

**FCC ID: PP9P2000MOBITEX**

**Exhibit 2c**

**Engineering Report on**

**Bandwidth (2.1049) Modulation Characteristics (2.1047)**



Author Data	Date	Document No.
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Approved	Rev	File / Reference
		BW_MASK

### OCCUPIED BANDWIDTH/BANDWIDTH LIMITATIONS

#### TEST PROCEDURE:

The Research In Motion Limited R902M-2-O radio modem device was connected together with a radio monitor board 02120-001, host computer, external power supply, a 20 dB external attenuator, and a coaxial cable. The R902M-2-O antenna output terminal was connected to the input of a 50  $\Omega$  spectrum analyzer through a matched 20 dB attenuator and a coaxial cable. The R902M-2-O transmitter was operating at full and low output power with and without internal data modulation.

#### TEST RESULTS:

UNMODULATED CARRIER, High Power: **11.97 dBm** with a 20 dB external attenuator and a 1 m coaxial cable.

- a) Internal Modulation: Please refer to the attached spectrum analyzer plots. 100% of the in-band modulation is below the specified mask per 90.210(j)

UNMODULATED CARRIER, Low Power: **-2.53 dBm** with a 20 dB external attenuator and 1 m coaxial cable.

- b) Internal Modulation: Please refer to the attached spectrum analyzer plots. 100% of the in-band modulation is below the specified mask per 90.210(j)

Below is the **description of the mask** for band 896-901/935-940 MHz (Mobitex) : 2 Watts transmitter

<u>Frequency (MHz)</u>	<u>Formula</u>	<u>Upper Limit (dB)</u>	<u>Lower Limit (dB)</u>
-26500	$50 + 10 \log(P)$	-53	-175
-0.0115	$157 \log(f_d/5.3)$	-53	-175
-0.0095	$157 \log(f_d/5.3)$ or $103 \log(f_d/3.9)$	-39.8	-175
-0.0062	$103 \log(f_d/3.9)$ or $53 \log(f_d/2.5)$	-21.1	-175
-0.0025	$53 \log(f_d/2.5)$	0.0	-175
0.0025	$53 \log(f_d/2.5)$	0.0	-175
0.0062	$103 \log(f_d/3.9)$ or $53 \log(f_d/2.5)$	-21.1	-175

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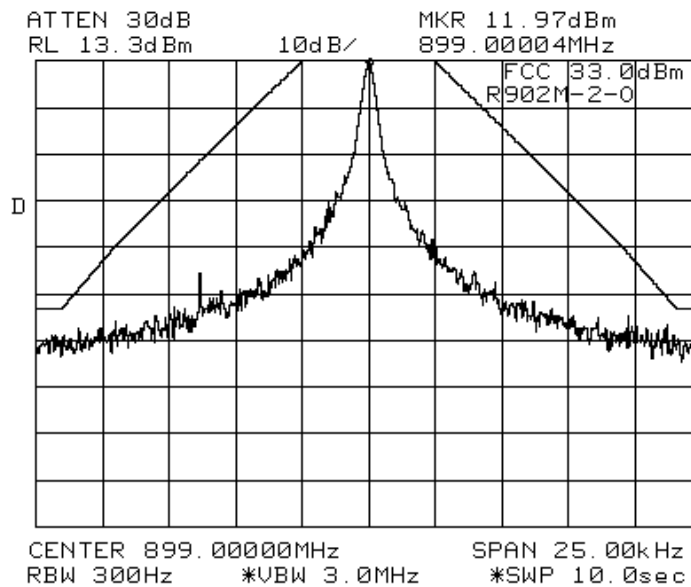
0.0095	$157 \log (f_d/5.3)$ or $103 \log (f_d/3.9)$	-39.8	-175
0.0115	$157 \log (f_d/5.3)$	-53	-175
26500	$50+10 \log (P)$	-53	-175

#### EQUIPMENT:

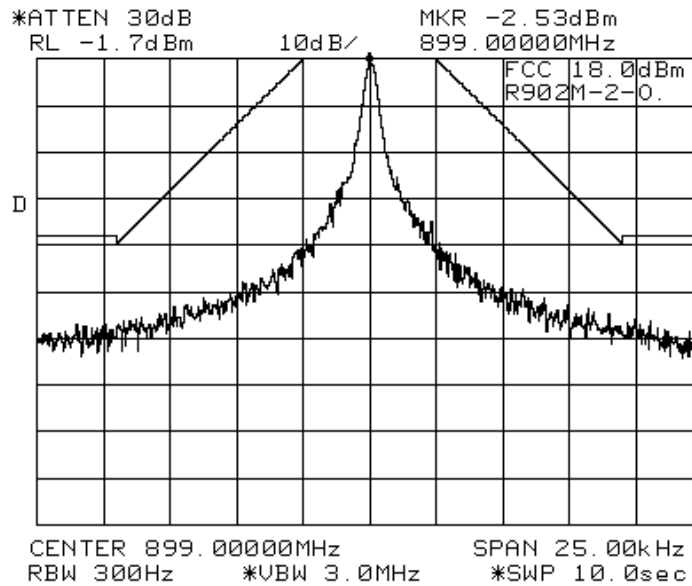
- H.P. 8563E Spectrum Analyzer 9.0 KHz - 26.5 GHz
- HP6632A DC POWER SUPPLY
- Mini Circuits 20 dB att. # NAT-20 0 Hz - 1.5 GHz

SETTING: RBW: 300 Hz; VBW: 3 MHz; SPAN: 25 KHz; SWP: 10 Sec

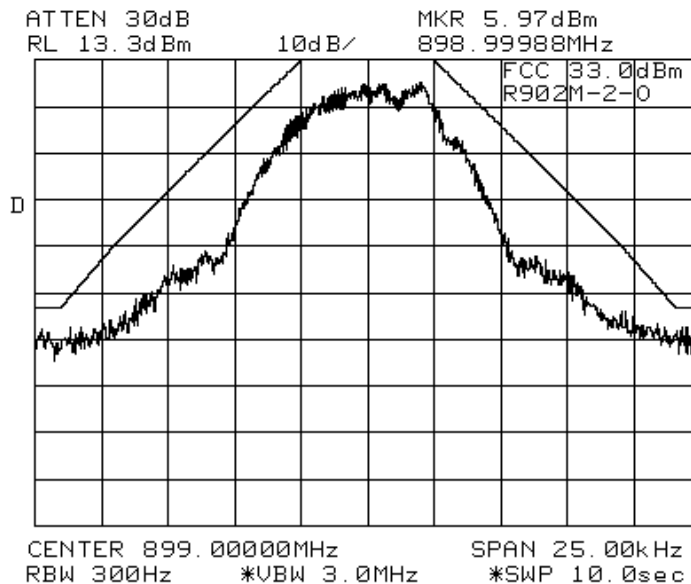
#### OCCUPIED BANDWIDTH/BANDWIDTH LIMITATIONS UNMODULATED CARRIER – HIGH POWER



# **OCCUPIED BANDWIDTH/BANDWIDTH LIMITATIONS UNMODULATED CARRIER – LOW POWER**



# **OCCUPIED BANDWIDTH/BANDWIDTH LIMITATIONS MODULATED CARRIER – HIGH POWER**



# **OCCUPIED BANDWIDTH/BANDWIDTH LIMITATIONS MODULATED CARRIER – LOW POWER**

