



# TEST REPORT FROM RFI GLOBAL SERVICES LTD

Test of: CIBS

To: FCC Part 15.247: 2008 Subpart C, RSS-210 Issue 7 June 2007  
& RSS-Gen Issue 2 June 2007

**Test Report Serial No:**  
RFI/RPT2/RP75103JD05A

**Supersedes Test Report Serial No:**  
RFI/RPT1/RP75103JD05A

<b>This Test Report Is Issued Under The Authority Of Brian Watson, Operations Director:</b>	pp 
<b>Checked By:</b>	R. Graham
<b>Signature:</b>	
<b>Date of Issue:</b>	16 July 2009

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**RFI Global Services Ltd**

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire RG23 8BG  
Telephone: +44 (0)1256 312000 Facsimile: +44 (0)1256 312001  
Email: [info@rfi-global.com](mailto:info@rfi-global.com) Website: [www.rfi-global.com](http://www.rfi-global.com)

Registered in England and Wales. Company number:2117901

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**1. Customer Information**












<b>Company Name:</b>	COMMidt AS
<b>Address:</b>	Kirkegata 57-59 Levanger 7600 Norway

## **2. Summary of Testing**

### **2.1. General Information**

<b>Specification Reference:</b>	47CFR15.247
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subpart C (Radio Frequency Devices) - Section 15.247
<b>Specification Reference:</b>	47CFR15.107 and 47CFR15.109
<b>Specification Title:</b>	Code of Federal Regulations Volume 47 (Telecommunications) 2008: Part 15 Subpart B (Radio Frequency Devices) - Sections 15.107 and 15.109
<b>Specification Reference:</b>	RSS-GEN Issue 2 June 2007
<b>Specification Title:</b>	General Requirements and Information for the Certification of Radiocommunication Equipment
<b>Specification Reference:</b>	RSS-210 Issue 7 June 2007
<b>Specification Title:</b>	Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
<b>Site Registration:</b>	FCC: 209735; Industry Canada: 3245B-2
<b>Location of Testing:</b>	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
<b>Test Dates:</b>	03 May 2009 to 08 May 2009

## 2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Port Type	Result
Part 15.107	RSS-Gen 7.2.2	Receiver/Idle Mode AC Conducted Emissions	AC Mains	
Part 15.109	RSS-Gen 4.10 RSS-Gen 6.0	Idle Mode Radiated Spurious Emissions	Antenna	
Part 15.207	RSS-Gen 7.2.2	Transmitter AC Conducted Emissions	AC Mains	
Part 15.247(a)(1)	RSS-Gen 4.6.1 RSS-210 A8.1(a)	Transmitter 20 dB Bandwidth	Antenna	
Part 15.247(a)(1)	RSS-210 A8.1(b)	Transmitter Carrier Frequency Separation	Antenna	
Part 15.247(a)(1)(iii)	RSS-210 A8.1(d)	Transmitter Average Time of Occupancy	Antenna	
Part 15.247(b)(3)	RSS-Gen 4.8 RSS-210 A8.4(2)	Transmitter Maximum Peak Output Power	Antenna	
Part 15.247(d) & 15.209(a)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Radiated Emissions	Antenna	
Part 15.247(d) & 15.209(a)	RSS-Gen 4.9 RSS-210 A8.5	Transmitter Band Edge Radiated Emissions	Antenna	
<b>Key to Results</b>  = Complied  = Did not comply				

## 2.3. Methods and Procedures

<b>Reference:</b>	ANSI C63.4 (2003)
<b>Title:</b>	American National Standard Methods of Measurement of Electromagnetic Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
<b>Reference:</b>	DA00-705 (2000)
<b>Title:</b>	Filing and Frequency Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

## 2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations from, additions to, or exclusions from the test specification identified above.

### **3. Equipment Under Test (EUT)**

#### **3.1. Identification of Equipment Under Test (EUT)**

Brand Name:	Maestro
Model Name or Number:	CIBS
Serial Number:	None Stated
IC Number:	8441A-CIBS
FCC ID:	XKTCIBS

Description:	AC charger
Brand Name:	Strontronics
Model Name or Number:	3A-061WP05

#### **3.2. Description of EUT**

The equipment under test was a T-loop which receives sound from all types of *Bluetooth* wireless technology enabled devices (mobile phones, TV, MP3 players, etc.)

#### **3.3. Modifications Incorporated in the EUT**

No modifications were applied to the EUT during testing.

**3.4. Additional Information Related to Testing**

Tested Technology:	Bluetooth		
Power Supply Requirement:	Nominal	3.7 V	
Type of Unit:	Transceiver		
Channel Spacing:	1 MHz		
Mode:	Basic Rate	Enhanced Data Rate	
Modulation:	GFSK	$\pi/4$ DQPSK	$\pi/8$ DQPSK
Packet Type: (Maximum Payload)	DH5	2DH5	3DH5
Data Rate (Mbit/s):	1	2	3
Maximum Transmit EIRP:	2.6 dBm		
Transmit Frequency Range:	2402 MHz to 2480 MHz		
Transmit Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	0	2402
	Middle	39	2441
	Top	79	2480
Receive Frequency Range:	2402 MHz to 2480 MHz		
Receive Channels Tested:	Channel ID	Channel Number	Channel Frequency (MHz)
	Bottom	0	2402
	Middle	39	2441
	Top	79	2480

**3.5. Support Equipment**

No support equipment was used to exercise the EUT during testing.



## **4. Operation and Monitoring of the EUT during Testing**

### **4.1. Operating Modes**

The EUT was tested in the following operating modes, unless otherwise stated:

- Receive/Idle Mode
- Transmit Mode with Basic Rate (DH5 packets) or EDR (2DH5 or 3DH5 packets) as required.

### **4.2. Configuration and Peripherals**

The EUT was tested in the following configuration(s):

- For Transmit tests: Connected to the AC mains charger, setup into a test mode using the support laptop and interface board using Bluetest 3 software suite.
- For Receive/Idle mode tests: Connected to the AC mains charger, setup into a dedicated receiver mode via the support laptop and interface board using Bluetest 3 software suite
- Both EDR and Basic rate modes were tested in order to identify the mode that presented the worse case result with regards to amplitude and modulation bandwidth. All tests were performed on the mode that exhibited the highest output power and bandwidth except for output power, bandwidth, band edge and channel separation where all modes were tested.

## **5. Measurements, Examinations and Derived Results**

### **5.1. General Comments**

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

## 5.2. Test Results

### 5.2.1. Idle Mode AC Conducted Spurious Emissions

#### Test Summary:

FCC Part:	15.107(a)
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

#### Environmental Conditions:

Temperature Range (°C):	28
Relative Humidity Range (%):	33

#### Results: Quasi Peak Detector Measurements

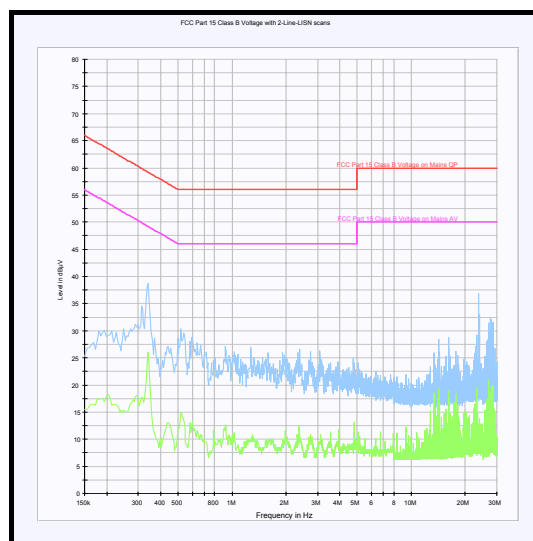
Frequency (MHz)	Line	Quasi Peak Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
See note 1					

#### Results: Average Detector Measurements

Frequency (MHz)	Line	Average Level (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Result
See note 1					

#### Note(s):

1. All emissions were at least 20 dB below the limit



Note: This plot is a pre-scan for indication purposes only. For final measurements, see accompanying table.

**5.2.2. Idle Mode Radiated Spurious Emissions****Test Summary:**

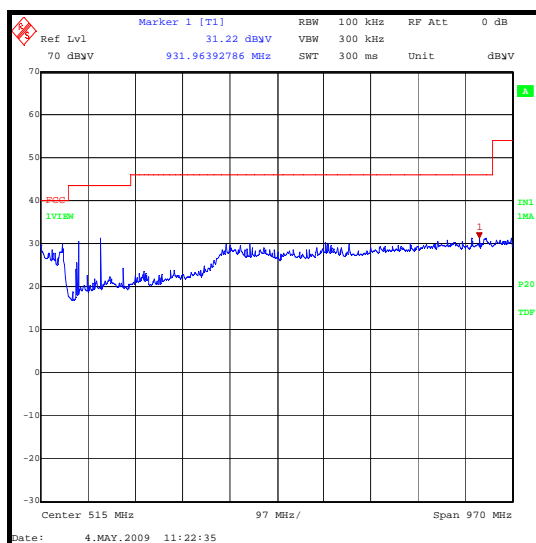
<b>FCC Part:</b>	15.109
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and relevant annexes
<b>Frequency Range:</b>	30 MHz to 1000 MHz

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	35

**Results:**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
67.987	Vertical	24.9	40.0	15.1	Complied
107.580	Vertical	29.5	43.5	14.0	Complied
153.282	Vertical	22.5	43.5	21.0	Complied

**30 MHz to 1 GHz Peak Scan**

Note: This plot is a pre-scan for indication purposes only. For final measurements, see accompanying table.

