

FCC REPORT

(LTE)

Applicant: Plus One Marketing Ltd.

Address of Applicant: Sumitomofudosan Hibiya building 2F, 2-8-6 Shinbashi, Minatoku, Tokyo, Japan

Equipment Under Test (EUT)

Product Name: Smart Phone

Model No.: FTU152B, ÖWN Smart HD

Trade Mark: OWN, Freetel

FCC ID: 2AG5L-FTU152B

FCC CFR Title 47 Part 2

FCC CFR Title 47 Part 24 Subpart E

FCC CFR Title 47 Part 27 Subpart L

FCC CFR Title 47 Part 27 Subpart M

Date of sample receipt: 25 Feb., 2016

Date of Test: 26 Feb., to 14 Mar., 2016

Date of report issued: 14 Mar., 2016

Test Result: PASS*

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

Authorized Signature:



Bruce Zhang

Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2. Version

Version No.	Date	Description
00	14 Mar., 2016	Original

Tested by:


M.Jiang

Date:

14 Mar., 2016

Test Engineer

Reviewed by:


Wimer Zhang

Date:

14 Mar., 2016

Project Engineer

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4. Test Summary

Test Item	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 24.232 (c) Part 27.50 (d)(4) Part 27.50 (h)(2)	Pass
Peak-to-Average Ratio	Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 24.238 Part 27.53(h) Part 27.53(m)	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 24.238 (a) Part 27.53(h) Part 27.53(m)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 24.238 (a) Part 27.53(h) Part 27.53(m)	Pass
Out of band emission, Band Edge	Part 24.238 (a) Part 27.53(h) Part 27.53(m)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5. General Information

5.1 Client Information

Applicant:	Plus One Marketing Ltd.
Address of Applicant:	Sumitomofudosan Hibiya building 2F, 2-8-6 Shinbashi, Minatoku, Tokyo, Japan
Manufacturer:	Shenzhen X&F Technology Co., Ltd.
Address of Manufacturer:	6/F North Tower of Wandelai Duilding, No.29 of Kejinan 6th Avenue, Hi-tech Industrial Park, Nanshan District, Shenzhen, China

5.2 General Description of E.U.T.

Product Name:	Smart Phone
Model No.:	FTU152B, ÖWN Smart HD
Operation Frequency range:	LTE Band 2: TX: 1850MHz-1910MHz, RX: 1930MHz-1990MHz LTE Band 4:TX: 1710MHz-1755MHz, RX: 2110MHz-2155MHz LTE Band 7: TX: 2500MHz -2570MHz, RX: 2620MHz-2690MHz
Modulation type:	QPSK, 16QAM
Antenna type:	Internal Antenna
Antenna gain:	LTE Band 2: -3.64dBi LTE Band 4: -3.66dBi LTE Band 7: -6.44dBi
AC adapter:	Model: Smart HD Input: AC100-240V 50/60Hz 0.2A Output: DC 5.0V, 1.5A
Power supply:	Rechargeable Li-ion Battery DC3.8V-4000mAh
Remark:	The model: FTU152B, ÖWN Smart HD were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.

Operation Frequency List:

LTE Band 2(1.4MHz)		LTE Band 2(3MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18607	1850.70	18615	1851.50
18608	1850.80	18616	1851.60
....
18899	1879.90	18899	1879.90
18900	1880.00	18900	1880.00
18901	1880.10	18901	1880.10
...
19193	1909.20	19185	1908.40
19194	1909.30	19186	1908.50
LTE Band 2(5MHz)		LTE Band 2(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18625	1852.50	18650	1855.00
18626	1852.60	18651	1855.10
....
18899	1879.90	18899	1879.90
18900	1880.00	18900	1880.00
18901	1880.10	18901	1880.10
...
19175	1907.40	19150	1904.90
19176	1907.50	19151	1905.00
LTE Band 2(15MHz)		LTE Band 2(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
18675	1857.50	18700	1860.00
18676	1857.60	18701	1860.10
....
18899	1879.90	18899	1879.90
18900	1880.00	18900	1880.00
18901	1880.10	18901	1880.10
...
19125	1902.40	19100	1899.90
19126	1902.50	19101	1900.00

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

LTE Band 7(5MHz)		LTE Band 7(10MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20775	2502.50	20800	2505.00
20776	2502.60	20801	2502.10
....
21099	2534.90	21099	2534.90
21100	2535.00	21100	2535.00
21101	2535.20	21101	2535.20
...
21424	2567.40	21399	2564.90
21425	2567.50	21400	2565.00
LTE Band 7(15MHz)		LTE Band 7(20MHz)	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
20825	2507.50	20850	2510.00
20826	2507.60	20851	2510.10
....
21099	2534.90	21099	2534.90
21100	2535.00	21100	2535.00
21101	2535.20	21101	2535.20
...
21374	2562.40	21349	2559.90
21375	2562.50	21350	2560.00

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 2(1.4MHz)			LTE Band 2(3MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	18607	1850.70	Lowest channel	18615	1851.50
Middle channel	18900	1880.00	Middle channel	18900	1880.00
Highest channel	19193	1909.30	Highest channel	19185	1908.50
LTE Band 2(5MHz)			LTE Band 2(10MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	18625	1852.50	Lowest channel	18650	1855.00
Middle channel	18900	1880.00	Middle channel	18900	1880.00
Highest channel	19175	1907.50	Highest channel	19150	1905.00
LTE Band 2(15MHz)			LTE Band 2(20MHz)		
Channel		Frequency (MHz)	Channel		Frequency (MHz)
Lowest channel	18675	1857.50	Lowest channel	18700	1860.00
Middle channel	18900	1880.00	Middle channel	18900	1880.00
Highest channel	19125	1902.50	Highest channel	19100	1900.00

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

LTE Band 7(5MHz)			LTE Band 7(10MHz)		
Channel	Frequency (MHz)	Channel	Frequency (MHz)		
Lowest channel	20775	2502.50	Lowest channel	20800	2505.00
Middle channel	21100	2535.00	Middle channel	21100	2535.00
Highest channel	21425	2567.50	Highest channel	21400	2565.00
LTE Band 7(15MHz)			LTE Band 7(20MHz)		
Channel	Frequency (MHz)	Channel	Frequency (MHz)		
Lowest channel	20825	2507.50	Lowest channel	20850	2510.00
Middle channel	21100	2535.00	Middle channel	21100	2535.00
Highest channel	21375	2562.50	Highest channel	21350	2560.00

5.3 Test modes

Data mode (LTE band 2(QPSK))	Keep the EUT in data communicating mode on LTE band 2(QPSK). (LTE band2(1.4MHz), LTE band2(3MHz), LTE band2(5MHz), LTE band2(10MHz), LTE band2(15MHz), LTE band2(20MHz))
Data mode (LTE band 2(16QAM))	Keep the EUT in data communicating mode on LTE band 2(16QAM). (LTE band2(1.4MHz), LTE band2(3MHz), LTE band2(5MHz), LTE band2(10MHz), LTE band2(15MHz), LTE band2(20MHz))
Data mode (LTE band 4(QPSK))	Keep the EUT in data communicating mode on LTE band 4(QPSK). (LTE band 4(1.4MHz), LTE band 4(3MHz), LTE band 4(5MHz), LTE band 4(10MHz), LTE band 4(15MHz), LTE band 4(20MHz))
Data mode (LTE band 4(16QAM))	Keep the EUT in data communicating mode on LTE band 4(16QAM). (LTE band 4(1.4MHz), LTE band 4(3MHz), LTE band 4(5MHz), LTE band 4(10MHz), LTE band 4(15MHz), LTE band 4(20MHz))
Data mode (LTE band 7(QPSK))	Keep the EUT in data communicating mode on LTE band 7(QPSK). (LTE band 7(5MHz), LTE band 7(10MHz))
Data mode (LTE band 7(16QAM))	Keep the EUT in data communicating mode on LTE band 7(16QAM). (LTE band 7(5MHz), LTE band 7(10MHz))
Remark :	Just the worst case data were shown in the report.

5.4 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 24 subpart E, Part 27 subpart L and Part 27 subpart M of the FCC CFR 47 Rules.

5.5 Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA 603 and FCC CFR 47 clause 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057

5.6 Laboratory Facility

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

•FCC - Registration No.: 817957

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

•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.

5.7 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

5.8 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	03-28-2015	03-28-2016
3	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	03-28-2015	03-28-2016
4	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
5	Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	04-01-2015	03-31-2016
6	Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	04-01-2015	03-31-2016
7	Pre-amplifier (18-26.5GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	04-01-2015	03-31-2016
8	Horn Antenna	ETS-LINDGREN	3160	GTS217	04-01-2015	03-31-2016
9	Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
10	Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
11	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP	CCIS0023	03-28-2015	03-28-2016
12	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	03-28-2015	03-28-2016
13	Loop antenna	Laplace instrument	RF300	EMC0701	04-01-2015	03-31-2016
14	Wideband Radio Communication Tester	Rhode&Schwarz	CMW500	140330	05-29-2015	05-28-2016
15	Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	04-08-2015	04-08-2016
16	Temperature and humidity chamber	Foshan Hengpu	HPGDS-500	CCIS0240	11-18-2015	11-17-2016

6. System test configuration

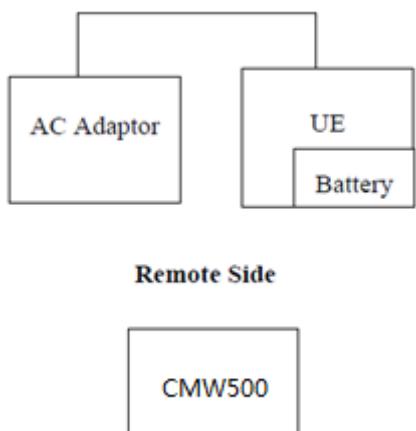
6.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

6.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

6.3 Configuration of Tested System



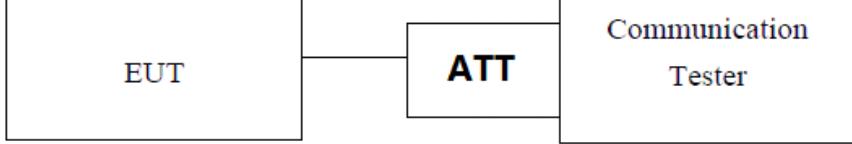
6.4 Description of Test Modes

The EUT has been tested under operating condition.

EUT staying in 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 three modes (LTE Band 2, LTE Band 4 and LTE Band 7) with power adaptor, earphone and Data cable. The worst-case H mode for LTE Band 2, LTE Band 4 and LTE Band 7.

6.5 Conducted Output Power

Test Requirement:	FCC Part 24.232 (c), part 27.50(d), FCC part 27.50(h)
Test Method:	FCC part2.1046
Limit:	LTE Band2: 2W LTE Band 4: 1W LTE Band 7: 2W
Test setup:	 <p>The diagram illustrates the measurement setup. A box labeled "EUT" (Equipment Under Test) is connected via a horizontal line to a box labeled "ATT" (Attenuator). From the "ATT" box, another horizontal line extends to a larger box labeled "Communication Tester".</p> <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
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 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

LTE Band 2 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18607	18900	19193
					1850.7MHz	1880.0MHz	1909.3MHz
2	1.4	QPSK	1	0	22.61	22.61	22.48
			1	2	22.56	22.49	22.20
			1	5	22.59	22.50	22.22
			3	0	22.76	22.61	22.46
			3	1	22.61	22.54	22.27
			3	2	22.67	22.58	22.28
			6	0	21.71	21.66	21.61
		16QAM	1	0	21.67	21.98	21.52
			1	2	21.68	21.52	21.77
			1	5	21.71	21.63	21.80
			3	0	21.79	21.71	21.55
			3	1	21.63	21.58	21.58
			3	2	21.65	21.65	21.42
			6	0	20.70	20.61	20.60
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18615	18900	19185
					1851.5MHz	1880.0MHz	1908.5MHz
2	3	QPSK	1	0	22.57	22.48	22.45
			1	7	22.48	22.53	22.46
			1	14	22.47	22.49	22.16
			8	0	21.71	21.62	21.57
			8	4	21.67	21.63	21.61
			8	7	21.67	21.61	21.62
			15	0	21.69	21.62	21.64
		16QAM	1	0	21.65	21.55	21.76
			1	7	21.95	21.92	21.46
			1	14	21.65	21.63	21.42
			8	0	20.70	20.68	20.48
			8	4	20.66	20.57	20.53
			8	7	20.73	20.59	20.50
			15	0	20.75	20.61	20.55
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18625	18900	19175
					1852.5MHz	1880.0MHz	1907.5MHz
2	5	QPSK	1	0	22.32	22.58	22.42
			1	12	21.91	22.38	22.11
			1	24	22.18	22.52	22.06
			12	0	21.20	21.57	21.51
			12	6	21.07	21.53	21.29
			12	11	21.13	21.63	21.31
			25	0	21.15	21.58	21.31
		16QAM	1	0	21.64	21.65	21.55
			1	12	21.20	21.37	21.34
			1	24	21.46	21.92	21.39
			12	0	20.30	20.63	20.47
			12	6	20.17	20.55	20.40
			12	11	20.22	20.54	20.48
			25	0	20.25	20.58	20.44

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18650	18900	19150
					1855.0MHz	1880.0MHz	1905.0MHz
2	10	QPSK	1	0	21.94	22.19	22.54
			1	24	21.71	22.26	22.42
			1	49	21.56	22.08	22.47
			25	0	21.08	21.44	21.59
			25	12	20.93	21.47	21.60
			25	24	20.82	21.47	21.50
			50	0	20.97	21.46	21.62
		16QAM	1	0	21.14	21.64	21.66
			1	24	20.99	21.59	21.53
			1	49	20.77	21.61	21.45
			25	0	20.07	20.62	20.52
			25	12	20.10	20.58	20.59
			25	24	19.98	20.57	20.48
			50	0	20.05	20.56	20.59
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18675	18900	19125
					1857.5MHz	1880.0MHz	1902.5MHz
					1860.0MHz	1880.0MHz	1900.0MHz
2	15	QPSK	1	0	22.70	22.67	22.64
			1	37	22.53	22.56	22.47
			1	74	22.56	22.53	22.46
			36	0	21.76	21.68	21.73
			36	16	21.65	21.62	21.60
			36	35	21.57	21.60	21.63
			75	0	21.73	21.64	21.67
		16QAM	1	0	21.98	21.85	21.92
			1	37	21.57	21.71	21.66
			1	74	21.73	21.12	21.57
			36	0	20.75	20.71	20.68
			36	16	20.65	20.63	20.57
			36	35	20.67	20.58	20.60
			75	0	20.69	20.67	20.58
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18700	18900	19100
					1860.0MHz	1880.0MHz	1900.0MHz
					1860.0MHz	1880.0MHz	1900.0MHz
2	20	QPSK	1	0	22.71	22.67	22.65
			1	49	22.53	22.54	22.46
			1	99	22.55	22.50	22.54
			50	0	21.82	21.75	22.71
			50	24	21.71	21.63	21.66
			50	49	21.69	21.64	21.69
			100	0	21.68	21.64	21.61
		16QAM	1	0	21.94	21.84	21.58
			1	49	21.77	22.12	21.76
			1	99	21.50	21.85	21.62
			50	0	20.43	20.76	20.66
			50	24	20.68	20.62	20.58
			50	49	20.63	20.59	20.64
			100	0	20.69	20.64	20.67

LTE Band 4 part

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	21.71	21.77	21.81
			1	2	21.70	21.37	21.78
			1	5	21.70	21.75	21.85
			3	0	21.98	21.82	21.93
			3	1	21.81	21.70	21.87
			3	2	21.83	21.79	21.91
			6	0	20.49	20.82	20.89
		16QAM	1	0	20.88	21.38	20.95
			1	2	20.86	20.82	20.84
			1	5	20.93	21.26	20.88
			3	0	20.92	20.93	20.99
			3	1	20.91	20.68	20.79
			3	2	20.77	20.86	20.83
			6	0	19.84	20.41	19.90
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	21.76	21.77	21.74
			1	7	21.77	21.76	21.76
			1	14	21.71	21.64	21.72
			8	0	20.85	20.85	20.87
			8	4	20.85	20.82	20.89
			8	7	20.83	20.82	20.91
			15	0	20.84	20.85	20.88
		16QAM	1	0	20.93	20.90	20.87
			1	7	20.96	20.97	20.94
			1	14	20.69	20.80	20.91
			8	0	19.91	19.92	19.84
			8	4	19.86	19.87	19.83
			8	7	19.81	19.79	19.83
			15	0	19.88	19.82	19.85
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	21.81	21.82	21.87
			1	12	21.84	21.32	21.85
			1	24	21.56	21.74	21.76
			12	0	20.90	20.87	20.92
			12	6	20.87	20.86	20.86
			12	11	20.84	20.88	20.85
			25	0	20.85	20.83	20.97
		16QAM	1	0	20.96	20.87	20.98
			1	12	20.91	20.92	20.93
			1	24	20.78	20.83	20.84
			12	0	19.87	19.97	19.89
			12	6	19.87	19.89	19.90
			12	11	19.72	19.82	19.92
			25	0	19.89	19.84	19.93

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	21.32	21.84	21.86
			1	24	21.82	21.73	21.74
			1	49	21.71	21.71	21.73
			25	0	20.90	20.86	20.87
			25	12	20.87	20.80	20.83
			25	24	20.86	20.83	20.85
			50	0	20.95	20.87	20.88
		16QAM	1	0	20.98	20.91	20.99
			1	24	20.97	20.71	20.87
			1	49	20.86	20.99	20.86
			25	0	19.91	19.96	19.92
			25	12	19.87	19.83	19.93
			25	24	19.88	19.85	19.85
			50	0	19.94	19.83	19.86
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	21.95	21.34	21.86
			1	37	21.76	21.78	21.76
			1	74	21.73	21.72	21.65
			36	0	20.89	20.86	20.90
			36	16	20.75	20.86	20.92
			36	35	20.89	20.84	20.87
			75	0	20.92	20.86	20.90
		16QAM	1	0	20.99	20.90	20.91
			1	37	20.96	20.96	20.96
			1	74	20.97	21.11	20.97
			36	0	19.96	19.90	19.98
			36	16	19.94	19.91	19.91
			36	35	19.89	19.87	19.91
			75	0	19.91	19.88	19.89
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	21.97	21.89	21.93
			1	49	21.73	21.72	21.77
			1	99	21.70	21.76	21.72
			50	0	20.95	20.95	20.90
			50	24	20.88	20.87	20.86
			50	49	20.87	20.87	20.83
			100	0	20.91	20.86	20.84
		16QAM	1	0	21.18	21.07	20.93
			1	49	20.98	20.97	20.98
			1	99	20.99	20.99	20.96
			50	0	19.94	19.93	19.95
			50	24	19.87	19.84	19.85
			50	49	19.89	19.87	19.81
			100	0	19.91	19.88	19.86

LTE Band 7 part

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20775	21100	21425
					2502.5MHz	2535.0MHz	2567.5MHz
7	5	QPSK	1	0	22.06	22.05	22.18
			1	12	22.07	22.10	22.15
			1	24	22.01	22.02	22.04
			12	0	21.14	21.17	21.27
			12	6	21.15	21.19	21.24
			12	11	21.18	21.16	21.20
			25	0	21.16	21.13	21.24
		16QAM	1	0	21.41	21.25	21.29
			1	12	21.18	21.60	21.47
			1	24	21.42	21.47	21.19
			12	0	20.15	20.22	20.23
			12	6	20.15	20.22	20.25
			12	11	20.10	20.27	20.23
			25	0	20.17	20.17	20.25
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20800	21100	21400
					2505.0MHz	2535.0MHz	2565.0MHz
7	10	QPSK	1	0	22.05	22.07	22.15
			1	24	22.16	22.05	22.16
			1	49	22.04	22.16	22.14
			25	0	21.13	21.16	21.25
			25	12	21.18	21.14	21.23
			25	24	21.19	21.17	21.22
			50	0	21.18	21.13	21.23
		16QAM	1	0	21.49	21.21	21.30
			1	24	21.53	21.57	21.23
			1	49	21.19	21.24	20.23
			25	0	20.20	20.16	20.20
			25	12	20.14	20.16	20.19
			25	24	20.16	20.18	20.26
			50	0	20.16	20.14	20.17

LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20825	21100	21375
					2507.5MHz	2535.0MHz	2562.5MHz
7	15	QPSK	1	0	22.16	22.07	22.17
			1	37	22.09	22.16	22.16
			1	74	22.02	22.18	22.14
			36	0	21.22	21.20	21.35
			36	16	21.18	21.25	21.24
			36	35	21.17	21.24	21.26
			75	0	21.17	21.20	21.27
		16QAM	1	0	21.69	21.47	21.49
			1	37	21.73	21.74	21.48
			1	74	21.35	21.95	21.45
			36	0	20.21	20.19	20.25
			36	16	20.22	20.22	20.27
			36	35	20.15	20.21	20.32
			75	0	20.16	20.17	20.25
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20850	21100	21350
					2510.0MHz	2535.0MHz	2560.0MHz
7	20	QPSK	1	0	22.17	22.12	22.15
			1	49	22.04	22.04	22.16
			1	99	22.03	22.13	22.13
			50	0	21.30	21.21	21.24
			50	24	21.15	21.22	21.26
			50	49	21.18	21.24	21.31
			100	0	21.24	21.19	21.26
		16QAM	1	0	21.37	21.45	21.30
			1	49	21.65	21.75	21.08
			1	99	21.67	21.32	21.74
			50	0	20.18	20.25	20.28
			50	24	20.13	20.22	20.30
			50	49	20.16	20.16	20.26
			100	0	20.16	20.17	20.24

6.6 Peak-to-Average Ratio

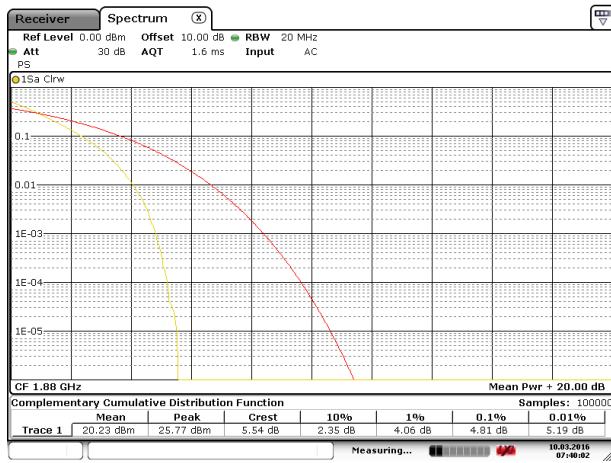
Test Requirement:	FCC part 24.232(d)
Limit:	The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.
Test setup:	<pre> graph LR EUT[EUT] --- Splitter[Splitter] Splitter --- CommTester[Communication Tester] Splitter --- ATT[ATT] ATT --- SPA[SPA] </pre>
<i>Note: Measurement setup for testing on Antenna connector</i>	
Test Procedure:	<ol style="list-style-type: none"> 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 \geq 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 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

BW(MHz)	Modulation	RB Size	RB Offset	PAPR
LTE Band 2 (Middle Channel)				
20MHz	QPSK	100	0	4.81
	16QAM	100	0	5.77
LTE Band 4 (Middle Channel)				
20MHz	QPSK	100	0	5.19
	16QAM	100	0	6.09
LTE Band 7 (Middle Channel)				
20MHz	QPSK	100	0	5.25
	16QAM	100	0	6.12

Test plots as below:

LTE Band 2 Middle channel

Modulation: QPSK

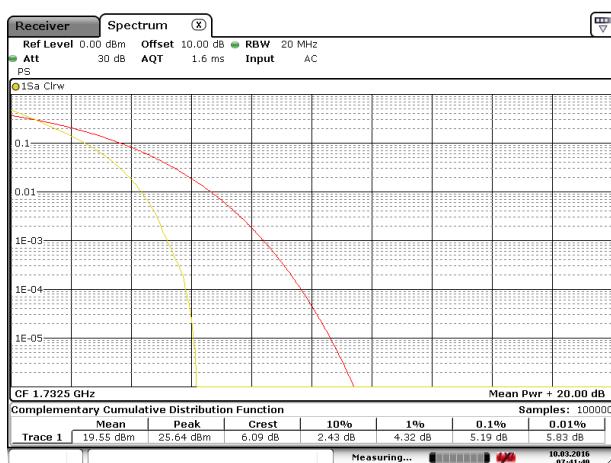


Modulation: 16QAM

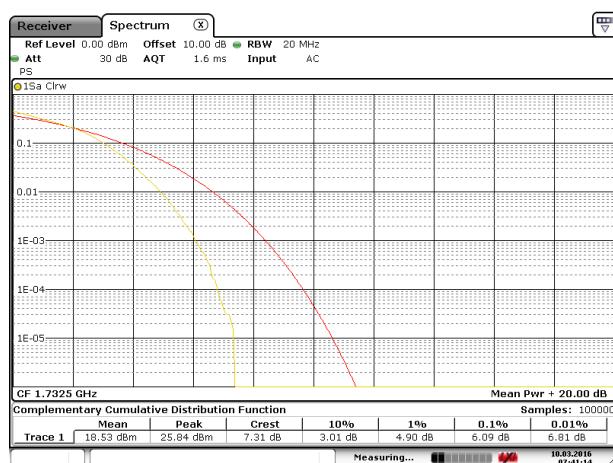


LTE Band 4 Middle channel

Modulation: QPSK

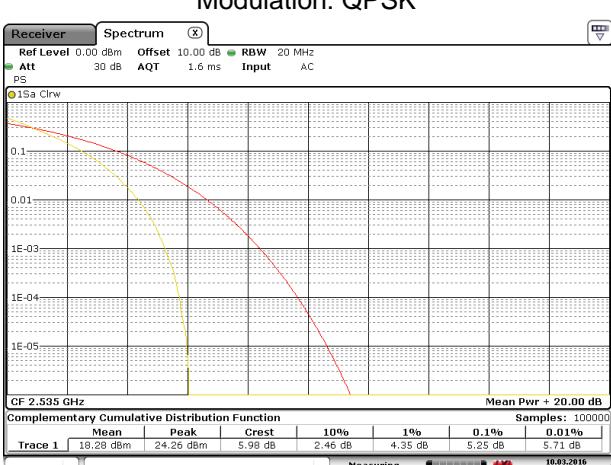


Modulation: 16QAM

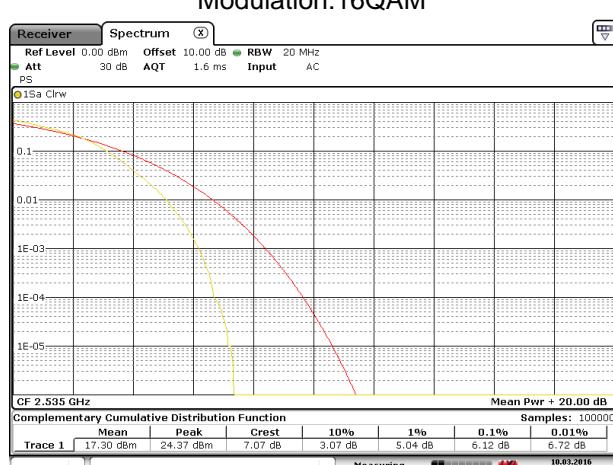


LTE Band 7 Middle channel

Modulation: QPSK



Modulation: 16QAM



6.7 Occupy Bandwidth

Test Requirement:	FCC Part 24.238, part 27.53(h), part 27.53(m)
Test Method:	FCC part2.1049
Test setup:	<p><i>Note: Measurement setup for testing on Antenna connector</i></p>
<p>Test Procedure:</p> <ol style="list-style-type: none"> 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 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

LTE Band 2 part:

EUT Mode	Channel	Frequency(MHz)	Modulation	99% OBW (kHz)	-26dBcEBW (kHz)
1.4MHz	18607	1850.70	16QAM	1098	1266
			QPSK	1104	1272
	18900	1880.00	16QAM	1098	1278
			QPSK	1098	1272
	19193	1909.30	16QAM	1098	1272
			QPSK	1104	1266
3MHz	18615	1851.50	16QAM	2736	3012
			QPSK	2736	3072
	18900	1880.00	16QAM	2724	3012
			QPSK	2736	3048
	19185	1908.50	16QAM	2724	3012
			QPSK	2736	3084
5MHz	18625	1852.50	16QAM	4520	4960
			QPSK	4500	5060
	18900	1880.00	16QAM	4520	5020
			QPSK	4520	5000
	19175	1907.50	16QAM	4520	4980
			QPSK	4540	5040
10MHz	18650	1855.00	16QAM	9080	10200
			QPSK	9120	10200
	18900	1880.00	16QAM	9120	10160
			QPSK	9080	10240
	19150	1905.00	16QAM	9120	10240
			QPSK	9120	10280
15MHz	18675	1857.50	16QAM	13560	15000
			QPSK	13500	14940
	18900	1880.00	16QAM	13500	15000
			QPSK	13500	14940
	19125	1902.50	16QAM	13560	14940
			QPSK	13500	15000
20MHz	18700	1860.00	16QAM	18000	19520
			QPSK	18000	19520
	18900	1880.00	16QAM	17920	19600
			QPSK	18080	19440
	19100	1900.00	16QAM	18000	19520
			QPSK	18000	19600

LTE Band 4 part:

EUT Mode	Channel	Frequency(MHz)	Modulation	99% OBW (kHz)	-26dBcEBW (kHz)
1.4MHz	19957	1710.7	16QAM	1098	1266
			QPSK	1098	1278
	20175	1732.5	16QAM	1098	1266
			QPSK	1098	1278
	20393	1754.3	16QAM	1092	1254
			QPSK	1098	1272
3MHz	19965	1711.5	16QAM	2724	3000
			QPSK	2736	3072
	20175	1732.5	16QAM	2736	3024
			QPSK	2748	3036
	20385	1750.5	16QAM	2736	3024
			QPSK	2736	3060
5MHz	19975	1712.5	16QAM	4520	5040
			QPSK	4520	5020
	20175	1732.5	16QAM	4520	5020
			QPSK	4520	5040
	20375	1752.5	16QAM	4520	5000
			QPSK	4540	5040
10MHz	20000	1715.0	16QAM	9120	10240
			QPSK	9080	10320
	20175	1732.5	16QAM	9080	10240
			QPSK	9120	10320
	20350	1750.0	16QAM	9080	10240
			QPSK	9080	10280
15MHz	20025	1717.5	16QAM	13560	14940
			QPSK	13560	14940
	20175	1732.5	16QAM	13560	15000
			QPSK	13560	14940
	20325	1747.5	16QAM	13560	14880
			QPSK	13500	14940
20MHz	20050	1720.0	16QAM	18000	19520
			QPSK	18080	19520
	20175	1732.5	16QAM	17920	19360
			QPSK	17920	19520
	20300	1745.0	16QAM	18000	19520
			QPSK	18080	19680

LTE Band 7 part:

EUT Mode	Channel	Frequency (MHz)	Modulation	99% OBW (kHz)	-26dB EBW (kHz)
5MHz	20775	2502.5	16QAM	4520	4960
			QPSK	4540	5000
	21100	2535.0	16QAM	4520	5000
			QPSK	4540	5040
	21425	2567.5	16QAM	4520	5040
			QPSK	4540	5040
	20800	2505.0	16QAM	9120	10200
			QPSK	9080	10360
10MHz	21100	2535.0	16QAM	9120	10160
			QPSK	9080	10320
	21400	2565.0	16QAM	9120	10240
			QPSK	9120	10320
15MHz	20825	2507.5	16QAM	13560	14760
			QPSK	13560	15000
	21100	2535.0	16QAM	13560	14820
			QPSK	13560	15000
20MHz	21375	2562.5	16QAM	13560	15000
			QPSK	13620	15000
	20850	2510.0	16QAM	18000	19520
			QPSK	18000	19520
	21100	2535.0	16QAM	18000	19440
			QPSK	18000	19440
	21350	2560.0	16QAM	18000	19520
			QPSK	18160	19760

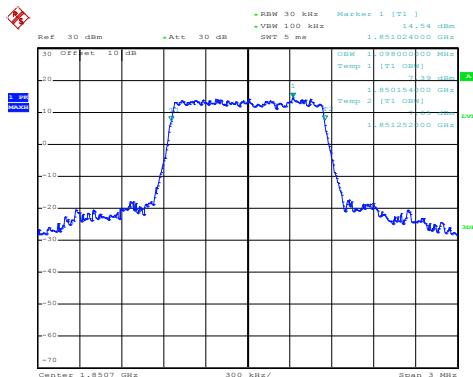
Test plot as follows:

LTE Band 2 part

Test Item:99% Occupy bandwidth

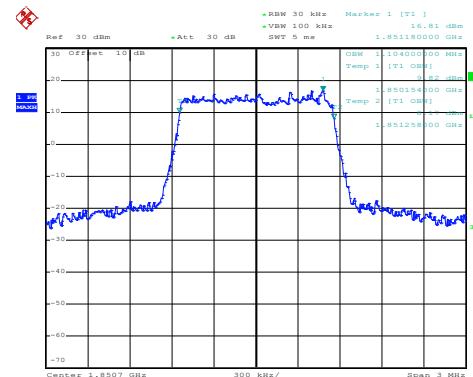
BW: 1.4MHz

Modulation: 16QAM



Date: 2.MAR.2016 12:46:58

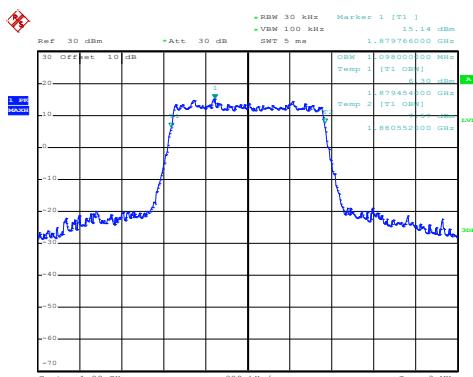
Modulation: QPSK



Date: 2.MAR.2016 12:46:42

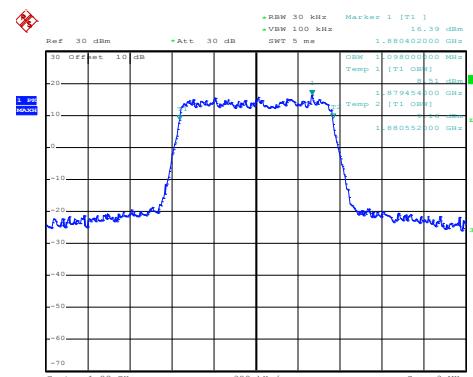
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 12:48:01

