

Test report

REP014519-1R1TRFWL

Date of issue: December 21, 2023

Applicant:

Fujitsu Network Communications, Inc.

Product:

TB2RU

Model:

N71N70N66-RU

Model variant:

N/A

FCC ID:

CFD5G4RUTB

Specifications:

◆ **FCC 47 CFR Part 27**

Miscellaneous Wireless Communications Services

Lab and test locations

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Tested by	Chenhao Ma, Wireless Test Technician
Reviewed by	James Cunningham, EMC/WL Manager
Review date	December 21, 2023
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.

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Section 1. Report summary

1.1 Applicant and manufacturer

Company name	Fujitsu Networks Communications, Inc.
Address	2801 Telecom Parkway
City	Richardson
Province/State	TX
Postal/Zip code	75082
Country	United States of America

1.2 Test specifications

FCC 47 CFR Part 27 ANSI C63.26 (2015)	Miscellaneous Wireless Communications Services American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
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1.3 Statement of compliance

In the configuration tested, the EUT was found compliant.

Testing was completed against all relevant requirements of the test standard. Results obtained indicate that the product under test complies in full with the requirements tested. The test results relate only to the items tested.

See "Summary of test results" for full details.

1.4 Exclusions

None

1.5 Test report revision history

Revision #	Details of changes made to test report
REP014519-1TRFWL	Original report issued
REP014519-1R1TRFWL	Updated following TCB comments

Section 2. Summary of test results

2.1 FCC Part 27 test results

Part	Test description	Verdict
§2.1033(c)(4)	Modulation type	Pass
§2.1049(h) & §27.50(c), (d)	99% Occupied bandwidth	Pass
§27.53(g), (h)	26 dB Occupied bandwidth	Pass
§27.50(c)(3), (d)(2)(ii)	Output power at RF antenna connector	Pass
§27.50(d)(5)	Peak to average power ratio	Pass
§27.53(g), (h)	Conducted spurious emissions	Pass
§27.53(g), (h)	Radiated spurious emissions	Pass
§27.54	Frequency stability	Pass

Section 3. Equipment under test (EUT) details

3.1 Sample information

Receipt date	September 11, 2023
Nemko sample ID number	PRJ0037301

3.2 EUT information

Product name	TB2 RU
Model	N71N70N66-RU
Model variant	N/A
Serial number	N/A

3.3 Technical information

Frequency band	1995 - 2020 MHz (Band n70) 2110 – 2200 MHz (Band n66) 617-652MHz (Band 71)
Maximum RF power:	n66: 43.82 dBm maximum total channel power (1 carrier, one antenna port), (24.10 Watts) n70: 43.89 dBm maximum total channel power (1 carrier, one antenna port), (24.49 Watts) n71: 43.94 dBm maximum total channel power (1 carrier, one antenna port), (24.77 Watts)
Supported bandwidths:	n66: 5/10/15/20 MHz n70: 5/20/25 MHz n71: 5/10/15/20 MHz
Type of modulation	QPSK; 16QAM; 64QAM; 256QAM; 1024QAM NB-IoT supported for band n71
Power requirements	120 VAC
Antenna information	The EUT is professionally installed.

3.4 Product description and theory of operation

The radio unit (RU) is one of the components to configure the 5G RAN mobile communication system. The RU has three band frequencies: band n66; band n70 and band n71. Port C and D are for band n66 and n70, port A and B are for band n71 and NB-IoT.

3.5 EUT exercise details

A laptop computer was used to send test commands to EUT to force it to transmit the appropriate signal. Unit transmit the selected signal at full power for all three bands (2 correlated outputs). The unit was tested using a conducted port. The antenna installation shall be done by professionals, and they are not within the scope of the tests evaluated on this document.

3.6 EUT setup diagram

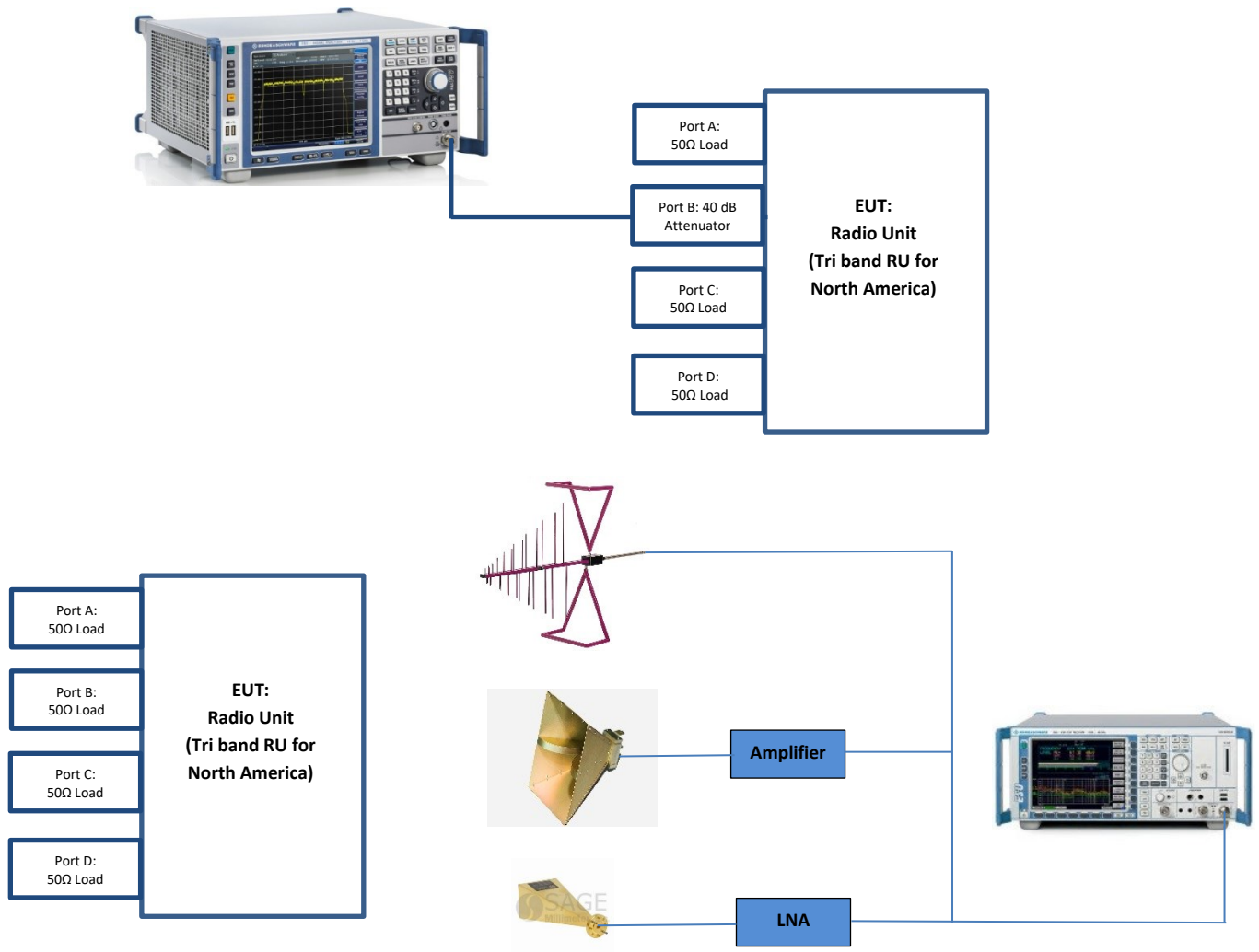


Figure 3.6-1: Setup diagram

Section 4. Engineering considerations

4.1 Modifications incorporated in the EUT

There were no modifications performed to the EUT during this assessment.

4.2 Technical judgment

None

4.3 Deviations from laboratory tests procedures

No deviations were made from laboratory procedures.

Section 5. Test conditions

5.1 Atmospheric conditions

Temperature	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar

When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.

5.2 Power supply range

The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

Section 6. Measurement uncertainty

6.1 Uncertainty of measurement

Measurement uncertainty budgets for the tests are detailed below. Measurement uncertainty calculations assume a coverage factor of $K = 2$ with 95% certainty.

Table 6.1-1: Measurement uncertainty

Test name	Measurement uncertainty, dB
All antenna port measurements/ including OBW	0.55
Conducted spurious emissions	1.13
Radiated spurious emissions	3.78
AC power line conducted emissions	1.38
Supply Voltages	0.05%
Time	2.09%

Section 7. Test equipment

7.1 Test equipment list

Table 7.1-1: Equipment list

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
EMC Test Receiver	Rohde & Schwarz	ESU 40	E1121	1 year	08-23-2024
Signal Analyzer	Rohde & Schwarz	FSV 40	E1120	2 years	08-28-2025
Antenna, Bilog	Schaffner-Chase	CBL6111C	1763	2 years	04-01-2024
Antenna, Horn	ETS	3117-PA	E1160	1 year	02-02-2024
Antenna, Horn	Sage Millimeter	SAR-2309-42-S2	E1143	2 years	12-01-2024
Low Noise Amplifier	Sage Millimeter	SBL-1834034030-KFKF-SI	E1228	VOU	VOU
FSW - Signal & Spectrum Analyzer 2Hz / 43.5 GHz	Rohde & Schwarz	FSW 43	E1302	1 year	10-20-2023
Spectrum Analyzer	Rohde & Schwarz	FSV-3030	E1321	1 year	09-26-2024
Environmental Chamber	Associated Environmental Systems	HD-210	S1265	1 year	09-21-2024
System controller	Sunol Sciences	SC104V	E1191	NCR	NCR

Note: NCR - No calibration required; VOU – Verify on use

Section 8. Testing data

8.1 FCC §2.1033(c)(4) Modulation type

8.1.1 Definitions and limits

(c) Applications for equipment other than that operating under parts 15, 11 and 18 of this chapter shall be accompanied by a technical report containing the following information:

(4) Type or types of emission

8.1.2 Test summary

Test date	September 11, 2023	Temperature	22 °C
Test engineer	Chenhao Ma	Air pressure	1003 mbar
Verdict	Pass	Relative humidity	54 %

8.1.3 Observations, settings and special notes

None

8.1.4 Test data

Table 8.1-1: Types of emission

Band	Bandwidth (MHz)	Emission type
NB-IoT+N71	0.2+20	QPSK
n66	5, 10, 15, 20	QPSK; 16QAM; 64QAM; 256QAM; 1024QAM
n70	5, 20, 25	QPSK; 16QAM; 64QAM; 256QAM; 1024QAM
n71	5, 10, 15, 20	QPSK; 16QAM; 64QAM; 256QAM; 1024QAM

8.2 FCC §2.1049(h) & 99% §27.50 (c), (d) Occupied Bandwidth and frequency ranges

8.2.1 Definitions and limits

§2.1049 (h) Transmitters employing digital modulation techniques—when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at the discretion of the use.

8.2.2 Test summary

Test date	September 18, 2023	Temperature	22 °C
	September 19, 2023		21 °C
	September 20, 2023		22 °C
	November 17, 2023		24 °C
Test engineer	Chenhao Ma Wireless test engineer	Air pressure	1003 mbar
			1001 mbar
			1001 mbar
			1000 mbar
Verdict	Pass	Relative humidity	54 %
			57 %
			55 %
			52 %

8.2.3 Observations, settings and special notes

Testing was performed on the antenna port identified as the highest output power for each frequency band.

Testing was performed according to ANSI C63.26 section 5.4.4.

Spectrum analyzer settings:

Resolution bandwidth	1% - 5% OBW
Video bandwidth	3*RBW
Frequency span	2*OBW
Detector mode	Peak
Trace mode	Max Hold



8.2.4 Test data

Table 8.2-1: 99% Occupied bandwidth, QPSK Modulation.

Band	OBW Declared (MHz)	Port	Channel (MHz)	99% OBW (MHz)
NB-IoT+N71	0.2+20	B	617.3	19.394
NB-IoT+N71	0.2+20	B	641.7	19.317
NB-IoT+N71	0.2+20	B	651.7	19.365
n66	5	C	2112.5	4.533
n66	10	C	2115	9.320
n66	15	C	2117.5	14.132
n66	20	C	2120	19.045
n66	5	C	2155	4.483
n66	10	C	2155	9.370
n66	15	C	2155	14.208
n66	20	C	2155	18.944
n66	5	C	2197.5	4.508
n66	10	C	2195	9.370
n66	15	C	2192.5	14.132
n66	20	C	2190	18.944
n70	5	C	1997.5	4.508
n70	20	C	2005	18.944
n70	25	C	2007.5	23.806
n70	5	C	2007.5	4.508
n70	20	C	2007.5	18.944
n70	5	C	2017.5	4.483
n70	20	C	2010	19.045
n71	5	B	619.5	4.508
n71	10	B	622	9.320
n71	15	B	624.5	14.208
n71	20	B	627	18.944
n71	5	B	634.5	4.483
n71	10	B	634.5	9.370
n71	15	B	634.5	14.132
n71	20	B	634.5	19.045
n71	5	B	649.5	4.508
n71	10	B	647	9.320
n71	15	B	644.5	14.208
n71	20	B	642	18.944



Table 8.2-2: 99% Occupied bandwidth, 16QAM Modulation.

Band	OBW Declared	Port	Channel (MHz)	99% OBW
n66	5	C	2112.5	4.508
n66	10	C	2115	9.269
n66	15	C	2117.5	14.208
n66	20	C	2120	19.045
n66	5	C	2155	4.508
n66	10	C	2155	9.320
n66	15	C	2155	14.132
n66	20	C	2155	19.045
n66	5	C	2197.5	4.533
n66	10	C	2195	9.269
n66	15	C	2192.5	14.208
n66	20	C	2190	19.045
n70	5	C	1997.5	4.533
n70	20	C	2005	19.045
n70	25	C	2007.5	23.806
n70	5	C	2007.5	4.508
n70	20	C	2007.5	19.045
n70	5	C	2017.5	4.508
n70	20	C	2010	19.045
n71	5	B	619.5	4.508
n71	10	B	622	9.269
n71	15	B	624.5	14.208
n71	20	B	627	19.146
n71	5	B	634.5	4.508
n71	10	B	634.5	9.269
n71	15	B	634.5	14.208
n71	20	B	634.5	19.146
n71	5	B	649.5	4.508
n71	10	B	647	9.269
n71	15	B	644.5	14.208
n71	20	B	642	19.045



Table 8.2-3: 99% Occupied bandwidth, 64QAM Modulation.

Band	OBW Declared	Port	Channel (MHz)	99% OBW
n66	5	C	2112.5	4.483
n66	10	C	2115	9.370
n66	15	C	2117.5	14.132
n66	20	C	2120	18.944
n66	5	C	2155	4.508
n66	10	C	2155	9.320
n66	15	C	2155	14.132
n66	20	C	2155	19.045
n66	5	C	2197.5	4.508
n66	10	C	2195	9.320
n66	15	C	2192.5	14.208
n66	20	C	2190	19.045
n70	5	C	1997.5	4.508
n70	20	C	2005	18.944
n70	25	C	2007.5	23.806
n70	5	C	2007.5	4.533
n70	20	C	2007.5	18.944
n70	5	C	2017.5	4.508
n70	20	C	2010	18.944
n71	5	B	619.5	4.508
n71	10	B	622	9.320
n71	15	B	624.5	14.132
n71	20	B	627	19.045
n71	5	B	634.5	4.508
n71	10	B	634.5	9.370
n71	15	B	634.5	14.132
n71	20	B	634.5	18.944
n71	5	B	649.5	4.508
n71	10	B	647	9.320
n71	15	B	644.5	14.132
n71	20	B	642	19.045

Table 8.2-4: 99% Occupied bandwidth, 256QAM Modulation.

Band	OBW Declared	Port	Channel (MHz)	99% OBW
n66	5	C	2112.5	4.508
n66	10	C	2115	9.320
n66	15	C	2117.5	14.132
n66	20	C	2120	19.045
n66	5	C	2155	4.483
n66	10	C	2155	9.320
n66	15	C	2155	14.208
n66	20	C	2155	18.944
n66	5	C	2197.5	4.483
n66	10	C	2195	9.320
n66	15	C	2192.5	14.132
n66	20	C	2190	18.944
n70	5	C	1997.5	4.508
n70	20	C	2005	18.944
n70	25	C	2007.5	23.806
n70	5	C	2007.5	4.508
n70	20	C	2007.5	18.944
n70	5	C	2017.5	4.483
n70	20	C	2010	18.944
n71	5	B	619.5	4.508
n71	10	B	622	9.320
n71	15	B	624.5	14.132
n71	20	B	627	19.045
n71	5	B	634.5	4.533
n71	10	B	634.5	9.370
n71	15	B	634.5	14.132
n71	20	B	634.5	19.146
n71	5	B	649.5	4.483
n71	10	B	647	9.320
n71	15	B	644.5	14.132
n71	20	B	642	18.944

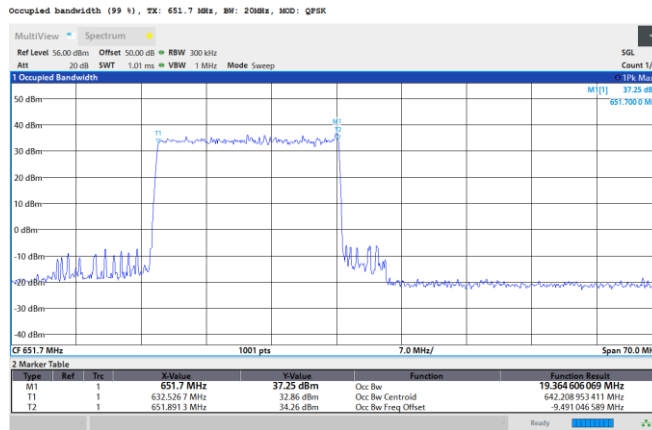
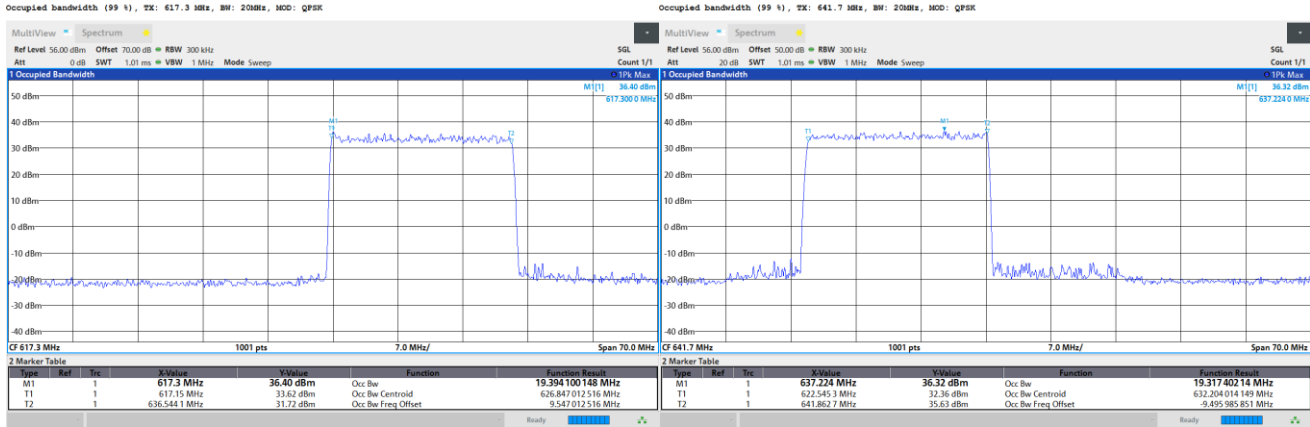


Table 8.2-5: 99% Occupied bandwidth, 1024QAM Modulation.