**Idle Mode Radiated Spurious Emissions (continued)****Test Summary:**

<b>FCC Part:</b>	15.109
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and relevant annexes
<b>Frequency Range:</b>	1 GHz to 12.75 GHz

**Environmental Conditions:**

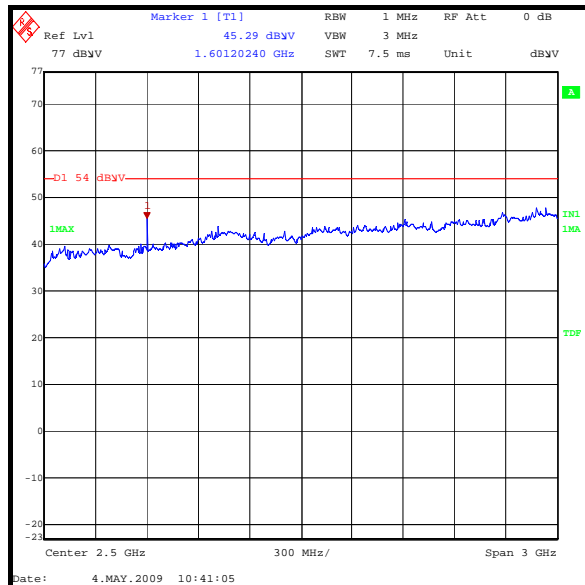
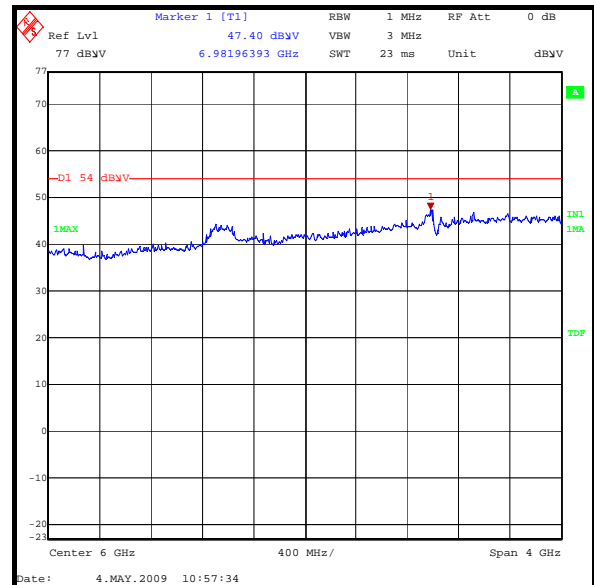
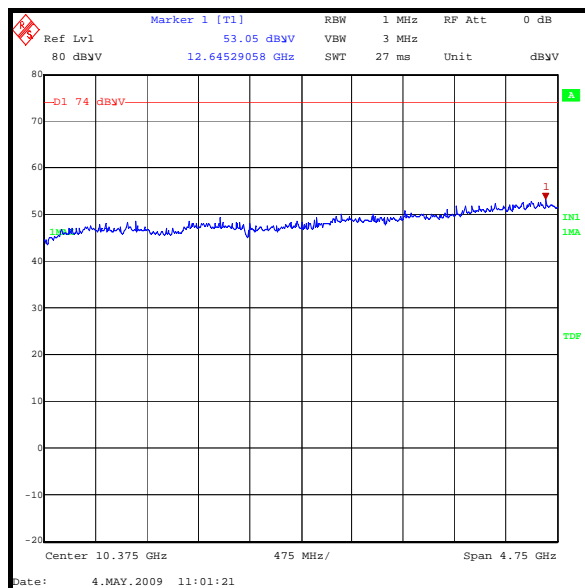
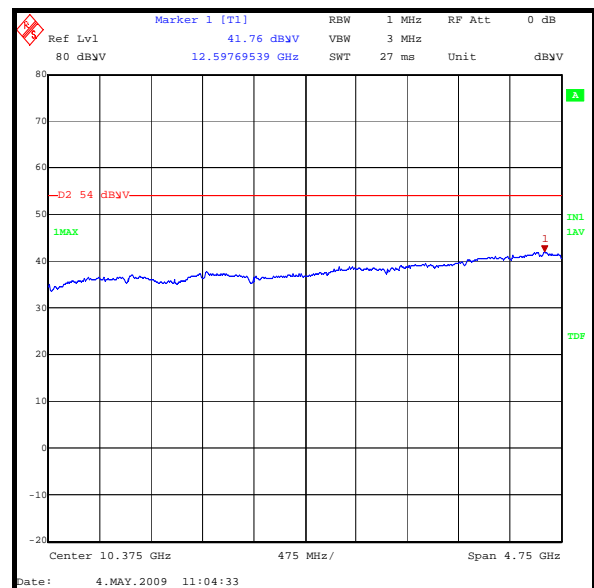
<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	35

**Results: Peak Level**

<b>Frequency (GHz)</b>	<b>Antenna Polarity</b>	<b>Detector Level (dB<math>\mu</math>V)</b>	<b>Transducer Factor (dB)</b>	<b>Level (dB<math>\mu</math>V/m)</b>	<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>	<b>Result</b>
1.602356	Vertical	49.3	-3.1	46.2	74.0	27.8	Complied

**Results: Average Level**

<b>Frequency (GHz)</b>	<b>Antenna Polarity</b>	<b>Detector Level (dB<math>\mu</math>V)</b>	<b>Transducer Factor (dB)</b>	<b>Level (dB<math>\mu</math>V/m)</b>	<b>Limit (dB<math>\mu</math>V/m)</b>	<b>Margin (dB)</b>	<b>Result</b>
1.602356	Vertical	41.9	-3.1	38.8	54.0	15.2	Complied

**Idle Mode Radiated Spurious Emissions (continued)****1 GHz to 4 GHz Peak Scan****4 GHz to 8 GHz Peak Scan****8 GHz to 12.75 GHz Peak Scan****8 GHz to 12.75 GHz Avg Scan**

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying table.

**5.2.3. Transmitter AC Conducted Spurious Emissions****Test Summary:**

FCC Part:	15.207
Test Method Used:	As detailed in ANSI C63.4 Section 7 and relevant annexes

**Environmental Conditions:**

Temperature Range (°C):	28
Relative Humidity Range (%):	37

**Results: Quasi Peak Detector Measurements**

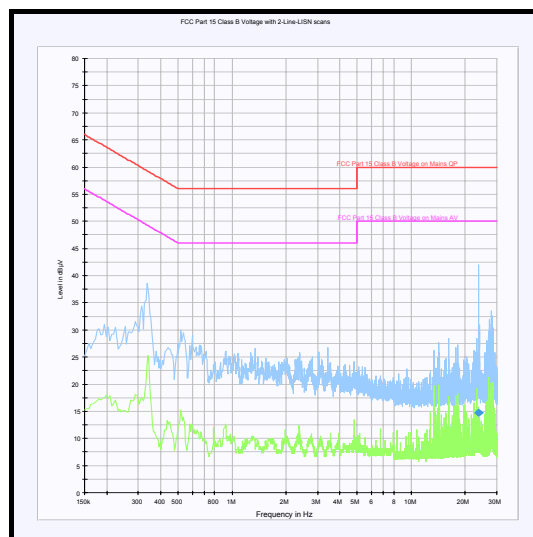
Frequency (MHz)	Line	Quasi Peak Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
23.698500	14.7	Neutral	60.0	45.3	Complied

**Results: Average Detector Measurements**

Frequency (MHz)	Line	Average Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
See note 1					

**Note(s):**

- All emissions were at least 20 dB below the limit.



Note: This plot is a pre-scan for indication purposes only. For final measurements, see accompanying table.

