TEST REPORT
FROM
RFI GLOBAL SERVICES LTD

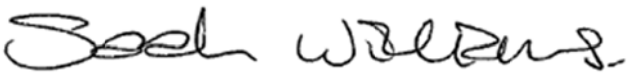
Test of: NTT docomo EB-4058

FCC ID: UCE212051A

To: FCC Part 15.247: 2011 Subpart C

Test Report Serial No.:
RFI-RPT-RP87473JD08A V2.0

Version 2.0 supersedes all previous versions

This Test Report Is Issued Under The Authority Of John Newell, Group Quality Manager:	
Checked By:	Sarah Williams
Signature:	
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:	21 May 2012 to 25 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-4058
IMEI:	351807050018897 *(Radiated sample #1)*
Hardware Version Number:	Rev E
Software Version Number:	ACPU: fujiko-ics-09-0316 CCPU: HY11-N5119_ALL_00.20.31
FCC ID:	UCE212051A

Brand Name:	NTT Docomo
Model Name or Number:	EB-4058
IMEI:	351807050019143 *(Radiated sample #2)*
Hardware Version Number:	Rev E
Software Version Number:	ACPU: fujiko-ics-09-0316 CCPU: HY11-N5119_ALL_00.20.31
FCC ID:	UCE212051A

Brand Name:	NTT Docomo
Model Name or Number:	EB-4058
IMEI:	351807050019168 *(Conducted RF port sample)*
Hardware Version Number:	Rev E
Software Version Number:	ACPU: fujiko-ics-09-0316 CCPU: HY11-N5119_ALL_00.20.31
FCC ID:	UCE212051A

Identification of Equipment Under Test (EUT) (continued)

Brand Name:	NTT docomo
Description:	Battery
Model Name or Number:	Not stated

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:	NTT docomo
Description:	Personal Hands-Free
Model Name or Number:	Type 02

3.2. Description of EUT

The equipment under test was a Dual Mode UMTS/GSM Mobile Phone with WLAN, *Bluetooth* 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:	*Bluetooth*		
Power Supply Requirement:	Nominal	3.8 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:	0.8 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 351807050019168 was used for 20 dB bandwidth, carrier frequency separation and average time of occupancy and conducted output power tests.
- The radiated samples with IMEI 351807050018897 and IMEI 351807050019143 were 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:	Steven White	**Test Date:**	25 June 2012
Test Sample IMEI:	351807050018897		

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):	24
Relative Humidity (%):	38

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.303	Live	36.9	60.2	23.3	Complied
1.203	Live	27.8	56.0	28.2	Complied
1.487	Live	27.6	56.0	28.4	Complied
1.770	Live	28.5	56.0	27.5	Complied
2.805	Live	31.4	56.0	24.6	Complied
4.929	Live	32.0	56.0	24.0	Complied
4.992	Live	32.1	56.0	23.9	Complied
5.496	Live	32.6	60.0	27.4	Complied
7.013	Live	32.2	60.0	27.8	Complied
8.574	Live	34.8	60.0	25.2	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.321	Live	29.2	49.7	20.5	Complied
1.194	Live	22.5	46.0	23.5	Complied
1.518	Live	20.2	46.0	25.8	Complied
2.647	Live	22.8	46.0	23.2	Complied
4.083	Live	24.3	46.0	21.7	Complied
16.120	Live	27.8	50.0	22.2	Complied
16.170	Live	24.5	50.0	25.5	Complied
16.219	Live	21.3	50.0	28.7	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)

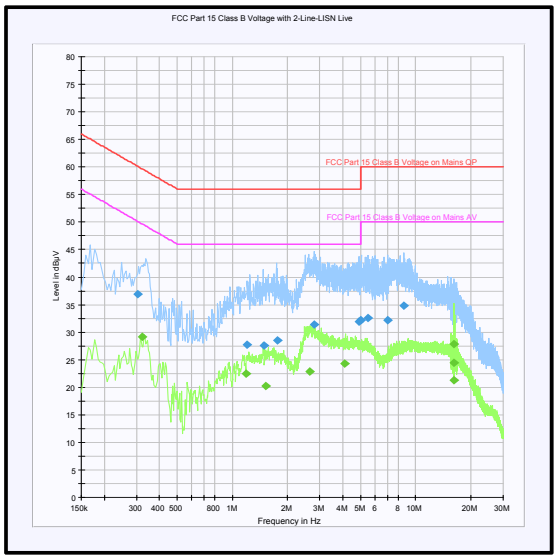
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.150	Neutral	50.4	66.0	15.6	Complied
0.154	Neutral	50.6	65.8	15.2	Complied
0.168	Neutral	50.5	65.1	14.6	Complied
0.168	Neutral	49.6	65.1	15.5	Complied
0.195	Neutral	51.4	63.8	12.4	Complied
0.217	Neutral	44.7	62.9	18.2	Complied
0.249	Neutral	40.3	61.8	21.5	Complied
0.280	Neutral	39.3	60.8	21.5	Complied
0.307	Neutral	37.8	60.0	22.2	Complied
0.361	Neutral	36.3	58.7	22.4	Complied

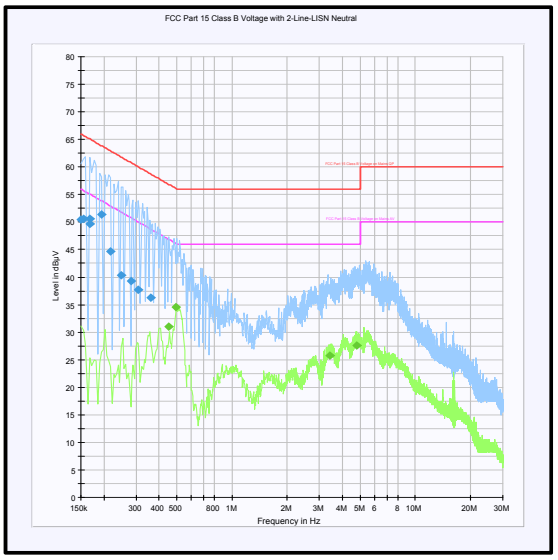
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBμV)	Limit (dBμV)	Margin (dB)	Result
0.451500	Neutral	31.0	46.8	15.8	Complied
0.492000	Neutral	34.5	46.1	11.6	Complied
3.439500	Neutral	25.8	46.0	20.2	Complied
4.771500	Neutral	27.6	46.0	18.4	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:	Steven White	**Test Date:**	25 June 2012
Test Sample IMEI:	351807050018897		

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):	24
Relative Humidity (%):	38

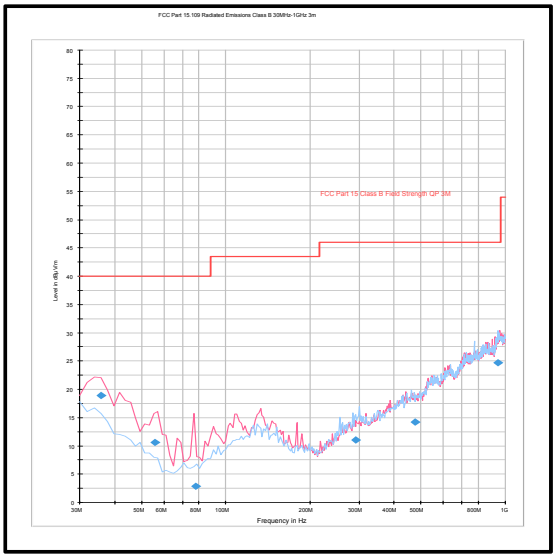
Results: Quasi Peak

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
35.788	Vertical	18.9	40.00	21.1	Complied
55.815	Vertical	10.6	40.00	29.4	Complied
77.861	Vertical	2.8	40.00	37.2	Complied
291.746	Horizontal	11.0	46.00	35.0	Complied
475.510	Vertical	14.2	46.00	31.8	Complied
943.873	Horizontal	24.7	46.00	21.3	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:**	25 June 2012
Test Sample IMEI:	351807050018897		

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):	24
Relative Humidity (%):	44

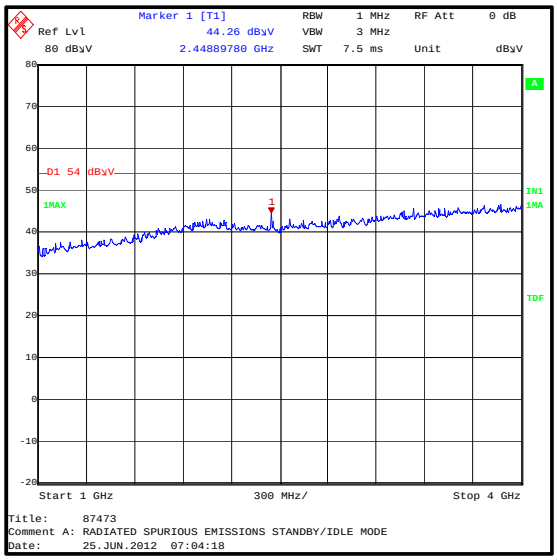
Results:

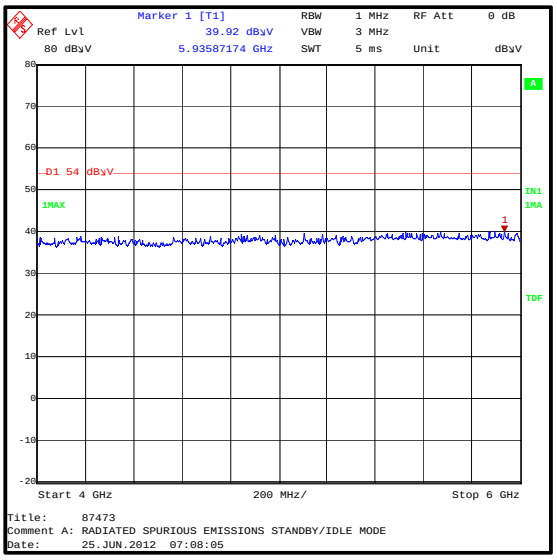
Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Average Limit (dBµV/m)	Margin (dB)	Result
6957.916	Vertical	46.1	54.0	7.9	Complied

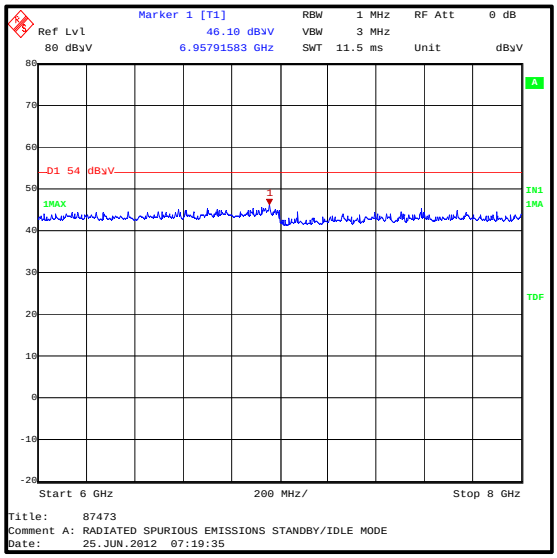
Note(s):

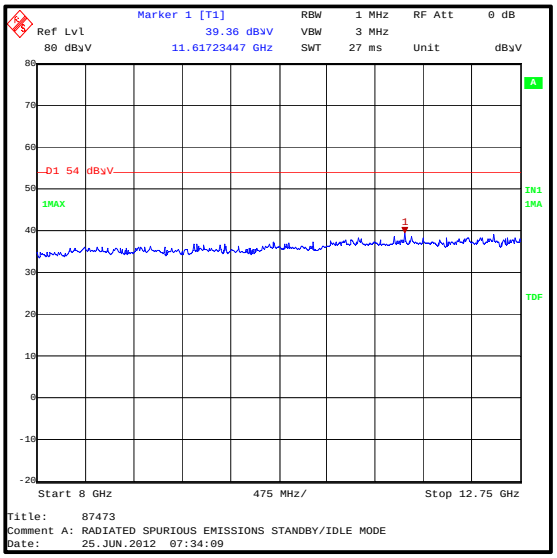
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above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









5.2.3. Transmitter AC Conducted Spurious Emissions

Test Summary:

Test Engineer:	Nick Steele	**Test Date:**	19 June 2012
Test Sample IMEI:	351807050018897		

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):	23
Relative Humidity (%):	43

Results: Live / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.505500	Live	23.0	56.0	33.0	Complied
3.030000	Live	14.2	56.0	41.8	Complied
3.867000	Live	15.1	56.0	40.9	Complied
4.996500	Live	16.9	56.0	39.1	Complied
7.935000	Live	21.3	60.0	38.7	Complied
8.979000	Live	20.4	60.0	39.6	Complied

Results: Live / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.505500	Live	19.6	46.0	26.4	Complied
3.075000	Live	11.1	46.0	34.9	Complied
4.159500	Live	12.0	46.0	34.0	Complied
5.194500	Live	13.8	50.0	36.2	Complied
7.876500	Live	13.2	50.0	36.8	Complied
9.249000	Live	14.6	50.0	35.4	Complied

Receiver/Idle Mode AC Conducted Spurious Emissions (continued)

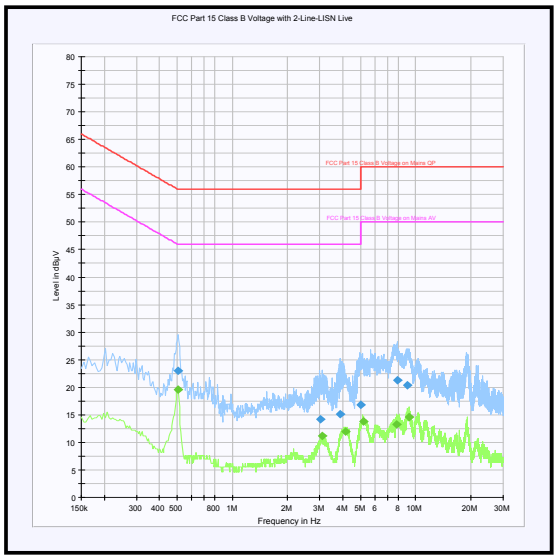
Results: Neutral / Quasi Peak

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.505500	Neutral	32.3	56.0	23.7	Complied
0.757500	Neutral	18.3	56.0	37.7	Complied
4.114500	Neutral	20.7	56.0	35.3	Complied
5.320500	Neutral	22.6	60.0	37.4	Complied
7.638000	Neutral	20.3	60.0	39.7	Complied
19.149000	Neutral	18.9	60.0	41.1	Complied

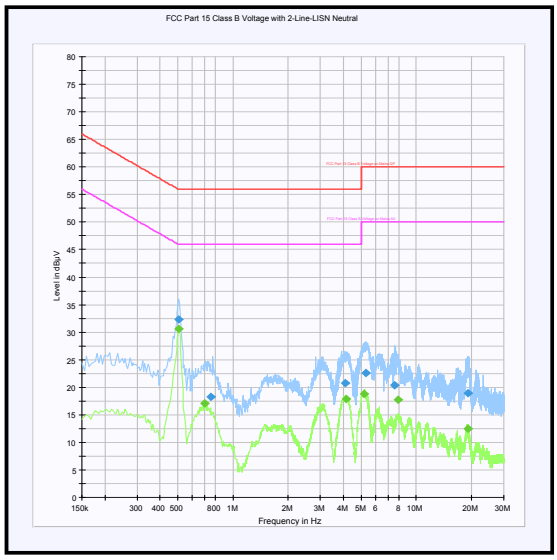
Results: Neutral / Average

Frequency (MHz)	Line	Level (dBµV)	Limit (dBµV)	Margin (dB)	Result
0.505500	Neutral	30.6	46.0	15.4	Complied
0.703500	Neutral	17.1	46.0	28.9	Complied
4.155000	Neutral	17.8	46.0	28.2	Complied
5.185500	Neutral	18.8	50.0	31.2	Complied
7.989000	Neutral	17.8	50.0	32.2	Complied
19.072500	Neutral	12.5	50.0	37.5	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.

5.2.4.Transmitter 20 dB Bandwidth

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	06 June 2012
Test Sample IMEI:	351807050019168		

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

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	43

Results DH5:

Channel	20 dB Bandwidth (kHz)
Bottom	1041.667
Middle	953.526
Top	1033.654

Results 2DH5:

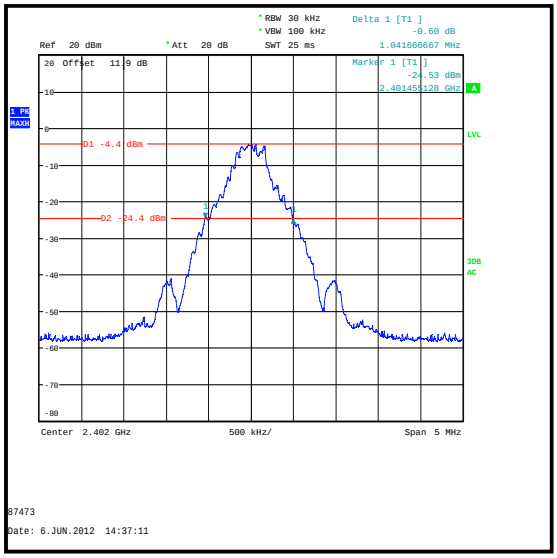
Channel	20 dB Bandwidth (kHz)
Bottom	1298.077
Middle	1298.077
Top	1298.077

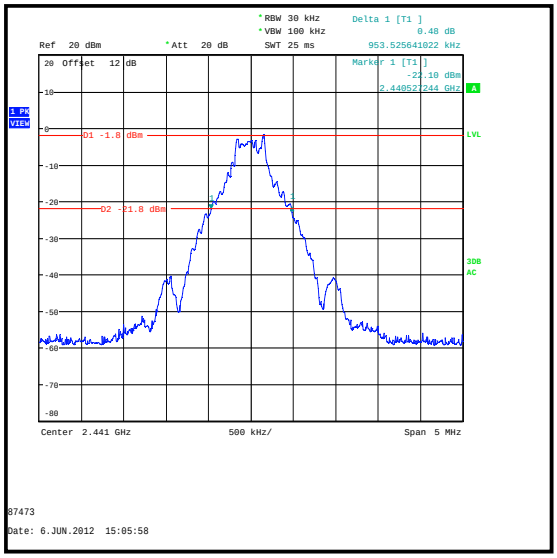
Results 3DH5:

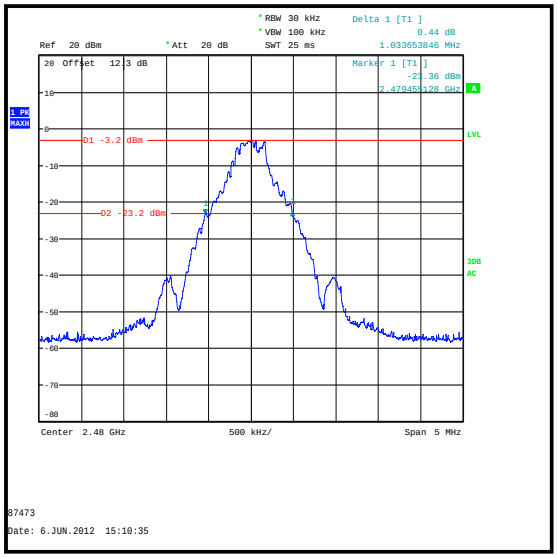
Channel	20 dB Bandwidth (kHz)
Bottom	1298.077
Middle	1322.115
Top	1298.077

Transmitter 20 dB Bandwidth (continued)

Results DH5:

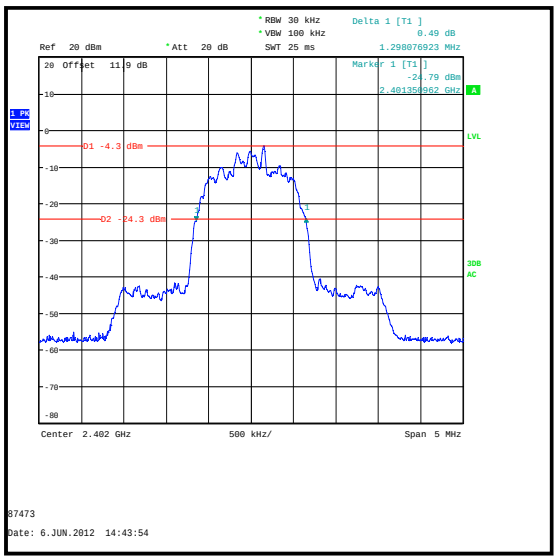


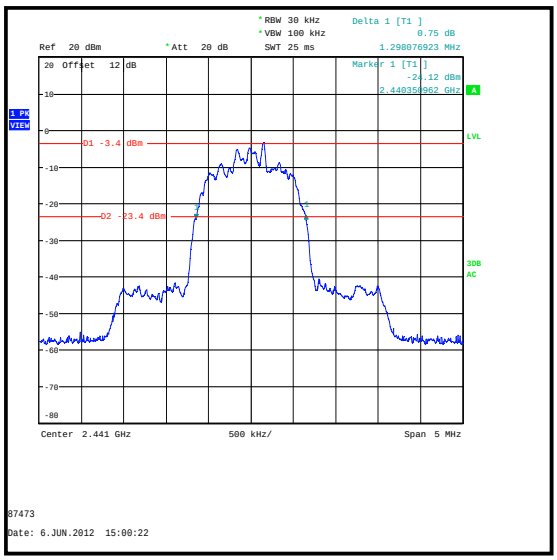


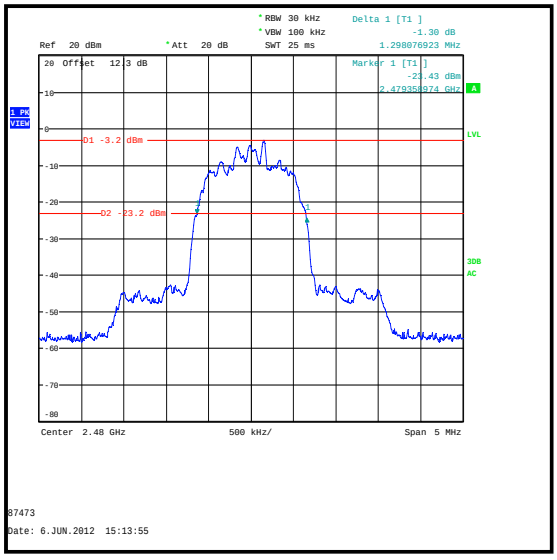


Transmitter 20 dB Bandwidth (continued)

Results 2DH5:

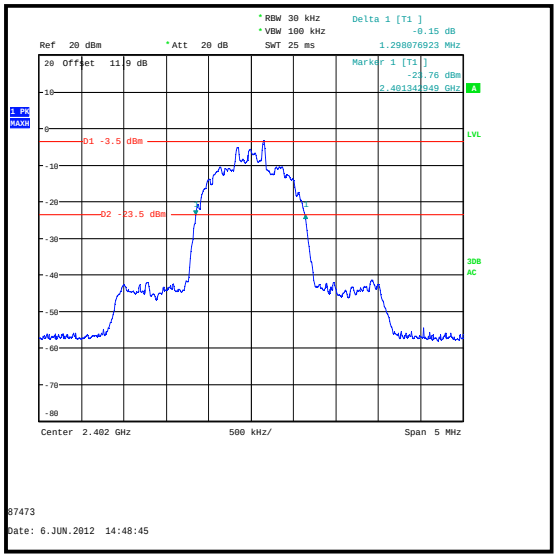


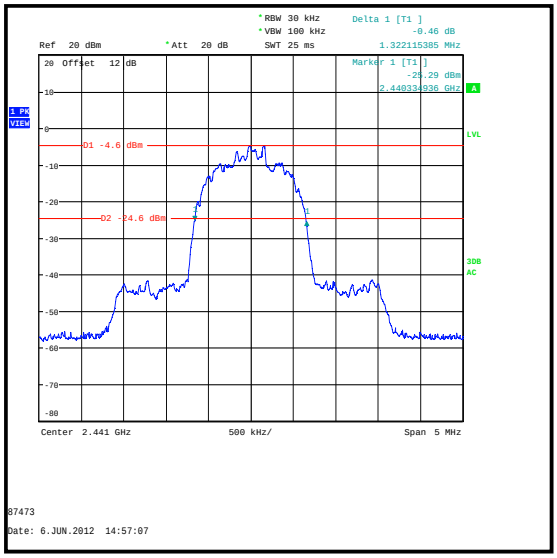


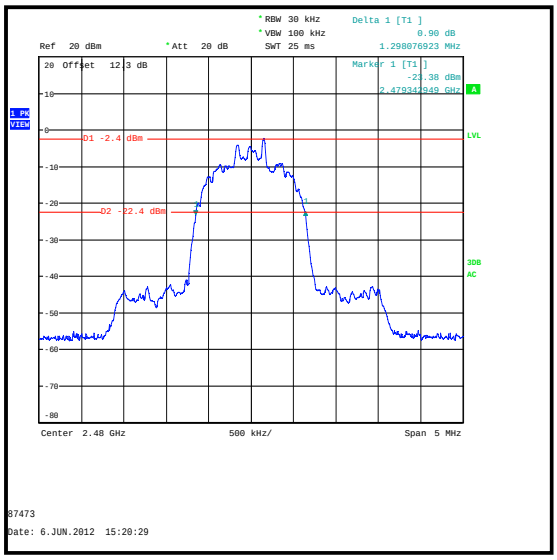


Transmitter 20 dB Bandwidth (continued)

Results 3DH5:







5.2.5. Transmitter Carrier Frequency Separation

Test Summary:

Test Engineer:	Andrew Edwards	**Test Date:**	06 June 2012
Test Sample IMEI:	351807050019168		

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

Environmental Conditions:

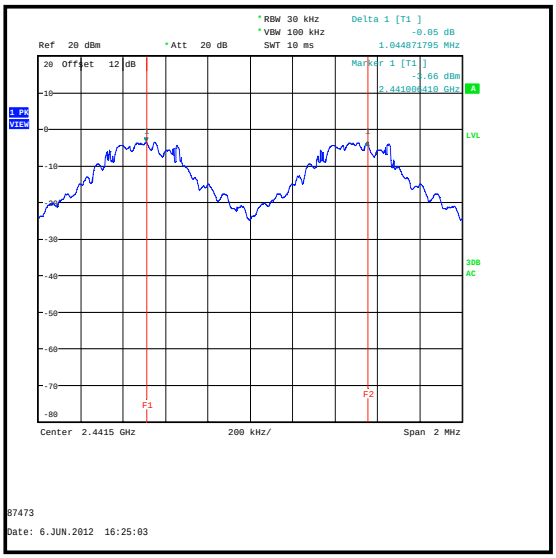
Temperature (°C):	28
Relative Humidity (%):	40

Results: DH5

Carrier Frequency Separation (kHz)	Limit ($^2/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1044.872	635.684	409.188	Complied

Note(s):

