on the Digital modes. QSL via VE9NC.

YE1, INDONESIA

Members of the Bekasi DX Contest Club (YE1ZAT) will be active during the CQWW WPX RTTY Contest (February 14-15th) as a Multi-Single entry and the CQ WW WPX SSB Contest (March 28-29th) as a Multi-Single entry. Operators mentioned are Joz/YD1JZ, Danu/YD1GCL, Terry/YC1KAF, Yon/YB1CCF, Arif/YE1AA and Heri/YB1KAR. QSL via YE1ZAT, by the Bureau, e-QSL or direct (QRZ.com).

3W/XV, VIETNAM

Mike, OM2DX (aka E4/OM2DX, YI9X..etc), is now in Hanoi, and is working for the Embassy of the Slovak Republic. He has obtained a license with the callsigns XV9DX and 3W1M. He is expected to be here the next 3 years and be active on all bands using CW, SSB and the Digi modes. QRNs shown that Mike has been on 40/20/17/15 meters CW this past week. QSL via OM3JW.

FO, FRENCH POLYNESIA

Phil, F5PHW, informs that his 2 year assignment in Tahiti will begin during the summer in August and end in July of 2011. He intends to be active on all HF bands from 80-10 meters mainly on CW and RTTY (possibly some PSK31) with very little SSB using only 100 watts.. QSL via F8BPN, by the Bureau or direct. QSL will also by LoTW.

P4, ARUBA

John, KK9A, will be active as P40A during the ARRL DX SSB Contest (March 7-8th) as a Single-Op/All-Band entry. QSL via WD9DZV.

ZF, CAYMAN ISLANDS (NA-016)

John, K6AM, will be active as ZF2AM during the ARRL DX CW Contest (February 21-22th) as a Single-Op/All-Band/High- Power entry. QSL via K6AM, direct or by the Bureau or LoTW.

ZK2, NIUE (OC-040)

Chris, ZL1CT (GM3WOJ), will be active as ZK2V between May 16th and June 20th. He states that this 5 week DXpedition is not a "Holiday DXpedition" but it aims to give as many stations their first QSO with ZK2 as possible. This is the cyclone season, so operation may be interrupted by electrical storms. Resources are limited, so activity will be mainly on 80/40/20/15 meters using CW and SSB, with some 30/17/12 meter activity and RTTY. Planned operations include entries in the 2009 ARRL CW and Phone Contests. QSL via N3SL. More details will be forthcoming.

Hogwash For Hamsters: A Light-hearted Look at the Hobby of Amateur Radio by Jerry Spring 111 pages; quality trade paperback (softcover).
A humorous look at the hobby of amateur radio. Included are stories, familiar songs and nursery rhymes, limericks, riddles, and other assorted gems.
Here : http://www.trafford.com/08-1259

Have a look at the WB6DHW's website. Interesting about the boards, either the 995x or the UHFSDR. Dave - WB6DHW
http://wb6dhw.com

THE DX CALENDAR
BY SM3CVM, Lars
http://www.sk3bg.se/

FEBRUARY 2009

– 3/2 CANARY ISLANDS; EA8/hc AF-004
from Tenerife by ON5JV and ON6AK. Activity will be mainly on 20 and 40 metres during their evenings. QSL via home calls (bureau preferred).

– 5/2 DOMINICAN REPUBLIC; HI7/IZ5JNQ NA-096 NA-122
He also plans to go and operate as HI2/IZ5JNQ from the coastal islands (NA-122) of Saona and Catalina during that time frame.

- 15/2 ANTARCTICA; OPØLE AN-016
from Princess Elizabeth Base and various, but Antarctica mainly by ON3PC. QSL via homecall.

– ca 28/2 IVORY COAST; TU8/F4EGS
by F4EGS in his spare time with a focus on CW and RTTY (and SSB on 160 and 80 metres). QSL via F4EGS, direct or bureau.

– 28/2 CANADA; CG, CF, CH and CI
All radio amateurs in Canada are welcome to use the following special event prefixes. Activity is to commemorates Galileo's first use of an optical telescope and the subsequent discoveries he made in his lifetime. Look for radio amateurs in Canada to use the following prefixes:
VA stations will use the prefix CF
VE stations will use the prefix CG
VO stations will use the prefix CH
VY stations will use the prefix CI
VE9NC will be activating the special event prefix callsign CG9NC. He will be active mainly on 20 meters on the Digital modes throughout this period. QSL via VE9NC.

– Feb MARTINIQUE; FM/F5IRO NA-107
He plans to be active in his spare time, typically after 22 UTC and during the weekends. Expect him to operate CW, digital modes and some SSB on 40, 30 and 20 metres. QSL via home call, direct or bureau.

INDIA HAMFIESTA 2009

The Organising Committee of Hamfest India 2009 and BARC Golden Jubilee Year, is happy to announce that it has finalised the following events to be conducted through the year 2009. The events will be conducted and coordinated by the Organising Committee Members.

Sunday, 26 April 2009
Day Fox Hunt in Bangalore

Sat – Sun, 23 and 24 May 2009
HF Contest - Phone/CW

Sat – Sun, 27 and 28 June 2009
Field Day at Nandi Hills

Sunday, 18 July 2009
Quiz on the Air – Activity in Schools

Sat – Sun, 15 and 16 August 2009
International Lighthouse & Lightship Weekend – Mangalore / Cochin

Sunday, 20 Sep 2009
Family Field Day

Sat - Sun, 3 and 4 Oct 2009
VHF Contest

The entry fee for the events, rules & regulations for the contests, etc, will be announced at least one month prior to each of the events. The Winners and participants in these events will be awarded and recognised respectively during Hamfest India 2009 on 7 - 8 November 2009. We also request you to circulate and share this information amongst your members so that we will have participation in big numbers.
More information on www.hamfestindia.com or www.barc.in
73, Ramesh Kumar - VU2LU - Official Correspondent - Organising Committee - HFI 2009

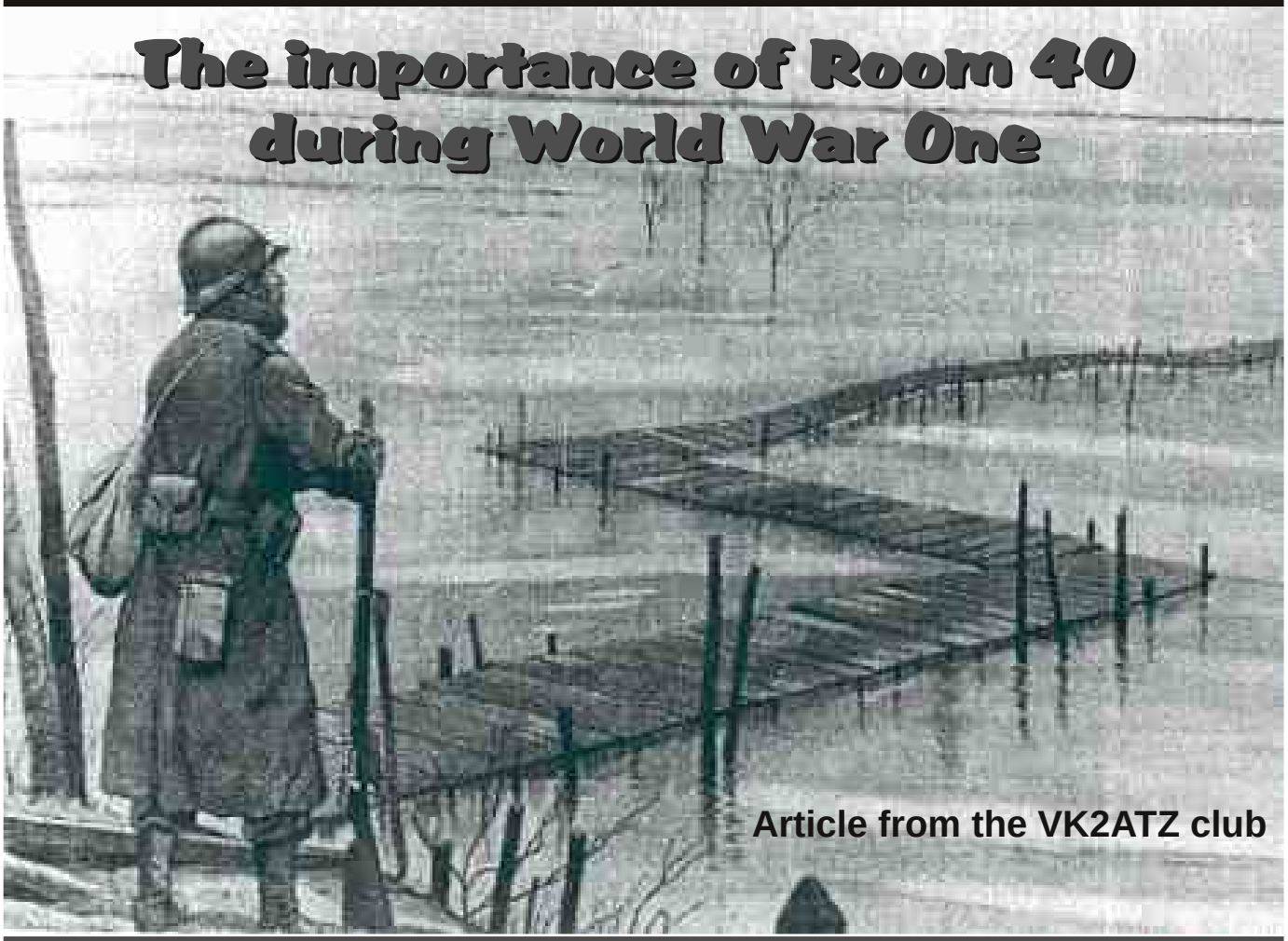
According to the IARU Region 1 Constitution, the new Executive Committee, elected at the 2008 Region 1 Conference.
Details of the new Committee can be found at http://www.iaru-r1.org/EC.htm
Member Societies should note that the new Region 1 President is Hans Blondeel Timmerman, PB2T (hans@blondeeltimmerman.nl) and the new Secretary is Dennis Green, ZS4BS (zs4bs@netactive.co.za).
I would like to take this opportunity of thanking all Member Societies for their support during my six years as Secretary, and wish you all a very Happy New Year. With best wishes for the future. **73, Don Beattie, G3BJ**

