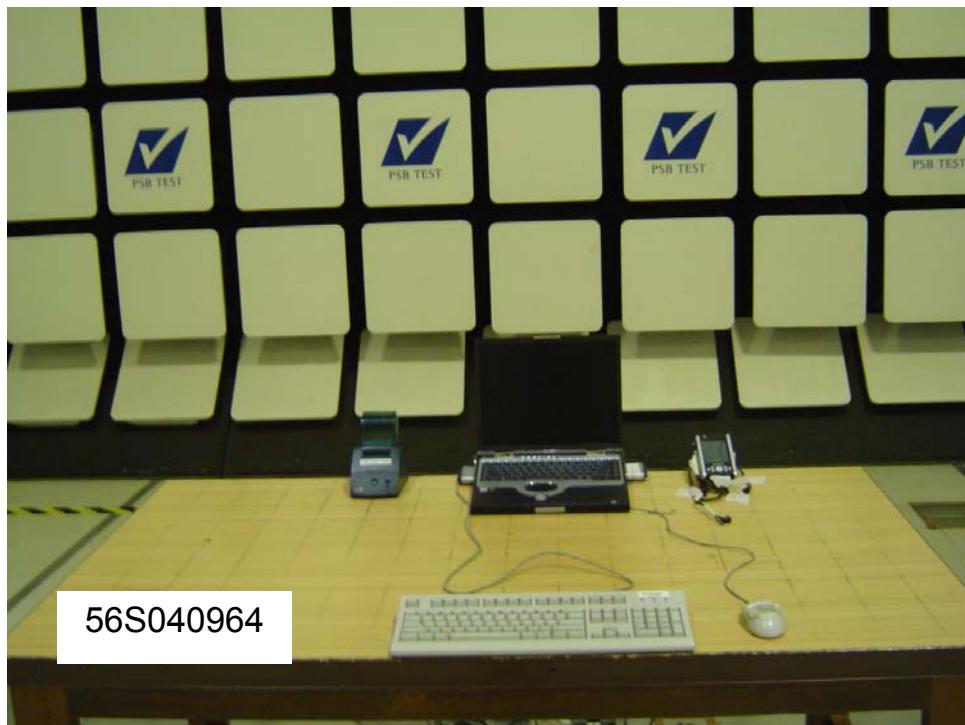




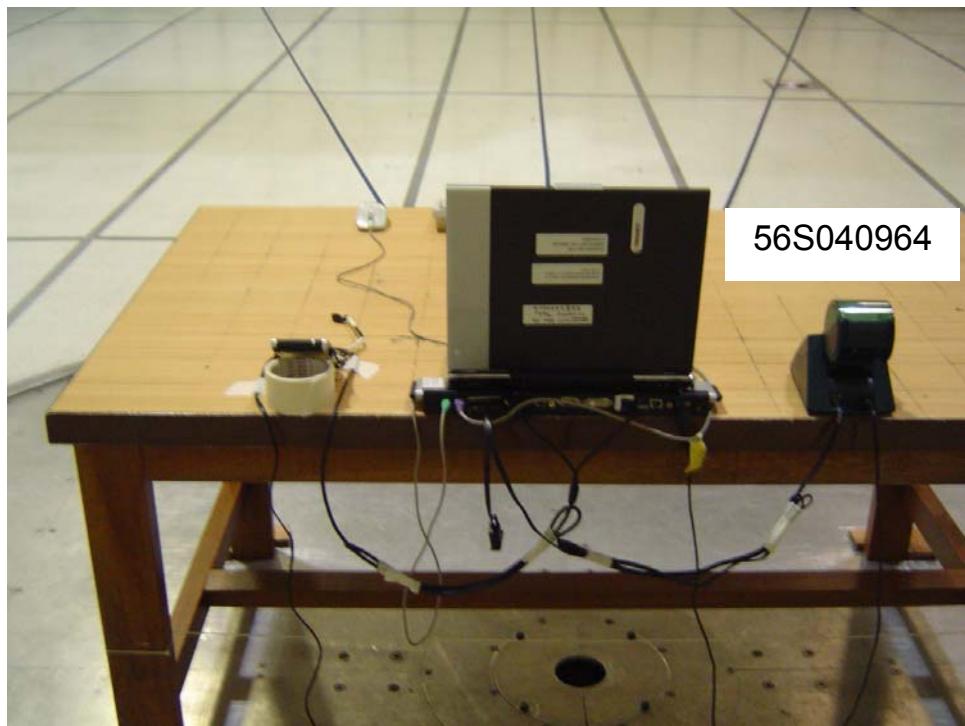
Conducted Emissions Setup (Front View)



