FCC RADIO TEST REPORT
FCC 47 CFR PART 27

Test Standard	**FCC Part 27**
FCC ID	**QI3BIL-8920NZ**
Product name	**3G/4G LTE Embedded VDSL2/ADSL2+ Wireless-N VPN Firewall Router**
Brand name	**Billion**
Test Result	**Pass**
Function	**LTE Band 4**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in TIA/EIA-603D:2012 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services (Wugu Laboratory)

The sample selected for test was production product and was provided by manufacturer.

Testing Laboratory
1309

Approved by:

Sam Chuang
Manager

Reviewed by:

Zeus Chen
Supervisor

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Revision History

Rev.	Issue Date	Revisions	Revised By
00	January 18, 2017	Initial Issue	Angel Cheng
01	March 24, 2017	1. Added model number in page 4. 2. Modify antenna gain in page 7.	Angel Cheng
02	March 29, 2017	1. Modify model number in page 4.	Angel Cheng
03	May 24, 2017	1. Modify 16QAM Emission Designator in page 5.	Angel Cheng

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

<table>
<tr><td>Applicant</td><td colspan="4">Billion Electric Co., Ltd.</td></tr>
<tr><td>Applicant Address</td><td colspan="4">8F., No.192, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)</td></tr>
<tr><td>Equipment</td><td colspan="4">3G/4G LTE Embedded VDSL2/ADSL2+ Wireless-N VPN Firewall Router</td></tr>
<tr><td>Model No.</td><td colspan="4">BiPAC 8920NZ, BiPAC 8920NZL, BEC 8920NZ, BEC 8920NZL,
BiPAC 8900NZ, BiPAC 8900NZL, BEC 8900NZ, BEC 8900NZL</td></tr>
<tr><td rowspan="13">Model Discrepancy</td><td></td><td>BiPAC 8920NZ</td><td>BiPAC 8920NZL</td><td>BEC 8920NZ</td><td>BEC 8920NZL</td></tr>
<tr><td>Trade Name</td><td>Billion</td><td>Billion</td><td>BEC</td><td>BEC</td></tr>
<tr><td>External Feature</td><td>Wide-band Antenna</td><td>Wide-band Antenna</td><td>Wide-band Antenna</td><td>Wide-band Antenna</td></tr>
<tr><td>External color</td><td>Upper/Lower Casing: Gray/ Silver</td><td>Upper/Lower Casing: Gray/ Silver</td><td>Upper/Lower Casing: Gray/ Silver</td><td>Upper/Lower Casing: Gray/ Silver</td></tr>
<tr><td>Housing Drawing</td><td>D3-R w/ Vertical Stand</td><td>D3-R w/ Vertical Stand</td><td>D3-R w/ Vertical Stand</td><td>D3-R w/ Vertical Stand</td></tr>
<tr><td>VDSL/ADSL</td><td>O</td><td>O</td><td>O</td><td>O</td></tr>
<tr><td>Dual-Sim slot</td><td>O</td><td>O</td><td>O</td><td>O</td></tr>
<tr><td>VPN</td><td>O</td><td>X</td><td>O</td><td>X</td></tr>
<tr><td>Power Adapter</td><td>DC 15V/ 1.6A</td><td>DC 15V/ 1.6A</td><td>DC 15V/ 1.6A</td><td>DC 15V/ 1.6A</td></tr>
<tr><td colspan="5">Note: "O" means all the same, and "X" means the difference</td></tr>
<tr><td></td><td>BiPAC 8900NZ</td><td>BiPAC 8900NZL</td><td>BEC 8900NZ</td><td>BEC 8900NZL</td></tr>
<tr><td>Trade Name</td><td>Billion</td><td>Billion</td><td>BEC</td><td>BEC</td></tr>
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<tr><td>EUT Functions</td><td colspan="4">LTE Band 4</td></tr>
<tr><td>Received Date</td><td colspan="4">Dec 19, 2016</td></tr>
<tr><td>Date of Test</td><td colspan="4">Dec 27, 2016 ~ Jan 8, 2017</td></tr>
</table>

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Power Operation	☒ AC 120V/60Hz ☒ Adapter ☐ PoE(Not for sale) ☐ DC Type : ☐ Battery ☐ DC Power Supply ☐ External DC adapter

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1.2 EUT CHANNEL INFORMATION

Frequency Range						
Channel	**1.4MHz**		**3MHz**		**5MHz**	
	Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
Low CH	19957	1710.7	19965	1711.5	19975	1712.5
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20392	1754.2	20384	1753.4	20375	1752.5
Channel	**10MHz**		**15MHz**		**20MHz**	
	Channel	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**	**Channel**	**Frequency(MHz)**
Low CH	20000	1715.0	20025	1717.5	20050	1720.0
Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
High CH	20350	1750.0	20325	1747.5	20300	1745.0

1.3 EMISSION DESIGNATOR

Emission Designator						
Band	**Frequency Range(MHz)**	**BW (MHz)**	**QPSK**		**16QAM**	
			Emission Designator	**Maximum EIRP (W)**	**Emission Designator**	**Maximum EIRP (W)**
4	**1710.7MHz ~1754.2MHz**	**1.4**	1M08G7D	0.547	1M08W7D	0.610
	1711.5MHz ~1753.4MHz	**3**	2M67G7D	0.587	2M68W7D	0.650
	1712.5MHz ~1752.5MHz	**5**	4M45G7D	0.588	4M45W7D	0.625
	1715.0MHz ~1750.0MHz	**10**	8M91G7D	0.630	8M91W7D	0.605
	1717.5MHz ~1747.50MHz	**15**	13M5G7D	0.625	13M4W7D	0.633
	1720MHz ~1745MHz	**20**	18M0G7D	0.610	18M0W7D	0.659

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1.4 ANTENNA INFORMATION

Antenna Category	☐ Integral: antenna permanently attached ☐ External dedicated antennas ☒ External Unique antenna connector
Antenna Type	☐ PIFA ☐ PCB for ☒ Dipole ☐ Printed ☐ Coils
Antenna Gain	2.26 (dBi)

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1.5 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 1.4003
RF output power, conducted	+/- 1.1372
Power density, conducted	+/- 1.4003
3M Semi Anechoic Chamber / 30M~200M	+/- 4.0138
3M Semi Anechoic Chamber / 200M~1000M	+/- 3.9483
3M Semi Anechoic Chamber / 1G~8G	+/- 2.5975
3M Semi Anechoic Chamber / 8G~18G	+/- 2.6112
3M Semi Anechoic Chamber / 18G~26G	+/- 2.7389
3M Semi Anechoic Chamber / 26G~40G	+/- 2.9683
3M Semi Anechoic Chamber / 40G~60G	+/- 1.8509
3M Semi Anechoic Chamber / 60G~75G	+/- 1.9869
3M Semi Anechoic Chamber / 75G~110G	+/- 2.9651
3M Semi Anechoic Chamber / 110G~170G	+/- 2.7807
3M Semi Anechoic Chamber / 170G~220G	+/- 3.6437
3M Semi Anechoic Chamber / 220G~325G	+/- 4.2982

Remark:
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

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1.6 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at *No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)*

Test site	Test Engineer	Remark
AC Conduction Room	-	-
Radiation	Rondo Raw	-
RF Conducted	Ian Tu	-

Remark: *The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.*

1.7 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Spectrum Analyzer	R&S	FSV 40	101073	05/11/2016	05/10/2017
Communication Analyzer	Anritsu	MT-8820C	6201240043	02/18/2016	02/17/2017

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	12/07/2016	12/04/2017
Loop Ant	COM-POWER	AL-130	121051	02/25/2016	02/24/2017
Bilog Antenna	Sunol Sciences	JB3	A030105	07/03/2016	07/02/2017
Pre-Amplifier	EMEC	EM330	60609	06/08/2016	06/07/2017
Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/30/2016	09/01/2017
Pre-Amplifier	MITEQ	AMF-6F-260400-40-8P	985646	01/14/2016	01/13/2017
Horn Antenna	EMCO	3116	26370	01/15/2016	01/14/2017
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	EZ-EMC (CCS-3A1RE)				

Remark: *Each piece of equipment is scheduled for calibration once a year.*

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1.8 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
1	Adapter	BILLION	BA018-120120	N/A	N/A

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with TIA/EIA-603-D:2010 and Part 27.

1.10 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	IC 2324G-1 IC 2324G-2

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2. DESCRIPTION OF TEST MODES

2.1 THE WORST MODE OF OPERATING CONDITION

	Channel	1.4MHz		3MHz		5MHz	
		Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Operation mode	Low CH	19957	1710.7	19965	1711.5	19975	1712.5
	Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
	High CH	20392	1754.2	20384	1753.4	20375	1752.5
	Channel	10MHz		15MHz		20MHz	
		Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
	Low CH	20000	1715.0	20025	1717.5	20050	1720.0
	Middle CH	20175	1732.5	20175	1732.5	20175	1732.5
	High CH	20350	1750.0	20325	1747.5	20300	1745.0

Remark:
1. EUT pre-scanned the output power for each mode, the worst data rate were recorded in this report.
2. Covered modes are test reduction modes. The output powers on the covered modes are equal to or less than the mode referenced and use the same module
2. Client consigns only one model sample to test (Model Number: BiPAC 8920NZ).

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2.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Voltage/Hz	**120V/60Hz**
Test Mode	**Mode 1:EUT power by AC adapter**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☐ **Placed in fixed position at X-Plane (E2-Plane)** ☒ **Placed in fixed position at Y-Plane (E1-Plane)** ☐ **Placed in fixed position at Z-Plane (H-Plane)**
Worst Polarity	☒ **Horizontal** ☐ **Vertical**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Voltage/Hz	**120V/60Hz**
Test Mode	**Mode 1:EUT power by AC adapter**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis, X, Y, Z and two polarity, Horizontal and Vertical for radiated measurement. The worst case(Y-Plane and Horizontal) were recorded in this report.

3. For below 1G AC power line conducted emission and radiation emission were performed the EUT transmit at the highest output power channel as worse case.

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3. TEST RESULT

3.1 OUTPUT POWER MEASUREMENT

3.1.1 Test Procedure

Conducted Power Measurement

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

3.1.2 Test Result

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LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	1.4	19957	1710.7	QPSK	1	0	0	22.9	0.1950
					1	2	0	22.4	0.1738
					1	5	0	22.3	0.1698
					3	0	0	22.7	0.1862
					3	1	0	22.4	0.1738
					3	2	0	22.3	0.1698
					6	0	1	21.5	0.1413
				16QAM	1	0	1	21.8	0.1514
					1	2	1	21.6	0.1445
					1	5	1	21.5	0.1413
					3	0	1	21.8	0.1514
					3	1	1	21.6	0.1445
					3	2	1	21.5	0.1413
					6	0	2	20.5	0.1122
		20175	1732.5	QPSK	1	0	0	22.5	0.1778
					1	2	0	22.3	0.1698
					1	5	0	22.3	0.1698
					3	0	0	22.5	0.1778
					3	1	0	22.3	0.1698
					3	2	0	22.3	0.1698
					6	0	1	21.4	0.1380
				16QAM	1	0	1	21.5	0.1413
					1	2	1	21.5	0.1413
					1	5	1	21.4	0.1380
					3	0	1	21.5	0.1413
					3	1	1	21.5	0.1413
					3	2	1	21.4	0.1380
					6	0	2	20.5	0.1122
		20392	1754.2	QPSK	1	0	0	22.6	0.1820
					1	2	0	22.4	0.1738
					1	5	0	22.4	0.1738
					3	0	0	22.6	0.1820
					3	1	0	22.4	0.1738
					3	2	0	22.4	0.1738
					6	0	1	21.5	0.1413
				16QAM	1	0	1	21.6	0.1445
					1	2	1	21.5	0.1413
					1	5	1	21.5	0.1413
					3	0	1	21.6	0.1445
					3	1	1	21.5	0.1413
					3	2	1	21.5	0.1413
					6	0	2	20.6	0.1148

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	3	19965	1711.5	QPSK	1	0	0	22.9	0.1950
					1	7	0	22.4	0.1738
					1	14	0	22.3	0.1698
					8	0	1	21.8	0.1514
					8	4	1	21.6	0.1445
					8	7	1	21.6	0.1445
					15	0	1	21.5	0.1413
				16QAM	1	0	1	21.8	0.1514
					1	7	1	21.6	0.1445
					1	14	1	21.5	0.1413
					8	0	2	20.8	0.1202
					8	4	2	20.6	0.1148
					8	7	2	20.6	0.1148
					15	0	2	20.5	0.1122
		20175	1732.5	QPSK	1	0	0	22.5	0.1778
					1	7	0	22.3	0.1698
					1	14	0	22.3	0.1698
					8	0	1	21.7	0.1479
					8	4	1	21.5	0.1413
					8	7	1	21.5	0.1413
					15	0	1	21.4	0.1380
				16QAM	1	0	1	21.5	0.1413
					1	7	1	21.5	0.1413
					1	14	1	21.4	0.1380
					8	0	2	20.6	0.1148
					8	4	2	20.4	0.1096
					8	7	2	20.5	0.1122
					15	0	2	20.4	0.1096
		20384	1753.4	QPSK	1	0	0	22.6	0.1820
					1	7	0	22.4	0.1738
					1	14	0	22.4	0.1738
					8	0	1	21.7	0.1479
					8	4	1	21.6	0.1445
					8	7	1	21.6	0.1445
					15	0	1	21.5	0.1413
				16QAM	1	0	1	21.6	0.1445
					1	7	1	21.5	0.1413
					1	14	1	21.5	0.1413
					8	0	2	20.7	0.1175
					8	4	2	20.6	0.1148
					8	7	2	20.6	0.1148
					15	0	2	20.5	0.1122

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	5	19975	1712.5	QPSK	1	0	0	23.0	0.1995
					1	12	0	22.5	0.1778
					1	24	0	22.4	0.1738
					12	0	1	21.9	0.1549
					12	6	1	21.7	0.1479
					12	11	1	21.7	0.1479
					25	0	1	21.6	0.1445
				16QAM	1	0	1	21.9	0.1549
					1	12	1	21.7	0.1479
					1	24	1	21.6	0.1445
					12	0	2	20.9	0.1230
					12	6	2	20.7	0.1175
					12	11	2	20.7	0.1175
					25	0	2	20.6	0.1148
		20175	1732.5	QPSK	1	0	0	22.6	0.1820
					1	12	0	22.4	0.1738
					1	24	0	22.4	0.1738
					12	0	1	21.8	0.1514
					12	6	1	21.6	0.1445
					12	11	1	21.6	0.1445
					25	0	1	21.5	0.1413
				16QAM	1	0	1	21.6	0.1445
					1	12	1	21.6	0.1445
					1	24	1	21.5	0.1413
					12	0	2	20.7	0.1175
					12	6	2	20.5	0.1122
					12	11	2	20.6	0.1148
					25	0	2	20.5	0.1122
		20375	1752.5	QPSK	1	0	0	22.7	0.1862
					1	12	0	22.5	0.1778
					1	24	0	22.5	0.1778
					12	0	1	21.8	0.1514
					12	6	1	21.7	0.1479
					12	11	1	21.7	0.1479
					25	0	1	21.6	0.1445
				16QAM	1	0	1	21.7	0.1479
					1	12	1	21.6	0.1445
					1	24	1	21.6	0.1445
					12	0	2	20.8	0.1202
					12	6	2	20.7	0.1175
					12	11	2	20.7	0.1175
					25	0	2	20.6	0.1148

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	10	20000	1715.0	QPSK	1	0	0	23.0	0.1995
					1	24	0	22.5	0.1778
					1	49	0	22.4	0.1738
					25	0	1	21.9	0.1549
					25	12	1	21.7	0.1479
					25	24	1	21.7	0.1479
					50	0	1	21.6	0.1445
				16QAM	1	0	1	21.9	0.1549
					1	24	1	21.7	0.1479
					1	49	1	21.6	0.1445
					25	0	2	20.9	0.1230
					25	12	2	20.7	0.1175
					25	24	2	20.7	0.1175
					50	0	2	20.6	0.1148
		20175	1732.5	QPSK	1	0	0	22.6	0.1820
					1	24	0	22.4	0.1738
					1	49	0	22.4	0.1738
					25	0	1	21.8	0.1514
					25	12	1	21.6	0.1445
					25	24	1	21.6	0.1445
					50	0	1	21.5	0.1413
				16QAM	1	0	1	21.6	0.1445
					1	24	1	21.6	0.1445
					1	49	1	21.5	0.1413
					25	0	2	20.7	0.1175
					25	12	2	20.5	0.1122
					25	24	2	20.6	0.1148
					50	0	2	20.5	0.1122
		20350	1750.0	QPSK	1	0	0	22.7	0.1862
					1	24	0	22.5	0.1778
					1	49	0	22.5	0.1778
					25	0	1	21.8	0.1514
					25	12	1	21.7	0.1479
					25	24	1	21.7	0.1479
					50	0	1	21.6	0.1445
				16QAM	1	0	1	21.7	0.1479
					1	24	1	21.6	0.1445
					1	49	1	21.6	0.1445
					25	0	2	20.8	0.1202
					25	12	2	20.7	0.1175
					25	24	2	20.7	0.1175
					50	0	2	20.6	0.1148

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	15	20025	1717.5	QPSK	1	0	0	23.1	0.2042
					1	37	0	22.6	0.1820
					1	74	0	22.5	0.1778
					36	0	1	22.0	0.1585
					36	18	1	21.8	0.1514
					36	35	1	21.8	0.1514
					75	0	1	21.7	0.1479
				16QAM	1	0	1	22.0	0.1585
					1	37	1	21.8	0.1514
					1	74	1	21.7	0.1479
					36	0	2	21.0	0.1259
					36	18	2	20.8	0.1202
					36	35	2	20.8	0.1202
					75	0	2	20.7	0.1175
		20175	1732.5	QPSK	1	0	0	22.7	0.1862
					1	37	0	22.5	0.1778
					1	74	0	22.5	0.1778
					36	0	1	21.9	0.1549
					36	18	1	21.7	0.1479
					36	35	1	21.7	0.1479
					75	0	1	21.6	0.1445
				16QAM	1	0	1	21.7	0.1479
					1	37	1	21.7	0.1479
					1	74	1	21.6	0.1445
					36	0	2	20.8	0.1202
					36	18	2	20.6	0.1148
					36	35	2	20.7	0.1175
					75	0	2	20.6	0.1148
		20325	1747.5	QPSK	1	0	0	22.8	0.1905
					1	37	0	22.6	0.1820
					1	74	0	22.6	0.1820
					36	0	1	21.9	0.1549
					36	18	1	21.8	0.1514
					36	35	1	21.8	0.1514
					75	0	1	21.7	0.1479
				16QAM	1	0	1	21.8	0.1514
					1	37	1	21.7	0.1479
					1	74	1	21.7	0.1479
					36	0	2	20.9	0.1230
					36	18	2	20.8	0.1202
					36	35	2	20.8	0.1202
					75	0	2	20.7	0.1175

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Offset	MPR	Average Power (dBm)	Average Power (W)
4	20	20050	1720.0	QPSK	1	0	0	23.1	0.2042
					1	49	0	22.6	0.1820
					1	99	0	22.5	0.1778
					50	0	1	22.0	0.1585
					50	24	1	21.8	0.1514
					50	49	1	21.8	0.1514
					100	0	1	21.7	0.1479
				16QAM	1	0	1	22.0	0.1585
					1	49	1	21.8	0.1514
					1	99	1	21.7	0.1479
					50	0	2	21.0	0.1259
					50	24	2	20.8	0.1202
					50	49	2	20.8	0.1202
					100	0	2	20.7	0.1175
		20175	1732.5	QPSK	1	0	0	22.7	0.1862
					1	49	0	22.5	0.1778
					1	99	0	22.5	0.1778
					50	0	1	21.9	0.1549
					50	24	1	21.7	0.1479
					50	49	1	21.7	0.1479
					100	0	1	21.6	0.1445
				16QAM	1	0	1	21.7	0.1479
					1	49	1	21.7	0.1479
					1	99	1	21.6	0.1445
					50	0	2	20.8	0.1202
					50	24	2	20.6	0.1148
					50	49	2	20.7	0.1175
					100	0	2	20.6	0.1148
		20300	1745.0	QPSK	1	0	0	22.8	0.1905
					1	49	0	22.6	0.1820
					1	99	0	22.6	0.1820
					50	0	1	21.9	0.1549
					50	24	1	21.8	0.1514
					50	49	1	21.8	0.1514
					100	0	1	21.7	0.1479
				16QAM	1	0	1	21.8	0.1514
					1	49	1	21.7	0.1479
					1	99	1	21.7	0.1479
					50	0	2	20.9	0.1230
					50	24	2	20.8	0.1202
					50	49	2	20.8	0.1202
					100	0	2	20.7	0.1175

3.2 EIRP MEASURMENT

3.2.1 Test Limit

FCC 27.50 (d) (4): Fixed, mobile, and portable (handheld)stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP

3.2.2 Test Procedure

1. The EUT was placed on a non-conductive rotating platform (0.8m for below 1G and above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per section 5, KDB 971168 D01.

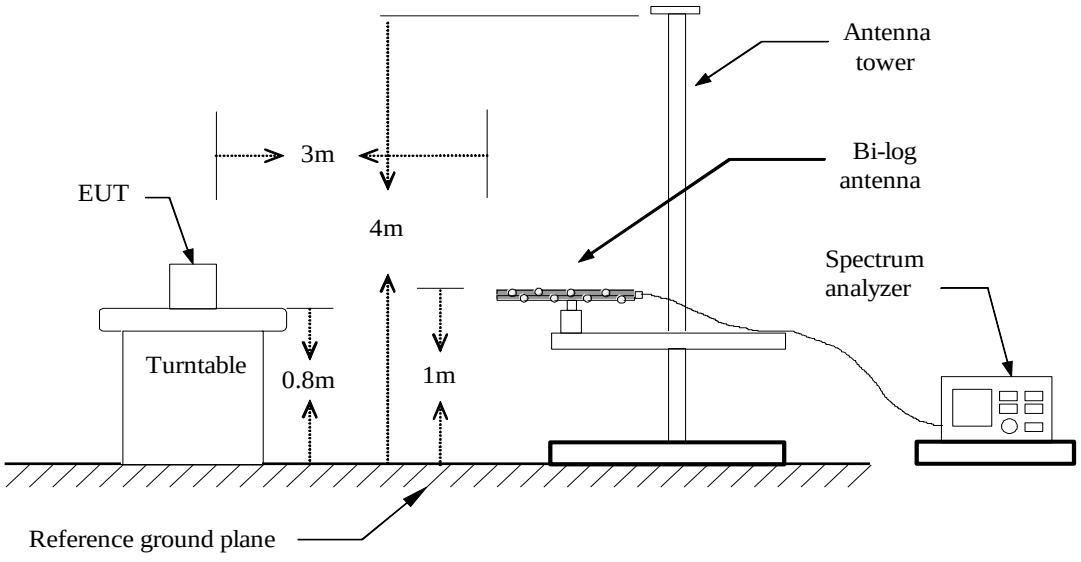
2. During the measurement, the call box parameters were set to get the maximum output power of the EUT. The maximum emission was recorded from spectrum analyzer power level (LVL) from 360 degrees rotation of turntable and the test antenna raised and lowered over a range from 1m to 4m in both horizontally and vertically polarized orientations.

