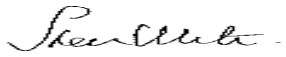
TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

Test of: NTT docomo EB-4055

FCC ID: UCE111050A

To: FCC Part 15.247: 2011 Subpart C

Test Report Serial No.:
RFI-RPT-RP87983JD07A

This Test Report Is Issued Under The Authority Of John Newell, Group Quality Manager:	pp. 
Checked By:	Sarah Williams
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Date of Issue:	25 June 2012

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Registered in England and Wales. Company number:2117901

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Table of Contents

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) 2011: 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) 2011: 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) 2011: 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:	29 May 2012 to 19 June 2012

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:	EB-4055
IMEI:	359952040036328 *(Radiated sample)*
Hardware Version Number:	Rev C
Software Version Number:	ACPU: arrietty-ics-09-0417 CCPU: R1B_0_EC12_02_D00
FCC ID:	UCE111050A

Brand Name:	NTT docomo
Model Name or Number:	EB-4055
IMEI:	359952040036344 *(Conducted RF port sample)*
Hardware Version Number:	Rev C
Software Version Number:	ACPU: arrietty-ics-09-0417 CCPU: R1B_0_EC12_02_D00
FCC ID:	UCE111050A

Brand Name:	NTT docomo
Description:	AC Charger
Model Name or Number:	Type P01

Brand Name:	NTT docomo
Description:	USB Data cable
Model Name or Number:	Type 01

Brand Name:	Panasonic
Description:	Personal Hands-Free
Model Name or Number:	Panasonic Part # L0ZZ00000036

Brand Name:	Not marked or stated
Description:	Cradle
Model Name or Number:	P50

3.2. Description of EUT

The equipment under test was a single mode UMTS Tablet Device with *Bluetooth* and WLAN.

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	π/4-DQPSK	8DQPSK
Packet Type: (Maximum Payload)	DH5	2DH5	3DH5
Data Rate (Mbit/s):	1	2	3
Conducted Peak Output Power:	-0.1 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:	Panasonic
Description:	Laptop PC
Model Name or Number:	CF-74

Brand Name:	Not marked or stated
Description:	2 GB Micro SD Card
Model Name or Number:	Not stated

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 in order to place the EUT into Bluetooth test mode. The laptop PC with the Client's bespoke application was used to place the EUT into Bluetooth 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 with the exception of output power, bandwidth, band edge and channel separation, for which all modes were tested.
- Idle and transmitter radiated spurious emissions tests were performed with the AC charger and PHF 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 EUT conducted sample with IMEI 359952040036344 was used for 20 dB bandwidth, carrier frequency separation, average time of occupancy and conducted output power tests.
- The EUT radiated sample with IMEI 359952040036328 was used for AC conducted emissions and radiated spurious emissions tests.

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:	Mark Percival	**Test Date:**	19 June 2012
Test Sample IMEI:	359952040036328		

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	38

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
4.825	Live	33.6	56.0	22.4	Complied
6.013	Live	34.6	60.0	25.4	Complied
6.144	Live	35.1	60.0	24.9	Complied
6.549	Live	34.7	60.0	25.3	Complied
7.476	Live	38.3	60.0	21.7	Complied
7.534	Live	38.5	60.0	21.5	Complied
7.584	Live	38.5	60.0	21.5	Complied
7.701	Live	37.5	60.0	22.5	Complied
7.939	Live	38.8	60.0	21.2	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.478	Live	26.2	46.4	20.2	Complied
5.019	Live	27.4	50.0	22.6	Complied
15.742	Live	30.3	50.0	19.7	Complied
15.814	Live	31.6	50.0	18.4	Complied
15.886	Live	31.5	50.0	18.5	Complied
15.954	Live	31.9	50.0	18.1	Complied
16.026	Live	29.6	50.0	20.4	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)

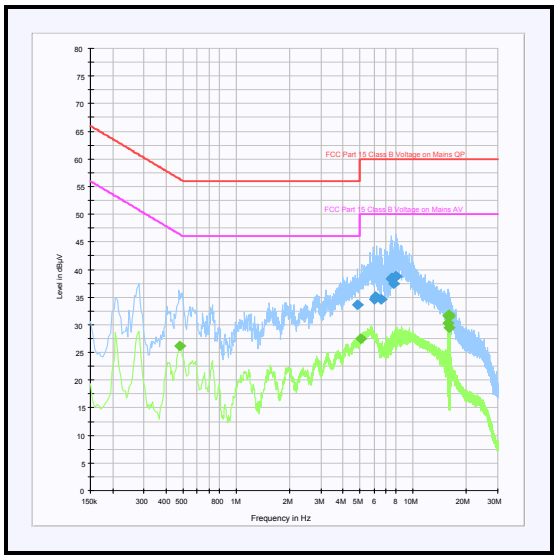
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.474	Neutral	39.1	56.4	17.3	Complied
2.737	Neutral	36.0	56.0	20.0	Complied
3.183	Neutral	36.6	56.0	19.4	Complied
3.633	Neutral	37.6	56.0	18.4	Complied
4.848	Neutral	40.0	56.0	16.0	Complied
5.667	Neutral	42.3	60.0	17.7	Complied
6.072	Neutral	41.5	60.0	18.5	Complied
6.135	Neutral	41.3	60.0	18.7	Complied
6.603	Neutral	38.9	60.0	21.1	Complied
7.476	Neutral	38.8	60.0	21.2	Complied

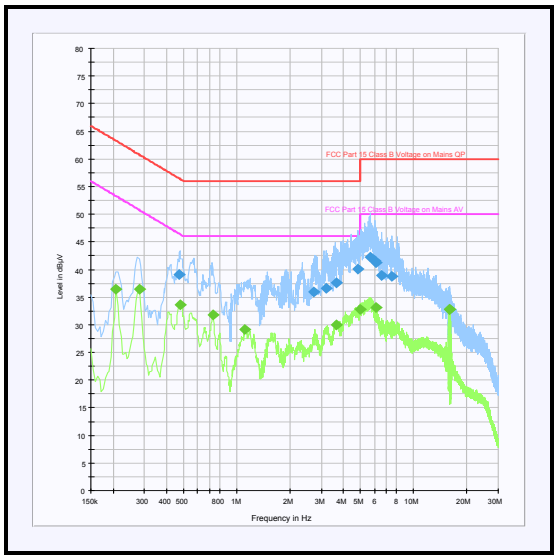
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.208	Neutral	36.4	53.3	16.9	Complied
0.280	Neutral	36.4	50.8	14.4	Complied
0.478	Neutral	33.6	46.4	12.8	Complied
0.730	Neutral	31.8	46.0	14.2	Complied
1.117	Neutral	29.2	46.0	16.8	Complied
3.642	Neutral	29.9	46.0	16.1	Complied
4.956	Neutral	32.8	46.0	13.2	Complied
6.121	Neutral	33.1	50.0	16.9	Complied
15.886	Neutral	32.8	50.0	17.2	Complied
15.954	Neutral	32.8	50.0	17.2	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)



Live



Neutral

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

5.2.2. Receiver/Idle Mode Radiated Spurious Emissions

Test Summary:

Test Engineer:	Nick Steele	**Test Date:**	01 June 2012
Test Sample IMEI:	359952040036328		

FCC Reference:	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):	27
Relative Humidity (%):	39

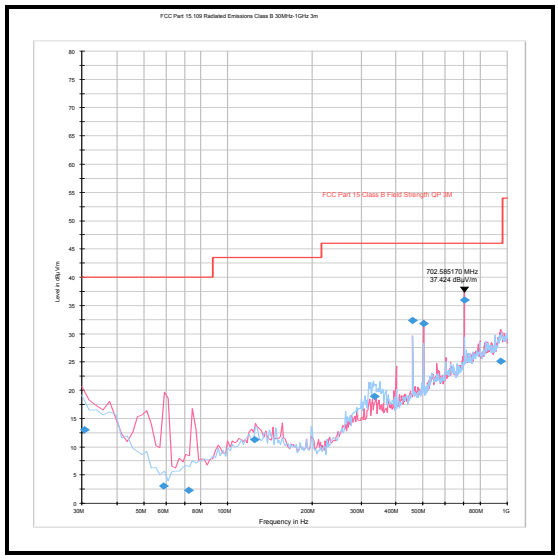
Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
30.770	Vertical	13.0	40.0	27.0	Complied
334.079	Horizontal	18.9	46.0	27.1	Complied
458.796	Vertical	32.3	46.0	13.7	Complied
501.023	Vertical	31.8	46.0	14.2	Complied
701.349	Vertical	36.0	46.0	10.0	Complied
950.176	Vertical	25.2	46.0	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. 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:	David Doyle	**Test Date:**	30 May 2012
Test Sample IMEI:	359952040036328		

FCC Reference:	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 12.75 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	41

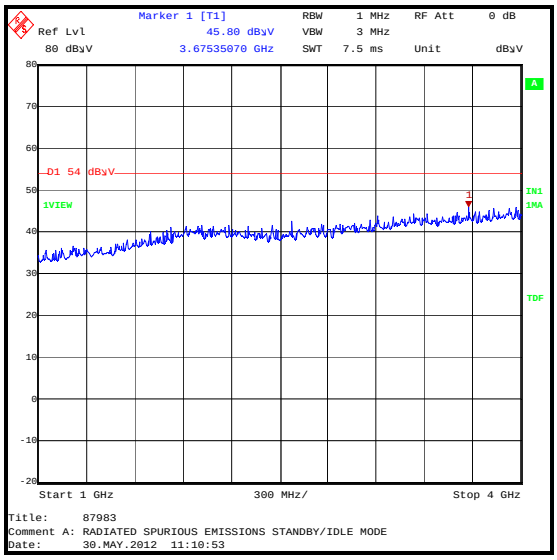
Results:

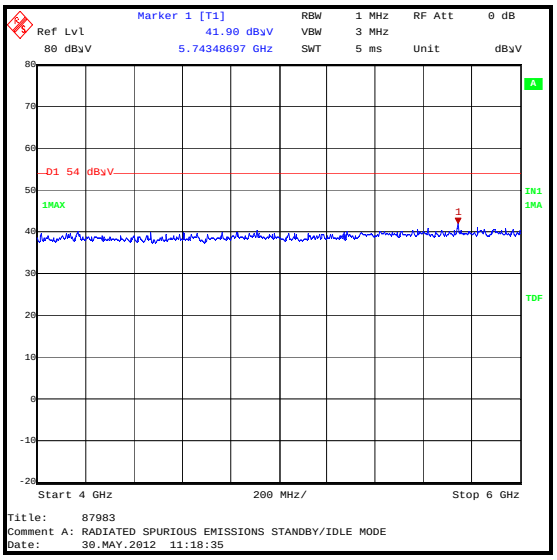
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
3675.350	Vertical	45.8	54.0	8.2	Complied

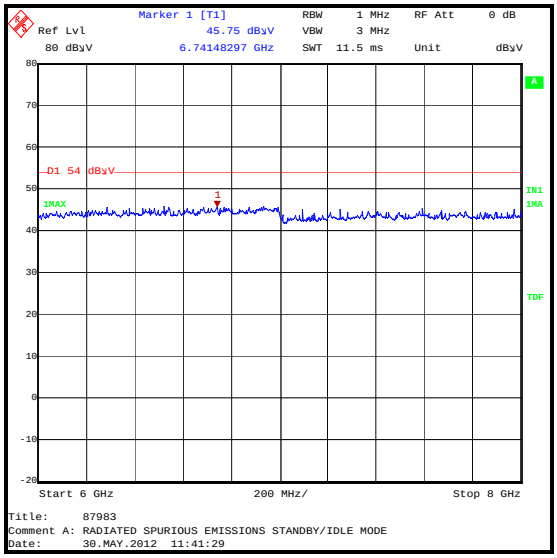
Note(s):

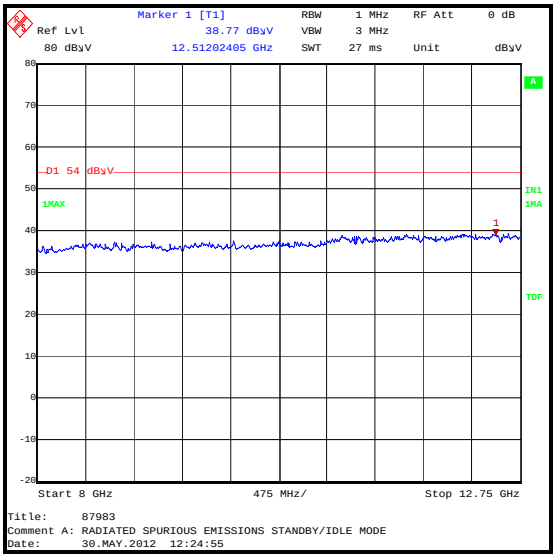
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above 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:	Mark Percival	**Test Date:**	19 June 2012
Test Sample IMEI:	359952040036328		

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	38

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.150	Live	39.6	66.0	26.4	Complied
4.983	Live	34.2	56.0	21.8	Complied
5.559	Live	35.1	60.0	24.9	Complied
6.049	Live	35.2	60.0	24.8	Complied
6.067	Live	35.2	60.0	24.8	Complied
6.355	Live	34.2	60.0	25.8	Complied
6.981	Live	36.1	60.0	23.9	Complied
7.534	Live	38.3	60.0	21.7	Complied
7.917	Live	38.7	60.0	21.3	Complied
8.362	Live	37.5	60.0	22.5	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.478	Live	26.2	46.4	20.2	Complied
4.956	Live	27.3	46.0	18.7	Complied
15.747	Live	30.7	50.0	19.3	Complied
15.814	Live	30.7	50.0	19.3	Complied
15.886	Live	32.2	50.0	17.8	Complied
15.958	Live	31.1	50.0	18.9	Complied
16.026	Live	31.1	50.0	18.9	Complied

Transmitter AC Conducted Spurious Emissions (continued)

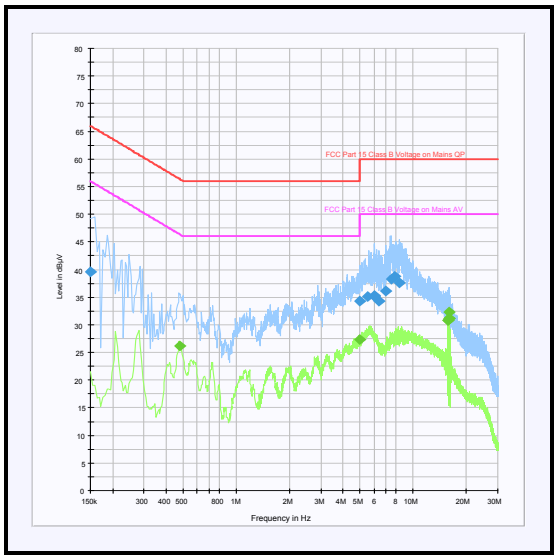
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.478	Neutral	39.3	56.4	17.1	Complied
3.115	Neutral	36.5	56.0	19.5	Complied
3.664	Neutral	38.1	56.0	17.9	Complied
3.993	Neutral	38.5	56.0	17.5	Complied
4.654	Neutral	39.3	56.0	16.7	Complied
4.803	Neutral	39.4	56.0	16.6	Complied
5.001	Neutral	40.3	60.0	19.7	Complied
5.734	Neutral	42.1	60.0	17.9	Complied
6.112	Neutral	41.4	60.0	18.6	Complied
6.121	Neutral	41.4	60.0	18.6	Complied

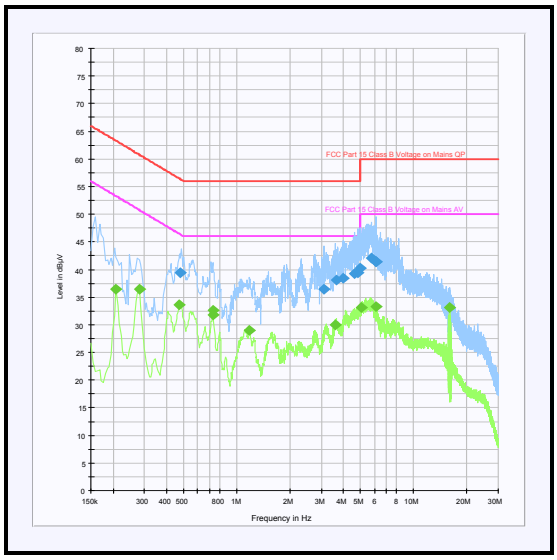
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.208	Neutral	36.4	53.3	16.9	Complied
0.280	Neutral	36.4	50.8	14.4	Complied
0.474	Neutral	33.7	46.4	12.7	Complied
0.730	Neutral	32.6	46.0	13.4	Complied
0.730	Neutral	31.9	46.0	14.1	Complied
1.180	Neutral	29.0	46.0	17.0	Complied
3.624	Neutral	30.0	46.0	16.0	Complied
5.019	Neutral	33.1	50.0	16.9	Complied
6.103	Neutral	33.4	50.0	16.6	Complied
15.886	Neutral	33.2	50.0	16.8	Complied

Transmitter AC Conducted Spurious Emissions (continued)



Live



Neutral

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

5.2.4.Transmitter 20 dB Bandwidth

Test Summary:

Test Engineer:	Mark Percival	**Test Date:**	29 May 2012
Test Sample IMEI:	359952040036344		

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	40

Results DH5:

Channel	20 dB Bandwidth (kHz)
Bottom	1052.104
Middle	1062.124
Top	1052.104

Results 2DH5:

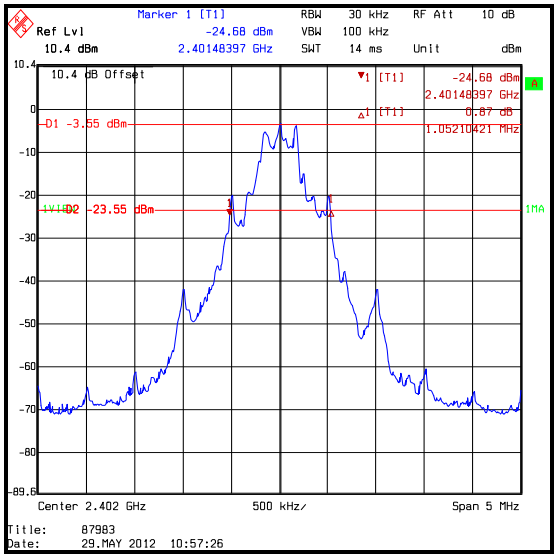
Channel	20 dB Bandwidth (kHz)
Bottom	1352.705
Middle	1352.705
Top	1352.705

