FCC REPORT
(LTE)

Applicant:	SHENZHEN COOTEL FONE TECHNOLOGY CO.,LTD
Address of Applicant:	No.311, 3rd Floor, Langfeng Building, No.2, Kefa Road, Nanshan District, Shenzhen, China

Equipment Under Test (EUT)

Product Name:	Smart phone
Model No.:	C8
Trade mark:	CooTel
FCC ID:	2AHS2-C8
Applicable standards:	FCC CFR Title 47 Part 2 FCC CFR Title 47 Part 27 Subpart L
Date of sample receipt:	18 Dec., 2017
Date of Test:	18 Dec., 2017 to 16 Jan., 2018
Date of report issued:	17 Jan., 2018
Test Result:	PASS*

*In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

2. Version

Version No.	Date	Description
00	*17 Jan., 2018*	*Original*

Tested by: YT Yang ***Date:*** *17 Jan., 2018*

Test Engineer

Reviewed by: Winner Zhang ***Date:*** *17 Jan., 2018*

Project Engineer

3. Contents

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4. Test Summary

Test Items	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 27.50 (d)(4)	Pass
Peak-to-Average Ratio	Part 27.50(d)(5)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 27.53(h)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 27.53 (h)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 27.53 (h)	Pass
Out of band emission, Band Edge	Part 27.53 (h)	Pass
Frequency stability vs. temperature	Part 27.54 Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 27.54 Part 2.1055(d)(2)	Pass
Pass: The EUT complies with the essential requirements in the standard.		

5. General Information

5.1 Client Information

Applicant:	SHENZHEN COOTEL FONE TECHNOLOGY CO.,LTD
Address:	No.311, 3rd Floor, Langfeng Building, No.2, Kefa Road, Nanshan District, Shenzhen, China
Manufacturer/Factory:	SHENZHEN COOTEL FONE TECHNOLOGY CO.,LTD
Address:	No.311, 3rd Floor, Langfeng Building, No.2, Kefa Road, Nanshan District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Smart phone
Model No.:	C8
Operation Frequency range:	LTE Band 4: TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz
Modulation type:	QPSK, 16QAM
Antenna type:	Internal Antenna
Antenna gain:	LTE Band 4: 0.7 dBi
Power supply:	Rechargeable Li-ion Battery DC3.85V-2700mAh
AC adapter:	Model: UF22P1501 Input: AC100-240V 50/60Hz 500mA Output: DC 5.0V, 2.1 A DC 9.0V, 1.67A DC 12.0V, 1.25A

Operation Frequency List:

LTE Band 4 (1.4MHz)		LTE Band 4 (3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
19957	1710.70	19965	1711.50
19958	1710.80	19966	1711.60
….	….	….	….
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
…	…	…	…
20392	1754.20	20384	1753.40
20393	1754.30	20385	1753.50
LTE Band 4 (5MHz)		LTE Band 4 (10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
19975	1712.50	20000	1715.00
19976	1712.60	20001	1715.10
….	….	….	….
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
…	…	…	…
20374	1752.40	20349	1749.90
20375	1752.50	20350	1750.00
LTE Band 4 (15MHz)		LTE Band 4 (20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20025	1717.50	20050	1720.00
20026	1717.60	20051	1720.10
….	….	….	….
20174	1732.40	20174	1732.40
20175	1732.50	20175	1732.50
20176	1732.60	20176	1732.60
…	…	…	…
20324	1747.40	20299	1744.90
20325	1747.50	20300	1745.00

Regards to the operating frequency range, the lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channels as below:

LTE Band 4 (1.4MHz)			LTE Band 4 (3MHz)		
Channel:		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	19957	1710.70	Lowest channel	19965	1711.50
Middle channel	20175	1732.50	Middle channel	20175	1732.50
Highest channel	20393	1754.30	Highest channel	20385	1753.50
LTE Band 4 (5MHz)			LTE Band 4 (10MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	19975	1712.50	Lowest channel	20000	1715.00
Middle channel	20175	1732.50	Middle channel	20175	1732.50
Highest channel	20375	1752.50	Highest channel	20350	1750.00
LTE Band 4 (15MHz)			LTE Band 4 (20MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	20025	1717.50	Lowest channel	20050	1720.00
Middle channel	20175	1732.50	Middle channel	20175	1732.50
Highest channel	20325	1747.50	Highest channel	20300	1745.00

5.3 Test environment and mode

Operating Environment:	
Temperature:	Normal: 15℃ ~ 35℃, Extreme: -30℃ ~ +50℃
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 3.85 Vdc, Extreme: Low 3.5 Vdc, High 4.35 Vdc
Test mode:	
LTE QPSK mode	Keep the EUT communication with simulated station in QPSK mode
LTE 16-QAM mode	Keep the EUT communication with simulated station in 16-QAM mode
Remark: The EUT has been tested under continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing. The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for these modes with power adaptor, earphone and Data cable. Just the worst case position (H mode) shown in report.	

5.4 Description of Support Units

Test Equipment	Manufacturer	Model No.	Serial No.
Simulated Station	Anritsu	MT8820C	6201026545

5.5 Measurement Uncertainty

Parameters	Expanded Uncertainty
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

5.6 Related Submittal(s) / Grant (s)

This is an original grant, no related submittals and grants.

5.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC - Registration No.: 727551**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been accredited as a testing laboratory by FCC (Federal Communications Commission). The Registration No. is 727551.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1.

- **CNAS - Registration No.: CNAS L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

- **A2LA - Registration No.: 4346.01**

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf

5.8 Laboratory Location

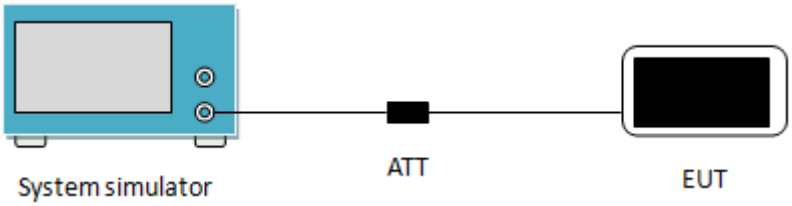
Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: http://www.ccis-cb.com

5.9 Test Instruments list

Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	SAEMC	9m*6m*6m	966	07-22-2017	07-21-2020
BiConiLog Antenna	SCHWARZBECK	VULB9163	497	02-25-2017	02-24-2018
Biconical Antenna	SCHWARZBECK	VUBA9117	359	06-22-2017	06-21-2018
Horn Antenna	SCHWARZBECK	BBHA9120D	916	02-25-2017	02-24-2018
Horn Antenna	SCHWARZBECK	BBHA9120D	1805	02-25-2017	02-24-2018
EMI Test Software	AUDIX	E3	6.110919b	N/A	N/A
Pre-amplifier	HP	8447D	2944A09358	02-25-2017	02-24-2018
Pre-amplifier	CD	PAP-1G18	11804	02-25-2017	02-24-2018
Spectrum analyzer	Rohde & Schwarz	FSP30	101454	02-25-2017	02-24-2018
EMI Test Receiver	Rohde & Schwarz	ESRP7	101070	02-25-2017	02-24-2018
Spectrum Analyzer	Agilent	N9020A	MY50510123	10-29-2017	10-28- 2018
Signal Generator	Rohde & Schwarz	SMX	835454/016	02-25-2017	02-24- 2018
Signal Generator	R&S	SMR20	1008100050	02-25-2017	02-24-2018
RF Switch Unit	MWRFTEST	MW200	N/A	N/A	N/A
Cable	ZDECL	Z108-NJ-NJ-81	1608458	02-25-2017	02-24-2018
Cable	MICRO-COAX	MFR64639	K10742-5	02-25-2017	02-24-2018
Cable	SUHNER	SUCOFLEX100	58193/4PE	02-25-2017	02-24-2018
DC Power Supply	XinNuoEr	WYK-10020K	1409050110020	10-31-2017	10-30-2018
Temperature Humidity Chamber	HengPu	HPGDS-500	20140828008	09-24-2017	09-23-2018
Simulated Station	Rohde & Schwarz	CMW500	140493	06-24-2017	06-23-2018

6. Test results

6.1 Conducted Output Power

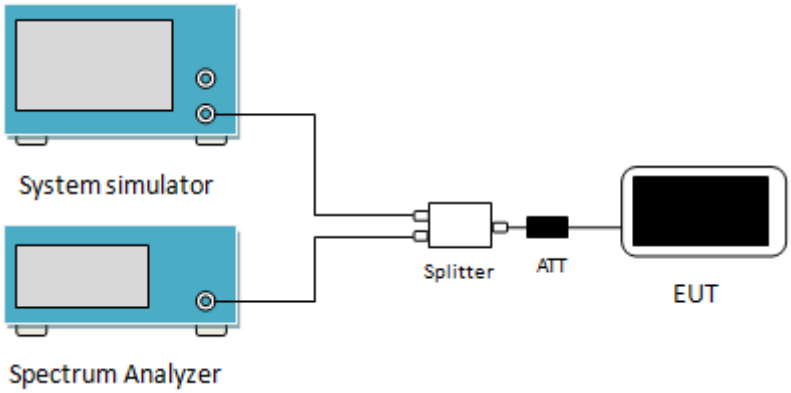
Test Requirement:	Part 27.50(d)(4),
Test Method:	ANSI/TIA-603-D 2010
Limit:	LTE Band 4: 1W
Test Setup:	
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the CMW500. Transmitter output power was read off in dBm.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19957	20175	20393
					1710.7MHz	1732.5MHz	1754.3MHz
4	1.4	QPSK	1	0	22.98	22.75	22.89
			1	2	23.17	22.83	23.23
			1	5	23.04	22.80	23.31
			3	0	23.18	23.07	23.25
			3	1	23.15	23.08	23.15
			3	2	23.17	22.98	23.04
			6	0	22.25	22.56	22.21
		16QAM	1	0	22.06	21.75	22.15
			1	2	22.16	21.65	22.06
			1	5	21.75	21.36	21.35
			3	0	22.09	21.95	21.84
			3	1	22.06	21.74	22.13
			3	2	22.24	21.83	22.41
			6	0	21.21	20.98	21.13
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19965	20175	20385
					1711.5MHz	1732.5MHz	1753.5MHz
4	3	QPSK	1	0	22.85	22.89	22.85
			1	7	22.89	22.68	22.86
			1	14	22.74	22.63	23.01
			8	0	21.98	22.14	22.05
			8	4	22.17	21.86	22.14
			8	7	21.92	21.95	21.99
			15	0	22.01	21.86	21.06
		16QAM	1	0	22.12	22.21	21.80
			1	7	21.86	21.45	21.84
			1	14	21.39	21.53	21.89
			8	0	20.89	20.84	20.86
			8	4	20.89	20.78	20.78
			8	7	20.82	20.83	20.96
			15	0	20.84	20.72	20.92
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19975	20175	20375
					1712.5MHz	1732.5MHz	1752.5MHz
4	5	QPSK	1	0	22.76	22.75	23.45
			1	12	22.89	22.56	23.26
			1	24	22.74	22.39	23.53
			12	0	21.78	22.58	22.74
			12	6	21.90	22.42	22.36
			12	11	21.79	22.26	22.35
			25	0	21.78	22.43	22.45
		16QAM	1	0	21.20	22.21	22.82
			1	12	21.85	21.99	22.46
			1	24	21.50	21.06	21.74
			12	0	20.56	21.22	21.42
			12	6	20.71	21.45	21.57
			12	11	20.65	20.95	21.42
			25	0	20.63	21.03	21.43

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20000	20175	20350
					1715.0MHz	1732.5MHz	1750.0MHz
4	10	QPSK	1	0	23.45	23.51	23.16
			1	24	23.05	23.30	23.45
			1	49	23.15	23.41	23.14
			25	0	22.57	22.56	22.78
			25	12	22.63	22.68	22.89
			25	24	22.51	22.39	22.95
			50	0	22.45	22.50	22.45
		16QAM	1	0	22.35	22.14	22.42
			1	24	22.65	22.52	22.45
			1	49	21.96	22.03	22.31
			25	0	21.64	21.45	21.58
			25	12	21.51	21.68	21.68
			25	24	21.43	21.31	21.63
			50	0	21.40	21.45	21.37
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20025	20175	20325
					1717.5MHz	1732.5MHz	1747.5MHz
4	15	QPSK	1	0	23.51	23.52	23.12
			1	37	23.14	23.14	23.04
			1	74	23.25	23.45	23.16
			36	0	22.85	22.78	22.72
			36	16	22.56	22.71	22.59
			36	35	22.53	22.06	22.83
			75	0	22.45	22.54	22.72
		16QAM	1	0	23.12	22.84	22.30
			1	37	23.14	22.73	22.42
			1	74	21.78	21.98	22.20
			36	0	21.45	21.43	21.56
			36	16	21.71	21.54	21.70
			36	35	21.49	21.26	21.86
			75	0	21.51	21.50	21.52
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20050	20175	20300
					1720.0MHz	1732.5MHz	1745.0MHz
4	20	QPSK	1	0	23.41	23.54	23.54
			1	49	23.51	23.43	23.45
			1	99	23.34	23.35	23.56
			50	0	22.78	22.72	22.82
			50	24	22.57	22.86	22.65
			50	49	22.34	22.41	22.71
			100	0	22.54	22.48	22.62
		16QAM	1	0	22.82	22.56	22.68
			1	49	21.98	22.67	22.24
			1	99	22.14	22.27	22.43
			50	0	21.42	21.64	21.45
			50	24	21.85	21.82	21.58
			50	49	21.65	21.17	21.59
			100	0	21.50	21.35	21.48

6.2 Peak-to-Average Ratio

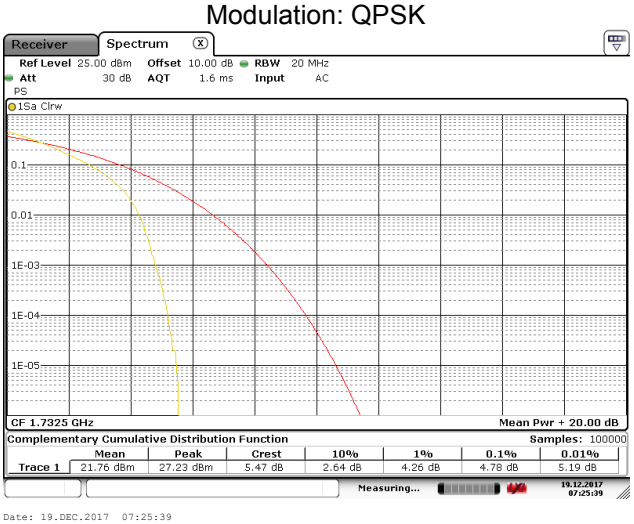
Test Requirement:	Part 27.50(d)(5)
Test Method:	ANSI/TIA-603-D 2010
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test Setup:	
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 Set the CCDF option in spectrum analyzer, RBW ≥ OBW, 3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level. 4 Repeat step 1~3 at other frequency and modulations.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Test plots as below:

LTE Band 4 Middle channel

Modulation: QPSK



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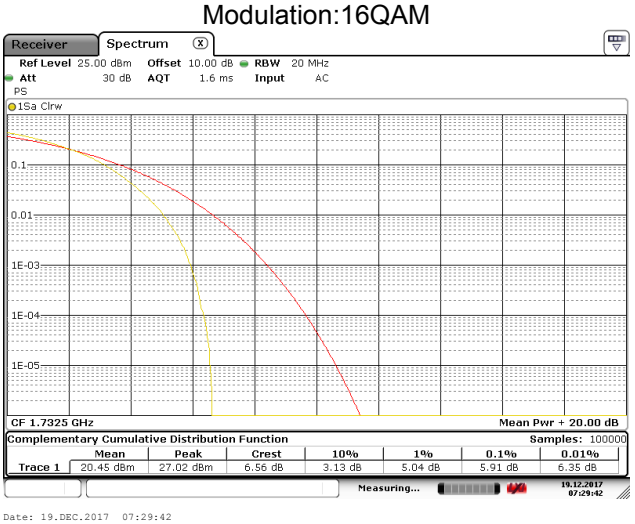
Modulation:16QAM



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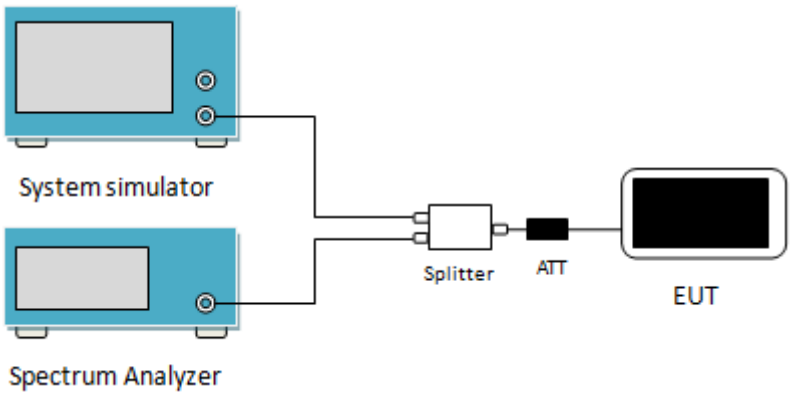
6.3 Occupy Bandwidth

Test Requirement:	Part 27.53(h),
Test Method:	ANSI/TIA-603-D 2010
Test Setup:	
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW. 3. -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

LTE Band 4 part:

Bandwidth	Channel	Frequency(MHz)	Modulation	99% OBW (kHz)	-26dBcEBW (kHz)
1.4MHz	19957	1710.7	16QAM	1092	1302
			QPSK	1098	1308
	20175	1732.5	16QAM	1104	1278
			QPSK	1099	1296
	20393	1754.3	16QAM	1104	1320
			QPSK	1104	1290
3MHz	19965	1711.5	16QAM	2736	3024
			QPSK	2736	3060
	20175	1732.5	16QAM	2736	3012
			QPSK	2736	3072
	20385	1750.5	16QAM	2736	3036
			QPSK	2736	3060
5MHz	19975	1712.5	16QAM	4480	4900
			QPSK	4520	4960
	20175	1732.5	16QAM	4500	4860
			QPSK	4500	4940
	20375	1752.5	16QAM	4500	4900
			QPSK	4520	4960
10MHz	20000	1715.0	16QAM	9040	10040
			QPSK	9080	10080
	20175	1732.5	16QAM	9040	10040
			QPSK	9040	10120
	20350	1750.0	16QAM	9040	10080
			QPSK	9080	10280
15MHz	20025	1717.5	16QAM	13500	14640
			QPSK	13560	14760
	20175	1732.5	16QAM	13440	14760
			QPSK	13500	14640
	20325	1747.5	16QAM	13500	14580
			QPSK	13500	14820
20MHz	20050	1720.0	16QAM	18000	19360
			QPSK	17920	19520
	20175	1732.5	16QAM	17840	19120
			QPSK	17920	19360
	20300	1745.0	16QAM	17920	19360
			QPSK	18000	19440