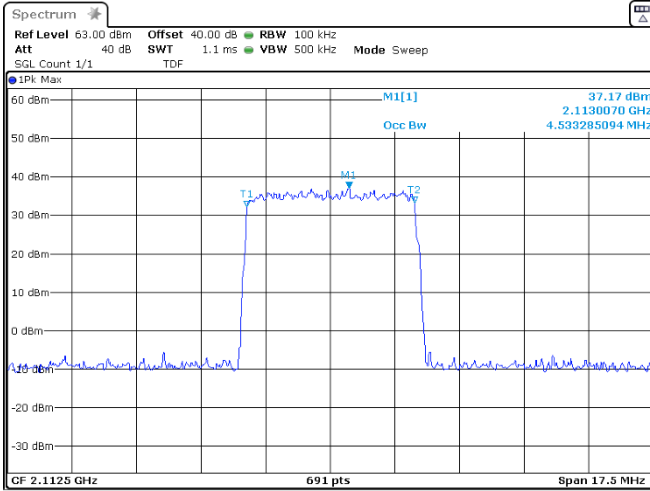
Band	OBW Declared	Port	Channel (MHz)	99% OBW
n66	5	C	2112.5	4.483
n66	10	C	2115	9.320
n66	15	C	2117.5	14.132
n66	20	C	2120	18.944
n66	5	C	2155	4.508
n66	10	C	2155	9.320
n66	15	C	2155	14.132
n66	20	C	2155	19.045
n66	5	C	2197.5	4.483
n66	10	C	2195	9.320
n66	15	C	2192.5	14.132
n66	20	C	2190	18.944
n70	5	C	1997.5	4.508
n70	20	C	2005	19.045
n70	25	C	2007.5	23.679
n70	5	C	2007.5	4.483
n70	20	C	2007.5	18.944
n70	5	C	2017.5	4.508
n70	20	C	2010	18.944
n71	5	B	619.5	4.483
n71	10	B	622	9.370
n71	15	B	624.5	14.132
n71	20	B	627	18.944
n71	5	B	634.5	4.483
n71	10	B	634.5	9.320
n71	15	B	634.5	14.132
n71	20	B	634.5	18.944
n71	5	B	649.5	4.508
n71	10	B	647	9.320
n71	15	B	644.5	14.132
n71	20	B	642	18.944



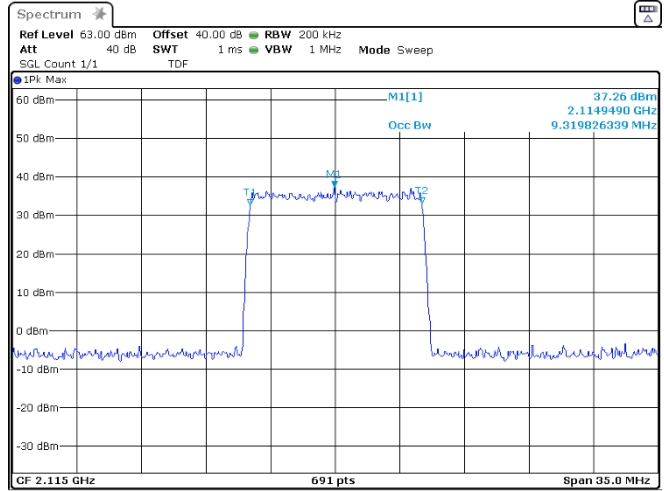
NB-IoT + Band n71, 99% bandwidth



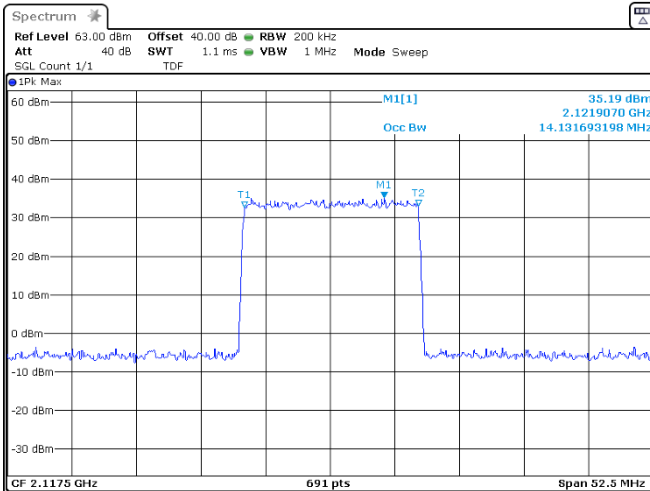
Band 66, 99% bandwidth



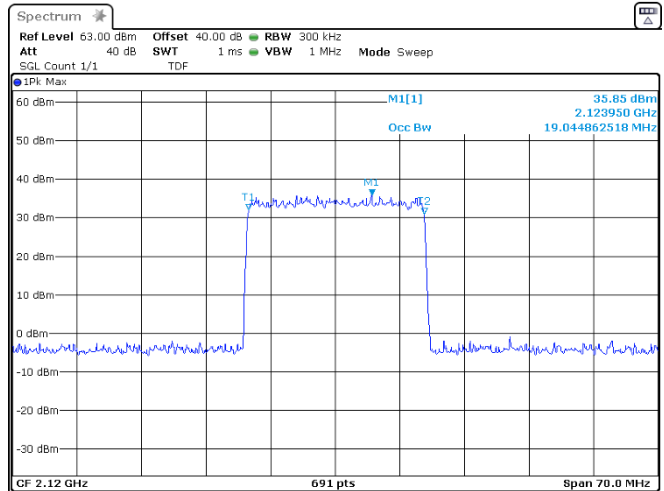
Occupied bandwidth (99 %), TX 2112.5 MHz, BW: 5MHz, MOD: QP
 SK



Occupied bandwidth (99 %), TX 2115 MHz, BW: 10MHz, MOD: QPS
 K



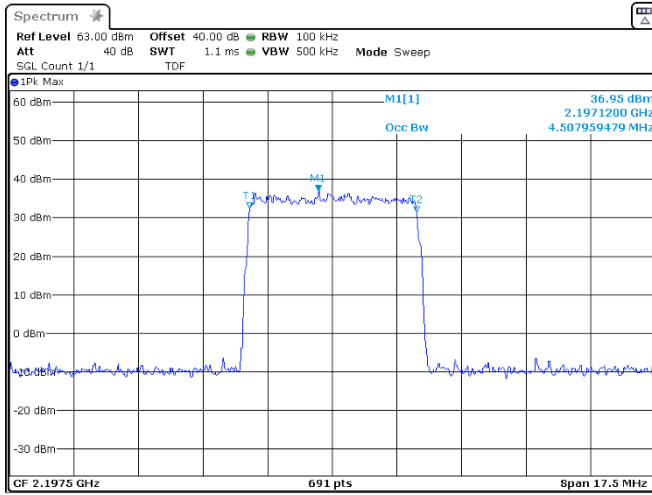
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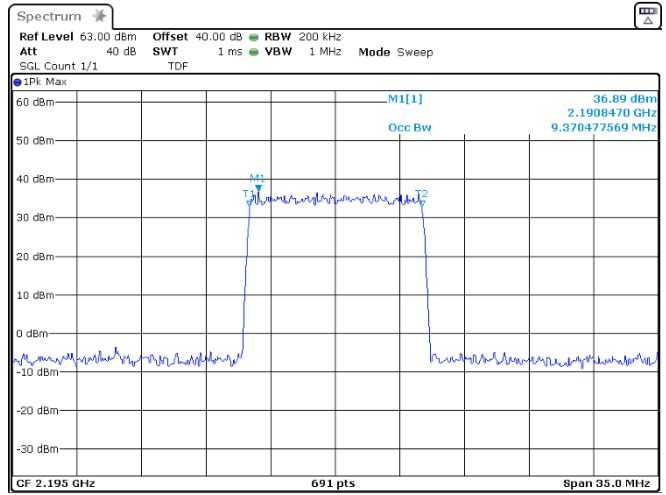
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 K

Section 8
Test name
Specification

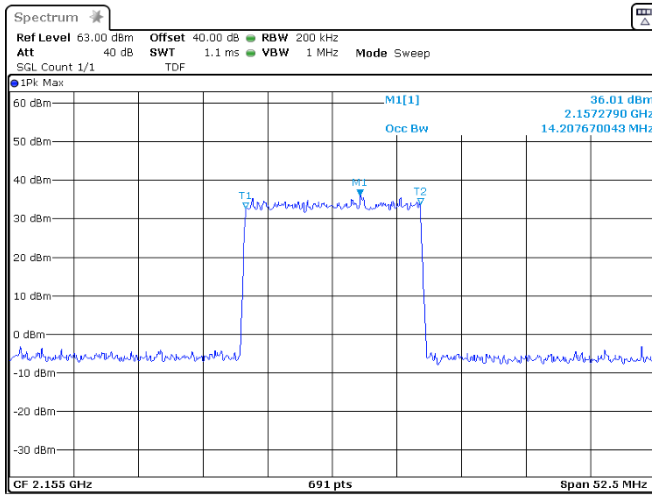
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 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



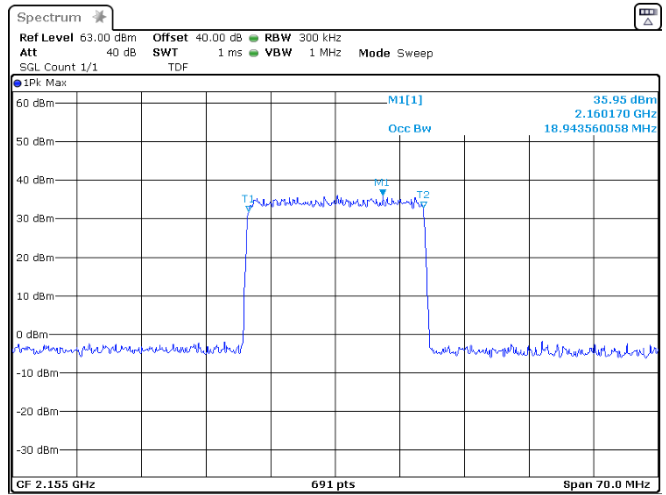
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 SK



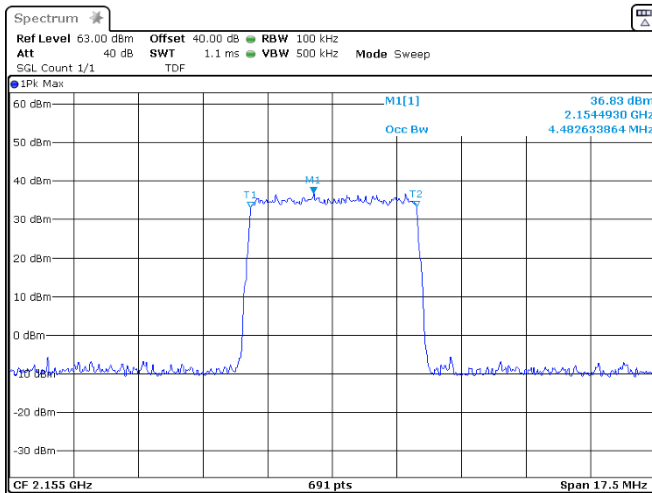
Occupied bandwidth (99 %), TX 2195 MHz, BW: 10MHz, MOD: QPSK
 K



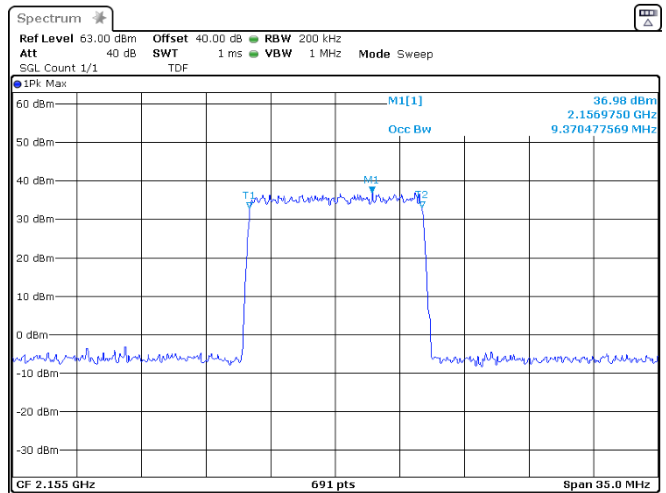
Occupied bandwidth (99 %), TX 2155 MHz, BW: 15MHz, MOD: QPSK
 K



Occupied bandwidth (99 %), TX 2155 MHz, BW: 20MHz, MOD: QPSK
 K



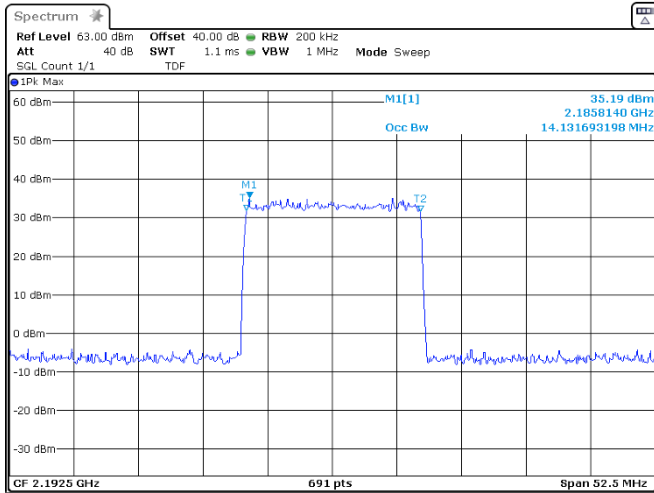
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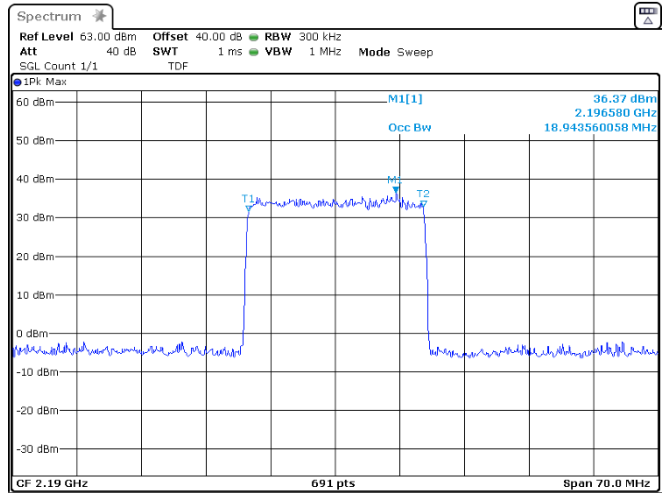
Occupied bandwidth (99 %), TX 2155 MHz, BW: 10MHz, MOD: QPSK
 K

Section 8
Test name
Specification

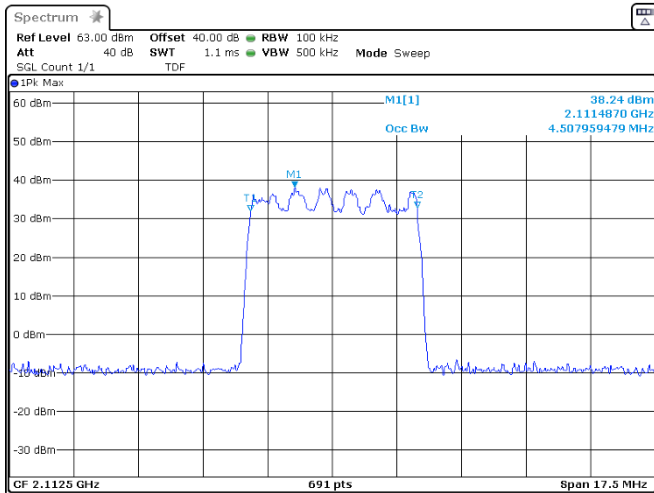
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 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



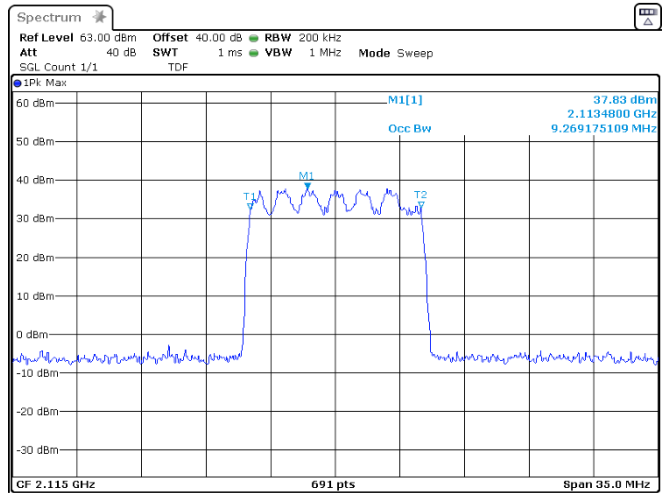
Occupied bandwidth (99 %), TX 2192.5 MHz, BW: 15MHz, MOD: QPSK



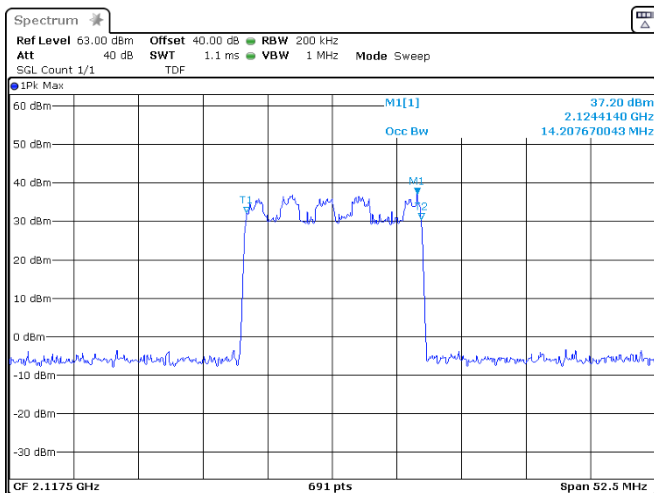
Occupied bandwidth (99 %), TX 2190 MHz, BW: 20MHz, MOD: QPSK



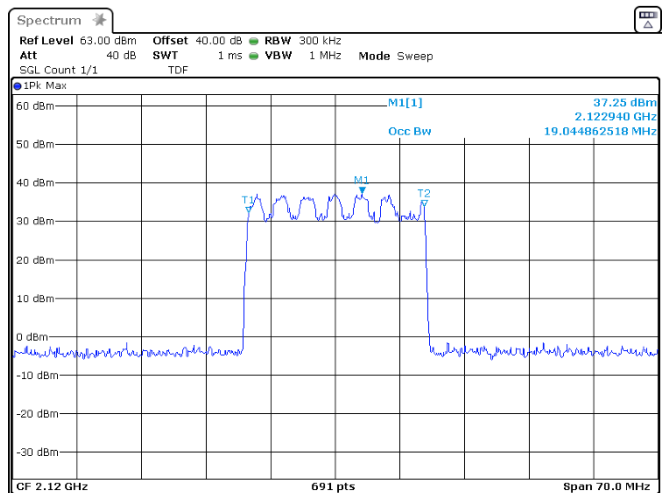
Occupied bandwidth (99 %), TX 2112.5 MHz, BW: 5MHz, MOD: 16QAM



Occupied bandwidth (99 %), TX 2115 MHz, BW: 10MHz, MOD: 16QAM



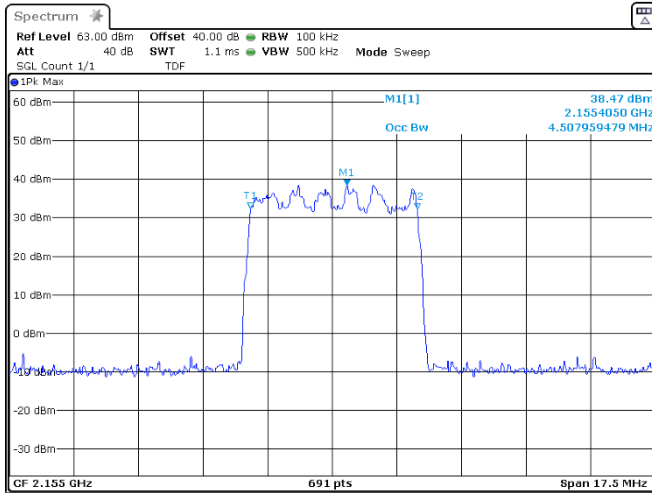
Occupied bandwidth (99 %), TX 2117.5 MHz, BW: 15MHz, MOD: 16QAM