By Gary Sawyer W0GDS
Keeping corrosion off your aluminum antenna connects and end pieces that fit inside another connect. When taking these pieces apart have a 2 gal approx 6 liter container of hot water with 2 cups or one-half liter of baking soda thoroughly mixed in the water solution.
Stand the end pieces in the solution for about an hour or until the end is beginning to become brighter. Lightly brush the end piece to free it of any corrosion residue. Once this is bright and dry, apply a generous coat of OX-GARD non-corrosion paste made by Gardner-Denver. This is available in 2 0z or 6 oz tubes. The OX-GARD will enhance the electrical contact between the two pieces joining and will prevent corrosion for many months or years.
This works well and you may even see an improvement in the use of the antenna once it has been cleaned and treated. Contact me at W0GDS@arrl.net for any additional information.
73 Gary W0GDS Dallas TX EM12

4K9W NEEDS YOUR HELP

What was not expected has unfortunately happened which has brought Vlad, 4K9W, into a personally very difficult situation. Certainly many DXer's do not know that Vlad, whom I know for over 20 years, is an invalid for over 30 years, has been bed ridden. Due to this fact he is naturally constantly dependant of respite care.
Now for already 4 weeks, Vlad's mother, who until now took care of Vlad, is dead. So now Vlad is alone without other relatives. At present, his friends and acquaintances from the neighborhood support him. However it is necessary to find a constant home care for him. If this is not possible from own means then the State will be compelled to move Vlad into a home for severely disabled persons in order to guarantee him minimum care to survive.
That would, however, also mean that Vlad, with unsurpassed optimism and joy for life would no longer enjoy different facets of his life: Amateur radio (almost QRV daily and along with CW and SSB also on PSK and RTTY for over a year now), communicating with friends for many years on Amateur radio airwaves, participating in contesting, and also on the internet. It is also expected that Vlad won't be able to take his very large QSL collection with him.
Alone in electronic form there are over 164,000 QSO's logged since the beginning of the 90's.
In the past few days, Vlad and his friends tried to find out how much with certainty his care would cost. The frightening result is that in Baku and the greater area, the cost would be $500-$800 monthly. To complicate matters, Vlad, where he lives, is about 30 km from the town center. However, invalidity pension (of highest classification) that he receives only amounts to $140 from which he must naturally also live (meals, clothes, electricity, and everything else needed).
Last week Vlad arranged an agreement with a woman who lives nearby and was known by him before to take the care duties for about $350. Hopefully she'll be able and ready to do it for a long time.
The complexity of the problem is that Vlad needs montly assistance and the above costs accumulate each month. In principle one could say that this isn't so difficult. For approximately 20 helpful radio amateurs that would mean about $20 per month each. I will try to help him as much as I can, like I always did during all the years but $350 on a monthly basis are too much for me too. Therefor, on behalf of Vlad, 4K9W, I make a call to all to whom his situation matters, to support this project that will keep him active on amateur radio. The most important part of the project is to help support his continued health needs. Naturally are we thankful to one time donors also. Organization for relief to Vlad is planned so that money collected will go directly to the care givers. Thus, it is guaranteed that the support is used for his care by the health providers. I fear that we will soon not hear 4K9W on the air without such support, and without such support he soon looses vital interest in life, even though his life over the past 30 years wasn't the best. For his willpower and desire to live, with over 20 years as his friend, I'm impressed. The translation in other languages and forward to other mail-lists is requested and permitted. A copy would also be nice. Axel Schernikau, DL6KVA dl6kva@darc.de
Website : http://4k9w.oe4vie.com/4k9w_english.html

The importance of Room 40 during World War One



Article from the VK2ATZ club

Naval Intelligence Division to examine intercepted German Radio messages. The sea messages had been intercepted by the stations of the Marconi Company. Sir Alfred quickly realised that valuable information could be gained by reading these messages. Staff were recruited and Room 40 (later designated 1D25) of the Admiralty was established with the task of intercepting and breaking the enemy's messages and codes.

The first intercept station was set up in a Coast Guard Station in Huntstanton with the help of two amateur radio operators: Russel Clarke and B. Hippisley. The number of these stations grew to 14 with all having direct lines to the Admiralry.

In 1914 the codebreakers obtained copies of the German codebooks from captured or destroyed ships. A copy of the Mercantile Signal Book was obtained from Australia while the German Naval Signal Book was obtained from Russia. In April 1915 a copy of the German Diplomatic Code was obtained and another rich source of information had been secured. These books were the basis of breaking and reading coded traffic..

Room 40 was able to give early warning to the British Grand Fleet about the movement of the German Fleet and in early 1915 the first Direction Finding (DF) station was established at Chelmsford. Soon after, other DF stations were set up along the coast of England and Ireland. Room 40 now had another important source of intelligence, as DF stations proved invaluable in the location of German U-boats. In May 1916 Room 40 was instrumental in relaying up-to-date information on the German High Sea Fleet during the battle of Jutland. Unfortunately the information was relayed without comments and proved confusing. This resulted in the information being doubted by the Admiralty and to their detriment was not acted upon.

Although the Battle of Jutland was a victory for the Germans, they were not eager to face the British Fleet. Therefore the Germans began extensive submarine warfare on merchant shipping which resulted in submarine operations becoming top priority for all staff of Room 40. Every scrap of information on the movements and intentions of German submarines became invaluable to the Admiralty. When the Germans changed their codes in 1916, Room 40's DF and interception sections were so experienced that they were able to obtain a good flow of intelligence. More help came from divers who recovered codes from sunken Uboats.

Room 40 was also able to give advanced warning when the Germans sent their Zepplins to drop bombs over England. Westlakes Amateur Radio Club Inc. Magazine December 2008

In 1917 Room 40 was reorganised, and instead of simply passing decrypted messages, they were combined into intelligence reports. After years of studying the German Fleet, the staff of Room 40 were very knowledgeable and capable of making accurate intelligence assessments.

In early 1917 the cryptographers of Room 40 worked on what was to become the most important message solved during WW I: The Zimmerman Telegram. This message was sent by Zimmerman, the German Secretary of State fro Foreign Affairs. To the German Minister in Mexico. Room 40's solution of the telegraph helped propel the United States into the First World War when it was shown to the President. Following in the text of the famous telegram : "We intend to begin unrestricted submarine warfare on the first of February. We shall endeavour in spite of this to keep the United States neutral. In the event of this not succeeding we shall make Mexico a proposal of alliance on the following basis : Make war together, generous financial support and an understanding on our part that Mexico is to reconquer the lost territory in Texas, New Mexico and Arizona. The settlement detail is left up to you. You will inform the President (of Mexico) of the above most secretly as soon as the outbreak of war with the United States is certain and add the suggestion that he should , on his own initiative invite Japan to immediate adherence and at the same time mediate between Japan and ourselves. Please call the President's attention to the fact that the unrestricted deployment of our submarines now offer the prospect of compelling England to make peace within a few months. Acknowledge receipt. Zimmerman."

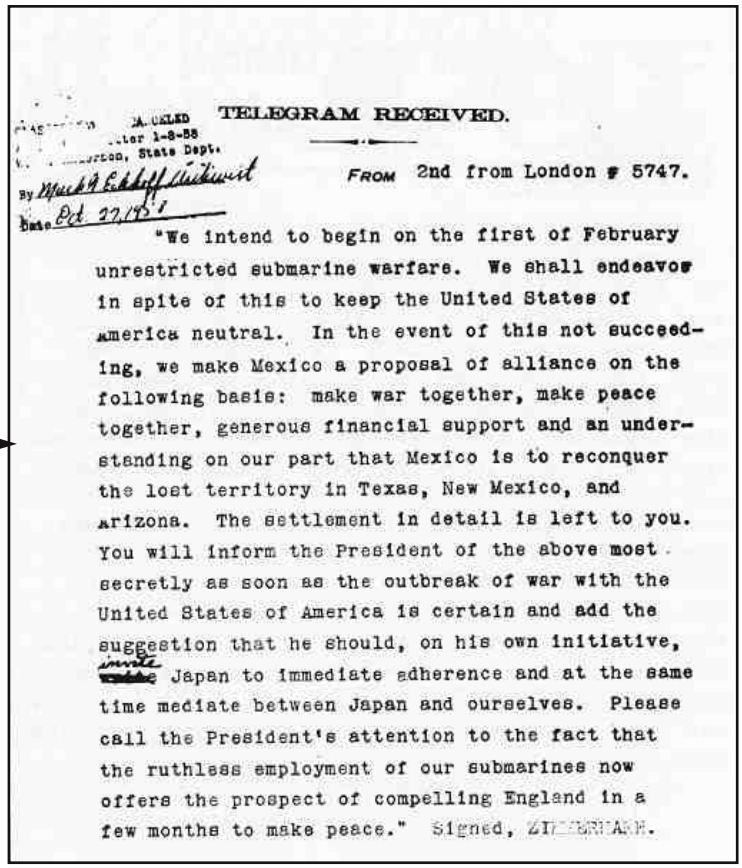
In early 1917 the cryptographers of Room 40 worked on what was to become the most important message solved during WW I: The Zimmerman Telegram. This message was sent by Zimmerman, the German Secretary of State fro Foreign Affairs. To the German Minister in Mexico. Room 40's solution of the telegraph helped propel the United States into the First World War when it was shown to the President. Following in the text of the famous telegram : "We intend to begin unrestricted submarine warfare on the first of February. We shall endeavour in spite of this to keep the United States neutral. In the event of this not succeeding we shall make Mexico a proposal of alliance on the following basis : Make war together, generous financial support and an understanding on our part that Mexico is to reconquer the lost territory in Texas, New Mexico and Arizona. The settlement detail is left up to you. You will inform the President (of Mexico) of the above most secretly as soon as the outbreak of war with the United States is certain and add the suggestion that he should , on his own initiative invite Japan to immediate adherence and at the same time mediate between Japan and ourselves. Please call the President's attention to the fact that the unrestricted deployment of our submarines now offer the prospect of compelling England to make peace within a few months. Acknowledge receipt. Zimmerman."