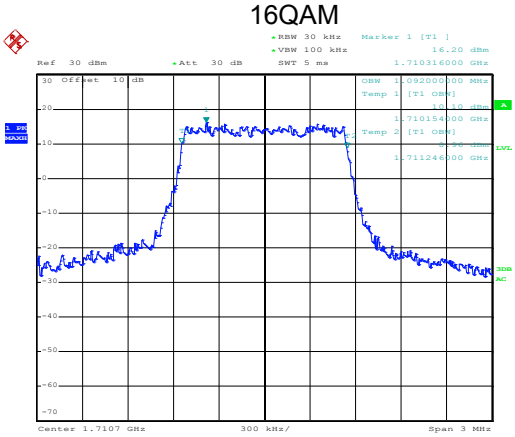
Test plot as follows:

LTE Band 4 part

99% Occupy bandwidth

BW: 1.4MHz

16QAM



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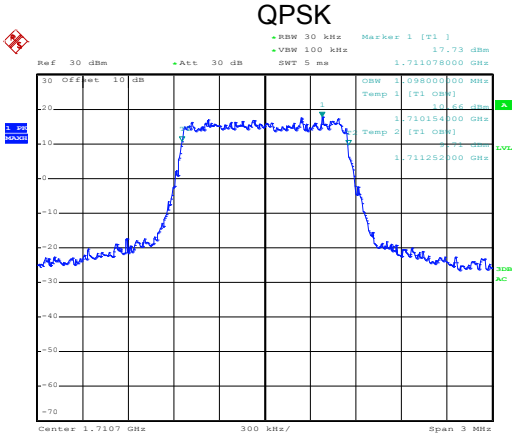
QPSK



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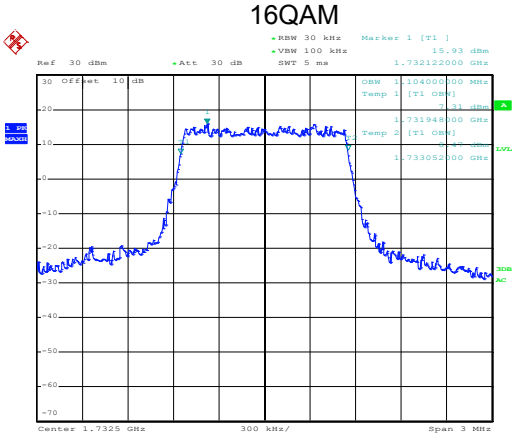
Lowest channel

16QAM



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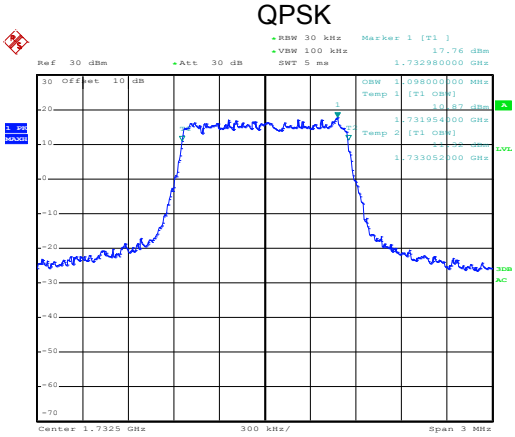
QPSK



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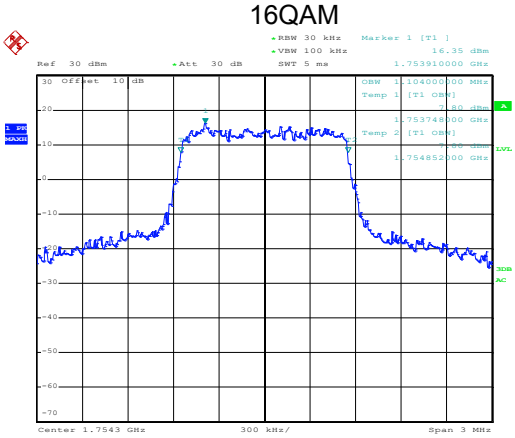
Middle channel

16QAM



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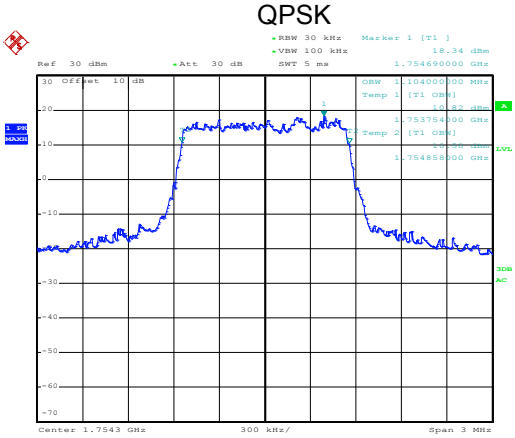
QPSK



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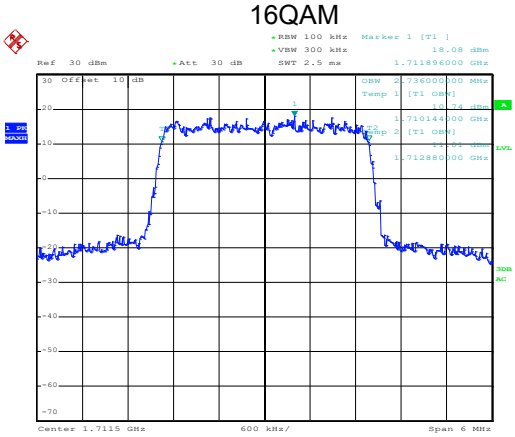
Highest channel

