

TEST REPORT FROM RFI GLOBAL SERVICES LTD



Test of: NTT docomo P-05C

FCC ID: UCE211039A

To: FCC Part 15.247: 2010 Subpart C

Test Report Serial No:
RFI-RPT-RP81001JD14A V2.0

Version 2.0 Supersedes All Previous Versions

This Test Report Is Issued Under The Authority Of Chris Guy, Head of Global Approvals:		
Checked By:		Ian Watch
Signature:		
Date of Issue:		19 April 2011

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1. Customer Information












Company Name:	Panasonic Mobile Communications Development of Europe Ltd.
Address:	Panasonic House Willoughby Road Bracknell Berkshire RG12 8FP United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.247
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Intentional Radiators) - Section 15.247
Specification Reference:	47CFR15.107 and 47CFR15.109
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart B (Unintentional Radiators) - Sections 15.107 and 15.109
Specification Reference:	47CFR15.207 and 47CFR15.209
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications) 2010: Part 15 Subpart C (Intentional Radiators) - Sections 15.207 and 15.209
Site Registration:	FCC: 209735
Location of Testing:	RFI Global Services Ltd, Wade Road, Basingstoke, Hampshire, RG24 8AH.
Test Dates:	13 March 2011 to 30 March 2011

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
Part 15.107(a)	Receiver/Idle Mode AC Conducted Emissions	
Part 15.109	Receiver/Idle Mode Radiated Spurious Emissions	
Part 15.207	Transmitter AC Conducted Emissions	
Part 15.247(a)(1)	Transmitter 20 dB Bandwidth	
Part 15.247(a)(1)	Transmitter Carrier Frequency Separation	
Part 15.247(a)(1)(iii)	Transmitter Number of Hopping Frequencies and Average Time of Occupancy	
Part 15.247(b)(1)	Transmitter Maximum Peak Output Power	
Part 15.247(d) & 15.209(a)	Transmitter Radiated Emissions	
Part 15.247(d) & 15.209(a)	Transmitter Band Edge Radiated Emissions	
Key to Results		
 = Complied  = Did not comply		

2.3. Methods and Procedures

Reference:	ANSI C63.4 (2009)
Title:	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Reference:	ANSI C63.10 (2009)
Title:	American National Standard for Testing Unlicensed Wireless Devices

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:	NTT docomo
Model Name or Number:	P-05C
IMEI:	355320040013412 (<i>Radiated sample #1</i>) 355320040013438 (<i>Radiated sample #2</i>) 355320040012406 (<i>Conducted RF port sample</i>)
Hardware Version Number:	Rev C
Software Version Number:	B-D11SL1-00.01.037 D11SL1_Cv58091405
FCC ID:	UCE211039A

Brand Name:	NTT
Description:	Battery
Model Name or Number:	P20*

Brand Name:	NTT docomo
Description:	AC Charger
Model Name or Number:	FOMA AC Adapter 01 for Global use / MAS-BH0008-A 002

Brand Name:	NTT docomo
Description:	DC Charger
Model Name or Number:	FOMA DC Adapter 02

Brand Name:	NTT docomo
Description:	Charge/USB Data Cable
Model Name or Number:	FOMA USB Cable with Charge Function 02

Brand Name:	NTT docomo
Description:	Personal Hands-Free
Model Name or Number:	Stereo Earphone Set 01

3.2. Description of EUT

The equipment under test was a dual mode UMTS/GSM cellular handset with *Bluetooth*, WLAN and RFID

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:	<i>Bluetooth</i>		
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	8DQPSK
Packet Type: (Maximum Payload)	DH5	2DH5	3DH5
Data Rate (Mbit/s):	1	2	3
Maximum Peak Output Power:	0 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	78	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	78	2480

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Brand Name:	Sony
Description:	Laptop PC
Model Name or Number:	Vaio PCG-551N

Brand Name:	Samsung
Description:	Micro SD Memory Card
Model Name or Number:	Micro SD 2GB

Brand Name:	Buffalo
Description:	USB Hub
Model Name or Number:	BSH3U01

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating mode(s):

- 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: Standalone, connected via a radio link to a *Bluetooth* tester. A laptop PC with the Client's bespoke application was used to place the EUT into *Bluetooth* test mode.
- Receive/Idle tests: Standalone, with the *Bluetooth* mode active but not transmitting.
- Both EDR/Basic rate modes were compared and tests were performed with the mode that presented the worst case result. For output power, bandwidth, band edge and channel separation, all modes were tested.
- Idle and transmitter radiated spurious emissions tests were performed with the AC Charger connected to the EUT as this was found to be the worst case during pre-scans. All the accessories were individually connected and measurements made during the pre-scans to determine the worst case combination.
- The SDRAM card was present during all tests.
- The EUT conducted sample IMEI 355320040012406 was used for Transmitter Maximum Peak Output Power, 20 dB bandwidth, carrier frequency separation and average time of occupancy tests
- The EUT radiated sample IMEI 355320040013412 was used for AC conducted emissions, and radiated spurious emissions tests apart from receiver radiated emissions below 1 GHz when sample 355320040013438 was used.

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. Receiver/Idle Mode AC Conducted Spurious Emissions****Test Summary:**

Test Engineer:	Patrick Jones	Test Date:	16 March 2011
Test Sample Serial No:	355320040013412		

FCC Part:	15.107
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	29

Results: Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150000	Neutral	41.0	66.0	25.0	Complied
1.806000	Live	25.0	56.0	31.0	Complied
1.833000	Live	24.9	56.0	31.1	Complied
1.842000	Live	27.0	56.0	29.0	Complied
1.851000	Live	27.8	56.0	28.2	Complied
1.878000	Live	27.4	56.0	28.6	Complied
1.891500	Live	26.9	56.0	29.1	Complied
1.900500	Live	25.4	56.0	30.6	Complied
1.918500	Live	27.4	56.0	28.6	Complied
1.923000	Live	24.7	56.0	31.3	Complied
1.945500	Live	24.7	56.0	31.3	Complied
1.954500	Live	29.5	56.0	26.5	Complied
1.963500	Live	24.5	56.0	31.5	Complied
1.986000	Live	30.4	56.0	25.6	Complied
1.999500	Live	28.6	56.0	27.4	Complied

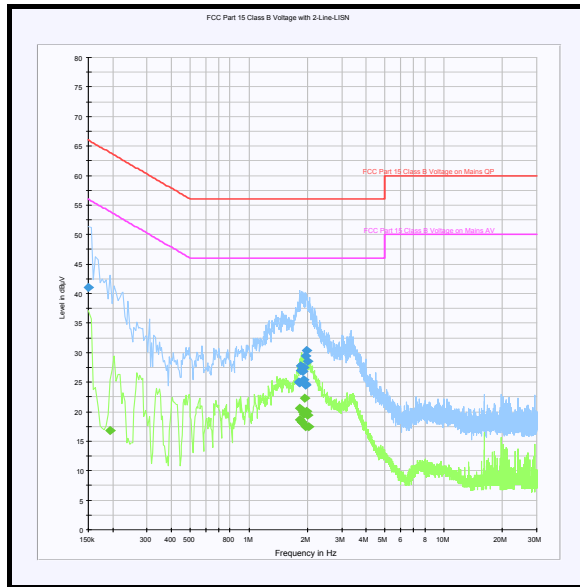
Receiver/Idle Mode AC Conducted Spurious Emissions (continued)**Results: Average**

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.195000	Neutral	16.8	53.8	37.0	Complied
1.824000	Live	18.6	46.0	27.4	Complied
1.828500	Live	20.6	46.0	25.4	Complied
1.860000	Live	18.2	46.0	27.8	Complied
1.864500	Live	18.2	46.0	27.8	Complied
1.896000	Live	20.0	46.0	26.0	Complied
1.905000	Live	19.5	46.0	26.5	Complied
1.941000	Live	22.2	46.0	23.8	Complied
1.963500	Live	17.5	46.0	28.5	Complied
1.968000	Live	20.1	46.0	25.9	Complied
1.995000	Live	19.4	46.0	26.6	Complied
2.026500	Live	17.5	46.0	28.5	Complied

Note(s):

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

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



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

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

Test Engineer:	Andrew Edwards	Test Date:	13 March 2011
Test Sample Serial No:	355320040013438		

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	23

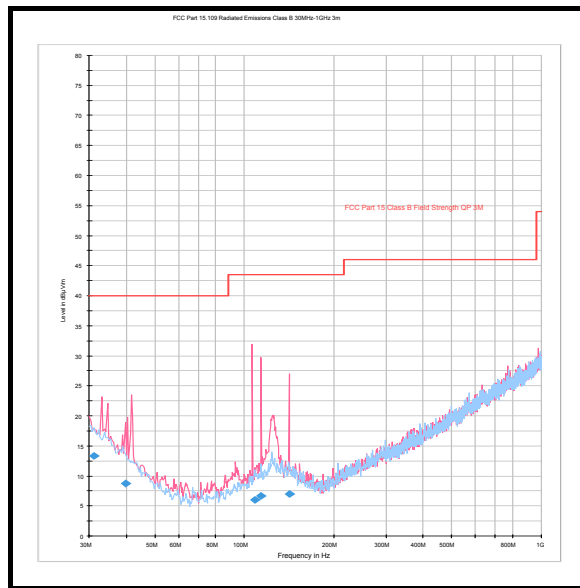
Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
31.096	Vertical	13.4	40.0	26.6	Complied
39.935	Vertical	8.8	40.0	31.2	Complied
108.644	Vertical	6.0	43.5	37.5	Complied
114.100	Vertical	6.6	43.5	36.9	Complied
141.441	Vertical	7.0	43.5	36.5	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

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

Test Engineer:	Andrew Edwards	Test Date:	22 March 2011
Test Sample Serial No:	355320040013412		

FCC Part:	15.109
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range:	1 GHz to 12.5 GHz