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



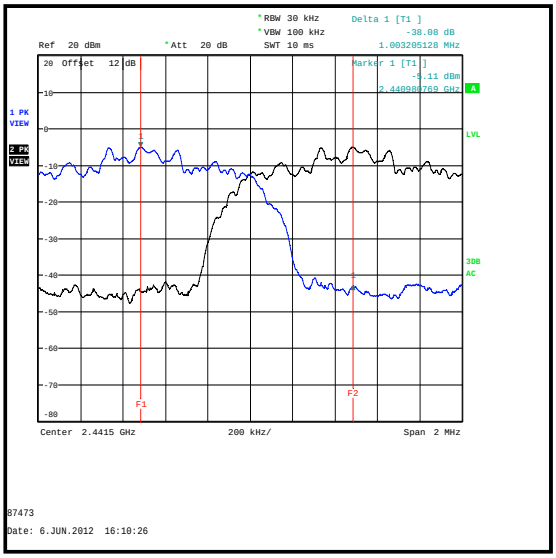
Transmitter Carrier Frequency Separation (continued)

Results: 2DH5

Carrier Frequency Separation (kHz)	Limit ($^2/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1003.205	865.385	137.820	Complied

Note(s):

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



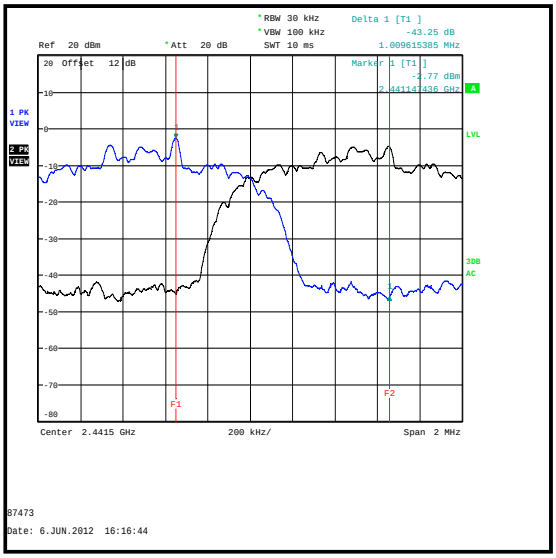
Transmitter Carrier Frequency Separation (continued)

Results: 3DH5

Carrier Frequency Separation (kHz)	Limit ($^2/_3$ of 20 dB BW) (kHz)	Margin (kHz)	Result
1009.615	881.410	128.205	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:	Andrew Edwards	**Test Date:**	06 June 2012
Test Sample IMEI:	351807050019168		

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):	28
Relative Humidity (%):	40

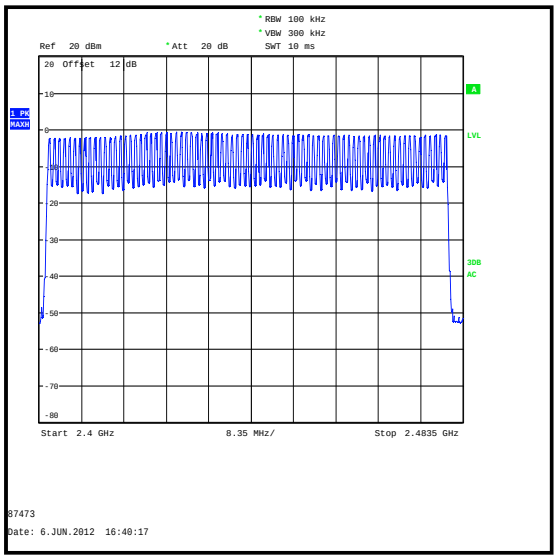
Results:

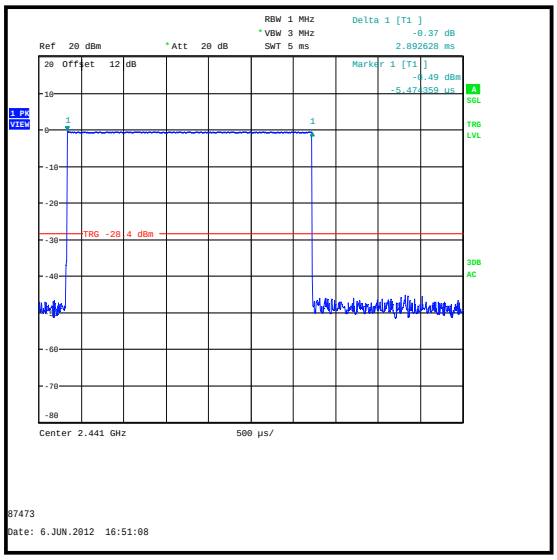
Emission Width (μs)	Number of Hops in 31.6 Seconds	Average Time of Occupancy (s)	Limit (s)	Margin (s)	Result
2892.628	91	0.263	0.4	0.137	Complied

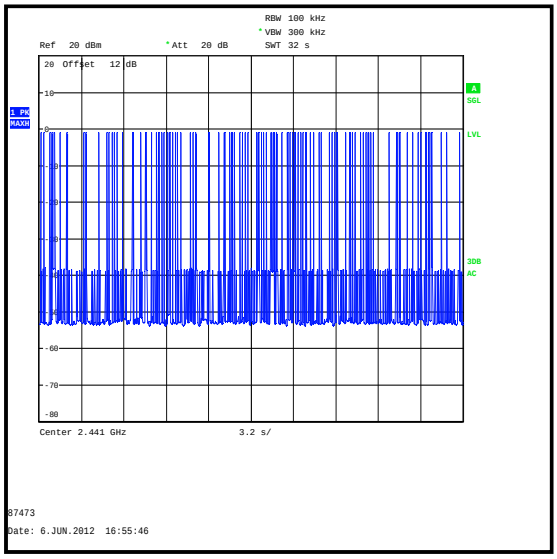
Note(s):

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:**	06 June 2012
Test Sample IMEI:	351807050019168		

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

Environmental Conditions:

Temperature (°C):	28
Relative Humidity (%):	42

Results: DH5

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-1.3	30.0	31.3	Complied
Middle	-0.3	30.0	30.3	Complied
Top	-0.1	30.0	30.1	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-1.3	-2.9	-4.2	36.0	40.2	Complied
Middle	-0.3	-2.9	-3.2	36.0	39.2	Complied
Top	-0.1	-2.9	-3.0	36.0	39.0	Complied

Results: 2DH5

Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-0.8	21.0	21.8	Complied
Middle	0.2	21.0	20.8	Complied
Top	0.5	21.0	20.5	Complied

Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.8	-2.9	-3.7	27.0	30.7	Complied
Middle	0.3	-2.9	-2.6	27.0	29.6	Complied
Top	0.5	-2.9	-2.4	27.0	29.4	Complied

Transmitter Maximum Peak Output Power (continued)

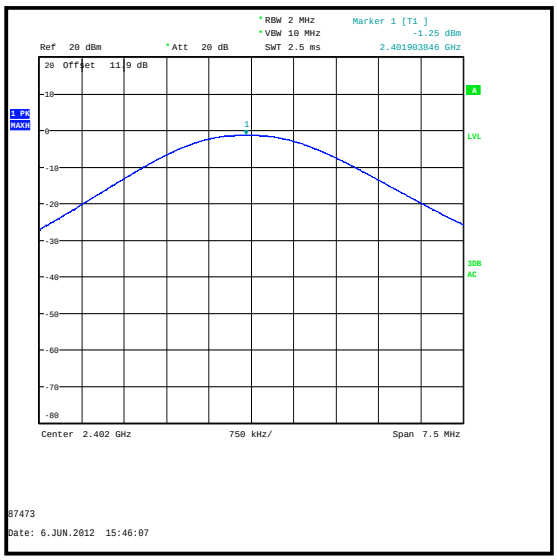
Results: 3DH5

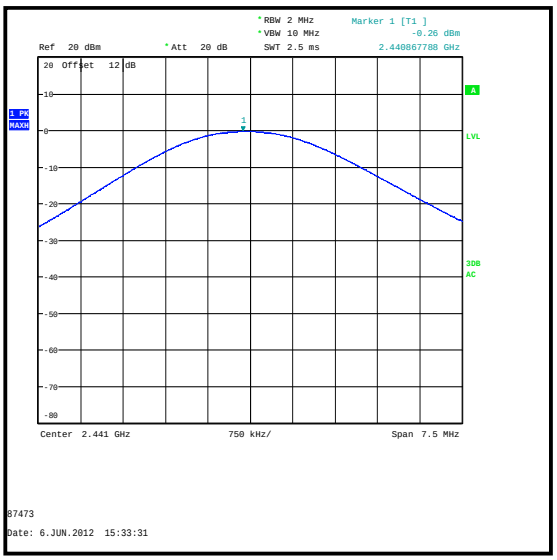
Channel	Conducted Peak Power (dBm)	Conducted Peak Power Limit (dBm)	Margin (dB)	Result
Bottom	-0.4	21.0	21.4	Complied
Middle	0.5	21.0	20.5	Complied
Top	0.8	21.0	20.2	Complied

