TEST REPORT

Test Report No. : UL-RPT-RP10295106JD04A V2.0

Manufacturer	:	Sony Mobile Communications Inc.
FCC ID	:	PY7PM-0806
Technology	:	LTE – Band 7
Test Standard(s)	:	FCC Part 27 Subpart C

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2. The results in this report apply only to the sample(s) 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 2.0 supersedes all previous versions.

Date of Issue: 04 August 2014

Checked by:

Sarah Williams
Engineer, Radio Laboratory

Issued by :

pp
John Newell
Group Quality Manager,
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ilac-MRA UKAS TESTING 0644

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

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Table of Contents

1. Customer Information

Company Name:	Sony Mobile Communications Inc.
Address:	Nya Vattentornet Mobilvägen 10 Lund 22188 Sweden

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR27
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 27 Subpart C (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:	09 June 2014 to 17 June 2014

2.2. Summary of Test Results

FCC Reference (47CFR)	Measurement	Result
2.1046 / 27.50(h)(2)	Transmitter Output Power (EIRP)	✓
2.1049	Transmitter Occupied Bandwidth	✓
2.1053 / 27.53(l)(4)	Transmitter Radiated Spurious Emissions	✓
2.1053 / 27.53(l)(4)	Transmitter Radiated Emissions at Band Edges	✓
2.1053 / 27.53(l)(4)	Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz	✓
2.1055 / 27.54	Transmitter Frequency Stability (Temperature and Voltage Variation)	✓

Key to Results

✓ **= Complied** ✗ **= Did not comply**

2.3. Methods and Procedures

Reference:	ANSI/TIA-603-C-2004
Title:	Land Mobile Communications Equipment, Measurements and performance Standards
Reference:	FCC KDB 971168 D01 v02r01, 7 June 2013
Title:	Measurement Guidance for Certification of Licensed Digital Transmitters

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:	Sony
IMEI:	004402452728243 *(Radiated sample)*
Test Sample Serial Number:	CB5A1Z2H3A
Hardware Version Number:	A
Software Version Number:	23.0.A.0.204
FCC ID:	PY7PM-0806

Brand Name:	Sony
IMEI:	004402452726833 *(Conducted sample with RF port #1)*
Test Sample Serial Number:	CB5A1Z2H9E
Hardware Version Number:	A
Software Version Number:	23.0.A.0.204
FCC ID:	PY7PM-0806

Brand Name:	Sony
IMEI:	004402452727823 *(Conducted sample with RF port #2)*
Test Sample Serial Number:	CB5A1Z2H22
Hardware Version Number:	A
Software Version Number:	23.0.A.0.204
FCC ID:	PY7PM-0806

Brand Name:	Sony
Description:	AC Charger
Model Name or Number:	EP880

Brand Name:	Generic
Description:	MHL Cable
Model Name or Number:	Not marked

Brand Name:	Sony
Description:	MHL Adaptor
Model Name or Number:	IM750

Identification of Equipment Under Test (EUT) (continued)

Brand Name:	Sony
Description:	USB Cable
Model Name or Number:	EC803

Brand Name:	Sony
Description:	Deskstand
Model Name or Number:	DK43

Brand Name:	Sony
Description:	PHF
Model Name or Number:	MH410c

3.2. Description of EUT

The equipment under test (EUT) was a GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac + NFC & ANT+.

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 Band 7			
Type of Equipment	Transceiver			
Channel Bandwidth:	5 MHz, 10 MHz, 15 MHz & 20 MHz			
Modulation Type:	QPSK & 16QAM			
Duty Cycle:	100%			
Antenna Gain:	-1.2 dBi			
Power Supply Requirement:	Nominal	3.8 VDC		
	Minimum	3.42 VDC		
	Maximum	4.18 VDC		
Transmit Frequency Range:	2500 MHz to 2570 MHz			
Channels Tested:	**Channel Bandwidth**		**N_{ul}**	**Frequency of Uplink (MHz)**
Bottom Channel	5		20775	2502.5
	10		20800	2505.0
	15		20825	2507.5
	20		20850	2510.0
Middle Channel	All		21100	2535.0
Top Channel	5		21425	2567.5
	10		21400	2565.0
	15		21375	2562.5
	20		21350	2560.0

3.5. Support Equipment

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

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

Brand Name:	Logik
Description:	22” High Definition Television
Model Name or Number:	L22FE12A
Serial Number:	1309020661

Description:	Voltage variation jig
Brand Name:	Not marked
Model Name or Number:	Not marked
Serial Number:	Not marked

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 the required channel bandwidth. QPSK and 16QAM modulations were both tested, with Resource Block allocation as detailed in section 4.3.

4.2. Configuration and Peripherals

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

- The EUT was connected to a Rohde and Schwarz CMW500 LTE system simulator, operating in a transceiver mode.
- Transmitter radiated spurious emission tests were performed with the following configurations, employing all available accessories:
    - Configuration 1 – Handset with the AC charger, USB Cable, MHL cable (terminated in to a television), MHL adaptor and PHF.
    - Configuration 2 – Handset with the AC charger, USB Cable, Deskstand and PHF.

  Pre-scans below 1 GHz were performed in both configurations 1 and 2, with final measurements limited to the configuration which provided worst case results. Pre-scans above 1 GHz were performed in the configuration that employed the most accessories (Configuration 1), with any final measurements being performed in both configurations
- Transmitter radiated spurious emissions tests were performed with the EUT set to transmit with a 10 MHz channel bandwidth with QPSK modulation applied and 1 resource block with 0 offset. This was found to be the worst case modulation scheme with regards to emissions after preliminary investigations and, as this mode emits the highest transmit output power level, it was deemed to be the worst case.
- The EUT was supplied with an RF conducted port and external RF connector, to allow conducted measurements to be performed where necessary.
- Testing at temperature and voltage extremes was performed using a voltage variation jig and adaptor supplied by the customer. The adaptor plugs onto the handset in place of the battery connector.
- The voltage variation jig and adaptor were used for conducted measurements set at the nominal voltage.
- The conducted sample with IMEI 004402452726833 was used for frequency stability measurements.
- The conducted sample with IMEI 004402452727823 was used for average power and occupied bandwidth measurements.
- The radiated sample with IMEI 004402452728243 was used for all radiated measurements.

4.3. Resource Block Allocation

Channel Bandwidth (MHz)	Maximum No. of Resource Blocks	Resource Block / Offset Number							
		Sub Test 1		Sub Test 2		Sub Test 3		Sub Test 4	
		RB	Offset	RB	Offset	RB	Offset	RB	Offset
5	25	1	0	1	24	12	6	25	0
10	50	1	0	1	49	25	12	50	0
15	75	1	0	1	74	36	18	75	0
20	100	1	0	1	99	50	25	100	0

Transmitter Output Power was carried out using sub tests 1, 2, 3 and 4, with both QPSK and 16QAM modulation schemes.

Transmitter Occupied Bandwidth was carried out using sub tests 3 and 4, for both QPSK and 16QAM modulation schemes.

Transmitter Radiated Emissions testing was carried out using sub test 1, with a 10 MHz channel bandwidth and QPSK modulation scheme, as this was found to be the worst case modulation scheme with regards to emissions after preliminary investigations and, as this mode emits the highest transmit output power level, it was deemed to be the worst case.

Transmitter Radiated Band Edge Emissions was tested with sub test 4 on all supported channel bandwidths, using QPSK and 16QAM modulations with the maximum resource blocks settings.

Transmitter Radiated Band Edge +/- 5.5 MHz Emissions was tested with sub tests 1, 2 and 4 on all supported channel bandwidths, using QPSK and 16QAM modulations. These sub-bands were selected as they include the resource block allocations closest to the edge of the bands.

Transmitter Frequency Stability test was carried out with sub test 4, with a channel bandwidth of 5 MHz only.

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 Output Power (EIRP)

Test Summary:

Test Engineer:	Ben Mercer	**Test Date:**	09 June 2014
Test Sample IMEI:	004402452727823		

FCC Reference:	Parts 2.1046 & 27.50(h)(2)
Test Method Used:	As detailed in FCC KDB 971168 Section 5.2.1

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	40 to 42

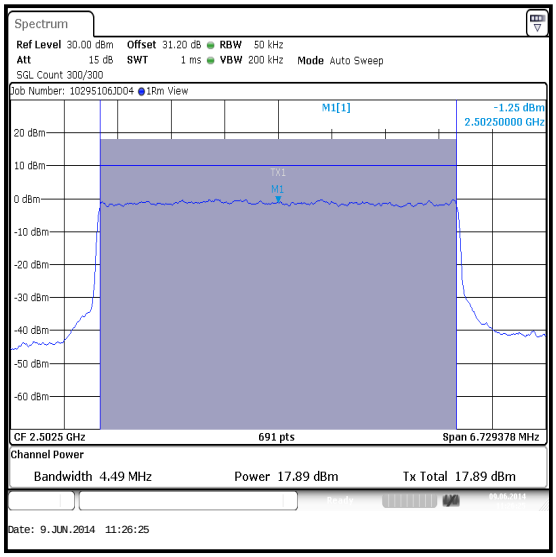
Note(s):

1. The customer stated that the antenna gain is -1.2 dBi. The antenna gain was added to the conducted output power to obtain the EIRP.
2. Measurements were performed with the EUT transmitting with QPSK and 16QAM modulation schemes, with resource blocks settings as detailed in section 4.3 of this report.
3. The spectrum analyser's channel power function was used to integrate across the occupied bandwidth. The resolution bandwidth was set to between 1-5% of the occupied bandwidth and the video bandwidth was set to at least 3 times the resolution bandwidth. An RMS detector was used, sweep time was set to auto and the trace was averaged over 300 traces. The span was set to at least 1.5 times the occupied bandwidth. The channel power results are recorded in the tables below.
4. The RF port of the EUT was connected to the spectrum analyser via RF cables, directional coupler and suitable attenuation. An RF level offset was entered on the spectrum analyser, to compensate for the signal path losses in these components.

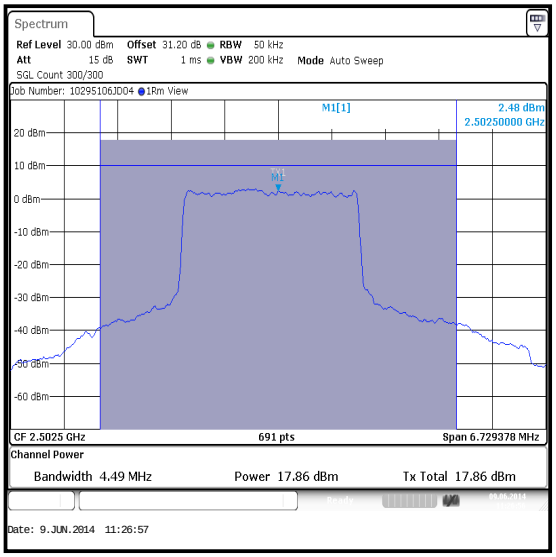
Transmitter Output Power (EIRP) (continued)

Results: 5 MHz Channel Bandwidth / Bottom Channel / QPSK

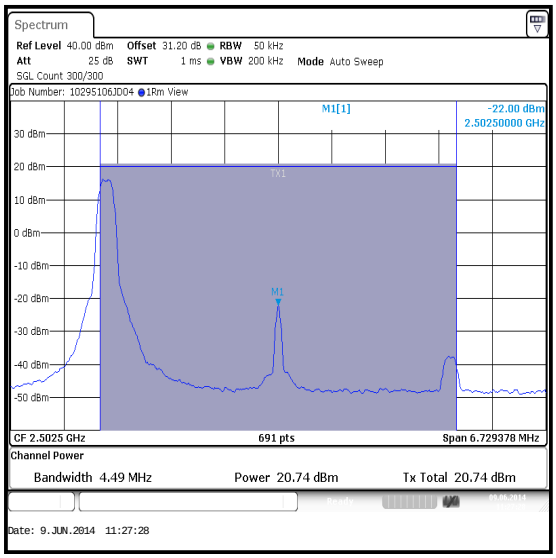
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2502.5	25	0	17.9	-1.2	16.7	33.0	16.3	Complied
2502.5	12	6	17.9	-1.2	16.7	33.0	16.3	Complied
2502.5	1	0	20.7	-1.2	19.5	33.0	13.5	Complied
2502.5	1	24	20.7	-1.2	19.5	33.0	13.5	Complied



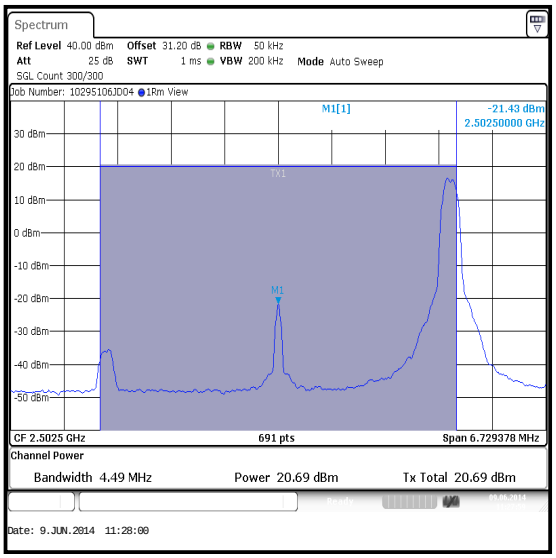
QPSK / 25 Resource Blocks (0 Offset)



QPSK / 12 Resource Blocks (6 Offset)



QPSK / 1 Resource Block (0 Offset)

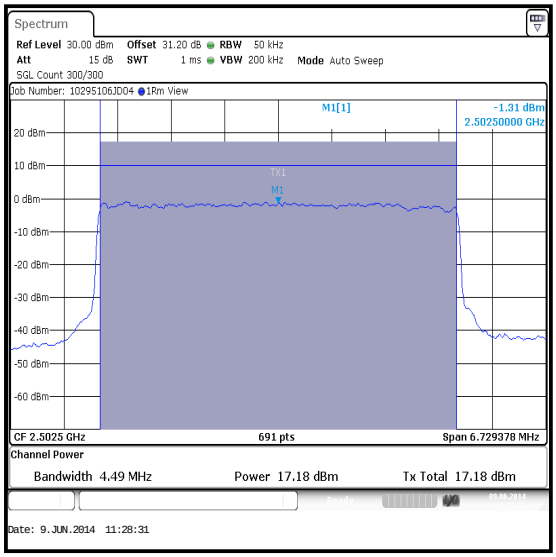


QPSK / 1 Resource Block (24 Offset)

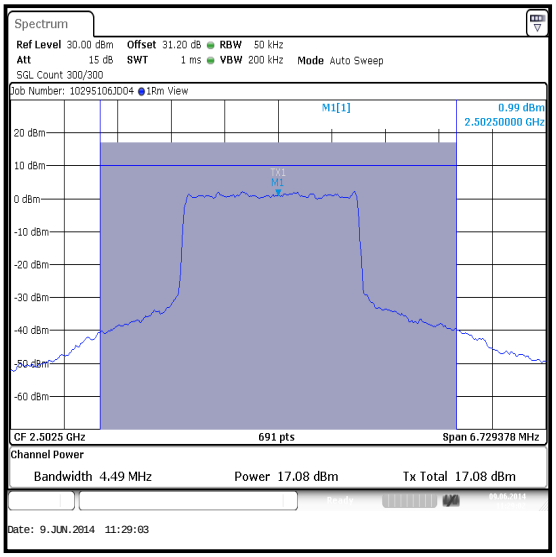
Transmitter Output Power (EIRP) (continued)

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

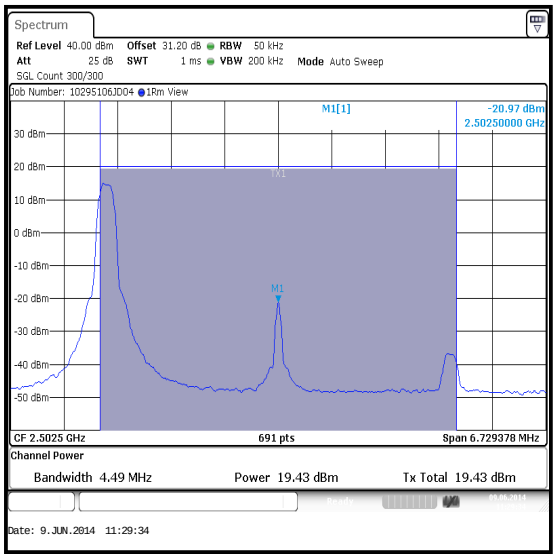
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2502.5	25	0	17.2	-1.2	16.0	33.0	17.0	Complied
2502.5	12	6	17.1	-1.2	15.9	33.0	17.1	Complied
2502.5	1	0	19.4	-1.2	18.2	33.0	14.8	Complied
2502.5	1	24	19.6	-1.2	18.4	33.0	14.6	Complied



16QAM / 25 Resource Blocks (0 Offset)



16QAM / 12 Resource Blocks (6 Offset)



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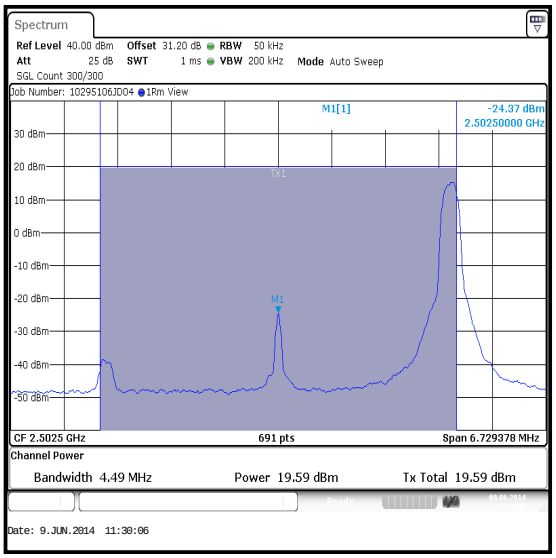
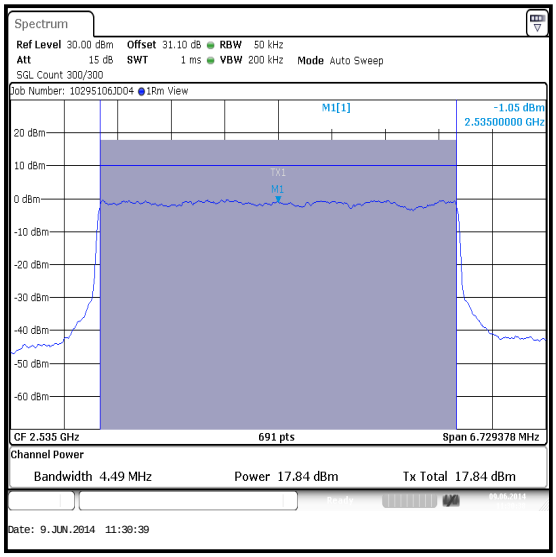


16QAM / 1 Resource Block (24 Offset)

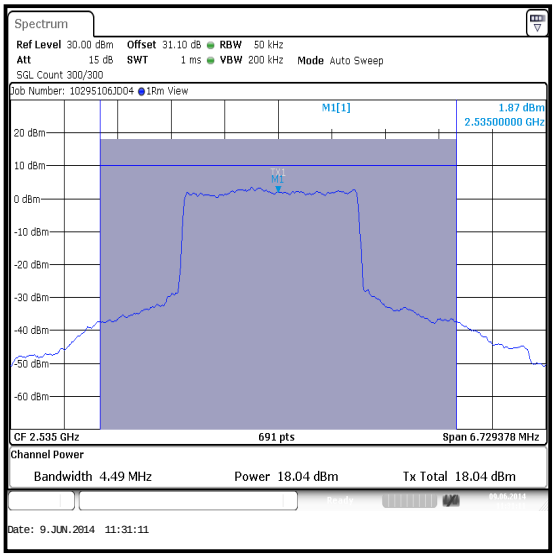
Transmitter Output Power (EIRP) (continued)

Results: 5 MHz Channel Bandwidth / Middle Channel / QPSK

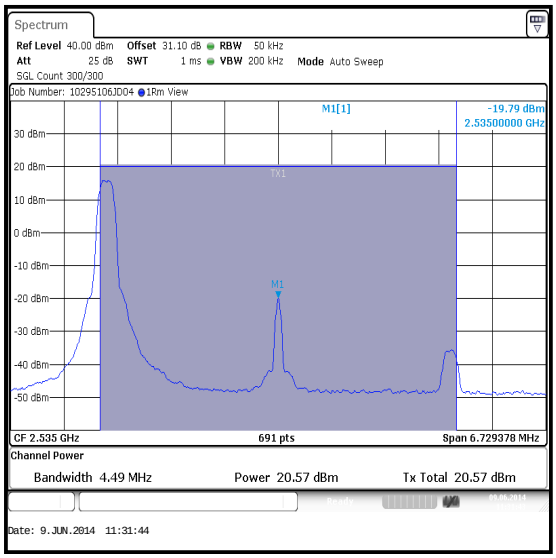
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	25	0	17.8	-1.2	16.6	33.0	16.4	Complied
2535.0	12	6	18.0	-1.2	16.8	33.0	16.2	Complied
2535.0	1	0	20.6	-1.2	19.4	33.0	13.6	Complied
2535.0	1	24	20.7	-1.2	19.5	33.0	13.5	Complied



QPSK / 25 Resource Blocks (0 Offset)



QPSK / 12 Resource Blocks (6 Offset)



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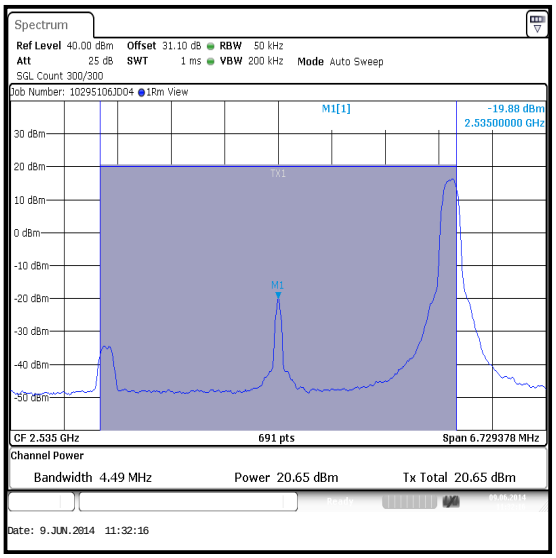
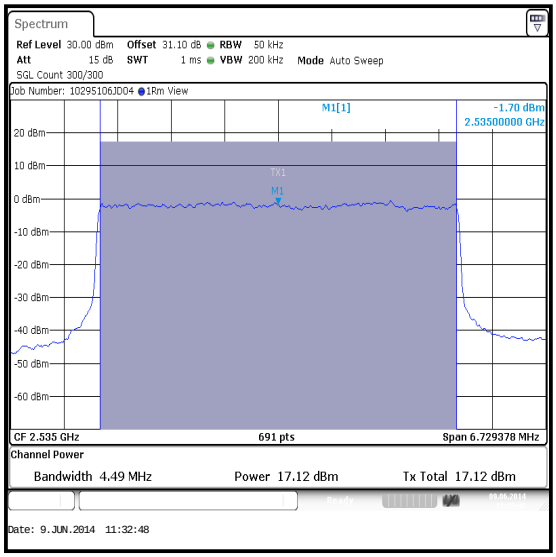


QPSK / 1 Resource Block (24 Offset)

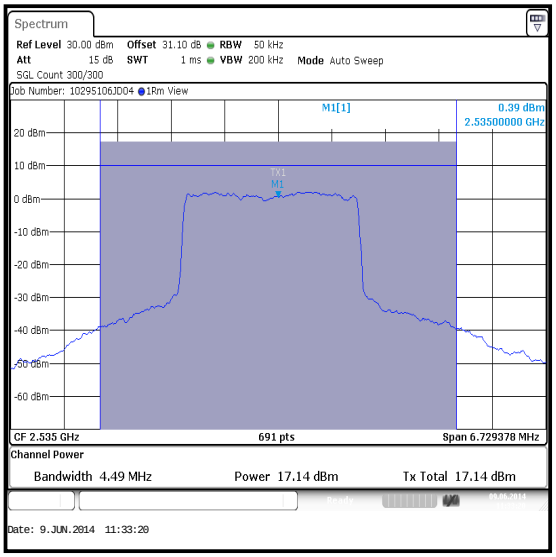
Transmitter Output Power (EIRP) (continued)

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

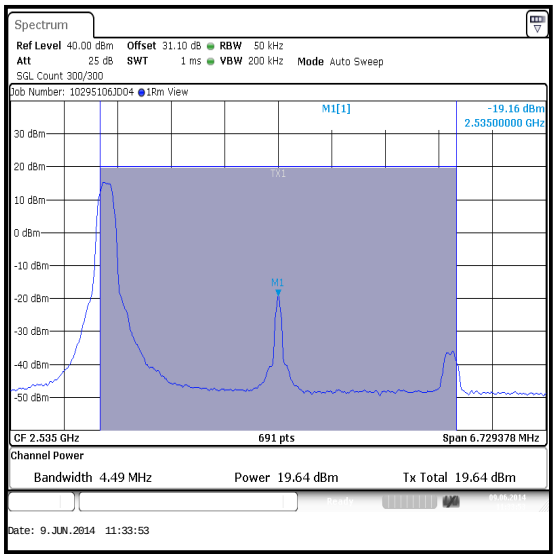
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	25	0	17.1	-1.2	15.9	33.0	17.1	Complied
2535.0	12	6	17.1	-1.2	15.9	33.0	17.1	Complied
2535.0	1	0	19.6	-1.2	18.4	33.0	14.6	Complied
2535.0	1	24	19.8	-1.2	18.6	33.0	14.4	Complied



16QAM / 25 Resource Blocks (0 Offset)



16QAM / 12 Resource Blocks (6 Offset)



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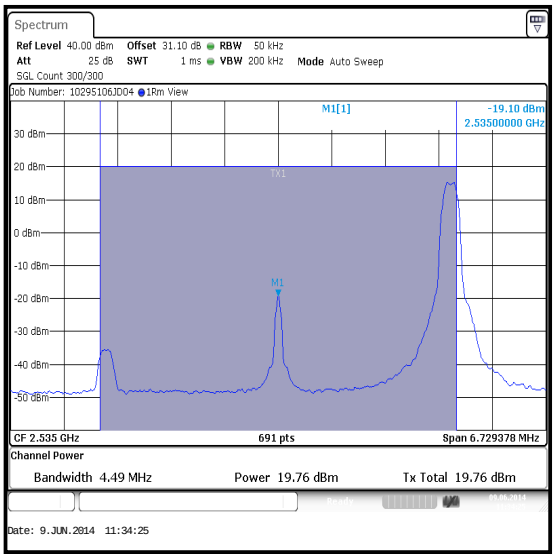
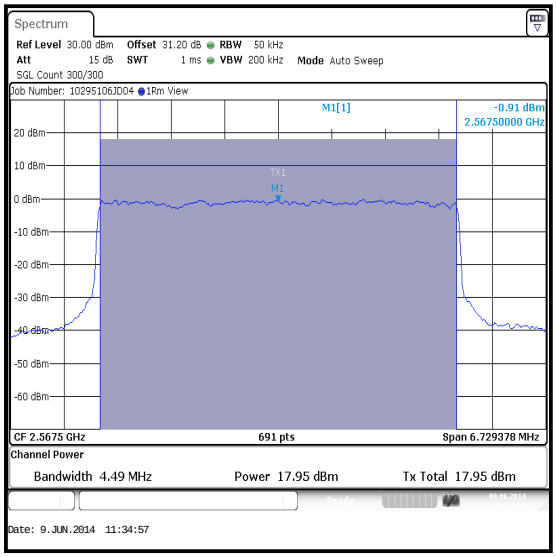


16QAM / 1 Resource Block (24 Offset)

Transmitter Output Power (EIRP) (continued)

Results: 5 MHz Channel Bandwidth / Top Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2567.5	25	0	18.0	-1.2	16.8	33.0	16.2	Complied
2567.5	12	6	18.4	-1.2	17.2	33.0	15.8	Complied
2567.5	1	0	20.8	-1.2	19.6	33.0	13.4	Complied
2567.5	1	24	21.0	-1.2	19.8	33.0	13.2	Complied



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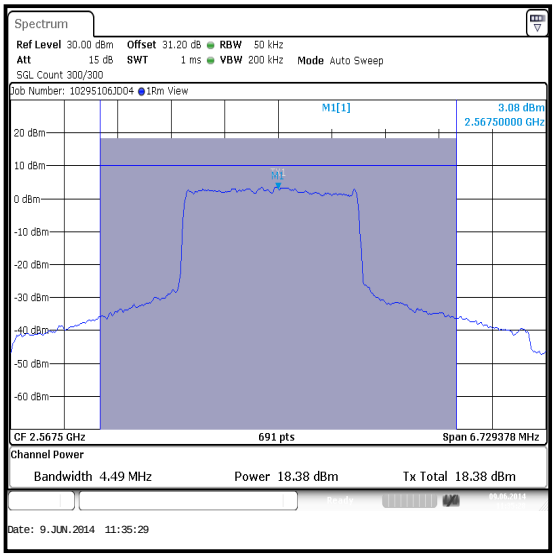
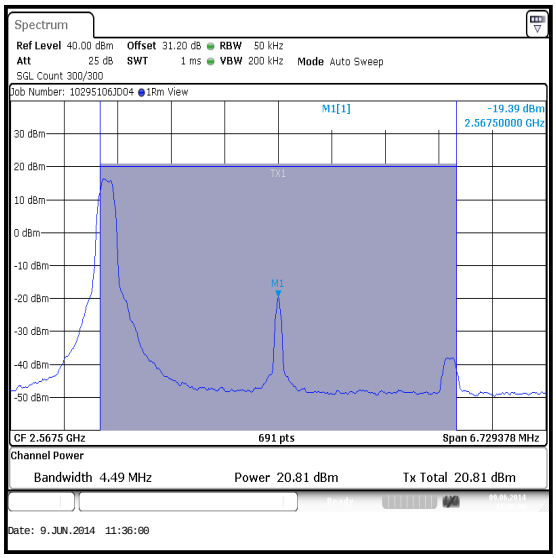


QPSK / 12 Resource Blocks (6 Offset)



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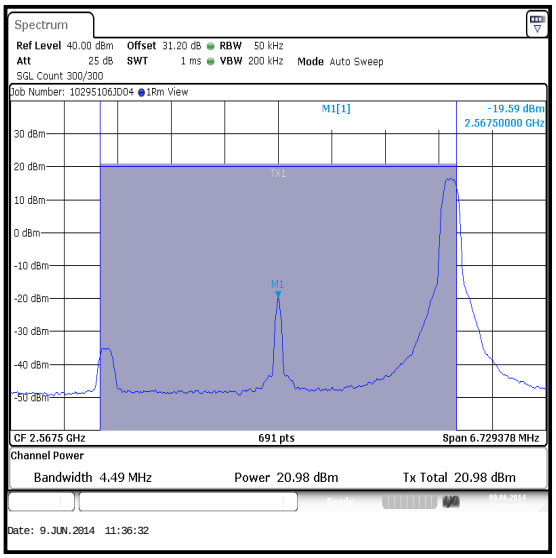
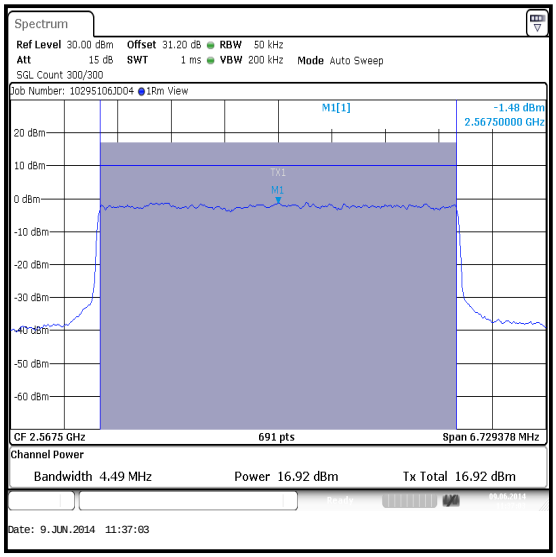


QPSK / 1 Resource Block (24 Offset)

Transmitter Output Power (EIRP) (continued)

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

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2567.5	25	0	16.9	-1.2	15.7	33.0	17.3	Complied
2567.5	12	6	16.8	-1.2	15.6	33.0	17.4	Complied
2567.5	1	0	19.0	-1.2	17.8	33.0	15.2	Complied
2567.5	1	24	19.1	-1.2	17.9	33.0	15.1	Complied



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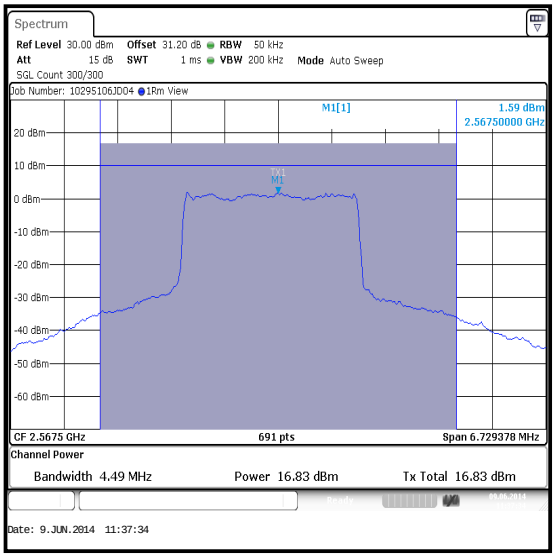
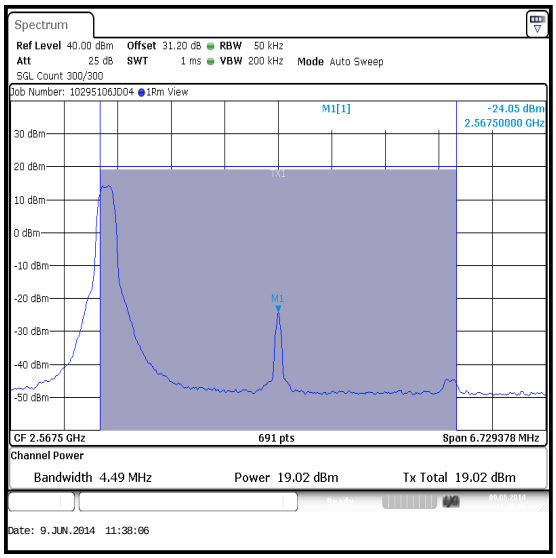
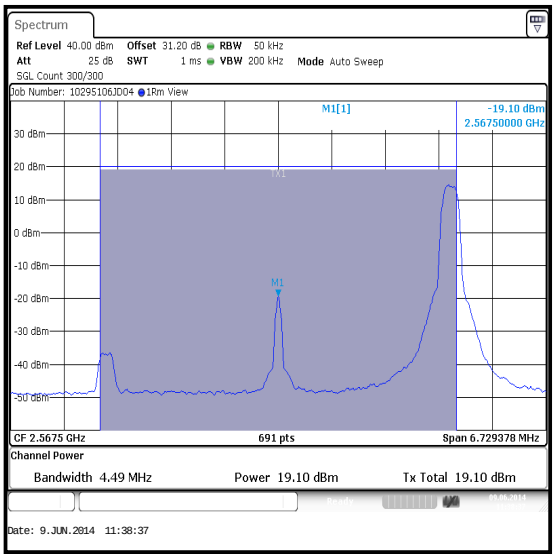