Conducted Emissions Setup (Rear View)



Radiated Emissions Setup (Front View)



Radiated Emissions Setup (Rear View)

## **FCC Part 15C (15.247(a)(1)) Carrier Frequency Separation Results**

## Operation Mode: Bluetooth

The EUT shows compliance to the requirements of this section, which states the adjacent carrier frequencies must be separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

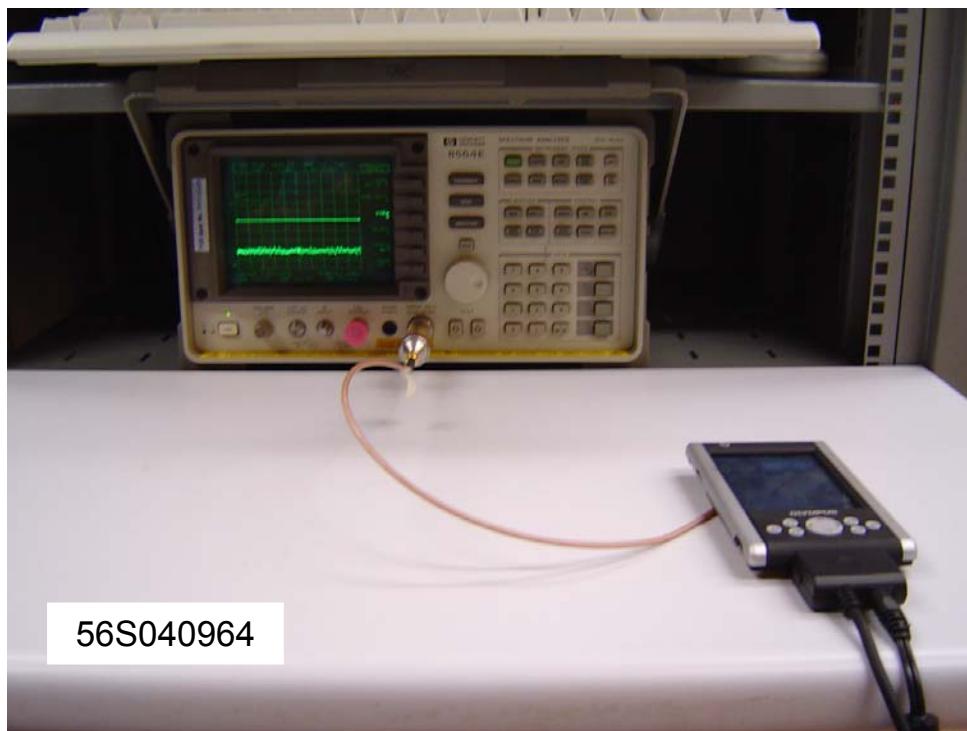
Adjacent Channels	Channel Separation (MHz)
0 and 1 (2.402GHz and 2.403GHz)	1.040
38 and 39 (2.440GHz and 2.441GHz)	1.025
39 and 40 (2.441GHz and 2.442GHz)	1.020
77 and 78 (2.479GHz and 2.480GHz)	1.025

Please refer to the attached Plots 1 - 4 for details.

Tested by: DP

## Notes

1.	<u>Environmental Conditions</u>	Temperature	23°C
		Relative Humidity	58%
		Atmospheric Pressure	1030mbar



## Carrier Frequency Separation Measurement Test Setup

**FCC Part 15C (15.247(a)(1)) Spectrum Bandwidth (20dB Bandwidth Measurement) Results****Operation Mode: Bluetooth**

The EUT shows compliance to the requirements of this section, which states that the 20dB bandwidth of the hopping channel shall be the channel frequency separation by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is greater.