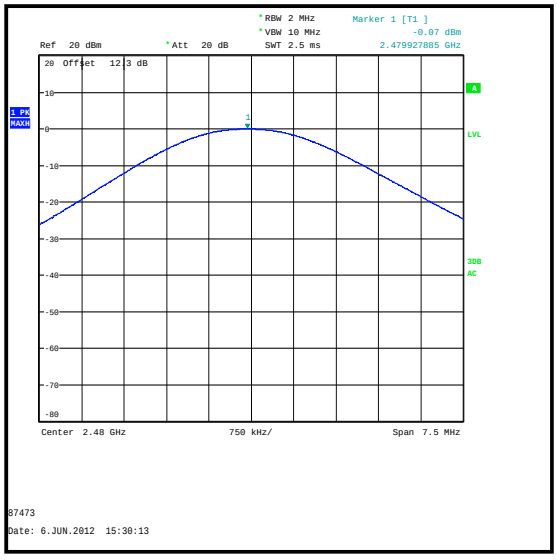
Channel	Conducted Peak Power (dBm)	Declared Antenna Gain (dBi)	EIRP (dBm)	De Facto EIRP Limit (dBm)	Margin (dB)	Result
Bottom	-0.4	-2.9	-3.3	27.0	30.3	Complied
Middle	0.5	-2.9	-2.4	27.0	29.4	Complied
Top	0.8	-2.9	-2.1	27.0	29.1	Complied

Transmitter Maximum Peak Output Power (continued)

Results: Basic Rate DH5

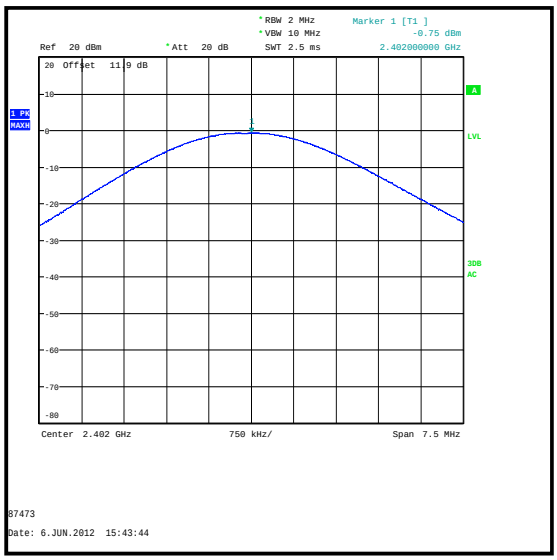


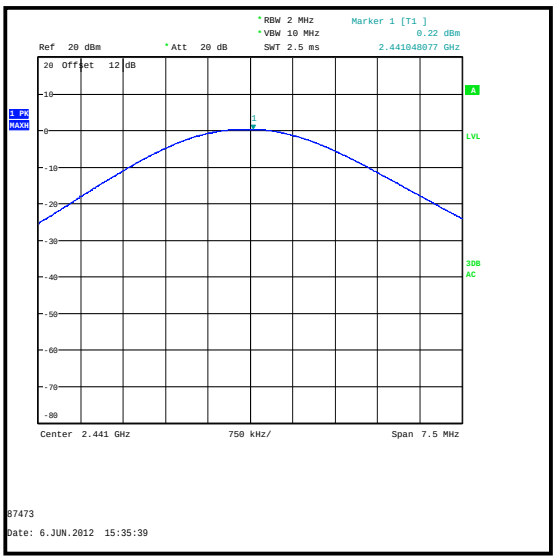


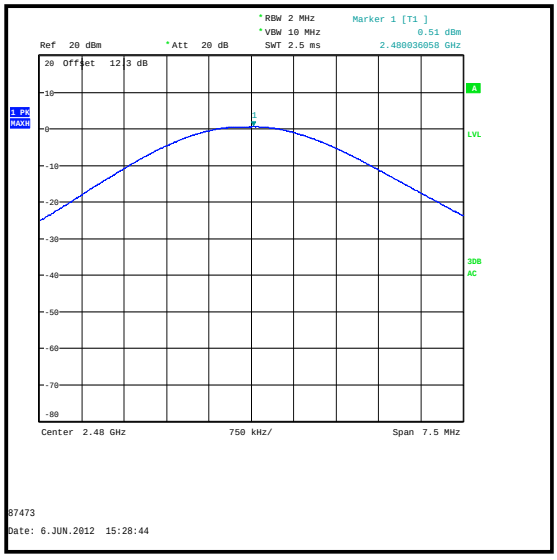


Transmitter Maximum Peak Output Power (continued)

Results: 2DH5

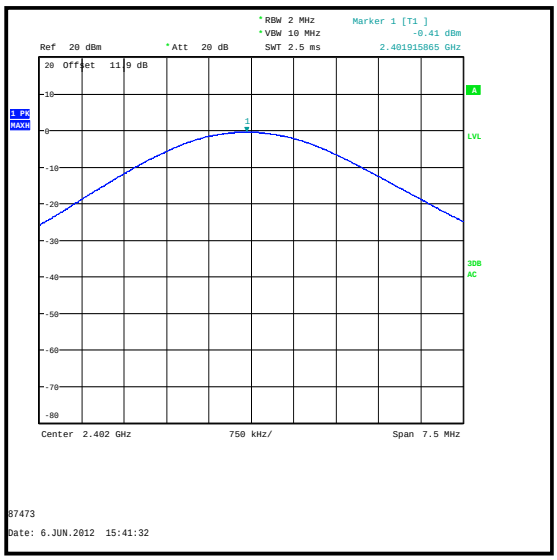


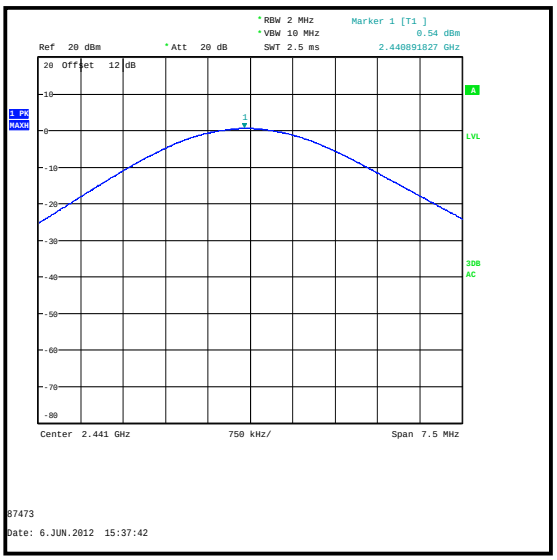


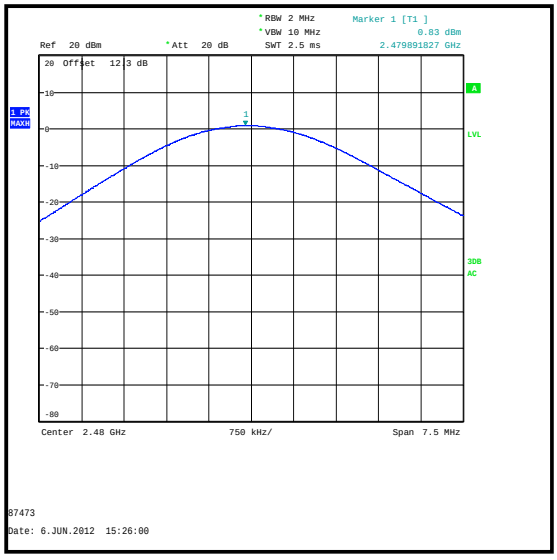


Transmitter Maximum Peak Output Power (continued)

Results: 3DH5







5.2.8. Transmitter Radiated Emissions

Test Summary:

Test Engineer:	Nick Steele	**Test Date:**	13 June 2012
Test Sample IMEI:	351807050018897		

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):	27
Relative Humidity (%):	36

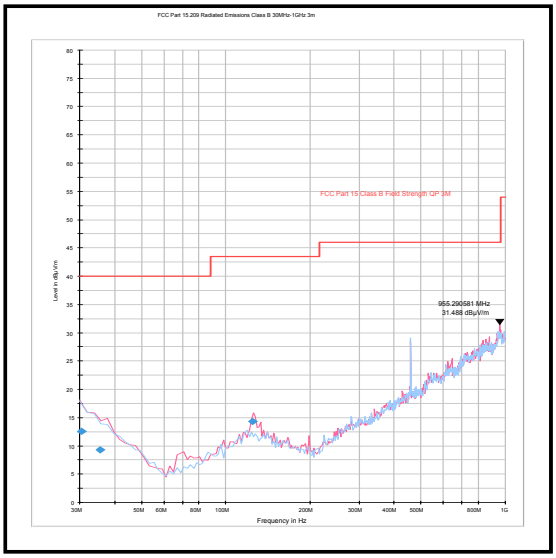
Results: Quasi-Peak 3DH5

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
124.582	Vertical	14.3	43.5	29.2	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. 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:	Nick Steele	**Test Dates:**	18 June 2012 & 19 June 2012
Test Sample IMEI:	351807050018897		

