

FCC ID: O2SNURIT3010RT

Exhibit 2

Engineering Report
d)Spurious Emissions, Antenna Terminal (2.1051)



Author Data	Date	Document No.
Masud S. Attayi	April 8, 1999	01947-CERT-FCC-TEST-SPURIOUS
Approved	Rev	File / Reference
		Spurious

SPURIOUS EMISSIONS AT ANTENNA TERMINALS

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 Ω spectrum analyzer through a matched 20 dB attenuator and a coaxial cable. The transmitter was operating at full output power with and without internal data modulation. The calculated limit below the unmodulated carrier at +12.1 dBm, including the 20 dB external attenuator and 1 dB cable loss, is +33.1 dBm. The actual limit is 53.1 dBc lower, or -20.0 dB.

TEST RESULTS:

Ref 899**+33.1 (- 53.1)****-20.0**

FREQUENCY MHz	LEVEL dBm	LIMIT dB
899	33.1	
1,798	-37.0	-20.0
2,697	-39.3	-20.0
3,596	-62.9	-20.0
4,495	-55.1	-20.0
5,394	-39.8	-20.0
6,293	-41.7	-20.0
7,192	-73.1	-20.0
8,091	-57.2	-20.0
8,990	-66.5	-20.0

NOTE:

The above limits take into account the unmodulated carrier level of 33.1 dBm inclusive of the 20 dB external attenuator and 1 dB coaxial cable loss. The modulation used was a worst case, random data pattern while still representing a normal modulation pattern.

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



Author Data	Date	Document No.
Masud S. Attayi	April 8, 1999	01947-CERT-FCC-TEST-012
Approved	Rev	File / Reference
		012

CFR 47 Chapter 1 - Federal Communication Commission Rules

Part 2 Required Measurement

2.985 (a,c) RF Power Output

Part 90 Subpart I : Technical Standards

90.205 RF Power Output

(i) Maximum power output limit : reference to subpart S, Subpart 90.635 (896-901 MHz band).

Part 90 - Subpart S : Use of Frequencies in 896-901 MHz Band

90.635 Limitations on Output Power

(d) Mobile station maximum output power is 100 W (20dBW)

We are rating the device as 2 W (33 dBm) output across a 50 ohm load.

But we are requesting 2.25 W (33.5 dBm) as an absolute maximum device output power due to the 0.5 dB tolerance in our Calibration software tool.

Calibrated power measurement using the following equipment:

HP EPM-441A Power Meter S/N GB37481300 Cal on 29/04/98

HP ECP-E18A Power Sensor S/N US37181260 Cal on 05/05/98

HP 8753D Network Analyzer S/N 3410A05905 Cal on 08/08/98

HP 85033D Calibration Kit S/N 3423A00734 Cal on 20/08/98

Mini-Circuits NAT-20 DC to 1500 MHz Coaxial Attenuator

Procedure: These results were obtained using the test procedure described in document 01947-CERT-FCC-TEST-013.

The 8753D was calibrated using the 85033D. The cable assembly and microwave attenuator used for the measurements were calibrated using the 8753D. The EPM-441A and ECP-E18A were calibrated using the internal power reference. The radio was tuned by the procedure as provided for sections 2.983(d)(5) and 2.983(d)(9). At three transmit frequencies the maximum radio output power level was measured using the EPM-441A and ECP-E18A. Output levels were measured for both modulated and unmodulated carrier. The calibrated insertion loss measured for the attenuator and cable assembly was added to the calibrated power measurements which produced the following results:

Maximum requested: 2.25 W (33.5 dBm)

Results:

Carrier Frequency (MHz)	Measured Level (dBm)	Calibrated Attenuation (dB)	Output Power (dBm)	Output Power (W)
896.000	6.25	26.83	33.08	2.03
899.000	6.02	26.83	32.85	1.93
901.000	6.01	26.83	32.84	1.92

Identical output power levels were recorded for both modulated and unmodulated carrier.