Channel	Channel Frequency (GHz)	20dB Bandwidth (MHz)
0	2.402	0.720
39	2.441	0.720
78	2.480	0.730

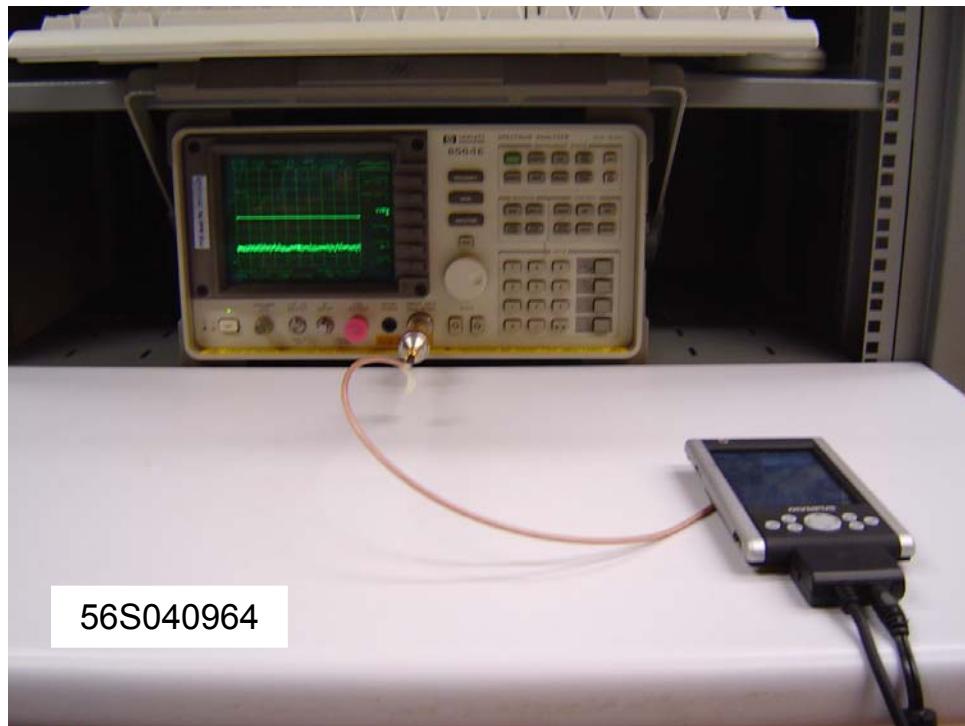
Note: The EUT is a Bluetooth device, which supports no overlapping for each channel.

Please refer to attached Plots 5 - 7 for details.

Tested by: DP

**Notes**

1.	<u>Environmental Conditions</u>	Temperature	23°C
		Relative Humidity	58%
		Atmospheric Pressure	1030mbar



**Spectrum Bandwidth Measurement Test Setup**

**FCC Part 15C (15.247(a)(1)(iii)) Number of Hopping Frequencies Results****Operation Mode: Bluetooth**

The EUT shows compliance to the requirements of this section, which states the number of hopping frequencies shall be at least 75.

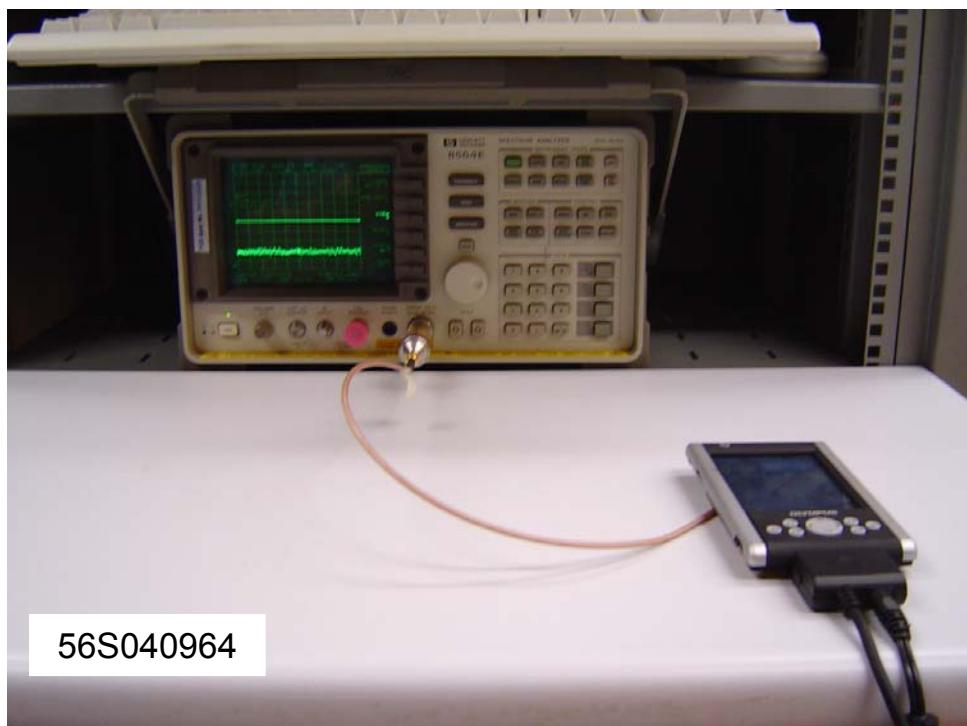
The EUT was found to have 79 hopping frequencies.