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	20

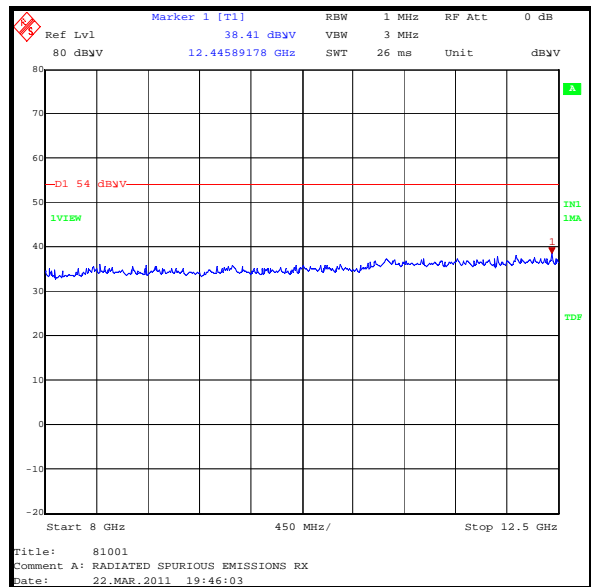
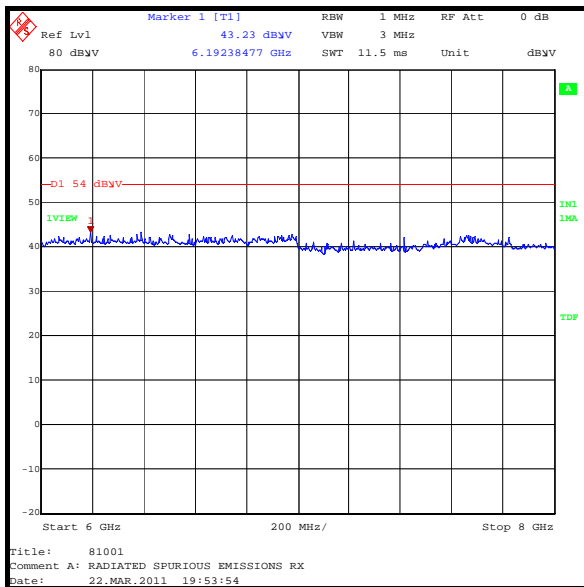
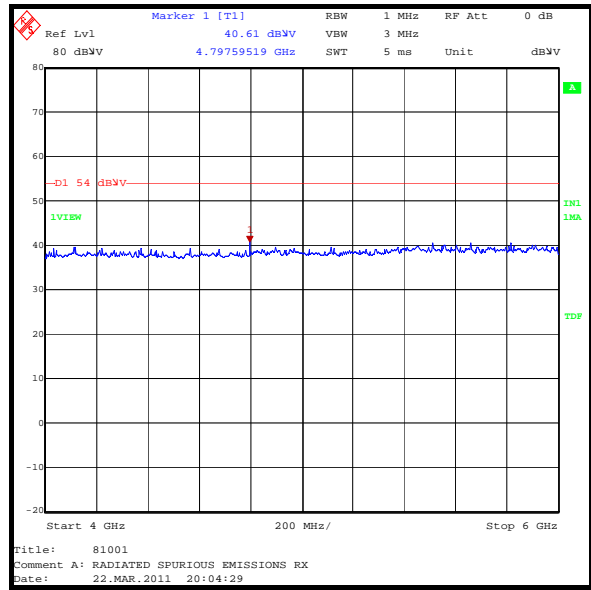
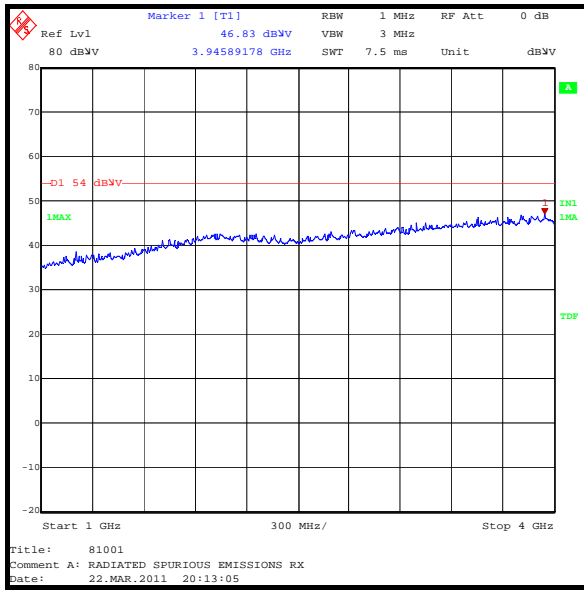
Results:

Frequency (MHz)	Antenna Polarity	Peak Level (dBμV/m)	Average Limit (dBμV/m)	Margin (dB)	Result
3945.892	Vertical	46.8	54.0	7.2	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
3. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the table above. The peak level was compared to the average limit as opposed to being compared to the peak limit because this is the more onerous limit.

Receiver/Idle Mode Radiated Spurious Emissions (continued)



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

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

Test Engineer:	Andrew Edwards	Test Date:	30 March 2011
Test Sample Serial No:	355320040013412		

FCC Part:	15.207
Test Method Used:	As detailed in ANSI C63.10 Section 6.2 referencing ANSI C63.4

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	29

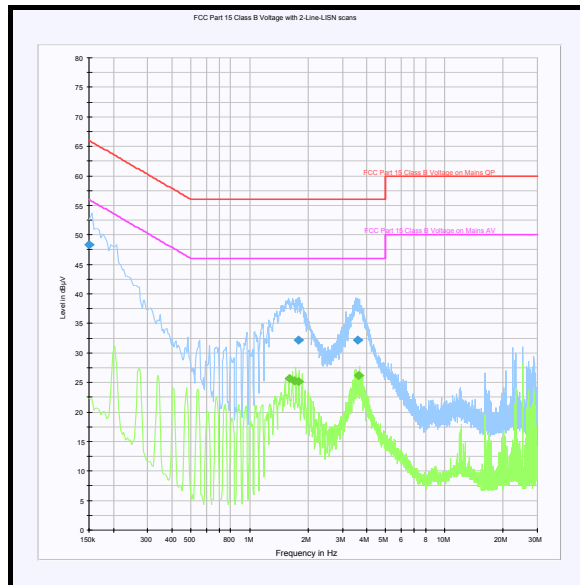
Results: Quasi Peak

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
0.150000	Neutral	48.3	48.3	17.7	Complied
1.779000	Neutral	32.2	32.2	23.8	Complied
3.583500	Neutral	32.2	32.2	23.8	Complied

Results: Average

Frequency (MHz)	Line	Level (dB μ V)	Limit (dB μ V)	Margin (dB)	Result
1.599000	Neutral	25.7	46.0	20.3	Complied
1.693500	Neutral	25.3	46.0	20.7	Complied
1.702500	Neutral	25.3	46.0	20.7	Complied
1.779000	Neutral	25.1	46.0	20.9	Complied
3.633000	Neutral	26.2	46.0	19.8	Complied

Transmitter AC Conducted Spurious Emissions (continued)



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

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

Test Engineer:	Andrew Edwards	Test Date:	30 March 2011
Test Sample Serial No:	355320040012406		

FCC Part:	15.247(a)(1)
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.1

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	31

Results DH5:

Channel	20 dB Bandwidth (kHz)
Bottom	960.922
Middle	960.922
Top	960.922

Results 2DH5:

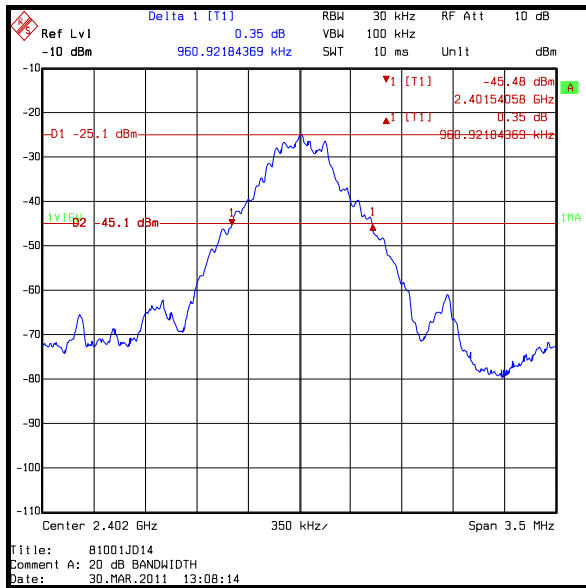
Channel	20 dB Bandwidth (kHz)
Bottom	1290.581
Middle	1297.595
Top	1297.595

Results 3DH5:

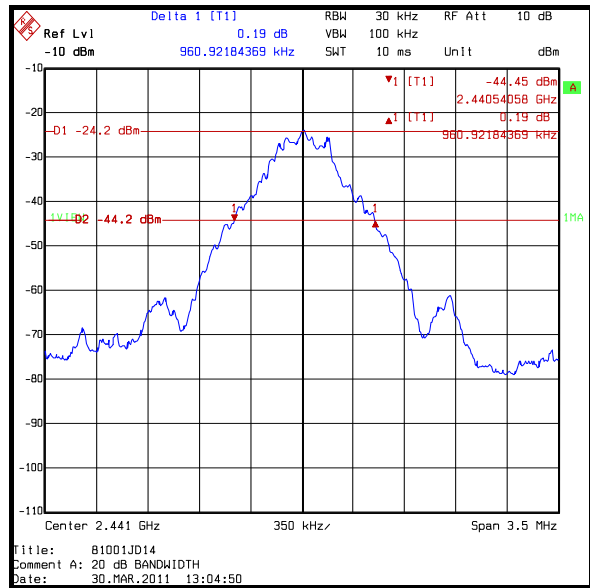
Channel	20 dB Bandwidth (kHz)
Bottom	1290.581
Middle	1290.581
Top	1290.581

Transmitter 20 dB Bandwidth (continued)

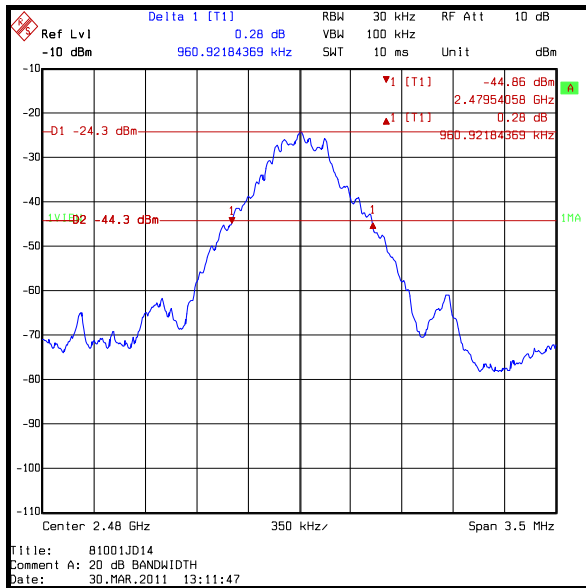
Results DH5:



Bottom channel



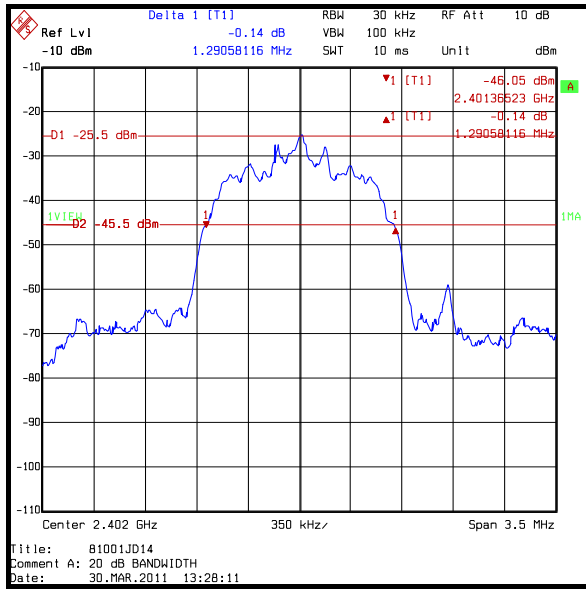
Middle channel



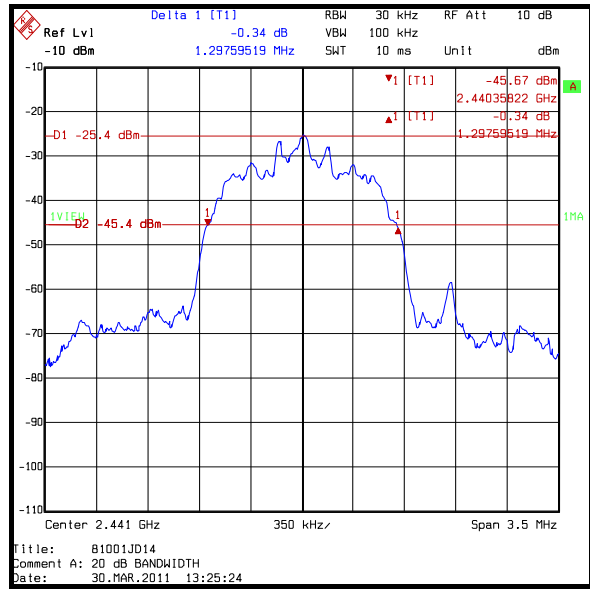
Top channel

Transmitter 20 dB Bandwidth (continued)

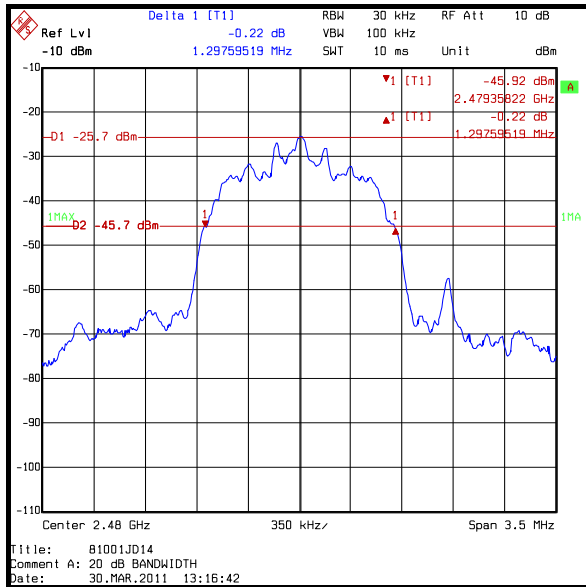
Results 2DH5:



Bottom channel



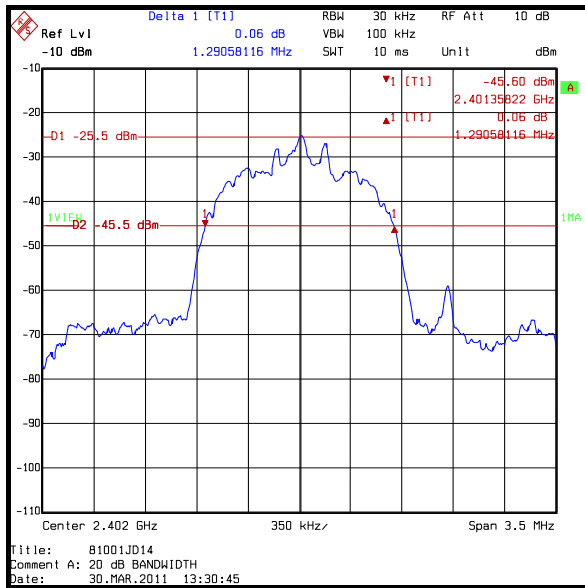
Middle channel



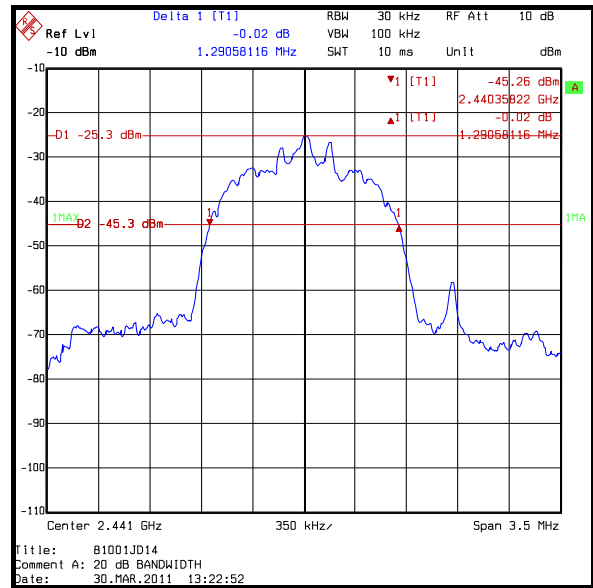
Top channel

Transmitter 20 dB Bandwidth (continued)

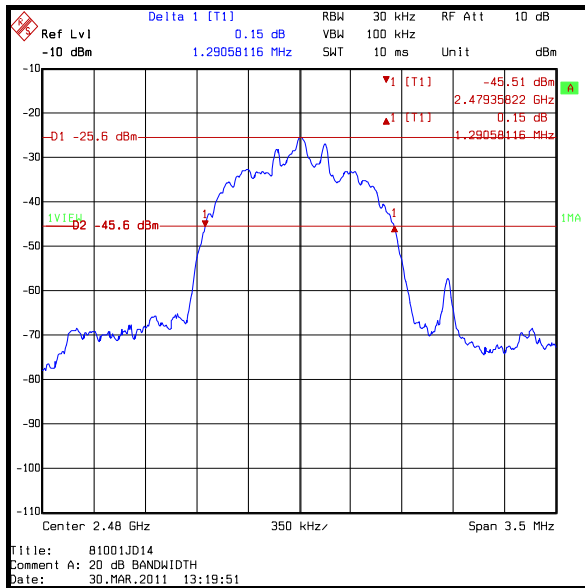
Results 3DH5:



Bottom channel



Middle channel



Top channel

5.2.5. Transmitter Carrier Frequency Separation

Test Summary:

Test Engineer:	Andrew Edwards	Test Date:	30 March 2011
Test Sample Serial No:	355320040012406		

FCC Part:	15.247(a)(1)
Test Method Used:	As detailed in ANSI C63.10 Section 7.7.2

Environmental Conditions:

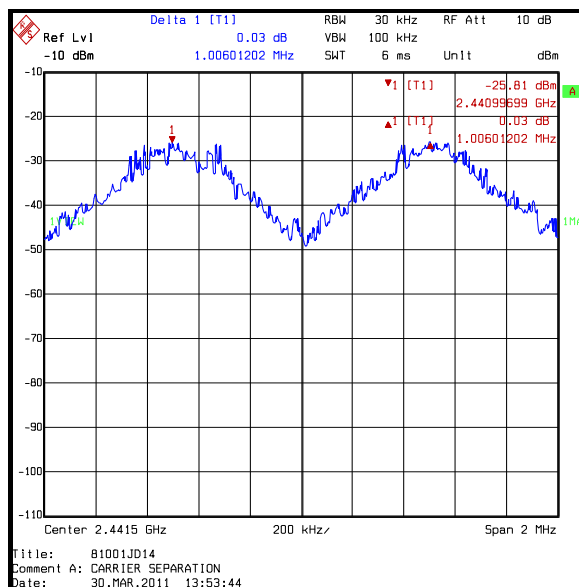
Temperature (°C):	24
Relative Humidity (%):	31

Results: DH5

Carrier Frequency Separation (kHz)	Limit ($2/3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1006.012	640.615	365.397	Complied

Note(s):

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



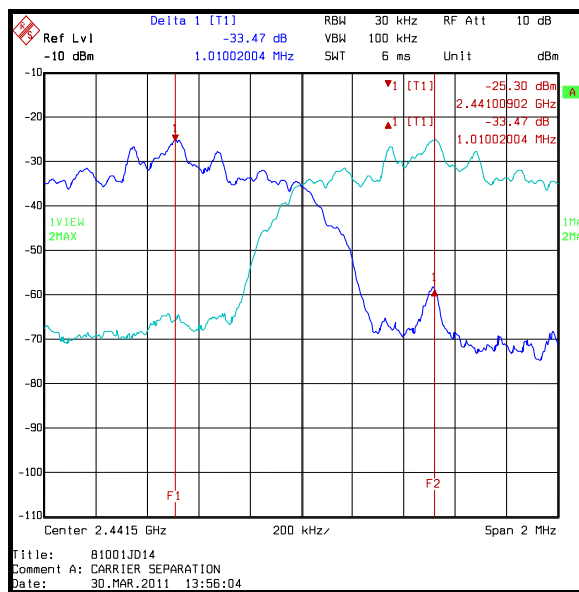
Transmitter Carrier Frequency Separation (continued)

Results: 2DH5

Carrier Frequency Separation (kHz)	Limit ($2/3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1010.020	865.063	144.957	Complied

Note(s):