Occupied bandwidth (99 %), TX 2120 MHz, BW: 20MHz, MOD: 16QAM

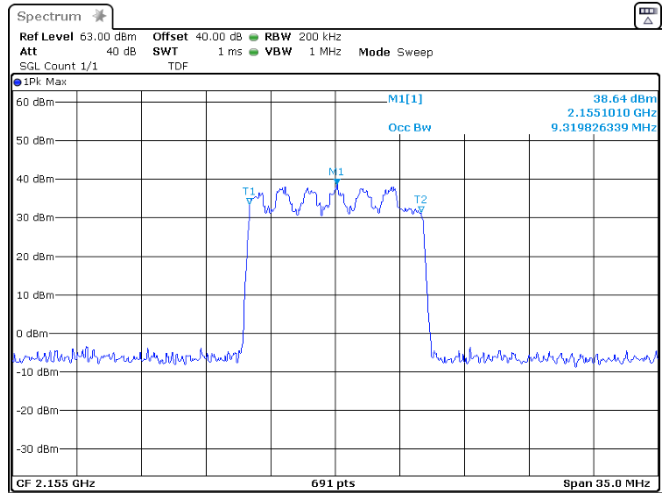
Section 8
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Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



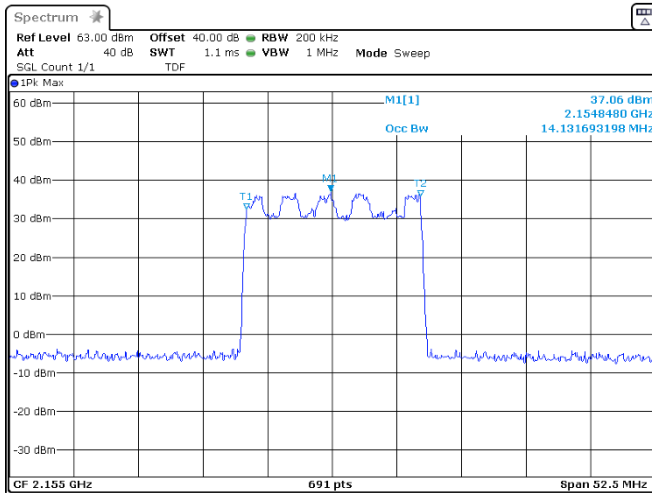
Occupied bandwidth (99 %), TX 2155 MHz, BW: 5MHz, MOD: 16QA

M



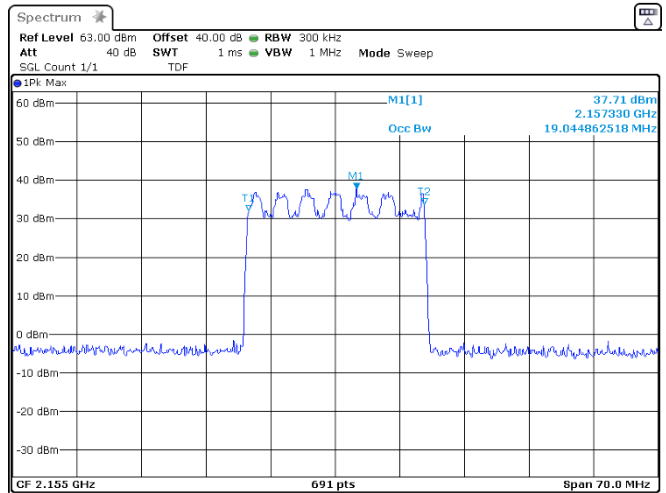
Occupied bandwidth (99 %), TX 2155 MHz, BW: 10MHz, MOD: 16Q

AM



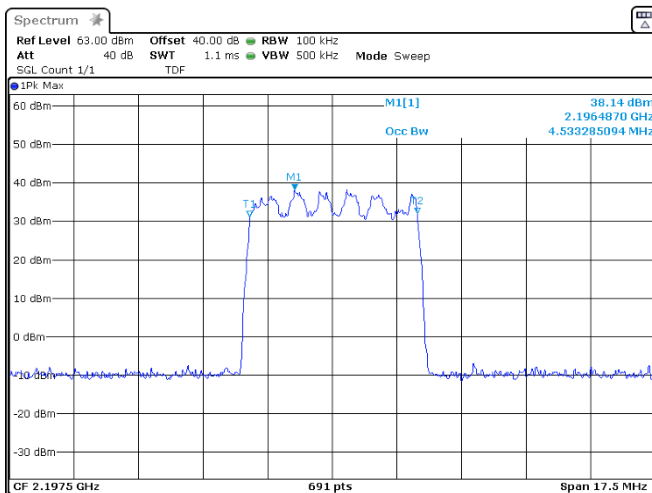
Occupied bandwidth (99 %), TX 2155 MHz, BW: 15MHz, MOD: 16Q

AM



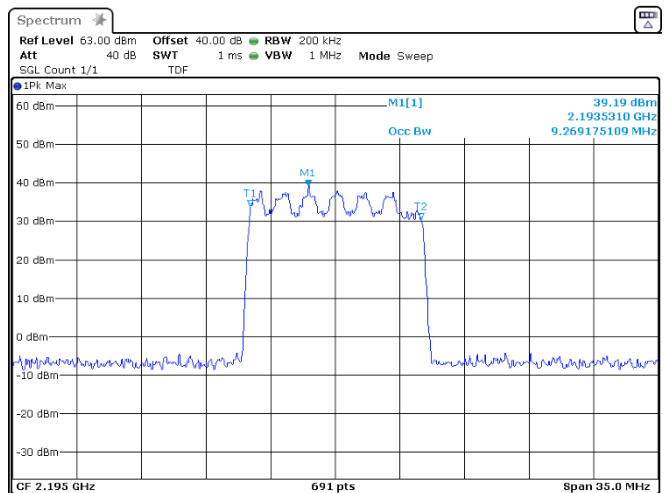
Occupied bandwidth (99 %), TX 2155 MHz, BW: 20MHz, MOD: 16Q

AM



Occupied bandwidth (99 %), TX 2197.5 MHz, BW: 5MHz, MOD: 16

QAM

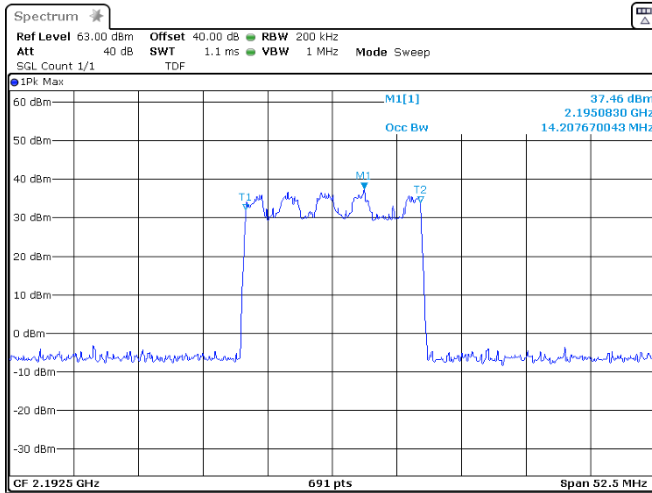


Occupied bandwidth (99 %), TX 2195 MHz, BW: 10MHz, MOD: 16Q

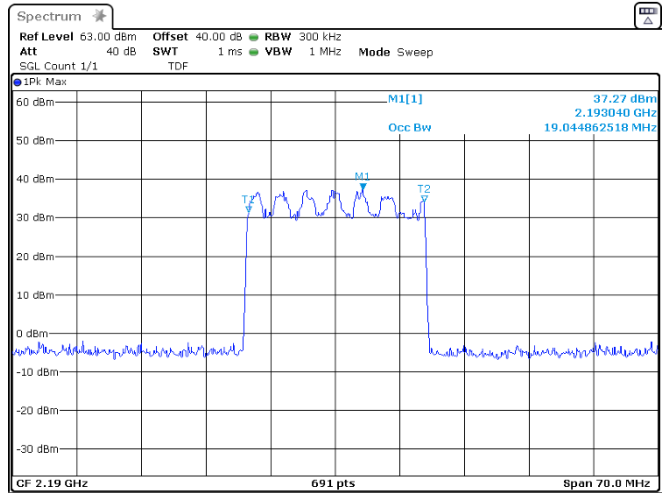
AM

Section 8
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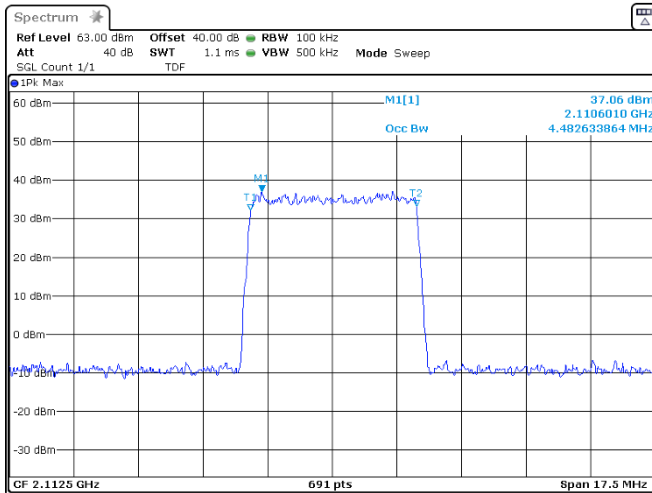
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



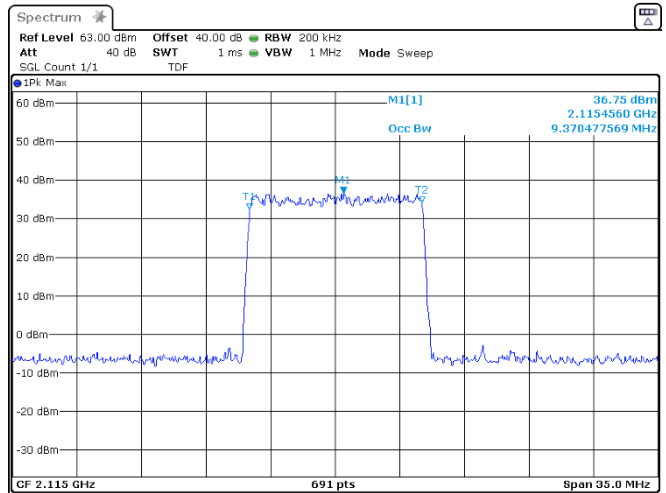
Occupied bandwidth (99 %), TX 2192.5 MHz, BW: 15MHz, MOD: 1
 6QAM



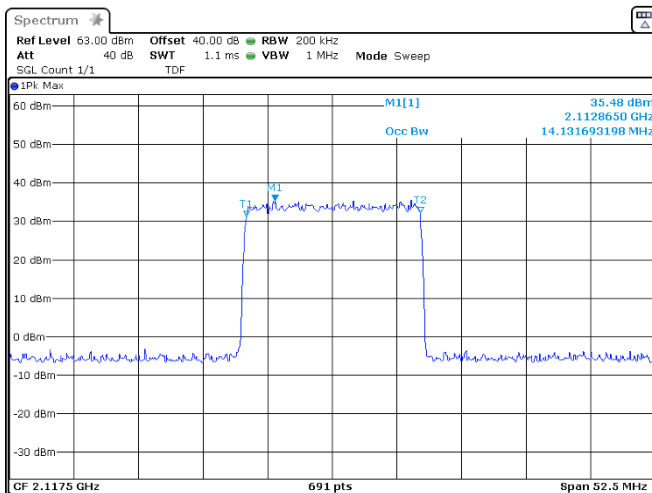
Occupied bandwidth (99 %), TX 2190 MHz, BW: 20MHz, MOD: 16Q
 AM



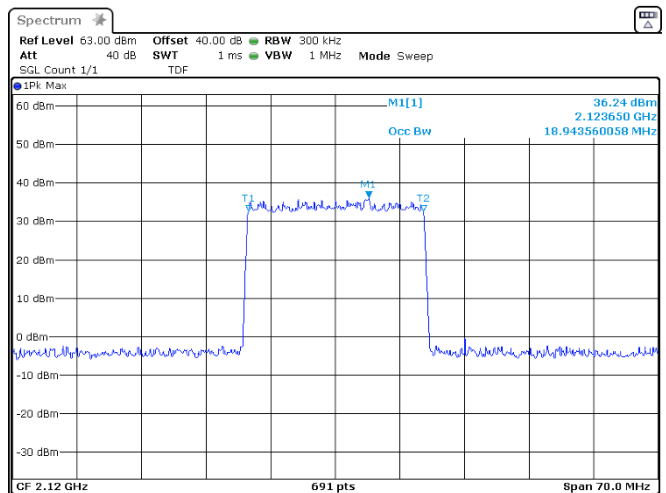
Occupied bandwidth (99 %), TX 2112.5 MHz, BW: 5MHz, MOD: 64
 QAM



Occupied bandwidth (99 %), TX 2115 MHz, BW: 10MHz, MOD: 64Q
 AM



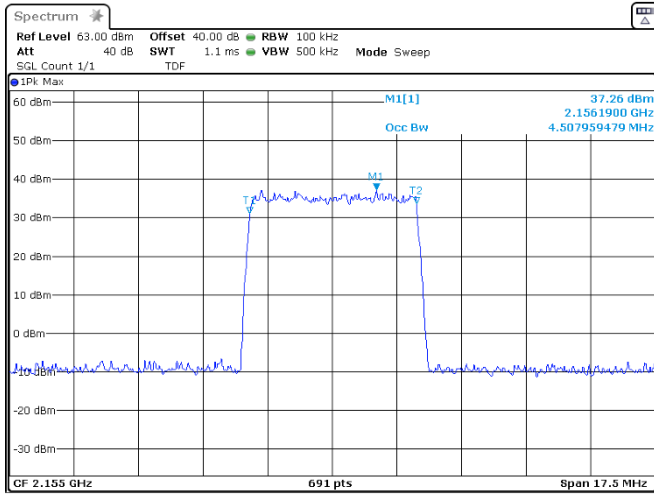
Occupied bandwidth (99 %), TX 2117.5 MHz, BW: 15MHz, MOD: 6
 4QAM



Occupied bandwidth (99 %), TX 2120 MHz, BW: 20MHz, MOD: 64Q
 AM

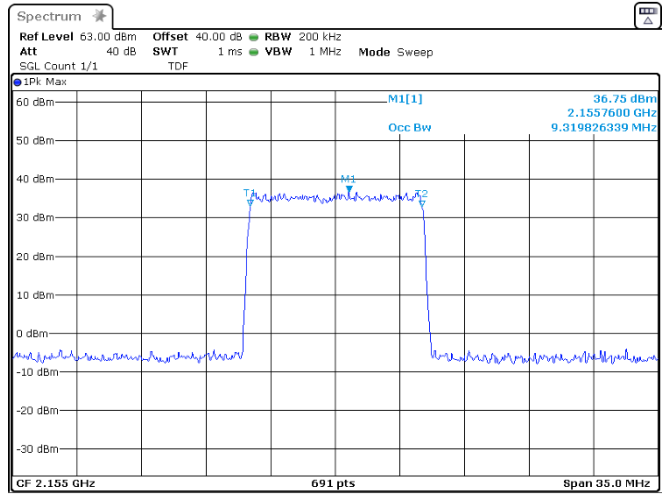
Section 8
Test name
Specification

Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



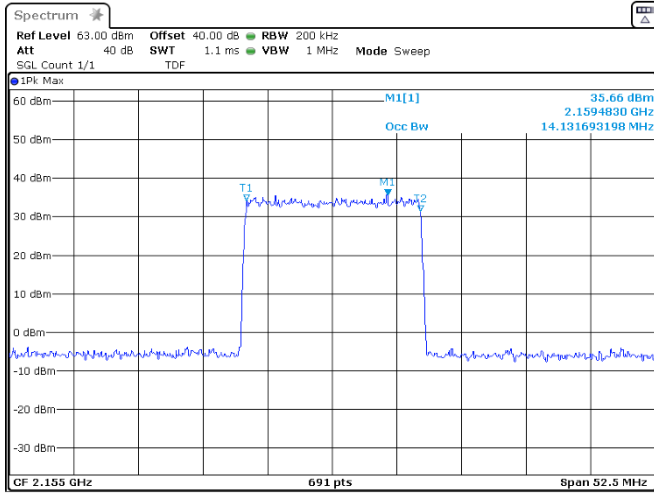
Occupied bandwidth (99 %), TX 2155 MHz, BW: 5MHz, MOD: 64QA

M



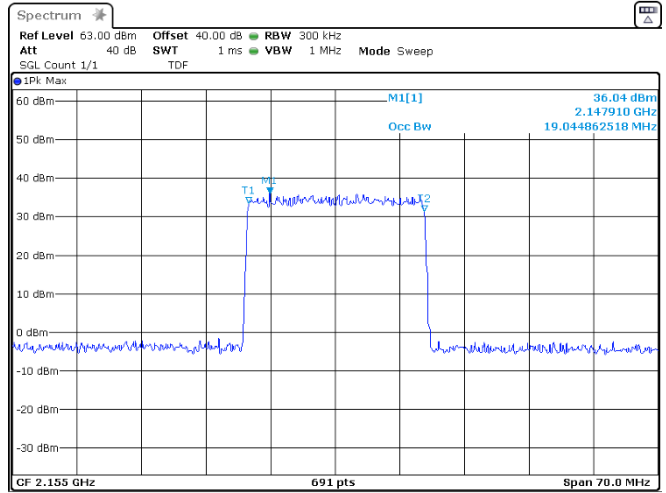
Occupied bandwidth (99 %), TX 2155 MHz, BW: 10MHz, MOD: 64Q

AM



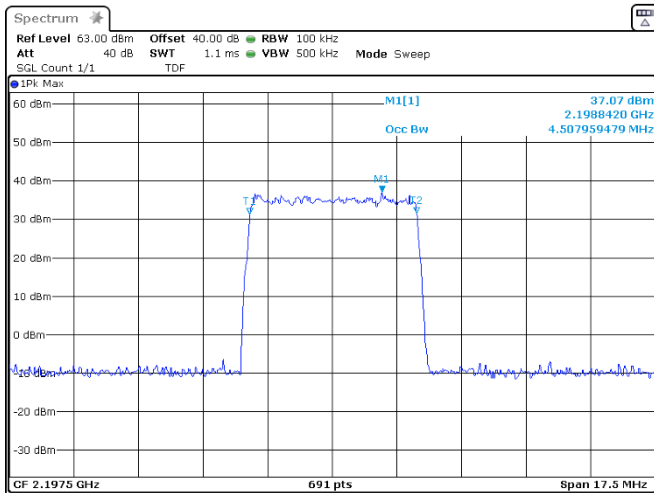
Occupied bandwidth (99 %), TX 2155 MHz, BW: 15MHz, MOD: 64Q

AM



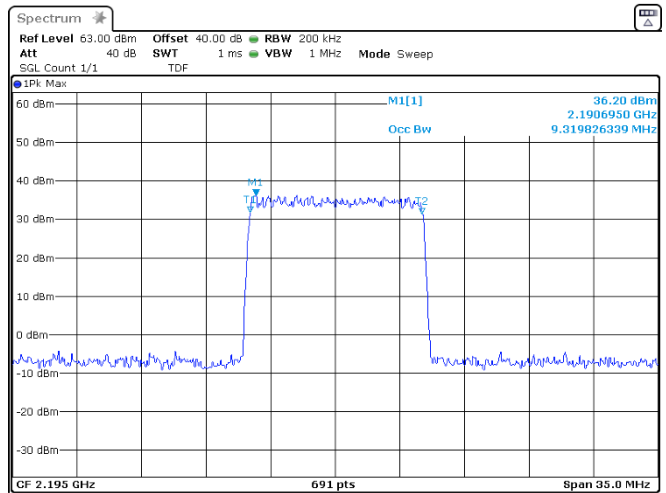
Occupied bandwidth (99 %), TX 2155 MHz, BW: 20MHz, MOD: 64Q