Please refer to the attached Plots 8 - 11 for details.

Tested by: DP

**Notes**

1.	<u>Environmental Conditions</u>	Temperature	23°C
		Relative Humidity	58%
		Atmospheric Pressure	1030mbar



**Number of Hopping Frequencies Measurement Test Setup**

## FCC Part 15C (15.247(a)(1)(iii)) Average Frequency Dwell Time Results

## Operation Mode: Bluetooth

The EUT shows compliance to the requirements of this section, which states the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4second multiplied by the number of hopping channels employed.

EUT hopping rate = 1600 hops/data packet length/s

Number of EUT hopping frequencies = 79 hops

DH1 packet was used as a transmission packet

Average Frequency Dwell Time = measured time slot length (l) x hopping rate (h) / number of hopping frequencies x 30 seconds period

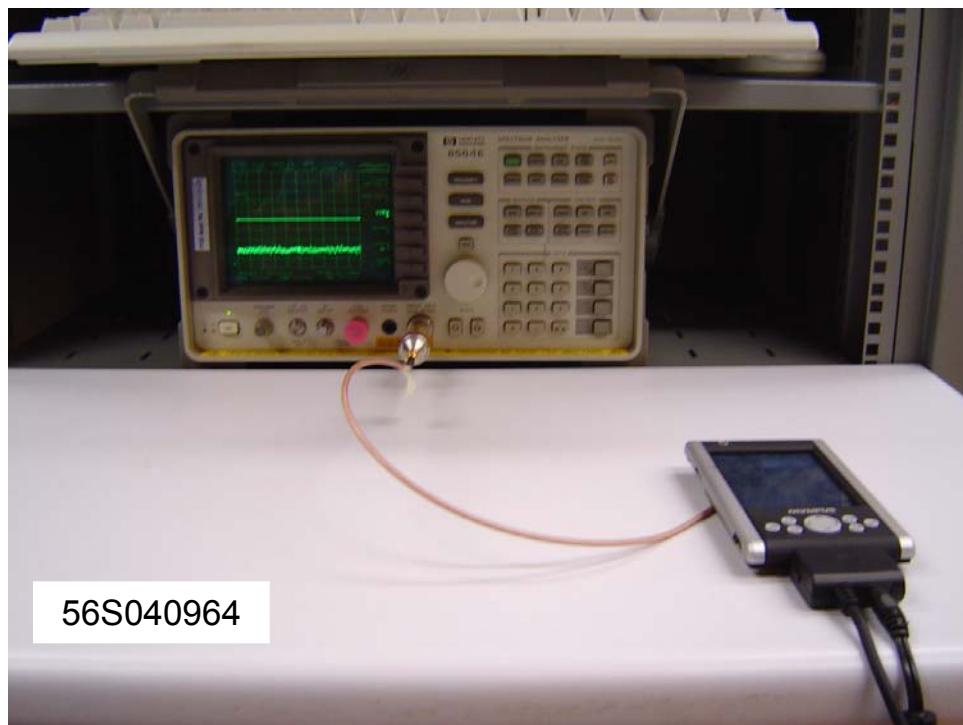
Channel	Channel Frequency (GHz)	Measured Time Slot Length for DH5 Packet (ms)	Average Frequency Dwell Time (s)	Average Occupancy Limit (s)
0	2.402	0.625	0.3798	0.4
39	2.441	0.625	0.3798	0.4
78	2.480	0.625	0.3798	0.4

Please refer to the attached Plots 12 – 14 for details.