By 1918 the Germans were aware that their communications were being read and adopted methods to prevent the British knowing or guessing the movements of their fleet. But in early November, plain language messages were intercepted indicating that the German Fleet had mutinied and so ended World War One. An important achievement by Room 40 was that after the war, intercepted traffic was used as evidence at trials of spies and saboteurs. It is estimated that from October 1914 to February 1919, Room 40 had intercepted and solved 15,000 German secret messages. Room 40 employed 800 wireless operators and 80 cryptographers and clerks.

Room 40 was taken over by the Foreign Office and became Great Britain's main cryptoanalytic agency. In 1939 the Foreign Office moved its Department of Communications to Bletchley Park, about 50miles north of London and that where Ultra Secret and a man called Intrepid come in, But that's another story...

World Radio January 1991

The Zimmerman telegram



TELEGRAM RECEIVED.

FROM 2nd from London # 5747.

"We intend to begin on the first of February unrestricted submarine warfare. We shall endeavor in spite of this to keep the United States of America neutral. In the event of this not succeeding, we make Mexico a proposal of alliance on the following basis: make war together, make peace together, generous financial support and an understanding on our part that Mexico is to reconquer the lost territory in Texas, New Mexico, and Arizona. The settlement in detail is left to you. You will inform the President of the above most secretly as soon as the outbreak of war with the United States of America is certain and add the suggestion that he should, on his own initiative, invite Japan to immediate adherence and at the same time mediate between Japan and ourselves. Please call the President's attention to the fact that the ruthless employment of our submarines now offers the prospect of compelling England in a few months to make peace." Signed, ZIMMERMANN.

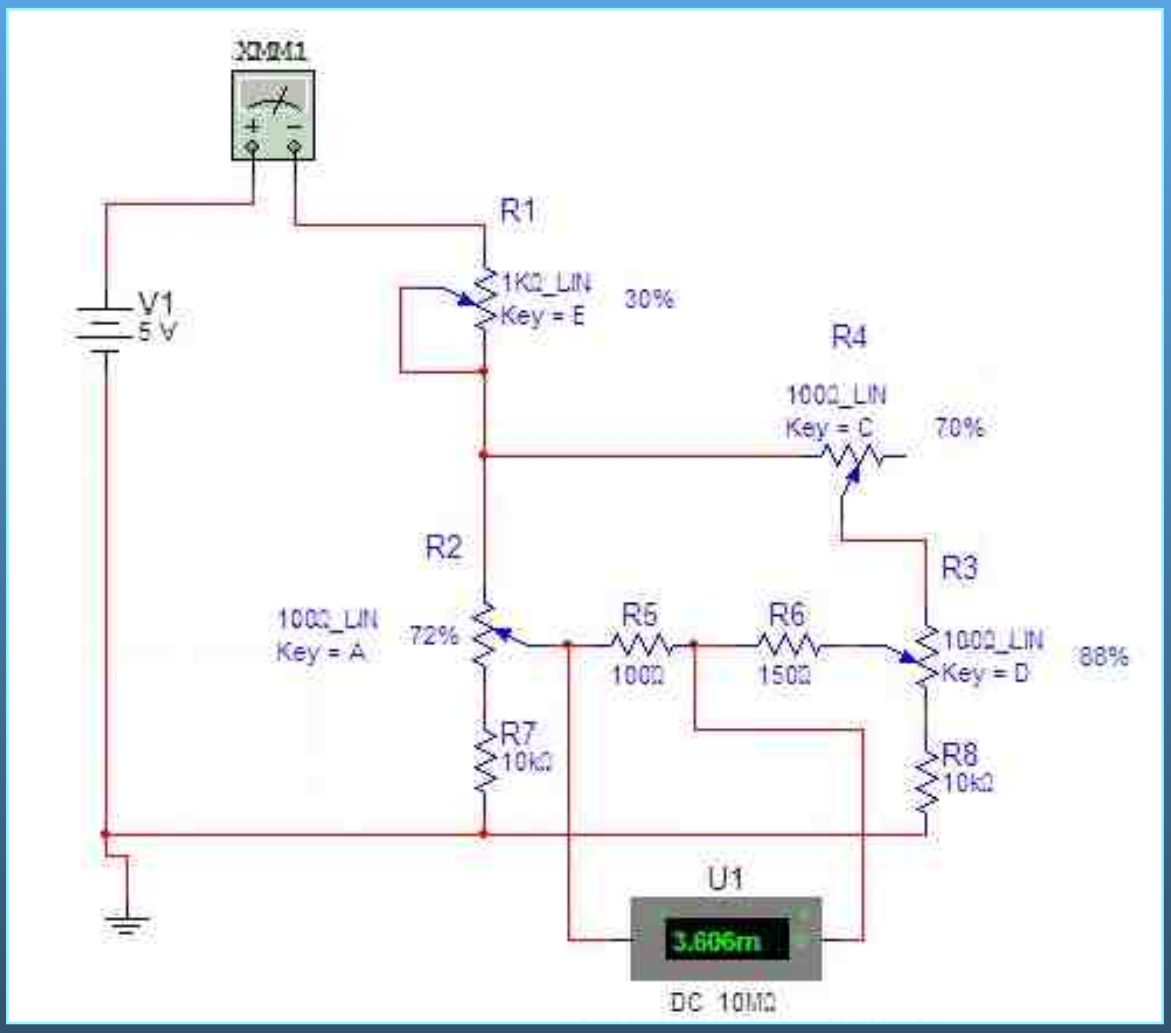
Antenna azimuth indicator From Hamportal.net

Are you using a cheap antenna rotator like AR-300? I have three these rotators and on one I have found a difference between the real antenna azimuth and indication. After few hours was the difference 80 degrees. Rotator, especially rotator with a top bearing is constructed well and could be used also with a larger antenna as a HF monoband yagis for higher bands or smaller tribander.
I have developed simple antenna azimuth indicator – aziumth measurement. It's a simple Wheatston's bridge where is used a pot attached to the rotator tube as sensor. Voltmeter is showing directly azimuth in degrees from 0 to 360.
I am using AR-300XL under the roof, so it is easy to join rotator tube with a potenciometer. See the picture below for details. Use a good quality pot. I have used 100 ohms linear Aripot. Used drive transform 360 degrees into the 180 suitable for pot.

The rotator case isn't fully waterproof but you can still built-in pot if you would like to mount the rotator on the tower. I am recommending to turn the wire from the main gear in the rotator – you got an advantage of the turn more as 360 degrees and avoid the gear breaking.

The Wheatston's bridge is simple. I have used the Electronic WorkBench software to develop the bridge. The schematic diagram is showed with the 5V power supply and output voltage 3,6mV. Potenciometer is marked R4. Other pots are multiturn types – calibration is much easier with them like with cheap pots. Resistors across the bridge were used as a voltage divider. If you would like to have 36mV output, use 12V power supply and connect the voltmeter on the bridge directly (R2 and R3 slides).

The cable from sensor is wound on the ferrite core in the box (three turns or so) as a prevent for RFI.



There are several ways how to display the value from the sensor. Very nice circle azimuth indicator is described on this website : http://dvi.elcom.cz/ok2pbq/prog/ae_map.php
It can be used also the pointer instrument with new scale in degress. I have intend to use a LED voltemeter but I can't found it in the local shop. So I bought a cheap LCD voltmeter module for five euro. If your PC skills are high, you can measure azimuth with computer, e.g. through the serial port.

Also I am recommending to block mechanically azimuth measurement in the control box. Bottom is a hole with bearing. I have put there a small wooden block. You can get an advantage of turning more than 360 degrees and preventing the problems with dead point of the rotator.