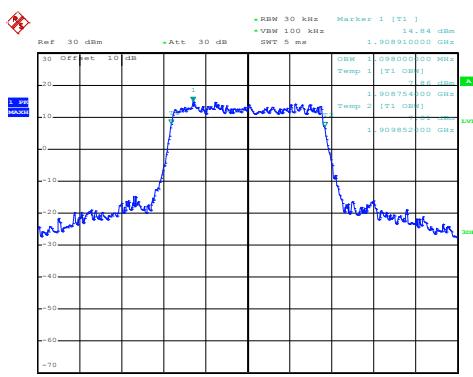
Modulation:QPSK



Date: 2.MAR.2016 12:47:49

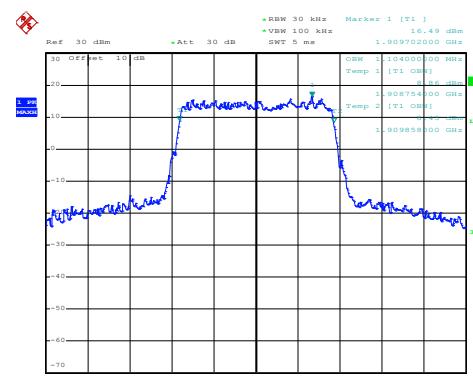
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:48:54

Modulation:QPSK



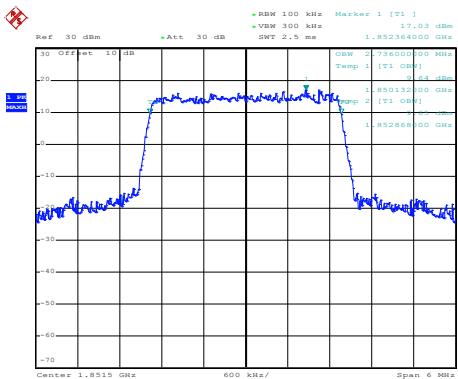
Date: 2.MAR.2016 12:49:07

Highest channel

Test Item:99% Occupy bandwidth

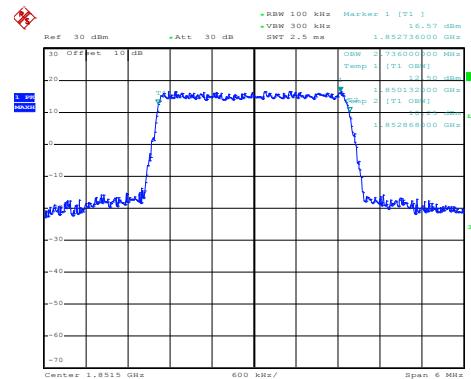
BW: 3MHz

Modulation:16QAM



Date: 2.MAR.2016 12:50:52

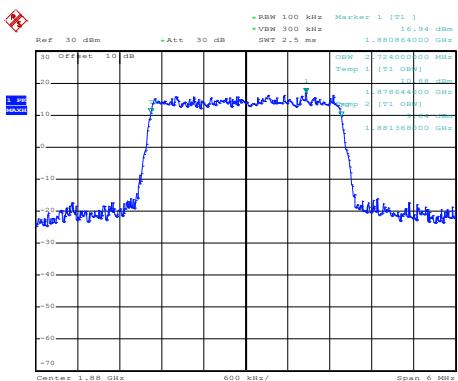
Modulation:QPSK



Date: 2.MAR.2016 12:50:40

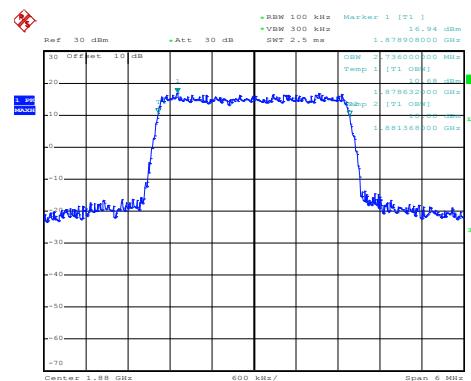
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 12:51:35

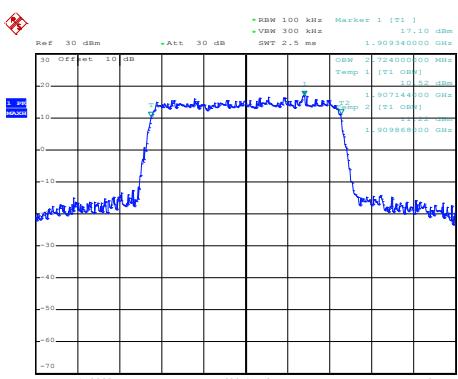
Modulation:QPSK



Date: 2.MAR.2016 12:51:46

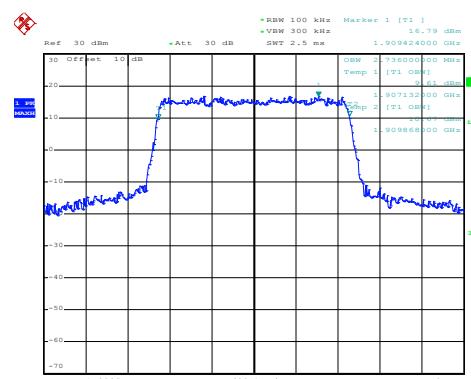
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:52:46

Modulation:QPSK



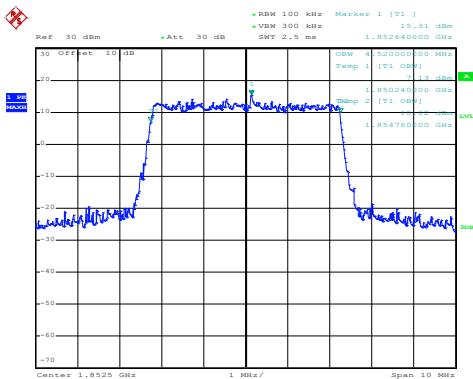
Date: 2.MAR.2016 12:52:34

Highest channel

Test Item:99% Occupy bandwidth

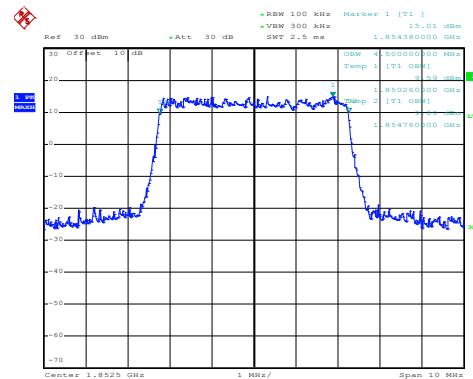
BW: 5MHz

Modulation:16QAM



Date: 2.MAR.2016 12:53:57

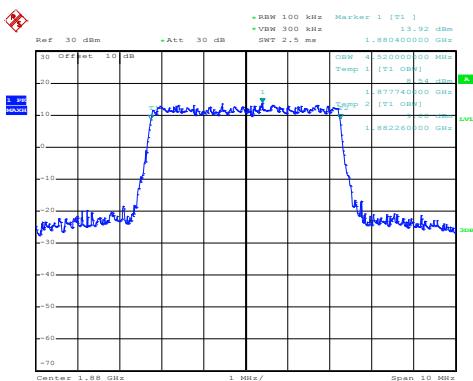
Modulation:QPSK



Date: 2.MAR.2016 12:53:46

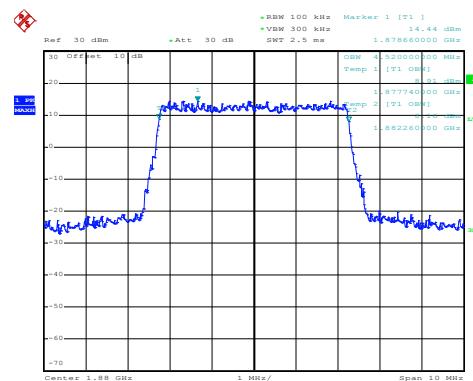
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 12:54:52

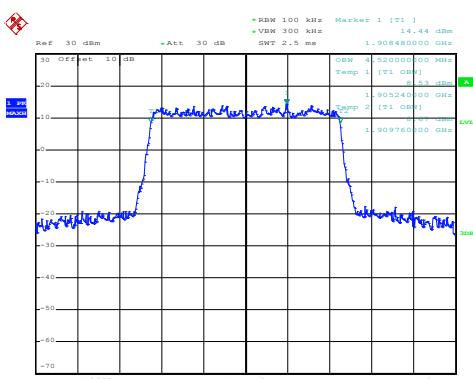
Modulation:QPSK



Date: 2.MAR.2016 12:54:41

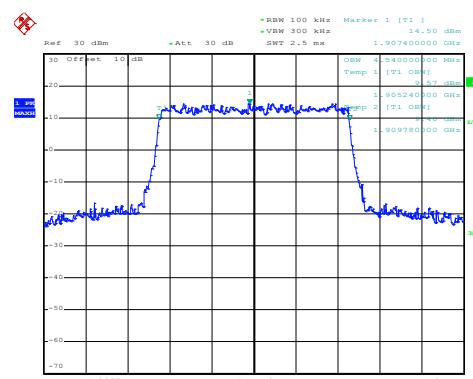
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:55:39

Modulation:QPSK



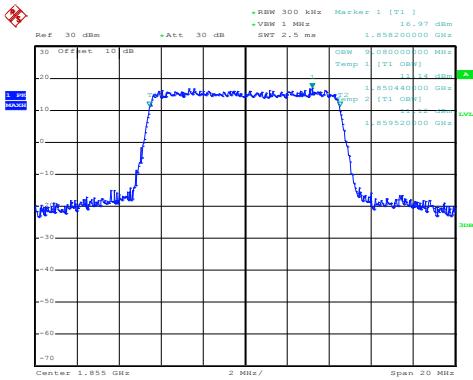
Date: 2.MAR.2016 13:08:29

Highest channel

Test Item:99% Occupy bandwidth

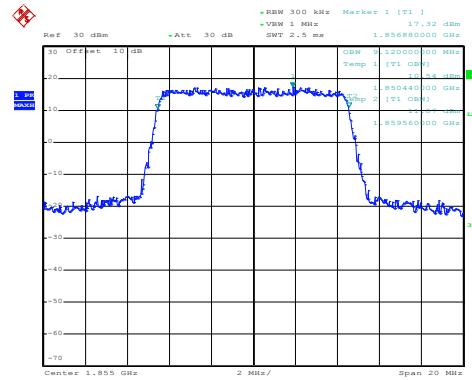
BW: 10MHz

Modulation:16QAM



Date: 2.MAR.2016 12:56:59

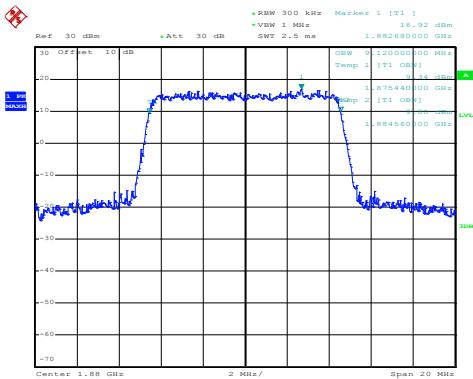
Modulation:QPSK



Date: 2.MAR.2016 12:56:45

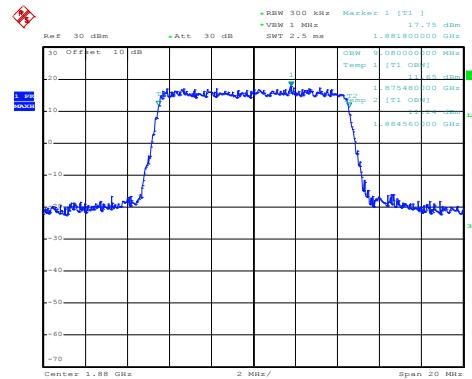
Lowest channel

Modulation:16QAM



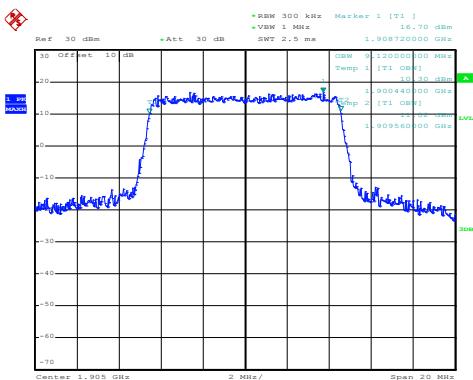
Date: 2.MAR.2016 12:57:54

Modulation:QPSK



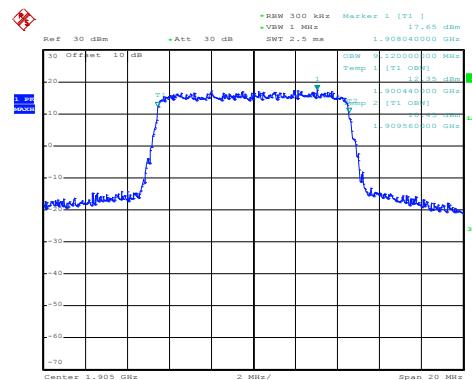
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:58:53

Modulation:QPSK



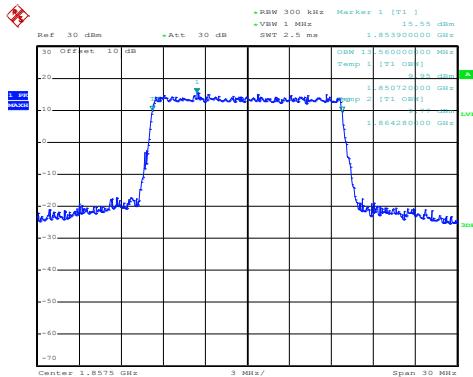
Date: 2.MAR.2016 12:58:43

Highest channel

Test Item:99% Occupy bandwidth

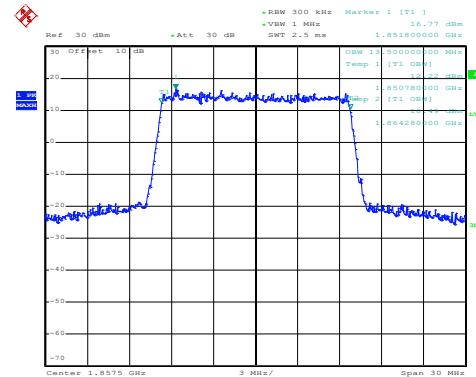
BW: 15MHz

Modulation:16QAM



Date: 2.MAR.2016 13:00:28

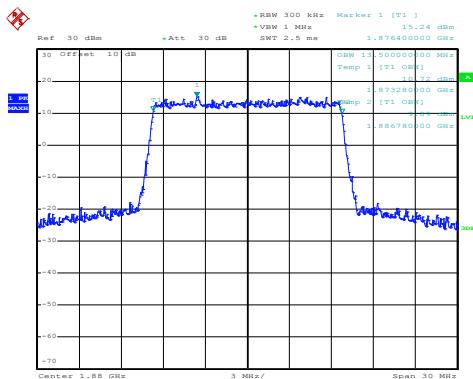
Modulation:QPSK



Date: 2.MAR.2016 13:00:13

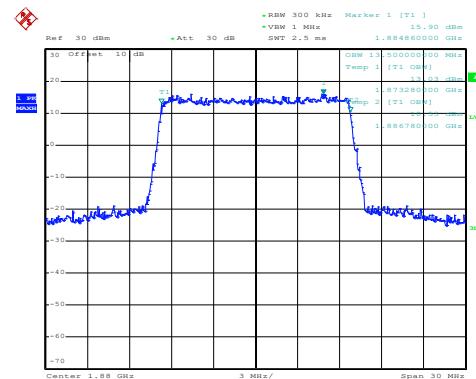
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 13:01:16

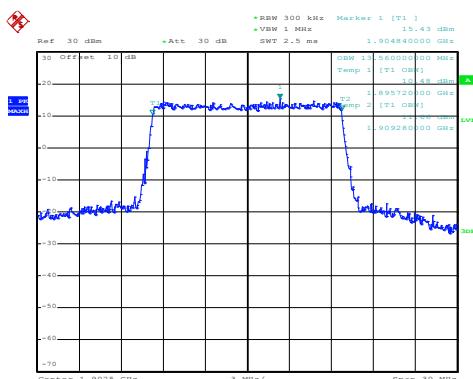
Modulation:QPSK



Date: 2.MAR.2016 13:01:27

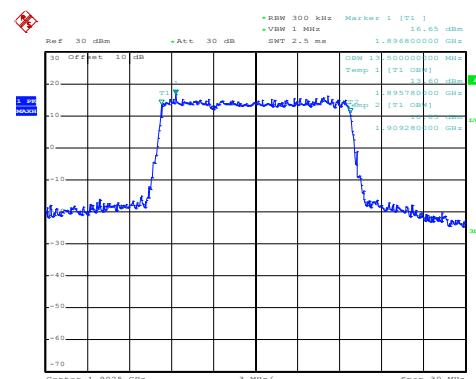
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 13:02:22

Modulation:QPSK



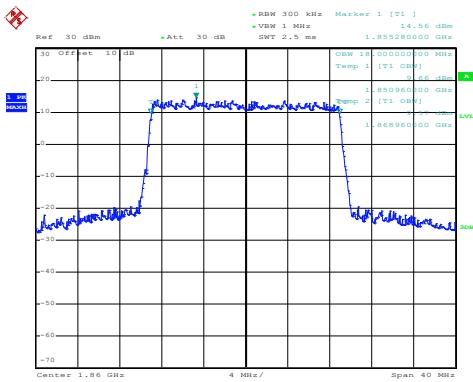
Date: 2.MAR.2016 13:02:10

Highest channel

Test Item:99% Occupy bandwidth

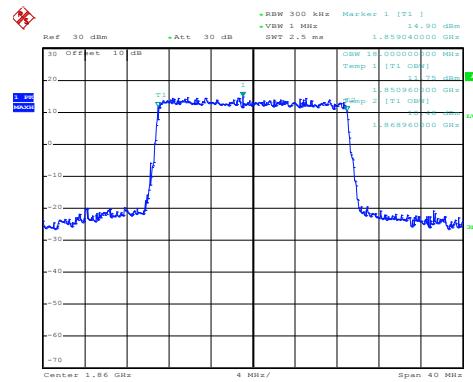
BW: 20MHz

Modulation:16QAM



Date: 2.MAR.2016 13:03:25

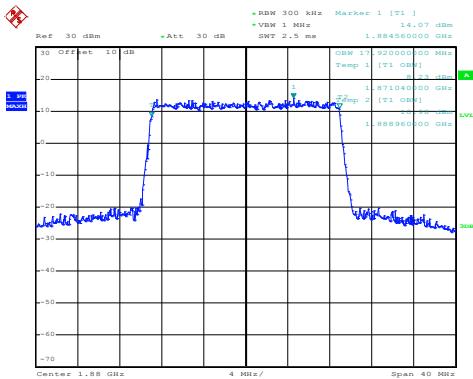
Modulation:QPSK



Date: 2.MAR.2016 13:03:14

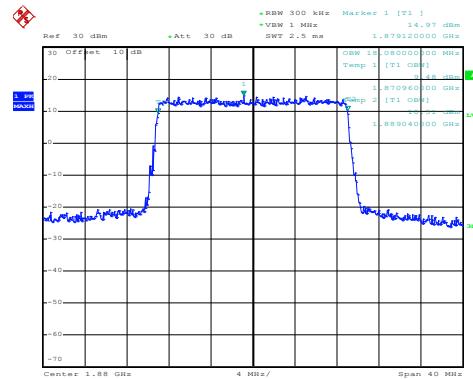
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 13:04:06

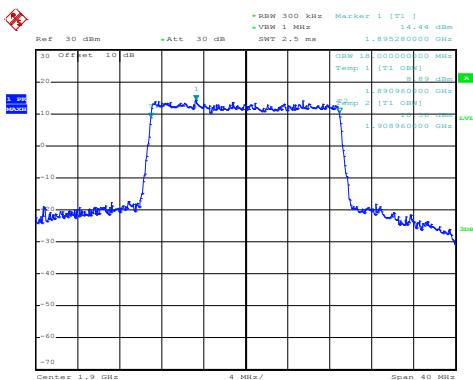
Modulation:QPSK



Date: 2.MAR.2016 13:04:19

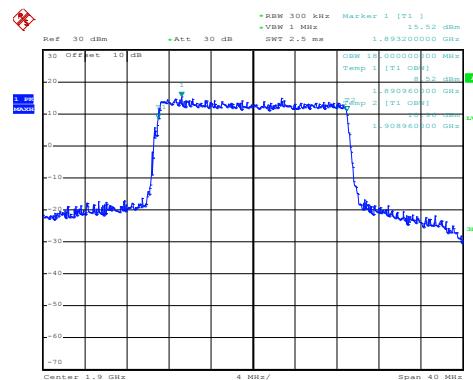
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 13:05:17

Modulation:QPSK



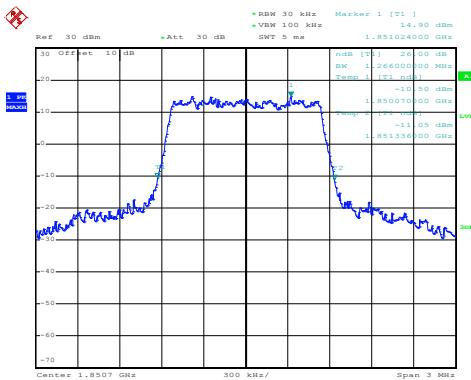
Date: 2.MAR.2016 13:04:59

Highest channel

Test Item:-26dBc bandwidth

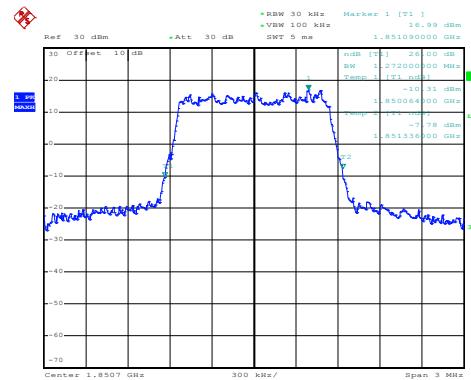
BW: 1.4MHz

Modulation:16QAM



Date: 2.MAR.2016 12:47:08

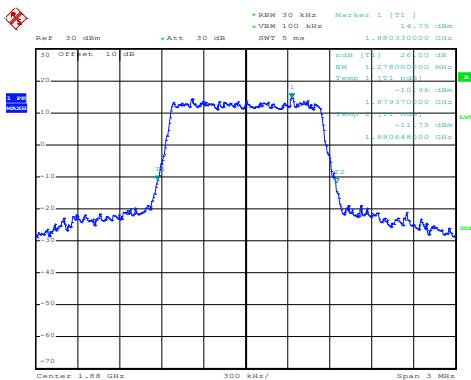
Modulation:QPSK



Date: 2.MAR.2016 12:46:31

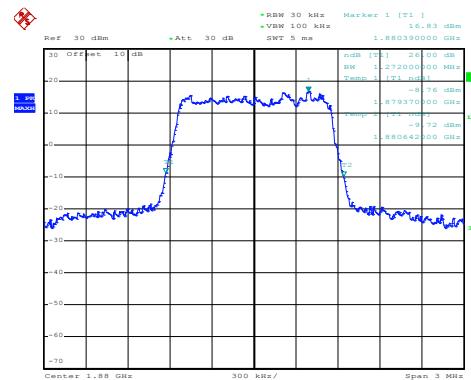
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 12:48:10

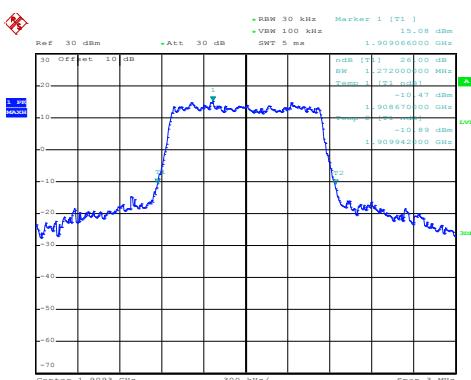
Modulation:QPSK



Date: 2.MAR.2016 12:47:37

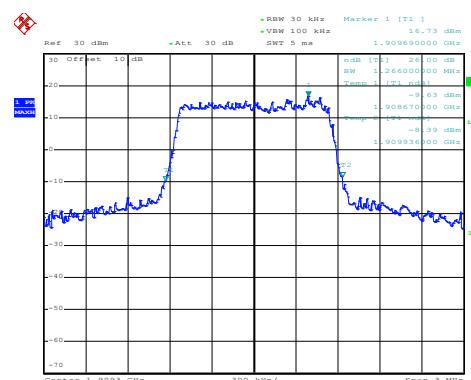
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:48:46

Modulation:QPSK



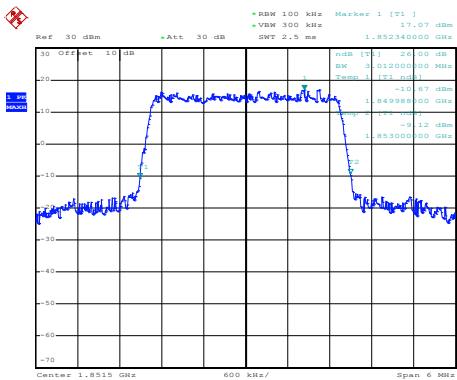
Date: 2.MAR.2016 12:49:15

Highest channel

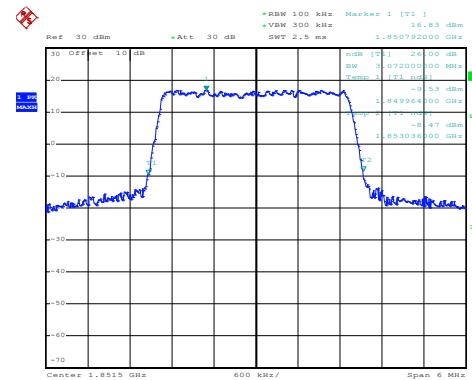
Test Item:-26dBc bandwidth

BW: 3MHz

Modulation:16QAM



Modulation:QPSK

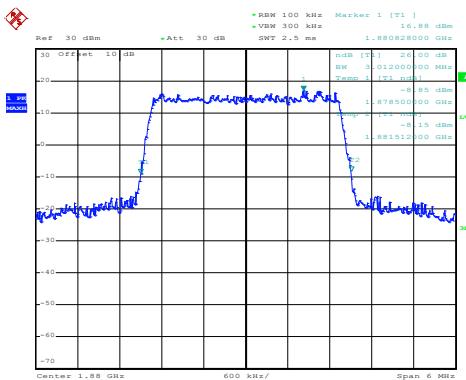


Date: 2.MAR.2016 12:51:02

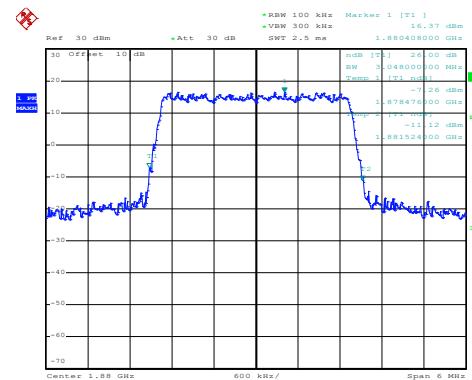
Date: 2.MAR.2016 12:50:30

Lowest channel

Modulation:16QAM



Modulation:QPSK

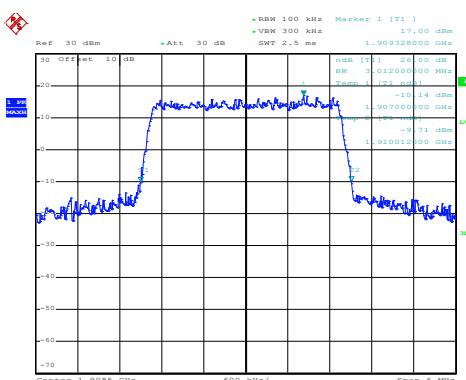


Date: 2.MAR.2016 12:51:25

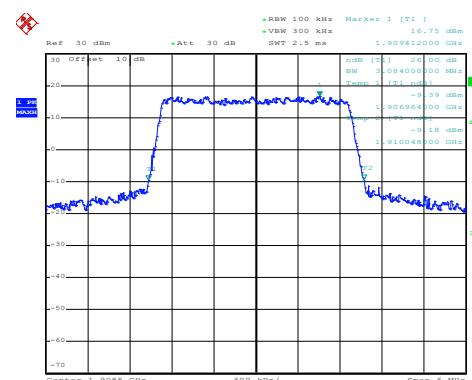
Date: 2.MAR.2016 12:51:55

Middle channel

Modulation:16QAM



Modulation:QPSK



Date: 2.MAR.2016 12:52:55

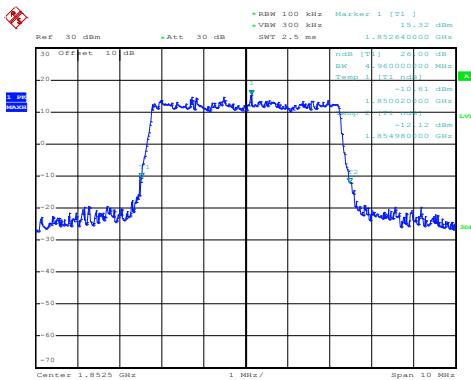
Date: 2.MAR.2016 12:52:22

Highest channel

Test Item:-26dBc bandwidth

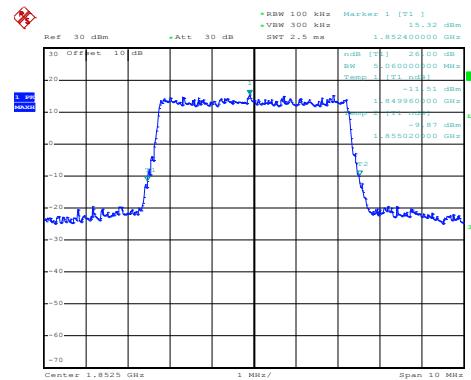
BW: 5MHz

Modulation:16QAM



Date: 2.MAR.2016 12:54:08

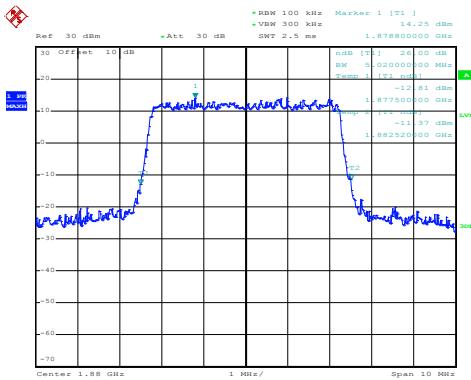
Modulation:QPSK



Date: 2.MAR.2016 12:53:38

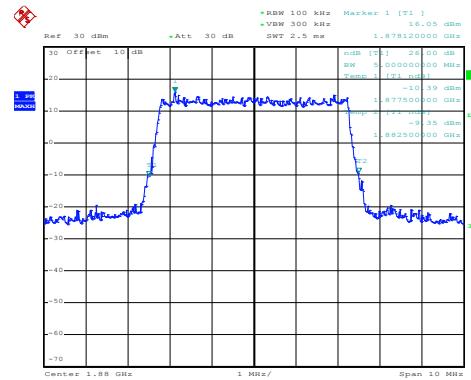
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 12:55:02

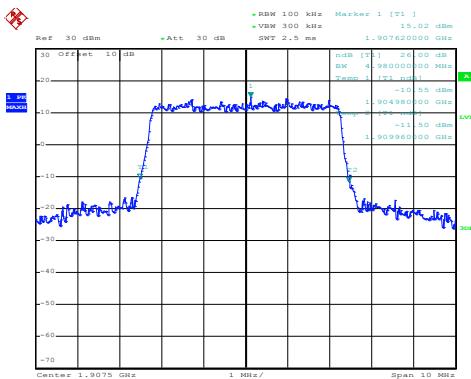
Modulation:QPSK



Date: 2.MAR.2016 12:54:32

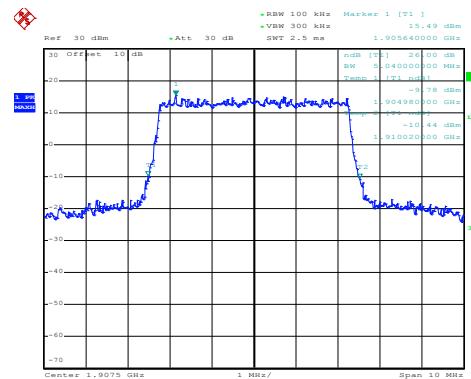
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:55:30

Modulation:QPSK



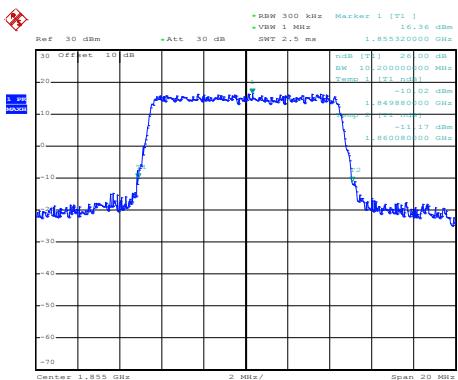
Date: 2.MAR.2016 13:08:18

Highest channel

Test Item:-26dBc bandwidth

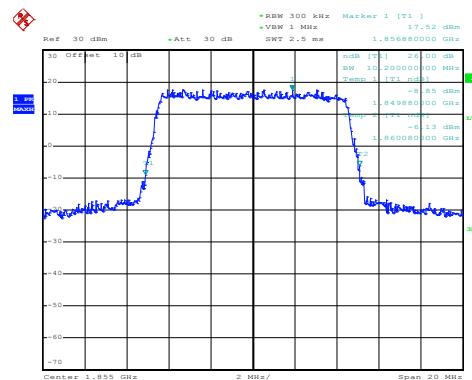
BW: 10MHz

Modulation:16QAM



Date: 2.MAR.2016 12:57:10

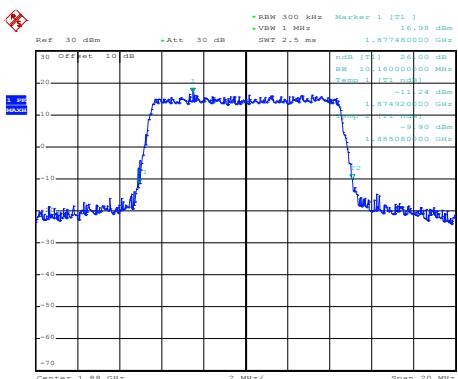
Modulation:QPSK



Date: 2.MAR.2016 12:56:36

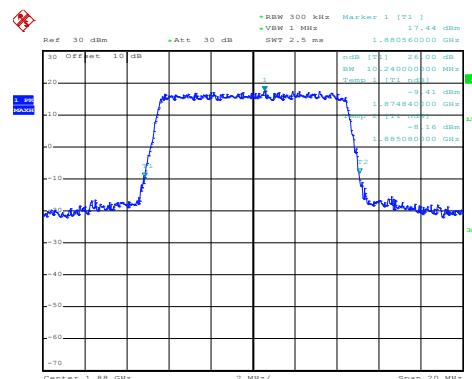
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 12:58:03

