



TEST REPORT

Test Report No. : UL-RPT-RP10839684JD01A

Manufacturer : General Dynamics Broadband UK Ltd
Model No. : BBY
Product Generation : RN2420 eNode B
FCC ID : PKTNODEBBBY
Technology : LTE Band 12, 5 MHz and 10 MHz Channel Bandwidth
Test Standard(s) : FCC Parts 27.50(c)(3), 27.53(g) & 27.54

1. This test report shall not be reproduced in full or partial, without the written approval of UL VS LTD.
2. The results in this report apply only to the sample tested.
3. The sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 1.0.

Date of Issue: 30 September 2015

Checked by: 
Sarah Williams
Engineer, Radio Laboratory

Issued by : 
pp
John Newell
Quality Manager,
UL VS LTD



This laboratory is accredited by UKAS.
The tests reported herein have been
performed in accordance with its terms
of accreditation.

UL VS LTD

Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG, UK
Telephone: +44 (0)1256 312000
Facsimile: +44 (0)1256 312001

This page has been left intentionally blank.

Table of Contents

1. Customer Information.....	4
2. Summary of Testing	5
2.1. General Information	5
2.2. Summary of Test Results	5
2.3. Methods and Procedures	5
2.4. Deviations from the Test Specification	5
3. Equipment Under Test (EUT)	6
3.1. Identification of Equipment Under Test (EUT)	6
3.2. Description of EUT	6
3.3. Modifications Incorporated in the EUT	6
3.4. Additional Information Related to Testing	6
3.5. Support Equipment	7
4. Operation and Monitoring of the EUT during Testing	8
4.1. Operating Modes	8
4.2. Configuration and Peripherals	8
5. Measurements, Examinations and Derived Results.....	9
5.1. General Comments	9
5.2. Test Results	10
5.2.1. Transmitter Carrier Output Power and Effective Radiated Power (ERP)	10
5.2.2. Transmitter Occupied Bandwidth	30
5.2.3. Transmitter Conducted Emissions	44
5.2.4. Transmitter Conducted Emissions at Band Edges	47
5.2.5. Transmitter Radiated Spurious Emissions	55
5.2.6. Transmitter Radiated Emissions at Band Edges	58
5.2.7. Transmitter Frequency Stability (Temperature Variation)	64
5.2.8. Transmitter Frequency Stability (Voltage Variation)	67
6. Measurement Uncertainty	69
7. Report Revision History	70

1. Customer Information

Company Name:	General Dynamics Broadband UK Ltd
Address:	Unit 7 Greenways Business Park Bellinger Close Chippenham Wilts SN15 1BN United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR27
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 27 Subpart J (Miscellaneous Wireless Communication Services)
Site Registration:	209735
Location of Testing:	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	02 September 2015 to 28 September 2015

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
27.50(c)(3) / 2.1046	Transmitter Carrier Output Power and Effective Radiated Power (ERP)	
2.1049	Transmitter Occupied Bandwidth	
27.53(g) / 2.1051	Transmitter Conducted Emissions	
27.53(g) / 2.1051	Transmitter Conducted Emissions at Band Edges	
27.53(g) / 2.1053	Transmitter Radiated Spurious Emissions	
27.53(g) / 2.1053	Transmitter Radiated Emissions at Band Edges	
27.54 / 2.1055	Transmitter Frequency Stability (Temperature and Voltage Variation)	
Key to Results  = Complied  = Did not comply		

2.3. Methods and Procedures

Reference:	FCC KDB 971168 D01 v02r02, October 17 2014
Title:	Measurement Guidance for Certification of Licensed Digital Transmitters
Reference:	FCC KDB 662911 D01 v02r01 October 31, 2013
Title:	Emissions Testing of Transmitters with Multiple Outputs in the Same Band

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:	General Dynamics Broadband
Model Name or Number:	BBY
Product Generation:	RN2420 eNode B
Test Sample Serial Number:	BBYBE31000110
Hardware Version Number:	Pass 1
Software Version Number:	9.2.4
FCC ID:	PKTNODEBBBY

3.2. Description of EUT

The equipment under test was a wireless LTE Band 12 base station.

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:	LTE		
Type of Equipment	eNodeB		
Channel Bandwidth:	5 MHz & 10 MHz		
Modulation Types:	QPSK, 16QAM & 64QAM		
Duty Cycle:	100%		
Antenna Gain:	20.0 dBi		
Power Supply Requirement:	Nominal	-48.0 VDC	
	Minimum	-40.8 VDC	
	Maximum	-55.2 VDC	
Transmit Frequency Range:	Band 12 (729 MHz to 746 MHz) Part 27 (698 MHz to 746 MHz)		
Channels Tested:	Channel Bandwidth	Nul	Frequency of Uplink (MHz)
Bottom Channel	5	5035	731.5
	10	5060	734.0
Middle Channel	All	5095	737.5
Top Channel	5	5155	743.5
	10	5130	741.0

3.5. Support Equipment

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

Description:	Laptop
Brand Name:	Toshiba
Model Name or Number:	Satellite Pro A100
Serial Number:	67071048Q

Description:	Ethernet to serial cable (2m)
Brand Name:	None stated
Model Name or Number:	None stated
Serial Number:	None stated

Description:	Serial to USB cable (0.4m)
Brand Name:	None stated
Model Name or Number:	UC-232A
Serial Number:	Z866011AK3048

Description:	SFP to Ethernet cable (10m)
Brand Name:	None stated
Model Name or Number:	None stated
Serial Number:	None stated

Description:	SFP to Optical (terminated) (10m)
Brand Name:	None stated
Model Name or Number:	NA20354-001
Serial Number:	33544510100012

Description:	GPS Antenna
Brand Name:	None stated
Model Name or Number:	None stated
Serial Number:	None stated

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

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

- Transmit Mode - The EUT was set to transmit with maximum output power using 5 MHz and 10 MHz channel bandwidths. QPSK, 16QAM and 64QAM modulations were tested.
- For frequency stability tests the EUT was set to transmit an unmodulated CW test tone.

4.2. Configuration and Peripherals

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

- The EUT was controlled via a laptop PC, using bespoke software supplied by the customer. The customer supplied test instructions, which were followed to place the unit into the correct test mode.
- The EUT was connected to the test laptop using the Ethernet service port. An Ethernet to serial cable, via a serial to USB cable, was connected to a USB port on the laptop.
- The EUT has two transceiver RF ports marked RF1 and RF2. The port not being used whilst testing was being performed was terminated with a suitable 50 Ohm load.
- The EUT has two receiver ports marked Rxa and Rxb, both ports were terminated with a suitable 50 Ohm load for all tests.
- For 5 MHz channel bandwidth, the EUT was configured for 25 Resource Blocks as defined in 3GPP 36.141 Rel 8.
- For 10 MHz channel bandwidth, the EUT was configured for 50 Resource Blocks as defined in 3GPP 36.141 Rel 8.
- The EUT was configured using the following E-UTRA Test Models as defined in 3GPP 36.141 Rel 8:
 - o E-TM1.1 for QPSK modulation
 - o E-TM3.2 for 16QAM modulation
 - o E-TM3.1 for 64QAM modulation
- The customer supplied suitable cables with terminations to ensure all other ports were terminated for all 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* for Measurement Uncertainty details.

In accordance with UKAS requirements all the measurement equipment is on a calibration schedule. All equipment was within the calibration period on the date of testing.

5.2. Test Results

5.2.1. Transmitter Carrier Output Power and Effective Radiated Power (ERP)

Test Summary:

Test Engineer:	Nick Steele	Test Dates:	02 September 2015 & 04 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.50(c)(3) and 2.1046
Test Method Used:	FCC KDB 971168 D01 Section 5.4, 5.4.1 and 5.6

Environmental Conditions:

Temperature (°C):	23 to 25
Relative Humidity (%):	36 to 45

Note(s):

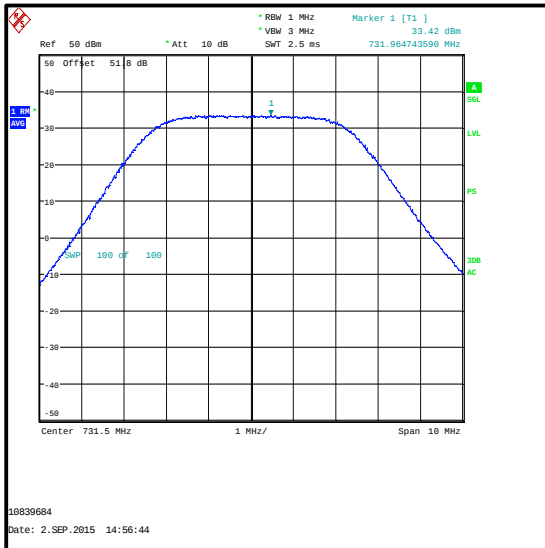
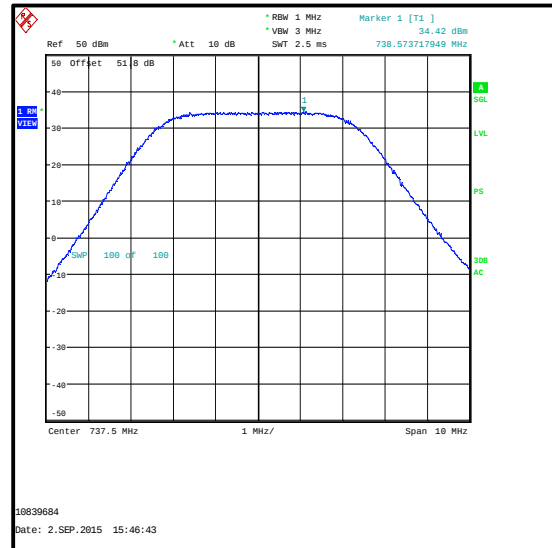
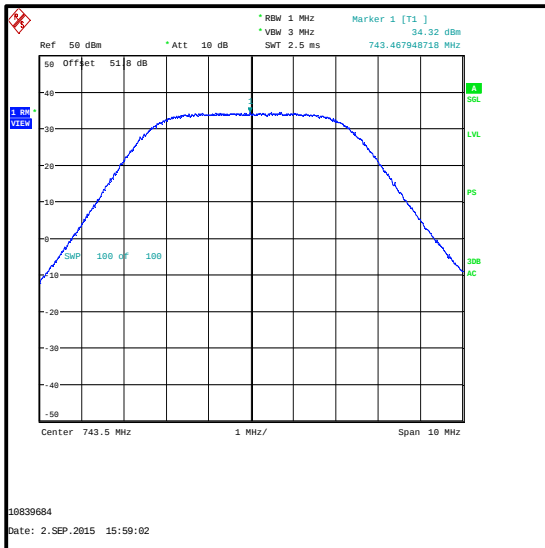
1. Power from both antenna ports was measured and combined using the measure-and-sum method stated in FCC KDB 662911 D01.
2. The ERP limit of 1000W/MHz has been converted to dBm/MHz, giving a limit of 60 dBm/MHz.
3. The customer stated that the EUT is designed to operate with a maximum antenna gain of 20 dBi. As the limit is an ERP limit the gain in dBi has been converted to dBd. The dBd value was calculated as:

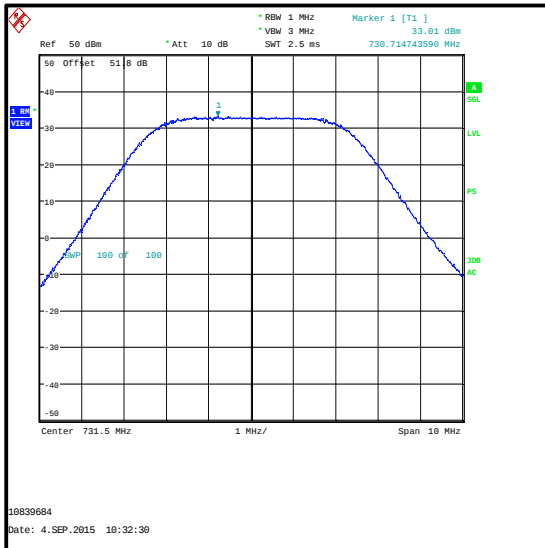
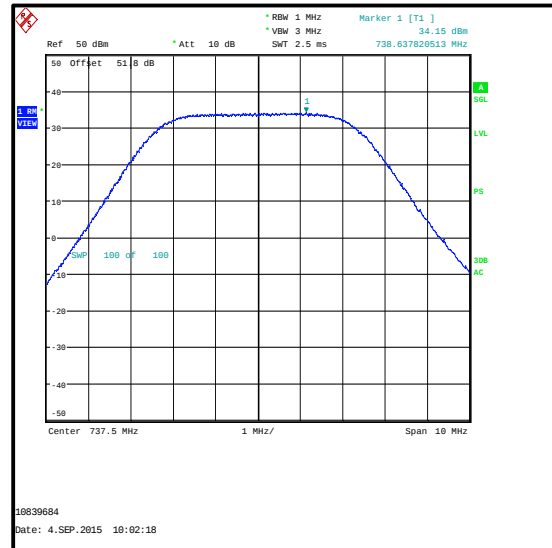
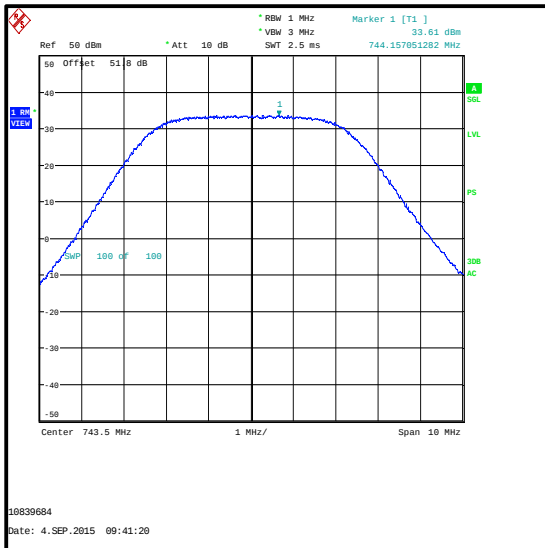
$$20 \text{ dBi} - 2.15 \text{ dB} = 17.85 \text{ dBd}$$

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: 5 MHz Channel Bandwidth**

Frequency (MHz)	Modulation	Conducted RF Power at Port RF1 (dBm/MHz)	Conducted RF Power at Port RF2 (dBm/MHz)	Combined Conducted RF Power (dBm/MHz)
731.5	QPSK	33.42	33.01	36.23
737.5	QPSK	34.42	34.15	37.30
743.5	QPSK	34.32	33.61	36.99

Frequency (MHz)	Combined Conducted RF Power (dBm/MHz)	Antenna Gain (dBd)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)	Margin (dB)	Result
731.5	36.23	17.85	54.08	60.0	5.92	Complied
737.5	37.30	17.85	55.15	60.0	4.85	Complied
743.5	36.99	17.85	54.84	60.0	5.16	Complied

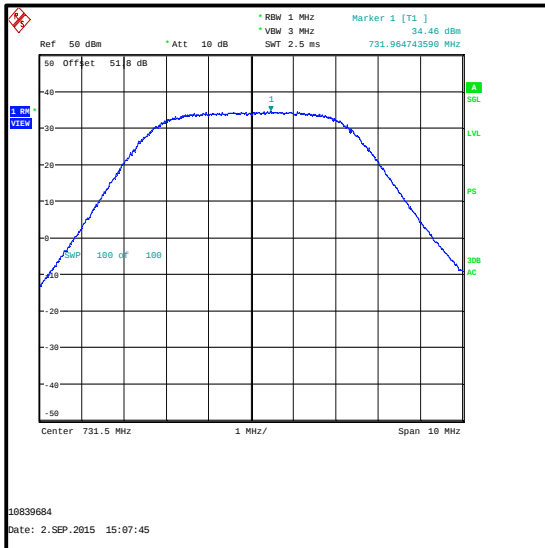
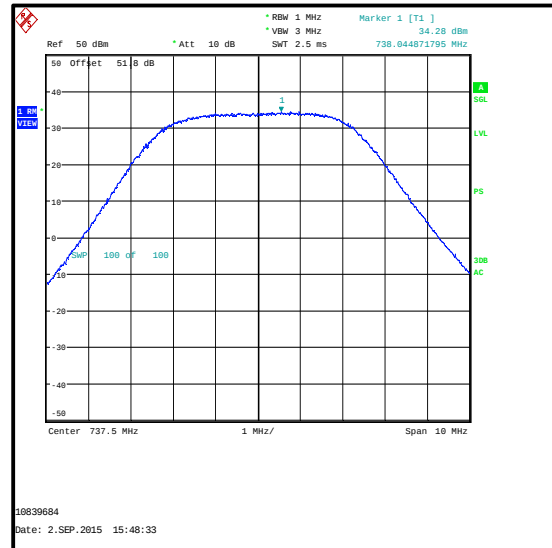
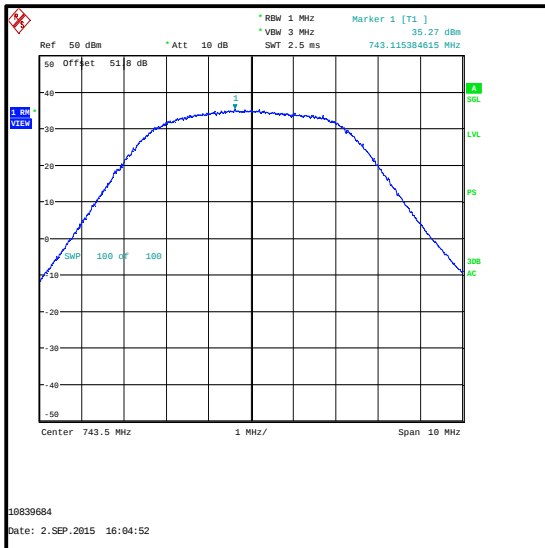
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF1****QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