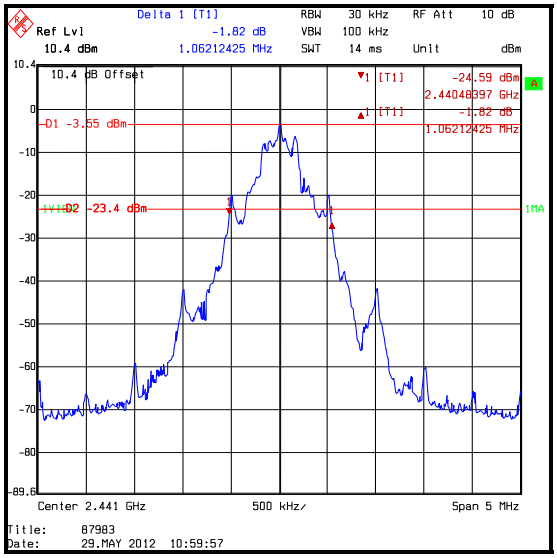
Results 3DH5:

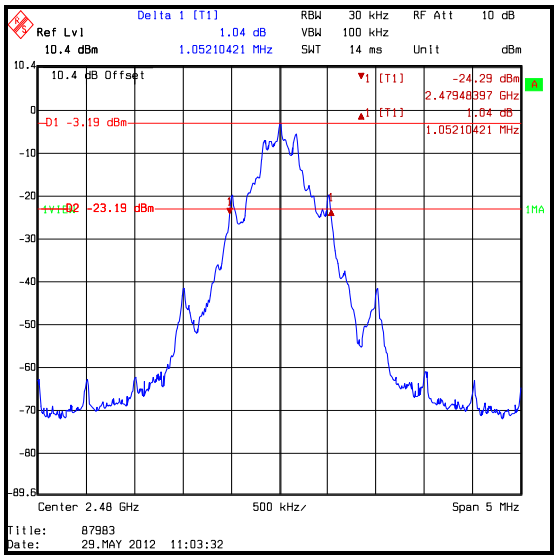
Channel	20 dB Bandwidth (kHz)
Bottom	1312.625
Middle	1332.665
Top	1332.665

Transmitter 20 dB Bandwidth (continued)

Results DH5:

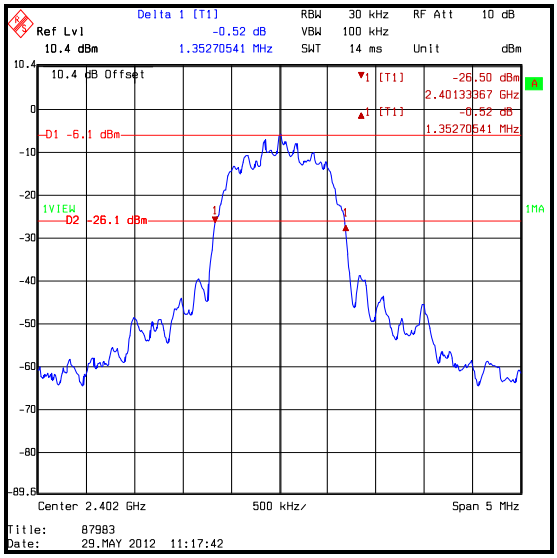


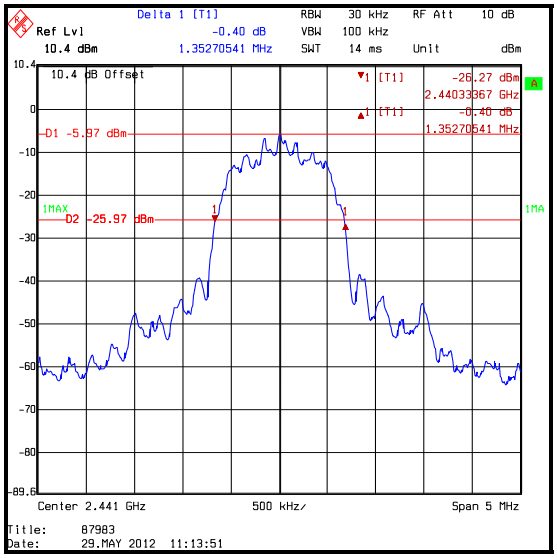


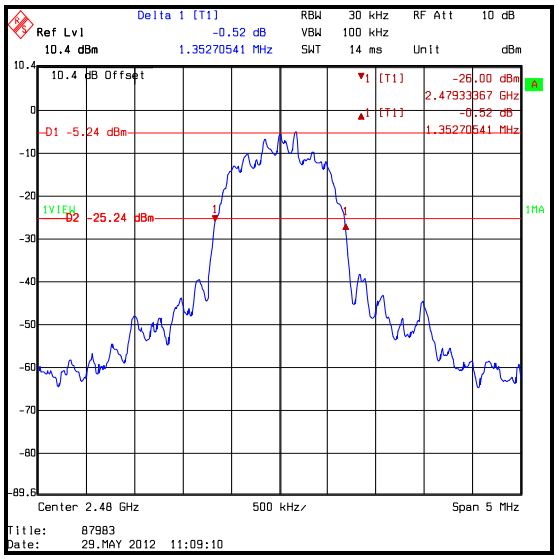


Transmitter 20 dB Bandwidth (continued)

Results 2DH5:

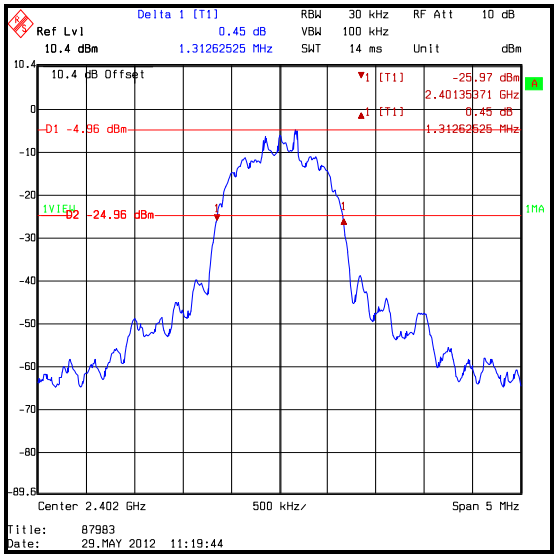


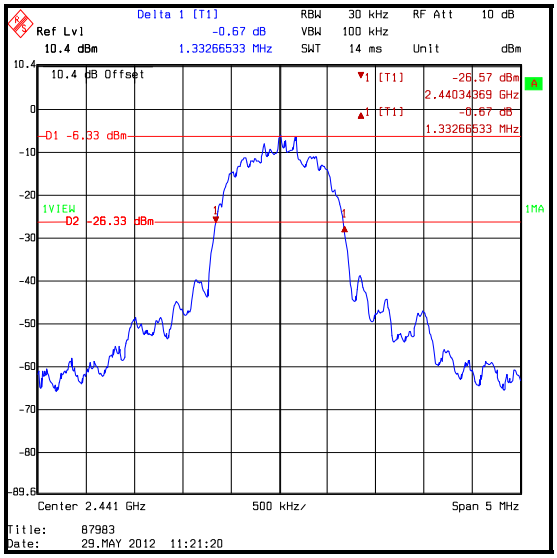


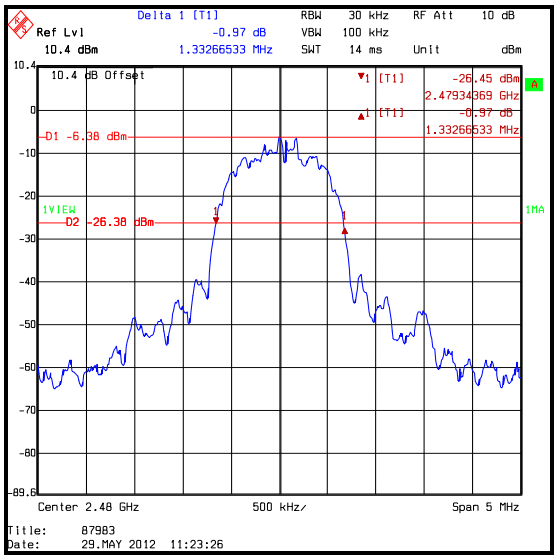


Transmitter 20 dB Bandwidth (continued)

Results 3DH5:







5.2.5. Transmitter Carrier Frequency Separation

Test Summary:

Test Engineer:	Mark Percival	**Test Date:**	29 May 2012
Test Sample IMEI:	359952040036344		

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

Environmental Conditions:

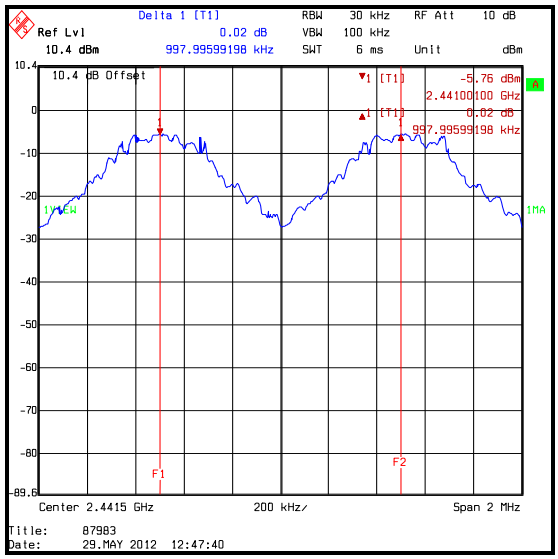
Temperature (°C):	27
Relative Humidity (%):	41