Tested by: DP

## Notes

1.	<u>Environmental Conditions</u>	Temperature	23°C
		Relative Humidity	58%
		Atmospheric Pressure	1030mbar



## Average Frequency Dwell Time Measurement Test Setup

FCC Part 15C (15.247(b)(1)) Maximum Peak Power Results**Operation Mode: Bluetooth**

The EUT shows compliance to the requirements of this section, which states the peak power of an intentional radiator (EUT) shall not exceed 30dBm (1 Watt).

The maximum peak power for Channels 0, 39 and 78 at 2.402GHz, 2.441GHz and 2.480GHz respectively were investigated and found below 30dBm (1Watt).

Channel	Channel Frequency (GHz)	Maximum Peak Power (W)	Limit (W)
0	2.402	0.001307	1
39	2.441	0.001973	1
78	2.480	0.002229	1

Tested by: DP

Notes

1. Environmental Conditions      Temperature 23°C  
Relative Humidity 58%  
Atmospheric Pressure 1030mbar
2. Power analyser of Universal Radio Communication Tester was used for power measurement with peak detection as mode of measurement. The power analyser mode supports a wideband power measurement ranging from 100kHz to 2700MHz.



**Maximum Peak Power Measurement Test Setup**

**FCC Part 15C (15.247(c)) RF Conducted Spurious Emissions & Band Edge Compliance at the Transmitter Antenna Results****Operation Mode: Bluetooth**

The EUT shows compliance to the requirements of this section, which states in any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator (EUT) is operating, the RF power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of desired power.

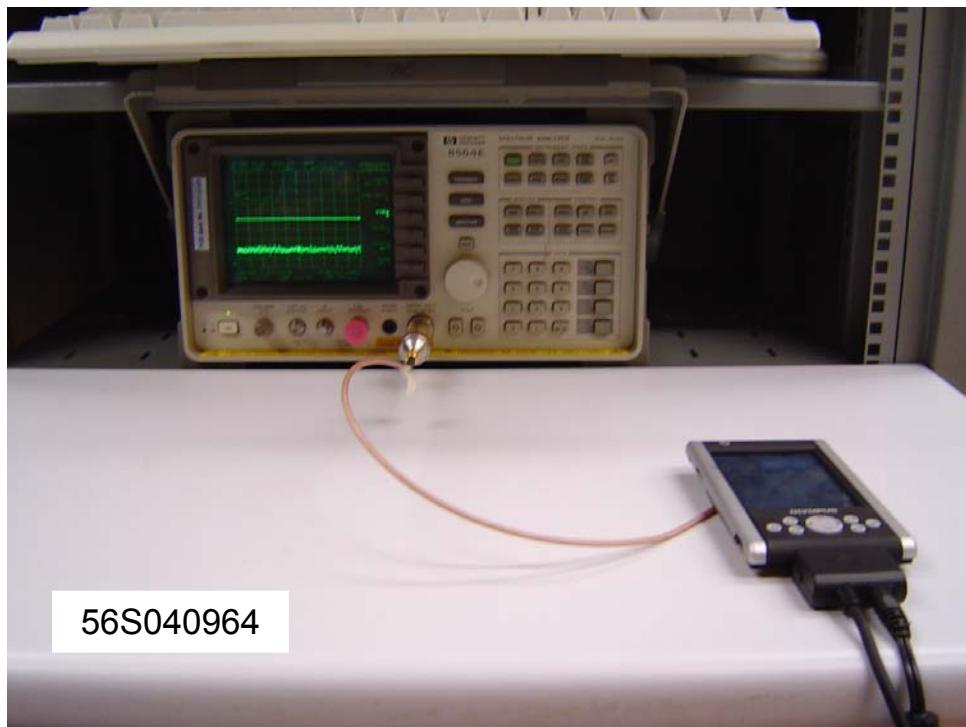
The RF conducted spurious emissions were scanned from 30MHz to 25GHz for Channels 0, 39, and 78 with channel frequency at 2.402GHz, 2.441GHz and 2.480GHz respectively. No significant signal was found and they were below the specified limit. Please refer to the attached Plots 15 – 20 for details.

The conducted spurious at lower and upper band-edges (2.4000GHz and 2.4835GHz) were scanned. The spurious emissions at band-edges were found below the specified limit. Please refer to the attached Plots 21 – 22 for details.