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



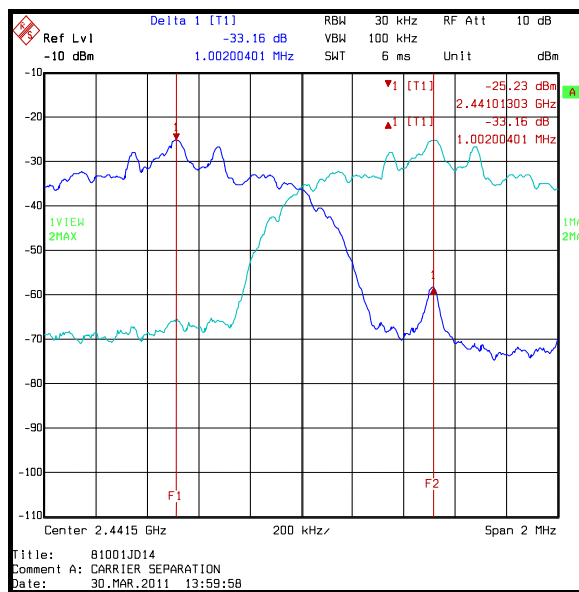
Transmitter Carrier Frequency Separation (continued)

Results: 3DH5

Carrier Frequency Separation (kHz)	Limit ($2/3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1002.004	860.387	144.617	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 Number of Hopping Frequencies and Average Time of Occupancy**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	30 March 2011
Test Sample Serial No:	355320040012406		

FCC Part:	15.247(a)(1)(iii)
Test Method Used:	As detailed in ANSI C63.10 Section 7.7.3 & 7.7.4

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	31

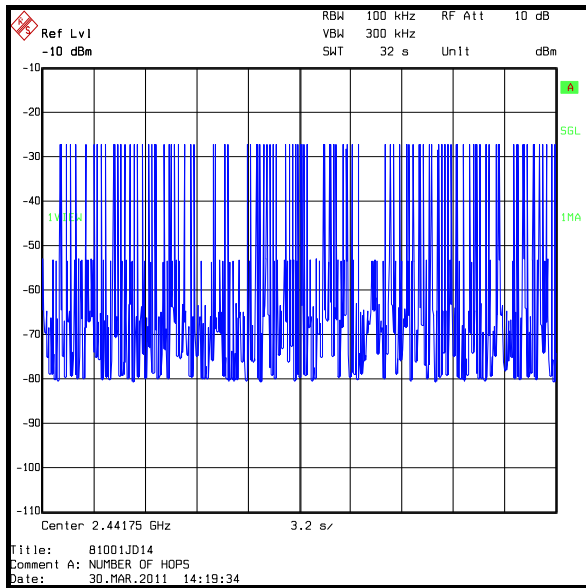
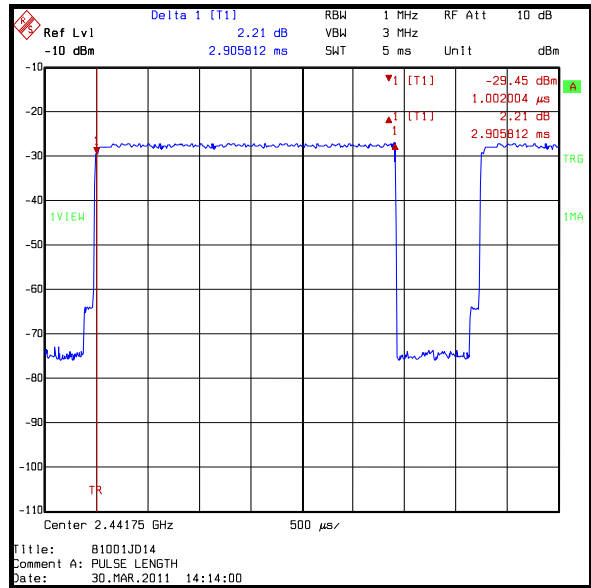
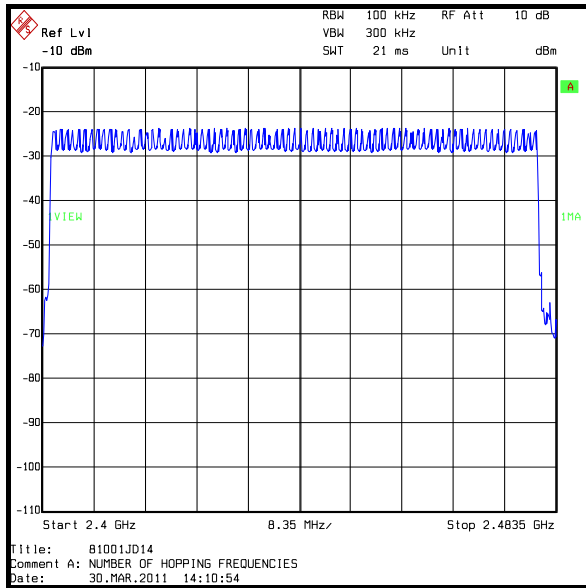
Results:

Emission Width (µs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2905.812	105	0.305	0.4	0.095	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 Number of Hopping Frequencies and Average Time of Occupancy (continued)



5.2.7. Transmitter Maximum Peak Output Power**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	30 March 2011
Test Sample Serial No:	355320040012406		

FCC Part:	15.247(b)(1)
Test Method Used:	As detailed in ANSI C63.10 Section 6.10.1

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	31

Results: DH5

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-0.2	30.0	30.2	Complied
Middle	0.0	30.0	30.0	Complied
Top	-0.5	30.0	30.5	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.2	0.4	0.2	36.0	35.8	Complied
Middle	0.0	0.4	0.4	36.0	35.6	Complied
Top	-0.5	0.4	-0.1	36.0	36.1	Complied

Results: 2DH5

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-0.2	21.0	21.2	Complied
Middle	-0.4	21.0	21.4	Complied
Top	-1.2	21.0	22.2	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.2	0.4	0.2	27.0	26.8	Complied
Middle	-0.4	0.4	0.0	27.0	27.0	Complied
Top	-1.2	0.4	-0.8	27.0	27.8	Complied

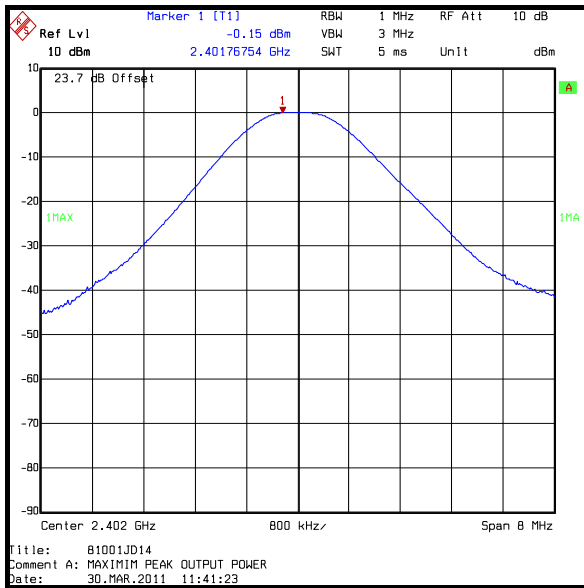
Transmitter Maximum Peak Output Power (continued)**Results: 3DH5**

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	0.0	21.0	21.0	Complied
Middle	-0.3	21.0	21.3	Complied
Top	-1.1	21.0	22.1	Complied

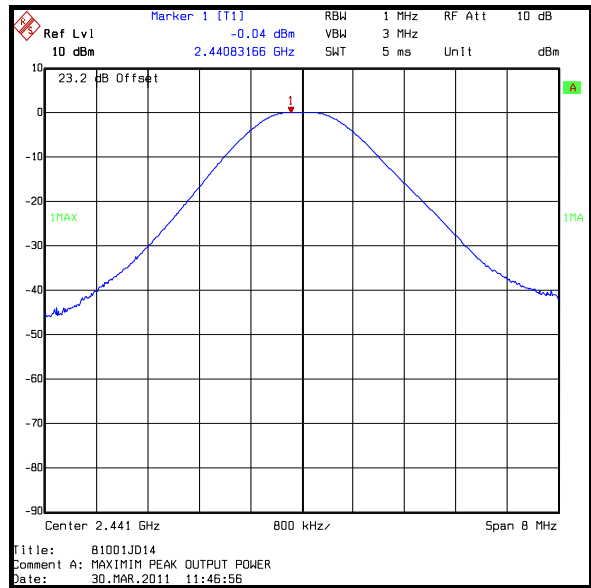
Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	0.0	0.4	0.4	27.0	26.6	Complied
Middle	-0.3	0.4	0.1	27.0	26.9	Complied
Top	-1.1	0.4	-0.7	27.0	27.7	Complied

Transmitter Maximum Peak Output Power (continued)