AM



Occupied bandwidth (99 %), TX 2197.5 MHz, BW: 5MHz, MOD: 64

QAM

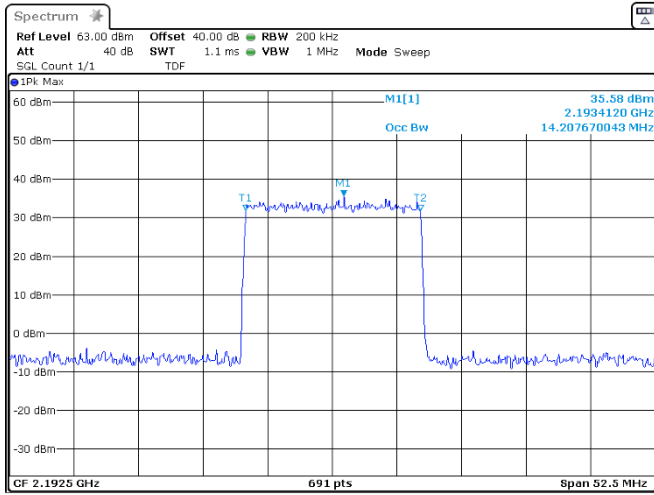


Occupied bandwidth (99 %), TX 2195 MHz, BW: 10MHz, MOD: 64Q

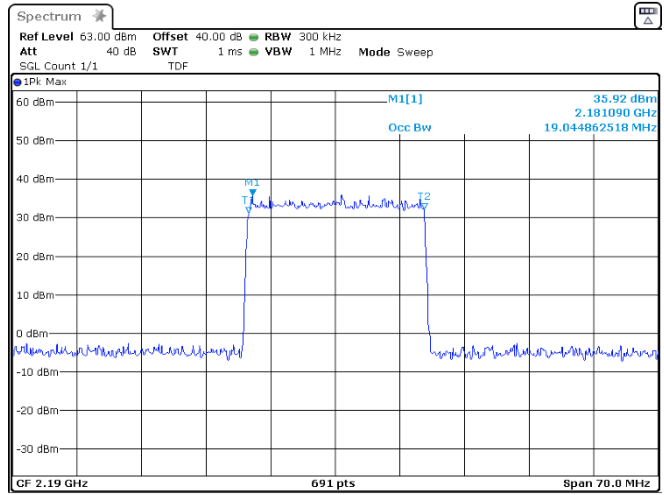
AM

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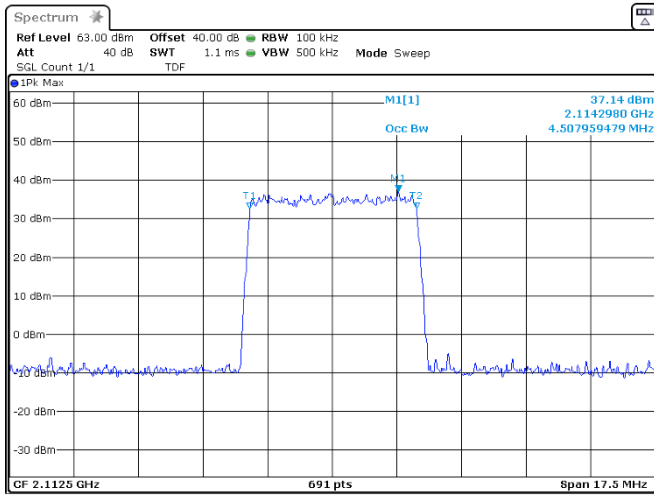
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



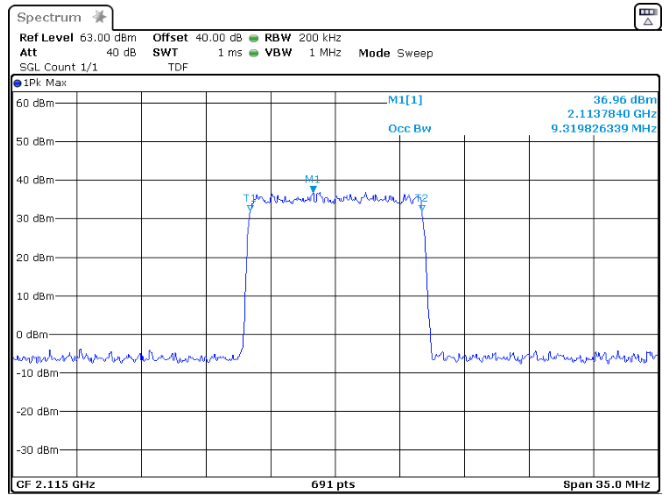
Occupied bandwidth (99 %), TX 2192.5 MHz, BW: 15MHz, MOD: 6
 4QAM



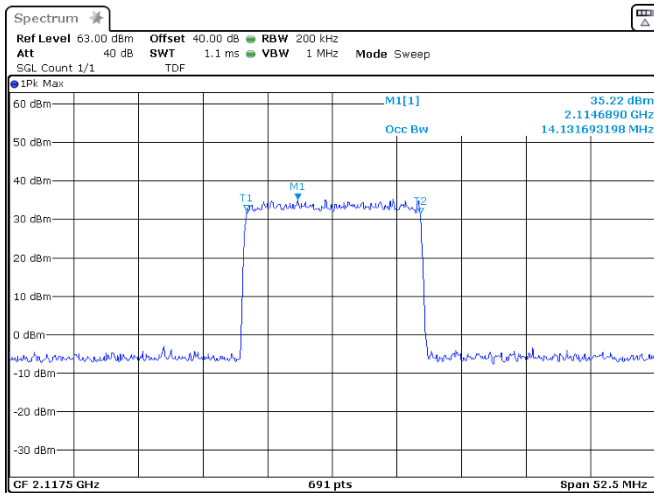
Occupied bandwidth (99 %), TX 2190 MHz, BW: 20MHz, MOD: 64Q
 AM



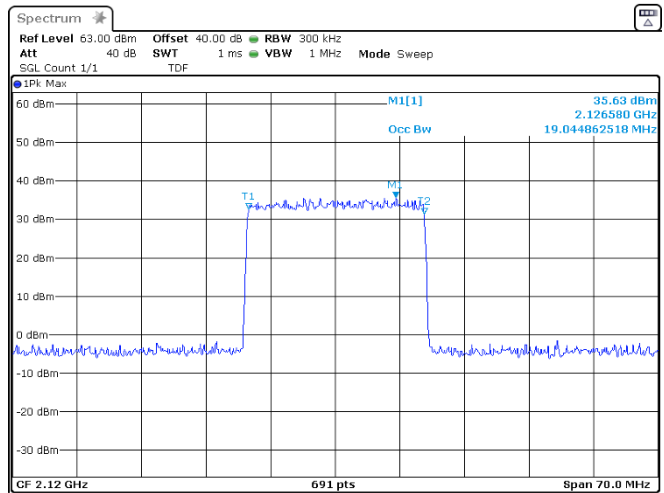
Occupied bandwidth (99 %), TX 2112.5 MHz, BW: 5MHz, MOD: 25
 6QAM



Occupied bandwidth (99 %), TX 2115 MHz, BW: 10MHz, MOD: 256
 QAM



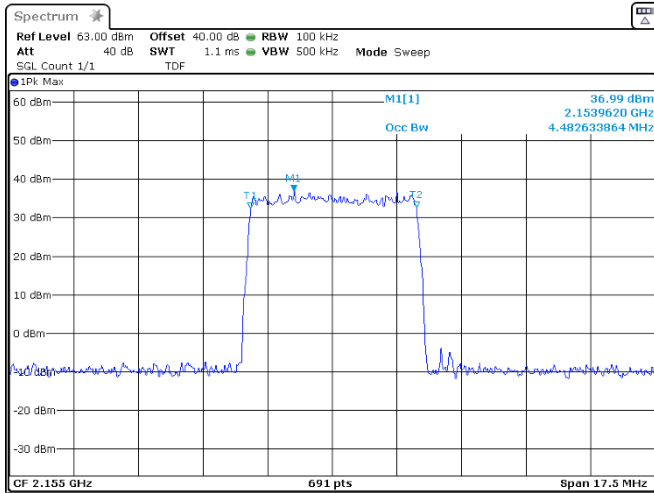
Occupied bandwidth (99 %), TX 2117.5 MHz, BW: 15MHz, MOD: 2
 56QAM



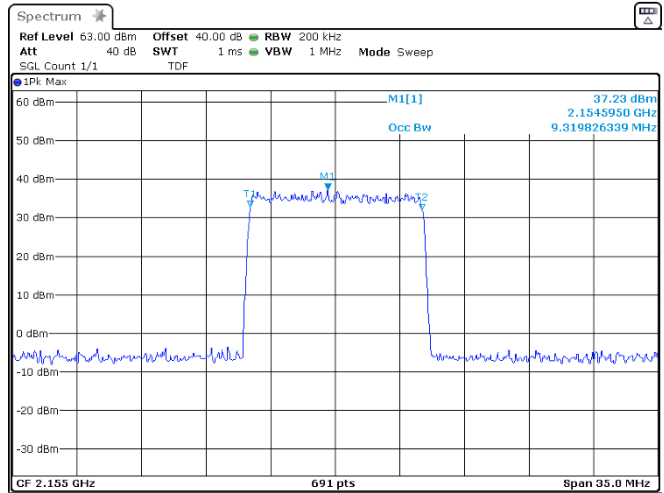
Occupied bandwidth (99 %), TX 2120 MHz, BW: 20MHz, MOD: 256
 QAM

Section 8
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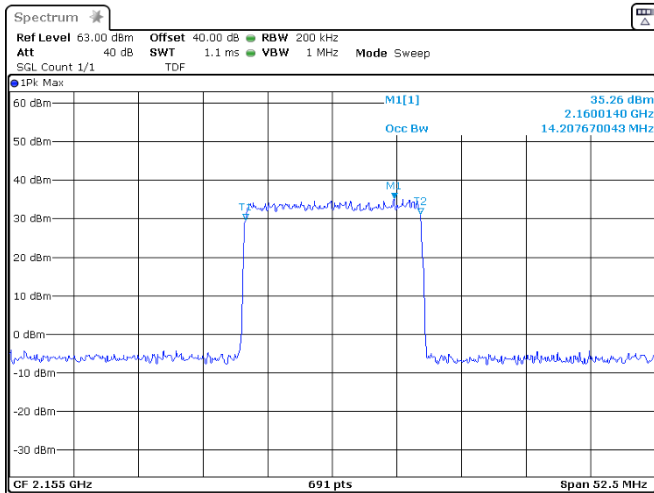
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



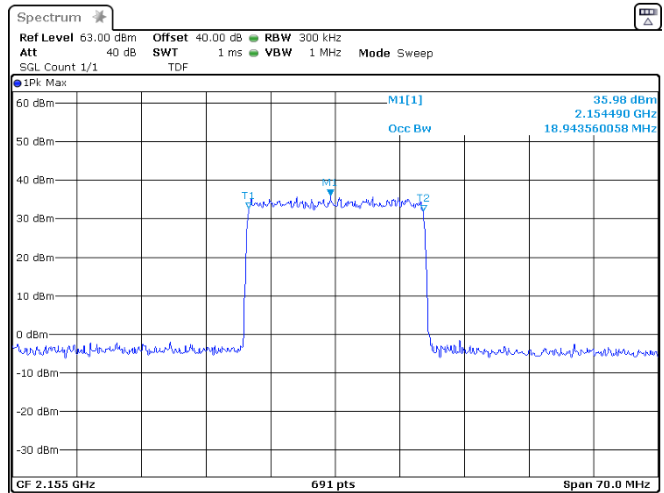
Occupied bandwidth (99 %) TX 2155 MHz, BW: 5MHz, MOD: 256Q
 AM



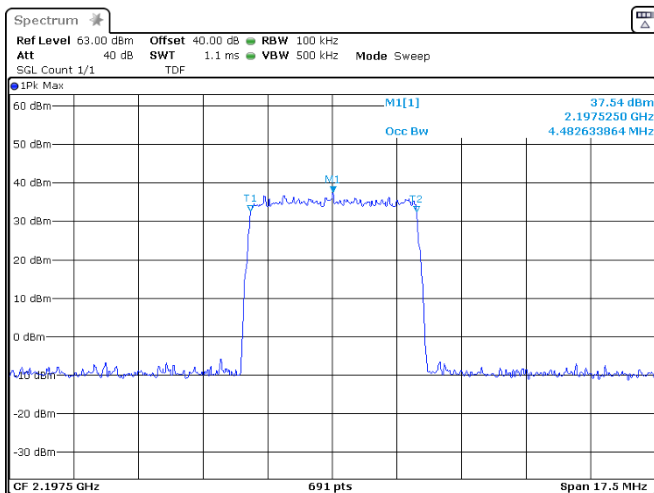
Occupied bandwidth (99 %) TX 2155 MHz, BW: 10MHz, MOD: 256
 QAM



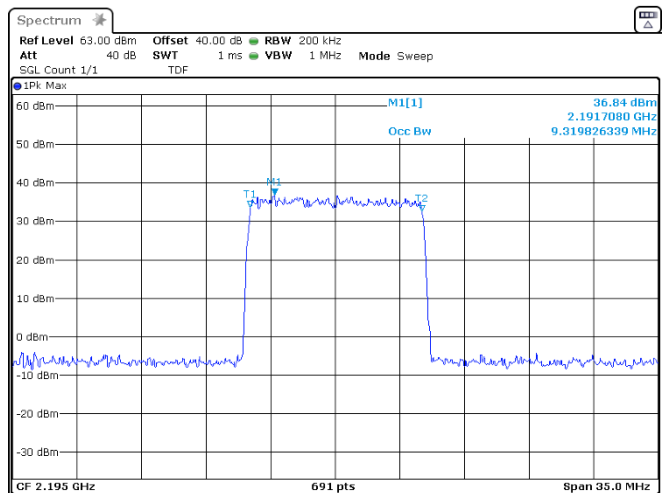
Occupied bandwidth (99 %) TX 2155 MHz, BW: 15MHz, MOD: 256
 QAM



Occupied bandwidth (99 %) TX 2155 MHz, BW: 20MHz, MOD: 256
 QAM



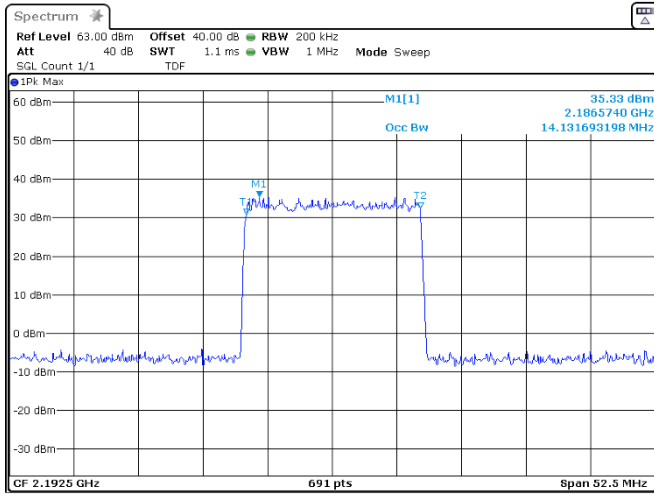
Occupied bandwidth (99 %) TX 2197.5 MHz, BW: 5MHz, MOD: 25
 6QAM



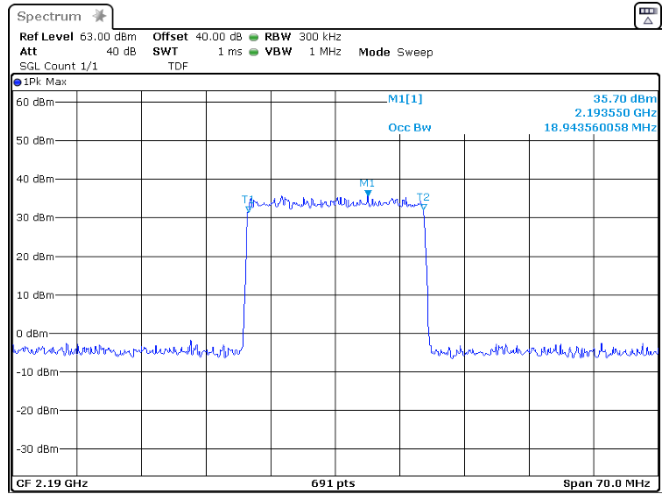
Occupied bandwidth (99 %) TX 2195 MHz, BW: 10MHz, MOD: 256
 QAM

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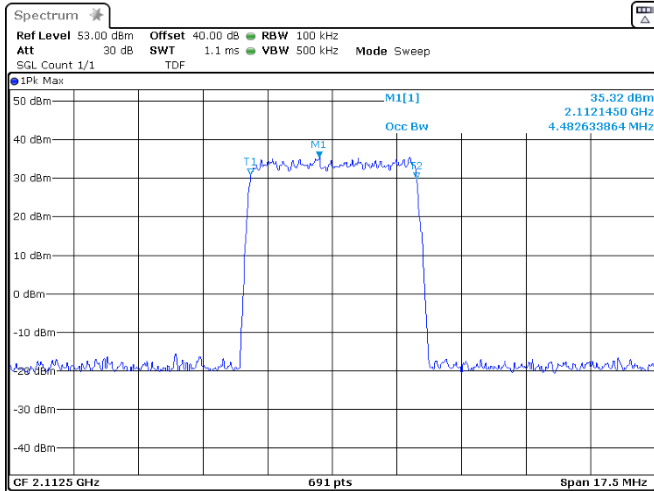
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
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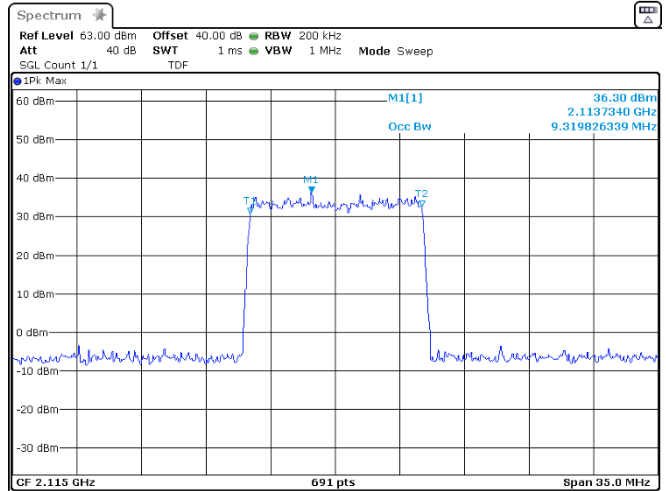
Occupied bandwidth (99 %), TX 2192.5 MHz, BW: 15MHz, MOD: 2
 56QAM



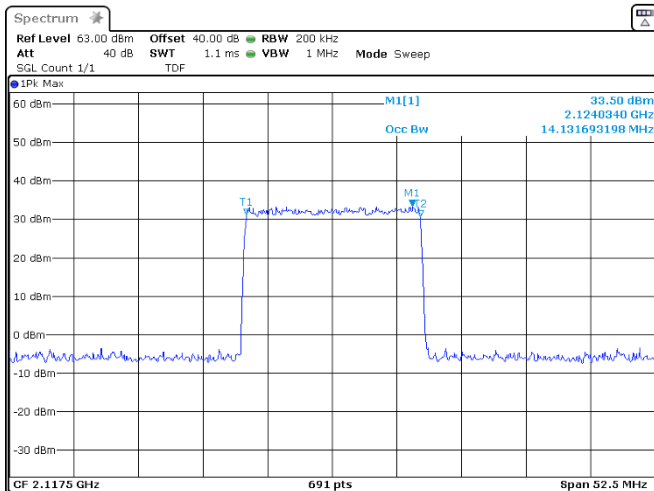
Occupied bandwidth (99 %), TX 2190 MHz, BW: 20MHz, MOD: 256
 QAM



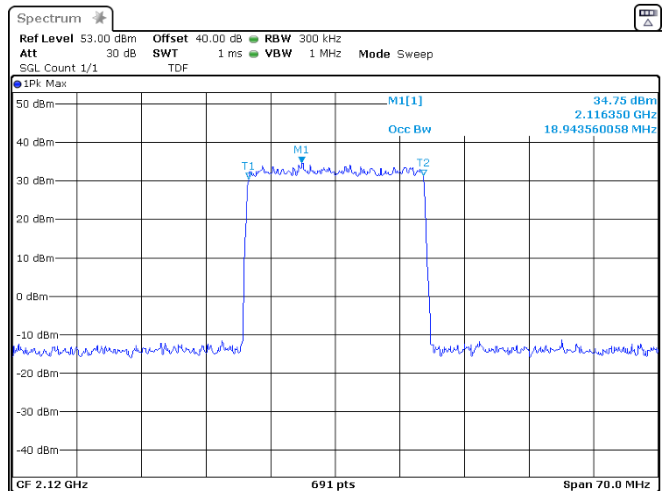
Occupied bandwidth (99 %), TX 2112.5 MHz, BW: 5MHz, MOD: 10
 24QAM