Results: DH5

Carrier Frequency Separation (kHz)	Limit ($^2/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
997.996	708.083	289.913	Complied

Note(s):

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



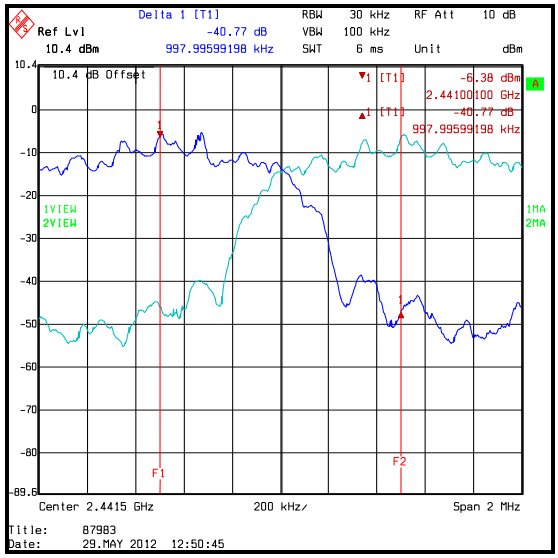
Transmitter Carrier Frequency Separation (continued)

Results: 2DH5

Carrier Frequency Separation (kHz)	Limit ($^2/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
997.996	901.803	96.193	Complied

Note(s):

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



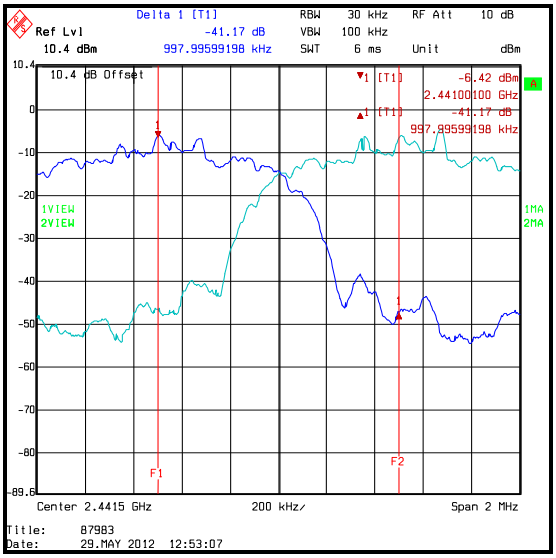
Transmitter Carrier Frequency Separation (continued)

Results: 3DH5

Carrier Frequency Separation (kHz)	Limit ($^2/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
997.996	888.443	109.553	Complied

Note(s):

1. 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:	Mark Percival	**Test Date:**	29 May 2012
Test Sample IMEI:	359952040036344		

FCC Reference:	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):	27
Relative Humidity (%):	40

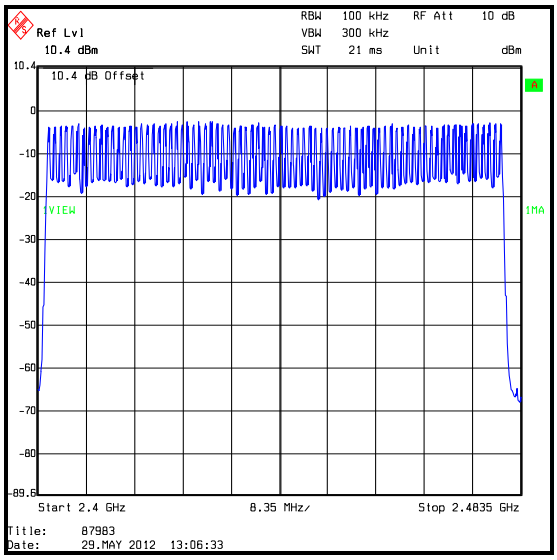
Results:

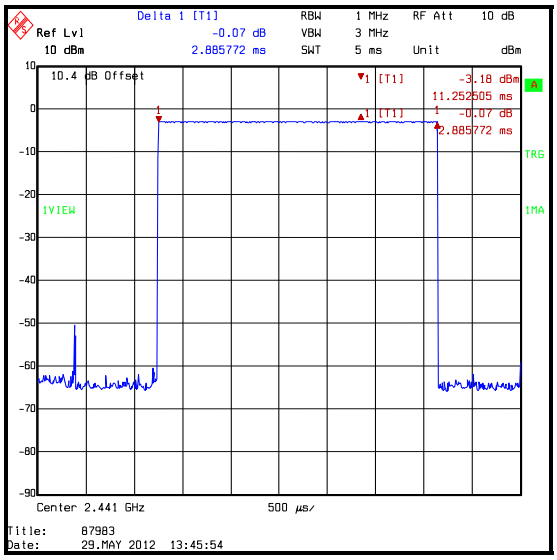
Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2885.772	118	0.341	0.4	0.059	Complied

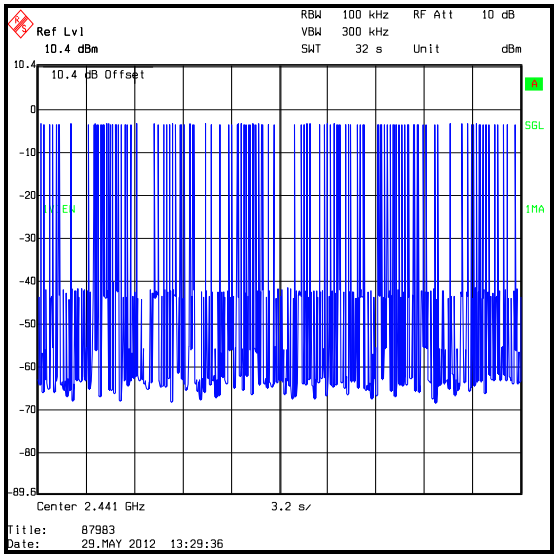
Note(s):

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:	Mark Percival	**Test Date:**	29 May 2012
Test Sample IMEI:	359952040036344		

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

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	40

Results: DH5

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-3.5	30.0	33.5	Complied
Middle	-2.9	30.0	32.9	Complied
Top	-2.5	30.0	32.5	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-3.5	-3.5	-7.0	36.0	43.0	Complied
Middle	-2.9	-3.1	-6.0	36.0	42.0	Complied
Top	-2.5	-3.8	-6.3	36.0	42.3	Complied

Results: 2DH5

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-1.8	21.0	22.8	Complied
Middle	-1.3	21.0	22.3	Complied
Top	-0.9	21.0	21.9	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-1.8	-3.5	-5.3	27.0	32.3	Complied
Middle	-1.3	-3.1	-4.4	27.0	31.4	Complied
Top	-0.9	-3.8	-4.7	27.0	31.7	Complied

Transmitter Maximum Peak Output Power (continued)

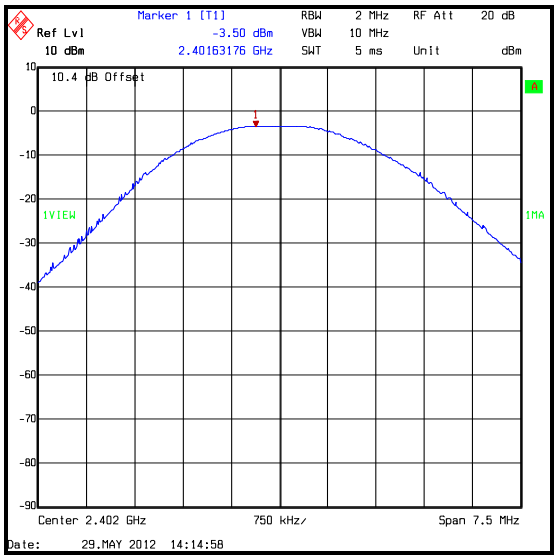
Results: 3DH5

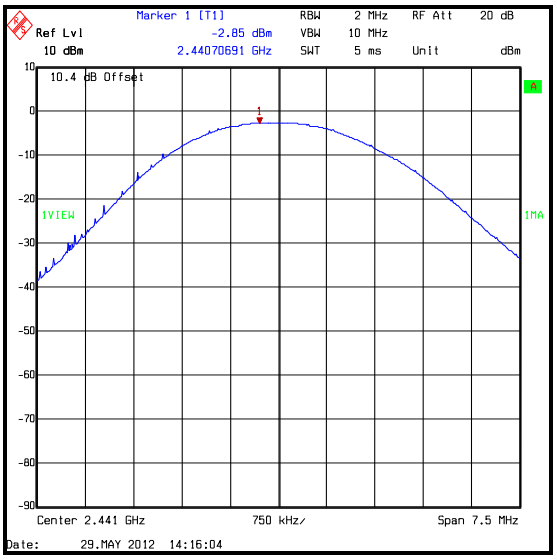
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-1.1	21.0	22.1	Complied
Middle	-0.5	21.0	21.5	Complied
Top	-0.1	21.0	21.1	Complied