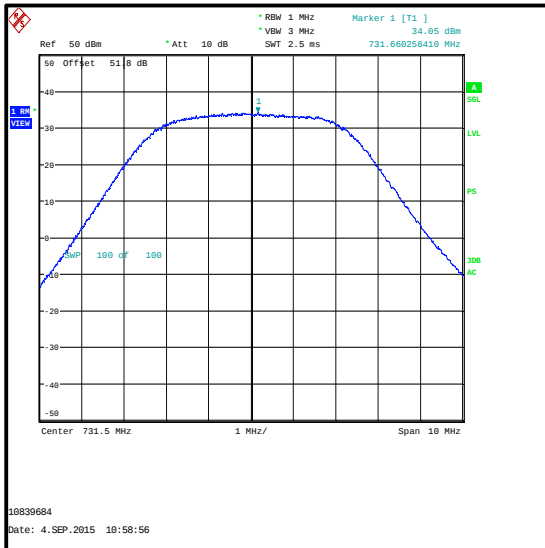
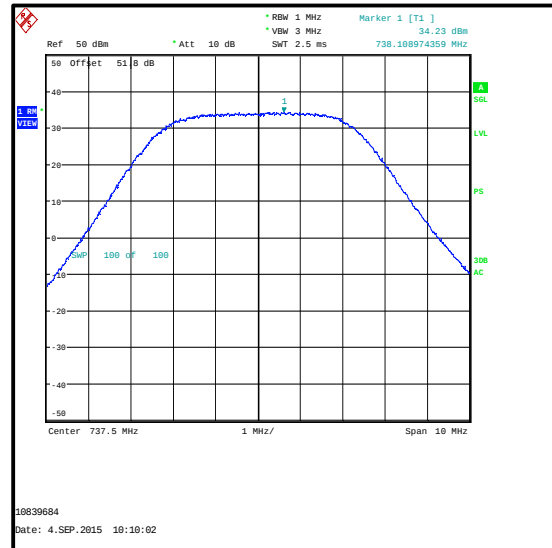
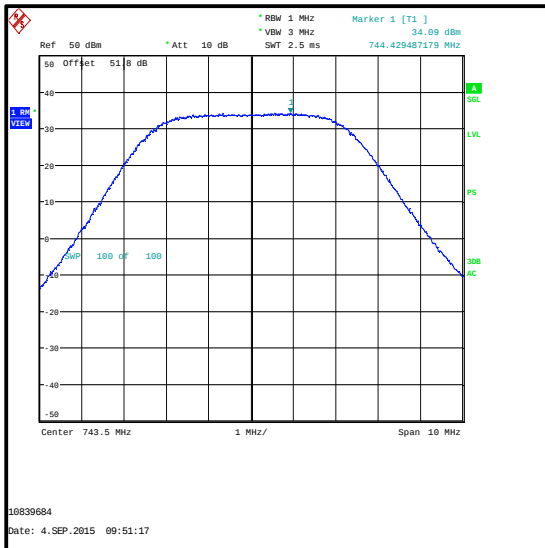
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF2****QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: 5 MHz Channel Bandwidth**

Frequency (MHz)	Modulation	Conducted RF Power at Port RF1 (dBm/MHz)	Conducted RF Power at Port RF2 (dBm/MHz)	Combined Conducted RF Power (dBm/MHz)
731.5	16QAM	34.46	34.05	37.27
737.5	16QAM	34.28	34.23	37.27
743.5	16QAM	35.27	34.09	37.73

Frequency (MHz)	Combined Conducted RF Power (dBm/MHz)	Antenna Gain (dBd)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)	Margin (dB)	Result
731.5	37.27	17.85	55.12	60.0	4.88	Complied
737.5	37.27	17.85	55.12	60.0	4.88	Complied
743.5	37.73	17.85	55.58	60.0	4.42	Complied

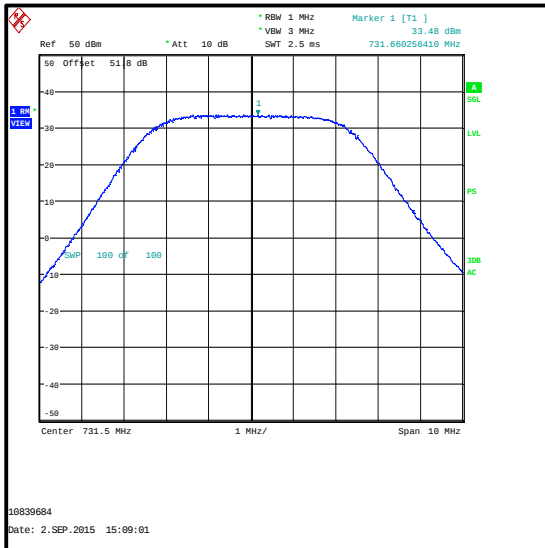
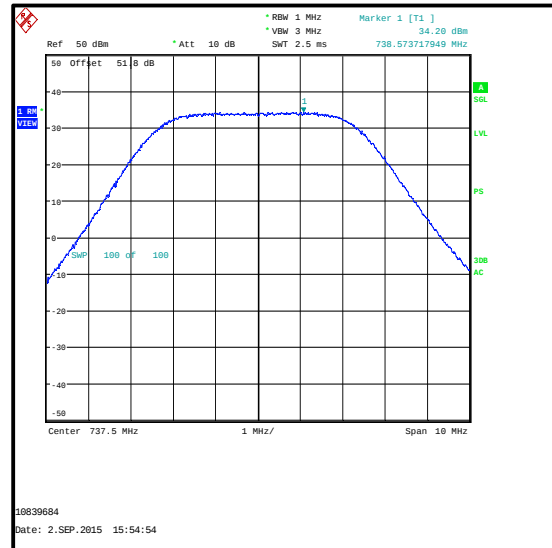
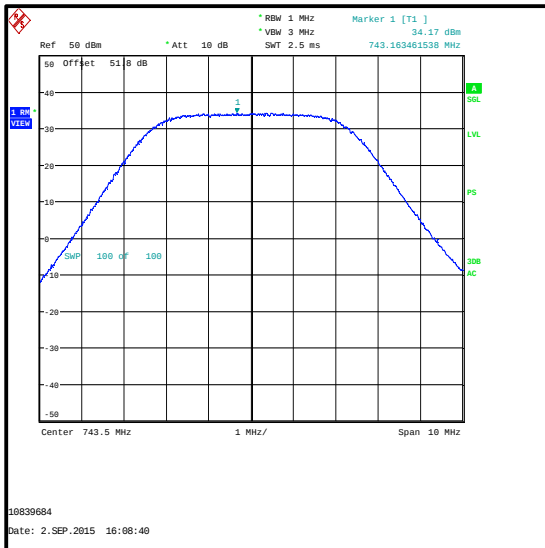
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF1****16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

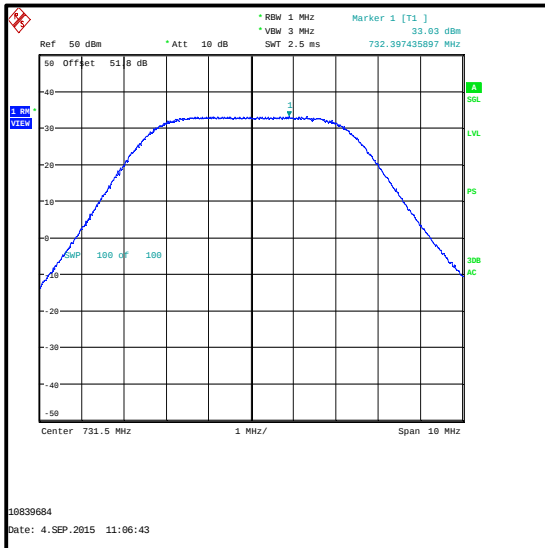
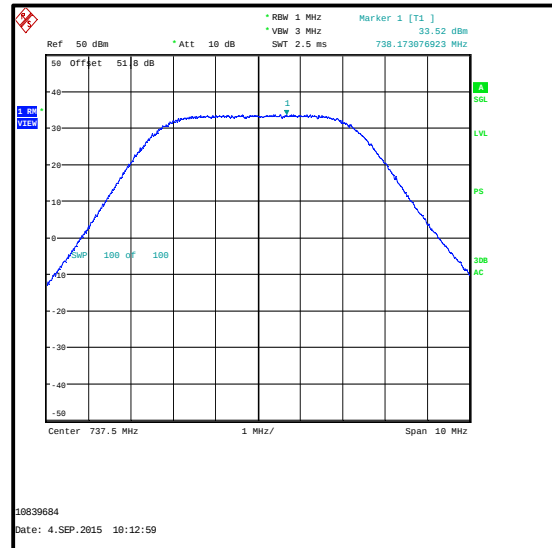
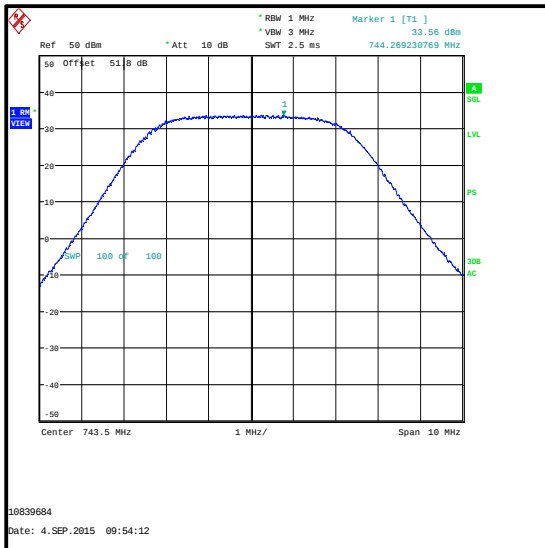
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF2****16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: 5 MHz Channel Bandwidth**

Frequency (MHz)	Modulation	Conducted RF Power at Port RF1 (dBm/MHz)	Conducted RF Power at Port RF2 (dBm/MHz)	Combined Conducted RF Power (dBm/MHz)
731.5	64QAM	33.48	33.03	36.27
737.5	64QAM	34.20	33.52	36.88
743.5	64QAM	34.17	33.56	36.89

Frequency (MHz)	Combined Conducted RF Power (dBm/MHz)	Antenna Gain (dBd)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)	Margin (dB)	Result
731.5	36.27	17.85	54.12	60.0	5.88	Complied
737.5	36.88	17.85	54.73	60.0	5.27	Complied
743.5	36.89	17.85	54.74	60.0	5.26	Complied

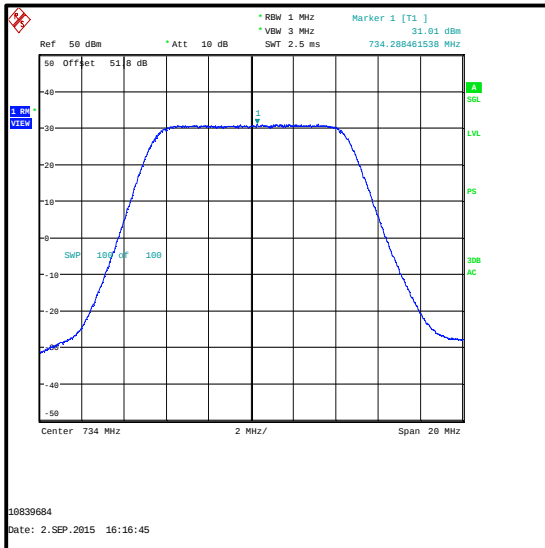
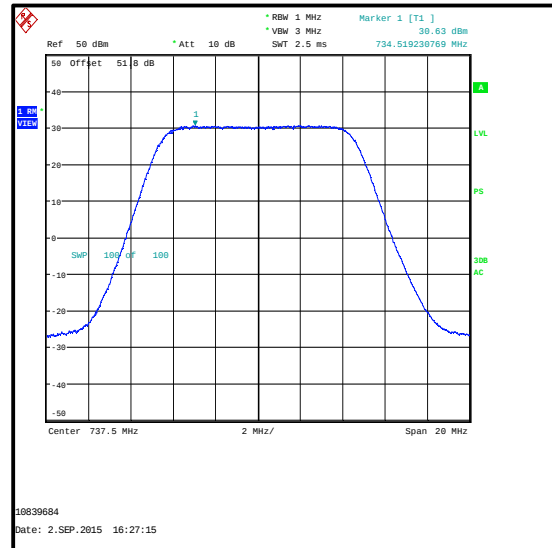
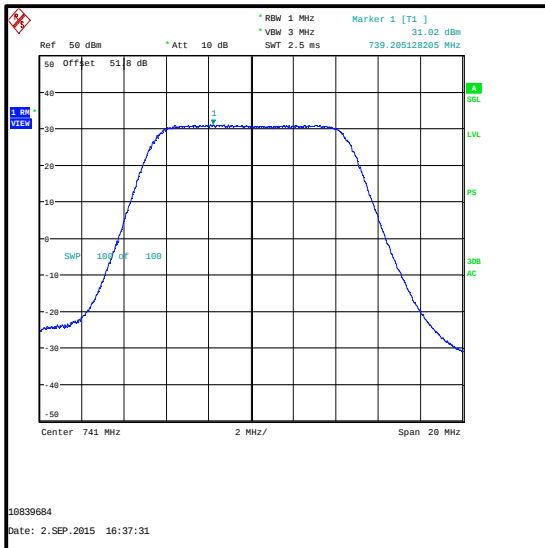
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF1****64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

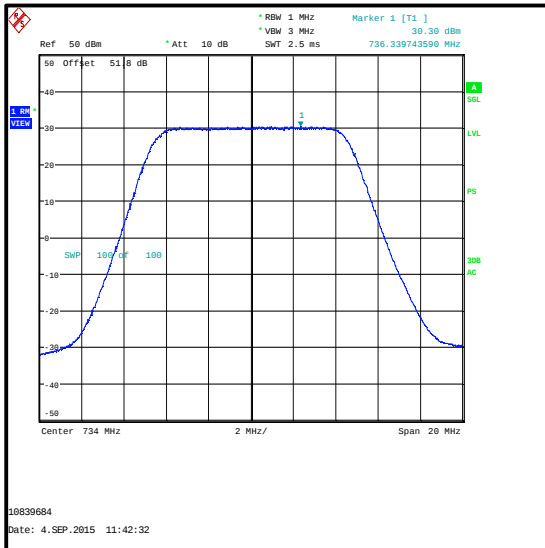
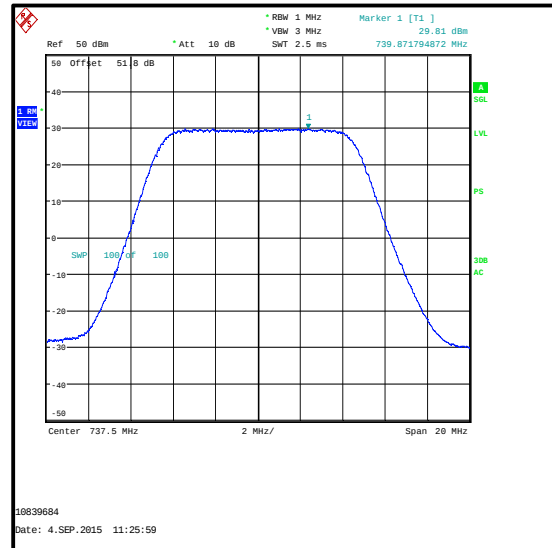
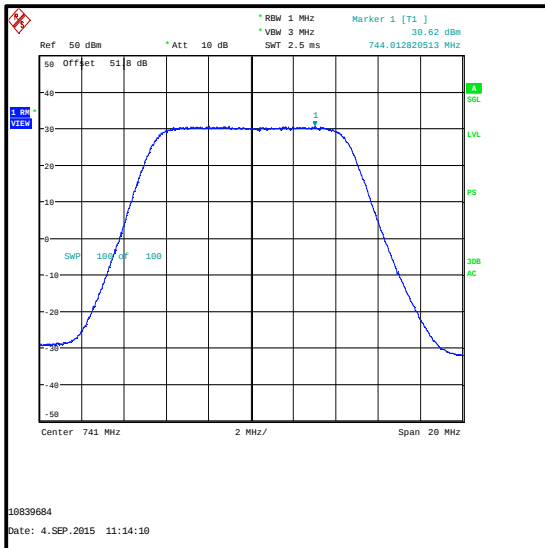
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF2****64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: 10 MHz Channel Bandwidth**

Frequency (MHz)	Modulation	Conducted RF Power at Port RF1 (dBm/MHz)	Conducted RF Power at Port RF2 (dBm/MHz)	Combined Conducted RF Power (dBm/MHz)
734.0	QPSK	31.01	30.30	33.68
737.5	QPSK	30.63	29.81	33.25
741.0	QPSK	31.02	30.62	33.83

Frequency (MHz)	Combined Conducted RF Power (dBm/MHz)	Antenna Gain (dBd)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)	Margin (dB)	Result
734.0	33.68	17.85	51.53	60.0	8.47	Complied
737.5	33.25	17.85	51.10	60.0	8.90	Complied
741.0	33.83	17.85	51.68	60.0	8.32	Complied

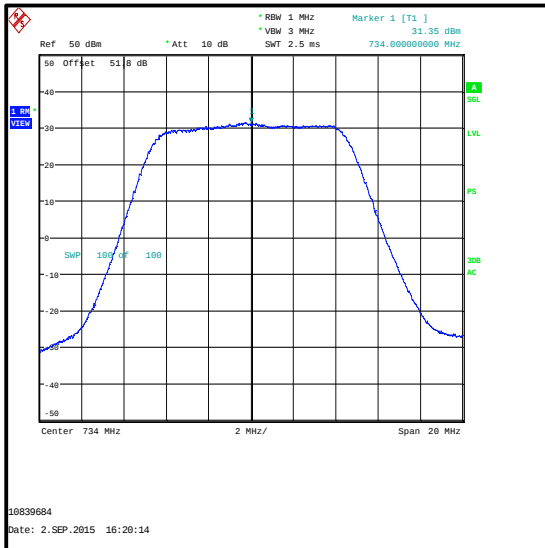
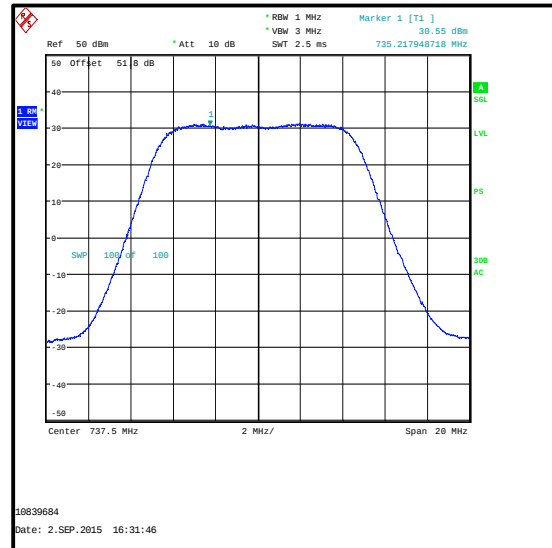
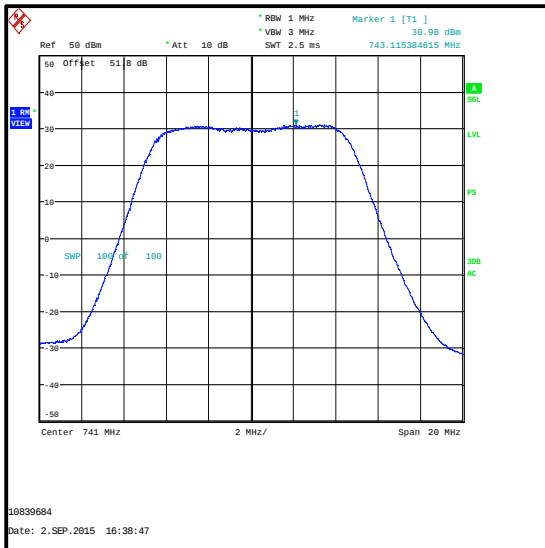
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF1****QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