Tested by: DP

**Notes**

1.	<u>Environmental Conditions</u>	Temperature	23°C
		Relative Humidity	58%
		Atmospheric Pressure	1030mbar



RF Conducted Spurious & Band Edge Measurement Test Setup

FCC Part 15C (15.247(d)) Peak Power Spectral Density Results**Operation Mode: Bluetooth**

The EUT shows compliance to the requirements of this section, which states the peak power spectral density of an intentional radiator (EUT) to the antenna shall not be greater than 8dBm (6.3mW) in any 3kHz band during any time interval of continuous transmission.

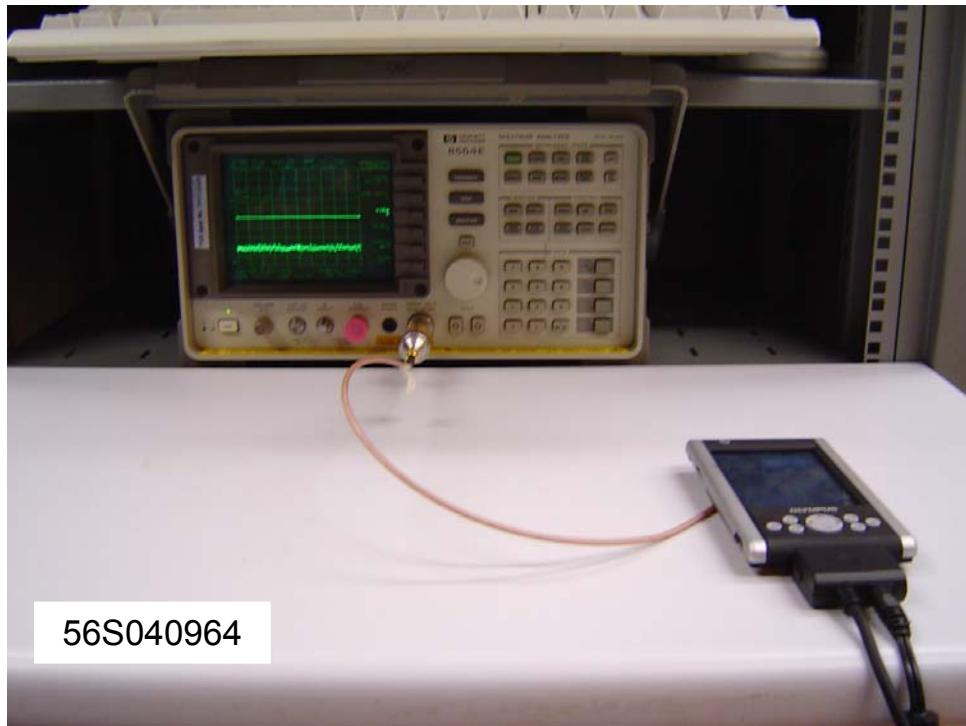
Channel	Channel Frequency (GHz)	Peak Power Spectral Density (mW)	Limit (mW)
0	2.402	0.1040	6.3
39	2.441	0.1420	6.3
78	2.480	0.1310	6.3

Please refer to the attached Plots 23 – 25 for details.