**5.2.4. Transmitter 20 dB Bandwidth****Test Summary:**

<b>FCC Part:</b>	15.247(a)(1)
<b>Test Method Used:</b>	As detailed in Public Notice DA 00-705 (March 30, 2000)

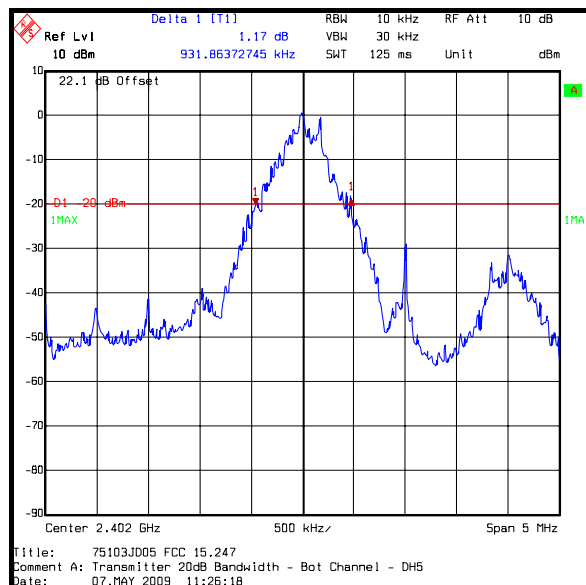
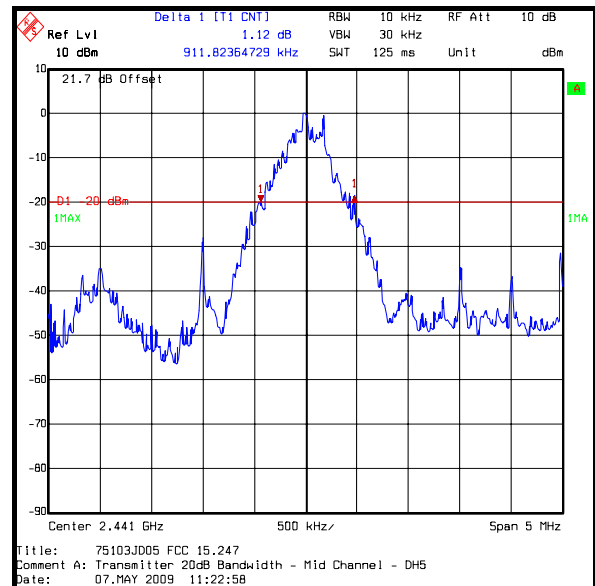
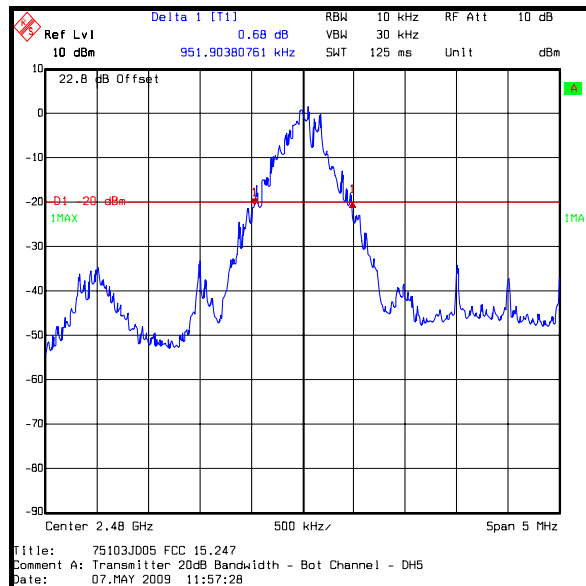
**Environmental Conditions:**

<b>Temperature (°C):</b>	26
<b>Relative Humidity (%):</b>	31

**Results: DH5**

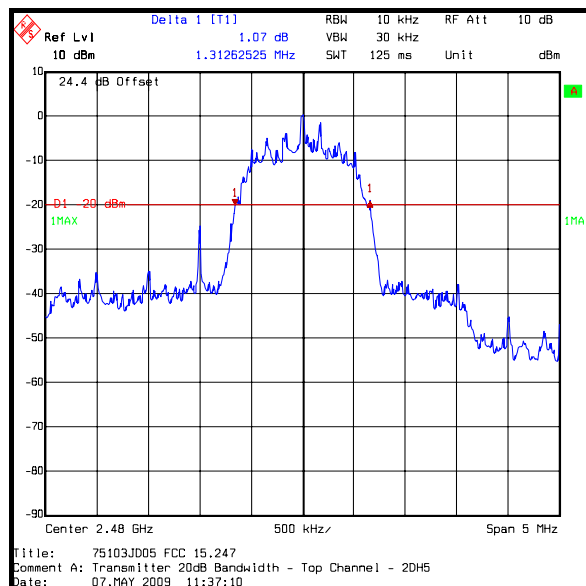
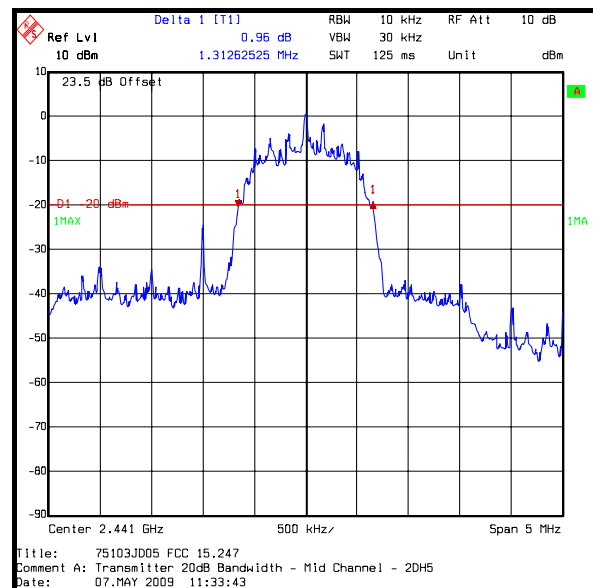
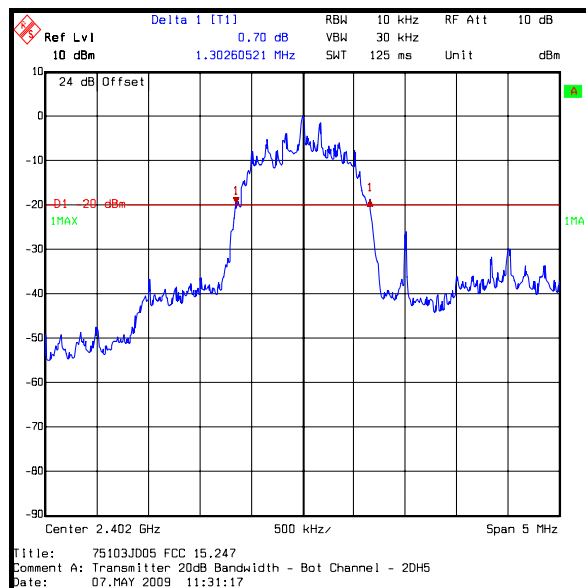
<b>Channel</b>	<b>20 dB Bandwidth (kHz)</b>
Bottom	931.864
Middle	911.824
Top	951.904



**Transmitter 20 dB Bandwidth (continued)****Results: DH5****DH5**

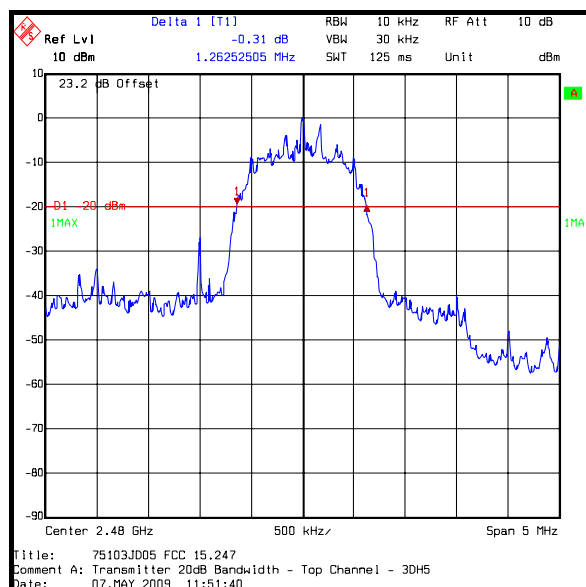
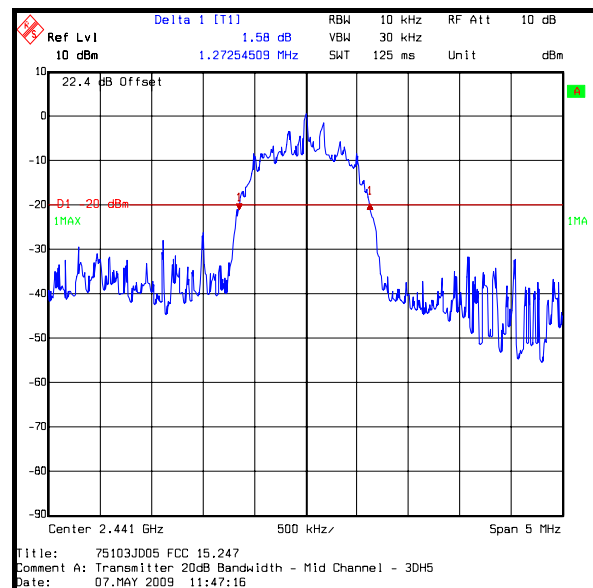
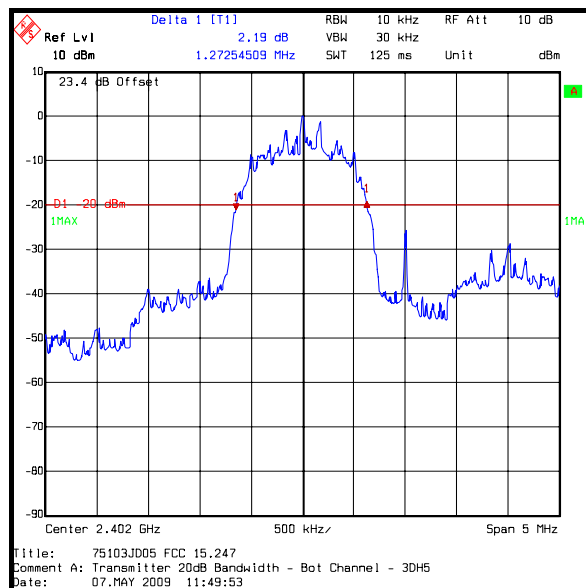
**Transmitter 20 dB Bandwidth (continued)****Results: 2DH5**

