

Table 4.1b

Frequency Deviation			
Frequency kHz	Initial Deviation	Peak Deviation	Steady State Deviation
0.3	1.3	10.5	10.2
0.5	2.1	11.1	10.1
0.7	4.2	9.3	9.1
0.9	7.4	10.9	10.6
1.0	8.0	11.3	8.0
1.2	9.5	13.0	12.7
1.4	9.7	12.3	12.1
1.6	9.3	11.7	11.0
1.8	8.8	10.9	10.7
2.0	8.4	10.4	10.1
2.4	6.3	8.0	7.9
2.8	6.2	7.8	7.7
3.0	6.0	7.3	7.2

Test Conditions:

$V_{\text{inp}} = 9.6 \text{ mV}$

Deviation = 8 kHz at 1 kHz modulation frequency

Middle Channel = 836.52 MHz

5.0 Audio Filter Characteristics

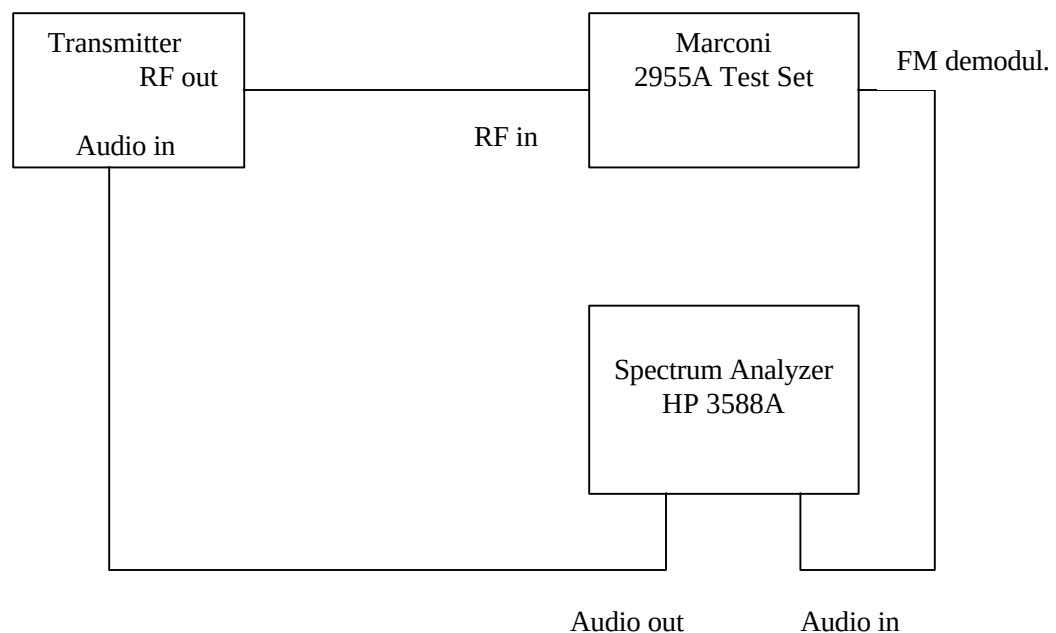
FCC 22.915(d)

For mobile stations, these signals must be attenuated, relative to the level at 1 kHz, as follows:

- (i) In the frequency ranges of 3.0 to 5.9 kHz and 6.1 to 15.0 kHz, signals must be attenuated by at least 40 log (f/3) dB, where f is the frequency of the signal in kHz.
- (ii) In the frequency range of 5.9 to 6.1 kHz, signals must be attenuated at least 35 dB.
- (iii) In the frequency range above 15 kHz, signals must be attenuated at least 28 dB.

5.1 Test Procedure

The test was performed according to the block diagram shown below.



On that block diagram, the HP 3885A spectrum analyzer having the tracing generator, and the Marconi 2955A Radio Communication Test Set having an output of a FM demodulator, are used. After the calibration was made (the -20 dBm reading of the spectrum analyzer corresponds to the 9 kHz deviation) the spectrum analyzer was set to scan the frequency from 300 Hz to 30 kHz, with the same audio input level as described above, and with compressor OFF and expander OFF.

The audio filter response was plotted directly from the spectrum analyzer (Refer to Plots # 5.1.a, 5.1.b).

Using the level measured at 1 kHz as a reference (0 dB), the audio filter response was calculated (See Table 5.1).

Table 5.1

Audio Filter Characteristics		
Modulation Frequency kHz	Relative Level dBm	Attenuation
0.3	-38.95	17.8
0.4	-36.12	14.9
0.5	-32.47	11.2
0.6	-30.27	6.2
0.7	-27.4	5.2
0.8	-24.94	3.7
0.9	-23.53	2.3
1.0	-21.21	0
1.2	-19.59	-1.7
1.4	-19.26	-2.0
1.6	-19.45	-1.8
1.8	-20.08	-1.2
2.0	-20.68	-0.6
2.2	-21.15	-0.1
2.5	-21.89	0.6
3.0	-23.34	1.1
3.5	-28.51	7.3
4.0	-59.23	38.5
4.5	-59.98	38.7
5.0	-60.31	39.4
5.5	-60.77	39.5
5.9	-61.60	40.4
6.0	-61.20	40.2
6.1	-60.79	40.5
8.0	-63.50	42.3
10.0	-64.22	43.0
15.0	-69.98	48.7
20.0	-85.38	63.1
30.0	-94.98	72.7