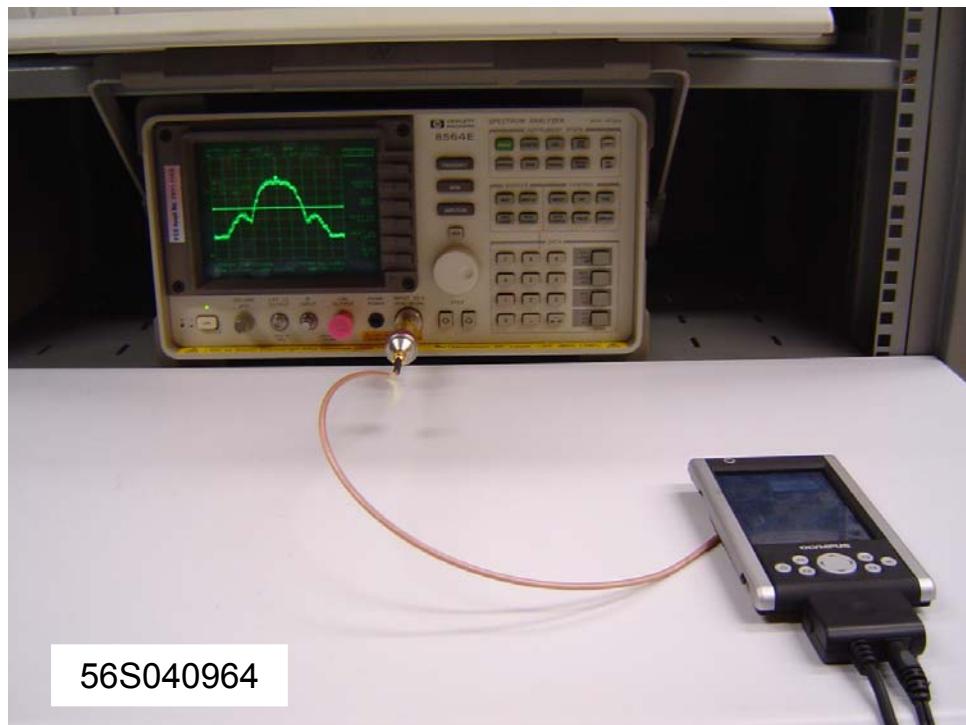
Tested by: DP

Notes

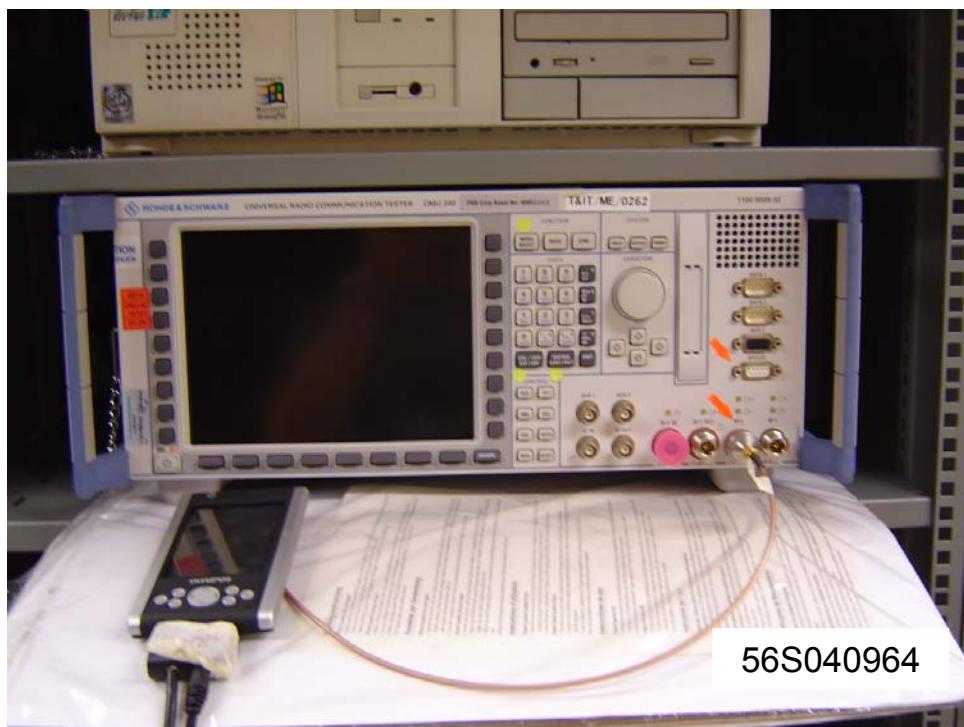
1.	<u>Environmental Conditions</u>	Temperature	23°C
		Relative Humidity	58%
		Atmospheric Pressure	1030mbar