Channel	20 dB Bandwidth (kHz)
Bottom	1302.605
Middle	1312.625
Top	1312.625



**Transmitter 20 dB Bandwidth (continued)****Results: 3DH5**

Channel	20 dB Bandwidth (kHz)
Bottom	1272.545
Middle	1272.545
Top	1262.525



**5.2.5. Transmitter Carrier Frequency Separation****Test Summary:**

FCC Part:	15.247(a)(1)
Test Method Used:	As detailed in Public Notice DA 00-705 (March 30, 2000)

**Environmental Conditions:**

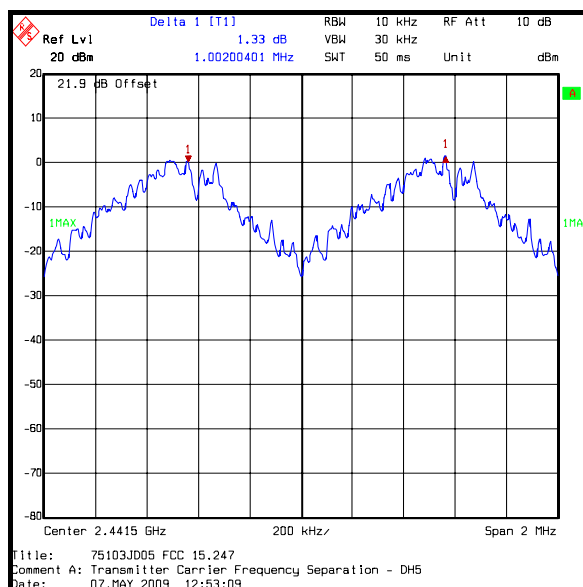
Temperature (°C):	26
Relative Humidity (%):	32

**Results: DH5**

Transmitter Carrier Frequency Separation (kHz)	Limit ( $^{2}/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1002.004	607.883	394.121	Complied

**Note(s):**

- The 20 dB bandwidth measured for the middle channel operating at 2441 MHz was used to calculate the limit

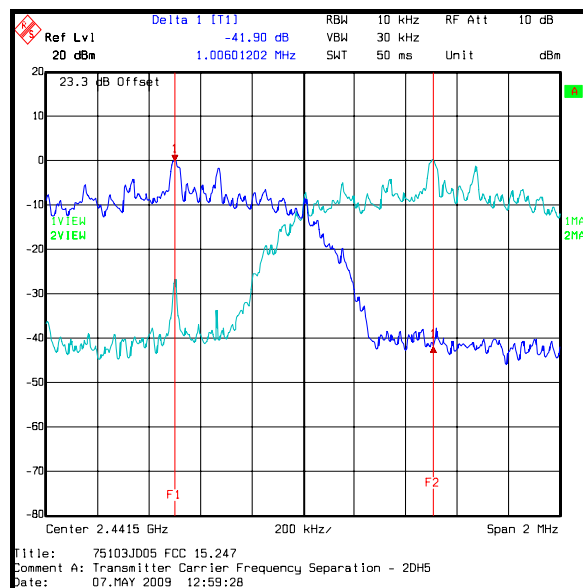


**Transmitter Carrier Frequency Separation (continued)****Results: 2DH5**

Transmitter Carrier Frequency Separation (kHz)	Limit ( $2/3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1006.012	875.083	130.929	Complied

**Note(s):**

- The 20 dB bandwidth measured for the middle channel operating at 2441 MHz was used to calculate the limit

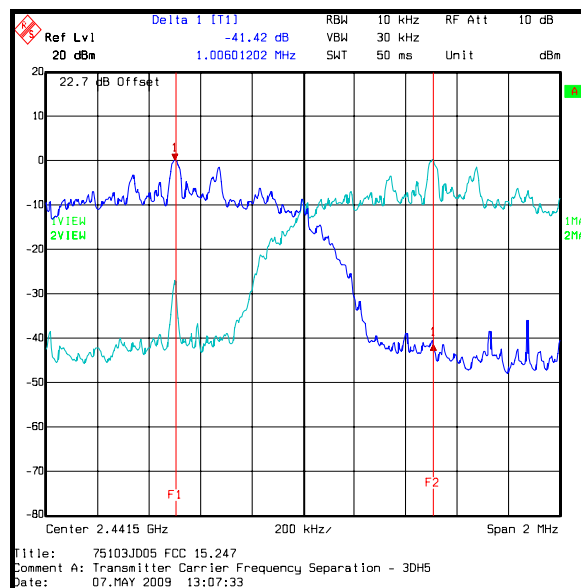


**Transmitter Carrier Frequency Separation (continued)****Results: 3DH5**

Transmitter Carrier Frequency Separation (kHz)	Limit ( $2/3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1006.012	848.363	157.649	Complied

**Note(s):**

- The 20 dB bandwidth measured for the middle channel operating at 2441 MHz was used to calculate the limit



**5.2.6. Transmitter Average Time of Occupancy****Test Summary:**

<b>FCC Part:</b>	15.247(a)(1)(iii)
<b>Test Method Used:</b>	As detailed in Public Notice DA 00-705 (March 30, 2000)

**Environmental Conditions:**

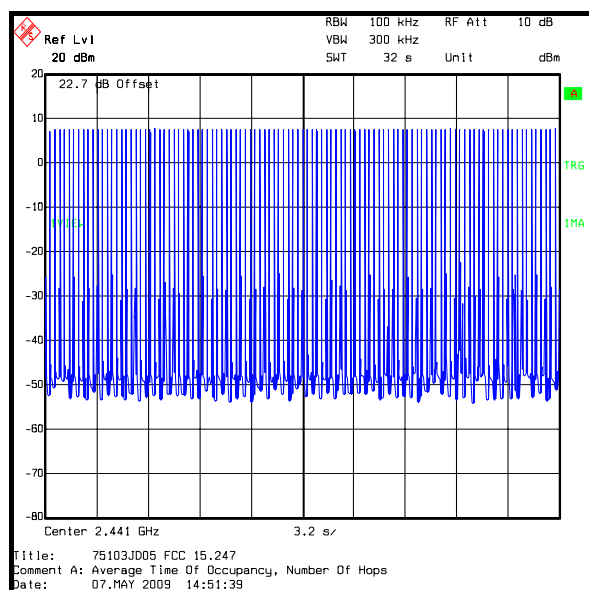
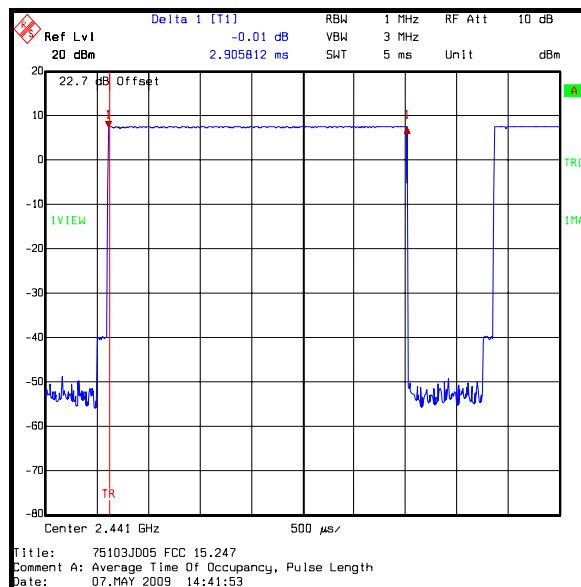
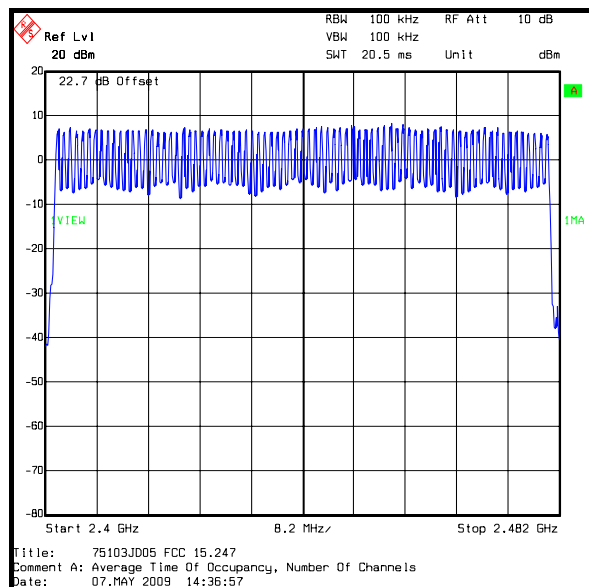
<b>Temperature (°C):</b>	26
<b>Relative Humidity (%):</b>	32

**Results:**

<b>Emission Width (μs)</b>	<b>Number of Hops in 31.6 Seconds</b>	<b>Average Time of Occupancy (s)</b>	<b>Limit (s)</b>	<b>Margin (s)</b>	<b>Result</b>
2905.812	111	0.323	0.4	0.077	Complied

**Note(s):**

1. Tests were performed to identify the average time of occupancy in number of channels (79) x 0.4 seconds. The calculated period is 31.6 seconds.

