

SOUNDS OF MORSE CODE (Version 2)

Using dots and dashes to represent the sounds of Morse code is **HIGHLY** discouraged.

Morse code is a language of **SOUND**, and by converting **SOUND** into dots and dashes, **THEN** converting dots and dashes into the letter the **SOUND** represents **WILL** shoot you in the foot when you try to pick up speed. You can count on it.
(Continued next page...)

FCC 43 CHARACTERS: LETTERS (26)

A	di-DAH
B	DAH-di-di-dit
C	DAH-di-DAH-dit
D	DAH-di-dit
E	dit
F	di-di-DAH-dit
G	DAH-DAH-dit
H	di-di-di-dit
I	di-dit
J	di-DAH-DAH-DAH
K	DAH-di-DAH
L	di-DAH-di-dit
M	DAH-DAH
N	DAH-dit
O	DAH-DAH-DAH
P	di-DAH-DAH-dit
Q	DAH-DAH-di-DAH
R	di-DAH-dit
S	di-di-dit
T	DAH
U	di-di-DAH
V	di-di-di-DAH
W	di-DAH-DAH
X	DAH-di-di-DAH
Y	DAH-di-DAH-DAH
Z	DAH-DAH-di-dit

WHY "AND" IS SPELLED "ES" IN MORSE CODE

American Morse code is made of short sounds, "**dit**" and long sounds "**DAH**" and longer sounds "**DAAAH**" and **spaces**. And this Morse code contains the ampersand, "&" which sounds out as **dit---di-di-dit**. American "&" translates into International Morse letter sequence "**ES**" – **and now you know the rest of the story!**

NUMERALS (10)

1	di-DAH-DAH-DAH-DAH
2	di-di-DAH-DAH-DAH
3	di-di-di-DAH-DAH
4	di-di-di-di-DAH
5	di-di-di-di-dit
6	DAH-di-di-di-dit
7	DAH-DAH-di-di-dit
8	DAH-DAH-DAH-di-dit
9	DAH-DAH-DAH-DAH-dit
0	DAH-DAH-DAH-DAH-DAH

PUNCTUATION & PROCEDURALS (7)

<u>BT</u>	DAH-di-di-di-DAH	= (Note 1)
?	di-di-DAH-DAH-di-dit	
/	DAH-di-di-DAH-dit	
,	DAH-DAH-di-di-DAH-DAH	
.	di-DAH-di-DAH-di-DAH	
<u>AR</u>	di-DAH-di-DAH-dit	+ (Note 2)
<u>SK</u>	di-di-di-DAH-di-DAH	(Note 3)

PROSIGNS NEEDED FOR GOOD CW OPERATING, NOT IN THE FCC 43

<u>BK</u>	DAH-di-di-di-DAH-di-DAH	(Note 4)
<u>KN</u>	DAH-di-DAH-DAH-dit	(Note 5)
<u>AS</u>	di-DAH-di-di-dit	(Note 6)
@	di-DAH-DAH-di-DAH-dit	(Note 7)
error	di-di-di-di-di-di-di-dit	(Note 8)

NOTES

1. "Double Dash" is used as a pause between topics and may be represented as an = sign.
2. "End of Message" represented as a + sign.
3. "End of Work" at end of QSO
4. "Break" is equivalent to voice "Over."
5. "Invitation to transmit – specific station"
Compares to **K**, invitation to transmit – anyone.
6. "Wait" indicates a brief interruption in transmission to to turn head and speak briefly to someone in the room, as one example.
7. Newest addition May 3, 2004 for email address.
8. Error in sending, may be represented by a slow series of **E E E E E E E** or ? (question mark). Follow the error signal with repeat of the last good word sent before the mistake.

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Morse code is a language of **SOUND**, and by converting **SOUND** into dots and dashes, **THEN** converting dots and dashes into the letter the **SOUND** represents **WILL** shoot you in the foot when you try to pick up speed. **You can count on it.**

This statement has been included twice in this document for a very good reason.

We choose instead to use the words “**dit**” for the short sound and “**DAH**” for the long sound to remind you that you are learning a language of sound.

You may note that we have spelled the short sound as “**di-**” when followed with another sound. It flows more smoothly to call an “**H**” as **di-di-di-dit** instead of “**dit-dit-dit-dit.**”

Morse Code Has a Timing Rhythm

Morse code is made of short and long sounds, separated by element spacing, letter spacing and word spacing, where:

- **short sound** = 1 unit of time
- **Long sound** = 3 units of time
- **element space** = 1 unit of time
- **letter-space** = 3 units of time
- **word-space** = 7 units of time

Applied to a certain speed of Morse code, each time unit may be a tenth of a second.

Taking the letter A, **di-DAH**, the short sound is 0.1 second, plus the element space after is 0.1 second, plus the long sound is 0.3 seconds long. Looking a **di-DAH** in print, the **di** syllable is 0.1 second, the dash is the element space, also 0.1 second, the **DAH** syllable is 0.3 seconds. If **A** is the first letter of a word, there will be a 0.3-second pause before the next letter, and if **A** is the word, the space following will consume 0.7 seconds before the first letter of the next word begins sounding.