16QAM / 12 Resource Blocks (6 Offset)



16QAM / 1 Resource Block (0 Offset)

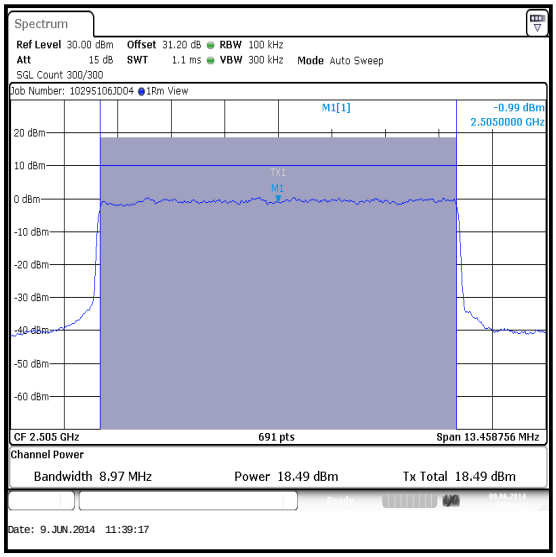


16QAM / 1 Resource Block (24 Offset)

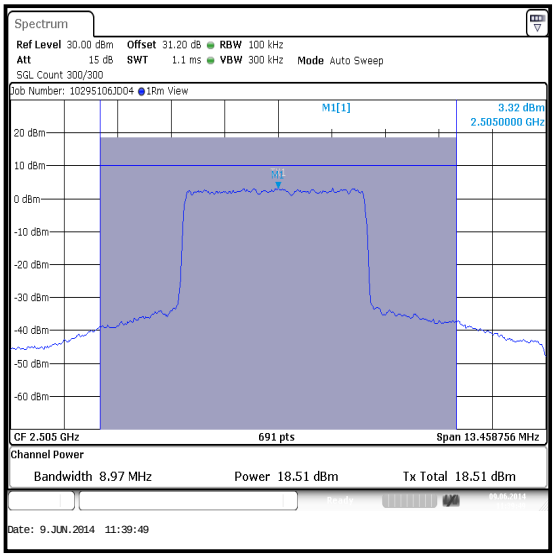
Transmitter Output Power (EIRP) (continued)

Results: 10 MHz Channel Bandwidth / Bottom Channel / QPSK

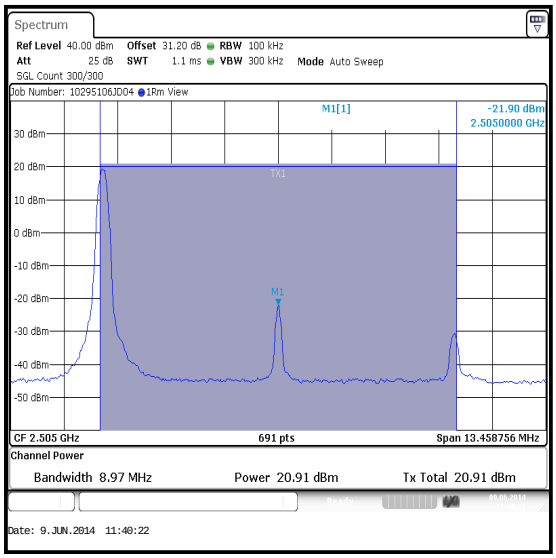
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2505.0	50	0	18.5	-1.2	17.3	33.0	15.7	Complied
2505.0	25	12	18.5	-1.2	17.3	33.0	15.7	Complied
2505.0	1	0	20.9	-1.2	19.7	33.0	13.3	Complied
2505.0	1	49	21.0	-1.2	19.8	33.0	13.2	Complied



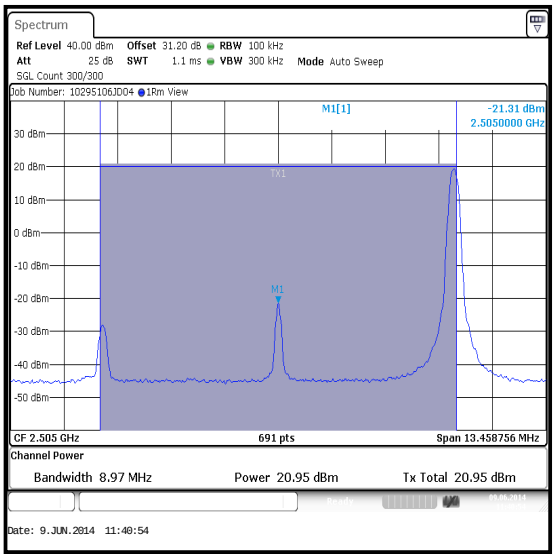
QPSK / 50 Resource Blocks (0 Offset)



QPSK / 25 Resource Blocks (12 Offset)



QPSK / 1 Resource Block (0 Offset)

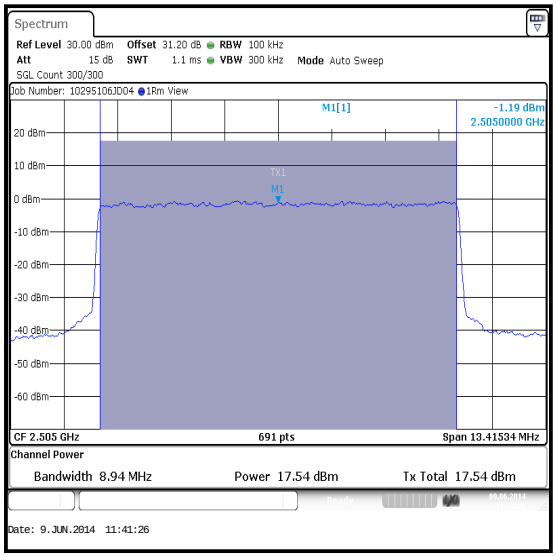


QPSK / 1 Resource Block (49 Offset)

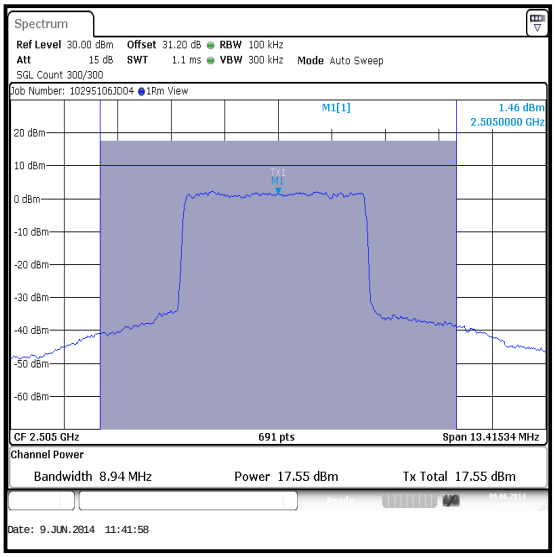
Transmitter Output Power (EIRP) (continued)

Results: 10 MHz Channel Bandwidth / Bottom Channel / 16QAM

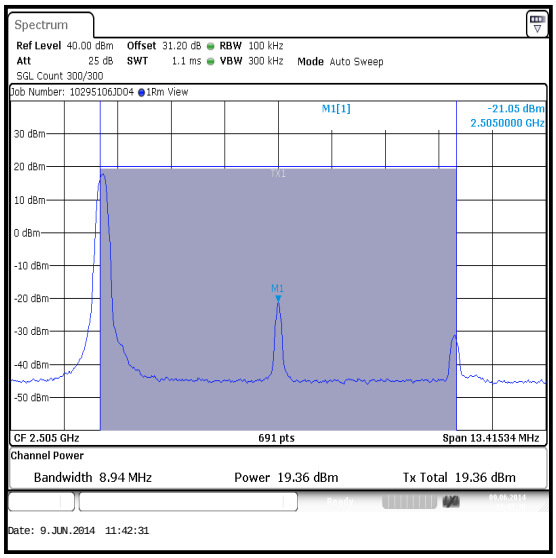
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2505.0	50	0	17.5	-1.2	16.3	33.0	16.7	Complied
2505.0	25	12	17.6	-1.2	16.4	33.0	16.6	Complied
2505.0	1	0	19.4	-1.2	18.2	33.0	14.8	Complied
2505.0	1	49	19.4	-1.2	18.2	33.0	14.8	Complied



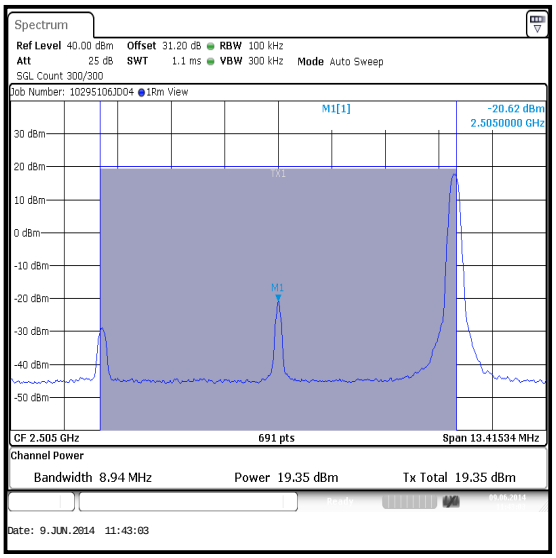
16QAM / 50 Resource Blocks (0 Offset)



16QAM / 25 Resource Blocks (12 Offset)



16QAM / 1 Resource Block (0 Offset)

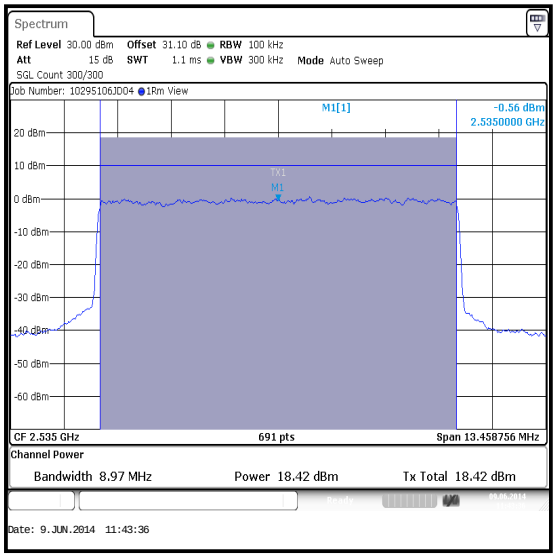


16QAM / 1 Resource Block (49 Offset)

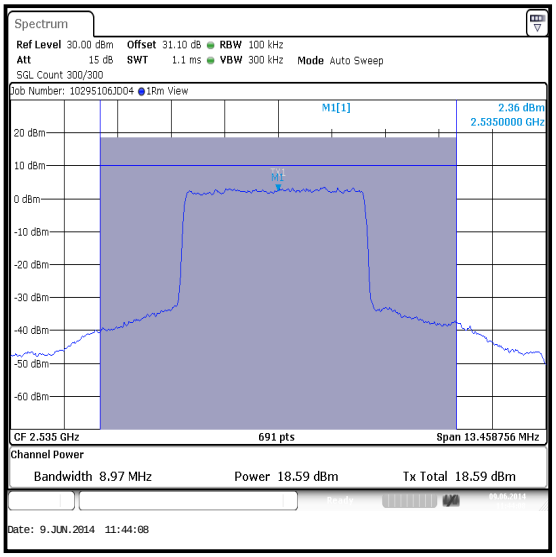
Transmitter Output Power (EIRP) (continued)

Results: 10 MHz Channel Bandwidth / Middle Channel / QPSK

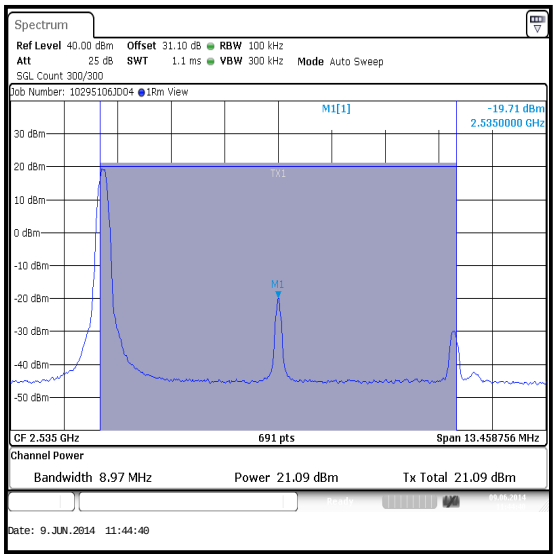
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	50	0	18.4	-1.2	17.2	33.0	15.8	Complied
2535.0	25	12	18.6	-1.2	17.4	33.0	15.6	Complied
2535.0	1	0	21.1	-1.2	19.9	33.0	13.1	Complied
2535.0	1	49	21.0	-1.2	19.8	33.0	13.2	Complied



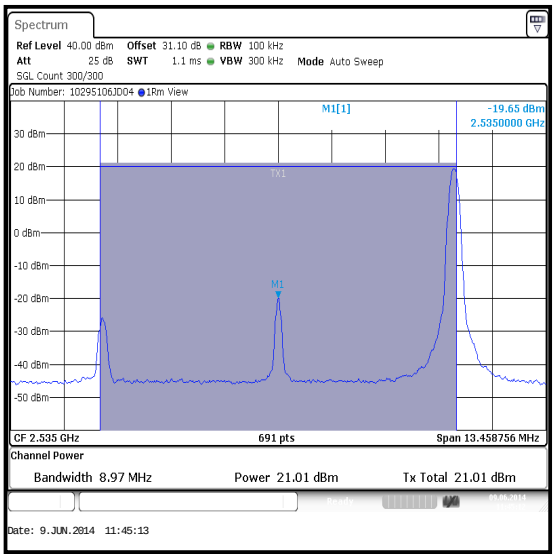
QPSK / 50 Resource Blocks (0 Offset)



QPSK / 25 Resource Blocks (12 Offset)



QPSK / 1 Resource Block (0 Offset)

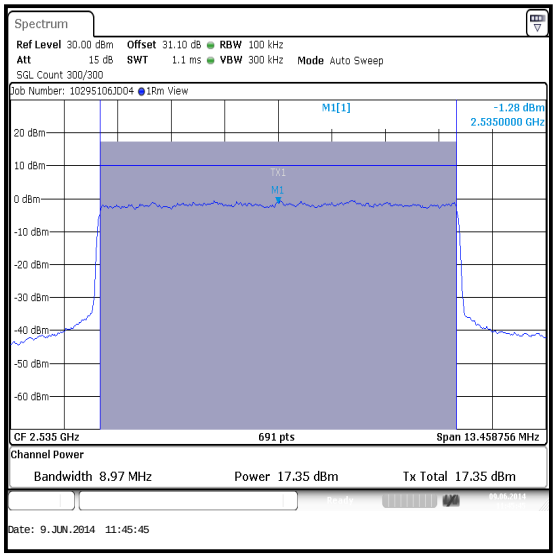


QPSK / 1 Resource Block (49 Offset)

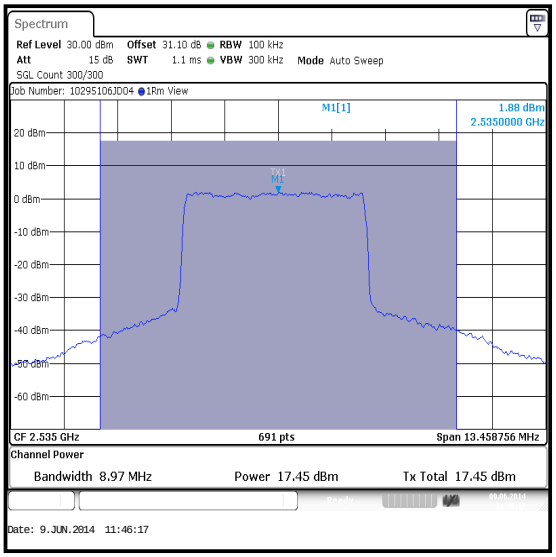
Transmitter Output Power (EIRP) (continued)

Results: 10 MHz Channel Bandwidth / Middle Channel / 16QAM

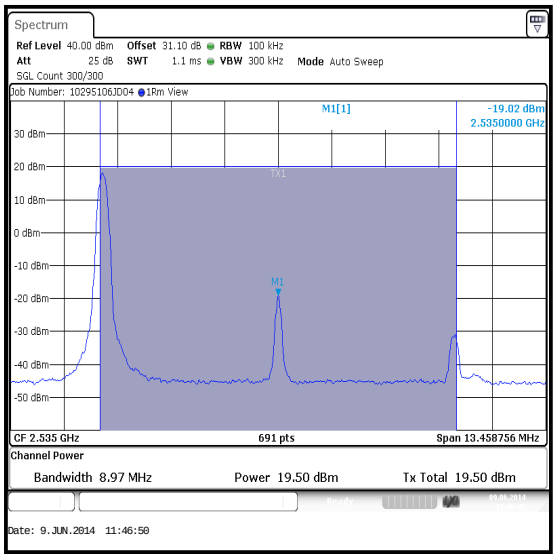
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	50	0	17.4	-1.2	16.2	33.0	16.8	Complied
2535.0	25	12	17.5	-1.2	16.3	33.0	16.7	Complied
2535.0	1	0	19.5	-1.2	18.3	33.0	14.7	Complied
2535.0	1	49	19.7	-1.2	18.5	33.0	14.5	Complied



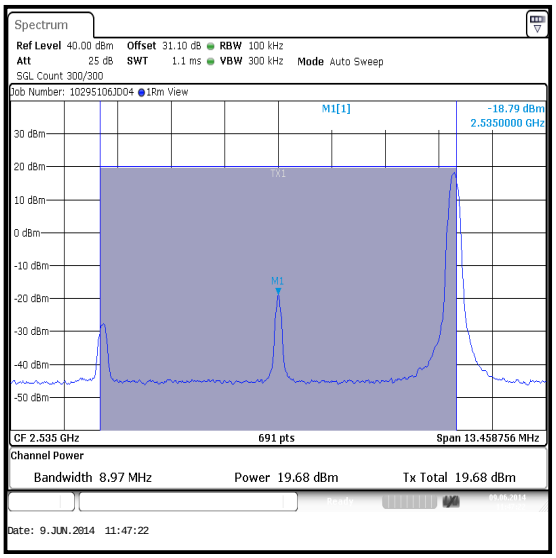
16QAM / 50 Resource Blocks (0 Offset)



16QAM / 25 Resource Blocks (12 Offset)



16QAM / 1 Resource Block (0 Offset)

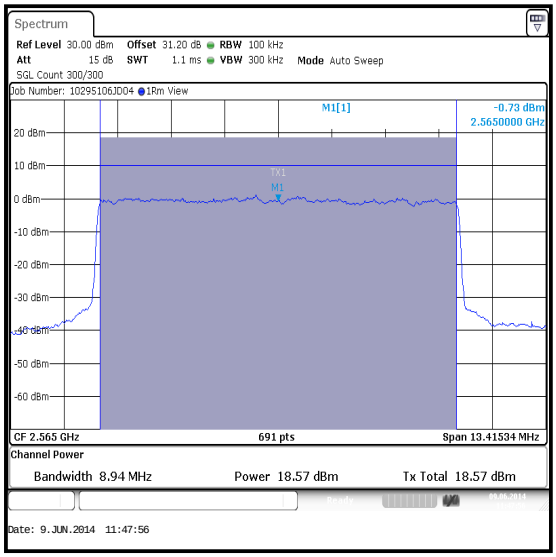


16QAM / 1 Resource Block (49 Offset)

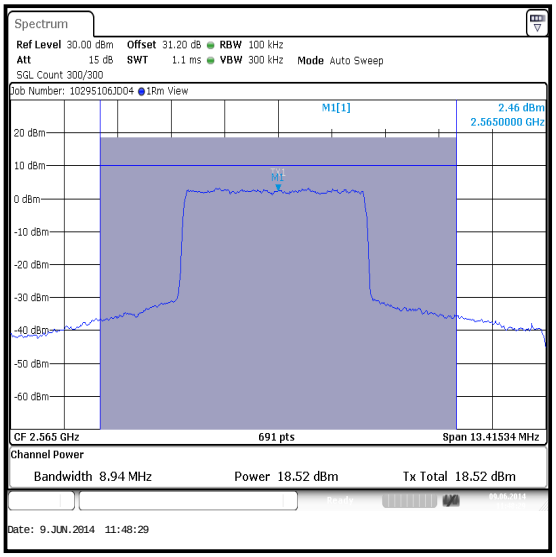
Transmitter Output Power (EIRP) (continued)

Results: 10 MHz Channel Bandwidth / Top Channel / QPSK

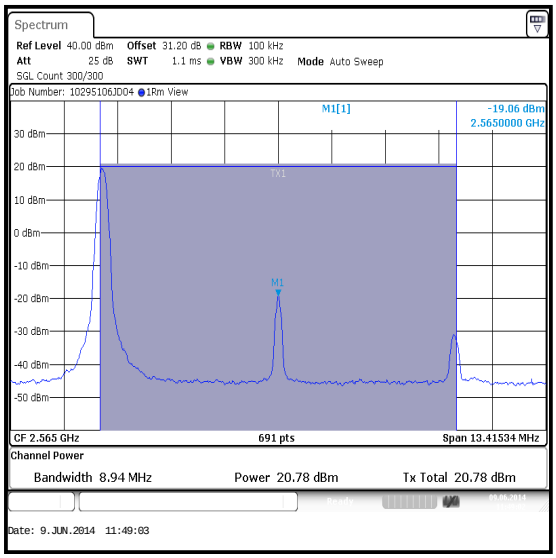
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2565.0	50	0	18.6	-1.2	17.4	33.0	15.6	Complied
2565.0	25	12	18.5	-1.2	17.3	33.0	15.7	Complied
2565.0	1	0	20.8	-1.2	19.6	33.0	13.4	Complied
2565.0	1	49	21.0	-1.2	19.8	33.0	13.2	Complied



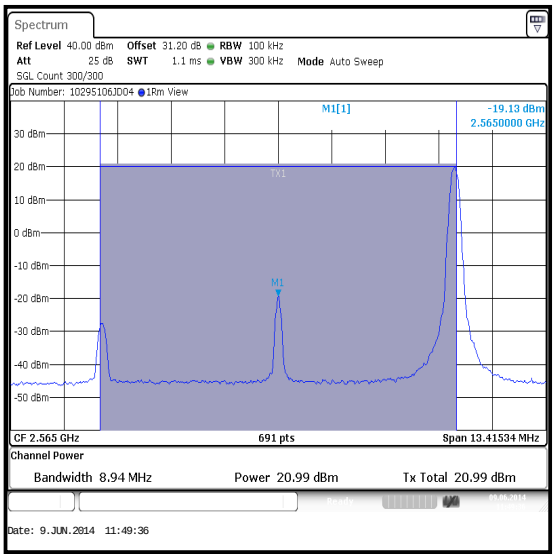
QPSK / 50 Resource Blocks (0 Offset)



QPSK / 25 Resource Blocks (12 Offset)



QPSK / 1 Resource Block (0 Offset)

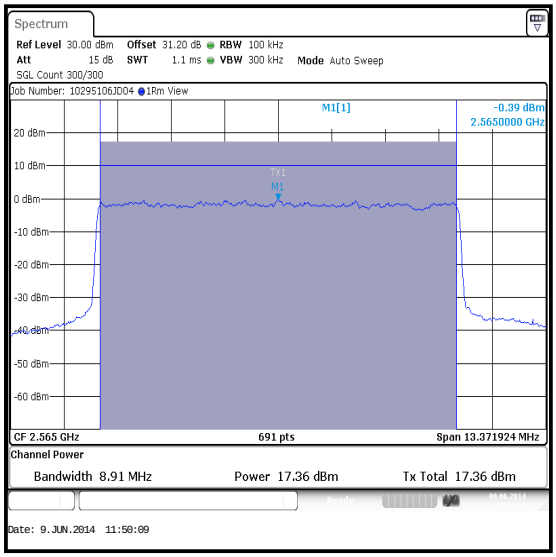


QPSK / 1 Resource Block (49 Offset)

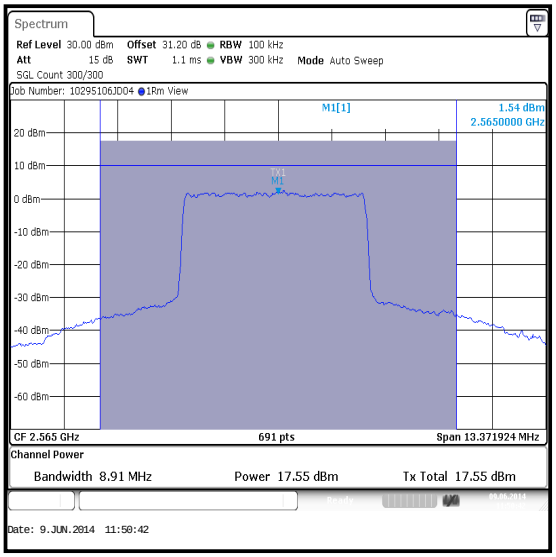
Transmitter Output Power (EIRP) (continued)

Results: 10 MHz Channel Bandwidth / Top Channel / 16QAM

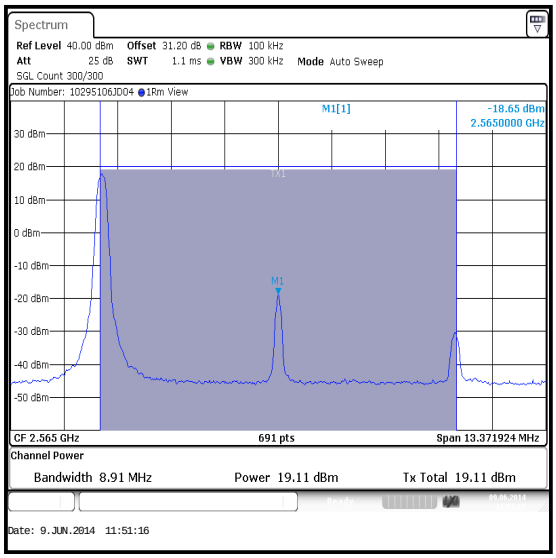
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2565.0	50	0	17.4	-1.2	16.2	33.0	16.8	Complied
2565.0	25	12	17.6	-1.2	16.4	33.0	16.6	Complied
2565.0	1	0	19.1	-1.2	17.9	33.0	15.1	Complied
2565.0	1	49	19.0	-1.2	17.8	33.0	15.2	Complied



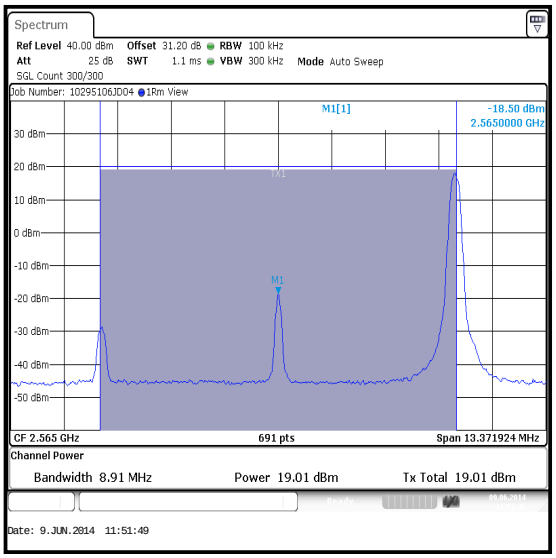
16QAM / 50 Resource Blocks (0 Offset)



16QAM / 25 Resource Blocks (12 Offset)



16QAM / 1 Resource Block (0 Offset)

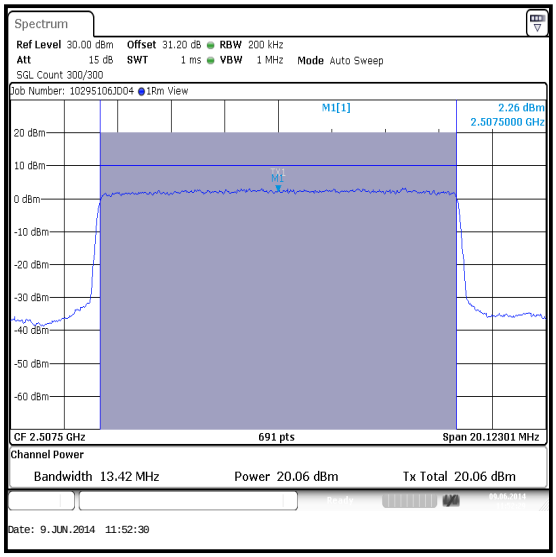


16QAM / 1 Resource Block (49 Offset)

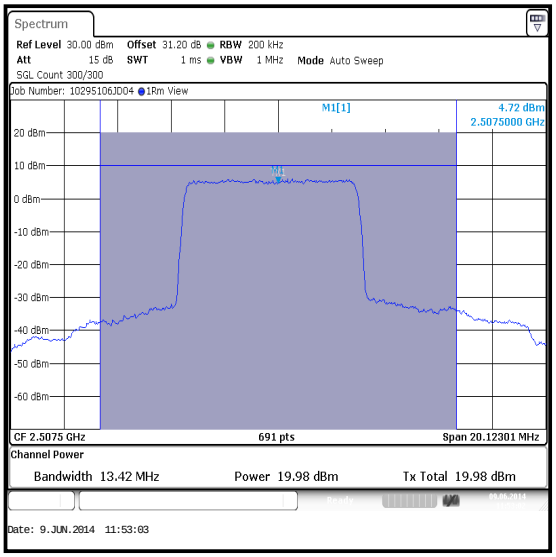
Transmitter Output Power (EIRP) (continued)

Results: 15 MHz Channel Bandwidth / Bottom Channel / QPSK

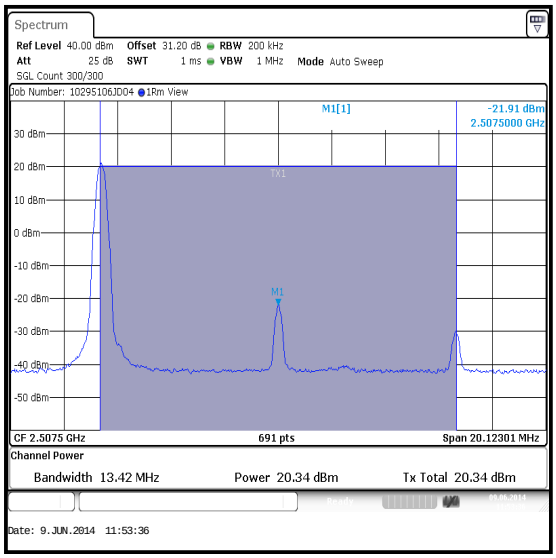
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2507.5	75	0	20.1	-1.2	18.9	33.0	14.1	Complied
2507.5	36	18	20.0	-1.2	18.8	33.0	14.2	Complied
2507.5	1	0	20.3	-1.2	19.1	33.0	13.9	Complied
2507.5	1	74	20.2	-1.2	19.0	33.0	14.0	Complied



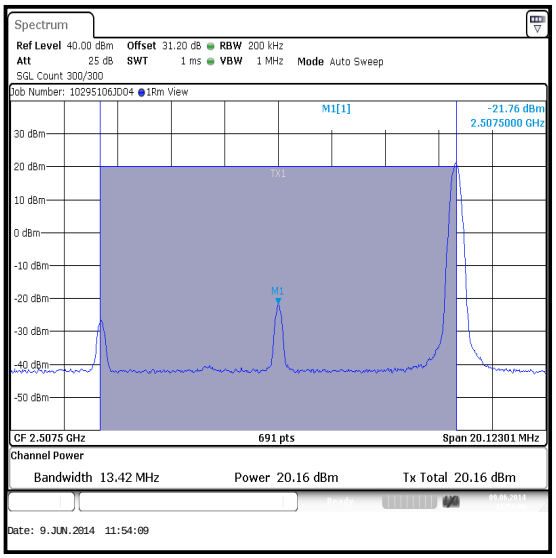
QPSK / 75 Resource Blocks (0 Offset)



QPSK / 36 Resource Blocks (18 Offset)



QPSK / 1 Resource Block (0 Offset)

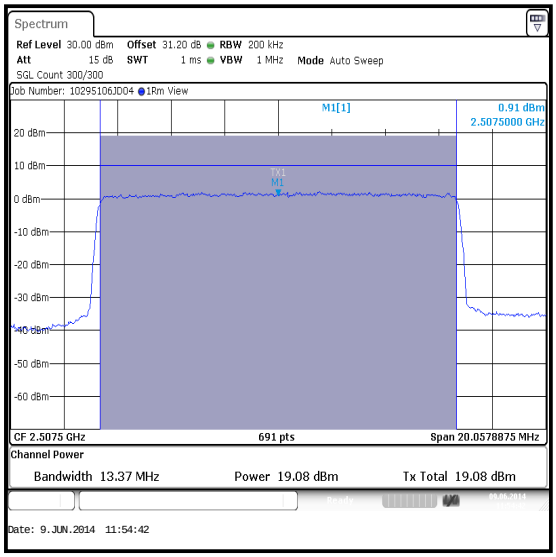


QPSK / 1 Resource Block (74 Offset)

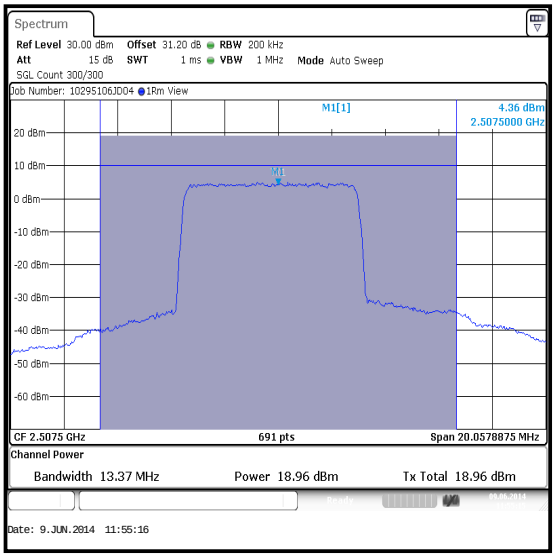
Transmitter Output Power (EIRP) (continued)