**Transmitter Average Time of Occupancy (continued)**



**5.2.7. Transmitter Maximum Peak Output Power (EIRP)****Test Summary:**

<b>FCC Part:</b>	15.247(b)(3)
<b>Test Method Used:</b>	As detailed in Public Notice DA 00-705 (March 30, 2000), ANSI TIA-603-C-2004 and FCC CFR Part 2

**Environmental Conditions:**

<b>Temperature (°C):</b>	24
<b>Relative Humidity (%):</b>	32

**Results: Basic Rate DH5**

Channel	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	2.6	30.0	27.4	Complied
Middle	2.1	30.0	27.9	Complied
Top	1.1	30.0	28.9	Complied

**Results: EDR 2DH5**

Channel	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	2.4	21.0	18.6	Complied
Middle	1.3	21.0	19.7	Complied
Top	0.3	21.0	20.7	Complied

**Results: EDR 3DH5**

Channel	EIRP (dBm)	Limit (dBm)	Margin (dB)	Result
Bottom	2.4	21.0	18.6	Complied
Middle	1.4	21.0	19.6	Complied
Top	0.7	21.0	20.3	Complied

**Note(s):**

1. These tests were performed radiated; therefore the EUT antenna gain is encompassed in the final result and not measurable.

**5.2.8. Transmitter Radiated Emissions****Test Summary:**

<b>FCC Part:</b>	15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and Public Notice DA 00-705 (March 30, 2000)
<b>Frequency Range</b>	30 MHz to 1 GHz

**Environmental Conditions:**

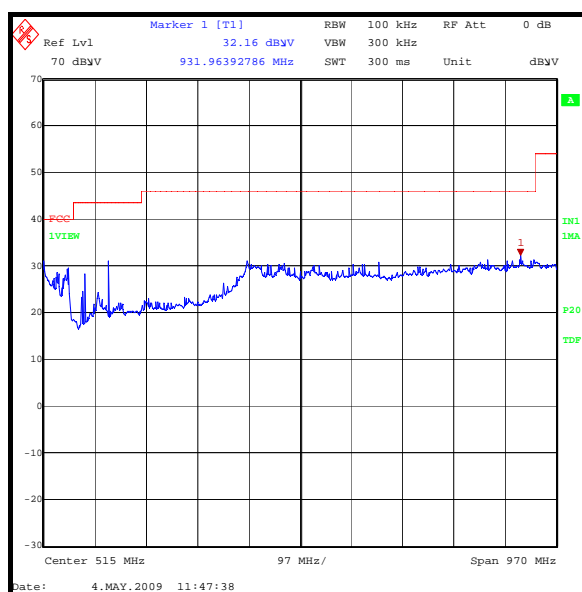
<b>Temperature (°C):</b>	22
<b>Relative Humidity (%):</b>	35

**Results:**

Frequency (MHz)	Antenna Polarity	Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
67.987	Vertical	24.9	40.0	15.1	Complied
107.580	Vertical	29.5	43.5	14.0	Complied
153.282	Vertical	22.5	43.5	21.0	Complied

**Note(s):**

- The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.

**30 MHz to 1 GHz Peak Scan**

*Note: This plot is a pre-scan for indication purposes only. For final measurements, see accompanying tables.*

**5.2.9. Transmitter Radiated Emissions****Test Summary:**

<b>FCC Part:</b>	15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and Public Notice DA 00-705 (March 30, 2000)
<b>Frequency Range</b>	1 GHz to 26.5 GHz

**Environmental Conditions:**

<b>Temperature (°C):</b>	23
<b>Relative Humidity (%):</b>	25

**Results: Highest Peak Level. Bottom Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4.802	Vertical	67.1	-1.2	65.9	74.0	8.1	Complied

**Results: Highest Average Level. Bottom Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4.802	Vertical	54.7	-1.2	53.5	54.0	0.5	Complied

**Results: Highest Peak Level. Middle Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4.882	Vertical	63.9	-1.2	62.7	74.0	11.3	Complied

**Results: Highest Average Level. Middle Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
4.882	Vertical	53.4	-1.2	52.2	54.0	1.8	Complied

**Transmitter Radiated Emissions (continued)****Results: Highest Peak Level. Top Channel**

Frequency (GHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4.960	Vertical	63.1	-1.2	61.9	74.0	12.1	Complied

**Results: Highest Average Level. Top Channel**

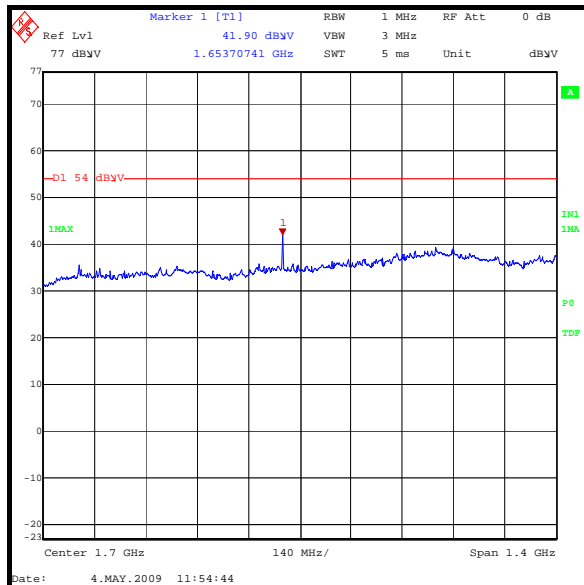
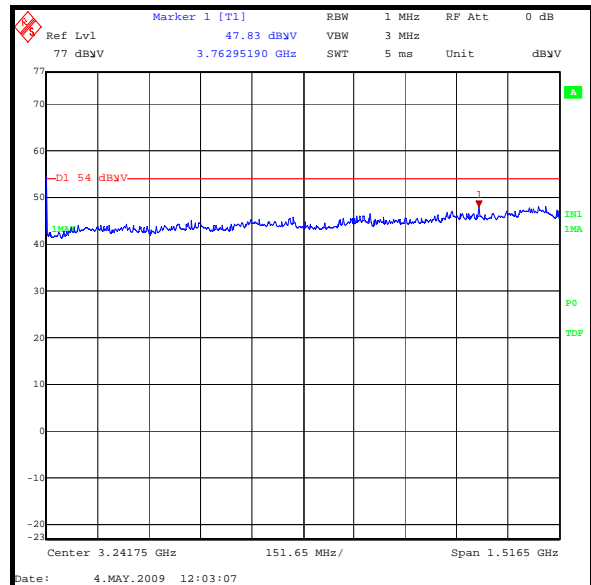
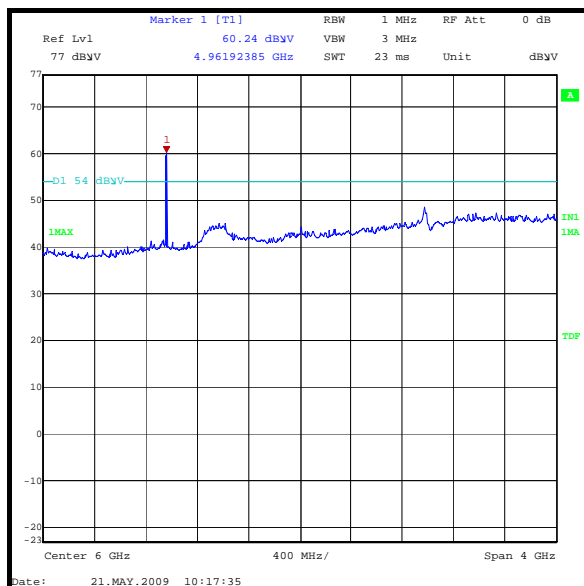
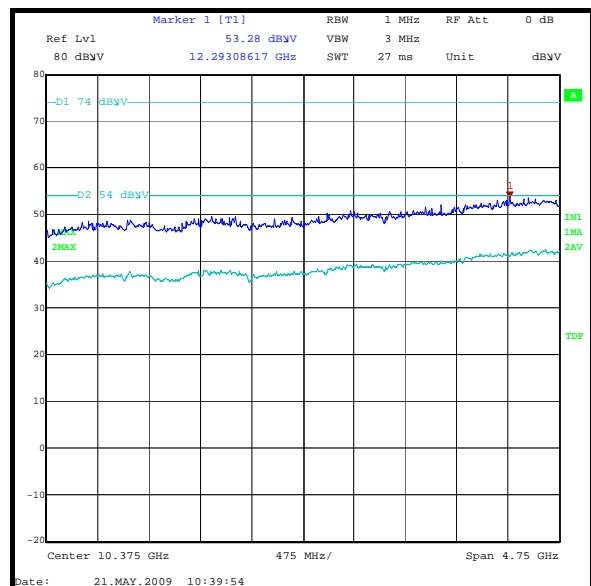
Frequency (GHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4.960	Vertical	54.3	-1.2	53.1	54.0	0.9	Complied