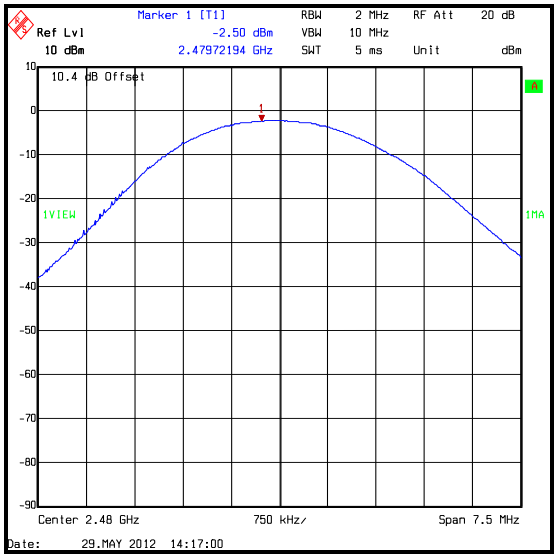
Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-1.1	-3.5	-4.6	27.0	31.6	Complied
Middle	-0.5	-3.1	-3.6	27.0	30.6	Complied
Top	-0.1	-3.8	-3.9	27.0	30.9	Complied

Transmitter Maximum Peak Output Power (continued)

Results: Basic Rate DH5

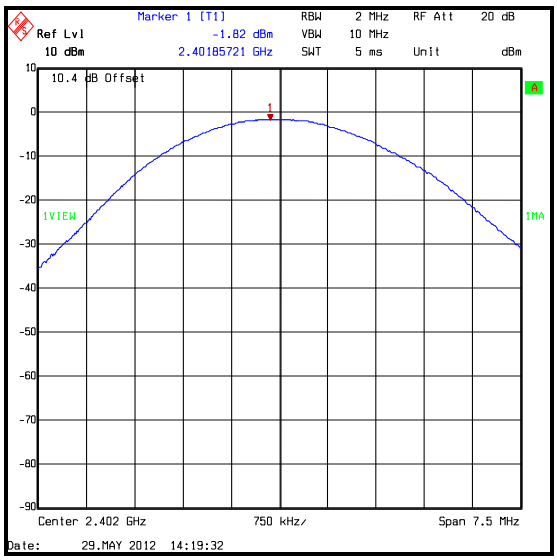


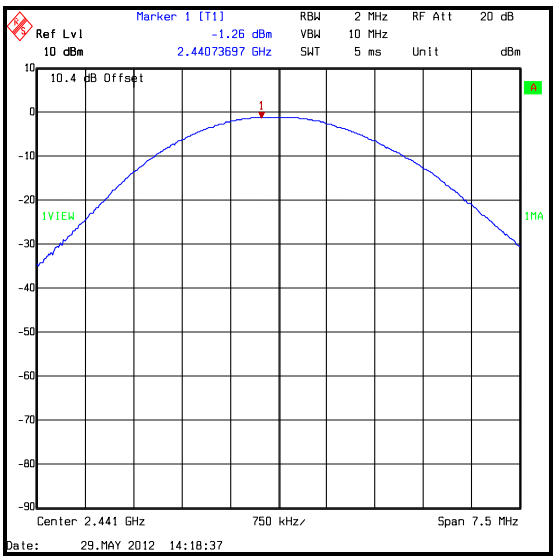


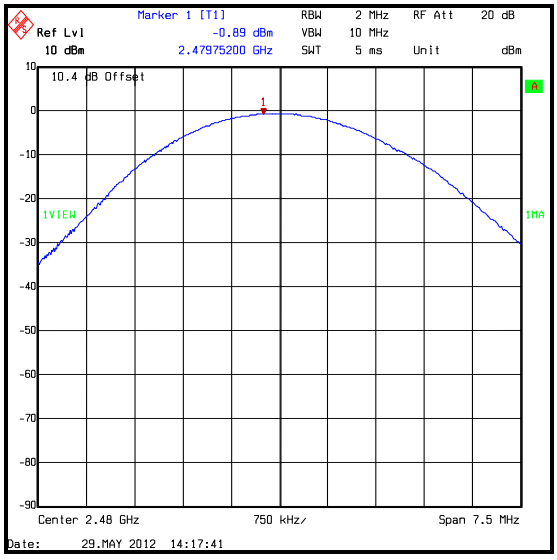


Transmitter Maximum Peak Output Power (continued)

Results: 2DH5

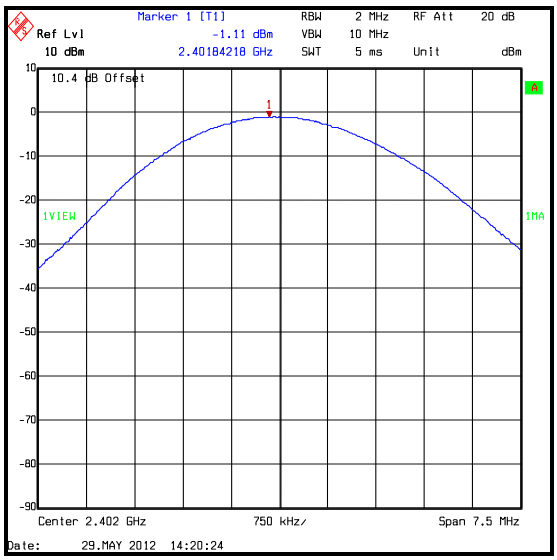


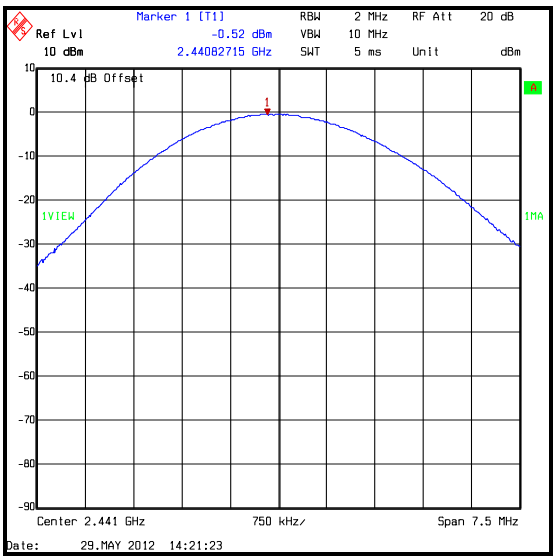


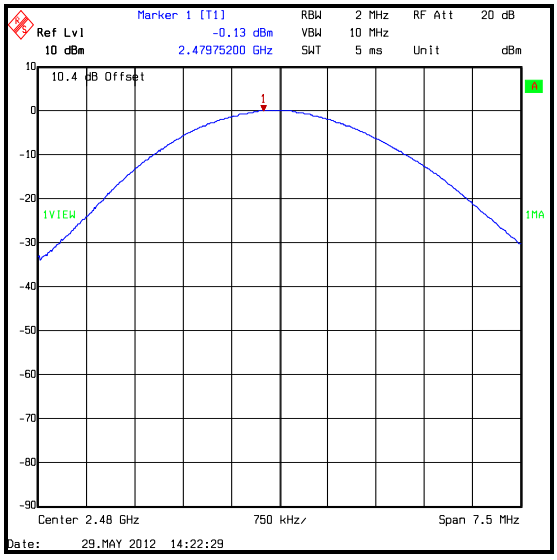


Transmitter Maximum Peak Output Power (continued)

Results: 3DH5







5.2.8. Transmitter Radiated Emissions

Test Summary:

Test Engineer:	Nick Steele	**Test Date:**	07 June 2012
Test Sample IMEI:	359952040036328		

FCC Reference:	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 (%):	39

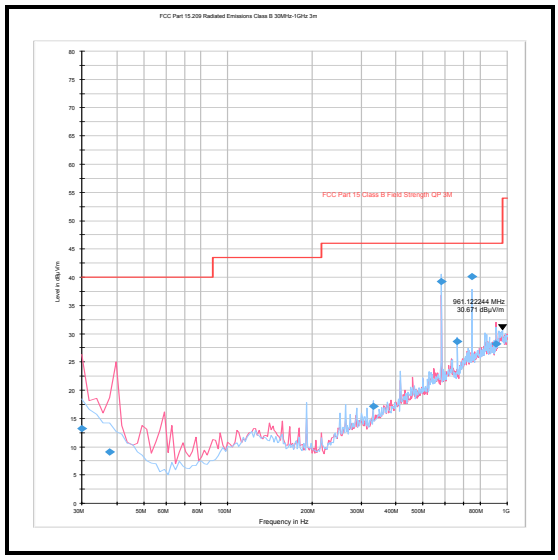
Results: Quasi-Peak 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
331.952	Horizontal	17.2	46.0	28.8	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. 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:**	30 May 2012
Test Sample IMEI:	359952040036328		

FCC Reference:	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):	26
Relative Humidity (%):	42

Results: Peak / Bottom Channel / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.374	Vertical	55.4	74.0	18.6	Complied

Results: Average / Bottom Channel / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.374	Vertical	50.0	54.0	4.0	Complied

Results: Peak / Middle Channel / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.374	Vertical	55.4	74.0	18.6	Complied

Results: Average / Middle Channel / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.374	Vertical	50.0	54.0	4.0	Complied

Transmitter Radiated Emissions (continued)

Results: Peak / Top Channel / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2381.374	Vertical	55.4	74.0	18.6	Complied

Results: Average / Top Channel / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2381.374	Vertical	50.0	54.0	4.0	Complied

Results: Peak / Hopping Mode / 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2381.374	Vertical	55.4	74.0	18.6	Complied

