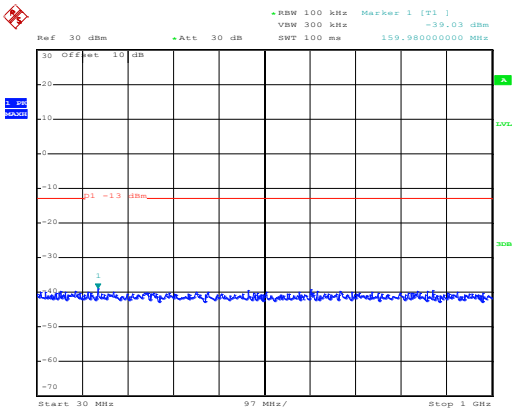
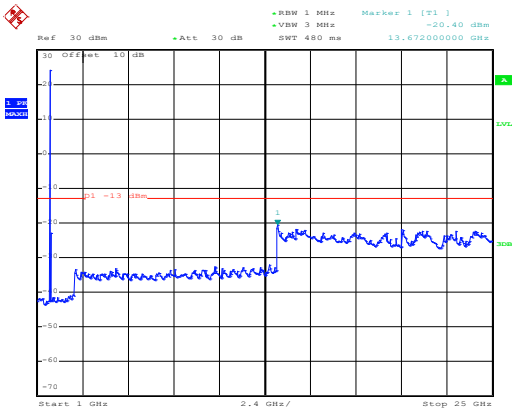
QPSK & RB Size 12

Lowest channel



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

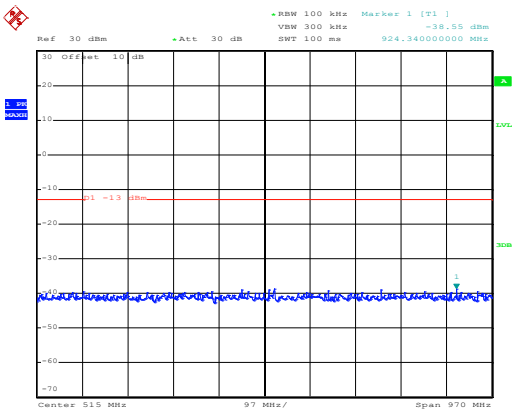
30MHz~1GHz



Date: 18.DEC.2017 13:37:32

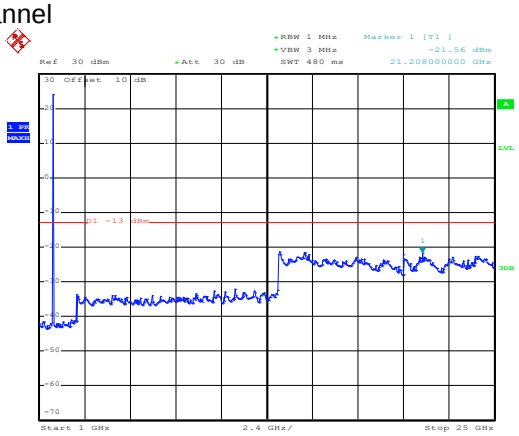
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:33:58

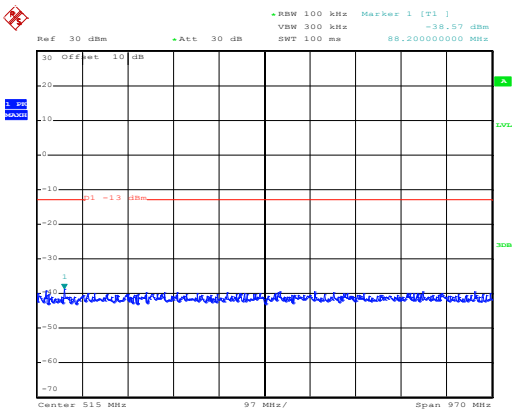
30MHz~1GHz



Date: 18.DEC.2017 13:38:55

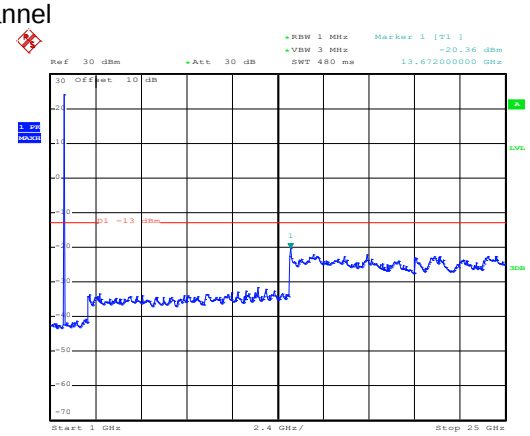
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:34:36

30MHz~1GHz

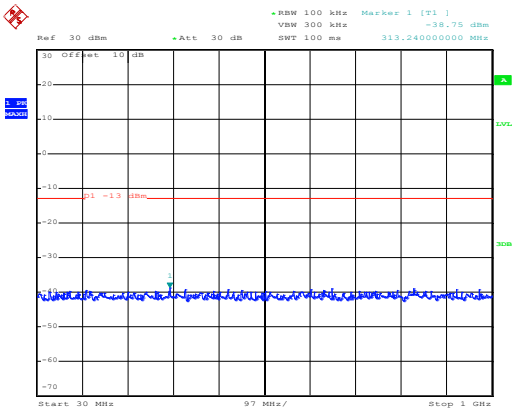


Date: 18.DEC.2017 13:40:06

1GHz~25GHz

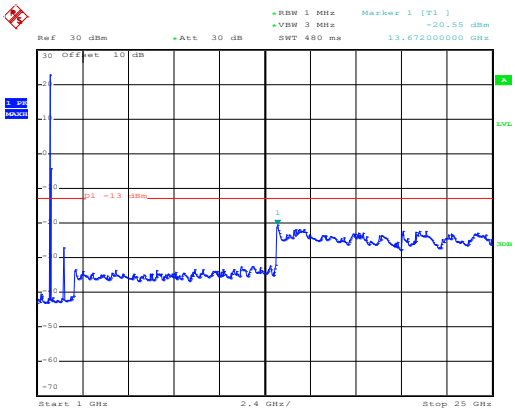
QPSK & RB Size 25

Lowest channel



Date: 18.DEC.2017 15:29:58

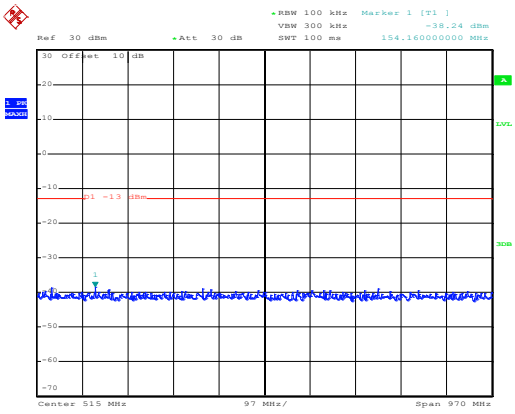
30MHz~1GHz



Date: 18.DEC.2017 13:37:58

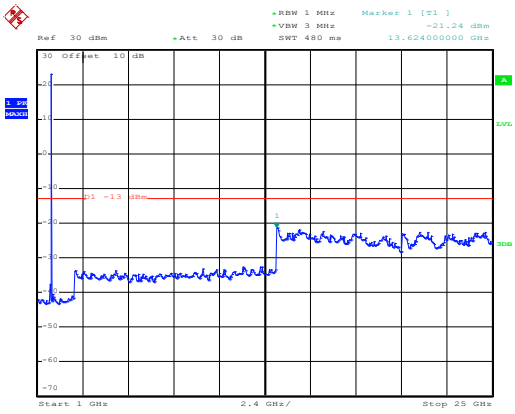
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:34:11

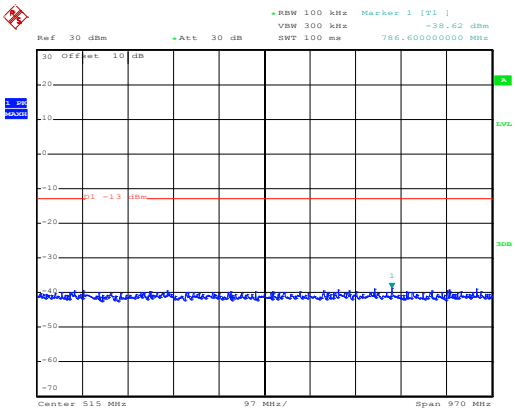
30MHz~1GHz



Date: 18.DEC.2017 13:39:17

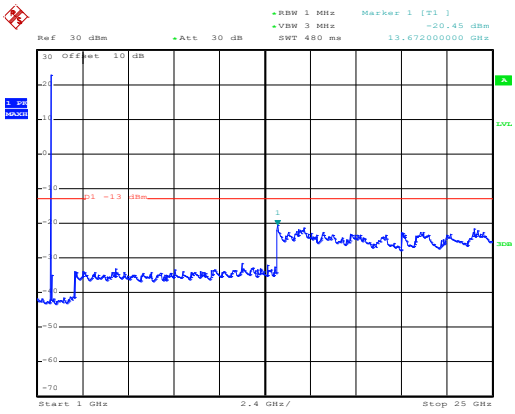
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:34:48

30MHz~1GHz



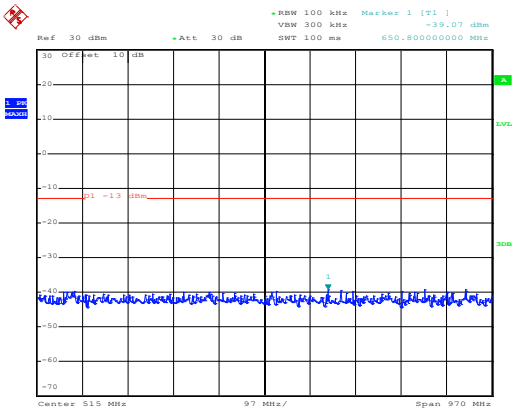
Date: 18.DEC.2017 13:40:28

1GHz~25GHz

10MHz

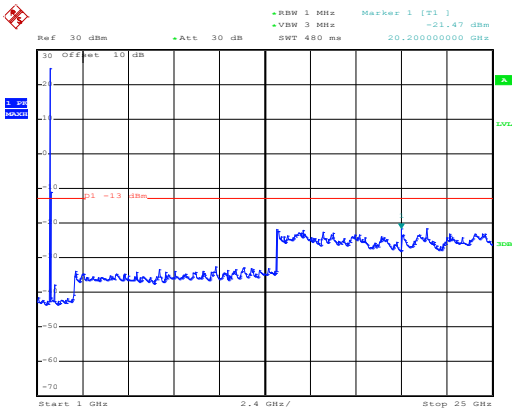
16 QAM & RB Size 1

Lowest channel



Date: 18.DEC.2017 14:35:13

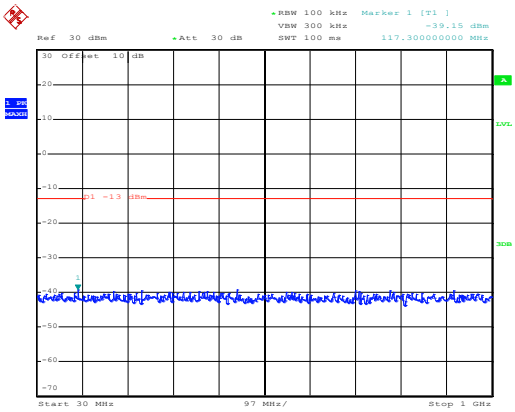
30MHz~1GHz



Date: 18.DEC.2017 13:41:23

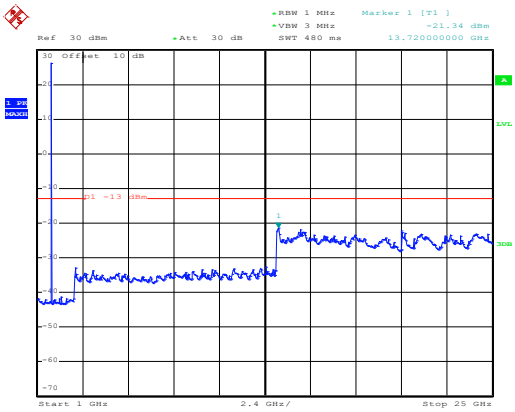
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:36:03

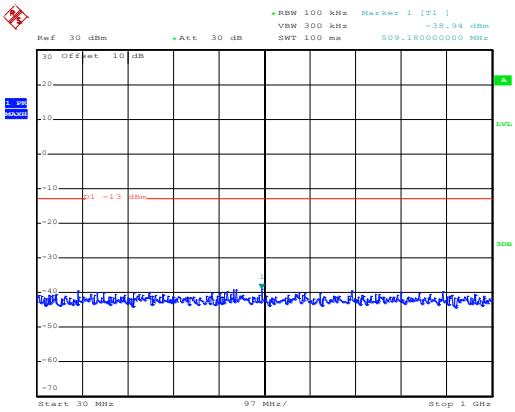
30MHz~1GHz



Date: 18.DEC.2017 13:42:49

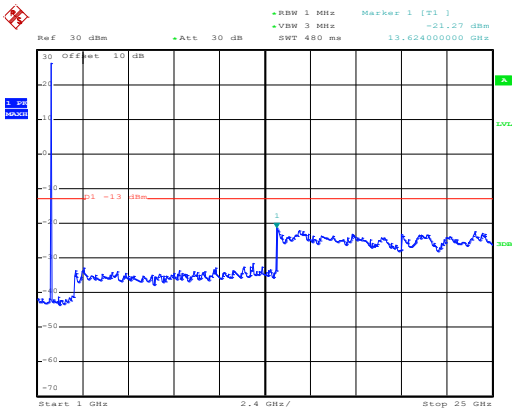
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:36:42

30MHz~1GHz

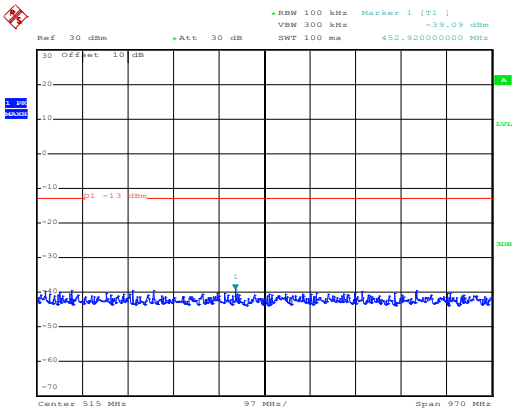


Date: 18.DEC.2017 13:44:13

1GHz~25GHz

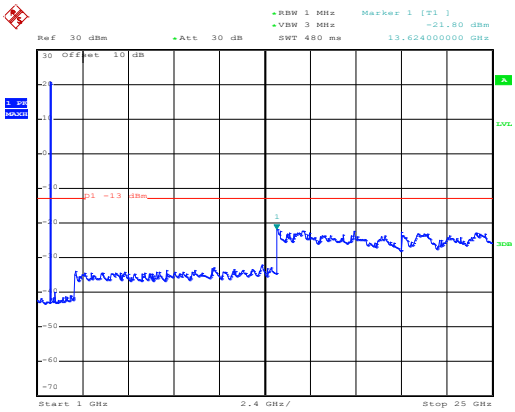
16 QAM & RB Size 25

Lowest channel



Date: 18.DEC.2017 14:35:23

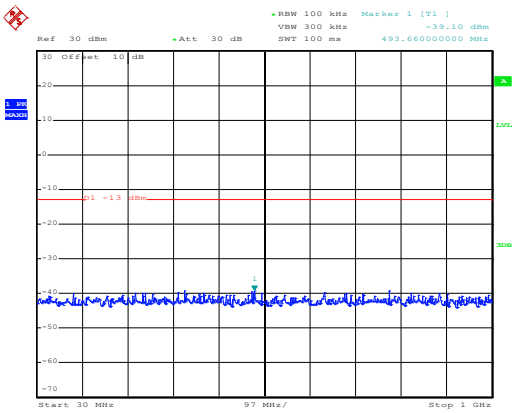
30MHz~1GHz



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

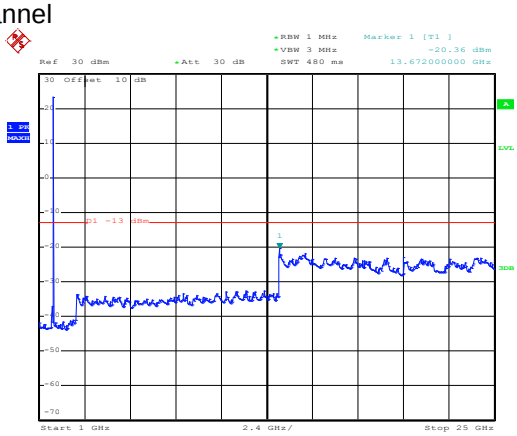
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:36:14