3. EIRP was measured method according to TIA/EIA-603-D:2010. The EUT was replaced by the substitution antenna at same location, and then record the maximum Analyzer reading through raised and lowered the test antenna.

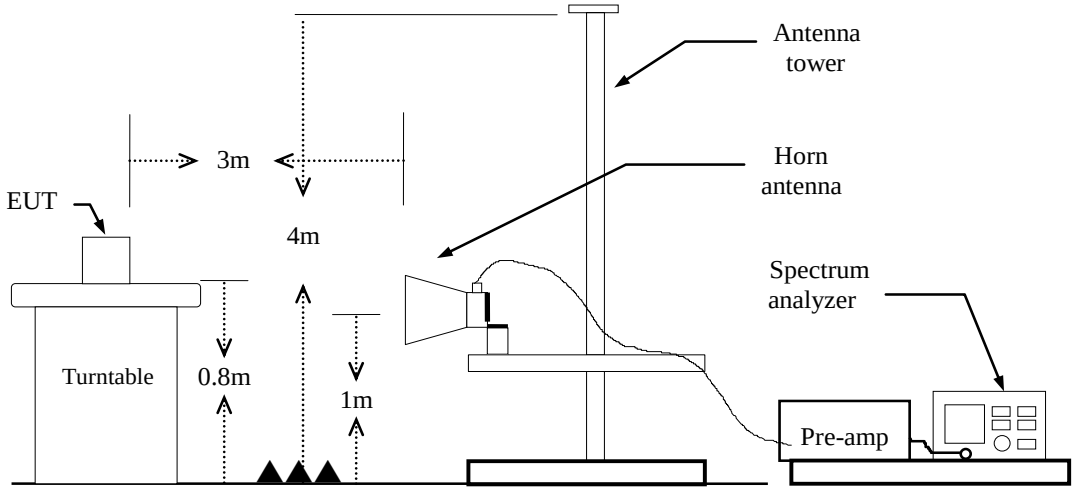
ERP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)-2.15
EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable (dB)

3.2.3 Test Setup

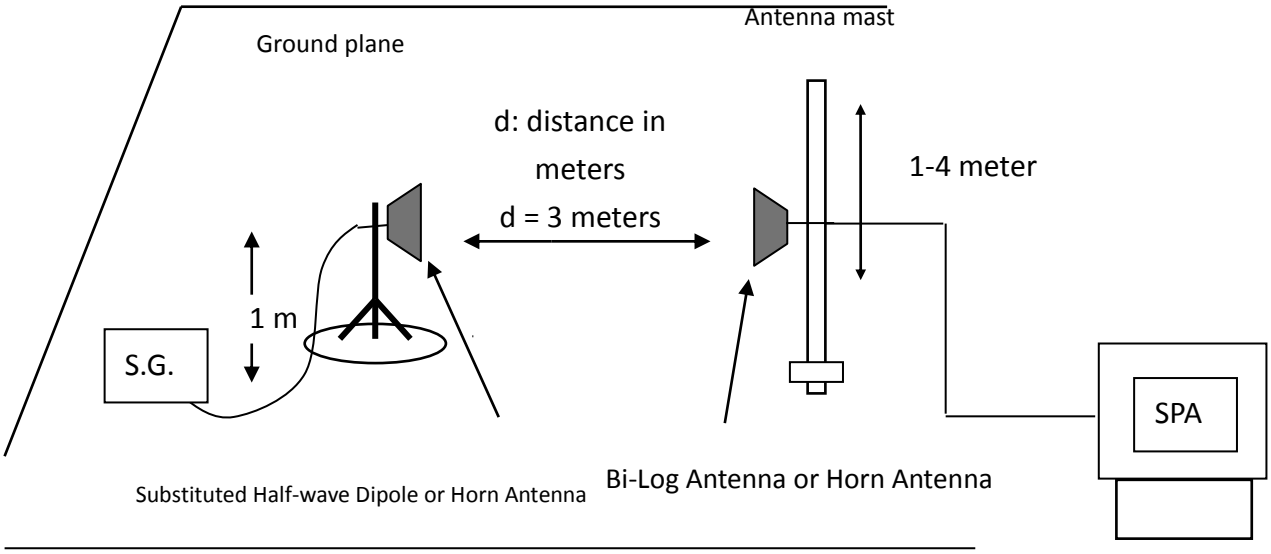
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



3.2.4 Test Result

LTE Band 4

BW: 1.4MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	1.4	Lowest	QPSK	1	0	23.28	0.212	27.38	0.547
		Middle		1	0	24.27	0.267	27.33	0.540
		Highest		1	0	24.34	0.271	27.17	0.521
		Lowest	16 QAM	1	0	24.39	0.274	27.86	0.610
		Middle		1	0	24.49	0.281	27.51	0.563
		Highest		1	0	24.32	0.270	26.96	0.496

BW: 3MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	3	Lowest	QPSK	1	0	24.31	0.269	27.69	0.587
		Middle		1	0	24.15	0.260	27.67	0.584
		Highest		1	0	24.19	0.262	27.09	0.511
		Lowest	16 QAM	1	0	24.37	0.273	28.13	0.650
		Middle		1	0	24.70	0.295	27.75	0.595
		Highest		1	0	24.65	0.291	27.26	0.532

BW: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	5	Lowest	QPSK	1	0	24.19	0.262	27.66	0.583
		Middle		1	0	21.87	0.153	27.70	0.588
		Highest		1	0	24.38	0.274	27.34	0.542
		Lowest	16 QAM	1	0	24.41	0.276	27.84	0.608
		Middle		1	0	24.52	0.283	27.96	0.625
		Highest		1	0	24.21	0.263	27.54	0.567

BW: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	10	Lowest	QPSK	1	0	24.10	0.257	27.82	0.605
		Middle		1	0	24.55	0.285	28.00	0.630
		Highest		1	0	24.44	0.277	27.49	0.561
		Lowest	16 QAM	1	0	24.21	0.263	27.82	0.605
		Middle		1	0	24.91	0.309	27.64	0.580
		Highest		1	0	24.35	0.272	27.64	0.580

BW: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	15	Lowest	QPSK	1	0	24.29	0.268	27.80	0.602
		Middle		1	0	24.43	0.277	27.96	0.625
		Highest		1	0	24.41	0.276	27.47	0.558
		Lowest	16 QAM	1	0	24.18	0.261	27.99	0.629
		Middle		1	0	24.80	0.301	28.02	0.633
		Highest		1	0	24.28	0.267	27.70	0.588

BW: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	20	Lowest	QPSK	1	0	24.21	0.263	27.74	0.594
		Middle		1	0	24.14	0.259	27.86	0.610
		Highest		1	0	24.41	0.276	27.79	0.601
		Lowest	16 QAM	1	0	24.35	0.272	27.49	0.561
		Middle		1	0	24.66	0.292	27.74	0.594
		Highest		1	0	24.71	0.295	28.19	0.659

3.3 OCCUPIED BANDWIDTH(99%)

3.3.1 Test Limit

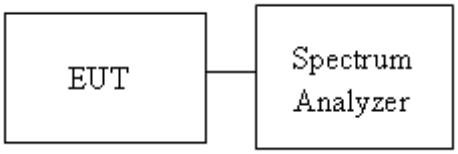
Occupied Bandwidth(99%) ： For reporting purposes only.

3.3.2 Test Procedure

KDB 971168 D01 v02r02 - Section 4..2,

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW, VBW ≥ 3 x RBW, Detector = Peak, Trace mode = max. hold

3.3.3 Test Setup



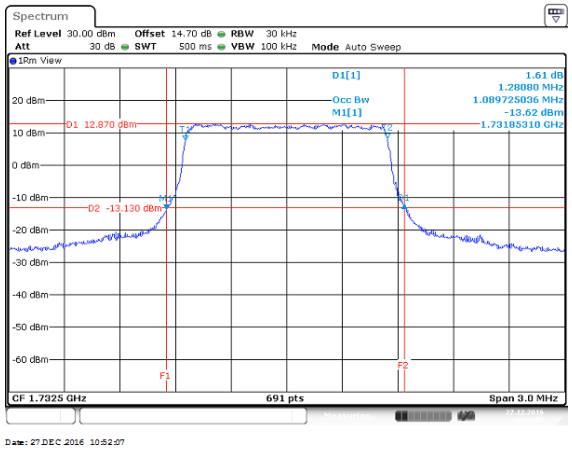
3.3.4 Test Result

LTE Band 4

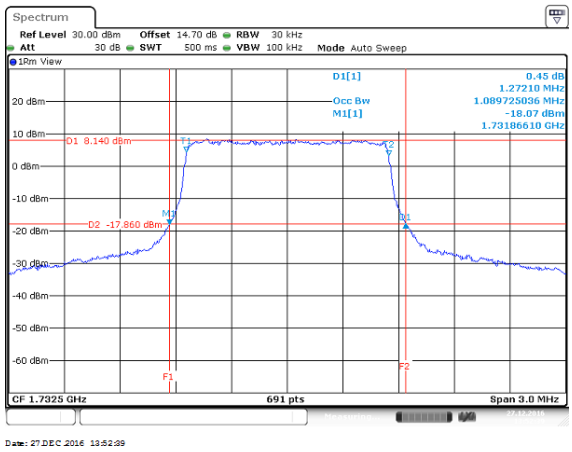
Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	OBW(99%)(MHz)	26 dB Bandwidth(MHz)
4	1.4	Middle	QPSK	6	0	1.0897	1.2808
		Middle	16QAM	6	0	1.0897	1..2721
	3	Middle	QPSK	15	0	2.6749	2.9609
		Middle	16QAM	15	0	2.6830	2.9783
	5	Middle	QPSK	25	0	4.4573	4.8050
		Middle	16QAM	25	0	4.4573	4.7900
	10	Middle	QPSK	50	0	8.9146	9.3490
		Middle	16QAM	50	0	8.9146	9.4070
	15	Middle	QPSK	75	0	13.4587	14.7610
		Middle	16QAM	75	0	13.4153	14.8910
	20	Middle	QPSK	100	0	18.0028	19.2220
		Middle	16QAM	100	0	18.0028	19.2800

Test Data

BW: 1.4MHz / QPSK / RB= 6, RB Offset = 0	
Mid CH	

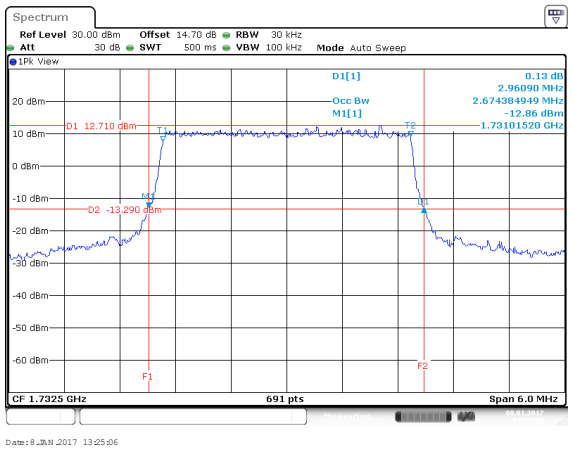


BW: 1.4MHz / 16QAM / RB= 6, RB Offset = 0	
Mid CH	



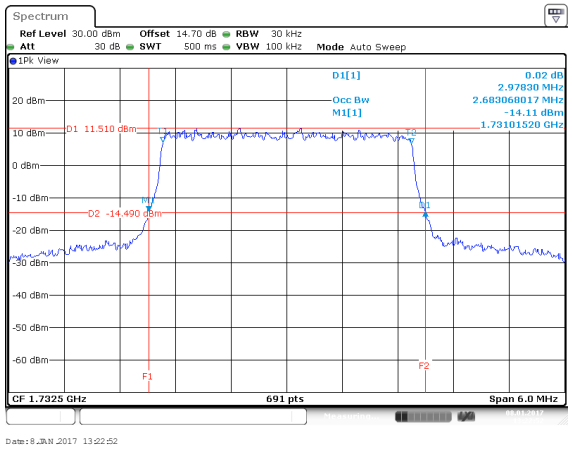
BW: 3MHz / QPSK / RB= 15, RB Offset = 0

Mid CH

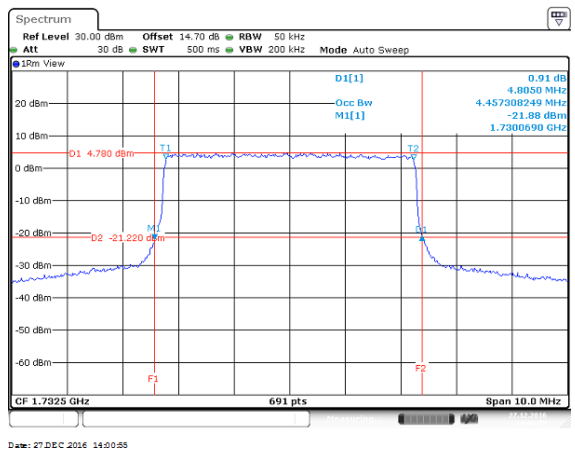


BW: 3MHz / 16QAM / RB= 15, RB Offset = 0

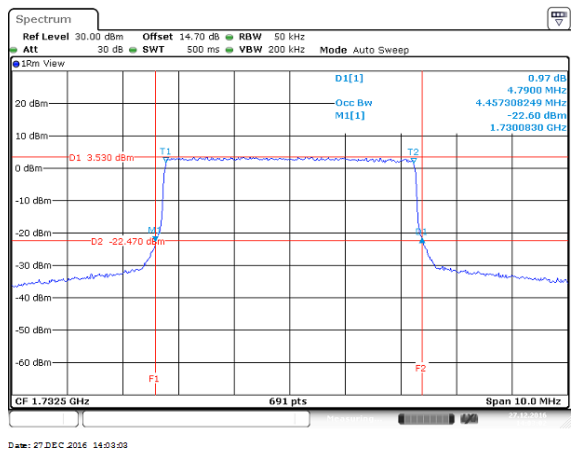
Mid CH



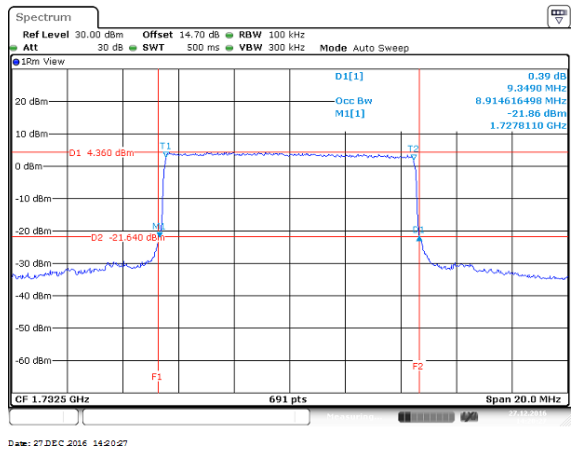
BW: 5MHz / QPSK / RB= 25, RB Offset = 0
Mid CH



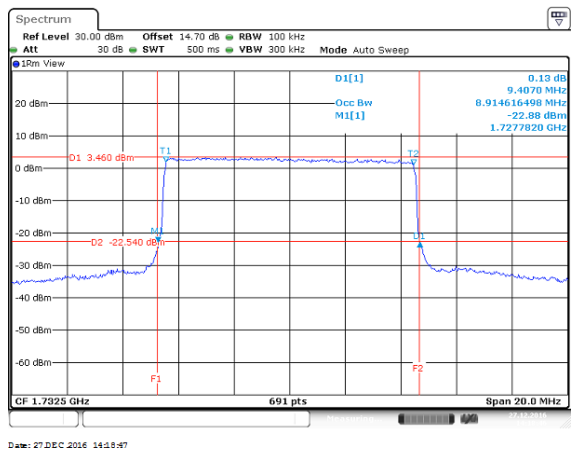
BW: 5MHz / 16QAM / RB= 25, RB Offset = 0
Mid CH



BW: 10MHz / QPSK / RB= 50, RB Offset = 0
Mid CH

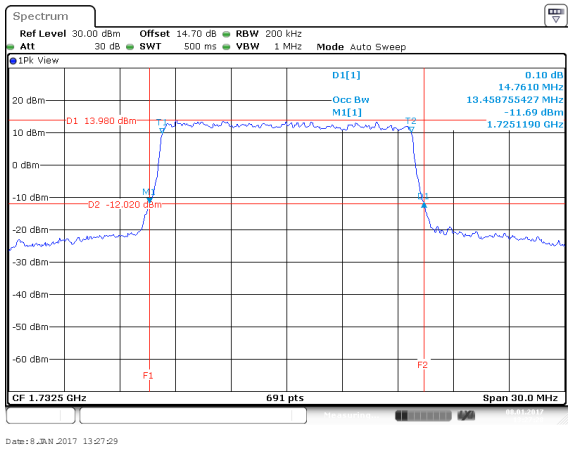


BW: 10MHz / 16QAM / RB= 50, RB Offset = 0
Mid CH



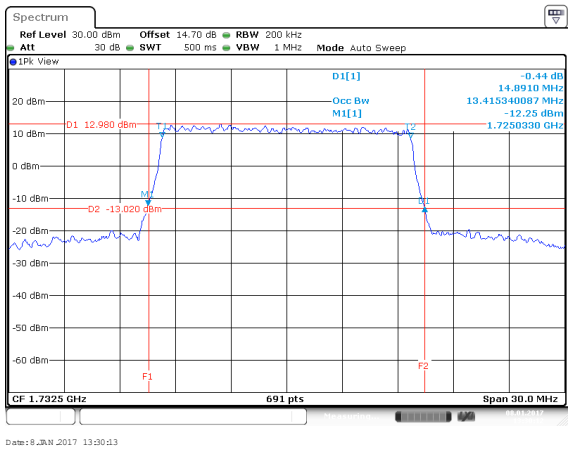
BW: 15MHz / QPSK / RB= 75, RB Offset = 0

Mid CH

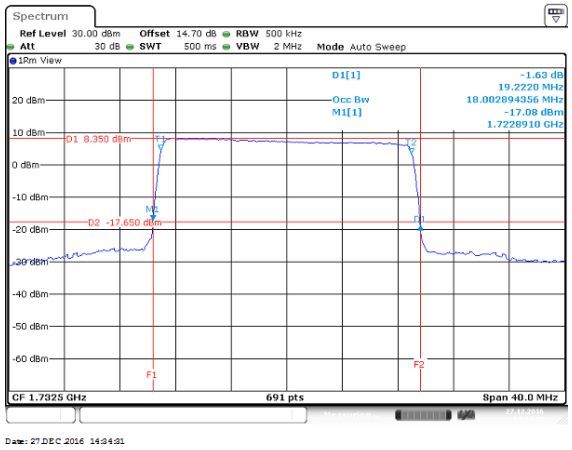


BW: 15MHz / 16QAM / RB= 75, RB Offset = 0

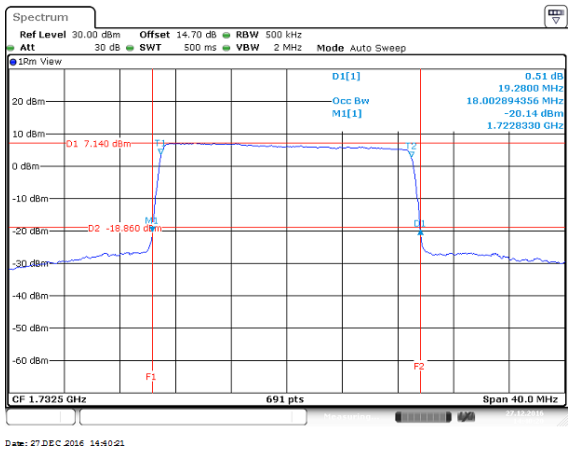
Mid CH



BW: 20MHz / QPSK / RB= 100, RB Offset = 0
Mid CH



BW: 20MHz / 16QAM / RB= 100, RB Offset = 0
Mid CH



3.4 PEAK TO AVERAGE POWER RATIO

3.4.1 Test Limit

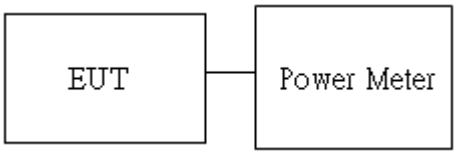
In measuring transmissions in this band using an average power technique, peak-to-average power ratio (PAPR) of the transmission may not exceed 13 dB

3.4.2 Test Procedure

According to KDB 971168 D01, section. 5.7.1.

1. The EUT was connect to spectrum analyzer and call box..
2. Set the CCDF function in spectrum analyzer.
3. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
4. Record the Peak to Average Power Ratio.