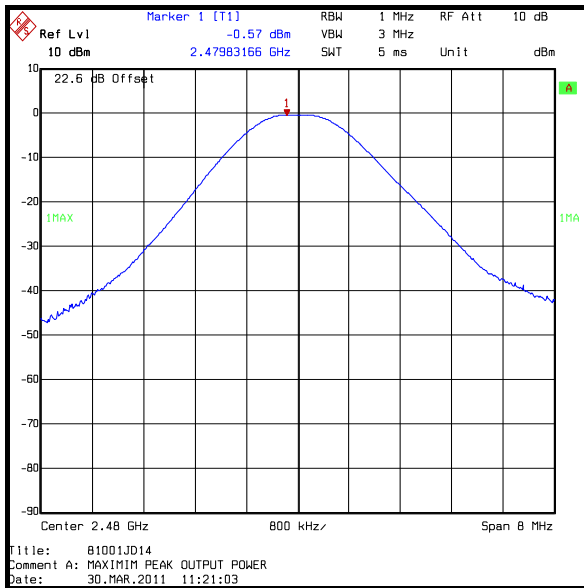
Results: Basic Rate DH5



Bottom channel



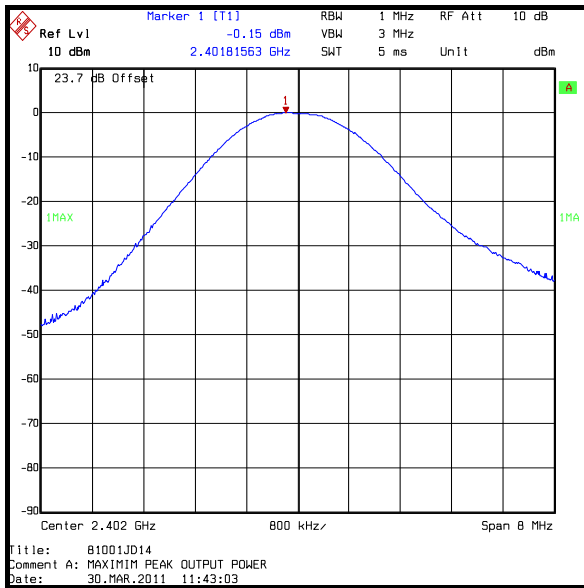
Middle channel



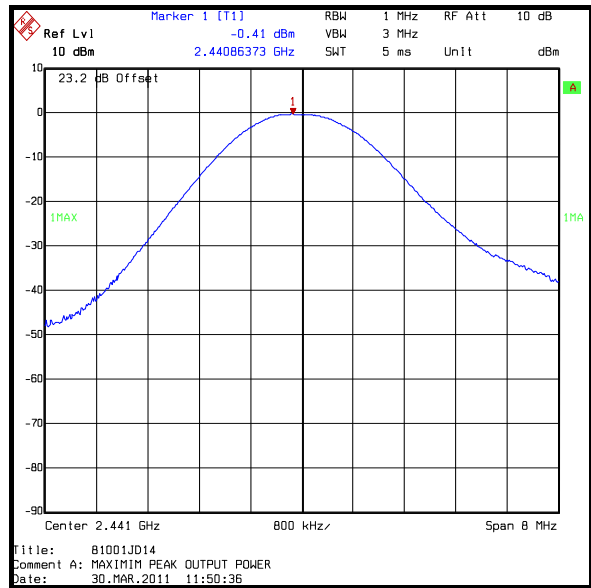
Top channel

Transmitter Maximum Peak Output Power (continued)

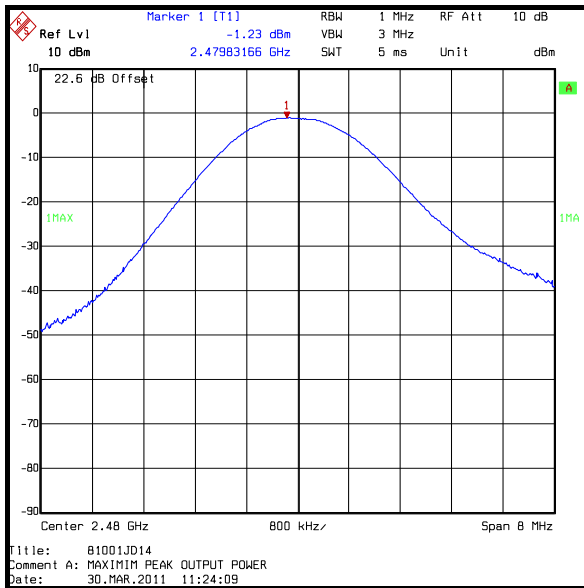
Results: 2DH5



Bottom channel



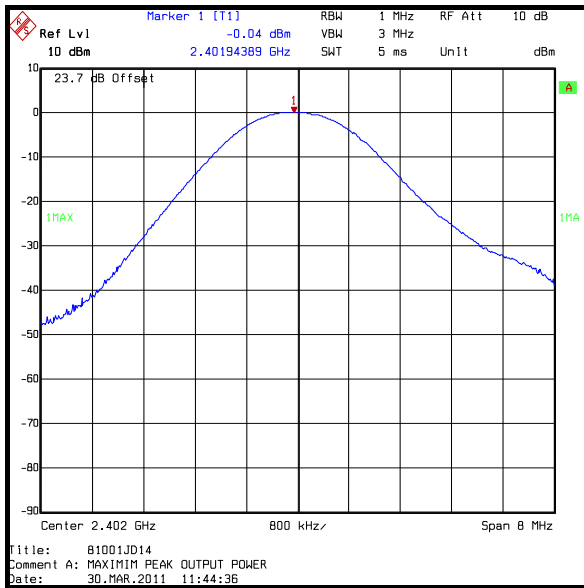
Middle channel



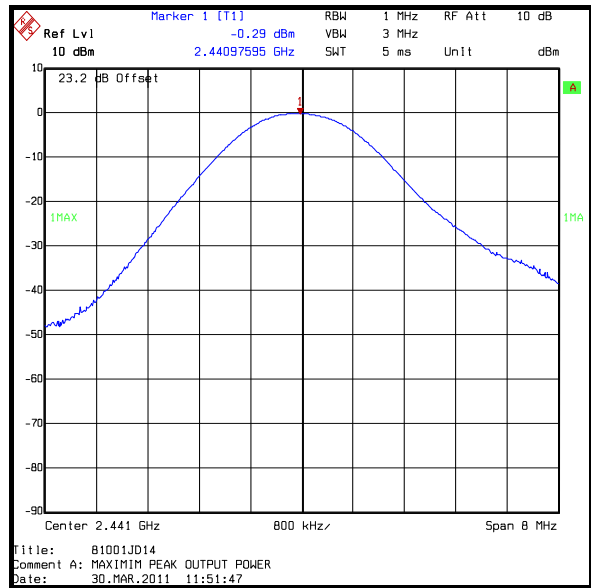
Top channel

Transmitter Maximum Peak Output Power (continued)

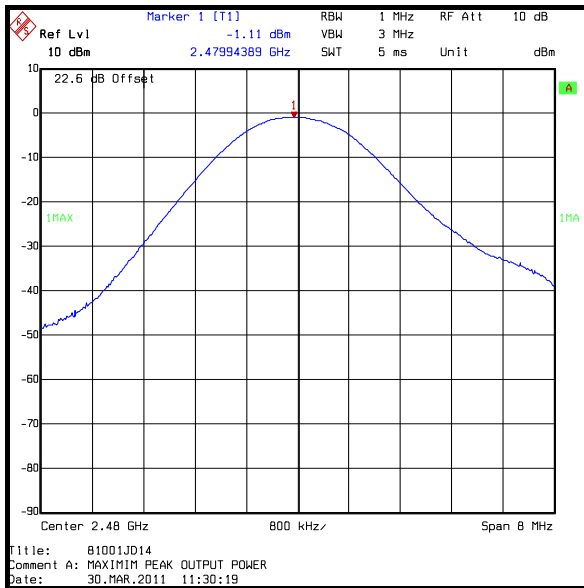
Results: 3DH5



Bottom channel



Middle channel



Top channel

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

Test Engineer:	Nick Steele	Test Date:	28 March 2011
Test Sample Serial No:	355320040013412		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	28

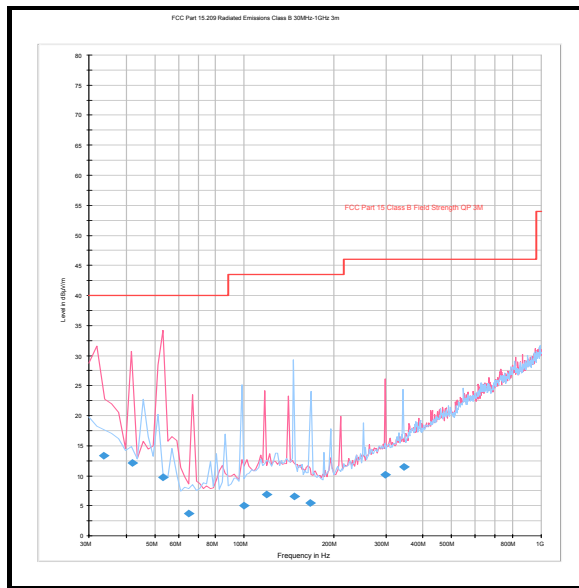
Results: Quasi-Peak DH5

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
33.769	Vertical	13.3	40.0	26.7	Complied
42.130	Vertical	12.1	40.0	27.9	Complied
53.303	Vertical	9.7	40.0	30.3	Complied
65.053	Vertical	3.7	40.0	36.3	Complied
99.935	Horizontal	5.1	43.5	38.4	Complied
119.067	Vertical	6.9	43.5	36.6	Complied
147.090	Horizontal	6.6	43.5	36.9	Complied
166.645	Horizontal	5.4	43.5	38.1	Complied
298.954	Vertical	10.2	46.0	35.8	Complied
345.030	Horizontal	11.5	46.0	34.5	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. 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.
3. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
4. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Radiated Emissions (continued)



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

Transmitter Radiated Emissions (continued)**Test Summary:**

Test Engineer:	Andrew Edwards	Test Date:	22 March 2011
Test Sample Serial No:	355320040013412		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range	1 GHz to 25 GHz

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	20

Results: DH5 / Peak

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
3837.675	Vertical	56.7	74.0	17.3	Complied

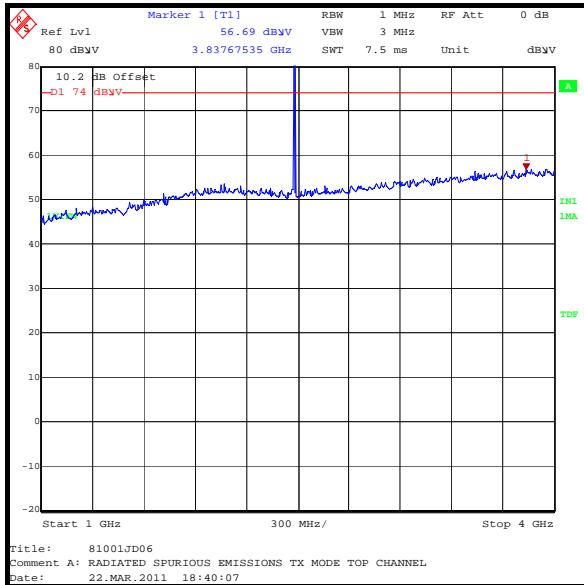
Results: DH5 / Average

Frequency (MHz)	Antenna Polarity	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
3861.723	Vertical	47.5	54.0	6.5	Complied

