Tactical Air Navigation (TACAN)

Recommended for: ADC, APC, and ACC. PP,SPP,CP	Goals: • Provide trainees technical characteristics of TACAN navaids. • Show similarities and differences between VOR and TACAN. • How to use table of TACAN frequencies
Time: 1 hour aprox.	**Minimum Rank:** AS3/FS3
Trainees: ATCO/Pilot	**Comms:** Teamspeak
Where: Teamspeak - cc.ts.ivao.aero	**Charts:** Conversion tables

¿What is a TACAN?

It is a military navaid, to support navigation of aircrafts in those areas without the necessary resources (such as VOR, NDB...)

It provides an aircraft position, by providing azimuth and distance information related to the involved navaid.

Although the way they work is so different, the data shown in your cockpit are the same as those obtained when using a VOR station.

It works at UHF band, and has 252 channels, which have a 1 MHz separation between two consecutive channels. There are two sections or "sub-bands" (first from 962 MHz to 1024 MHz second from 1151 MHz to 1213 MHz).

¿Which of its characteristics are similar to and different from a VOR?

As we said above, the way these navaids work is different for each one but at the end, we will obtain the same data in our CDI, that is azimuth and distance measurement.

Regarding frequencies, it is enough to check the following table to realize the differences between bands (VHF or UHF) for azimuth and distance data depending on the navaid:

a) <u>VOR</u>:
– Azimuth works in VHF

b) <u>VOR/DME</u>:
– Azimuth works in VHF
– DME works in UHF

c) <u>TACAN</u>:
– Azimuth works in UHF
– DME works in UHF

d) <u>VORTAC</u>:
– Azimuth works in both VHF & UHF
– DME works in UHF

How to use frequency-channel TACAN conversion table?

The following table will allow us to use the DME function from civil aircrafts (Those whose NAV radios are not set to receive TACAN frequencies). Please note that the VHF frequency will be different if we are working with "X" channels or "Y" channels. First of them will provide us a "0" ended frequency (e.g. 108.00, 110.20, etcetera) and second ones will provide us a "5" ended frequency "109.25, 111.75, etcetera).

(Check next page for examples)

A) CONVERSION X-TACAN CHANNELS INTO VHF FREQ

–TACAN channels from 17 to 59, both of them included: add 106.3 to the TACAN channel number divided by 10.

–TACAN channels from 70 to 126, both of them included: add 105.3 to the TACAN channel number divided by 10.
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MHZ	.00	.10	.20	.30	.40	.50	.60	.70	.80	.90
108	17	18	19	20	21	22	23	24	45	26
109	27	28	29	30	31	32	33	34	35	36
110	37	38	39	40	41	42	43	44	45	46
111	47	48	49	50	51	52	53	54	55	56
112	57	58	59	70	71	72	73	74	75	76
113	77	78	79	80	81	82	83	84	85	86
114	87	88	89	90	91	92	93	94	95	96
115	97	98	99	100	101	012	103	104	105	106
116	107	108	109	110	111	112	113	114	115	116
117	117	118	119	120	121	122	123	124	125	126

EXAMPLE: We want to know the VHF frequency for TACAN channel 41X, so, we divide 41/10 (4.1) and then add 106.3 (4.1+106.3= 110.4).

Check also blue numbers and arrows on the table.

B) CONVERSIÓN EN CANALES Y-TACAN

–TACAN channels from 17 to 59, both of them included: add 106.35 to the TACAN channel number divided by 10.

–TACAN channels from 70 to 126, both of them included: add 105.35 to the TACAN channel number divided by 10.

MHZ	.05	.15	.25	.35	.45	.55	.65	.75	.85	.95
108	17	18	19	20	21	22	23	24	45	26
109	27	28	29	30	31	32	33	34	35	36
110	37	38	39	40	41	42	43	44	45	46
111	47	48	49	50	51	52	53	54	55	56
112	57	58	59	70	71	72	73	74	75	76
113	77	78	79	80	81	82	83	84	85	86
114	87	88	89	90	91	92	93	94	95	96
115	97	98	99	100	101	012	103	104	105	106
116	107	108	109	110	111	112	113	114	115	116
117	117	118	119	120	121	122	123	124	125	126

EXAMPLE: We want to know the VHF frequency for TACAN channel 59Y, so, we divide 59/10 (5.9) and then add 106.35 (5.9+106.35= 112.25).

Check also blue numbers and arrows on the table.