99% Occupy bandwidth

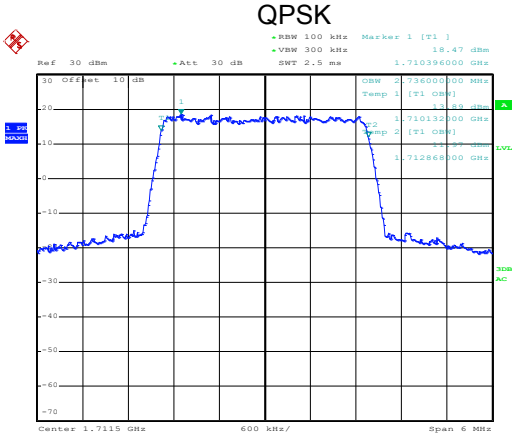
BW: 3MHz

16QAM



Date: 18.DEC.2017 15:53:22

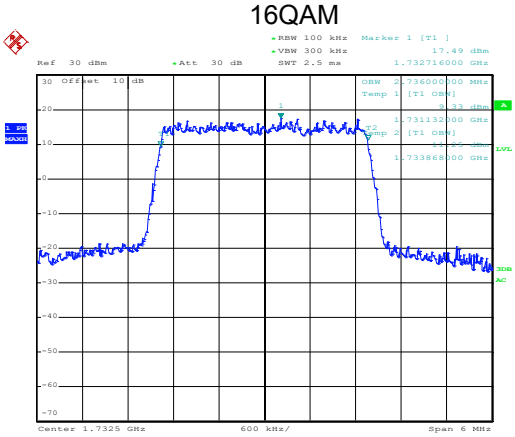
QPSK



Date: 18.DEC.2017 15:53:18

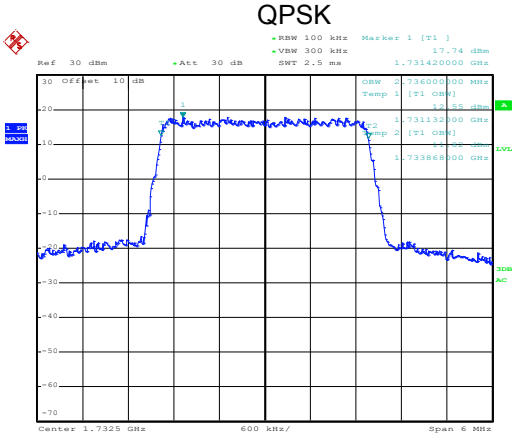
Lowest channel

16QAM



Date: 18.DEC.2017 15:54:20

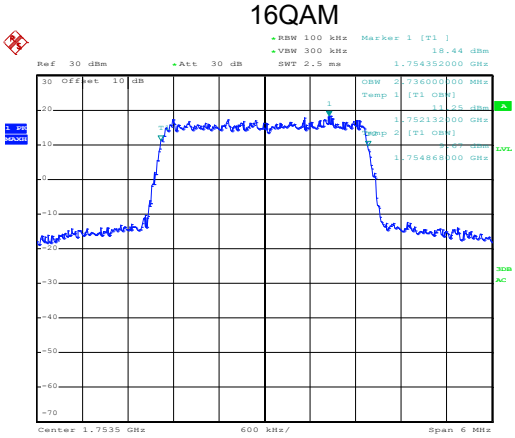
QPSK



Date: 18.DEC.2017 15:54:16

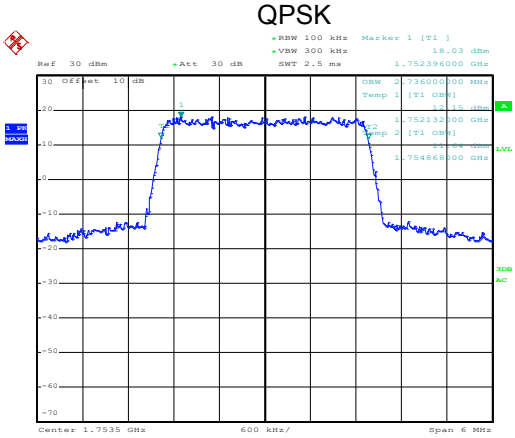
Middle channel

16QAM



Date: 18.DEC.2017 15:56:20

QPSK



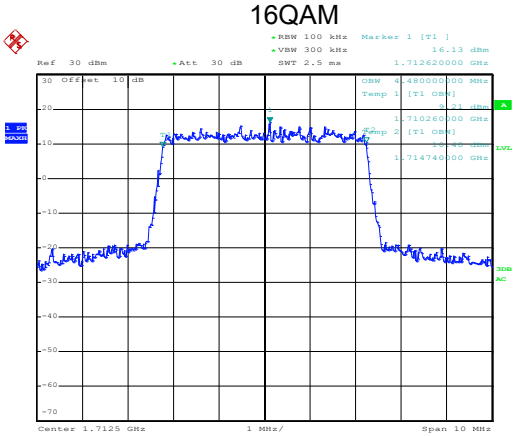
Date: 18.DEC.2017 15:56:12

Highest channel

99% Occupy bandwidth

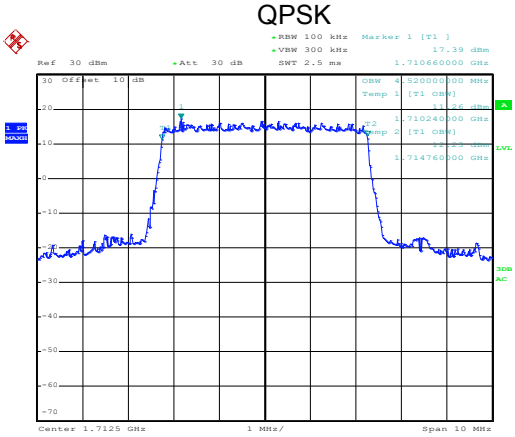
BW: 5MHz

16QAM



Date: 18.DEC.2017 15:57:23

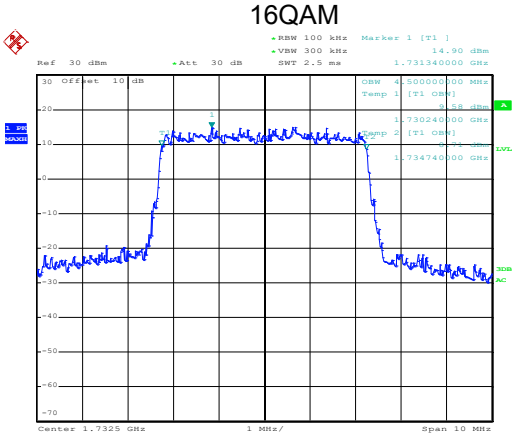
QPSK



Date: 18.DEC.2017 15:57:18

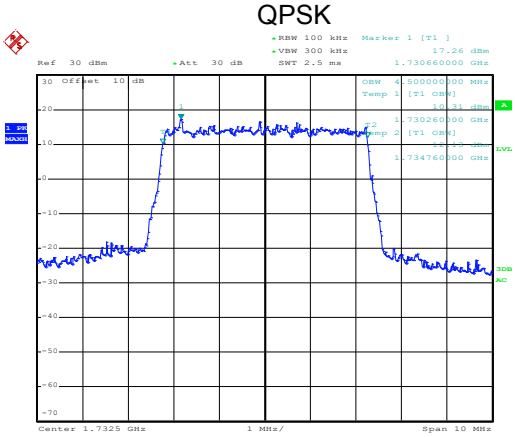
Lowest channel

16QAM



Date: 18.DEC.2017 15:58:13

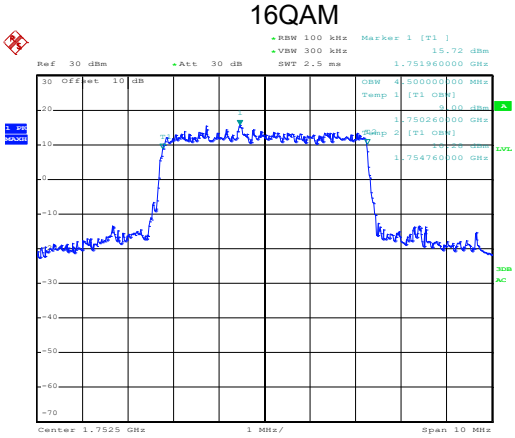
QPSK



Date: 18.DEC.2017 15:58:09

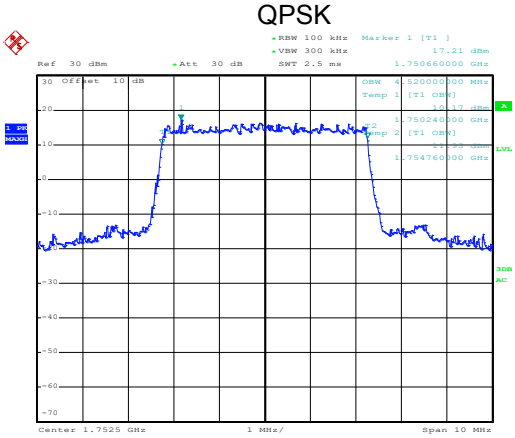
Middle channel

16QAM



Date: 18.DEC.2017 15:58:40

QPSK



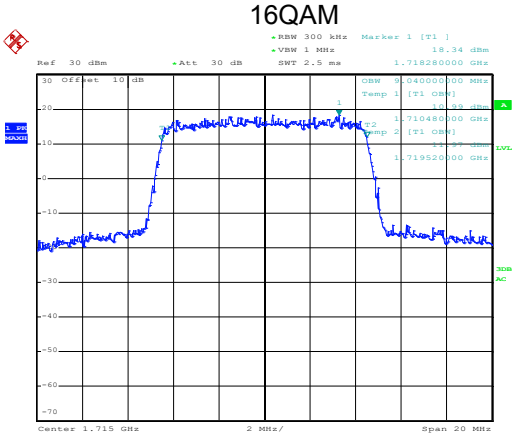
Date: 18.DEC.2017 15:58:35

Highest channel

99% Occupy bandwidth

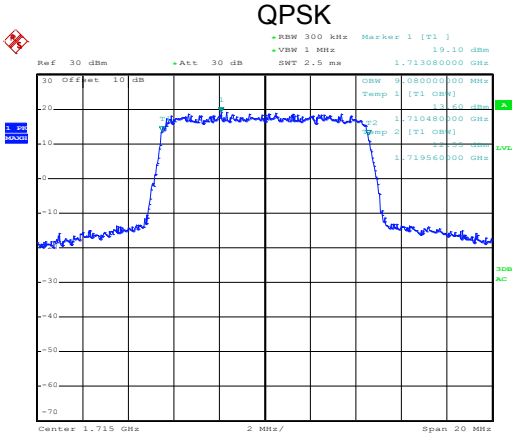
BW: 10MHz

16QAM



Date: 18.DEC.2017 16:01:00

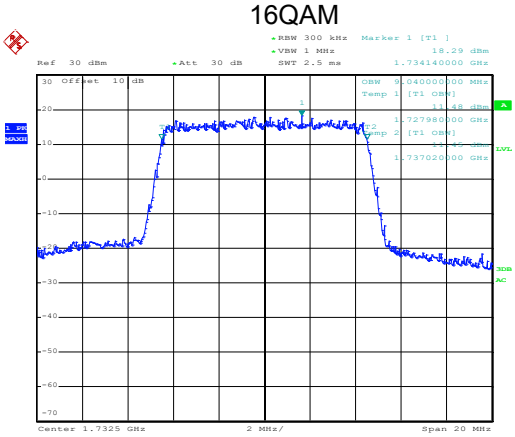
QPSK



Date: 18.DEC.2017 16:00:56

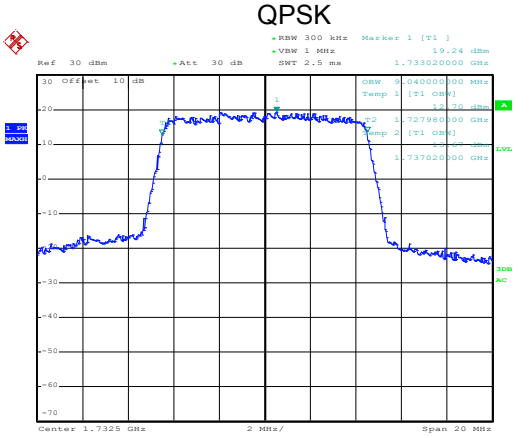
Lowest channel

16QAM



Date: 18.DEC.2017 16:01:22

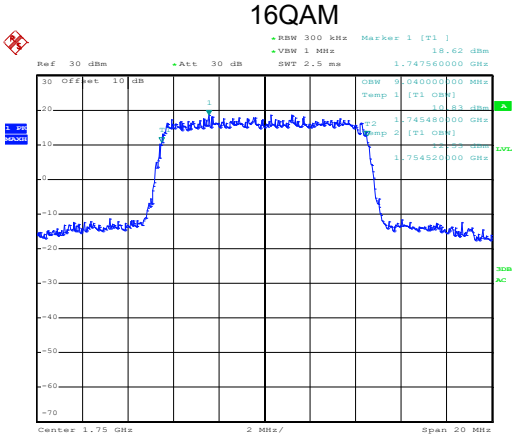
QPSK



Date: 18.DEC.2017 16:01:17

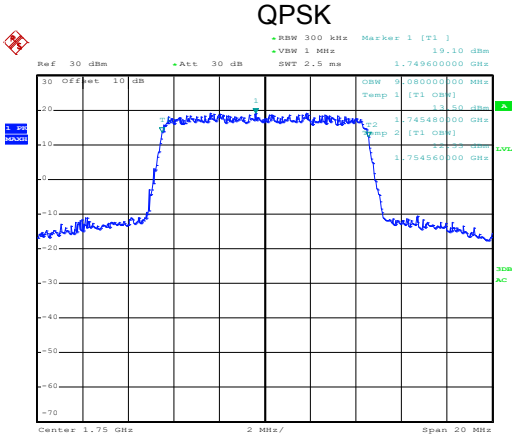
Middle channel

16QAM



Date: 18.DEC.2017 16:02:10

QPSK

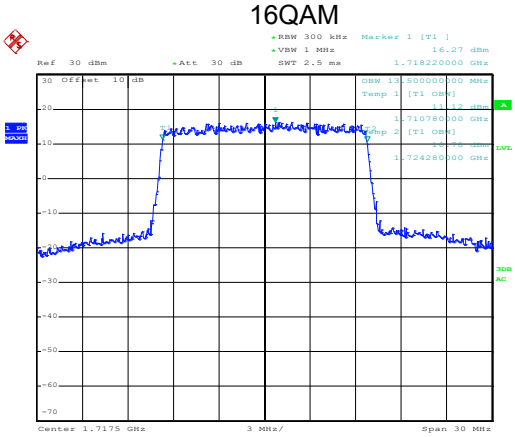


Date: 18.DEC.2017 16:02:06

Highest channel

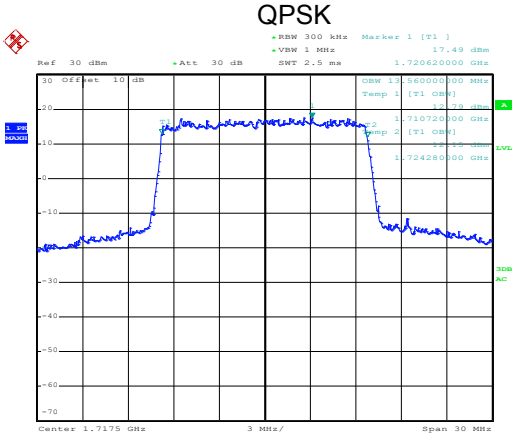
99% Occupy bandwidth
BW: 15MHz

16QAM



Date: 18.DEC.2017 16:02:51

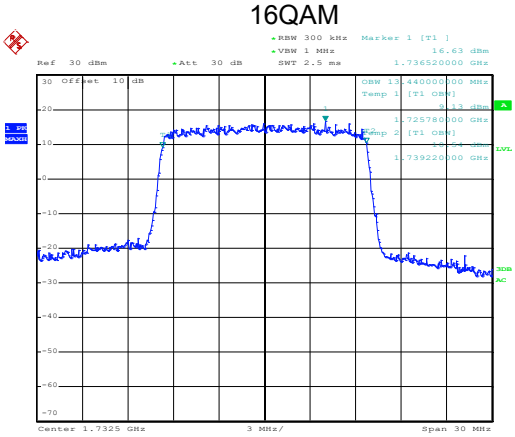
QPSK



Date: 18.DEC.2017 16:02:46

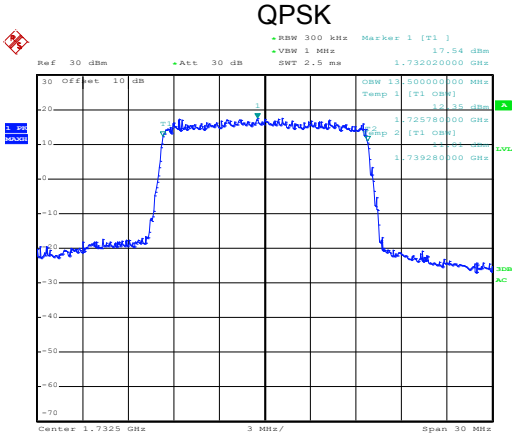
Lowest channel

16QAM



Date: 18.DEC.2017 16:03:45

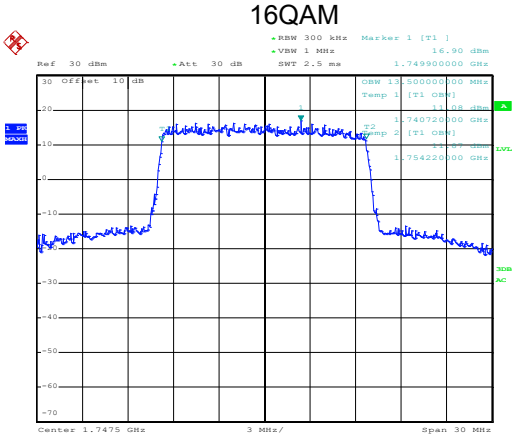
QPSK



Date: 18.DEC.2017 16:03:39

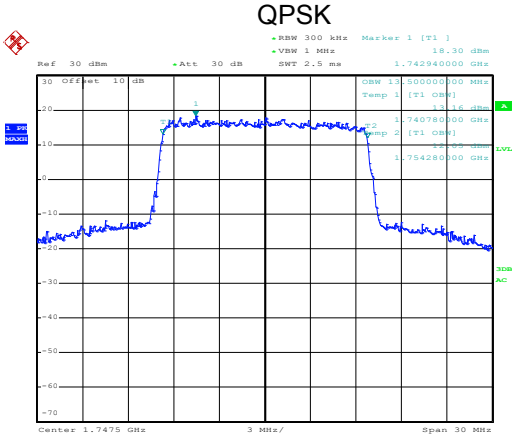
Middle channel

16QAM



Date: 18.DEC.2017 16:04:14

QPSK

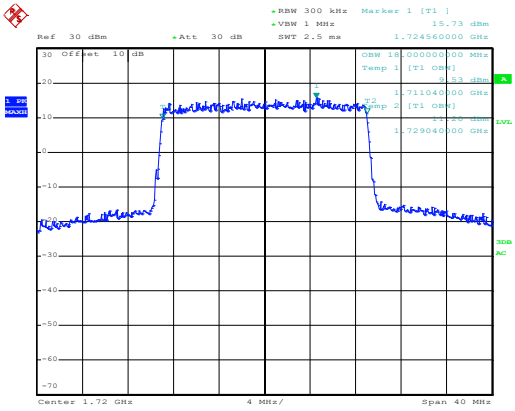


Date: 18.DEC.2017 16:04:09

Highest channel

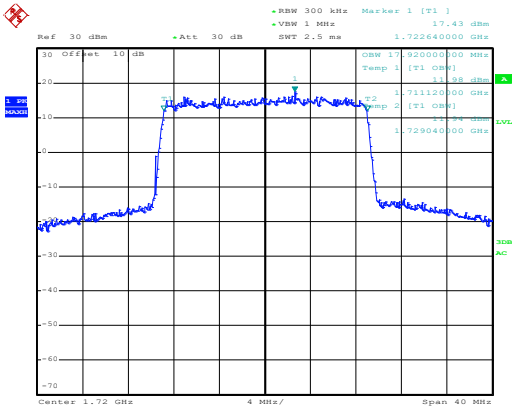
99% Occupy bandwidth
BW: 20MHz

16QAM



Date: 18.DEC.2017 16:05:30

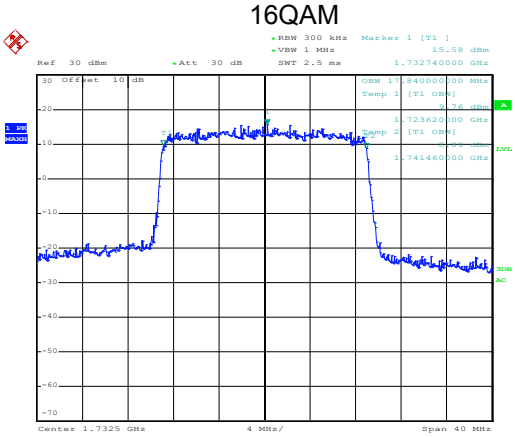
QPSK



Date: 18.DEC.2017 16:05:23

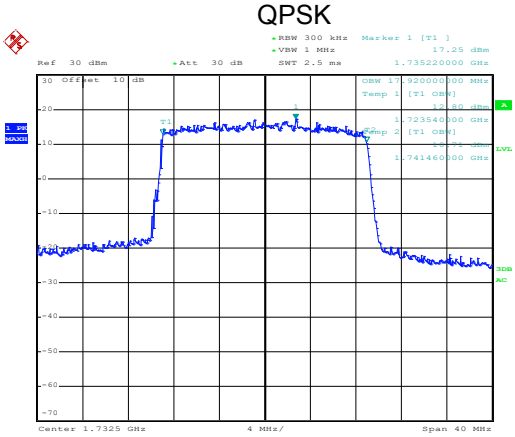
Lowest channel

16QAM



Date: 18.DEC.2017 16:05:56

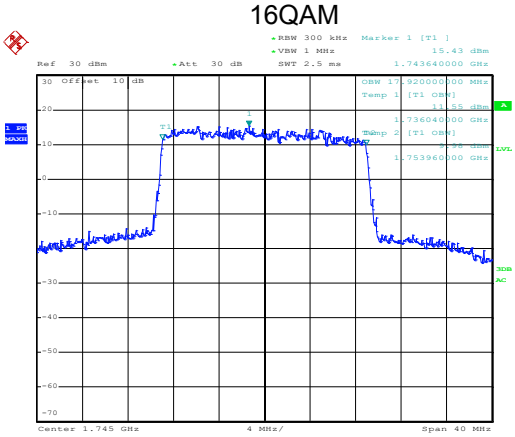
QPSK



Date: 18.DEC.2017 16:05:50

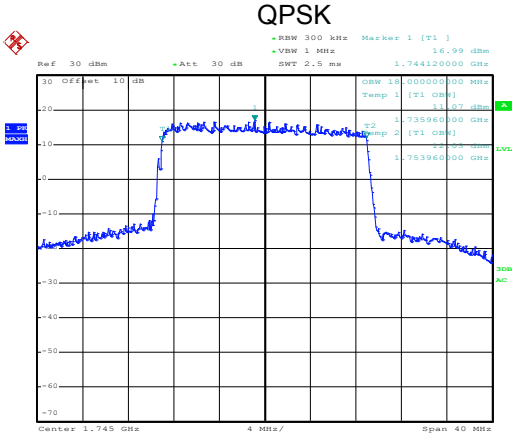
Middle channel

16QAM



Date: 18.DEC.2017 16:07:52

QPSK

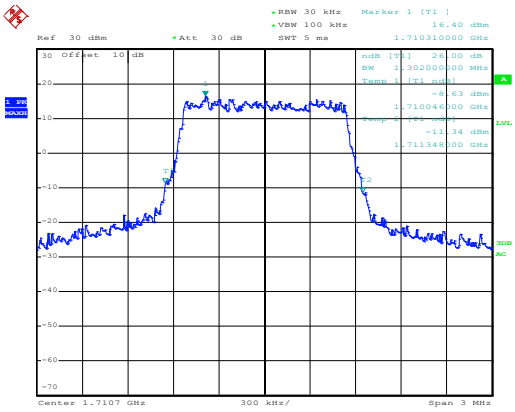


Date: 18.DEC.2017 16:07:48

Highest channel

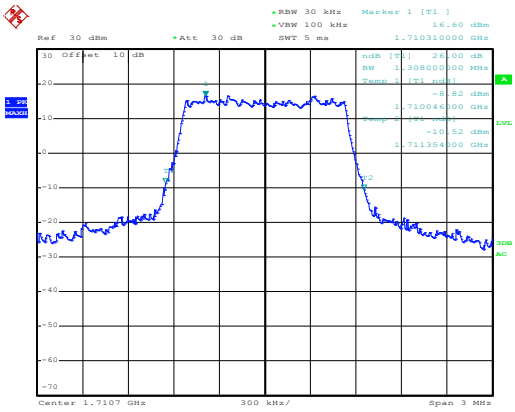
-26dBc bandwidth
BW: 1.4MHz

16QAM



Date: 18.DEC.2017 15:49:25

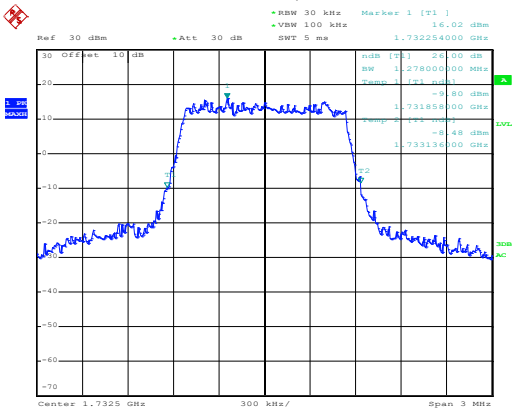
QPSK



Date: 18.DEC.2017 15:49:20

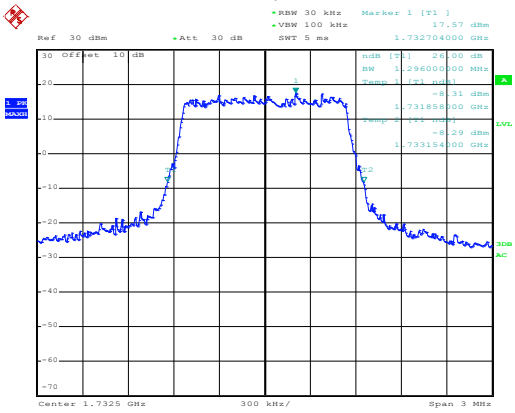
Lowest channel

16QAM



Date: 18.DEC.2017 15:51:23

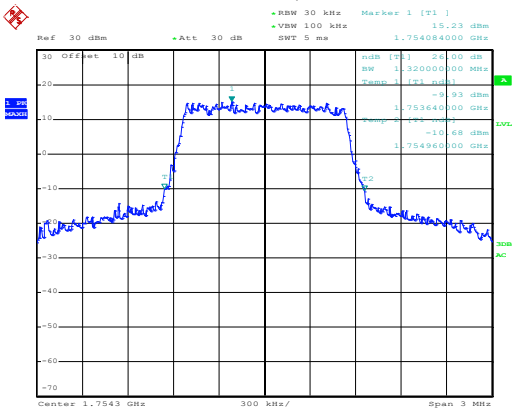