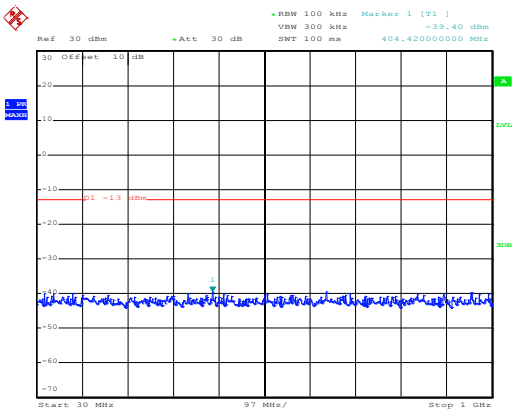
30MHz~1GHz



Date: 18.DEC.2017 13:43:13

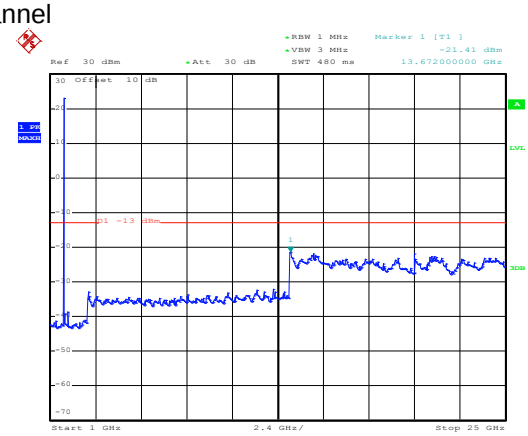
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:36:53

30MHz~1GHz

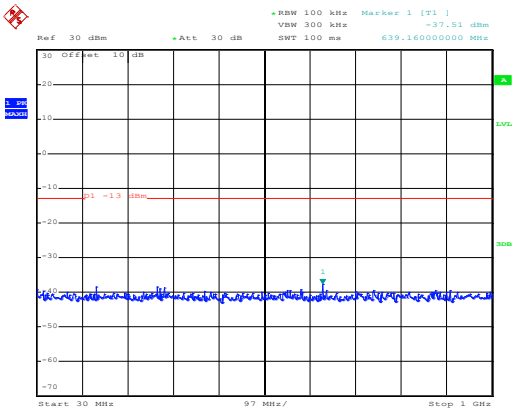


Date: 18.DEC.2017 13:44:40

1GHz~25GHz

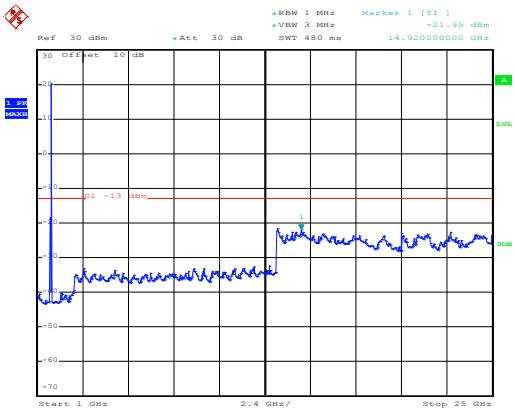
16 QAM & RB Size 50

Lowest channel



Date: 18.DEC.2017 14:35:47

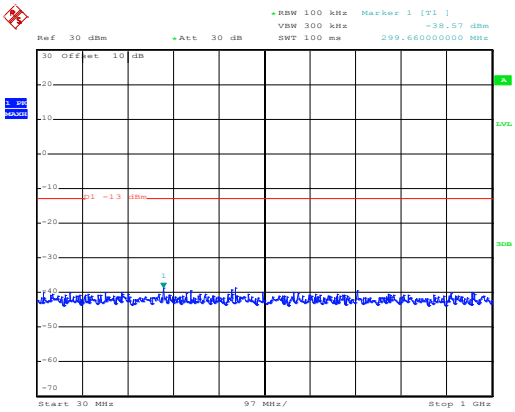
30MHz~1GHz



Date: 18.DEC.2017 13:51:42

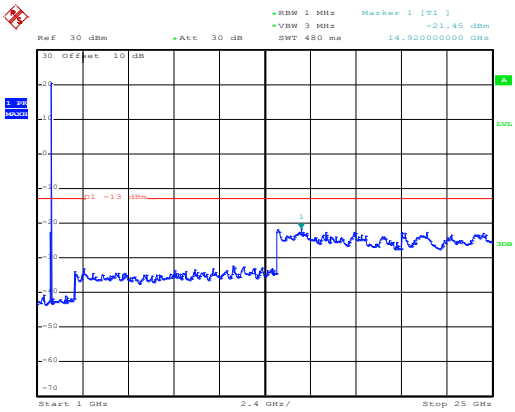
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:36:26

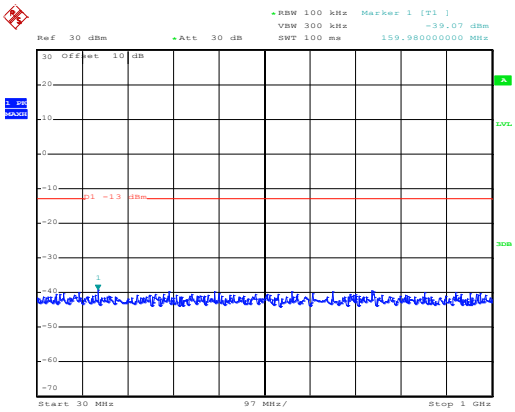
30MHz~1GHz



Date: 18.DEC.2017 13:43:33

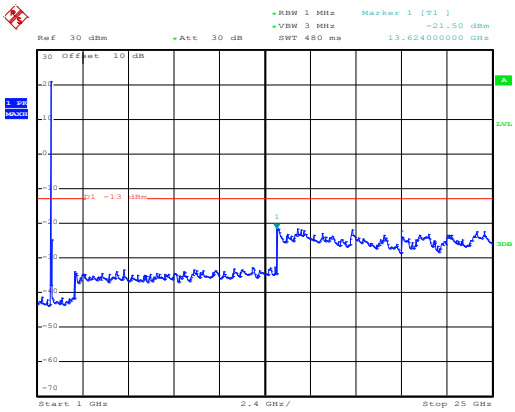
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:37:04

30MHz~1GHz

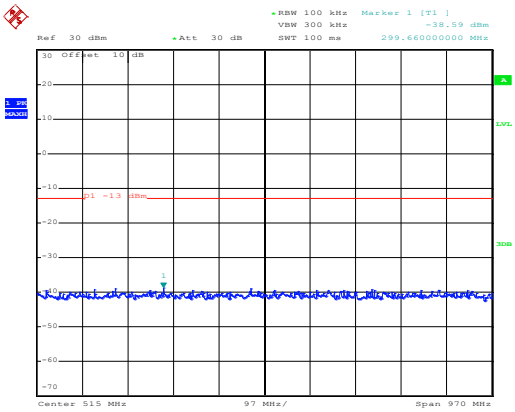


Date: 18.DEC.2017 13:44:59

1GHz~25GHz

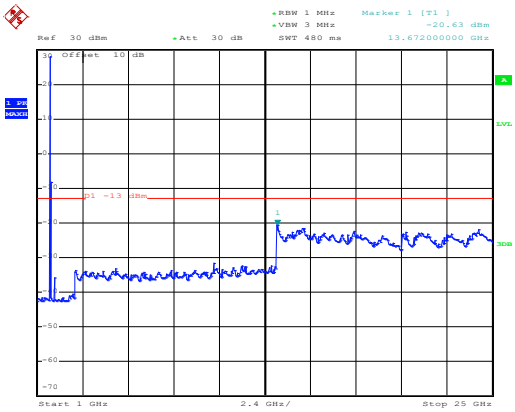
QPSK & RB Size 1

Lowest channel



Date: 18.DEC.2017 14:35:09

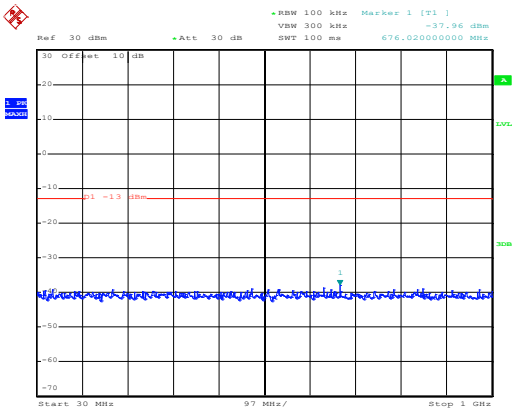
30MHz~1GHz



Date: 18.DEC.2017 13:41:15

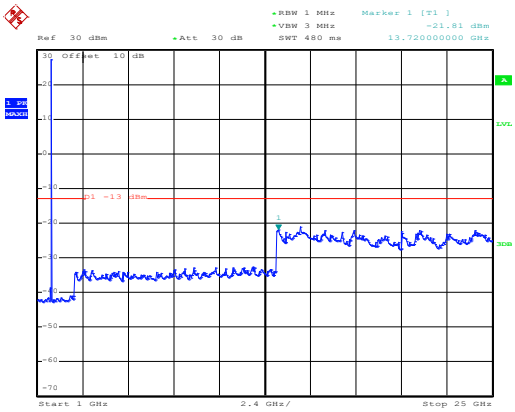
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:35:58

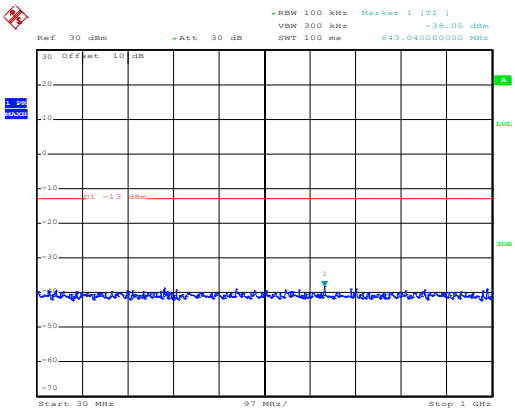
30MHz~1GHz



Date: 18.DEC.2017 13:42:41

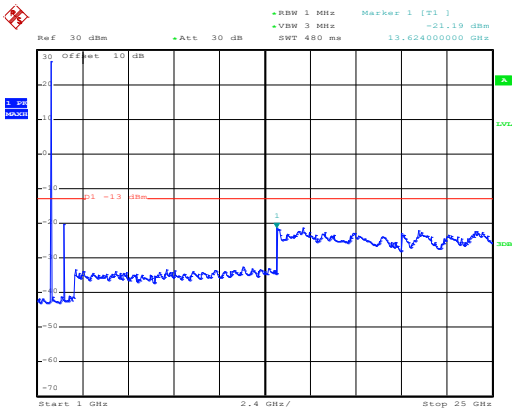
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:36:39

30MHz~1GHz

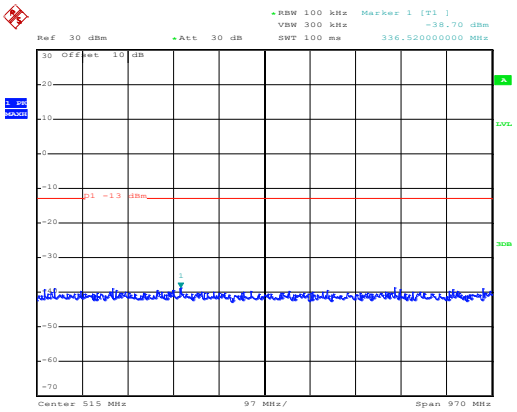


Date: 18.DEC.2017 13:44:04

1GHz~25GHz

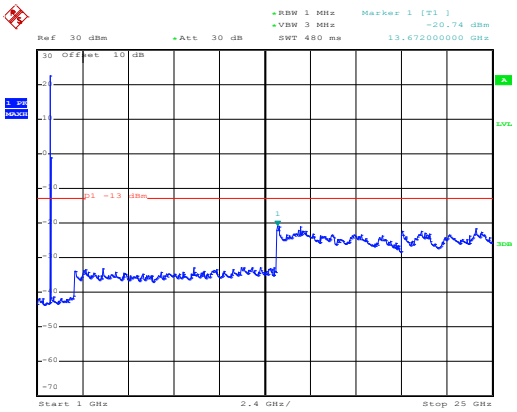
QPSK & RB Size 25

Lowest channel



Date: 18.DEC.2017 14:35:20

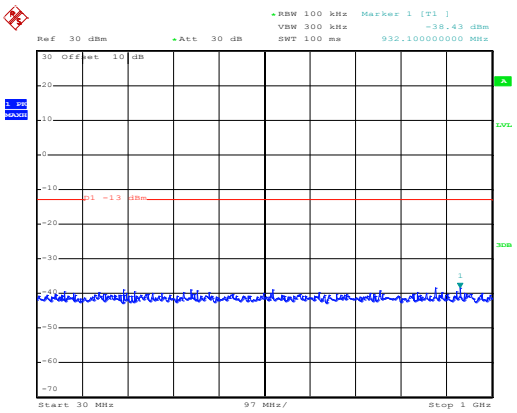
30MHz~1GHz



Date: 18.DEC.2017 13:41:37

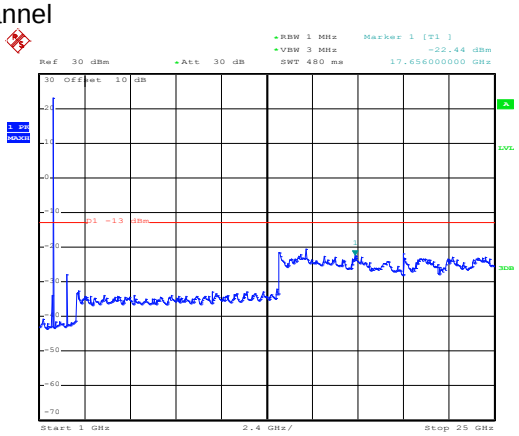
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:36:10

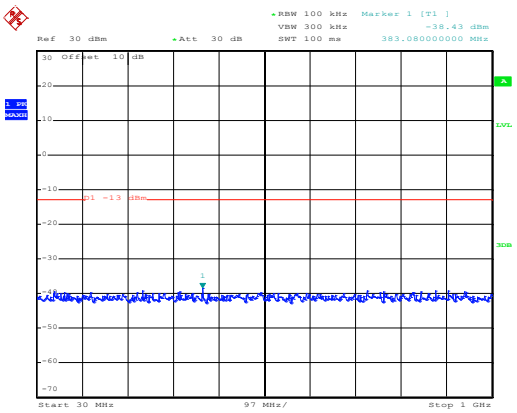
30MHz~1GHz



Date: 18.DEC.2017 13:43:04

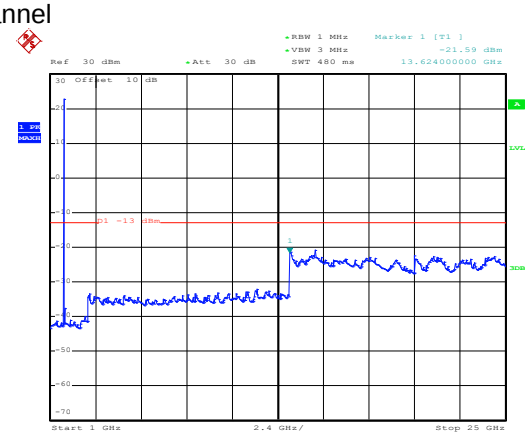
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:36:49

30MHz~1GHz

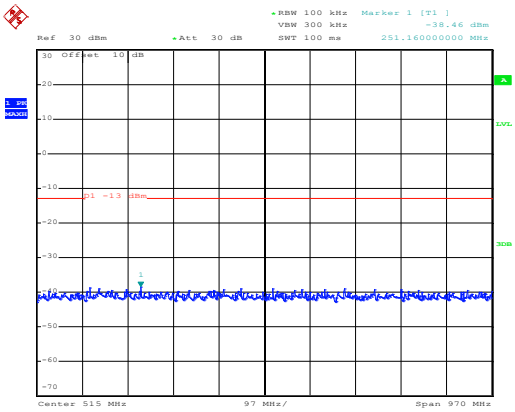


Date: 18.DEC.2017 13:44:27

1GHz~25GHz

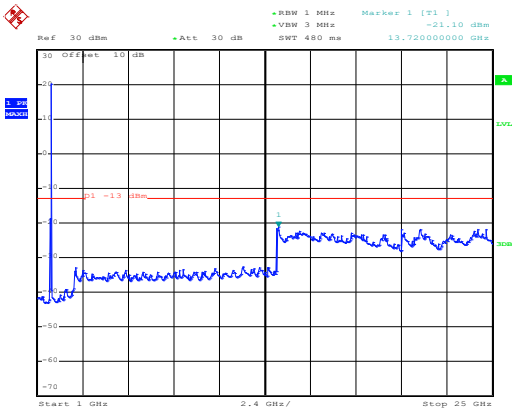
QPSK & RB Size 50

Lowest channel



Date: 18.DEC.2017 14:35:33

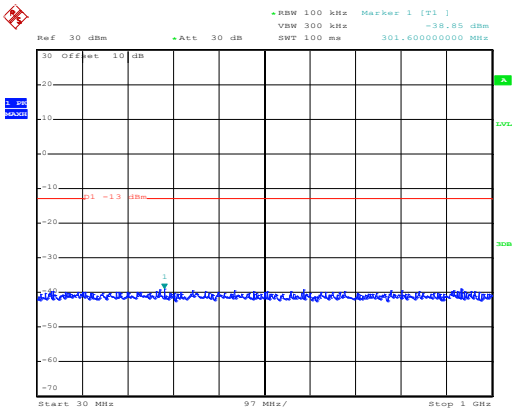
30MHz~1GHz



Date: 18.DEC.2017 13:51:33

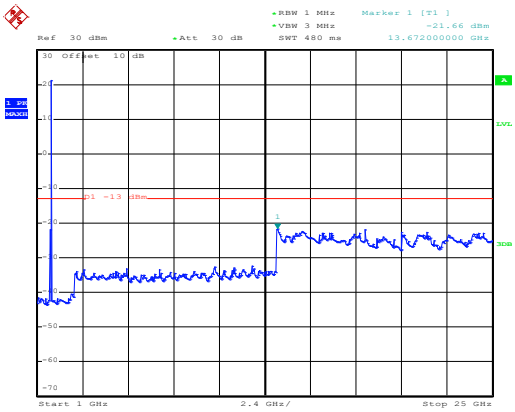
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:36:22