Results: 15 MHz Channel Bandwidth / Bottom Channel / 16QAM

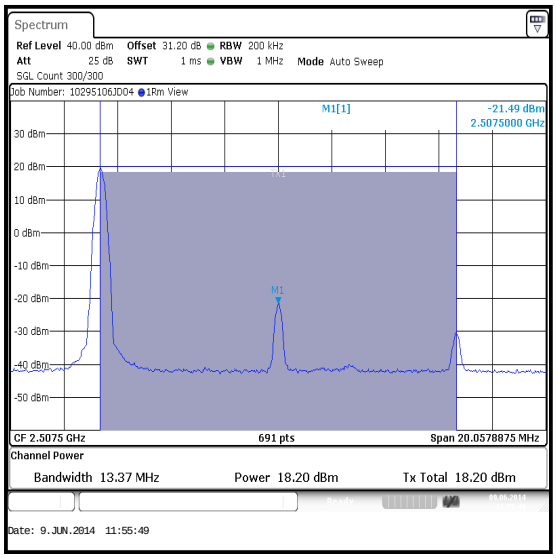
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2507.5	75	0	19.1	-1.2	17.9	33.0	15.1	Complied
2507.5	36	18	19.0	-1.2	17.8	33.0	15.2	Complied
2507.5	1	0	18.2	-1.2	17.0	33.0	16.0	Complied
2507.5	1	74	17.8	-1.2	16.6	33.0	16.4	Complied



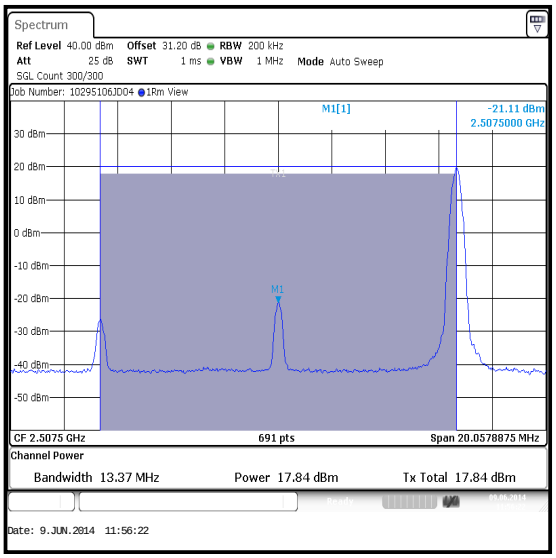
16QAM / 75 Resource Blocks (0 Offset)



16QAM / 36 Resource Blocks (18 Offset)



16QAM / 1 Resource Block (0 Offset)

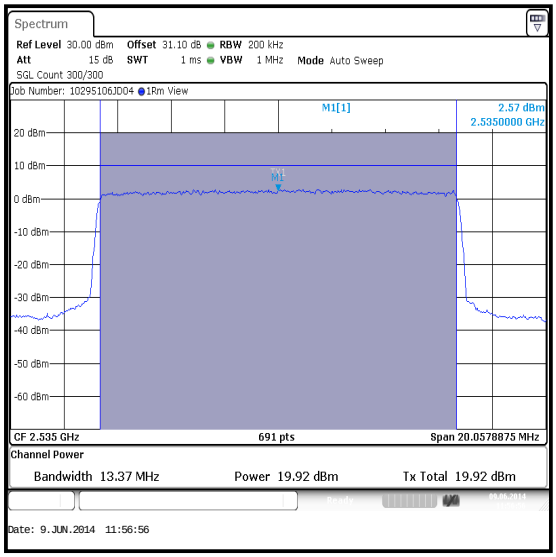


16QAM / 1 Resource Block (74 Offset)

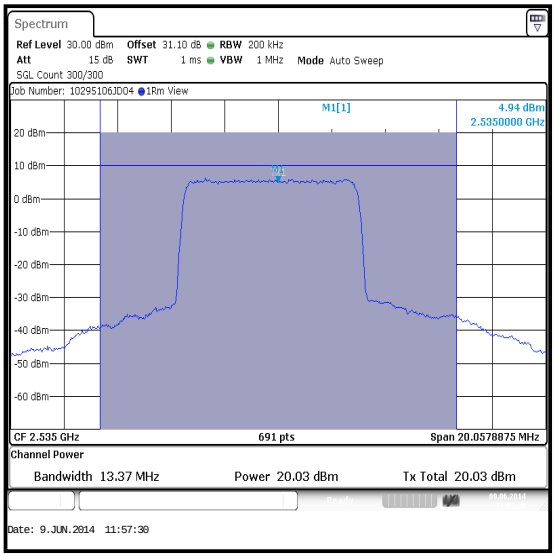
Transmitter Output Power (EIRP) (continued)

Results: 15 MHz Channel Bandwidth / Middle Channel / QPSK

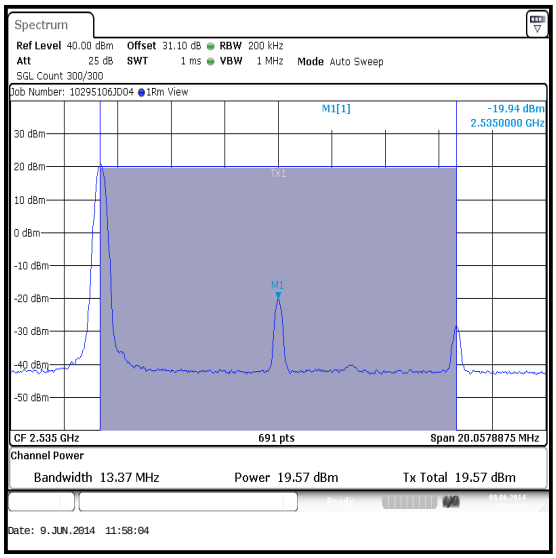
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	75	0	19.9	-1.2	18.7	33.0	14.3	Complied
2535.0	36	18	20.0	-1.2	18.8	33.0	14.2	Complied
2535.0	1	0	19.6	-1.2	18.4	33.0	14.6	Complied
2535.0	1	74	19.5	-1.2	18.3	33.0	14.7	Complied



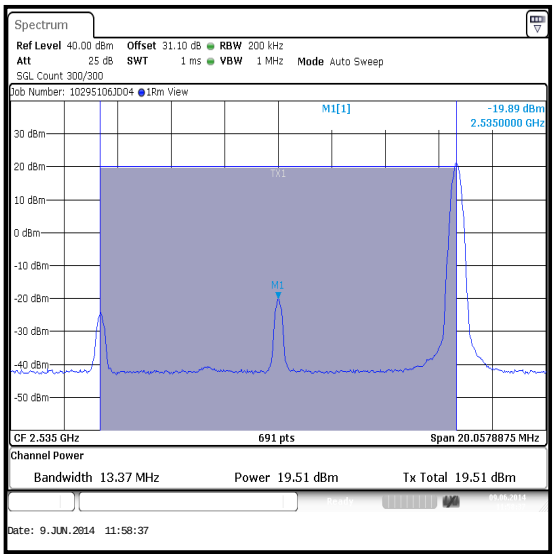
QPSK / 75 Resource Blocks (0 Offset)



QPSK / 36 Resource Blocks (18 Offset)



QPSK / 1 Resource Block (0 Offset)

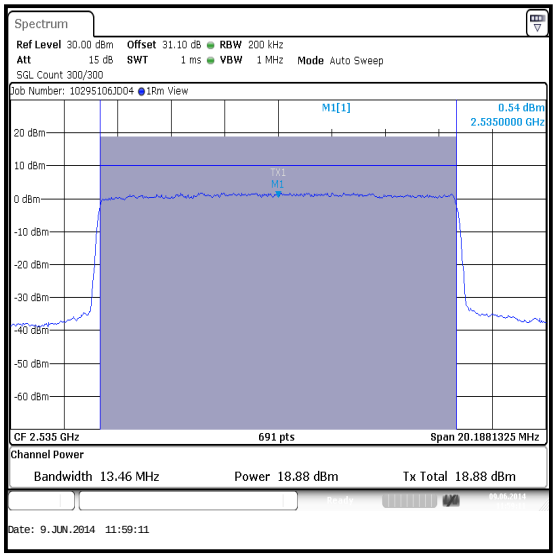


QPSK / 1 Resource Block (74 Offset)

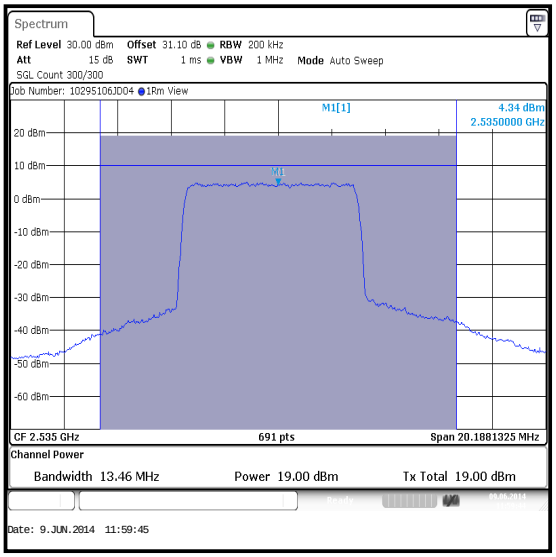
Transmitter Output Power (EIRP) (continued)

Results: 15 MHz Channel Bandwidth / Middle Channel / 16QAM

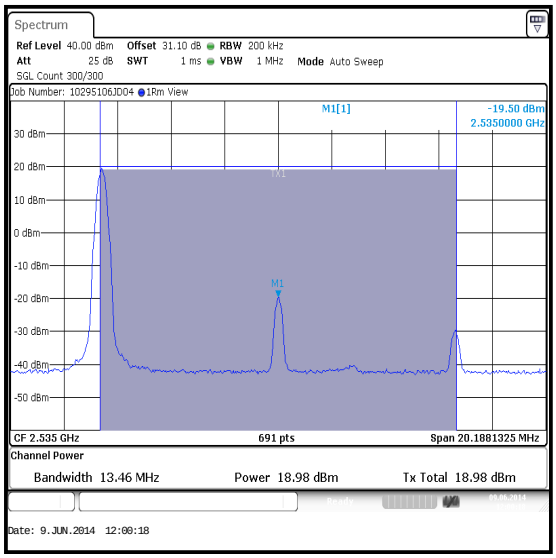
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	75	0	18.9	-1.2	17.7	33.0	15.3	Complied
2535.0	36	18	19.0	-1.2	17.8	33.0	15.2	Complied
2535.0	1	0	19.0	-1.2	17.8	33.0	15.2	Complied
2535.0	1	74	18.7	-1.2	17.5	33.0	15.5	Complied



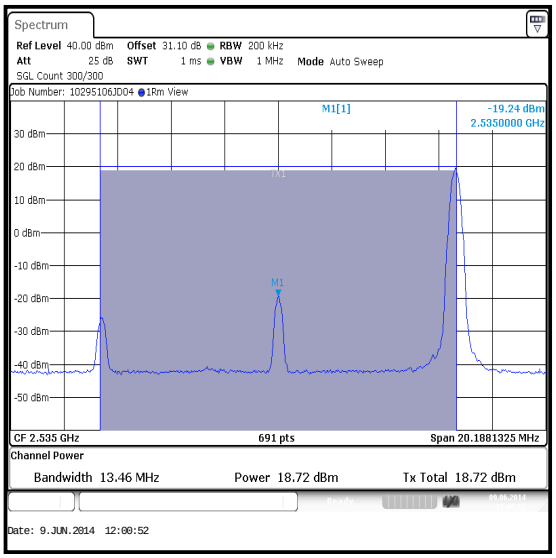
16QAM / 75 Resource Blocks (0 Offset)



16QAM / 36 Resource Blocks (18 Offset)



16QAM / 1 Resource Block (0 Offset)

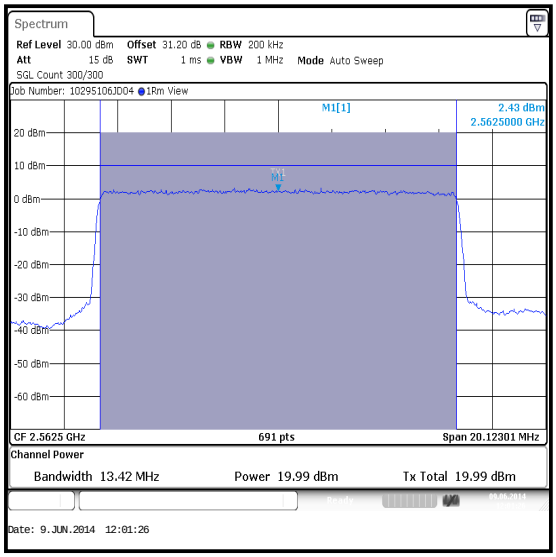


16QAM / 1 Resource Block (74 Offset)

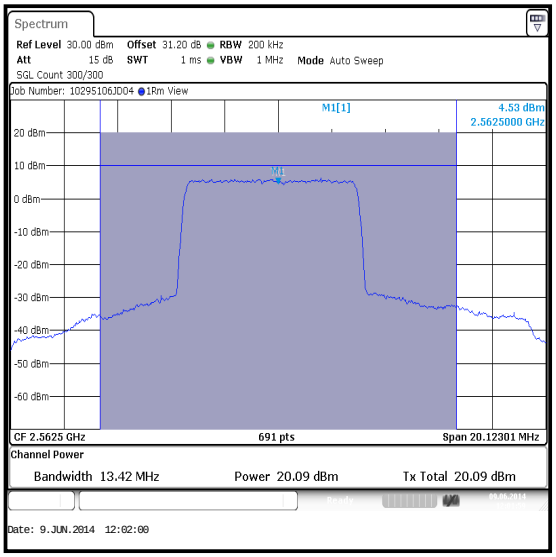
Transmitter Output Power (EIRP) (continued)

Results: 15 MHz Channel Bandwidth / Top Channel / QPSK

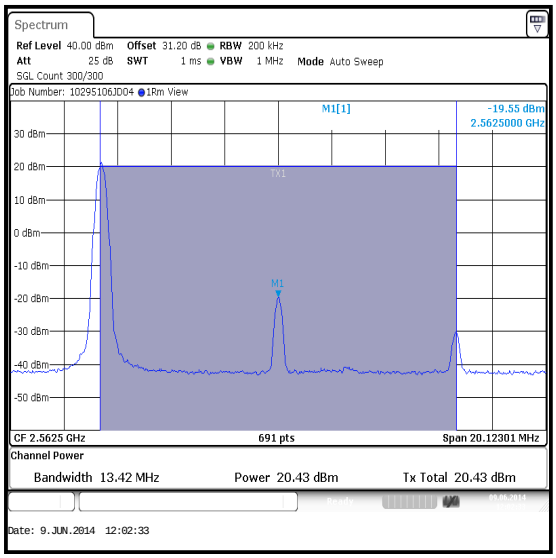
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2562.5	75	0	20.0	-1.2	18.8	33.0	14.2	Complied
2562.5	36	18	20.1	-1.2	18.9	33.0	14.1	Complied
2562.5	1	0	20.4	-1.2	19.2	33.0	13.8	Complied
2562.5	1	74	20.0	-1.2	18.8	33.0	14.2	Complied



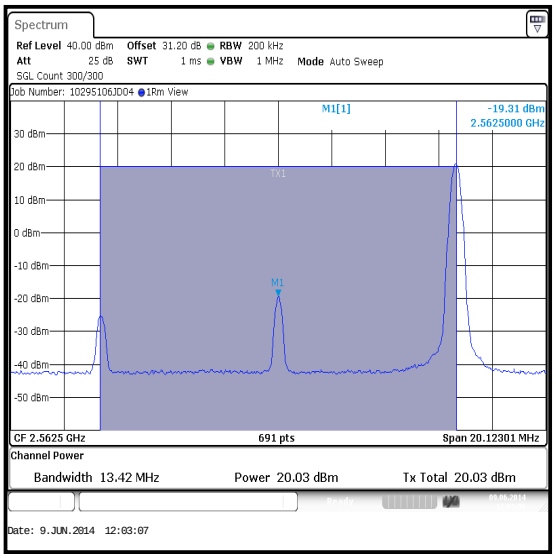
QPSK / 75 Resource Blocks (0 Offset)



QPSK / 36 Resource Blocks (18 Offset)



QPSK / 1 Resource Block (0 Offset)

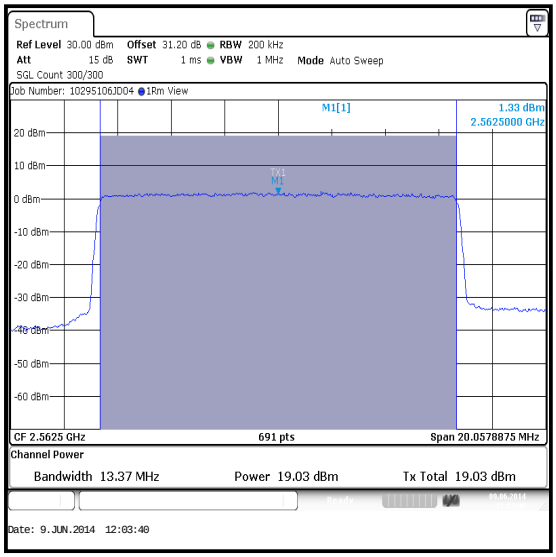


QPSK / 1 Resource Block (74 Offset)

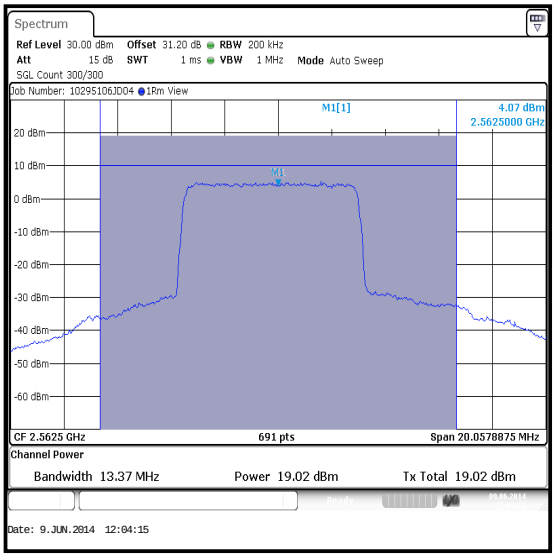
Transmitter Output Power (EIRP) (continued)

Results: 15 MHz Channel Bandwidth / Top Channel / 16QAM

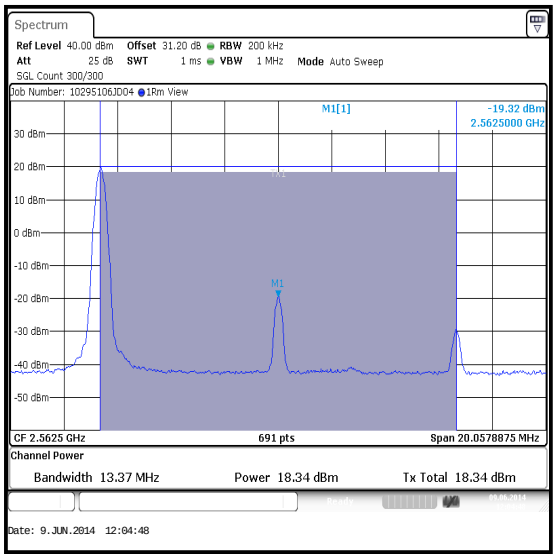
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2562.5	75	0	19.0	-1.2	17.8	33.0	15.2	Complied
2562.5	36	18	19.0	-1.2	17.8	33.0	15.2	Complied
2562.5	1	0	18.3	-1.2	17.1	33.0	15.9	Complied
2562.5	1	74	17.8	-1.2	16.6	33.0	16.4	Complied



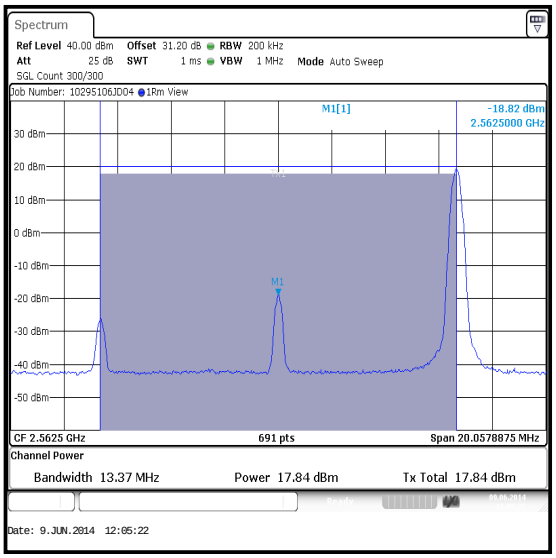
16QAM / 75 Resource Blocks (0 Offset)



16QAM / 36 Resource Blocks (18 Offset)



16QAM / 1 Resource Block (0 Offset)

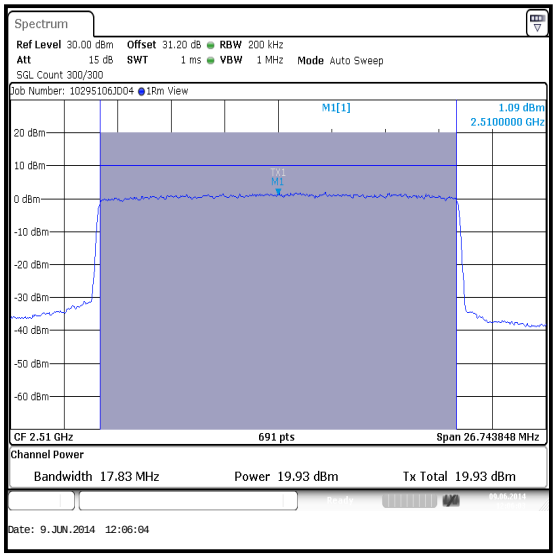


16QAM / 1 Resource Block (74 Offset)

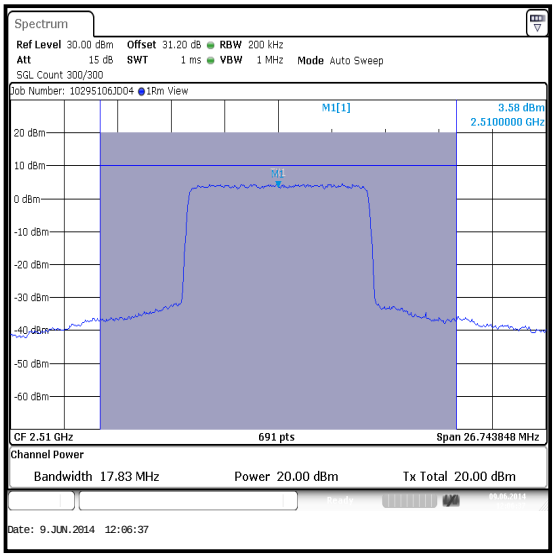
Transmitter Output Power (EIRP) (continued)

Results: 20 MHz Channel Bandwidth / Bottom Channel / QPSK

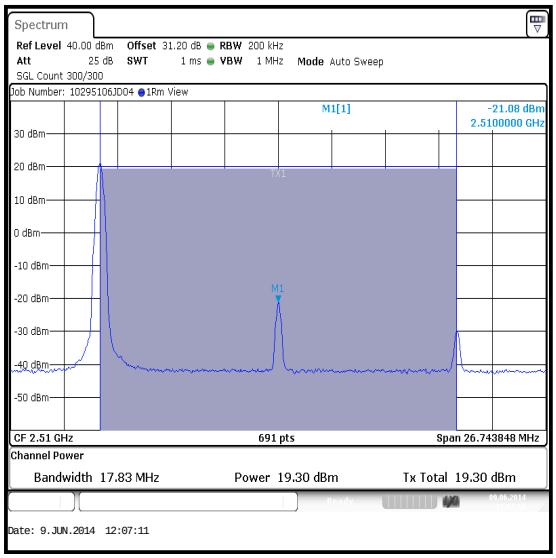
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2510.0	100	0	19.9	-1.2	18.7	33.0	14.3	Complied
2510.0	50	25	20.0	-1.2	18.8	33.0	14.2	Complied
2510.0	1	0	19.3	-1.2	18.1	33.0	14.9	Complied
2510.0	1	99	18.4	-1.2	17.2	33.0	15.8	Complied



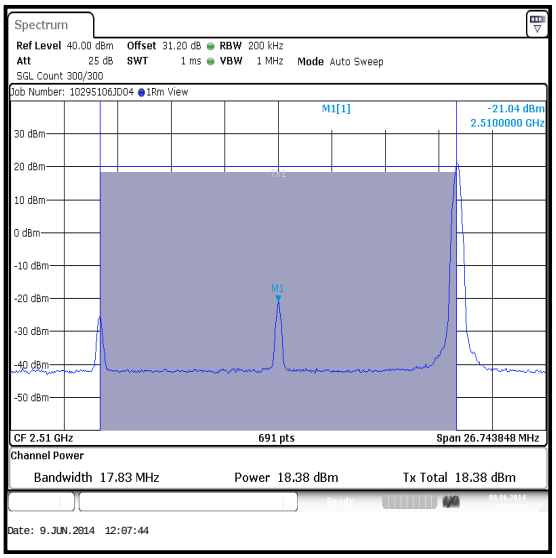
QPSK / 100 Resource Blocks (0 Offset)



QPSK / 50 Resource Blocks (25 Offset)



QPSK / 1 Resource Block (0 Offset)

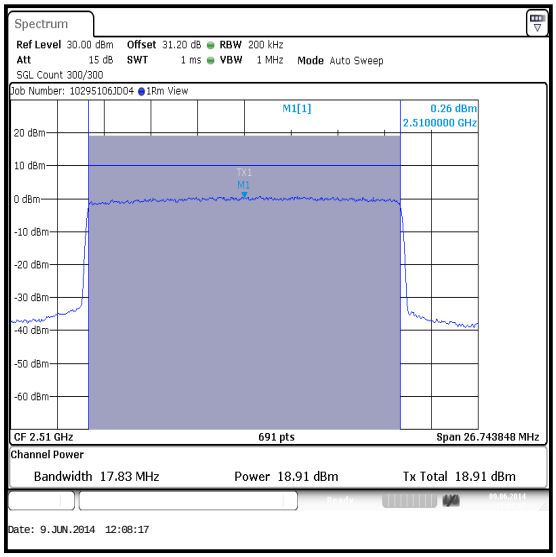


QPSK / 1 Resource Block (99 Offset)

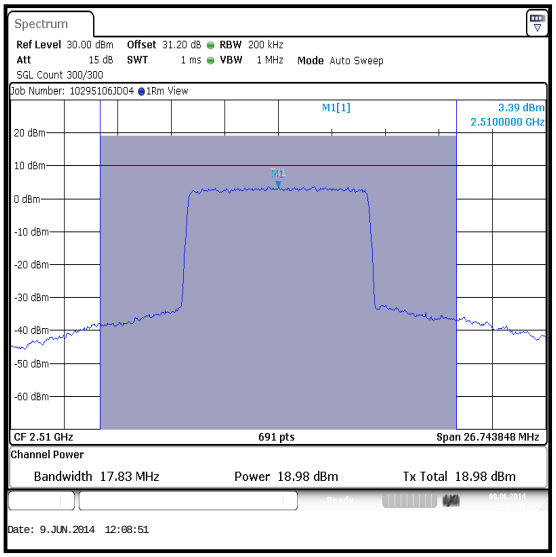
Transmitter Output Power (EIRP) (continued)

Results: 20 MHz Channel Bandwidth / Bottom Channel / 16QAM

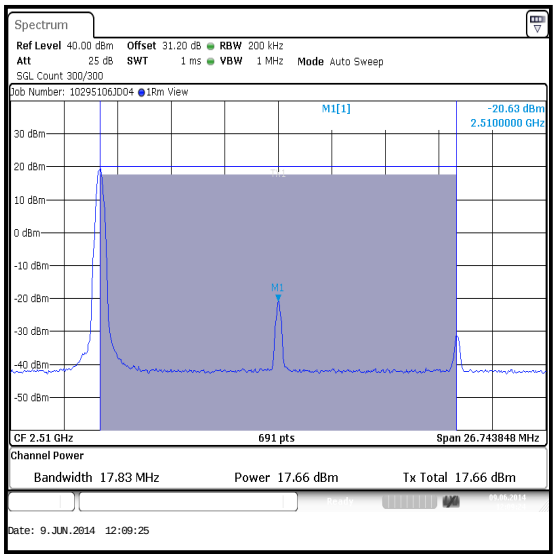
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2510.0	100	0	18.9	-1.2	17.7	33.0	15.3	Complied
2510.0	50	25	19.0	-1.2	17.8	33.0	15.2	Complied
2510.0	1	0	17.7	-1.2	16.5	33.0	16.5	Complied
2510.0	1	99	17.5	-1.2	16.3	33.0	16.7	Complied



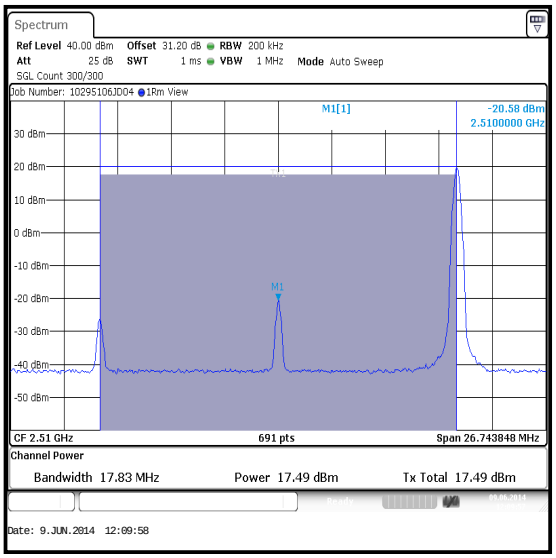
16QAM / 100 Resource Blocks (0 Offset)



16QAM / 50 Resource Blocks (25 Offset)



16QAM / 1 Resource Block (0 Offset)

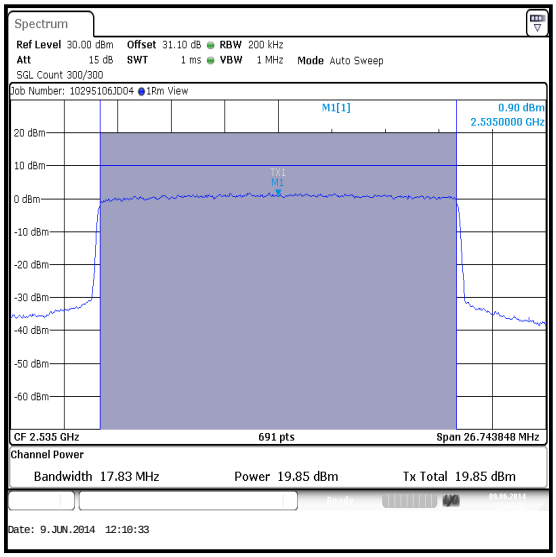


16QAM / 1 Resource Block (99 Offset)

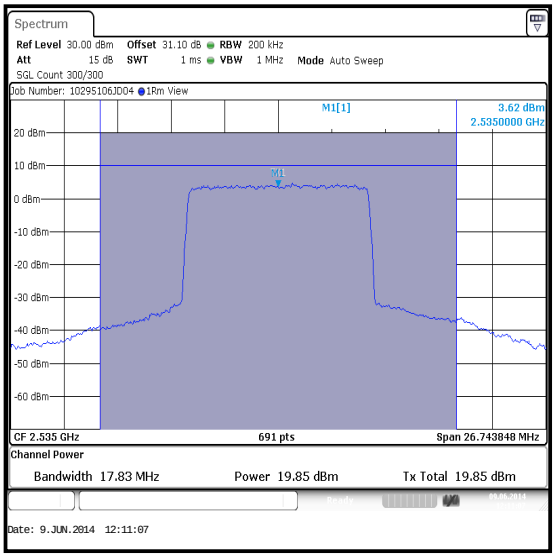
Transmitter Output Power (EIRP) (continued)

Results: 20 MHz Channel Bandwidth / Middle Channel / QPSK

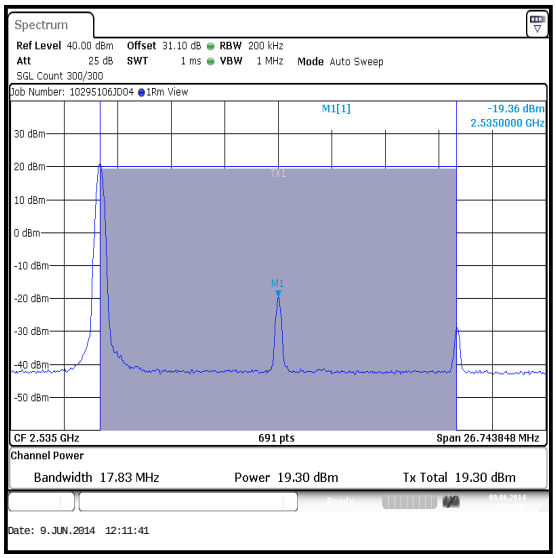
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	100	0	19.9	-1.2	18.7	33.0	14.3	Complied
2535.0	50	25	19.9	-1.2	18.7	33.0	14.3	Complied
2535.0	1	0	19.3	-1.2	18.1	33.0	14.9	Complied
2535.0	1	99	18.7	-1.2	17.5	33.0	15.5	Complied



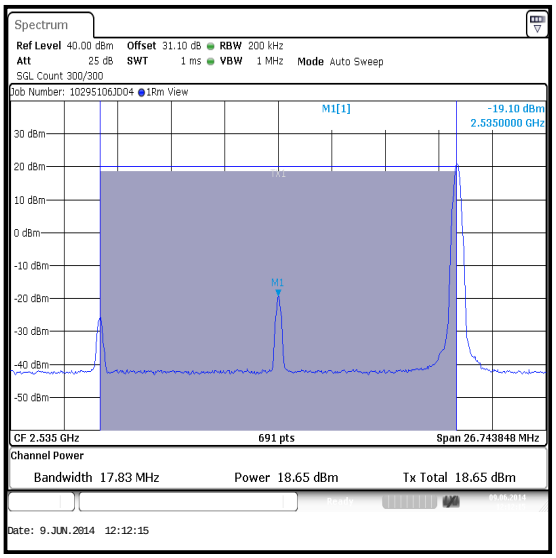
QPSK / 100 Resource Blocks (0 Offset)



QPSK / 50 Resource Blocks (25 Offset)



QPSK / 1 Resource Block (0 Offset)