Occupied bandwidth (99 %), TX 2115 MHz, BW: 10MHz, MOD: 102
 4QAM



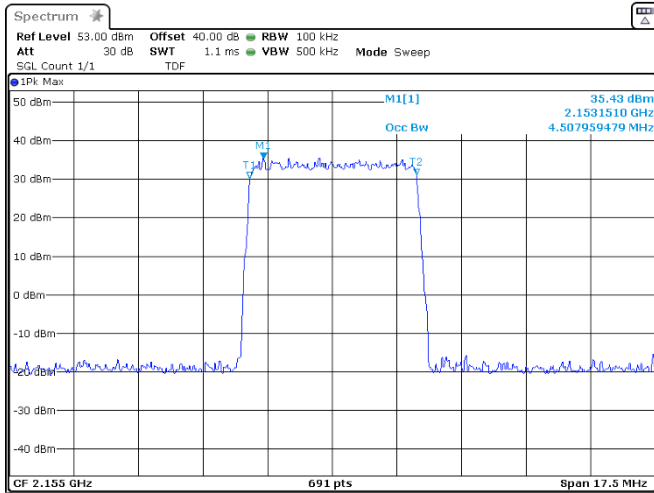
Occupied bandwidth (99 %), TX 2117.5 MHz, BW: 15MHz, MOD: 1
 56QAM



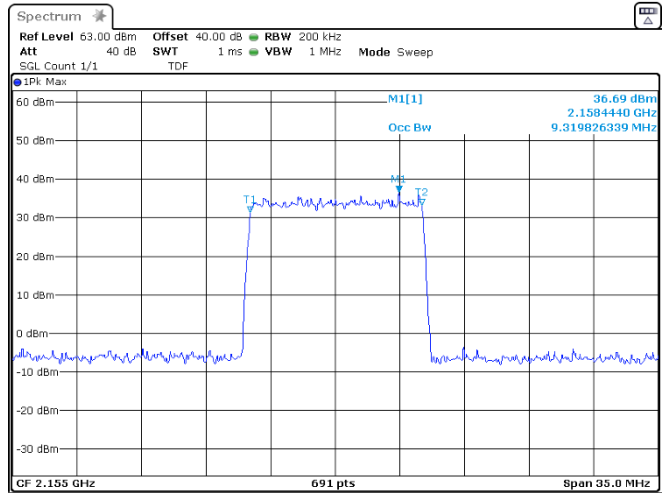
Occupied bandwidth (99 %), TX 2120 MHz, BW: 20MHz, MOD: 102
 4QAM

Section 8
Test name
Specification

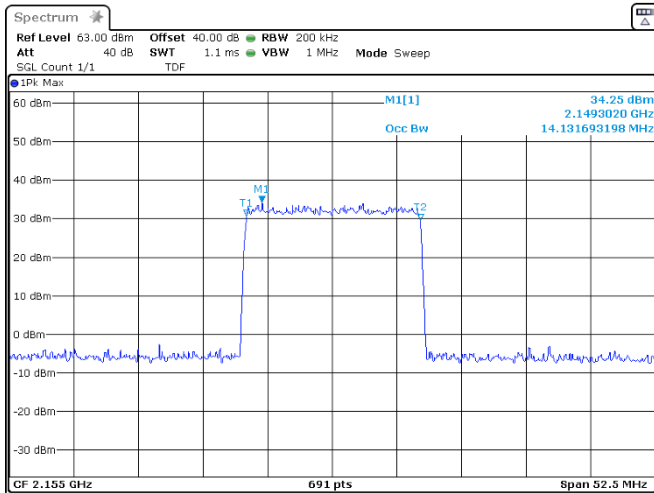
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



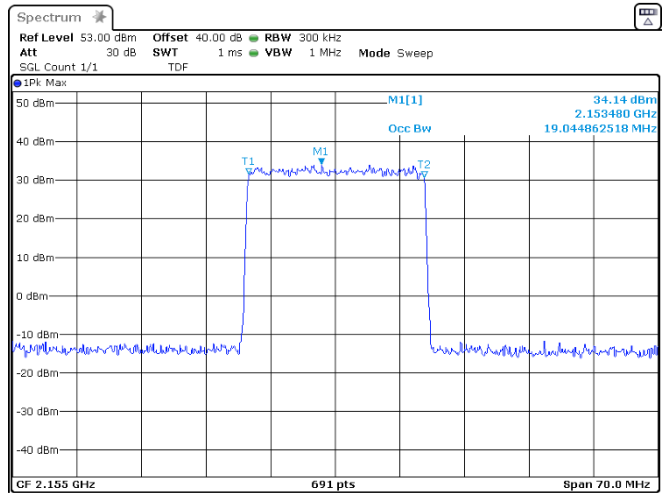
Occupied bandwidth (99 %), TX 2155 MHz, BW: 5MHz, MOD: 1024
 QAM



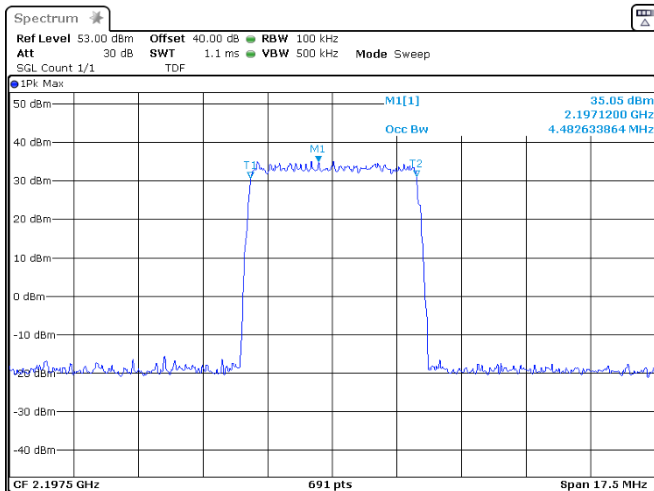
Occupied bandwidth (99 %), TX 2155 MHz, BW: 10MHz, MOD: 102
 4QAM



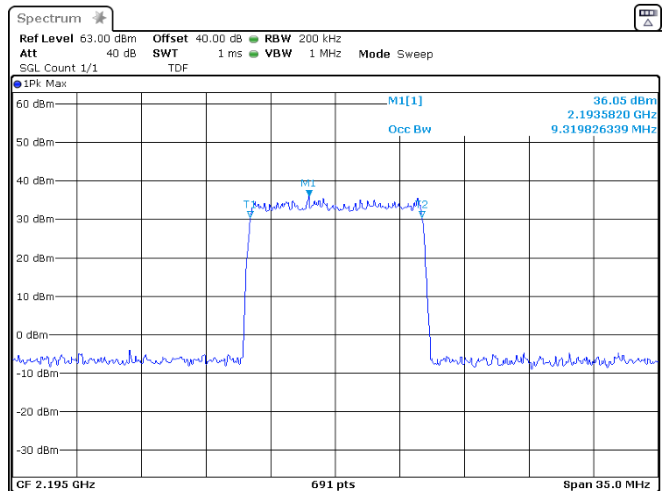
Occupied bandwidth (99 %), TX 2155 MHz, BW: 15MHz, MOD: 102
 4QAM



Occupied bandwidth (99 %), TX 2155 MHz, BW: 20MHz, MOD: 102
 4QAM



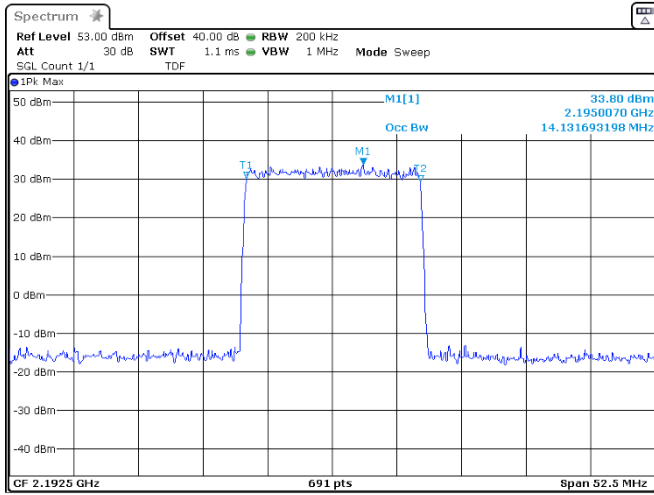
Occupied bandwidth (99 %), TX 2197.5 MHz, BW: 5MHz, MOD: 10
 24QAM



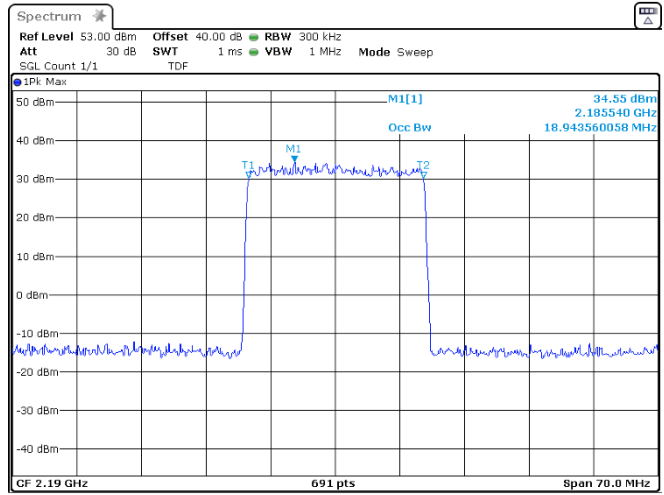
Occupied bandwidth (99 %), TX 2195 MHz, BW: 10MHz, MOD: 102
 4QAM

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Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27

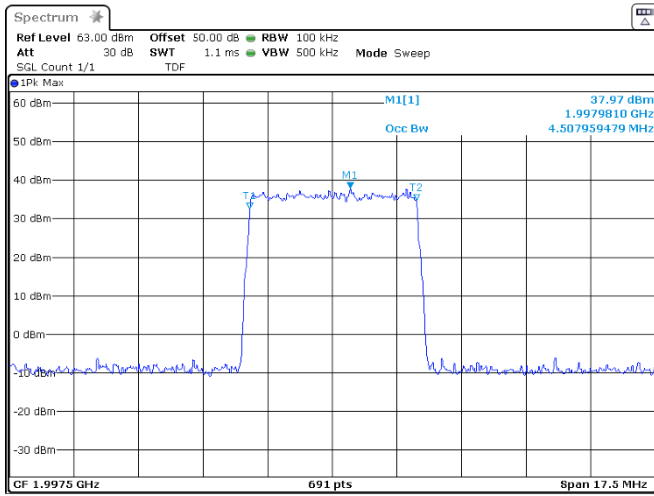


Occupied bandwidth (99 %), TX 2192.5 MHz, BW: 15MHz, MOD: 1
 024QAM

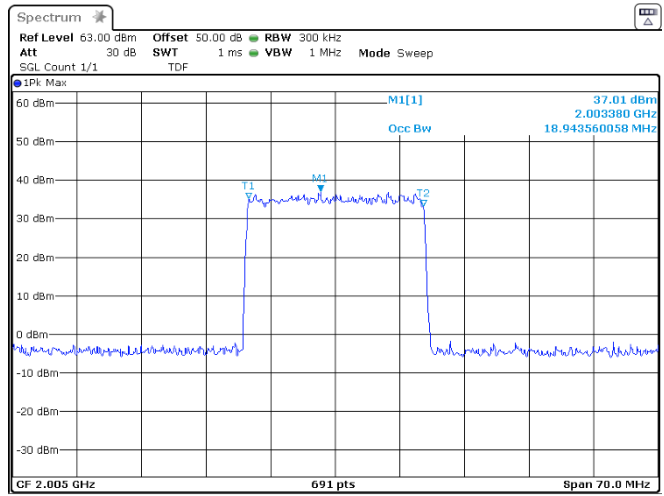


Occupied bandwidth (99 %), TX 2190 MHz, BW: 20MHz, MOD: 102
 4QAM

Band n70, 99% bandwidth



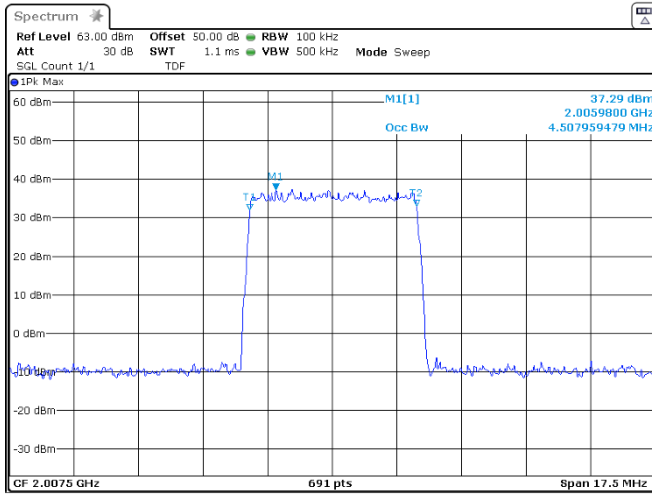
Occupied bandwidth (99 %), TX 1997.5 MHz, BW: 5MHz, MOD: QP
 SK



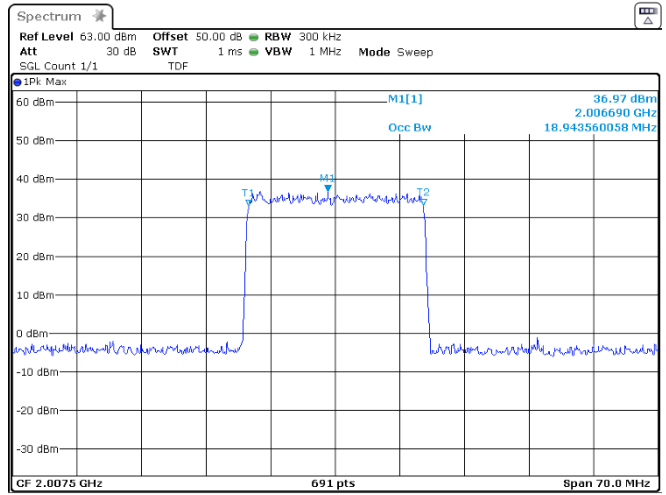
Occupied bandwidth (99 %), TX 2005 MHz, BW: 20MHz, MOD: QPS
 K

Section 8
Test name
Specification

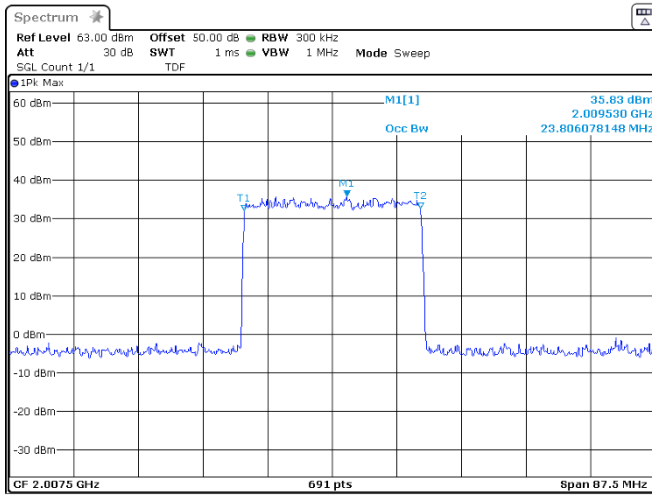
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



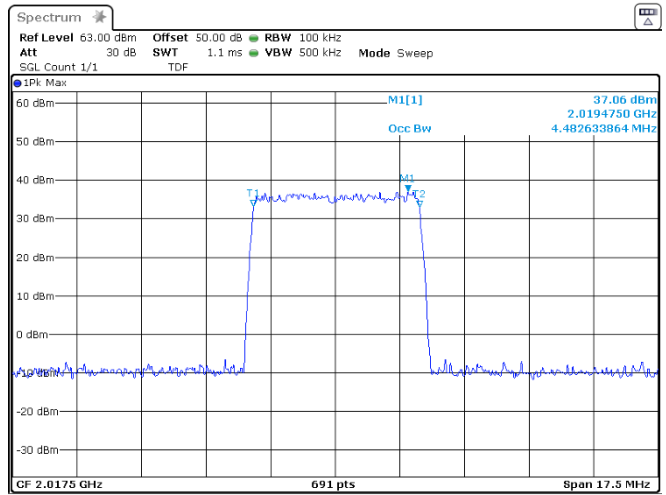
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 5MHz, MOD: QP
 SK



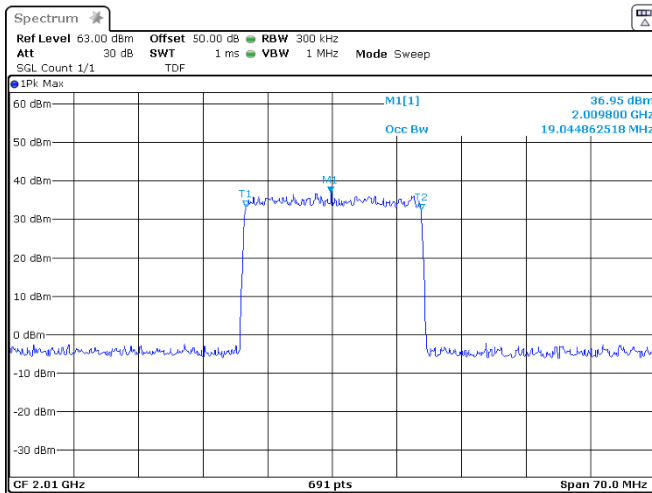
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 20MHz, MOD: Q
 PSK



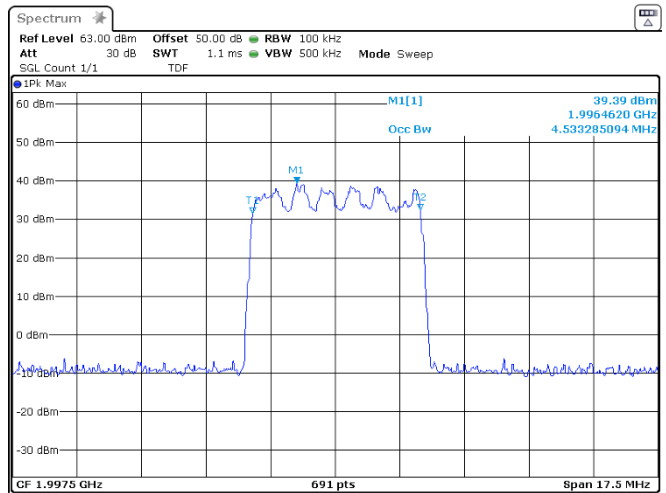
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 25MHz, MOD: Q
 PSK



Occupied bandwidth (99 %), TX 2017.5 MHz, BW: 5MHz, MOD: QP
 SK



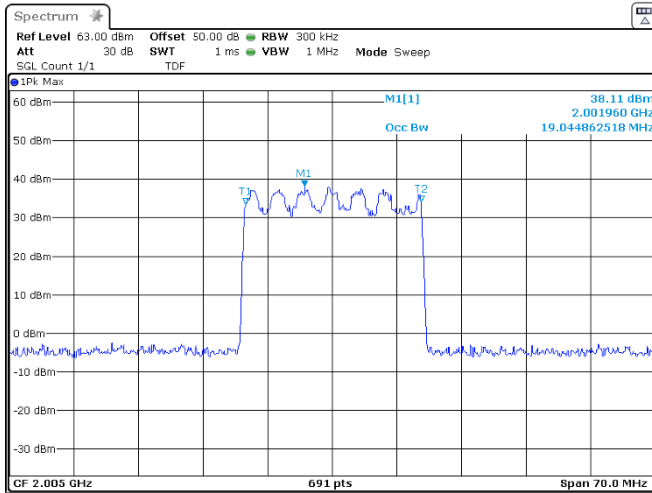
Occupied bandwidth (99 %), TX 2010 MHz, BW: 20MHz, MOD: QPS
 K



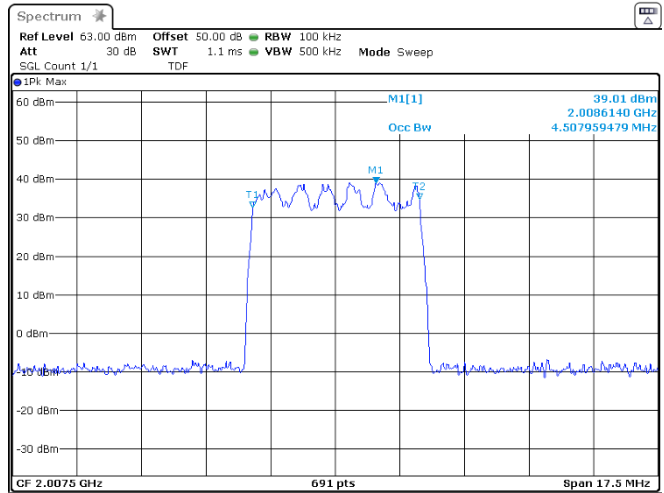
Occupied bandwidth (99 %), TX 1997.5 MHz, BW: 5MHz, MOD: 16
 QAM