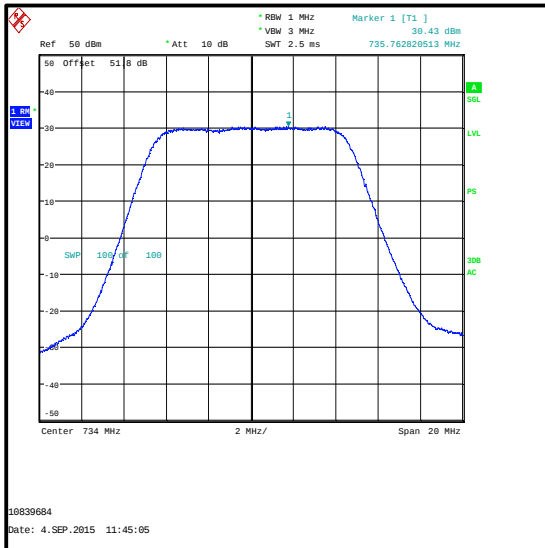
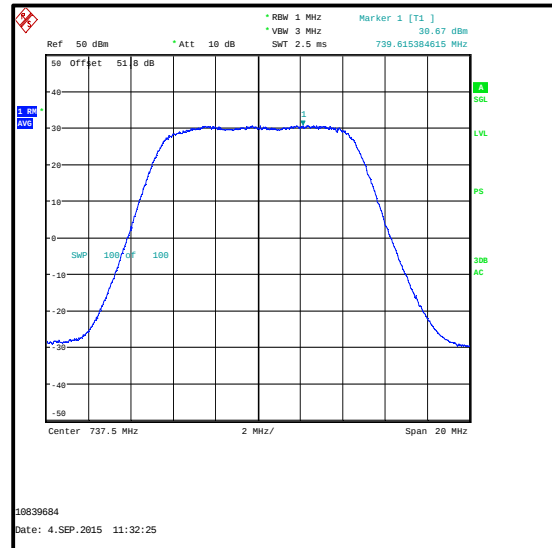
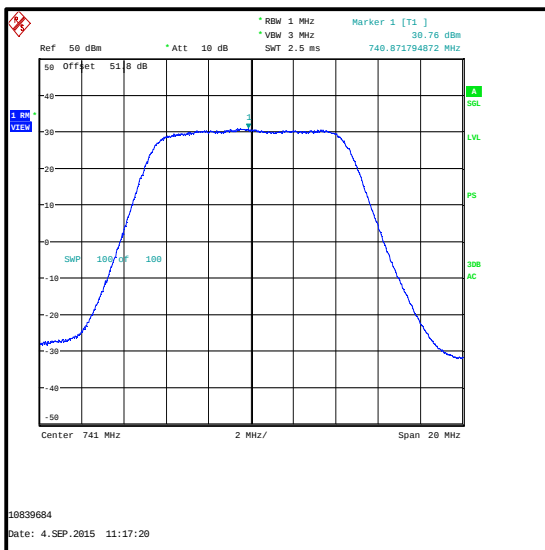
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF2****QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: 10 MHz Channel Bandwidth**

Frequency (MHz)	Modulation	Conducted RF Power at Port RF1 (dBm/MHz)	Conducted RF Power at Port RF2 (dBm/MHz)	Combined Conducted RF Power (dBm/MHz)
734.0	16QAM	31.35	30.43	33.92
737.5	16QAM	30.55	30.67	33.62
741.0	16QAM	30.98	30.76	33.88

Frequency (MHz)	Combined Conducted RF Power (dBm/MHz)	Antenna Gain (dBd)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)	Margin (dB)	Result
734.0	33.92	17.85	51.77	60.0	8.23	Complied
737.5	33.62	17.85	51.47	60.0	8.53	Complied
741.0	33.88	17.85	51.73	60.0	8.27	Complied

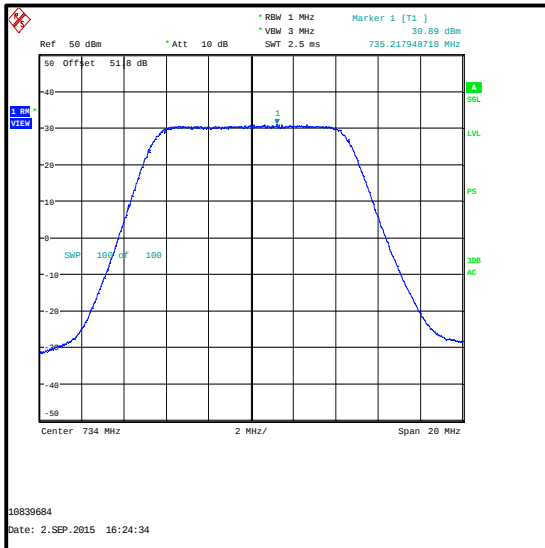
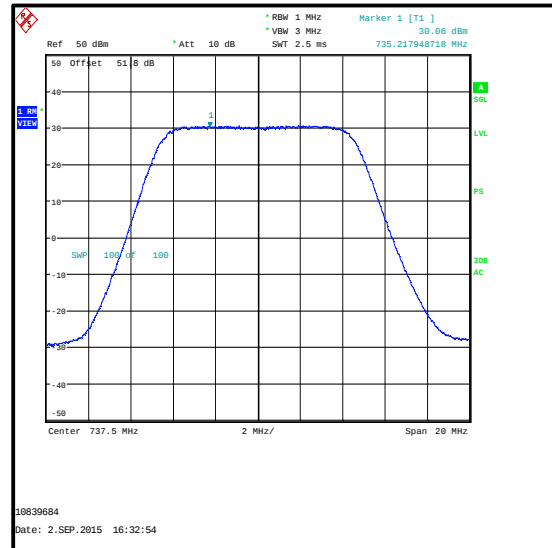
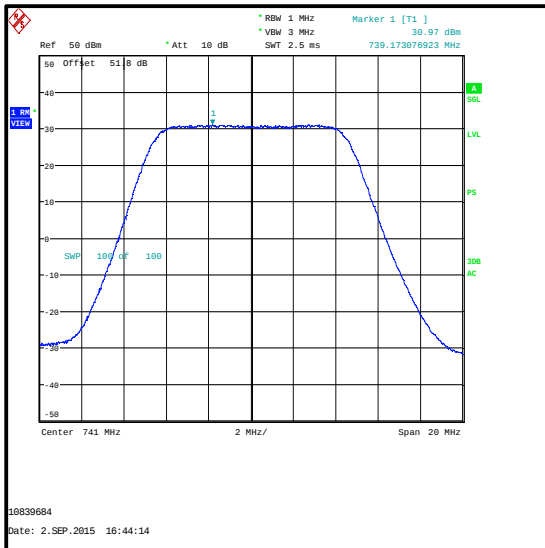
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF1****16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

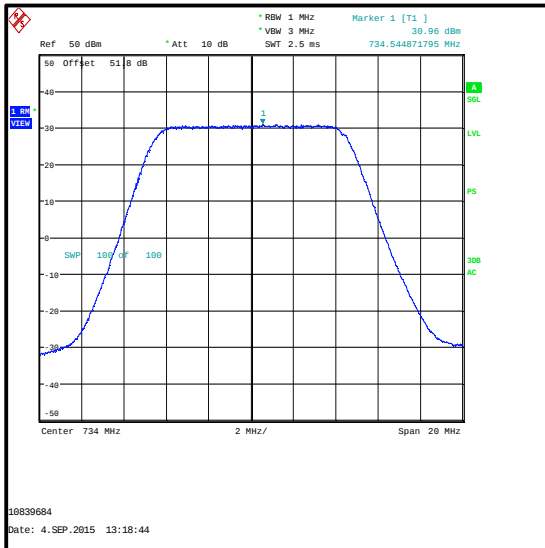
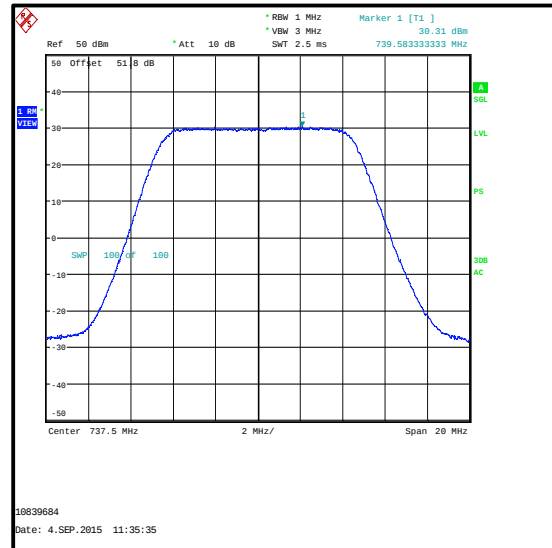
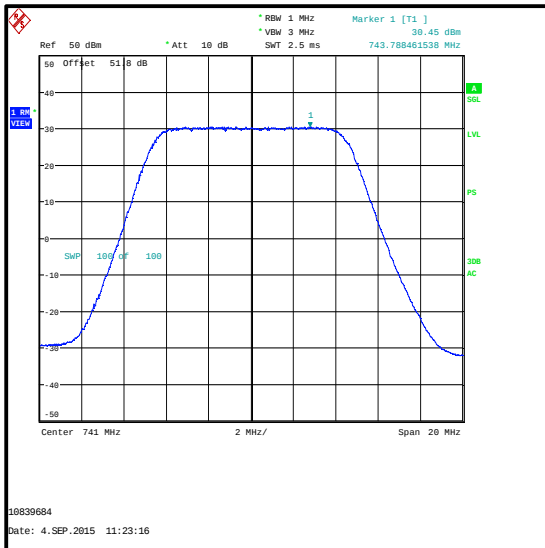
Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF2****16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: 10 MHz Channel Bandwidth**

Frequency (MHz)	Modulation	Conducted RF Power at Port RF1 (dBm/MHz)	Conducted RF Power at Port RF2 (dBm/MHz)	Combined Conducted RF Power (dBm/MHz)
734.0	64QAM	30.89	30.96	33.94
737.5	64QAM	30.06	30.31	33.20
741.0	64QAM	30.97	30.45	33.73

Frequency (MHz)	Combined Conducted RF Power (dBm/MHz)	Antenna Gain (dBd)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)	Margin (dB)	Result
734.0	33.94	17.85	51.79	60.0	8.21	Complied
737.5	33.20	17.85	51.05	60.0	8.95	Complied
741.0	33.73	17.85	51.58	60.0	8.42	Complied

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF1****64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Results: Port RF2****64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

Transmitter Carrier Output Power and Effective Radiated Power (ERP) (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	23 Apr 2016	12
M1630	Test Receiver	Rohde & Schwarz	ESU40	100233	20 Feb 2016	12
A2006	Attenuator	Narda	769-30	06588	Calibrated before use	-
A2007	Attenuator	Narda	769-20	001	Calibrated before use	-
M260	Signal Generator	Rohde & Schwarz	SMP02	829076/008	27 Apr 2016	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	08 Apr 2016	24
M1267	Power Sensor	Rohde & Schwarz	NRV-Z52	100155	23 Apr 2016	24

5.2.2. Transmitter Occupied Bandwidth**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	28 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Part 2.1049
Test Method Used:	As detailed in KDB 971168 D01 Section 4.2

Environmental Conditions:

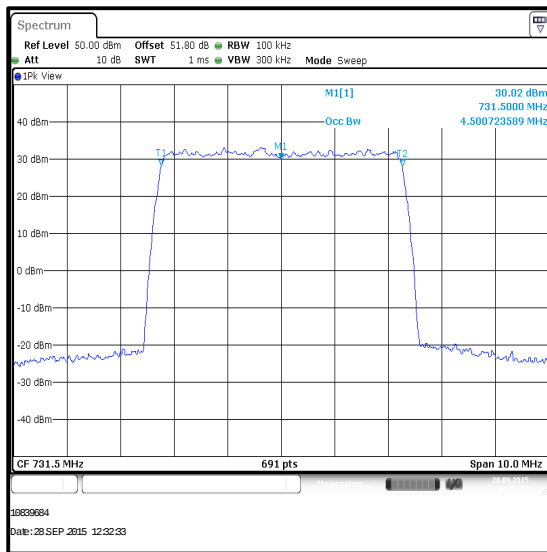
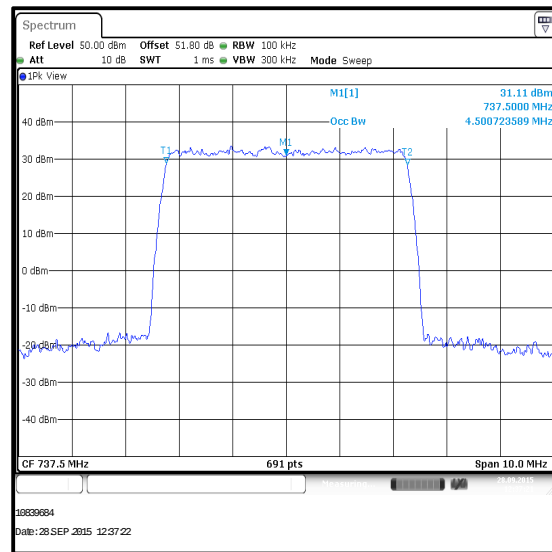
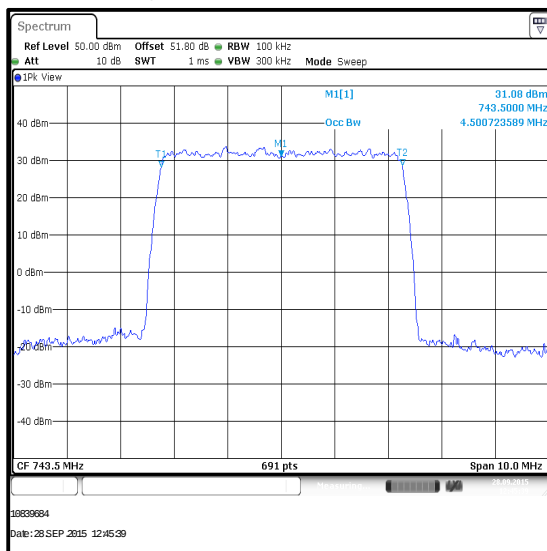
Temperature (°C):	25
Relative Humidity (%):	42

Note(s):

1. Measurements were performed with the EUT transmitting with QPSK, 16QAM and 64QAM modulation schemes.

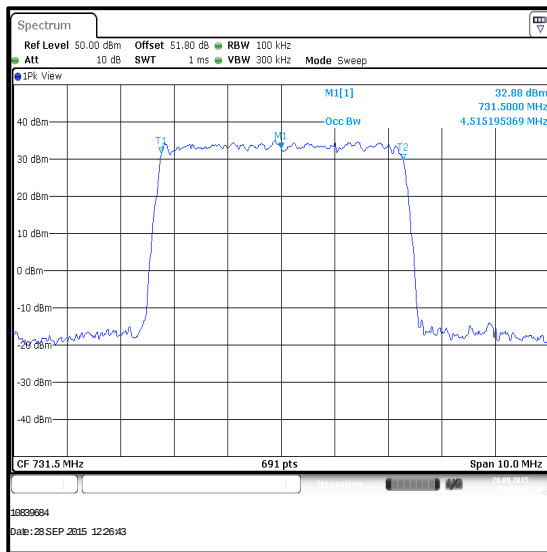
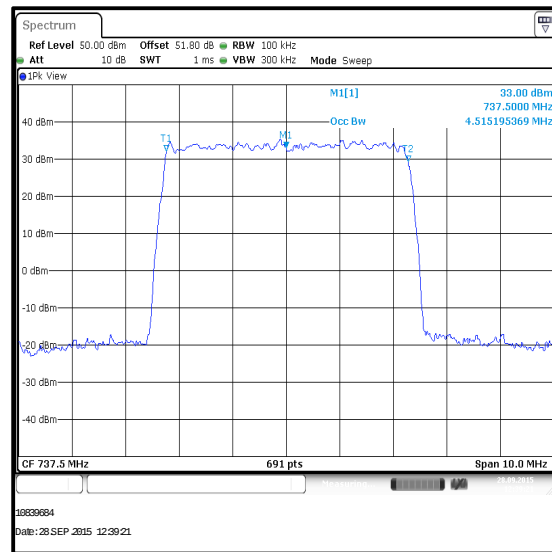
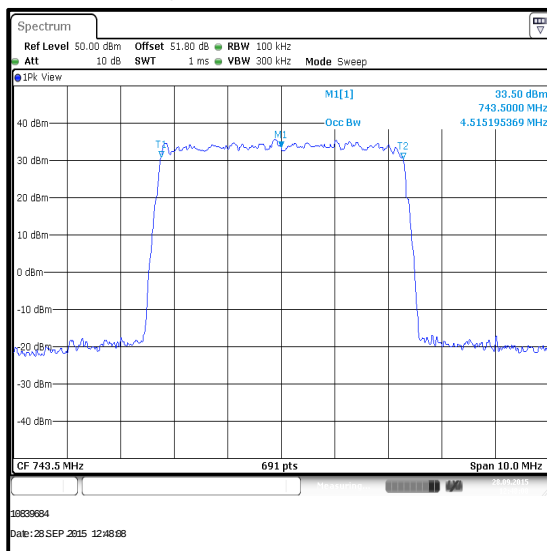
Transmitter Occupied Bandwidth (continued)**Results: 5 MHz Channel Bandwidth / Port RF1**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
731.5	QPSK	25	100	300	4.501
737.5	QPSK	25	100	300	4.501
743.5	QPSK	25	100	300	4.501

**QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

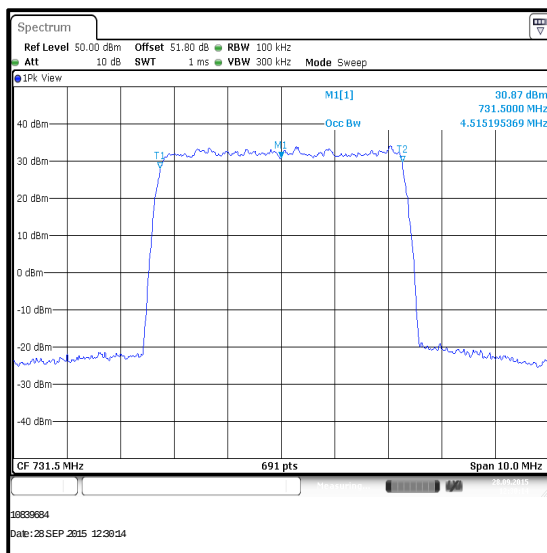
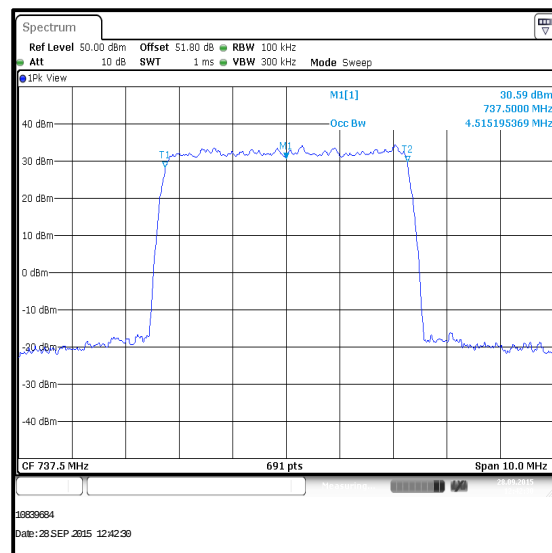
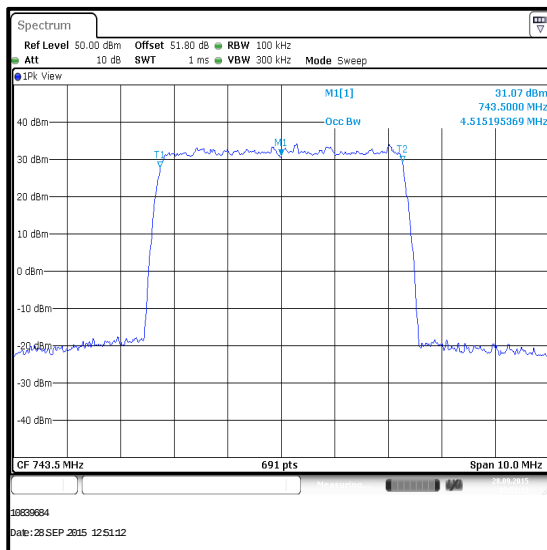
Transmitter Occupied Bandwidth (continued)**Results: 5 MHz Channel Bandwidth / Port RF1**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
731.5	16QAM	25	100	300	4.515
737.5	16QAM	25	100	300	4.515
743.5	16QAM	25	100	300	4.515

**16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

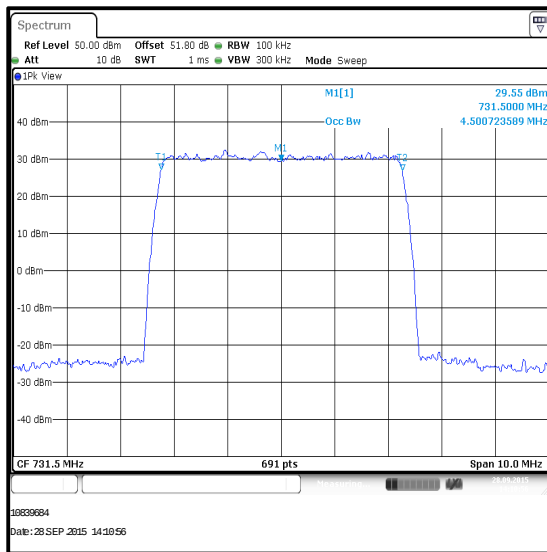
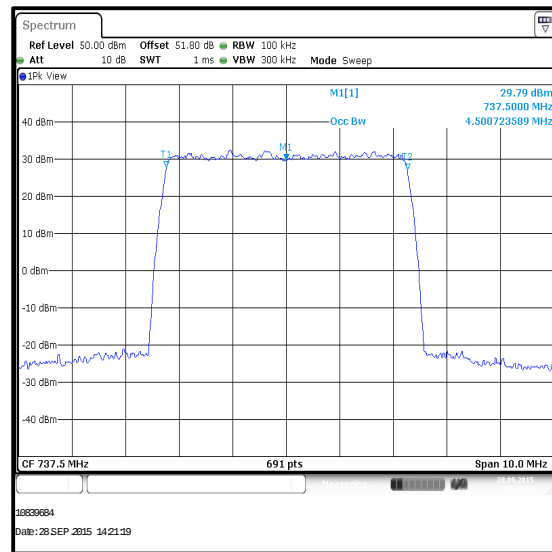
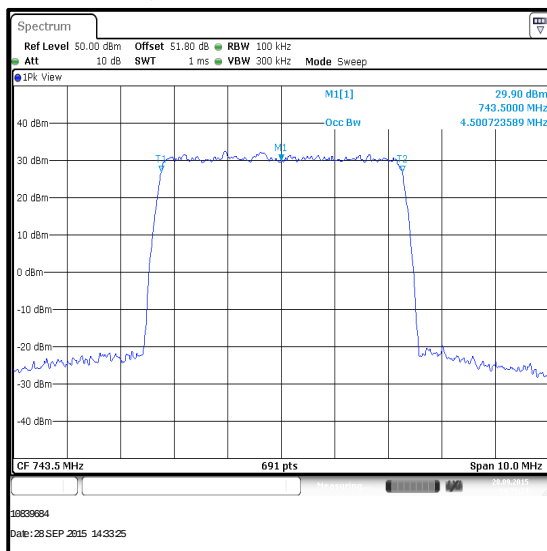
Transmitter Occupied Bandwidth (continued)**Results: 5 MHz Channel Bandwidth / Port RF1**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
731.5	64QAM	25	100	300	4.515
737.5	64QAM	25	100	300	4.515
743.5	64QAM	25	100	300	4.515

**64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

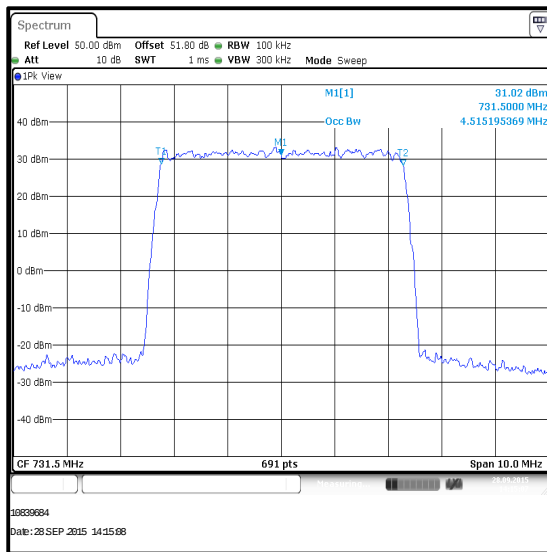
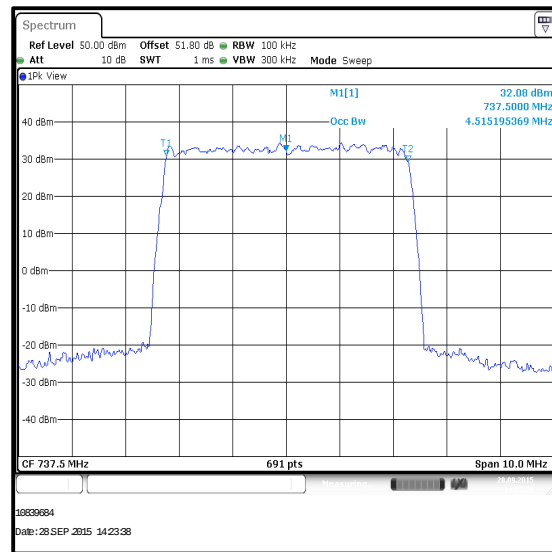
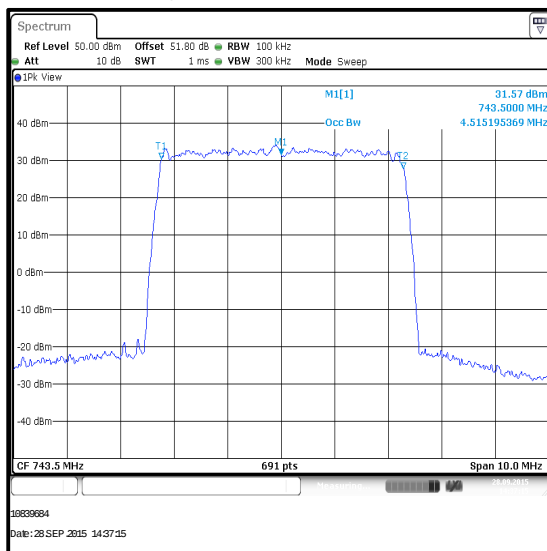
Transmitter Occupied Bandwidth (continued)**Results: 5 MHz Channel Bandwidth / Port RF2**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
731.5	QPSK	25	100	300	4.501
737.5	QPSK	25	100	300	4.501
743.5	QPSK	25	100	300	4.501

**QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

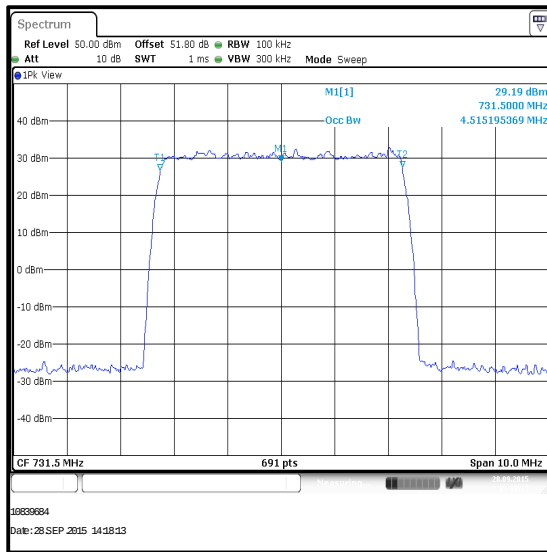
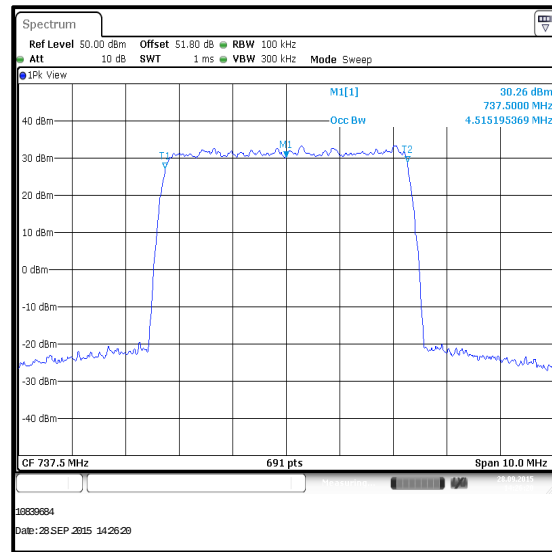
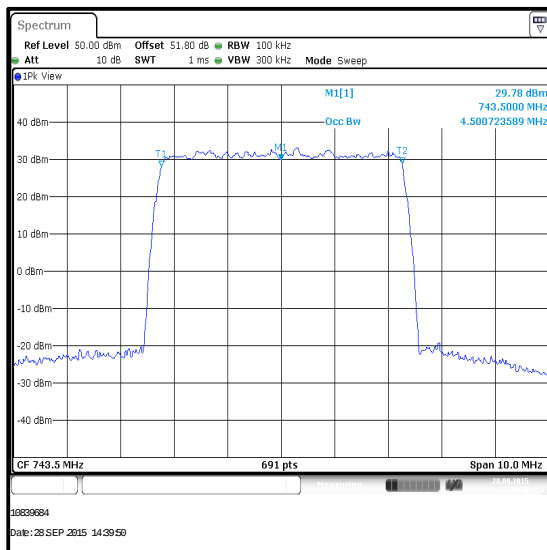
Transmitter Occupied Bandwidth (continued)**Results: 5 MHz Channel Bandwidth / Port RF2**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
731.5	16QAM	25	100	300	4.515
737.5	16QAM	25	100	300	4.515
743.5	16QAM	25	100	300	4.515

**16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

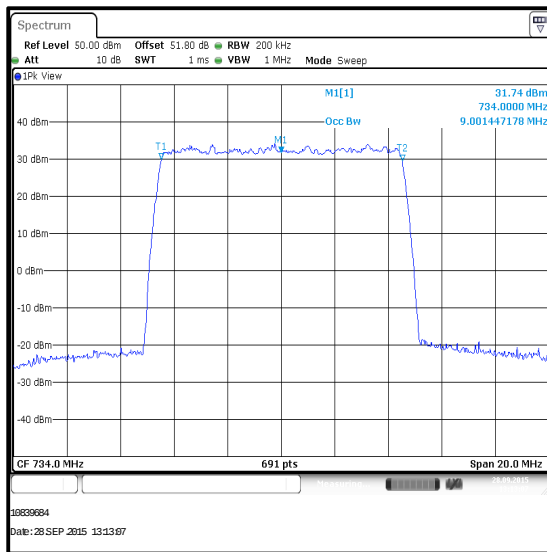
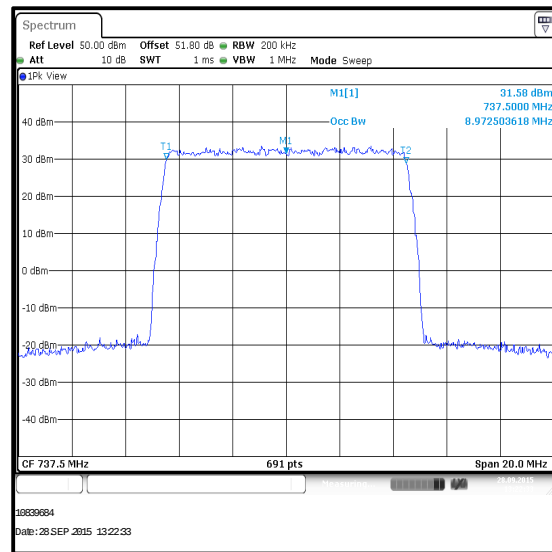
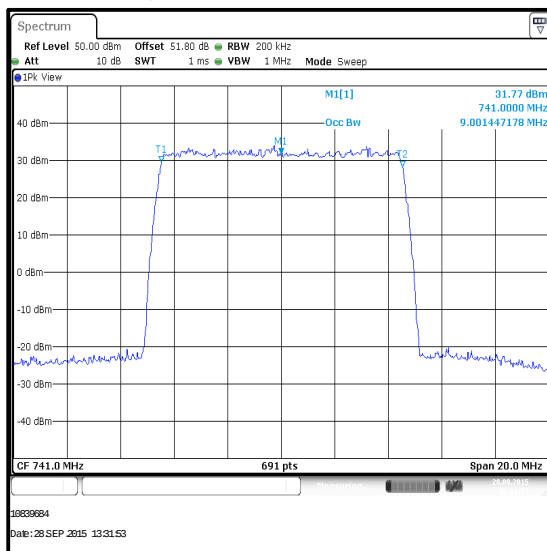
Transmitter Occupied Bandwidth (continued)**Results: 5 MHz Channel Bandwidth / Port RF2**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
731.5	64QAM	25	100	300	4.515
737.5	64QAM	25	100	300	4.515
743.5	64QAM	25	100	300	4.501

**64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

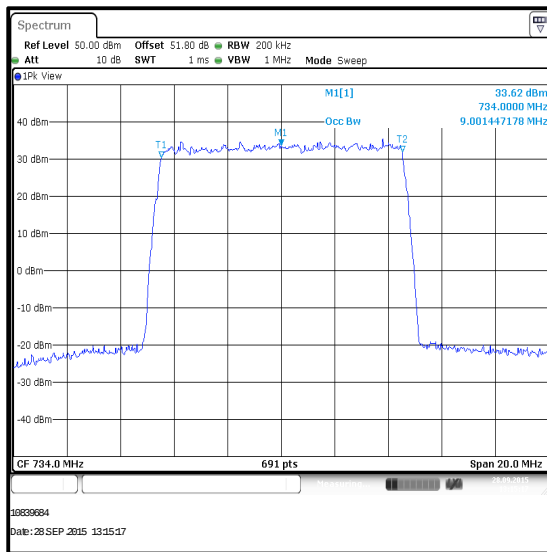
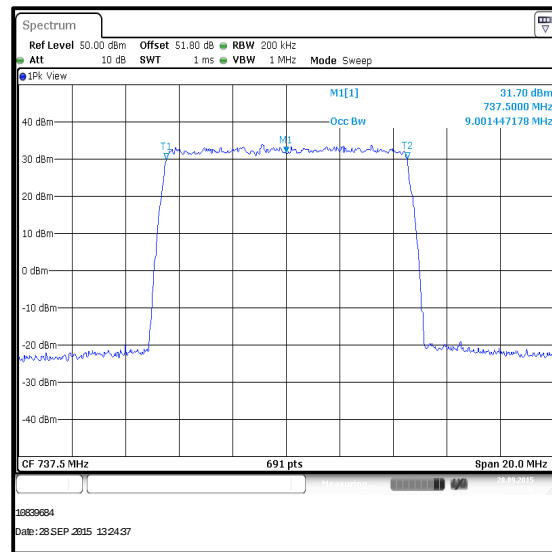
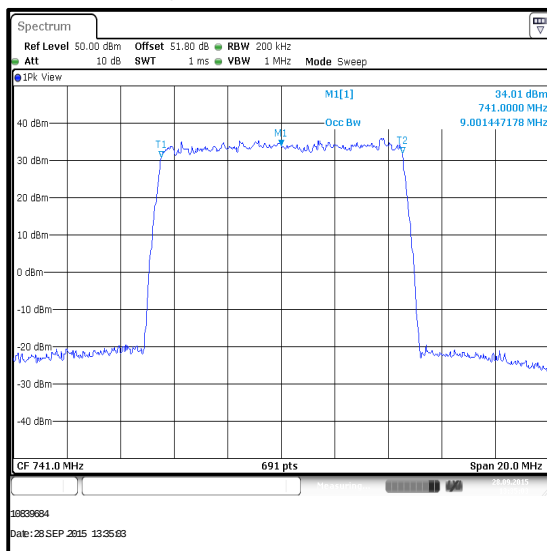
Transmitter Occupied Bandwidth (continued)**Results: 10 MHz Channel Bandwidth / Port RF1**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
734.0	QPSK	50	200	1000	9.001
737.5	QPSK	50	200	1000	8.973
741.0	QPSK	50	200	1000	9.001

**QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

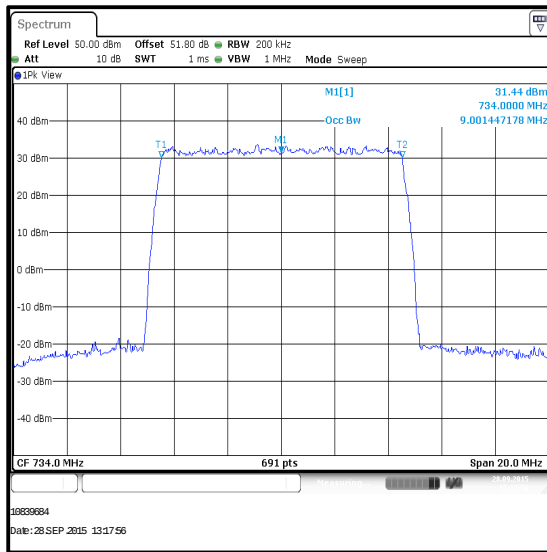
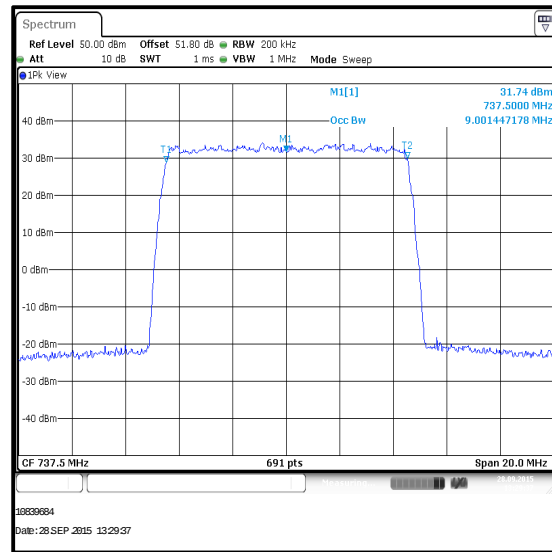
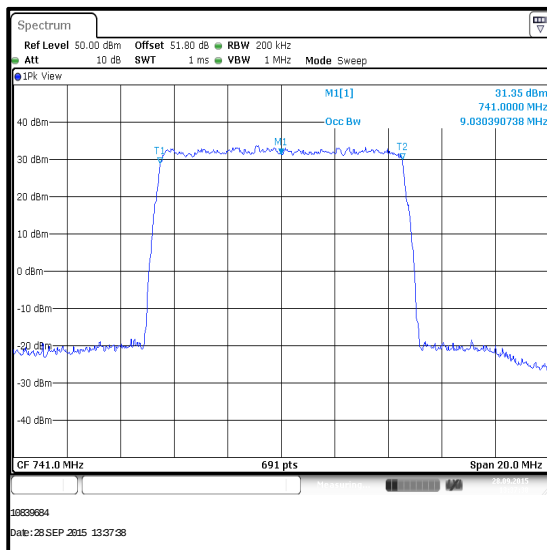
Transmitter Occupied Bandwidth (continued)**Results: 10 MHz Channel Bandwidth / Port RF1**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
734.0	16QAM	50	200	1000	9.001
737.5	16QAM	50	200	1000	9.001
741.0	16QAM	50	200	1000	9.001

**16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

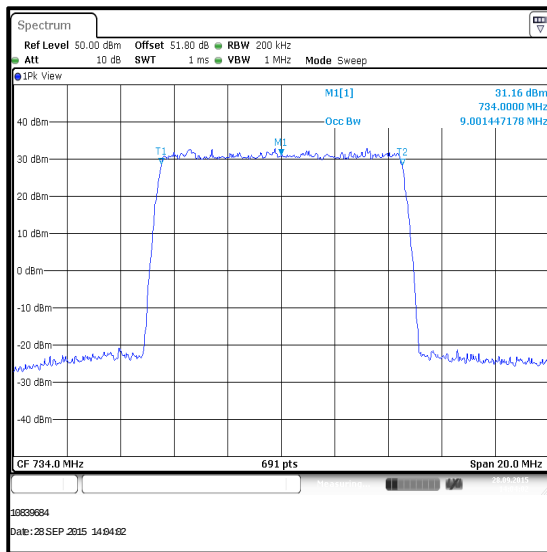
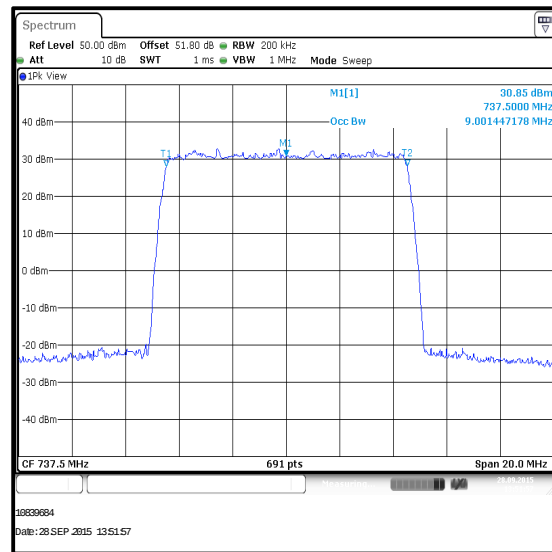
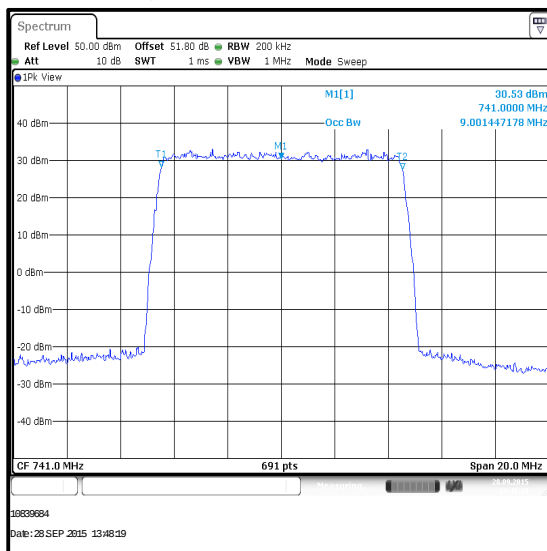
Transmitter Occupied Bandwidth (continued)**Results: 10 MHz Channel Bandwidth / Port RF1**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
734.0	64QAM	50	200	1000	9.001
737.5	64QAM	50	200	1000	9.001
741.0	64QAM	50	200	1000	9.030

**64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

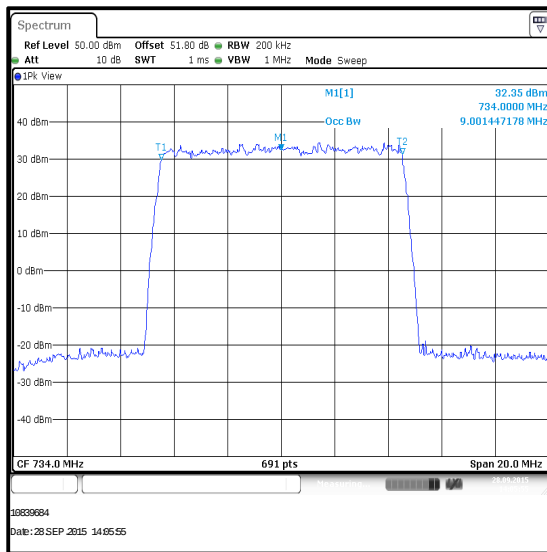
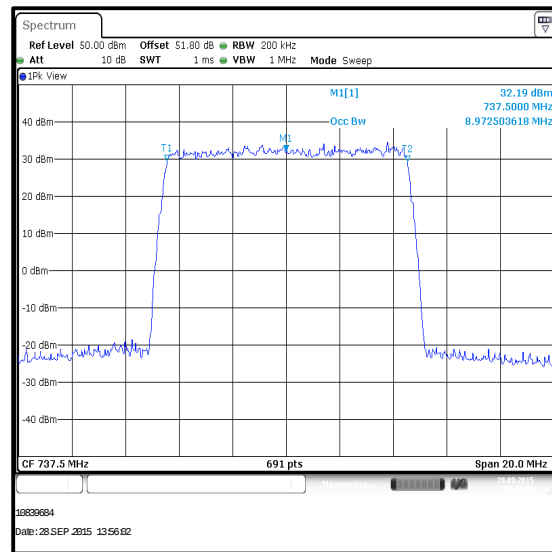
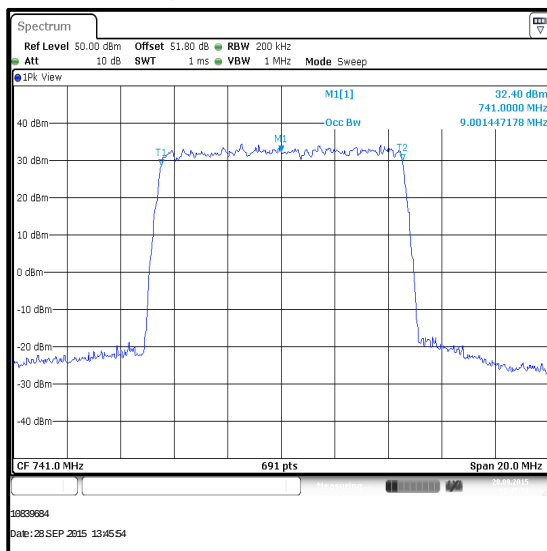
Transmitter Occupied Bandwidth (continued)**Results: 10 MHz Channel Bandwidth / Port RF2**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
734.0	QPSK	50	200	1000	9.001
737.5	QPSK	50	200	1000	9.001
741.0	QPSK	50	200	1000	9.001

**QPSK / Bottom Channel****QPSK / Middle Channel****QPSK / Top Channel**

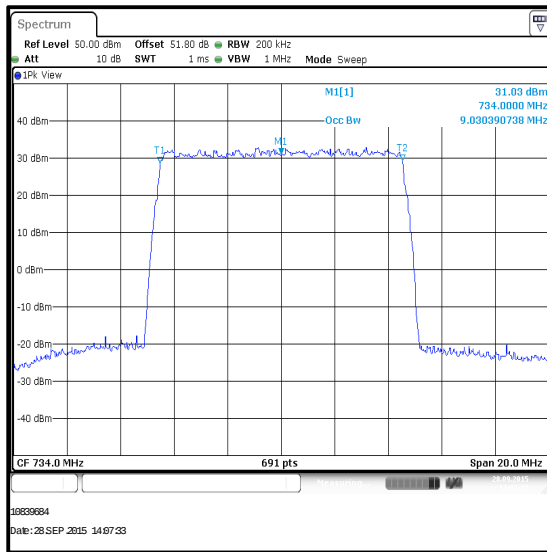
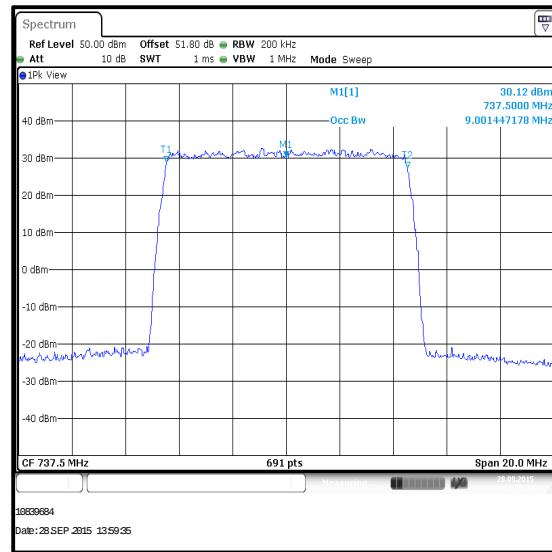
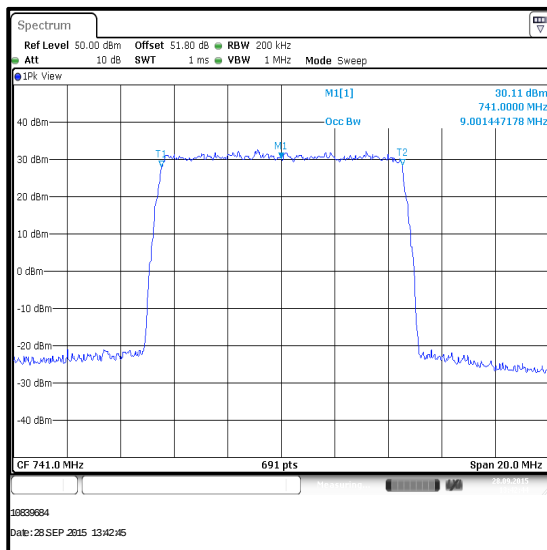
Transmitter Occupied Bandwidth (continued)**Results: 10 MHz Channel Bandwidth / Port RF2**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
734.0	16QAM	50	200	1000	9.001
737.5	16QAM	50	200	1000	8.973
741.0	16QAM	50	200	1000	9.001

**16QAM / Bottom Channel****16QAM / Middle Channel****16QAM / Top Channel**

Transmitter Occupied Bandwidth (continued)**Results: 10 MHz Channel Bandwidth / Port RF2**

Frequency	Modulation	Resource Blocks	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
734.0	64QAM	50	200	1000	9.030
737.5	64QAM	50	200	1000	9.001
741.0	64QAM	50	200	1000	9.001

**64QAM / Bottom Channel****64QAM / Middle Channel****64QAM / Top Channel**

Transmitter Occupied Bandwidth (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	23 Apr 2016	12
M1835	Signal Analyser	Rohde & Schwarz	FSV30	103050	18 Feb 2016	12
A2006	Attenuator	Narda	769-30	06588	Calibrated before use	-
A2007	Attenuator	Narda	769-20	001	Calibrated before use	-
M260	Signal Generator	Rohde & Schwarz	SMP02	829076/008	27 Apr 2016	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	08 Apr 2016	24
M1267	Power Sensor	Rohde & Schwarz	NRV-Z52	100155	23 Apr 2016	24

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

Test Engineer:	Nick Steele	Test Date:	08 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.53(g) and 2.1051
Test Method Used:	KDB 971168 D01 Section 6.0 & FCC Part 27.53
Frequency Range:	9 kHz to 10 GHz

Environmental Conditions:

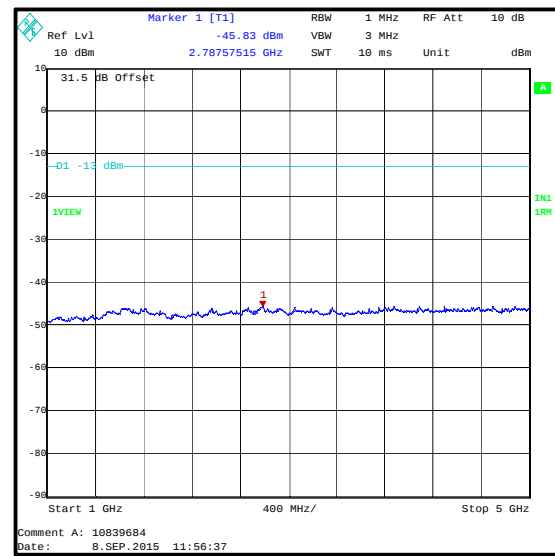
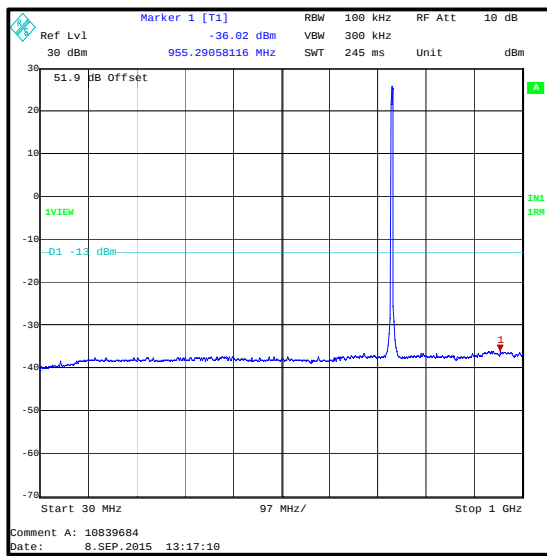
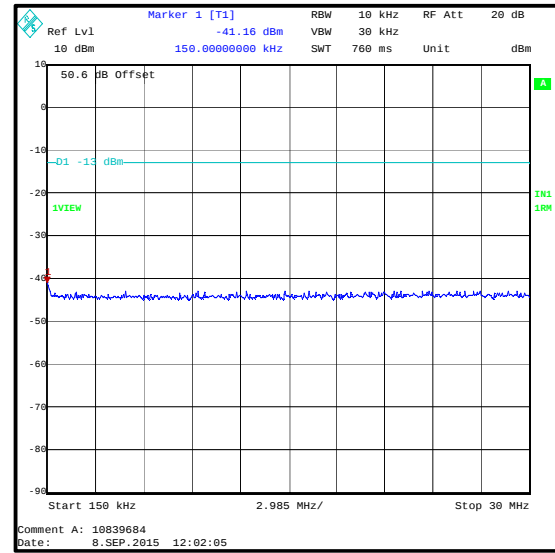
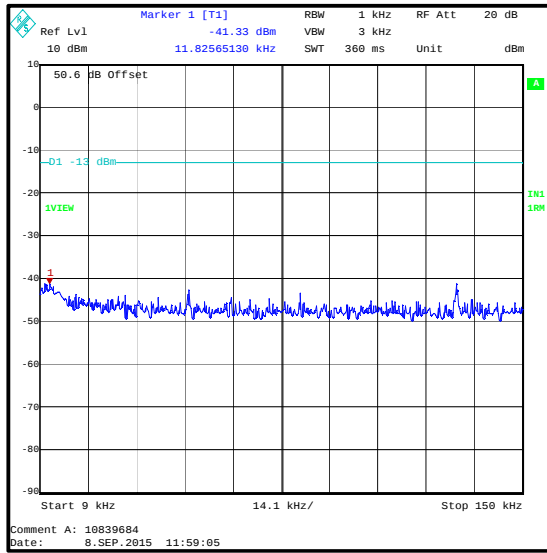
Temperature (°C):	24
Relative Humidity (%):	39

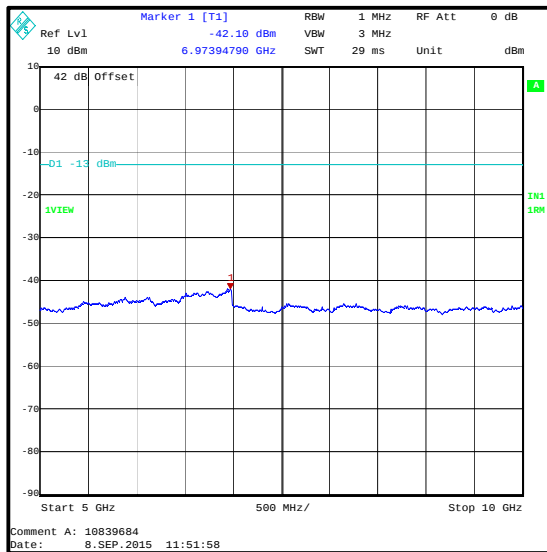
Note(s):

1. Pre-scans were performed with the EUT transmitting at maximum power with 5 MHz Channel Bandwidth using 16QAM modulation scheme, as this was found to produce the highest output level and therefore deemed worst case.
2. Measurements were made on RF Port RF1, as this produced the highest power out of the two ports.
3. Testing was performed to 10 GHz, as the customer declared the highest internally generated clock or oscillator frequency to be 951.5 MHz.
4. The emission seen on the 30 MHz to 1 GHz plot at approximately 737.5 MHz is the EUT carrier.
5. All emissions were >20 dB below the applicable limit or below the level of the noise floor of the measuring receiver, therefore the highest level of noise floor has been recorded in the table below.