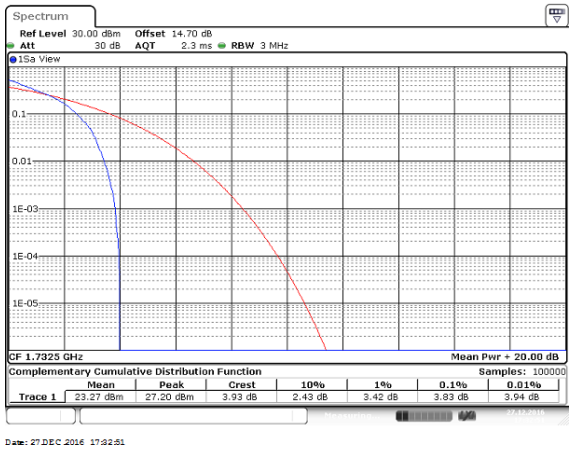
3.4.3 Test Setup



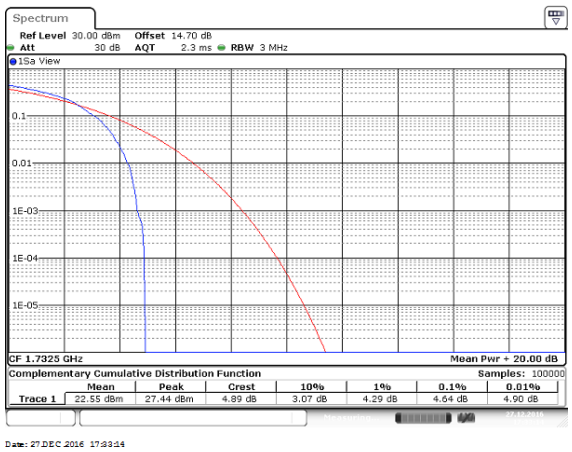
3.4.4 Test Result

Test Data

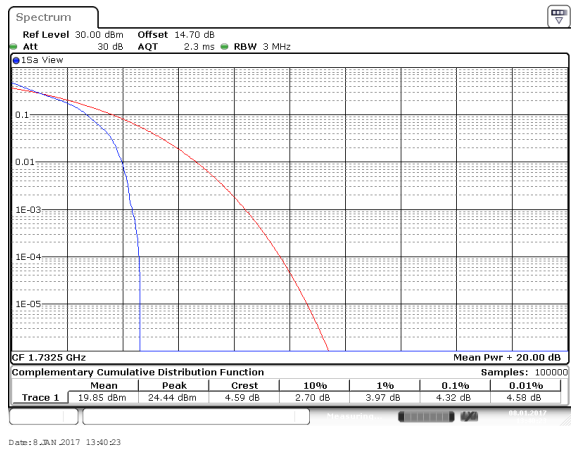
BW: 1.4MHz / QPSK / RB= 1, RB Offset = 0	
Mid CH	



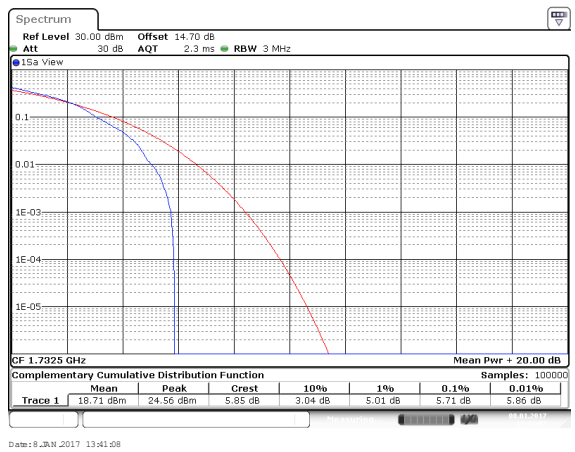
BW: 1.4MHz / 16QAM / RB= 1, RB Offset = 0	
Mid CH	



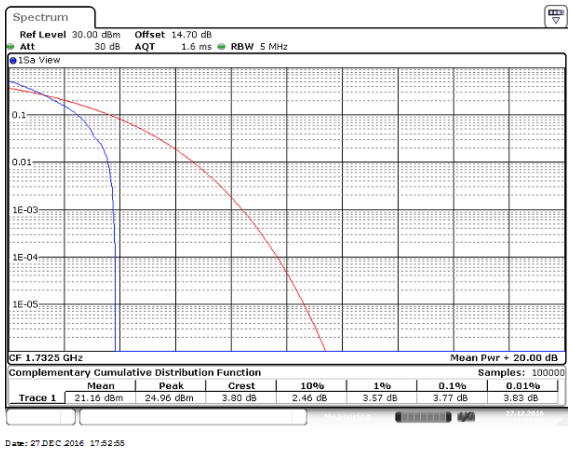
BW: 3MHz / QPSK / RB= 1, RB Offset = 0
Mid CH



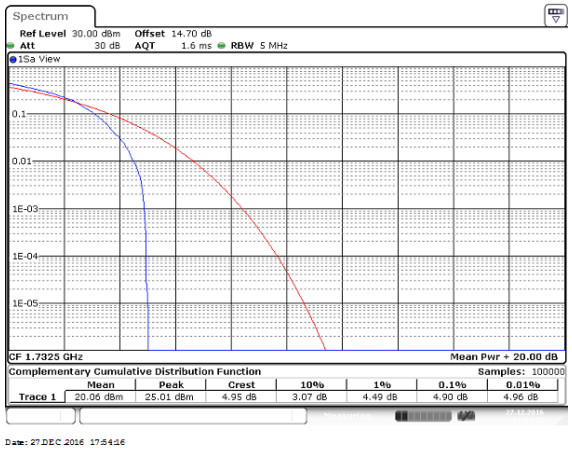
BW: 3MHz / 16QAM / RB= 1, RB Offset = 0
Mid CH



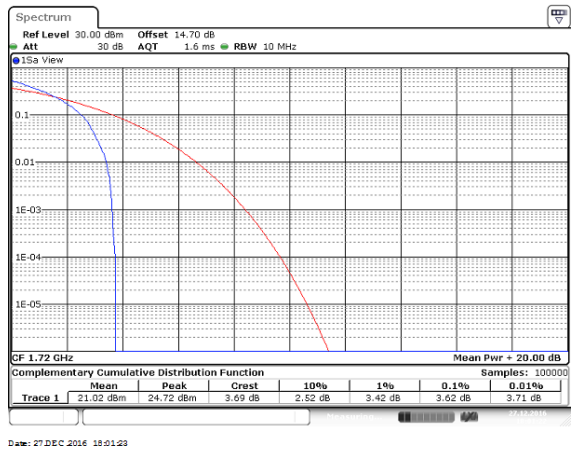
BW: 5MHz / QPSK / RB= 1, RB Offset = 0
Mid CH



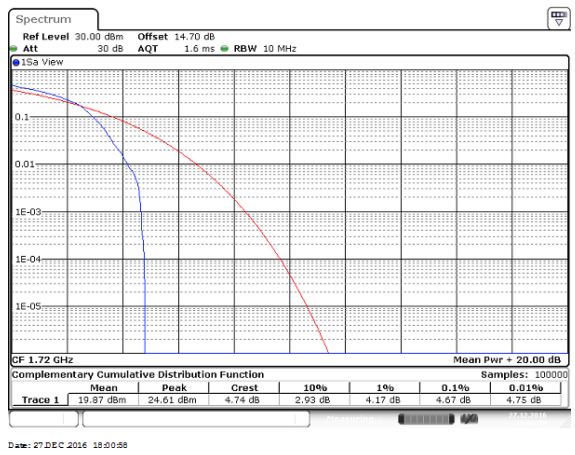
BW: 5MHz / 16QAM / RB= 1, RB Offset = 0
Mid CH



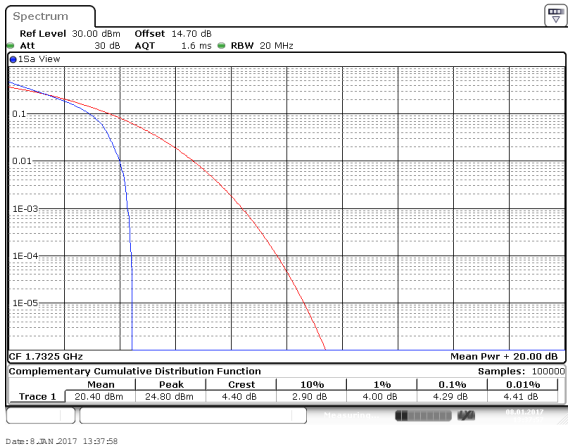
BW: 10MHz / QPSK / RB= 1, RB Offset = 0
Mid CH



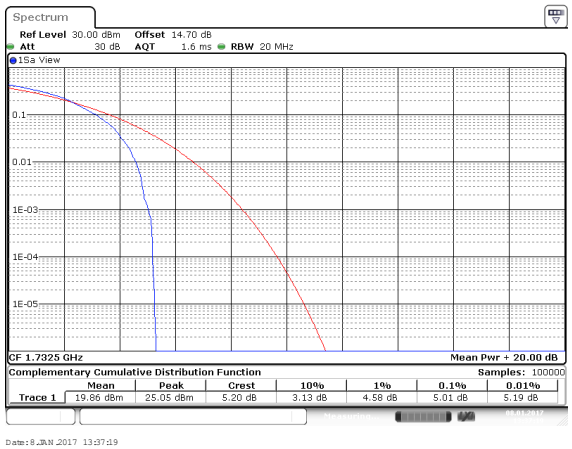
BW: 10MHz / 16QAM / RB= 1, RB Offset = 0
Mid CH



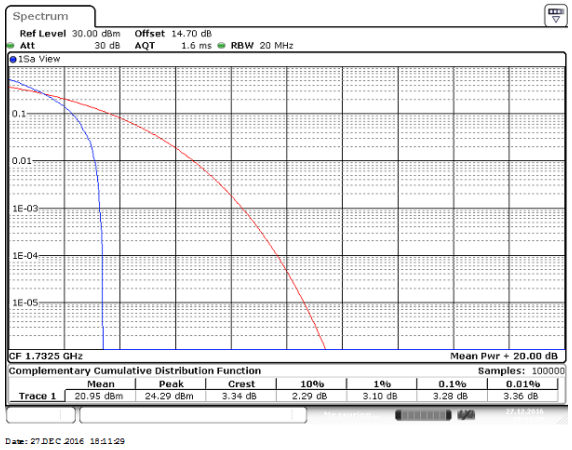
BW: 15MHz / QPSK / RB= 1, RB Offset = 0
Mid CH



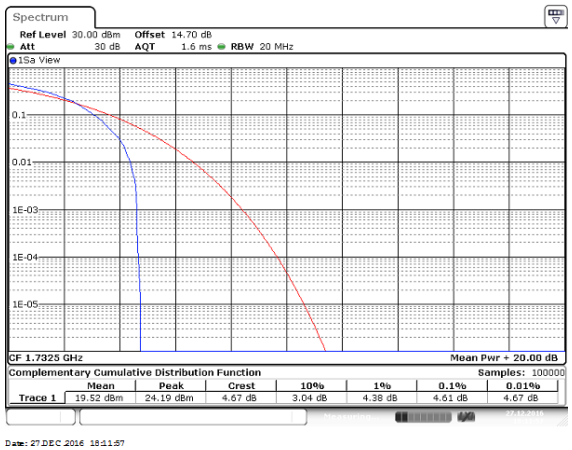
BW: 15MHz / 16QAM / RB= 1, RB Offset = 0
Mid CH



BW: 20MHz / QPSK / RB= 1, RB Offset = 0
Mid CH



BW: 20MHz / 16QAM / RB= 1, RB Offset = 0
Mid CH



3.5 BANDEDGE MEASURMENT

3.5.1 Test Limit

FCC §27.53(h), Band 4

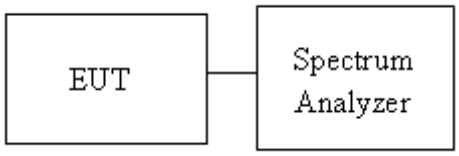
For operations in the, 1710-1755 MHz band, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 $\log_{10}$ (P) dB.

3.5.2 Test Procedure

KDB 971168 D01 v02r02 - Section 6.0

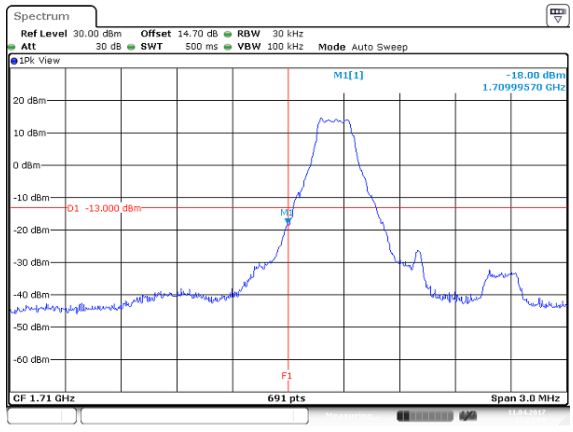
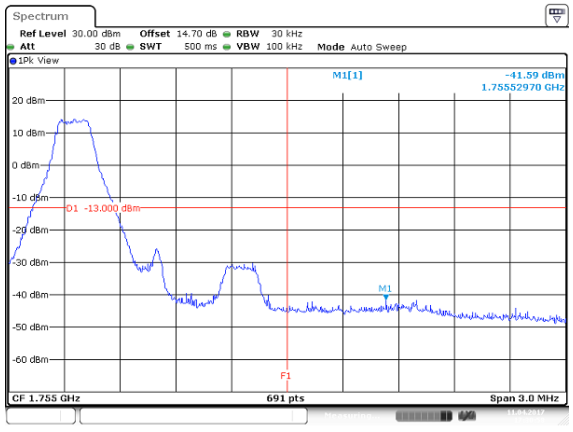
1. RBW ≥ 1% of the emission bandwidth.
2. VBW ≥ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

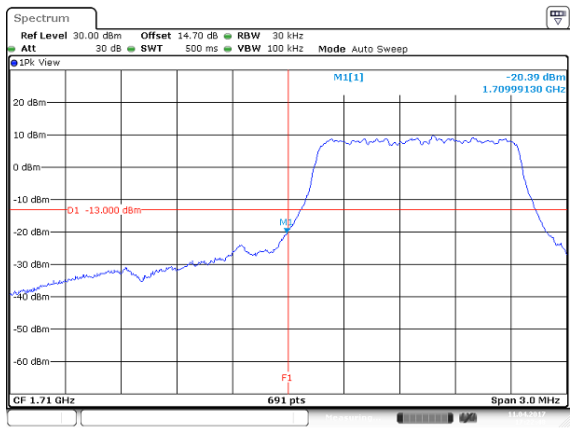
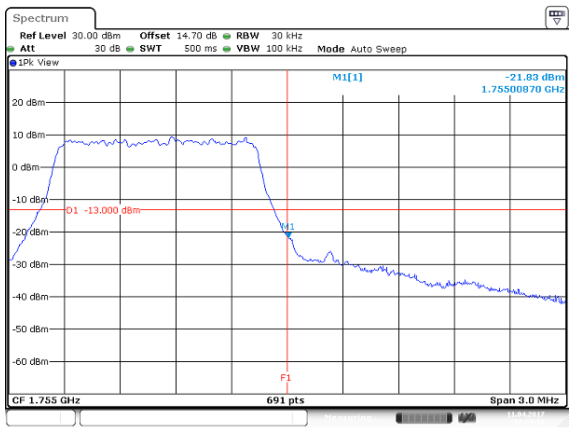
3.5.3 Test Setup

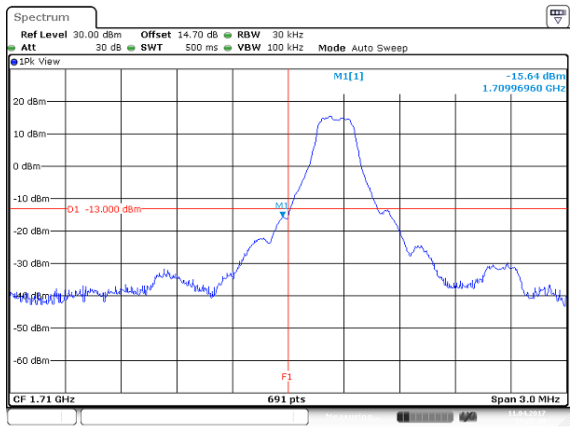
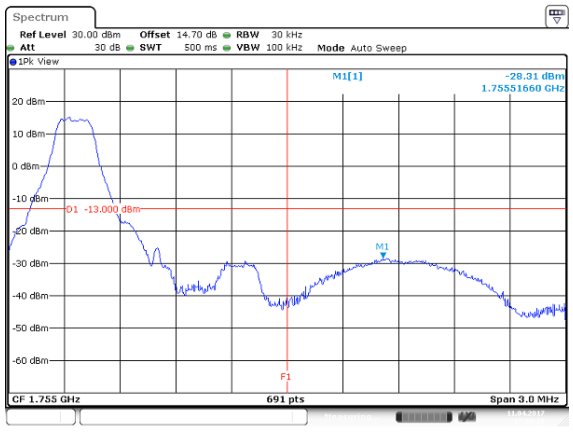


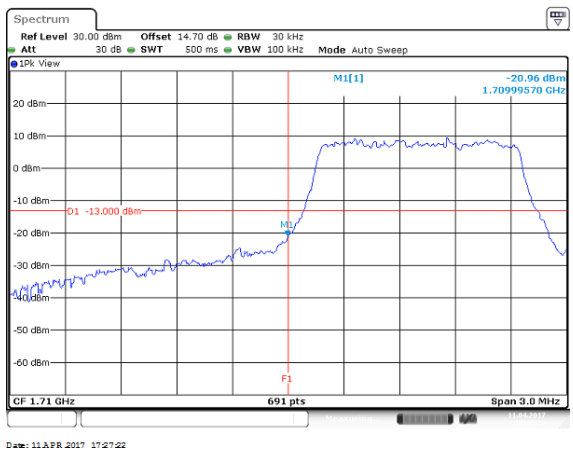
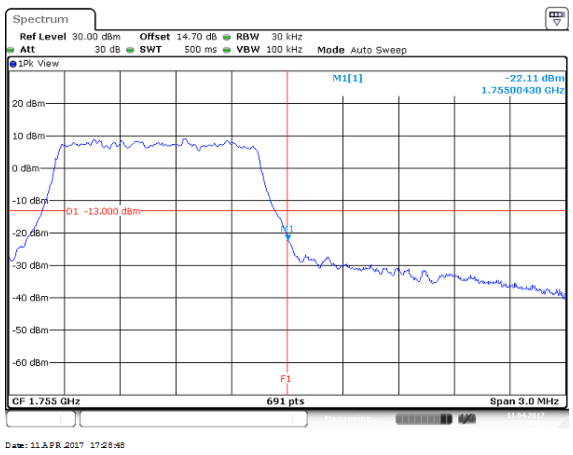
3.5.4 Test Result

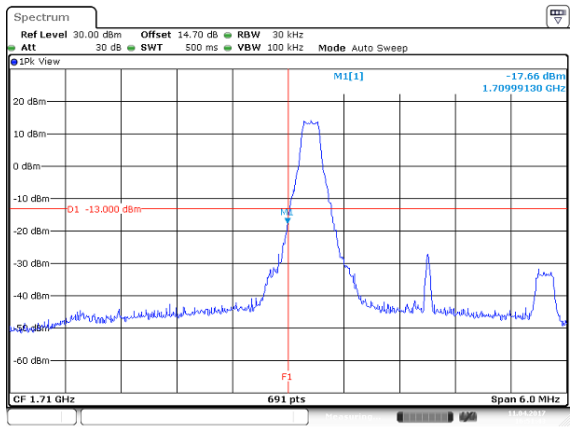
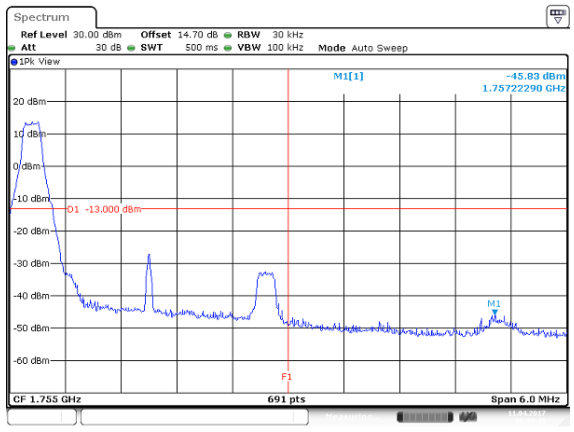
Test Data

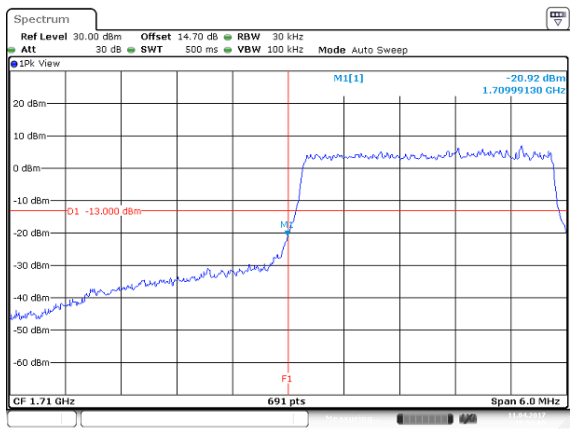
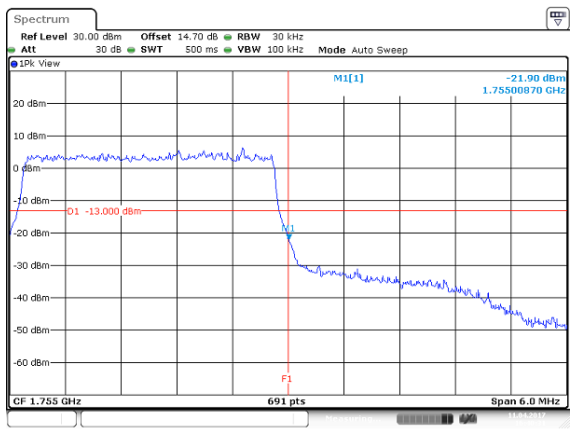
BW: 1.4MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	High CH
	

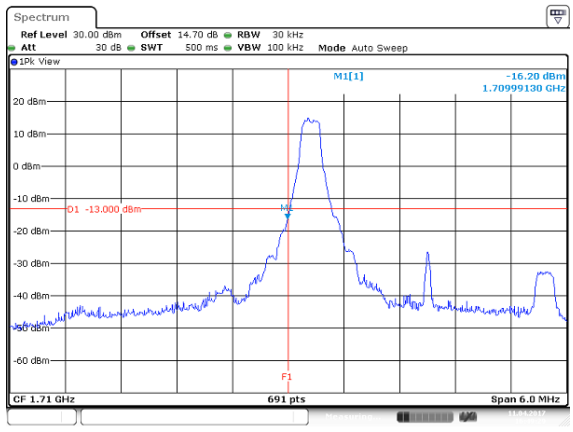
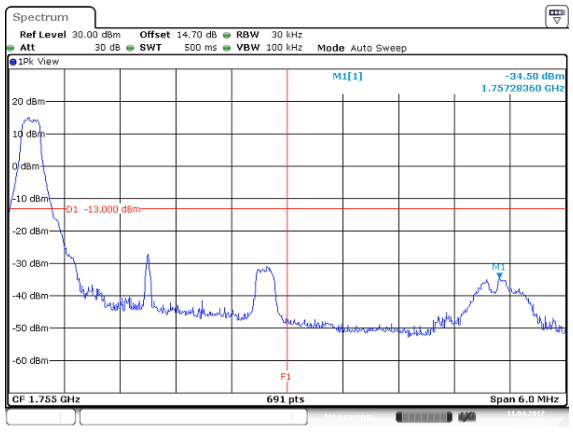
BW: 1.4MHz / QPSK / RB= 6, RB Offset = 0	
Low CH	High CH
	