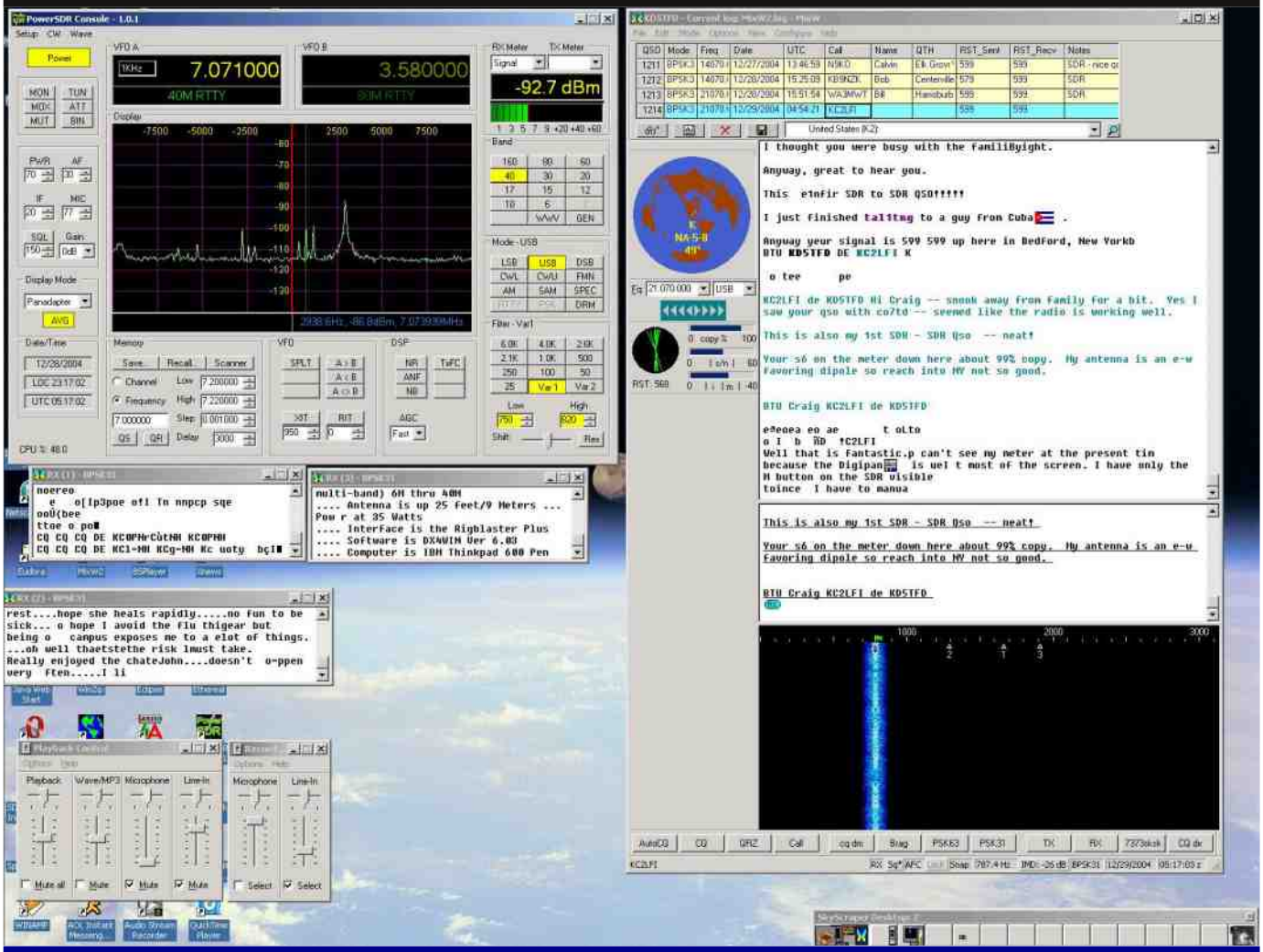
Calibration is a time-consuming procedure. One suggestion – turn antenna on the north and measure with ohmmeter resistance of pot. Build a resistor with this value (use a pot or combination of resistors). Now turn the antenna to 360 degrees, measure again the resitance and build the second resistor.

Now connect to the bridge first resistor and try to make balance with the pots – voltemeter must show zero. Now change it for second resitor and with R1 set on voltemeter 36mV or full scale on the pointer instrument. Check again zero and turn litlle pots – if needed. All post are affecting the bridge so do the calibration again and again until it is zero and 36mV as needed.

See the pictures for construction. I have used a metal box which is also used as stand for control box. In the wind is indicator changing digits frequently, it's OK. Antenna is really moving right and left in the wind. 73's !

A digital modes interface (FSK/AFSK) for sound cards

By IK3QAR

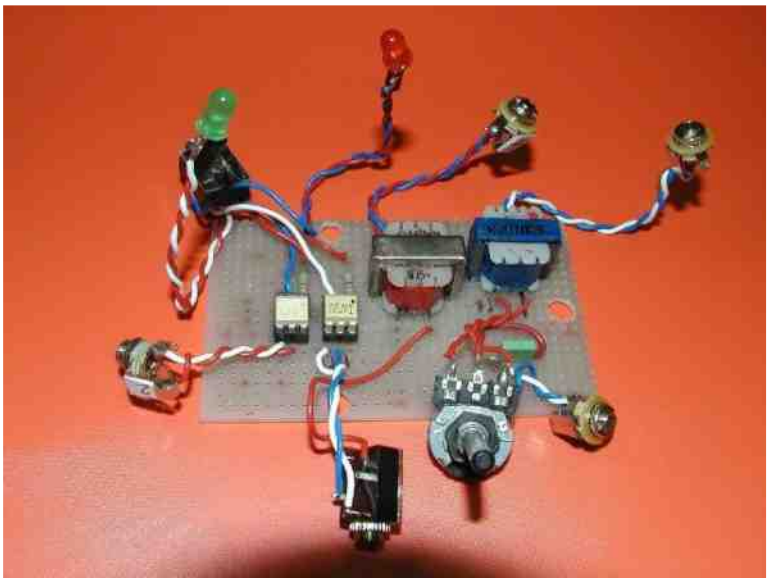


Or how to remove the so called "ground loop" and the reentry in the RTTY broadcast and make radio and PC happily coexist

One of the problems that affects our digital broadcasts which make use of audio cards, as for instance RTTY and PSK 31, is the reentry of the signal between RTX and the PC. These reentries often block the keyboard, make it impossible to get back to RX, send out "dirty" signals and so on.

A solution in these cases is to lower gradually the power, until the problem is over; anyhow this is not the ultimate solution, and in some cases you can put it into practice only by getting down to few watts. To get rid of the problem efficiently and successfully, you should isolate electrically both the RTX and the PC.

Let’s see how:

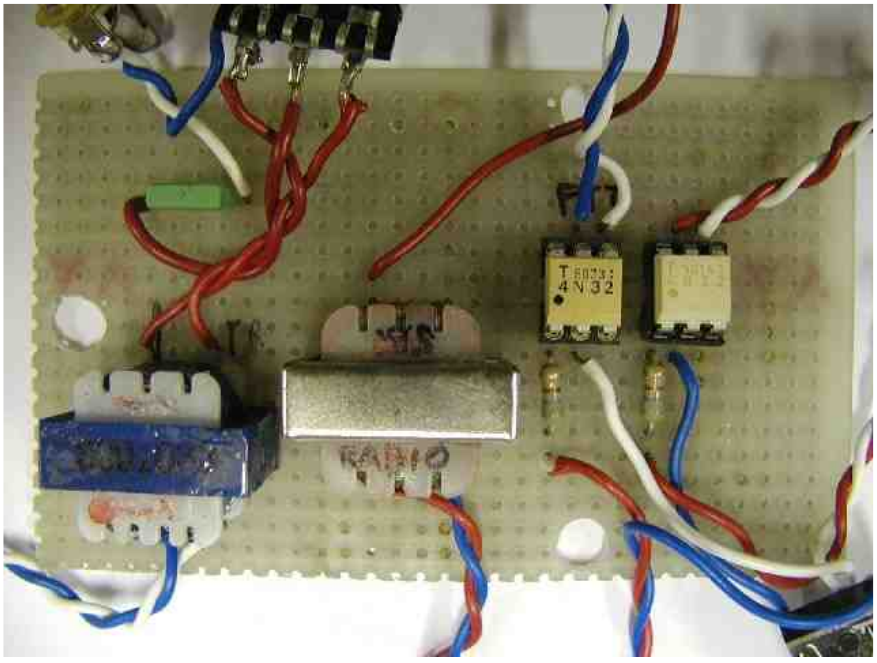


The minimum kit in order to transmit digitally is the following:

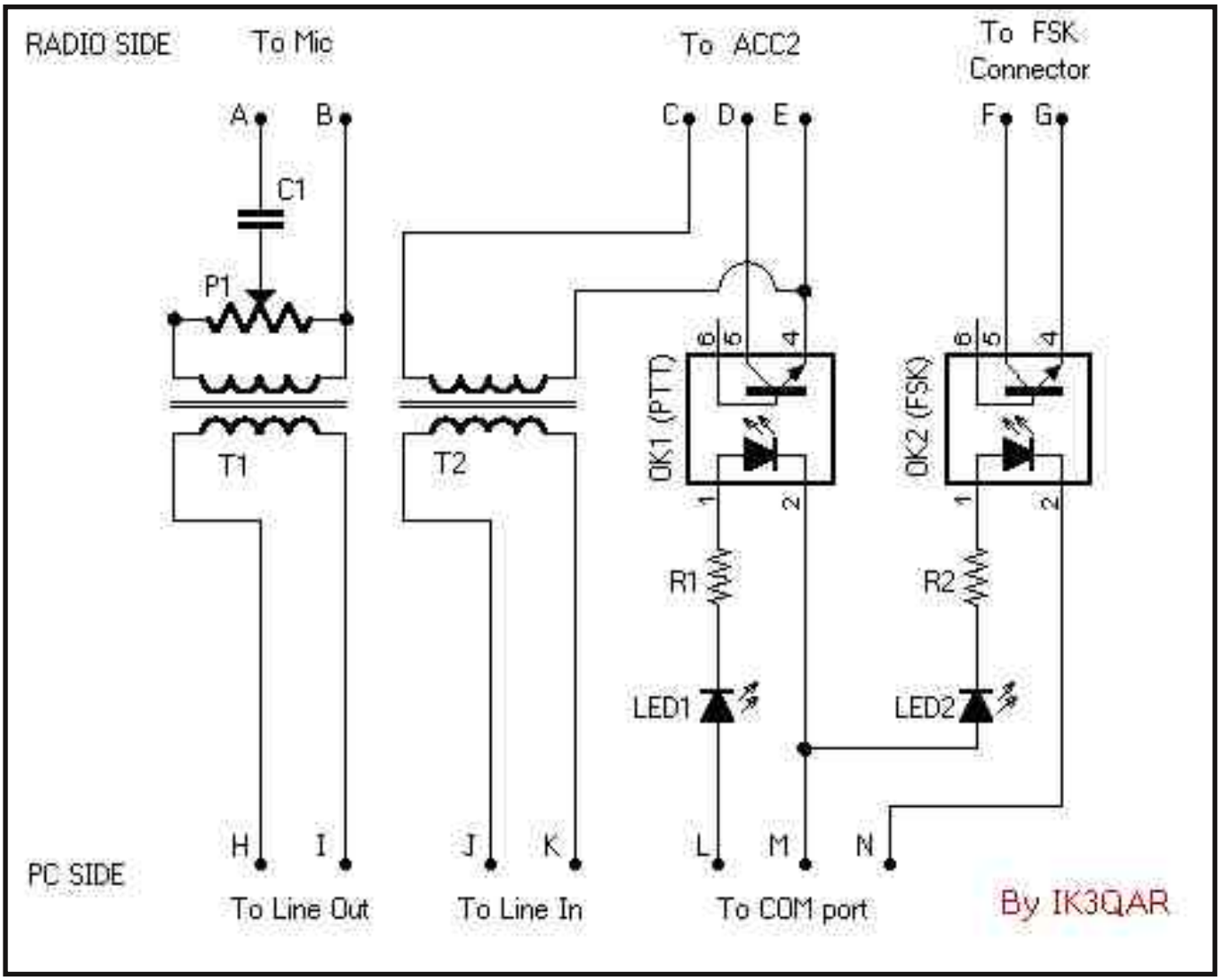
- A cable connecting the audio output (headphones, aux, phone-patch...) to the "line in" socket of the sound blaster
- A cable between the mike connector (or aux socket) and the "line out" socket of the sound blaster "line-out"