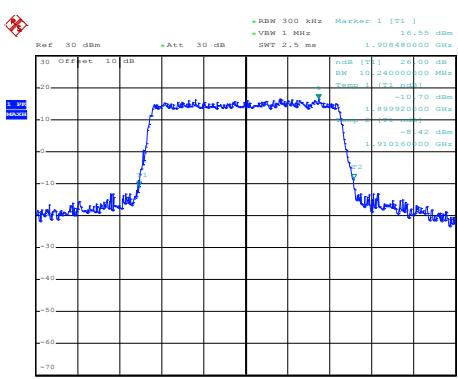
Modulation:QPSK



Date: 2.MAR.2016 12:57:35

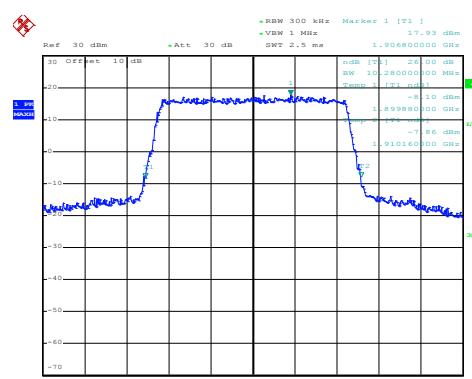
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 12:59:01

Modulation:QPSK



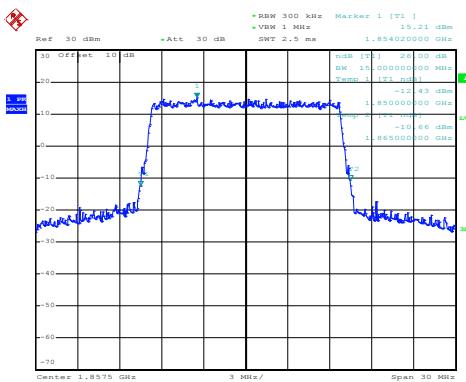
Date: 2.MAR.2016 12:58:33

Highest channel

Test Item:-26dBc bandwidth

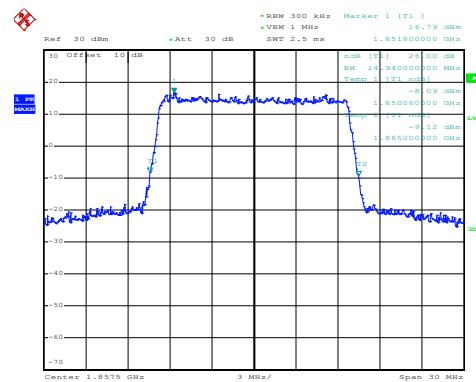
BW: 15MHz

Modulation:16QAM



Date: 2.MAR.2016 13:00:37

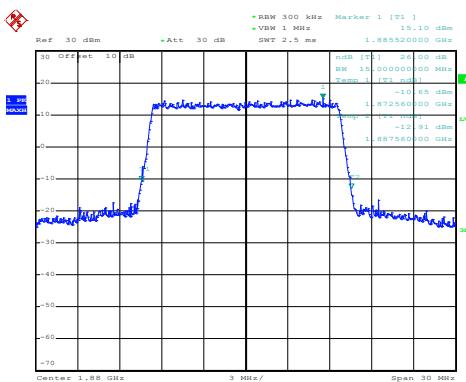
Modulation:QPSK



Date: 2.MAR.2016 13:00:04

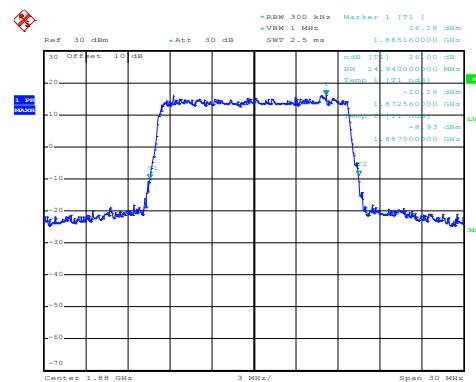
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 13:01:08

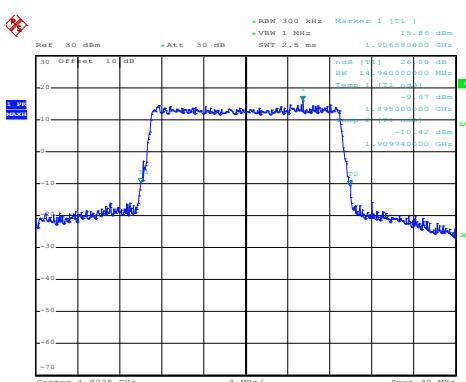
Modulation:QPSK



Date: 2.MAR.2016 13:01:37

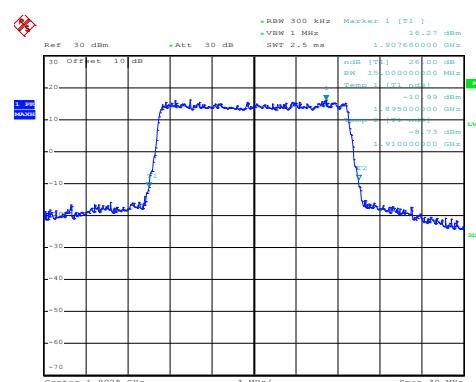
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 13:02:31

Modulation:QPSK



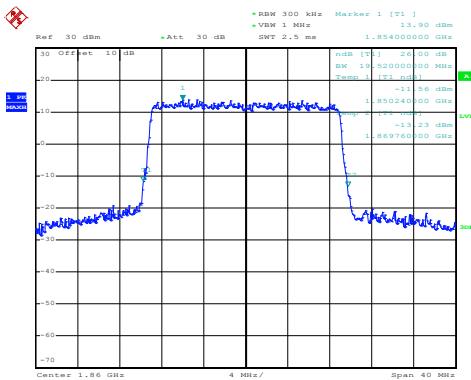
Date: 2.MAR.2016 13:02:02

Highest channel

Test Item:-26dBc bandwidth

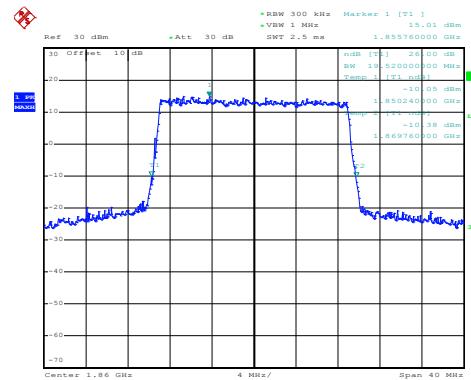
BW: 20MHz

Modulation:16QAM



Date: 2.MAR.2016 13:03:55

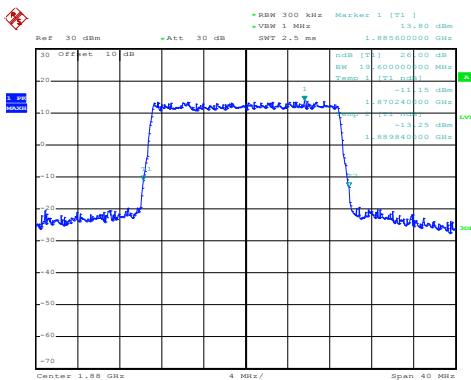
Modulation:QPSK



Date: 2.MAR.2016 13:03:03

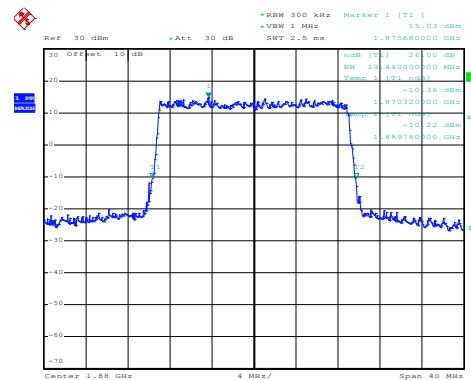
Lowest channel

Modulation:16QAM



Date: 2.MAR.2016 13:03:58

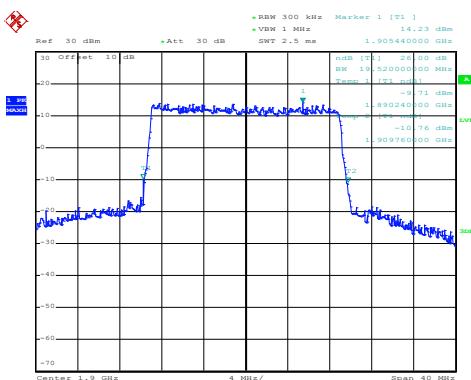
Modulation:QPSK



Date: 2.MAR.2016 13:04:27

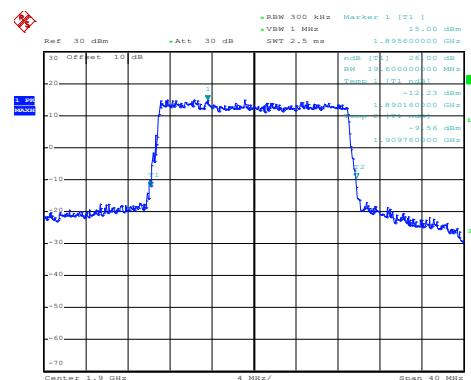
Middle channel

Modulation:16QAM



Date: 2.MAR.2016 13:05:30

Modulation:QPSK



Date: 2.MAR.2016 13:04:48

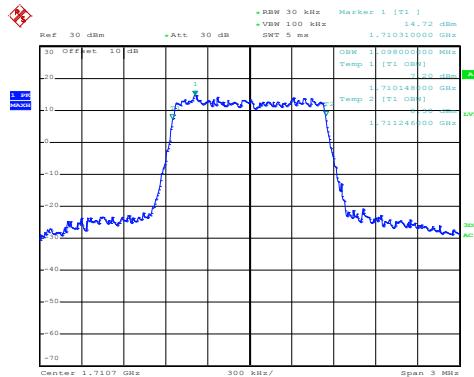
Highest channel

LTE Band 4 part

Test Item:99% Occupy bandwidth

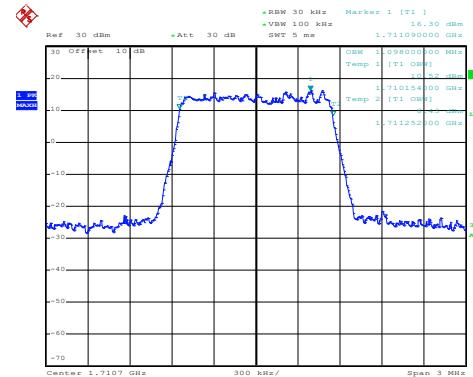
BW: 1.4MHz

Modulation:16QAM



Date: 1.MAR.2016 13:51:41

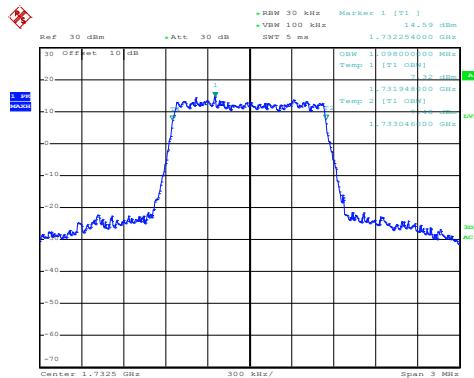
Modulation:QPSK



Date: 1.MAR.2016 13:51:31

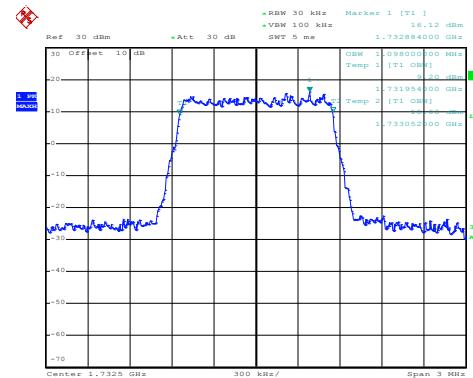
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 13:52:42

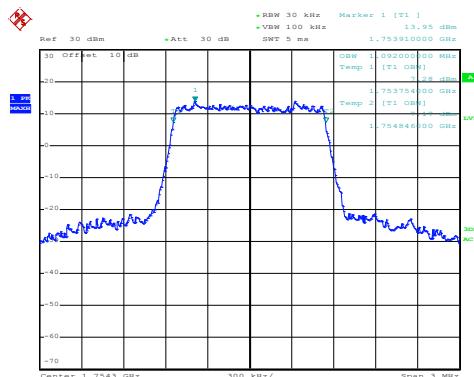
Modulation:QPSK



Date: 1.MAR.2016 13:52:33

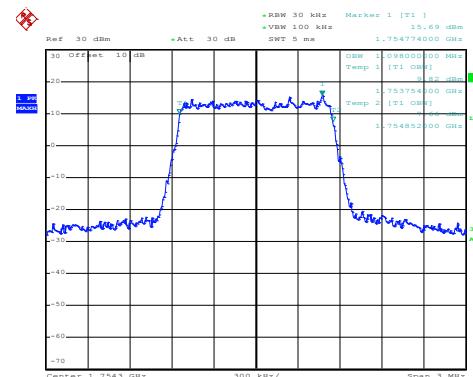
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 13:53:48

Modulation:QPSK



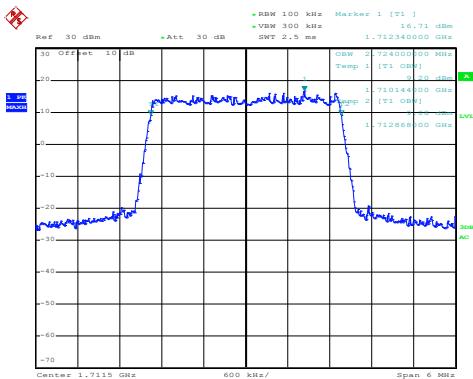
Date: 1.MAR.2016 13:53:37

Highest channel

Test Item:99% Occupy bandwidth

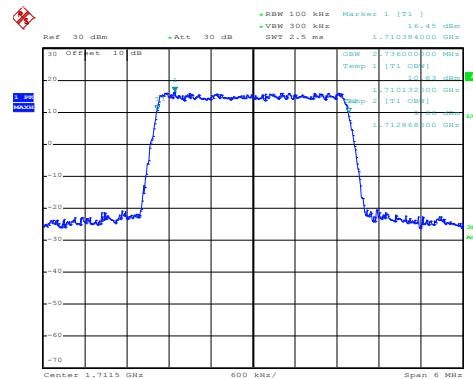
BW: 3MHz

Modulation:16QAM



Date: 1.MAR.2016 13:55:21

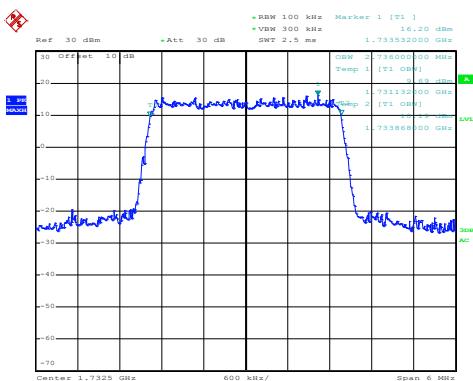
Modulation:QPSK



Date: 1.MAR.2016 13:55:11

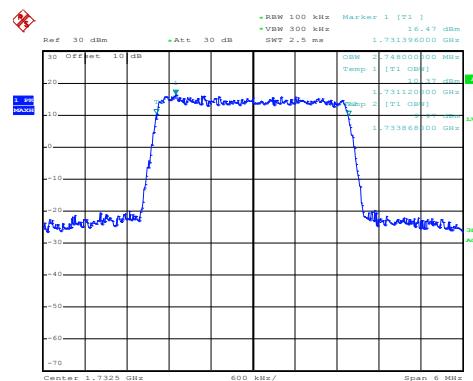
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 13:56:16

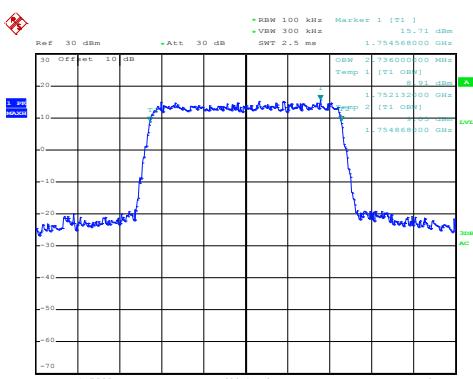
Modulation:QPSK



Date: 1.MAR.2016 13:56:29

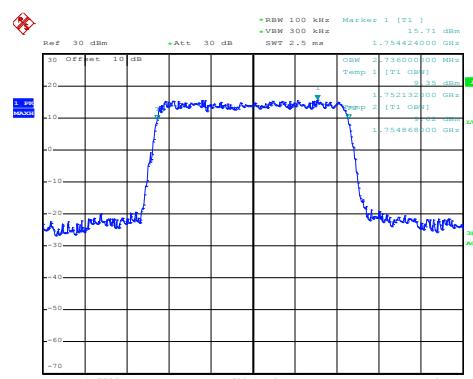
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 13:57:34

Modulation:QPSK



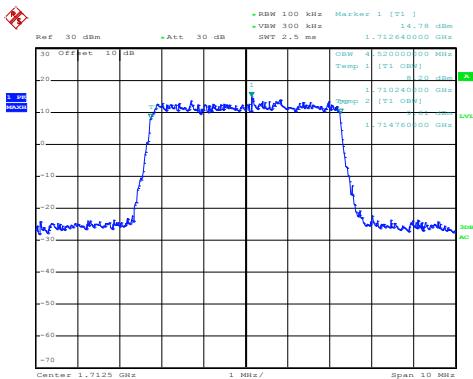
Date: 1.MAR.2016 13:57:21

Highest channel

Test Item:99% Occupy bandwidth

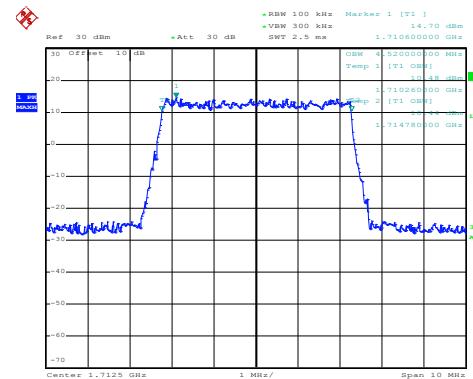
BW: 5MHz

Modulation:16QAM



Date: 1.MAR.2016 13:59:21

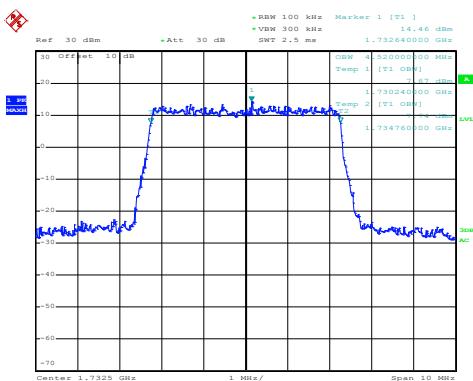
Modulation:QPSK



Date: 1.MAR.2016 13:59:09

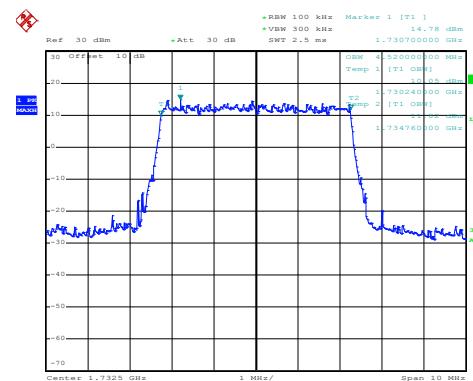
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:00:26

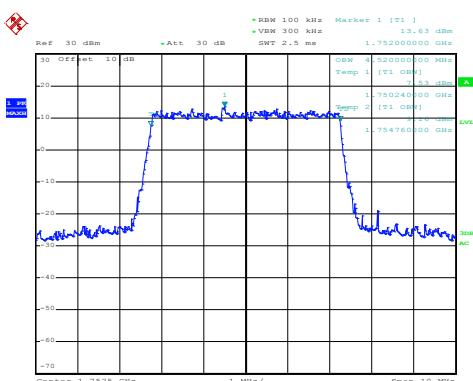
Modulation:QPSK



Date: 1.MAR.2016 14:00:37

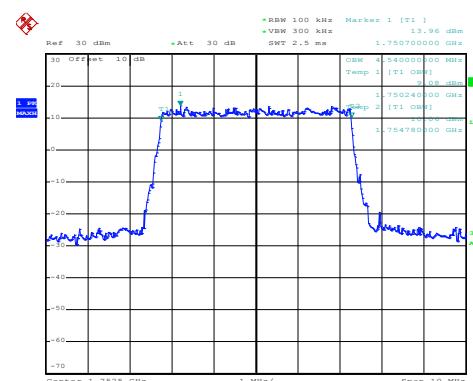
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:01:38

Modulation:QPSK



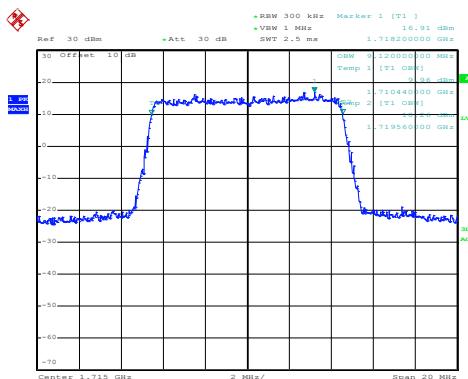
Date: 1.MAR.2016 14:01:26

Highest channel

Test Item:99% Occupy bandwidth

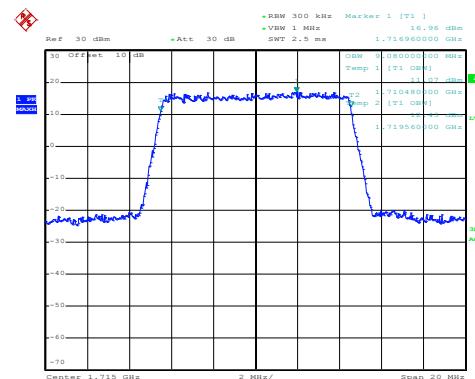
BW: 10MHz

Modulation:16QAM



Date: 1.MAR.2016 14:13:48

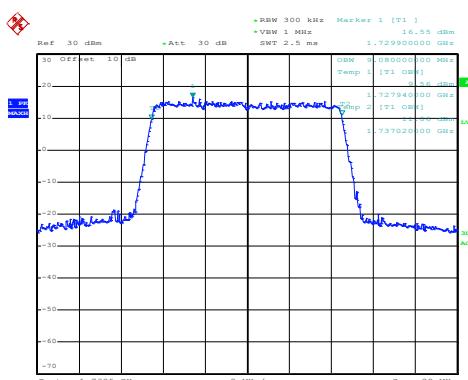
Modulation:QPSK



Date: 1.MAR.2016 14:13:34

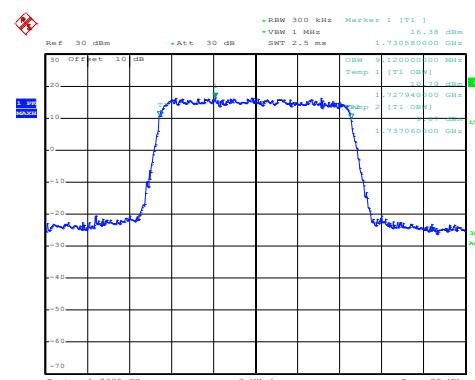
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:15:07

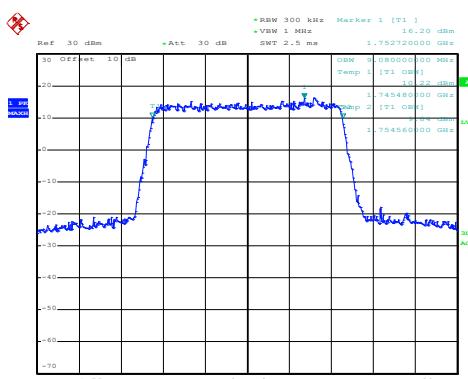
Modulation:QPSK



Date: 1.MAR.2016 14:14:53

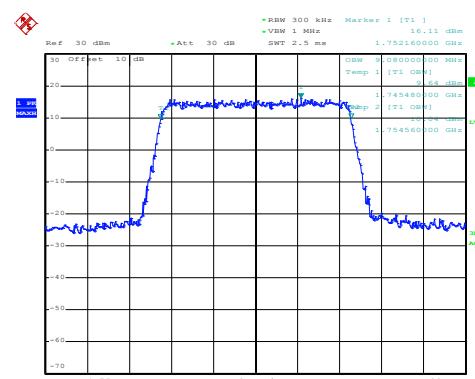
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:16:08

Modulation:QPSK



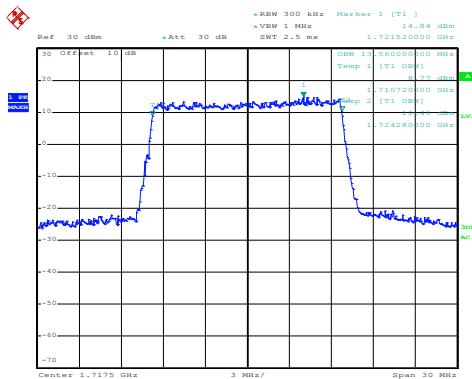
Date: 1.MAR.2016 14:15:56

Highest channel

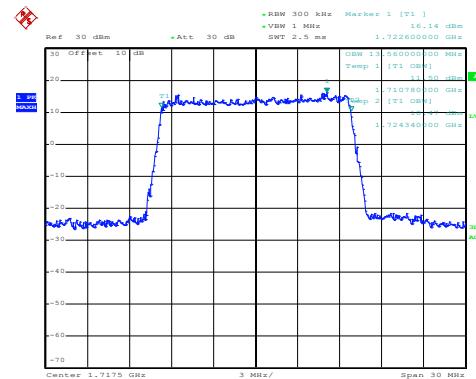
Test Item:99% Occupy bandwidth

BW: 15MHz

Modulation:16QAM



Modulation:QPSK

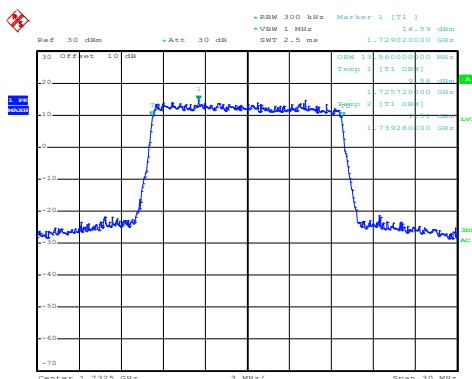


Date: 1.MAR.2016 14:17:41

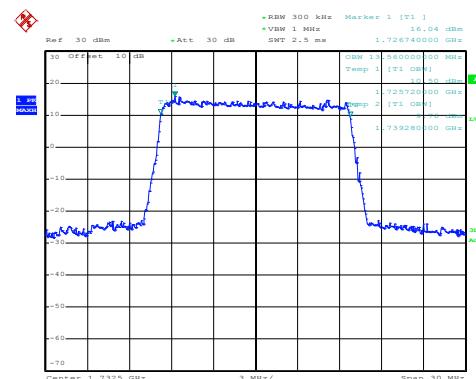
Date: 1.MAR.2016 14:17:29

Lowest channel

Modulation:16QAM



Modulation:QPSK

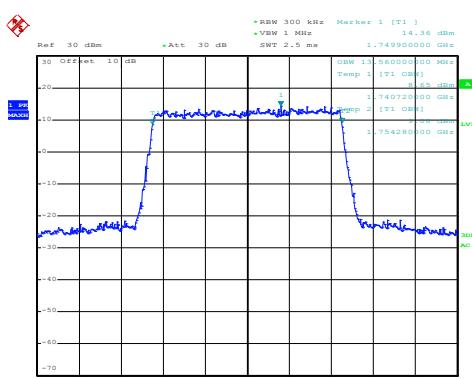


Date: 1.MAR.2016 14:18:28

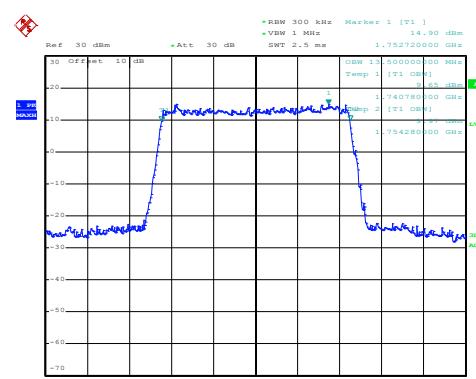
Date: 1.MAR.2016 14:18:39

Middle channel

Modulation:16QAM



Modulation:QPSK



Date: 1.MAR.2016 14:19:39

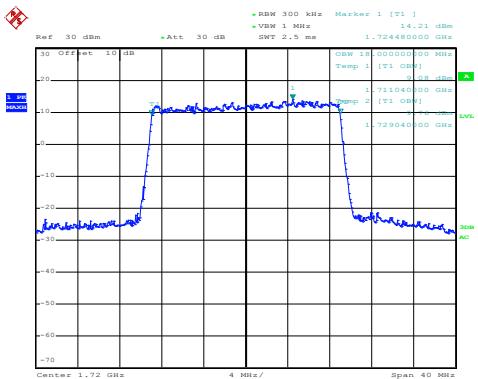
Date: 1.MAR.2016 14:19:22

Highest channel

Test Item:99% Occupy bandwidth

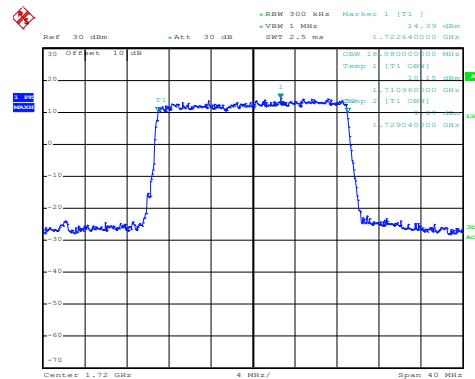
BW: 20MHz

Modulation:16QAM



Date: 1.MAR.2016 14:21:09

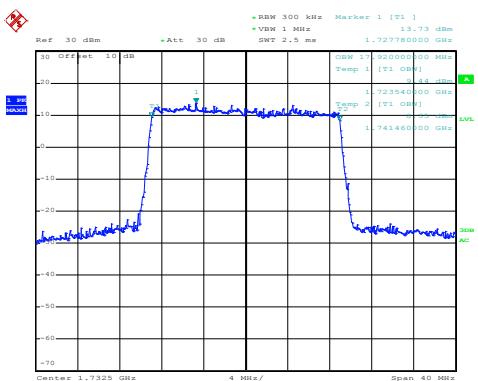
Modulation:QPSK



Date: 1.MAR.2016 14:20:48

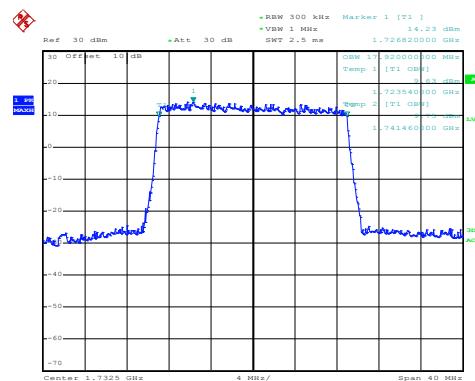
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:27:40

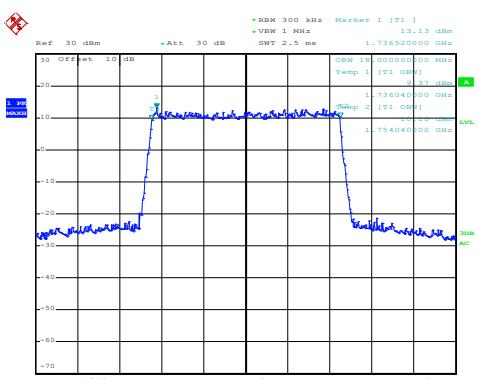
Modulation:QPSK



Date: 1.MAR.2016 14:27:28

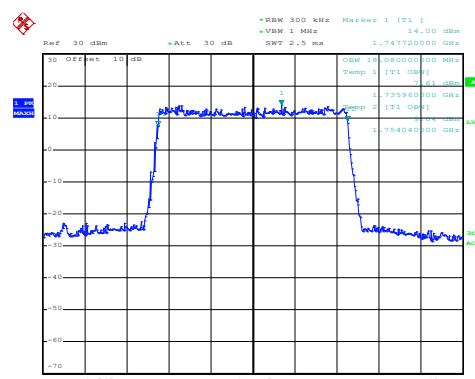
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:28:33