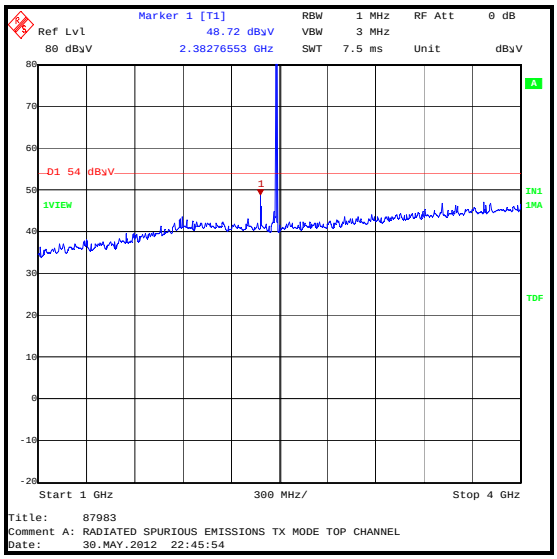
Results: Average / Hopping Mode / 3DH5

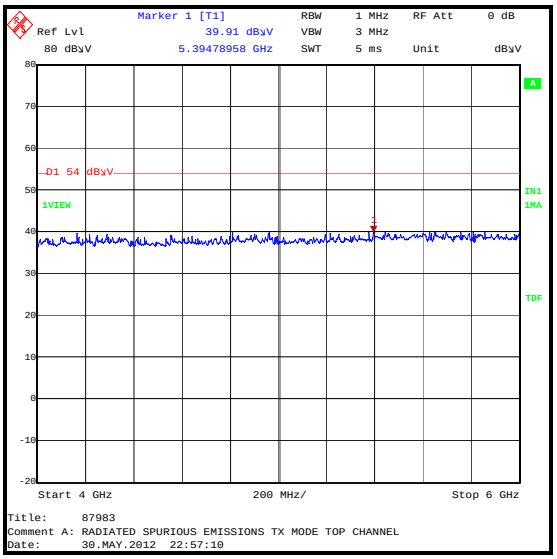
Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
2381.374	Vertical	50.0	54.0	4.0	Complied

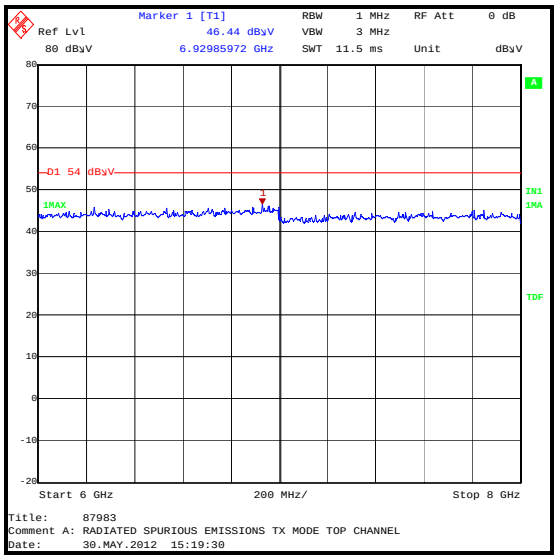
Note(s):

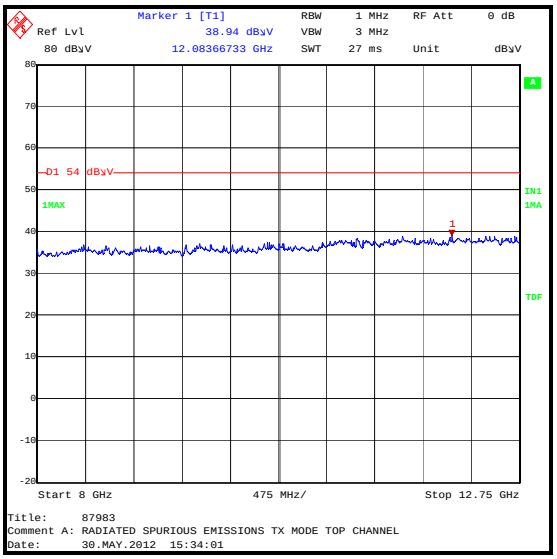
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental at 2480 MHz.
3. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
4. 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)

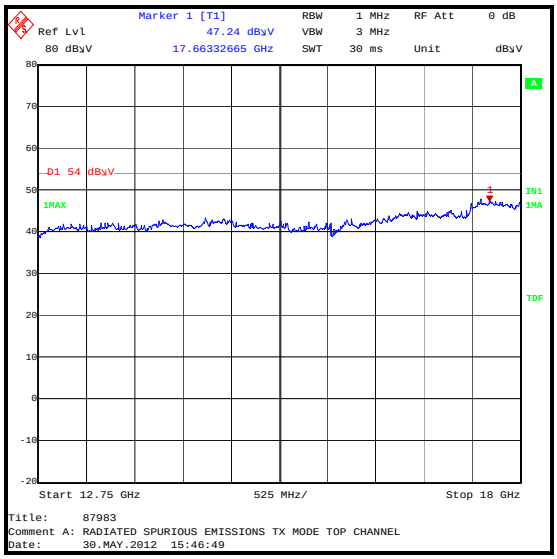


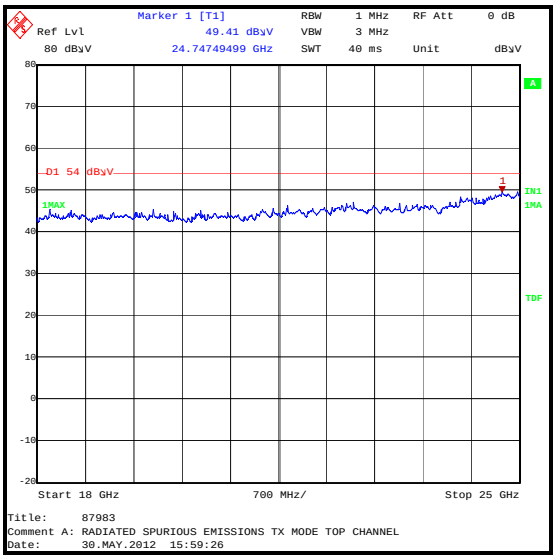






Transmitter Radiated Emissions (continued)





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

5.2.9. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	30 May 2012
Test Sample IMEI:	359952040036328		

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

Environmental Conditions:

Temperature (°C):	26
Relative Humidity (%):	40

Results: Static Mode DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400.0	Vertical	42.2	75.2*	33.0	Complied
2483.5	Vertical	54.4	74.0	19.6	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	Vertical	43.6	54.0	10.4	Complied

Results: Hopping Mode DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400.0	Vertical	42.4	75.0*	32.6	Complied
2483.5	Vertical	52.8	74.0	21.2	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	Vertical	39.6	54.0	14.4	Complied

Results: Static Mode 2DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.864	Vertical	52.8	74.4*	21.6	Complied
2400.0	Vertical	46.8	74.4*	27.6	Complied
2483.5	Vertical	55.1	74.0	18.9	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	Vertical	44.1	54.0	9.9	Complied

Transmitter Band Edge Radiated Emissions (continued)

Results: Hopping Mode 2DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.814	Vertical	52.2	74.1*	21.9	Complied
2400.0	Vertical	44.8	74.1*	29.3	Complied
2483.5	Vertical	53.8	74.0	20.2	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	Vertical	39.7	54.0	14.3	Complied

Results: Static Mode 3DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.814	Vertical	53.2	74.5*	21.3	Complied
2400.0	Vertical	47.5	74.5*	27.0	Complied
2483.5	Vertical	55.5	74.0	18.5	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	Vertical	44.1	54.0	9.9	Complied

Results: Hopping Mode 3DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2381.713	Vertical	52.5	74.3*	21.8	Complied
2400.0	Vertical	43.9	74.3*	30.4	Complied
2483.5	Vertical	54.3	74.0	19.7	Complied

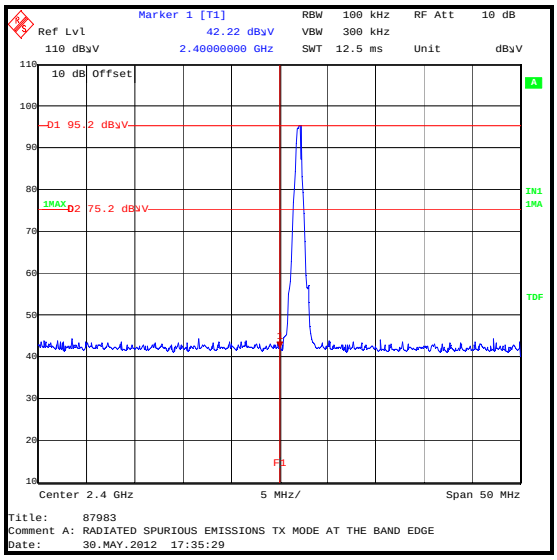
Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.5	Vertical	39.8	54.0	14.2	Complied

Note(s):

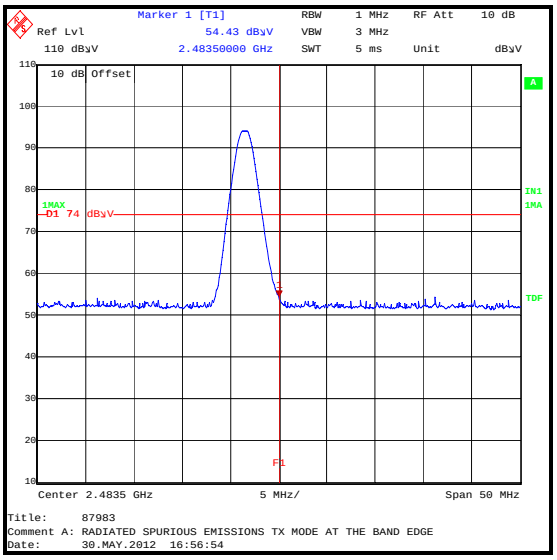
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. * -20 dBc limit.