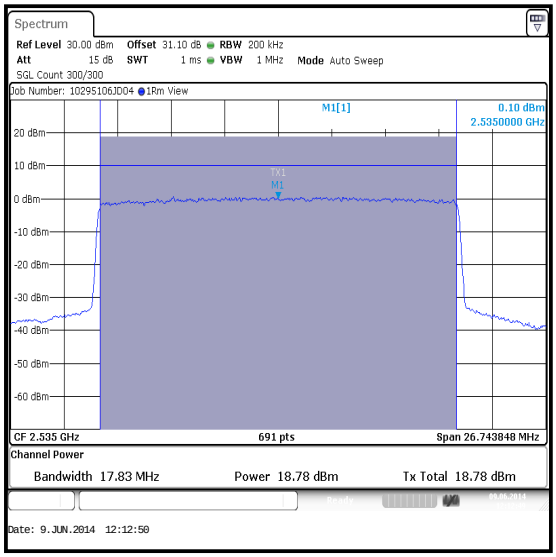


QPSK / 1 Resource Block (99 Offset)

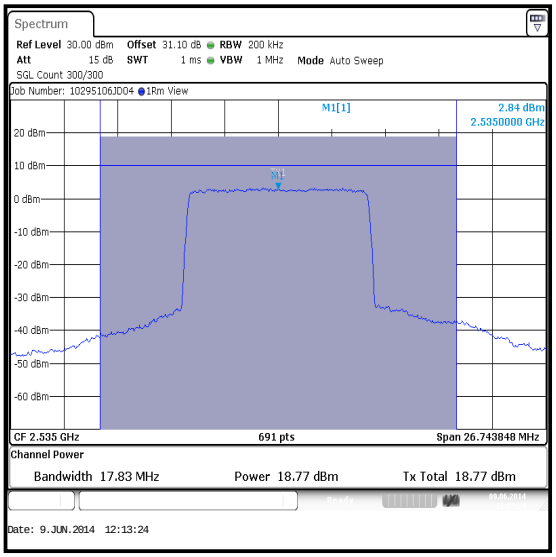
Transmitter Output Power (EIRP) (continued)

Results: 20 MHz Channel Bandwidth / Middle Channel / 16QAM

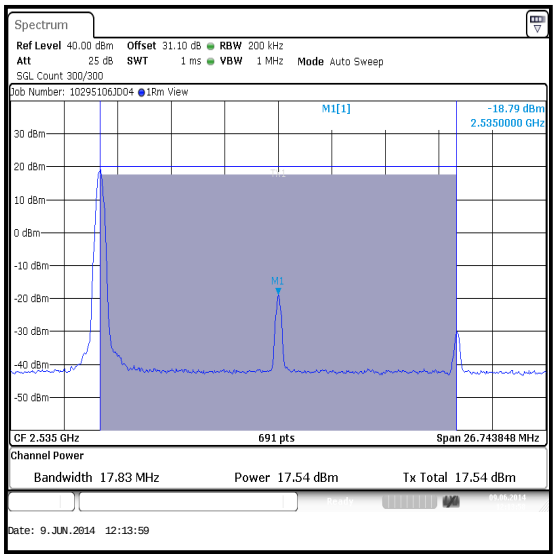
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2535.0	100	0	18.8	-1.2	17.6	33.0	15.4	Complied
2535.0	50	25	18.8	-1.2	17.6	33.0	15.4	Complied
2535.0	1	0	17.5	-1.2	16.3	33.0	16.7	Complied
2535.0	1	99	16.7	-1.2	15.5	33.0	17.5	Complied



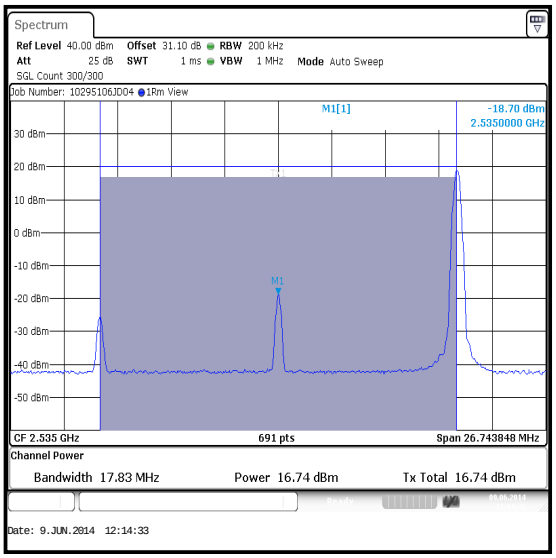
16QAM / 100 Resource Blocks (0 Offset)



16QAM / 50 Resource Blocks (25 Offset)



16QAM / 1 Resource Block (0 Offset)

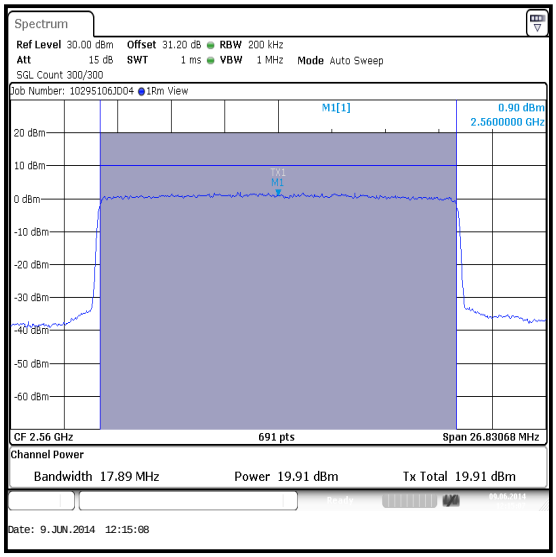


16QAM / 1 Resource Block (99 Offset)

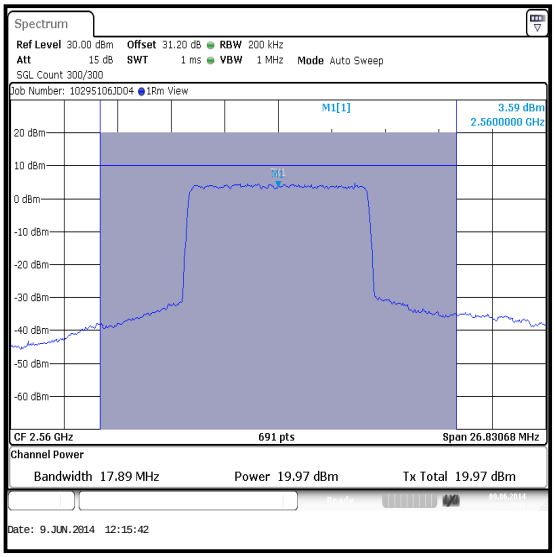
Transmitter Output Power (EIRP) (continued)

Results: 20 MHz Channel Bandwidth / Top Channel / QPSK

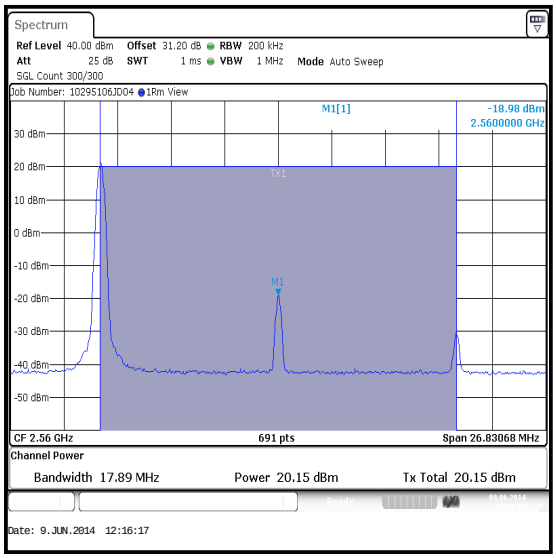
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2560.0	100	0	19.9	-1.2	18.7	33.0	14.3	Complied
2560.0	50	25	20.0	-1.2	18.8	33.0	14.2	Complied
2560.0	1	0	20.2	-1.2	19.0	33.0	14.0	Complied
2560.0	1	99	19.5	-1.2	18.3	33.0	14.7	Complied



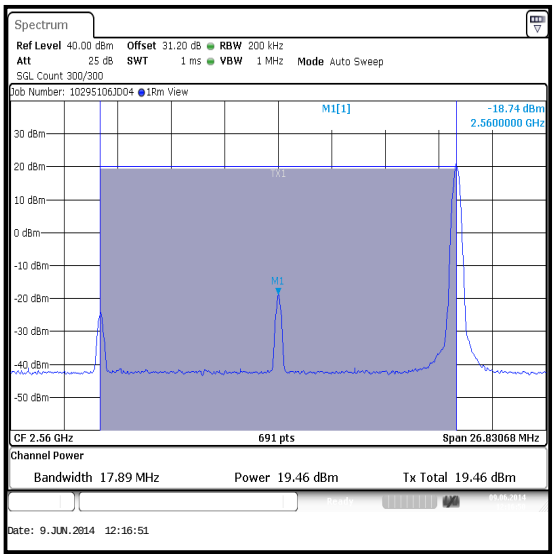
QPSK / 100 Resource Blocks (0 Offset)



QPSK / 50 Resource Blocks (25 Offset)



QPSK / 1 Resource Block (0 Offset)

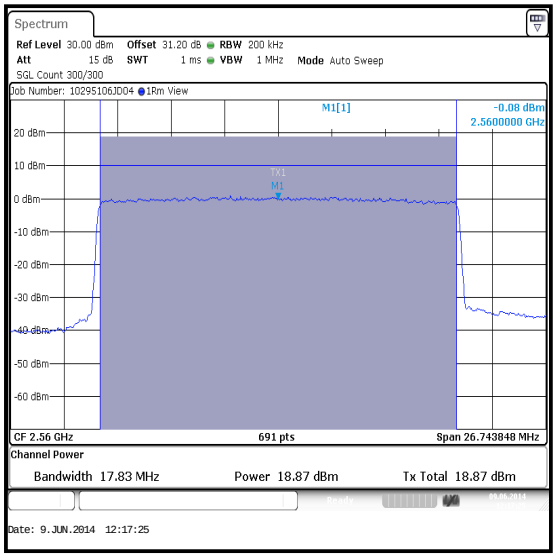


QPSK / 1 Resource Block (99 Offset)

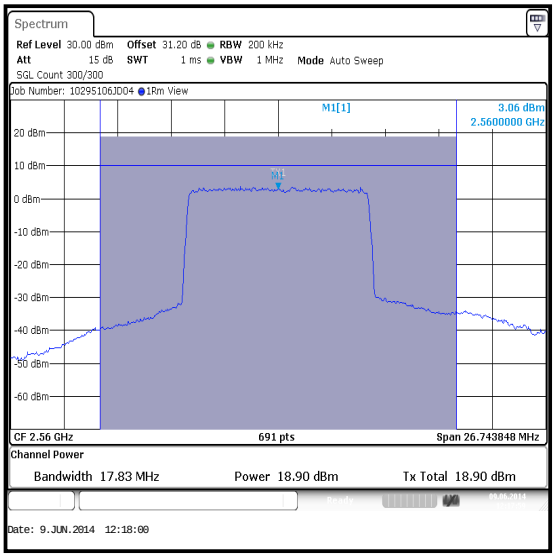
Transmitter Output Power (EIRP) (continued)

Results: 20 MHz Channel Bandwidth / Top Channel / 16QAM

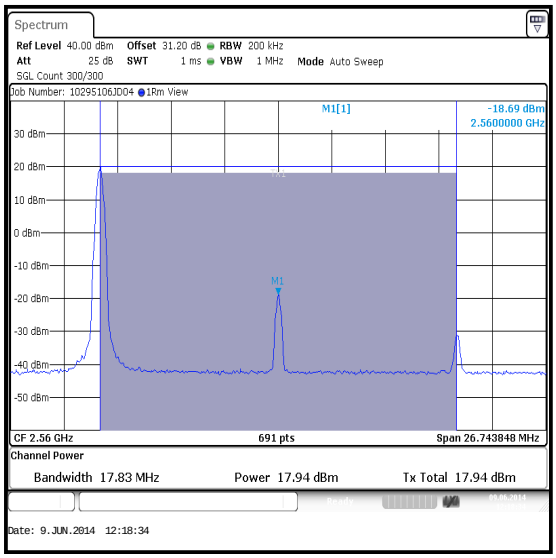
Frequency (MHz)	Resource Block(s)	Resource Block Offset	Conducted RF Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)	Result
2560.0	100	0	18.9	-1.2	17.7	33.0	15.3	Complied
2560.0	50	25	18.9	-1.2	17.7	33.0	15.3	Complied
2560.0	1	0	17.9	-1.2	16.7	33.0	16.3	Complied
2560.0	1	99	17.2	-1.2	16.0	33.0	17.0	Complied



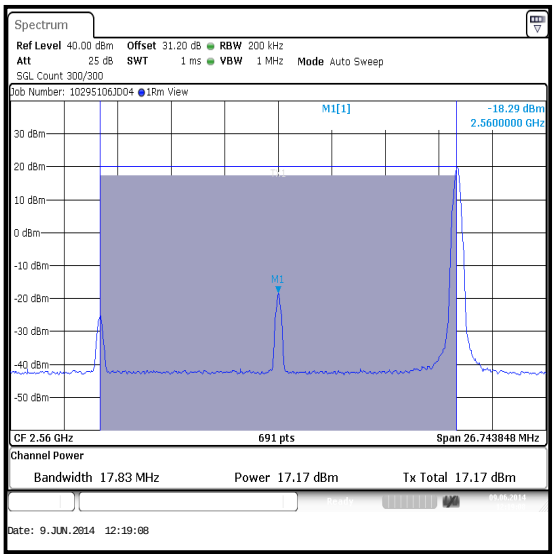
16QAM / 100 Resource Blocks (0 Offset)



16QAM / 50 Resource Blocks (25 Offset)



16QAM / 1 Resource Block (0 Offset)



16QAM / 1 Resource Block (99 Offset)

Transmitter Output Power (EIRP) (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	14 Mar 2015	12
L1127	Signal Analyser	Rohde & Schwarz	FSV13	100863	24 April 2015	12
A2535	Directional Coupler	AtlanTecRF	CDC-003060-20	14041701719	Calibrated before use	-
A2508	Attenuator	AtlanTecRF	AN18-10	821846#3	Calibrated before use	-
S0557	DC Power Supply	Tti	EL303R	395819	Calibrated before use	-
M1251	Digital Multimeter	Fluke	175	8717019	19 May 2015	12
M1009	Power Meter	Hewlett Packard	437B	3125U13706	04 Feb 2015	12
M1592	Power Sensor	Hewlett Packard	8487A	3318A02094	28 Aug 2014	12
G0608	Signal Generator	Rohde & Schwarz	SMIQ 06B	838341/033	14 Feb 2015	12

5.2.2. Transmitter Occupied Bandwidth

Test Summary:

Test Engineer:	Ben Mercer	**Test Date:**	09 June 2014
Test Sample IMEI:	004402452727823		

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

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	40 to 42

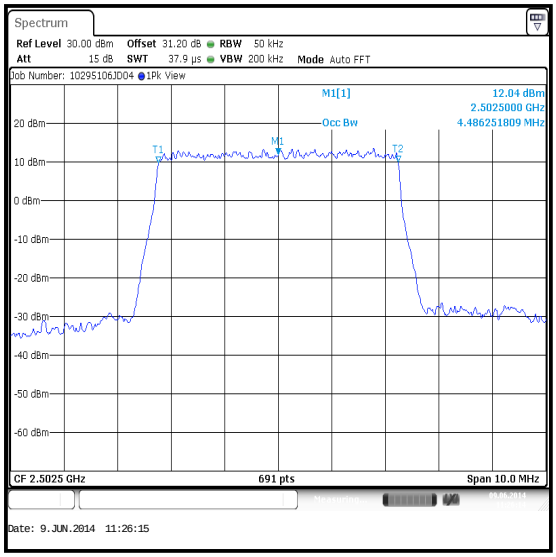
Note(s):

1. Occupied bandwidth (99% bandwidth) was measured using a test receiver occupied bandwidth function.
2. Measurements were performed with the EUT transmitting with QPSK and 16QAM modulation schemes, with resource blocks settings as detailed in section 4.3 of this report.
3. The RF port of the EUT was connected to the spectrum analyser via RF cables, directional coupler and suitable attenuation.

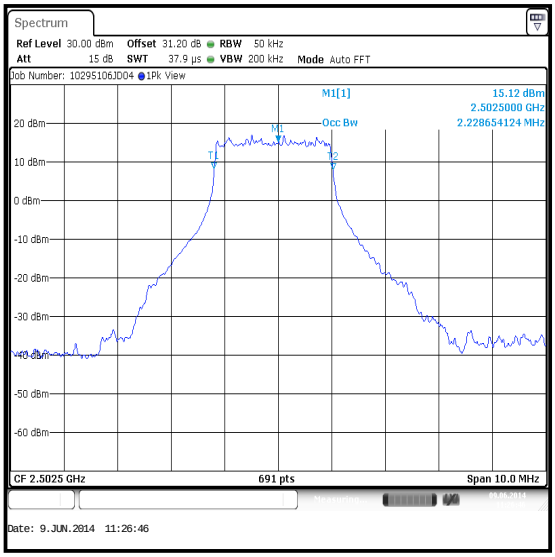
Transmitter Occupied Bandwidth (continued)

Results: 5 MHz Channel Bandwidth / Bottom Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2502.5	25	0	50	200	4.486
2502.5	12	6	50	200	2.229



QPSK / 25 Resource Blocks (0 Offset)

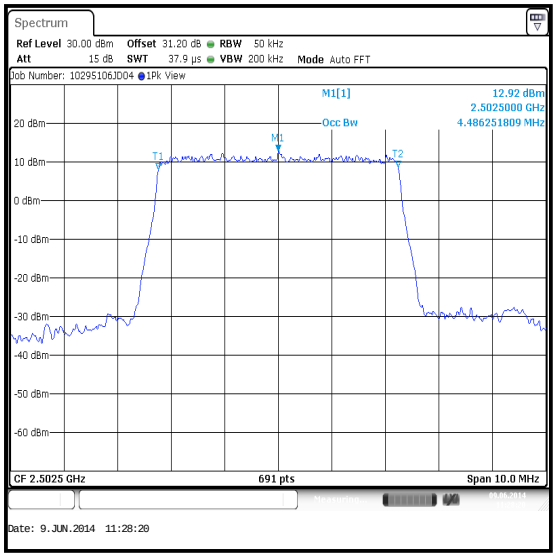


QPSK / 12 Resource Blocks (6 Offset)

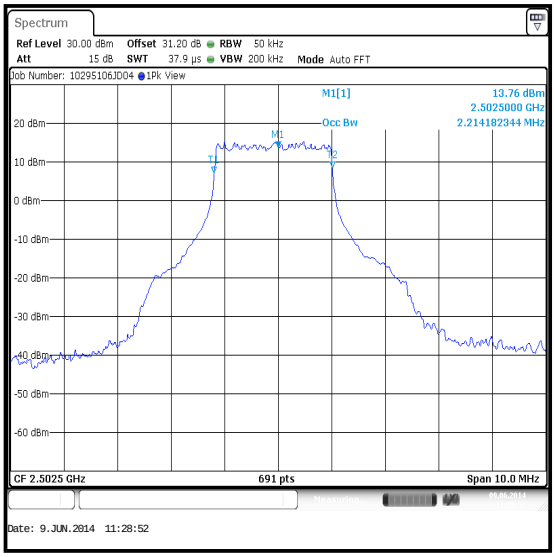
Transmitter Occupied Bandwidth (continued)

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

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2502.5	25	0	50	200	4.486
2502.5	12	6	50	200	2.214



16QAM / 25 Resource Blocks (0 Offset)

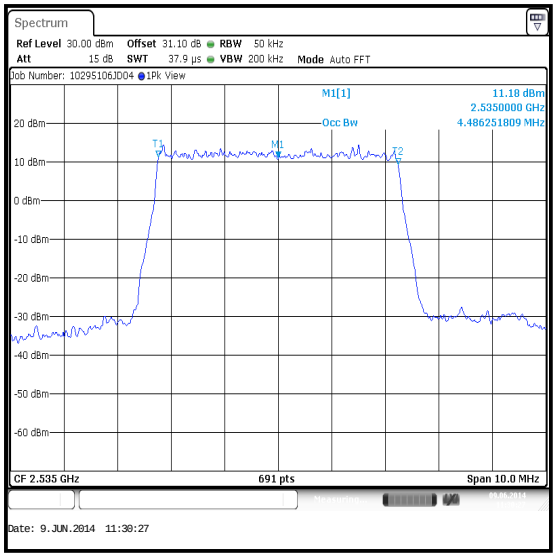


16QAM / 12 Resource Blocks (6 Offset)

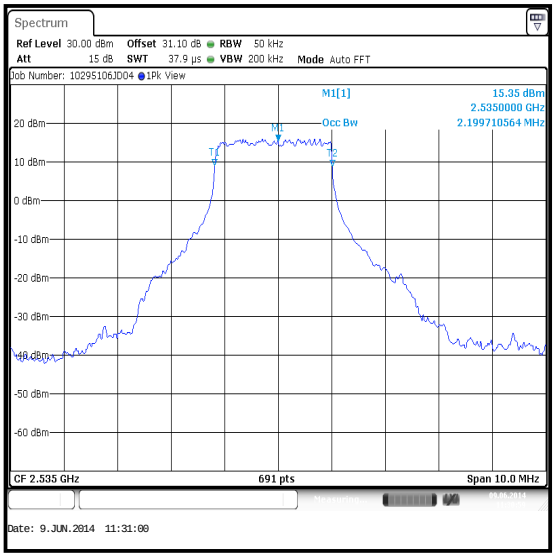
Transmitter Occupied Bandwidth (continued)

Results: 5 MHz Channel Bandwidth / Middle Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	25	0	50	200	4.486
2535.0	12	6	50	200	2.200



QPSK / 25 Resource Blocks (0 Offset)

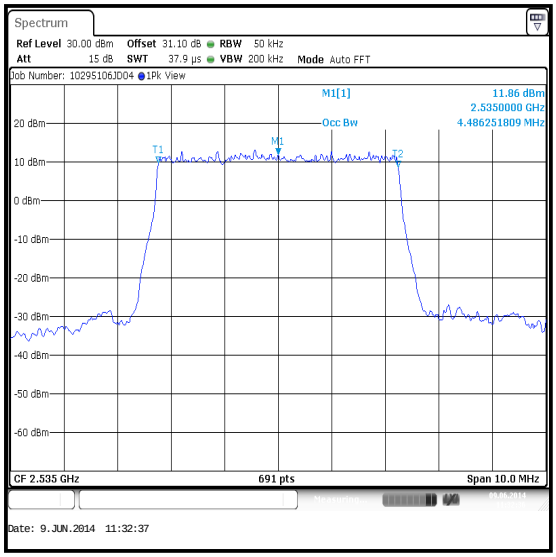


QPSK / 12 Resource Blocks (6 Offset)

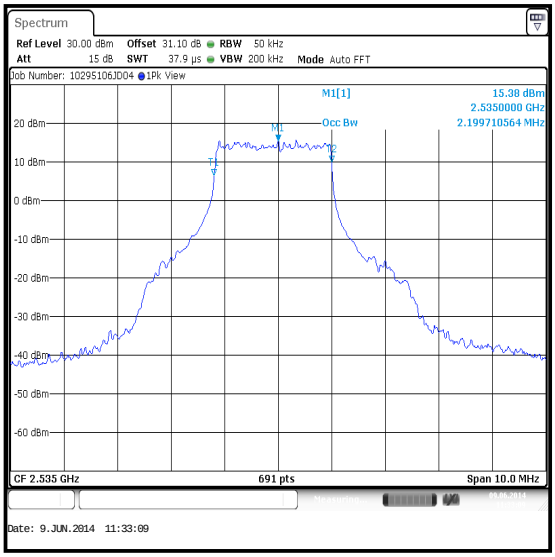
Transmitter Occupied Bandwidth (continued)

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

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	25	0	50	200	4.486
2535.0	12	6	50	200	2.200



16QAM / 25 Resource Blocks (0 Offset)

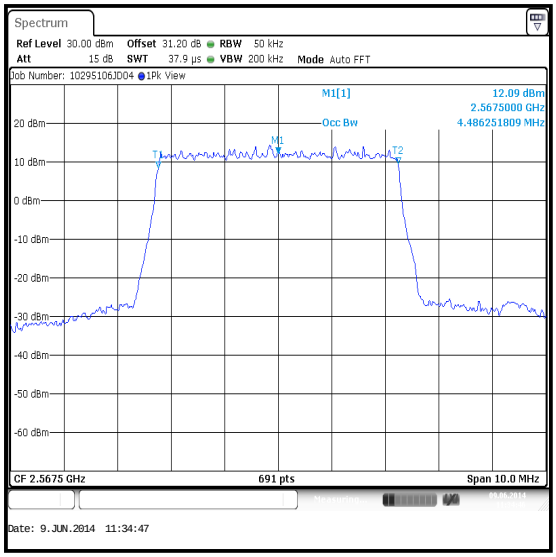


16QAM / 12 Resource Blocks (6 Offset)

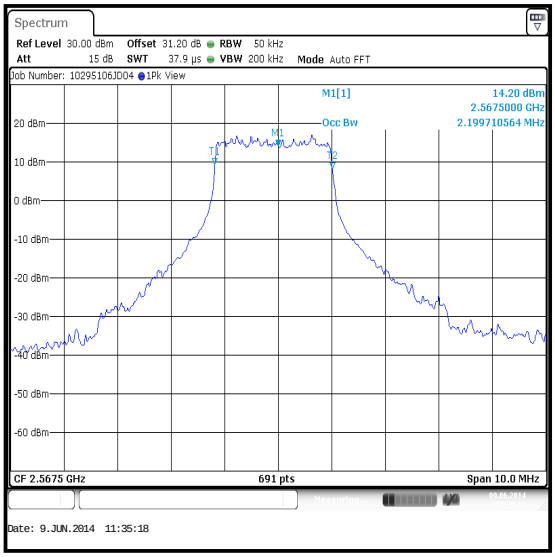
Transmitter Occupied Bandwidth (continued)

Results: 5 MHz Channel Bandwidth / Top Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2567.5	25	0	50	200	4.486
2567.5	12	6	50	200	2.200



QPSK / 25 Resource Blocks (0 Offset)

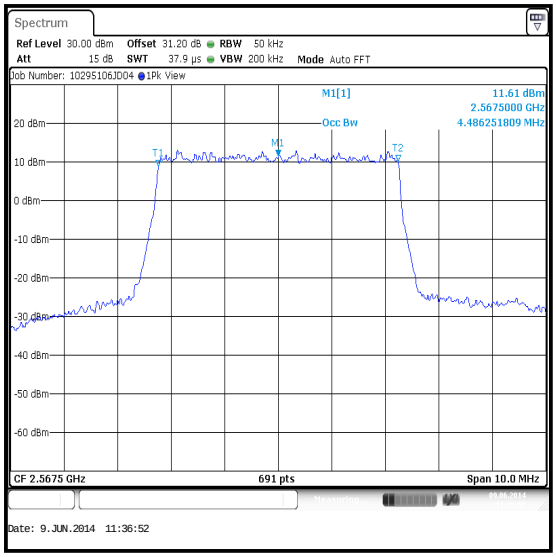


QPSK / 12 Resource Blocks (6 Offset)

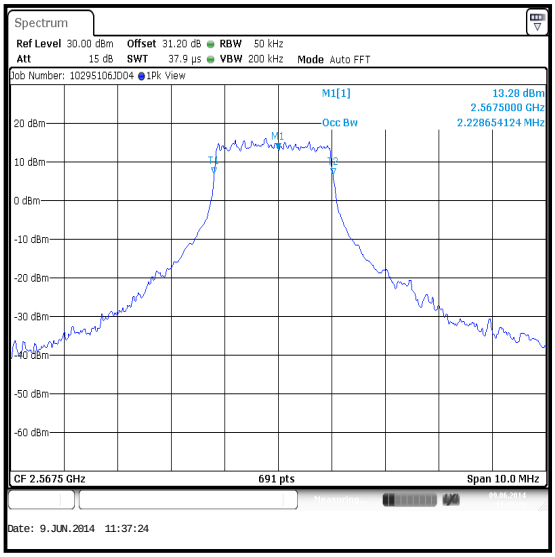
Transmitter Occupied Bandwidth (continued)

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

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2567.5	25	0	50	200	4.486
2567.5	12	6	50	200	2.229



16QAM / 25 Resource Blocks (0 Offset)

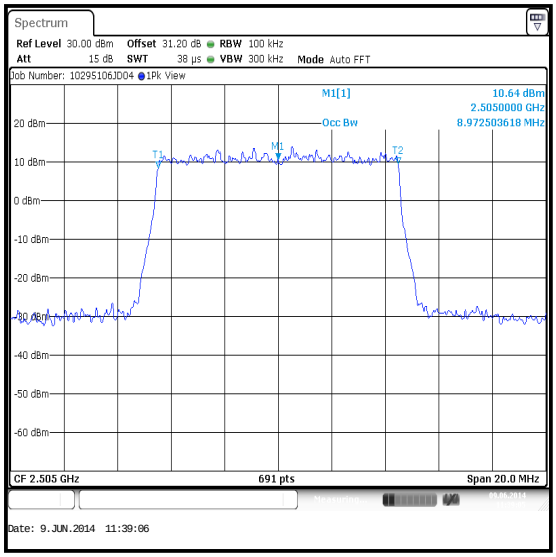


16QAM / 12 Resource Blocks (6 Offset)

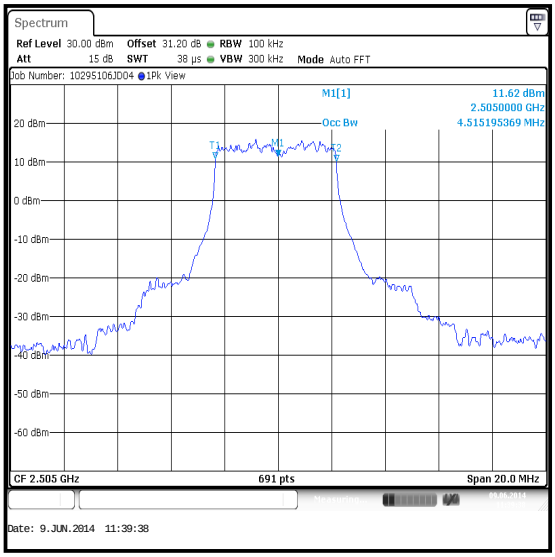
Transmitter Occupied Bandwidth (continued)

Results: 10 MHz Channel Bandwidth / Bottom Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2505.0	50	0	100	300	8.973
2505.0	25	12	100	300	4.515



QPSK / 50 Resource Blocks (0 Offset)

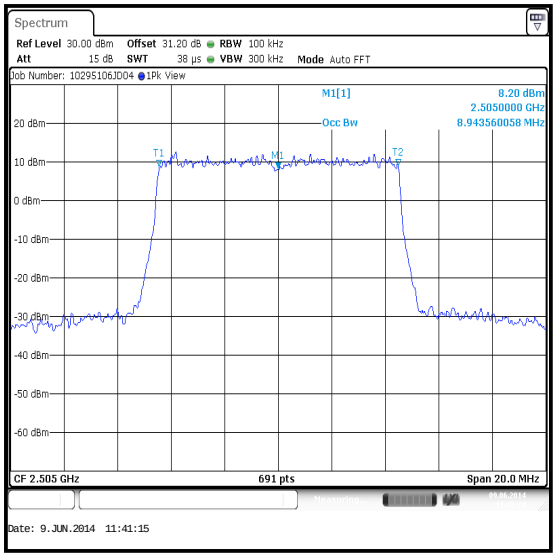


QPSK / 25 Resource Blocks (12 Offset)

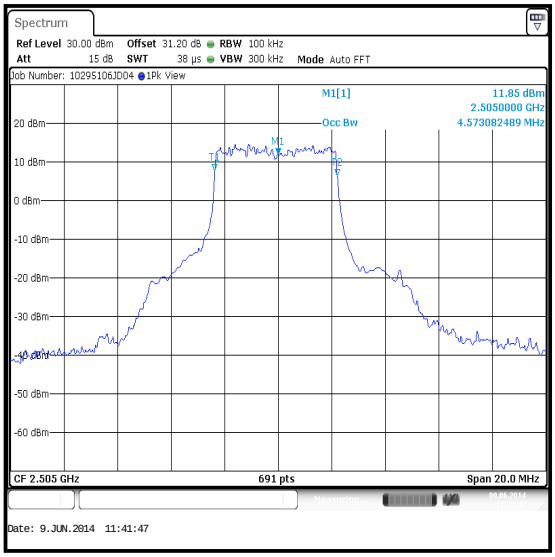
Transmitter Occupied Bandwidth (continued)

Results: 10 MHz Channel Bandwidth / Bottom Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2505.0	50	0	100	300	8.944
2505.0	25	12	100	300	4.573



16QAM / 50 Resource Blocks (0 Offset)

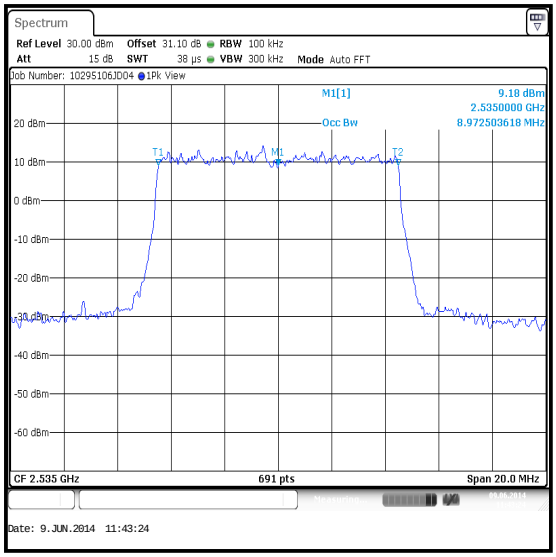


16QAM / 25 Resource Blocks (12 Offset)

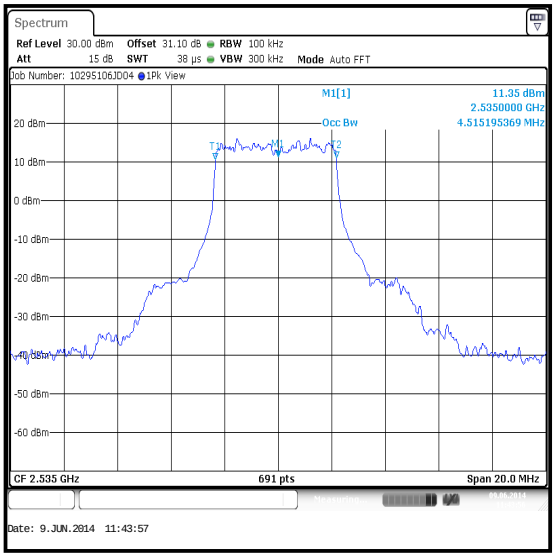
Transmitter Occupied Bandwidth (continued)

Results: 10 MHz Channel Bandwidth / Middle Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	50	0	100	300	8.973
2535.0	25	12	100	300	4.515