Section 8
Test name
Specification

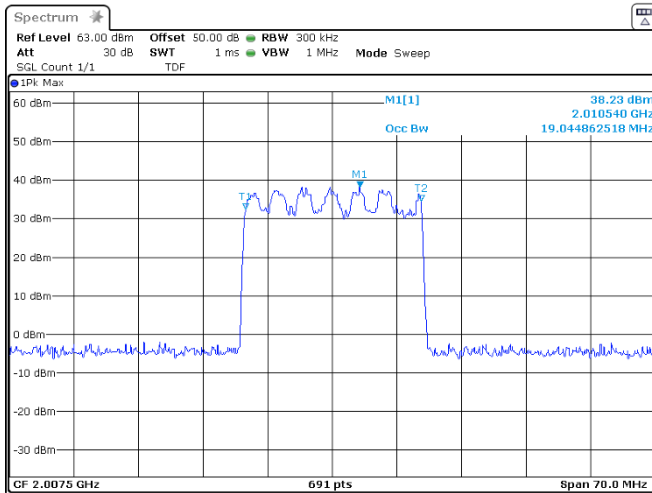
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



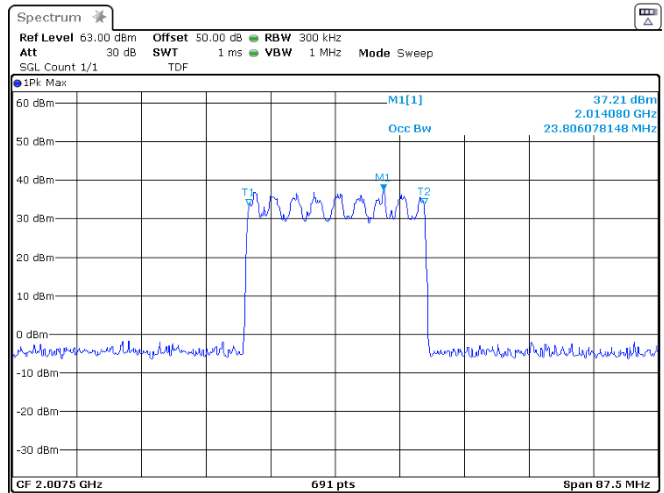
Occupied bandwidth (99 %), TX 2005 MHz, BW: 20MHz, MOD: 16Q
 AM



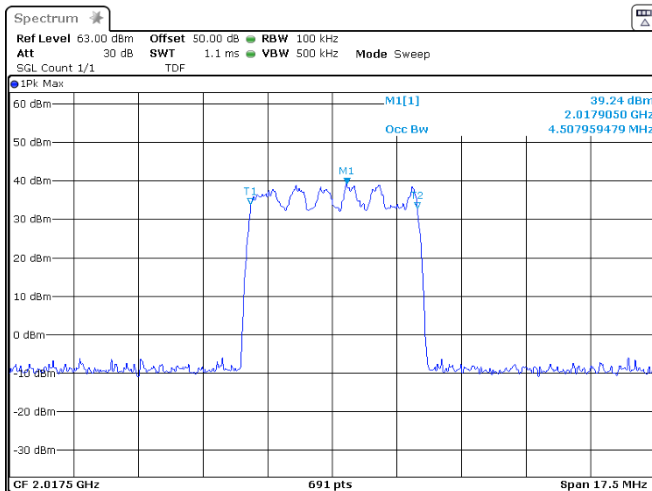
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 5MHz, MOD: 16
 QAM



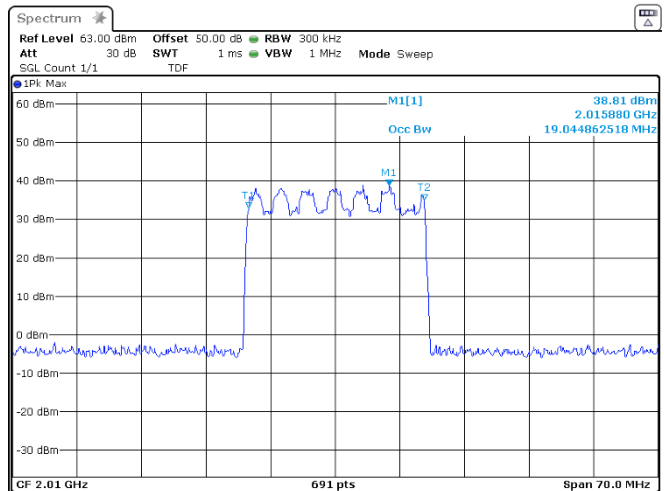
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 20MHz, MOD: 1
 6QAM



Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 25MHz, MOD: 1
 6QAM



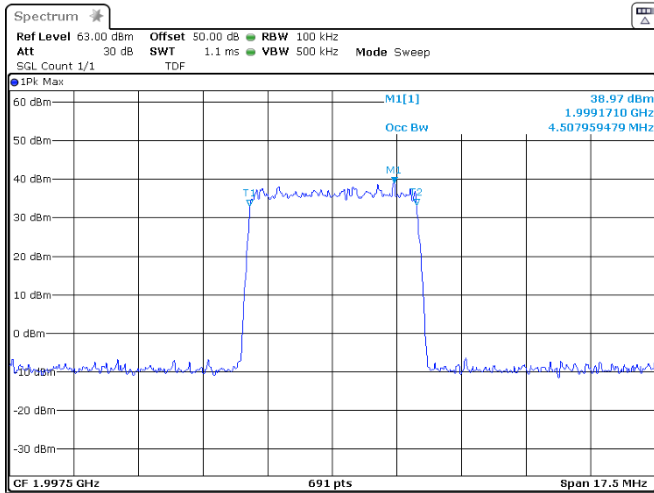
Occupied bandwidth (99 %), TX 2017.5 MHz, BW: 5MHz, MOD: 16
 QAM



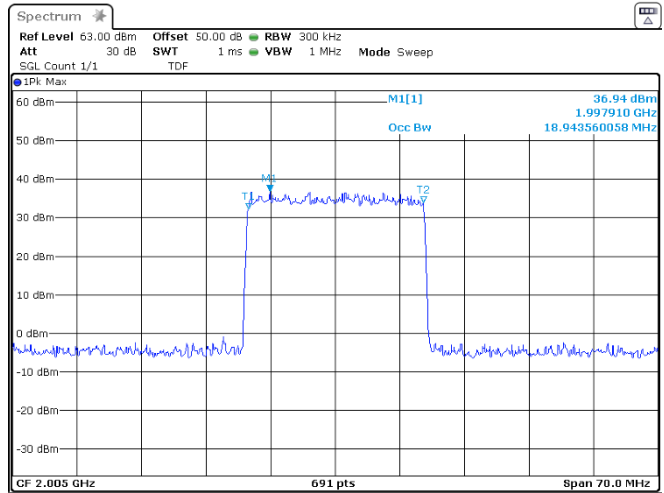
Occupied bandwidth (99 %), TX 2010 MHz, BW: 20MHz, MOD: 16Q
 AM

Section 8
Test name
Specification

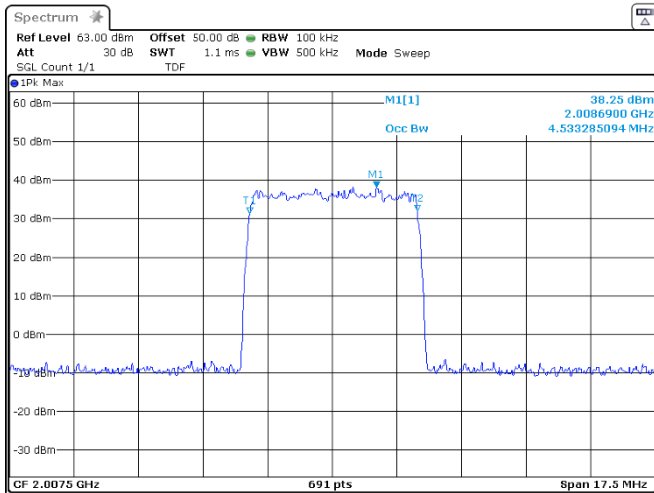
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



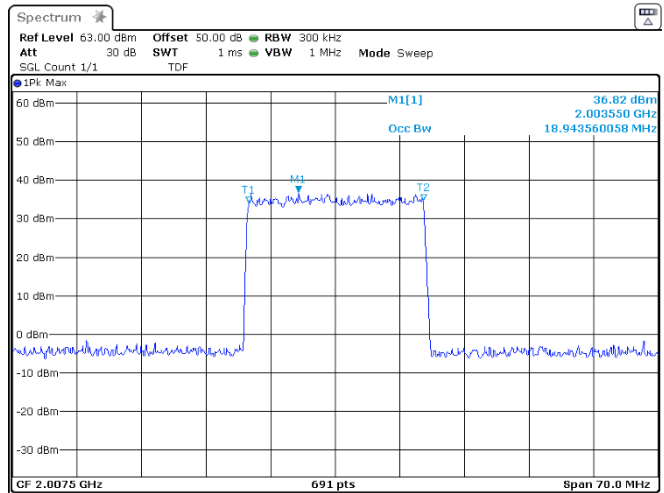
Occupied bandwidth (99 %), TX 1997.5 MHz, BW: 5MHz, MOD: 64
 QAM



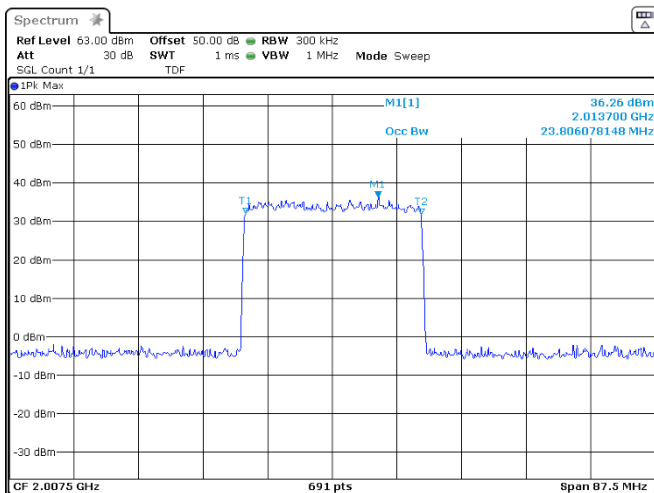
Occupied bandwidth (99 %), TX 2005 MHz, BW: 20MHz, MOD: 64Q
 AM



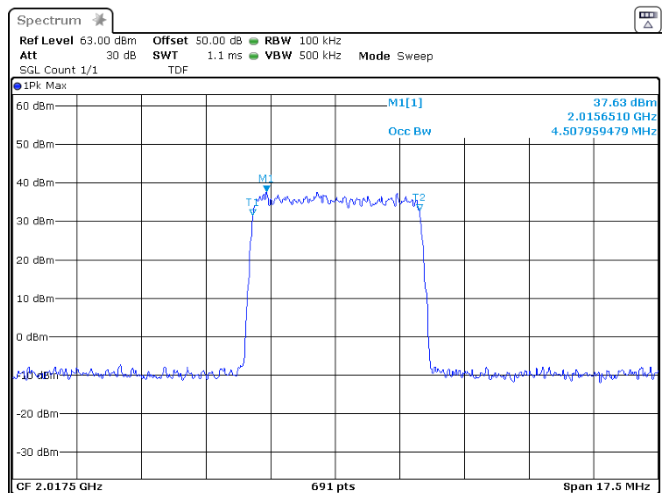
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 5MHz, MOD: 64
 QAM



Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 20MHz, MOD: 6
 4QAM



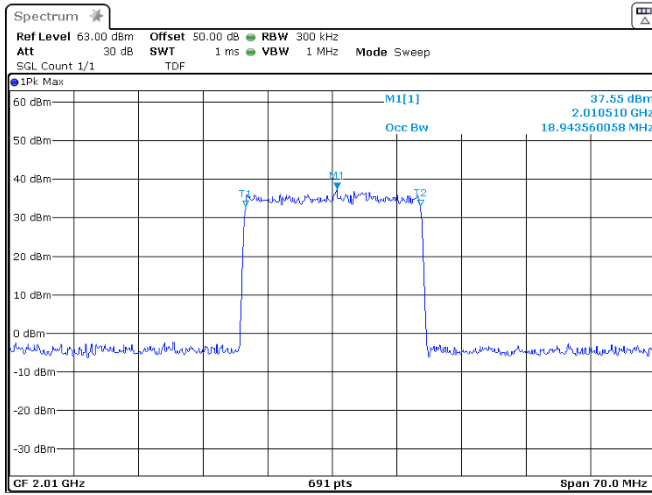
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 25MHz, MOD: 6
 4QAM



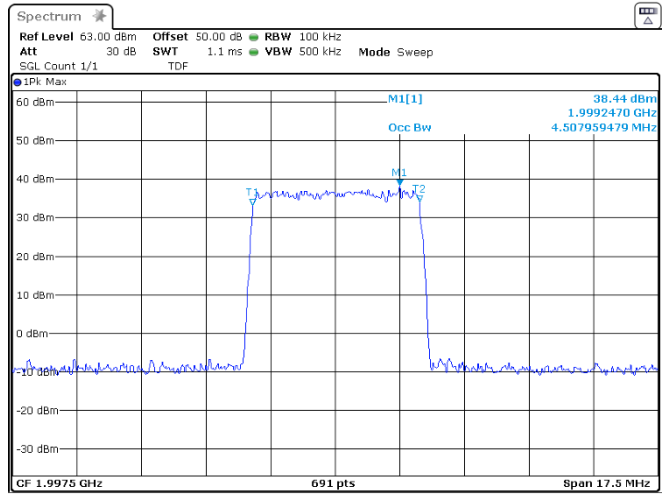
Occupied bandwidth (99 %), TX 2017.5 MHz, BW: 5MHz, MOD: 64
 QAM

Section 8
Test name
Specification

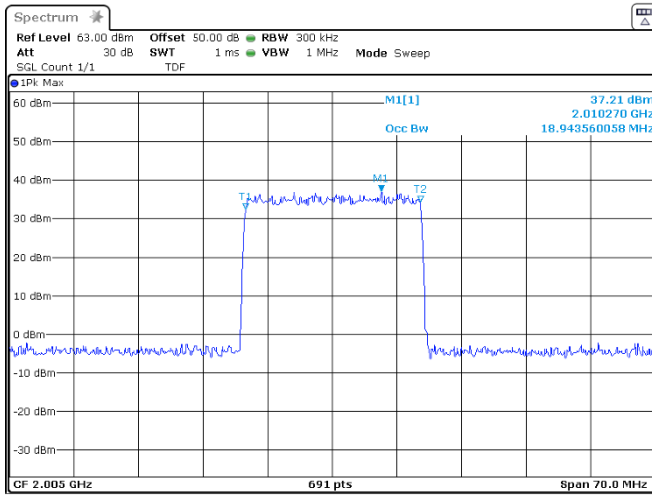
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



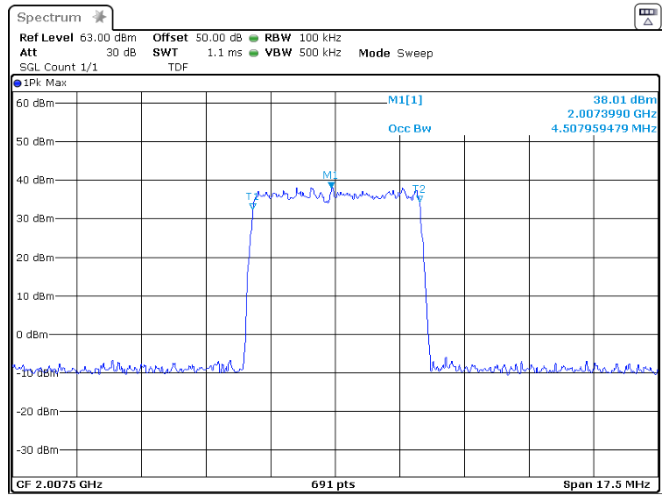
Occupied bandwidth (99 %) TX 2010 MHz, BW: 20MHz, MOD: 64Q
 AM



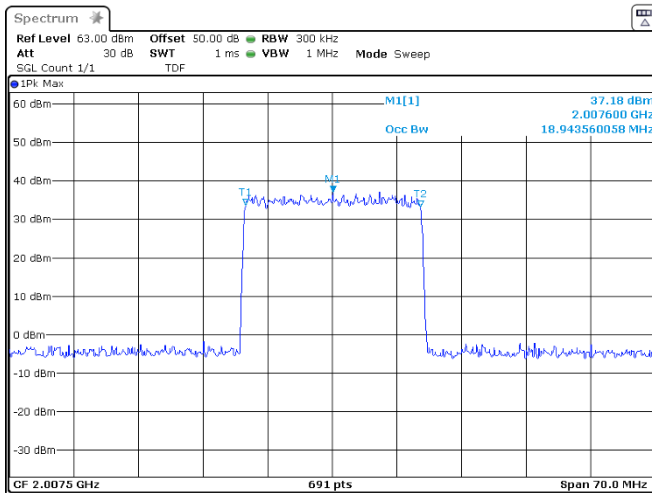
Occupied bandwidth (99 %) TX 1997.5 MHz, BW: 5MHz, MOD: 25
 6QAM



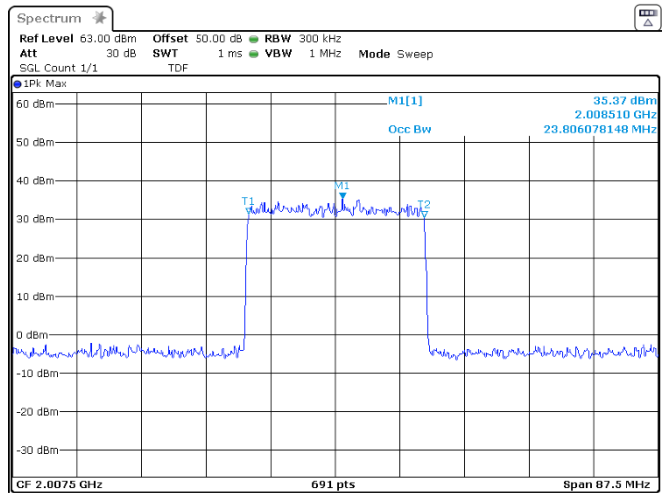
Occupied bandwidth (99 %) TX 2005 MHz, BW: 20MHz, MOD: 256
 QAM



Occupied bandwidth (99 %) TX 2007.5 MHz, BW: 5MHz, MOD: 25
 6QAM



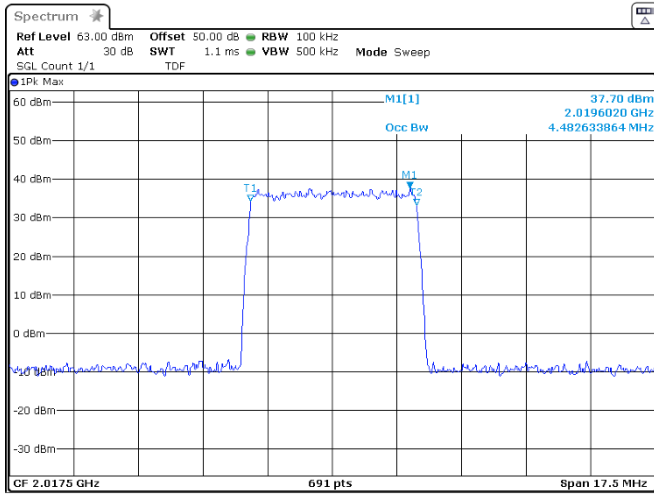
Occupied bandwidth (99 %) TX 2007.5 MHz, BW: 20MHz, MOD: 2
 56QAM