Results: 5 MHz Channel Bandwidth / Middle Channel / 16QAM

Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
955.291	-36.0	-13.0	23.0	Complied

Transmitter Conducted Emissions (continued)

Transmitter Conducted Emissions (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelpunkt	30.5015.13	None stated	23 Apr 2016	12
M1124	Test Receiver	Rohde & Schwarz	ESIB26	100046	06 Oct 2015	12
A2006	Attenuator	Narda	769-30	06588	Calibrated before use	-
A2007	Attenuator	Narda	769-20	001	Calibrated before use	-
A148	High Pass Filter	Filtron	5H036	32218	17 Apr 2017	24
M260	Signal Generator	Rohde & Schwarz	SMP02	829076/008	27 Apr 2016	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	08 Apr 2016	24
M1267	Power Sensor	Rohde & Schwarz	NRV-Z52	100155	23 Apr 2016	24

5.2.4. Transmitter Conducted Emissions at Band Edges**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	16 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.53(g) and 2.1051
Test Method Used:	KDB 971168 D01 Section 6.0 & FCC Part 27.53

Environmental Conditions:

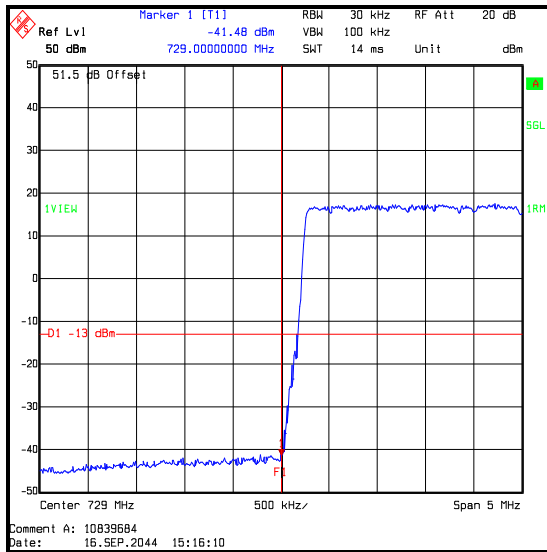
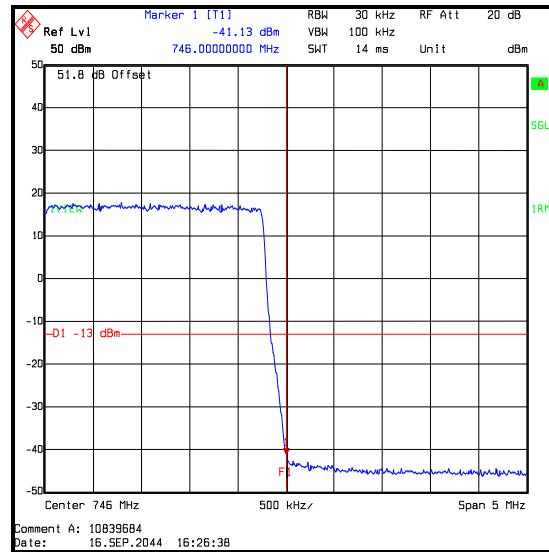
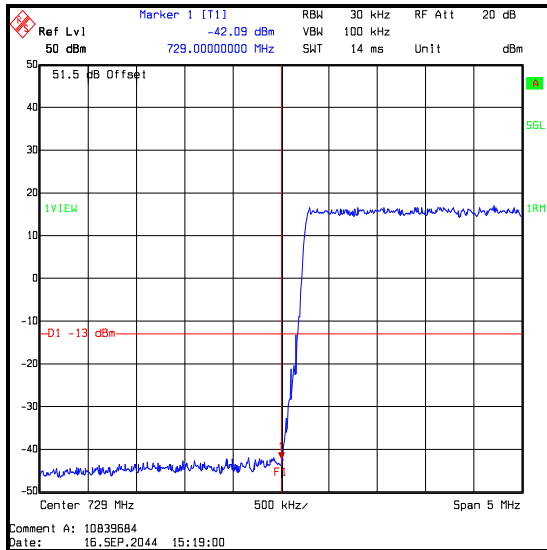
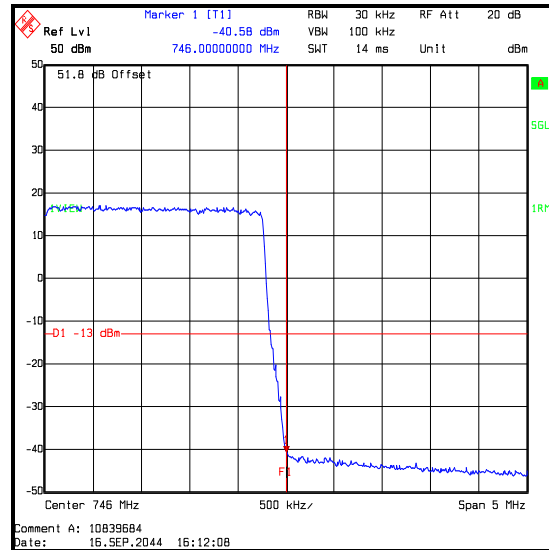
Temperature (°C):	25
Relative Humidity (%):	43

Note(s):

1. Measurements were performed with the EUT transmitting with 5 MHz and 10 MHz channel bandwidths, using QPSK, 16QAM and 64QAM modulation schemes, with full resource blocks.
2. In accordance with 27.53(g), a resolution bandwidth of 30 kHz has been employed.
3. Band edge emissions from both antenna ports was measured and combined using the measure-and-sum method stated in FCC KDB 662911 D01.
4. The plots have an incorrect date, measurements were performed on the above test date.

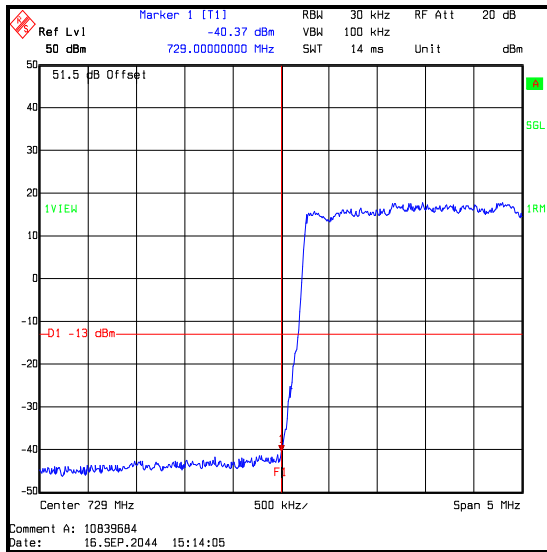
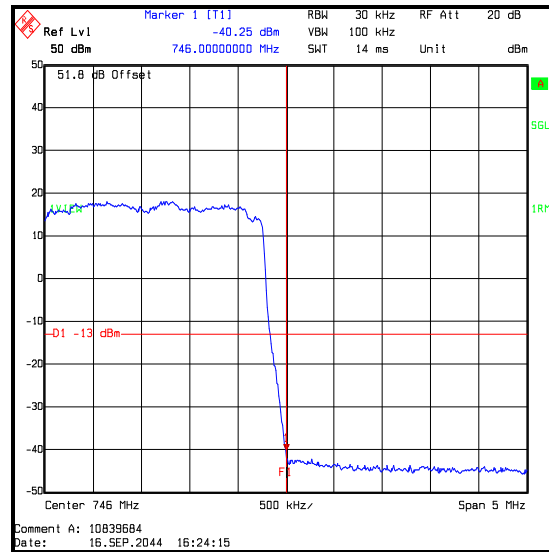
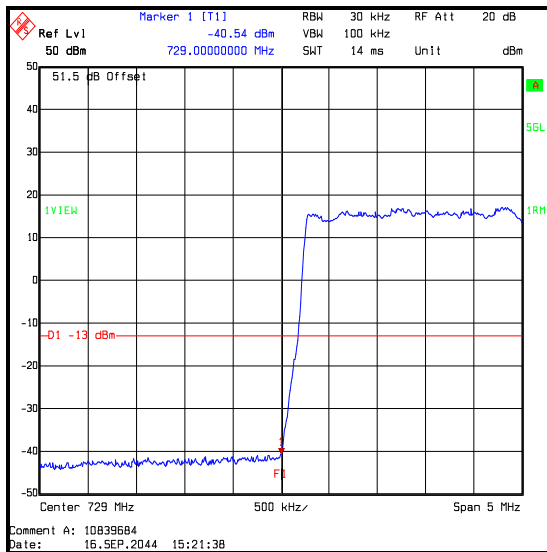
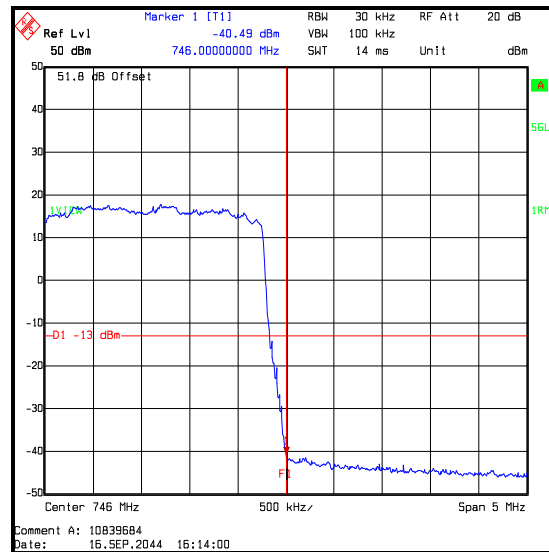
Transmitter Conducted Emissions at Band Edges (continued)**Results: 5 MHz Channel Bandwidth / QPSK**

Frequency (MHz)	Emission Level Port RF1 (dBm)	Emission Level Port RF2 (dBm)	Combined Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	-41.5	-42.1	-38.8	-13.0	25.8	Complied
746	-41.1	-40.6	-37.8	-13.0	24.8	Complied

**QPSK / Lower Band Edge / Port RF1****QPSK / Upper Band Edge / Port RF1****QPSK / Lower Band Edge / Port RF2****QPSK / Upper Band Edge / Port RF2**

Transmitter Conducted Emissions at Band Edges (continued)**Results: 5 MHz Channel Bandwidth / 16QAM**

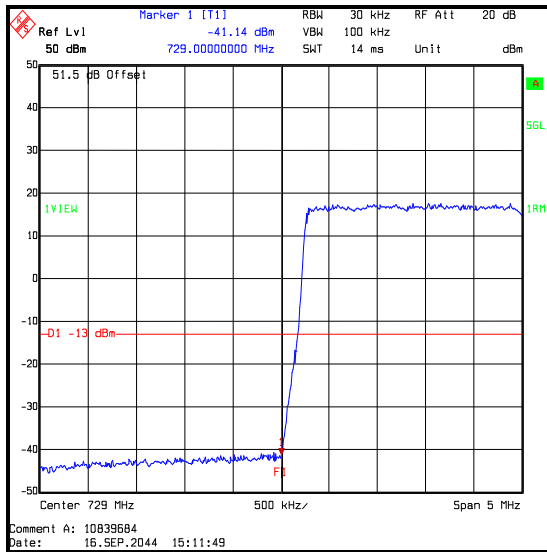
Frequency (MHz)	Emission Level Port RF1 (dBm)	Emission Level Port RF2 (dBm)	Combined Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	-40.4	-40.5	-37.4	-13.0	24.4	Complied
746	-40.3	-40.5	-37.4	-13.0	24.4	Complied

**16QAM / Lower Band Edge / Port RF1****16QAM / Upper Band Edge / Port RF1****16QAM / Lower Band Edge / Port RF2****16QAM / Upper Band Edge / Port RF2**

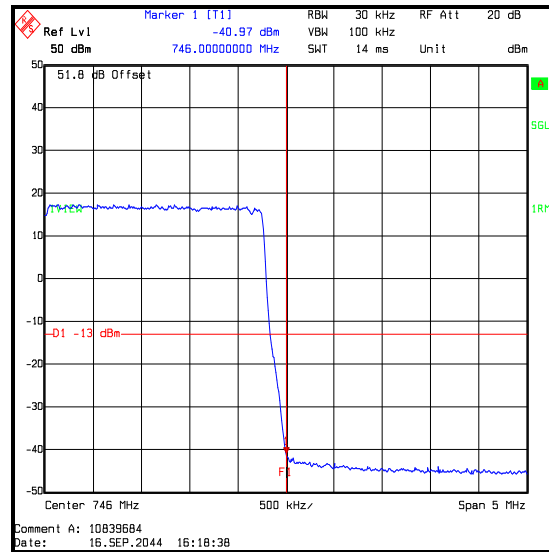
Transmitter Conducted Emissions at Band Edges (continued)

Results: 5 MHz Channel Bandwidth / 64QAM

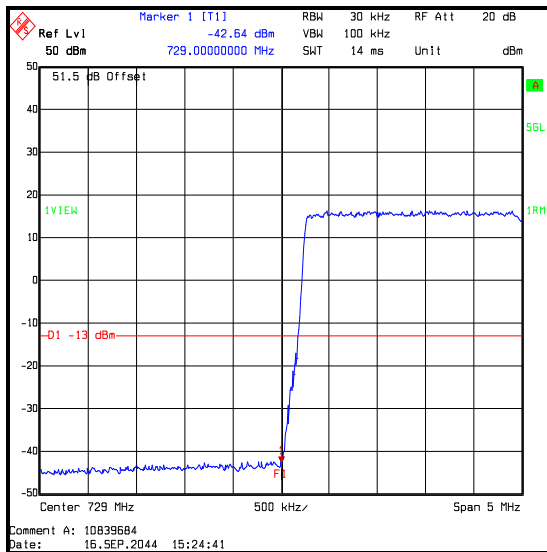
Frequency (MHz)	Emission Level Port RF1 (dBm)	Emission Level Port RF2 (dBm)	Combined Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	-41.1	-42.6	-38.8	-13.0	25.8	Complied
746	-41.0	-41.0	-38.0	-13.0	25.0	Complied



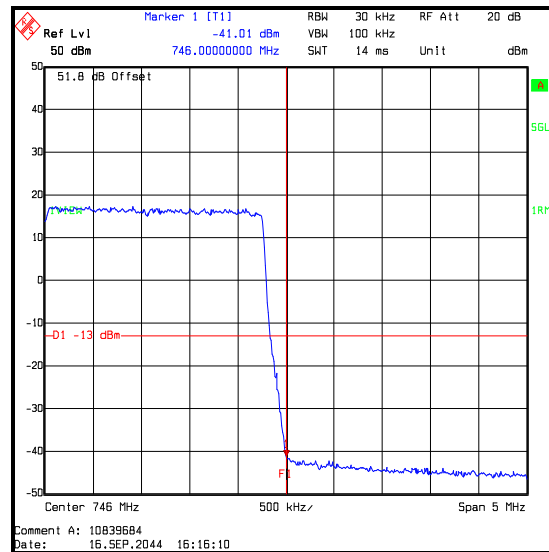
64QAM / Lower Band Edge / Port RF1



64QAM / Upper Band Edge / Port RF1



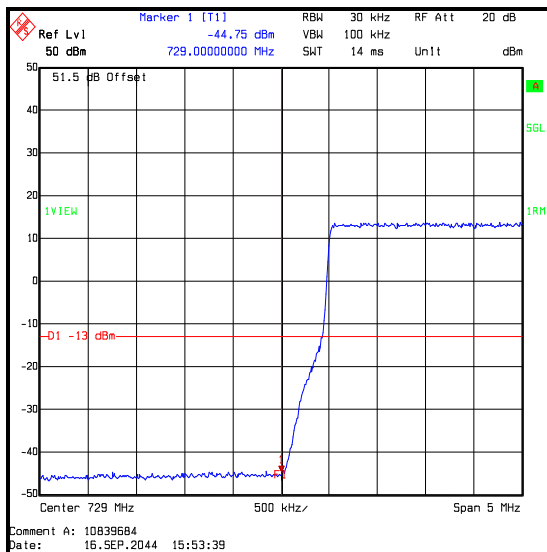
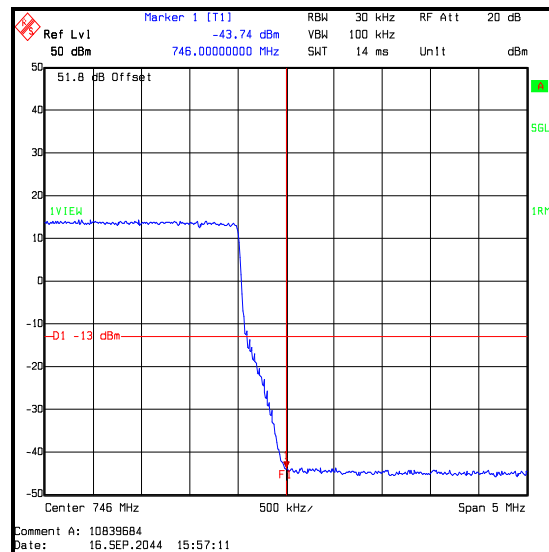
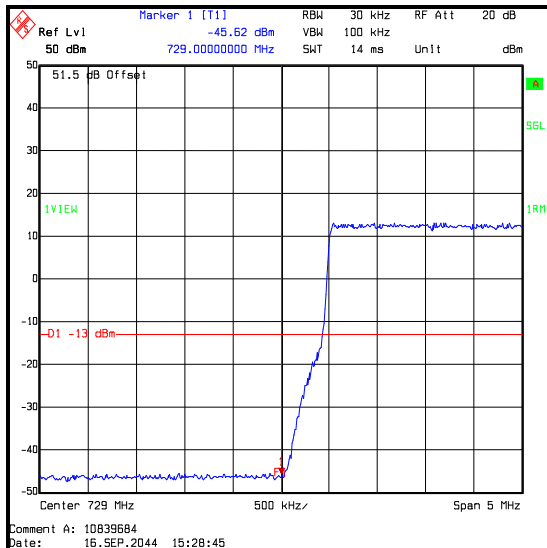
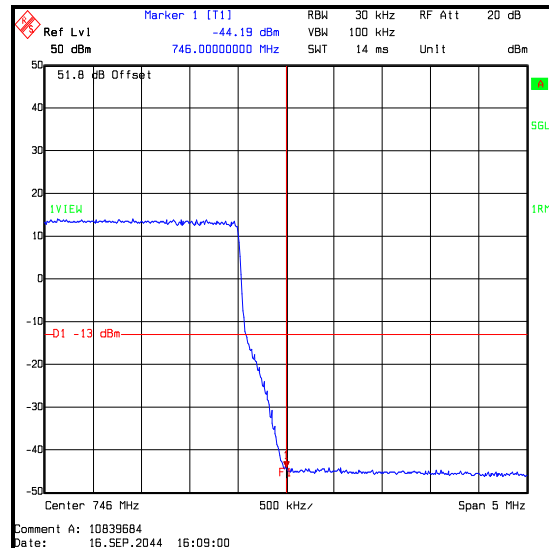
64QAM / Lower Band Edge / Port RF2