QPSK



Date: 18.DEC.2017 15:51:18

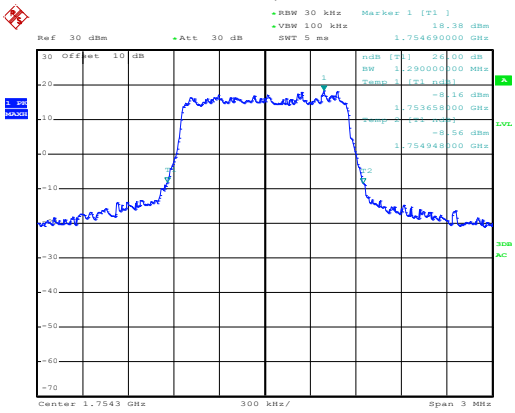
Middle channel

16QAM



Date: 18.DEC.2017 15:51:49

QPSK



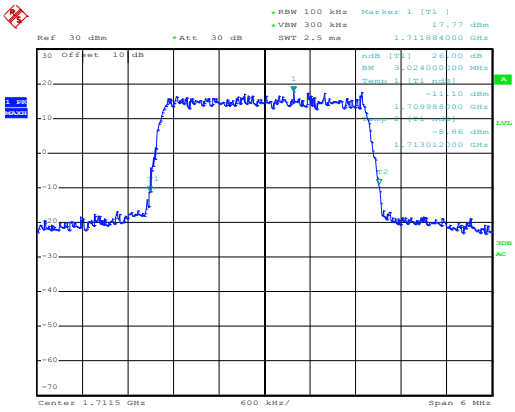
Date: 18.DEC.2017 15:51:45

Highest channel

-26dBc bandwidth

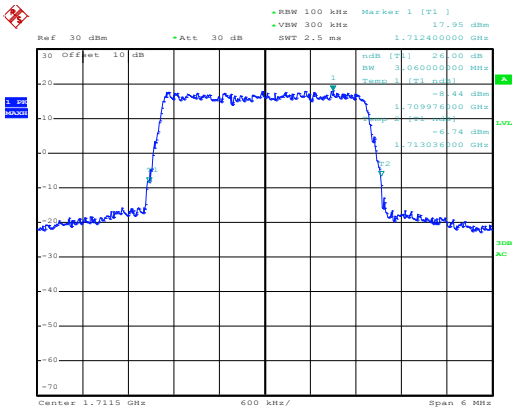
BW: 3MHz

16QAM



Date: 18.DEC.2017 15:53:33

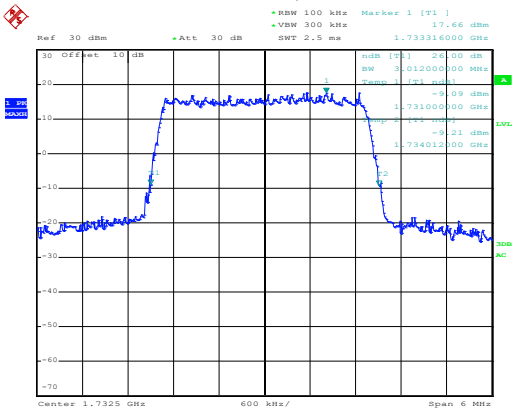
QPSK



Date: 18.DEC.2017 15:53:29

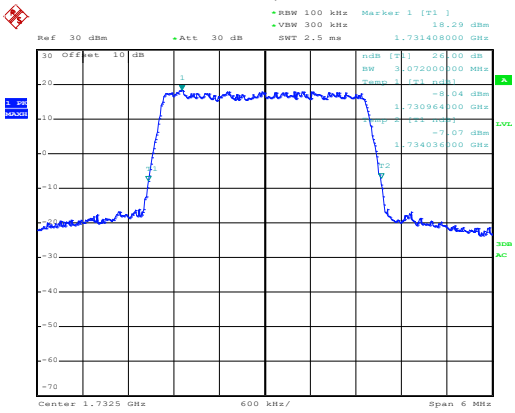
Lowest channel

16QAM



Date: 18.DEC.2017 15:54:08

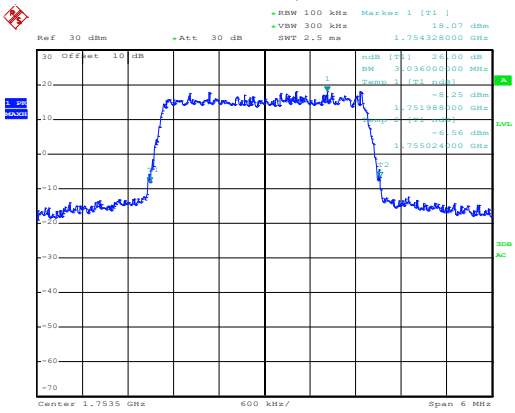
QPSK



Date: 18.DEC.2017 15:54:02

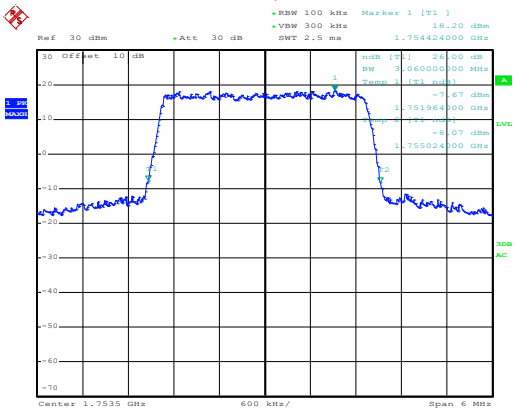
Middle channel

16QAM



Date: 18.DEC.2017 15:56:03

QPSK

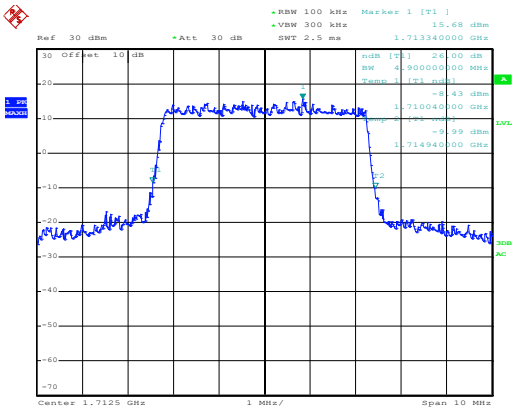


Date: 18.DEC.2017 15:55:57

Highest channel

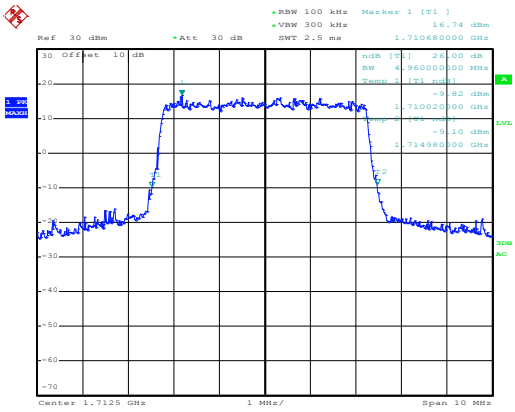
-26dBc bandwidth
BW: 5MHz

16QAM



Date: 18.DEC.2017 15:57:36

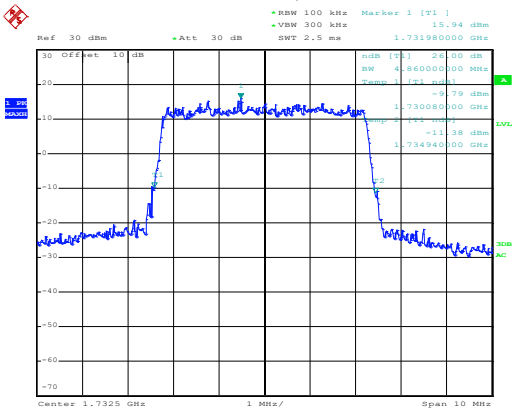
QPSK



Date: 18.DEC.2017 15:57:31

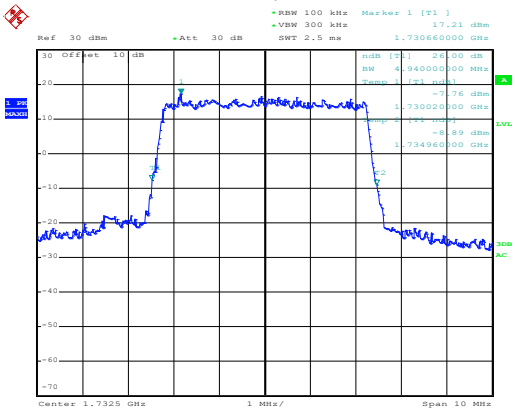
Lowest channel

16QAM



Date: 18.DEC.2017 15:58:02

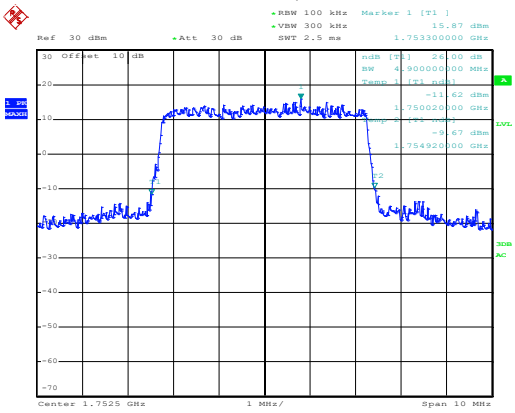
QPSK



Date: 18.DEC.2017 15:57:58

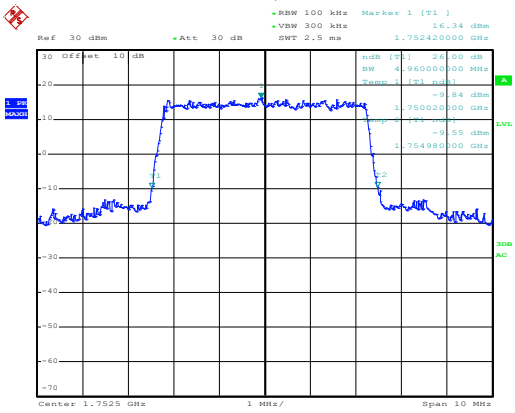
Middle channel

16QAM



Date: 18.DEC.2017 15:58:52

QPSK

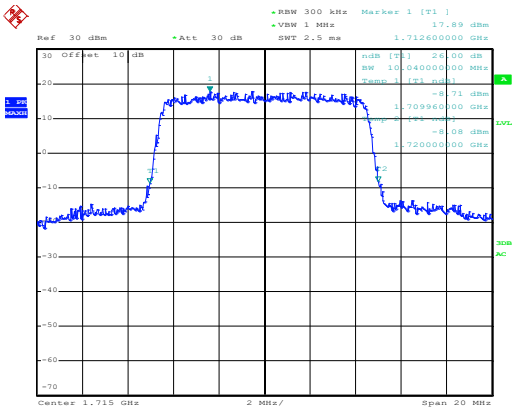


Date: 18.DEC.2017 15:58:48

Highest channel

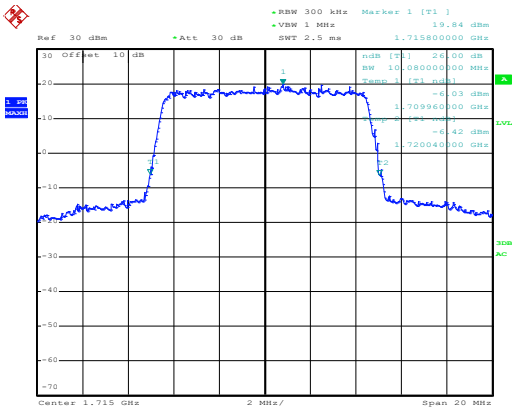
-26dBc bandwidth
BW: 10MHz

16QAM



Date: 18.DEC.2017 16:00:49

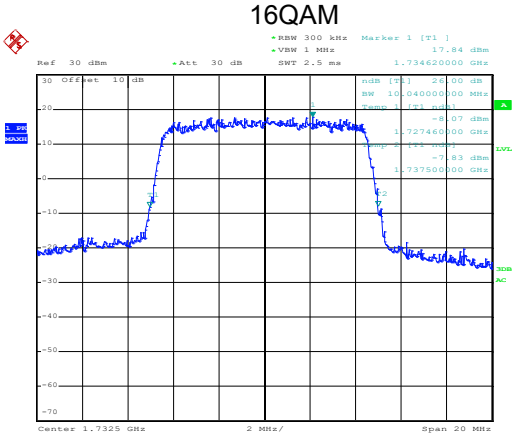
QPSK



Date: 18.DEC.2017 16:00:44

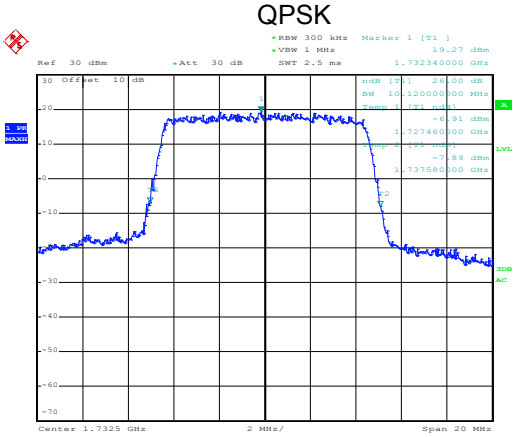
Lowest channel

16QAM



Date: 18.DEC.2017 16:01:35

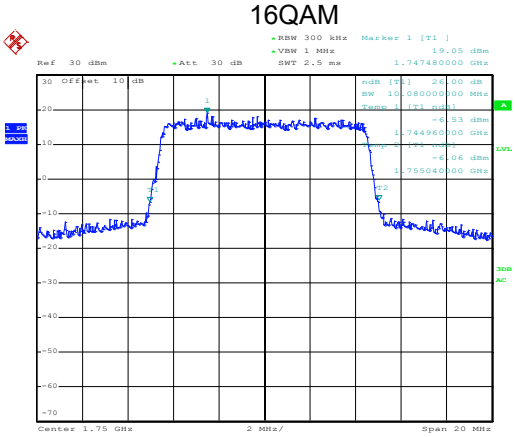
QPSK



Date: 18.DEC.2017 16:01:31

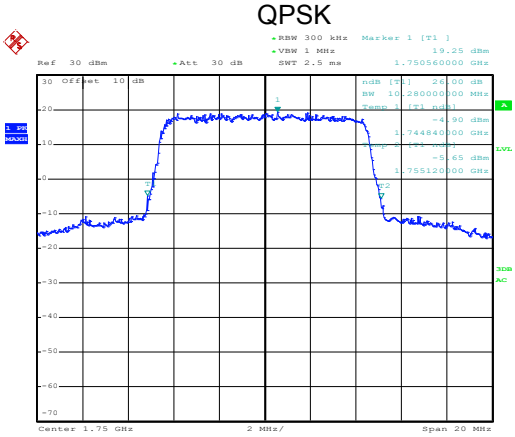
Middle channel

16QAM



Date: 18.DEC.2017 16:01:59

QPSK

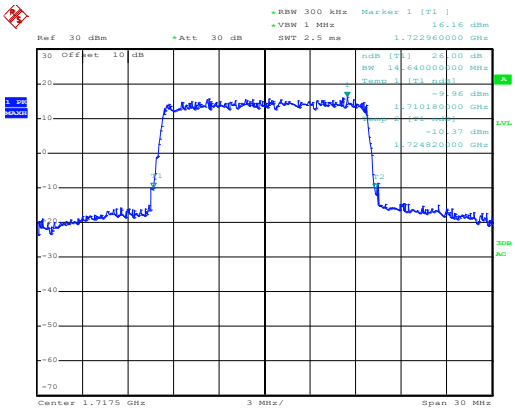


Date: 18.DEC.2017 16:01:54

Highest channel

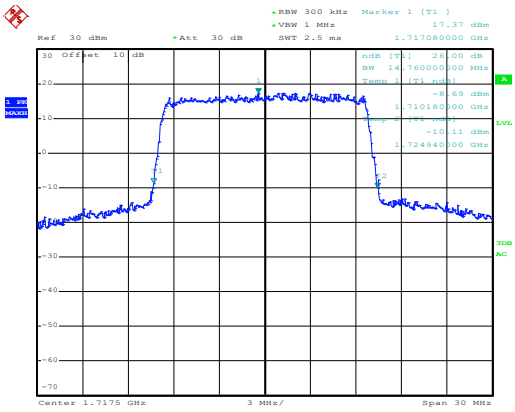
-26dBc bandwidth
BW: 15MHz

16QAM



Date: 18.DEC.2017 16:03:07

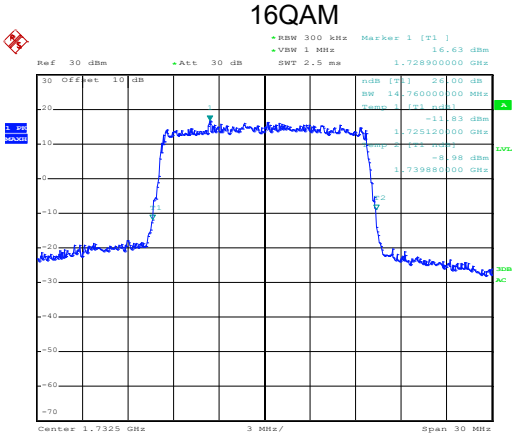
QPSK



Date: 18.DEC.2017 16:03:02

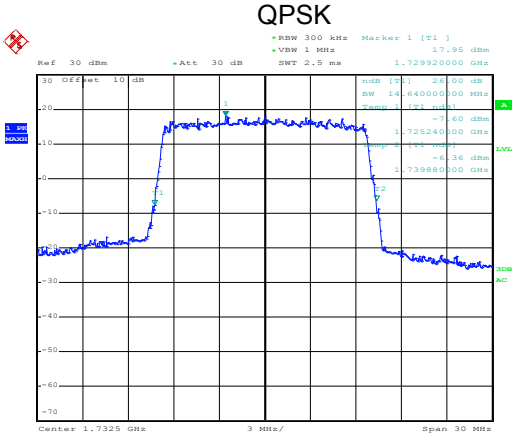
Lowest channel

16QAM



Date: 18.DEC.2017 16:03:32

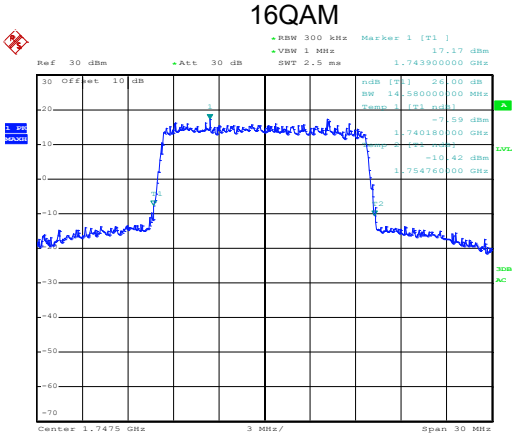
QPSK



Date: 18.DEC.2017 16:03:26

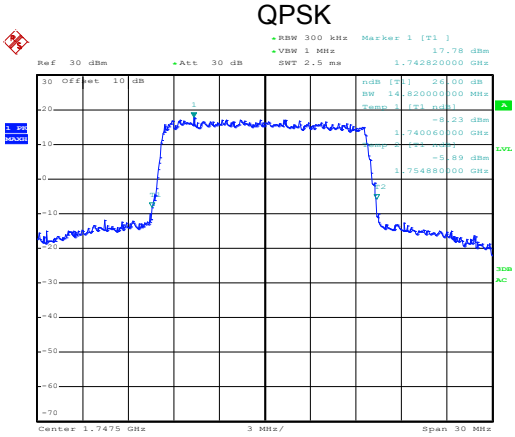
Middle channel

16QAM



Date: 18.DEC.2017 16:04:28

QPSK

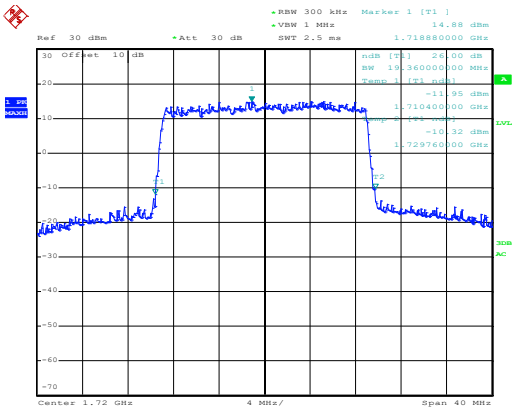


Date: 18.DEC.2017 16:04:22

Highest channel

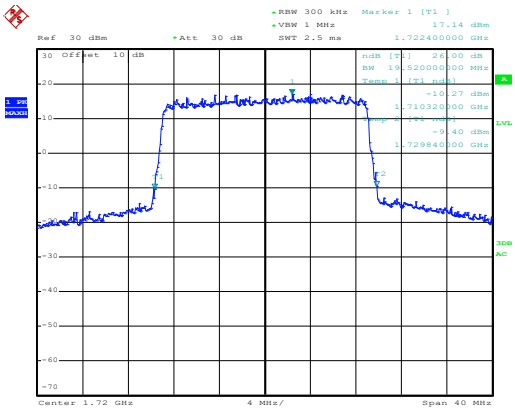
-26dBc bandwidth
BW: 20MHz

16QAM



Date: 18.DEC.2017 16:05:15

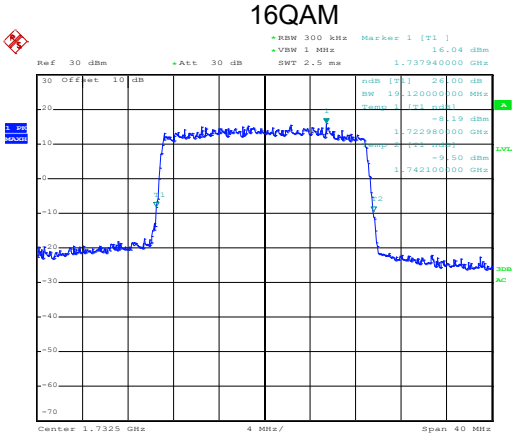
QPSK



Date: 18.DEC.2017 16:05:10

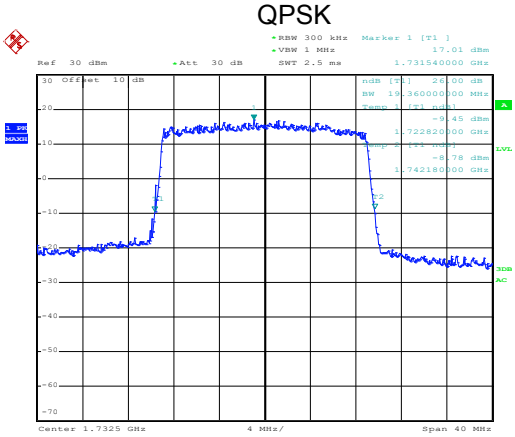
Lowest channel

16QAM



Date: 18.DEC.2017 16:06:10

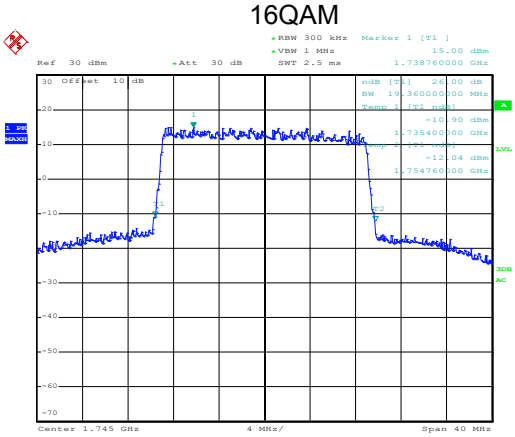
QPSK



Date: 18.DEC.2017 16:06:04

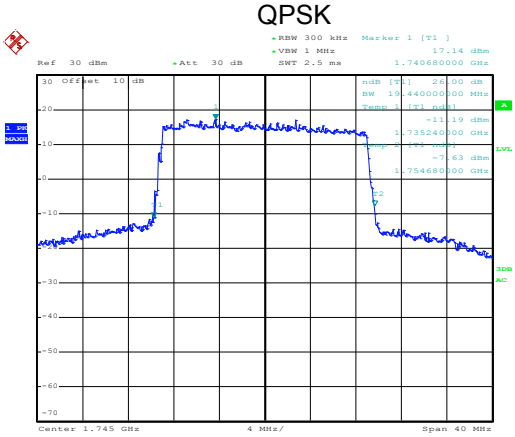
Middle channel

16QAM



Date: 18.DEC.2017 16:07:40

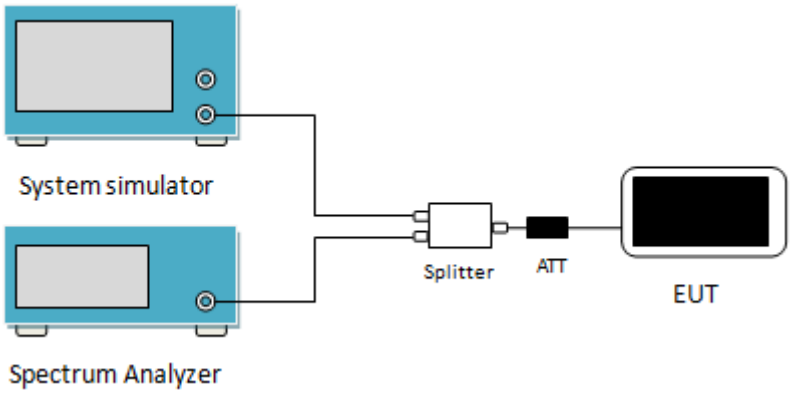
QPSK



Date: 18.DEC.2017 16:07:36

Highest channel

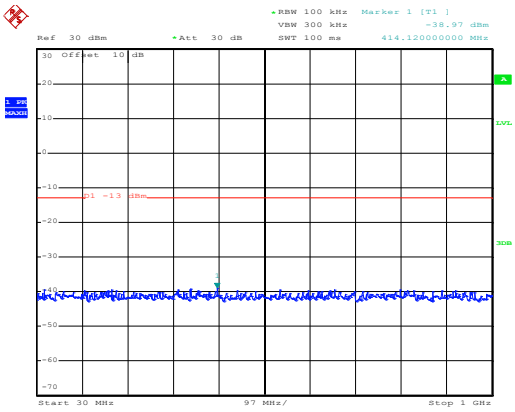
6.4 Out of band emission at antenna terminals