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 26.5 GHz

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	41

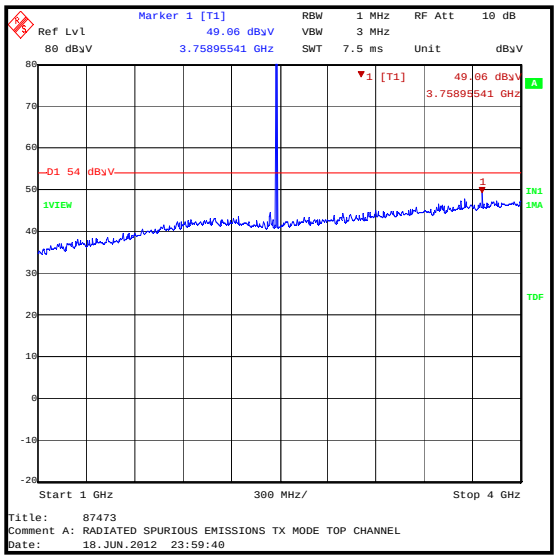
Results:

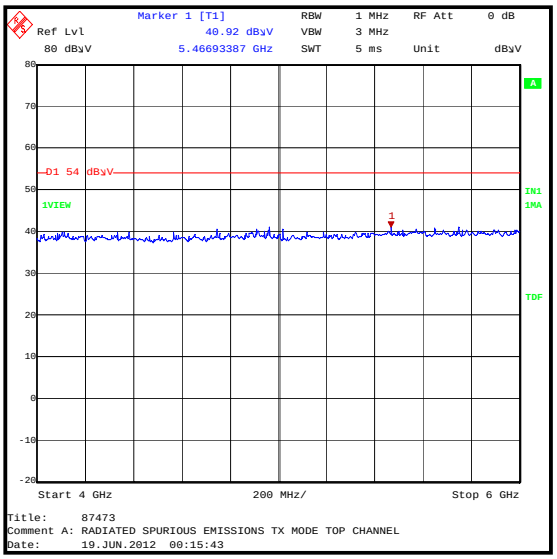
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
24789.579	Vertical	50.5	54.0	3.5	Complied

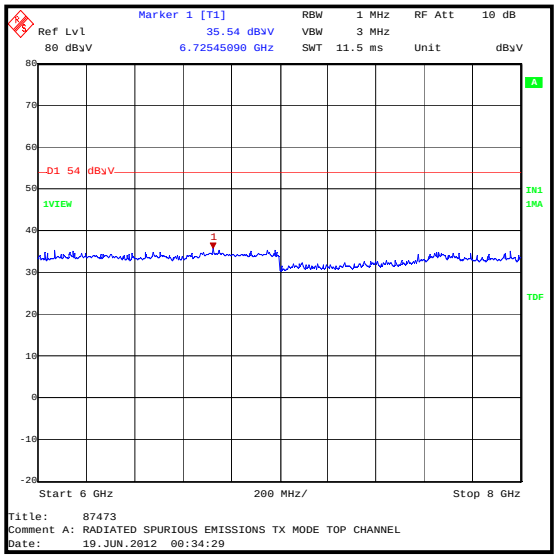
Note(s):

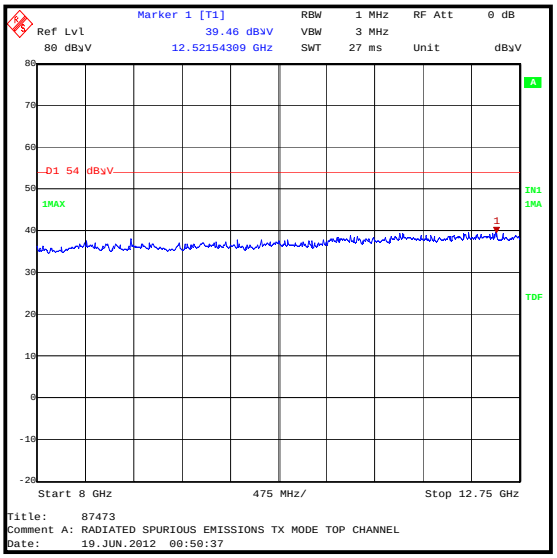
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. The emission shown on the 1 GHz to 4 GHz plot is the EUT fundamental at 2480 MHz.
3. No spurious emissions were detected above the noise floor of the measuring receiver therefore the highest peak noise floor reading of the measuring receiver was recorded as shown in the 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.
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)

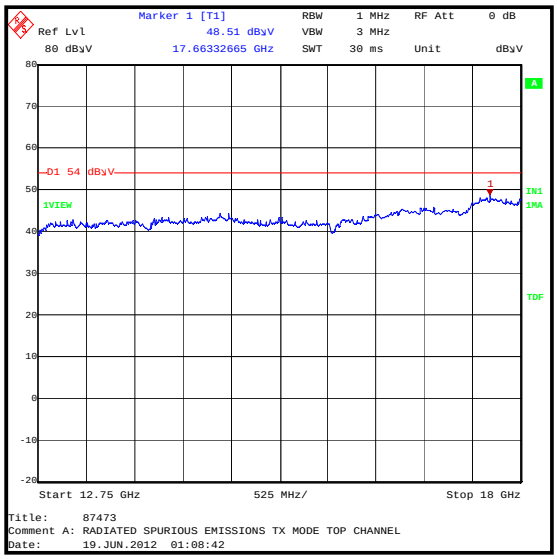


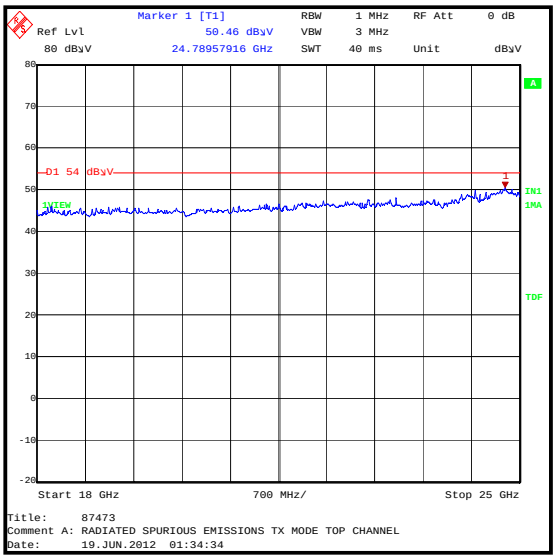






Transmitter Radiated Emissions (continued)





5.2.9. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Andrew Edwards	**Test Dates:**	12 June 2012 & 13 June 2012
Test Sample IMEI:	351807050018897 & 351807050019143		

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):	25
Relative Humidity (%):	40

Results: Static Mode DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2383.467	Vertical	44.5	70.5*	26.0	Complied
2400.000	Vertical	43.2	70.5*	27.3	Complied
2483.500	Vertical	53.7	74.0	20.3	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.500	Vertical	42.9	54.0	11.1	Complied

Results: Hopping Mode DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400.000	Vertical	42.3	72.0*	29.7	Complied
2483.500	Vertical	52.9	74.0	21.1	Complied
2485.504	Vertical	53.7	74.0	20.3	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.500	Vertical	39.7	54.0	14.3	Complied

Transmitter Band Edge Radiated Emissions (continued)

Results: Static Mode 2DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2398.397	Vertical	45.2	69.0*	23.8	Complied
2400.000	Vertical	43.2	69.0*	25.8	Complied
2483.500	Vertical	54.1	74.0	19.9	Complied
2488.260	Vertical	54.3	74.0	19.7	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.500	Vertical	42.9	54.0	11.1	Complied

Results: Hopping Mode 2DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400.000	Vertical	52.2	71.8*	19.6	Complied
2483.500	Vertical	53.2	74.0	20.8	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.500	Vertical	39.7	54.0	11.3	Complied

Results: Static Mode 3DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2389.329	Vertical	45.2	69.5*	24.3	Complied
2400.000	Vertical	43.2	69.5*	26.3	Complied
2483.500	Vertical	54.6	74.0	19.4	Complied

Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.500	Vertical	42.9	54.0	11.1	Complied

Transmitter Band Edge Radiated Emissions (continued)

Results: Hopping Mode 3DH5

Frequency (MHz)	Antenna Polarity	Peak Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2400.000	Vertical	44.6	71.2*	26.6	Complied
2483.500	Vertical	54.3	74.0	19.7	Complied

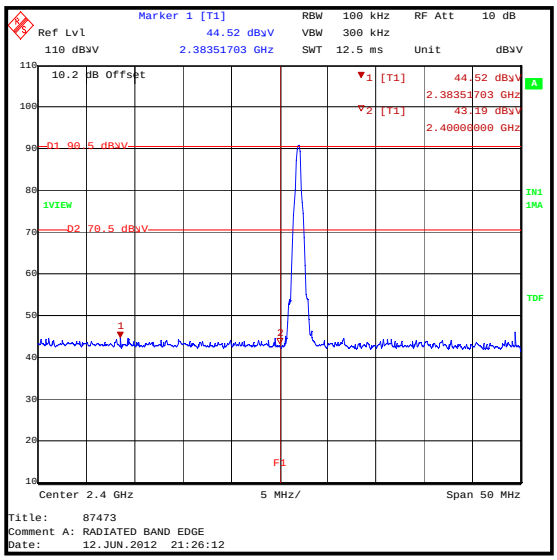
Frequency (MHz)	Antenna Polarity	Average Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
2483.500	Vertical	39.7	54.0	11.3	Complied

Note(s):

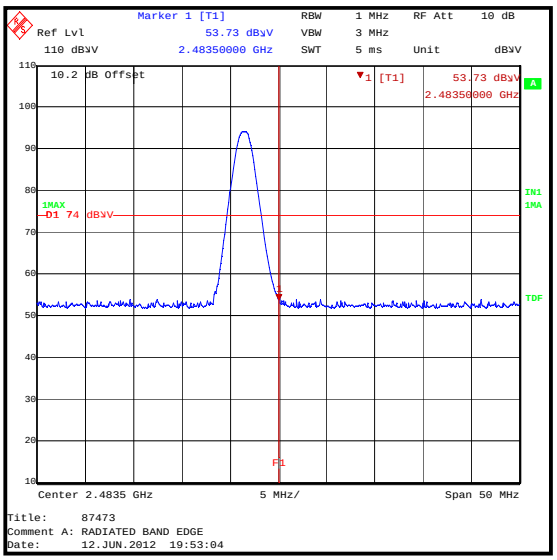
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. * -20 dBc limit.