QPSK / 50 Resource Blocks (0 Offset)

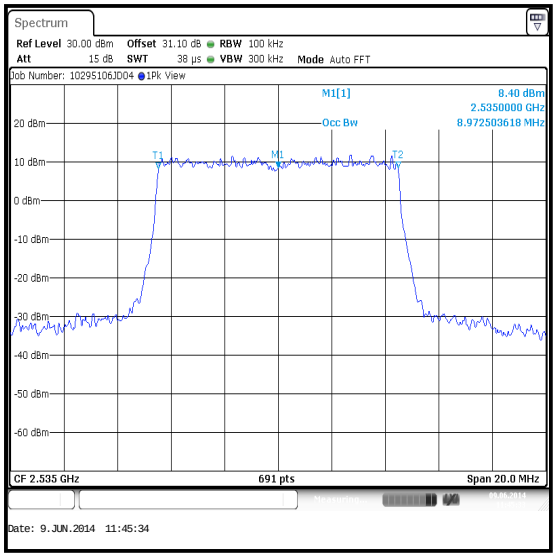


QPSK / 25 Resource Blocks (12 Offset)

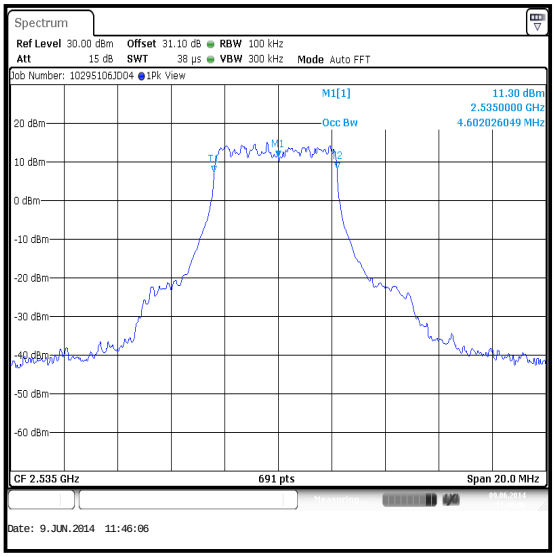
Transmitter Occupied Bandwidth (continued)

Results: 10 MHz Channel Bandwidth / Middle Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	50	0	100	300	8.973
2535.0	25	12	100	300	4.602



16QAM / 50 Resource Blocks (0 Offset)

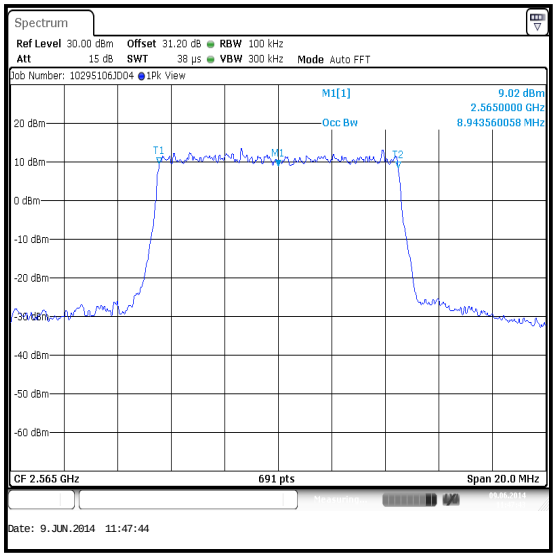


16QAM / 25 Resource Blocks (12 Offset)

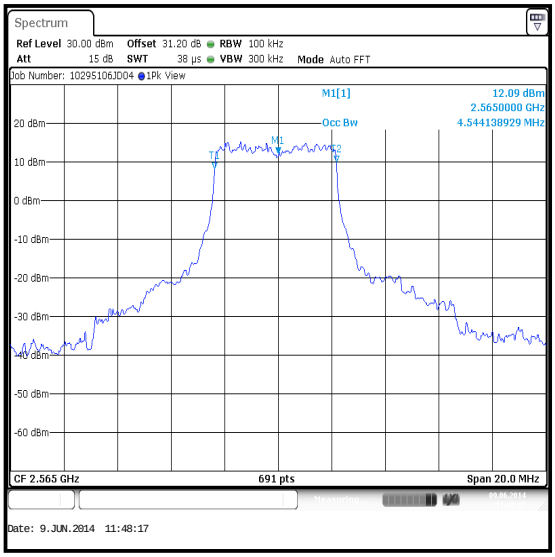
Transmitter Occupied Bandwidth (continued)

Results: 10 MHz Channel Bandwidth / Top Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2565.0	50	0	100	300	8.944
2565.0	25	12	100	300	4.544



QPSK / 50 Resource Blocks (0 Offset)

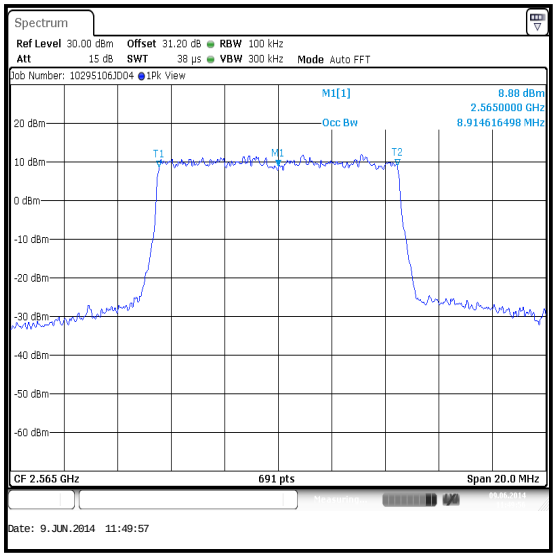


QPSK / 25 Resource Blocks (12 Offset)

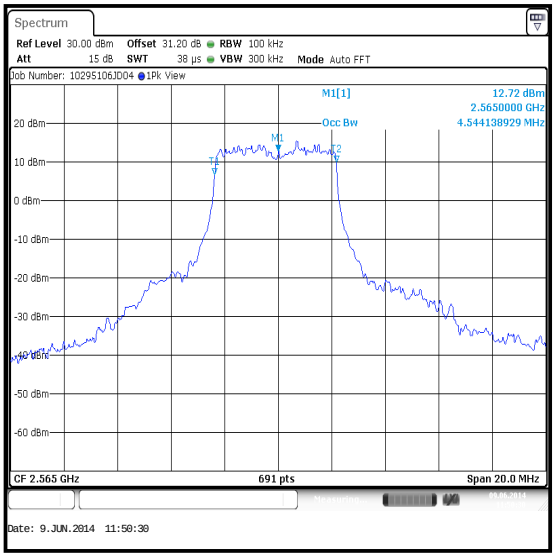
Transmitter Occupied Bandwidth (continued)

Results: 10 MHz Channel Bandwidth / Top Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2565.0	50	0	100	300	8.915
2565.0	25	12	100	300	4.544



16QAM / 50 Resource Blocks (0 Offset)

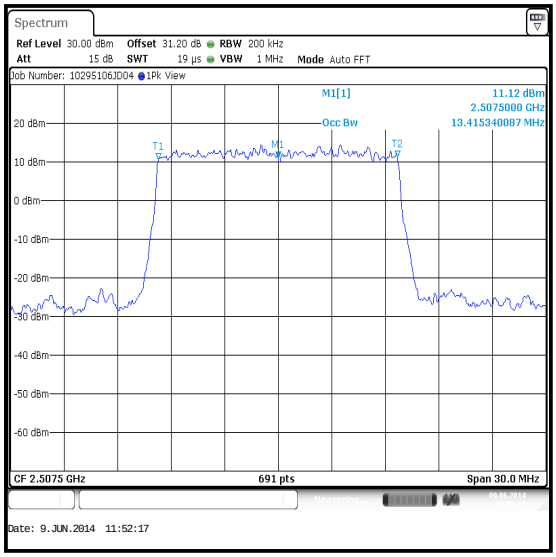


16QAM / 25 Resource Blocks (12 Offset)

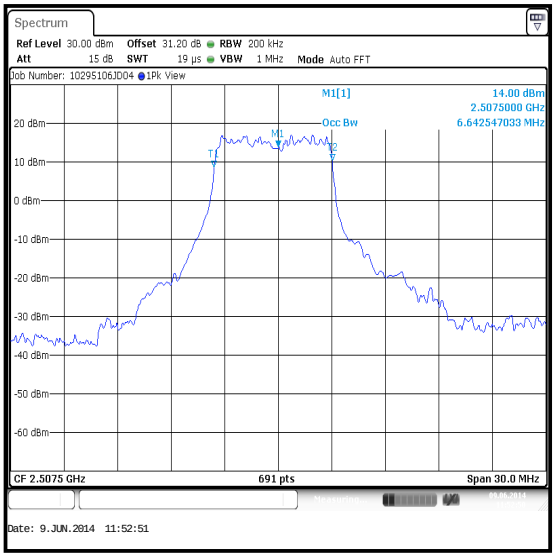
Transmitter Occupied Bandwidth (continued)

Results: 15 MHz Channel Bandwidth / Bottom Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2507.5	75	0	200	1000	13.415
2507.5	36	18	200	1000	6.643



QPSK / 75 Resource Blocks (0 Offset)

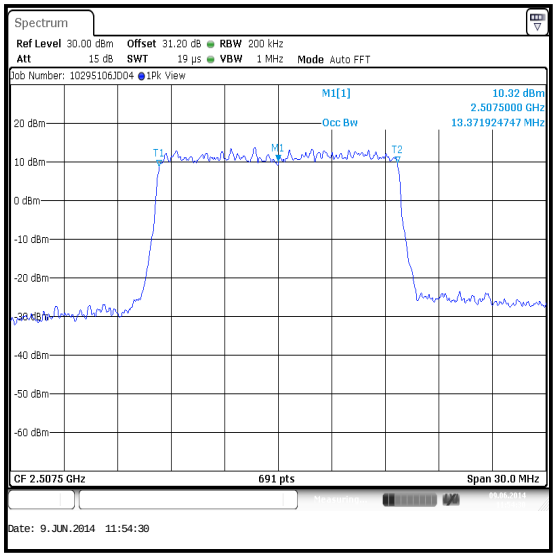


QPSK / 36 Resource Blocks (18 Offset)

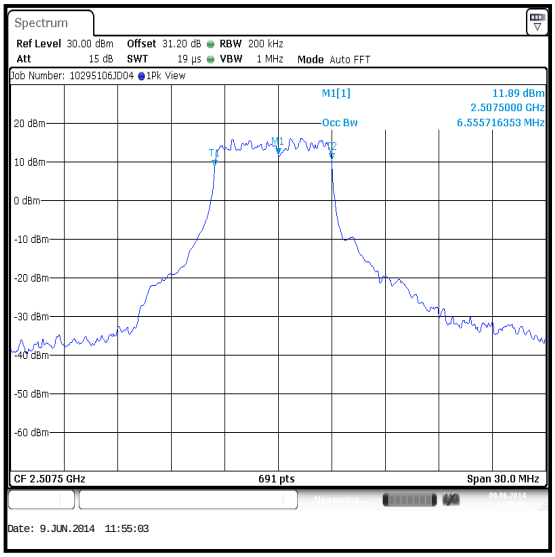
Transmitter Occupied Bandwidth (continued)

Results: 15 MHz Channel Bandwidth / Bottom Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2507.5	75	0	200	1000	13.372
2507.5	36	18	200	1000	6.556



16QAM / 75 Resource Blocks (0 Offset)

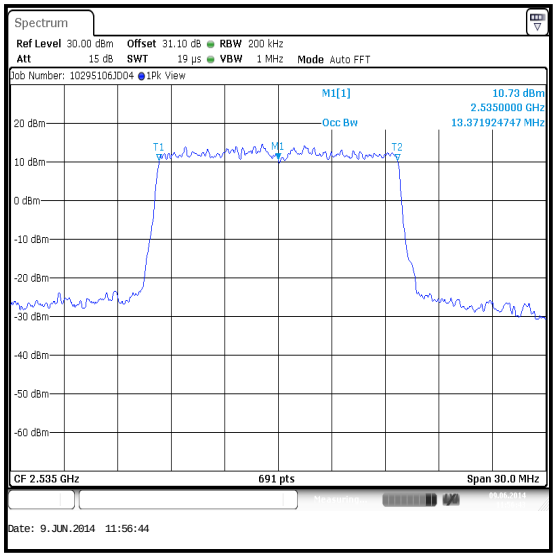


16QAM / 36 Resource Blocks (18 Offset)

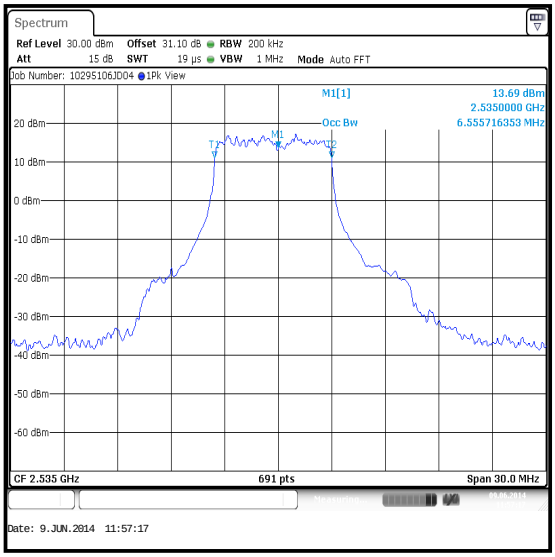
Transmitter Occupied Bandwidth (continued)

Results: 15 MHz Channel Bandwidth / Middle Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	75	0	200	1000	13.372
2535.0	36	18	200	1000	6.556



QPSK / 75 Resource Blocks (0 Offset)

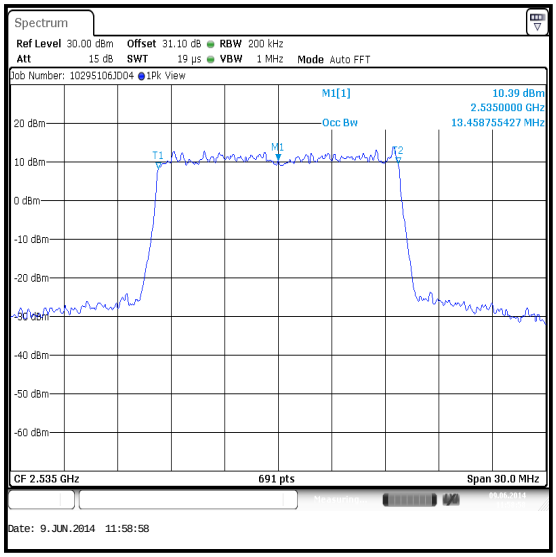


QPSK / 36 Resource Blocks (18 Offset)

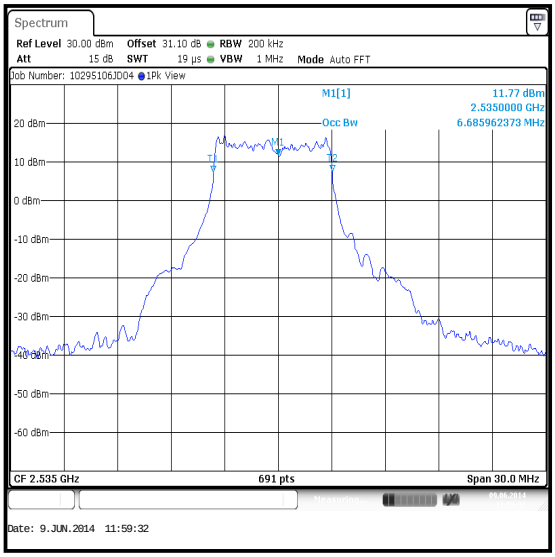
Transmitter Occupied Bandwidth (continued)

Results: 15 MHz Channel Bandwidth / Middle Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	75	0	200	1000	13.459
2535.0	36	18	200	1000	6.686



16QAM / 75 Resource Blocks (0 Offset)

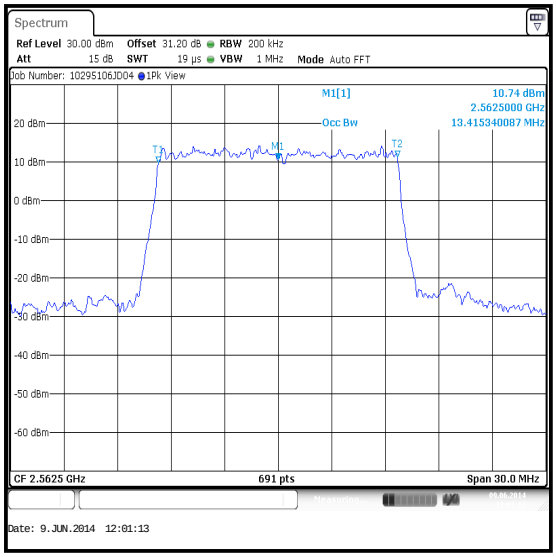


16QAM / 36 Resource Blocks (18 Offset)

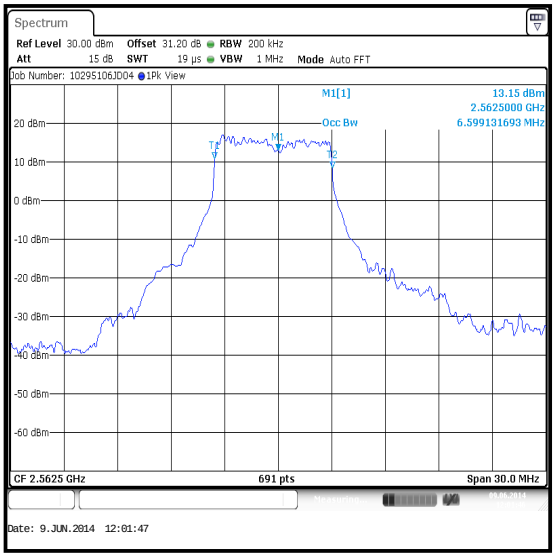
Transmitter Occupied Bandwidth (continued)

Results: 15 MHz Channel Bandwidth / Top Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2562.5	75	0	200	1000	13.415
2562.5	36	18	200	1000	6.599



QPSK / 75 Resource Blocks (0 Offset)

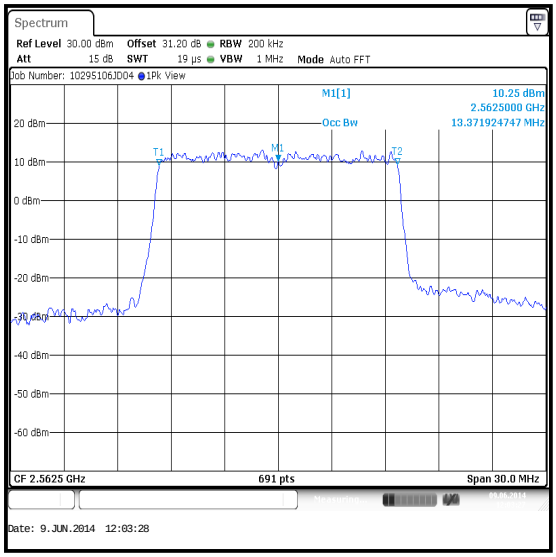


QPSK / 36 Resource Blocks (18 Offset)

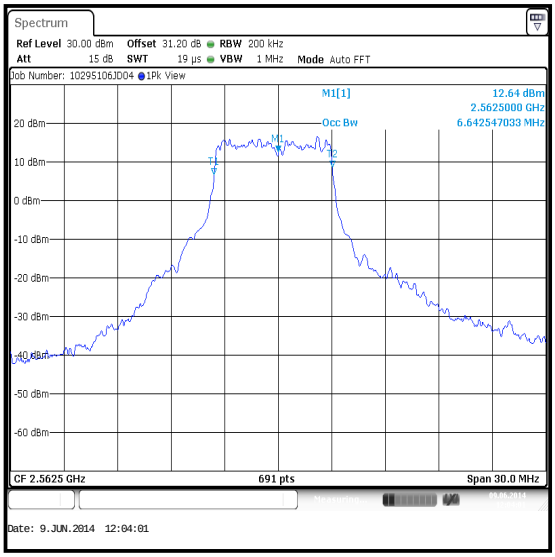
Transmitter Occupied Bandwidth (continued)

Results: 15 MHz Channel Bandwidth / Top Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2562.5	75	0	200	1000	13.372
2562.5	36	18	200	1000	6.643



16QAM / 75 Resource Blocks (0 Offset)

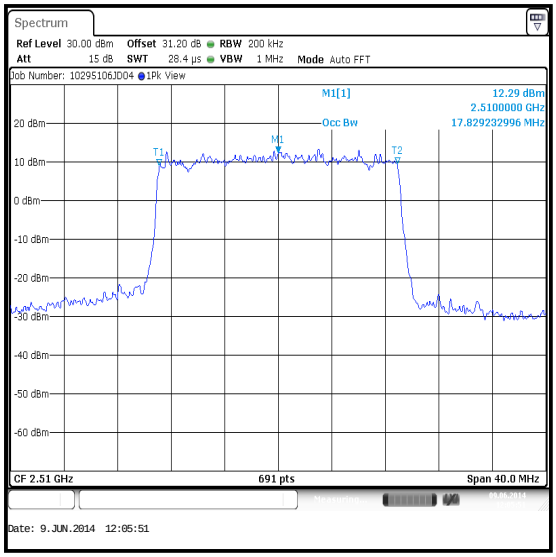


16QAM / 36 Resource Blocks (18 Offset)

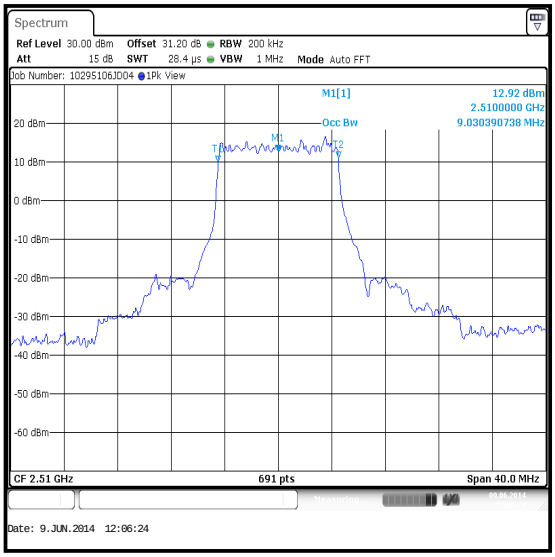
Transmitter Occupied Bandwidth (continued)

Results: 20 MHz Channel Bandwidth / Bottom Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2510.0	100	0	200	1000	17.829
2510.0	50	25	200	1000	9.030



QPSK / 100 Resource Blocks (0 Offset)

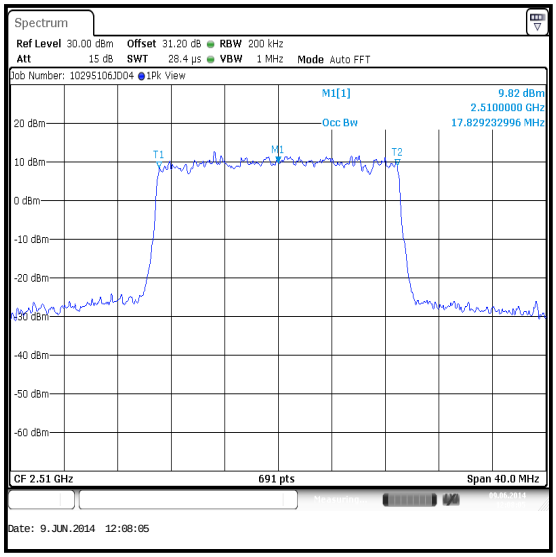


QPSK / 50 Resource Blocks (25 Offset)

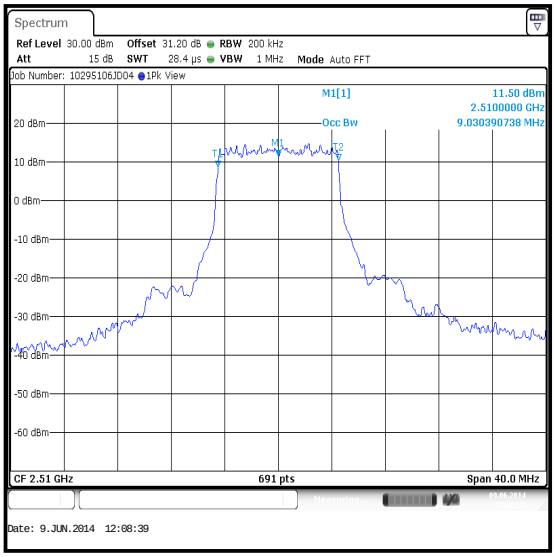
Transmitter Occupied Bandwidth (continued)

Results: 20 MHz Channel Bandwidth / Bottom Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2510.0	100	0	200	1000	17.829
2510.0	50	25	200	1000	9.030



16QAM / 100 Resource Blocks (0 Offset)

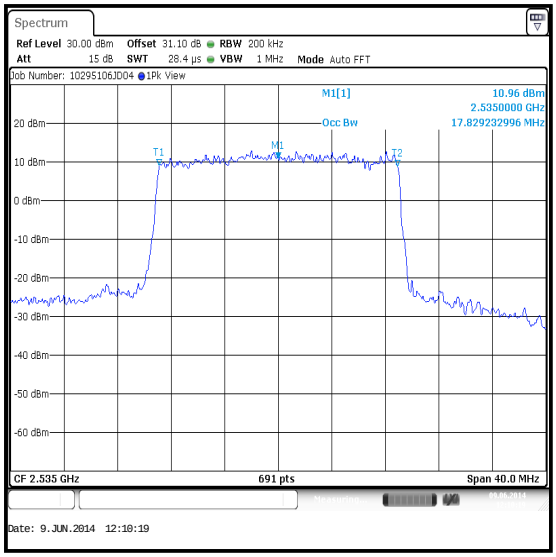


16QAM / 50 Resource Blocks (25 Offset)

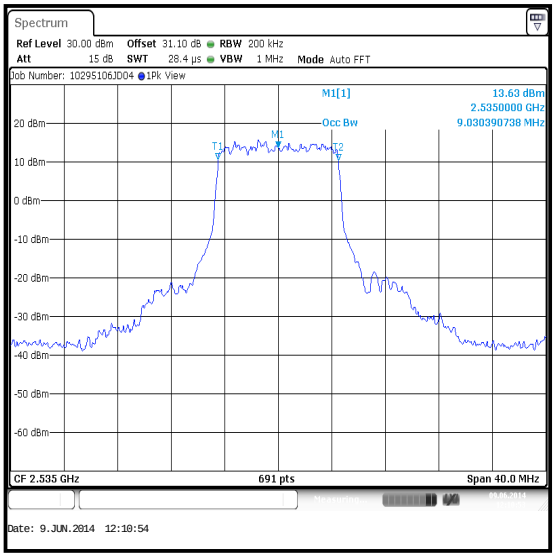
Transmitter Occupied Bandwidth (continued)

Results: 20 MHz Channel Bandwidth / Middle Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	100	0	200	1000	17.829
2535.0	50	25	200	1000	9.030



QPSK / 100 Resource Blocks (0 Offset)

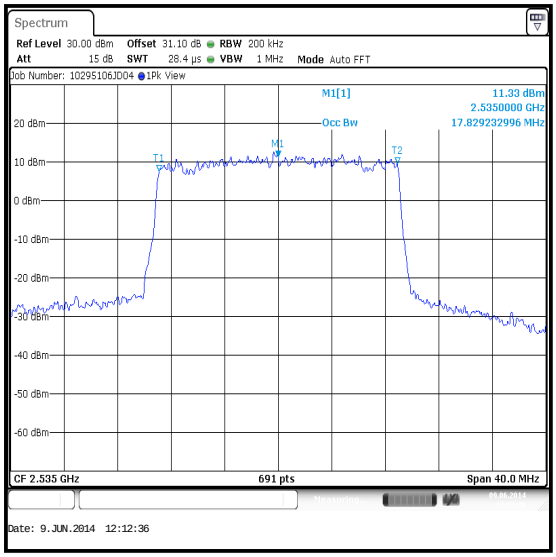


QPSK / 50 Resource Blocks (25 Offset)

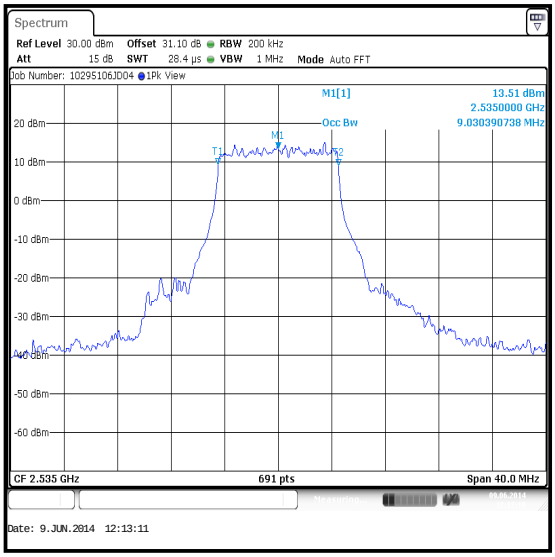
Transmitter Occupied Bandwidth (continued)

Results: 20 MHz Channel Bandwidth / Middle Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2535.0	100	0	200	1000	17.829
2535.0	50	25	200	1000	9.030



16QAM / 100 Resource Blocks (0 Offset)

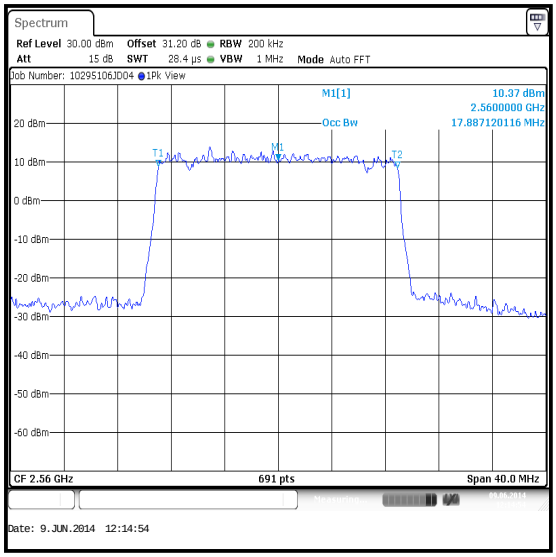


16QAM / 50 Resource Blocks (25 Offset)

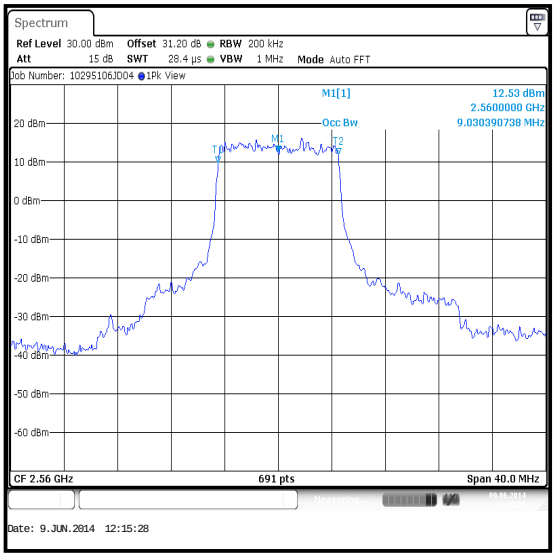
Transmitter Occupied Bandwidth (continued)

Results: 20 MHz Channel Bandwidth / Top Channel / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2560.0	100	0	200	1000	17.887
2560.0	50	25	200	1000	9.030



QPSK / 100 Resource Blocks (0 Offset)

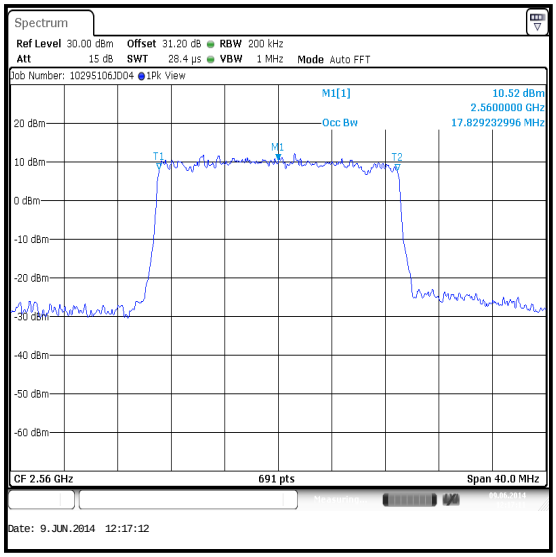


QPSK / 50 Resource Blocks (25 Offset)

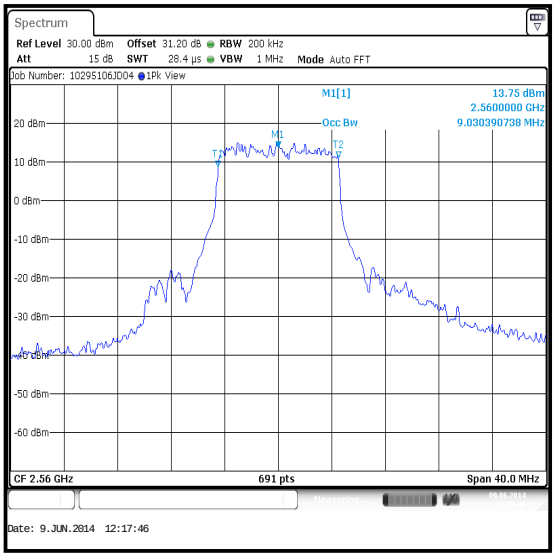
Transmitter Occupied Bandwidth (continued)

Results: 20 MHz Channel Bandwidth / Top Channel / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Resolution Bandwidth (kHz)	Video Bandwidth (kHz)	Occupied Bandwidth (MHz)
2560.0	100	0	200	1000	17.829
2560.0	50	25	200	1000	9.030



16QAM / 100 Resource Blocks (0 Offset)



16QAM / 50 Resource Blocks (25 Offset)

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	14 Mar 2015	12
L1127	Signal Analyser	Rohde & Schwarz	FSV13	100863	24 April 2015	12
A2535	Directional Coupler	AtlanTecRF	CDC-003060-20	14041701719	Calibrated before use	-
A2508	Attenuator	AtlanTecRF	AN18-10	821846#3	Calibrated before use	-
S0557	DC Power Supply	Tti	EL303R	395819	Calibrated before use	-
M1251	Digital Multimeter	Fluke	175	8717019	19 May 2015	12
G0608	Signal Generator	Rohde & Schwarz	SMIQ 06B	838341/033	14 Feb 2015	12
M1009	Power Meter	Hewlett Packard	437B	3125U13706	04 Feb 2015	12
M1592	Power Sensor	Hewlett Packard	8487A	3318A02094	28 Aug 2014	12

5.2.3. Transmitter Radiated Spurious Emissions

Test Summary:

Test Engineers:	David Doyle & Georgios Vrezas	**Test Dates:**	13 June 2014 & 17 June 2014
Test Sample IMEI:	004402452728243		

FCC Reference:	Parts 2.1053 & 27.53(l)(4)
Test Method Used:	As detailed in KDB 971168 Section 6.1 referencing FCC Part 2.1053
Frequency Range:	30 MHz to 26 GHz
Configuration:	10 MHz, QPSK, 1RB, 0 Offset

Environmental Conditions:

Temperature (°C):	23 to 25
Relative Humidity (%):	32 to 38

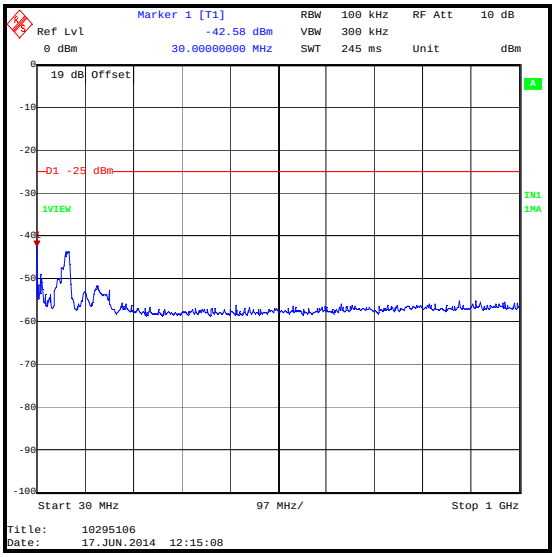
Note(s):

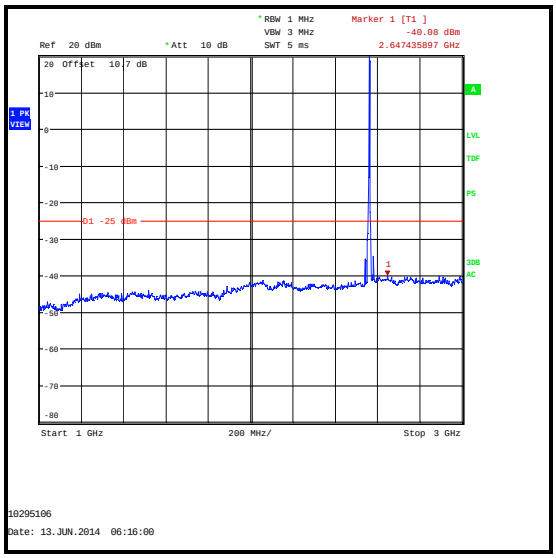
1. The EUT was set to transmit with a 10 MHz channel bandwidth with QPSK modulation applied and 1 resource block with 0 offset, as this was found to be the worst case modulation scheme with regards to emissions after preliminary investigations and, as this mode emits the highest transmit output power level, it was deemed to be the worst case.
2. The emission seen on the 1 GHz to 3 GHz plot at approximately 2565 MHz is the EUT carrier.
3. All emissions shown on the pre-scan plots were investigated. Final measurements were made using appropriate RF filters and attenuators where required. All emissions shown on the pre-scan plots were found to be below the measurement system noise floor or ambient, 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.