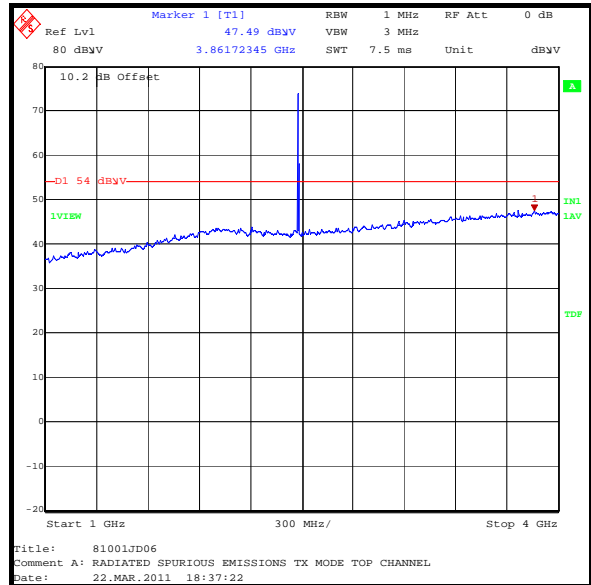
Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental at 2480 MHz.
3. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the tables above.
4. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

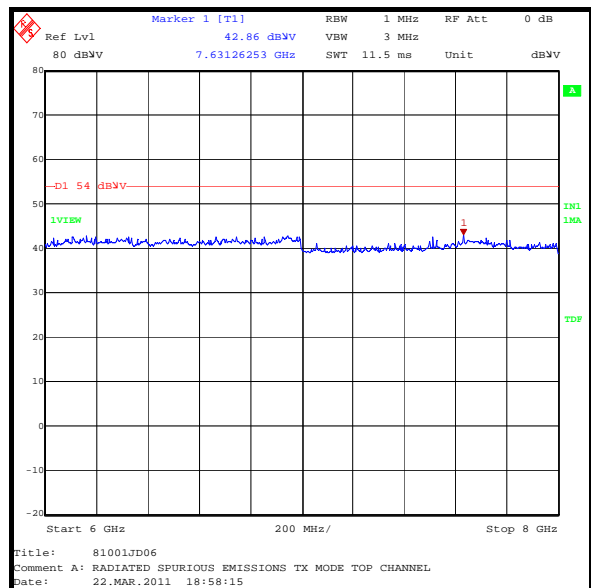
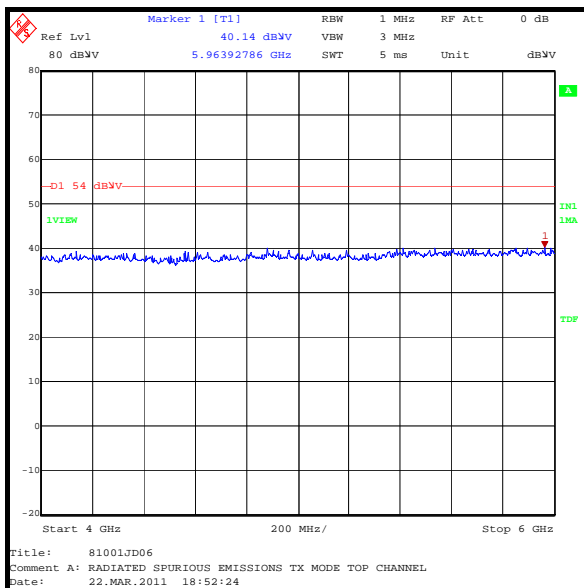
Transmitter Radiated Emissions (continued)



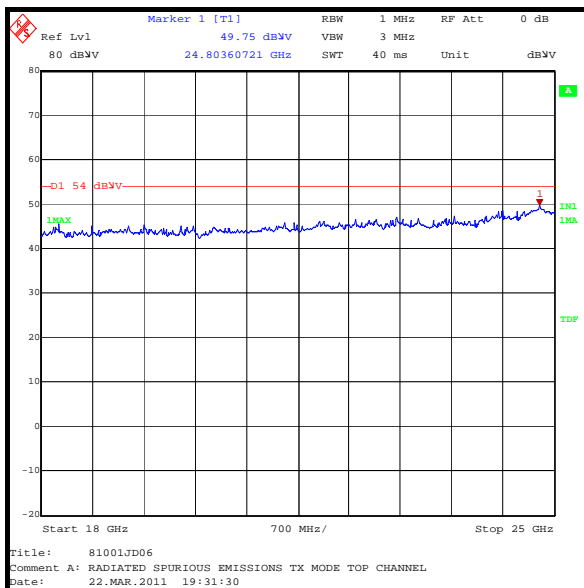
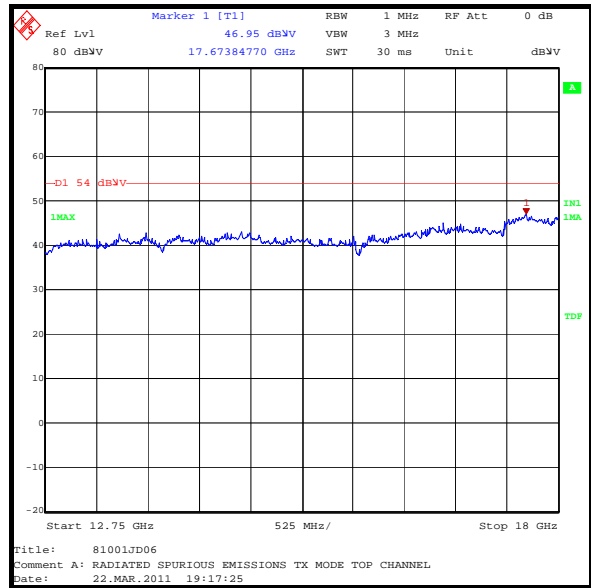
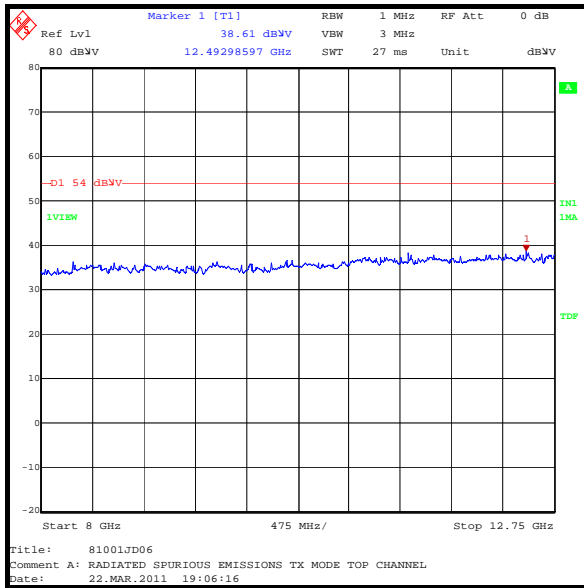
Peak Detector



Average Detector



Transmitter Radiated Emissions (continued)



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

Test Engineer:	Andrew Edwards	Test Date:	30 March 2011
Test Sample Serial No:	355320040012406		

FCC Part:	15.247(d) & 15.209(a)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.9.2

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	31

Results: Static Mode DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2400.0	Vertical	56.7	75.3*	18.6	Complied
2483.5	Vertical	55.2	74.0	18.8	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	42.1	54.0	11.9	Complied

Results: Hopping Mode DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2400.0	Vertical	50.7	75.3*	24.6	Complied
2483.5	Vertical	54.3	74.0	19.7	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	32.6	54.0	21.4	Complied

Results: Static Mode 2DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2400.0	Vertical	46.6	75.3*	28.7	Complied
2483.5	Vertical	60.0	74.0	14.0	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	43.8	54.0	10.2	Complied

Transmitter Band Edge Radiated Emissions (continued)**Results: Hopping Mode 2DH5**

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2400.0	Vertical	45.8	75.3*	29.5	Complied
2483.5	Vertical	57.6	74.0	16.4	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	33.3	54.0	20.7	Complied

Results: Static Mode 3DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2400.0	Vertical	47.9	75.3*	27.4	Complied
2483.5	Vertical	60.8	74.0	13.2	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	43.8	54.0	10.2	Complied

Results: Hopping Mode 3DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2400.0	Vertical	47.1	75.3*	28.2	Complied
2483.5	Vertical	56.5	74.0	17.5	Complied

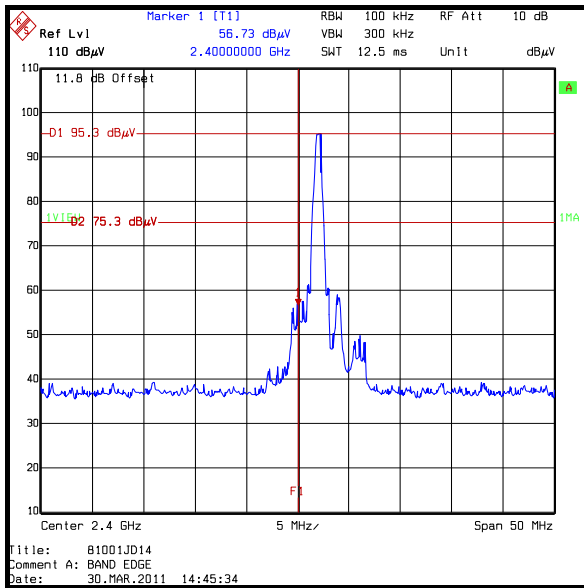
Frequency (MHz)	Antenna Polarity	Average Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Result
2483.5	Vertical	33.2	54.0	20.8	Complied

Note(s):

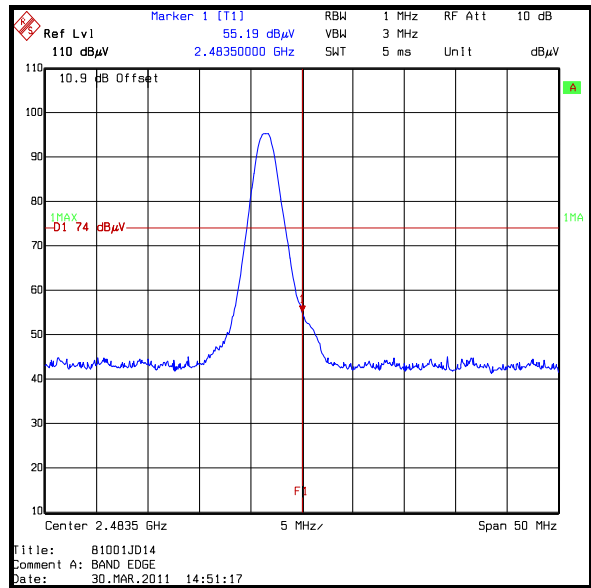
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. * -20 dBc limit