Transmitter Band Edge Radiated Emissions (continued)

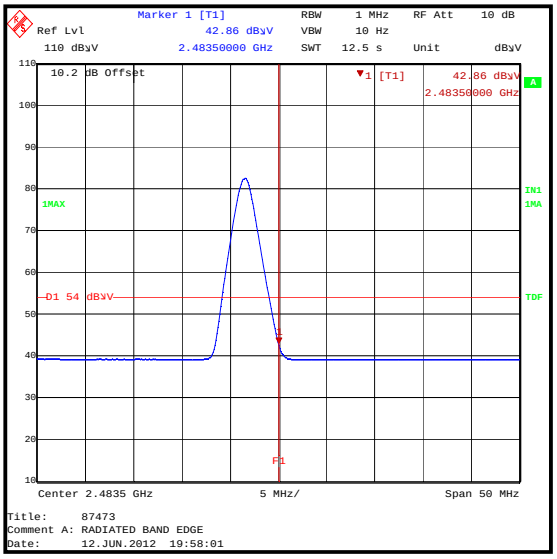
DH5 Static Mode



Lower Band Edge Peak Static



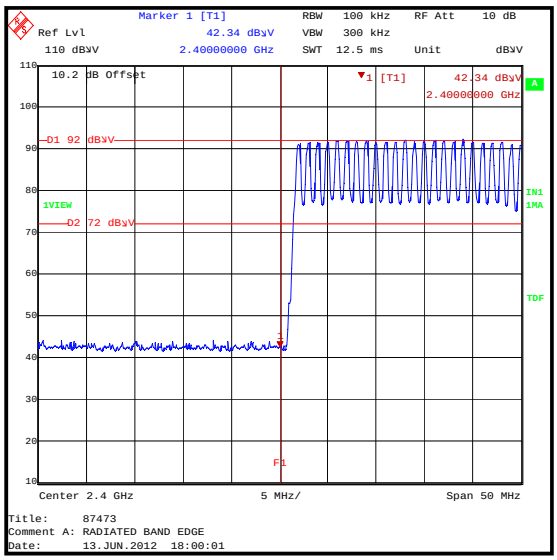
Upper Band Edge Peak Static



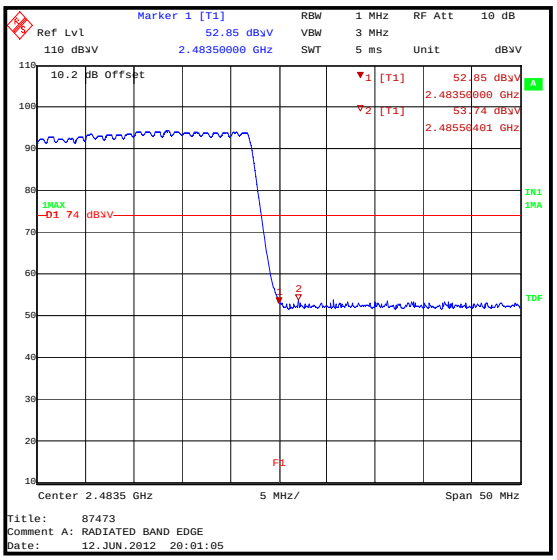
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

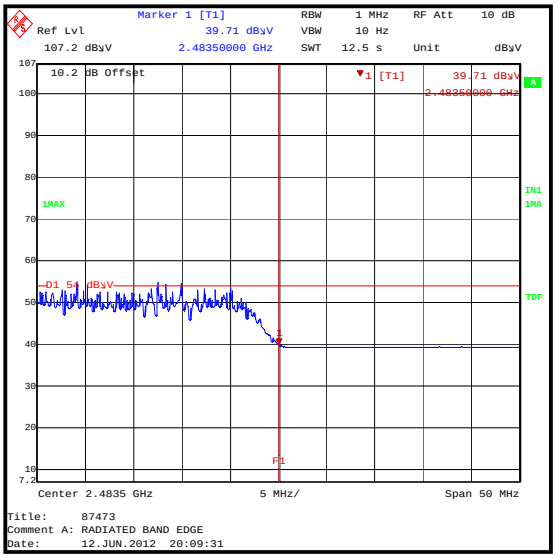
DH5 Hopping Mode



Lower Band Edge Peak Hopping



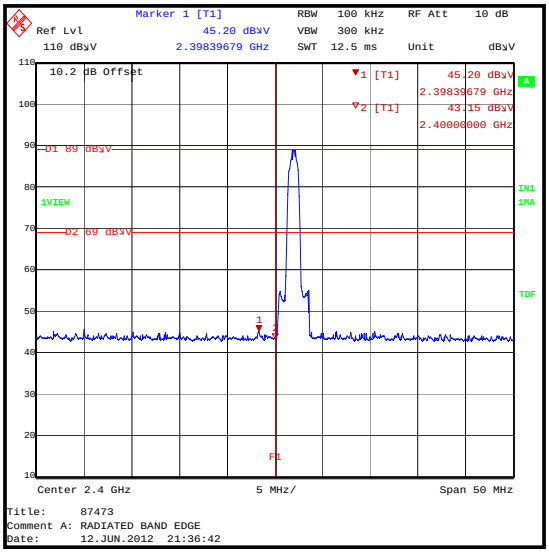
Upper Band Edge Peak Hopping



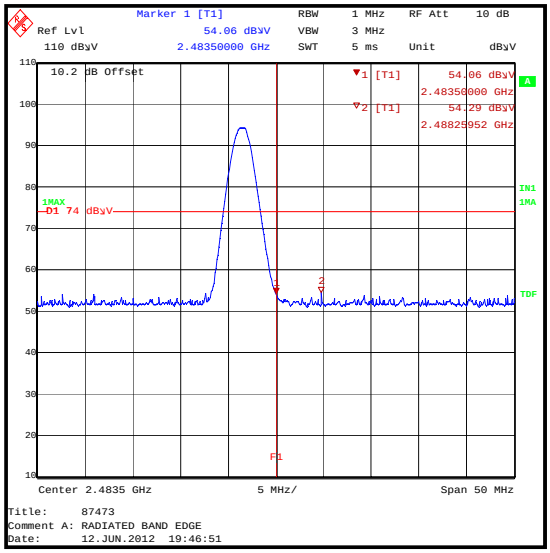
Upper Band Edge Average Hopping

Transmitter Band Edge Radiated Emissions (continued)