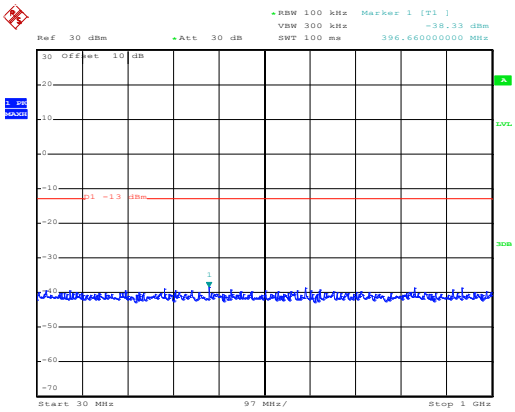
30MHz~1GHz



Date: 18.DEC.2017 13:43:23

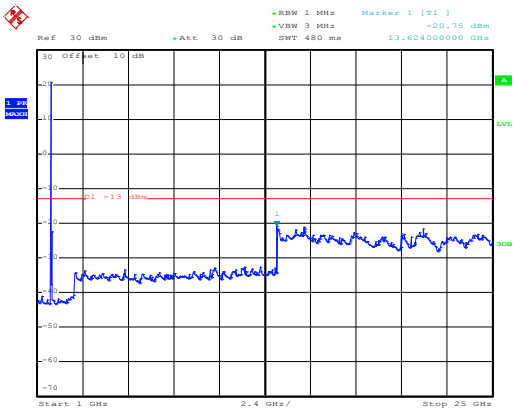
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:37:00

30MHz~1GHz



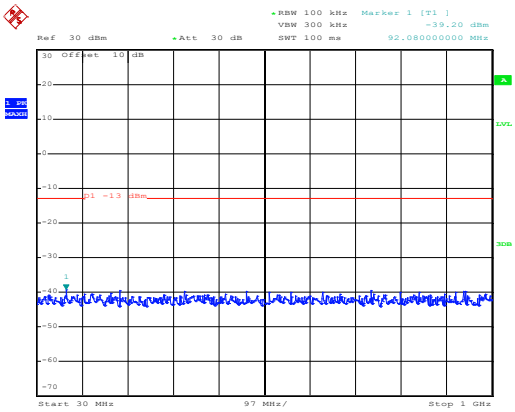
Date: 18.DEC.2017 13:44:52

1GHz~25GHz

15MHz

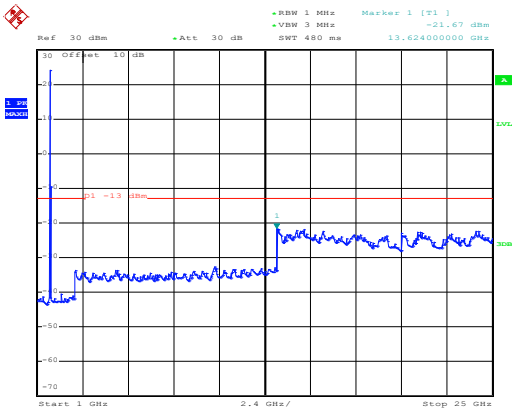
16 QAM & RB Size 1

Lowest channel



Date: 18.DEC.2017 14:37:22

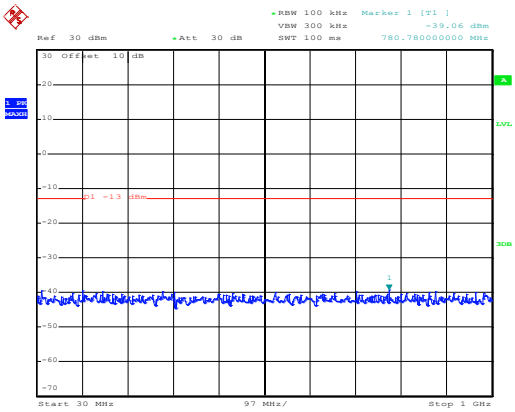
30MHz~1GHz



Date: 18.DEC.2017 13:45:54

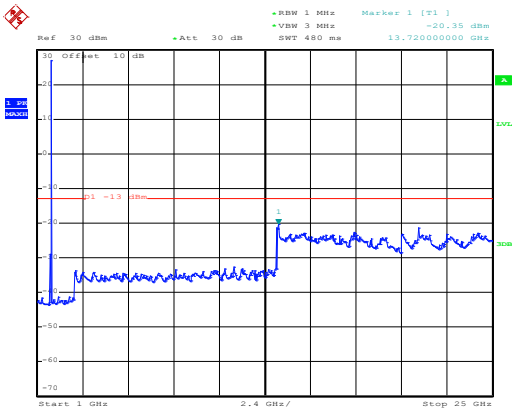
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:38:01

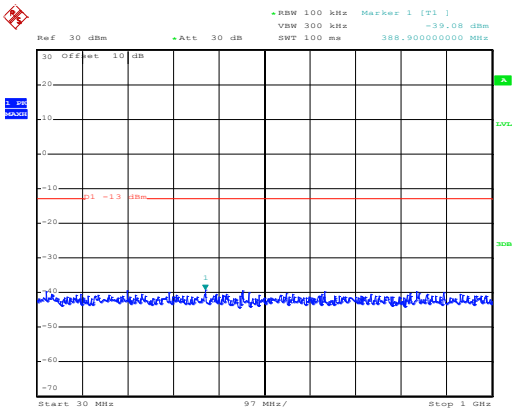
30MHz~1GHz



Date: 18.DEC.2017 13:47:07

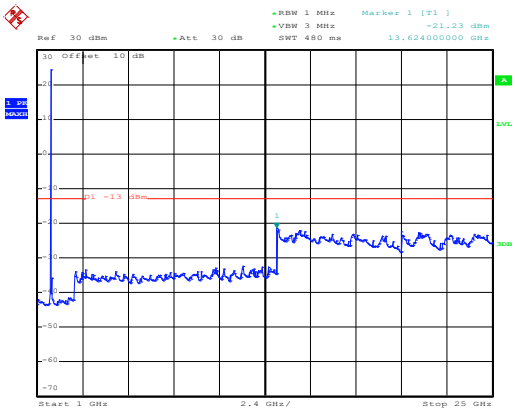
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:38:41

30MHz~1GHz

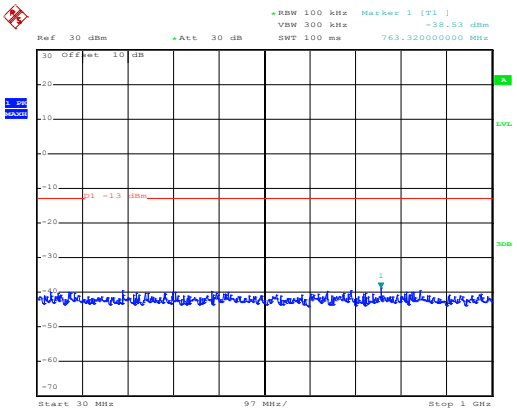


Date: 18.DEC.2017 13:48:13

1GHz~25GHz

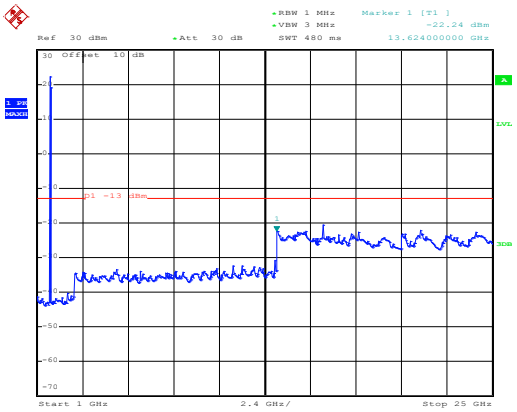
16 QAM & RB Size 36

Lowest channel



Date: 18.DEC.2017 14:37:33

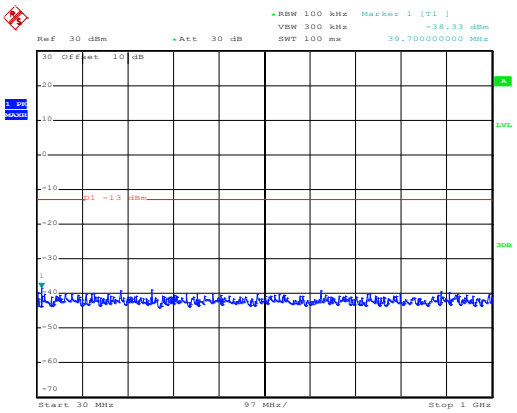
30MHz~1GHz



Date: 18.DEC.2017 13:46:16

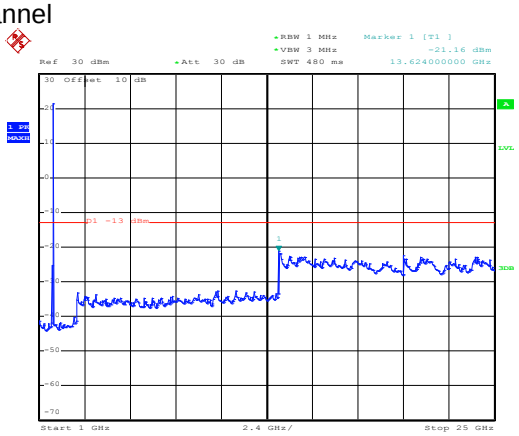
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:38:12

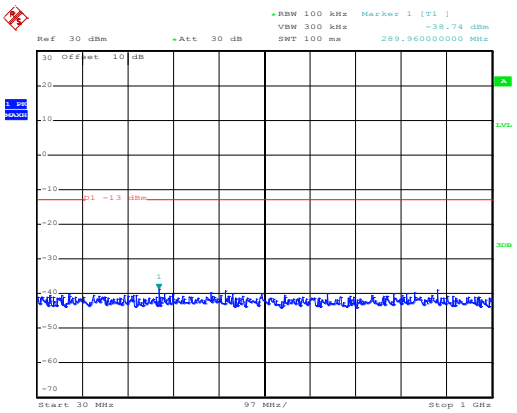
30MHz~1GHz



Date: 18.DEC.2017 13:47:28

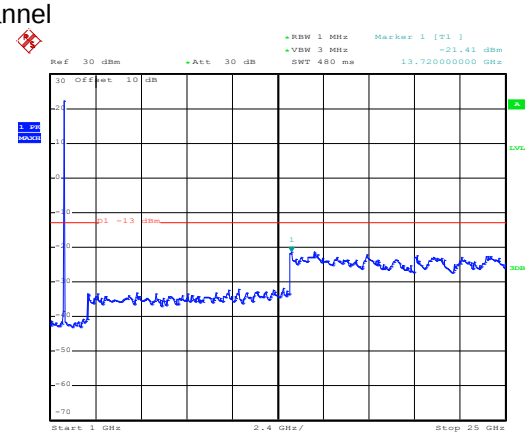
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:38:53

30MHz~1GHz

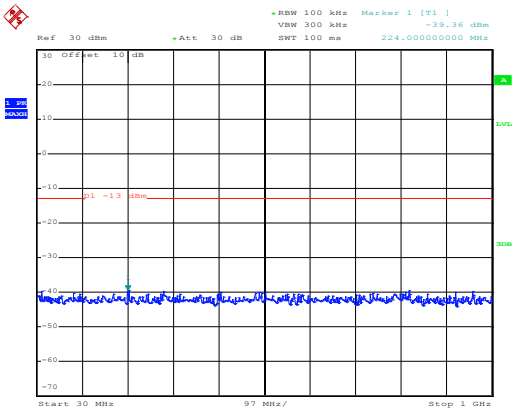


Date: 18.DEC.2017 13:48:46

1GHz~25GHz

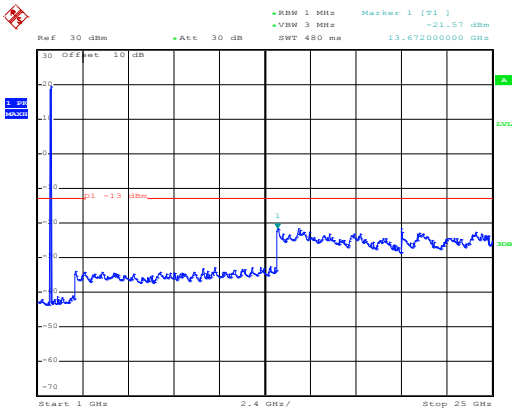
16 QAM & RB Size 75

Lowest channel



Date: 18.DEC.2017 14:37:45

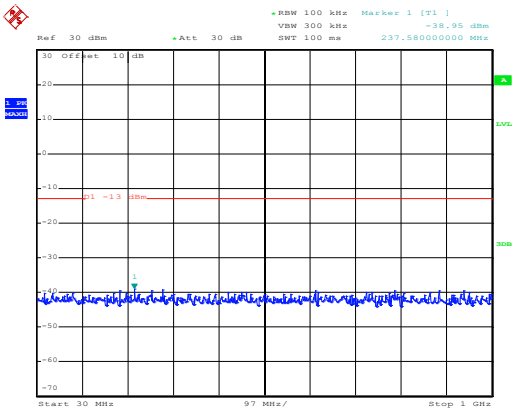
30MHz~1GHz



Date: 18.DEC.2017 13:46:38

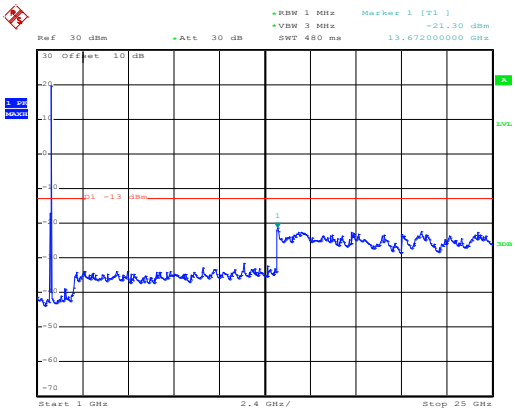
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:38:24

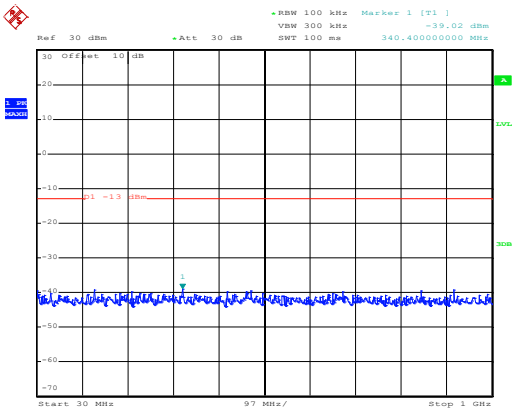
30MHz~1GHz



Date: 18.DEC.2017 13:47:45

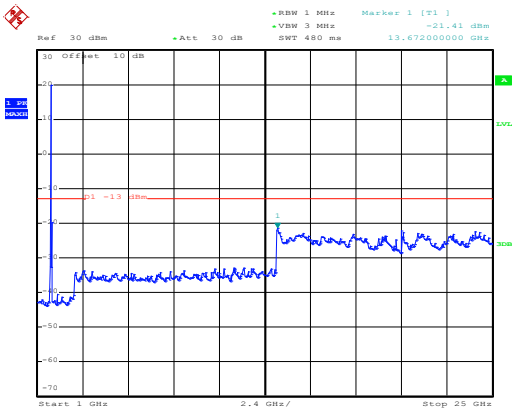
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:39:06