The word PARIS and the word-space after is used to time the words-per-minute speed of the code being sent.

di-DAH-DAH-dit di-DAH di-DAH-dit di-dit di-di-dit

It takes 5 seconds to send PARIS with a 0.1-second unit of time, including the seven-tenths second word-spacing after each, resulting in 12 words per minute. PARIS will be sent twelve times in one minute, with the thirteenth PARIS starting the second minute.

I honestly didn't know what speed I was dealing with until I wrote this article and counted up the math. 12 WPM is not a fast speed, but it seems so at the outset of learning Morse code.

The Farnsworth Method

At slow speeds of under 12 words-per-minute (WPM), it is best to present the Morse code at at least 15 WPM, and exaggerate the letter spacing and word spacing to achieve something like 4 and 5 WPM.

One does not have the chance to break the sounds down to dash-dot-dot-dot or dash-dot-dot-dot-dot, when the code is sounded that fast, and one is better able to recognize the **sounds** as a complete letter.

Oh, it is tough sometimes at the first time around to determine if that was **dit** or **dah**, but practice, practice, practice, is the name of the game to sharpen your skills.

LAUGHTER IN MORSE CODE

Many instant-messaging abbreviations have shown up on the air, even though there are many abbreviations historically used when sending CW.

It would take a long time to say LOL in CW transmissions of relatively slow speed, but Morse has its own abbreviation for laughter:

HI or **HI HI** is a sign of a chuckle.

– **Now you know the rest of the story!!**

SIGNAL REPORTS – RST SYSTEM

Signal reports consist of three numerals for **readability – strength – tone quality**.

The number “599” means R-5, S-9, T-9.

Voice communications only use Readability – Strength: 59.

From the web site:
www.hamuniverse.com/rst.html

READABILITY SCALE OF 1 TO 5

- 5 – Perfectly readable, “armchair copy.”
- 4 – Readable with practically no difficulty.
- 3 – Readable with considerable difficulty.
- 2 – Barely readable, occasional words distinguishable
- 1 – Unreadable

STRENGTH SCALE OF 1 TO 9

- 9 – Extremely strong signals
- 8 – Strong signals
- 7 – Moderately strong signals
- 6 – Good signals
- 5 – Fairly good signals
- 4 – Fair signals
- 3 – Weak signals
- 2 – Very weak signals
- 1 – Faint signals, barely perceptible

STONE SCALE OF 1 TO 9

- 9 – Perfect tone, no trace of ripple or modulation of any kind
- 8 – Near perfect tone, slight trace of modulation
- 7 – Near pure tone, trace of ripple modulation
- 6 – Filtered tone, definite trace of ripple modulation
- 5 – Filtered rectified a.c. but strongly ripple-modulated
- 4 – Rough note, some trace of filtering
- 3 – Rough a.c. tone, rectified but not filtered
- 2 – Very rough a.c. , very harsh and broad
- 1 – Sixty cycle a.c. or less, very rough and broad

SAMPLE QSO SHOWING USE OF RST

CQ CQ CQ DE KA5XAM KA5XAM KA5XAM K

KA5XAM DE W4QYZ W4QYZ \overline{KN}

W4QYZ DE KA5XAM \overline{BT} TNX FER THE CALL
OM \overline{BT} UR RST 579 579 \overline{BT} MY QTH IS NR
HOUSTON, TX HOUSTON, TX \overline{BT} NAME IS
JACK JACK \overline{BT} HW CPY? W4QYZ DE
KA5XAM \overline{KN}

R R KA5XAM DE W4QYZ \overline{BT} FB SIGS JACK
ES TNX FER THE REPORT \overline{BT} UR RST 589
589 PEAKING 15 OVER S9 \overline{BT} QTH IS
JACKSONVILLE. FL JACKSONVILLE, FL \overline{BT}
OP IS GEORGE GEORGE \overline{BT} PSE QSL \overline{BT}
KA5XAM DE W4QYZ K

What did all of this mean:

KA5XAM called CQ, looking for anyone to reply.
 (“KA5XAM” is a call sign not issued in the amateur
service because 2x3-format calls with first letter X in the
suffix, are reserved for experimental licenses.)

W4QYZ responded to the CQ call.

(Call signs with a three-letter suffix starting with Q are
not issued in the amateur service, as Q-codes have
special meaning.)

KA5XAM responded, saying, “Thanks for the
call, Old Man.* Your RST signal report is 579.
My QTH [location] is near Houston, Texas.
Name is Jack. How copy? W4QYZ this is
KA5XAM (invitation to transmit – W4QAM only)

Roger Roger, KA5XAM this is W4QYZ. Fine
business signals Jack, and thanks for the report.
Your RST 589, peaking to 15dB over S9 on my
meter. QTH is Jacksonville, Florida. OPerator is
George. Please send a QSL card.

He turns it back, using the invitation to transmit –
anyone (K).