Test Requirement:	part 27.53(h)
Test Method:	ANSI/TIA-603-D 2010
Limit:	LTE Band 4: 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 (-13 dBm).
Test Setup:	
Test Procedure:	1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 The resolution bandwidth of the spectrum analyzer was set at 100 kHz when below 1GHz, 1MHz when above 1 GHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic. 3 For the out of band: Set the RBW=100 kHz, VBW=300 kHz when below 1 GHz, RBW =1 MHz, VBW=3 MHz when above 1 GHz, Start=30MHz, Stop= 10th harmonic. 4 Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plots as follows:
Conducted spurious emission
LTE band 4, 1.4MHz

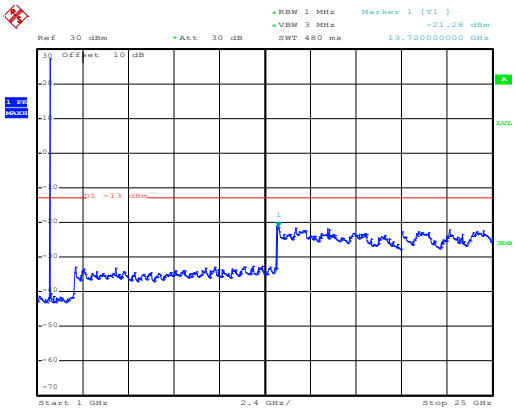
16 QAM & RB Size 1

Lowest channel



Date: 18.DEC.2017 15:25:30

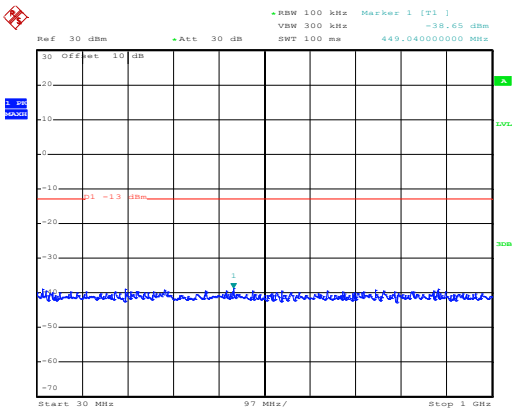
30MHz~1GHz



Date: 18.DEC.2017 13:17:34

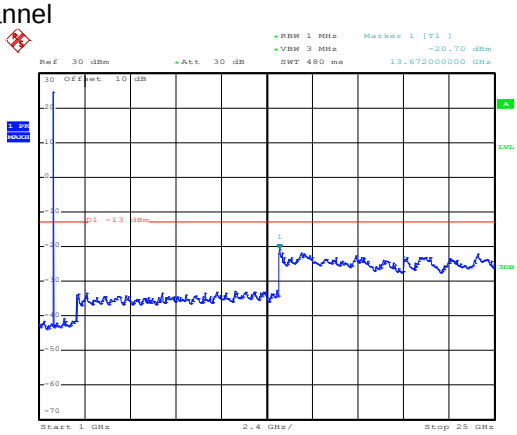
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:26:03

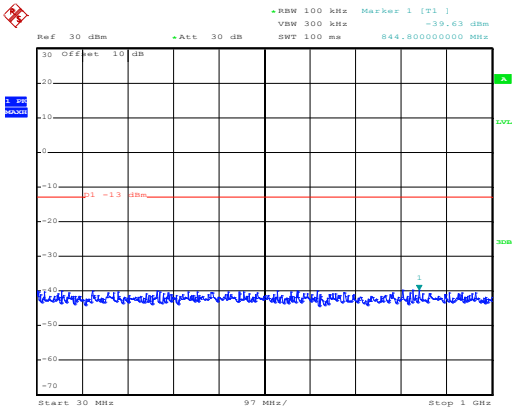
30MHz~1GHz



Date: 18.DEC.2017 13:19:14

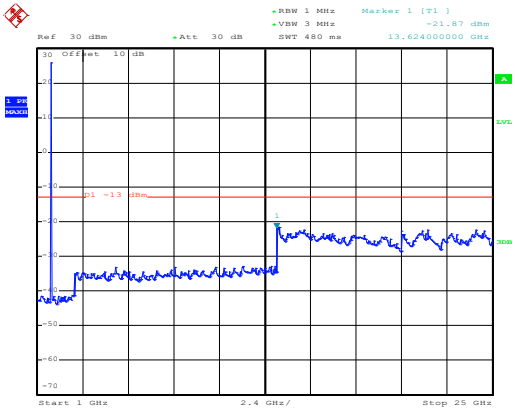
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:25:10

30MHz~1GHz

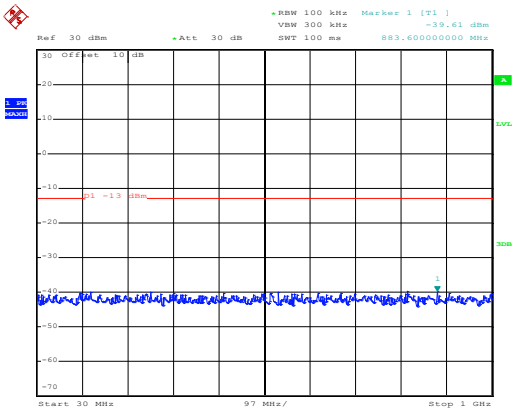


Date: 18.DEC.2017 13:22:40

1GHz~25GHz

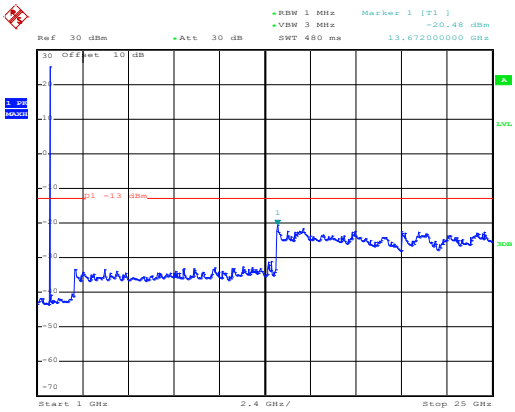
16 QAM & RB Size 3

Lowest channel



Date: 18.DEC.2017 15:26:54

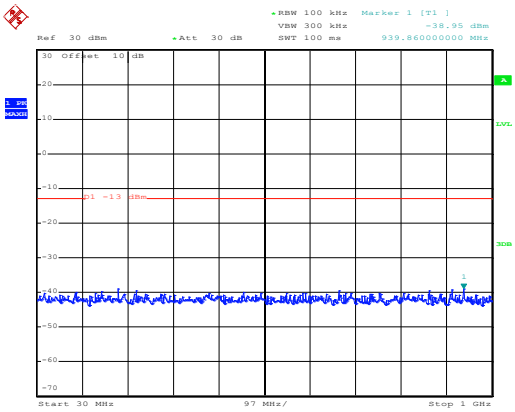
30MHz~1GHz



Date: 18.DEC.2017 13:18:06

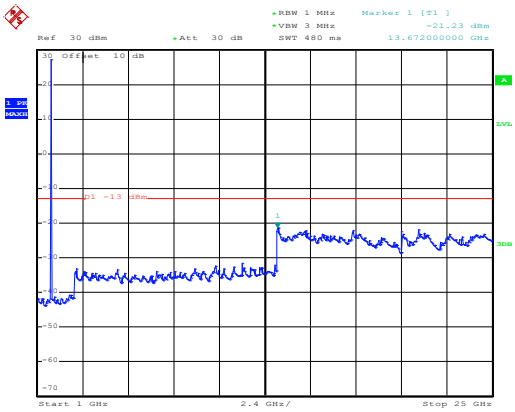
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:26:17

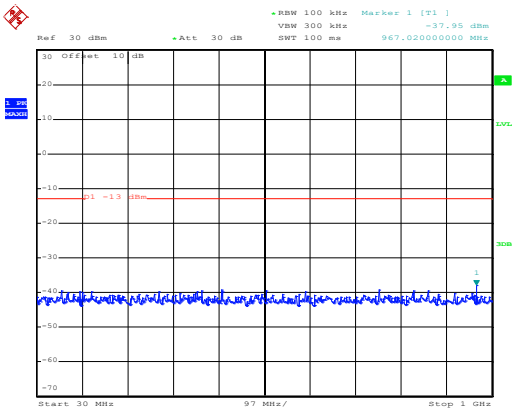
30MHz~1GHz



Date: 18.DEC.2017 13:19:34

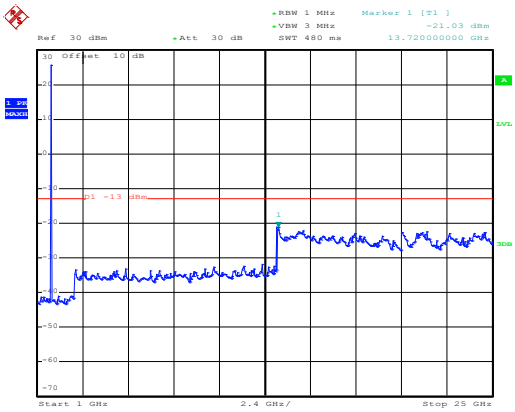
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:26:44

30MHz~1GHz

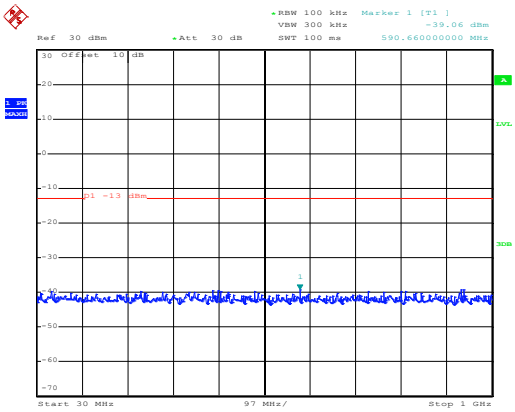


Date: 18.DEC.2017 13:23:04

1GHz~25GHz

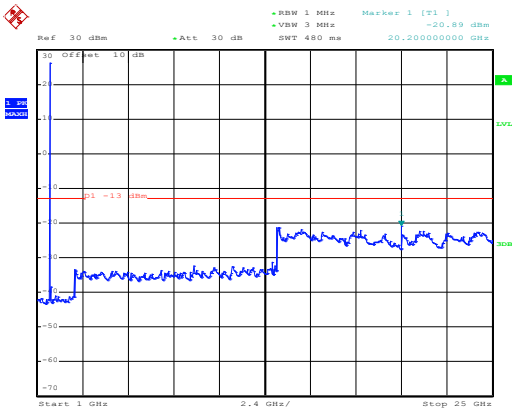
16 QAM & RB Size 6

Lowest channel



Date: 18.DEC.2017 15:27:06

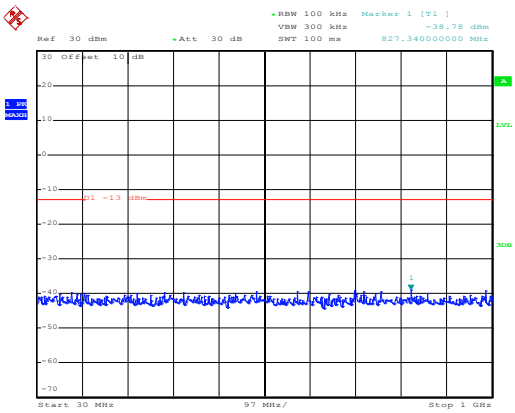
30MHz~1GHz



Date: 18.DEC.2017 13:18:32

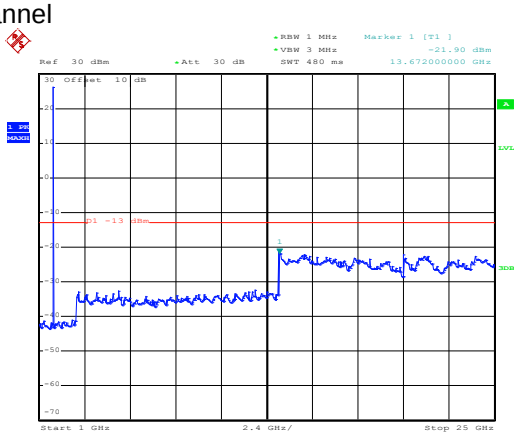
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:26:28

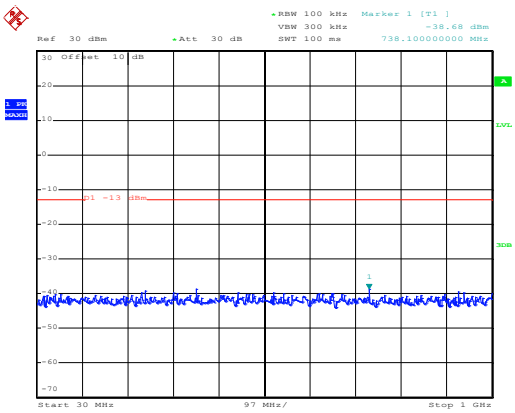
30MHz~1GHz



Date: 18.DEC.2017 13:19:55

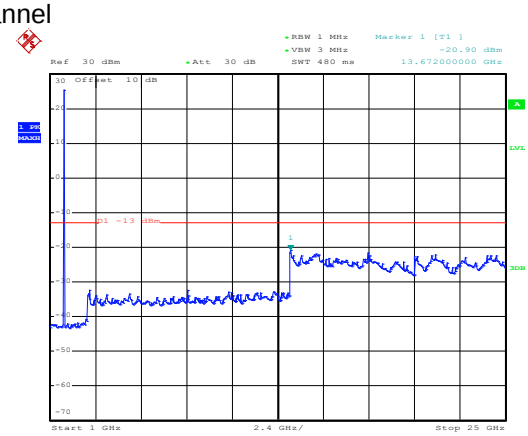
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:25:43

30MHz~1GHz

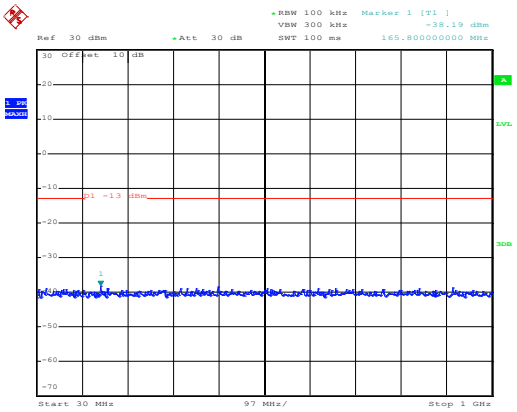


Date: 18.DEC.2017 13:26:29

1GHz~25GHz

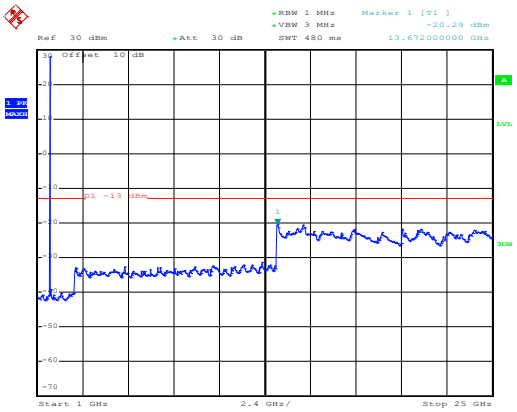
QPSK & RB Size 1

Lowest channel



Date: 18.DEC.2017 15:24:52

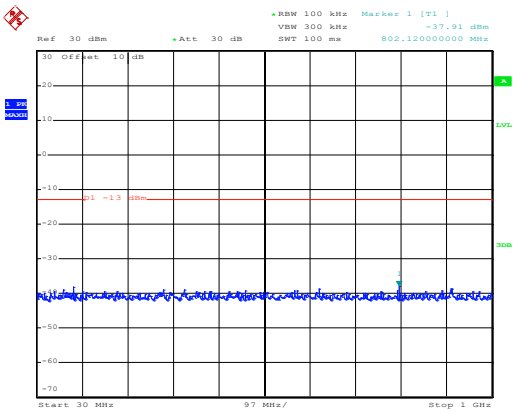
30MHz~1GHz



Date: 18.DEC.2017 13:17:19

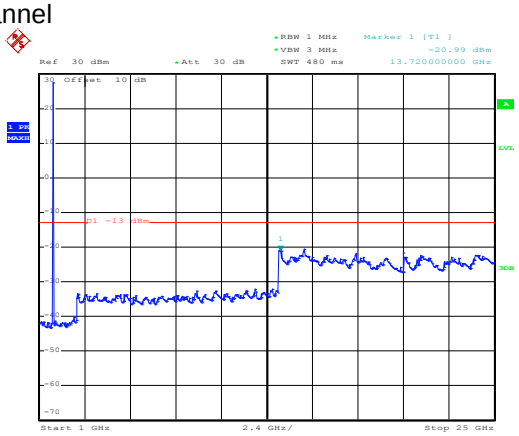
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:25:54