Transmitter Band Edge Radiated Emissions (continued)

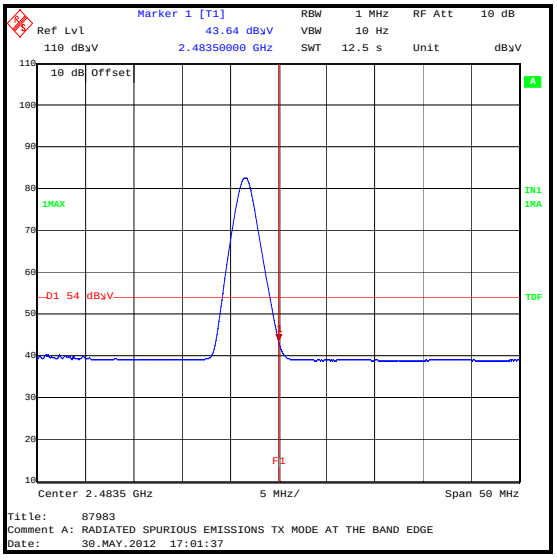
DH5 Static Mode



Lower Band Edge Peak Static



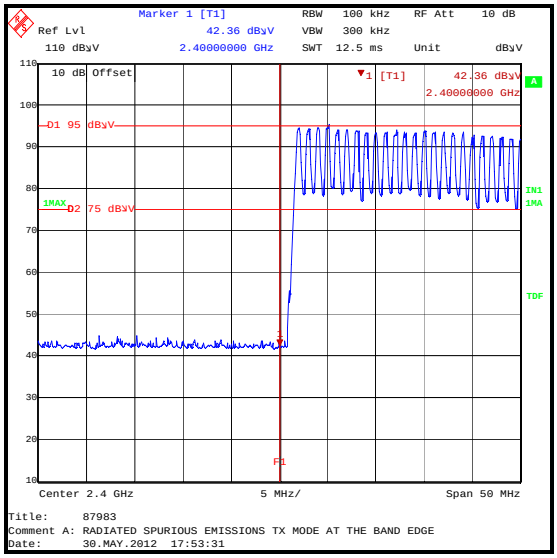
Upper Band Edge Peak Static



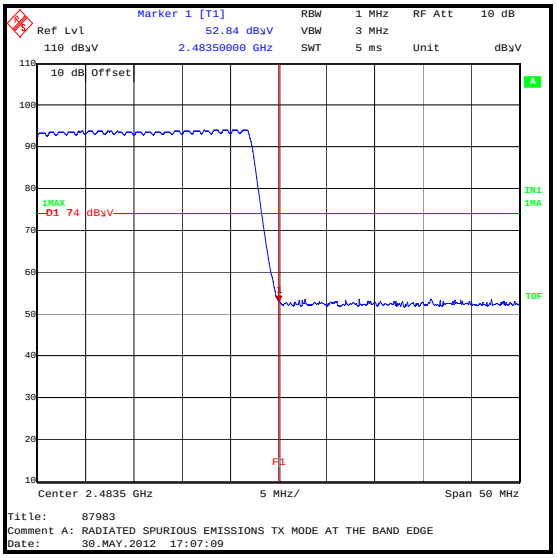
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

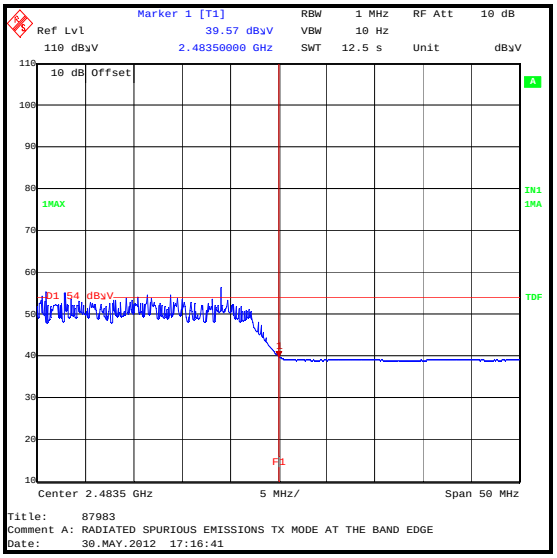
DH5 Hopping Mode



Lower Band Edge Peak Hopping



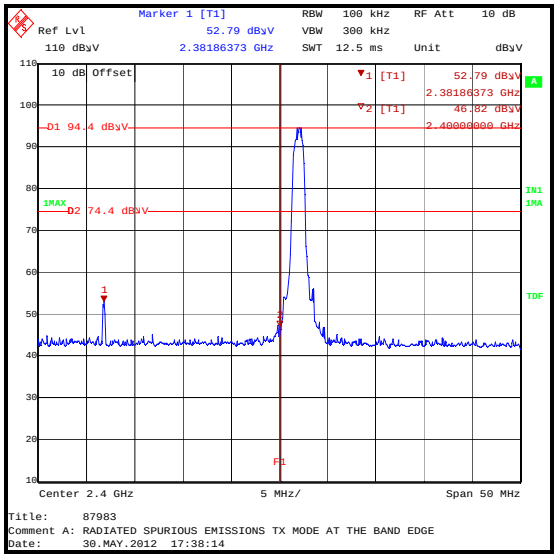
Upper Band Edge Peak Hopping



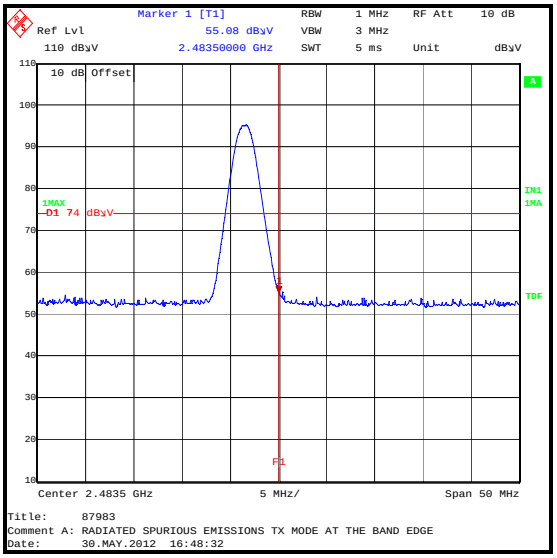
Upper Band Edge Average Hopping

Transmitter Band Edge Radiated Emissions (continued)

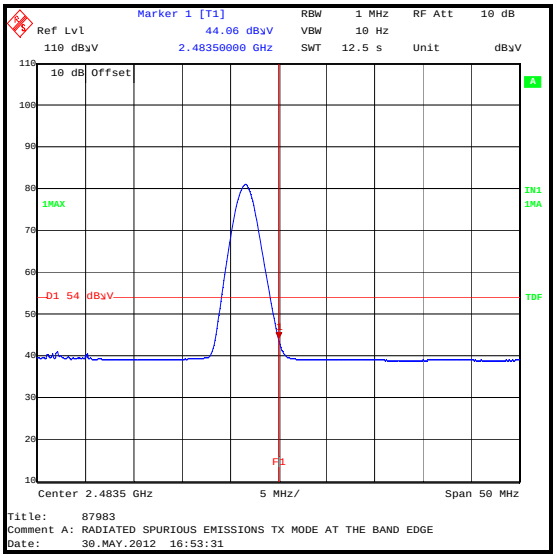
2DH5 Static Mode



Lower Band Edge Peak Static



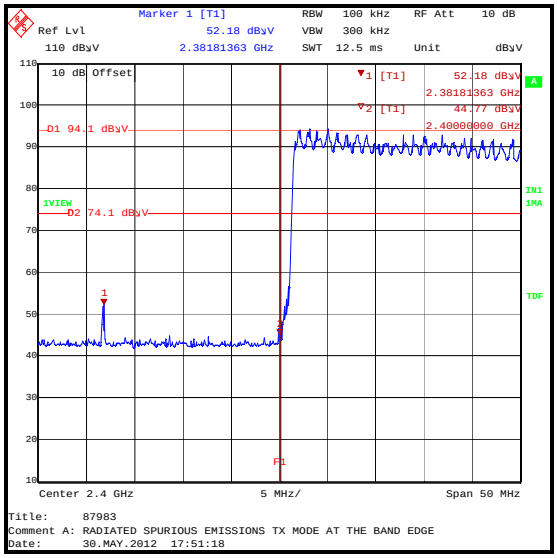
Upper Band Edge Peak Static



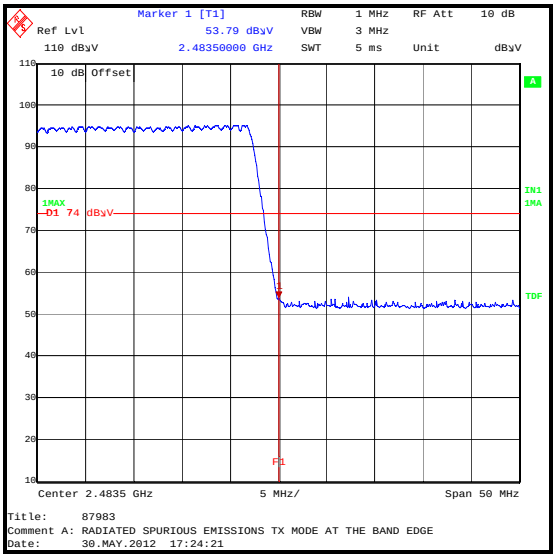
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