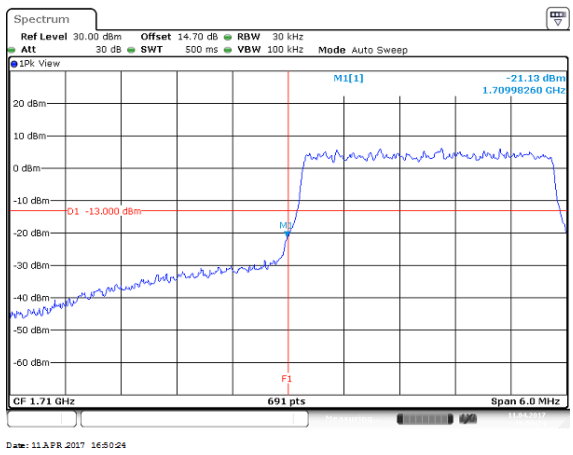
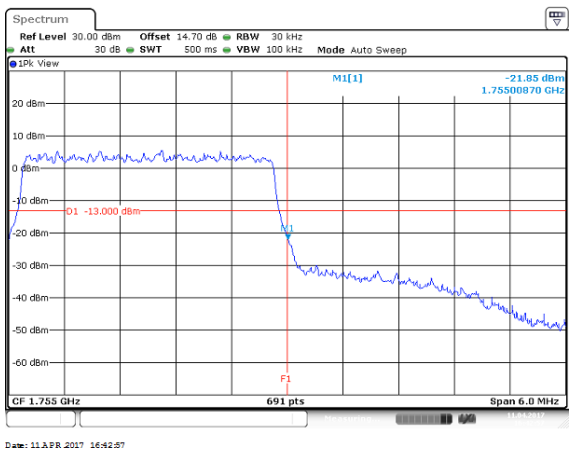
BW: 1.4MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

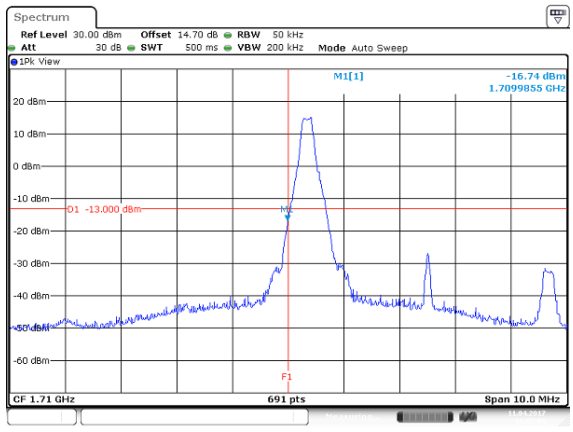
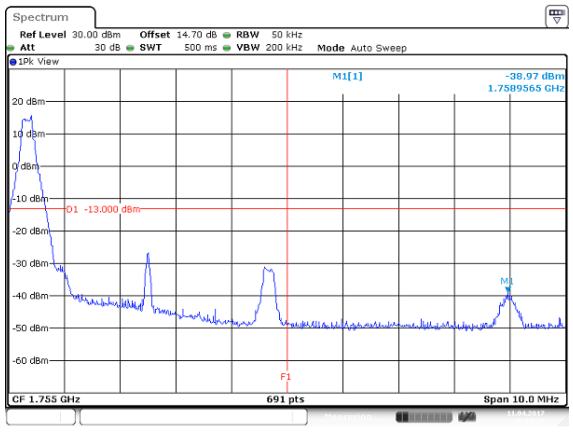
BW: 1.4MHz / 16QAM / RB= 6, RB Offset = 0	
Low CH	**High CH**
	

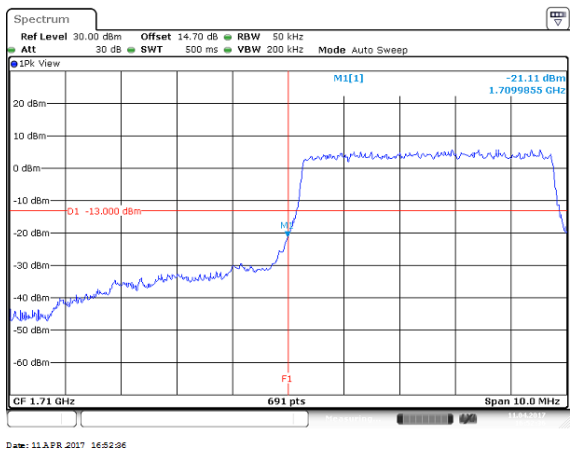
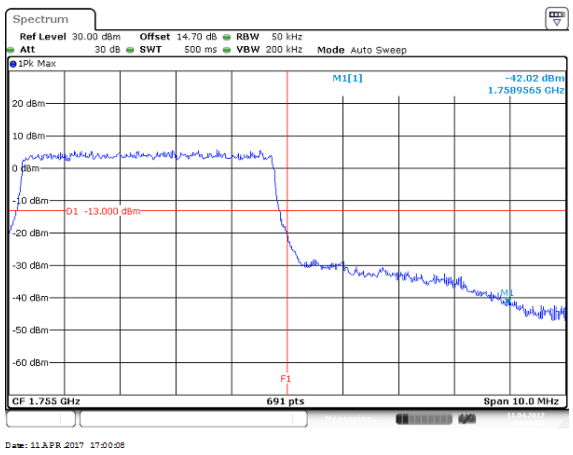
BW: 3MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

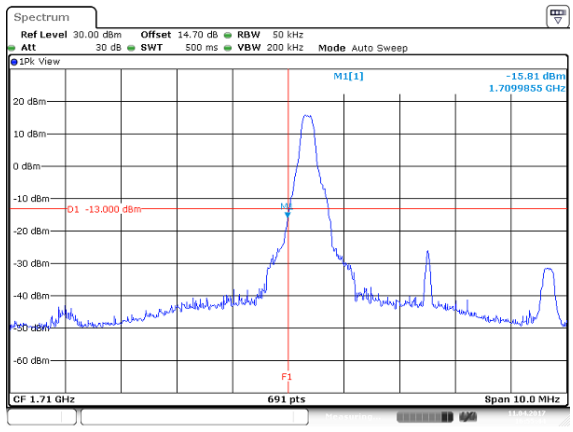
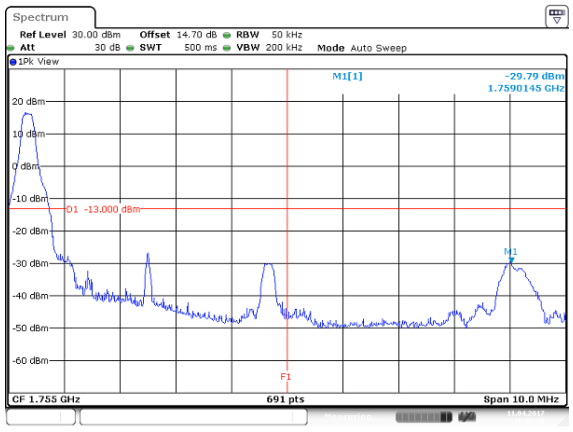
BW: 3MHz / QPSK / RB= 15, RB Offset = 0	
Low CH	**High CH**
	

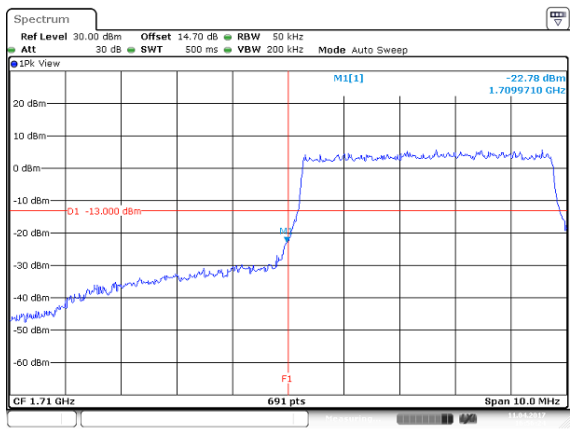
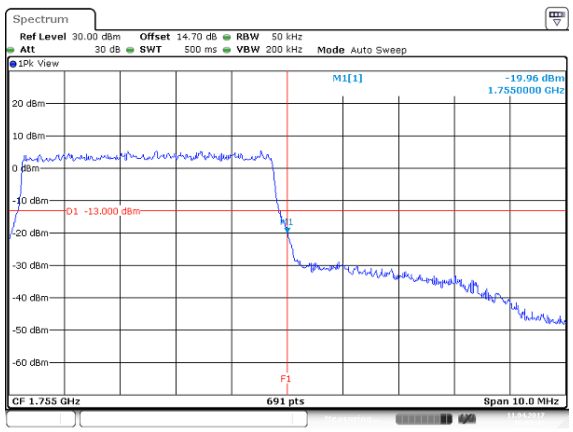
BW: 3MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

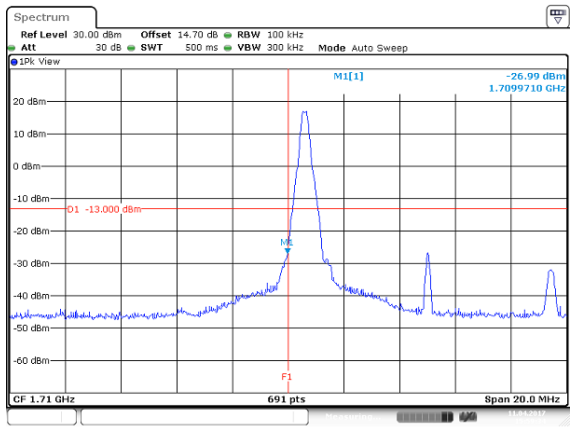
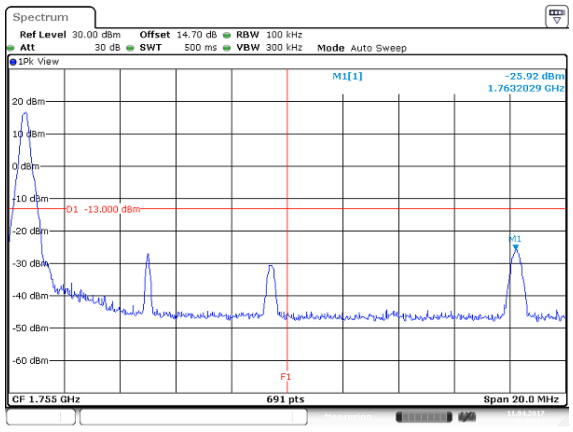
BW: 3MHz / 16QAM / RB= 15, RB Offset = 0	
Low CH	**High CH**
	

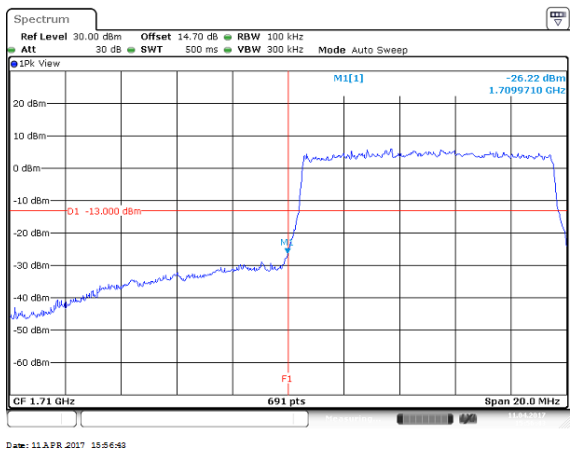
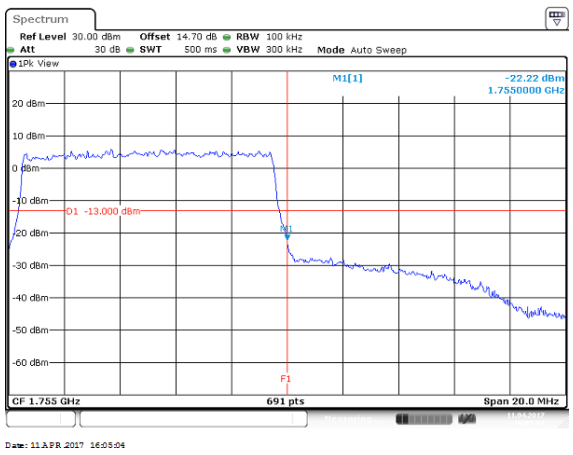
BW: 5MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

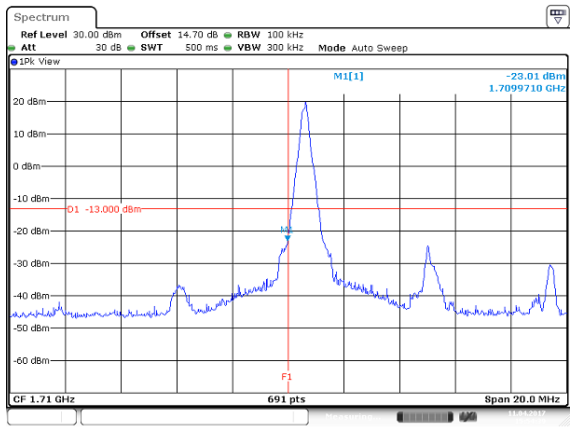
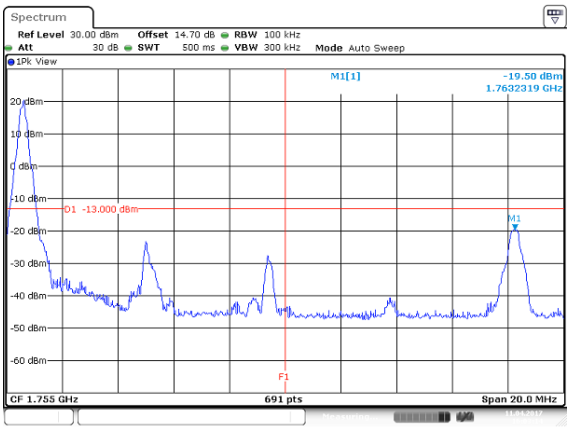
BW: 5MHz / QPSK / RB= 25, RB Offset = 0	
Low CH	**High CH**
	

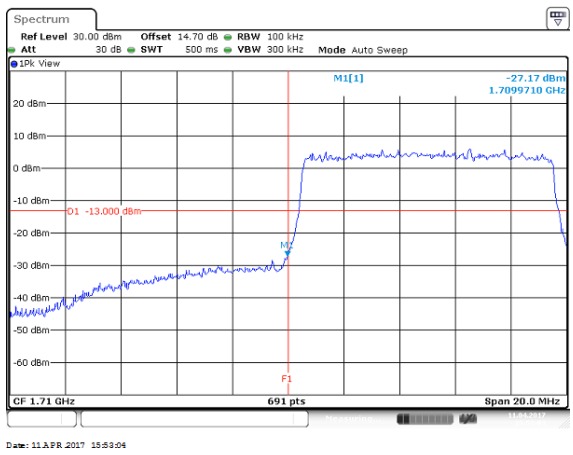
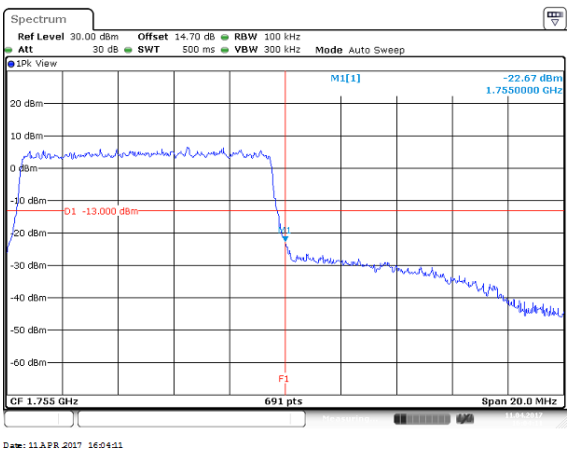
BW: 5MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

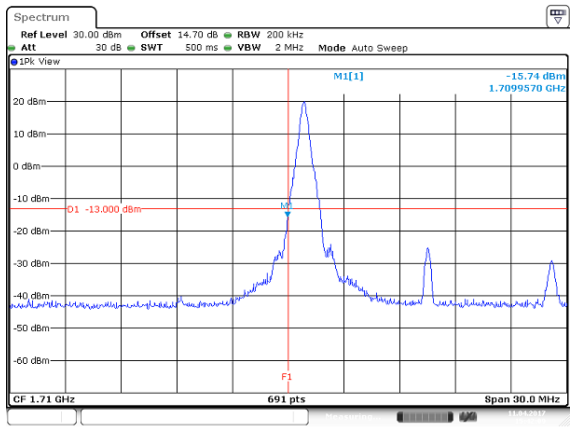
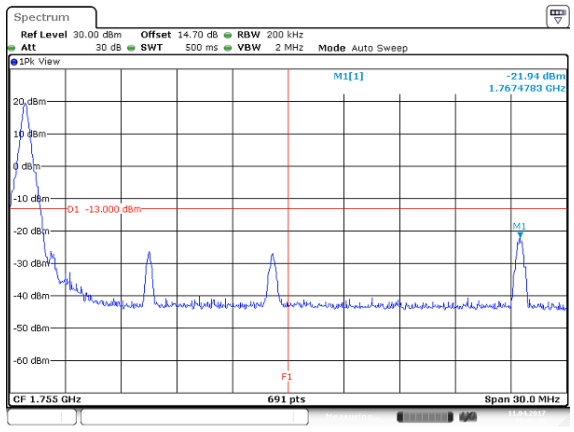
BW: 5MHz / 16QAM / RB= 25, RB Offset = 0	
Low CH	**High CH**
	

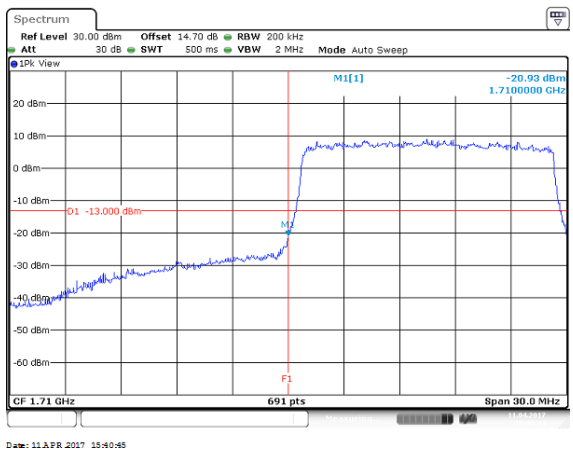
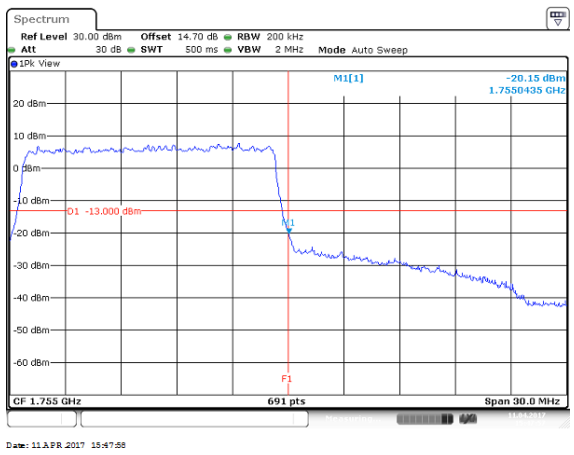
BW: 10MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

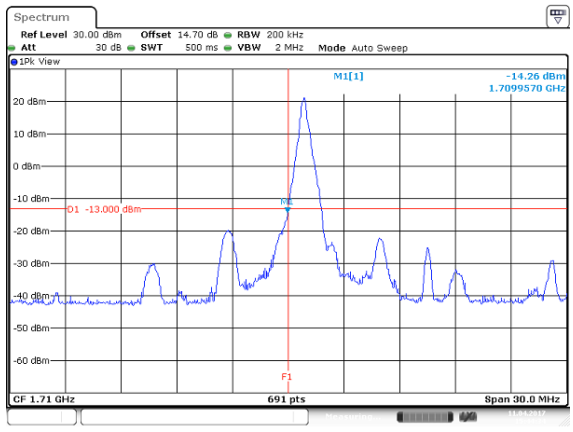
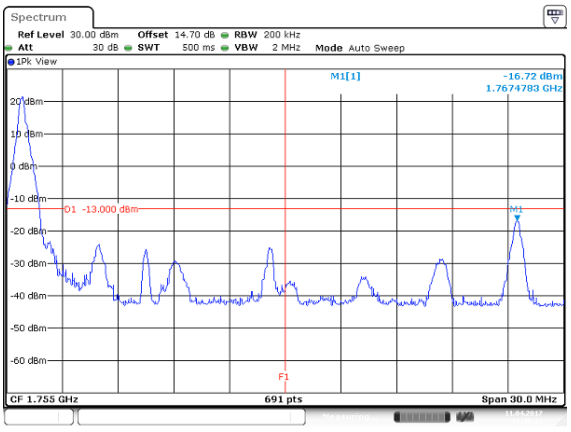
BW: 10MHz / QPSK / RB= 50, RB Offset = 0	
Low CH	**High CH**
	

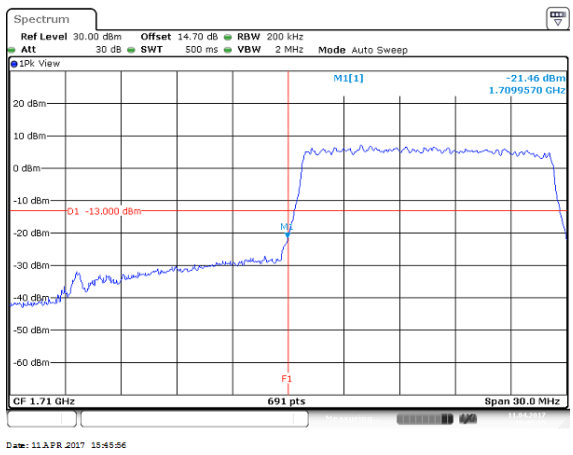
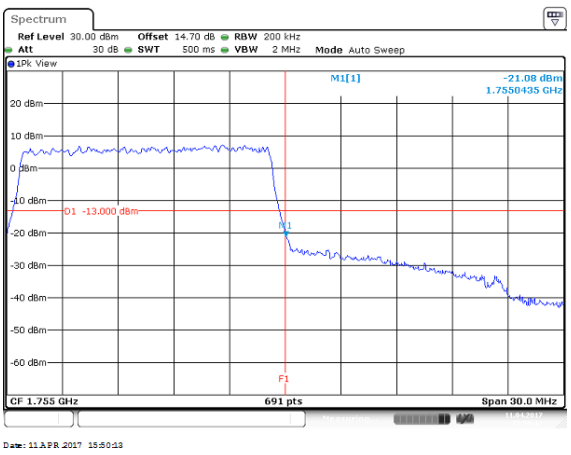
BW: 10MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