Both should be electrically interrupted by a small audio transformer, like those used in the am/fm portable radio sets.
If you want to transmit by FSK and use the PTT operated via serial port, you should use 2 more cables between the PC serial and RTX.
The home-site of the excellent software MMTTY (by JE3HHT) provides the transistor based diagrams for the interface, which though do not isolate radio and computer.
In this case the solution I have adopted to separate RTX/PC is to use 2 optocouplers instead of transistors:

- The first being used for the PTT commutation
- The second being used for FSK transmission (for the RTX that allow it)



Here is the complete diagram of the interface I have realized for the TS940 with the precious contribution of Vincenzo IW3FOL and Vittorio I3VFJ.



CAUTION: Though the circuit works perfectly, I don't take up any responsibility about the possible damages the diagram might cause to the PC, radio or any other item.

This is the component's list:

AFSK (TX) side
C1 - 100 nF Capacitor
P1 - 4k7 ohm Potentiometer
T1 - Audio transformer (1:1)

FSK (TX) side
R2 - 560 Ohm 1/4 Watt Resistor
OK2 - 4N32 Optocoupler
LED2 - Led Diode

A/FSK (RX) + PTT side
T2 - Audio transformer (1:1)
R1 - 560 Ohm 1/4 Watt resistor
OK1 - 4N32 Optocoupler
LED1 - Led Diode

diagram's Pin	On generic radio	On TS940
A	MIC	PIN 1 (MIC)
B	GND (MIC)	PIN 7 (MIC)
C	Radio data output	PIN 3 (ACC2)
D	PTT	PIN 13 (ACC2)
E	GND	PIN 4+12 (ACC2)
F	FSK	(FSK)
G	FSK	(FSK)

diagram's Pin	On PC (sound card)
H	Line Out
I	Line Out
J	Line In
K	Line In

diagram's Pin	On PC (COM DB9)
L	PIN 7 (RTS)
M	PIN 5 (GND)
N	PIN 3 (TXD)

NOTICE: The circuit described here works perfectly on Kenwood TS940, whose transmission circuit FSK is reverse operated compared to the majority of other RTX: for use with other radio sets you will have to slightly modify (only for the FSK (TX) part) the circuit by connecting the OK2's pin 1 (including R2 and LED2) to the "N" contact instead of the "M" contact (see diagram) and the pin 2 to the "M" contact of PC's COM port.

73's ! IK3QAR.it

QSL INFO

NEW QSL TRACKING SERVICE IN CHILE

Have you sent a QSL to Chile but had no reply? Perhaps you had a contact with XQ, CE, CA, CD, XR, 3G, CC which has not been confirmed.
A group of Chilean amateurs is offering to try to help to obtain missing card or cards by carrying out searches and making enquiries in Chile. This service is offered as a goodwill gesture by some Chilean amateurs and is completely free.

To use the service you need to contact José Luis Jiménez. His email address is: ce1kr.joseluis@gmail.com.

You can write to him in Spanish or English. Full details are available on the website: http://hunting-qsl.blogspot.com/

QSP from David Calderwood, CE2WZ - GW4VHO

DL3OCH Portable EME Operation
From QRZ news Jan. 2009
Website: www. K3IR.org

Well, for beginners I strongly recommend to keep the system as simple as possible. All I am using is just the single yagi, about 5m coax cable and the transverter. The advantage of using a transverter instead of a 23cm radio should be clear. It is much more sensitive and does not require an additional preamp (as long as the coax to the antenna remains short).

The advantage of the single yagi beats several disadvantages. Of course I lose 3dB due to polarization loss since most other stations are circular polarization. But look at this; I do not have any coax relay. I can never choose the wrong polarization. Everybody will hear me and I hear everybody. I do not need any kind of sequencer.

The yagi is assembled in just 10 minutes. I need 20 minutes to put my station on the air (including starting laptop etc.). Since the cable is short, I do not need an additional pre amp. All these are things that can fail and can lead to an unsuccessful Dxpedition. As soon as I connect the transverter to the antenna and point the antenna at the moon, it works. The yagi has 21.9dBi gain, which is just 2dB less than a 1.8m dish. My yagi fits easily into my luggage that I can check in at the airport.

To handle one yagi is very simple. I point it visually at the moon. Adjusting every 10 to 15 minutes is enough since the 3dB beam width angle is about 14 degrees. I sometimes do not see the moon at all. In these cases, I simply use a compass to adjust the direction.

Using two or more yogis has another disadvantage. It brings practically 2 to 2.5dB more gain (due to additional losses on coupler and coax). This increase in gain creates more and bigger side lobes which leads to higher noise level on 23cm. So, in the TX path you have the 2 to 2.5dB more gain but in the RX case you have only about 1.5 to 2dB more effective gain because of the higher noise. It gets even worse with four or more yogis. So, one long yagi (about 5m) seems to be the optimum regarding weight, portability, costs and results.

DL3OCH in 3A, Monaco

TF/DL3OCH activity. I forgot my mast in OY so I had to find something else. ...something

The activity has increased a lot especially on 23cm. The smallest station ever worked with this setup was RW3BP who used a 2.4m offset dish and 300W. If you take a look at people's equipment you will see, that most of them would be capable of working a single yagi station if they are using JT65. You can always turn off the deep search decoder, which simply needs a little more time until the QSO is done.

Vy 73 de Bodo, DU9/DL3OCH

Bodo, HB9EHJ in T7, San Marino

Audios interconnexions RX/TX to PC
By ON4BX, Arthur

SUMMARY :

Often, OM's have some problems of interference, lost of program, parasitic oscillations, or malfunction of their computer when their TX is on air. The author has noticed by monitoring the signals on the band that frequently the reason is HF induction on the wirings between computer and radio set-up.
He suggests a way of simple audio interconnexions preventing interference.

Introduction.
More and more, computers are used as a main part of the amateur radio-station, specially for all digital modes, but also CW, SSTV,
or simply logging on line. In the past, when I started RTTY 39 years ago… very little equipment were available on the market, or were too costly for most of us. The only way, was to wire home-made tuning units, like the Mainline TTL unit…
No computer was available, nor software and a TU had to be built for each mode …
Today, every Ham has a PC linked to his station and lots of software for any mode are available at low cost or free.
I have listed as last part of this text a few sites where more information is available.
Of course, have a look in the dedicated groups on the internet and you will found many more…
For all digital transmissions, rtty, amtor, pactor, psk, sstv, hell, cw,…… you only have to have a conventional SSB rig, a low cost PC and software loaded from the Internet!

CONNECTIONS RECEIVE to COMPUTER
Audio signal is usually at high level (1Volt) Fig.1. A very simple interconnection is usually enough. But more about that later in fig. 10.