30MHz~1GHz

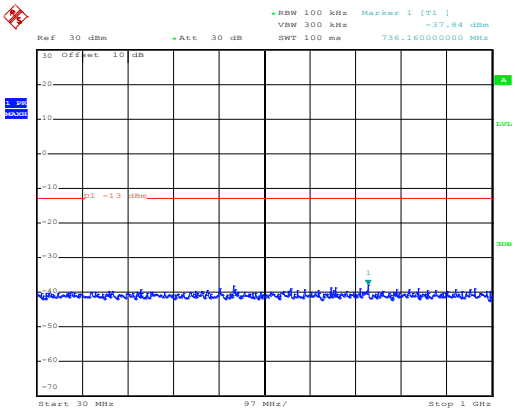


Date: 18.DEC.2017 13:49:08

1GHz~25GHz

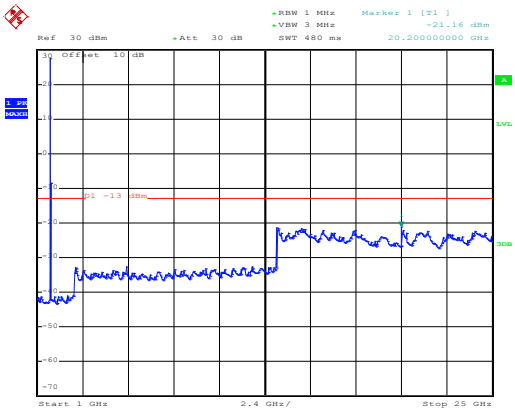
QPSK & RB Size 1

Lowest channel



Date: 18.DEC.2017 14:37:19

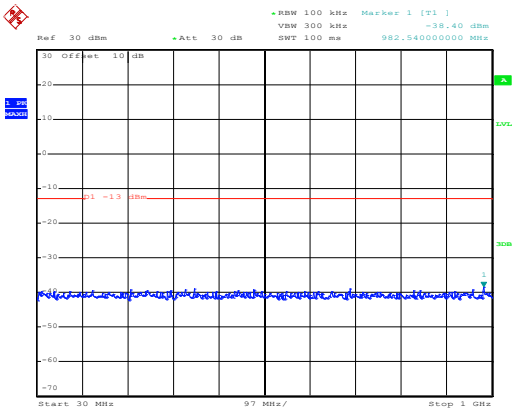
30MHz~1GHz



Date: 18.DEC.2017 13:45:43

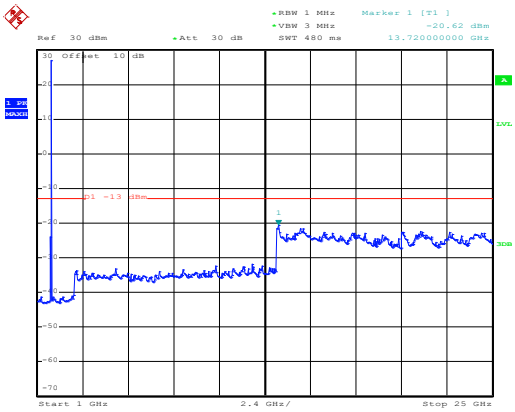
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:37:57

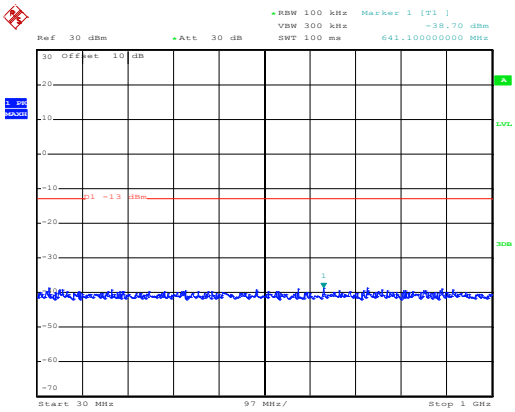
30MHz~1GHz



Date: 18.DEC.2017 13:46:59

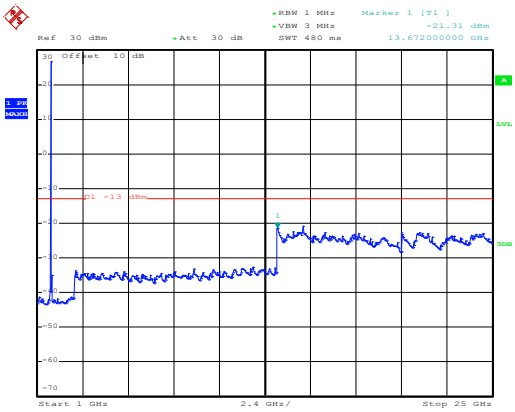
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:38:37

30MHz~1GHz

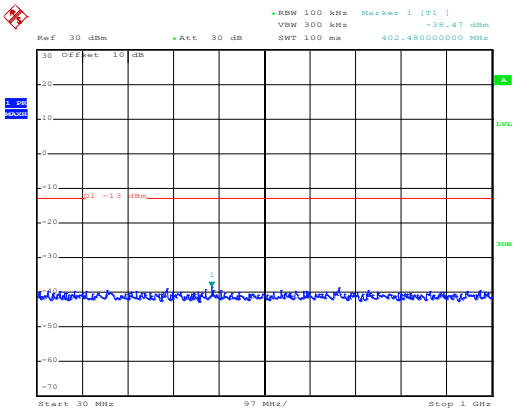


Date: 18.DEC.2017 13:48:04

1GHz~25GHz

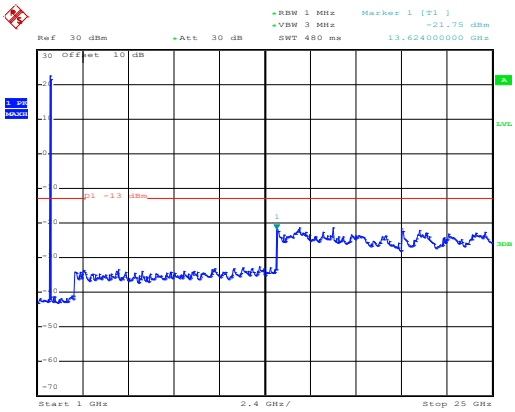
QPSK & RB Size 36

Lowest channel



Date: 18.DEC.2017 14:37:29

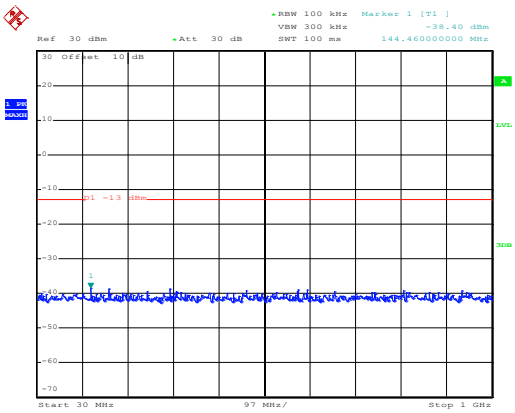
30MHz~1GHz



Date: 18.DEC.2017 13:46:07

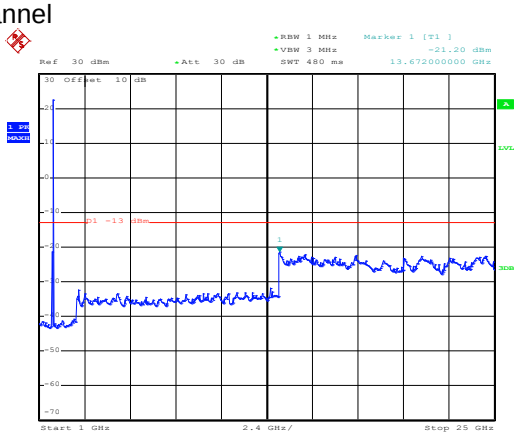
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:38:08

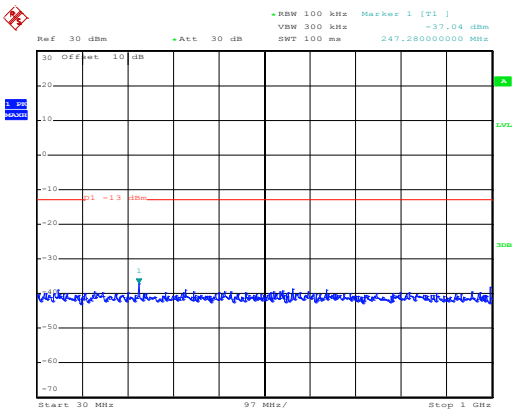
30MHz~1GHz



Date: 18.DEC.2017 13:47:20

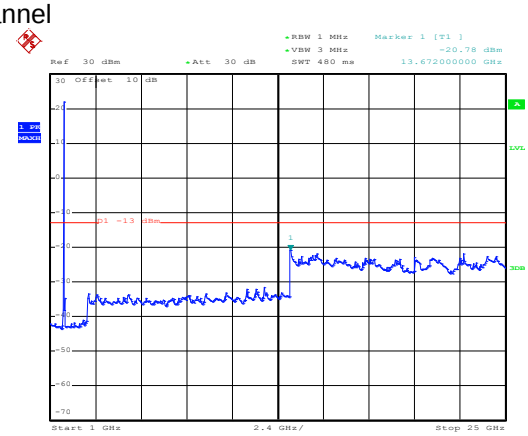
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:38:49

30MHz~1GHz

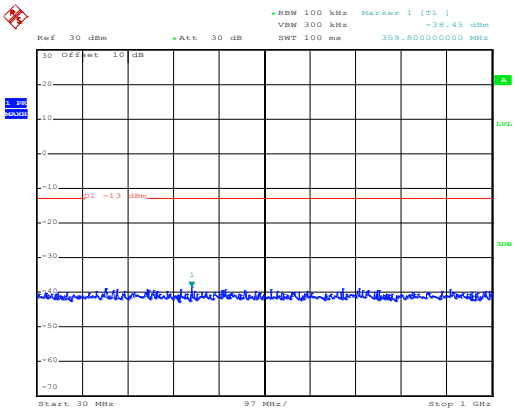


Date: 18.DEC.2017 13:48:25

1GHz~25GHz

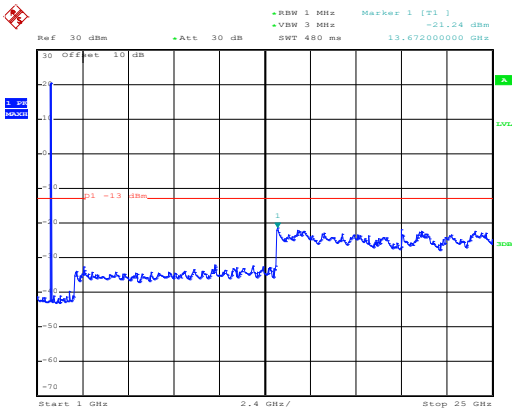
QPSK & RB Size 75

Lowest channel



Date: 18.DEC.2017 14:37:41

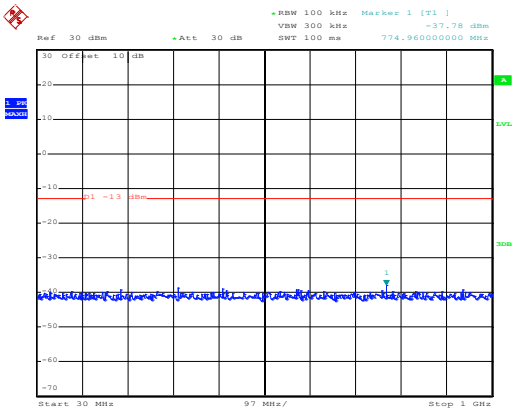
30MHz~1GHz



Date: 18.DEC.2017 13:46:31

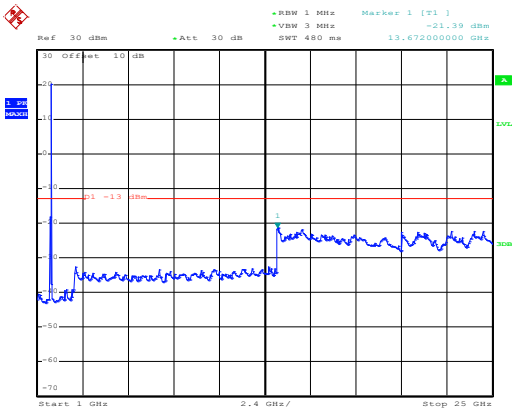
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:38:20

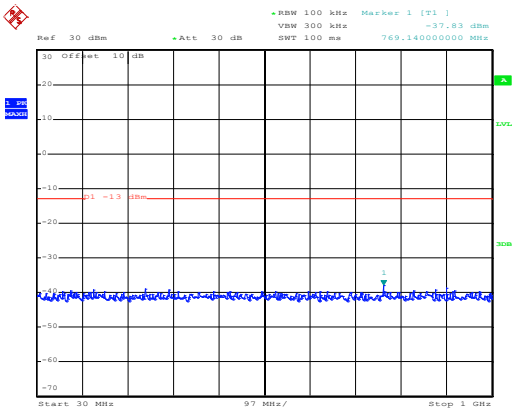
30MHz~1GHz



Date: 18.DEC.2017 13:47:37

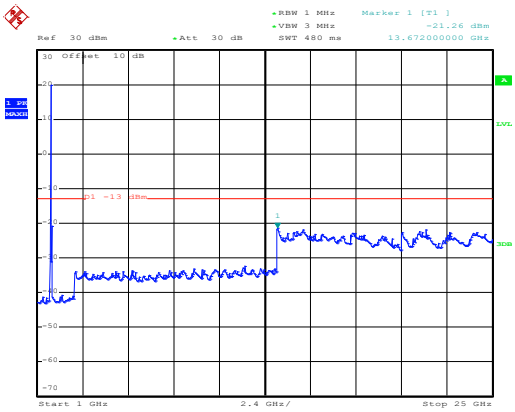
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:39:02

30MHz~1GHz



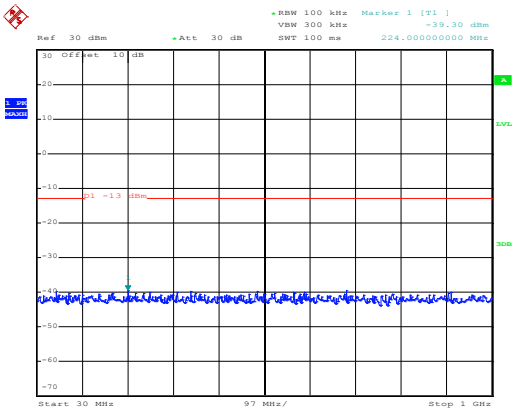
Date: 18.DEC.2017 13:49:00

1GHz~25GHz

20MHz

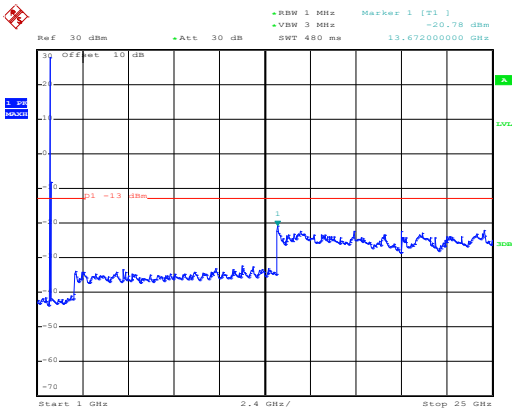
16 QAM & RB Size 1

Lowest channel



Date: 18.DEC.2017 14:39:29

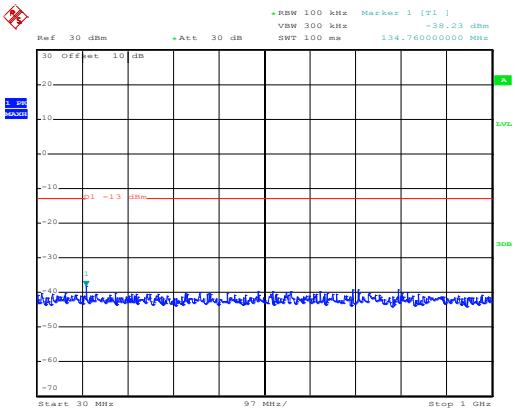
30MHz~1GHz



Date: 18.DEC.2017 13:49:51

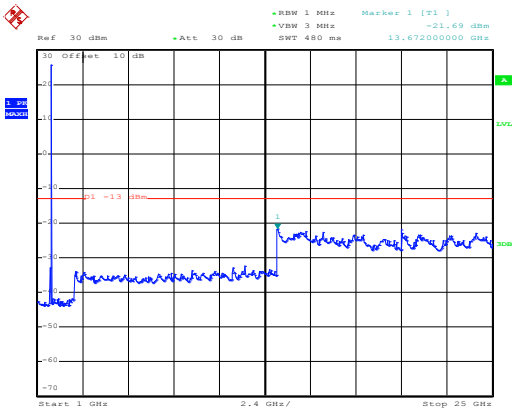
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:40:15

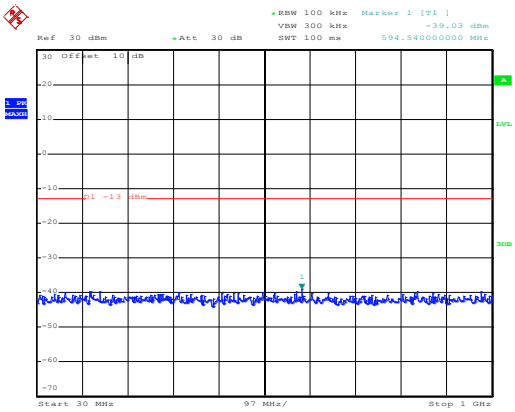
30MHz~1GHz



Date: 18.DEC.2017 13:51:02

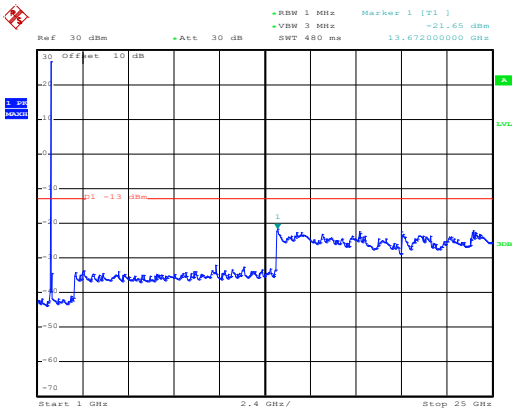
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:40:57