*** OM is Old man, regardless of age,
YL is Young lady, regardless of age!**

MORSE CODE ABBREVIATIONS

From the web site
www.kent-engineers.com/abbreviations.htm

AA - All after
AB - All before
ABT - About
ADR - Address
AGN - Again
AM - Amplitude Modulation
ANT - Antenna
BCI - Broadcast Interference
BCL - Broadcast Listener
BCNU - Be seeing you
BK - Break, Break in
BN - All between; Been
BTR - Better
BUG - Semi-Automatic key
B4 - Before
C - Yes, Correct
CFM - Confirm; I confirm
CK - Check
CKT - Circuit
CL - I am closing my station; Call
CLBK - Callbook
CLD - Called
CLG - Calling
CNT - Can't
CONDX - Conditions
CPY - Copy
CQ - Calling any station
CU - See You
CUL - See You later
CUM - Come
CW - Continuous wave
DA - Day
DE - From, This Is
DIFF - Difference
DLD - Delivered
DLVD - Delivered
DN - Down
DR - Dear
DX - Distance
EL - Element
ES - And
FB - Fine Business, excellent
FER - For
FM - Frequency Modulation; From
GA - Go ahead; Good Afternoon
GB - Good bye, God Bless
GD - Good
GE - Good Evening
GESS - Guess
GG - Going
GM - Good morning
GN - Good night
GND - Ground

GUD - Good
GV - Give
GVG - Giving
HH - Error in sending
HI - The telegraph laugh; High
HPE - Hope
HQ - Headquarters
HR - Here; Hear
HV - Have
HW - How, How Copy?
IMI - Repeat, Say Again
INFO - Info
LID - A poor operator
LNG - Long
LTR - Later; letter
LV - Leave
LVG - Leaving
MA - Milliamperes
MILL - Typewriter
MILS - Milliamperes
MSG - Message; Prefix to radiogram
N - No, Negative, Incorrect, No More
NCS - Net Control Station
ND - Nothing Doing
NIL - Nothing; I have nothing for you
NM - No more
NR - Number
NW - Now; I resume transmission
OB - Old boy
OC - Old chap
OM - Old man
OP - Operator
OPR - Operator
OT - Old timer; Old top
PBL - Preamble
PKG - Package
PSE - Please
PT - Point
PWR - Power
PX - Press
R - Received as transmitted; Are; Decimal Point
RC - Ragchew
RCD - Received
RCVR - Receiver
RE - Concerning; Regarding
REF - Refer to; Referring to; Reference
RFI - Radio frequency interference
RIG - Station equipment
RPT - Repeat, Report
RTTY - Radio teletype
RST - Readability, strength, tone
RX - Receive, Receiver
SASE - Self-addressed, stamped envelope
SED - Said
SEZ - Says
SGD - Signed
SIG - Signature; Signal
SINE - Operator's personal initials or nickname
SKED - Schedule

MORSE CODE ABBREVIATIONS continued

From the web site
www.kent-engineers.com/abbreviations.htm

SRI - Sorry
SS - Sweepstakes
SSB - Single Side Band
STN - Station
SUM - Some
SVC - Service; Prefix to service message
T - Zero
TFC - Traffic
TMW - Tomorrow
TKS - Thanks
TNX - Thanks
TR - Transmit
T/R - Transmit/Receive
TRIX - Tricks
TT - That
TTS - That is
TU - Thank you
TVI - Television interference
TX - Transmitter; Transmit
TXT - Text
U - You
UR - Your; You're
URS - Yours
VFB - Very fine business
VFO - Variable Frequency Oscillator
VY - Very
W - Watts
WA - Word after
WB - Word before
WD - Word
WDS - Words
WID - With
WKD - Worked
WKG - Working
WL - Well; Will
WPM - Words Per Minute
WRD - Word
WUD - Would
WX- Weather
XCVR - Transceiver
XMTR - Transmitter
XTAL - Crystal
XYL - Wife
YL - Young lady
YR - Year
30 - I have no more to send
73 - Best Regards
88 - Love and kisses

THE S-METER

The S meter is a relative signal indicator. Some manufacturers specified 50 microvolts at the antenna terminal at 14 MHz to be S9, while others specified 100 microvolts. The antenna terminal impedance is 50 ohms.

Typically, the meter would read less on higher-frequency bands and more on lower-frequency bands.

The meter scale is read as S1 through S9, with each S-unit being approximately 6dB.

Numbers above S9 are decibels over S9. A reading of 10 is read as "10dB over S9," or simply "10 over 9."

On higher-frequency bands there may well be times with solid copy with no S-meter reading, while on lower frequency bands like 7 MHz or lower will often have noise levels that can register at S5 or more, with typical strong signals being over S9.

Some radio transceivers have both an attenuator and a preamp, while others only have the attenuator. Use the preamp only when needed. It is not generally needed when there is a lot of noise present.

When there is a lot of noise present, as in thunderstorm static crashes, it is wise to reduce the RF Gain control. In most cases, reducing the RF Gain will cause the S meter to rise.

Switch the antenna switch to an empty position for a moment, and set the RF Gain back to where the S meter will hang at about the noise plus an S unit. Switch the antenna back in, and likely the signals will be more pleasant to listen to.

Switching to an empty antenna slot will help with setting the RF gain because sometimes the AGC causes the receiver to temporarily go deaf while adjusting the gain with a high noise floor present.