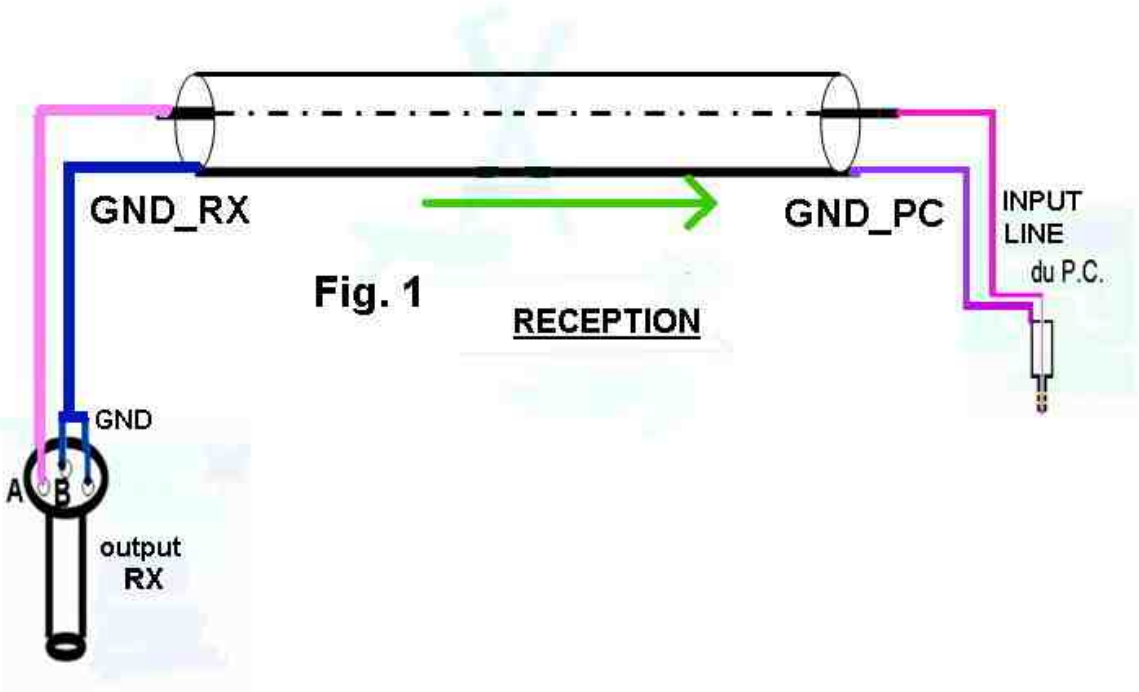
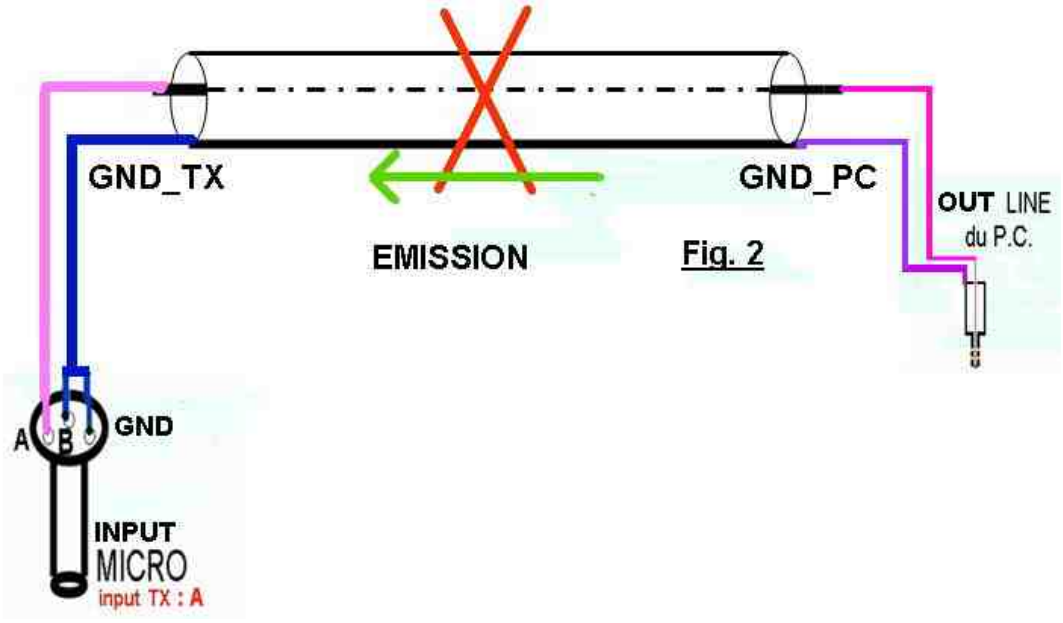


Fig. 1
RECEPTION

CONNECTION COMPUTER to TRANSMITTER

We may think as a first approach simple wiring as in fig. 2.



Note immediately that I have crossed the link with big **RED CROSS** !
That is the simplest way to generate very broad signals for example in psk mode!!

Hams are usually using the mike plug as entry point, except if the receiver has separate high level entry point. But in generally, those entry points are dedicated for a particular mode such as rtty, packet,….
And very often, the receiver parameters such as filters, audio shift… are factory set for the selected mode. Generally, the mike input is used as entry point. So you have the possibility to adjust the tx parameters as you wish. That is very convenient.We assume that the TX is good enough to reject the carrier and other sideband !!

For all that follows from now, we will consider that the mike input is in use. Of course the reader has to adapt the input sigs if he has the opportunity to dispose of a high audio level entry point, or if he wish for some reason use it.

But, the interconnection noted in fig. 2 must not be used!! The level needed at the mike input is millivolts. The output level of the computer sound card is around 1V. The overload at the mike input will be very very high, causing at least very wide unwanted sidebands or splatters…

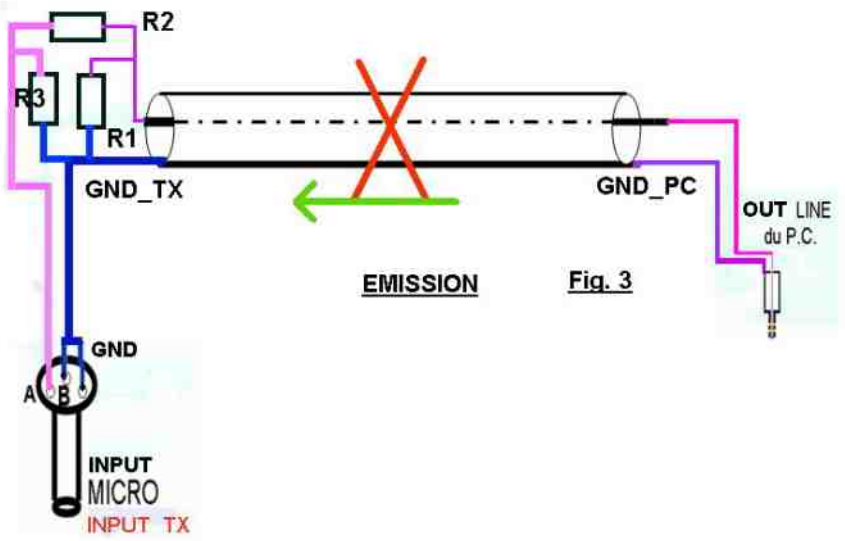
A first approach is maybe to reduce the output level of the sound card output… But as sounds are obtained via internal digital-analog conversion, at low levels the number of the digital steps is limited and quantification noise will appear and of course, noise plus few digital steps resolution means big distortions

A second approach should be to turn the mike gain control close to fully to the left… close to zero… That is no better!!
as there are also quantification noise associated to mike circuits and we have to add the other residual noise present in the RX/TX. That is also the best way to poor signal output!

TRANSMITTER : FIRST STEP

At first, we have to adapt the level of the input audio signal

We will insert an attenuator close to the mike input.



The output audio impedance of the sound card of the PC is close to 600 Ohms. The total input impedance of the attenuator, as seen by the audio cable must be close to 600 Ohms.

But usually the audio spectrum of the signal is quite narrow. The adaptation tolerance is not as strict as for hi-fi audios!

R1 will be the main terminal adaptation. But it is in parallel with the attenuator itself R2 + R3 and also the input impedance of the microphone input circuits. Attenuator is R3/(R2+R3). (R3 with input mike in parallel). I suggest 10 Ohms for R3 and for R2 value around 2K to 4K Ohms R2 should be selected such that the sound card output is at high level, close to the 1 volt, and the microphone input now close to midway. Of course, those values are indicative and R2 has to be rounded to obtain those values of setting. If we select 680 Ohms for the R1 main adaptation resistance, we should obtain an equivalent load for the cable close enough.

TRANSMITTER : SECOND STEP

Until now, a large RED CROSS has been drawed over the audio cable. It is possible that the wiring should be enough for most hams…. But for many of them, HF interferences still appears when the TX is at high power output level, or very wide side-bands if not splatters… Have a look in psk31 mode!!!

This question happens from time to time in the various working groups on the net!

One important problem is still there: GROUND LOOPS!! Usually, electronic equipment powered by the power line have on both power input wires a filter consisted of two sets of capacitors connected between each wire and ground. Sometimes, with an inductance in series and then four capacitors to ground. The efficiency is usually correct against short transit pulses.

but they conduct ground currents through the capacitors. Those power plug are inserted in various location in the shack, not necessary just close together….

So the ground pin of various plugs will carry those capacitors' return currents and several millivolts may be present between those pins at the nominal power line frequency.

Furthermore, if those grounds connecting wires are long enough, they may act as antennas capturing HF sigs induced by the transmitter.

GND_TX and GROUND_PC may have several millivolts of unwanted voltage, HF + power sigs…..

That is called COMMON MODE voltages.

Of course, those sigs are added at the audio microphone signal around same level….

This happens very often when the transmitting antenna is close of the shack (like verticals in restricted areas).
Its imperative to break those common mode voltages (and currents) WE need GALVANIC INSULATION AS IN FIG. 4.

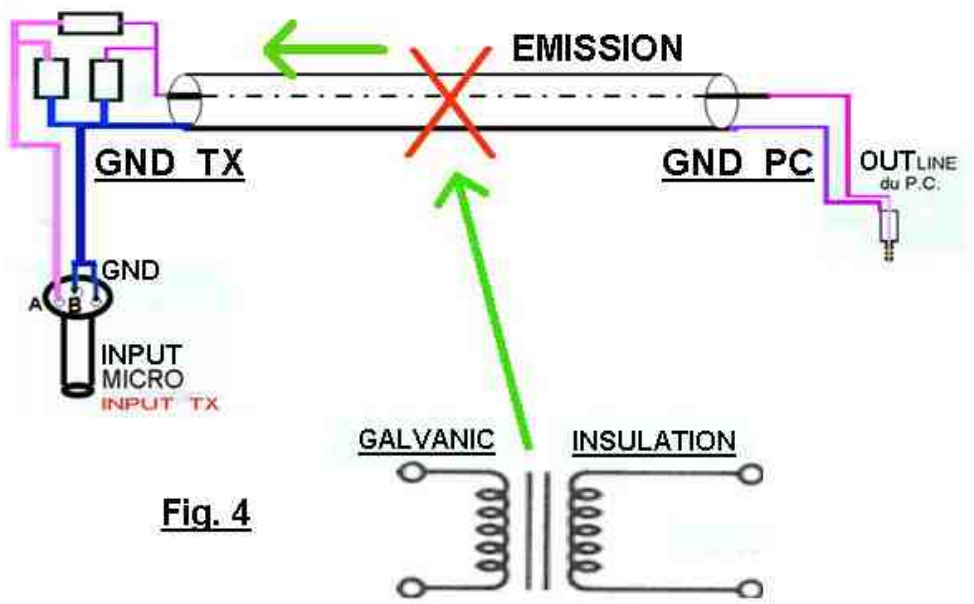


Fig. 4

This will be discussed later…. Red Cross still there for the moment…

TRANSMITTER THIRD STEP .