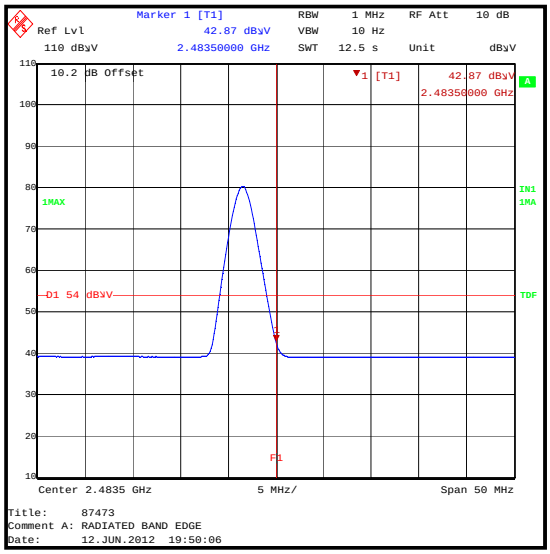
2DH5 Static Mode



Lower Band Edge Peak Static



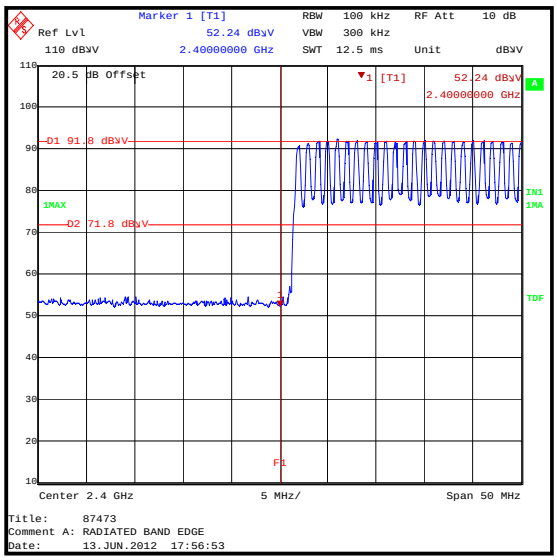
Upper Band Edge Peak Static



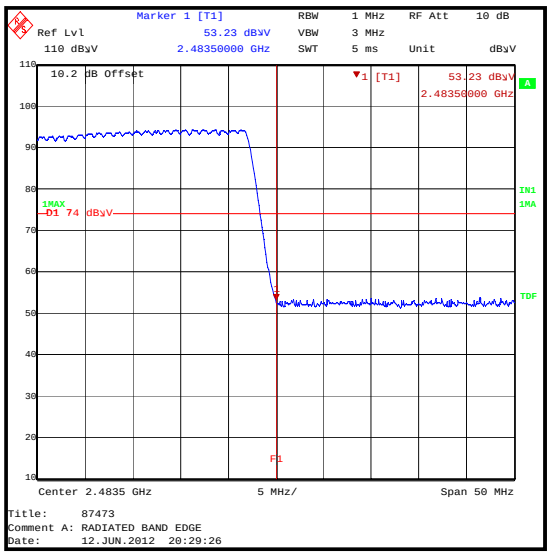
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

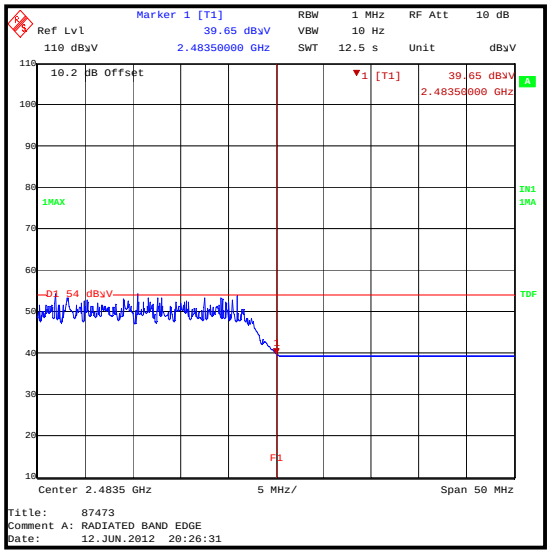
2DH5 Hopping Mode



Lower Band Edge Peak Hopping



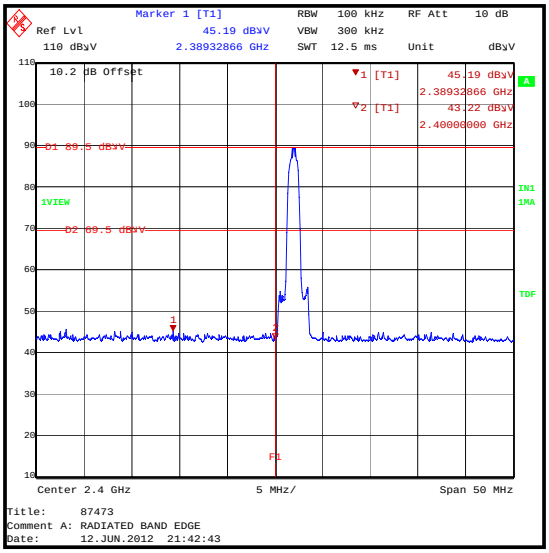
Upper Band Edge Peak Hopping



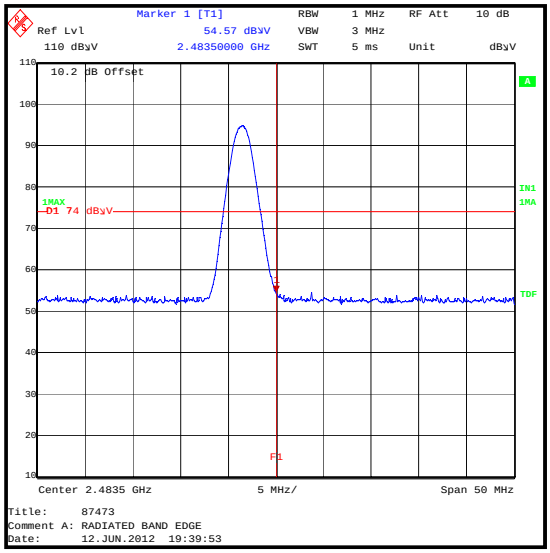
Upper Band Edge Average Hopping

Transmitter Band Edge Radiated Emissions (continued)

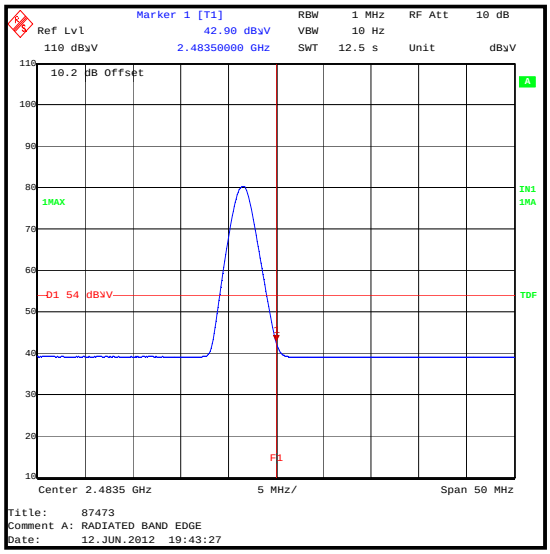
3DH5 Static Mode



Lower Band Edge Peak Static



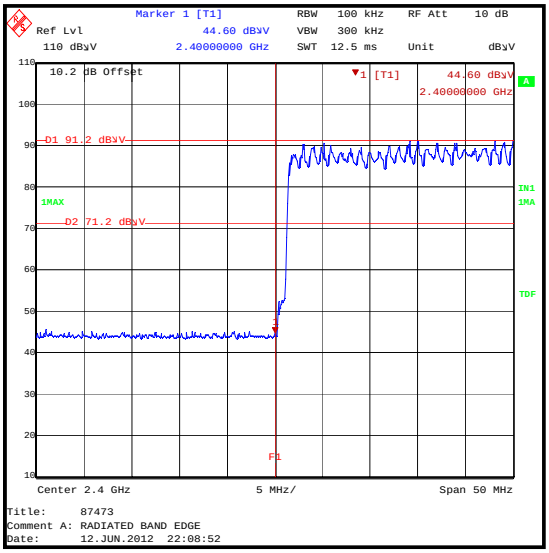
Upper Band Edge Peak Static



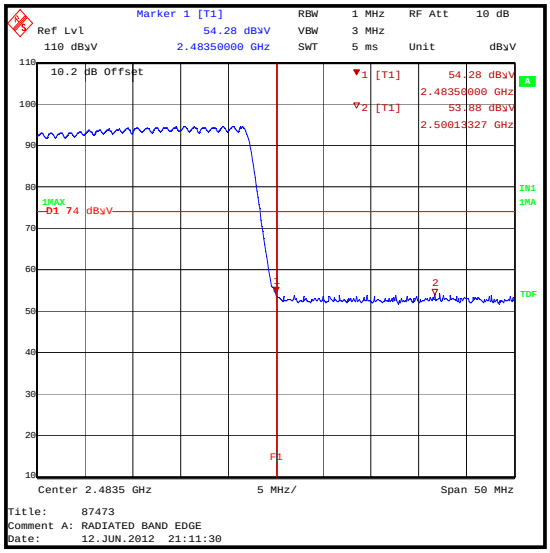
Upper Band Edge Average Static

Transmitter Band Edge Radiated Emissions (continued)

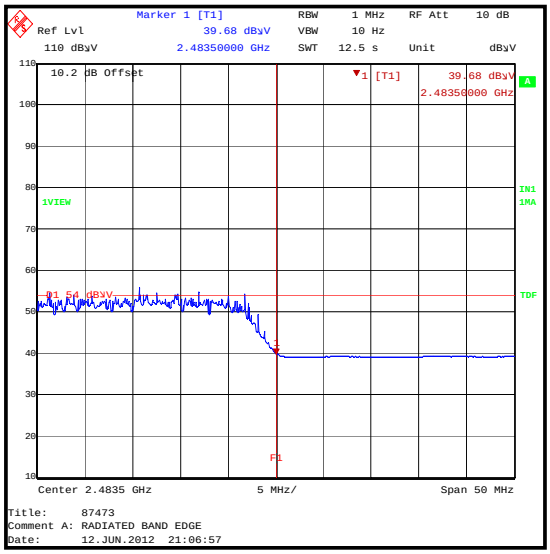
3DH5 Hopping Mode



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)
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	08 Jul 2012	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
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
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
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	03 Feb 2013	12
M1379	Test Receiver	Rohde & Schwarz	ESIB7	100330	20 Sep 2012	12
M1630	Test Receiver	Rohde & Schwarz	ESU40	100233	06 Feb 2013	12

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