30MHz~1GHz

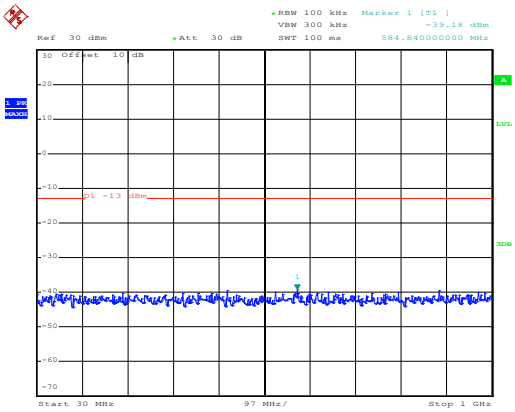


Date: 18.DEC.2017 13:53:29

1GHz~25GHz

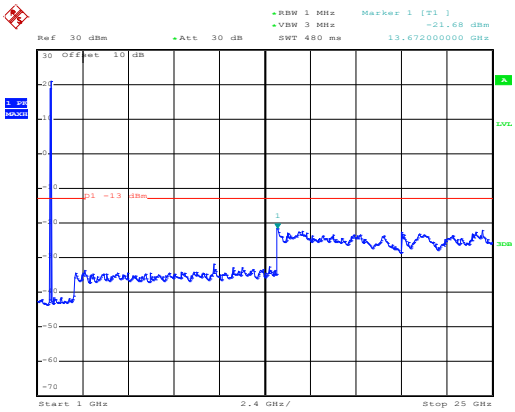
16 QAM & RB Size 50

Lowest channel



Date: 18.DEC.2017 14:39:46

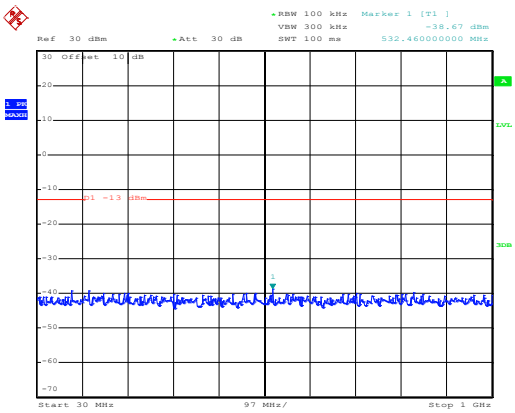
30MHz~1GHz



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

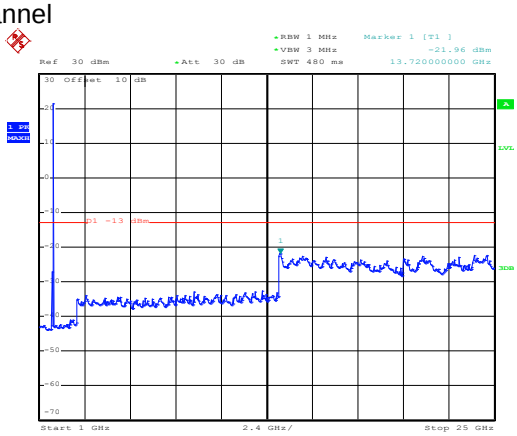
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:40:29

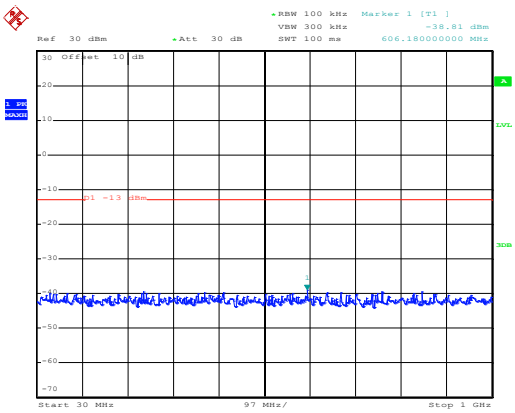
30MHz~1GHz



Date: 18.DEC.2017 13:51:22

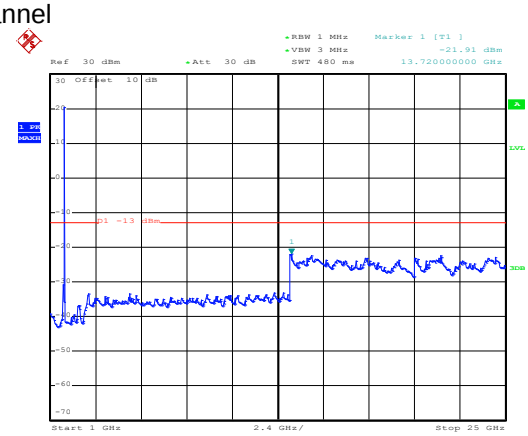
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:41:09

30MHz~1GHz

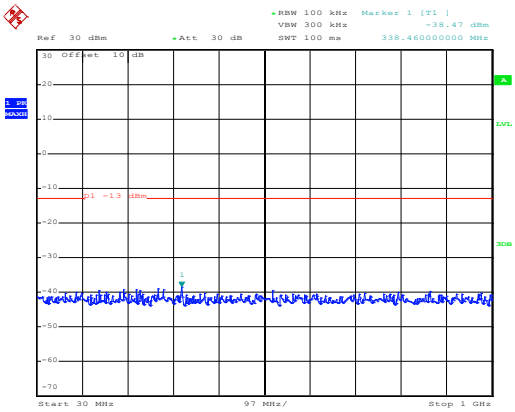


Date: 18.DEC.2017 13:53:53

1GHz~25GHz

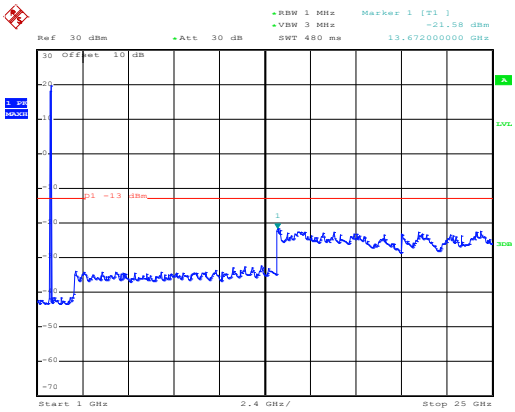
16 QAM & RB Size 100

Lowest channel



Date: 18.DEC.2017 14:39:59

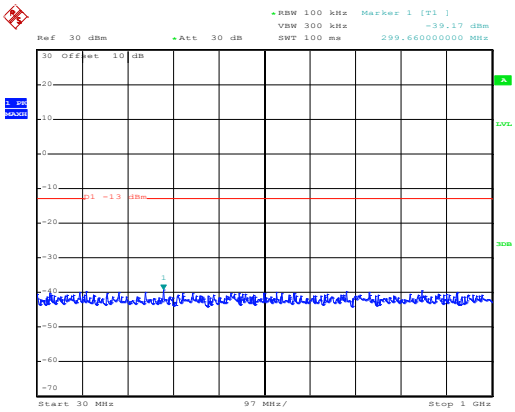
30MHz~1GHz



Date: 18.DEC.2017 13:50:34

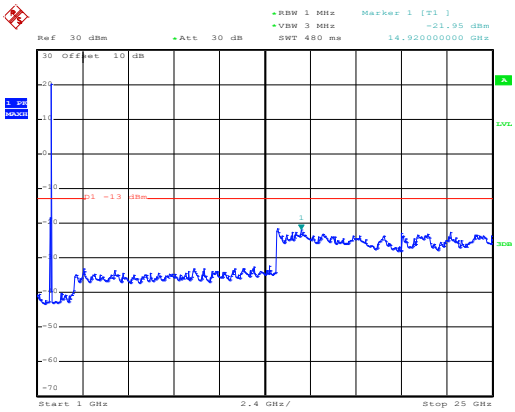
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:40:41

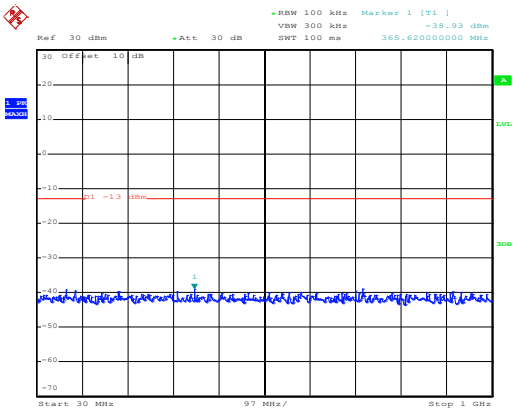
30MHz~1GHz



Date: 18.DEC.2017 13:51:42

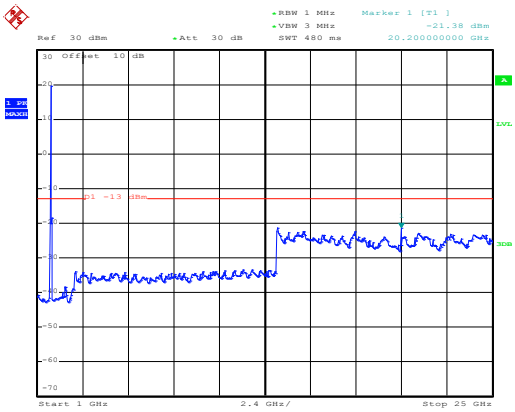
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:41:23

30MHz~1GHz

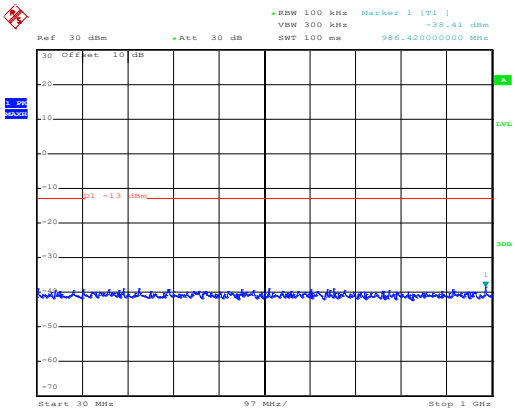


Date: 18.DEC.2017 13:54:13

1GHz~25GHz

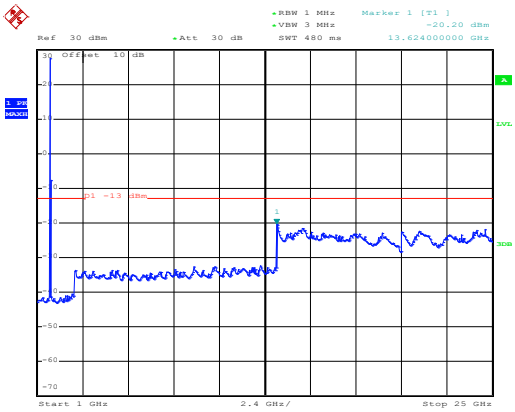
QPSK & RB Size 1

Lowest channel



Date: 18.DEC.2017 14:39:24

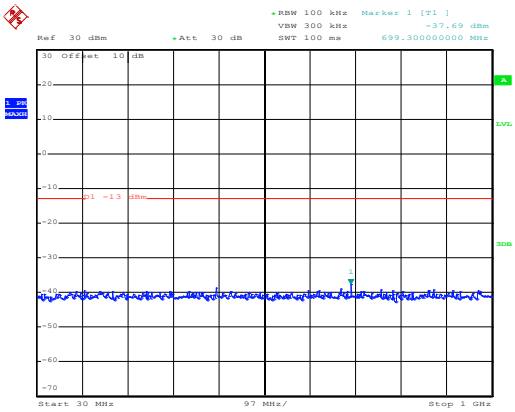
30MHz~1GHz



Date: 18.DEC.2017 13:49:42

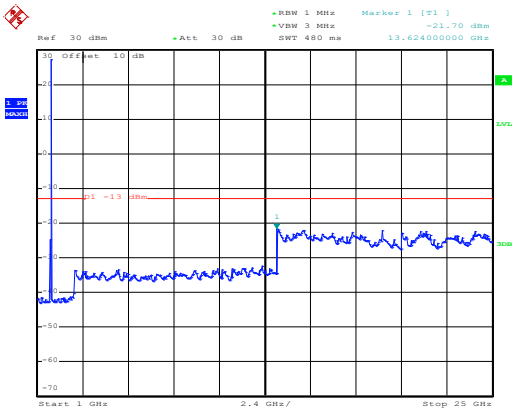
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:40:10

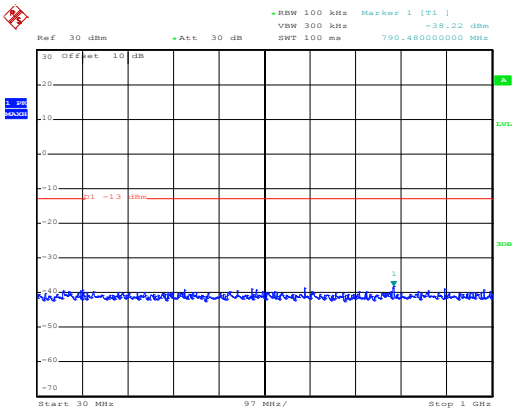
30MHz~1GHz



Date: 18.DEC.2017 13:50:54

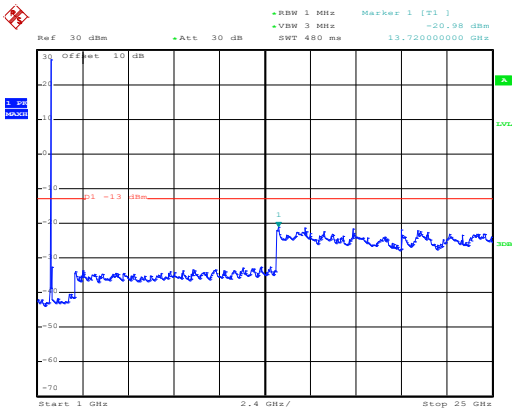
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:40:52

30MHz~1GHz

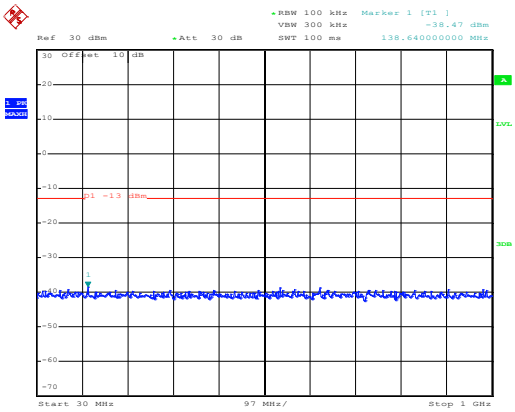


Date: 18.DEC.2017 13:53:20

1GHz~25GHz

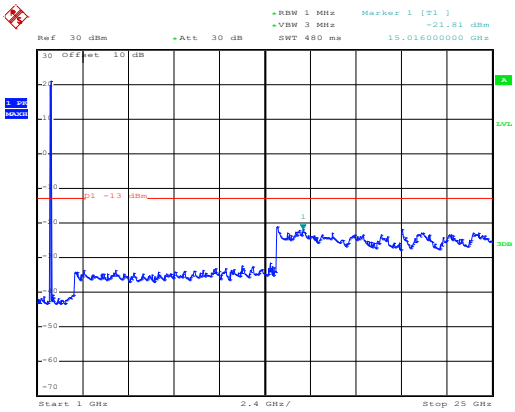
QPSK & RB Size 50

Lowest channel



Date: 18.DEC.2017 14:39:41

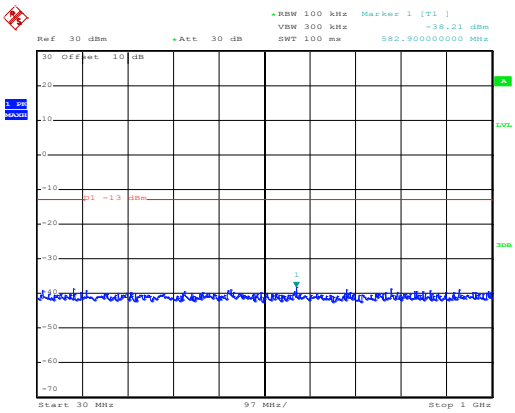
30MHz~1GHz



Date: 18.DEC.2017 13:50:03

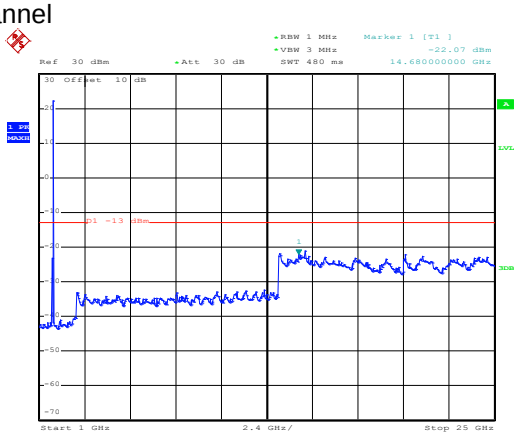
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:40:24