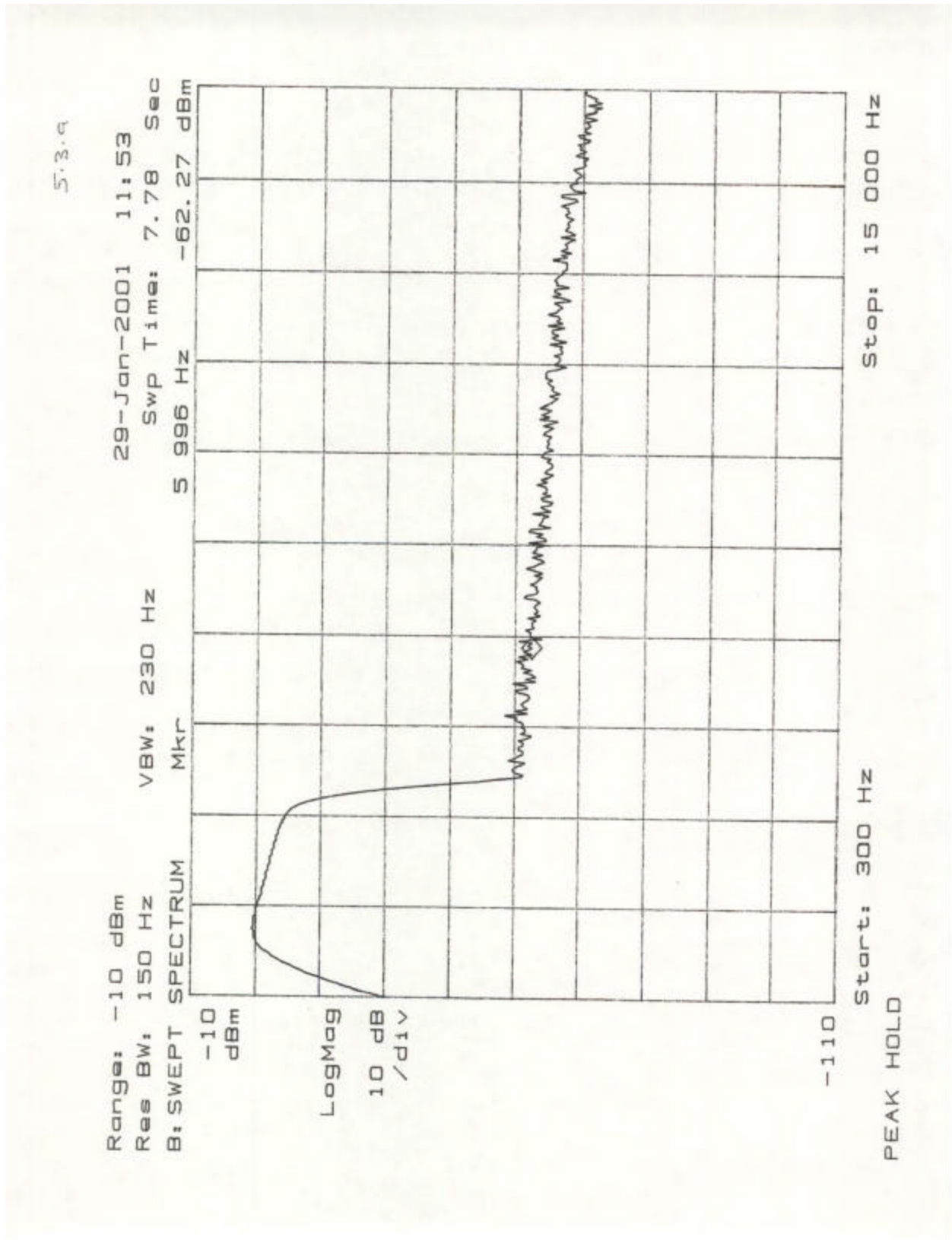
5.2 Test Equipment

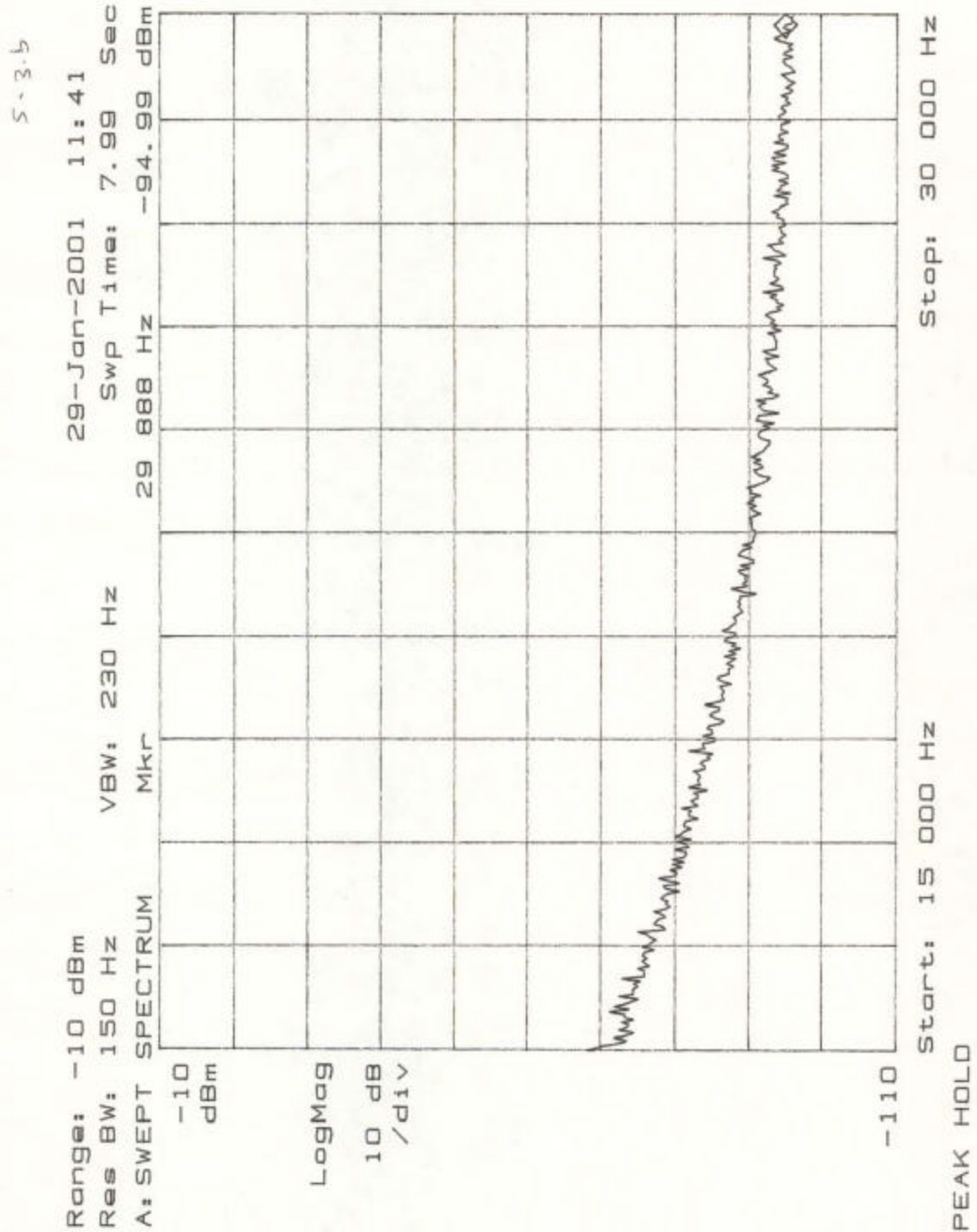
Marconi Instruments 2955A Radio Communications Test Set
HP 3588A Spectrum Analyzer
HP 7470A Plotter

5.3 Test Results

Passed, refer to the attached plots.

Audio Filter Characteristics	
Plot Number	Description
5.3.a	300Hz to 15KHz
5.3.b	15KHz to 30KHz





6.0 Emission Limitations, Occupied Bandwidth

FCC 2.1049, 22.917(b)(d)

For F3E/F3D emission mask uses with audio filter, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier wave (P) as follows:

- (1) On any frequency removed from the carrier frequency by more than 20 kHz but not more than 45 kHz: at least 26 dB;
- (2) On any frequency removed from the carrier frequency by more than 45 kHz, up to the first multiple of the carrier frequency: at least 60 dB or $(43 + 10 \log P)$ dB, whichever is the lesser attenuation.

For F1D emission mask, the mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) as follows:

- (1) On any frequency removed from the carrier frequency by more than 20 kHz but no more than 45 kHz: at least 26 dB;
- (2) On any frequency removed from the carrier frequency by more than 45 kHz but not more than 90 kHz: at least 45 dB;
- (2) On any frequency removed from the carrier frequency by more than 90 kHz, up to the first multiple of the carrier frequency: at least 60 dB or $(43 + 10 \log P)$ dB, whichever is the lesser attenuation.

6.1 Test Procedure

The RF output of the transceiver was connected to the input of the spectrum analyzer through sufficient attenuation. The audio generator was connected to the audio input of the transceiver.

The spectrum with no modulation was recorded. The audio input signal was adjusted to obtain the frequency deviation equal 6 kHz at the audio frequency of maximum response which was determined measuring deviation versus frequency from 300 Hz to 3.5 kHz and was found 2.8 kHz. The audio input level was increased by 16 dB. The audio frequency was set to the frequency 2.5 kHz.

The resolution bandwidth of the spectrum analyzer was set at 300 Hz and the spectrum was recorded in the frequency band ± 50 kHz and ± 100 kHz from the carrier frequency. The same plots has been done for wideband emissions, SAT, ST, DTMF9, Voice, some of the combinations of these modulating signals and in TDMA mode.