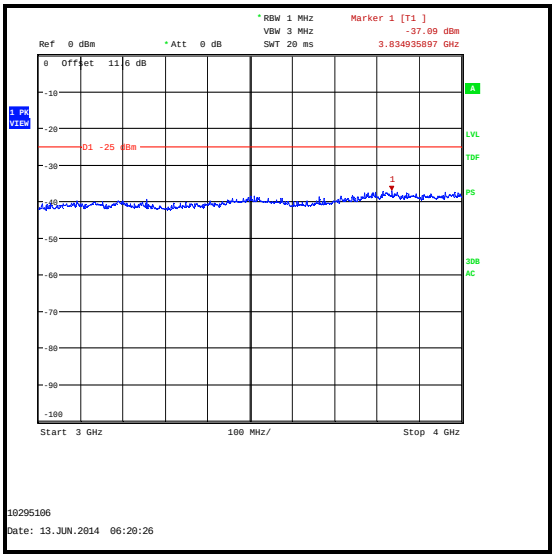
Results:

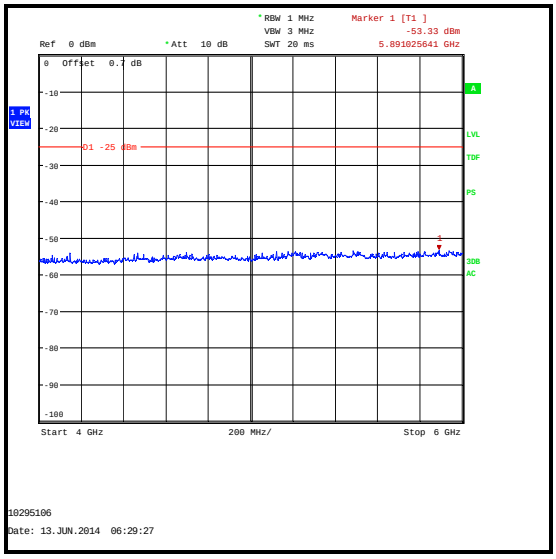
Frequency (MHz)	Antenna Polarisation	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
3834.936	Horizontal	-37.1	-25.0	12.1	Complied

Transmitter Radiated Spurious Emissions (continued)

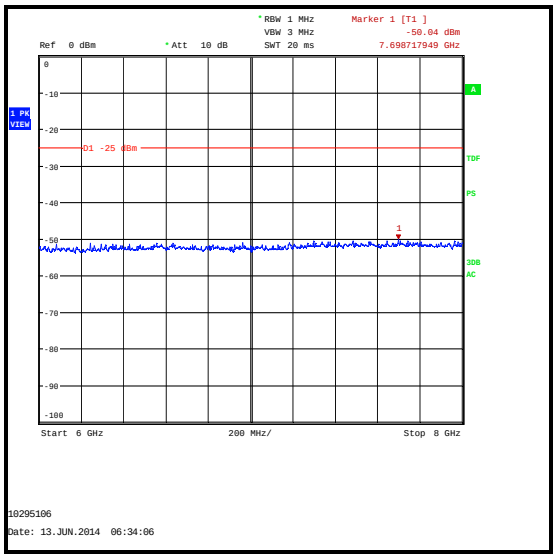


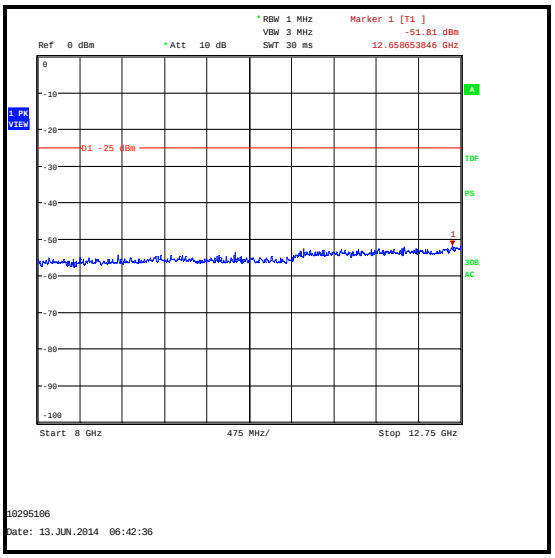


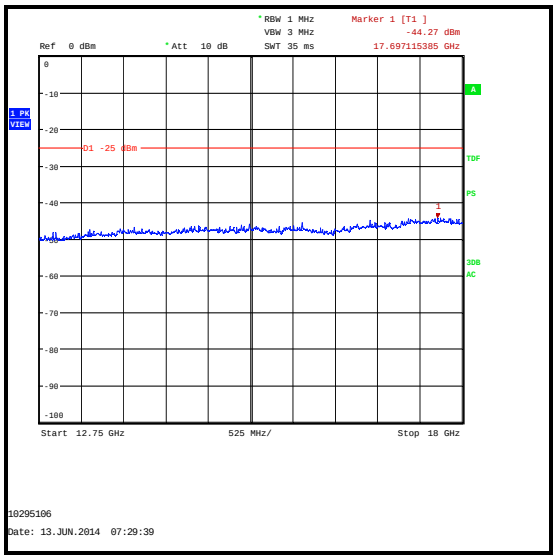


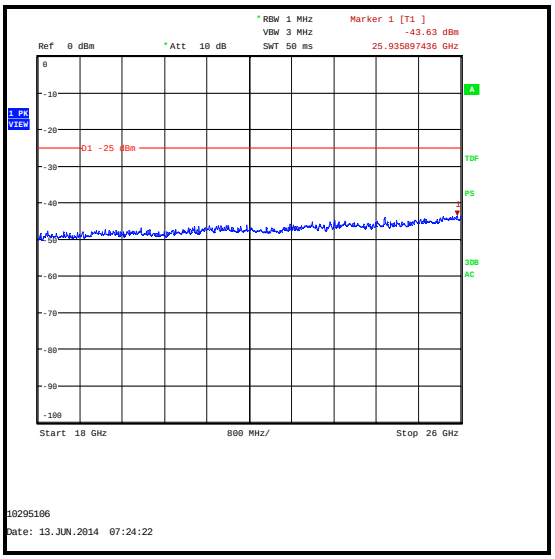


Transmitter Radiated Spurious Emissions (continued)









Transmitter Out of Band Radiated Emissions (continued)

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A490	Antenna	Chase	CBL6111A	1590	29 Apr 2015	12
A1834	Attenuator	Hewlett Packard	8491B	10444	15 Nov 2014	12
K0001	5m RSE Chamber	Rainford EMC	N/A	N/A	26 Nov 2014	12
G0543	Amplifier	Sonoma	310N	230801	19 Aug 2014	3
M1273	Test Receiver	Rohde & Schwarz	ESIB 26	100275	15 Feb 2015	12
M1622	Thermohygrometer	JM Handelspunkt	30.5015.13	Not stated	31 Dec 2014	12
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	14 Nov 2014	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12
A1396	Attenuator	Huber & Suhner	6810.17.B	757987	02 May 2015	12
A1975	High Pass Filter	AtlanTecRF	AFH-03000	090424010	12 Apr 2015	12
A1818	Antenna	EMCO	3115	00075692	14 Nov 2014	12
A253	Antenna	Flann Microwave	12240-20	128	14 Nov 2014	12
A254	Antenna	Flann Microwave	14240-20	139	14 Nov 2014	12
A255	Antenna	Flann Microwave	16240-20	519	14 Nov 2014	12
A256	Antenna	Flann Microwave	18240-20	400	14 Nov 2014	12
A436	Antenna	Flann Microwave	20240-20	330	14 Nov 2014	12

5.2.4. Transmitter Radiated Emissions at Band Edges

Test Summary:

Test Engineer:	David Doyle	**Test Date:**	11 June 2014
Test Sample IMEI:	004402452728243		

FCC Reference:	Parts 2.1053 & 27.53(l)(4)
Test Method Used:	As detailed in KDB 971168 Section 6.1 referencing FCC Part 27.53

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	44

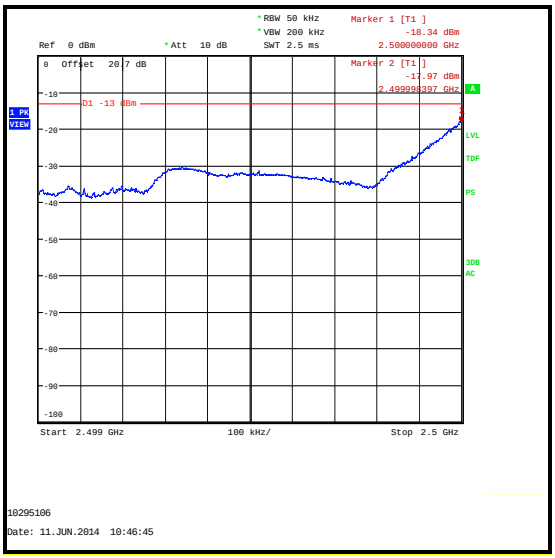
Note(s):

1. Measurements were performed with the EUT transmitting with QPSK and 16QAM modulation schemes, with the maximum resource blocks settings as detailed in section 4.3 of this report..

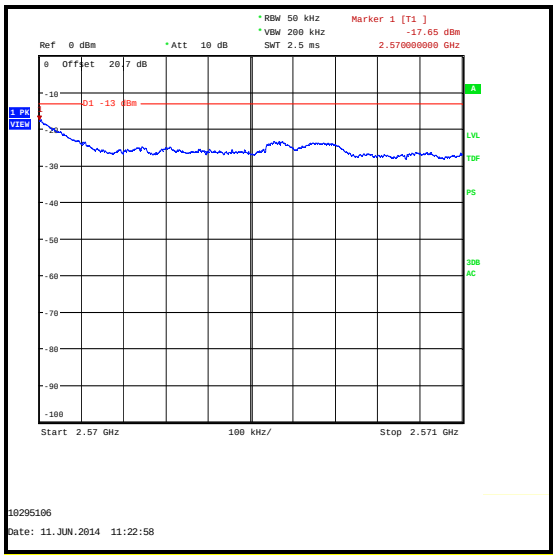
Transmitter Radiated Emissions at Band Edges (continued)

Results: 5 MHz Channel Bandwidth / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2499.998	25	0	-18.0	-13.0	5.0	Complied
2500	25	0	-18.3	-13.0	5.3	Complied
2570	25	0	-17.7	-13.0	4.7	Complied



QPSK / Lower Band Edge

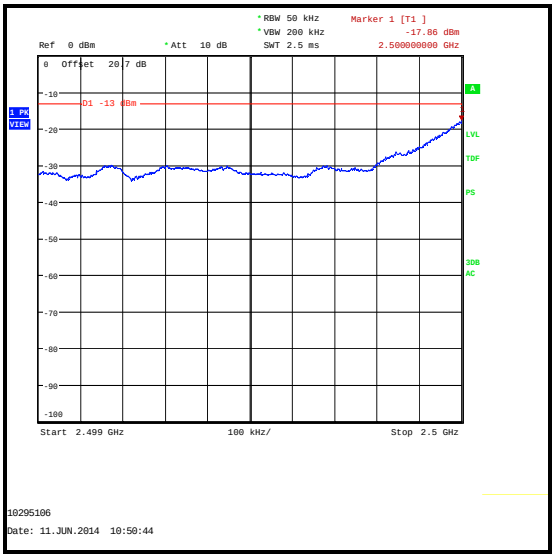


QPSK / Upper Band Edge

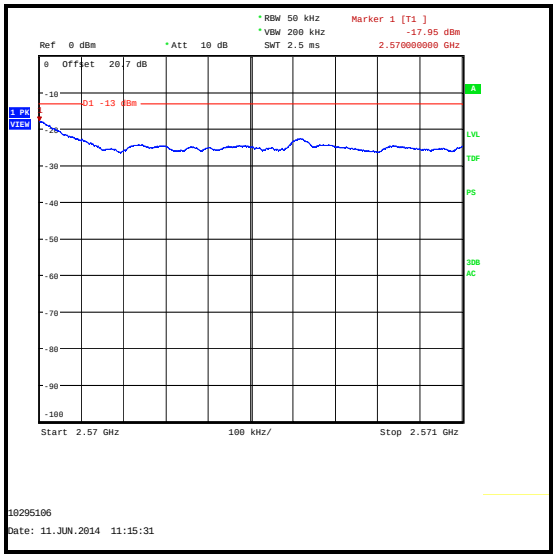
Transmitter Radiated Emissions at Band Edges (continued)

Results: 5 MHz Channel Bandwidth / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2500	25	0	-17.9	-13.0	4.9	Complied
2570	25	0	-18.0	-13.0	5.0	Complied



16QAM / Lower Band Edge

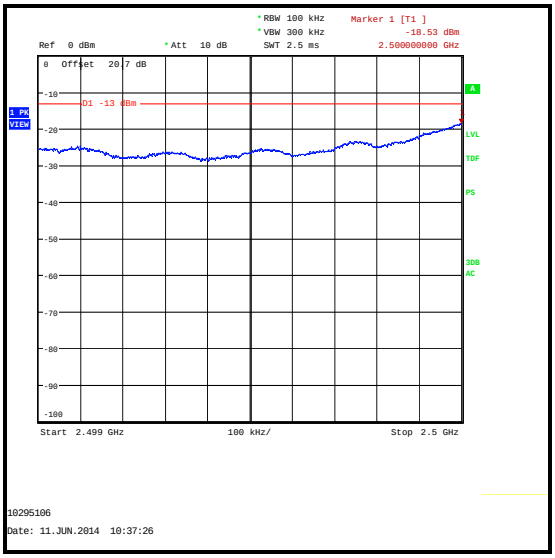


16QAM / Upper Band Edge

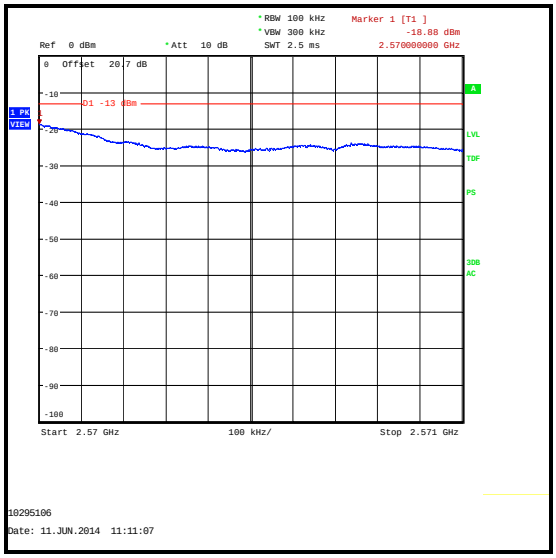
Transmitter Radiated Emissions at Band Edges (continued)

Results: 10 MHz Channel Bandwidth / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2500	50	0	-18.5	-13.0	5.5	Complied
2570	50	0	-18.9	-13.0	5.9	Complied



QPSK / Lower Band Edge

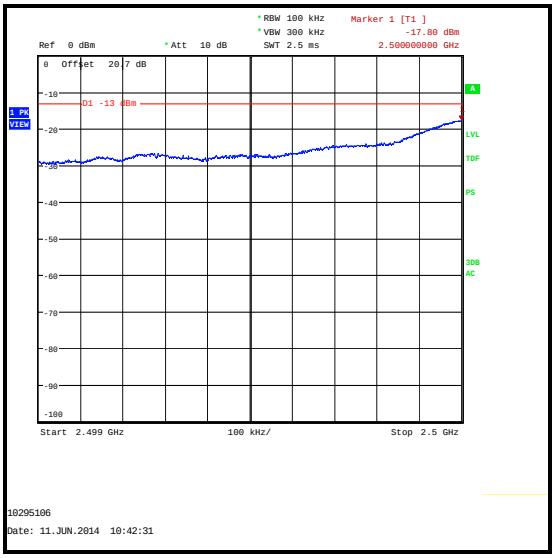


QPSK / Upper Band Edge

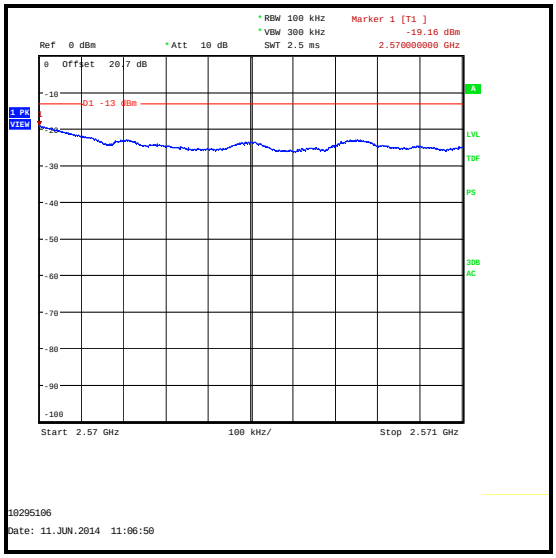
Transmitter Radiated Emissions at Band Edges (continued)

Results: 10 MHz Channel Bandwidth / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2500	50	0	-17.8	-13.0	4.8	Complied
2570	50	0	-19.2	-13.0	6.2	Complied



16QAM / Lower Band Edge

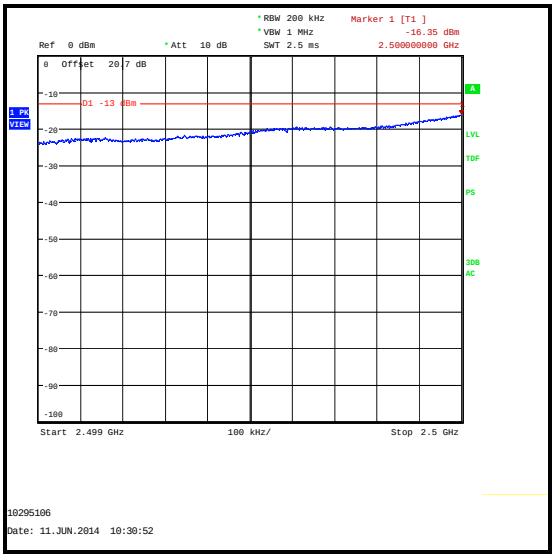


16QAM / Upper Band Edge

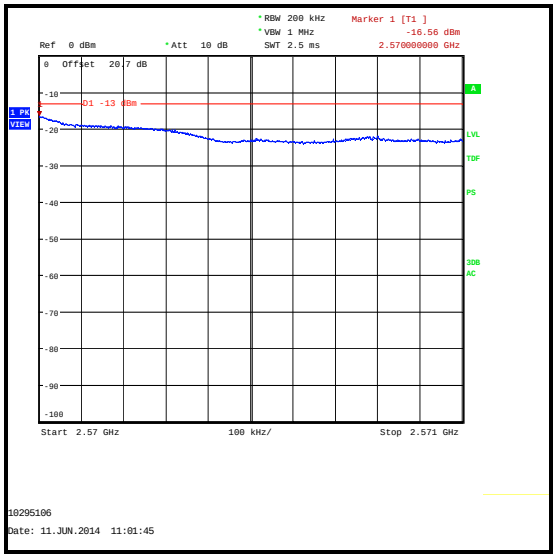
Transmitter Radiated Emissions at Band Edges (continued)

Results: 15 MHz Channel Bandwidth / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2500	75	0	-16.4	-13.0	3.4	Complied
2570	75	0	-16.6	-13.0	3.6	Complied



QPSK / Lower Band Edge

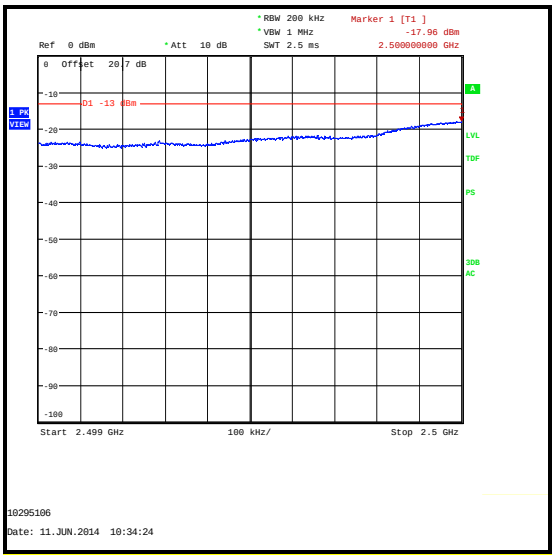


QPSK / Upper Band Edge

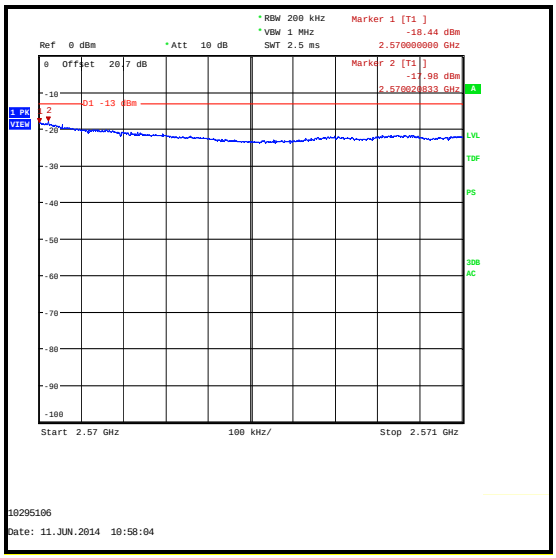
Transmitter Radiated Emissions at Band Edges (continued)

Results: 15 MHz Channel Bandwidth / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2500	75	0	-18.0	-13.0	5.0	Complied
2570	75	0	-18.4	-13.0	5.4	Complied
2570.021	75	0	-18.0	-13.0	5.0	Complied



16QAM / Lower Band Edge

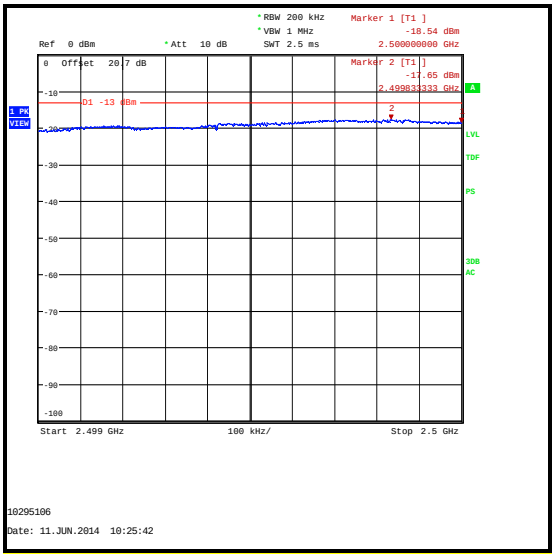


16QAM / Upper Band Edge

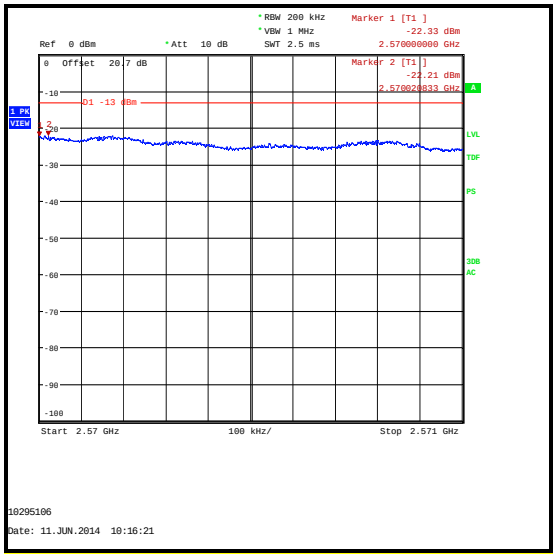
Transmitter Radiated Emissions at Band Edges (continued)

Results: 20 MHz Channel Bandwidth / QPSK

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2499.833	100	0	-17.7	-13.0	4.7	Complied
2500	100	0	-18.5	-13.0	5.5	Complied
2570	100	0	-22.3	-13.0	9.3	Complied
2570.021	100	0	-22.2	-13.0	9.2	Complied



QPSK / Lower Band Edge

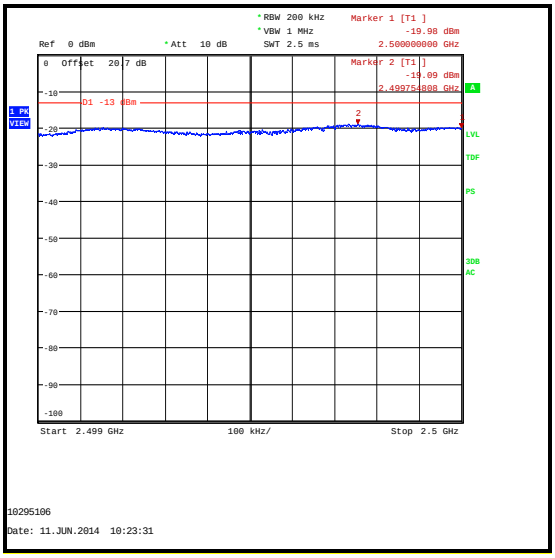


QPSK / Upper Band Edge

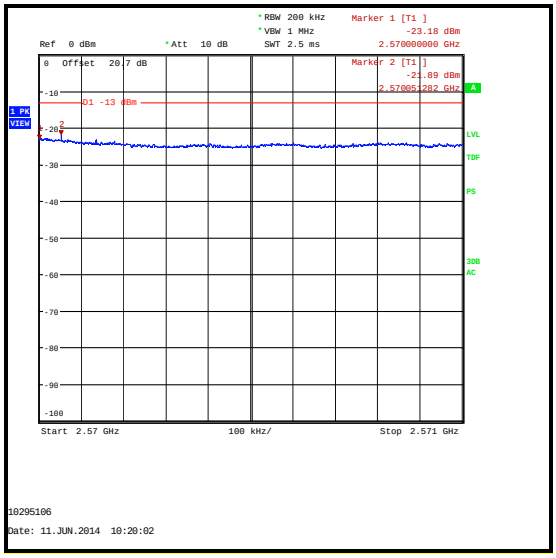
Transmitter Radiated Emissions at Band Edges (continued)

Results: 20 MHz Channel Bandwidth / 16QAM

Frequency (MHz)	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2499.755	100	0	-19.1	-13.0	6.1	Complied
2500	100	0	-20.0	-13.0	7.0	Complied
2570	100	0	-23.2	-13.0	10.2	Complied
2570.051	100	0	-21.9	-13.0	8.9	Complied



16QAM / Lower Band Edge



16QAM / Upper Band Edge

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	14 Nov 2014	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12
A1818	Antenna	EMCO	3115	00075692	14 Nov 2014	12

5.2.5. Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz

Test Summary:

Test Engineer:	David Doyle	**Test Date:**	12 June 2014
Test Sample IMEI:	004402452728243		

FCC Reference:	Parts 2.1053 & 27.53(l)(4)
Test Method Used:	As detailed in KDB 971168 Section 6 referencing FCC Part 27.53 & note 2 below

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	42

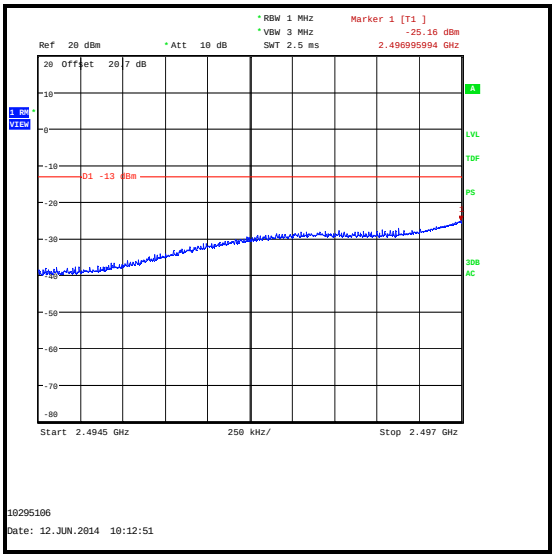
Note(s):

1. Measurements were performed with the EUT transmitting QPSK and 16QAM modulation schemes, with resource block settings stated in section 4.3.
2. In accordance with KDB 971168 D01 section 6.0, a relaxation of the resolution bandwidth has been applied at the edge of the authorised frequency band to increase the measurement accuracy in the ranges 2497 to 2498 MHz, 2498 to 2499 MHz, 2571 to 2572 MHz and 2572 to 2573 MHz. Where necessary the channel power function of the spectrum analyser was used to integrate over 1 MHz.