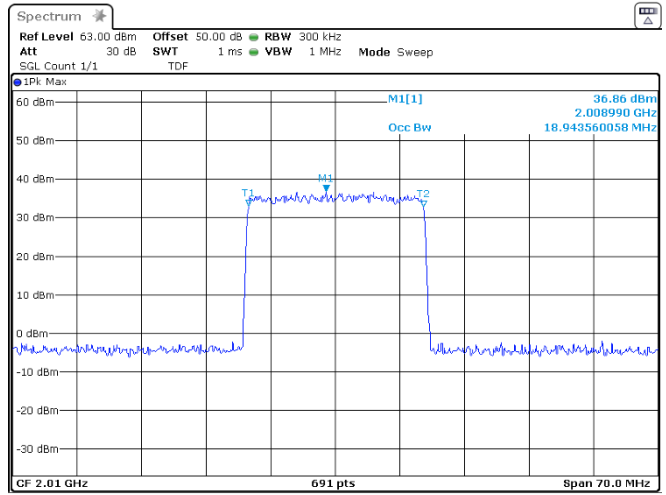
Occupied bandwidth (99 %) TX 2007.5 MHz, BW: 25MHz, MOD: 2
 56QAM

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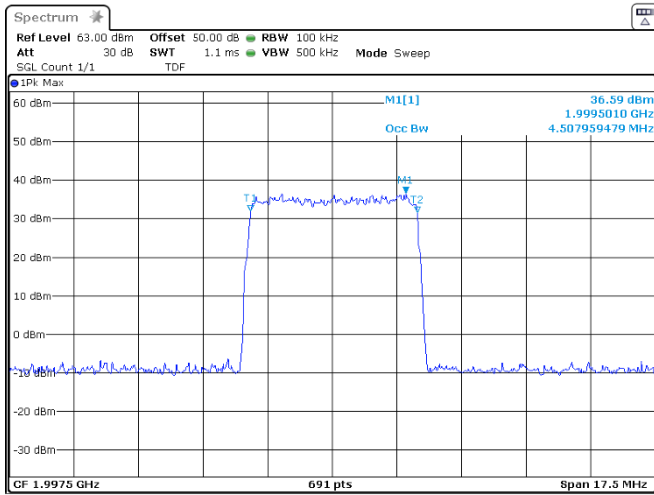
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
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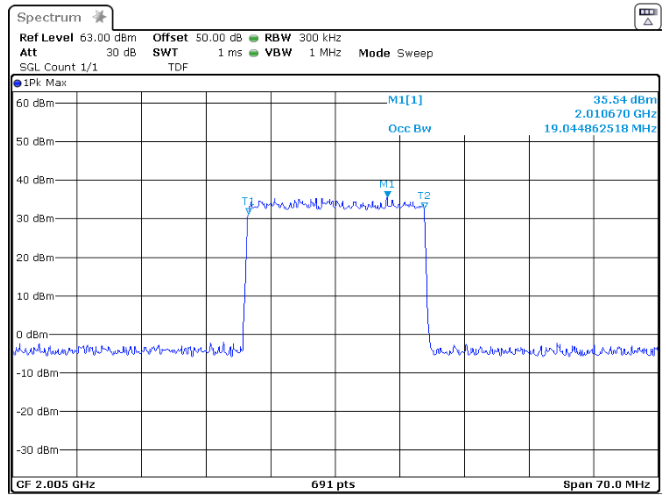
Occupied bandwidth (99 %), TX 2017.5 MHz, BW: 5MHz, MOD: 25
 6QAM



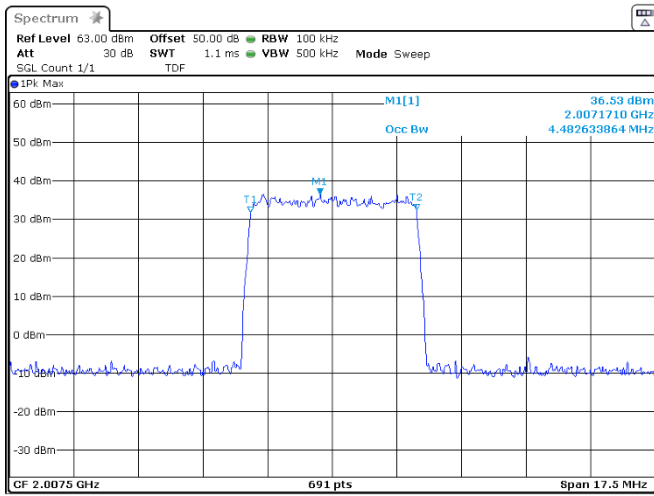
Occupied bandwidth (99 %), TX 2010 MHz, BW: 20MHz, MOD: 256
 QAM



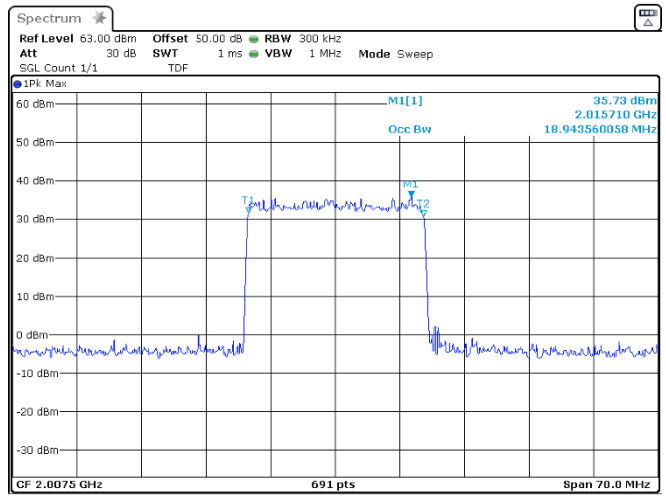
Occupied bandwidth (99 %), TX 1997.5 MHz, BW: 5MHz, MOD: 10
 24QAM



Occupied bandwidth (99 %), TX 2005 MHz, BW: 20MHz, MOD: 102
 4QAM



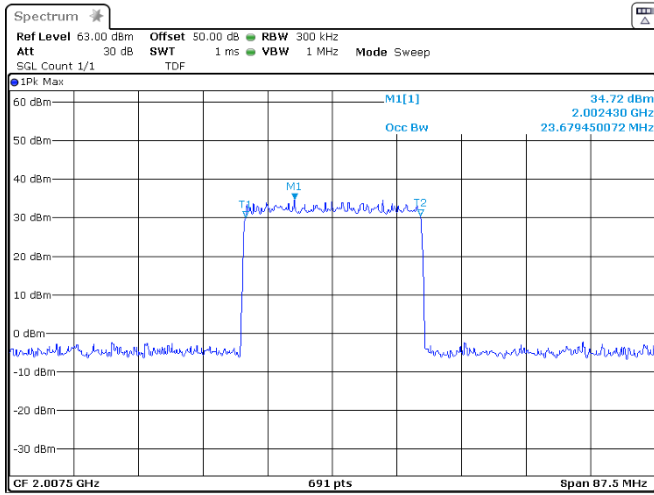
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 5MHz, MOD: 10
 24QAM



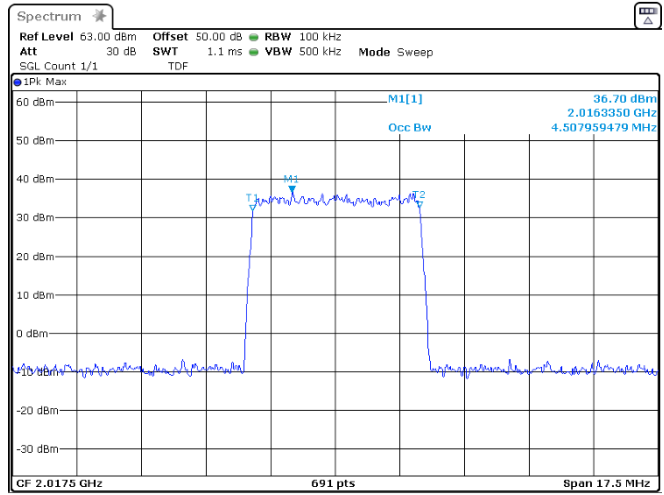
Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 20MHz, MOD: 1
 024QAM

Section 8
Test name
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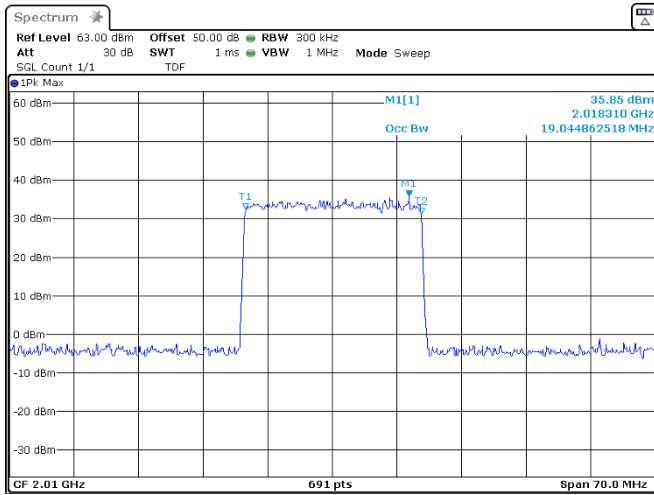
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



Occupied bandwidth (99 %), TX 2007.5 MHz, BW: 25MHz, MOD: 1
 024QAM

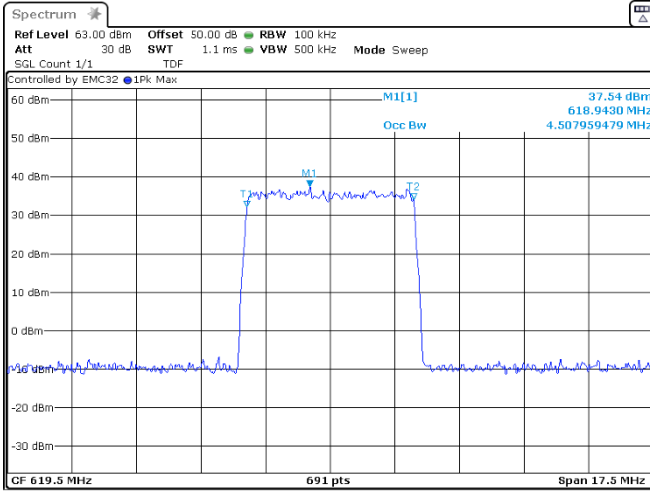


Occupied bandwidth (99 %), TX 2017.5 MHz, BW: 5MHz, MOD: 10
 24QAM



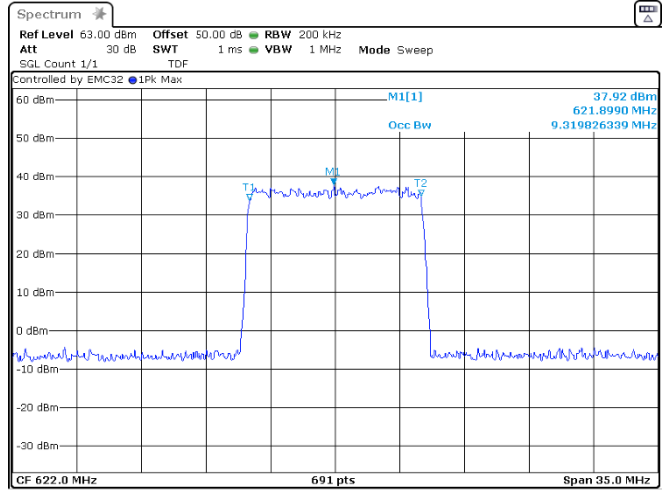
Occupied bandwidth (99 %), TX 2010 MHz, BW: 20MHz, MOD: 102
 4QAM

Band n71, 99% bandwidth

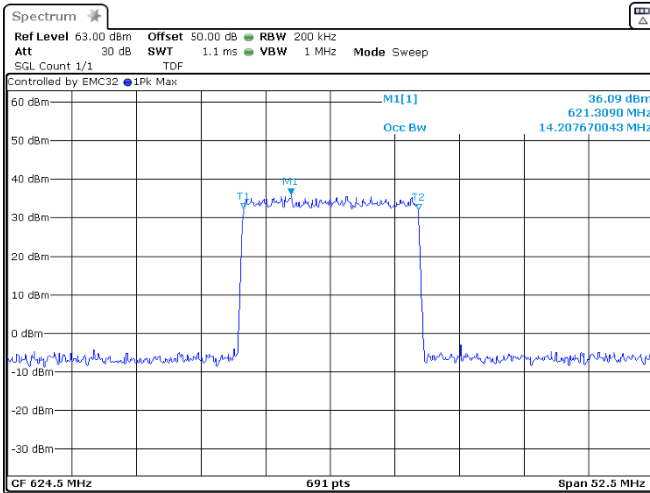


Occupied bandwidth (99 %), TX 619.5 MHz, BW: 5MHz, MOD: QPSK

K

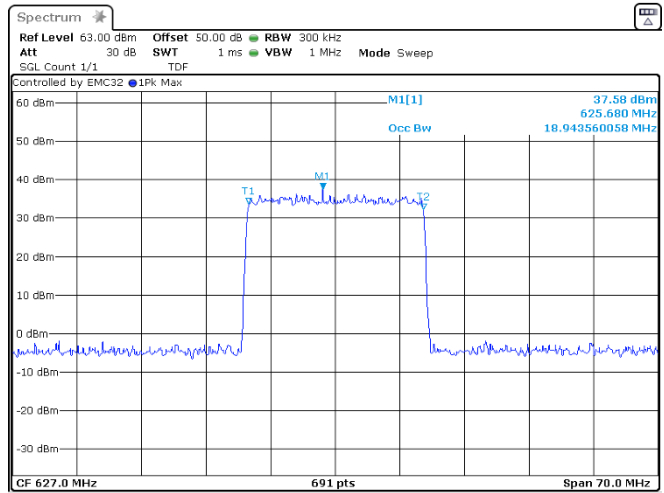


Occupied bandwidth (99 %), TX 622 MHz, BW: 10MHz, MOD: QPSK



Occupied bandwidth (99 %), TX 624.5 MHz, BW: 15MHz, MOD: QP

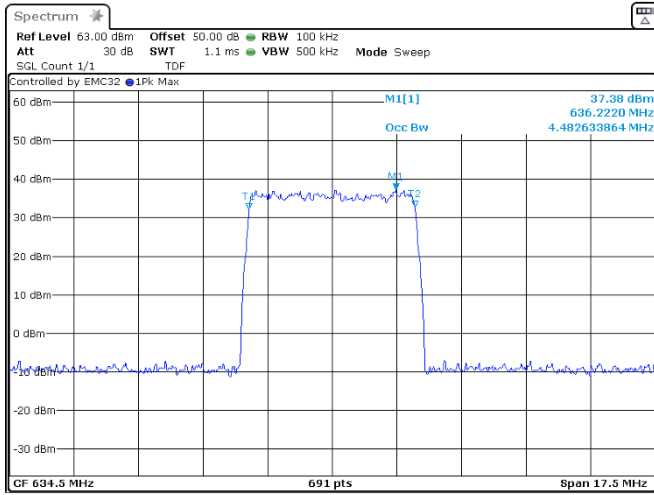
SK



Occupied bandwidth (99 %), TX 627 MHz, BW: 20MHz, MOD: QPSK

Section 8
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Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
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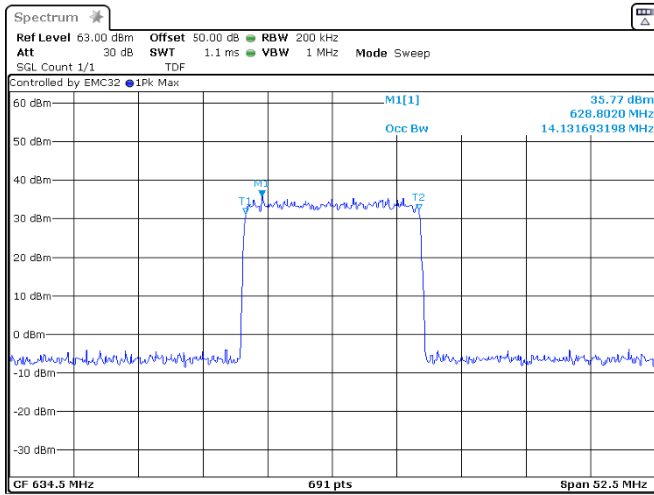
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 5MHz, MOD: QPS

K



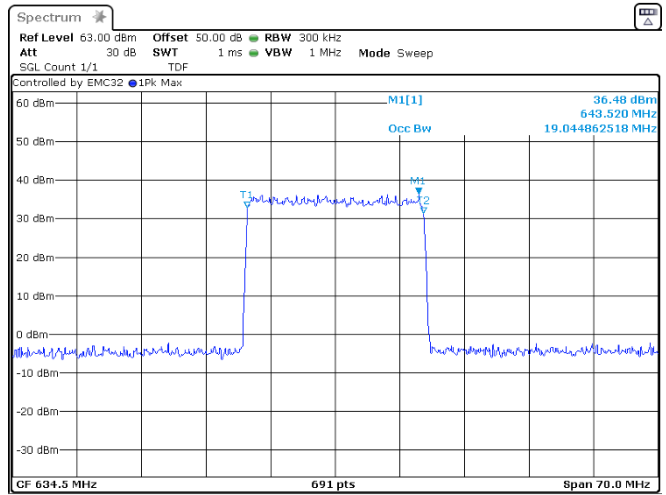
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 10MHz, MOD: QP

SK



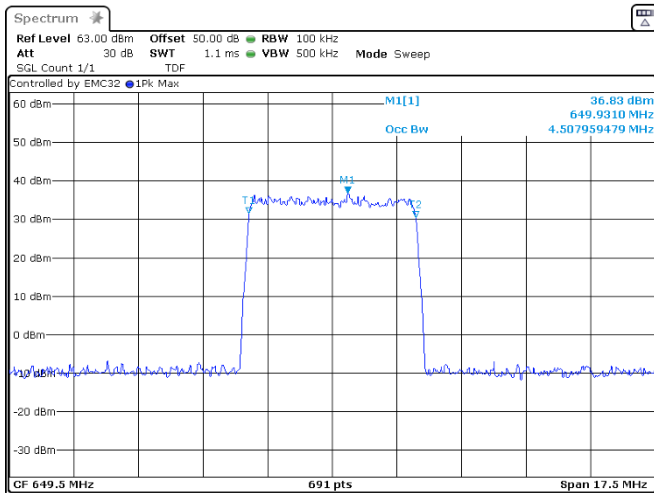
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 15MHz, MOD: QP

SK



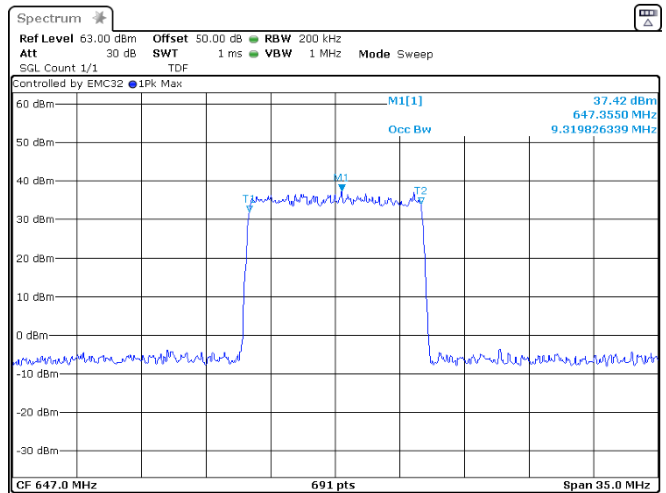
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 20MHz, MOD: QP