Before discussing the galvanic insulation problem, we had better first to see what type of wire is to be used??
Until now, all figures were showing simple insulated single wire with conventional shield (coax cable). That wire with its shield may be considered as a loop terminated by the terminal impedances. Even, it is a poor one,
that loop can generate induced voltages induced by the magnetic external fields. (We admit that the shield factor is high enough to act as electrostatic shield and avoid any induced voltage under external electric fields.). Such a single wire cable must not be used!!!!
WE NEED A BIFILAR TWISTED TIGHT PAIR, FULLY SYMETRICAL, FULLY INSULATED FROM SHIELD

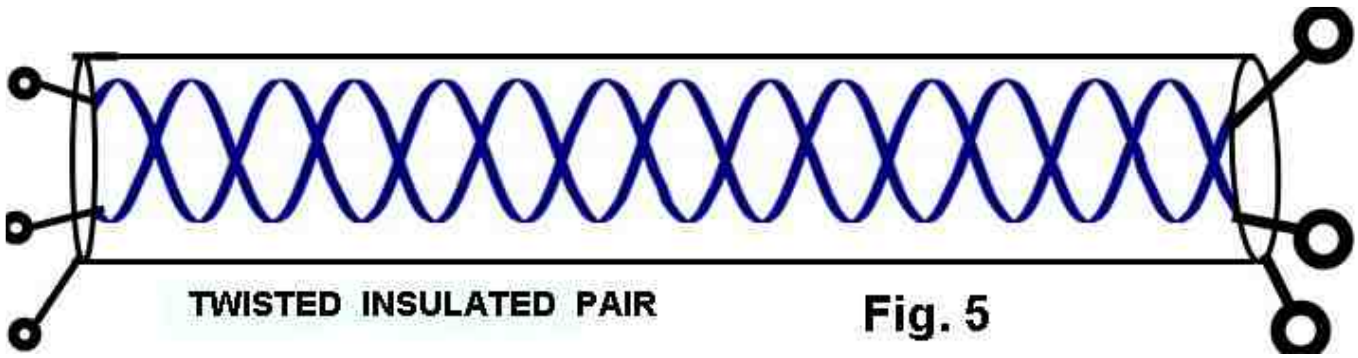


Fig. 5

Such way, induced voltages are compensated and the effect of the external magnetic field is close to zero, including all HF inductions created by the antenna current of the transmitter.
Usually, room is restricted into the shack and very often, wires carrying HF and audio signals are close together.
Don't forget that for the usual impedance of 50 Ohms, a power of 150 Watts means a HF current of 1.73 Amp.
Moreover, the SWR is not always perfect and values of 2 or more… are quite common!
The antenna current may be much higher than the nominal value !
More…. When the impedance match of the coaxial wire to antenna is not correct….or when no balun isn't inserted, or when the ground plane of a vertical is close to the shack there will be return currents flowing on the outside wires of the shield…
That means also induced sigs!
CONVENTIONALS SINGLE SHIELDED WIRES WILL CAUSE INTERFERENCES OR PARASITIC OSCILLATIONS. BIFILAR SYMETRICAL SHIELDED WIRES IS A MUST

TRANSMITTER FOURTH STEP . (tx side) WIRING (micro side) wires From the fig.2 , we replace the single wire by the shielded pair. We insert on the line the isolation audio transformer
Fig.6 is now :

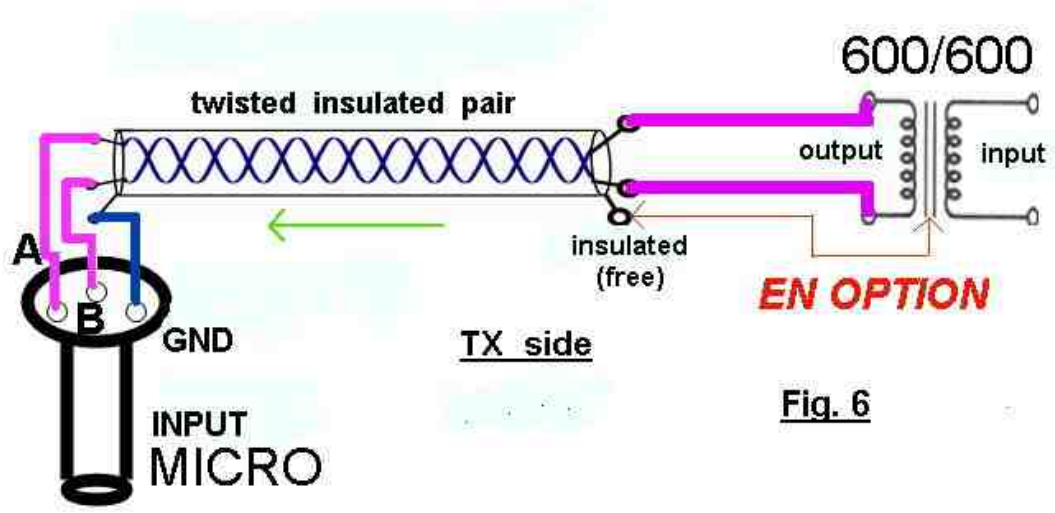


Fig. 6

Both wires of the output winding of the transformer are connected to the twisted wires.
BUT THE SHIELD IS LEFT FREE. It may never been connected to anywire of the twisted pair.
So the voltage at the output of the transformer appears exactly the same beween inputs A and B of the mike plug. The twisted line cancels the effect of any magnetic external induction and no ground loop or common mode voltage may appear as no other connection exists!.

The shield is connected to the ground pin of the microphone plug. The shield acts well against electrostatic external fields.

On the transformer side, the shield must be left fully free and never connected to any ground.
The only permitted connection is to link it to the core of the transformer, only if this last one is not grounded by its mounting or fixing.
The shield must never be connected to any side of the transformer winding!!

Galvanic insulation is now correct. .But we still have to adjust the level of the sigs, similar as fig. 3

WIRING (micro side) wires + attenuator
Adding the attenuator as we did on fig. 3 we have now fig. 7.

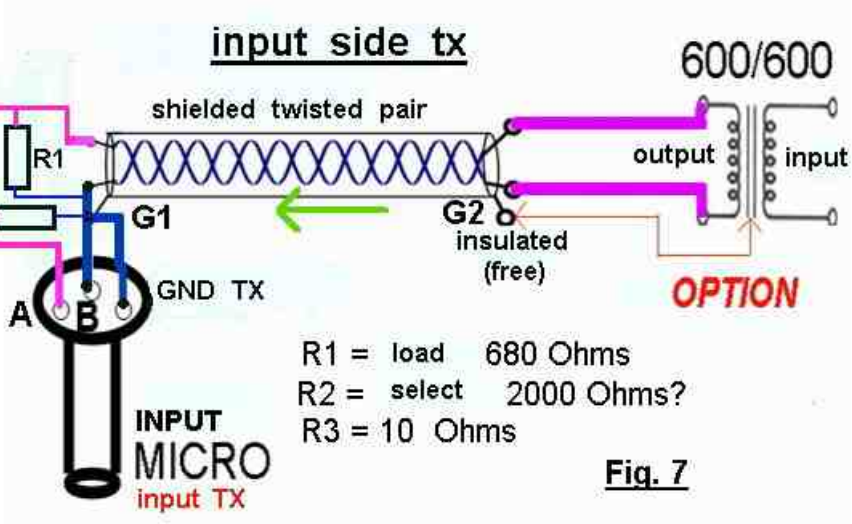


Fig. 7

Of course, the drawing of the mike plug is symbolic ! The user has to look at the mike plug he is using. A is the hot input signal, B is the cold one in case of a balanced entry. GND is the general ground . Usually mike input is asymetric so B is connected to GND.
If the mike input is a balanced one (without common mode Voltage between A and B),
the group R1 R2 R3 A B may be wired and left full floating and not connected to GND TX.
In that case, only the shield should be connected to the GND TX.

NOTE :
The best rule to reduce the effects of induction and noise is to locate the parts where are the low level sigs as close as possible of the input plug of the mike. A perfect solution is to wire the left side of R3 (see fig.7) directly to the pin A of the connector. Upper side of R2 and R1 are much less critical because there the audio level is high. Also, the cable length should be reduced as possible and transformer located as close as possible

WIRING (micro side) wires without attenuator
Until now, we have inserted a 1 to1 600 Ohms audio transformer. It is very common and easy to buy. But, we may replace it by an old audio step down transformer 4 Ohms to a few thousand Ohms. Such transformers were widely used as output stage of audio amplifiers in the past (final with tubes!). Of course, the step down is not critical but the only possible problem is that such transformers are usually of bigger size.. We have now only one resistor as loading impedance for the transformer and wiring much more easy! Just one resistor close to the mike plug. Fig .8.