64QAM / Upper Band Edge / Port RF2

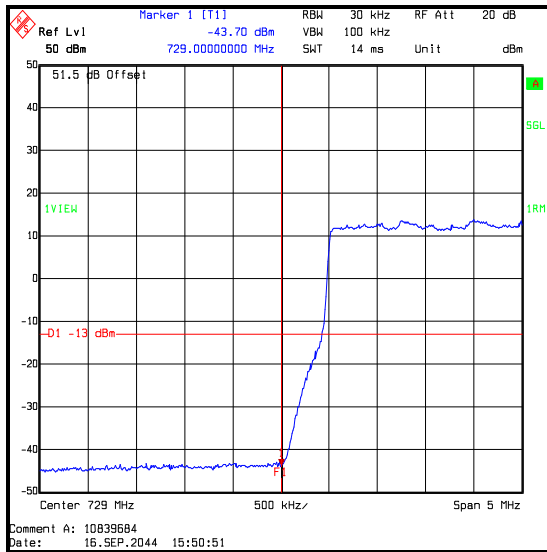
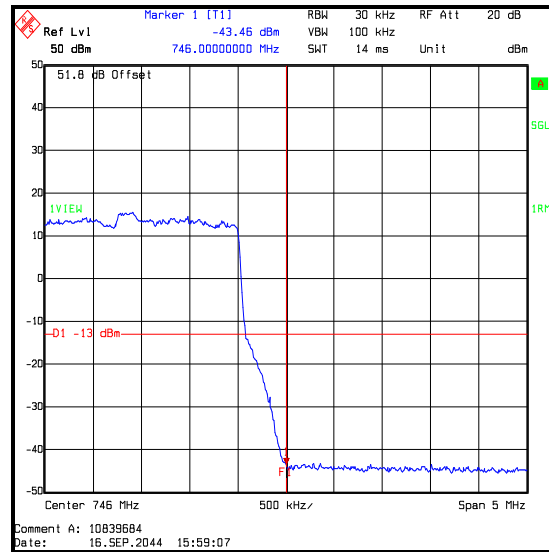
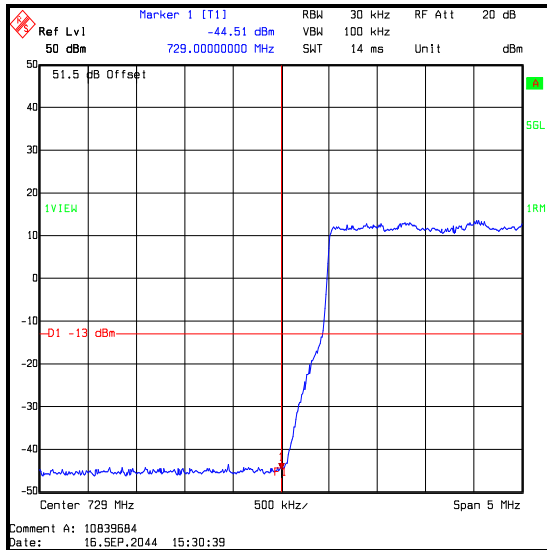
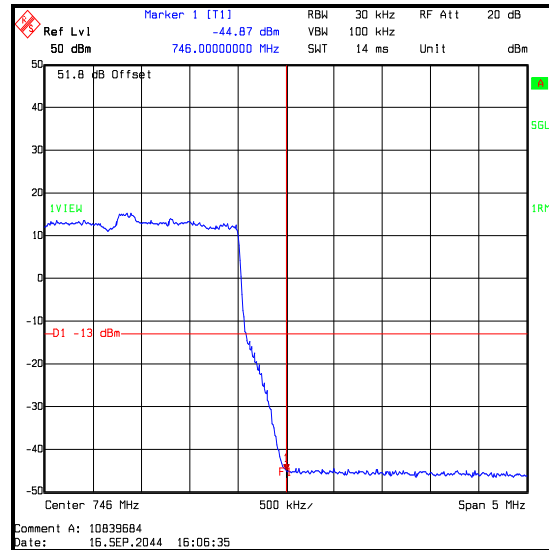
Transmitter Conducted Emissions at Band Edges (continued)**Results: 10 MHz Channel Bandwidth / QPSK**

Frequency (MHz)	Emission Level Port RF1 (dBm)	Emission Level Port RF2 (dBm)	Combined Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	-44.8	-45.6	-42.2	-13.0	29.2	Complied
746	-43.7	-44.2	-40.9	-13.0	27.9	Complied

**QPSK / Lower Band Edge / Port RF1****QPSK / Upper Band Edge / Port RF1****QPSK / Lower Band Edge / Port RF2****QPSK / Upper Band Edge / Port RF2**

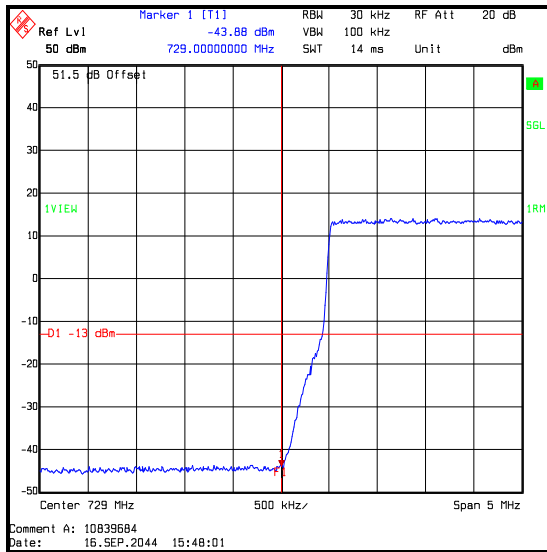
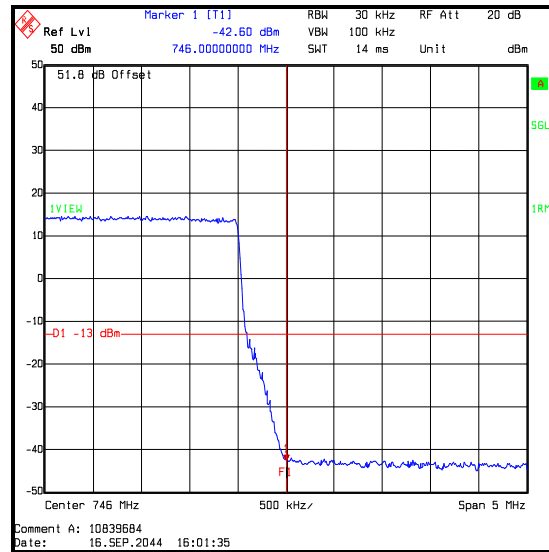
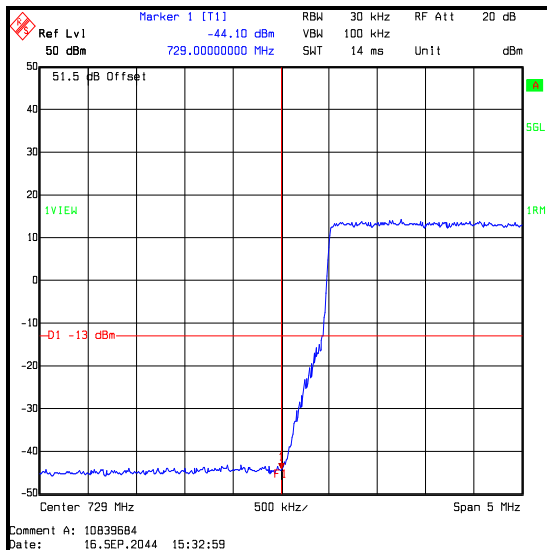
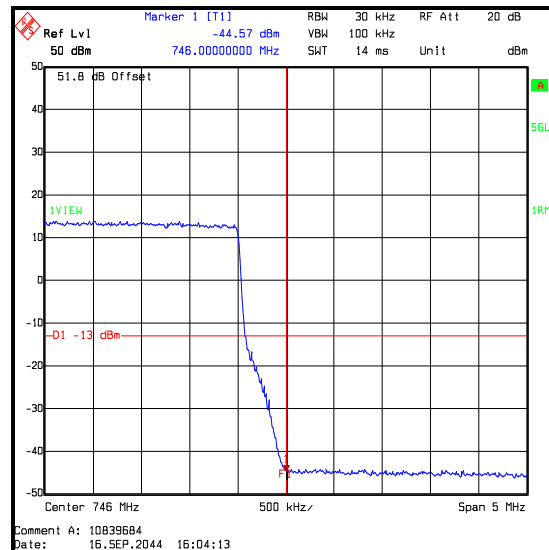
Transmitter Conducted Emissions at Band Edges (continued)**Results: 10 MHz Channel Bandwidth / 16QAM**

Frequency (MHz)	Emission Level Port RF1 (dBm)	Emission Level Port RF2 (dBm)	Combined Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	-43.7	-44.5	-41.1	-13.0	28.1	Complied
746	-43.5	-44.9	-41.1	-13.0	28.1	Complied

**16QAM / Lower Band Edge / Port RF1****16QAM / Upper Band Edge / Port RF1****16QAM / Lower Band Edge / Port RF2****16QAM / Upper Band Edge / Port RF2**

Transmitter Conducted Emissions at Band Edges (continued)**Results: 10 MHz Channel Bandwidth / 64QAM**

Frequency (MHz)	Emission Level Port RF1 (dBm)	Emission Level Port RF2 (dBm)	Combined Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	-43.9	-44.1	-41.0	-13.0	28.0	Complied
746	-42.6	-44.6	-40.5	-13.0	27.5	Complied

**64QAM / Lower Band Edge / Port RF1****64QAM / Upper Band Edge / Port RF1****64QAM / Lower Band Edge / Port RF2****64QAM / Upper Band Edge / Port RF2**

Transmitter Conducted Emissions at Band Edges (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	23 Apr 2016	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB30	842659/016	11 Aug 2016	12
A2006	Attenuator	Narda	769-30	06588	Calibrated before use	-
A2007	Attenuator	Narda	769-20	001	Calibrated before use	-
M260	Signal Generator	Rohde & Schwarz	SMP02	829076/008	27 Apr 2016	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	08 Apr 2016	24
M1267	Power Sensor	Rohde & Schwarz	NRV-Z52	100155	23 Apr 2016	24

5.2.5. Transmitter Radiated Spurious Emissions**Test Summary:**

Test Engineer:	Nick Steele	Test Dates:	07 September 2015 & 09 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.53(g) and 2.1053
Test Method Used:	KDB 971168 D01 Section 6.1 referencing FCC Part 2.1053
Frequency Range:	30 MHz to 10 GHz

Environmental Conditions:

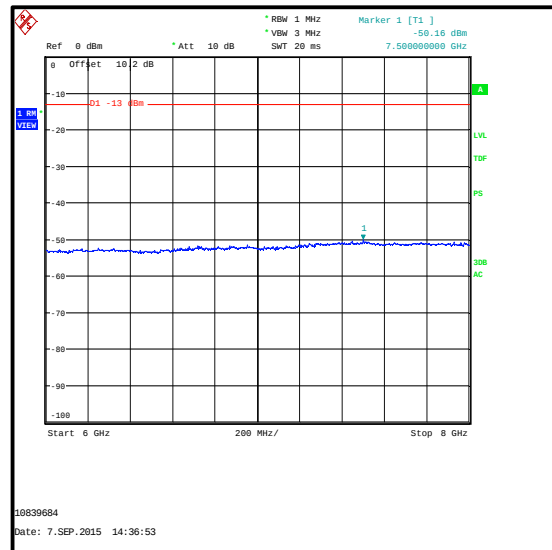
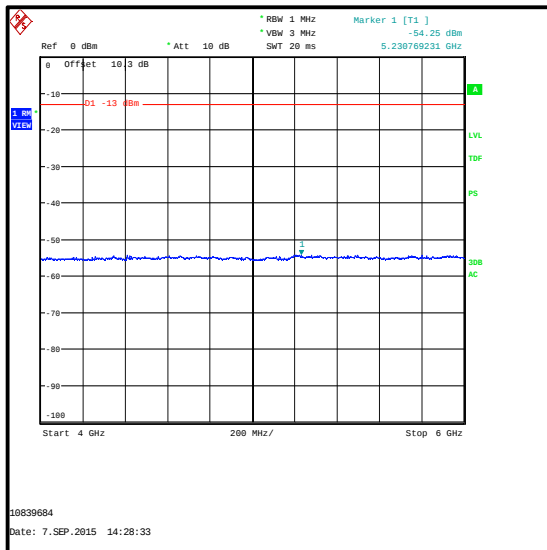
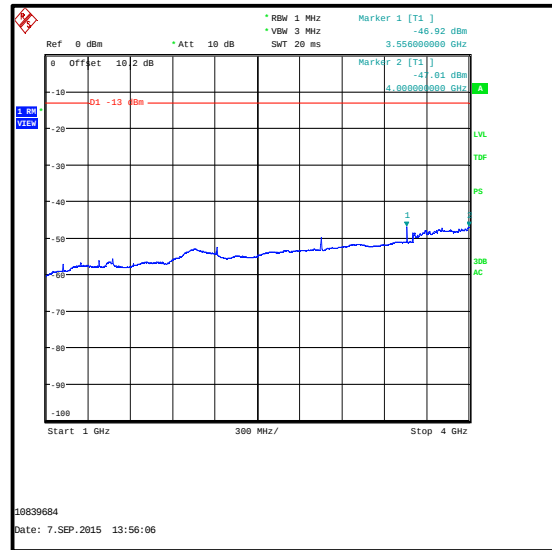
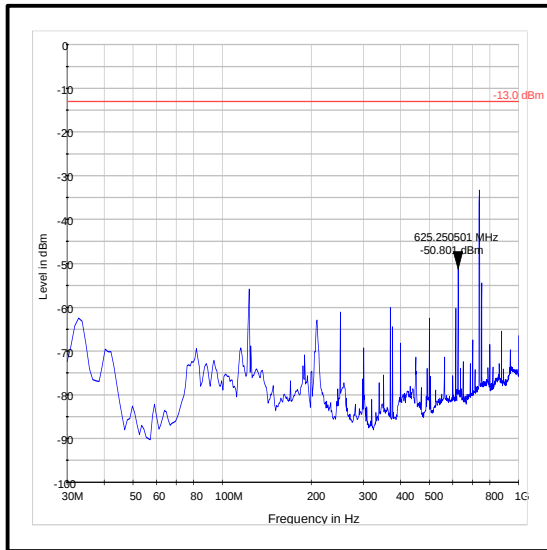
Temperature (°C):	24
Relative Humidity (%):	41

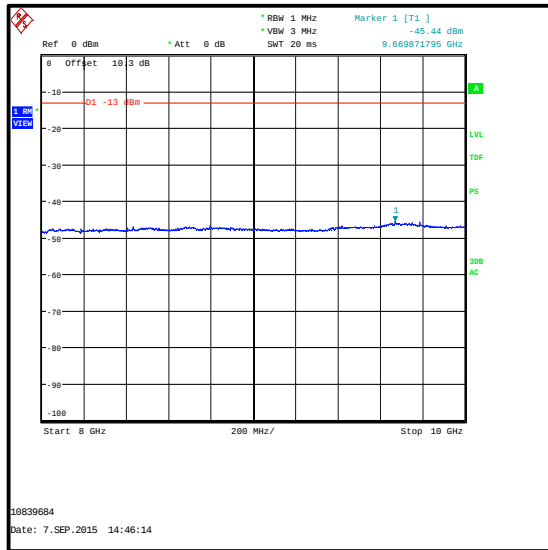
Note(s):

1. The EUT was set to transmit with 16QAM modulation applied with 25 Resource Blocks, as this was found to have the highest output power.
2. The emission seen on the 30 MHz to 1 GHz plot at approximately 737.5 MHz is the EUT carrier.
3. All emissions shown on the pre-scan plots were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor. Therefore the highest peak noise floor reading of the measuring receiver was recorded in the table below.
4. Measurements below 1 GHz were performed in a semi-anechoic chamber (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.
5. Pre-scans above 1 GHz were performed in a fully anechoic chamber (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 (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.