Modulation:QPSK



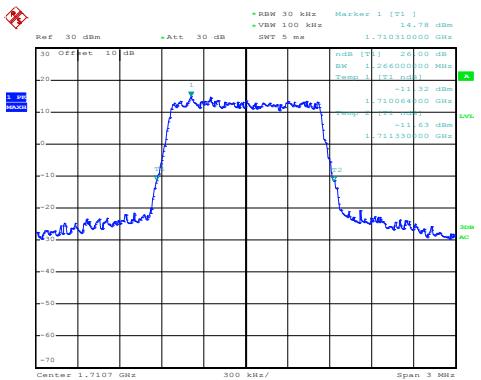
Date: 1.MAR.2016 14:28:49

Highest channel

Test Item:-26dBc bandwidth

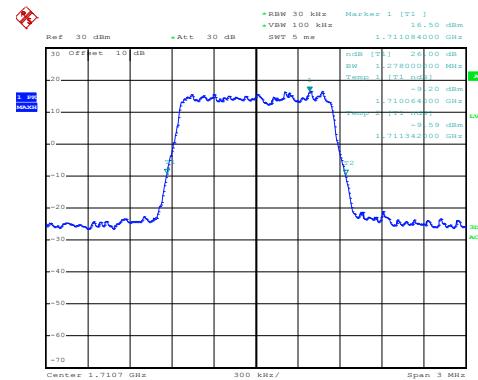
BW: 1.4MHz

Modulation:16QAM



Date: 1.MAR.2016 13:51:52

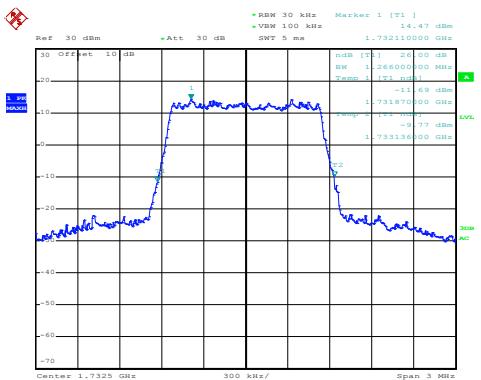
Modulation:QPSK



Date: 1.MAR.2016 13:51:18

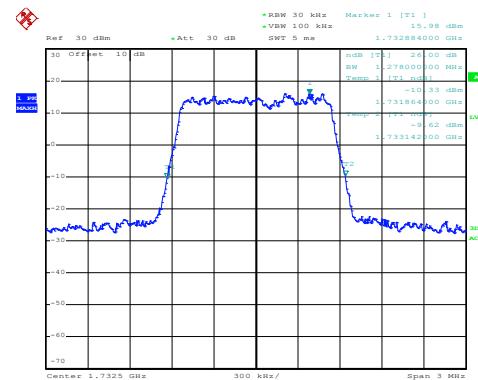
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 13:52:54

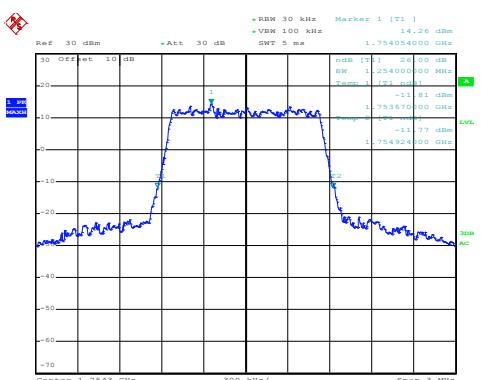
Modulation:QPSK



Date: 1.MAR.2016 13:52:22

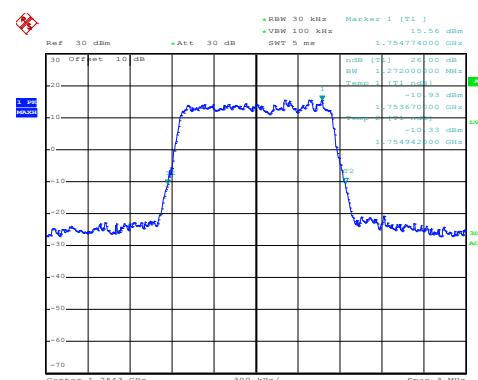
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 13:53:59

Modulation:QPSK



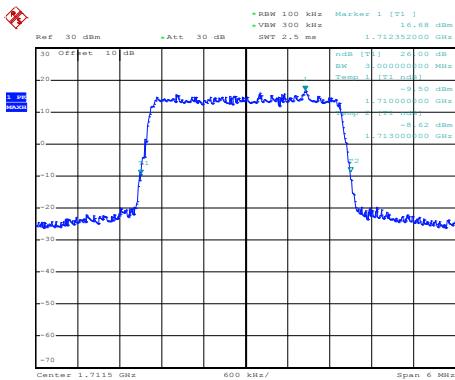
Date: 1.MAR.2016 13:53:28

Highest channel

Test Item:-26dBc bandwidth

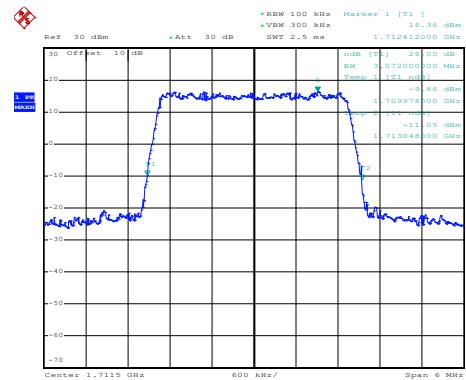
BW: 3MHz

Modulation:16QAM



Date: 1.MAR.2016 13:55:33

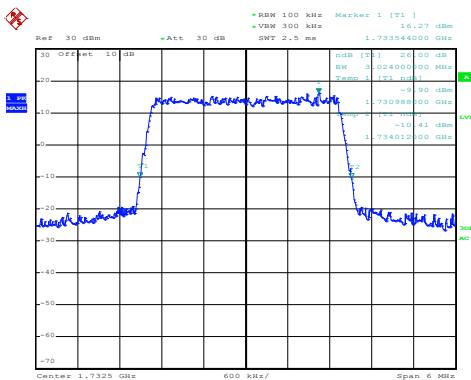
Modulation:QPSK



Date: 1.MAR.2016 13:54:55

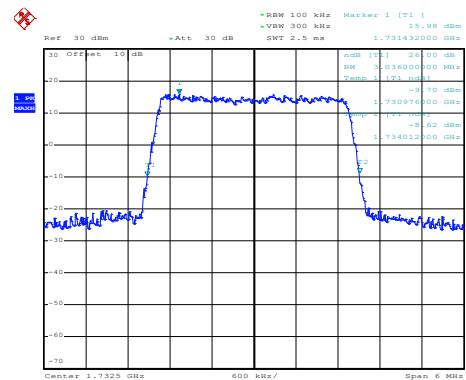
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 13:56:07

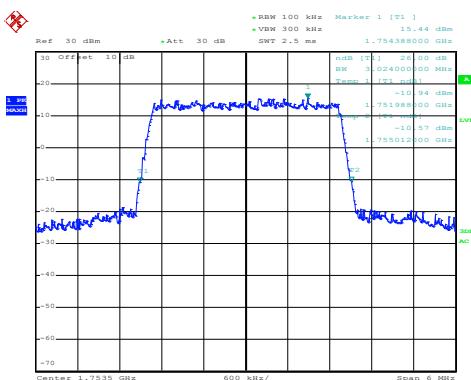
Modulation:QPSK



Date: 1.MAR.2016 13:56:37

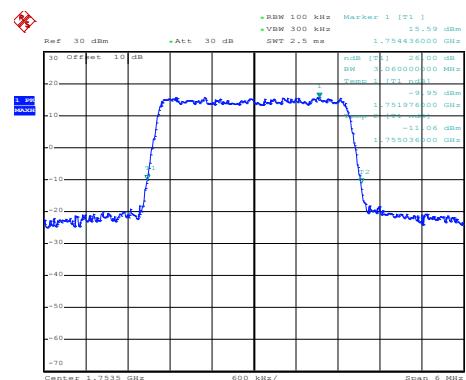
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 13:57:46

Modulation:QPSK



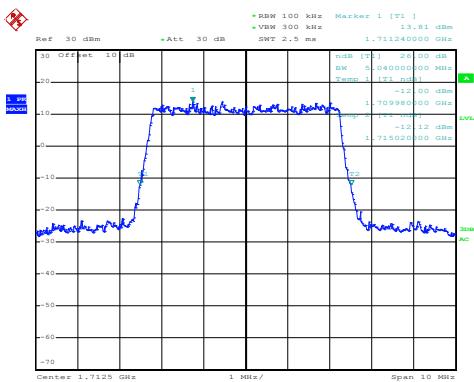
Date: 1.MAR.2016 13:57:12

Highest channel

Test Item:-26dBc bandwidth

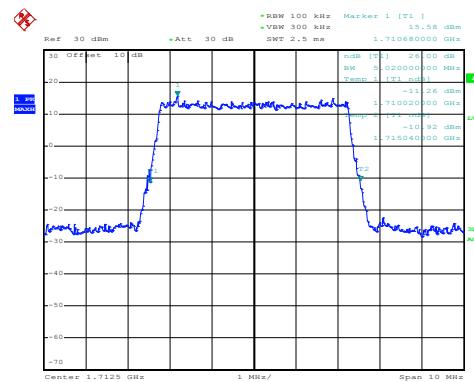
BW: 5MHz

Modulation:16QAM



Date: 1.MAR.2016 13:59:32

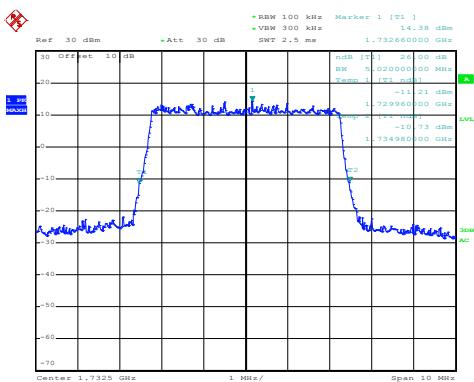
Modulation:QPSK



Date: 1.MAR.2016 13:58:56

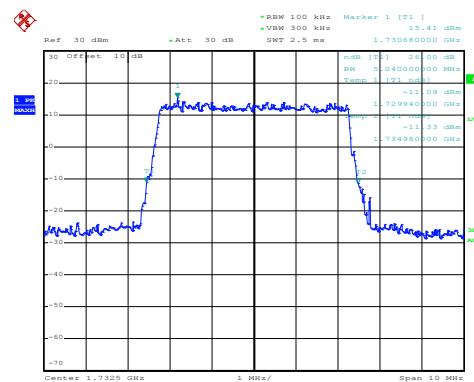
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:00:14

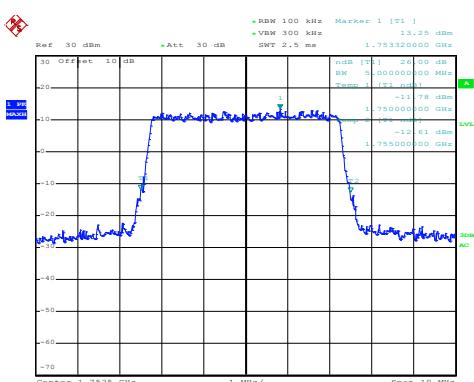
Modulation:QPSK



Date: 1.MAR.2016 14:00:50

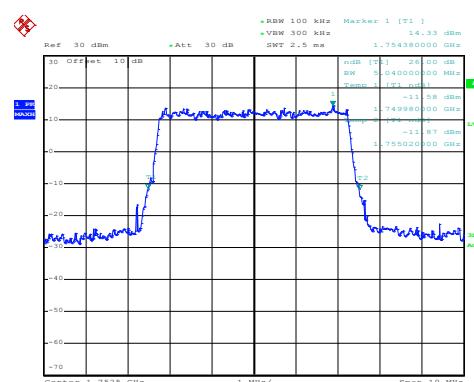
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:01:50

Modulation:QPSK



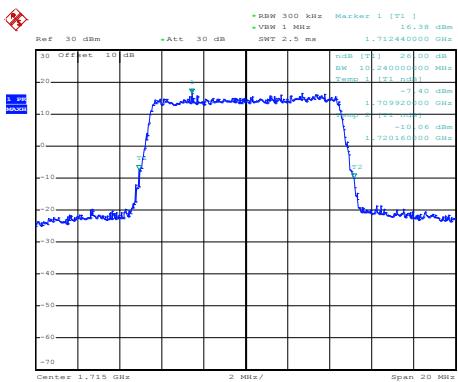
Date: 1.MAR.2016 14:01:14

Highest channel

Test Item:-26dBc bandwidth

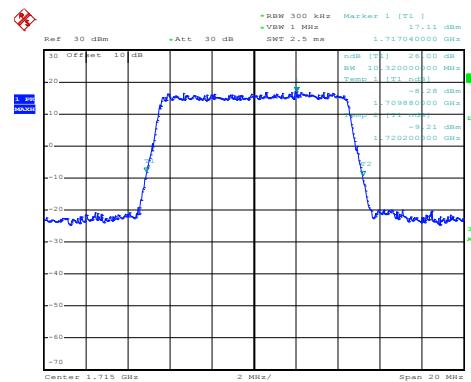
BW: 10MHz

Modulation:16QAM



Date: 1.MAR.2016 14:14:00

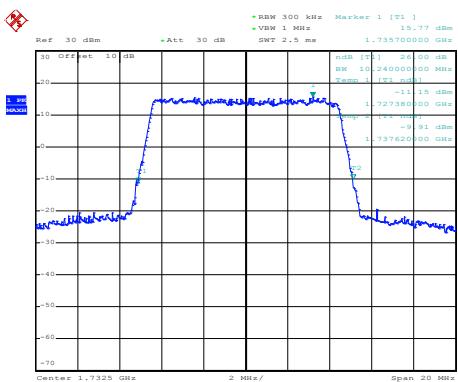
Modulation:QPSK



Date: 1.MAR.2016 14:13:14

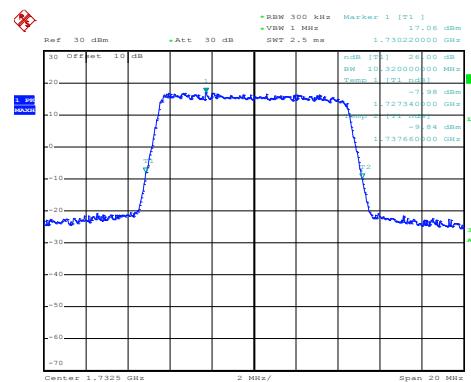
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:15:19

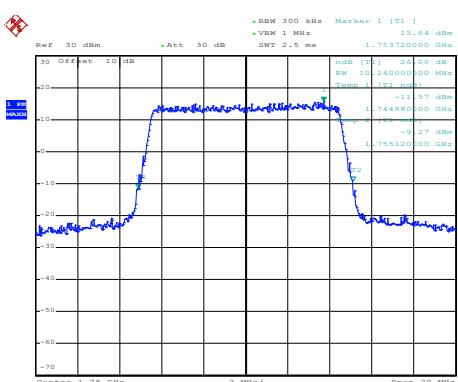
Modulation:QPSK



Date: 1.MAR.2016 14:14:42

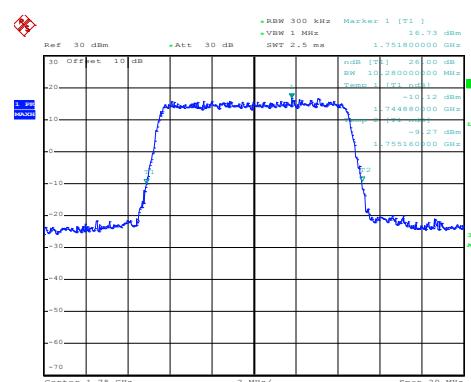
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:16:19

Modulation:QPSK



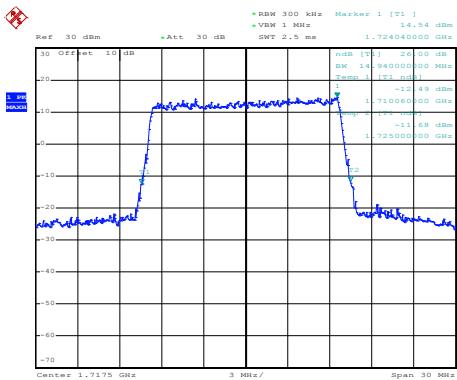
Date: 1.MAR.2016 14:15:47

Highest channel

Test Item:-26dBc bandwidth

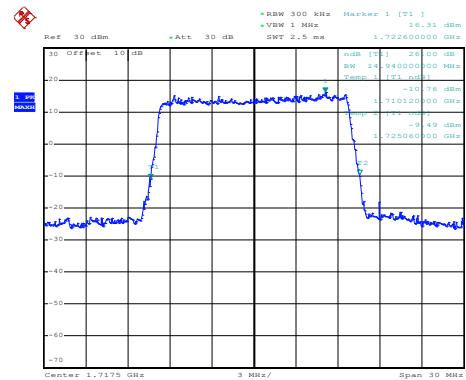
BW: 15MHz

Modulation:16QAM



Date: 1.MAR.2016 14:17:51

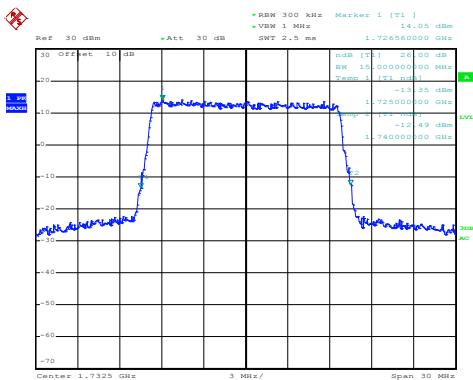
Modulation:QPSK



Date: 1.MAR.2016 14:17:17

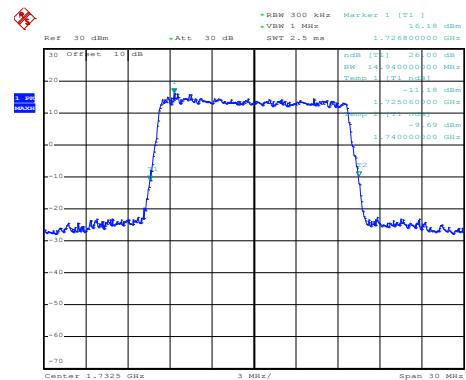
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:18:18

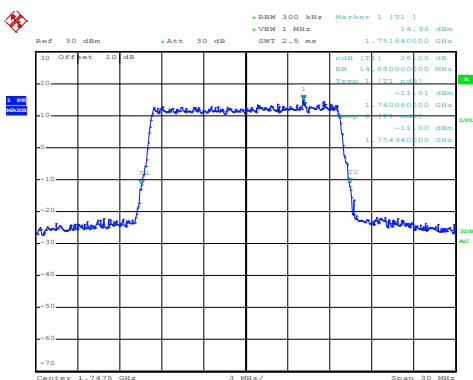
Modulation:QPSK



Date: 1.MAR.2016 14:18:50

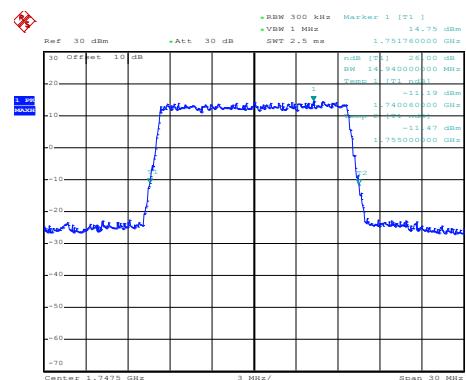
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:19:50

Modulation:QPSK



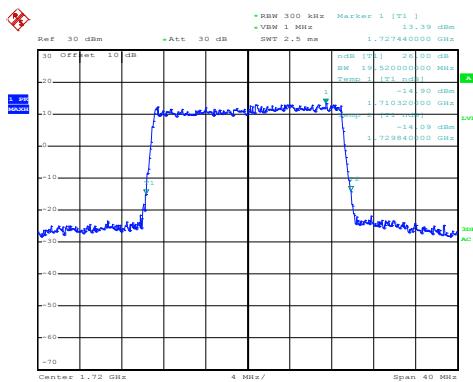
Date: 1.MAR.2016 14:19:12

Highest channel

Test Item:-26dBc bandwidth

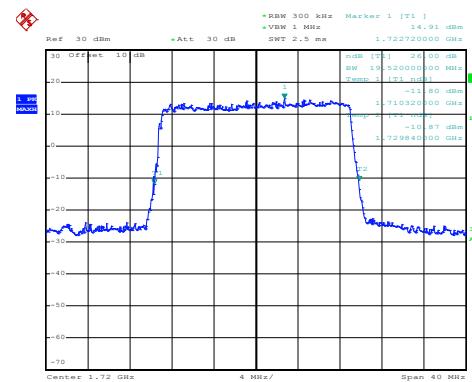
BW: 20MHz

Modulation:16QAM



Date: 1.MAR.2016 14:21:19

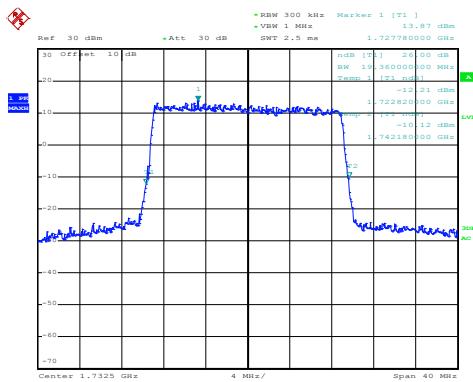
Modulation:QPSK



Date: 1.MAR.2016 14:20:33

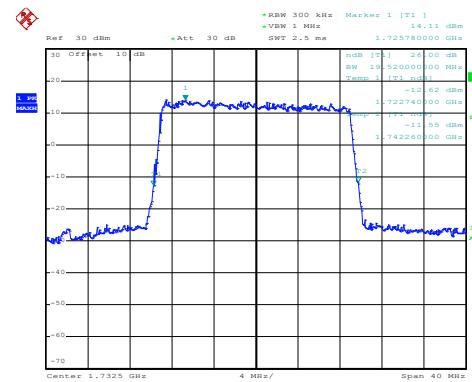
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 14:27:51

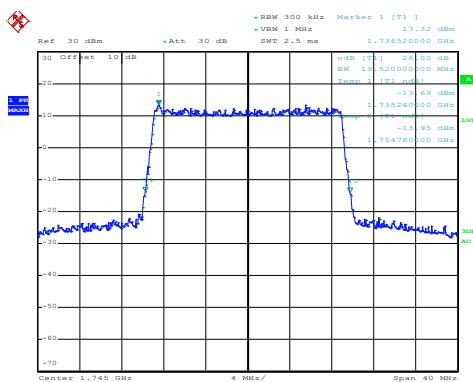
Modulation:QPSK



Date: 1.MAR.2016 14:27:18

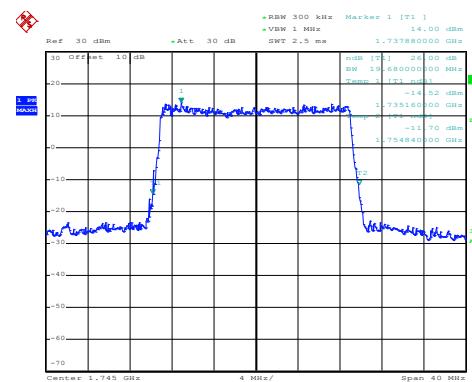
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 14:28:22

Modulation:QPSK



Date: 1.MAR.2016 14:28:59

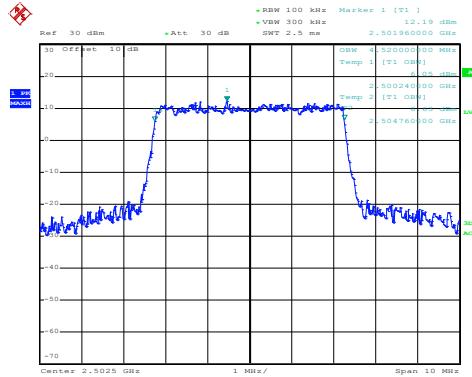
Highest channel

LTE-Band 7 part

Test Item: 99% Occupy bandwidth

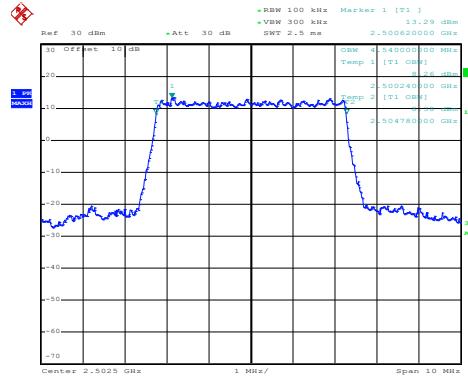
BW: 5MHz

Modulation: 16QAM



Date: 1.MAR.2016 13:22:28

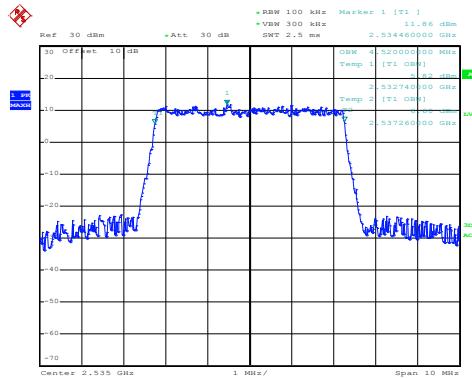
Modulation: QPSK



Date: 1.MAR.2016 13:22:03

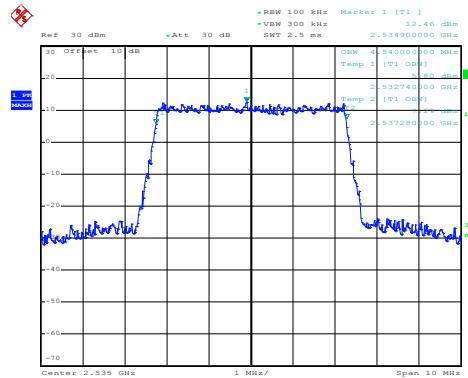
Lowest channel

Modulation: 16QAM



Date: 1.MAR.2016 13:24:05

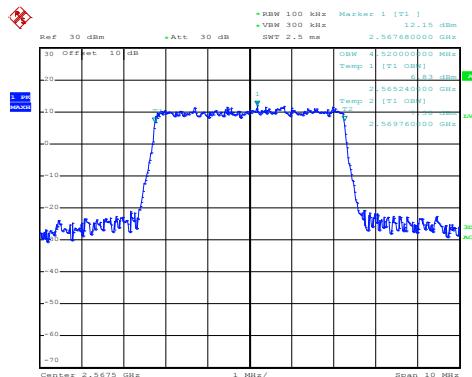
Modulation: QPSK



Date: 1.MAR.2016 13:24:16

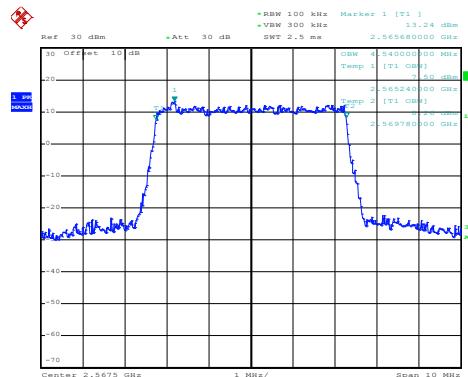
Middle channel

Modulation: 16QAM



Date: 1.MAR.2016 13:27:23

Modulation: QPSK

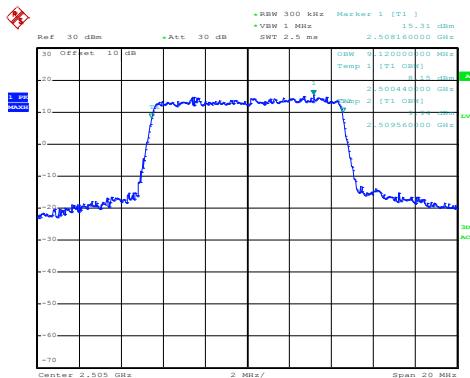


Date: 1.MAR.2016 13:26:34

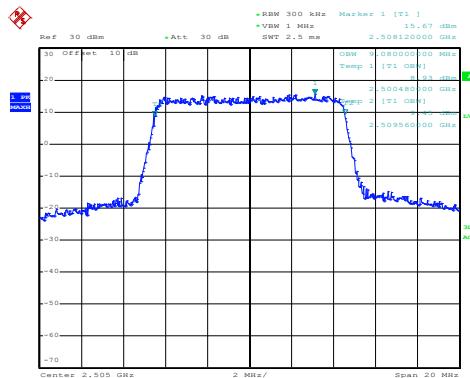
Highest channel

Test Item: 99% Occupy bandwidth
BW: 10MHz

Modulation: 16QAM



Modulation: QPSK

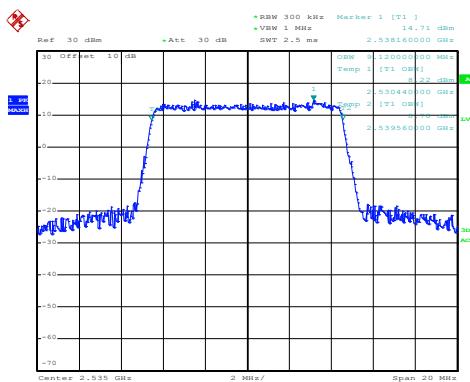


Date: 1.MAR.2016 13:30:10

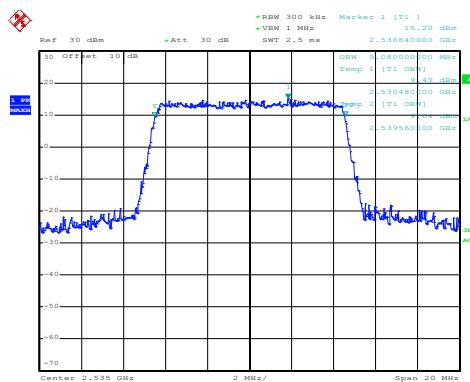
Date: 1.MAR.2016 13:29:28

Lowest channel

Modulation: 16QAM



Modulation: QPSK

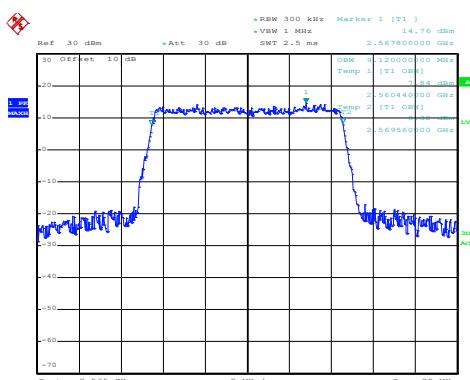


Date: 1.MAR.2016 13:32:46

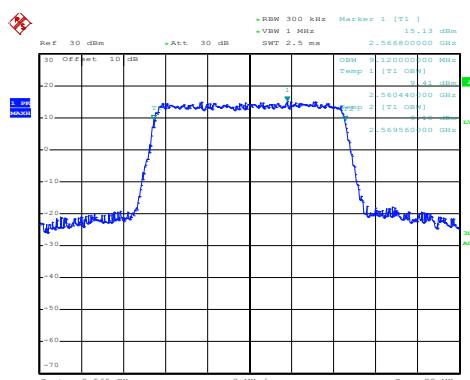
Date: 1.MAR.2016 13:32:30

Middle channel

Modulation: 16QAM



Modulation: QPSK



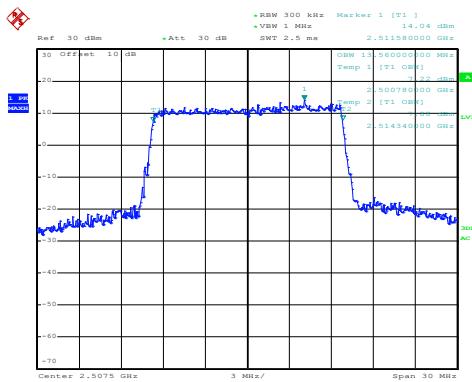
Date: 1.MAR.2016 13:36:19

Date: 1.MAR.2016 13:35:20

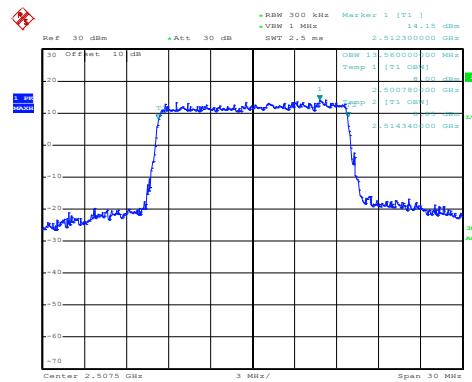
Highest channel

Test Item: 99% Occupy bandwidth
BW: 15MHz

Modulation: 16QAM



Modulation: QPSK

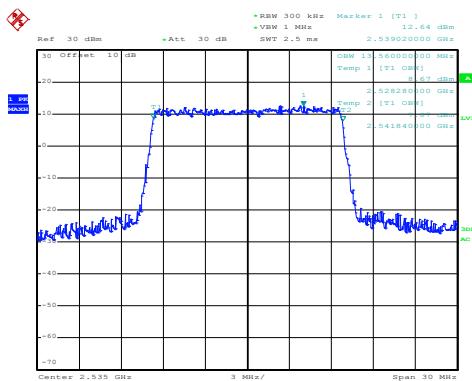


Date: 1.MAR.2016 13:39:37

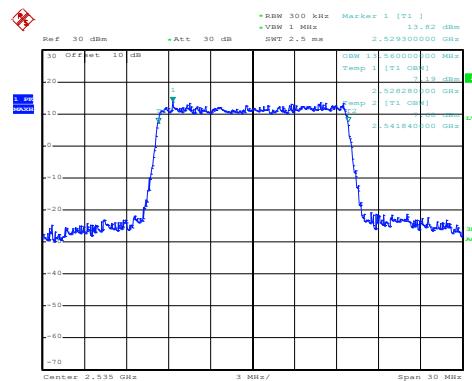
Date: 1.MAR.2016 13:39:23

Lowest channel

Modulation: 16QAM



Modulation: QPSK

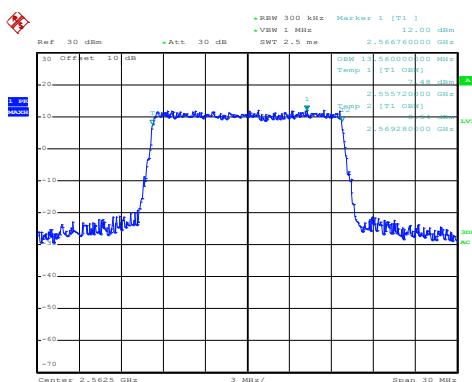


Date: 1.MAR.2016 13:40:51

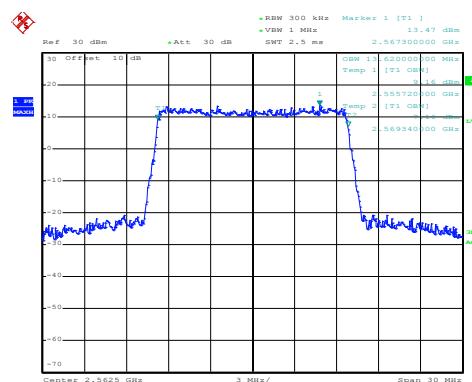
Date: 1.MAR.2016 13:40:35

Middle channel

Modulation: 16QAM



Modulation: QPSK



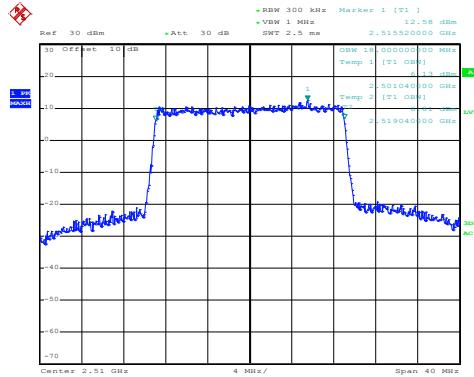
Date: 1.MAR.2016 13:42:58

Date: 1.MAR.2016 13:42:39

Highest channel

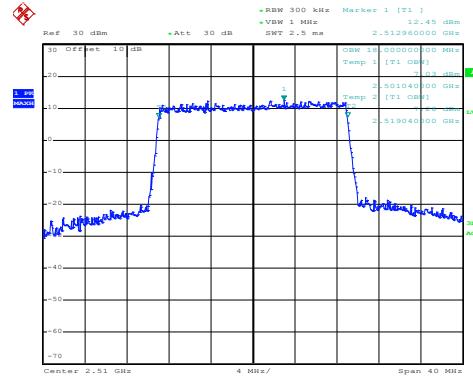
Test Item: 99% Occupy bandwidth
BW: 20MHz