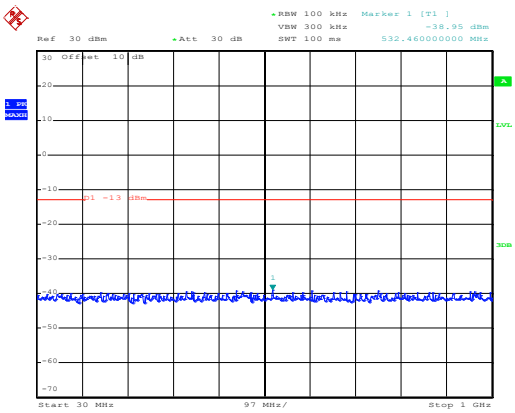
30MHz~1GHz



Date: 18.DEC.2017 13:51:15

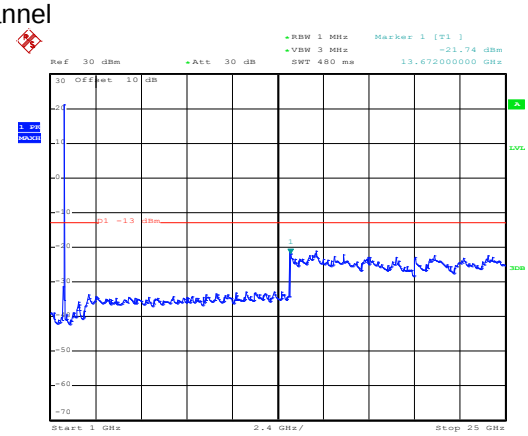
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:41:05

30MHz~1GHz

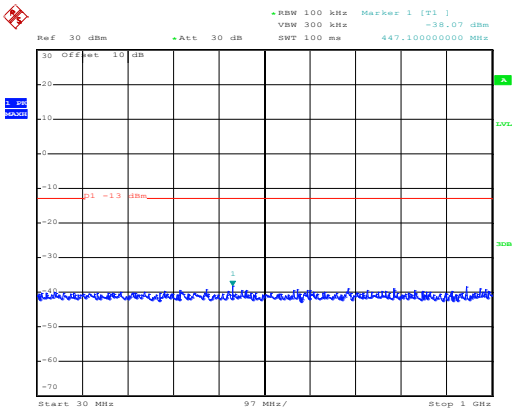


Date: 18.DEC.2017 13:53:45

1GHz~25GHz

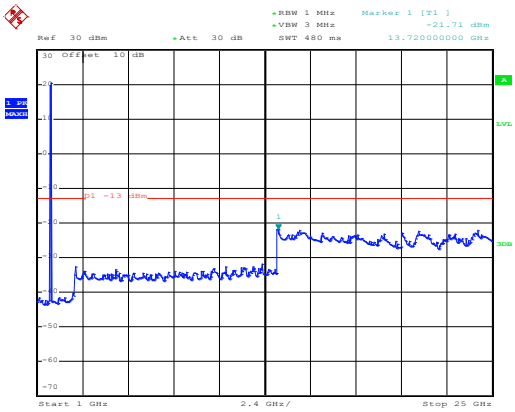
QPSK & RB Size 100

Lowest channel



Date: 18.DEC.2017 14:39:55

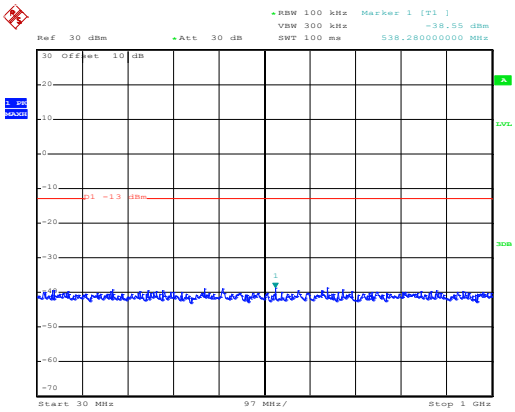
30MHz~1GHz



Date: 18.DEC.2017 13:50:25

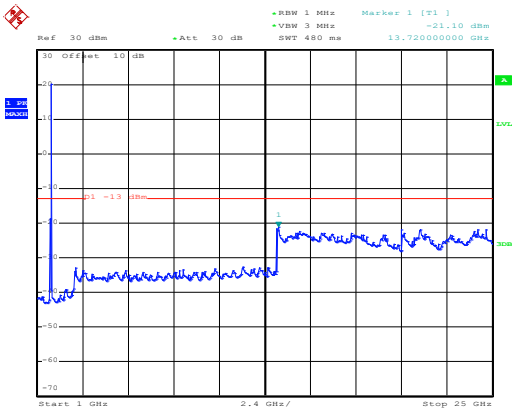
1GHz~25GHz

Middle channel



Date: 18.DEC.2017 14:40:37

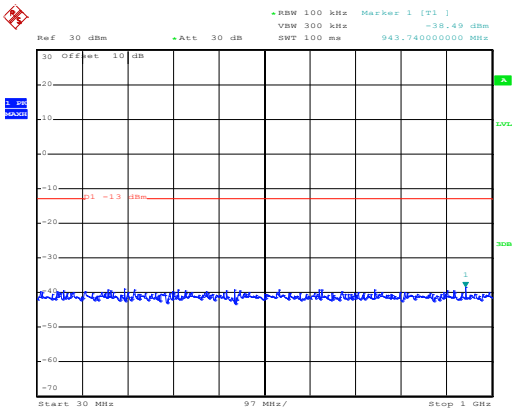
30MHz~1GHz



Date: 18.DEC.2017 13:51:33

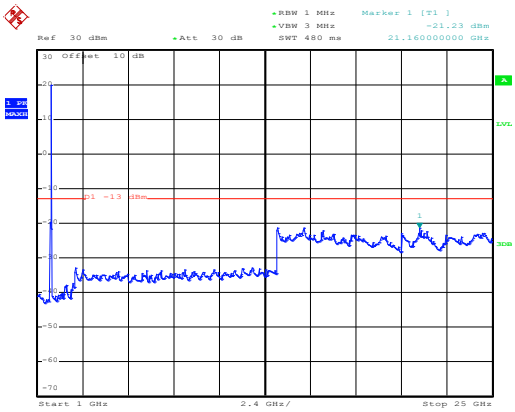
1GHz~25GHz

High channel



Date: 18.DEC.2017 14:41:18

30MHz~1GHz

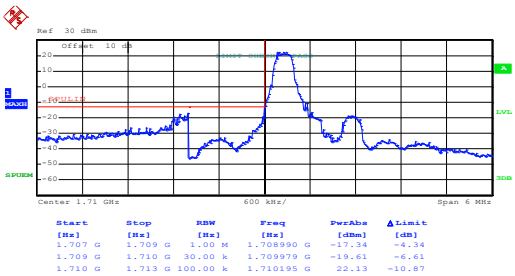


Date: 18.DEC.2017 13:54:04

1GHz~25GHz

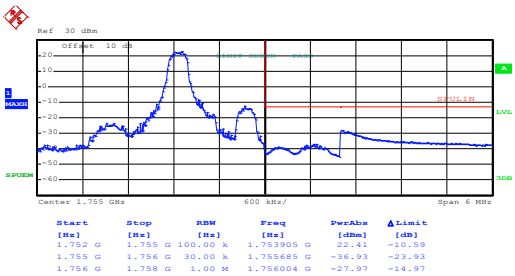
Band edge emission:
LTE band 4, 1.4MHz:

16QAM & RB Size 1



Date: 18.DEC.2017 14:12:19

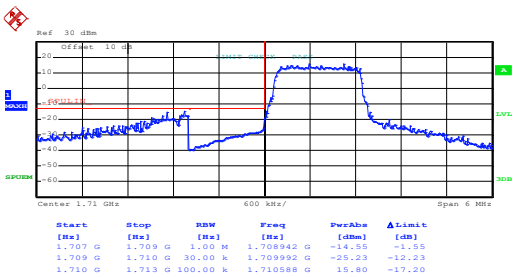
Lowest channel



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

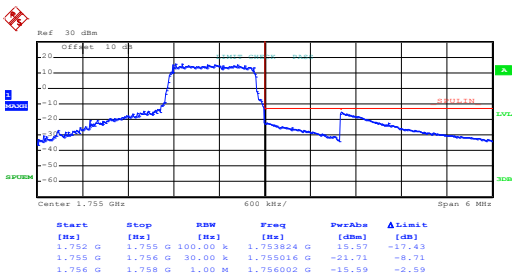
Highest channel

16QAM & RB Size 6



Date: 18.DEC.2017 14:13:44

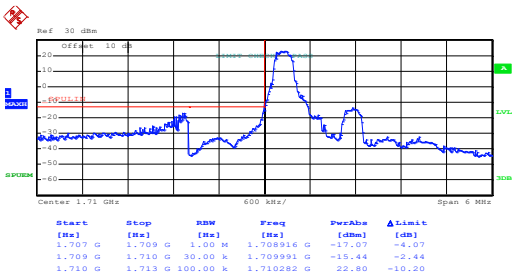
Lowest channel



Date: 18.DEC.2017 14:15:50

Highest channel

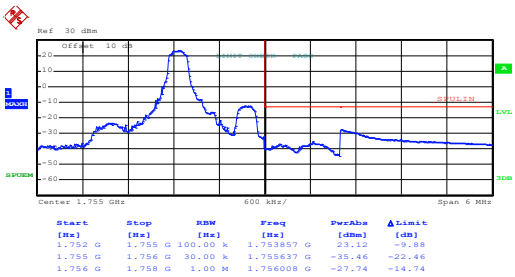
QPSK & RB Size 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.707 G	1.709 G	1.00 M	1.708916 G	-17.07	-4.07
1.709 G	1.710 G	30.00 k	1.709991 G	-15.44	-2.44
1.710 G	1.713 G	100.00 k	1.710282 G	22.80	-10.20

Date: 18.DEC.2017 14:12:07

Lowest channel

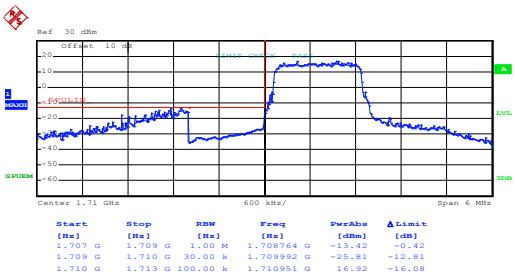


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.752 G	1.755 G	100.00 k	1.753857 G	23.12	-9.88
1.755 G	1.756 G	30.00 k	1.755637 G	-35.46	-22.46
1.756 G	1.758 G	1.00 M	1.756008 G	-27.74	-14.74

Date: 18.DEC.2017 14:14:20

Highest channel

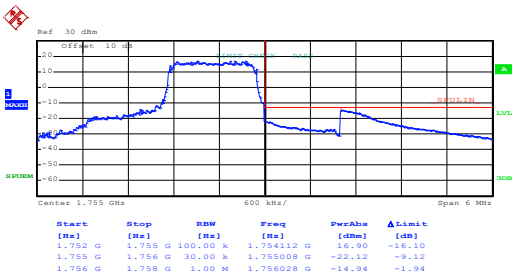
QPSK & RB Size 6



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.707 G	1.709 G	1.00 M	1.708764 G	-13.42	-0.42
1.709 G	1.710 G	30.00 k	1.709992 G	-25.81	-12.81
1.710 G	1.713 G	100.00 k	1.710951 G	16.92	-16.08

Date: 18.DEC.2017 14:13:36

Lowest channel



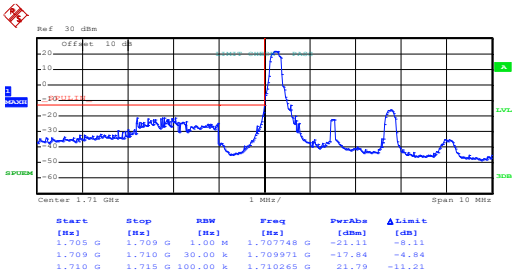
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.752 G	1.755 G	100.00 k	1.754112 G	16.90	-16.10
1.755 G	1.756 G	30.00 k	1.755008 G	-22.12	-9.12
1.756 G	1.758 G	1.00 M	1.756028 G	-14.94	-1.94

Date: 18.DEC.2017 14:15:41

Highest channel

3 MHz:

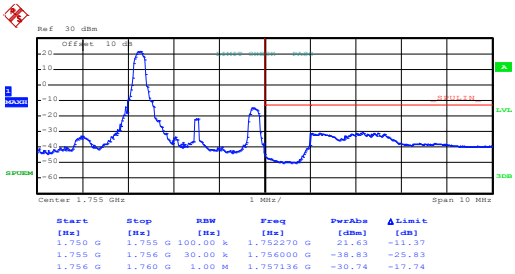
16QAM & RB Size 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	1.00 M	1.707748 G	-21.11	-8.11
1.709 G	1.710 G	30.00 k	1.709971 G	-17.84	-4.84
1.710 G	1.715 G	100.00 k	1.710265 G	21.79	-11.21

Date: 18.DEC.2017 14:16:55

Lowest channel

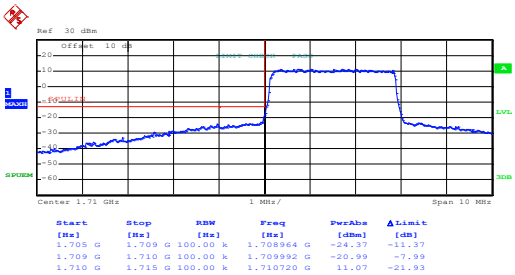


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.752270 G	21.63	-11.37
1.755 G	1.756 G	30.00 k	1.756000 G	-38.83	-25.83
1.756 G	1.760 G	1.00 M	1.757136 G	-30.74	-17.74

Date: 18.DEC.2017 14:19:15

Highest channel

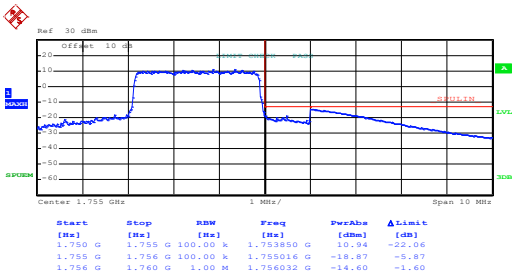
16QAM & RB Size 15



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	100.00 k	1.708964 G	-24.37	-11.37
1.709 G	1.710 G	100.00 k	1.709992 G	-20.99	-7.99
1.710 G	1.715 G	100.00 k	1.710720 G	11.07	-21.93

Date: 18.DEC.2017 14:23:21

Lowest channel

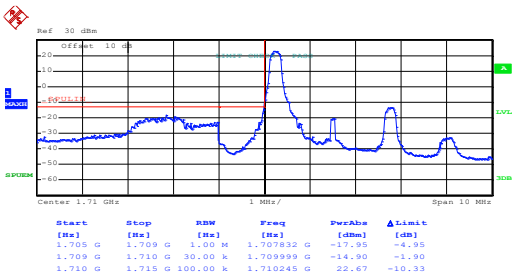


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.753850 G	10.94	-22.06
1.755 G	1.756 G	100.00 k	1.755016 G	-18.87	-5.87
1.756 G	1.760 G	1.00 M	1.756032 G	-14.60	-1.60

Date: 18.DEC.2017 14:21:23

Highest channel

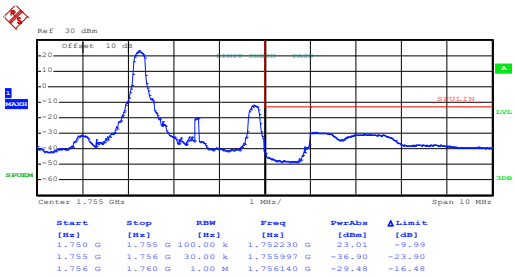
QPSK & RB Size 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	1.00 M	1.707832 G	-17.95	-4.95
1.709 G	1.710 G	30.00 k	1.709999 G	-14.90	-1.90
1.710 G	1.715 G	100.00 k	1.710245 G	22.67	-10.33

Date: 18.DEC.2017 14:16:47

Lowest channel

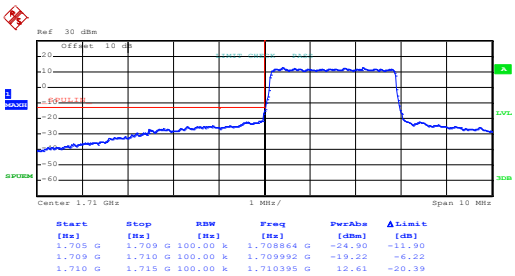


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.752230 G	23.01	-9.99
1.755 G	1.756 G	30.00 k	1.755997 G	-36.90	-23.90
1.756 G	1.760 G	1.00 M	1.756140 G	-29.48	-16.48

Date: 18.DEC.2017 14:19:07

Highest channel

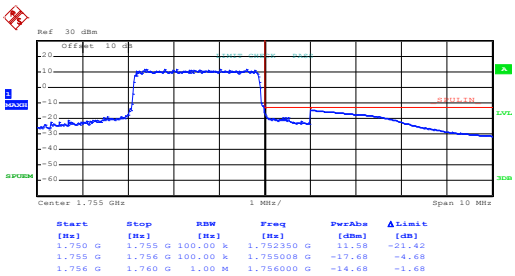
QPSK & RB Size 15



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.705 G	1.709 G	100.00 k	1.708864 G	-24.90	-11.90
1.709 G	1.710 G	100.00 k	1.709992 G	-19.22	-6.22
1.710 G	1.715 G	100.00 k	1.710395 G	12.61	-20.39