SK



Occupied bandwidth (99 %), TX 649.5 MHz, BW: 5MHz, MOD: QPS

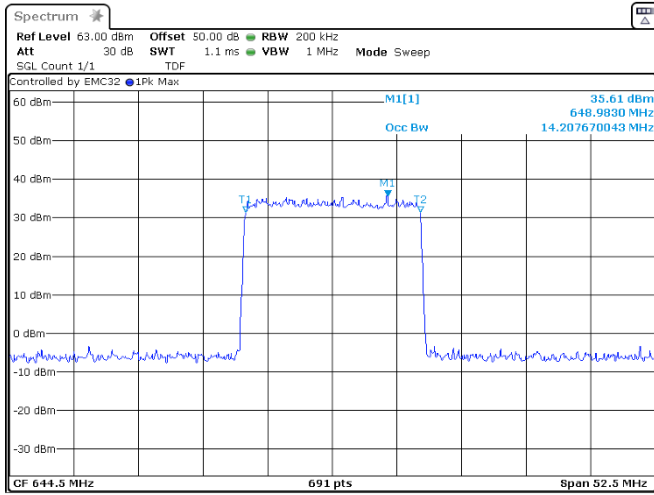
K



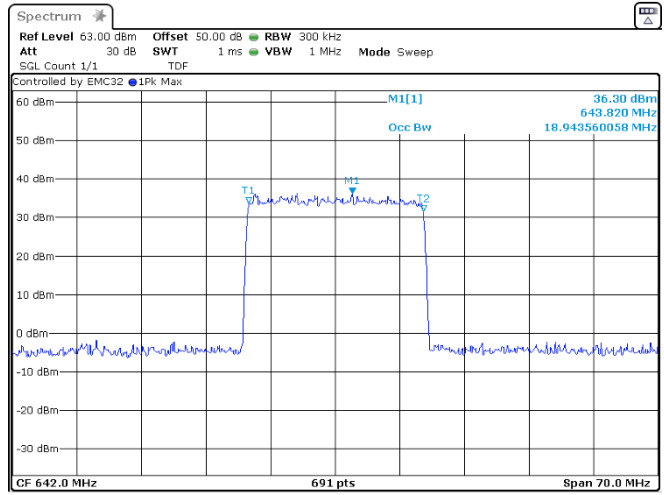
Occupied bandwidth (99 %), TX 647 MHz, BW: 10MHz, MOD: QPSK

Section 8
Test name
Specification

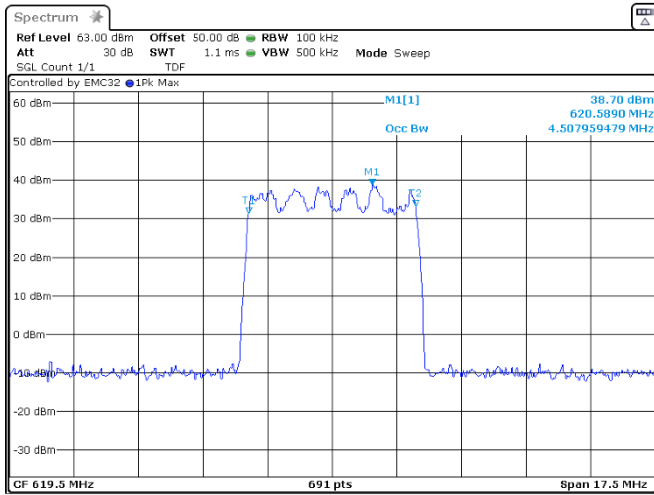
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
 FCC Part 27



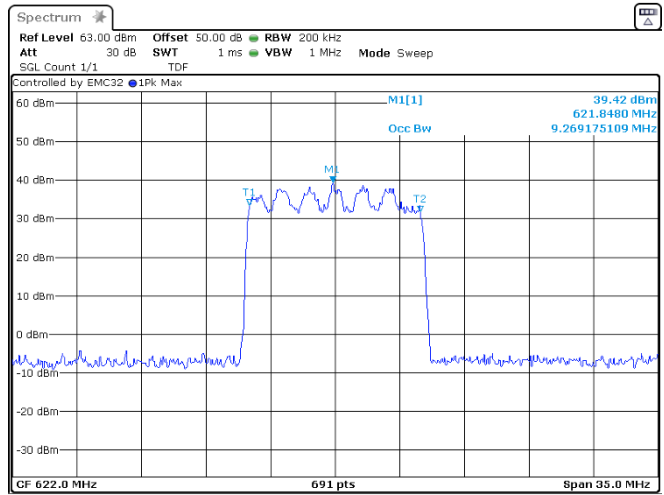
Occupied bandwidth (99 %), TX 644.5 MHz, BW: 15MHz, MOD: QP
 SK



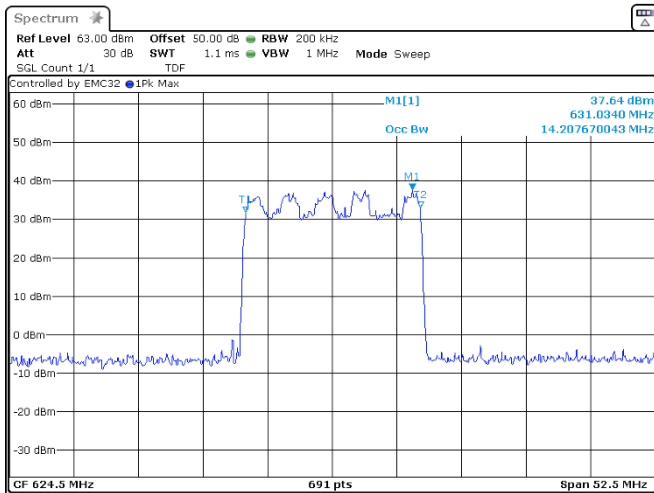
Occupied bandwidth (99 %), TX 642 MHz, BW: 20MHz, MOD: QPSK



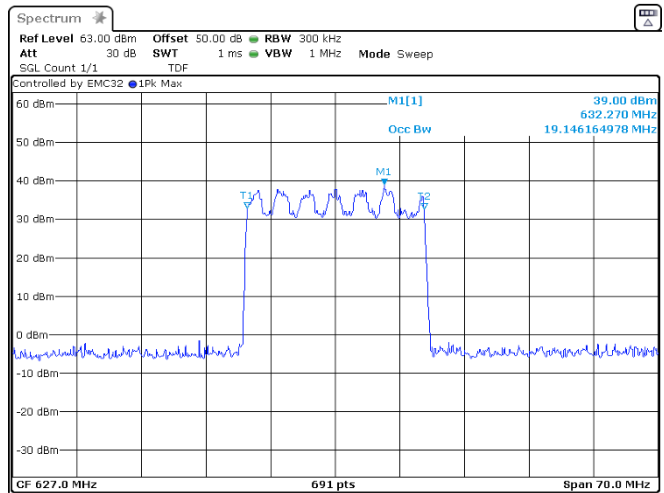
Occupied bandwidth (99 %), TX 619.5 MHz, BW: 5MHz, MOD: 16Q
 AM



Occupied bandwidth (99 %), TX 622 MHz, BW: 10MHz, MOD: 16QA
 M



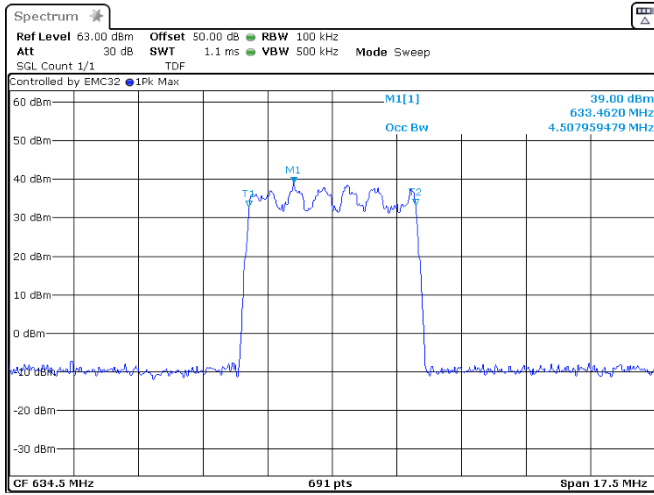
Occupied bandwidth (99 %), TX 624.5 MHz, BW: 15MHz, MOD: 16
 QAM



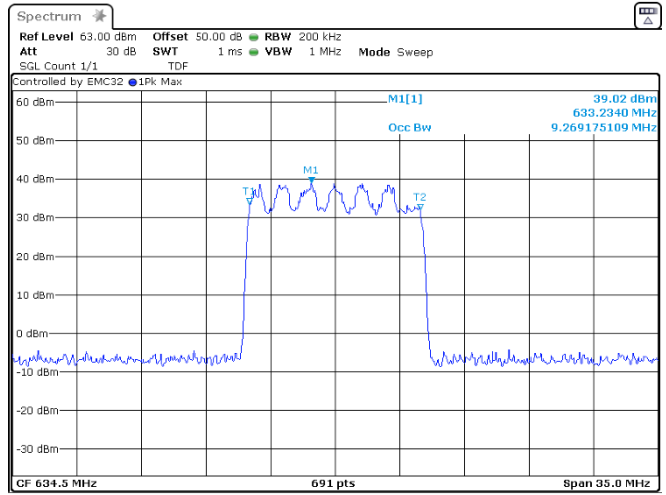
Occupied bandwidth (99 %), TX 627 MHz, BW: 20MHz, MOD: 16QA
 M

Section 8
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Specification

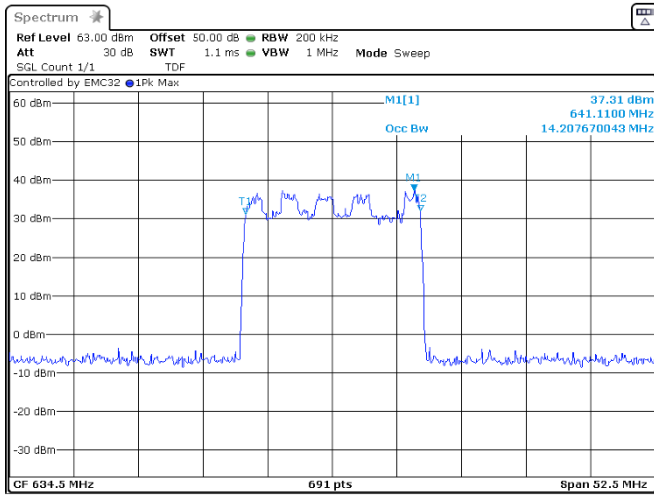
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
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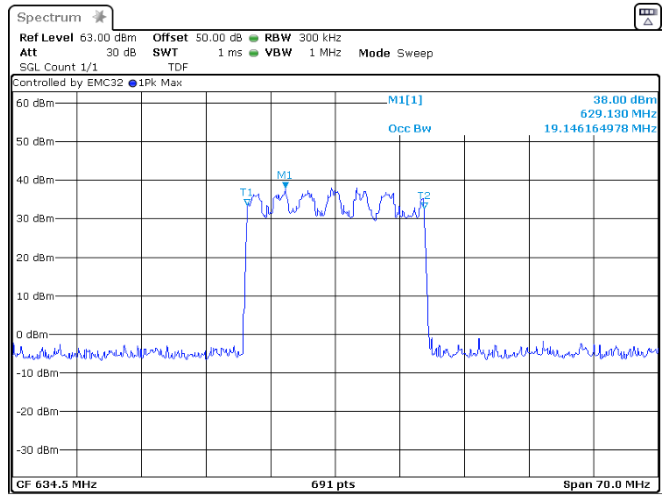
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 5MHz, MOD: 16Q
 AM



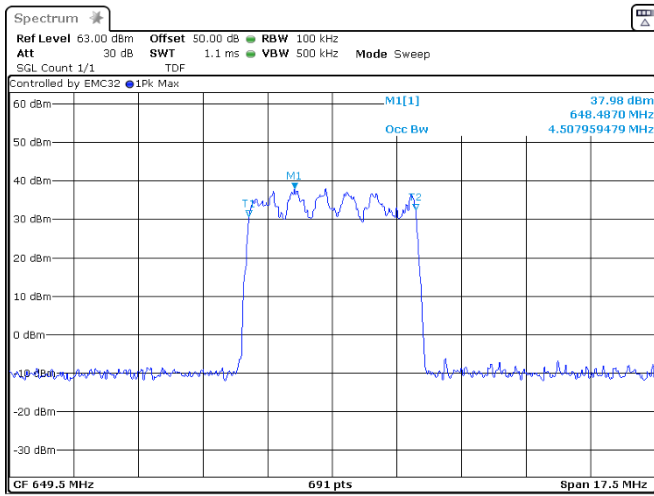
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 10MHz, MOD: 16
 QAM



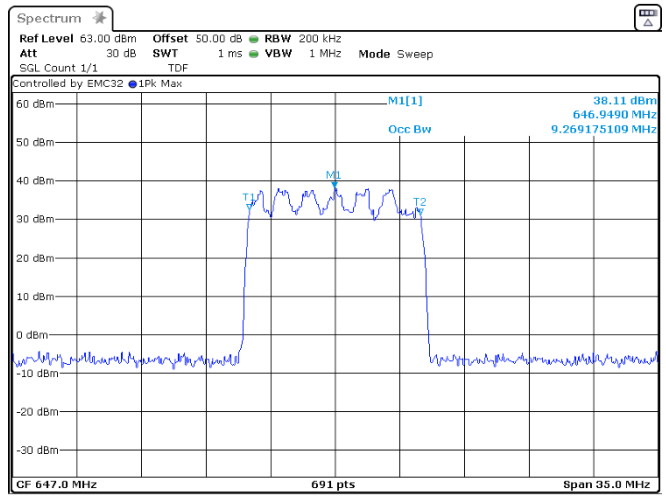
Occupied bandwidth (99 %), TX 634.5 MHz, BW: 15MHz, MOD: 16
 QAM



Occupied bandwidth (99 %), TX 634.5 MHz, BW: 20MHz, MOD: 16
 QAM



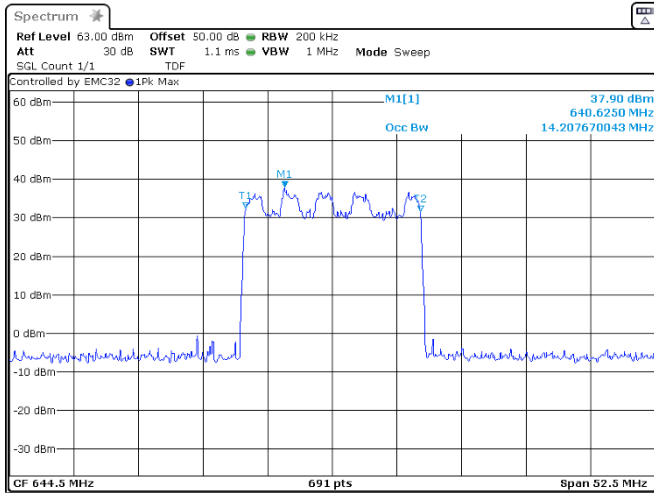
Occupied bandwidth (99 %), TX 649.5 MHz, BW: 5MHz, MOD: 16Q
 AM



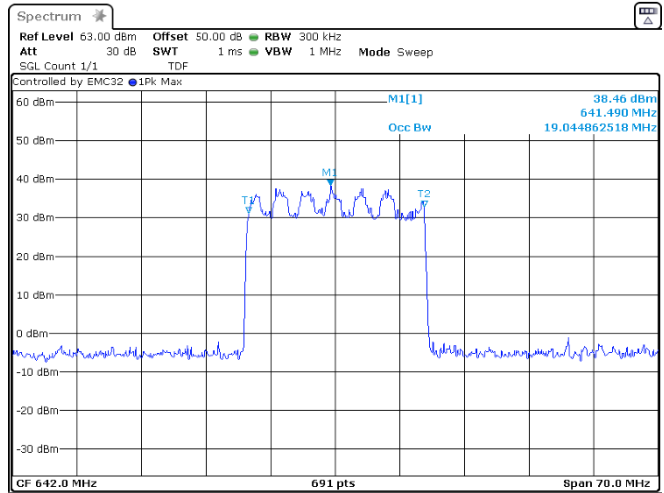
Occupied bandwidth (99 %), TX 647 MHz, BW: 10MHz, MOD: 16QA
 M

Section 8
Test name
Specification

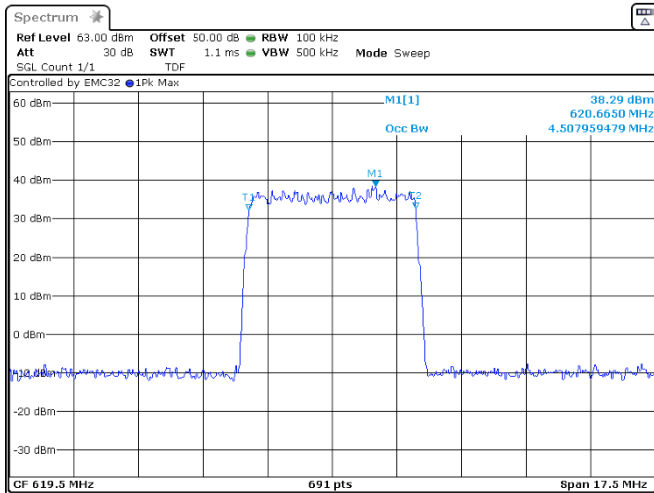
Testing data
 FCC §2.1049(h) 99% Occupied Bandwidth
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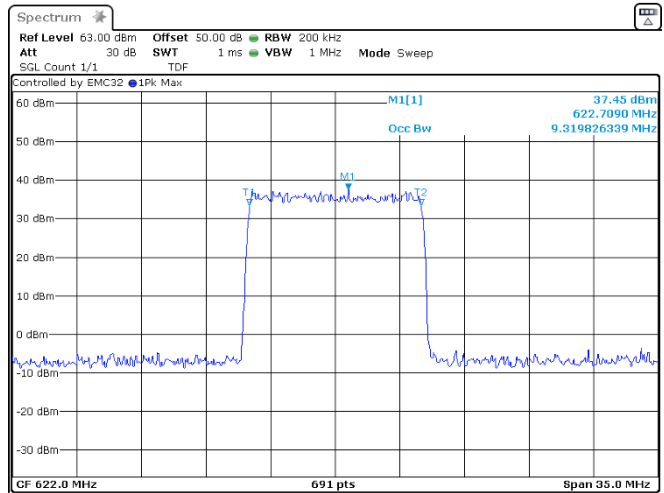
Occupied bandwidth (99 %), TX 644.5 MHz, BW: 15MHz, MOD: 16
 QAM



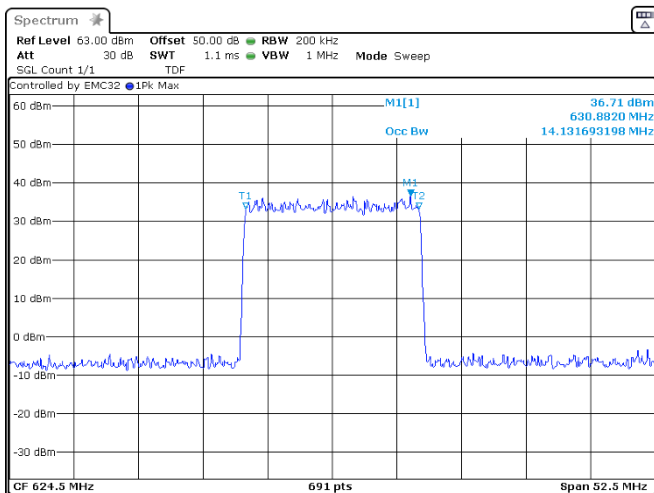
Occupied bandwidth (99 %), TX 642 MHz, BW: 20MHz, MOD: 16QA
 M



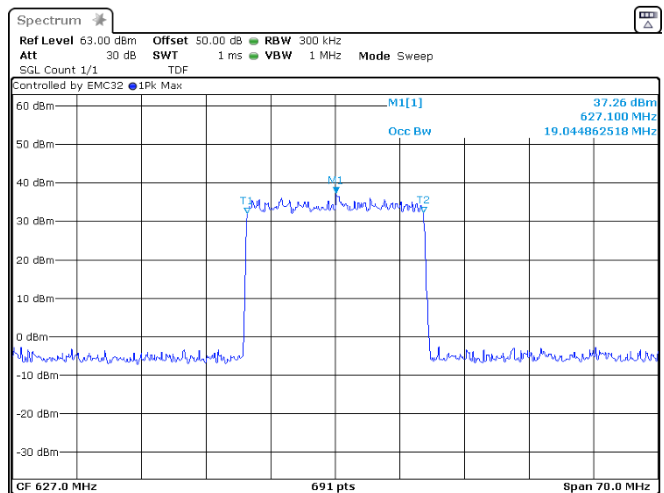
Occupied bandwidth (99 %), TX 619.5 MHz, BW: 5MHz, MOD: 64Q
 AM



Occupied bandwidth (99 %), TX 622 MHz, BW: 10MHz, MOD: 64QA
 M



Occupied bandwidth (99 %), TX 624.5 MHz, BW: 15MHz, MOD: 64
 QAM



Occupied bandwidth (99 %), TX 627 MHz, BW: 20MHz, MOD: 64QA
 M