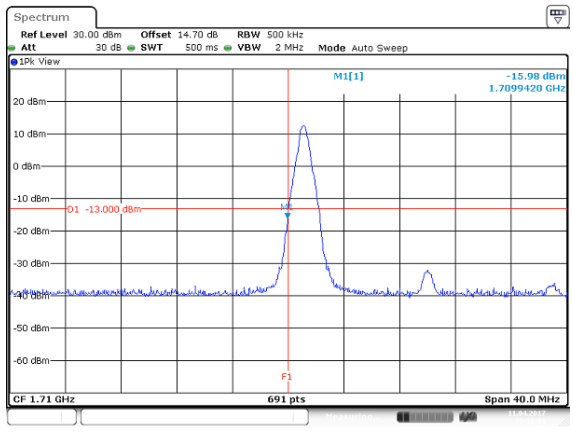
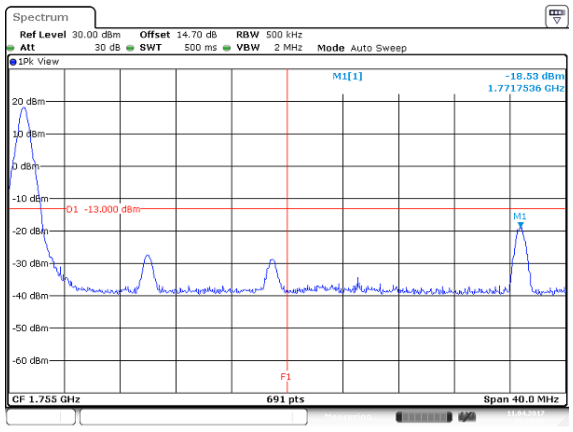
BW: 10MHz / 16QAM / RB= 50, RB Offset = 0	
Low CH	**High CH**
	

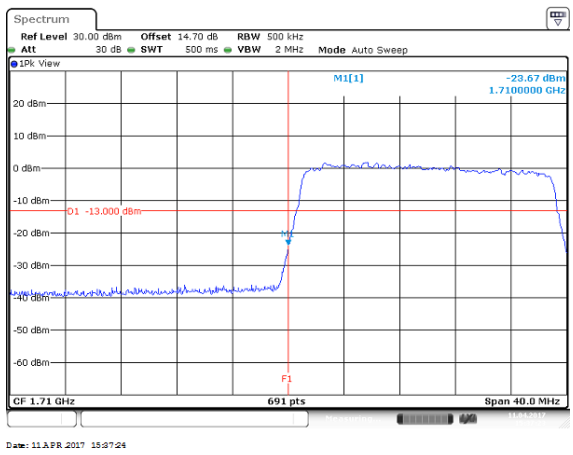
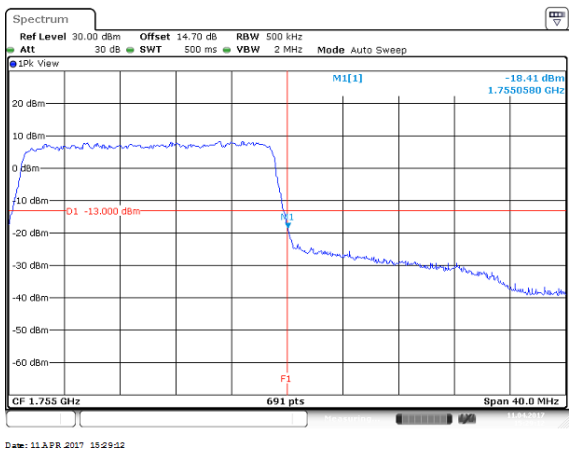
BW: 15MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

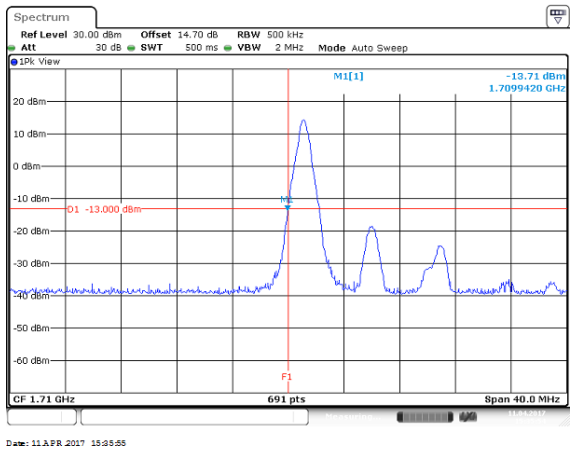
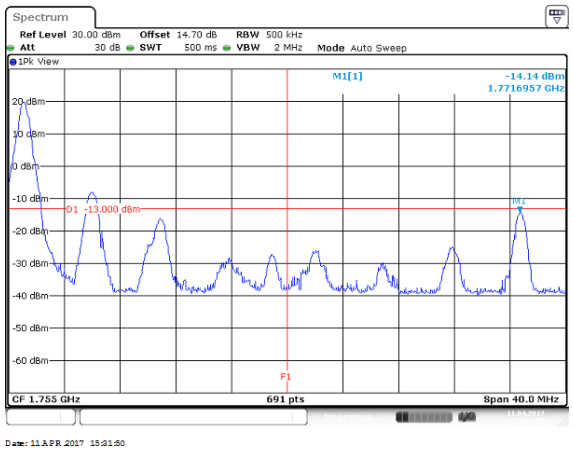
BW: 15MHz / QPSK / RB= 75, RB Offset = 0	
Low CH	**High CH**
	

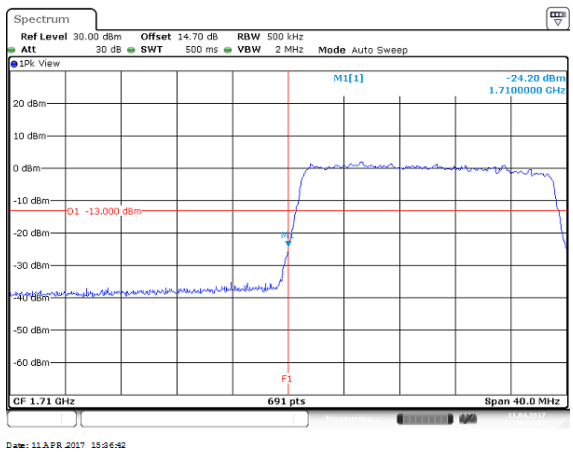
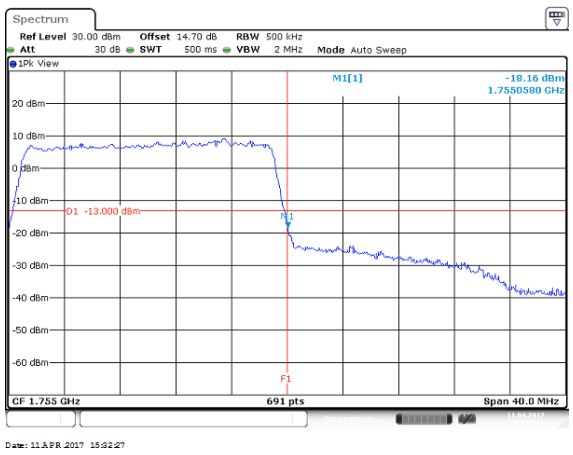
BW: 15MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

BW: 15MHz / 16QAM / RB= 75, RB Offset = 0	
Low CH	**High CH**
	

BW: 20MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

BW: 20MHz / QPSK / RB= 100, RB Offset = 0	
Low CH	**High CH**
	

BW: 20MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**High CH**
	

BW: 20MHz / 16QAM / RB= 100, RB Offset = 0	
Low CH	**High CH**
	

3.6 CONDUCTED SPURIOUS EMISSION

3.6.1 Test Limit

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

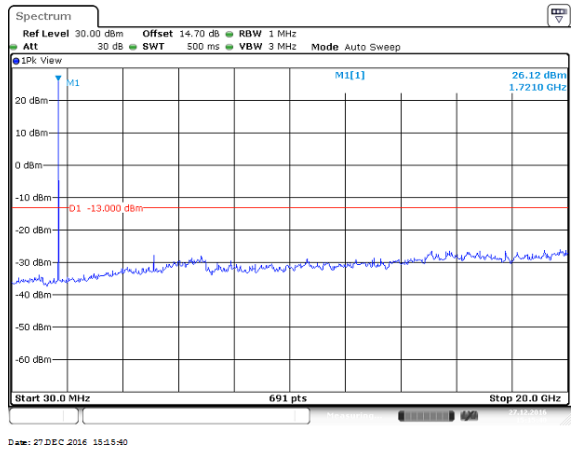
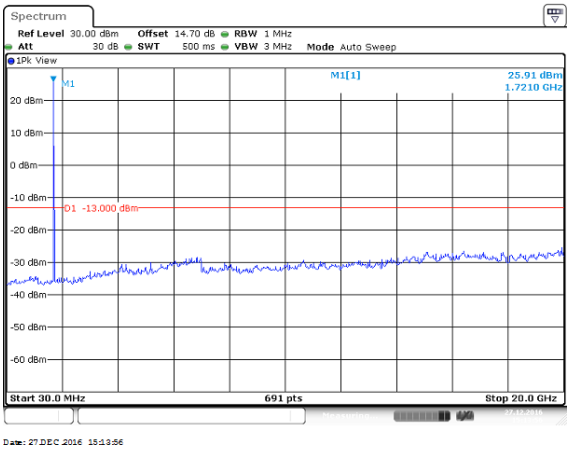
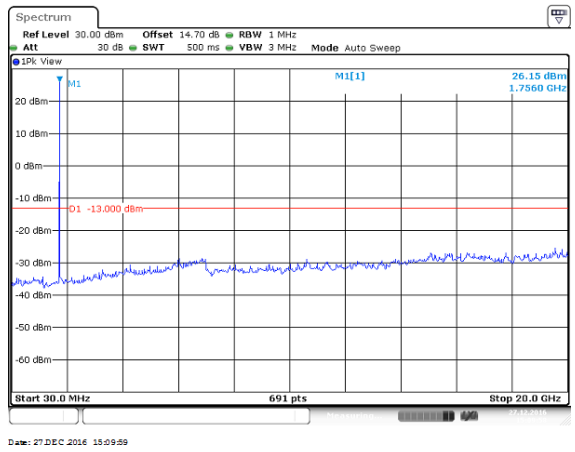
3.6.2 Test Procedure

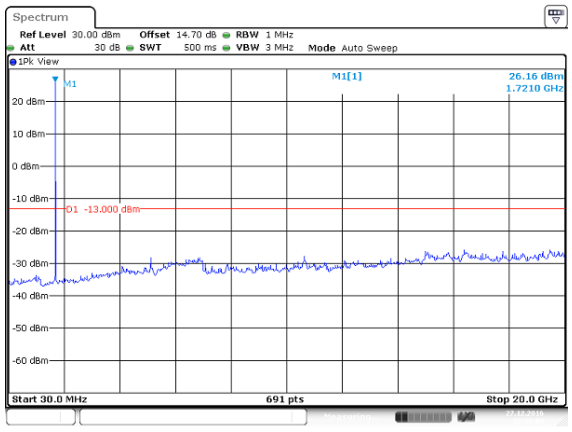
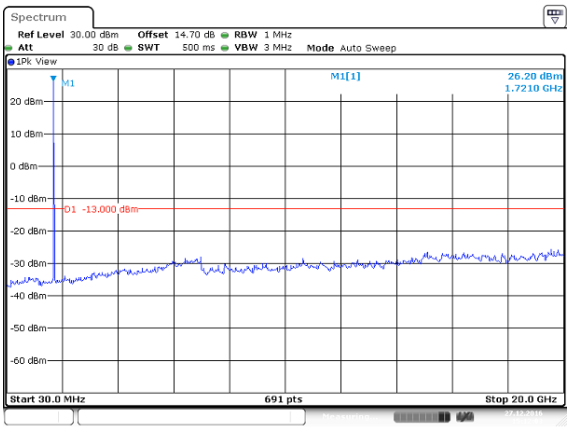
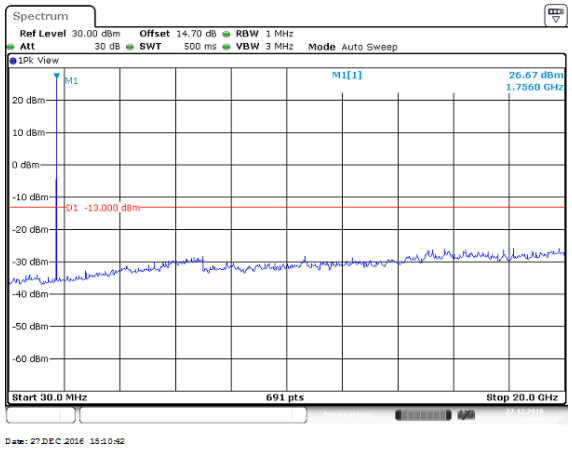
1. According to KDB 971168 D01, section 6.0
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.

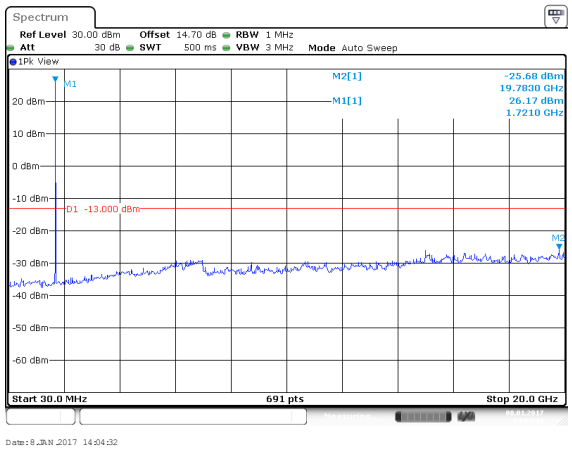
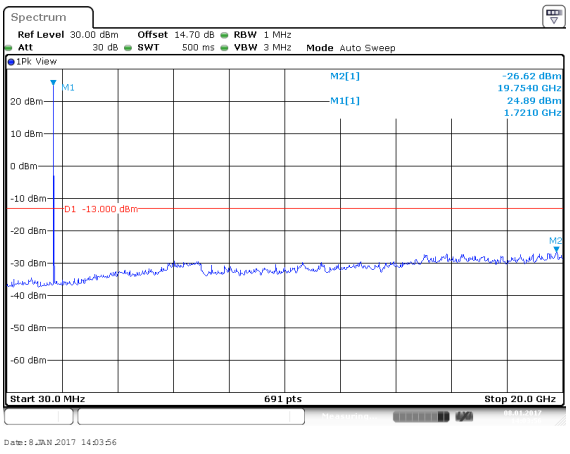
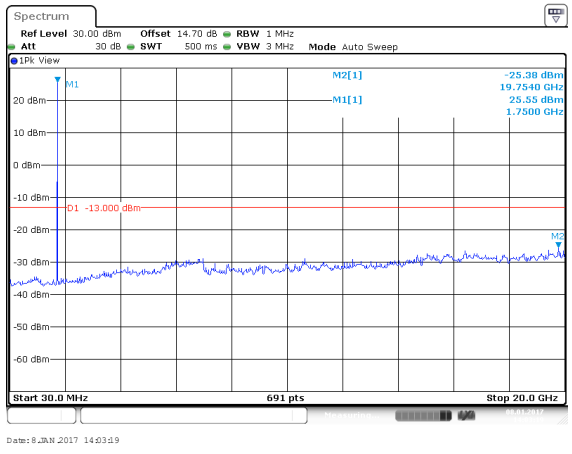
The fundamental frequency should be excluded against the limit in operating band

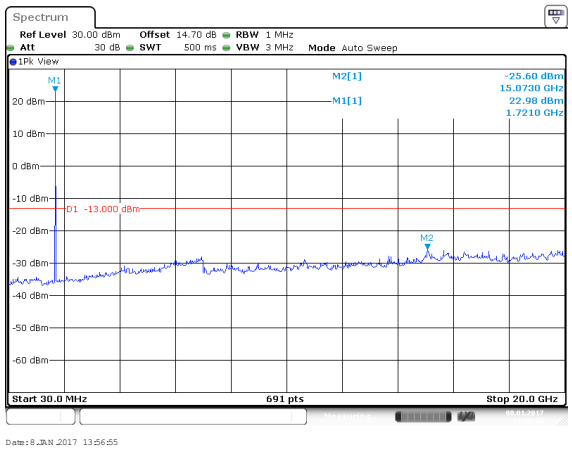
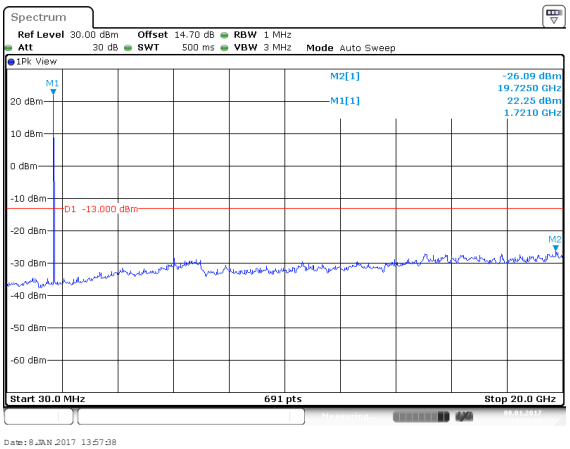
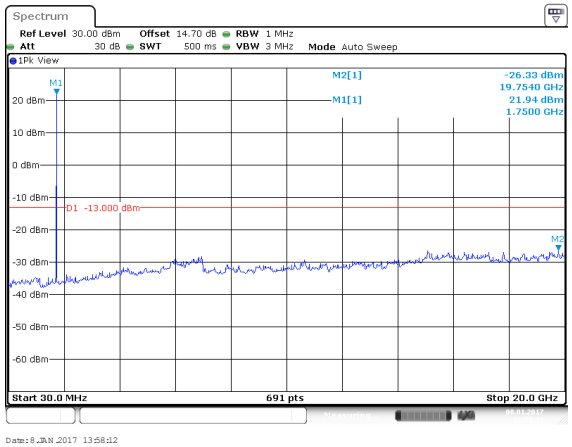
3.6.3 Test Result

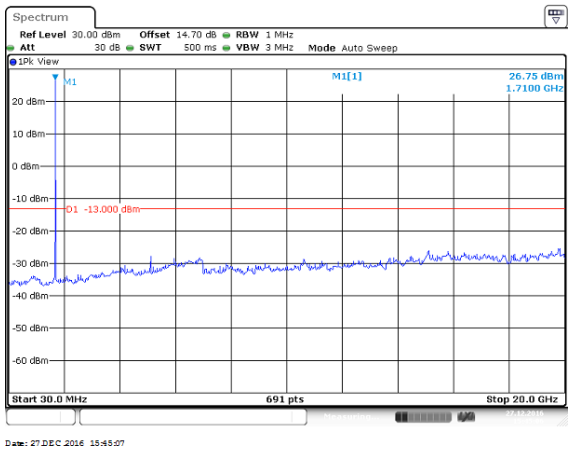
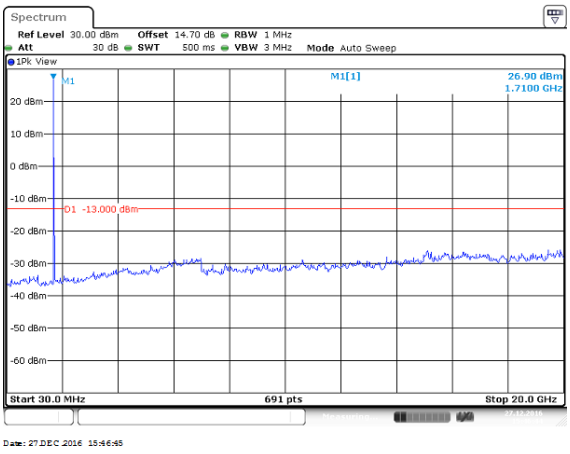
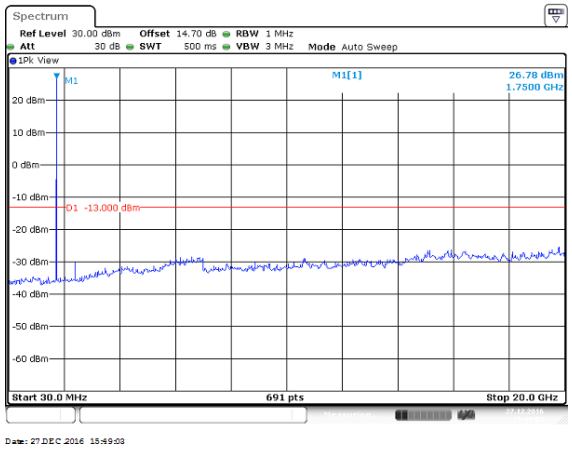
Test Data

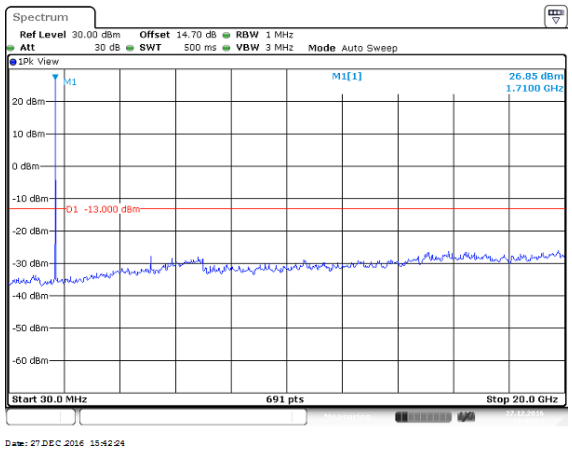
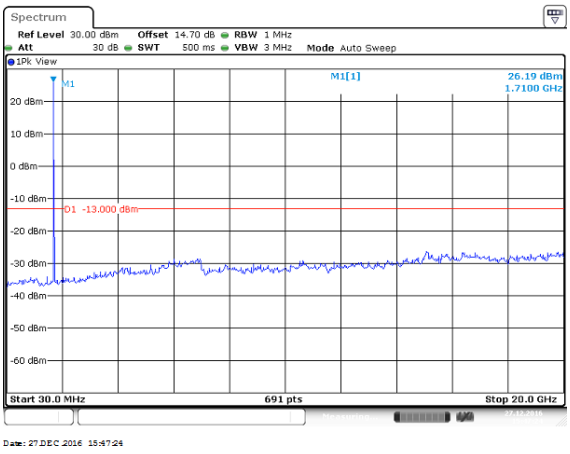
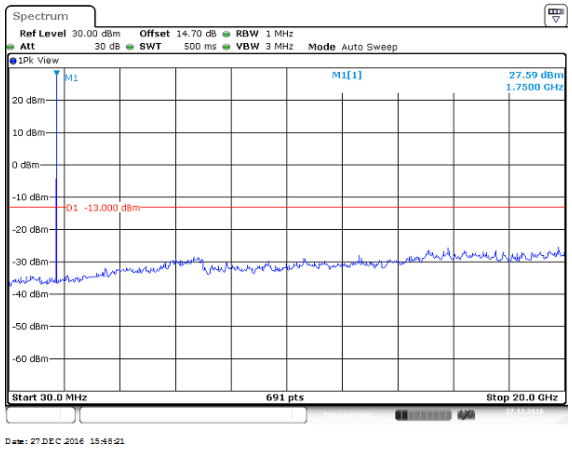
BW: 1.4MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