Date: 18.DEC.2017 14:23:09

Lowest channel



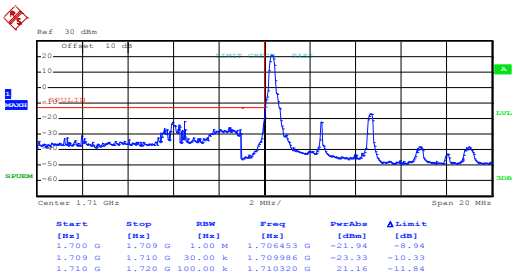
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
1.750 G	1.755 G	100.00 k	1.752350 G	11.58	-21.42
1.755 G	1.756 G	100.00 k	1.755008 G	-17.68	-4.68
1.756 G	1.760 G	1.00 M	1.756000 G	-14.68	-1.68

Date: 18.DEC.2017 14:21:14

Highest channel

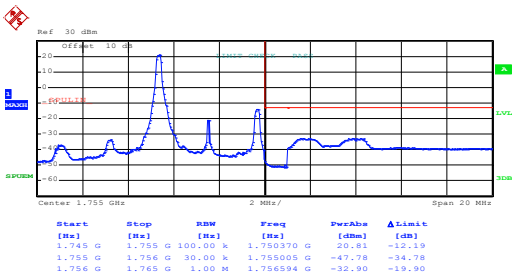
5 MHz:

16QAM & RB Size 1



Date: 18.DEC.2017 14:25:42

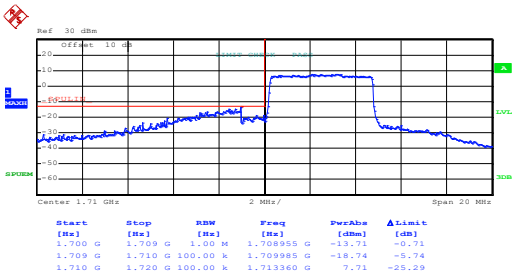
Lowest channel



Date: 18.DEC.2017 14:29:44

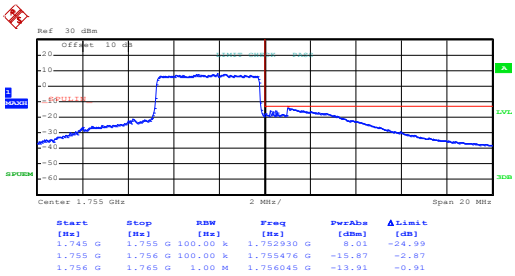
Highest channel

16QAM & RB Size 25



Date: 18.DEC.2017 14:27:07

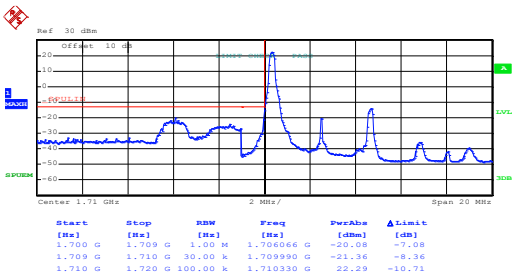
Lowest channel



Date: 18.DEC.2017 14:35:05

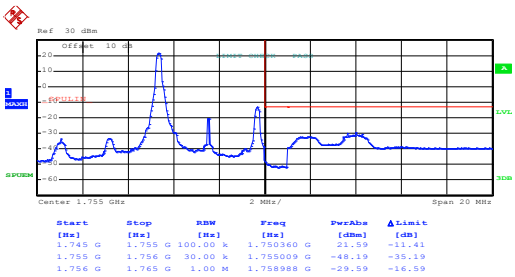
Highest channel

QPSK & RB Size 1



Date: 18.DEC.2017 14:25:33

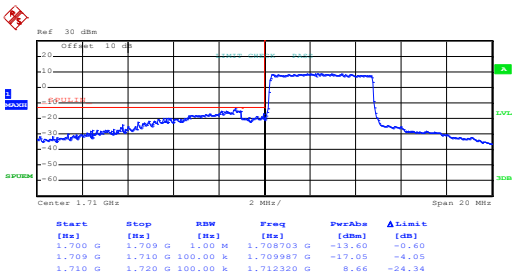
Lowest channel



Date: 18.DEC.2017 14:29:12

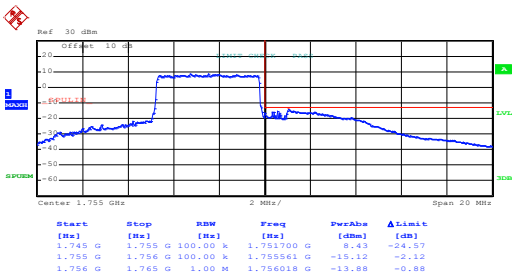
Highest channel

QPSK & RB Size 25



Date: 18.DEC.2017 14:27:00

Lowest channel

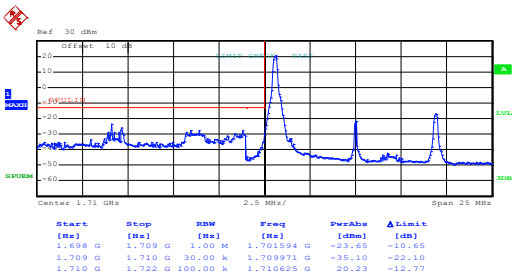


Date: 18.DEC.2017 14:34:58

Highest channel

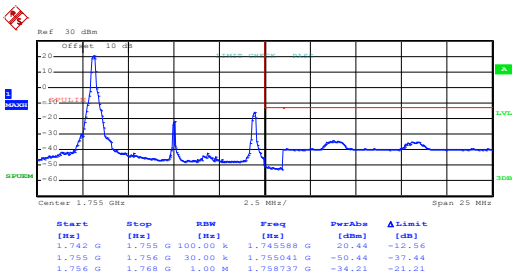
10 MHz:

16QAM & RB Size 1



Date: 18.DEC.2017 14:36:34

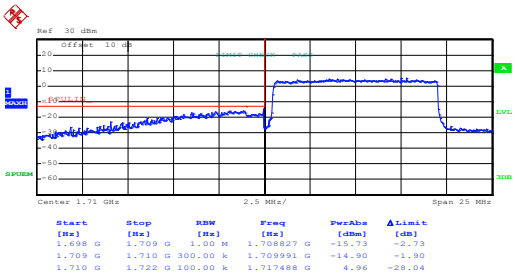
Lowest channel



Date: 18.DEC.2017 14:38:24

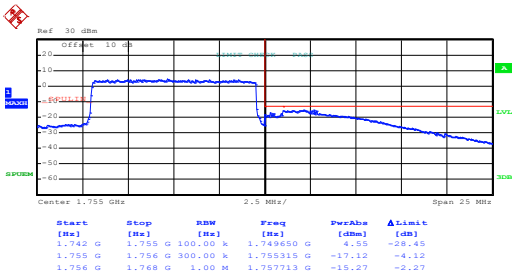
Highest channel

16QAM & RB Size 50



Date: 18.DEC.2017 14:37:46

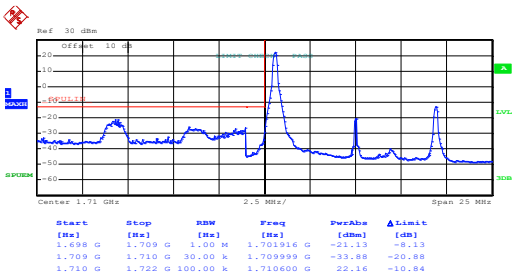
Lowest channel



Date: 18.DEC.2017 14:40:26

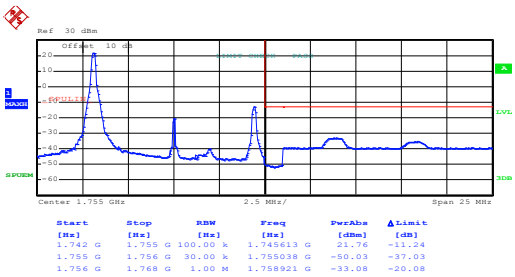
Highest channel

QPSK & RB Size 1



Date: 18.DEC.2017 14:36:26

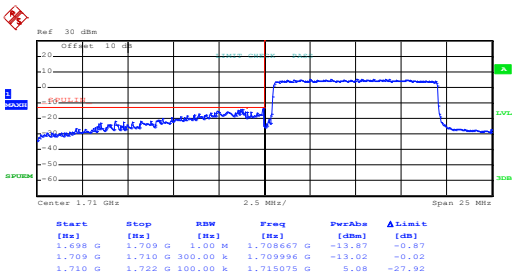
Lowest channel



Date: 18.DEC.2017 14:38:17

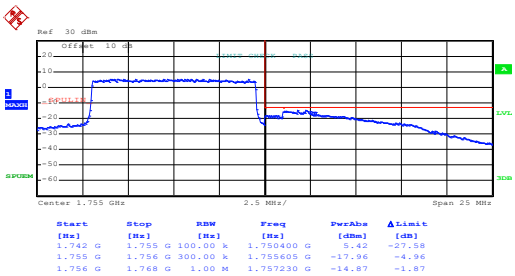
Highest channel

QPSK & RB Size 50



Date: 18.DEC.2017 14:37:39

Lowest channel

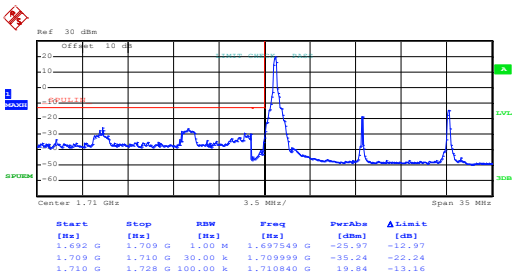


Date: 18.DEC.2017 14:40:20

Highest channel

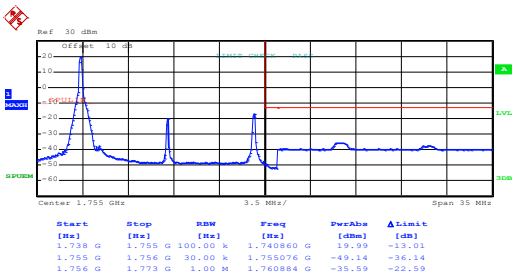
15 MHz:

16QAM & RB Size 1



Date: 18.DEC.2017 14:41:26

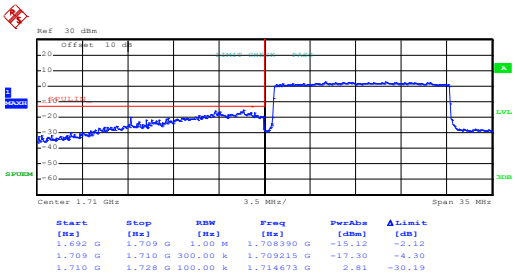
Lowest channel



Date: 18.DEC.2017 14:43:39

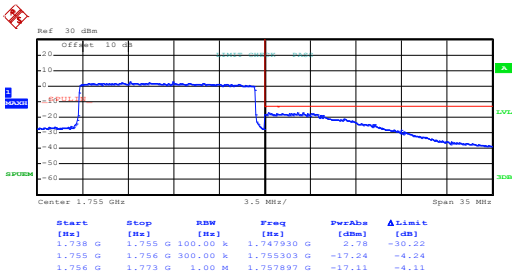
Highest channel

16QAM & RB Size 75



Date: 18.DEC.2017 14:43:03

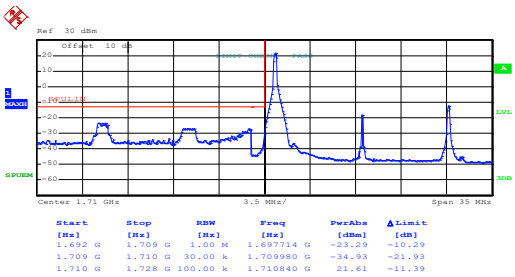
Lowest channel



Date: 18.DEC.2017 14:45:13

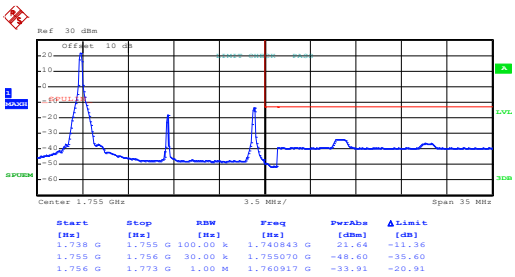
Highest channel

QPSK & RB Size 1



Date: 18.DEC.2017 14:41:18

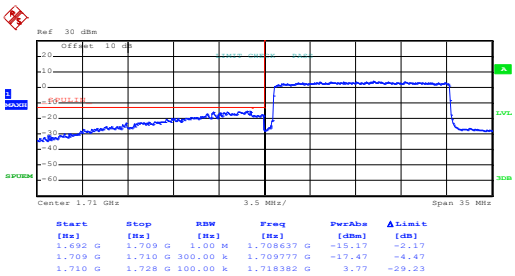
Lowest channel



Date: 18.DEC.2017 14:43:30

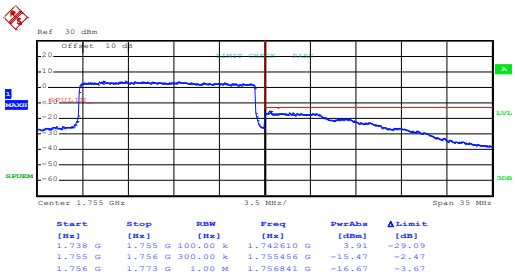
Highest channel

QPSK & RB Size 75



Date: 18.DEC.2017 14:42:56

Lowest channel

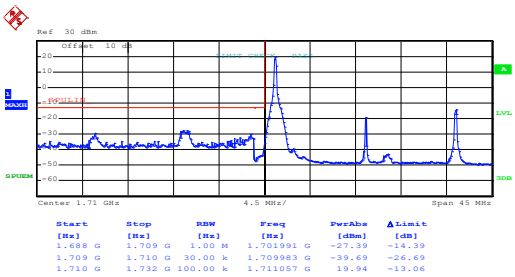


Date: 18.DEC.2017 14:45:06

Highest channel

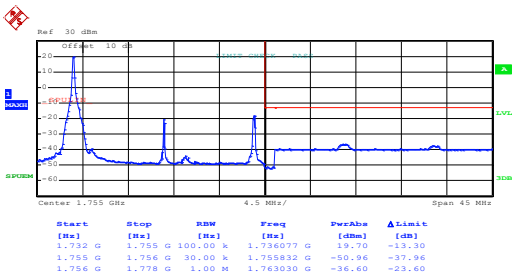
20 MHz:

16QAM & RB Size 1



Date: 18.DEC.2017 14:47:04

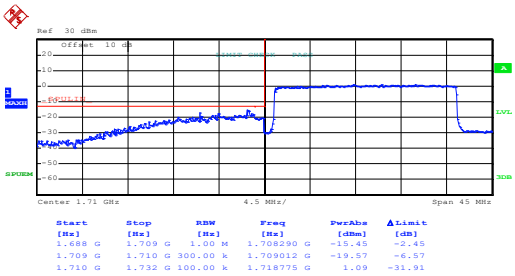
Lowest channel



Date: 18.DEC.2017 14:50:52

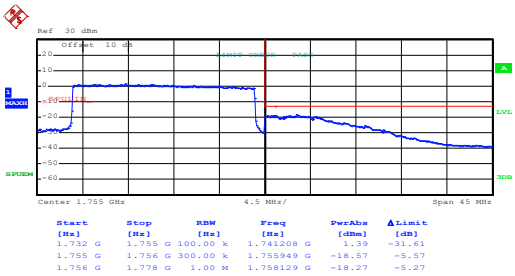
Highest channel

16QAM & RB Size 100



Date: 18.DEC.2017 14:50:11

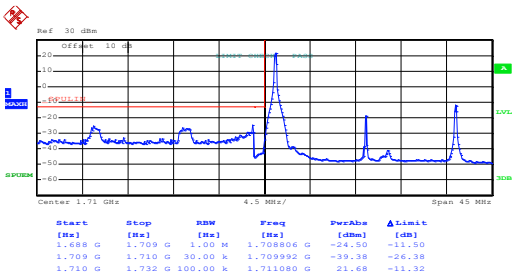
Lowest channel



Date: 18.DEC.2017 14:52:37

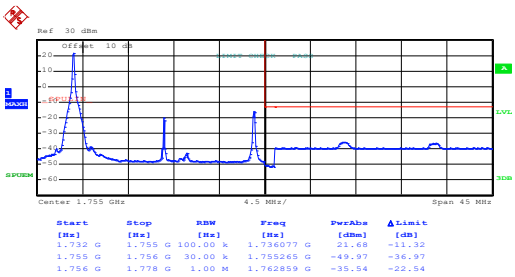
Highest channel

QPSK & RB Size 1



Date: 18.DEC.2017 14:46:55

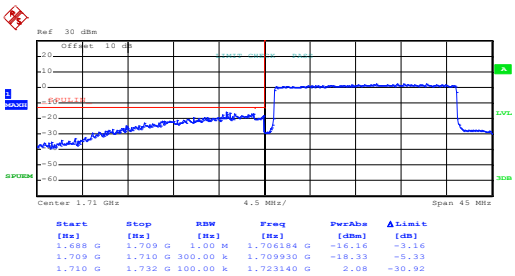
Lowest channel



Date: 18.DEC.2017 14:50:44

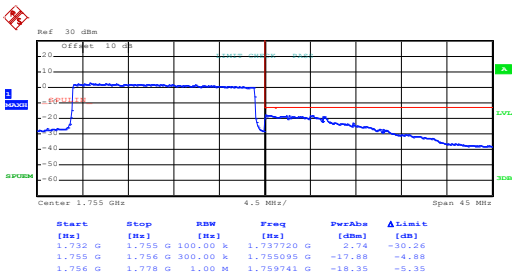
Highest channel

QPSK & RB Size 100



Date: 18.DEC.2017 14:50:04

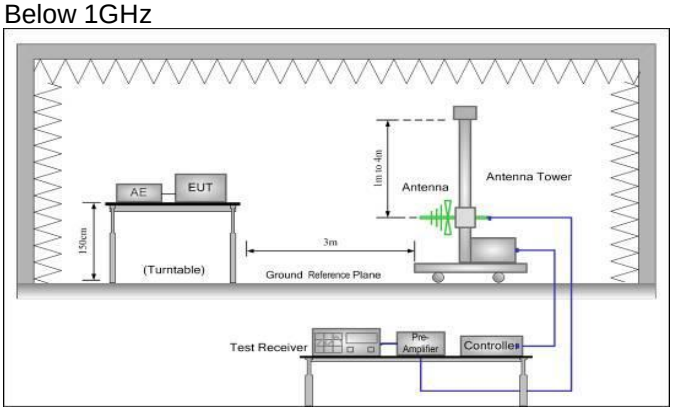
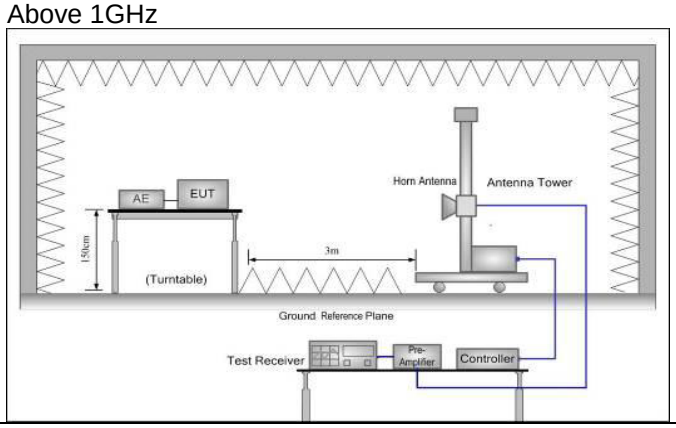
Lowest channel