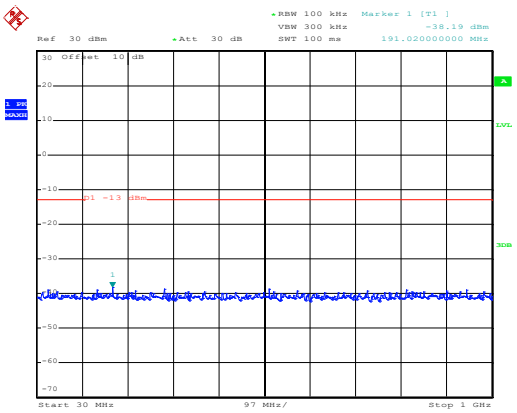
30MHz~1GHz



Date: 18.DEC.2017 13:19:04

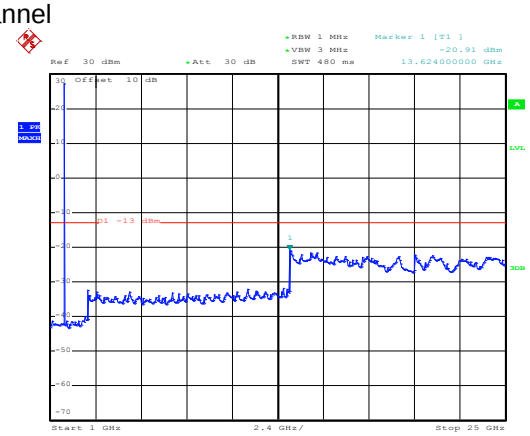
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:26:40

30MHz~1GHz

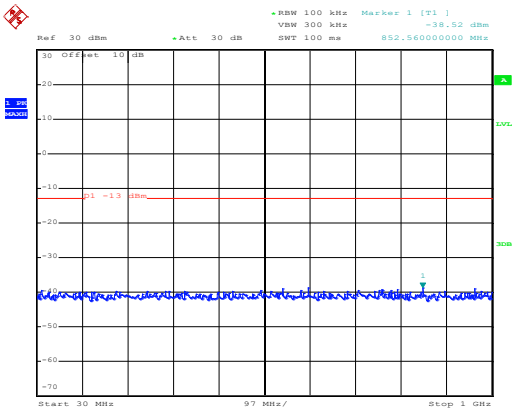


Date: 18.DEC.2017 13:22:30

1GHz~25GHz

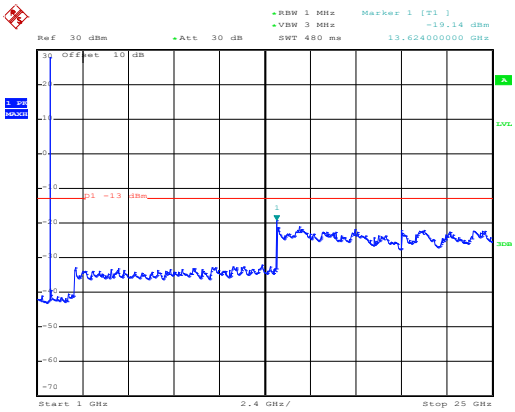
QPSK & RB Size 3

Lowest channel



Date: 18.DEC.2017 15:25:20

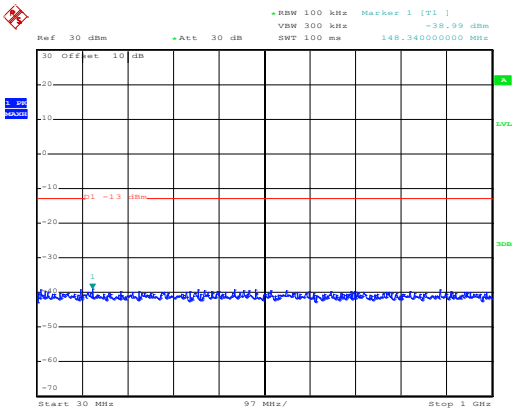
30MHz~1GHz



Date: 18.DEC.2017 13:17:56

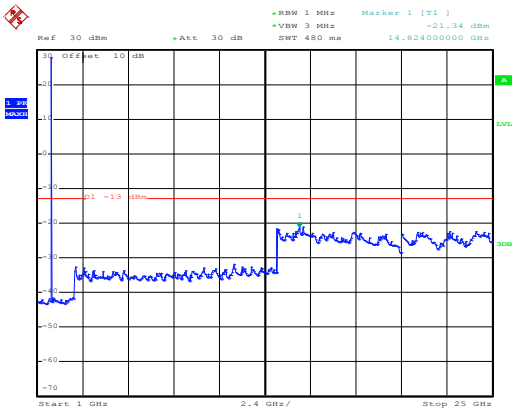
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:26:14

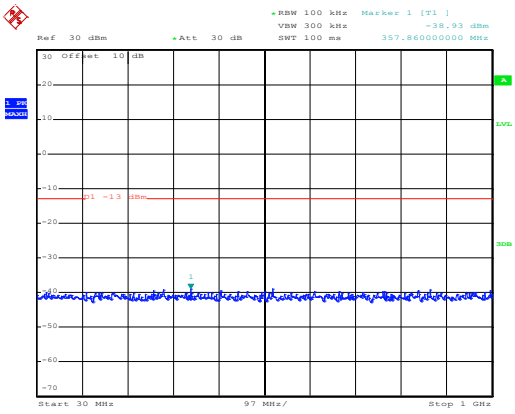
30MHz~1GHz



Date: 18.DEC.2017 13:19:26

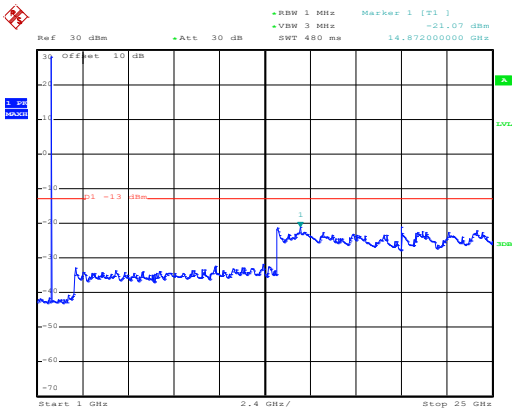
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:26:50

30MHz~1GHz

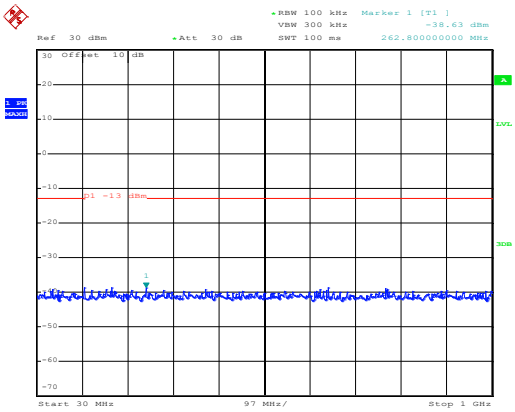


Date: 18.DEC.2017 13:22:53

1GHz~25GHz

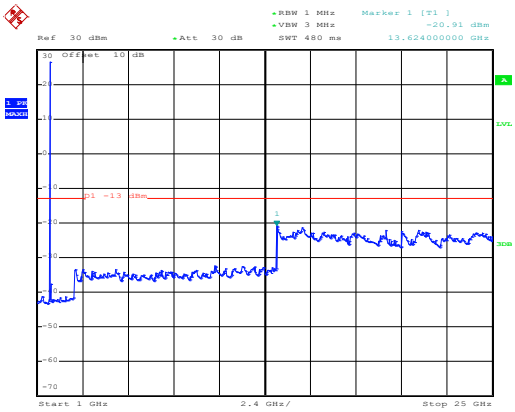
QPSK & RB Size 6

Lowest channel



Date: 18.DEC.2017 15:25:39

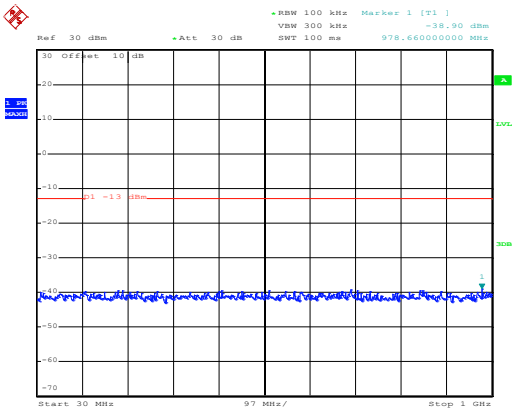
30MHz~1GHz



Date: 18.DEC.2017 13:18:19

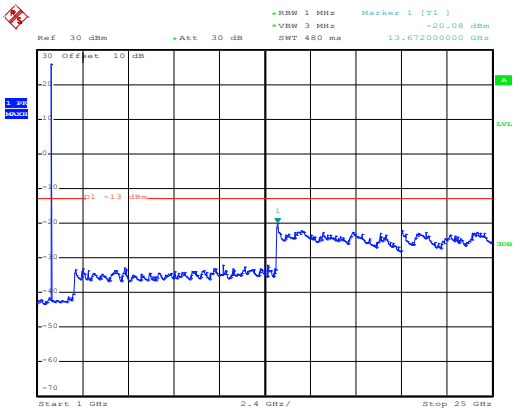
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:26:25

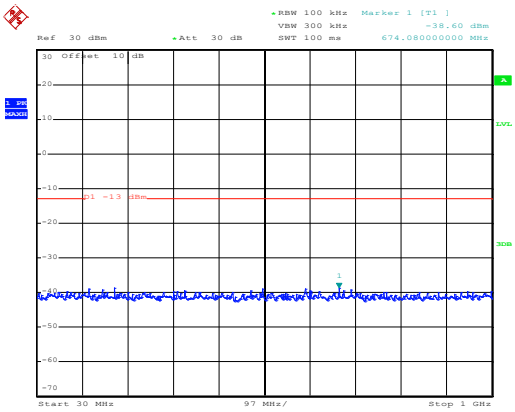
30MHz~1GHz



Date: 18.DEC.2017 13:19:46

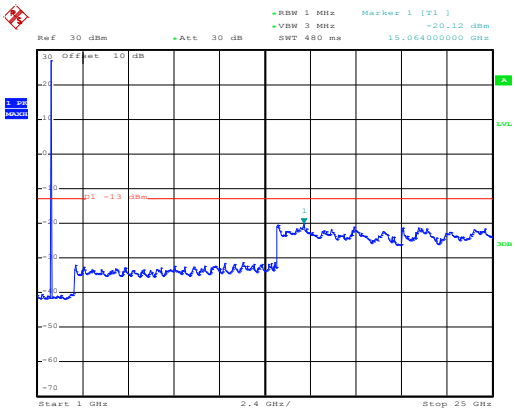
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:27:02

30MHz~1GHz



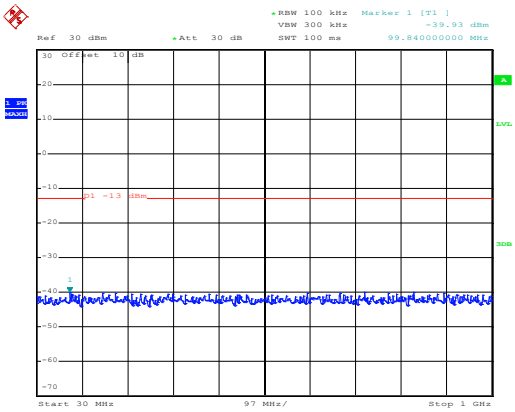
Date: 18.DEC.2017 13:26:20

1GHz~25GHz

3MHz

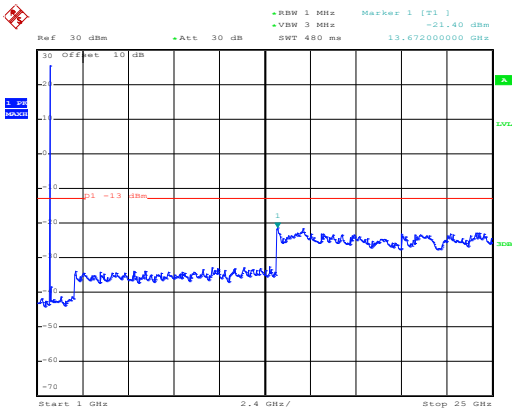
16 QAM & RB Size 1

Lowest channel



Date: 18.DEC.2017 15:27:26

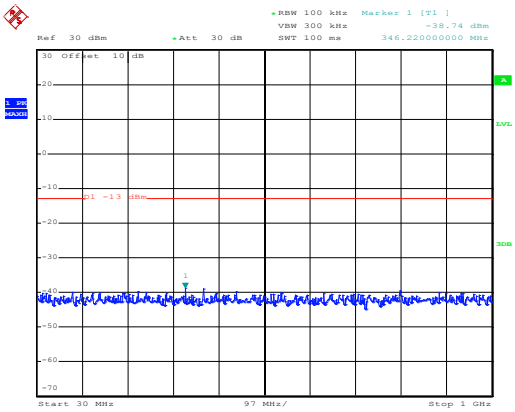
30MHz~1GHz



Date: 18.DEC.2017 13:27:33

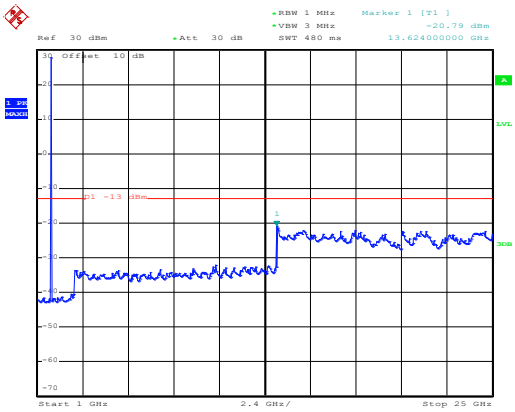
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:28:08

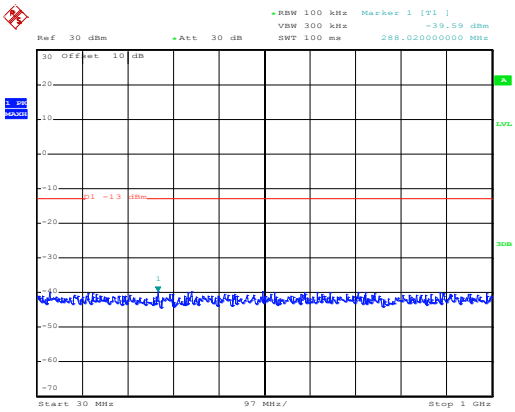
30MHz~1GHz



Date: 18.DEC.2017 13:29:08

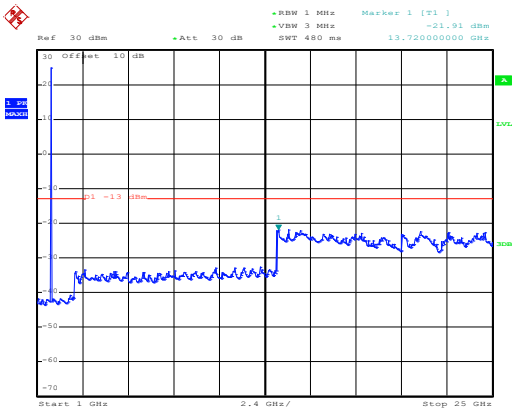
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:29:00

30MHz~1GHz

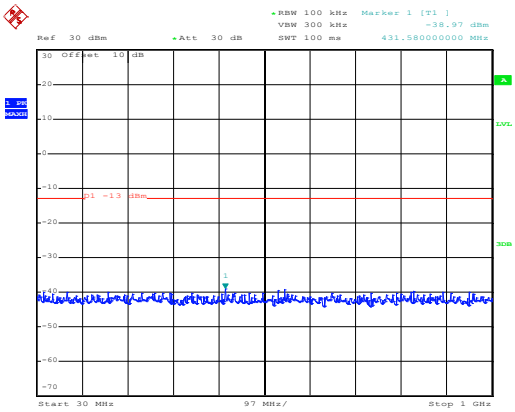


Date: 18.DEC.2017 13:30:32

1GHz~25GHz

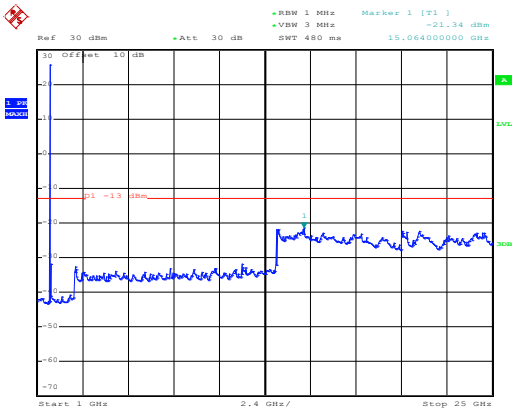
16 QAM & RB Size 8

Lowest channel



Date: 18.DEC.2017 15:27:37

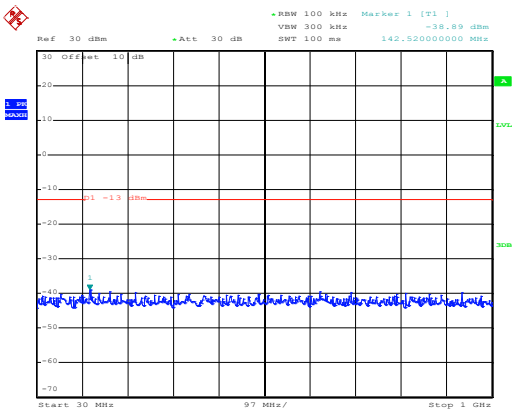
30MHz~1GHz



Date: 18.DEC.2017 13:28:01

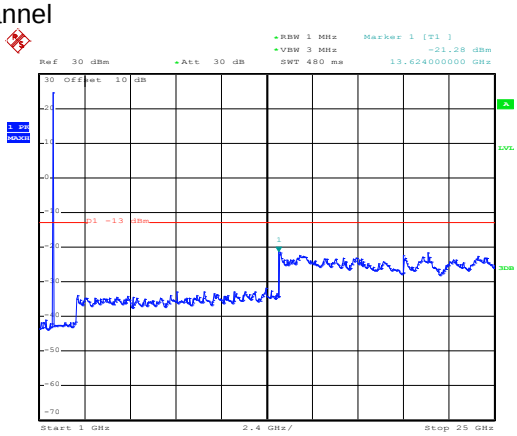
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:28:35