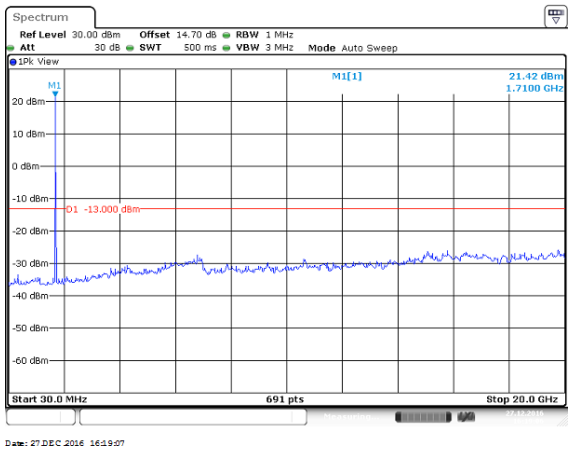
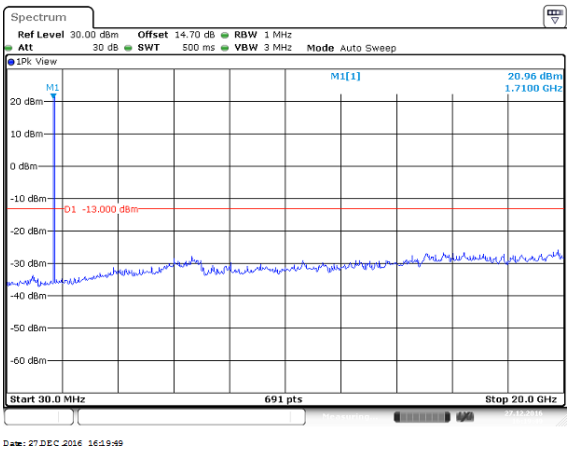
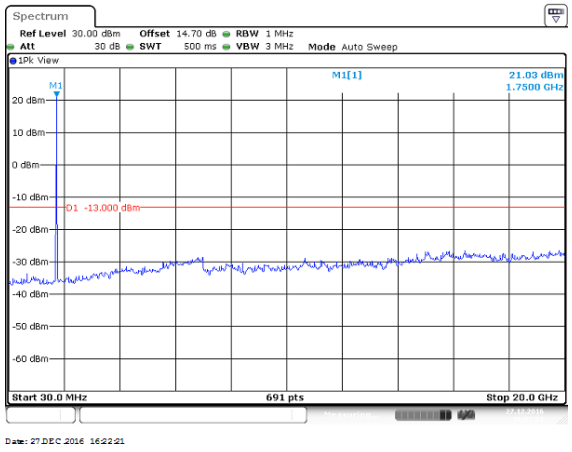
BW: 1.4MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

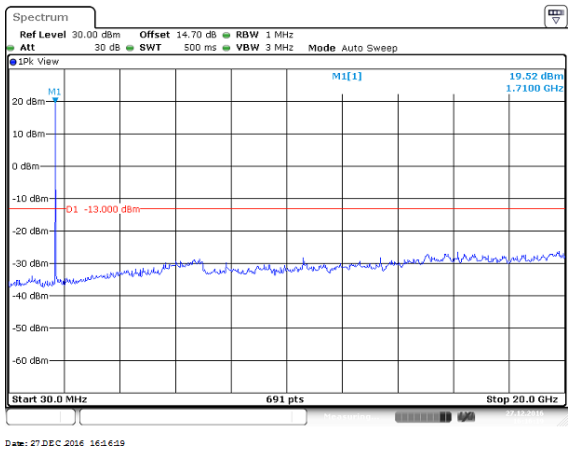
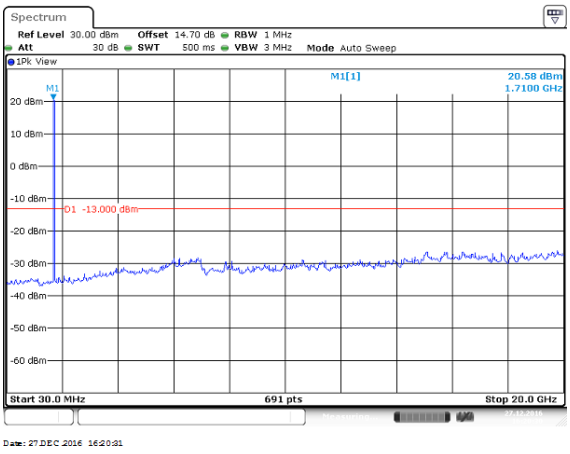
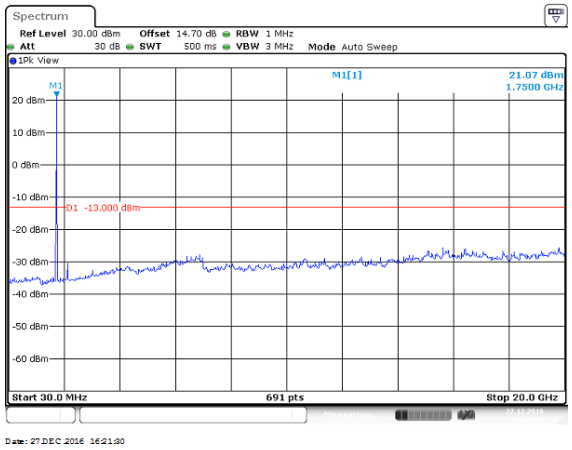
BW: 3MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

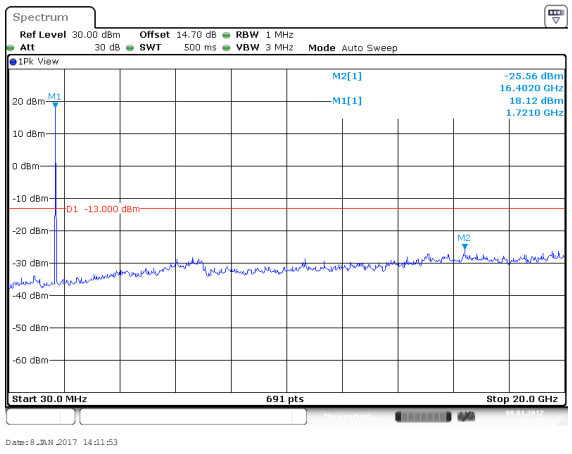
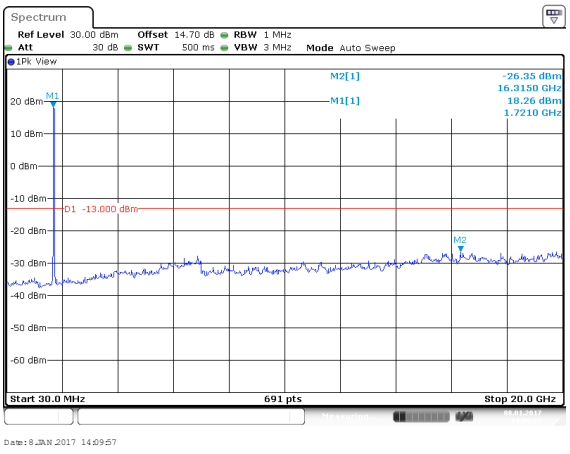
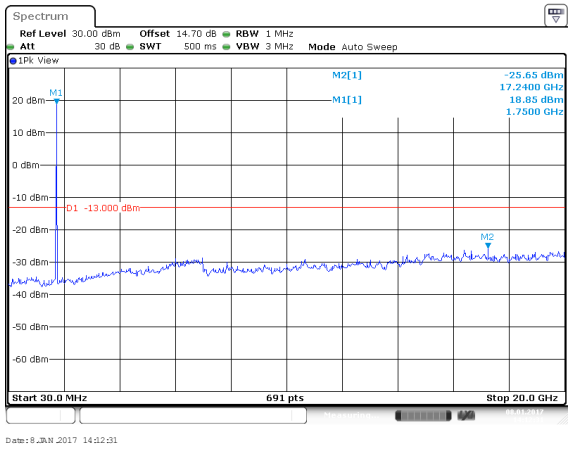
BW: 3MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

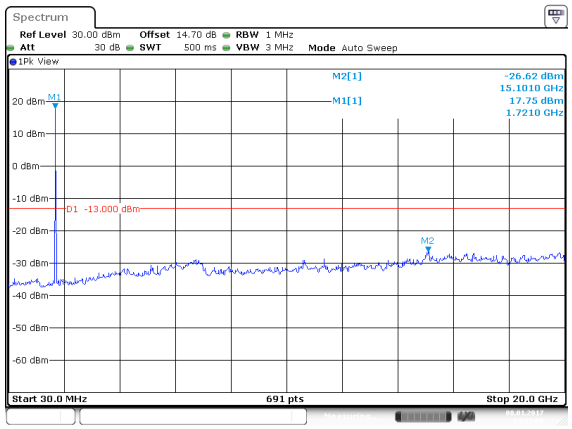
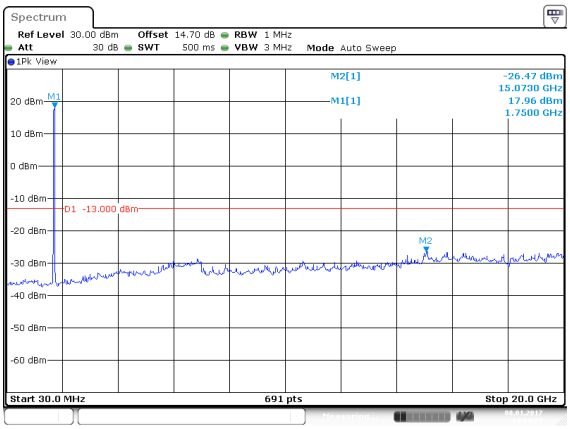
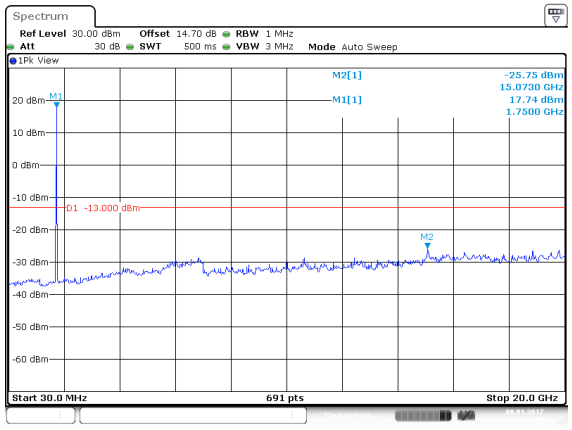
BW: 5MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

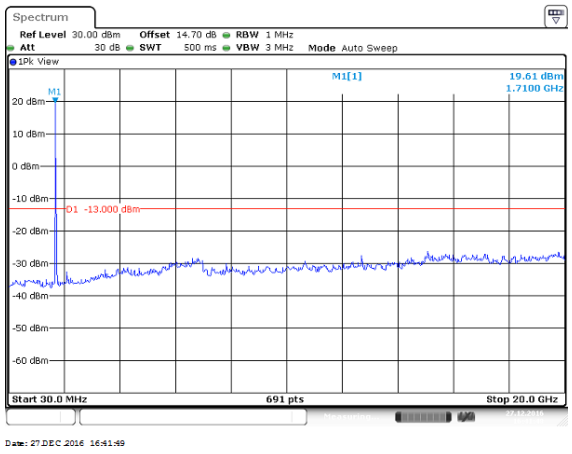
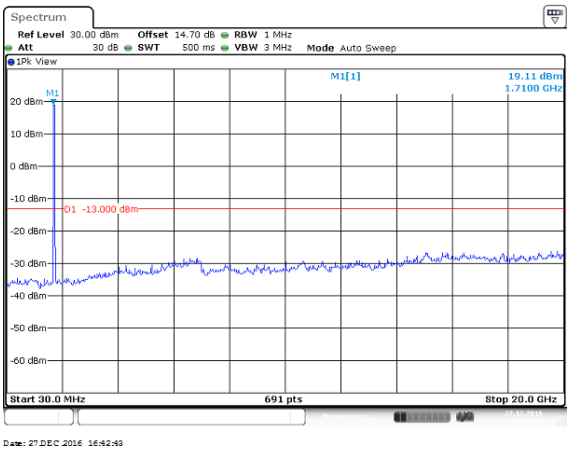
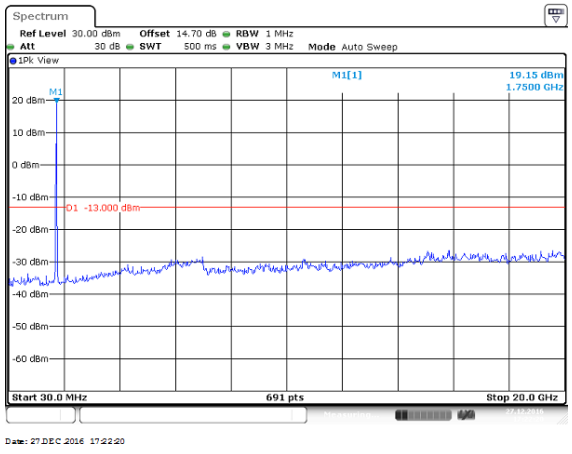
BW: 5MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

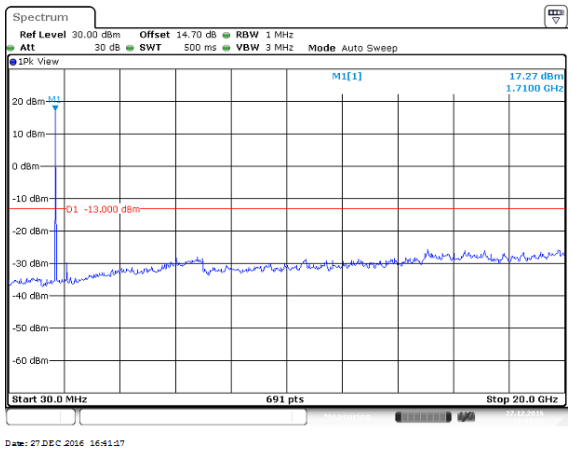
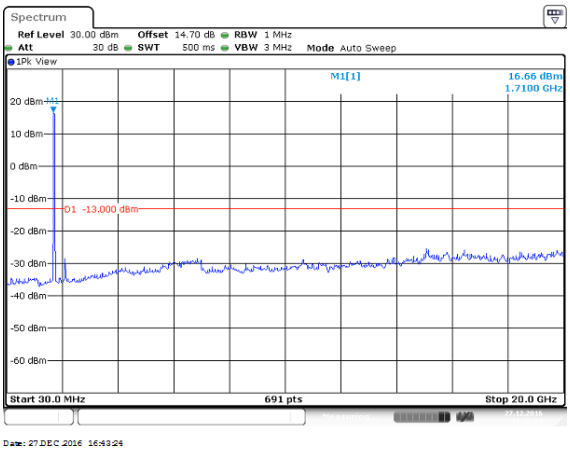
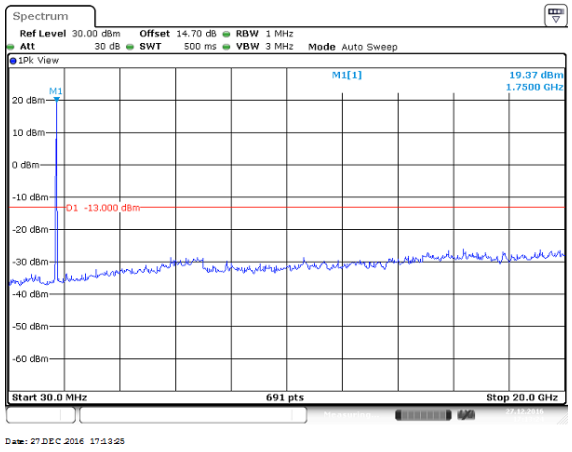
BW: 10 MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

BW: 10MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

BW: 15 MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

BW: 15MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

BW: 20MHz / QPSK / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

BW: 20MHz / 16QAM / RB= 1, RB Offset = 0	
Low CH	**Mid CH**
	
High CH	
	

3.7 RADIATION EMISSION

3.7.1 Test Limit

According to FCC §27.53(h), Band 4

General protection levels. Except as otherwise specified below, for operations in the 1710-1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

Limit Line: -13dBm

3.7.2 Test Procedure

According to KDB 971168 D01. section 5.8 and TIA-603-D:2010 section 2.2.12,.

1. The EUT was placed on a turntable

(1) Below 1G : 0.8m

(2) Above 1G : 1.5m

(3) EUT set 3m from the receiving antenna

(4) The table was rotated 360 degrees of the highest spurious emission to determine the position.

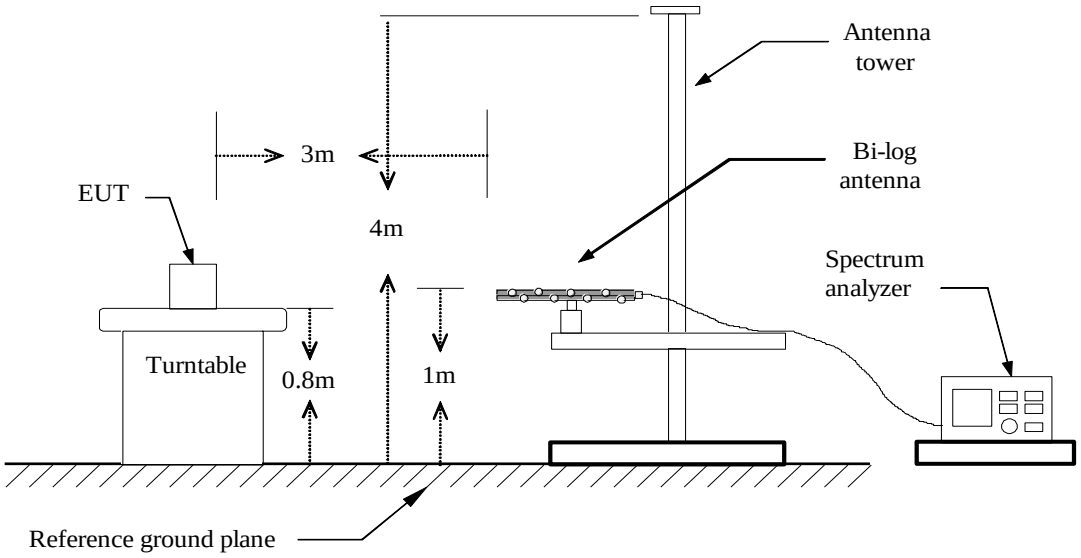
2. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.

3. A horn antenna was driven by a signal generator.

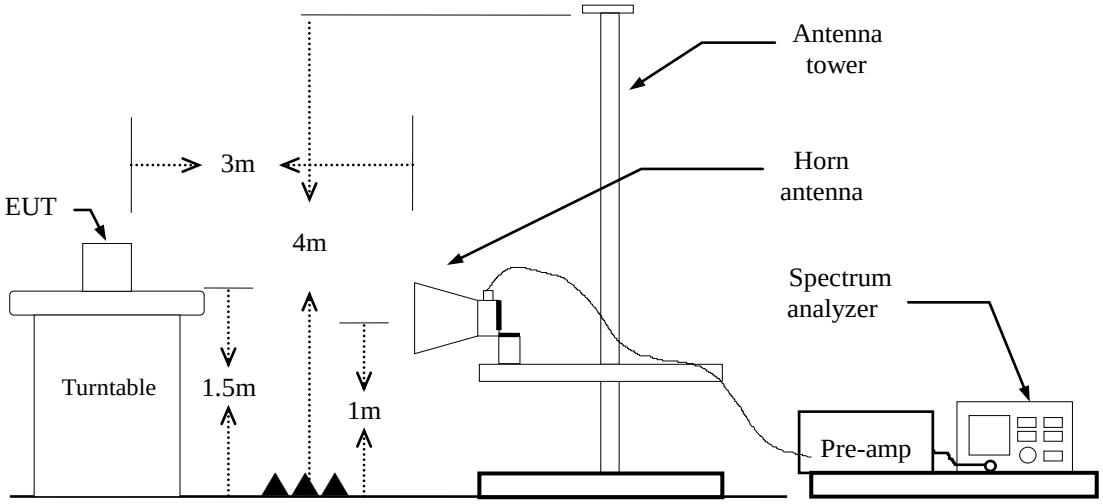
4. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