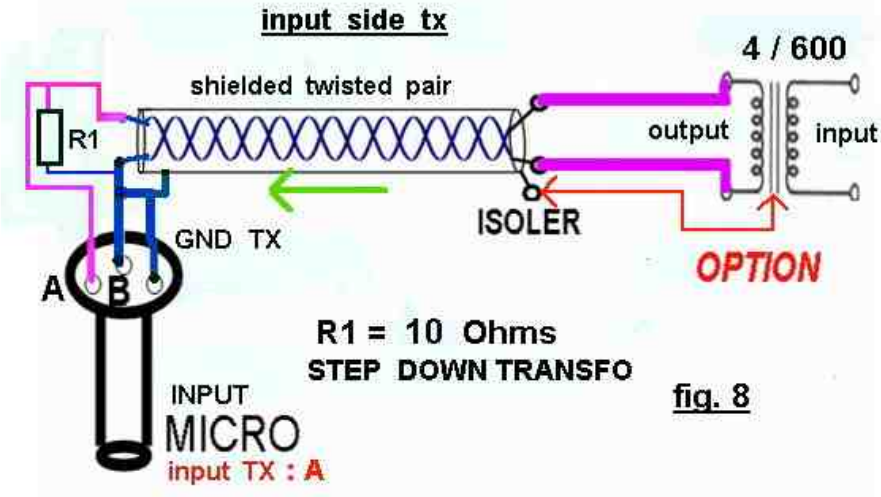
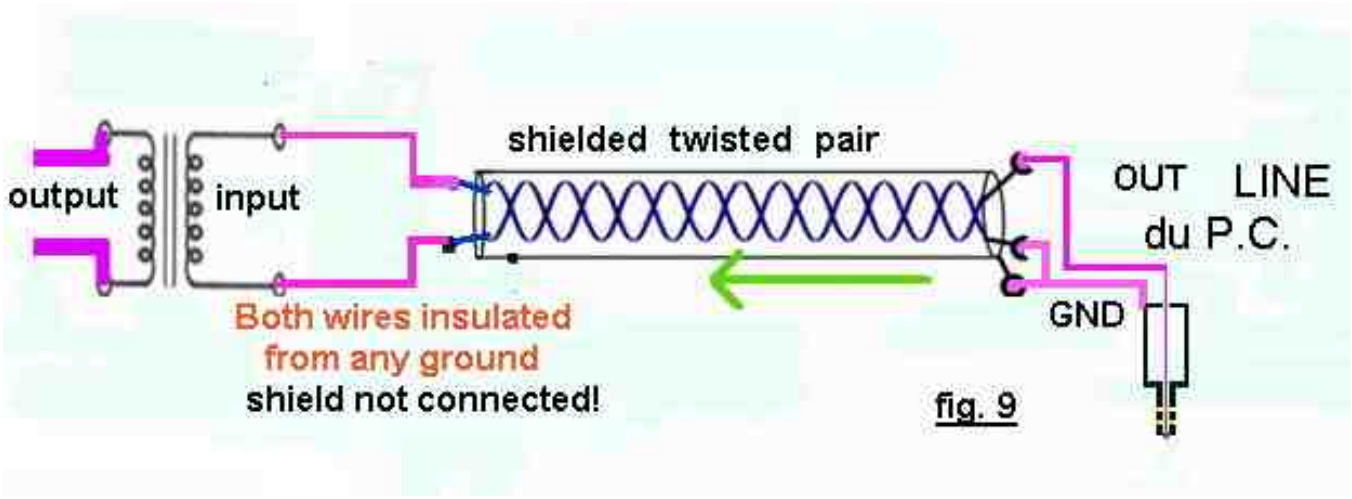


fig. 8

TRANSMITTER FIFTH STEP . (pc side)

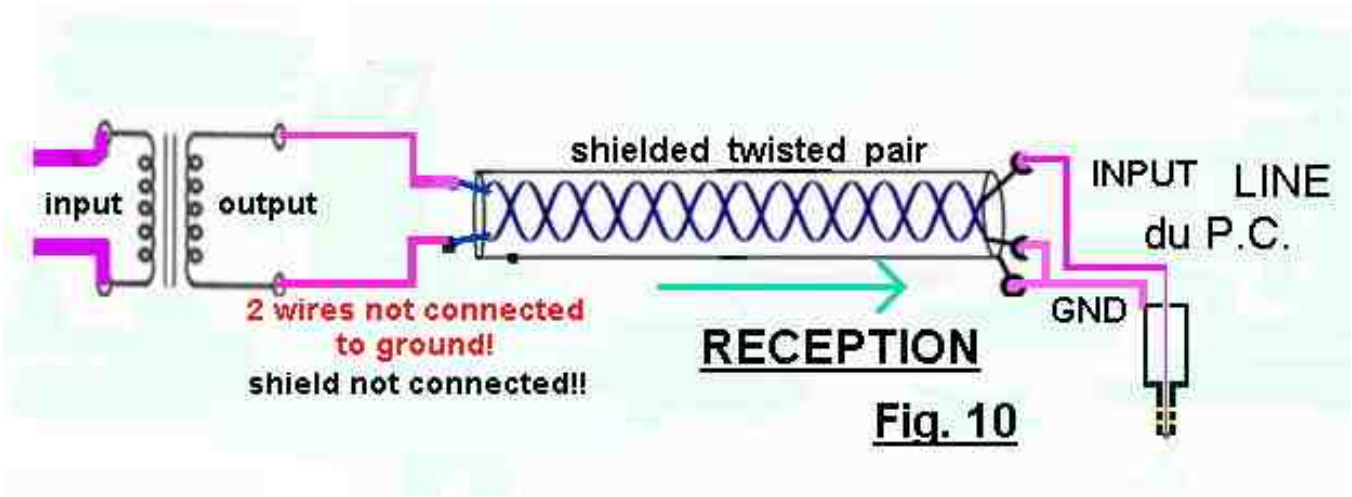
The other side of the transformer is connected to the PC. as in Fig.9.



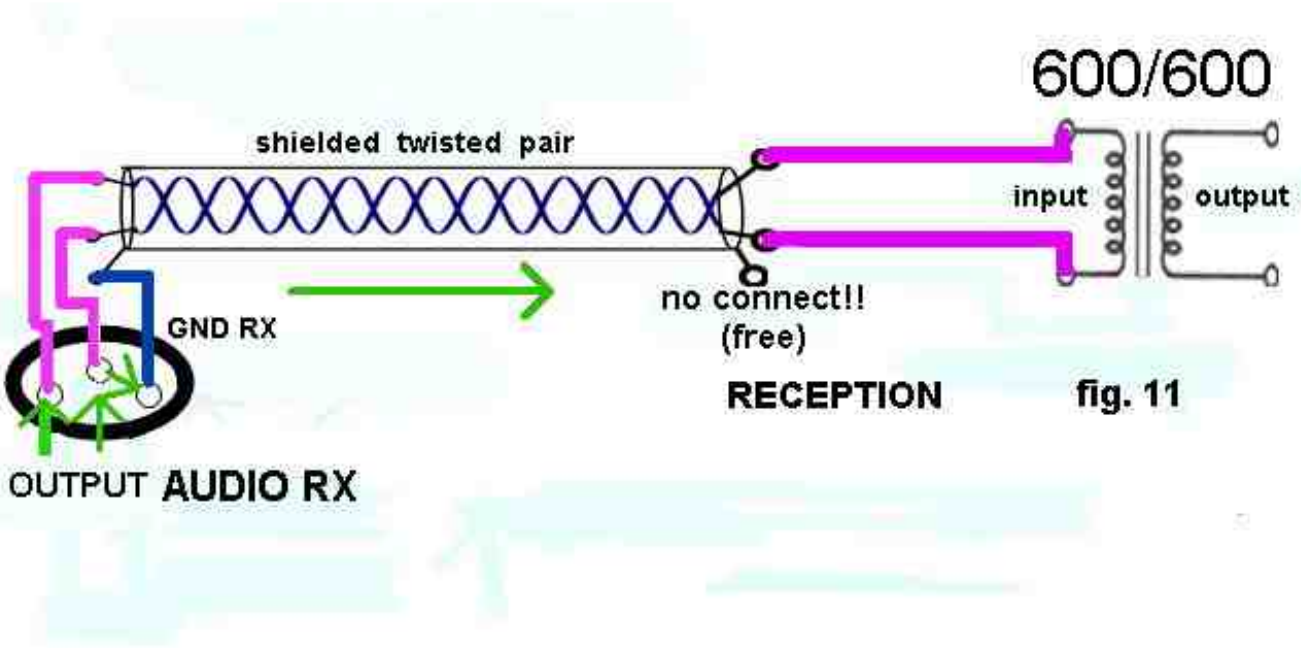
We will do exactly the same…but, it is much more easy. The LINE output of the sound card is close to 600 Ohms. We don't need any adaptation. It has been done by the other side of the transformer. Both wires of the shielded pair are connected to the input of the transformer and the shield left fully FREE.
(the optional connection of the core of the transformer has been discussed on the other side of it!)
More, the audio signal is always at high level so wiring and length are not critical.
The only attention is to avoid any length of the shielded pair that may be resonant with the transmitter output frequency!

RECEIVER CIRCUITS (fig. 1 adapted)

Of course, same rules can be adapted for the receiver section.
Fig.1 is now fig.10 (to input PC) Fig.11(out from receiver)



All sigs are at high level, so less critical.



I suggest to use also a separation transformer to have full galvanic insulation, both transmission and receive sections. The impedance of the transformer is not very critical.

NOTE:
The reader will have to select where to pick up the audio signal. There are several possibilities.. external speaker, phones socket, auxiliary connectors at the rear….

CONCLUSION :
You have from fig .7 to figr.11 the best way to do all needed interconnexions between radio and PC. This aspect is usually considered as secondary part of the shack. But experience shows that very often there are plenty of lost time when interference occurs… before wiring is considered.. This a simple but efficiency solution. Thank for you for having read it.

73's from ON4BX, Prof. Arthur BLAVE Ir, Faculty of Applied Sciences, MONS BELGIUM
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Rev.1 : grammatical corrections kindly suggested by ZL1IE, Thanks Brian.

BIBLIOGRAPHY :
Here are a few references concerning rtty and psk.
I suggest the reader consult the various working group on the net…
Many other references are on the Internet. Use by example Copernic for a more detailed search.
http://www.copernic.com/en/products/desktop-search/index.html
Of course, all digital modes are concerned. Interference occurs not only on rtty or psk but everywhere when radio and pc are linked!
http://www.psk31.com
http://www.rtty.com
mmtty@yahoogroups.com
http://www.aa5aw.com/rttyinterface.html
http://www.sstvham.com

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