Transmitter Band Edge Radiated Emissions (continued)

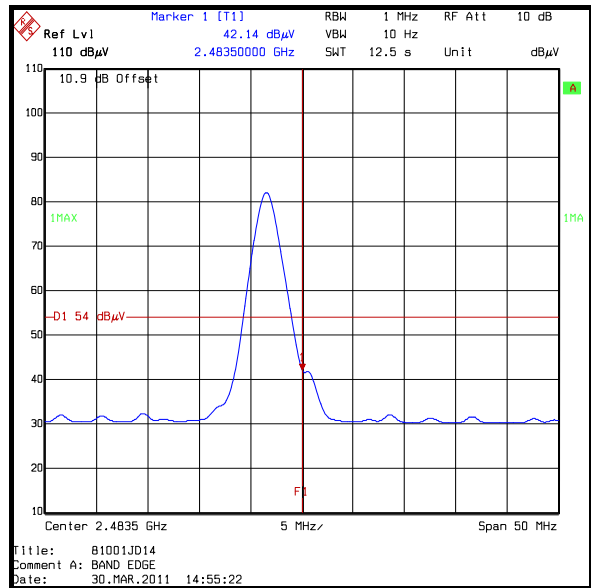
DH5 Static Mode



Lower Band Edge Peak Static



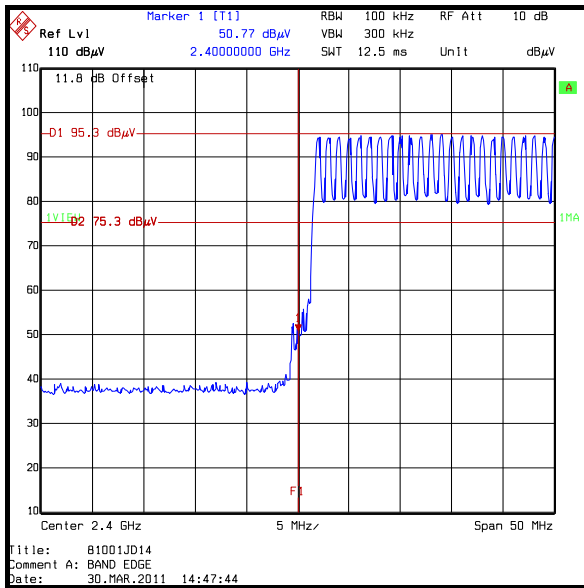
Upper Band Edge Peak Static



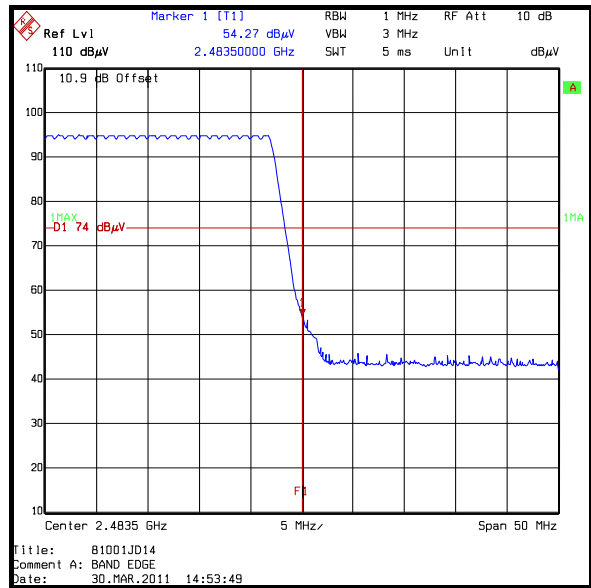
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

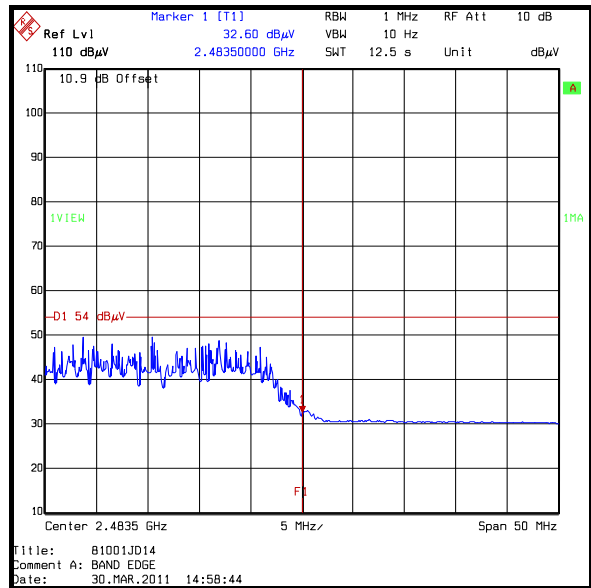
DH5 Hopping Mode



Lower Band Edge Peak Hopping



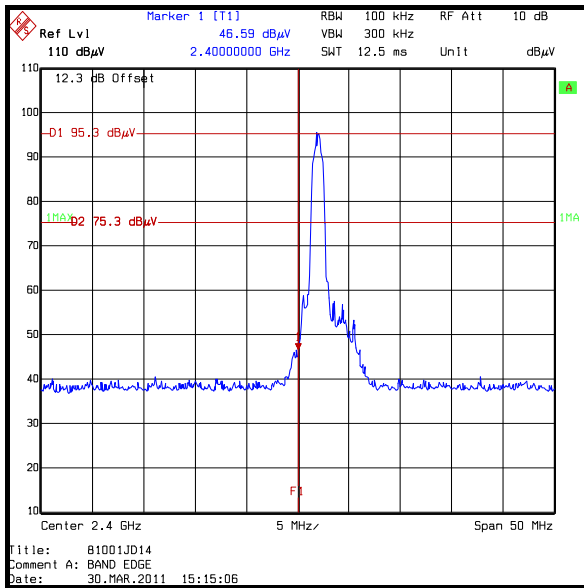
Upper Band Edge Peak Hopping



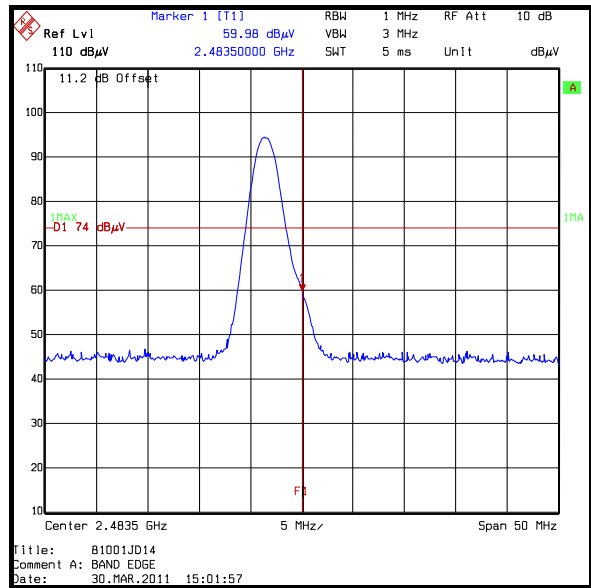
Upper Band Edge Average Hopping

Transmitter Band Edge Radiated Emissions (continued)

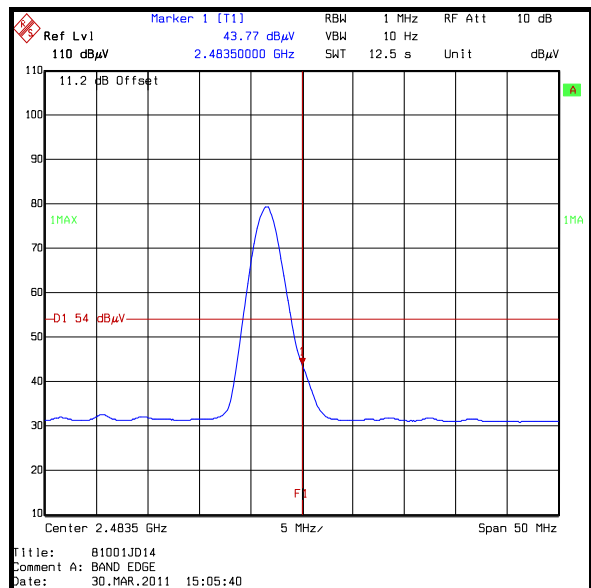
2DH5 Static Mode



Lower Band Edge Peak Static



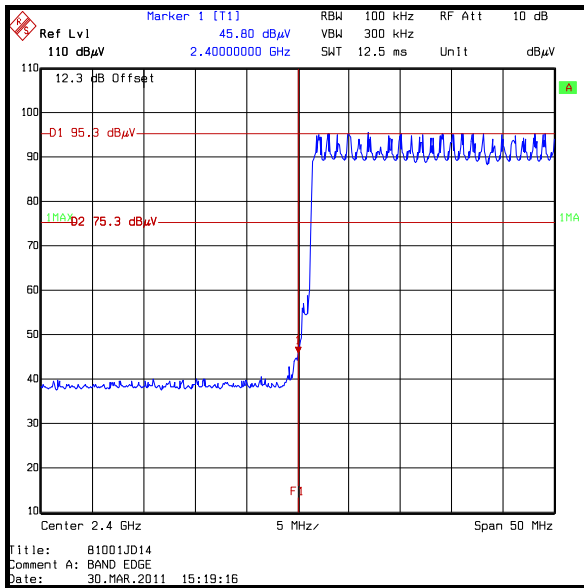
Upper Band Edge Peak Static



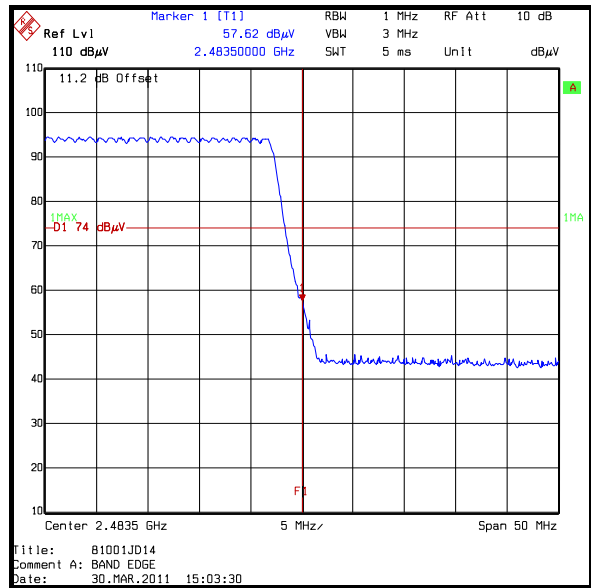
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