3.7.3 Test Setup

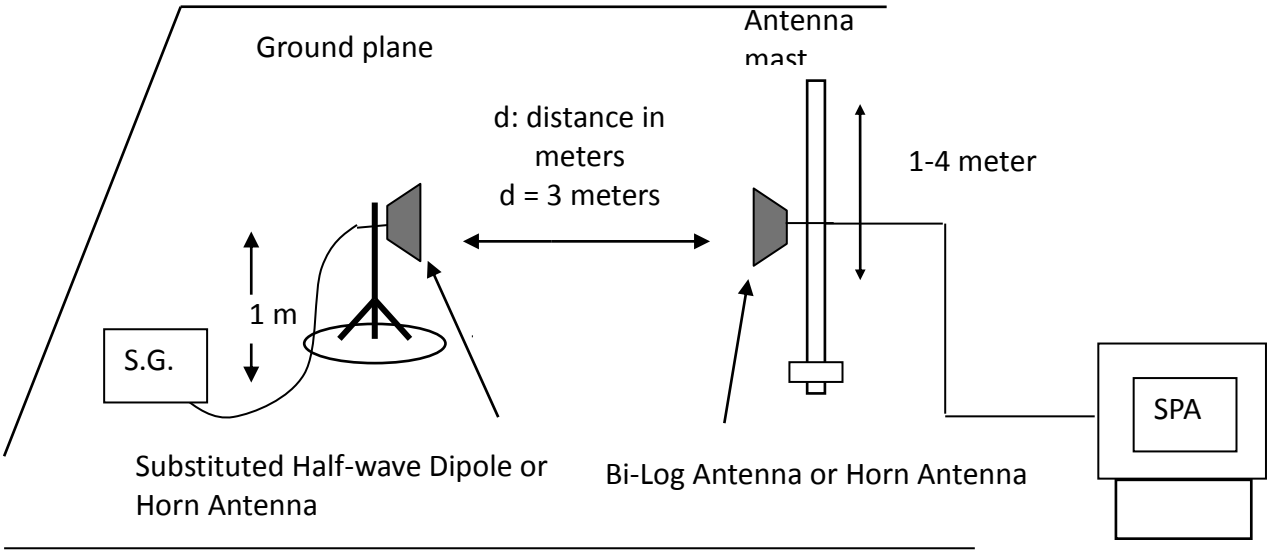
Below 1GHz



Above 1 GHz



Substituted Method Test Set-up



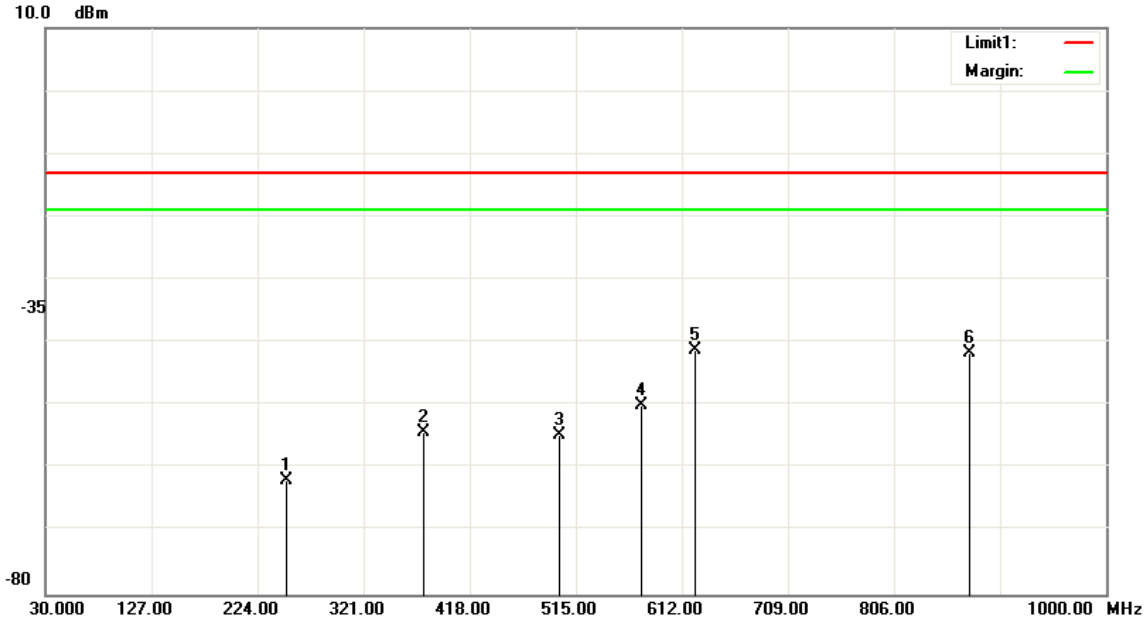
3.7.4 Test Result

Test Data

LTE Band 4

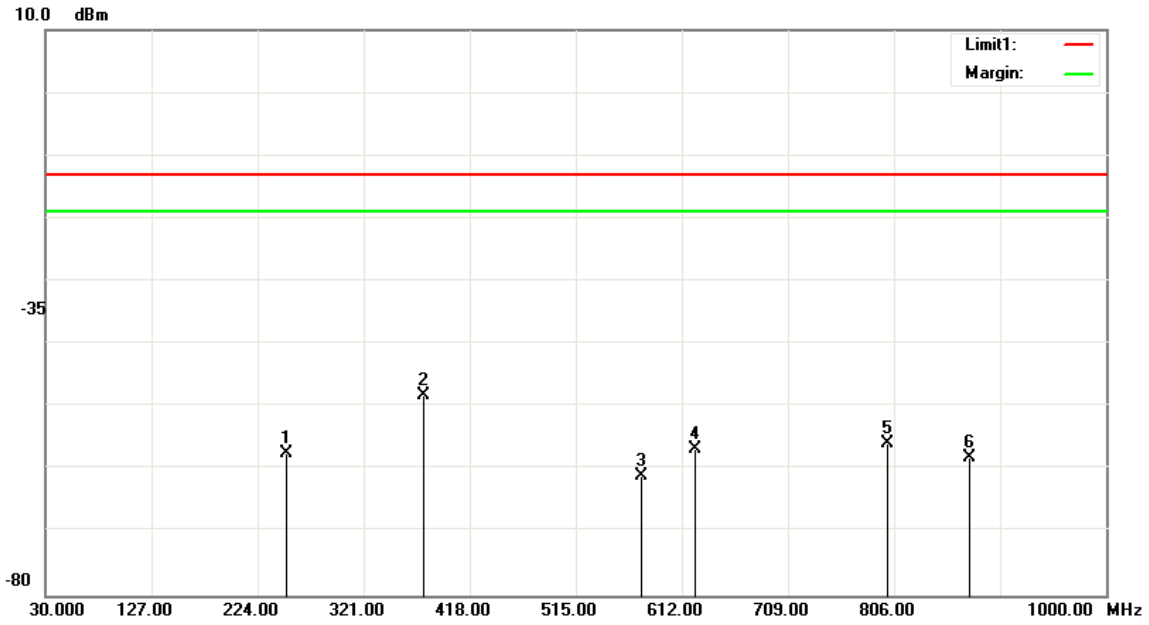
Below 1G Test Data

Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Below 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Qusi-Peak	Test Voltage	120Vac / 60Hz



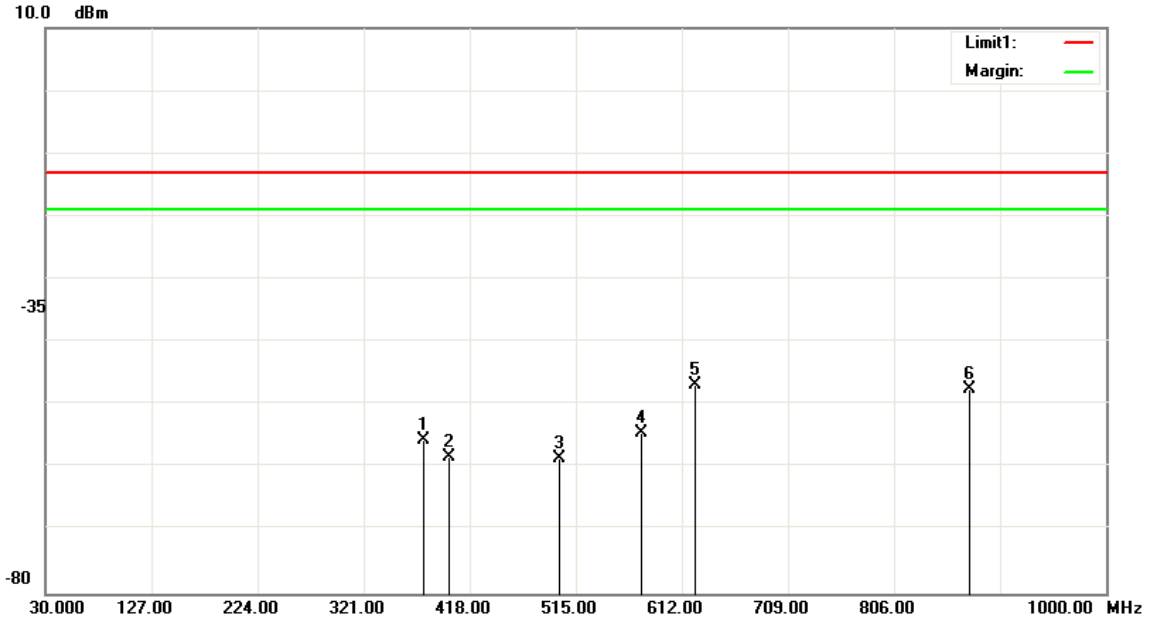
Frequency (MHz)	S.G. (dBm)	Ant Gain (dBi)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
250.1900	-69.19	7.4	-61.79	-13.00	-48.79	Peak
375.3200	-61.48	7.2	-54.28	-13.00	-41.28	Peak
500.4500	-61.39	6.8	-54.59	-13.00	-41.59	Peak
575.1400	-52.68	2.61	-50.07	-13.00	-37.07	Peak
624.6100	-40.97	-0.17	-41.14	-13.00	-28.14	Peak
874.8700	-42.84	1.31	-41.53	-13.00	-28.53	Peak

Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Below 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Qusi-Peak	Test Voltage	120Vac / 60Hz



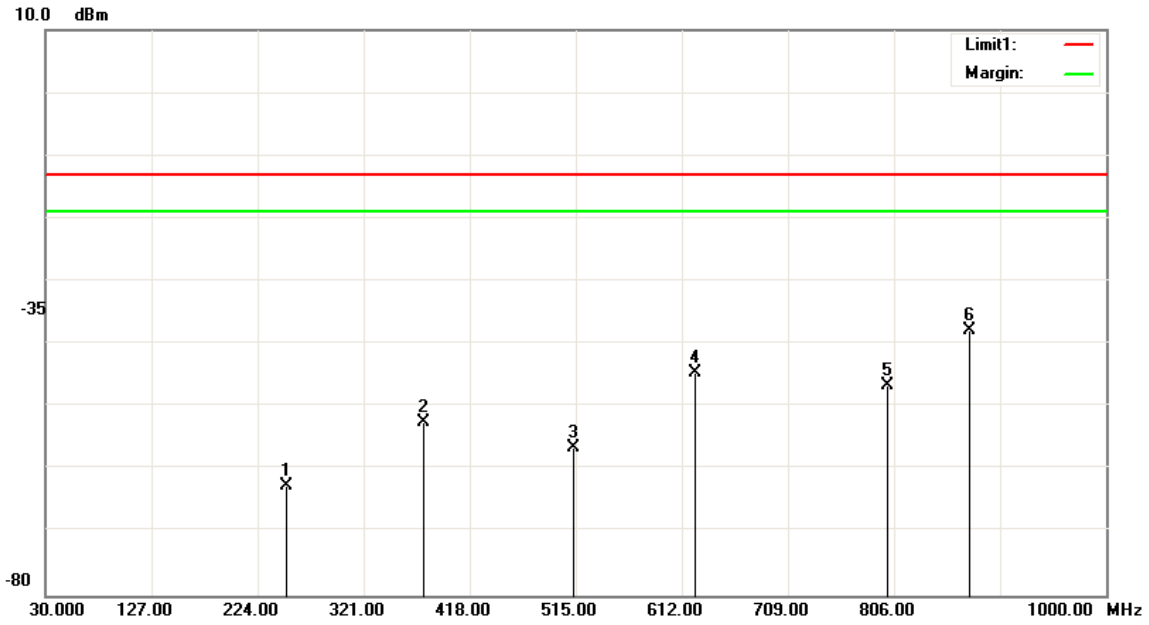
Frequency (MHz)	S.G. (dBm)	Ant Gain (dBi)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
250.1900	-64.68	7.4	-57.28	-13.00	-44.28	Peak
375.3200	-55.34	7.2	-48.14	-13.00	-35.14	Peak
575.1400	-63.7	2.61	-61.09	-13.00	-48.09	Peak
624.6100	-56.52	-0.17	-56.69	-13.00	-43.69	Peak
800.1800	-57.14	1.29	-55.85	-13.00	-42.85	Peak
874.8700	-59.26	1.31	-57.95	-13.00	-44.95	Peak

Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Below 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Qusi-Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	S.G. (dBm)	Ant Gain (dBi)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
375.3200	-62.73	7.2	-55.53	-13.00	-42.53	Peak
399.5700	-65.58	7.3	-58.28	-13.00	-45.28	Peak
500.4500	-65.21	6.8	-58.41	-13.00	-45.41	Peak
575.1400	-57.17	2.61	-54.56	-13.00	-41.56	Peak
624.6100	-46.54	-0.17	-46.71	-13.00	-33.71	Peak
874.8700	-48.79	1.31	-47.48	-13.00	-34.48	Peak

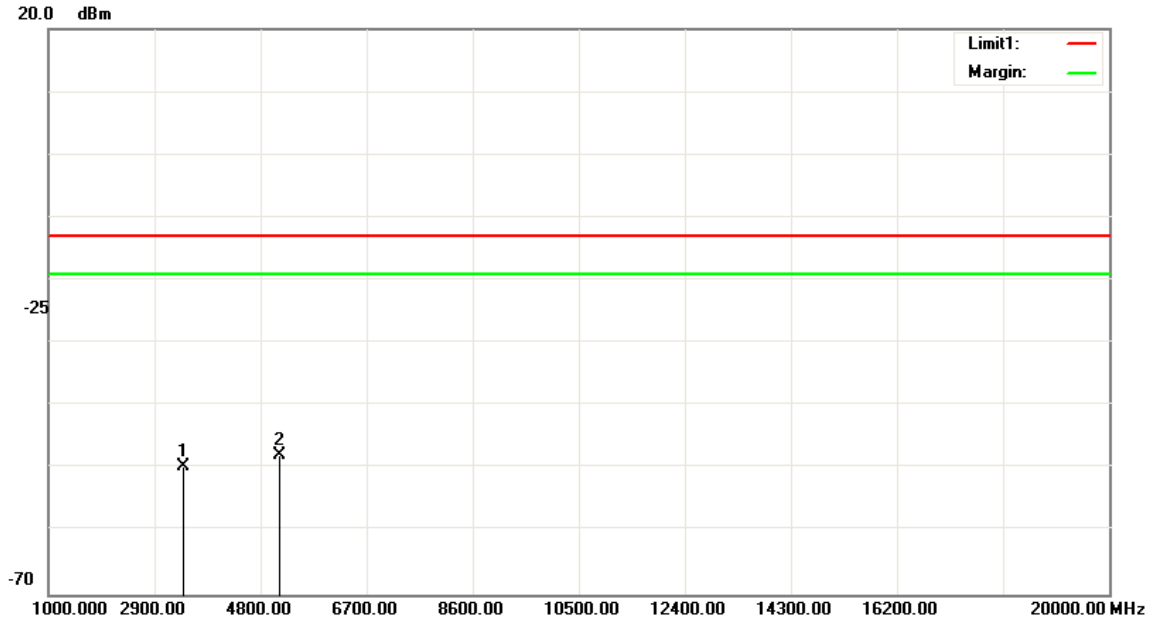
Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Below 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Qusi-Peak	Test Voltage	120Vac / 60Hz



Frequency (MHz)	S.G. (dBm)	Ant Gain (dBi)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
250.1900	-69.93	7.4	-62.53	-13.00	-49.53	Peak
375.3200	-59.69	7.2	-52.49	-13.00	-39.49	Peak
512.6900	-63.24	6.81	-56.43	-13.00	-43.43	Peak
624.6100	-44.35	-0.17	-44.52	-13.00	-31.52	Peak
800.1800	-47.86	1.29	-46.57	-13.00	-33.57	Peak
874.8700	-39.18	1.31	-37.87	-13.00	-24.87	Peak

Above 1G Test Data

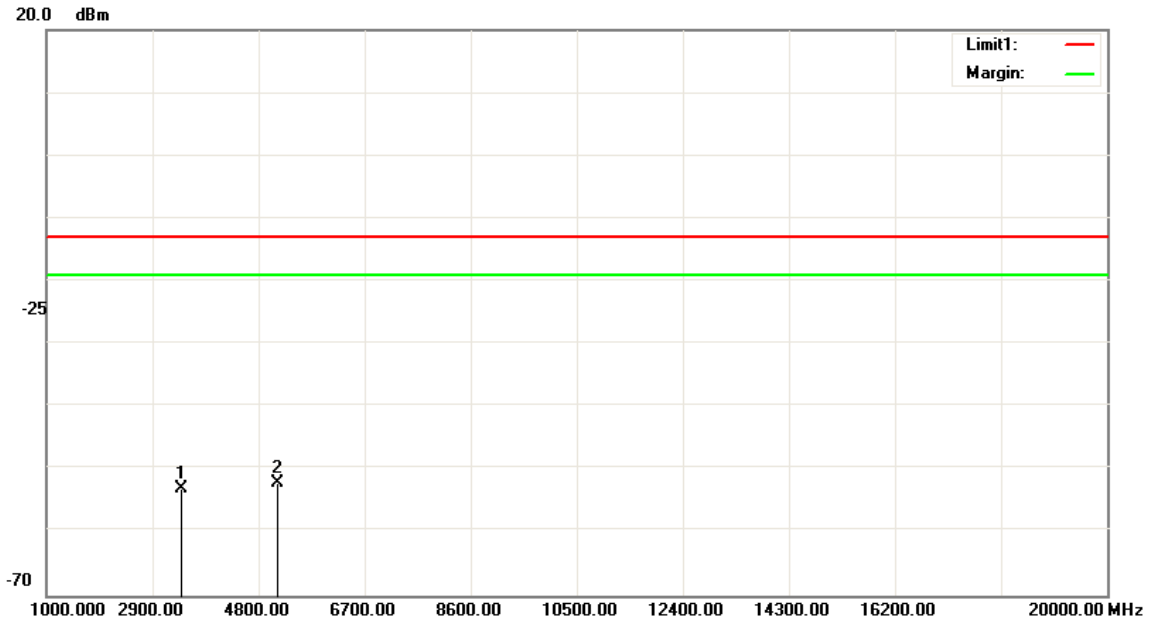
Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3422.000	-61.83	12.3	-49.53	-13.00	-36.53	Peak
5137.000	-60.52	12.61	-47.91	-13.00	-34.91	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

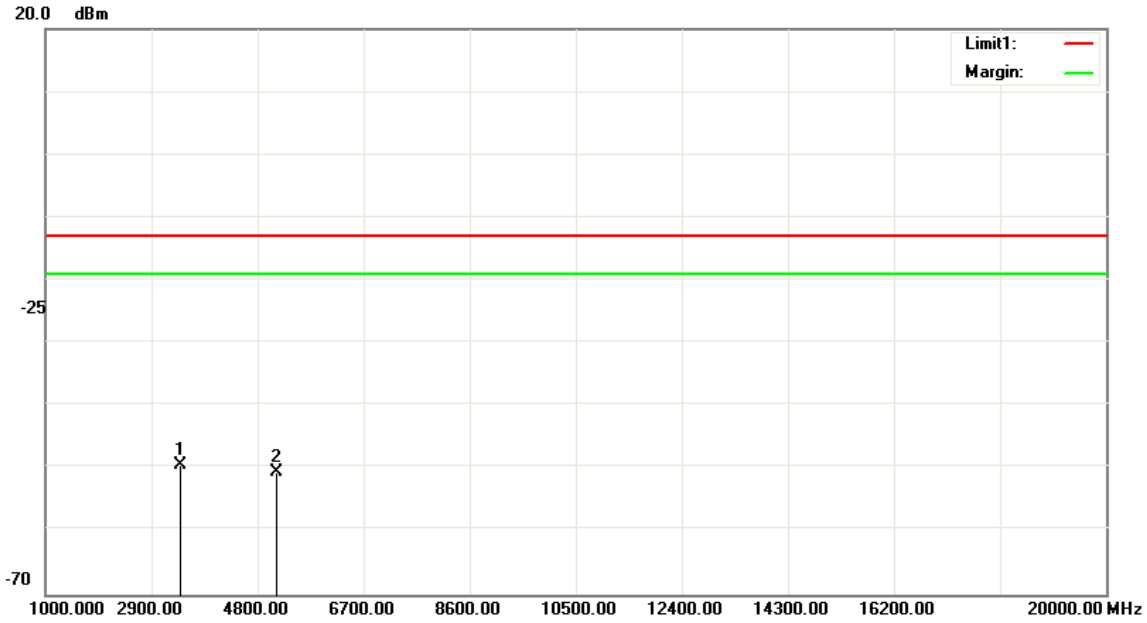
Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3422.000	-65.23	12.3	-52.93	-13.00	-39.93	Peak
5137.000	-64.66	12.61	-52.05	-13.00	-39.05	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

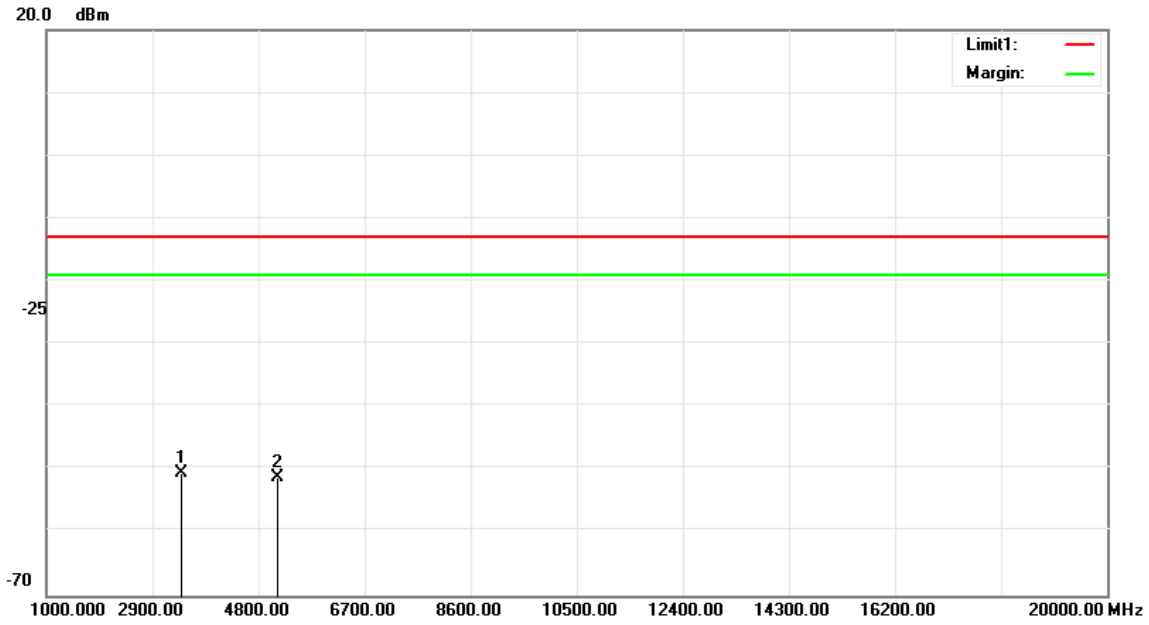
Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3422.000	-61.66	12.3	-49.36	-13.00	-36.36	Peak
5137.000	-63.1	12.61	-50.49	-13.00	-37.49	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

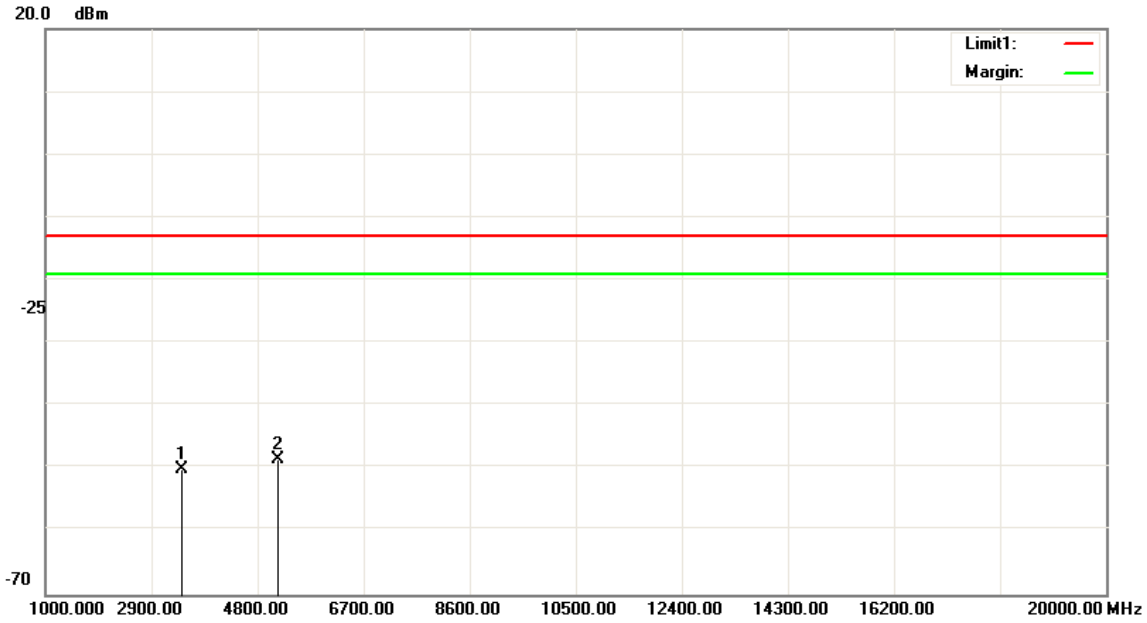
Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 Low CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3422.000	-62.86	12.3	-50.56	-13.00	-37.56	Peak
5137.000	-63.88	12.61	-51.27	-13.00	-38.27	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