Results:

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
9669.872	Vertical	-45.4	-13.0	32.4	Complied

Transmitter Radiated Spurious Emissions (continued)

Transmitter Radiated Spurious Emissions (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1945	Thermohygrometer	JM Handelspunkt	30.5015.01	None stated	23 Apr 2016	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	19 Mar 2016	12
A490	Antenna	Chase	CBL6111A	1590	30 Apr 2016	12
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	19 Mar 2016	12
G0543	Amplifier	Sonoma	310N	230801	06 Nov 2015	3
A1834	Attenuator	Hewlett Packard	8491B	10444	05 Mar 2016	12
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	23 Apr 2016	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 May 2016	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	12 Jun 2016	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	21 Dec 2015	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	05 May 2016	12
A1818	Antenna	EMCO	3115	00075692	20 Dec 2015	12
A253	Antenna	Flann Microwave	12240-20	128	20 Dec 2015	12
A254	Antenna	Flann Microwave	14240-20	139	20 Dec 2015	12
A255	Antenna	Flann Microwave	16240-20	519	20 Dec 2015	12

5.2.6. Transmitter Radiated Emissions at Band Edges**Test Summary:**

Test Engineer:	Nick Steele	Test Dates:	07 September 2015 & 16 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.53(g) and 2.1053
Test Method Used:	KDB 971168 D01 Section 6.1 & FCC Part 27.53

Environmental Conditions:

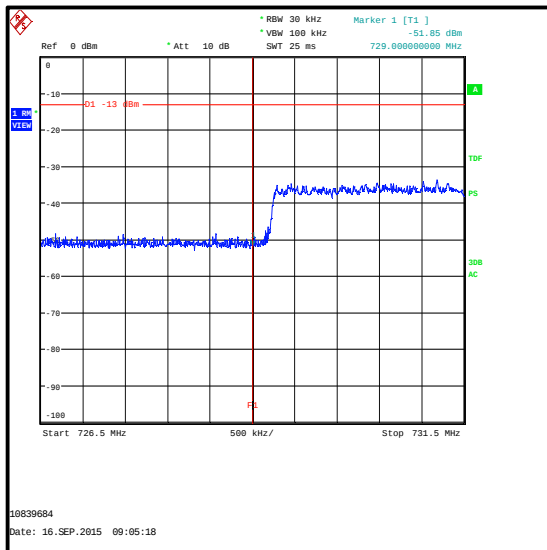
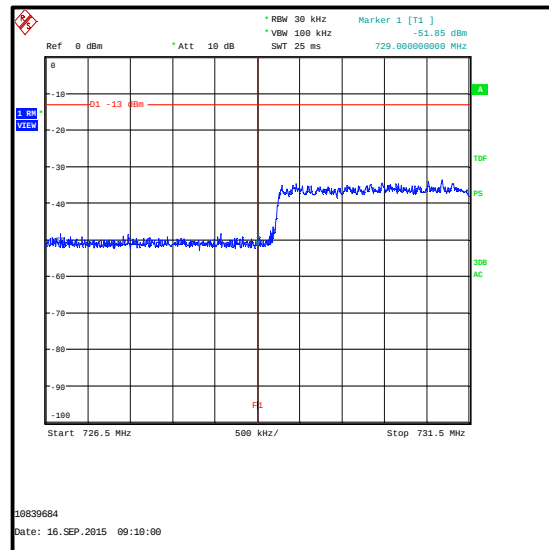
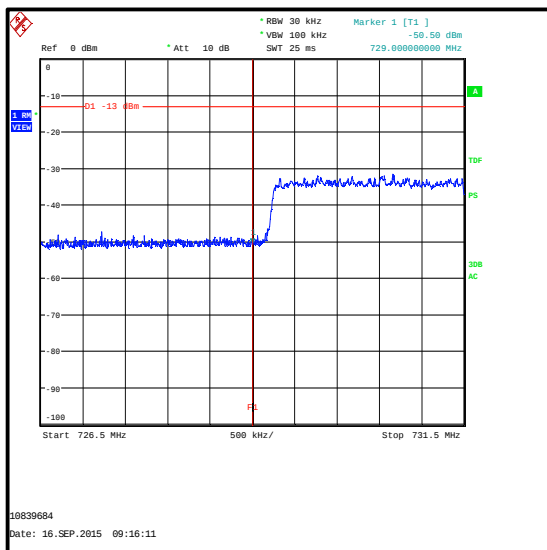
Temperature (°C):	24
Relative Humidity (%):	41

Note(s):

1. Measurements were performed with the EUT transmitting with 5 MHz and 10 MHz channel bandwidths, using QPSK, 16QAM and 64QAM modulation schemes, with full resource blocks.
2. In accordance with 27.53(g), a resolution bandwidth of 30 kHz has been employed.

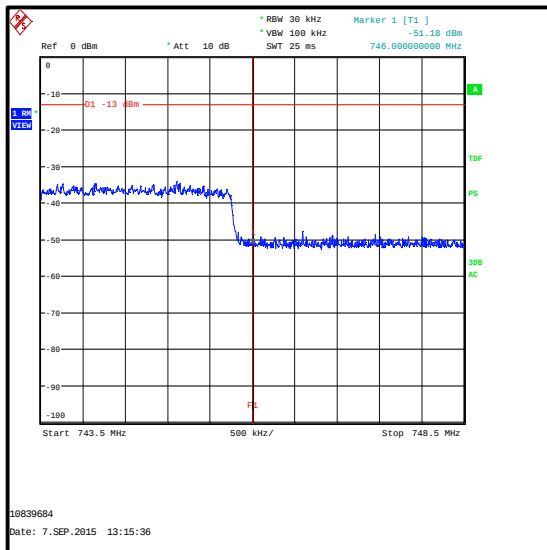
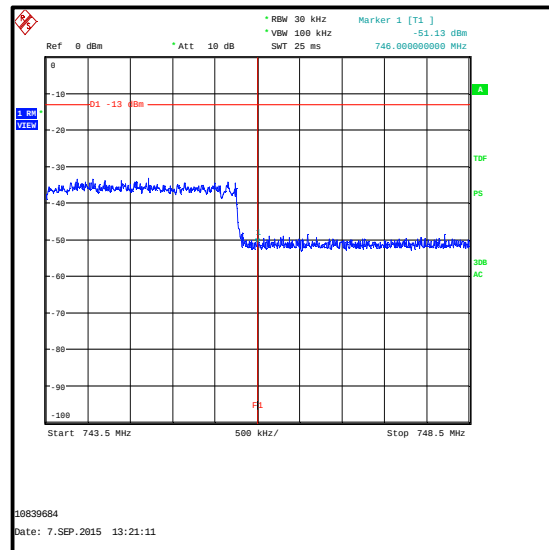
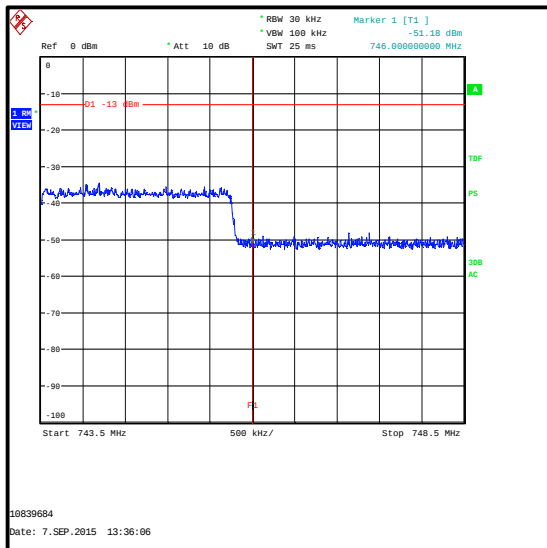
Transmitter Radiated Emissions at Band Edges (continued)**Results: 5 MHz Channel Bandwidth / Lower Band Edge**

Frequency (MHz)	Modulation Scheme	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	QPSK	-51.9	-13.0	38.9	Complied
729	16QAM	-51.9	-13.0	38.9	Complied
729	64QAM	-50.5	-13.0	37.5	Complied

**QPSK****16QAM****64QAM**

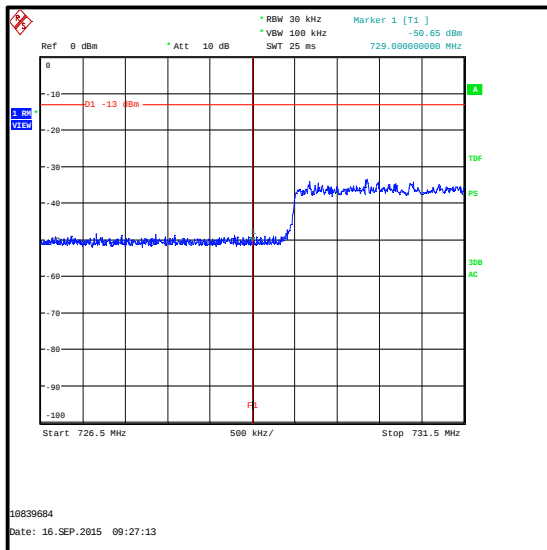
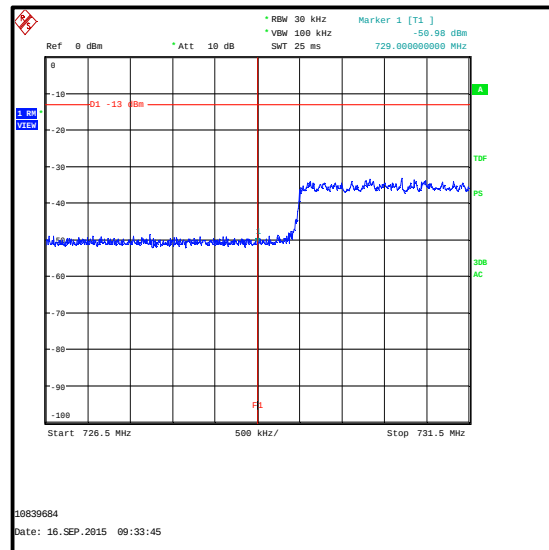
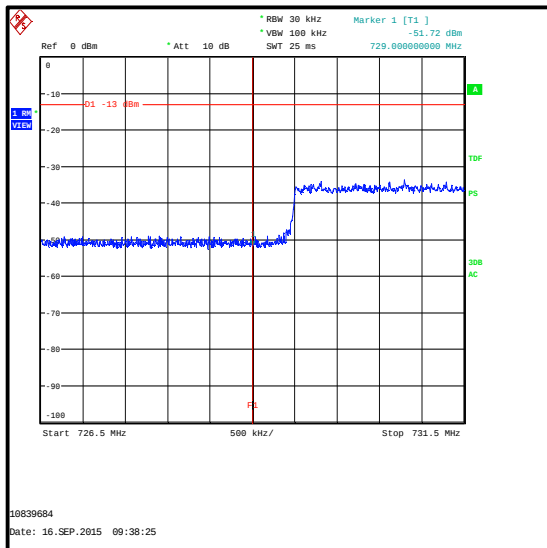
Transmitter Radiated Emissions at Band Edges (continued)**Results: 5 MHz Channel Bandwidth / Upper Band Edge**

Frequency (MHz)	Modulation Scheme	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
746	QPSK	-51.2	-13.0	38.2	Complied
746	16QAM	-51.1	-13.0	38.1	Complied
746	64QAM	-51.2	-13.0	38.2	Complied

**QPSK****16QAM****64QAM**

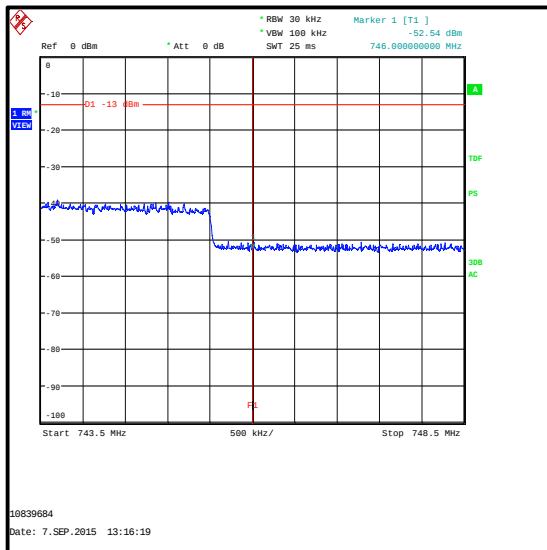
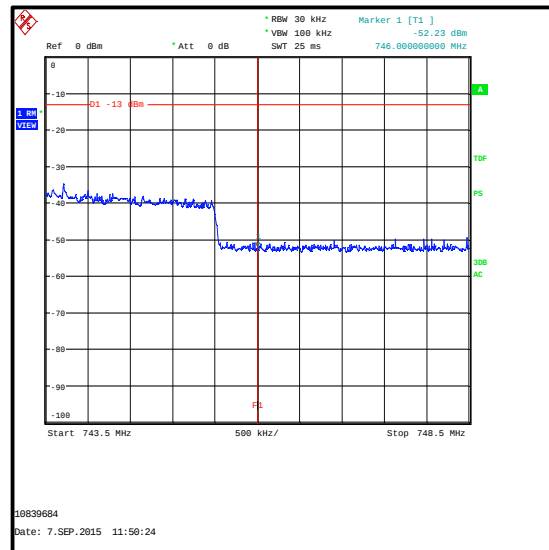
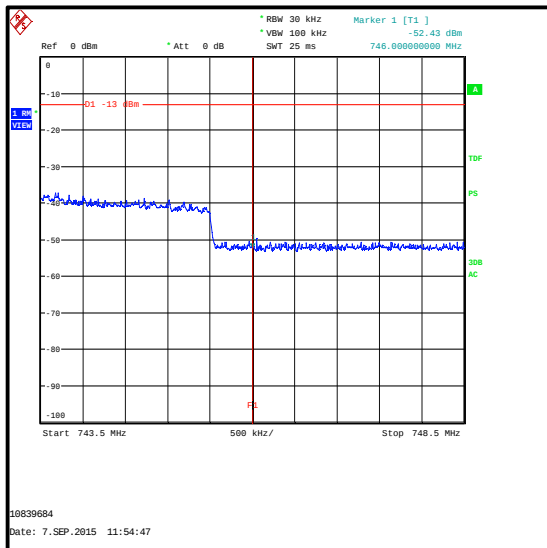
Transmitter Radiated Emissions at Band Edges (continued)**Results: 10 MHz Channel Bandwidth / Lower Band Edge**

Frequency (MHz)	Modulation Scheme	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
729	QPSK	-50.7	-13.0	37.7	Complied
729	16QAM	-51.0	-13.0	38.0	Complied
729	64QAM	-51.7	-13.0	38.7	Complied

**QPSK****16QAM****64QAM**

Transmitter Radiated Emissions at Band Edges (continued)**Results: 10 MHz Channel Bandwidth / Upper Band Edge**

Frequency (MHz)	Modulation Scheme	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
746	QPSK	-52.5	-13.0	39.5	Complied
746	16QAM	-52.2	-13.0	39.2	Complied
746	64QAM	-52.4	-13.0	39.4	Complied

**QPSK****16QAM****64QAM**

Transmitter Radiated Emissions at Band Edges (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	23 Apr 2016	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	01 May 2016	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	12 Jun 2016	12
A259	Antenna	Chase	CBL6111	1513	09 Apr 2016	12

5.2.7. Transmitter Frequency Stability (Temperature Variation)**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	10 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.54 and 2.1055
Test Method Used:	KDB 971168 D01 Section 9.0 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	44

Note(s):

1. Temperature was monitored throughout the test with a calibrated digital thermometer.
2. An external GPS antenna was connected to the GPS antenna port of the EUT. Using the communications software Teraterm, it was seen that the EUT was frequency locked to 8 satellites.
3. The EUT was configured to transmit an un-modulated CW test tone in order to measure the frequency stability.
4. Measurements were made using the frequency count function of the test receiver.

Transmitter Frequency Stability (Temperature Variation) (continued)**Results: Bottom Channel (731.5 MHz)**

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	14	731.500014	729	2.500014	Complied
-20	18	731.500018	729	2.500018	Complied
-10	18	731.500018	729	2.500018	Complied
0	18	731.500018	729	2.500018	Complied
10	18	731.500018	729	2.500018	Complied
20	19	731.500019	729	2.500019	Complied
30	17	731.500017	729	2.500017	Complied
40	17	731.500017	729	2.500017	Complied
50	20	731.500020	729	2.500020	Complied

Results: Top Channel (743.5 MHz)

Temperature (°C)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	14	743.500014	746	2.499986	Complied
-20	17	743.500017	746	2.499983	Complied
-10	18	743.500018	746	2.499982	Complied
0	18	743.500018	746	2.499982	Complied
10	17	743.500017	746	2.499983	Complied
20	17	743.500017	746	2.499983	Complied
30	16	743.500016	746	2.499984	Complied
40	17	743.500017	746	2.499983	Complied
50	19	743.500019	746	2.499981	Complied

Transmitter Frequency Stability (Temperature Variation) (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelpunkt	30.5015.13	None stated	23 Apr 2016	12
M1124	Test Receiver	Rohde & Schwarz	ESIB26	100046	06 Oct 2015	12
E0518	Environmental Chamber	TAS	LTCL 1200	24000107	Calibrated before use	-
M1643	Thermometer	Fluke	52II	18890136	23 Apr 2016	12
A2006	Attenuator	Narda	769-30	06588	Calibrated before use	-
A2007	Attenuator	Narda	769-20	001	Calibrated before use	-
M260	Signal Generator	Rohde & Schwarz	SMP02	829076/008	27 Apr 2016	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	08 Apr 2016	24
M1267	Power Sensor	Rohde & Schwarz	NRV-Z52	100155	23 Apr 2016	24

5.2.8. Transmitter Frequency Stability (Voltage Variation)**Test Summary:**

Test Engineer:	Nick Steele	Test Date:	10 September 2015
Test Sample Serial Number:	BBYBE31000110		

FCC Reference:	Parts 27.54 and 2.1055
Test Method Used:	KDB 971168 D01 Section 9.0 referencing FCC CFR Part 2.1055

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	44

Note(s):

1. Voltage was monitored throughout the test with a calibrated digital voltmeter.
2. An external GPS antenna was connected to the GPS antenna port of the EUT. Using the communications software Teraterm, it was seen that the EUT was frequency locked to 8 satellites.
3. The EUT was configured to transmit an un-modulated CW test tone in order to measure the frequency stability.
4. Measurements were made using the frequency count function of the test receiver.

Results: Bottom Channel (731.5 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-40.8	19	731.500019	729	2.500019	Complied
-55.2	18	731.500018	729	2.500018	Complied

Results: Top Channel (743.5 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-40.8	17	743.500017	746	2.499983	Complied
-55.2	17	743.500017	746	2.499983	Complied

Transmitter Frequency Stability (Voltage Variation) (continued)**Test Equipment Used:**

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1659	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	23 Apr 2016	12
M1124	Test Receiver	Rohde & Schwarz	ESIB26	100046	06 Oct 2015	12
M1229	Multimeter	Fluke	179	87640015	23 Apr 2016	12
S0550	Power Supply	Hewlett Packard	6032A	US35420781	Calibrated before use	-
A2006	Attenuator	Narda	769-30	06588	Calibrated before use	-
A2007	Attenuator	Narda	769-20	001	Calibrated before use	-
M260	Signal Generator	Rohde & Schwarz	SMP02	829076/008	27 Apr 2016	12
M199	Power Meter	Rohde & Schwarz	NRVS	827023/075	08 Apr 2016	24
M1267	Power Sensor	Rohde & Schwarz	NRV-Z52	100155	23 Apr 2016	24

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
Occupied Bandwidth	728 MHz to 746 MHz	95%	±3.92 %
Conducted Carrier Output Power	728 MHz to 746 MHz	95%	±1.13 dB
Conducted Spurious Emissions	9 kHz to 8 GHz	95%	±2.62 dB
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 8 GHz	95%	±2.94 dB
Frequency Stability	728 MHz to 746 MHz	95%	±0.92 ppm

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.

7. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version