Modulation: 16QAM



Date: 1.MAR.2016 13:44:22

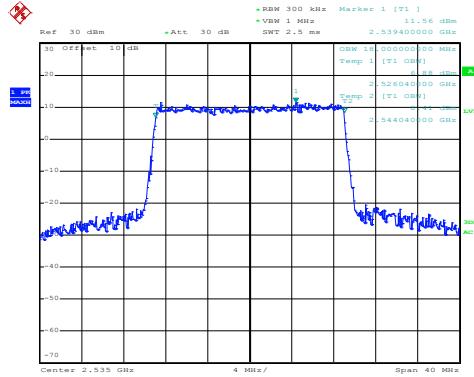
Modulation: QPSK



Date: 1.MAR.2016 13:44:09

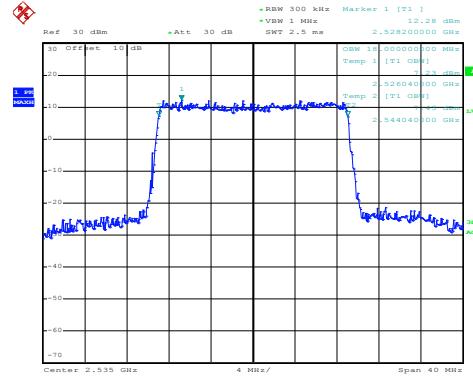
Lowest channel

Modulation: 16QAM



Date: 1.MAR.2016 13:46:06

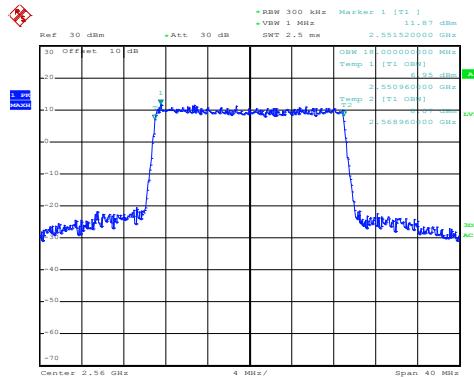
Modulation: QPSK



Date: 1.MAR.2016 13:45:52

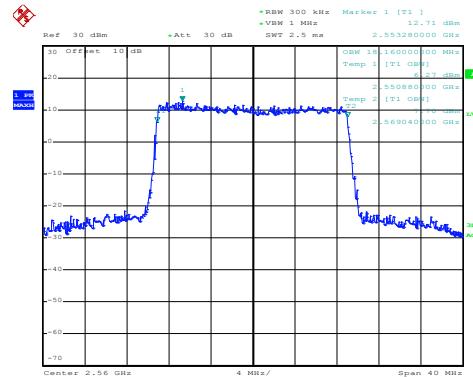
Middle channel

Modulation: 16QAM



Date: 1.MAR.2016 13:48:33

Modulation: QPSK



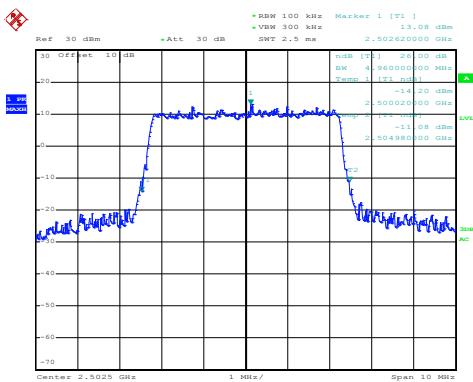
Date: 1.MAR.2016 13:48:19

Highest channel

Test Item: -26dBc bandwidth

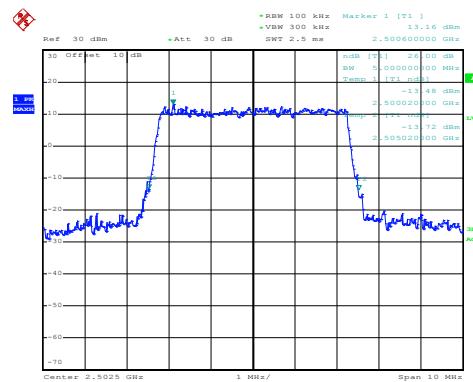
BW: 5MHz

Modulation: 16QAM



Date: 1.MAR.2016 13:22:43

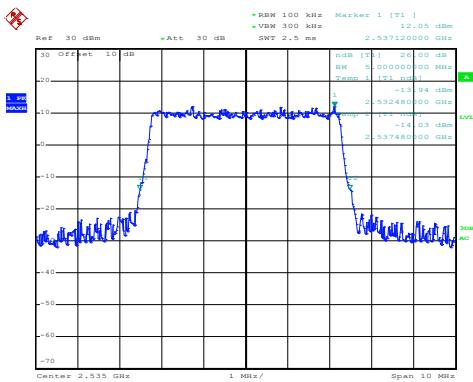
Modulation: QPSK



Date: 1.MAR.2016 13:22:55

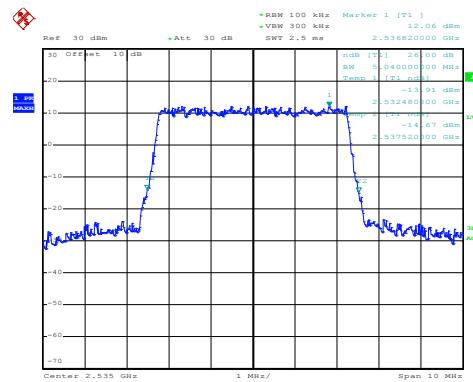
Lowest channel

Modulation: 16QAM



Date: 1.MAR.2016 13:23:52

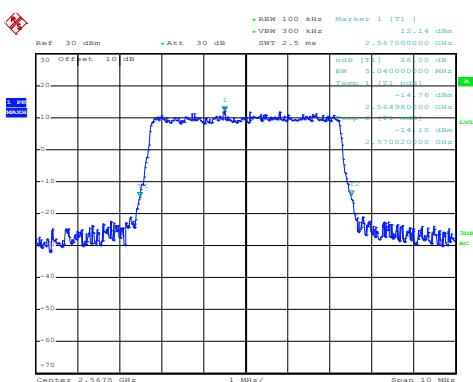
Modulation: QPSK



Date: 1.MAR.2016 13:23:40

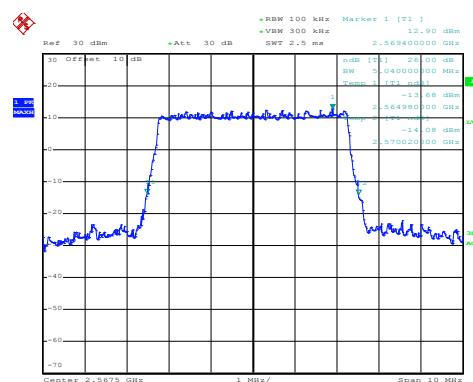
Middle channel

Modulation: 16QAM



Date: 1.MAR.2016 13:27:37

Modulation: QPSK



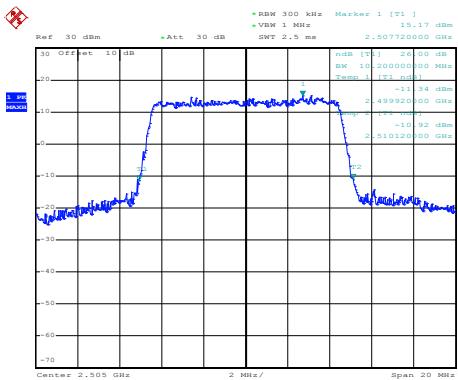
Date: 1.MAR.2016 13:26:50

Highest channel

Test Item: -26dBc bandwidth

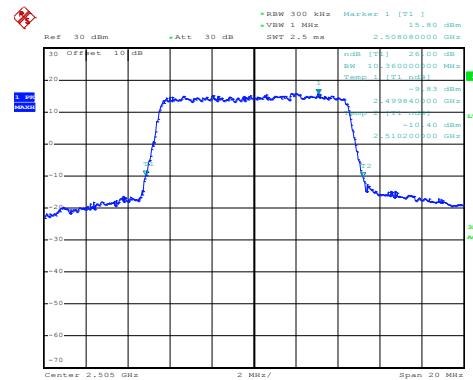
BW: 10MHz

Modulation: 16QAM



Date: 1.MAR.2016 13:30:22

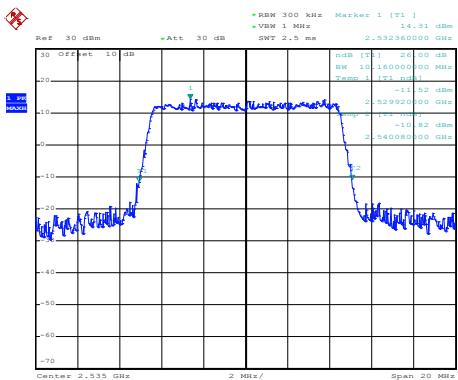
Modulation: QPSK



Date: 1.MAR.2016 13:29:16

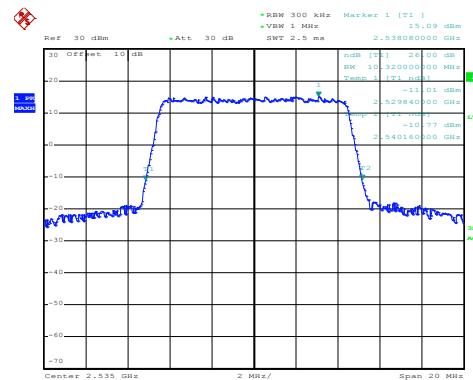
Lowest channel

Modulation: 16QAM



Date: 1.MAR.2016 13:32:57

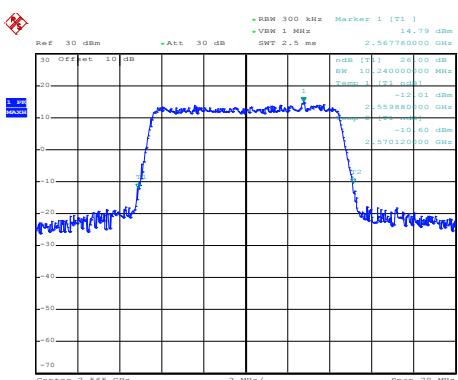
Modulation: QPSK



Date: 1.MAR.2016 13:32:16

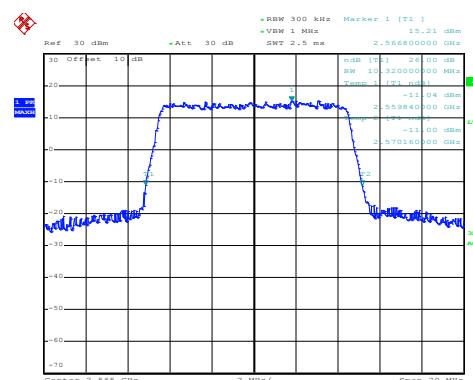
Middle channel

Modulation: 16QAM



Date: 1.MAR.2016 13:36:07

Modulation: QPSK



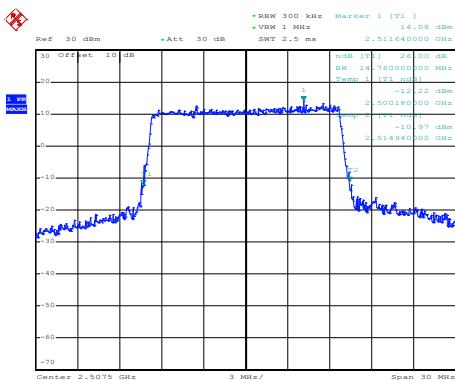
Date: 1.MAR.2016 13:35:48

Highest channel

Test Item: -26dBc bandwidth

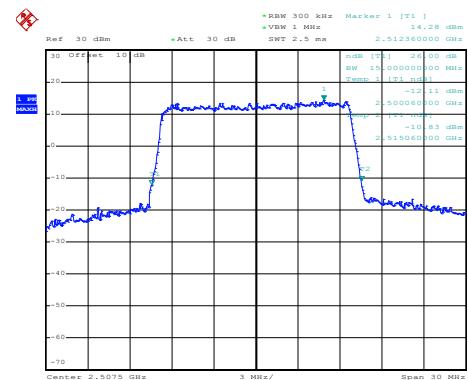
BW: 15MHz

Modulation: 16QAM



Date: 1.MAR.2016 13:39:48

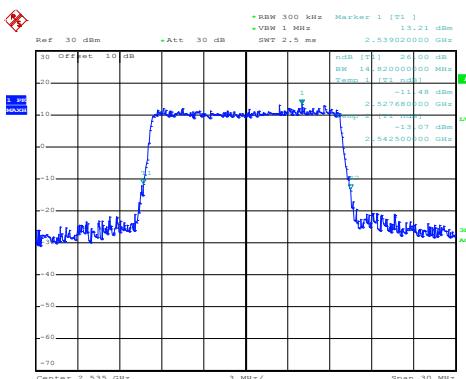
Modulation: QPSK



Date: 1.MAR.2016 13:39:13

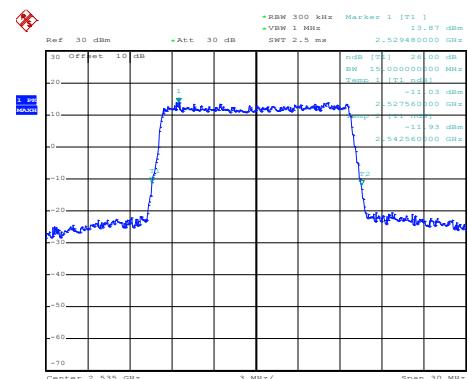
Lowest channel

Modulation:16QAM



Date: 1.MAR.2016 13:41:05

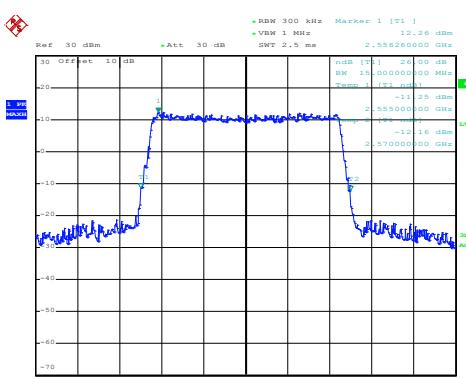
Modulation: QPSK



Date: 1.MAR.2016 13:40:25

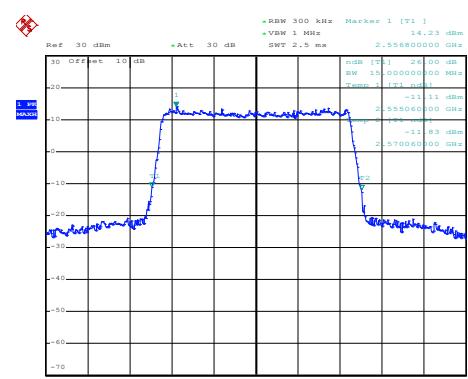
Middle channel

Modulation:16QAM



Date: 1.MAR.2016 13:43:10

Modulation: QPSK



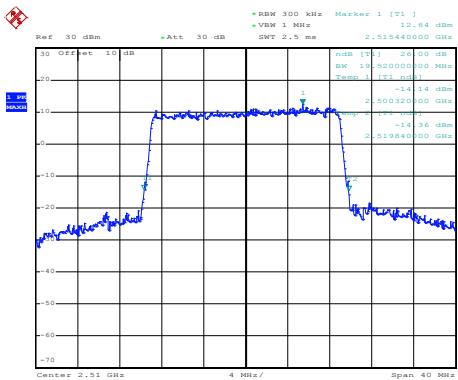
Date: 1.MAR.2016 13:42:27

Highest channel

Test Item: -26dBc bandwidth

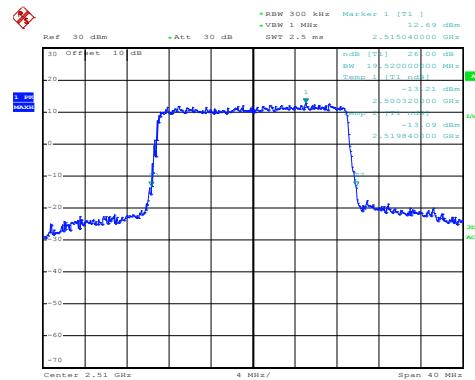
BW: 20MHz

Modulation: 16QAM



Date: 1.MAR.2016 13:44:34

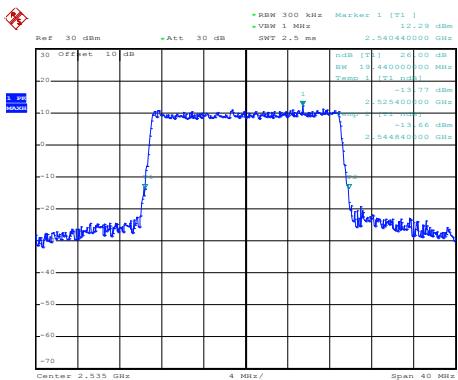
Modulation: QPSK



Date: 1.MAR.2016 13:43:59

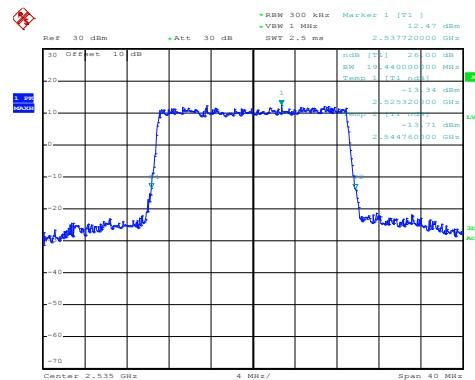
Lowest channel

Modulation: 16QAM



Date: 1.MAR.2016 13:46:18

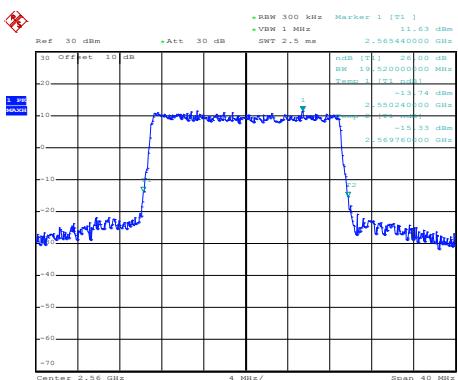
Modulation: QPSK



Date: 1.MAR.2016 13:45:42

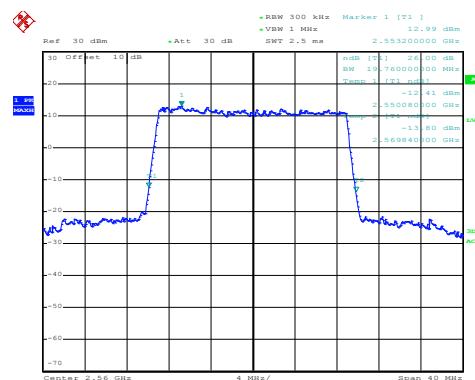
Middle channel

Modulation: 16QAM



Date: 1.MAR.2016 13:48:46

Modulation: QPSK



Date: 1.MAR.2016 13:48:10

Highest channel

6.8 Modulation Characteristic

According to FCC § 2.1047(d), Part 24E, Part 27L and 27M there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

6.9 Out of band emission at antenna terminals

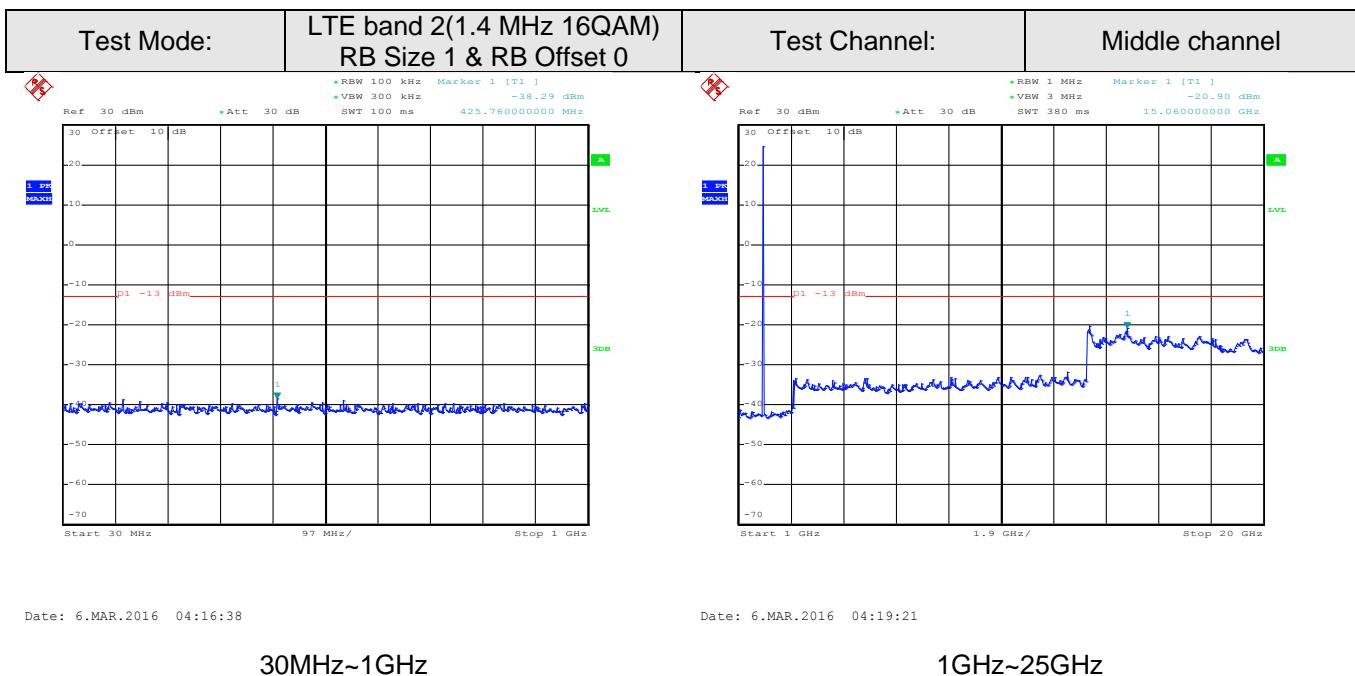
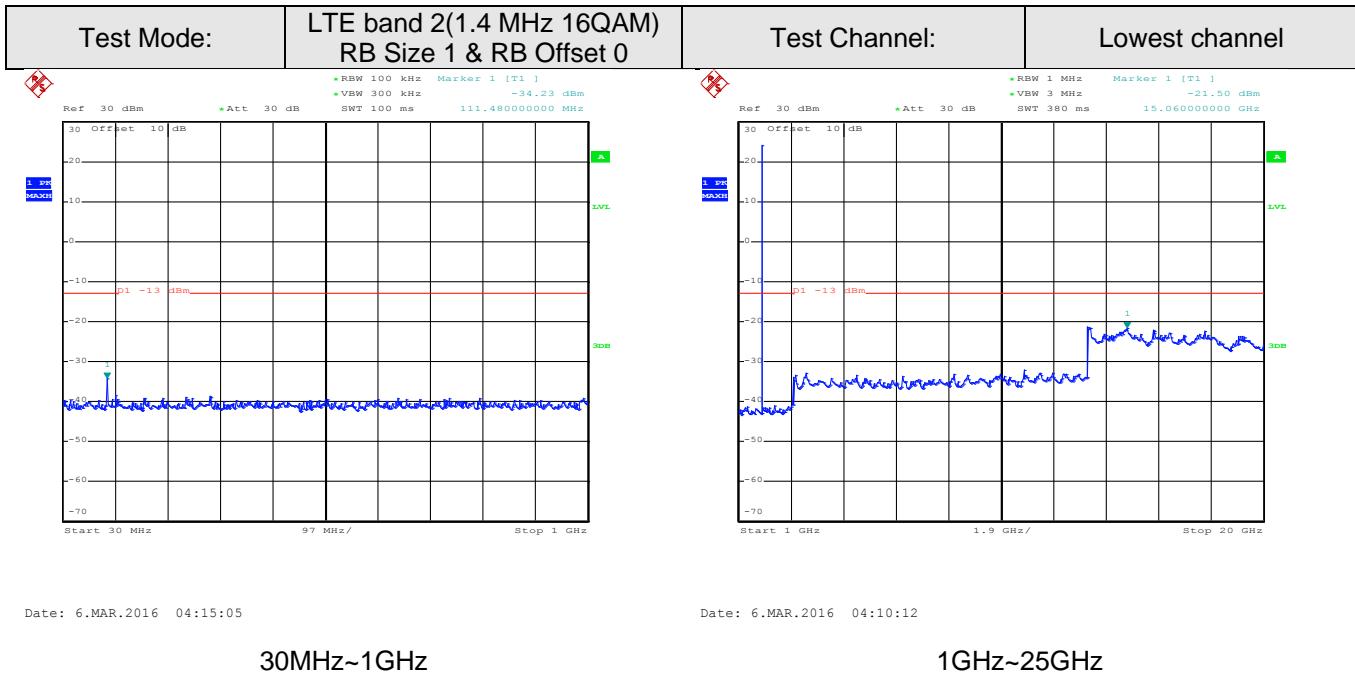
Test Requirement:	FCC Part 24.238 (a), part 27.53(h), part 27.53(m)
Test Method:	FCC part2.1051
Limit:	<p>Conducted spurious emission: LTE Band 2 and Band 4: -13 dBm LTE Band 7: -25 dBm</p> <p>Band edge: LTE Band 2, Band 4 and Band 17: the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10} (P)$ dB. LTE Band 7: For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.</p>
Test setup:	<pre> graph LR EUT[EUT] --- Splitter[Splitter] Splitter --- CommTester[Communication Tester] Splitter --- ATT[ATT] ATT --- SPA[SPA] </pre> <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 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. 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. 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 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

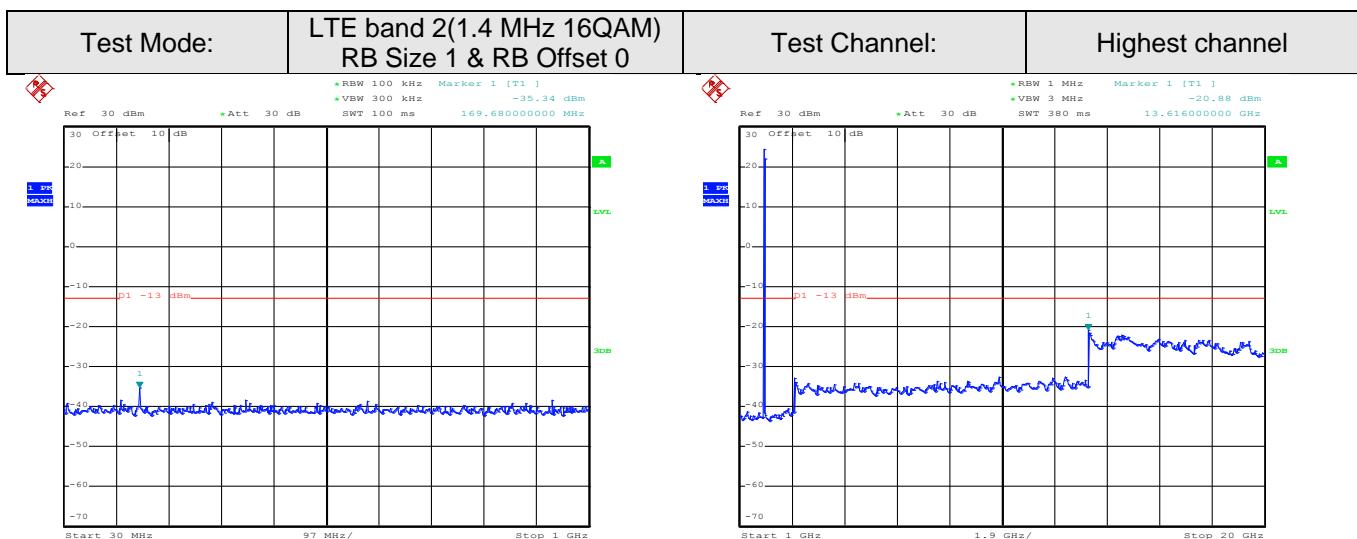
Test plots as follows:

Spurious emission

LTE band 2 Part:

1.4MHz



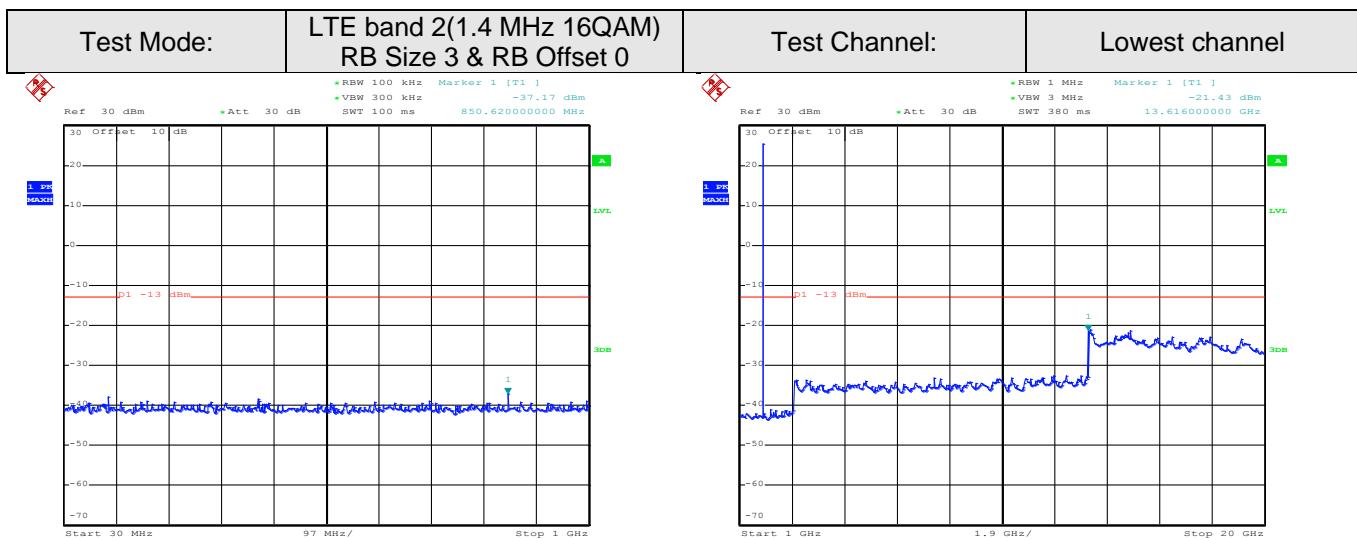


Date: 6.MAR.2016 04:24:47

30MHz~1GHz

Date: 6.MAR.2016 04:21:00

1GHz~25GHz

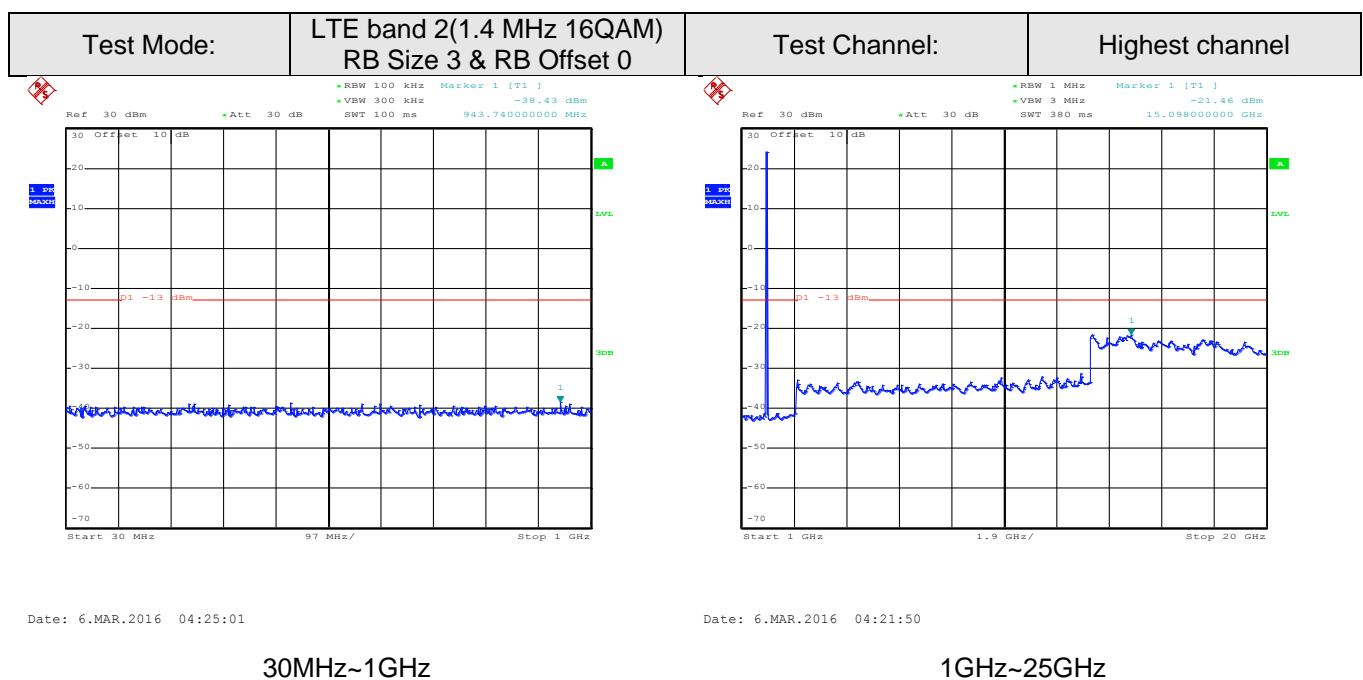
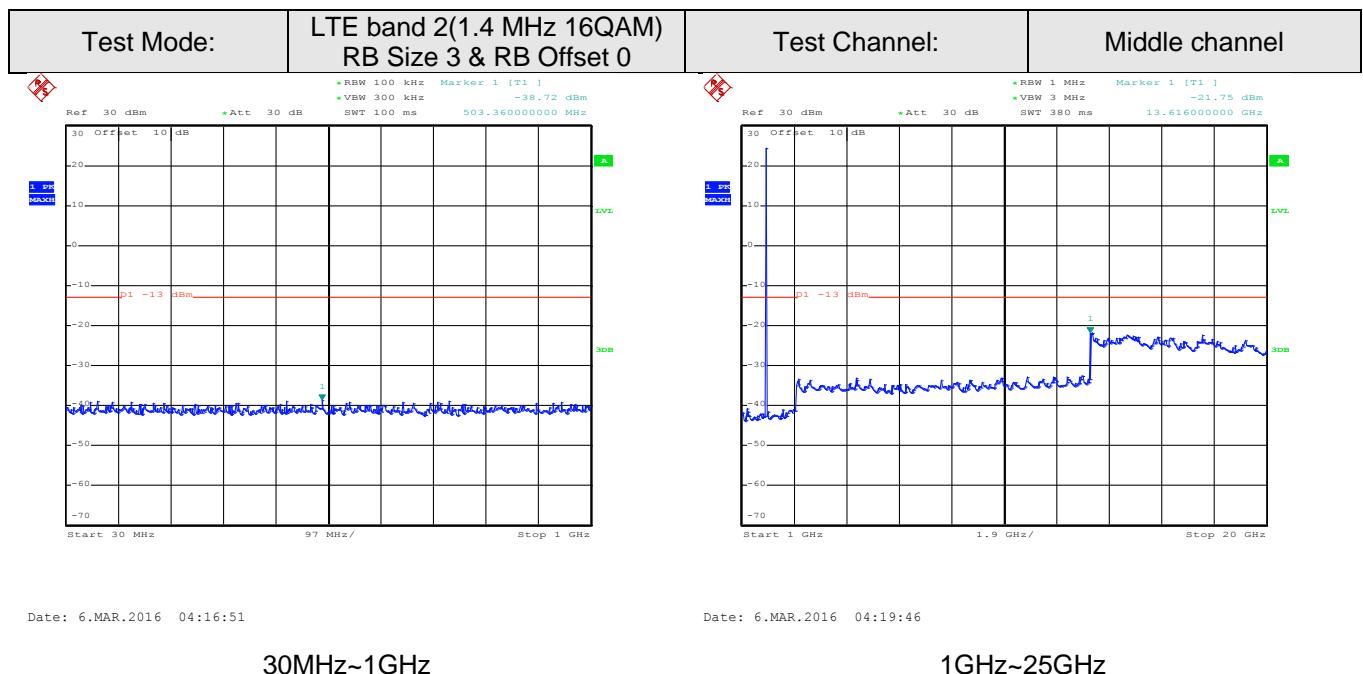


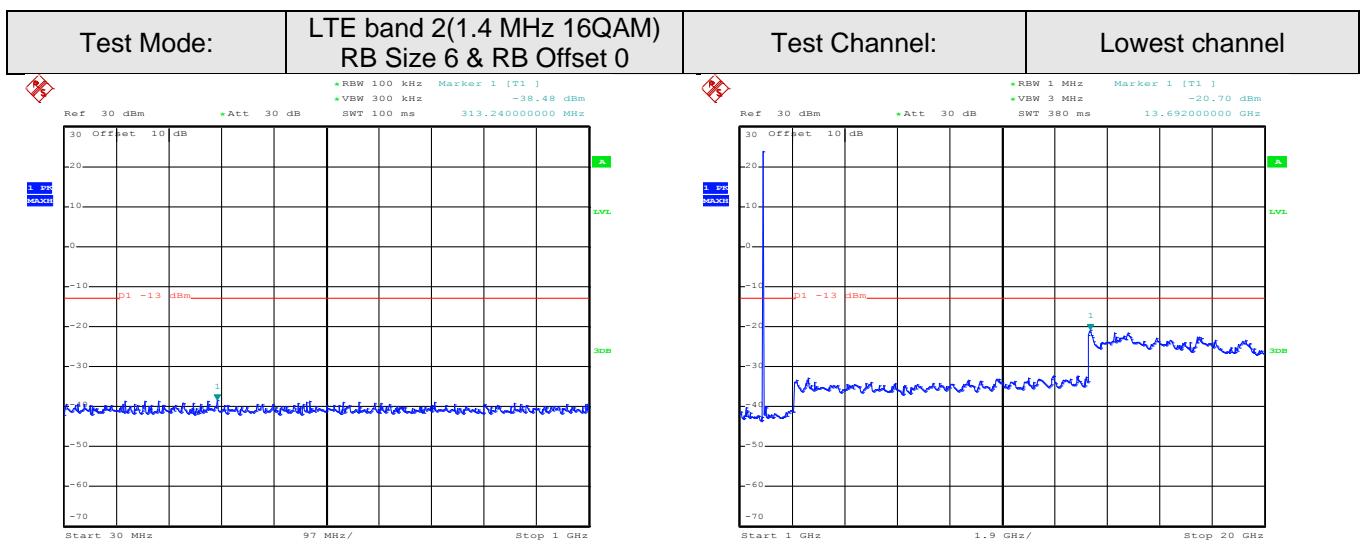
Date: 6.MAR.2016 04:15:34

30MHz~1GHz

Date: 6.MAR.2016 04:11:46

1GHz~25GHz



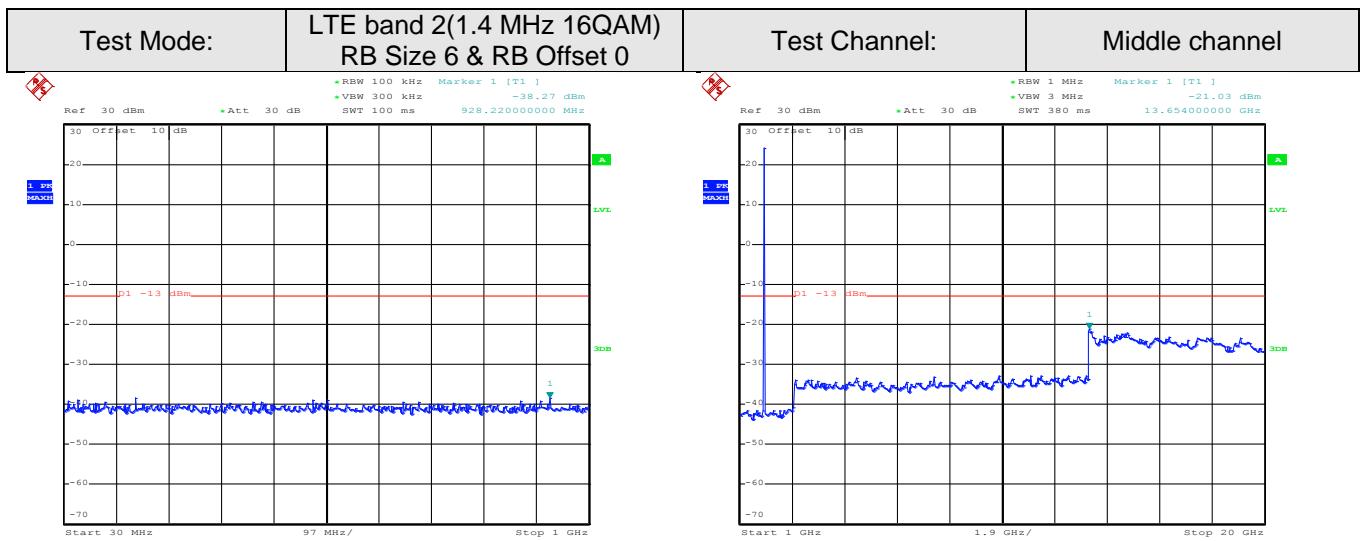


Date: 6.MAR.2016 04:14:24

30MHz~1GHz

Date: 6.MAR.2016 04:13:55

1GHz~25GHz

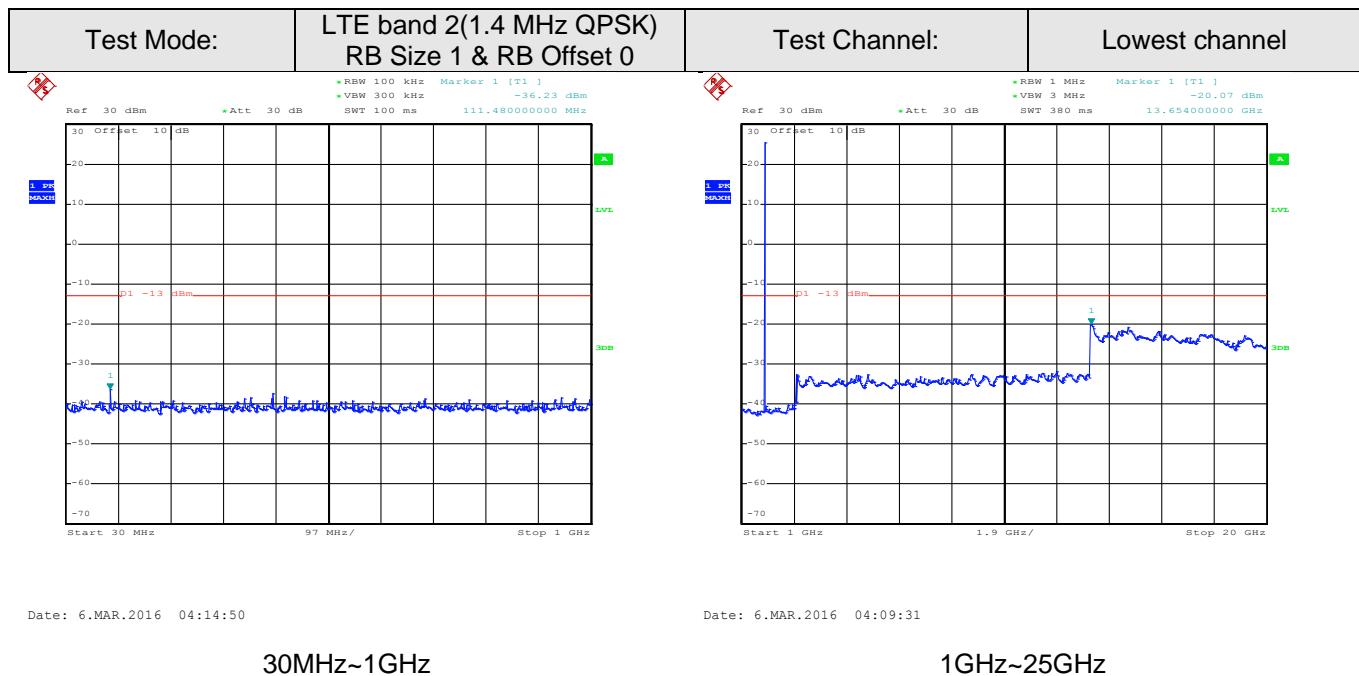
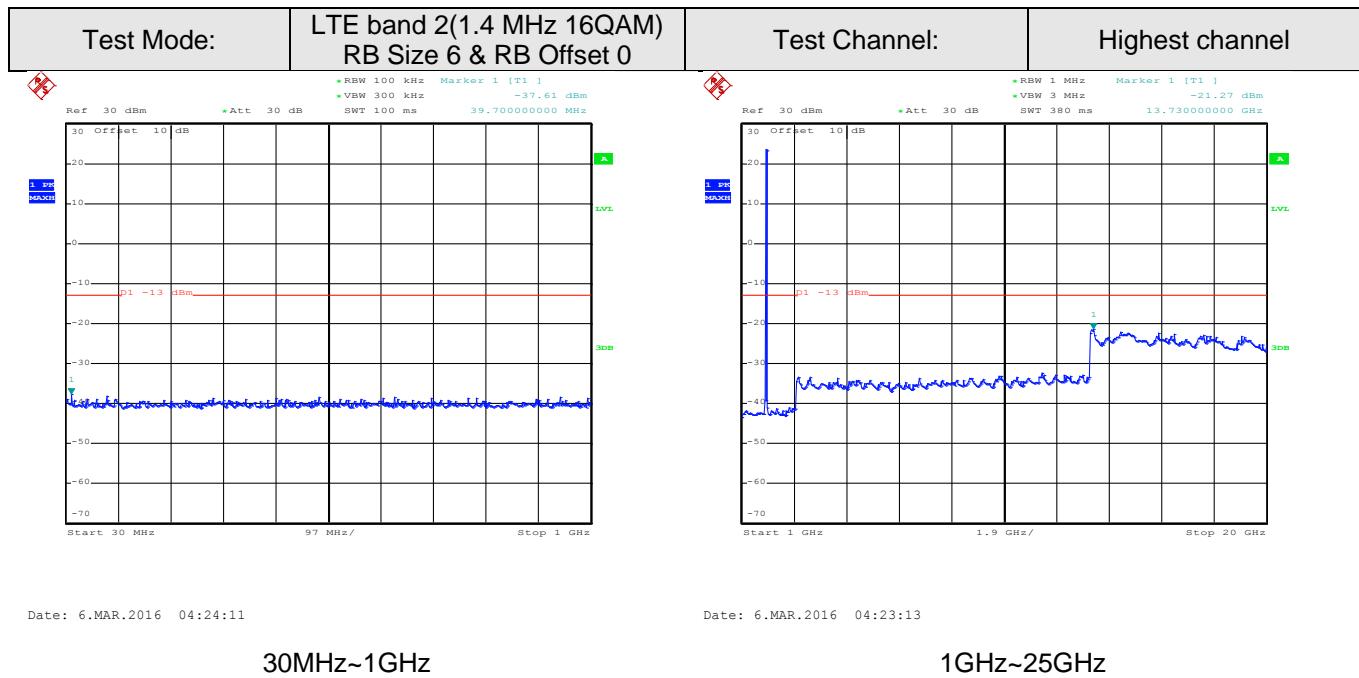


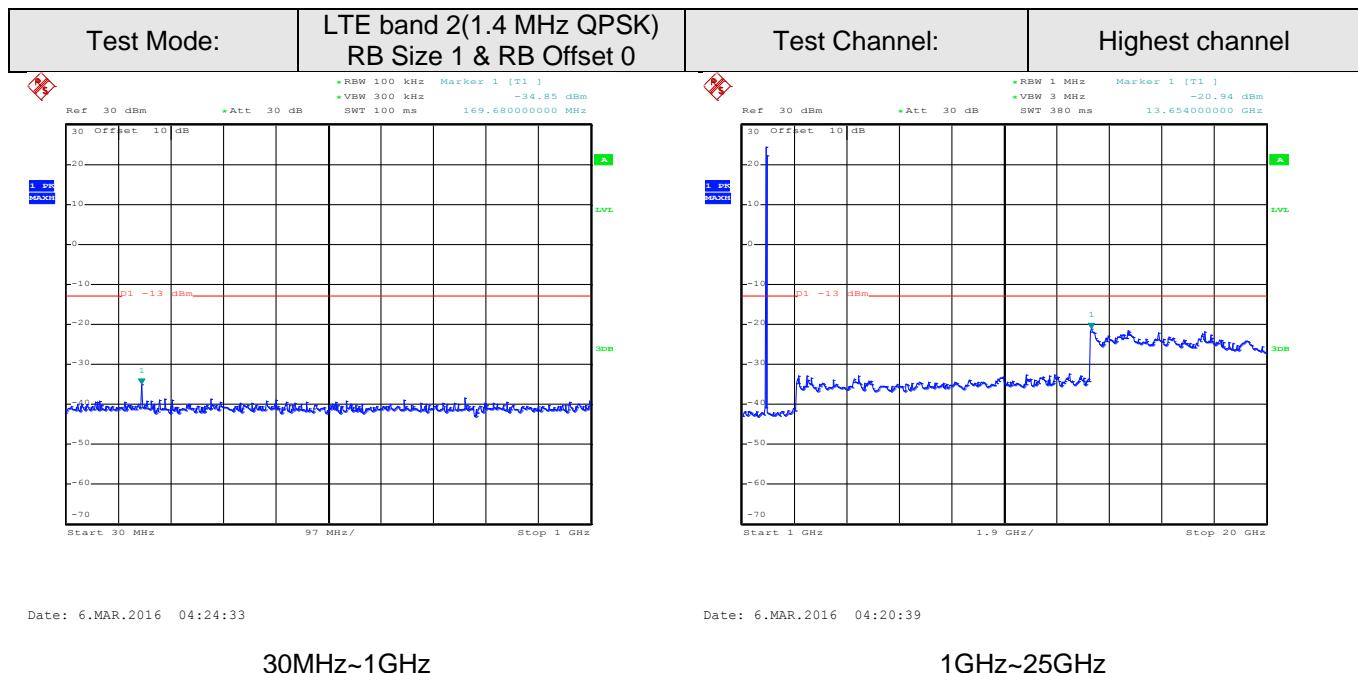
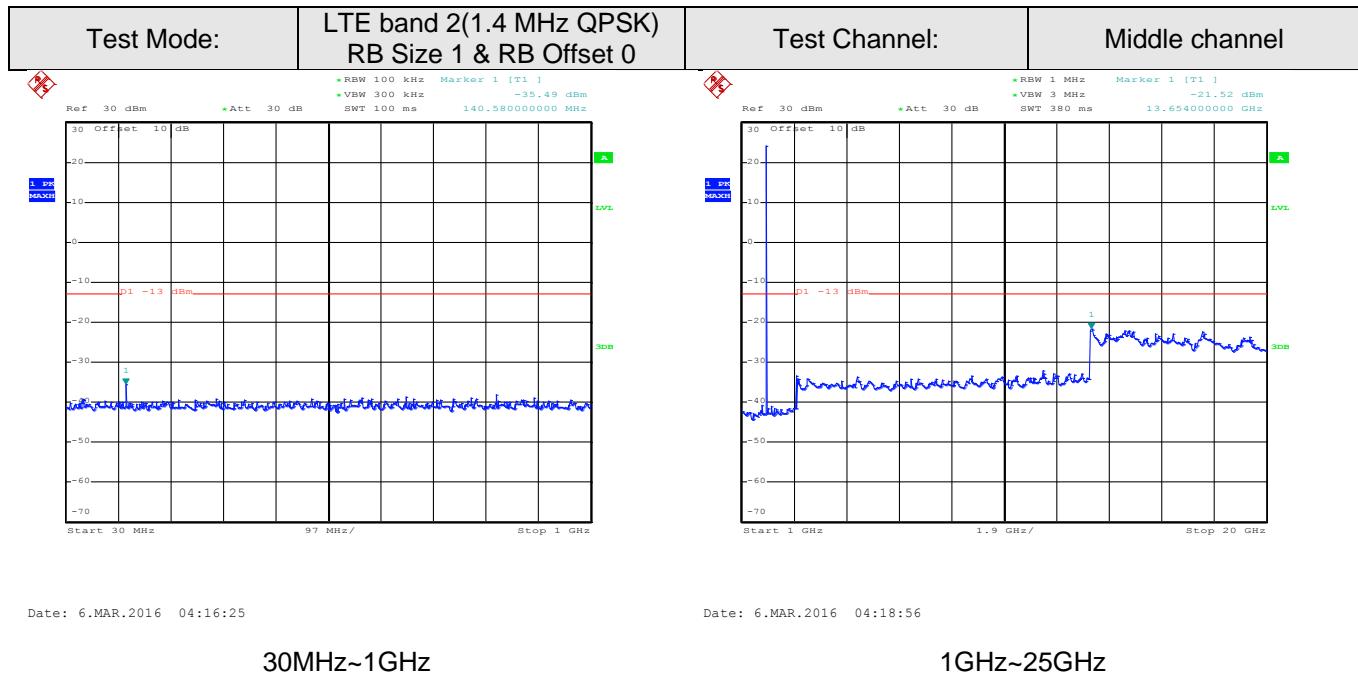
Date: 6.MAR.2016 04:17:33

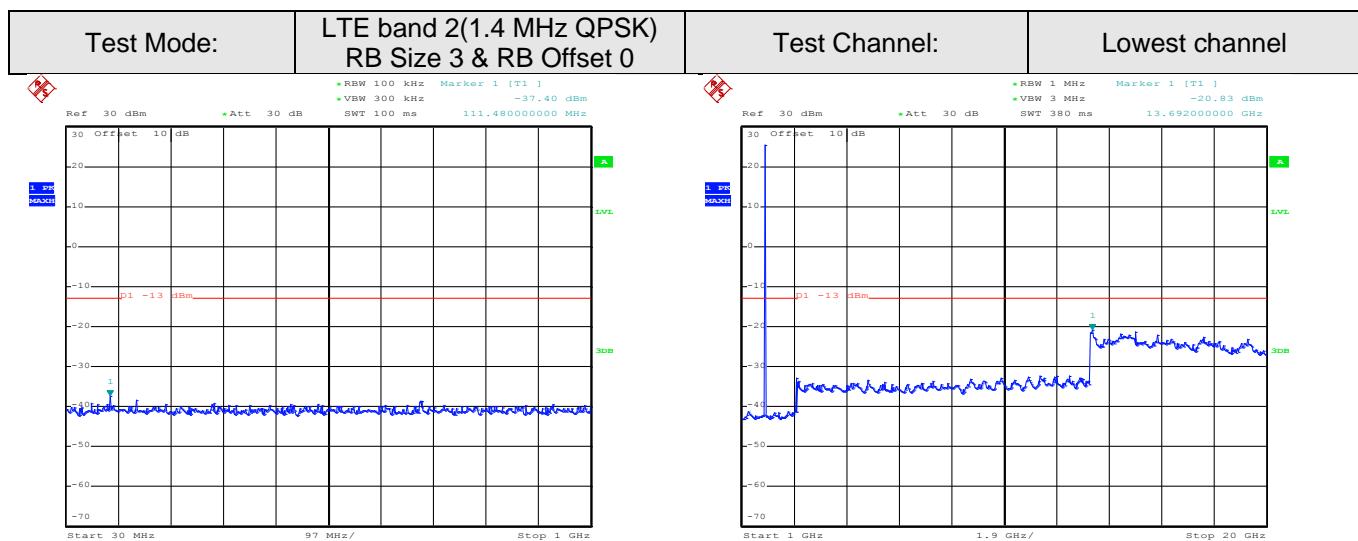
30MHz~1GHz

Date: 6.MAR.2016 04:18:16

1GHz~25GHz





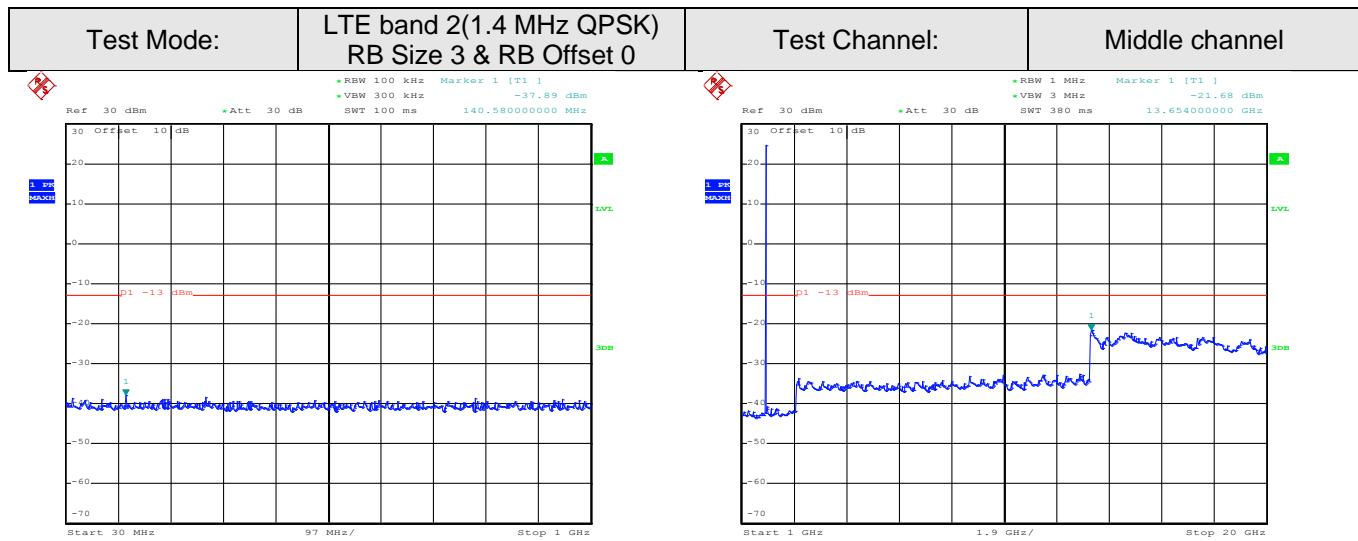


Date: 6.MAR.2016 04:15:47

30MHz~1GHz

Date: 6.MAR.2016 04:12:19

1GHz~25GHz

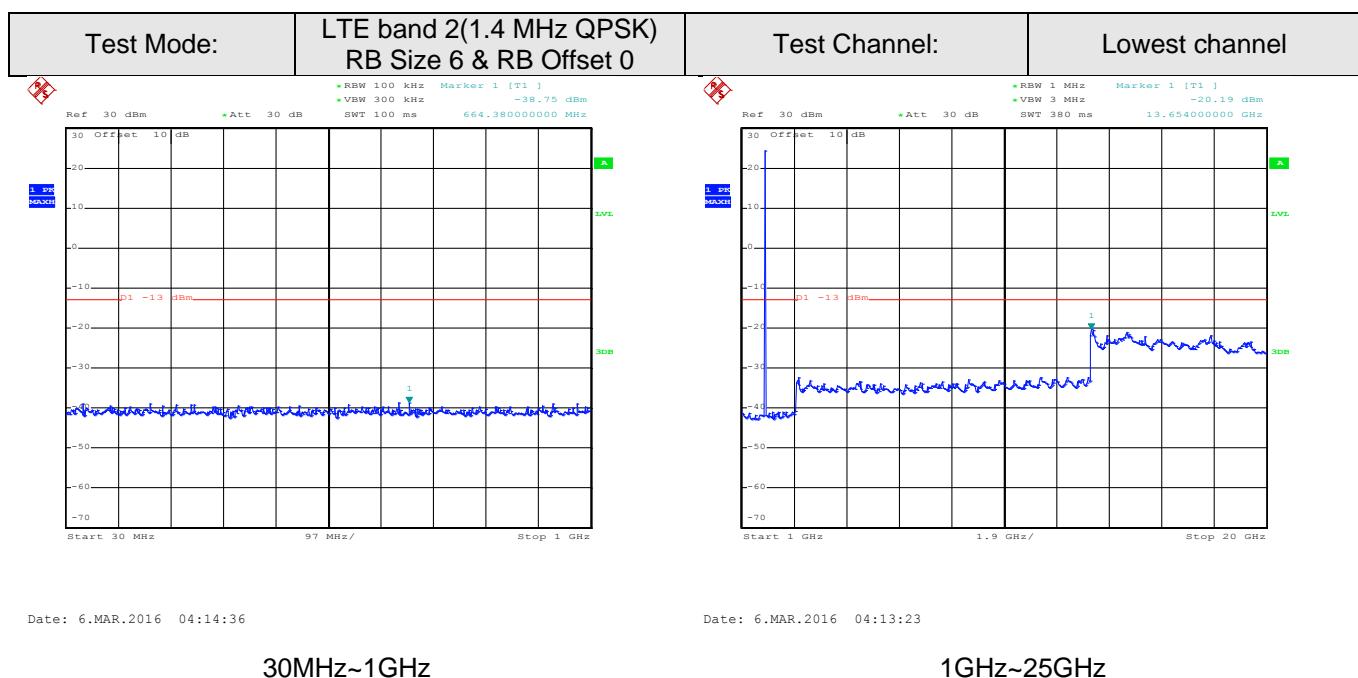
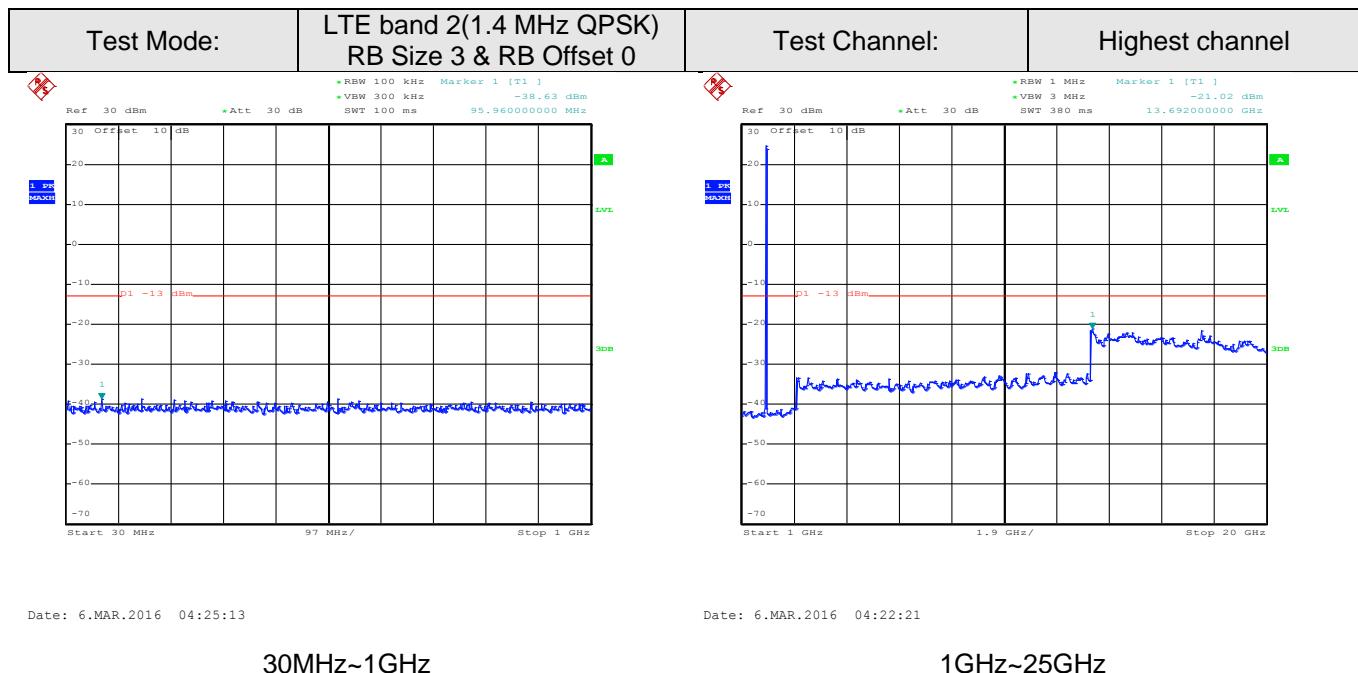