**Results: Highest Peak Level. Hopping Mode**

Frequency (GHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4.811824	Vertical	66.3	-1.2	65.1	74.0	8.9	Complied

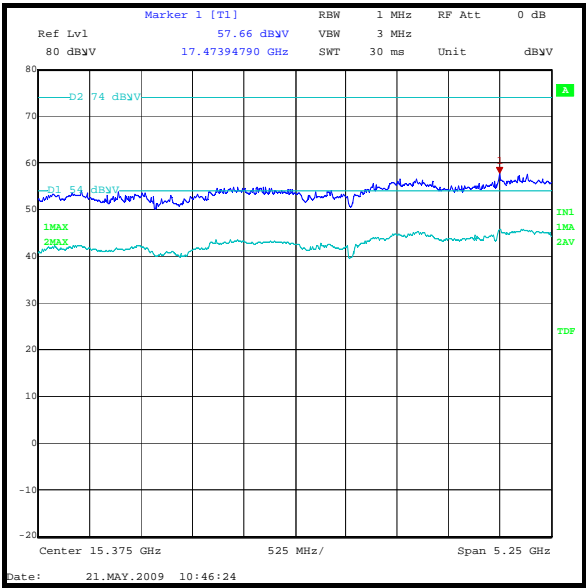
**Results: Highest Average Level. Hopping Mode**

Frequency (GHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
4.805812	Vertical	46.6	-1.2	45.4	54.0	8.6	Complied

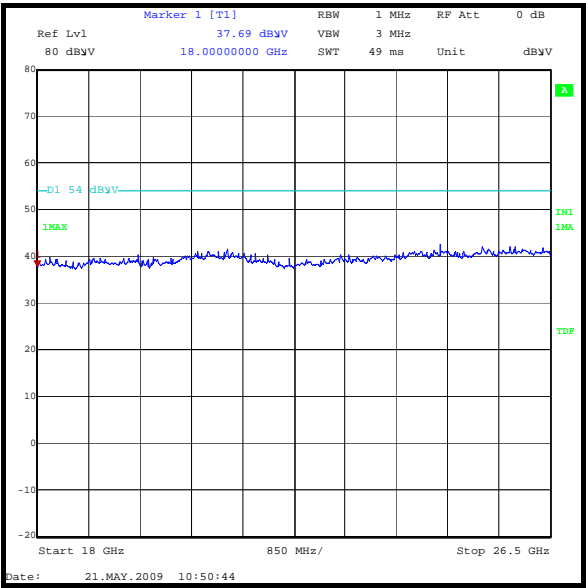
**Transmitter Radiated Emissions (continued)****1 GHz to 2.4 GHz Peak Scan****2.4835 GHz to 4 GHz Peak Scan****4 GHz to 8 GHz Peak Scan****8 GHz to 12.75 GHz Peak & Avg Scans**

*Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.*

Transmitter Radiated Emissions (continued)



12.75 GHz to 18 GHz Peak & Avg Scans



18 GHz to 26.5 GHz Peak Scan

Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

**5.2.10. Transmitter Band Edge Radiated Emissions****Test Summary:**

<b>FCC Part:</b>	15.247(d) & 15.209(a)
<b>Test Method Used:</b>	As detailed in ANSI C63.4 Section 8 and Public Notice DA 00-705 (March 30, 2000)

**Environmental Conditions:**

<b>Temperature (°C):</b>	28
<b>Relative Humidity (%):</b>	29

**Results: Peak Power Level Hopping Mode DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	54.9	-0.2	54.7	*77.7	23.0	Complied
2.4835	Vertical	55.1	-0.3	54.8	74.0	19.2	Complied

\* -20 dBc limit

**Results: Average Power Level Hopping Mode DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	32.3	-0.3	32.0	54.0	22.0	Complied

**Results: Peak Power Level Hopping Mode 2DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	47.3	-0.2	47.1	*77.6	30.5	Complied
2.4835	Vertical	55.3	-0.3	55.0	74.0	19.0	Complied

\* -20 dBc limit

**Results: Average Power Level Hopping Mode 2DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	32.7	-0.3	32.4	54.0	21.6	Complied

**Results: Peak Power Level Hopping Mode 3DH5**

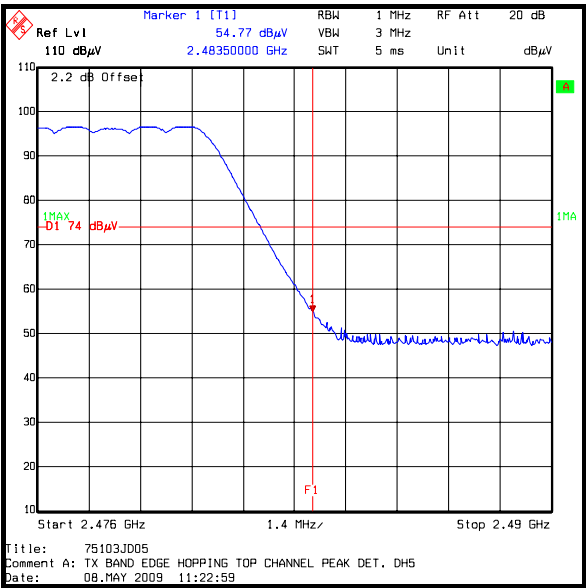
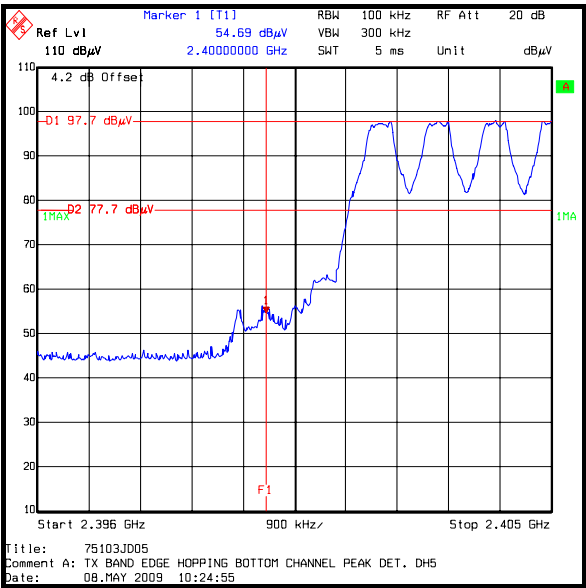
Frequency (MHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2.4000	Vertical	50.3	-0.2	50.1	*77.6	27.5	Complied
2.4835	Vertical	49.9	-0.3	49.6	74.0	24.4	Complied

*\* -20 dBc limit***Results: Average Power Level Hopping Mode 3DH5**

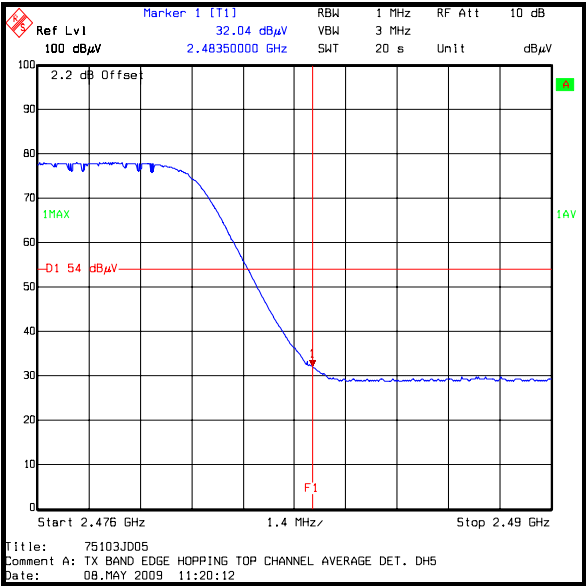
Frequency (MHz)	Antenna Polarity	Detector Level (dB $\mu$ V)	Transducer Factor (dB)	Actual Level (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Result
2.4835	Vertical	33.7	-0.3	33.4	54.0	20.6	Complied



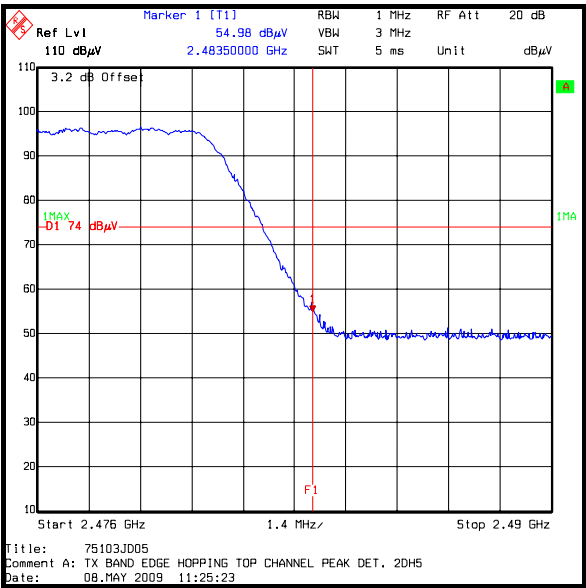
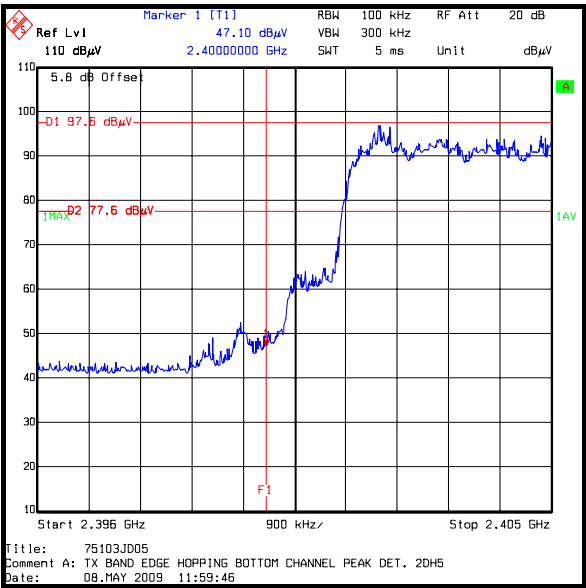
Transmitter Band Edge Radiated Emissions (continued)