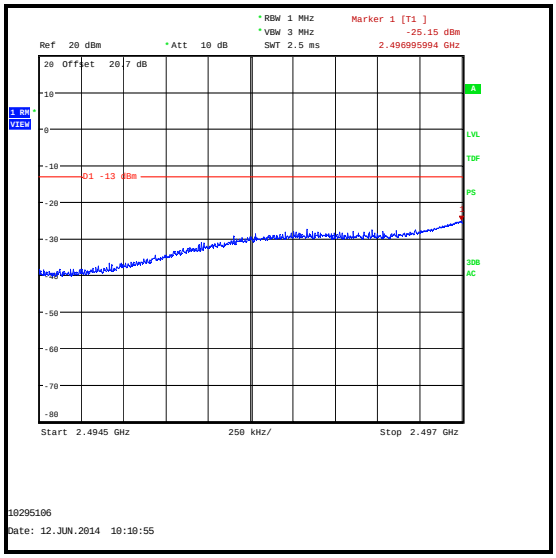
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2494.5 MHz to 2497 MHz / Sub-test 1

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2496.996	QPSK	1	0	-25.2	-13.0	12.2	Complied
2496.996	16QAM	1	0	-25.2	-13.0	12.2	Complied



QPSK

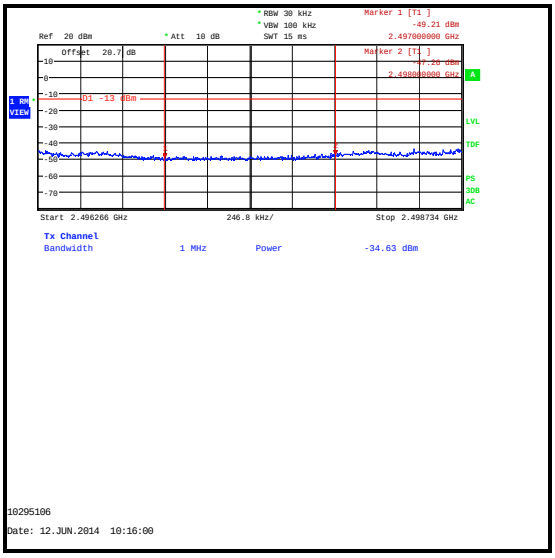


16QAM

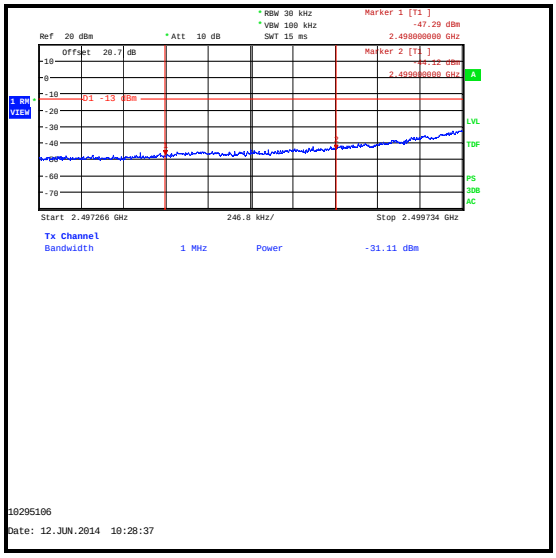
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2497 MHz to 2499 MHz / Integrated Result

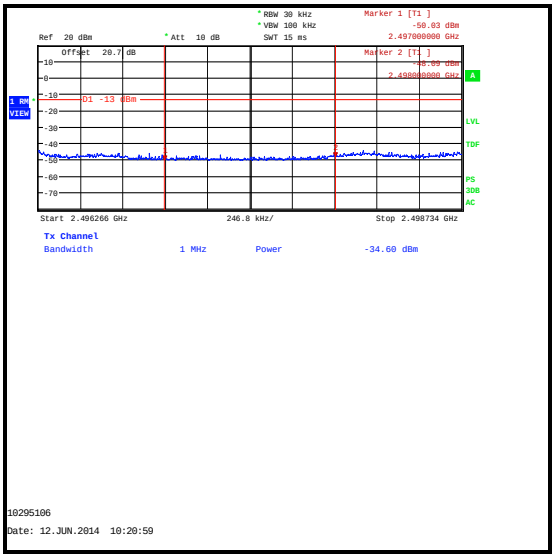
Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2497 to 2498	QPSK	1	0	-34.6	-13.0	21.6	Complied
2498 to 2499	QPSK	1	0	-31.1	-13.0	18.1	Complied
2497 to 2498	16QAM	1	0	-34.6	-13.0	21.6	Complied
2498 to 2499	16QAM	1	0	-31.9	-13.0	18.9	Complied



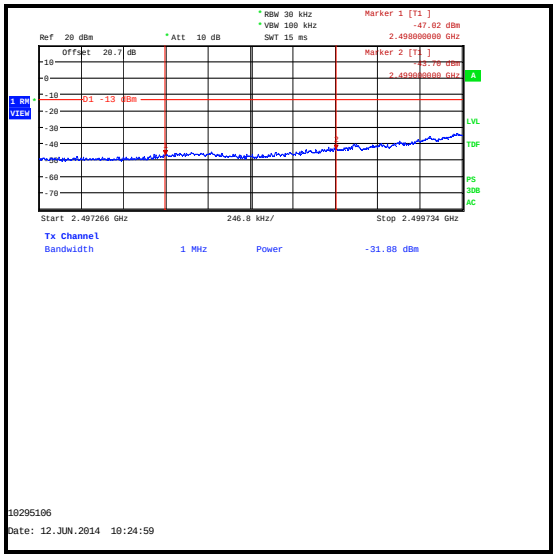
QPSK / 2497 to 2498 MHz



QPSK / 2498 to 2499 MHz



16QAM / 2497 to 2498 MHz

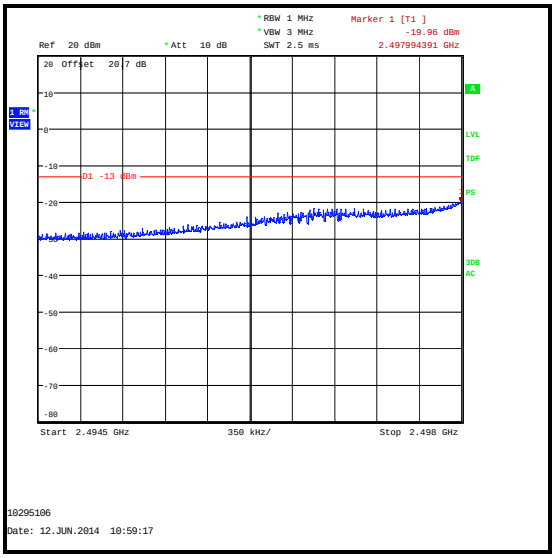


16QAM / 2498 to 2499 MHz

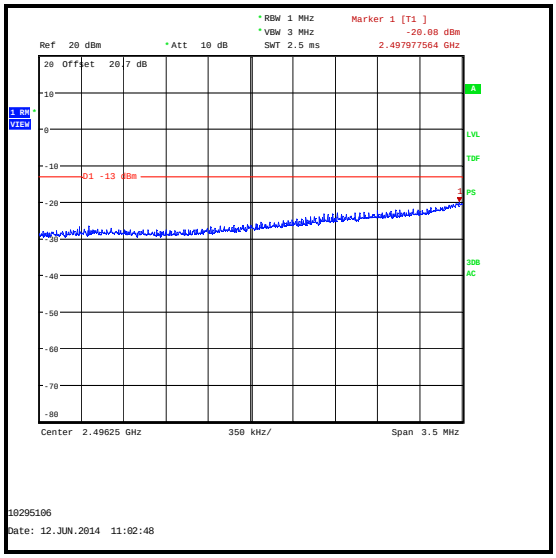
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2494.5 MHz to 2498 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Blocks	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2497.994	QPSK	25	0	-20.0	-13.0	7.0	Complied
2497.978	16QAM	25	0	-20.1	-13.0	7.1	Complied



QPSK

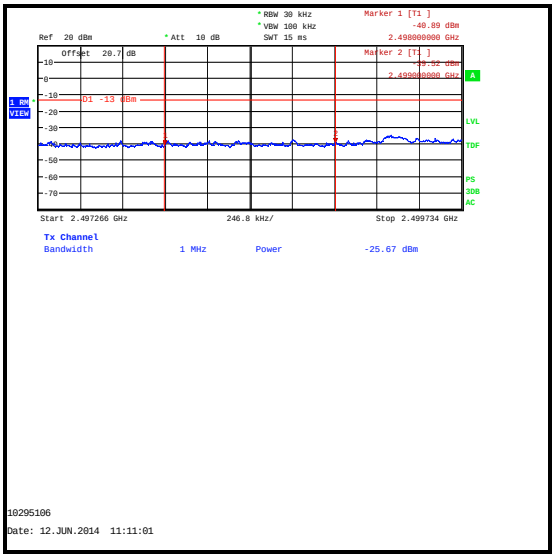


16QAM

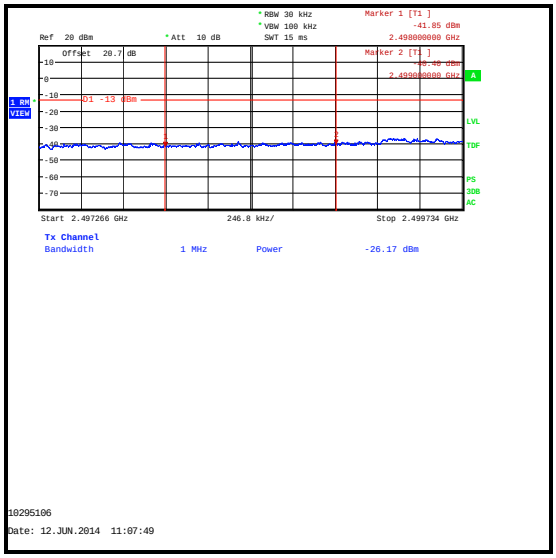
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2498 MHz to 2499 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498 to 2499	QPSK	25	0	-25.7	-13.0	12.7	Complied
2498 to 2499	16QAM	25	0	-26.2	-13.0	13.2	Complied



QPSK

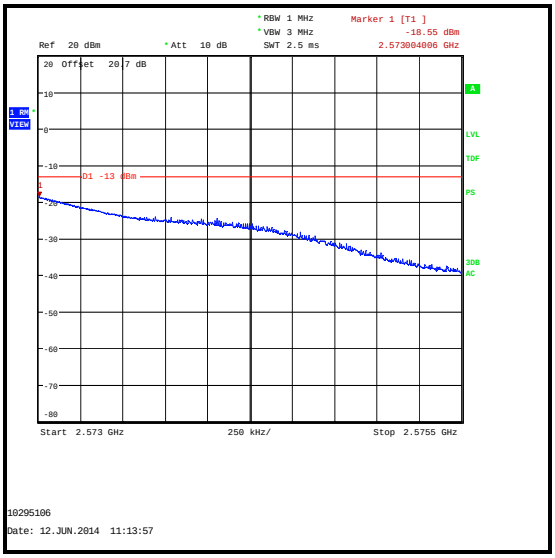


16QAM

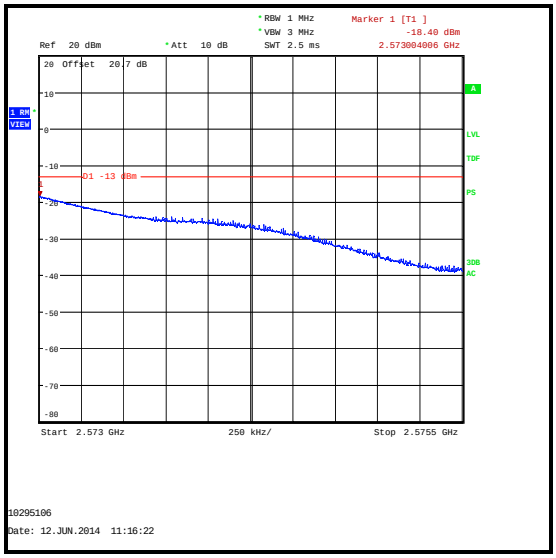
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2573 MHz to 2575.5 MHz / Sub-test 2

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2573.004	QPSK	1	24	-18.6	-13.0	5.6	Complied
2573.004	16QAM	1	24	-18.4	-13.0	5.4	Complied



QPSK

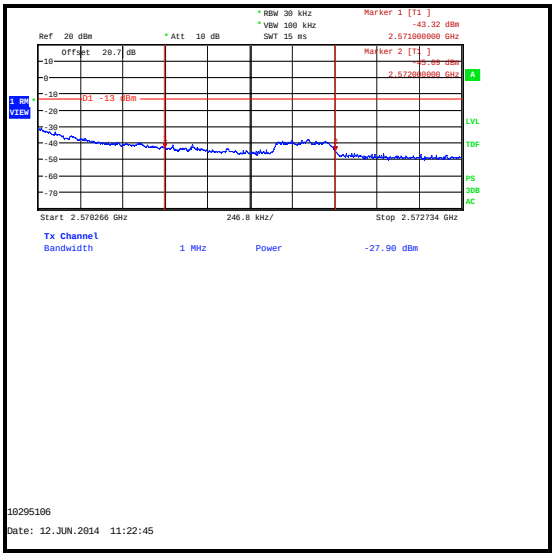


16QAM

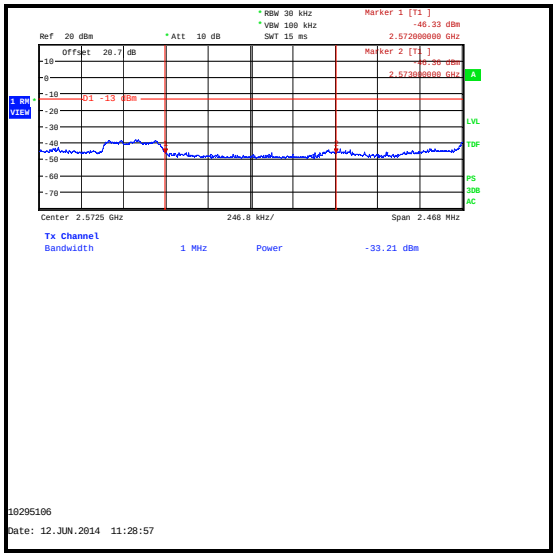
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2571 MHz to 2573 MHz Integrated Result

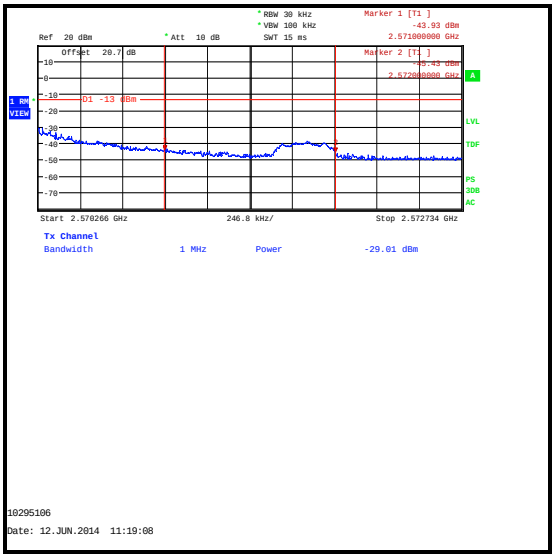
Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571 to 2572	QPSK	1	24	-27.9	-13.0	14.9	Complied
2572 to 2573	QPSK	1	24	-33.2	-13.0	20.2	Complied
2571 to 2572	16QAM	1	24	-29.0	-13.0	16.0	Complied
2572 to 2573	16QAM	1	24	-34.5	-13.0	21.5	Complied



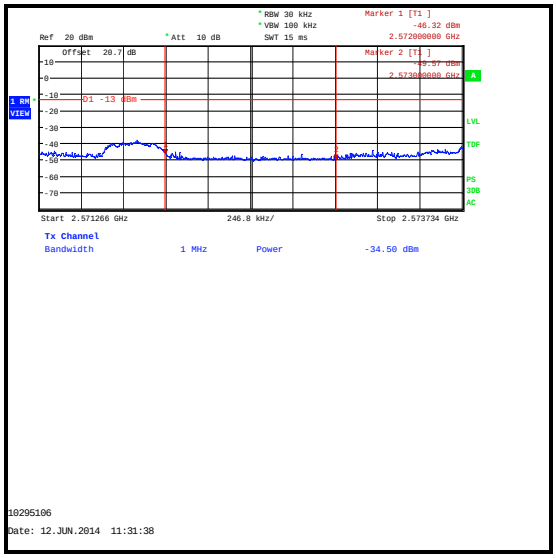
QPSK / 2571 to 2572 MHz



QPSK / 2572 to 2573 MHz



16QAM / 2571 to 2572 MHz

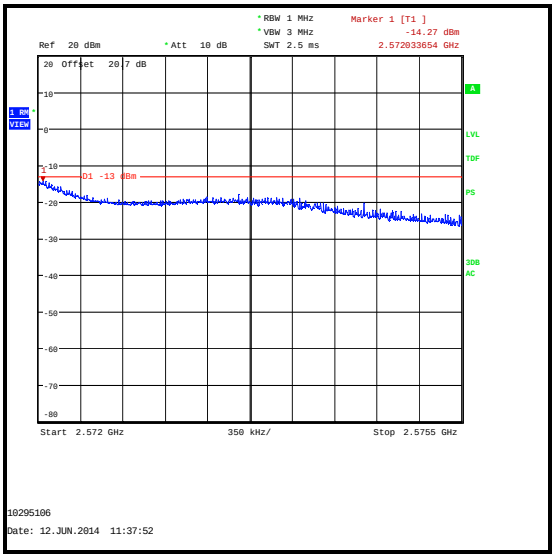


16QAM / 2572 to 2573 MHz

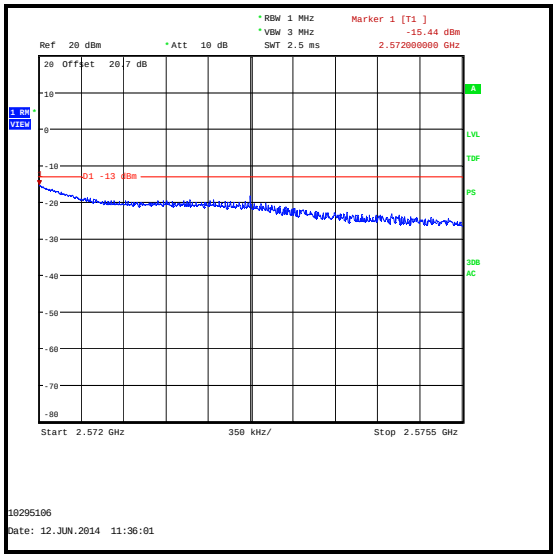
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2572 MHz to 2575.5 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2572.034	QPSK	25	0	-14.3	-13.0	1.3	Complied
2572.000	16QAM	25	0	-15.4	-13.0	2.4	Complied



QPSK

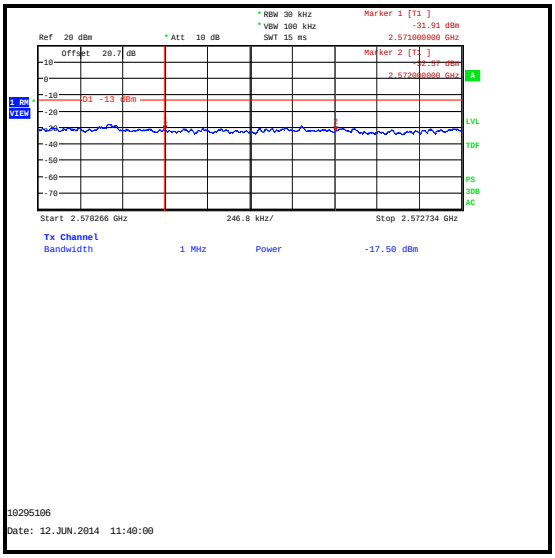


16QAM

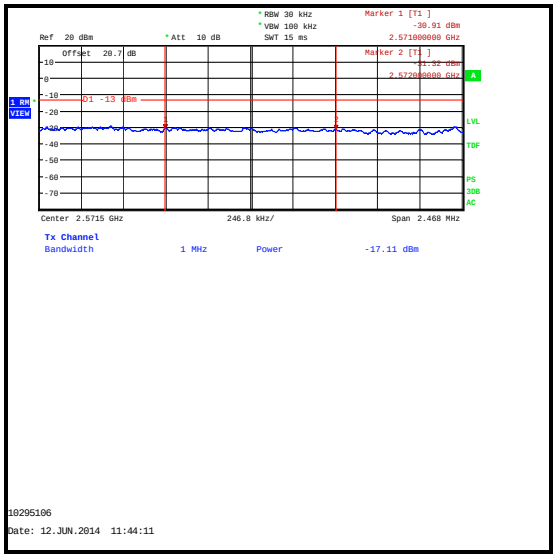
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 5 MHz Channel Bandwidth / 2571 MHz to 2572 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571 to 2572	QPSK	25	0	-17.5	-13.0	4.5	Complied
2571 to 2572	16QAM	25	0	-17.1	-13.0	4.1	Complied



QPSK

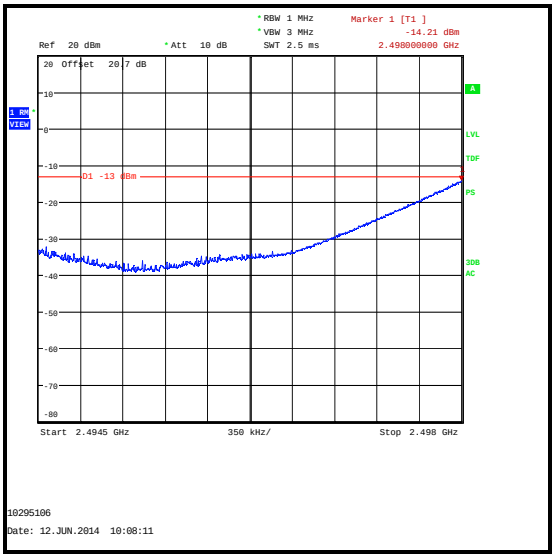


16QAM

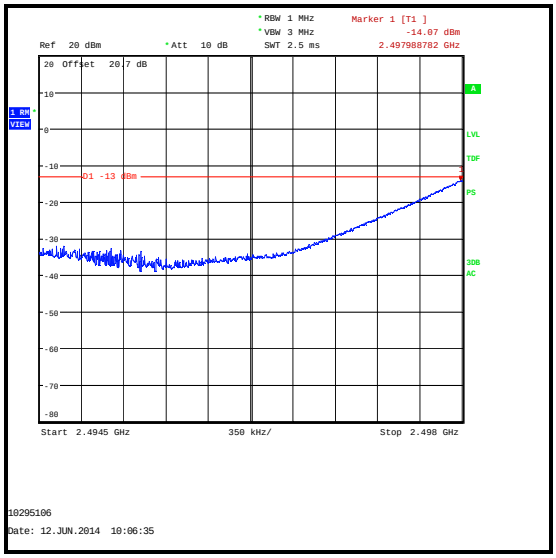
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2494.5 MHz to 2498 MHz / Sub-test 1

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498.000	QPSK	1	0	-14.2	-13.0	1.2	Complied
2497.989	16QAM	1	0	-14.1	-13.0	1.1	Complied



QPSK

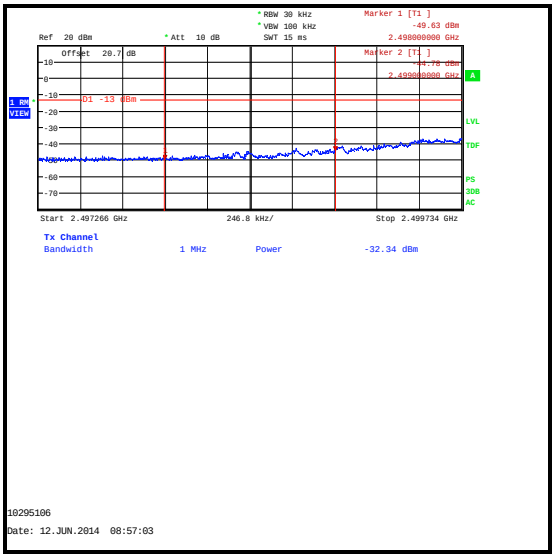


16QAM

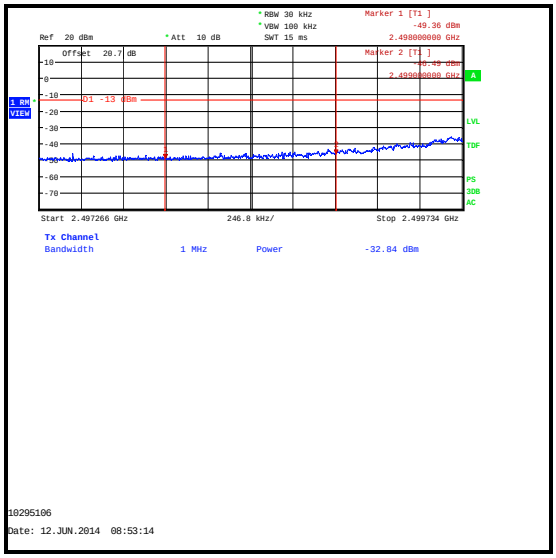
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2498 MHz to 2499 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498 to 2499	QPSK	1	0	-32.3	-13.0	19.3	Complied
2498 to 2499	16QAM	1	0	-32.8	-13.0	19.8	Complied



QPSK

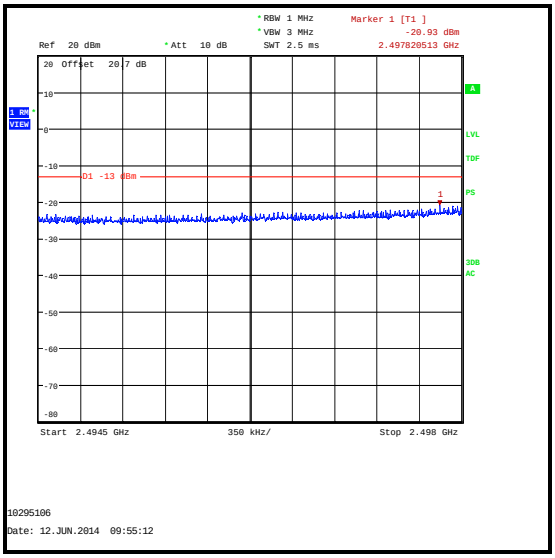


16QAM

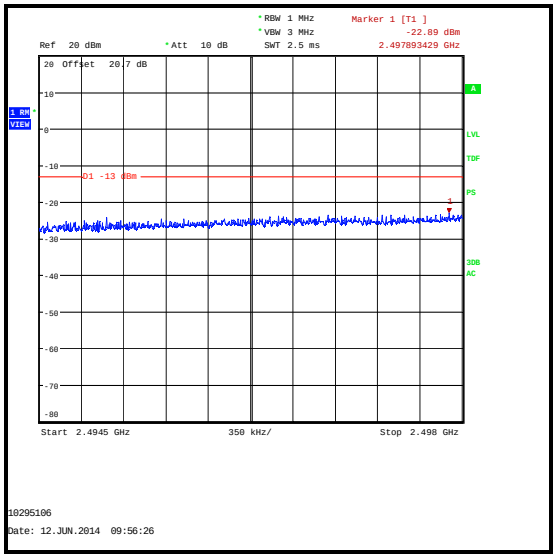
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2494.5 MHz to 2498 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2497.821	QPSK	50	0	-20.9	-13.0	7.9	Complied
2497.893	16QAM	50	0	-22.9	-13.0	9.9	Complied



QPSK

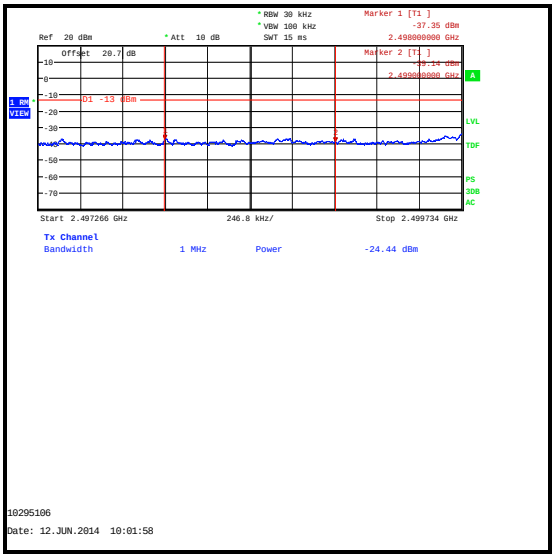


16QAM

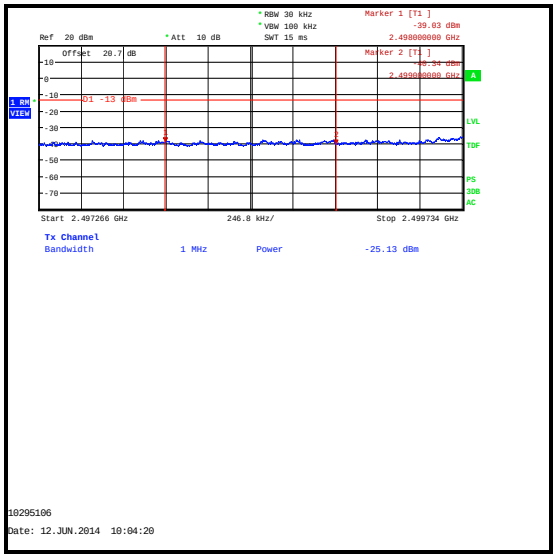
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2498 MHz to 2499 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498 to 2499	QPSK	50	0	-24.4	-13.0	11.4	Complied
2498 to 2499	16QAM	50	0	-25.1	-13.0	12.1	Complied



QPSK

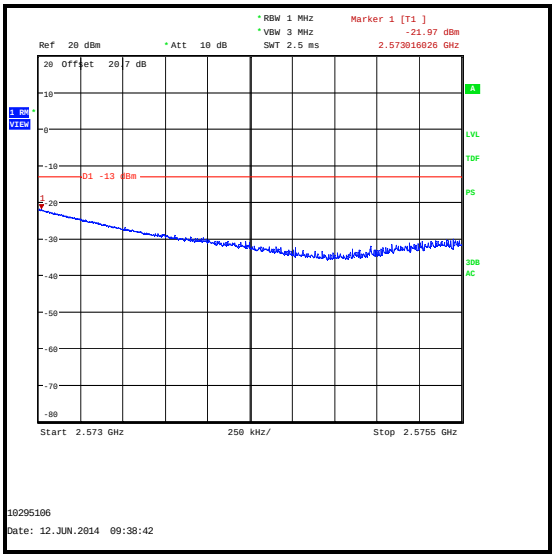


16QAM

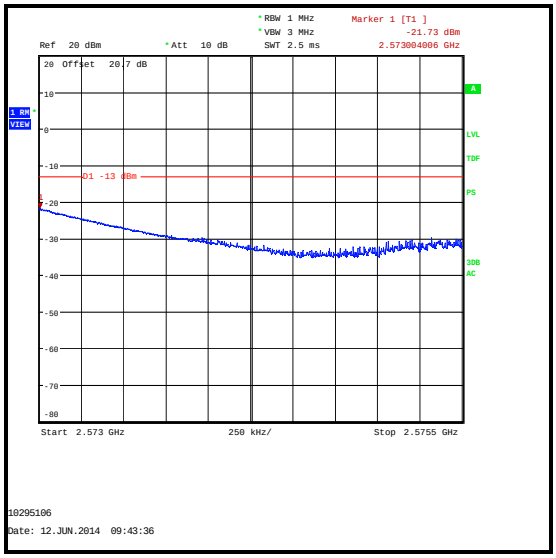
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2573 MHz to 2575.5 MHz / Sub-test 2

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2573.016	QPSK	1	49	-22.0	-13.0	9.0	Complied
2573.004	16QAM	1	49	-21.7	-13.0	8.7	Complied



QPSK

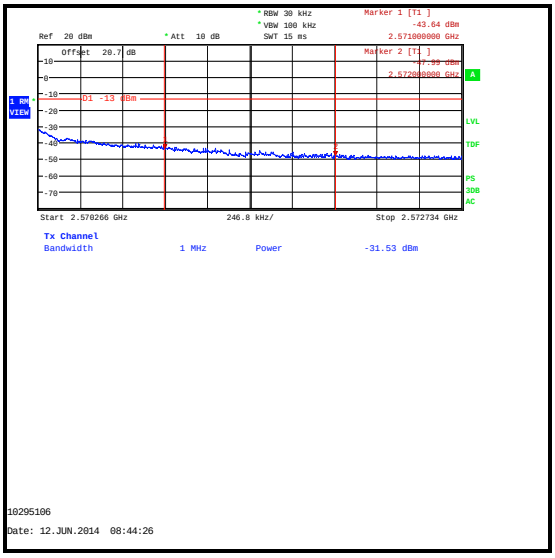


16QAM

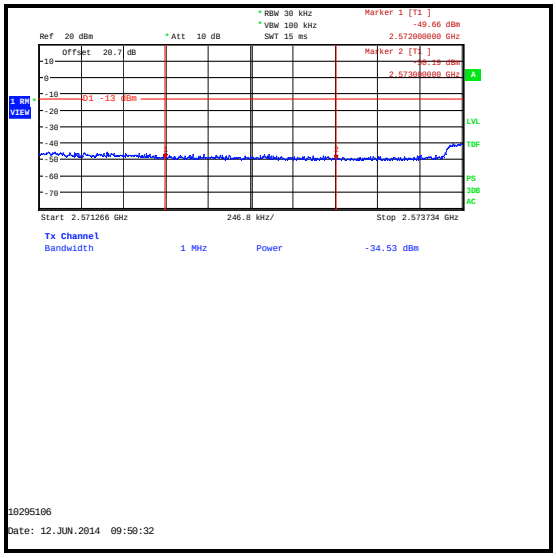
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2571 MHz to 2573 MHz Integrated Result

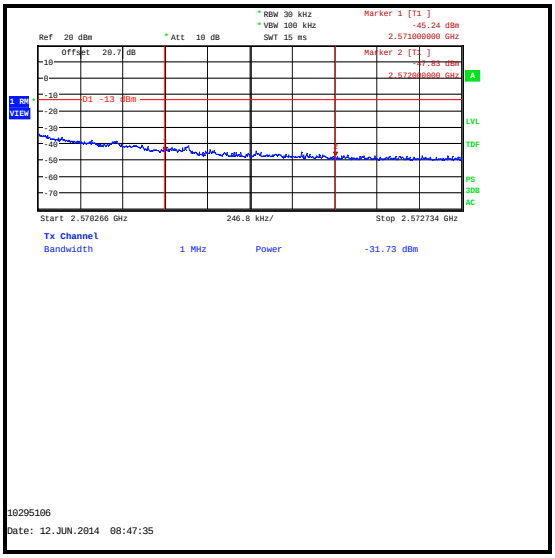
Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571 to 2572	QPSK	1	49	-31.5	-13.0	18.5	Complied
2572 to 2573	QPSK	1	49	-34.5	-13.0	21.5	Complied
2571 to 2572	16QAM	1	49	-31.7	-13.0	18.7	Complied
2572 to 2573	16QAM	1	49	-34.9	-13.0	21.9	Complied



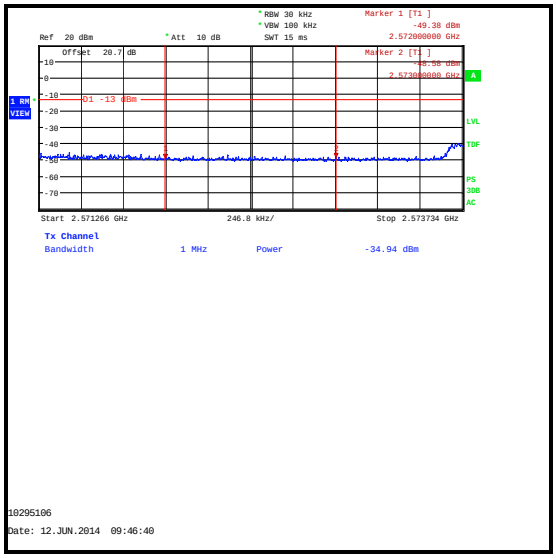
QPSK / 2571 to 2572 MHz



QPSK / 2572 to 2573 MHz



16QAM / 2571 to 2572 MHz

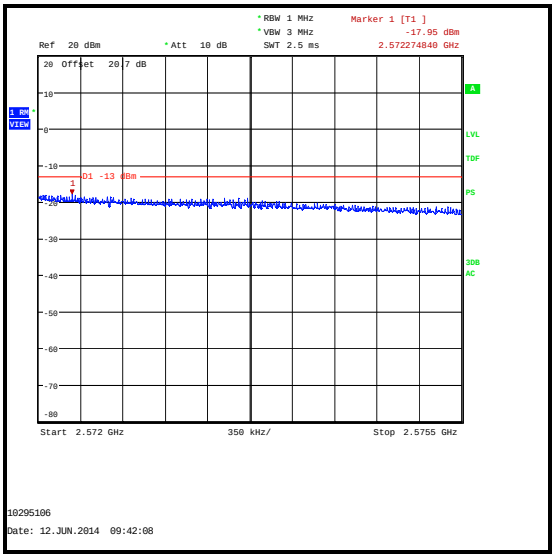


16QAM / 2572 to 2573 MHz

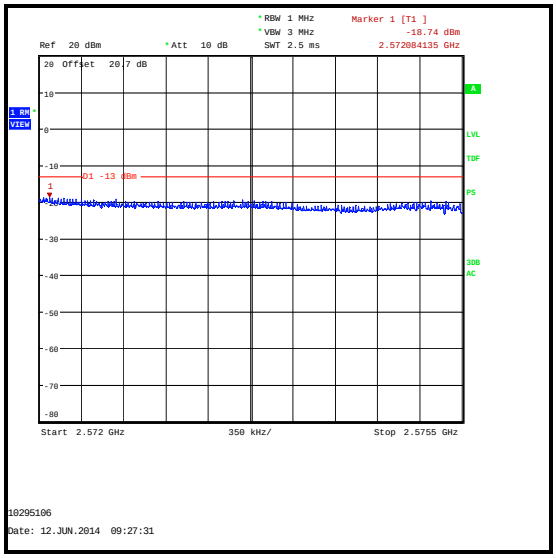
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2572 MHz to 2575.5 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2572.275	QPSK	50	0	-18.0	-13.0	5.0	Complied
2572.084	16QAM	50	0	-18.7	-13.0	5.7	Complied