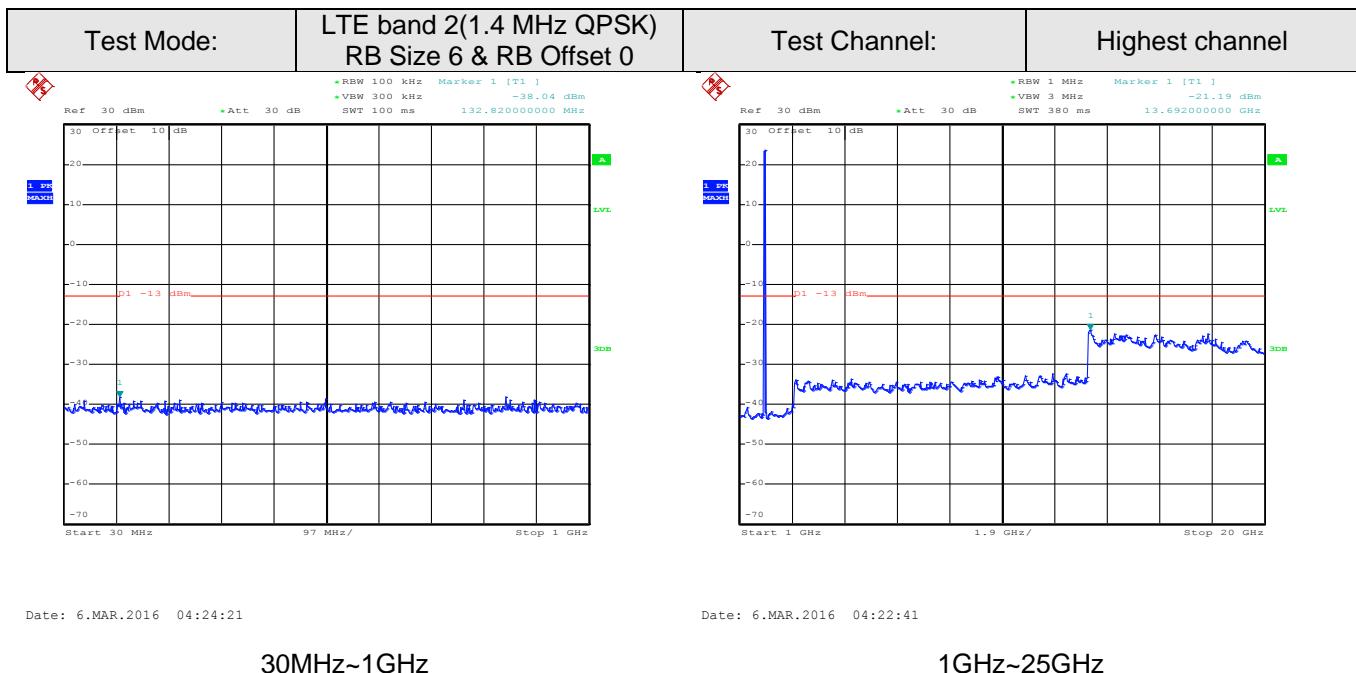
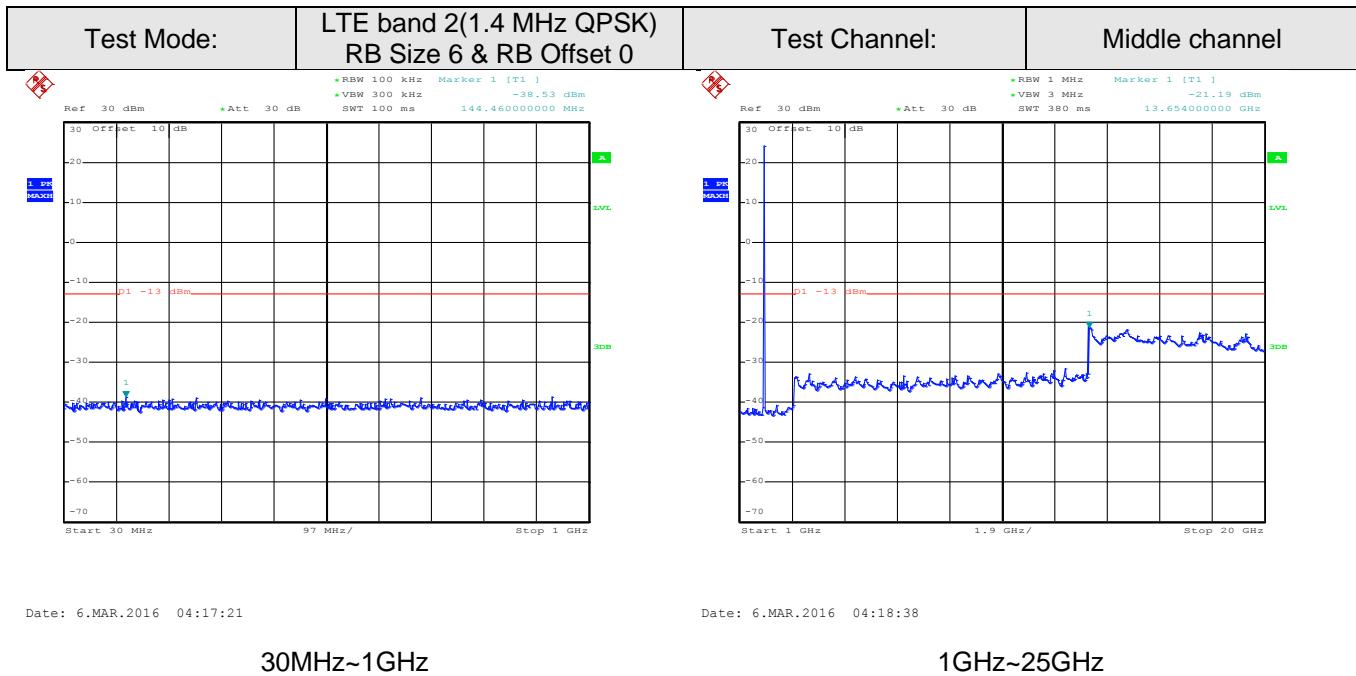
Date: 6.MAR.2016 04:17:07

30MHz~1GHz

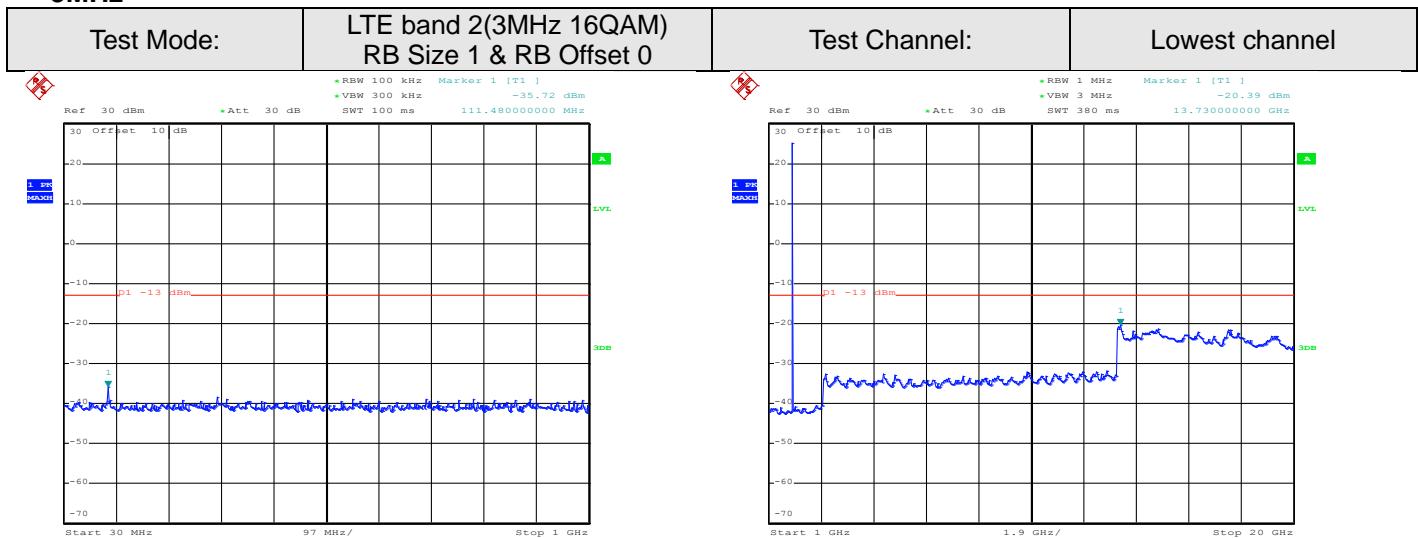
Date: 6.MAR.2016 04:20:03

1GHz~25GHz





3MHz

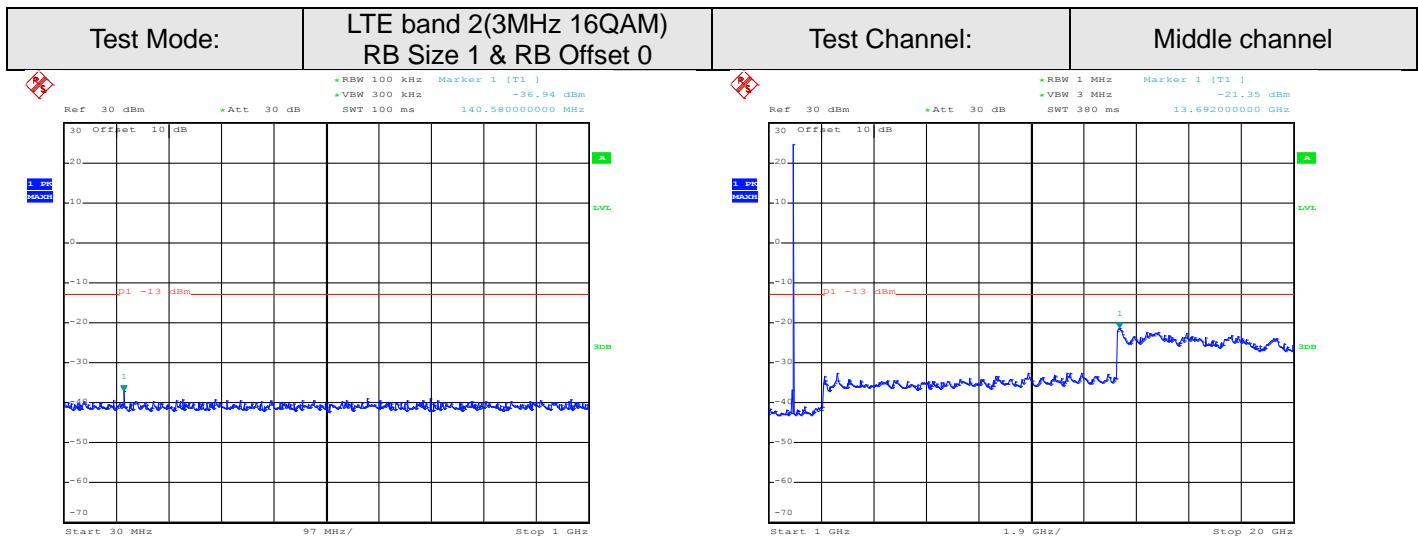


Date: 6.MAR.2016 04:26:22

30MHz~1GHz

Date: 6.MAR.2016 04:32:52

1GHz~25GHz

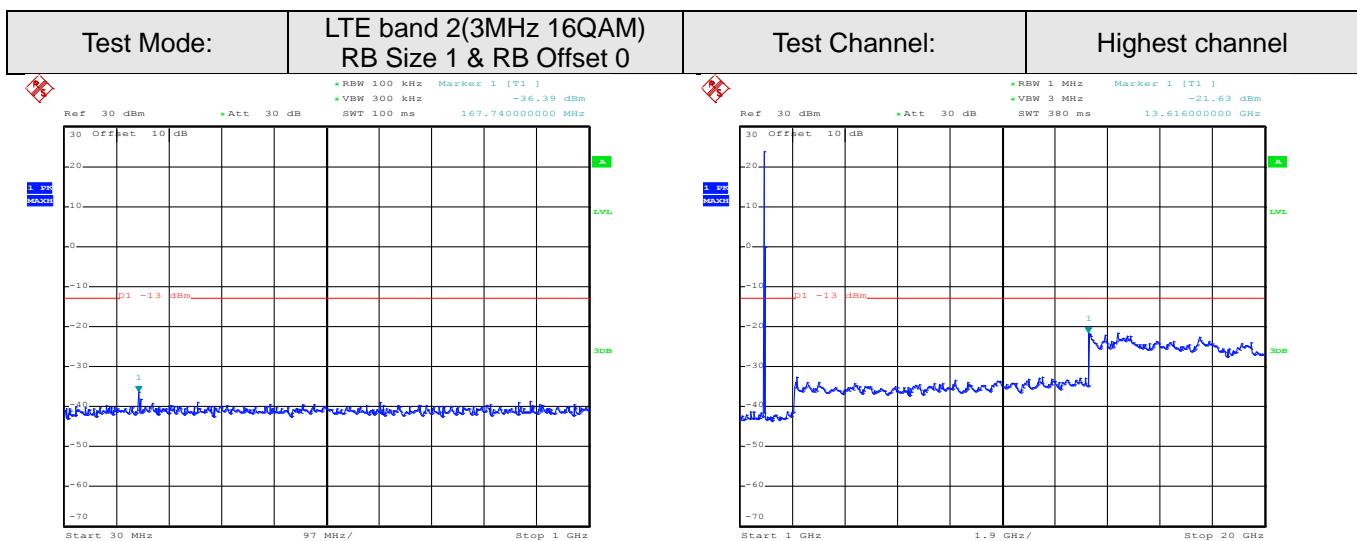


Date: 6.MAR.2016 04:35:29

30MHz~1GHz

Date: 6.MAR.2016 04:43:01

1GHz~25GHz

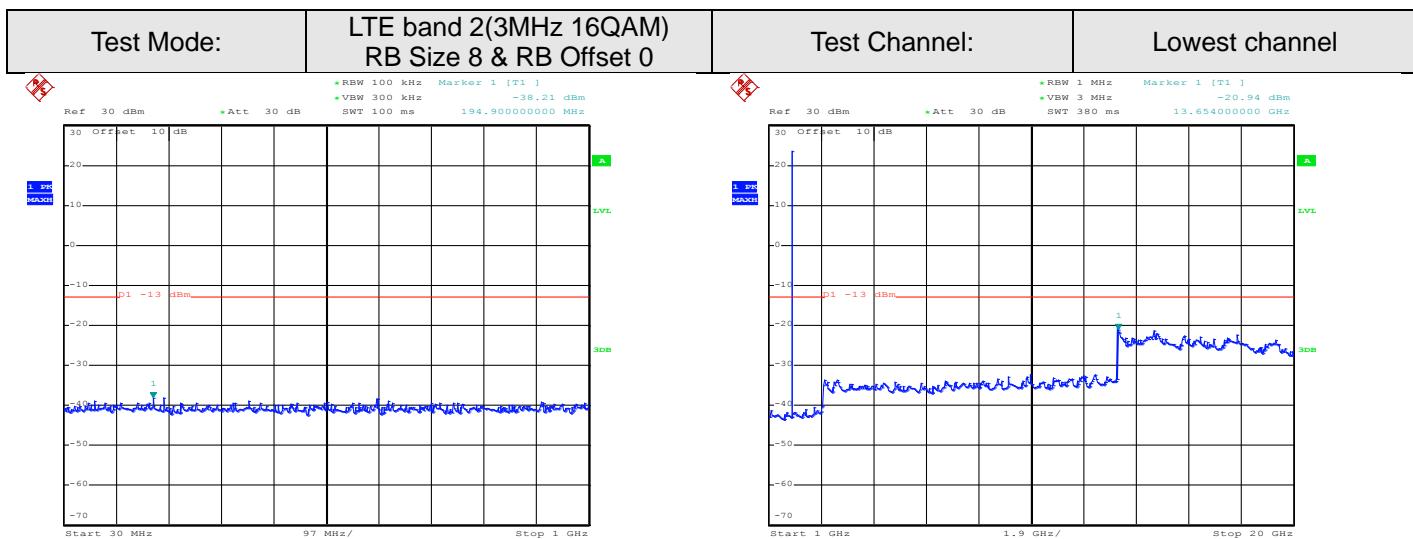


Date: 6.MAR.2016 04:37:24

30MHz~1GHz

Date: 6.MAR.2016 04:35:03

1GHz~25GHz

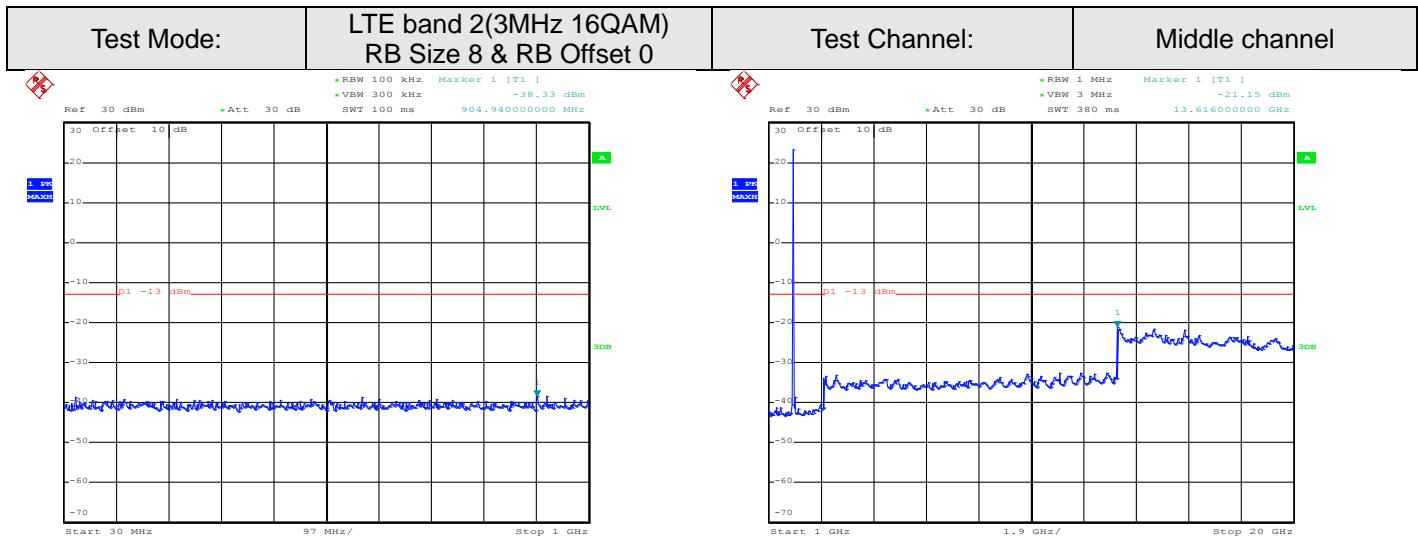


Date: 6.MAR.2016 04:27:07

30MHz~1GHz

Date: 6.MAR.2016 04:33:23

1GHz~25GHz

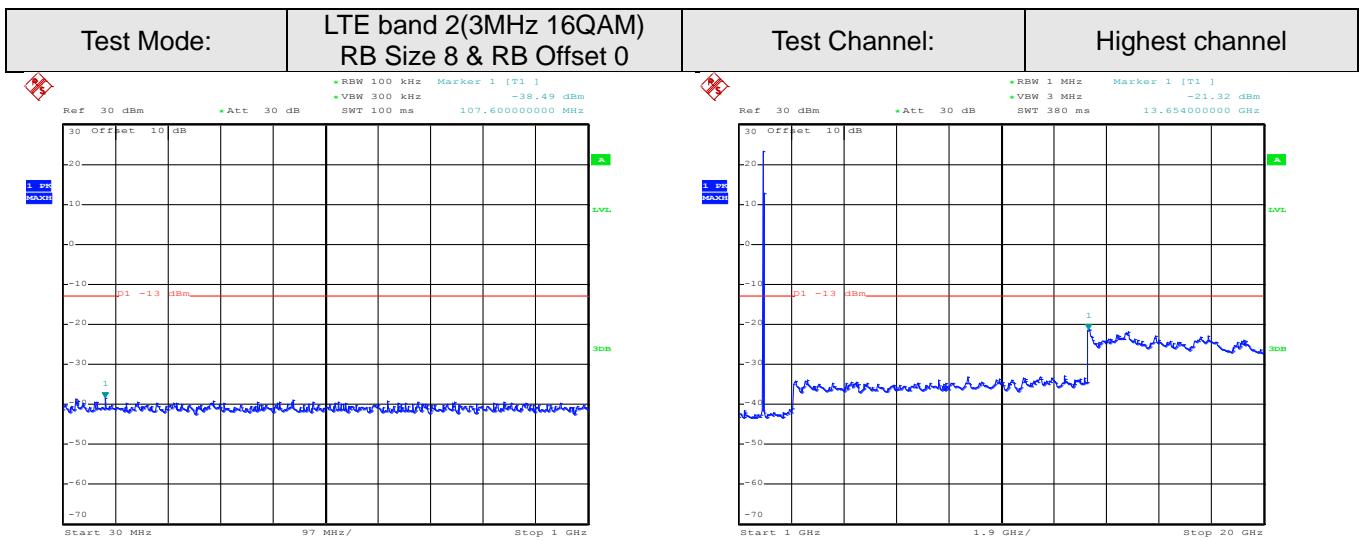


Date: 6.MAR.2016 04:35:52

30MHz~1GHz

Date: 6.MAR.2016 04:43:32

1GHz~25GHz

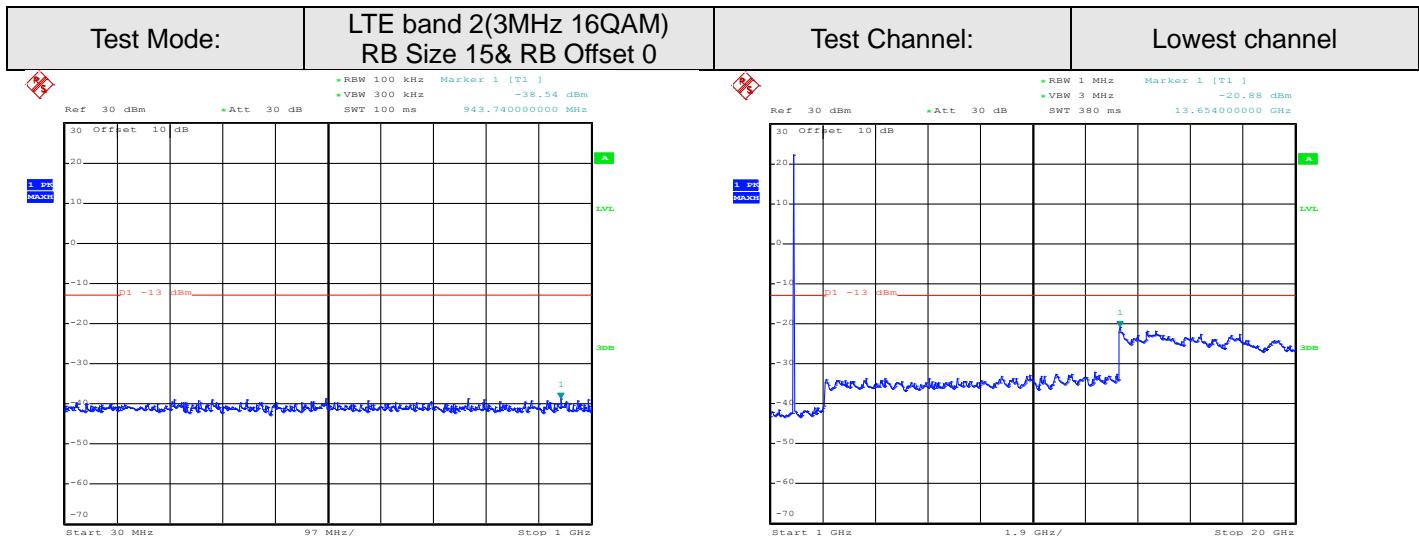


Date: 6.MAR.2016 04:37:42

30MHz~1GHz

Date: 6.MAR.2016 04:35:27

1GHz~25GHz

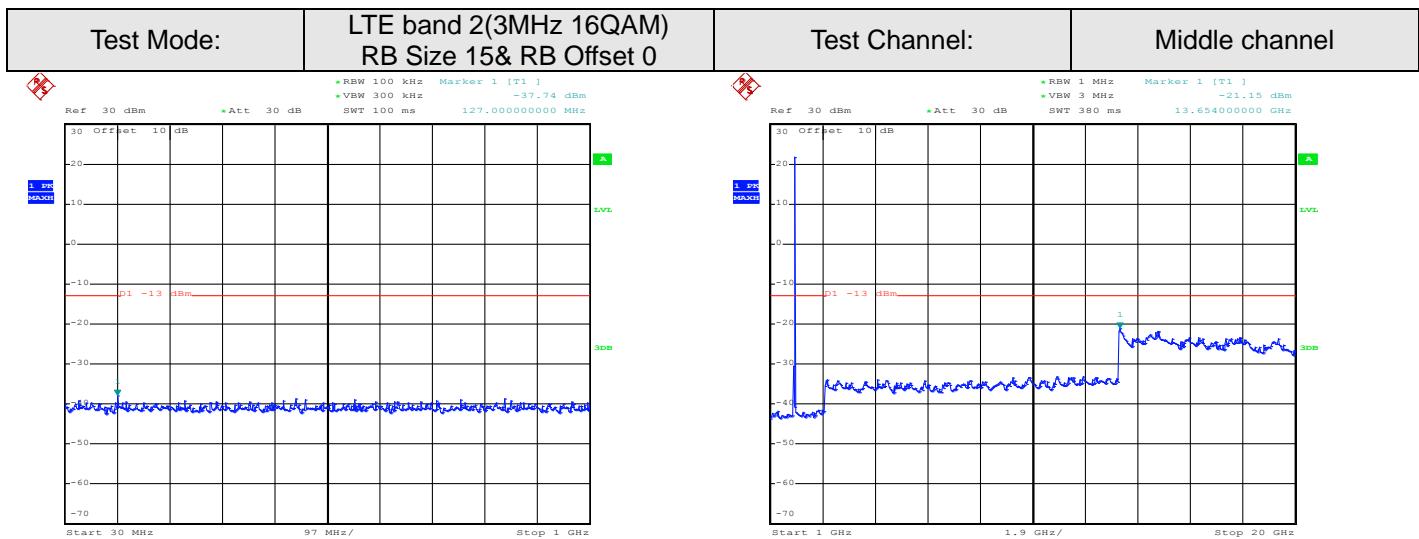


Date: 6.MAR.2016 04:28:14

30MHz~1GHz

Date: 6.MAR.2016 04:29:14

1GHz~25GHz

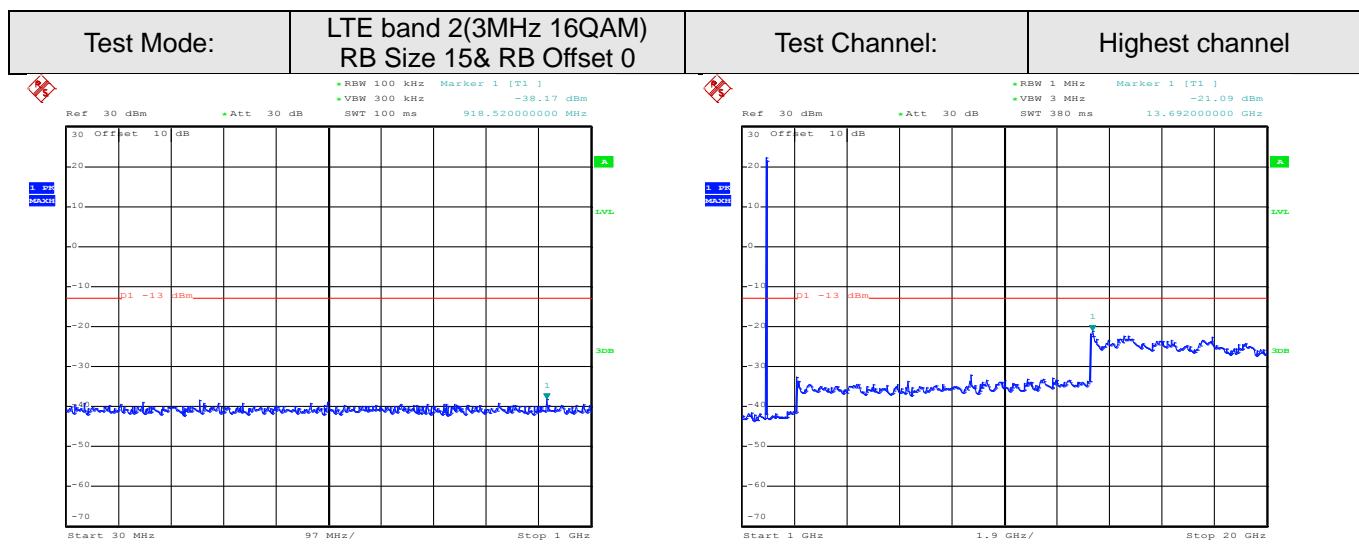


Date: 6.MAR.2016 04:37:10

30MHz~1GHz

Date: 6.MAR.2016 04:41:59

1GHz~25GHz

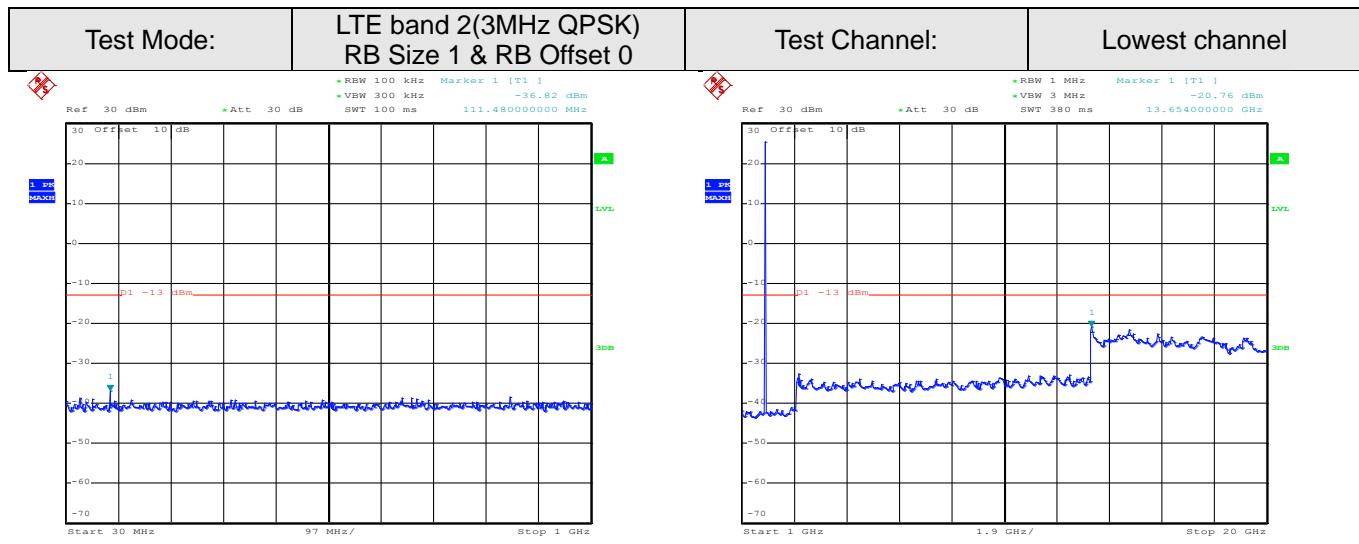


Date: 6.MAR.2016 04:36:48

30MHz~1GHz

Date: 6.MAR.2016 04:36:24

1GHz~25GHz

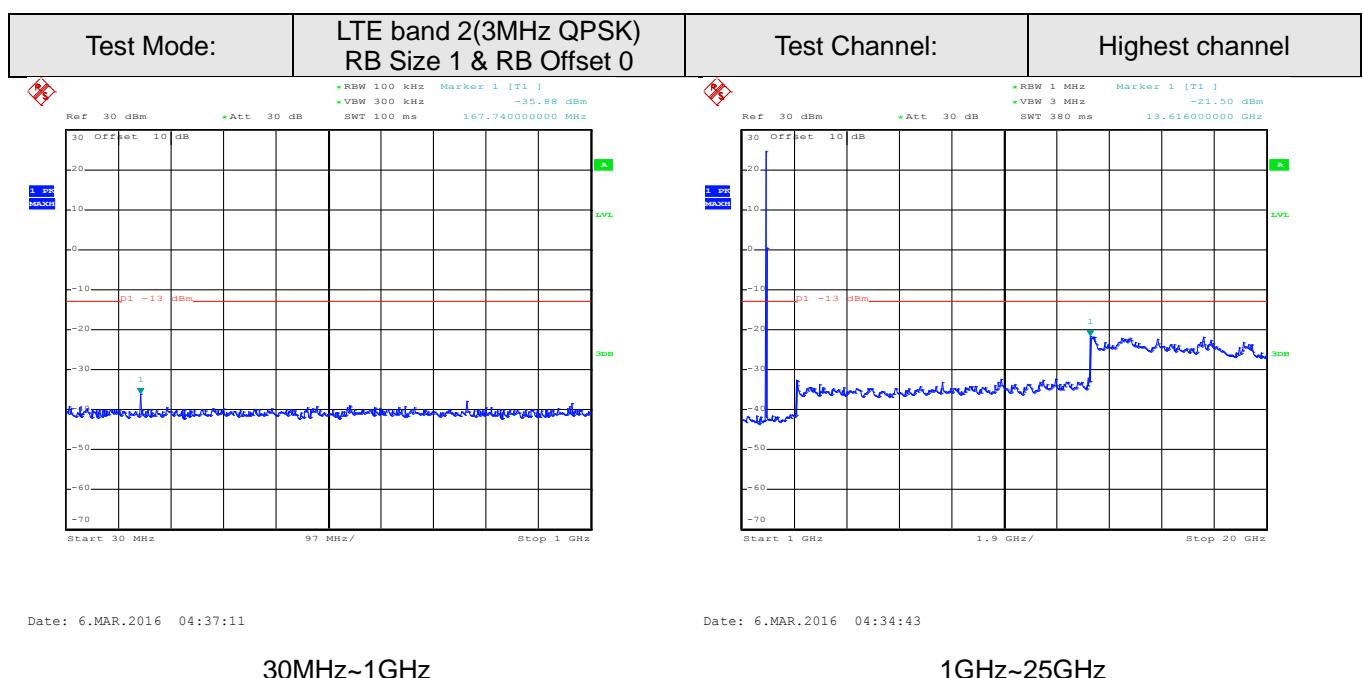
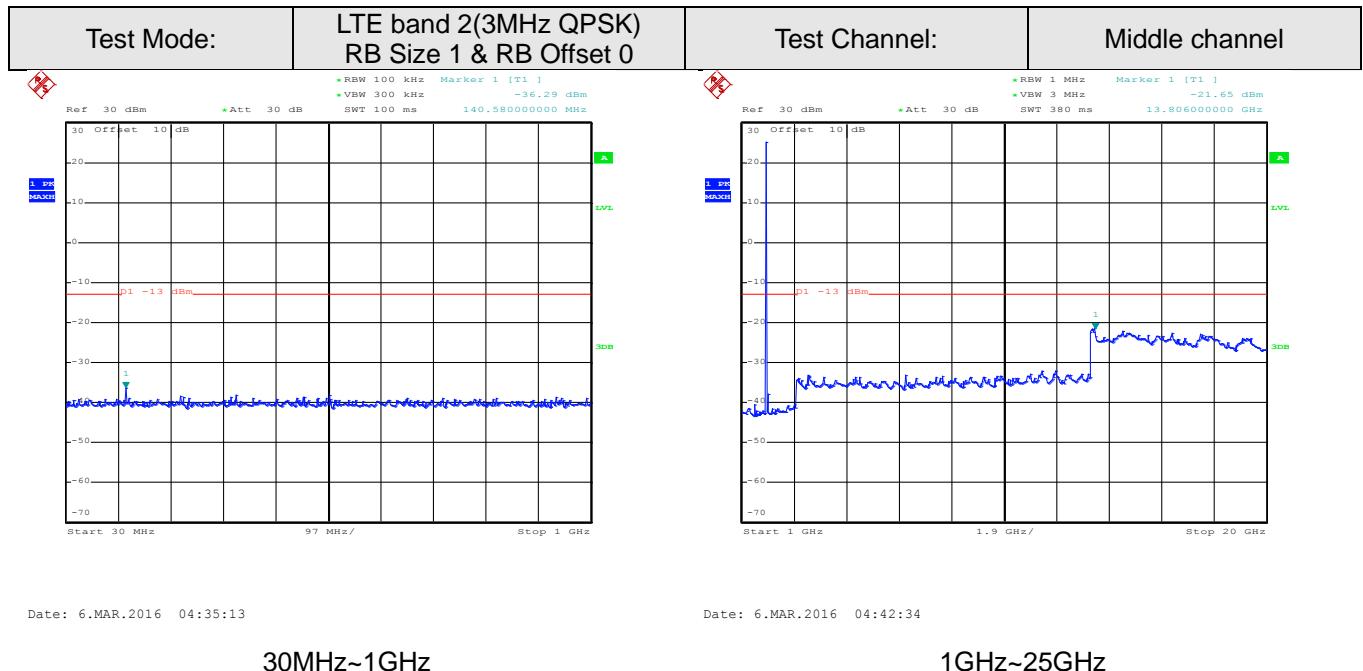