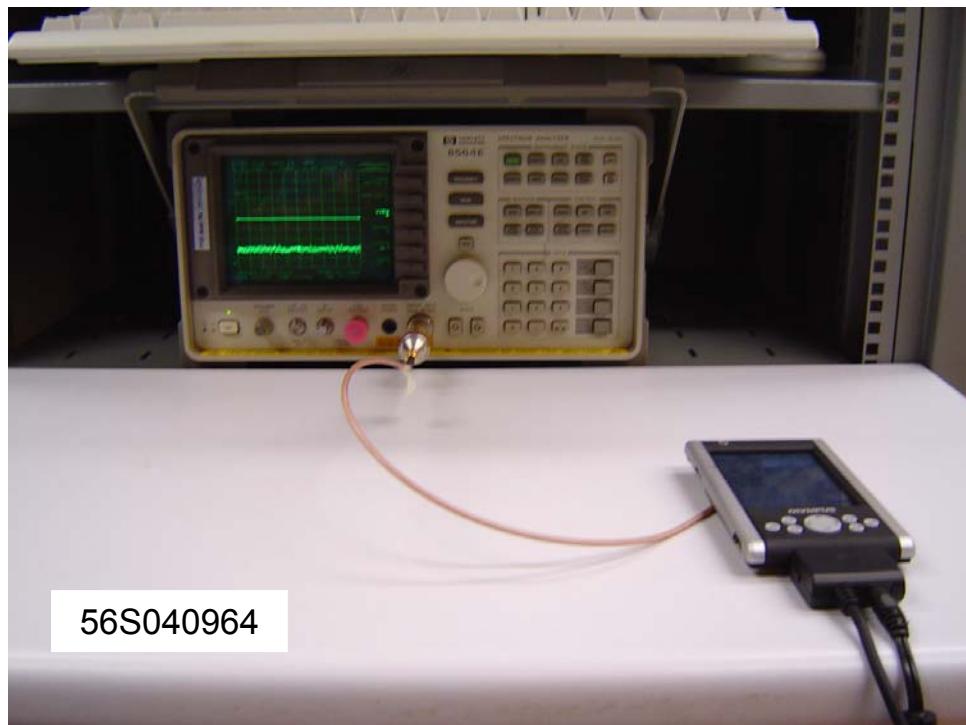
Peak Power Spectral Density Measurement Test Setup



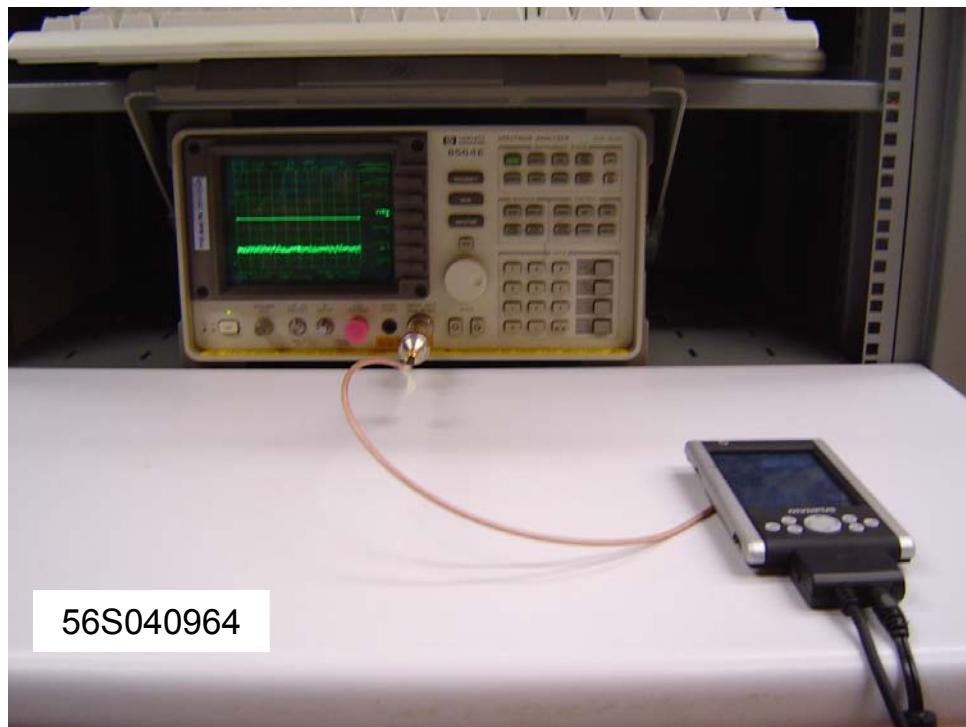
**Spectrum Bandwidth Measurement Test Setup**



Maximum Peak Power Measurement Test Setup



RF Conducted Spurious & Band Edge Measurement Test Setup



Peak Power Spectral Density Measurement Test Setup