Date: 18.DEC.2017 14:52:29

Highest channel

6.5 ERP, EIRP Measurement

Test Requirement:	Part 27.50(d)(4)
Test Method:	ANSI/TIA-603-D 2010
Limit:	LTE Band 4: 1W EIRP
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band below 1GHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows: ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB) 4. EIRP in frequency band above 1GHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB) 5. The worse case was relating to the conducted output power.
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

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
Lowest Channel								
1710.70	19957	QPSK	1.4	H	V	18.55	30.00	Pass
					H	20.92		
1710.70	19957	16QAM	1.4	H	V	18.63		
					H	21.15		
Middle Channel								
1732.50	20175	QPSK	1.4	H	V	17.83	30.00	Pass
					H	19.38		
1732.50	20175	16QAM	1.4	H	V	18.06		
					H	19.55		
Highest Channel								
1754.30	20393	QPSK	1.4	H	V	16.51	30.00	Pass
					H	19.36		
1754.30	20393	16QAM	1.4	H	V	17.56		
					H	19.44		

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
Lowest Channel								
1711.50	19965	QPSK	3	H	V	18.56	30.00	Pass
					H	20.12		
1711.50	19965	16QAM	3	H	V	19.32		
					H	21.06		
Middle Channel								
1732.50	20175	QPSK	3	H	V	18.26	30.00	Pass
					H	18.69		
1732.50	20175	16QAM	3	H	V	19.24		
					H	20.16		
Highest Channel								
1753.50	20385	QPSK	3	H	V	17.52	30.00	Pass
					H	20.12		
1753.50	20385	16QAM	3	H	V	17.69		
					H	20.11		

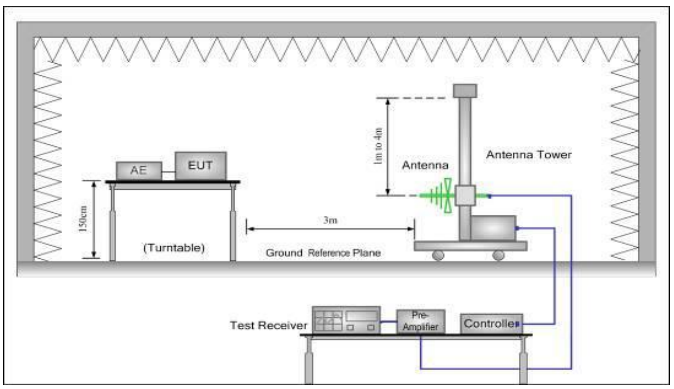
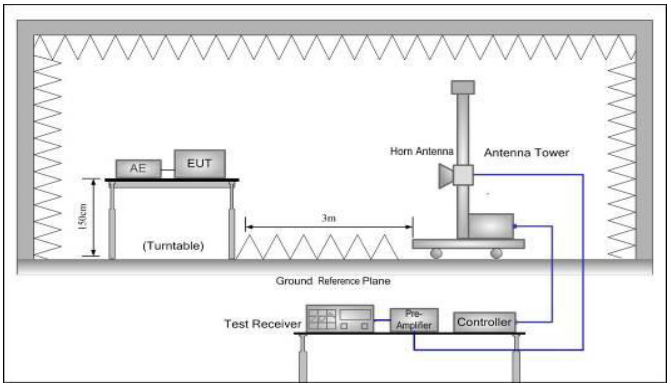
Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
Lowest Channel								
1712.50	19975	QPSK	5	H	V	19.60	30.00	Pass
					H	20.44		
1712.50	19975	16QAM	5	H	V	20.12		
					H	21.19		
Middle Channel								
1732.50	20175	QPSK	5	H	V	19.58	30.00	Pass
					H	18.45		
1732.50	20175	16QAM	5	H	V	19.47		
					H	20.26		
Highest Channel								
1752.50	20375	QPSK	5	H	V	18.26	30.00	Pass
					H	21.25		
1752.50	20375	16QAM	5	H	V	19.62		
					H	20.74		

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
Lowest Channel								
1715.00	20000	QPSK	10	H	V	20.12	30.00	Pass
					H	21.48		
1715.00	20000	16QAM	10	H	V	21.69		
					H	19.59		
Middle Channel								
1732.50	20175	QPSK	10	H	V	19.26	30.00	Pass
					H	18.55		
1732.50	20175	16QAM	10	H	V	19.48		
					H	20.16		
Highest Channel								
1750.00	20350	QPSK	10	H	V	19.23	30.00	Pass
					H	20.16		
1750.00	20350	16QAM	10	H	V	19.44		
					H	21.16		

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
Lowest Channel								
1717.50	20025	QPSK	15	H	V	19.25	30.00	Pass
					H	20.44		
1717.50	20025	16QAM	15	H	V	20.26		
					H	21.36		
Middle Channel								
1732.50	20175	QPSK	15	H	V	19.28	30.00	Pass
					H	18.46		
1732.50	20175	16QAM	15	H	V	19.74		
					H	20.19		
Highest Channel								
1747.50	20325	QPSK	15	H	V	20.12	30.00	Pass
					H	21.16		
1747.50	20325	16QAM	15	H	V	19.87		
					H	21.53		

Frequency (MHz)	UL Channel	Modulation	BW (MHz)	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
Lowest Channel								
1720.00	20050	QPSK	20	H	V	18.57	30.00	Pass
					H	20.94		
1720.00	20050	16QAM	20	H	V	18.25		
					H	21.44		
Middle Channel								
1732.50	20175	QPSK	20	H	V	18.46	30.00	Pass
					H	20.44		
1732.50	20175	16QAM	20	H	V	18.26		
					H	19.68		
Highest Channel								
1745.00	20300	QPSK	20	H	V	19.12	30.00	Pass
					H	21.06		
1745.00	20300	16QAM	20	H	V	18.65		
					H	21.44		

6.6 Field strength of spurious radiation measurement

Test Requirement:	Part 27.53(h)
Test Method:	ANSI/TIA-603-D 2010
Limit:	LTE Band 4: < -13dBm.
Test setup:	Below 1GHz  Above 1GHz 
Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
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 / 1.4 MHz / RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest				
3421.40	Vertical	-50.85	-13.00	Pass
5132.10	V	-43.29		
6842.80	V	-38.96		
3421.40	Horizontal	-46.17		
5132.10	H	-41.30		
6842.80	H	-34.74		
Middle				
3465.00	Vertical	-47.13	-13.00	Pass
5197.50	V	-40.50		
6930.00	V	-35.15		
3465.00	Horizontal	-46.49		
5197.50	H	-38.61		
6930.00	H	-36.00		
Highest				
3508.60	Vertical	-47.32	-13.00	Pass
5262.90	V	-41.18		
7017.20	V	-35.72		
3508.60	Horizontal	-47.15		
5262.90	H	-40.78		
7017.20	H	-34.77		

Note:
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.

LTE Band 4 / 3 MHz / RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest				
3423.00	Vertical	-45.23	-13.00	Pass
5134.50	V	-42.61		
6846.00	V	-36.23		
3423.00	Horizontal	-50.24		
5134.50	H	-42.61		
6846.00	H	-36.24		
Middle				
3465.00	Vertical	-45.21	-13.00	Pass
5197.50	V	-36.25		
6930.00	V	-37.64		
3465.00	Horizontal	-45.19		
5197.50	H	-42.25		
6930.00	H	-36.33		
Highest				
3507.00	Vertical	-46.25	-13.00	Pass
5260.50	V	-42.52		
7014.00	V	-36.24		
3507.00	Horizontal	-45.21		
5260.50	H	-41.79		
7014.00	H	-35.98		

Note:
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.

LTE Band 4 / 5 MHz / RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest				
3425.00	Vertical	-49.62	-13.00	Pass
5137.50	V	-42.52		
6850.00	V	-38.21		
3425.00	Horizontal	-46.15		
5137.50	H	-41.77		
6850.00	H	-34.25		
Middle				
3465.00	Vertical	-46.26	-13.00	Pass
5197.50	V	-39.21		
6930.00	V	-35.46		
3465.00	Horizontal	-45.78		
5197.50	H	-38.59		
6930.00	H	-36.14		
Highest				
3505.00	Vertical	-46.25	-13.00	Pass
5257.50	V	-42.15		
7010.00	V	-36.57		
3505.00	Horizontal	-46.19		
5257.50	H	-40.52		
7010.00	H	-34.79		

Note:
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.

LTE Band 4 / 10 MHz / RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest				
3430.00	Vertical	-45.26	-13.00	Pass
5145.00	V	-41.26		
6860.00	V	-34.67		
3430.00	Horizontal	-49.58		
5145.00	H	-41.52		
6860.00	H	-36.57		
Middle				
3465.00	Vertical	-45.91	-13.00	Pass
5197.50	V	-38.64		
6930.00	V	-36.24		
3465.00	Horizontal	-45.21		
5197.50	H	-42.16		
6930.00	H	-36.78		
Highest				
3500.00	Vertical	-45.24	-13.00	Pass
5250.00	V	-41.64		
7000.00	V	-35.27		
3500.00	Horizontal	-46.79		
5250.00	H	-42.15		
7000.00	H	-36.50		

Note:
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.

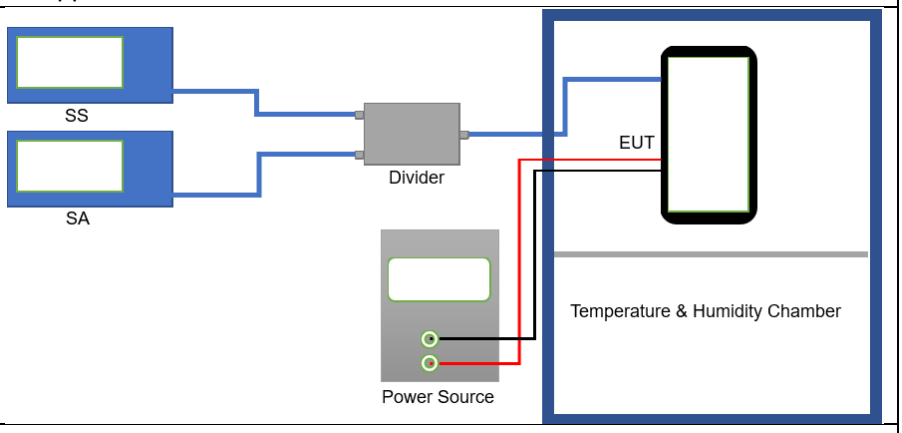
LTE Band 4 / 15 MHz / RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest				
3435.00	Vertical	-49.88	-13.00	Pass
5152.50	V	-42.22		
6870.00	V	-38.64		
3435.00	Horizontal	-46.21		
5152.50	H	-42.21		
6870.00	H	-34.51		
Middle				
3465.00	Vertical	-46.25	-13.00	Pass
5197.50	V	-39.76		
6930.00	V	-34.61		
3465.00	Horizontal	-45.98		
5197.50	H	-38.56		
6930.00	H	-37.45		
Highest				
3495.00	Vertical	-45.21	-13.00	Pass
5242.50	V	-42.61		
6990.00	V	-36.53		
3495.00	Horizontal	-46.57		
5242.50	H	-41.45		
6990.00	H	-34.19		

Note:
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.

LTE Band 4 / 20 MHz / RB size 1 & RB offset 0				
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
Lowest				
3440.00	Vertical	-46.13	-13.00	Pass
5160.00	V	-40.95		
6880.00	V	-35.11		
3440.00	Horizontal	-47.17		
5160.00	H	-41.37		
6880.00	H	-37.00		
Middle				
3465.00	Vertical	-46.03	-13.00	Pass
5197.50	V	-38.85		
6930.00	V	-35.52		
3465.00	Horizontal	-46.67		
5197.50	H	-41.20		
6930.00	H	-34.06		
Highest				
3490.00	Vertical	-44.55	-13.00	Pass
5235.00	V	-40.26		
6980.00	V	-35.09		
3490.00	Horizontal	-47.00		
5235.00	H	-41.36		
6980.00	H	-35.64		

Note:
1. The emission levels of below 1 GHz are 20 dB lower than the limit so not show in this report.
2. For above 1 GHz, all test modes were performed, and just the worst case shown in the report.

6.7 Frequency stability V.S. Temperature measurement

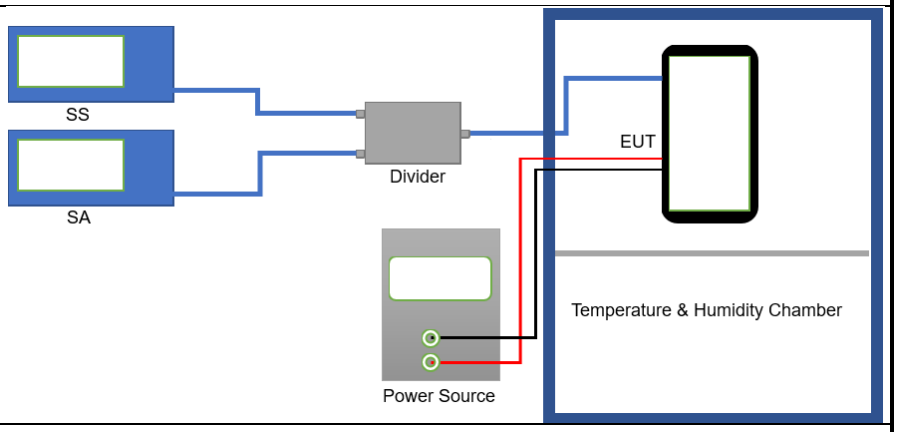
Test Requirement:	Part 27.54, Part 2.1055(a)(1)(b)
Test Method:	ANSI/TIA-603-D 2010
Limit:	±2.5ppm
Test setup:	
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Reference Frequency: LTE Band 4 (10MHz) Middle channel=20175 channel=1732.50MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
3.85	-30	197	0.113709	±2.5	Pass
	-20	154	0.088889		
	-10	162	0.093506		
	0	122	0.070418		
	10	187	0.107937		
	20	173	0.099856		
	30	113	0.065224		
	40	104	0.060029		
	50	149	0.086003		
16QAM					
3.85	-30	122	0.070418	±2.5	Pass
	-20	149	0.086003		
	-10	165	0.095238		
	0	121	0.069841		
	10	143	0.082540		
	20	139	0.080231		
	30	155	0.089466		
	40	132	0.076190		
	50	137	0.079076		

Note: Only the worst case shown in the report.

6.8 Frequency stability V.S. Voltage measurement

Test Requirement:	Part 27.54, Part 2.1055(d)(2)
Test Method:	ANSI/TIA-603-D 2010
Limit:	±2.5ppm
Test setup:	
Test procedure:	1. Set chamber temperature to 25℃. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specify extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 5.9 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data:

Reference Frequency: LTE Band 4(10MHz) Middle channel=20175 channel=1732.50MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
QPSK					
25	4.35	97	0.055988	±2.5	Pass
	3.85	64	0.036941		
	3.50	73	0.042136		
16QAM					
25	4.35	79	0.045599	±2.5	Pass
	3.85	95	0.054834		
	3.50	47	0.027128		

Note: Only the worst case shown in the report.