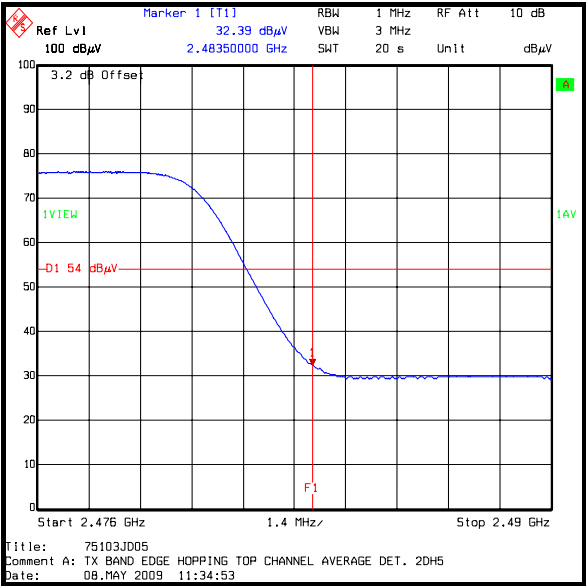
DH5



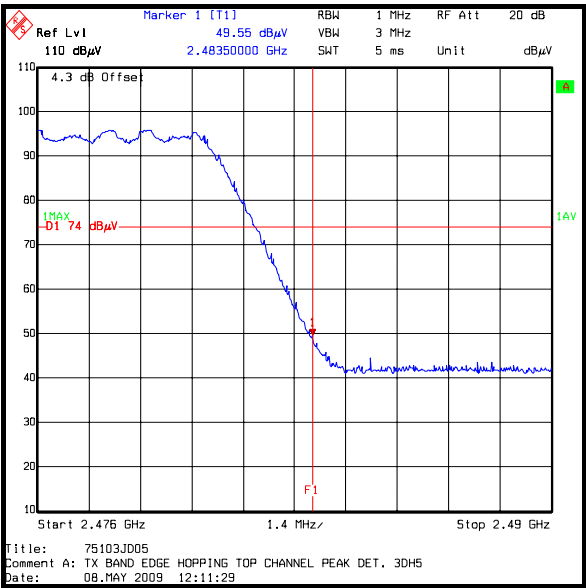
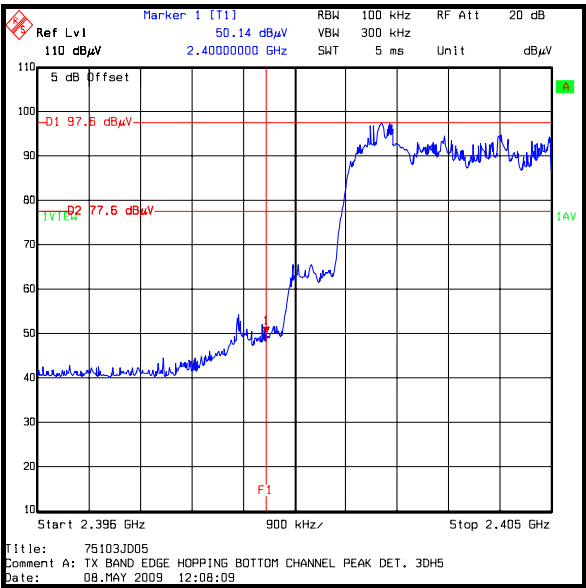
Transmitter Band Edge Radiated Emissions (continued)



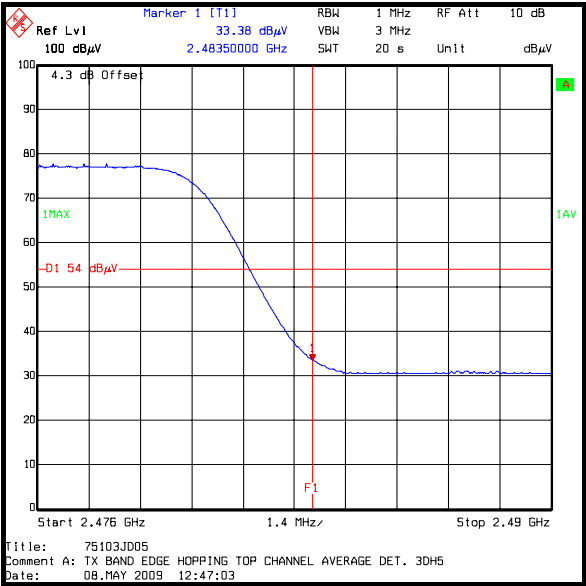
EDR 2DH5



Transmitter Band Edge Radiated Emissions (continued)



EDR 3DH5



**Transmitter Band Edge Radiated Emissions (continued)****Results: Peak Power Level Static Mode DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	57.1	-0.2	56.9	*77.8	20.9	Complied
2.4835	Vertical	57.1	-0.3	56.8	74.0	17.2	Complied

\* -20 dBc limit

**Results: Average Power Level Static Mode DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	46.0	-0.3	45.7	54.0	8.3	Complied

**Results: Peak Power Level Static Mode 2DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	54.2	-0.2	54.0	*77.6	23.6	Complied
2.4835	Vertical	55.5	-0.3	55.2	74.0	18.9	Complied

\* -20 dBc limit

**Results: Average Power Level Static Mode 2DH5**

Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	45.0	-0.3	44.7	54.0	9.3	Complied

**Results: Peak Power Level Static Mode 3DH5**

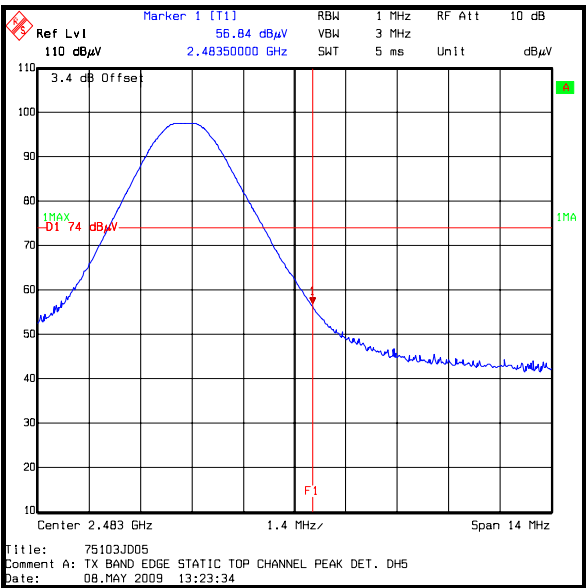
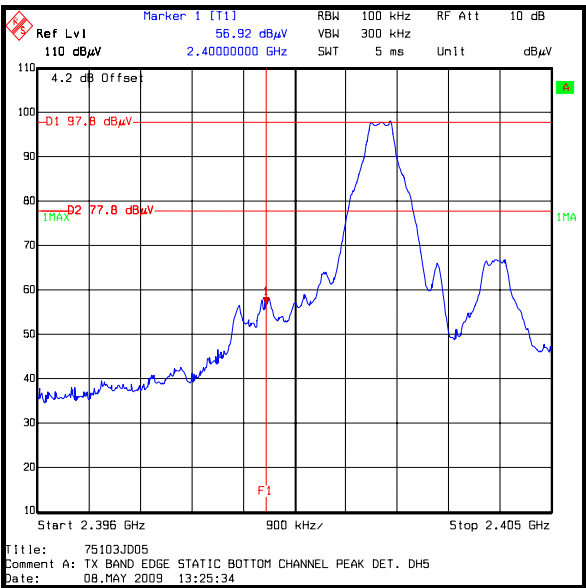
Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4000	Vertical	55.9	-0.2	55.7	*77.6	21.9	Complied
2.4835	Vertical	56.2	-0.3	55.9	74.0	18.1	Complied