QPSK

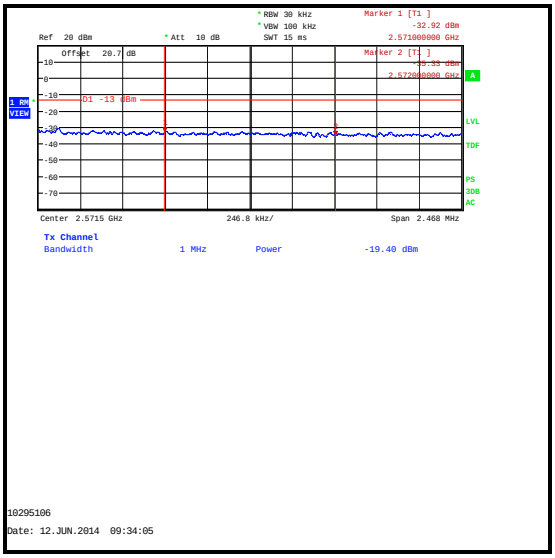


16QAM

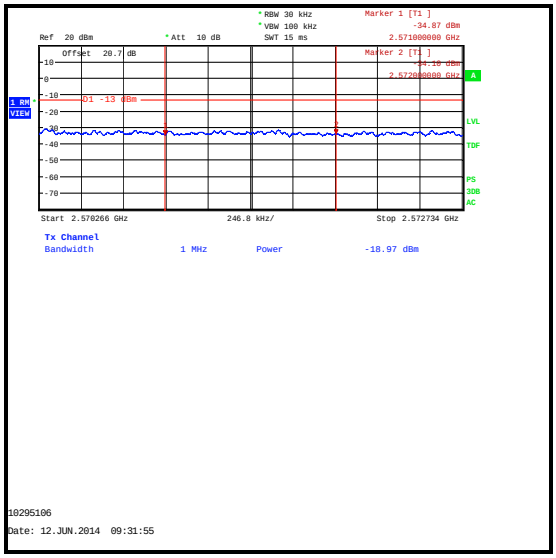
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 10 MHz Channel Bandwidth / 2571 MHz to 2572 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571 to 2572	QPSK	50	0	-19.4	-13.0	6.4	Complied
2571 to 2572	16QAM	50	0	-19.0	-13.0	6.0	Complied



QPSK

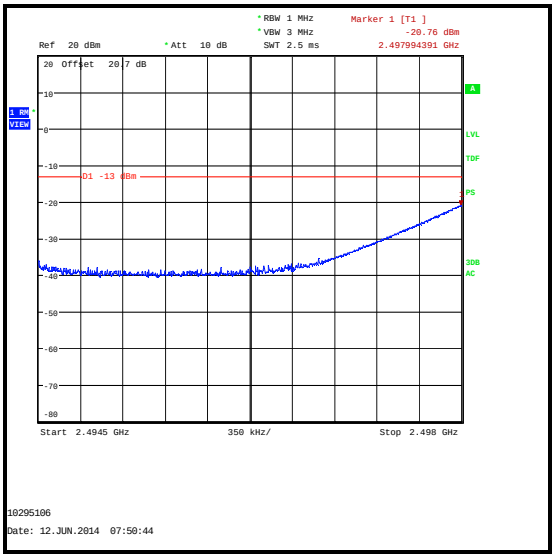


16QAM

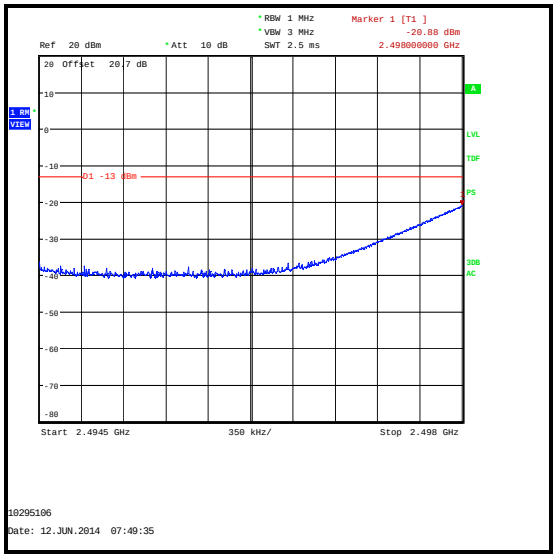
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 15 MHz Channel Bandwidth / 2494.5 MHz to 2498 MHz / Sub-test 1

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2497.994	QPSK	1	0	-20.8	-13.0	7.8	Complied
2498.000	16QAM	1	0	-20.9	-13.0	7.9	Complied



QPSK

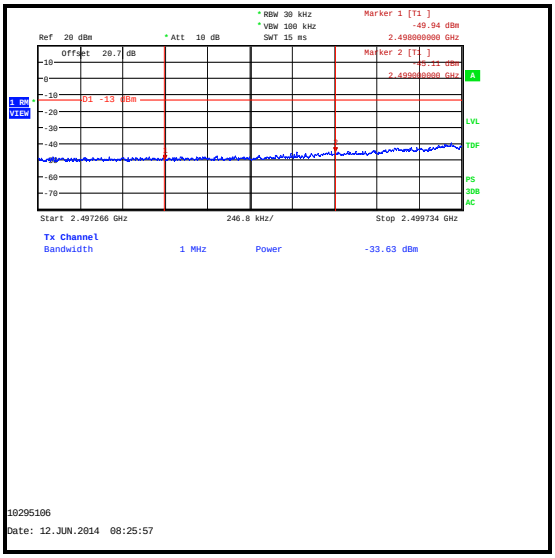


16QAM

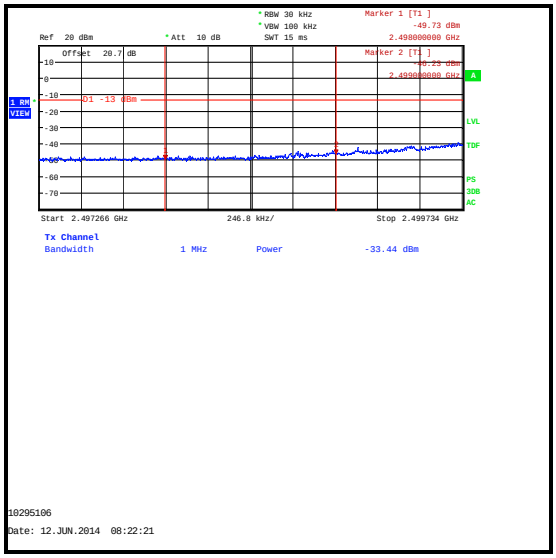
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 15 MHz Channel Bandwidth / 2498 MHz to 2499 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498 to 2499	QPSK	1	0	-33.6	-13.0	20.6	Complied
2498 to 2499	16QAM	1	0	-33.4	-13.0	20.4	Complied



QPSK

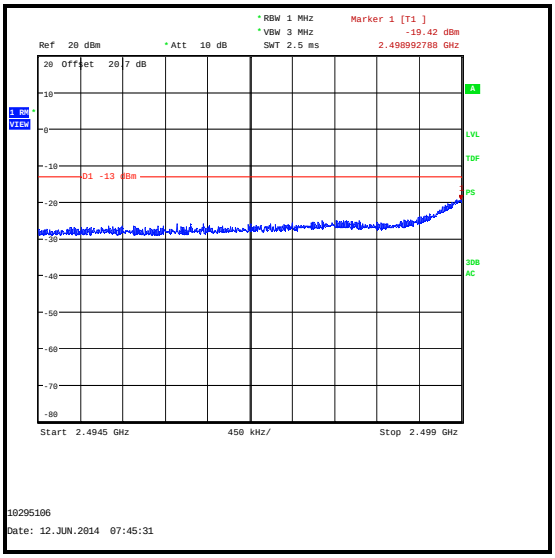


16QAM

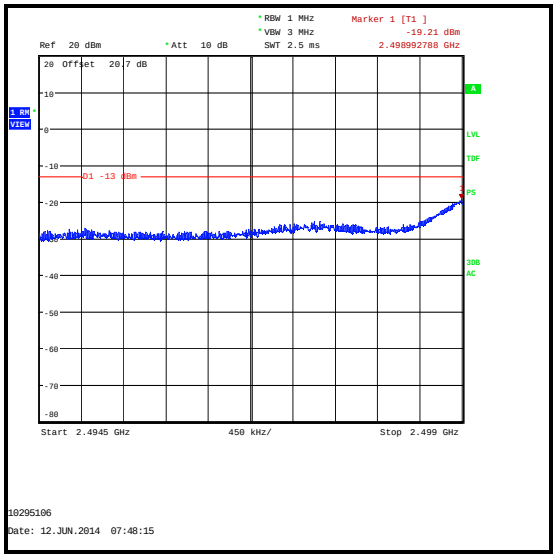
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 15 MHz Channel Bandwidth / 2494.5 MHz to 2499 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498.993	QPSK	75	0	-19.4	-13.0	6.4	Complied
2498.993	16QAM	75	0	-19.2	-13.0	6.2	Complied



QPSK

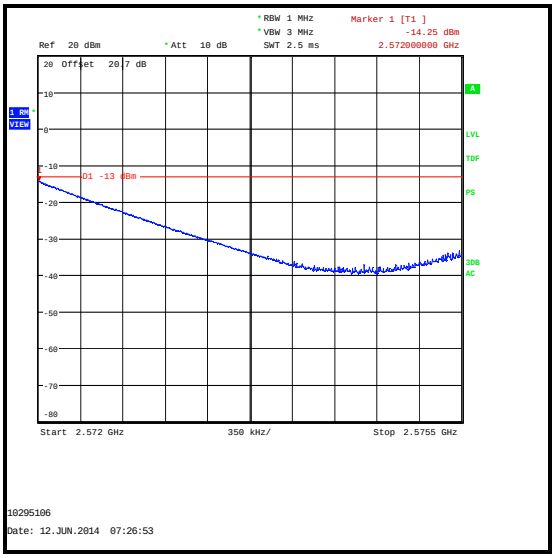


16QAM

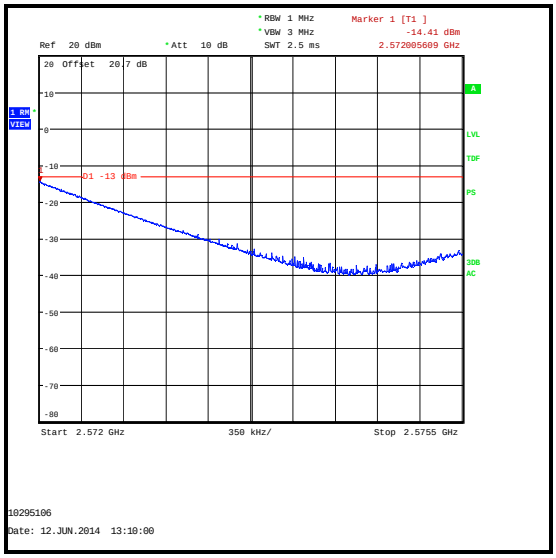
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 15 MHz Channel Bandwidth / 2572 MHz to 2575.5 MHz / Sub-test 2

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2572.000	QPSK	1	74	-14.3	-13.0	1.3	Complied
2572.006	16QAM	1	74	-14.4	-13.0	1.4	Complied



QPSK

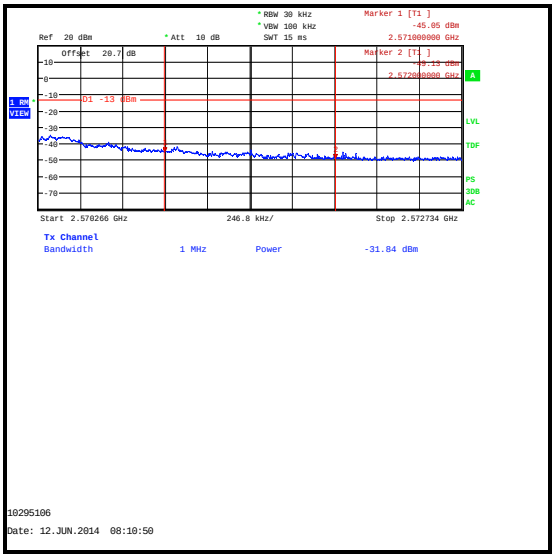


16QAM

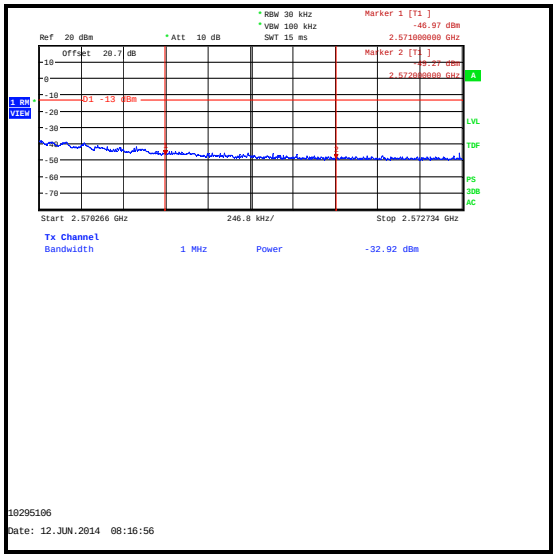
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 15 MHz Channel Bandwidth / 2571 MHz to 2572 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571 to 2572	QPSK	1	74	-31.8	-13.0	18.8	Complied
2571 to 2572	16QAM	1	74	-32.9	-13.0	19.9	Complied



QPSK

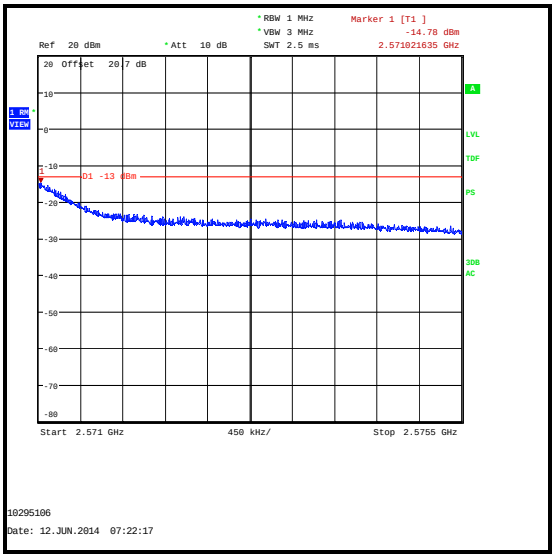


16QAM

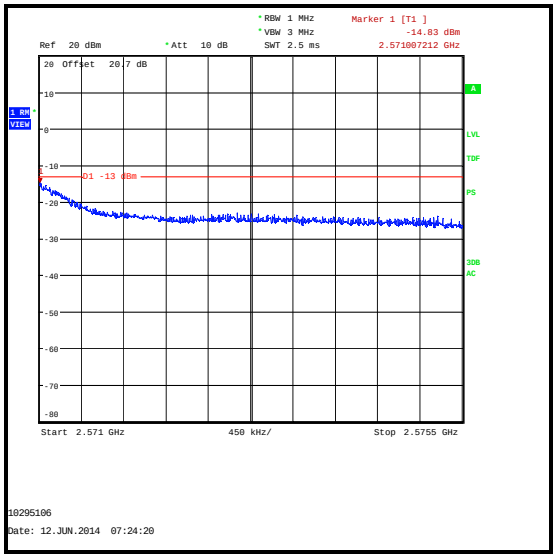
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 15 MHz Channel Bandwidth / 2571 MHz to 2575.5 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571.021	QPSK	75	0	-14.8	-13.0	1.8	Complied
2571.007	16QAM	75	0	-14.8	-13.0	1.8	Complied



QPSK

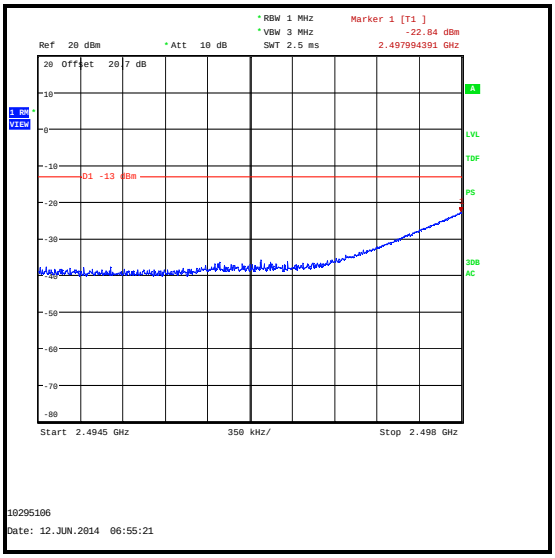


16QAM

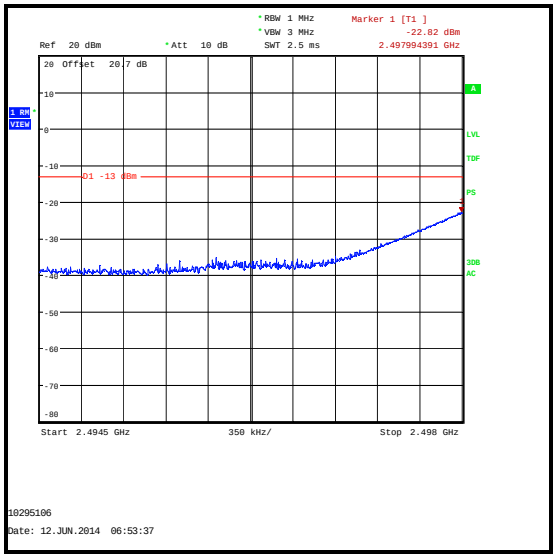
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 20 MHz Channel Bandwidth / 2494.5 MHz to 2498 MHz / Sub-test 1

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2497.994	QPSK	1	0	-22.8	-13.0	9.8	Complied
2497.994	16QAM	1	0	-22.8	-13.0	9.8	Complied



QPSK

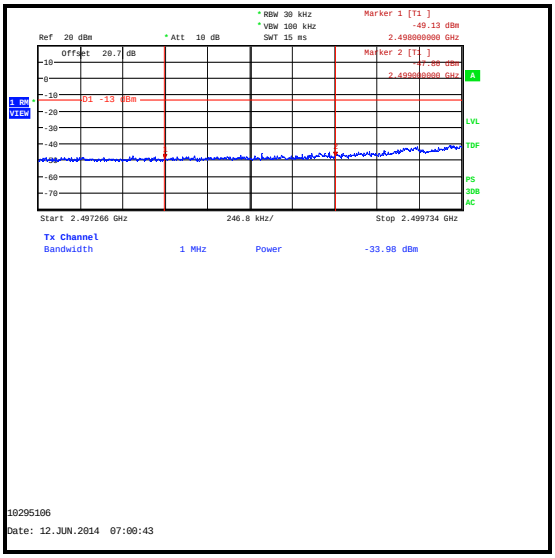


16QAM

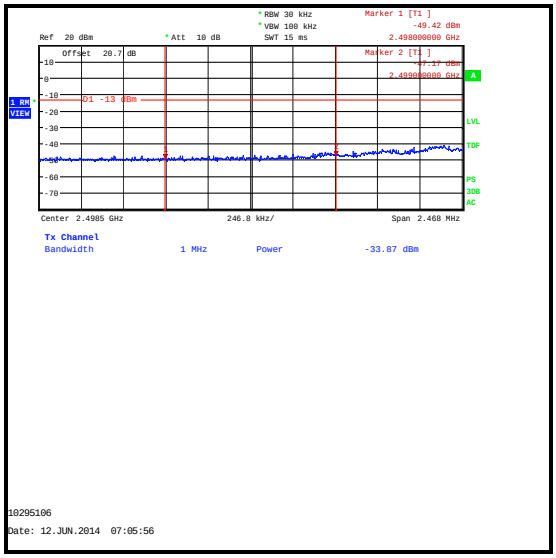
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 20 MHz Channel Bandwidth / 2498 MHz to 2499 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498 to 2499	QPSK	1	0	-34.0	-13.0	21.0	Complied
2498 to 2499	16QAM	1	0	-33.9	-13.0	20.9	Complied



QPSK

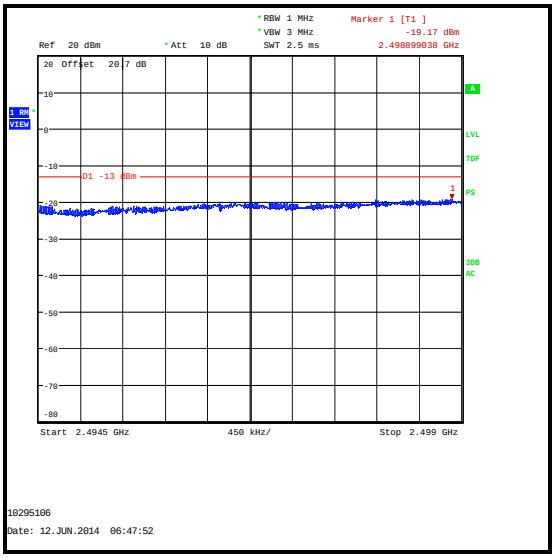


16QAM

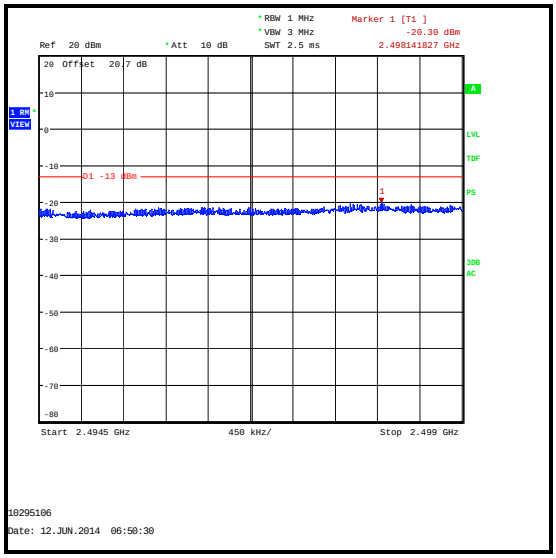
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 20 MHz Channel Bandwidth / 2494.5 MHz to 2499 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2498.899	QPSK	100	0	-19.2	-13.0	6.2	Complied
2498.142	16QAM	100	0	-20.3	-13.0	7.3	Complied



QPSK

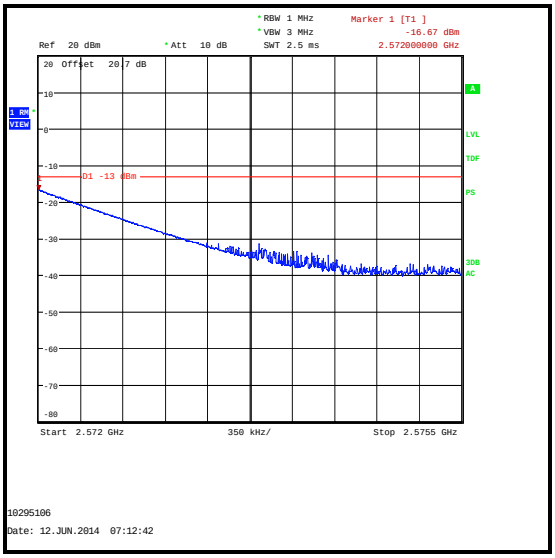


16QAM

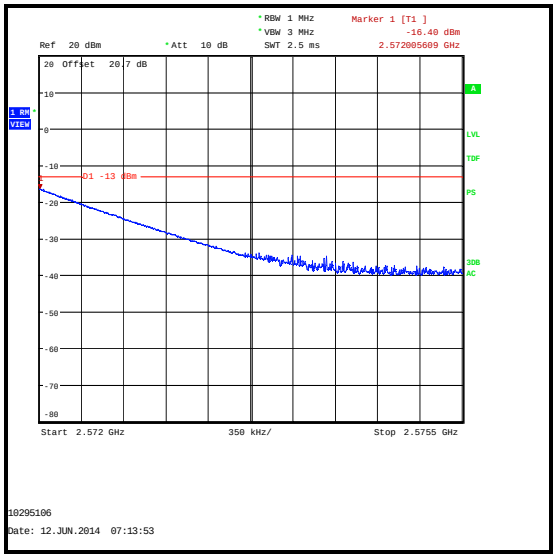
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 20 MHz Channel Bandwidth / 2572 MHz to 2575.5 MHz / Sub-test 2

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2572.000	QPSK	1	99	-16.7	-13.0	3.7	Complied
2572.006	16QAM	1	99	-16.4	-13.0	3.4	Complied



QPSK

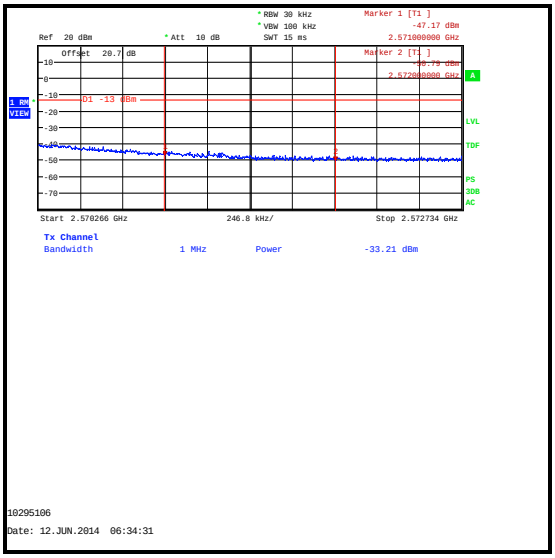


16QAM

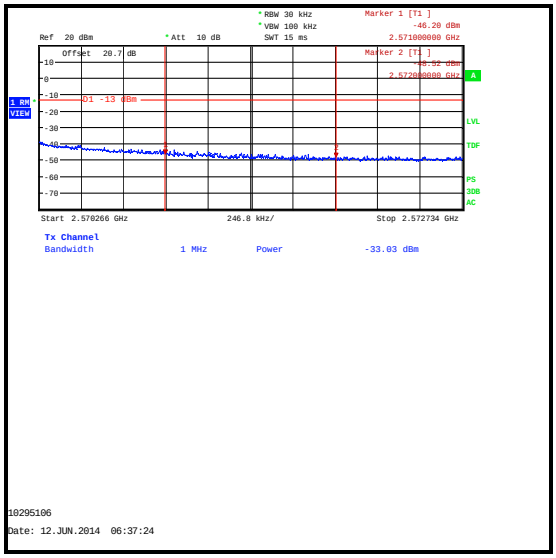
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 20 MHz Channel Bandwidth / 2571 MHz to 2572 MHz Integrated Result

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Integrated Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571 to 2572	QPSK	1	99	-33.2	-13.0	20.2	Complied
2571 to 2572	16QAM	1	99	-33.0	-13.0	20.0	Complied



QPSK

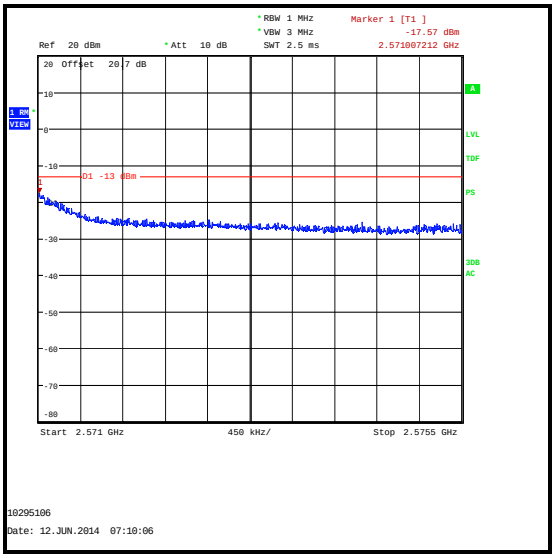


16QAM

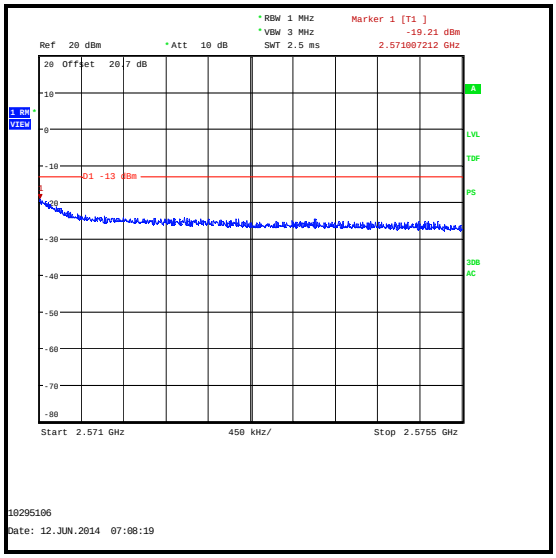
Transmitter Radiated Emissions at Band Edges +/- 5.5 MHz (continued)

Results: 20 MHz Channel Bandwidth / 2571 MHz to 2575.5 MHz / Sub-test 4

Frequency (MHz)	Modulation Scheme	Resource Block(s)	Resource Block Offset	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Result
2571.007	QPSK	100	0	-17.6	-13.0	4.6	Complied
2571.007	16QAM	100	0	-19.2	-13.0	6.2	Complied



QPSK



16QAM

Test Equipment Used:

Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	14 Mar 2015	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	14 Nov 2014	12
M1874	Test Receiver	Rohde & Schwarz	ESU26	100553	13 May 2015	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	18 May 2015	12
A1818	Antenna	EMCO	3115	00075692	14 Nov 2014	12

5.2.6. Transmitter Frequency Stability (Temperature Variation)

Test Summary:

Test Engineer:	Keith Tucker	**Test Dates:**	09 June 2014 & 10 June 2014
Test Sample IMEI:	004402452726833		

FCC Reference:	Parts 2.1055 & 27.54
Test Method Used:	As detailed in KDB 971168 Section 9.0 referencing ANSI TIA-603-C-2004 Section 2.2.2 and FCC Part 2.1055

Environmental Conditions:

Temperature (°C):	23 to 25
Relative Humidity (%):	37 to 40

Note(s):

1. A voltage variation jig was connected to the EUT which was powered via a bench power supply at the nominal voltage of 3.8V.
2. Frequency error was measured using a calibrated Rohde and Schwarz CMW 500 Universal Radio Communications Tester in accordance with current Rohde and Schwarz application notes. The EUT was connected by suitable RF cables to the CMW 500. A bi-directional communications link was established between the EUT and CMW 500. The frequency meter value was recorded.
3. Temperature was monitored throughout the test with a calibrated digital thermometer.

Transmitter Frequency Stability (Temperature Variation) (continued)

Results: Bottom Channel (2502.5 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
-30	22	2502.500022	2500	2.500022	Complied
-20	22	2502.500022	2500	2.500022	Complied
-10	20	2502.499980	2500	2.499980	Complied
0	23	2502.499977	2500	2.499977	Complied
10	22	2502.500022	2500	2.500022	Complied
20	27	2502.500027	2500	2.500027	Complied
30	23	2502.499977	2500	2.499977	Complied
40	22	2502.499978	2500	2.499978	Complied
50	21	2502.499979	2500	2.499979	Complied

Results: Top Channel (2567.5 MHz)

Temperature (ºC)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
-30	35	2567.500035	2570	2.499965	Complied
-20	39	2567.500039	2570	2.499961	Complied
-10	33	2567.500033	2570	2.499967	Complied
0	26	2567.500026	2570	2.499974	Complied
10	38	2567.500038	2570	2.499962	Complied
20	35	2567.500035	2570	2.499965	Complied
30	37	2567.500037	2570	2.499963	Complied
40	34	2567.500034	2570	2.499966	Complied
50	39	2567.500039	2570	2.499961	Complied

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	14 Mar 2015	12
M1870	Wideband Radio Comms Tester	Rohde & Schwarz	CMW500	145919	05 May 2015	12
E0513	Environmental Chamber	TAS	LT600 Series 3	23900506	Calibrated before use	-
M1249	Thermometer	Fluke	52II	88800049	02 May 2015	12
S021	Dual DC power supply	Tti	CPX200	061034	Calibrated before use	-
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12

5.2.7. Transmitter Frequency Stability (Voltage Variation)

Test Summary:

Test Engineer:	Keith Tucker	**Test Dates:**	09 June 2014 & 10 June 2014
Test Sample IMEI:	004402452726833		

FCC Reference:	Parts 2.1055 & 27.54
Test Method Used:	As detailed in KDB 971168 Section 9.0 referencing ANSI TIA-603-C-2004 Section 2.2.2 and FCC Part 2.1055

Environmental Conditions:

Temperature (°C):	23 to 25
Relative Humidity (%):	37 to 40

Note(s):

1. A voltage variation jig was connected to the EUT which was powered via a bench power supply.
2. Frequency error was measured using a calibrated Rohde and Schwarz CMW 500 Universal Radio Communications Tester in accordance with current Rohde and Schwarz application notes. The EUT was connected by suitable RF cables to the CMW 500. A bi-directional communications link was established between the EUT and CMW 500. The frequency meter value was recorded.
3. Voltage was monitored throughout the test with a calibrated digital voltmeter.

Results: Bottom Channel (2502.5 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Lower Band Edge Limit (MHz)	Margin (MHz)	Result
3.42	20	2502.499980	2500	2.499980	Complied
4.18	22	2502.499978	2500	2.499978	Complied

Results: Top Channel (2567.5 MHz)

Supply Voltage (V)	Frequency Error (Hz)	Measured Frequency (MHz)	Upper Band Edge Limit (MHz)	Margin (MHz)	Result
3.42	33	2567.500033	2570	2.499967	Complied
4.18	36	2567.500036	2570	2.499964	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	14 Mar 2015	12
M1870	Wideband Radio Comms Tester	Rohde & Schwarz	CMW500	145919	05 May 2015	12
S021	Dual DC power supply	Tti	CPX200	061034	Calibrated before use	-
M1251	Multimeter	Fluke	175	89170179	19 May 2015	12

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
Conducted Output Power	2500 to 2570 MHz	95%	±1.13 dB
Frequency Stability	2500 to 2570 MHz	95%	±23 Hz
Occupied Bandwidth	2500 to 2570 MHz	95%	±3.92 %
Radiated Spurious Emissions	30 MHz to 1 GHz	95%	±5.65 dB
Radiated Spurious Emissions	1 GHz to 26 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.

7. Report Revision History

Version Number	Revision Details		
	Page No(s)	Clause	Details
1.0	-	-	Initial Version
2.0	-	-	EUT Description update

--- END OF REPORT ---