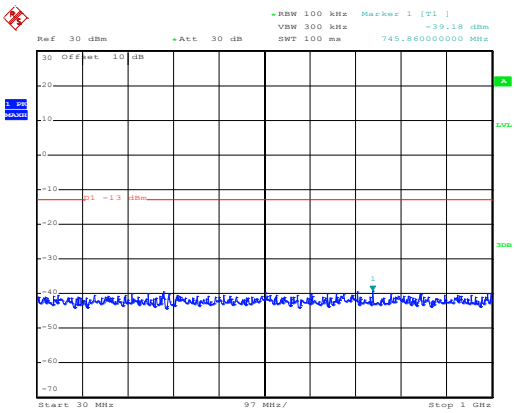
30MHz~1GHz



Date: 18.DEC.2017 13:29:33

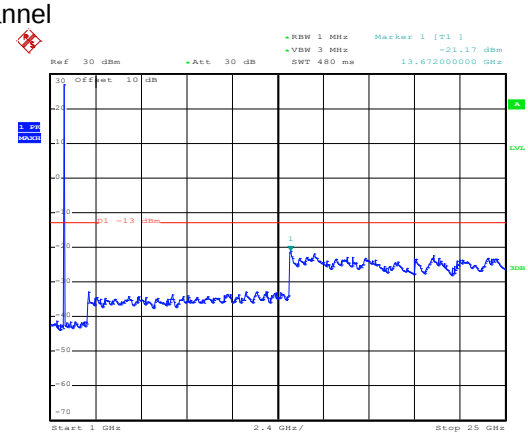
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:29:11

30MHz~1GHz

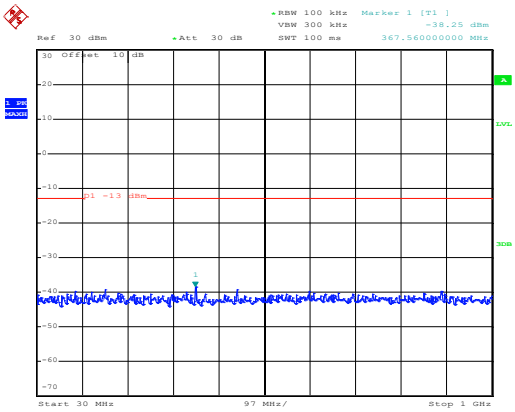


Date: 18.DEC.2017 13:31:01

1GHz~25GHz

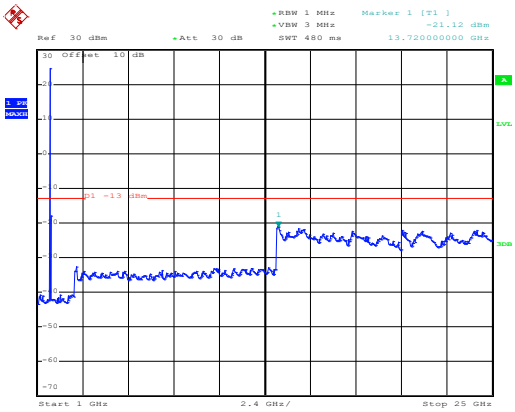
16 QAM & RB Size 15

Lowest channel



Date: 18.DEC.2017 15:27:52

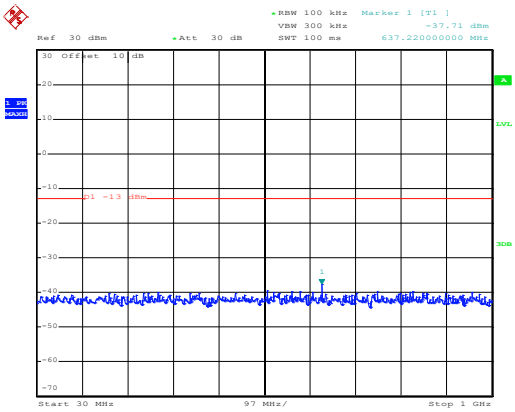
30MHz~1GHz



Date: 18.DEC.2017 13:28:20

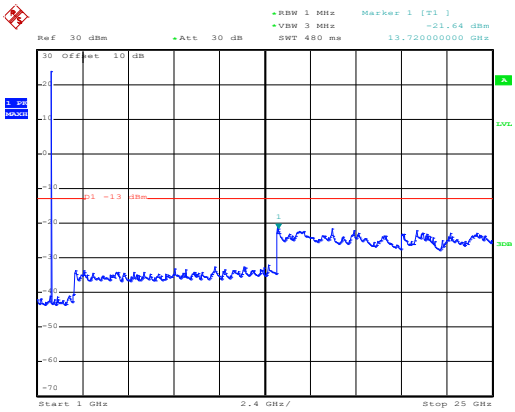
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:28:47

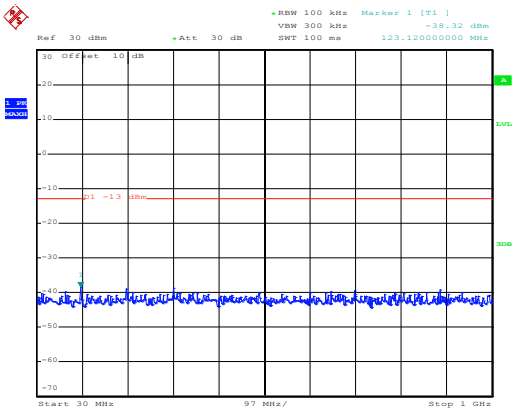
30MHz~1GHz



Date: 18.DEC.2017 13:29:53

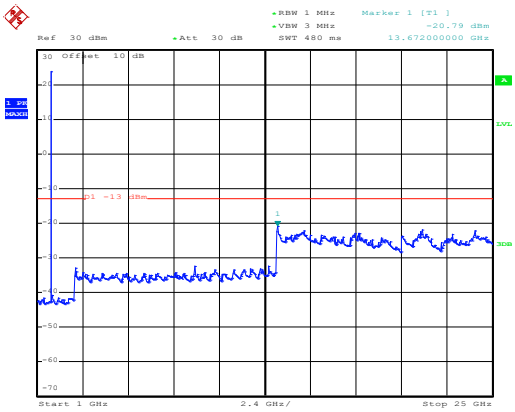
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:29:21

30MHz~1GHz

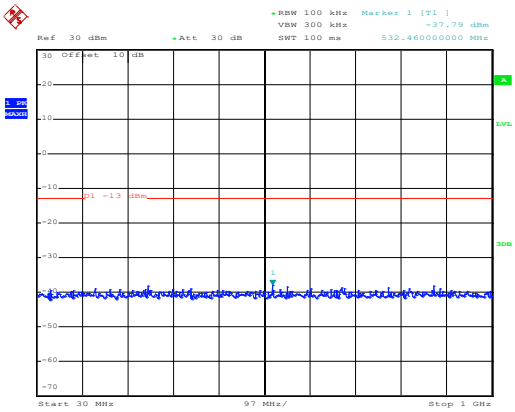


Date: 18.DEC.2017 13:31:19

1GHz~25GHz

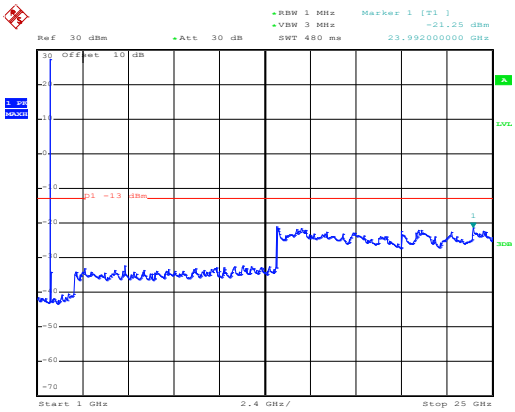
QPSK & RB Size 1

Lowest channel



Date: 18.DEC.2017 15:27:23

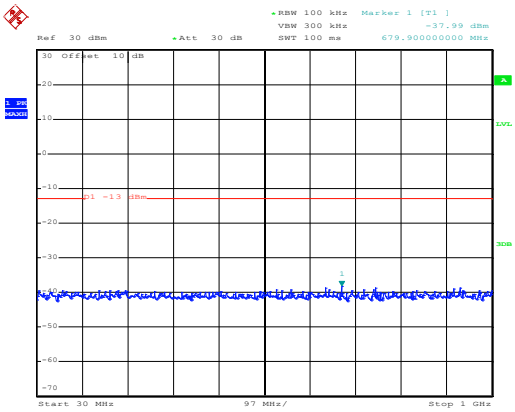
30MHz~1GHz



Date: 18.DEC.2017 13:27:23

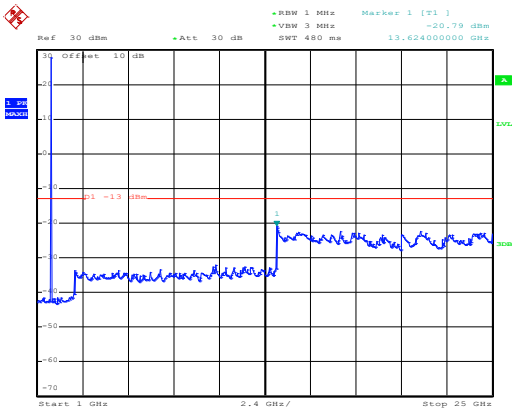
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:28:04

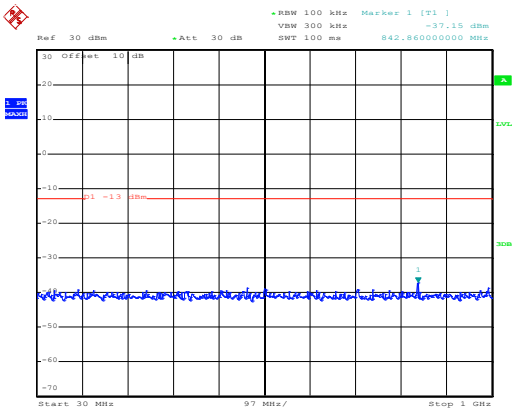
30MHz~1GHz



Date: 18.DEC.2017 13:29:00

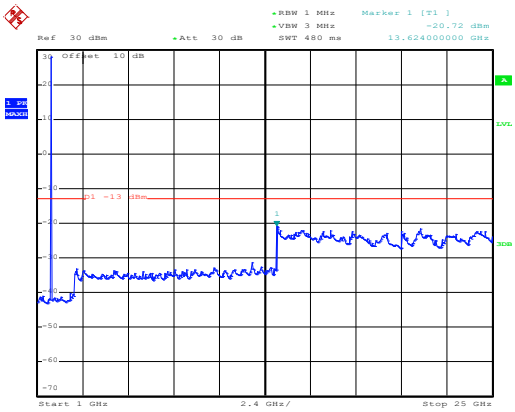
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:28:57

30MHz~1GHz

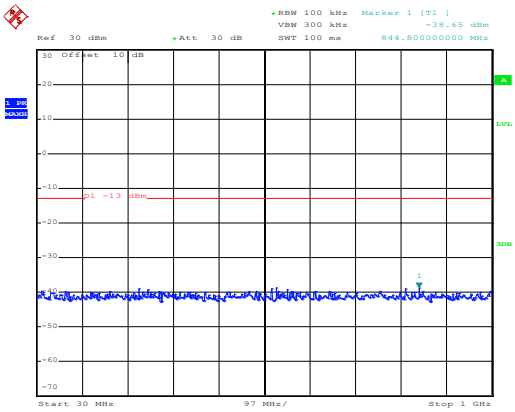


Date: 18.DEC.2017 13:30:23

1GHz~25GHz

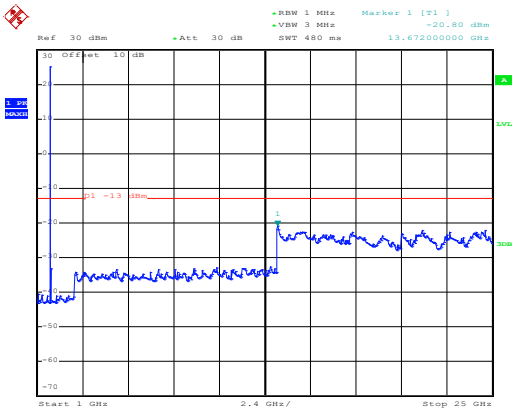
QPSK & RB Size 8

Lowest channel



Date: 18.DEC.2017 15:27:34

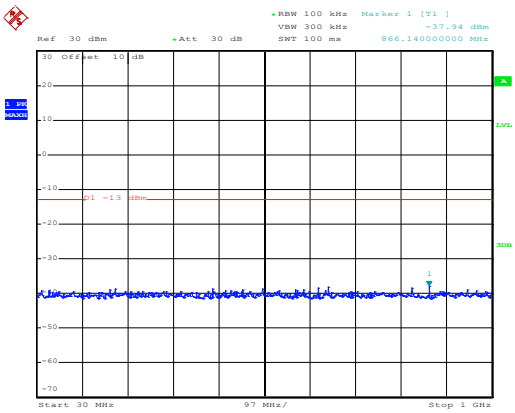
30MHz~1GHz



Date: 18.DEC.2017 13:27:50

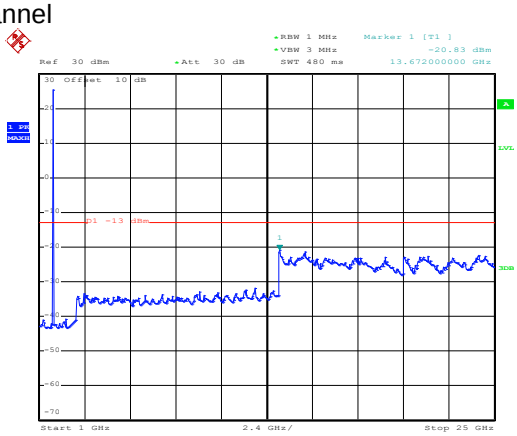
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:28:31

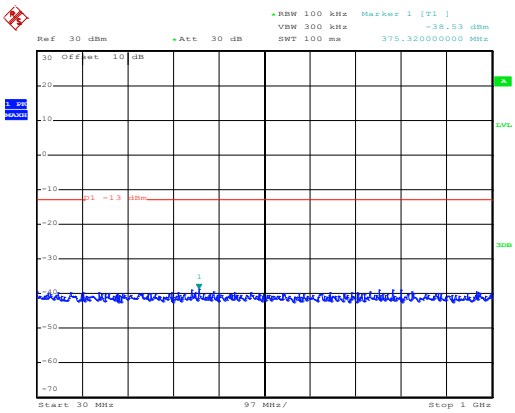
30MHz~1GHz



Date: 18.DEC.2017 13:29:22

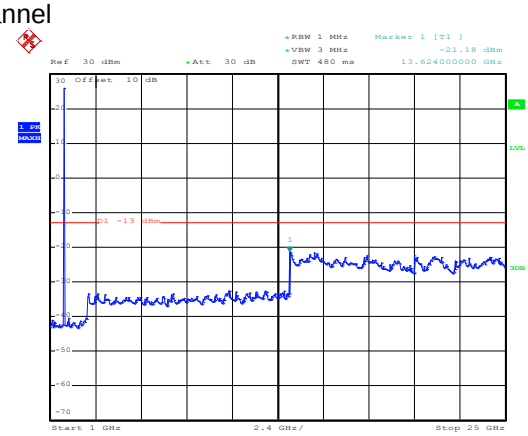
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:29:07

30MHz~1GHz

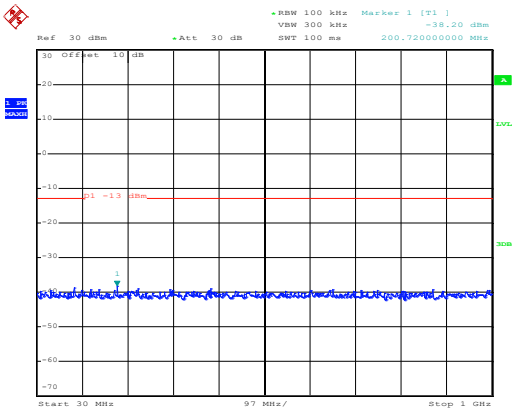


Date: 18.DEC.2017 13:30:53

1GHz~25GHz

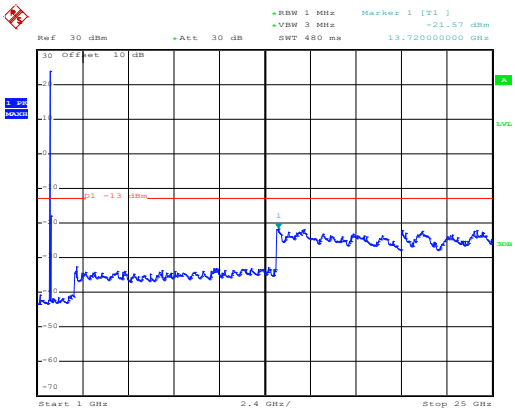
QPSK & RB Size 15

Lowest channel



Date: 18.DEC.2017 15:27:49

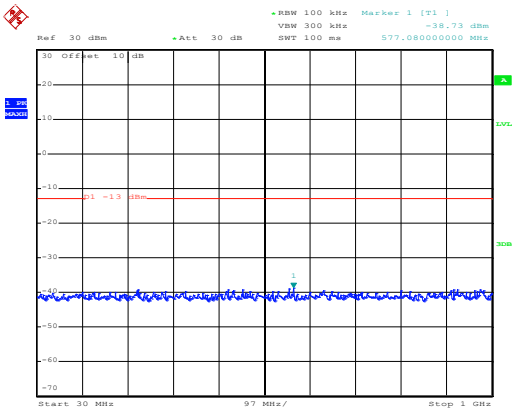
30MHz~1GHz



Date: 18.DEC.2017 13:28:14

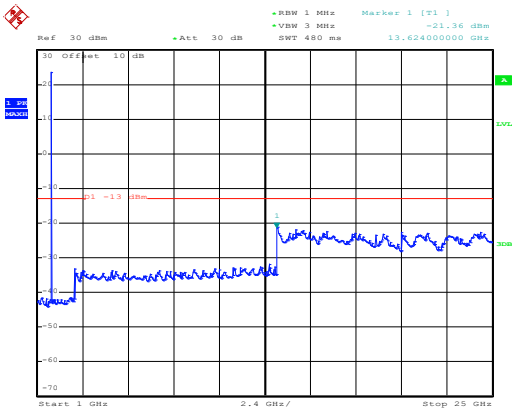
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 15:28:43