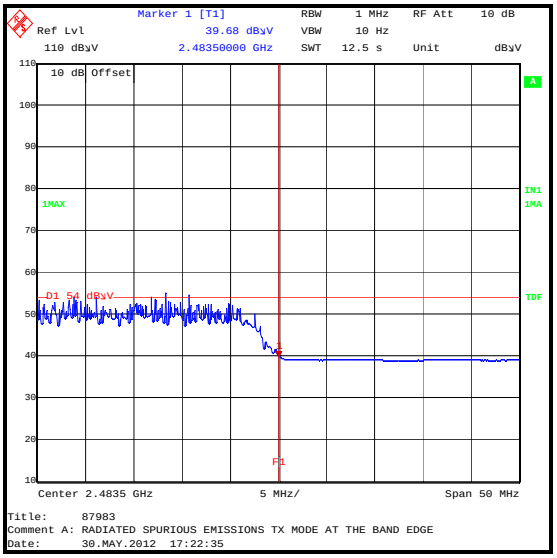
2DH5 Hopping Mode



Lower Band Edge Peak Hopping



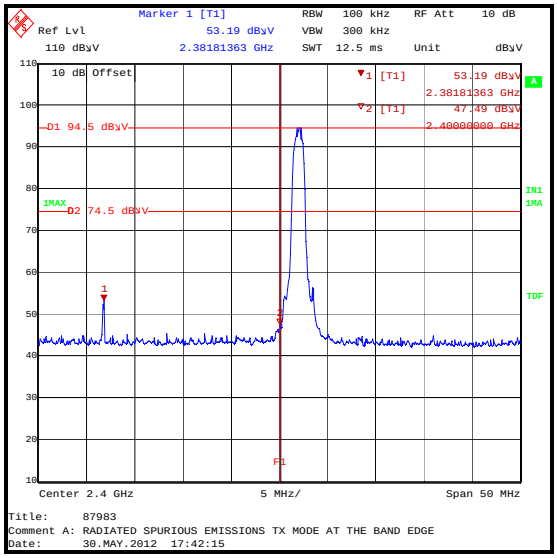
Upper Band Edge Peak Hopping



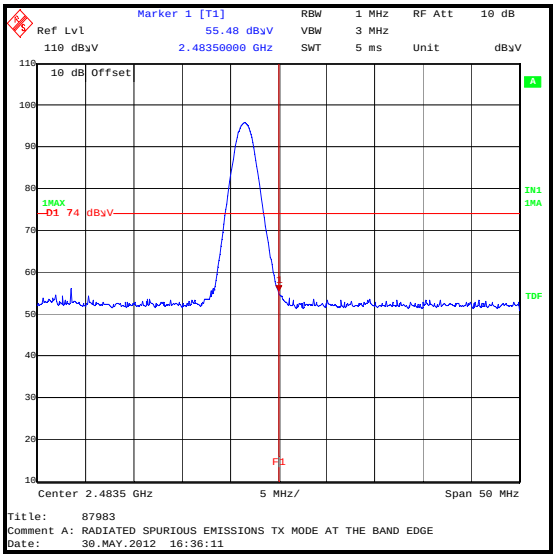
Upper Band Edge Average Hopping

Transmitter Band Edge Radiated Emissions (continued)

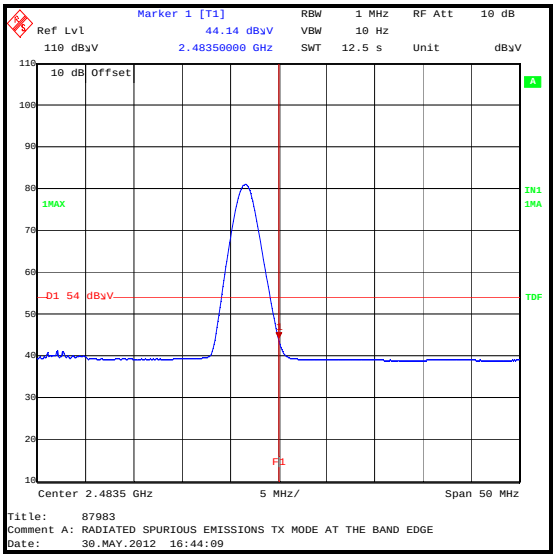
3DH5 Static Mode



Lower Band Edge Peak Static



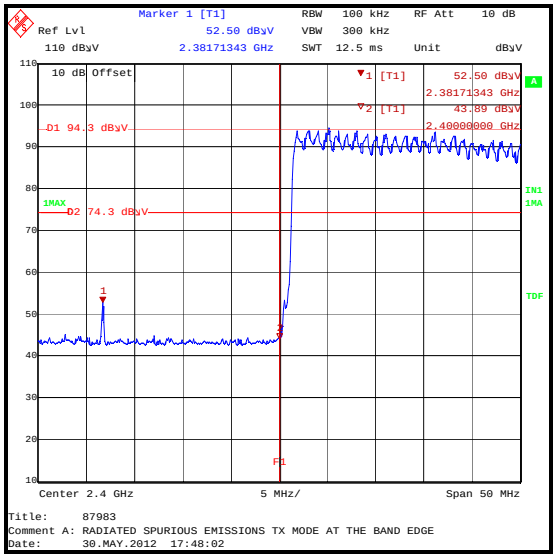
Upper Band Edge Peak Static



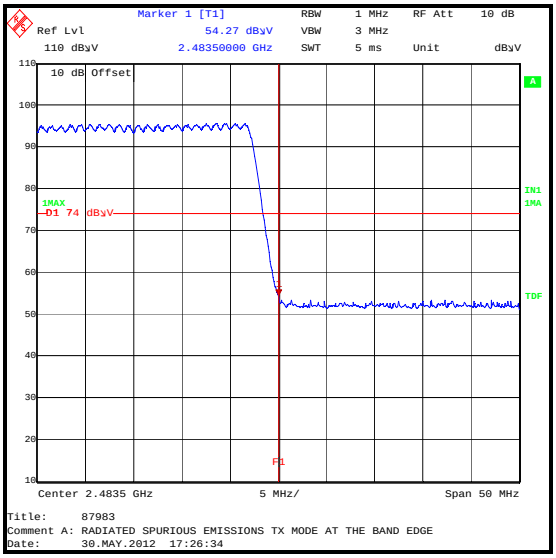
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

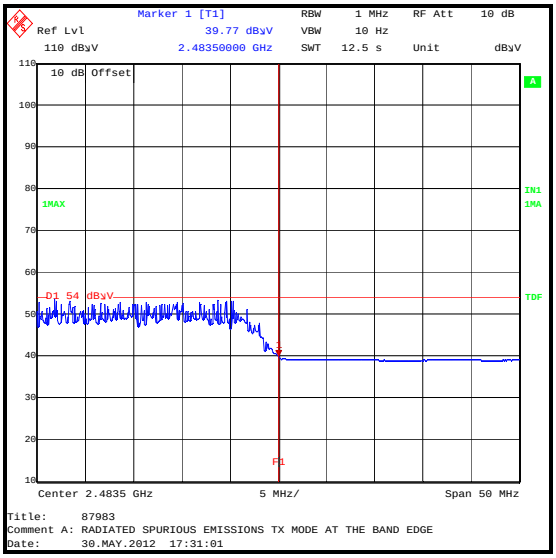
3DH5 Hopping Mode



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
Maximum Peak Output Power	2.4 GHz to 2.4835 GHz	95%	±2.94 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)
A1391	Attenuator	Huber & Suhner	6810.17.B	757987	03 Apr 2013	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	09 Oct 2012	12
A1818	Antenna	EMCO	3115	00075692	09 Oct 2012	12
A1830	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100668	25 Feb 2013	12
A1834	Attenuator	Hewlett Packard	8491B	10444	29 Jan 2013	12
A2072	Directional Coupler	Narda	4242B	03549	Calibrated before use	-
A253	Antenna	Flann Microwave	12240-20	128	09 Oct 2012	12
A254	Antenna	Flann Microwave	14240-20	139	09 Oct 2012	12
A255	Antenna	Flann Microwave	16240-20	519	09 Oct 2012	12
A256	Antenna	Flann Microwave	18240-20	400	09 Oct 2012	12
A436	Antenna	Flann Microwave	20240-20	330	09 Oct 2012	12
A553	Antenna	Chase	CBL6111A	1593	15 Feb 2013	12
A649	LISN	Rohde & Schwarz	ESH3-Z5	825562/008	19 Apr 2013	12
G0543	Amplifier	Sonoma	310N	230801	13 Jul 2012	3
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	31 Aug 2012	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	09 Oct 2012	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	29 Jun 2012	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	08 Nov 2012	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	20 Sep 2012	12

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