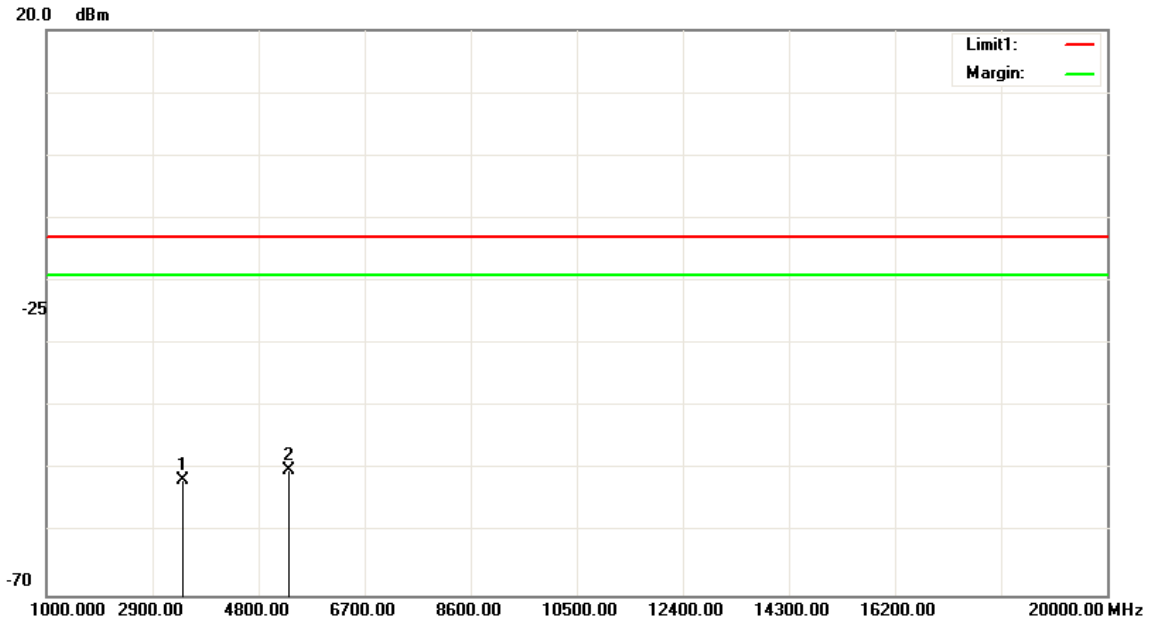
Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3450.000	-62.45	12.37	-50.08	-13.00	-37.08	Peak
5172.000	-61.1	12.64	-48.46	-13.00	-35.46	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

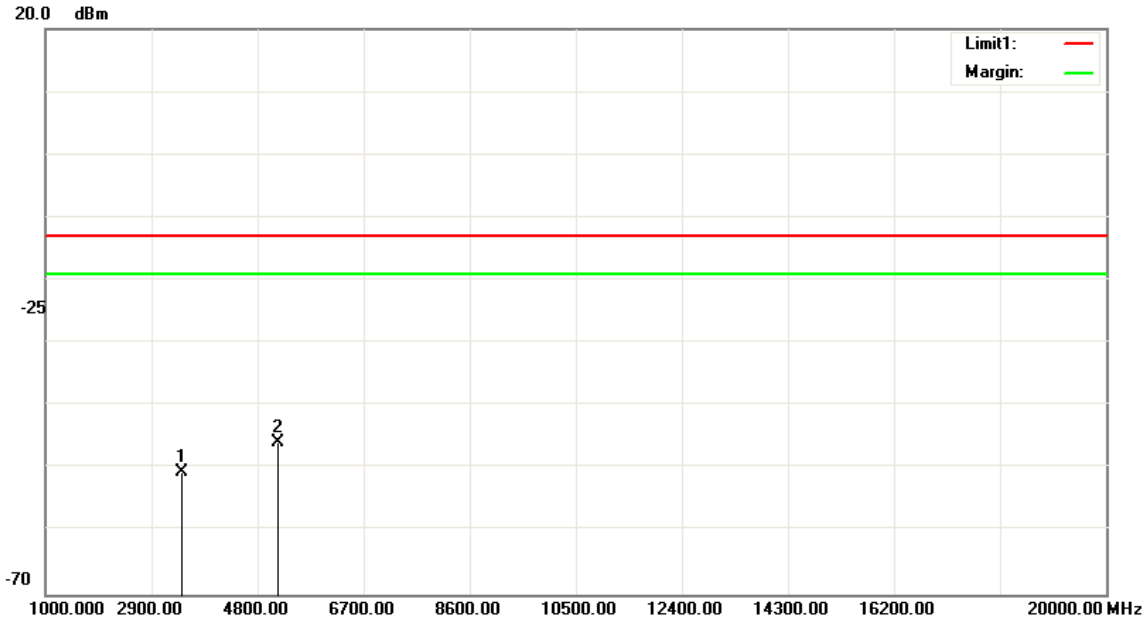
Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3450.000	-64.13	12.37	-51.76	-13.00	-38.76	Peak
5354.000	-62.92	12.78	-50.14	-13.00	-37.14	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

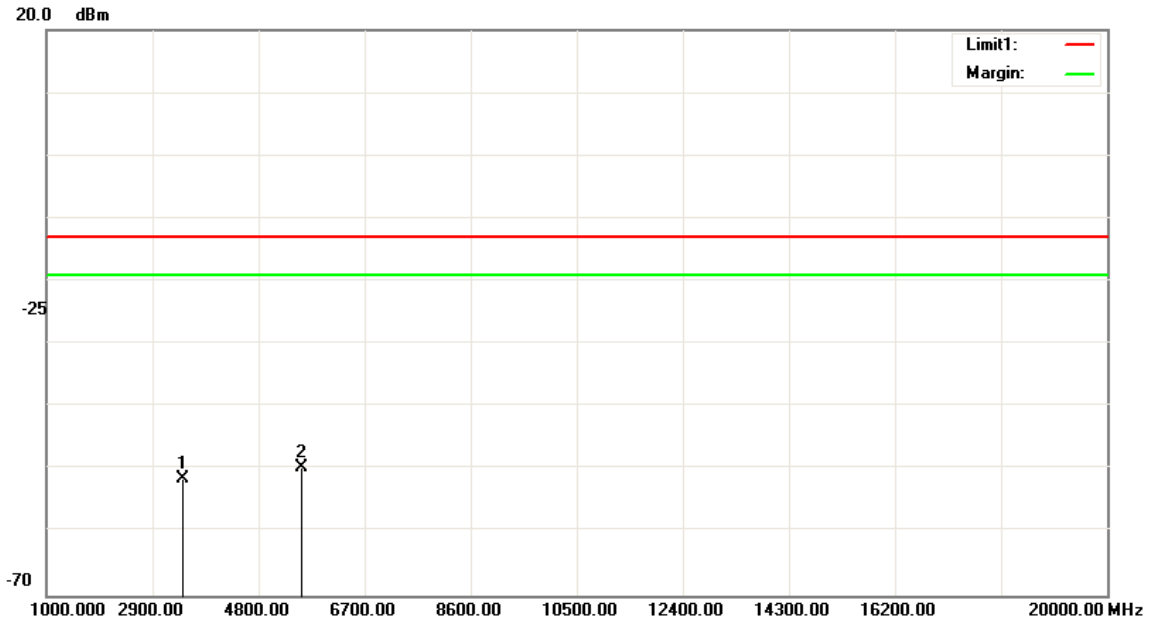
Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3450.000	-62.98	12.37	-50.61	-13.00	-37.61	Peak
5172.000	-58.39	12.64	-45.75	-13.00	-32.75	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

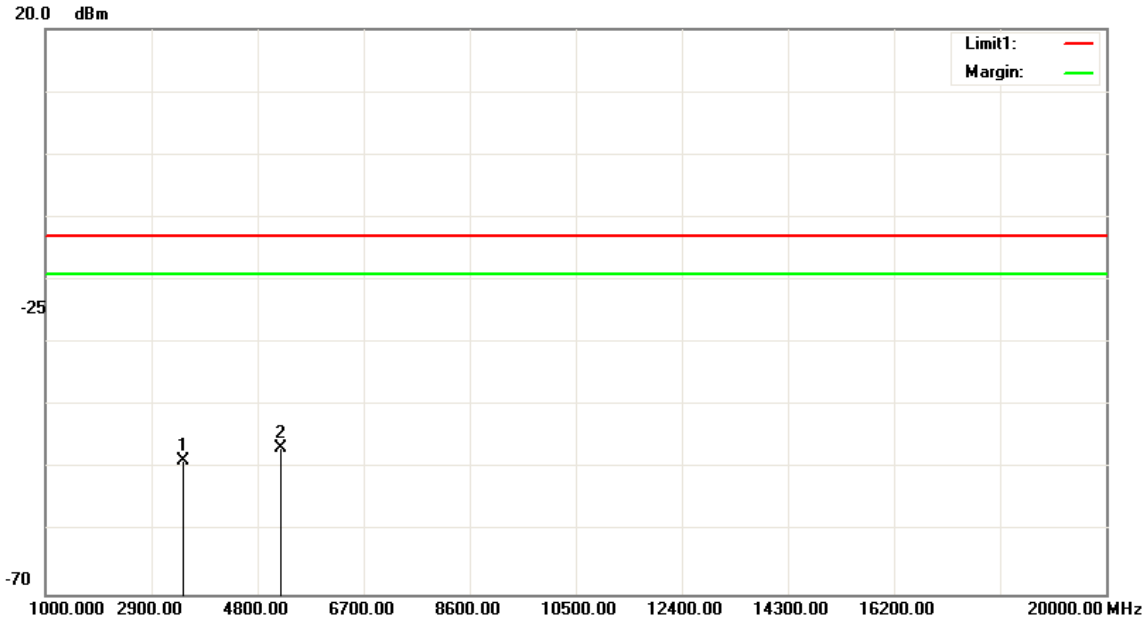
Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 Mid CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3450.000	-63.76	12.37	-51.39	-13.00	-38.39	Peak
5564.000	-62.61	12.87	-49.74	-13.00	-36.74	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

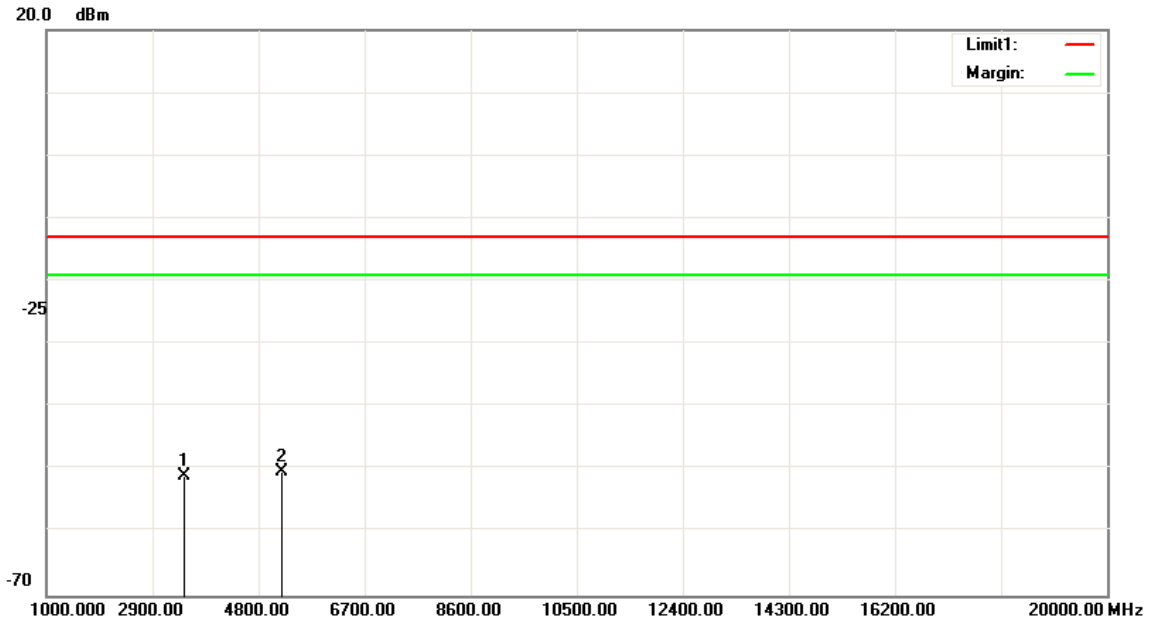
Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3471.000	-61.17	12.42	-48.75	-13.00	-35.75	Peak
5207.000	-59.38	12.67	-46.71	-13.00	-33.71	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

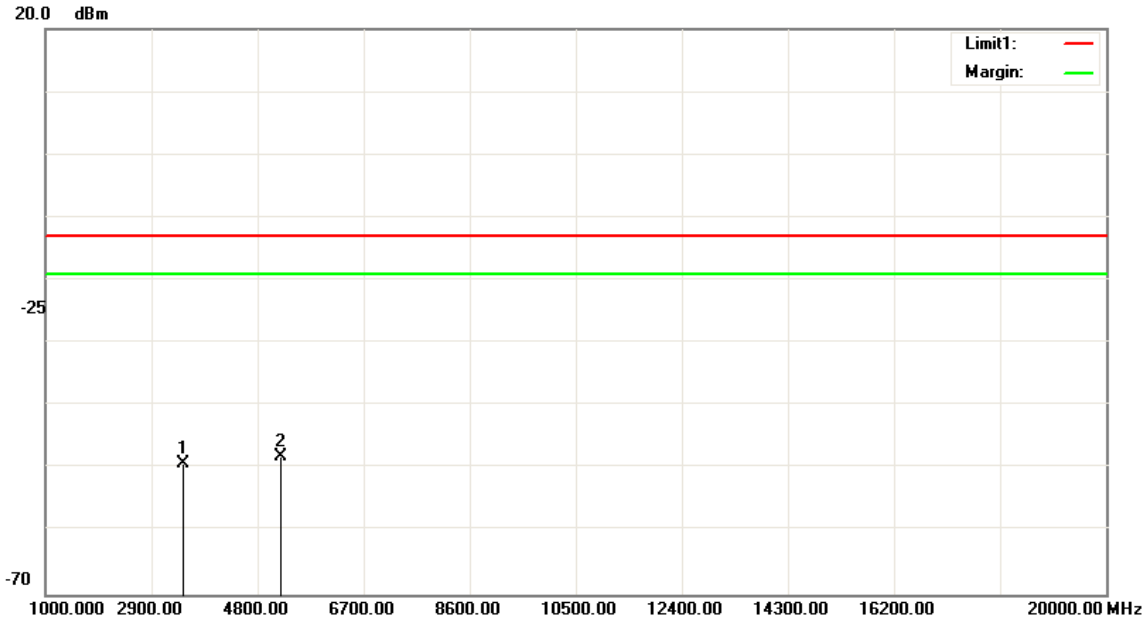
Test Mode	BW: 20MHz / QPSK / RB =1, RB Offset = 0 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3471.000	-63.43	12.42	-51.01	-13.00	-38.01	Peak
5207.000	-62.89	12.67	-50.22	-13.00	-37.22	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

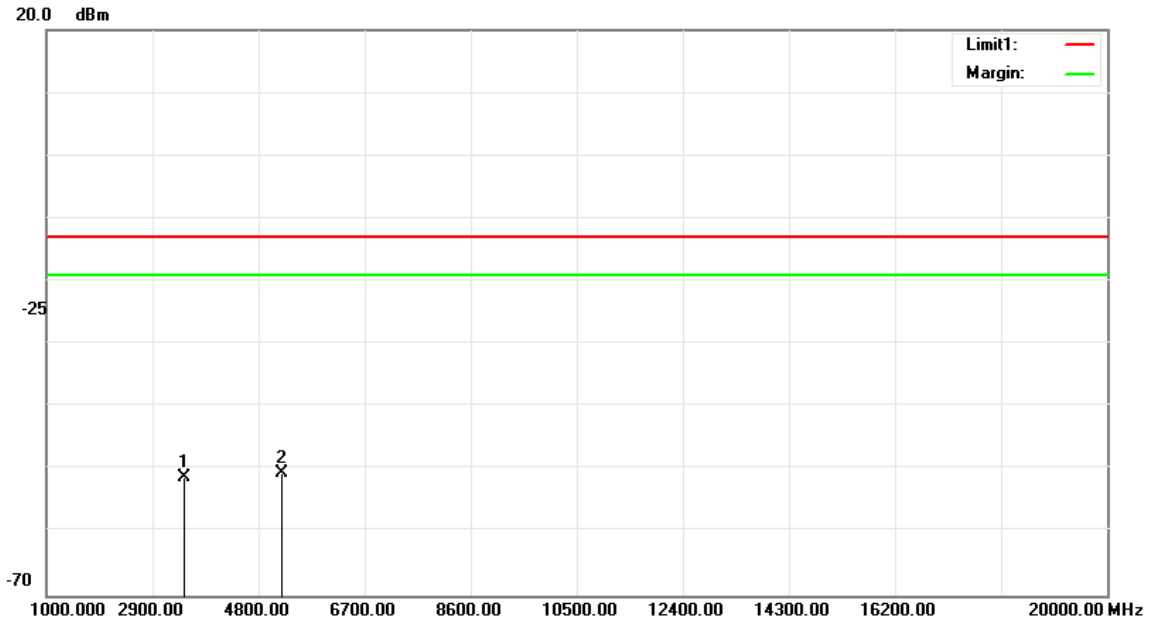
Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Horizontal	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3471.000	-61.55	12.42	-49.13	-13.00	-36.13	Peak
5207.000	-60.84	12.67	-48.17	-13.00	-35.17	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Test Mode	BW: 20MHz / 16QAM / RB =1, RB Offset = 0 High CH	Temp/Hum	27(℃)/ 53%RH
Test Item	Above 1G	Test Date	Jan 05, 2017
Polarize	Vertical	Test Engineer	Dennis Li
Detector	Peak and Average	Test Voltage	120Vac / 60Hz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
3471.000	-63.57	12.42	-51.15	-13.00	-38.15	Peak
5207.000	-63.19	12.67	-50.52	-13.00	-37.52	Peak

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

3.8 FREQUENCY STABILITY

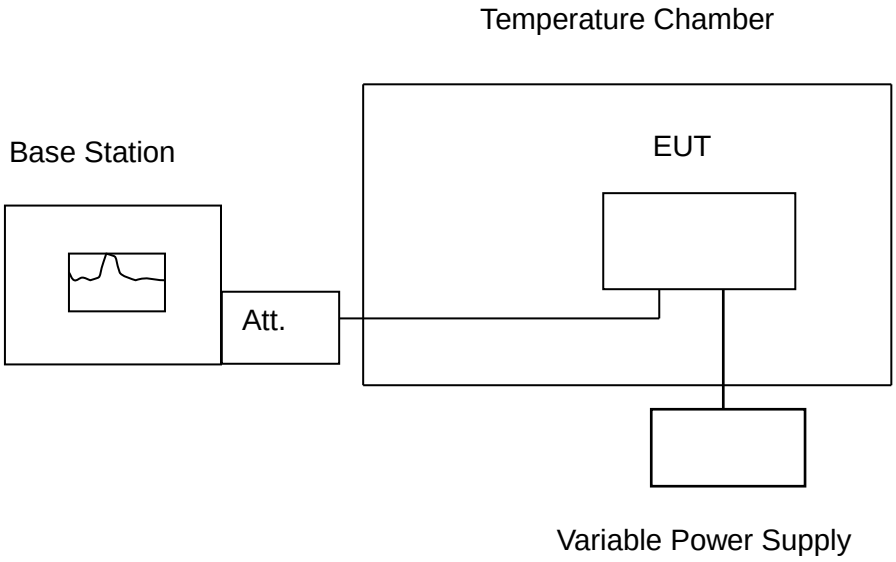
3.8.1 Test Limit

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

3.8.2 Test Procedure

Use Anritsu 8820 with frequency Error measurement capability
Temp = -30 to +50℃
Voltage= 85% to 115% of the nominal value for AC powered equipment..

3.8.3 Test Setup



3.8.4 Test Result

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

Reference Frequency: LTE Band 4, 1732.5 MHz_QPSK				
Limit: 2.5 ppm = 4331.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-12.33	-0.0071	+/- 2.5
120	40	-11.76	-0.0068	
120	30	-9.68	-0.0056	
120	20	-8.37	-0.0048	
120	10	-6.78	-0.0039	
120	0	-6.14	-0.0035	
120	-10	-8.87	-0.0051	
120	-20	-6.54	-0.0038	
120	-30	-12.33	-0.0071	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: LTE Band 4, 1732.5 MH_QPSK				
Limit: 2.5 ppm = 4331.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	-9.31	-0.0054	+/- 2.5
120		-8.37	-0.0048	
138		-12.16	-0.0070	

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT:

Reference Frequency: LTE Band 4, 1732.5 MHz_16QAM				
Limit: 2.5 ppm = 4331.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
120	50	-12.27	-0.0071	+/- 2.5
120	40	-11.63	-0.0067	
120	30	-9.54	-0.0055	
120	20	-8.26	-0.0048	
120	10	-6.64	-0.0038	
120	0	-6.02	-0.0035	
120	-10	-8.63	-0.0050	
120	-20	-6.48	-0.0037	
120	-30	-12.24	-0.0071	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

Reference Frequency: LTE Band 4, 1732.5 MH_16QAM				
Limit: 2.5 ppm = 4331.25Hz				
Power Supply (Vac)	Environment Temperature (°C)	BW: 20M Frequency Error(Hz)	Frequency Error (ppm)	Limit (ppm)
102	20	-9.27	-0.0054	+/- 2.5
120		-8.32	-0.0048	
138		-12.09	-0.0070	