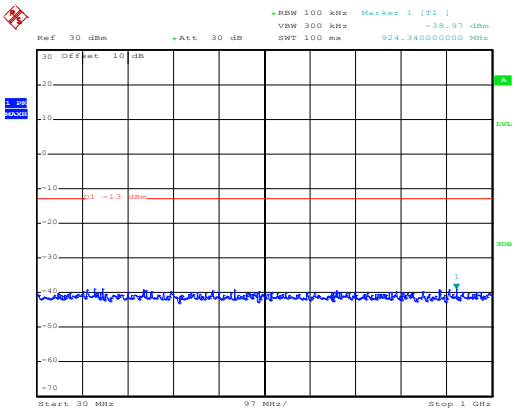
30MHz~1GHz



Date: 18.DEC.2017 13:29:44

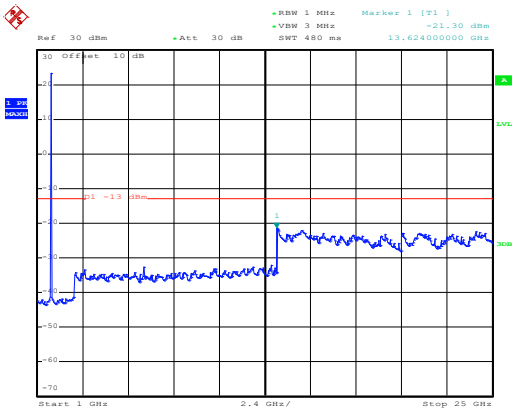
1GHz~25GHz

High channel



Date: 18.DEC.2017 15:29:18

30MHz~1GHz



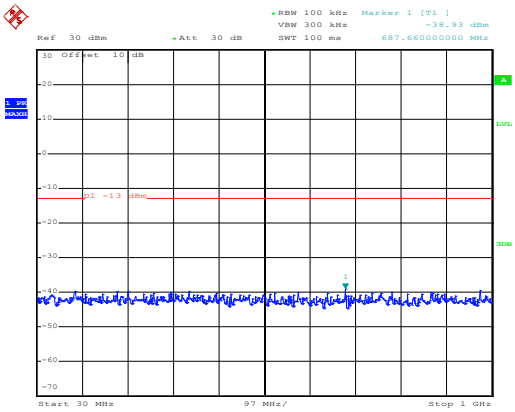
Date: 18.DEC.2017 13:31:12

1GHz~25GHz

5MHz

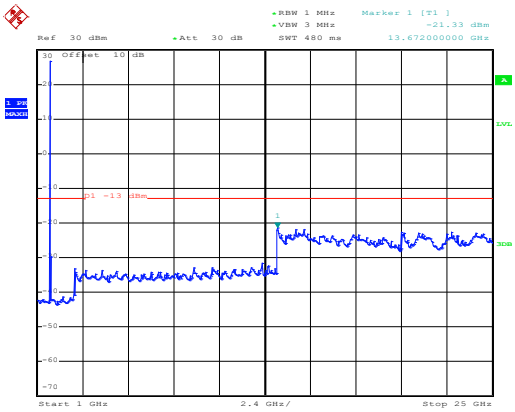
16 QAM & RB Size 1

Lowest channel



Date: 18.DEC.2017 15:29:41

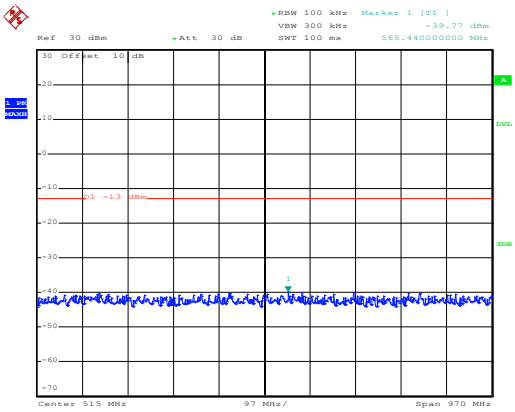
30MHz~1GHz



Date: 18.DEC.2017 13:37:13

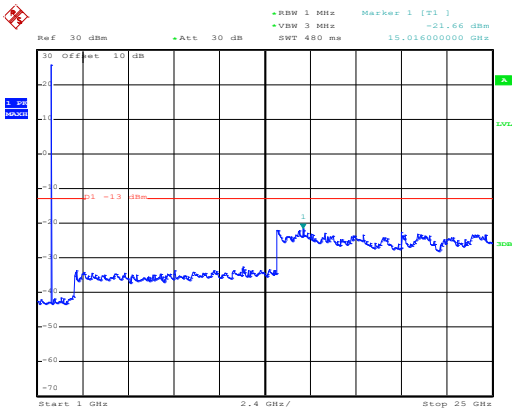
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:33:48

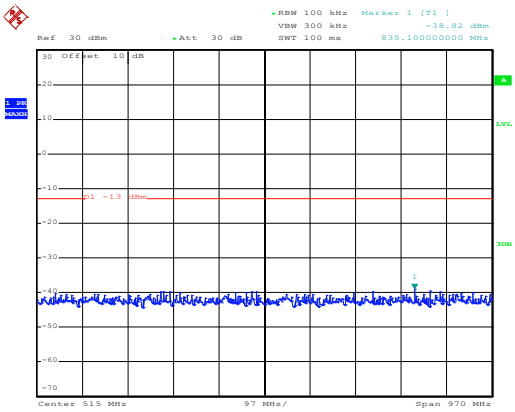
30MHz~1GHz



Date: 18.DEC.2017 13:38:42

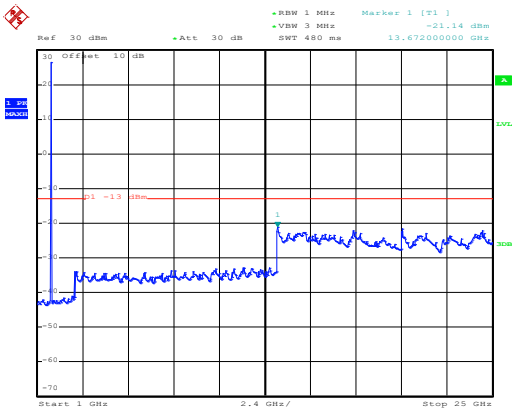
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:34:30

30MHz~1GHz

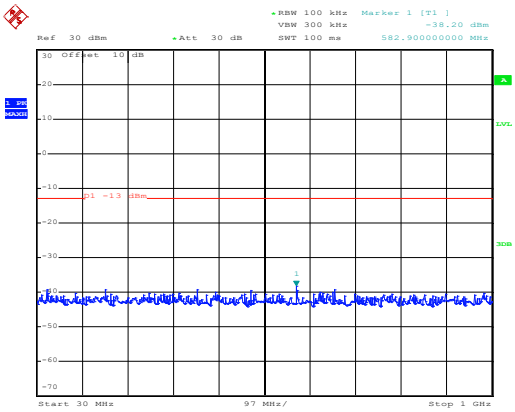


Date: 18.DEC.2017 13:39:52

1GHz~25GHz

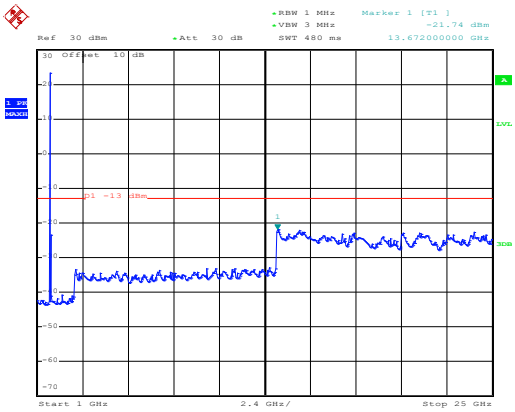
16 QAM & RB Size 12

Lowest channel



Date: 18.DEC.2017 15:29:51

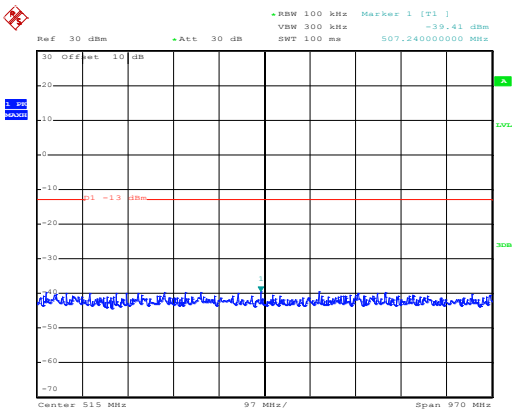
30MHz~1GHz



Date: 18.DEC.2017 13:37:44

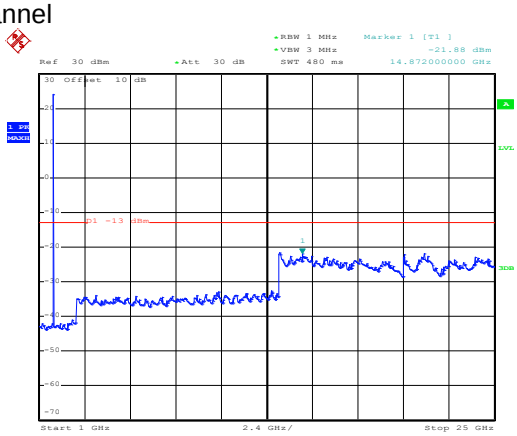
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:34:02

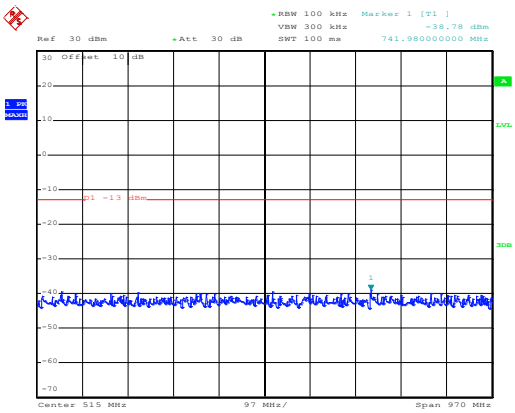
30MHz~1GHz



Date: 18.DEC.2017 13:39:05

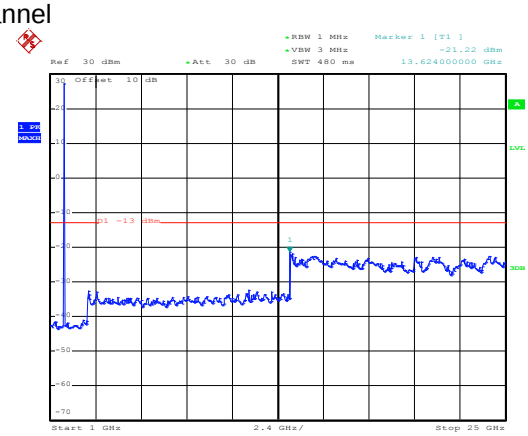
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:34:39

30MHz~1GHz

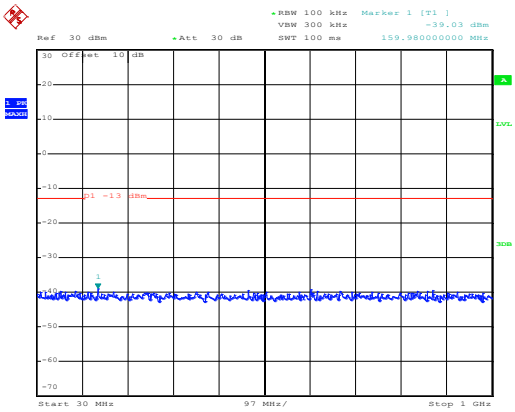


Date: 18.DEC.2017 13:40:14

1GHz~25GHz

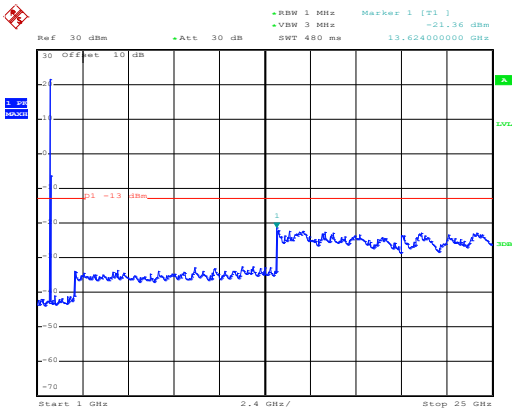
16 QAM & RB Size 25

Lowest channel



Date: 18.DEC.2017 15:29:48

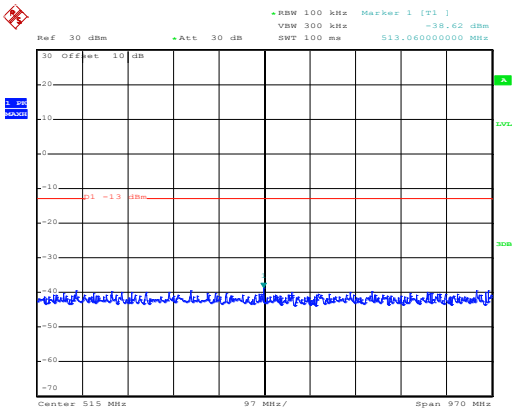
30MHz~1GHz



Date: 18.DEC.2017 13:38:06

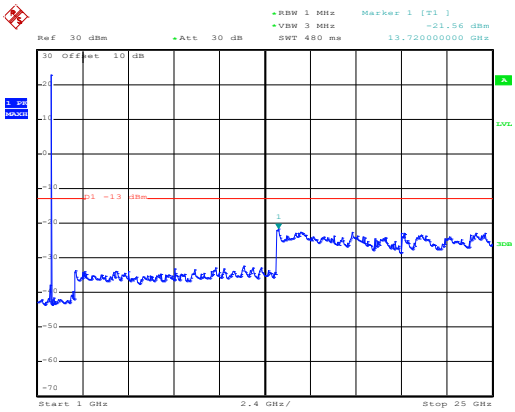
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:34:14

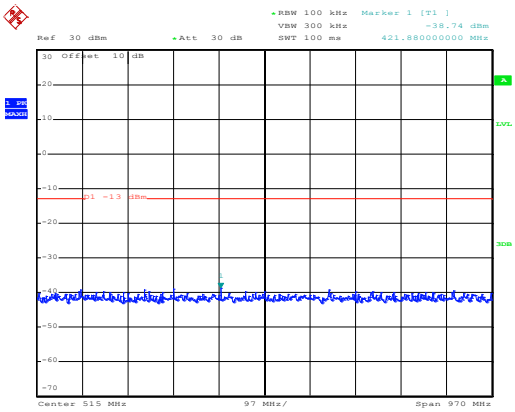
30MHz~1GHz



Date: 18.DEC.2017 13:39:24

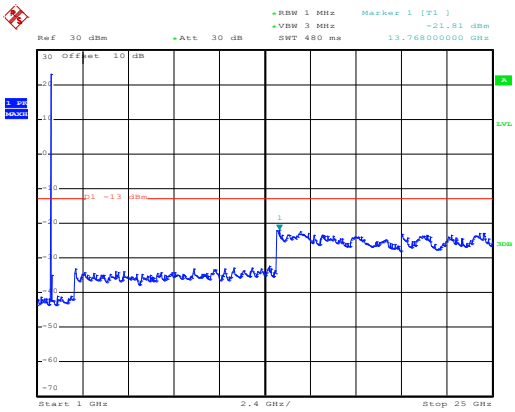
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:34:54

30MHz~1GHz

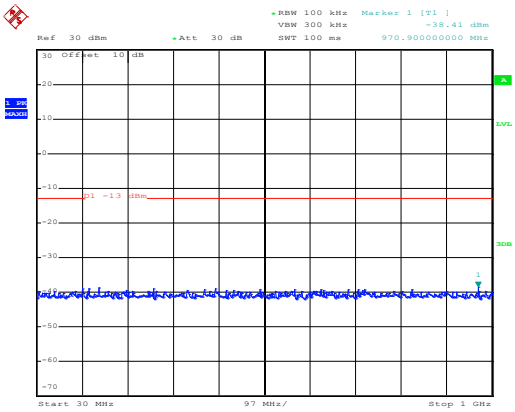


Date: 18.DEC.2017 13:40:35

1GHz~25GHz

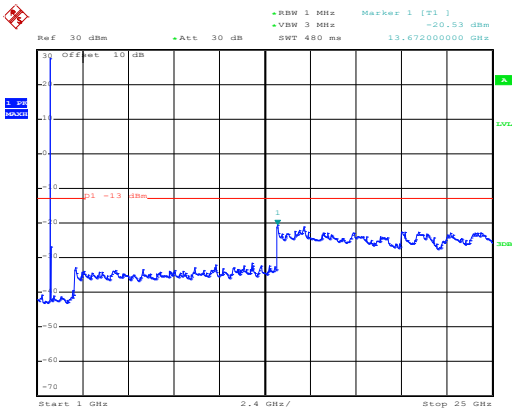
QPSK & RB Size 1

Lowest channel



Date: 18.DEC.2017 15:29:34

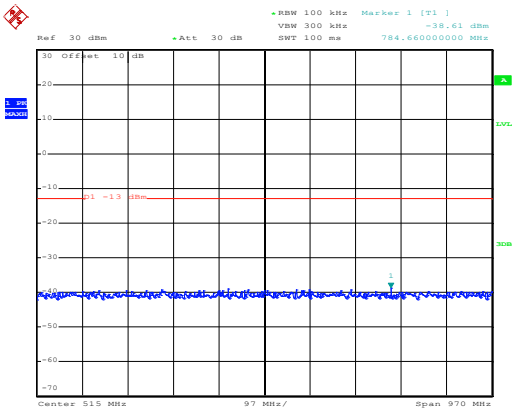
30MHz~1GHz



Date: 18.DEC.2017 13:37:03

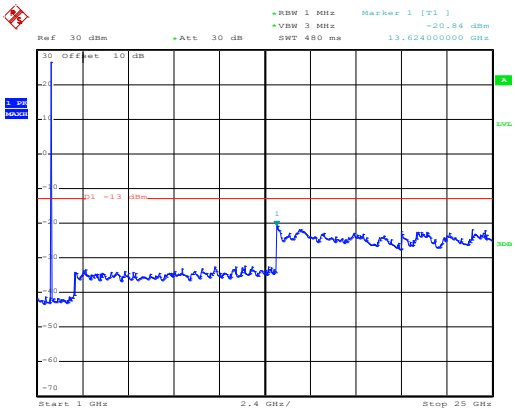
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:33:44

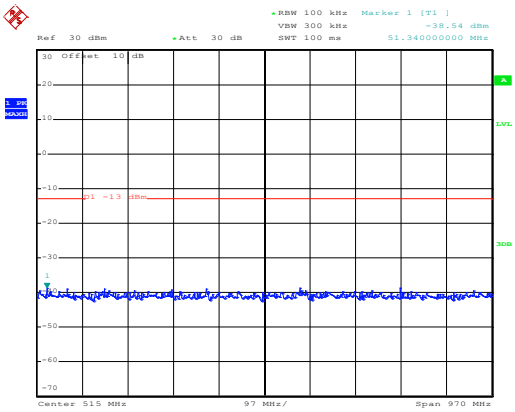
30MHz~1GHz



Date: 18.DEC.2017 13:38:33

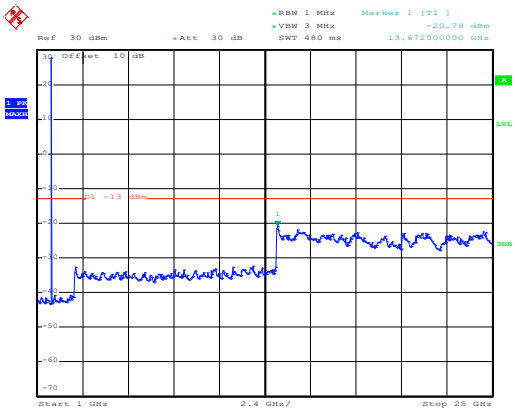
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:34:26

30MHz~1GHz



Date: 18.DEC.2017 13:39:44

1GHz~25GHz