\* -20 dBc limit

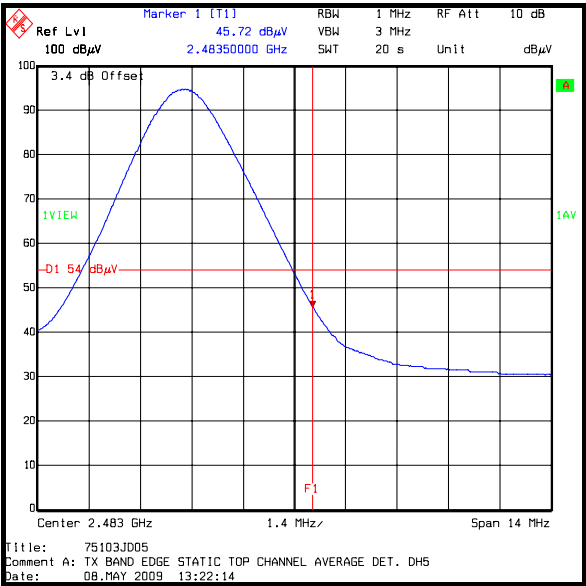
**Results: Average Power Level Static Mode 3DH5**

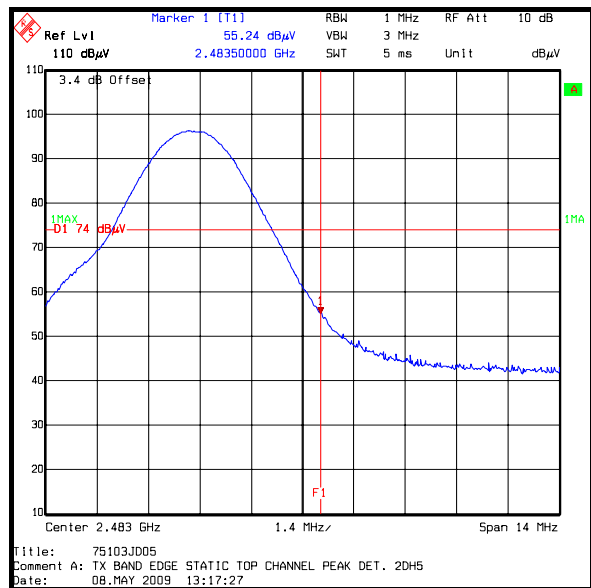
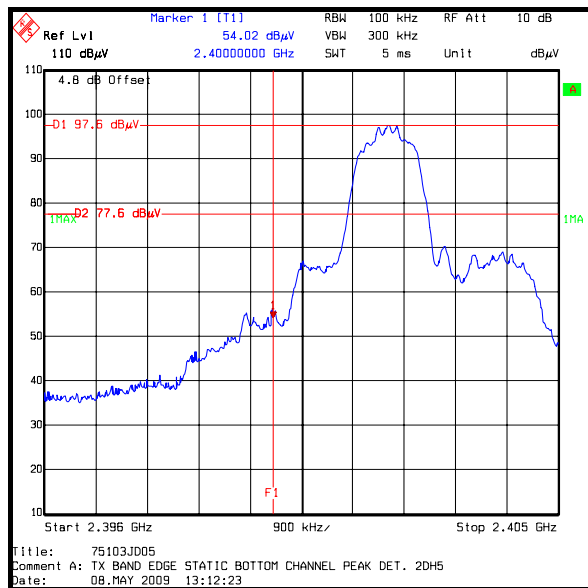
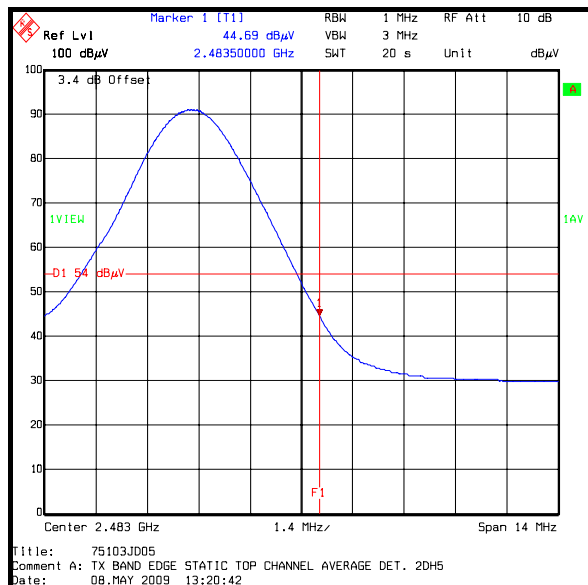
Frequency (MHz)	Antenna Polarity	Detector Level (dBμV)	Transducer Factor (dB)	Actual Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2.4835	Vertical	45.2	-0.3	44.9	54.0	9.1	Complied

Transmitter Band Edge Radiated Emissions (continued)

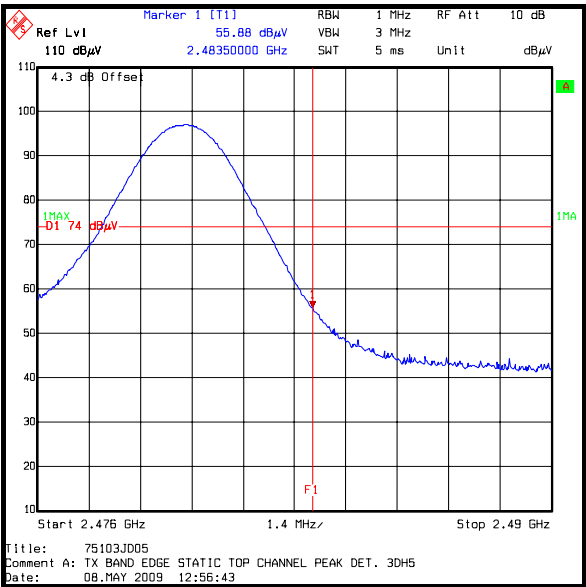
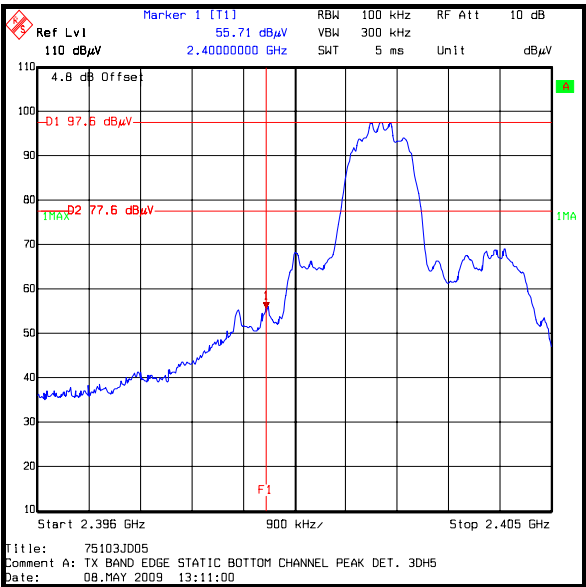


DH5

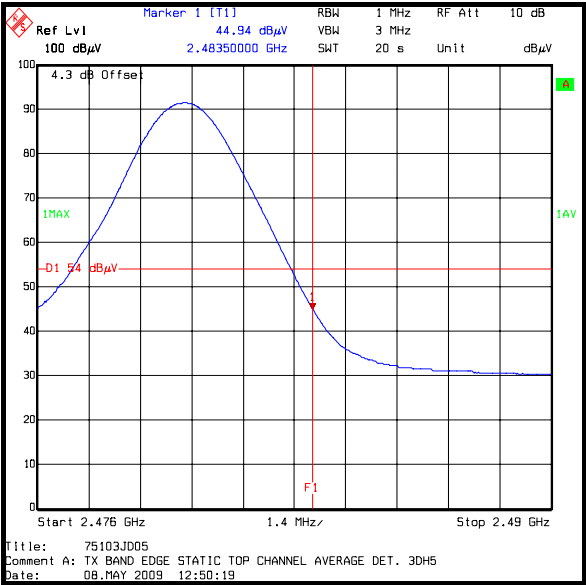


**Transmitter Band Edge Radiated Emissions (continued)****EDR 2DH5**

Transmitter Band Edge Radiated Emissions (continued)



EDR 3DH5



## **6. Measurement Uncertainty**

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

<b>Measurement Type</b>	<b>Range</b>	<b>Confidence Level (%)</b>	<b>Calculated Uncertainty</b>
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.72 dB
Maximum Peak Output Power	Not Applicable	95%	±2.94 dB
Carrier Frequency Separation	Not Applicable	95%	±0.92 ppm
Average Time of Occupancy	Not Applicable	95%	±0.3 ns
20 dB Bandwidth	Not Applicable	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±2.94 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.



**Appendix 1. Test Equipment Used**

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Mar 2009	12
A1299	Antenna	Schaffner	CBL6143	5094	28 Jul 2008	12
A1534	Pre Amplifier	Hewlett Packard	8449B OPT H02	3008A00405	Calibrated before use	-
A1818	Antenna	EMCO	3115	00075692	25 Oct 2008	12
A1830	Pulse Limiter	Rhode & Schwarz	ESH3-Z2	100668	05 Jan 2009	12
A436	Antenna	Flann	20240-20	330	24 Apr 2007	36
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	26 Aug 2008	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESIB26	100046K	09 Mar 2009	12
M1242	Spectrum Analyser	Rohde & Schwarz	FSEM30	845986/022	09 Dec 2008	12

**NB** In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.