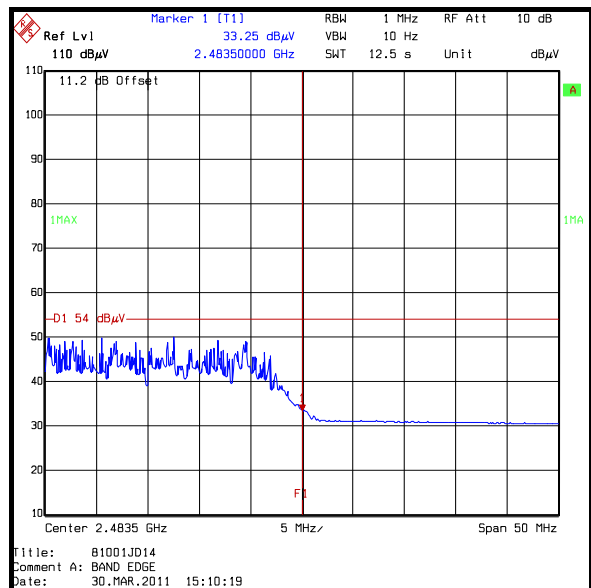
2DH5 Hopping Mode



Lower Band Edge Peak Hopping



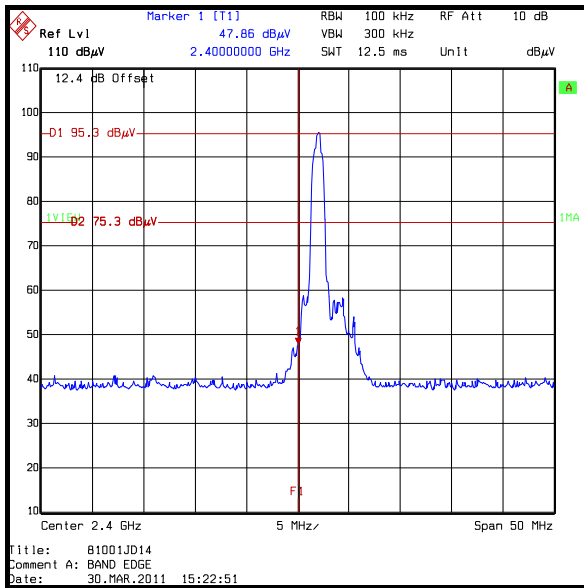
Upper Band Edge Peak Hopping



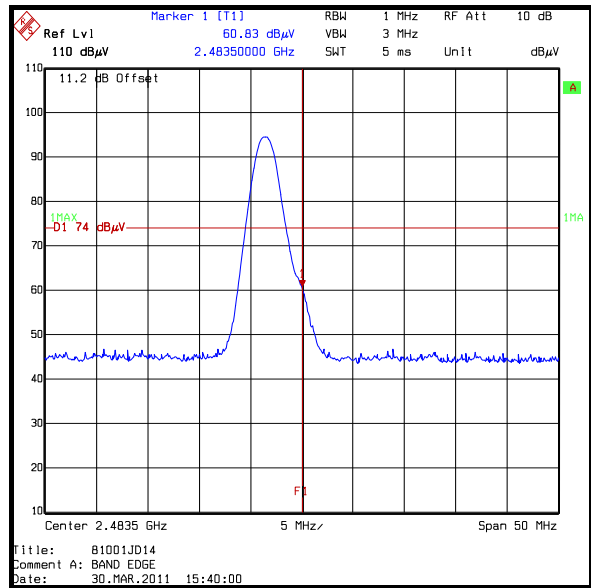
Upper Band Edge Average Hopping

Transmitter Band Edge Radiated Emissions (continued)

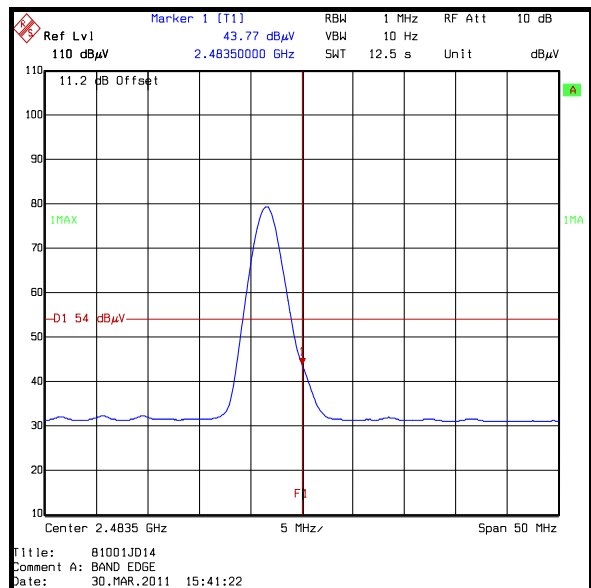
3DH5 Static Mode



Lower Band Edge Peak Static



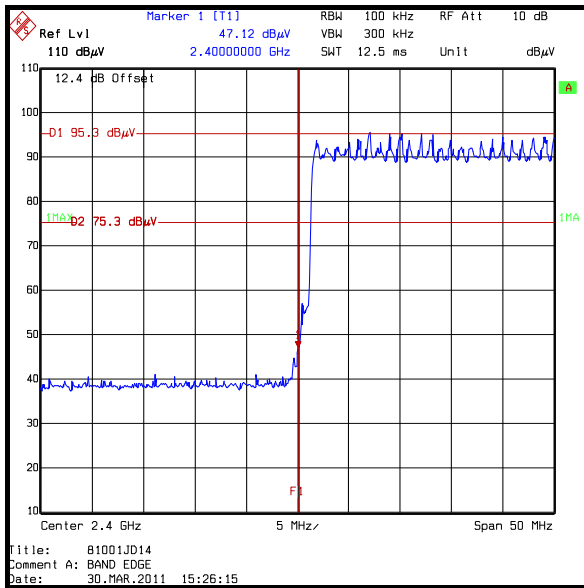
Upper Band Edge Peak Static



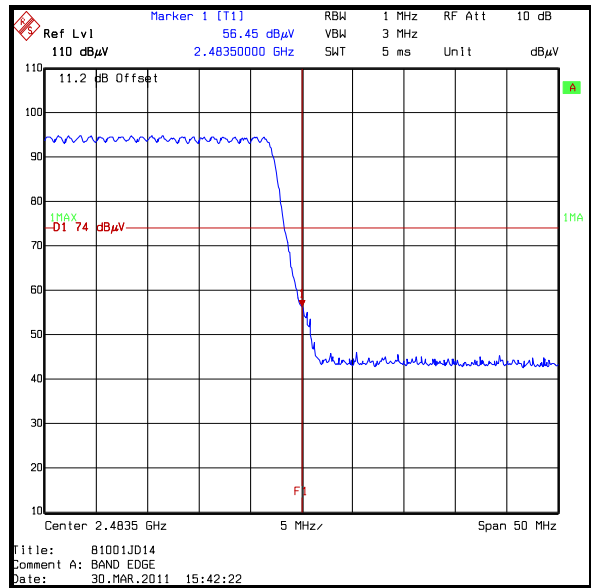
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

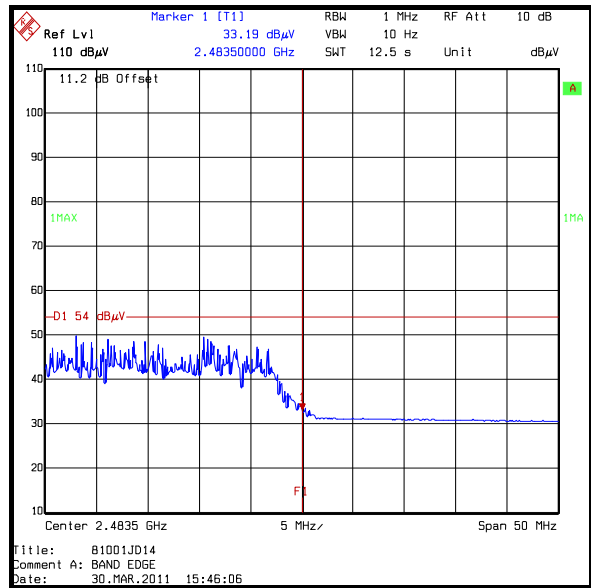
3DH5 Hopping Mode



Lower Band Edge Peak Hopping



Upper Band Edge Peak Hopping



Upper Band Edge Average Hopping

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".

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Conducted Maximum Peak Output Power	2.4 GHz to 2.4835 GHz	95%	±0.27 dB
Carrier Frequency Separation	2.4 GHz to 2.4835 GHz	95%	±0.92 ppm
Average Time of Occupancy	2.4 GHz to 2.4835 GHz	95%	±0.3 ns
20 dB Bandwidth	2.4 GHz to 2.4835 GHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 26.5 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 Calibration Due	Cal. Interval (Months)
A1069	LISN	Rohde & Schwarz	ESH3-Z5	837469/012	13 Apr 2011	12
A1396	Attenuator	Huber & Suhner	757987	6810.17.B	06 Jul 2011	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	06 Jun 2011	12
A1818	Antenna	EMCO	3115	00075692	05 Sep 2011	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	05 Mar 2012	12
A1834	Attenuator	Hewlett Packard	8491B	10444	30 Jun 2011	12
A253	Antenna	Flann Microwave	12240-20	128	05 Sep 2011	12
A254	Antenna	Flann Microwave	14240-20	139	05 Sep 2011	12
A255	Antenna	Flann Microwave	16240-20	519	05 Sep 2011	12
A288	Antenna	Chase	CBL6111A	1589	05 Sep 2011	12
A436	Antenna	Flann	20240-20	330	05 Sep 2011	12
A553	Antenna	Chase	CBL6111A	1593	26 Mar 2012	12
G0543	Amplifier	Sonoma.	310N	230801	30 Jun 2011	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	25 Apr 2011	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	15 Sep 2011	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	04 Feb 2012	12
M1447	Bluetooth Tester	Rohde & Schwarz	CBT	100329	18 Feb 2012	12

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