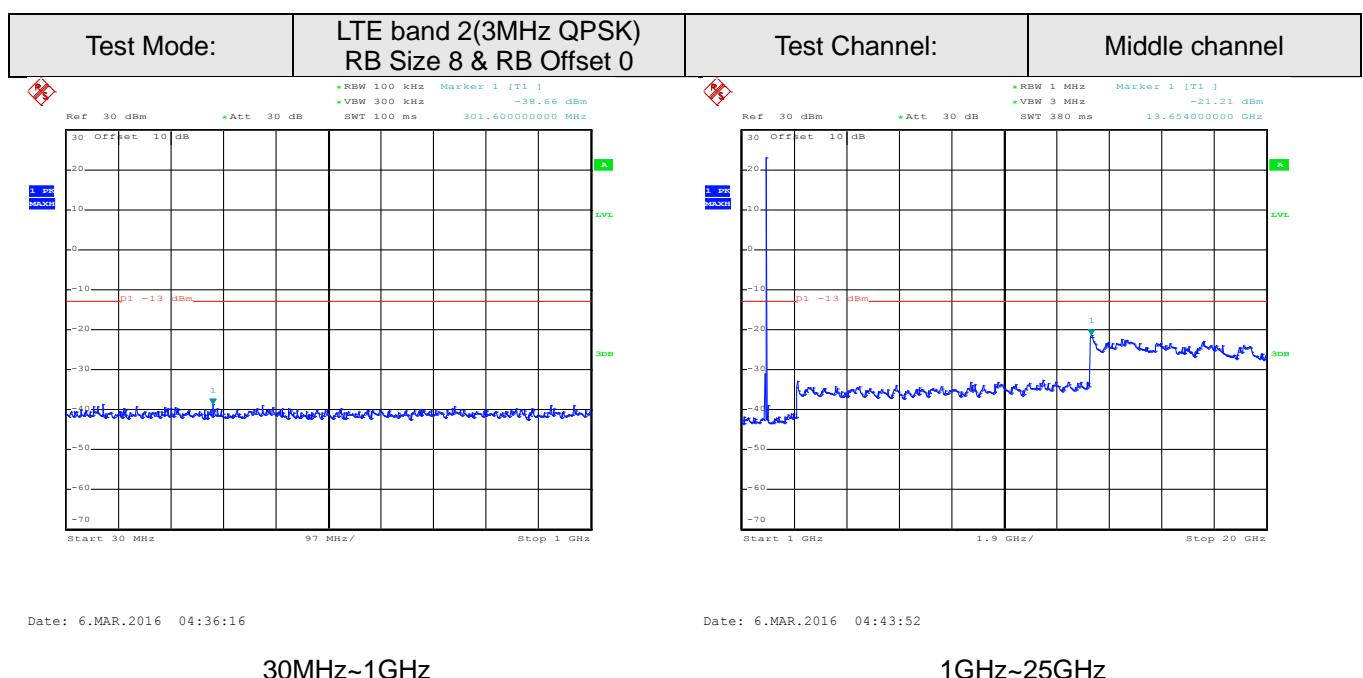
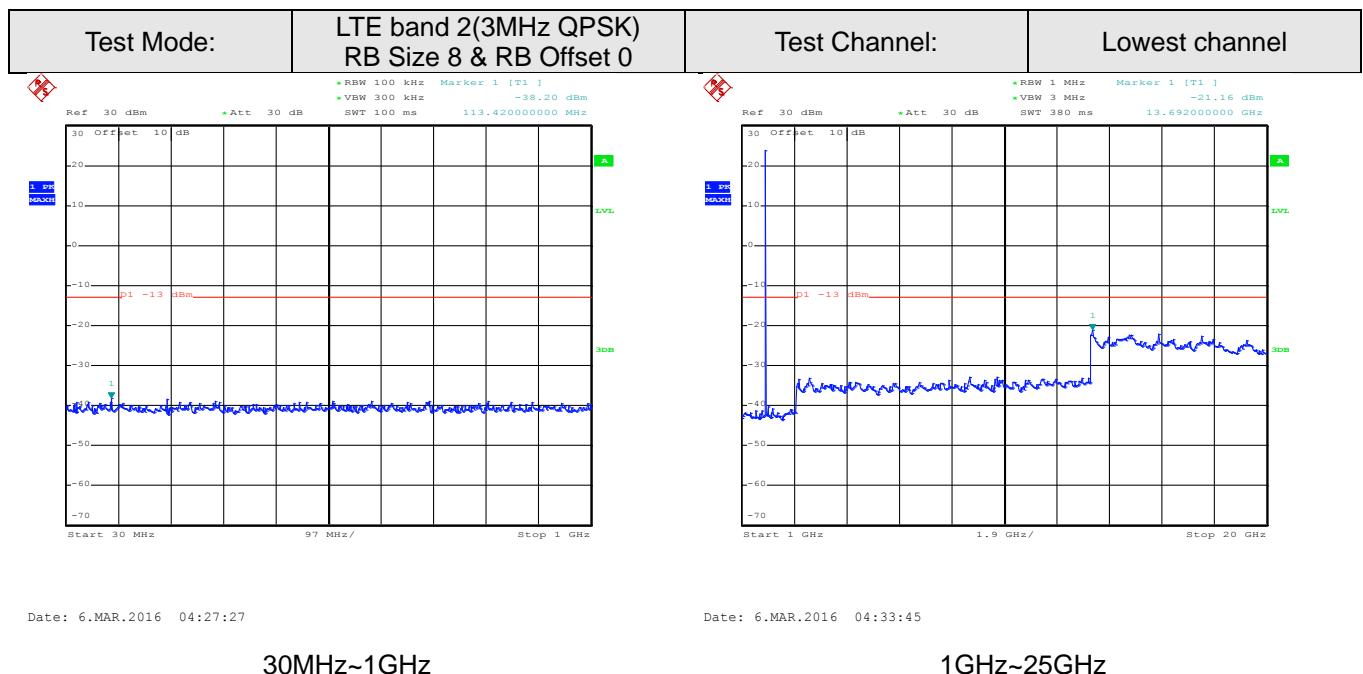
Date: 6.MAR.2016 04:26:06

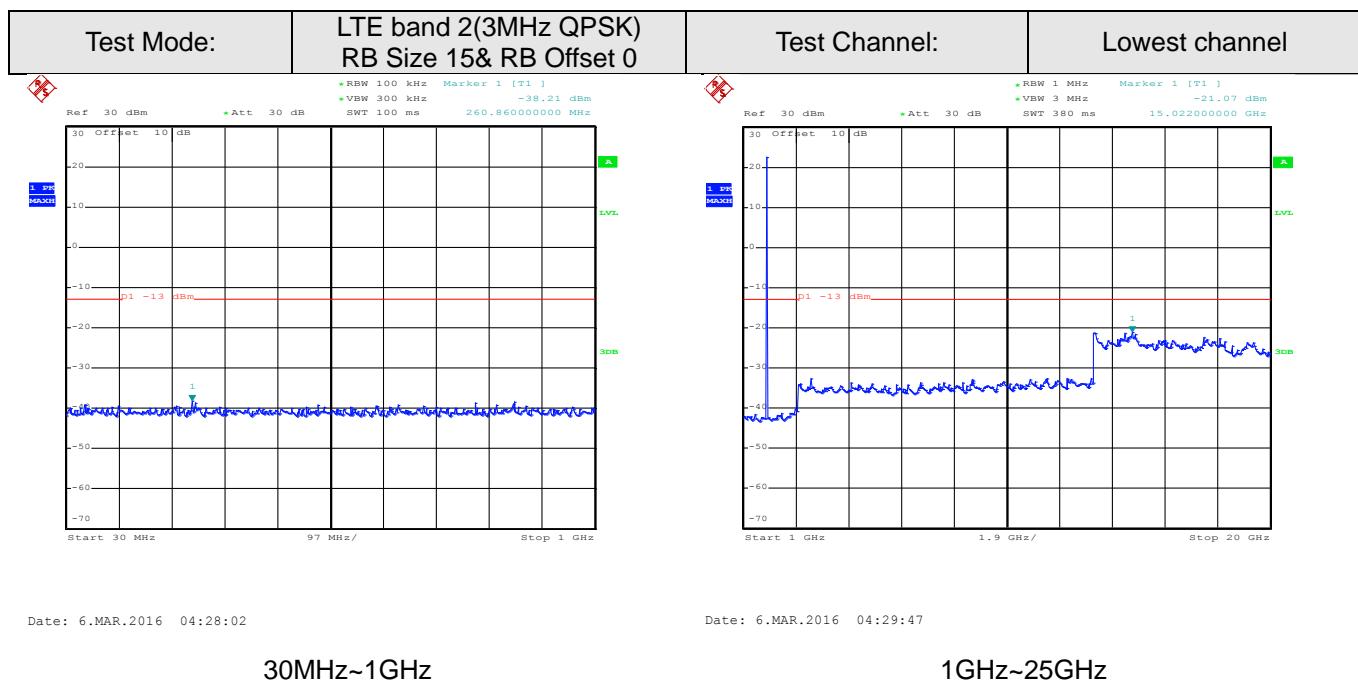
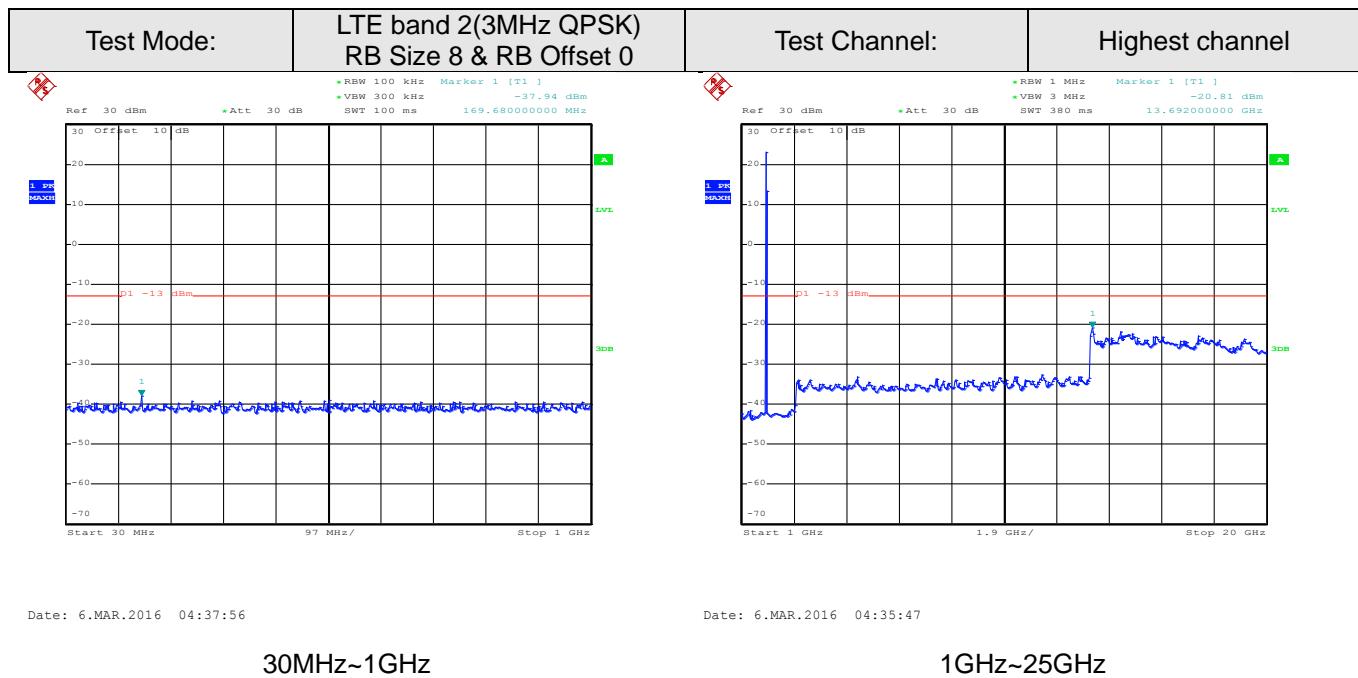
30MHz~1GHz

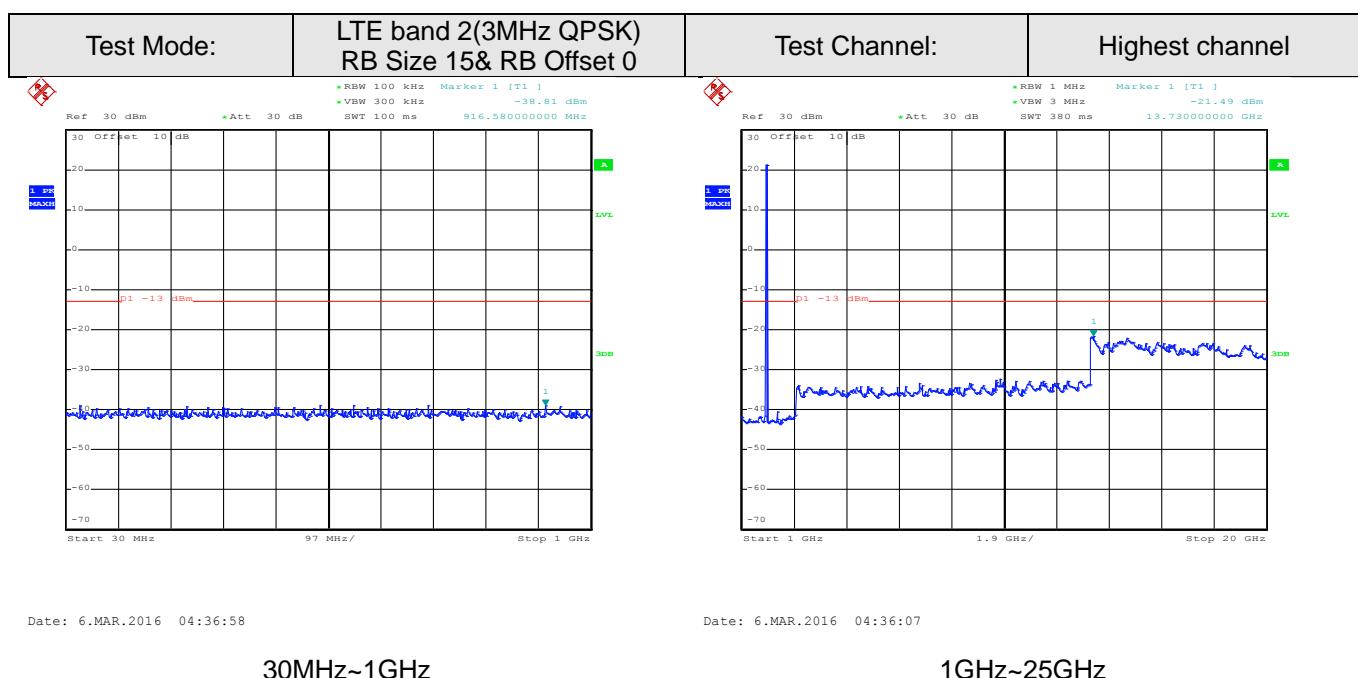
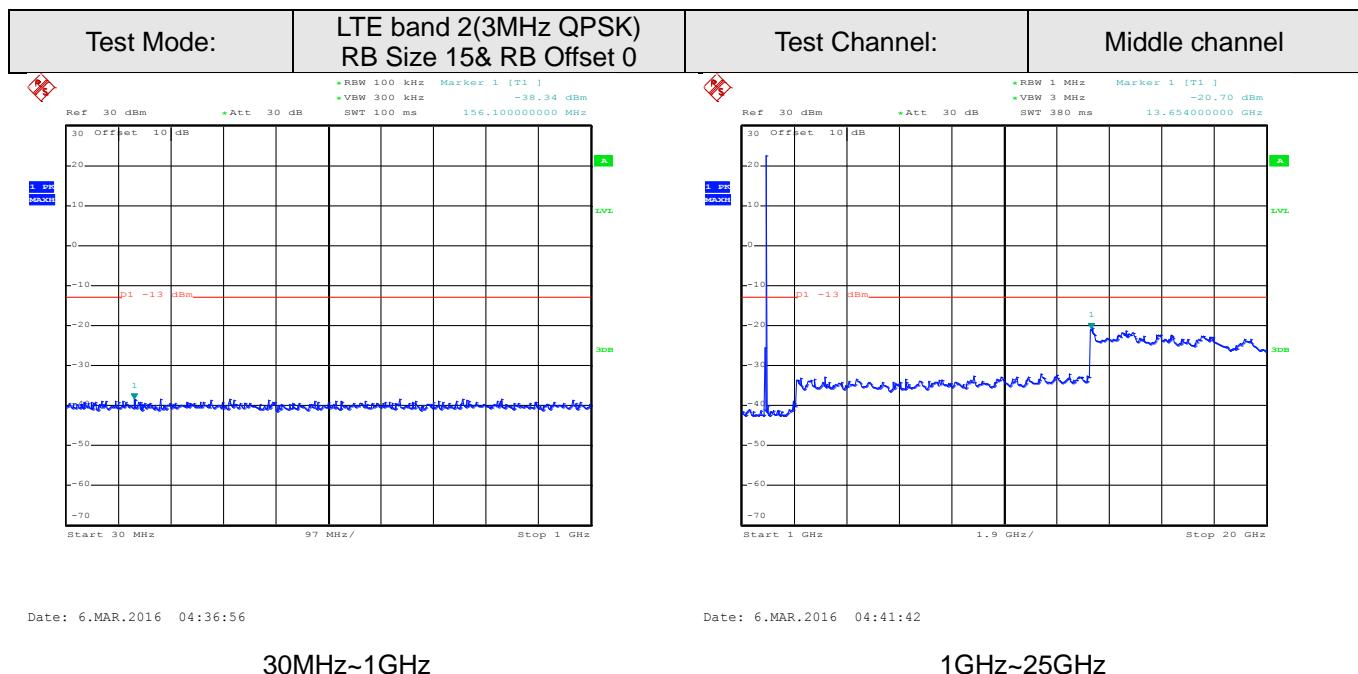
Date: 6.MAR.2016 04:30:07

1GHz~25GHz

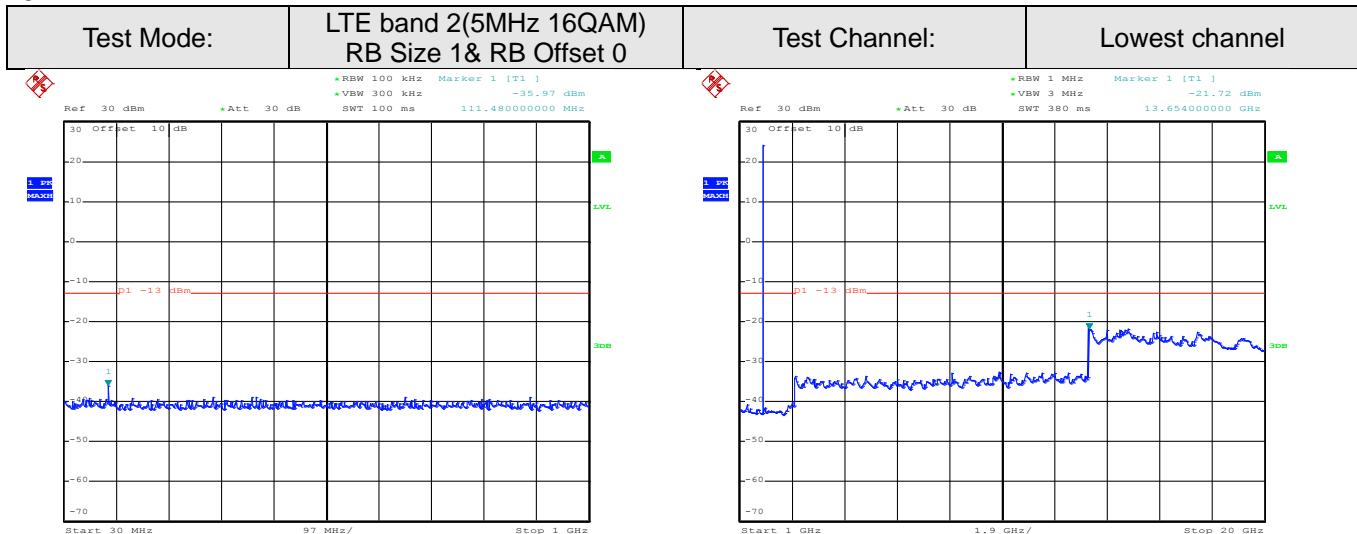








5MHz

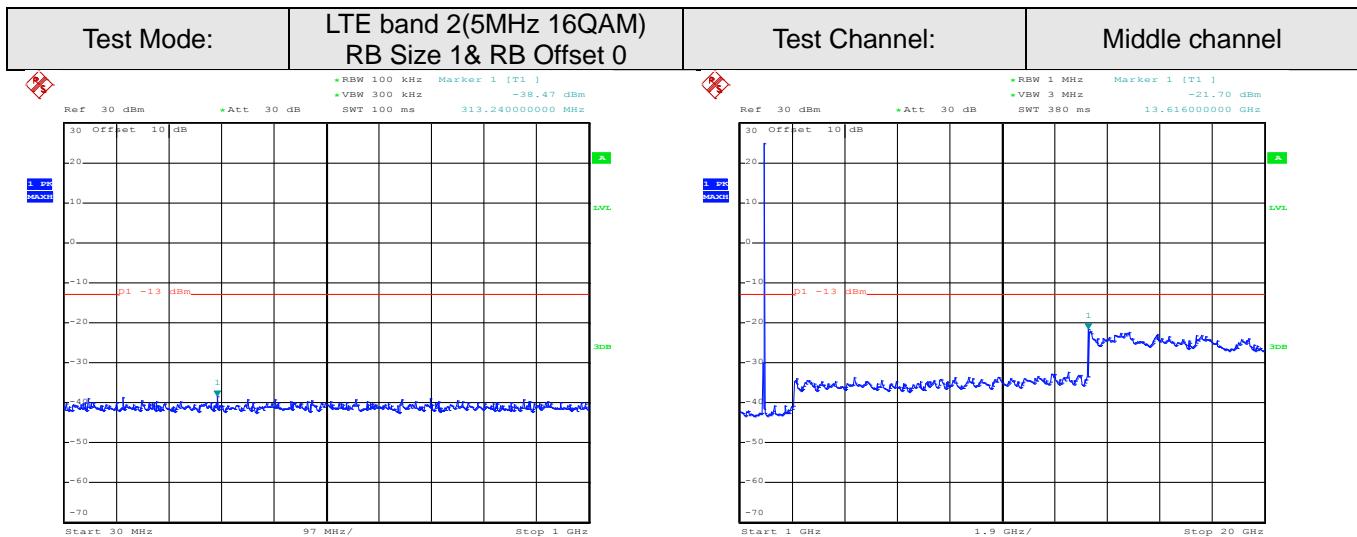


Date: 6.MAR.2016 05:10:07

30MHz~1GHz

Date: 6.MAR.2016 05:06:40

1GHz~25GHz

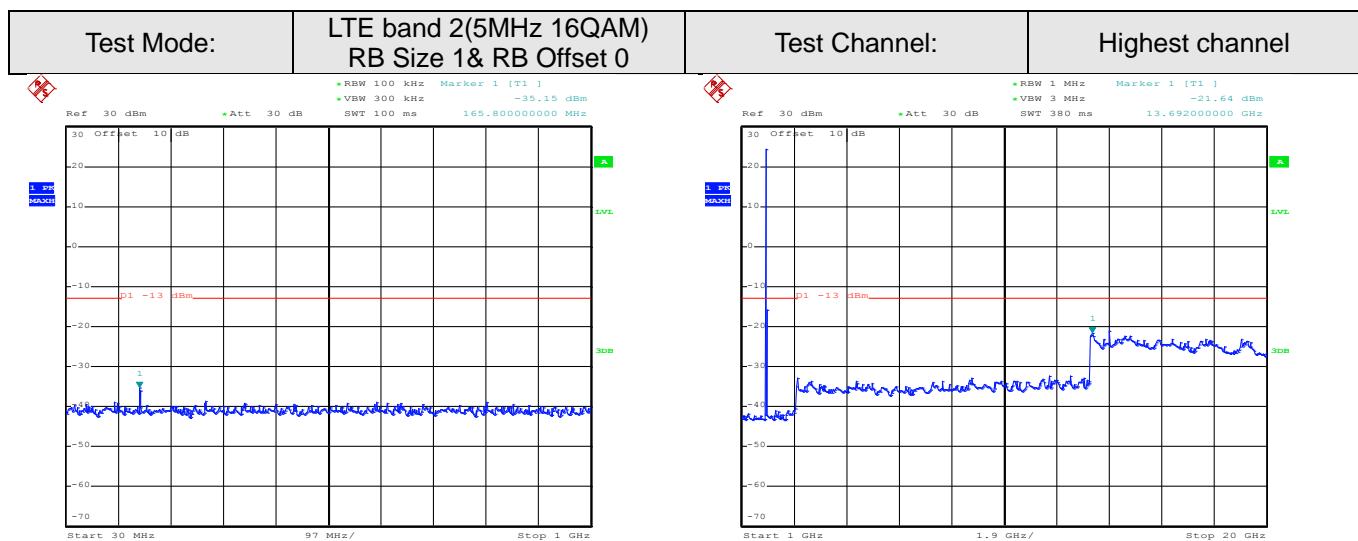


Date: 6.MAR.2016 04:42:29

30MHz~1GHz

Date: 6.MAR.2016 04:44:52

1GHz~25GHz

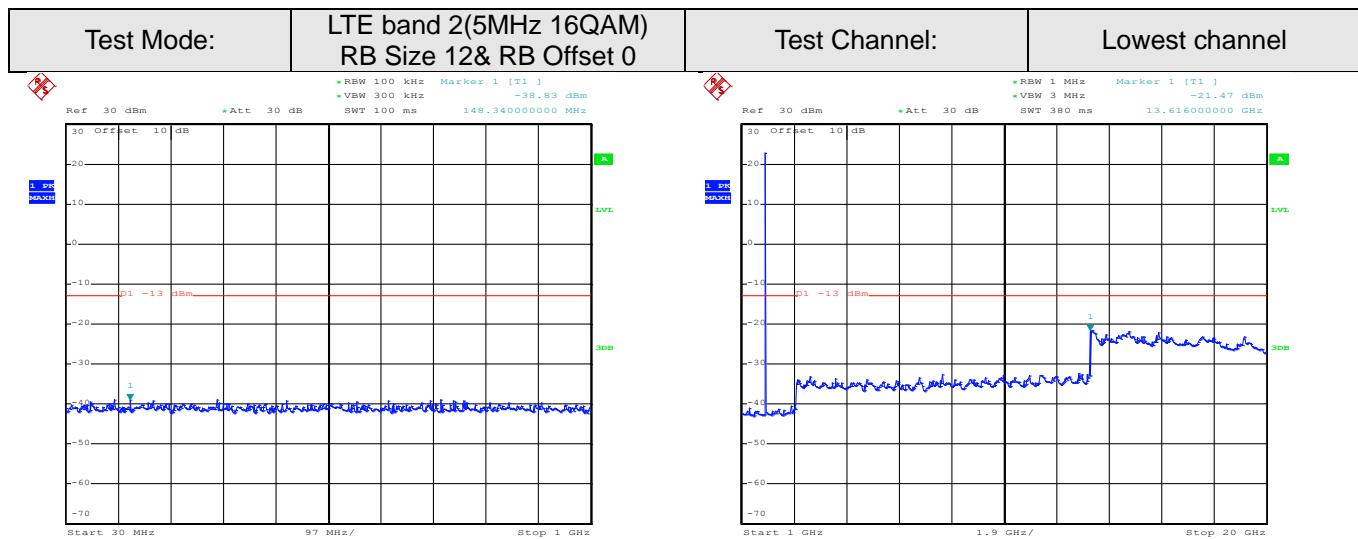


Date: 6.MAR.2016 04:49:09

30MHz~1GHz

Date: 6.MAR.2016 04:46:30

1GHz~25GHz

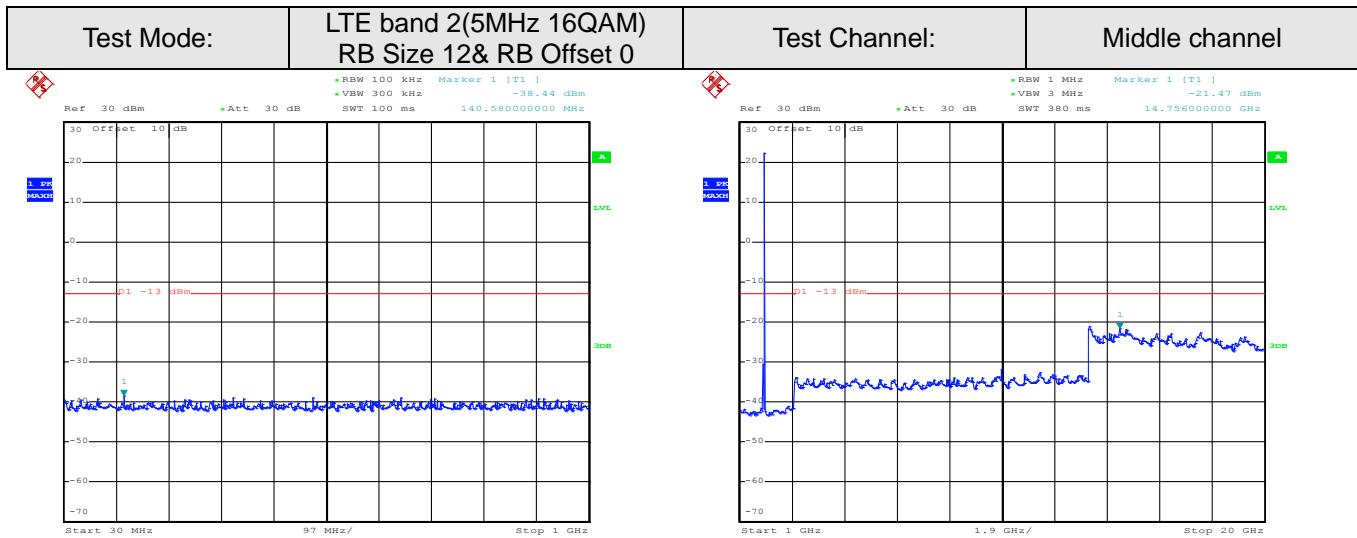


Date: 6.MAR.2016 04:41:45

30MHz~1GHz

Date: 6.MAR.2016 05:07:22

1GHz~25GHz

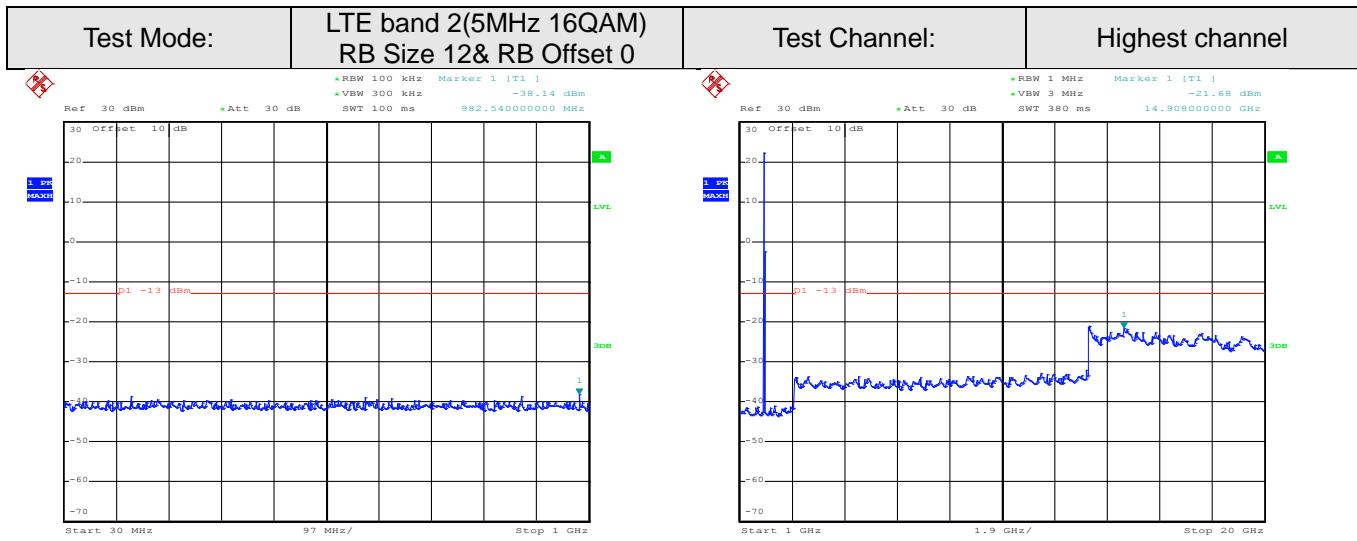


Date: 6.MAR.2016 04:42:43

30MHz~1GHz

Date: 6.MAR.2016 04:45:15

1GHz~25GHz

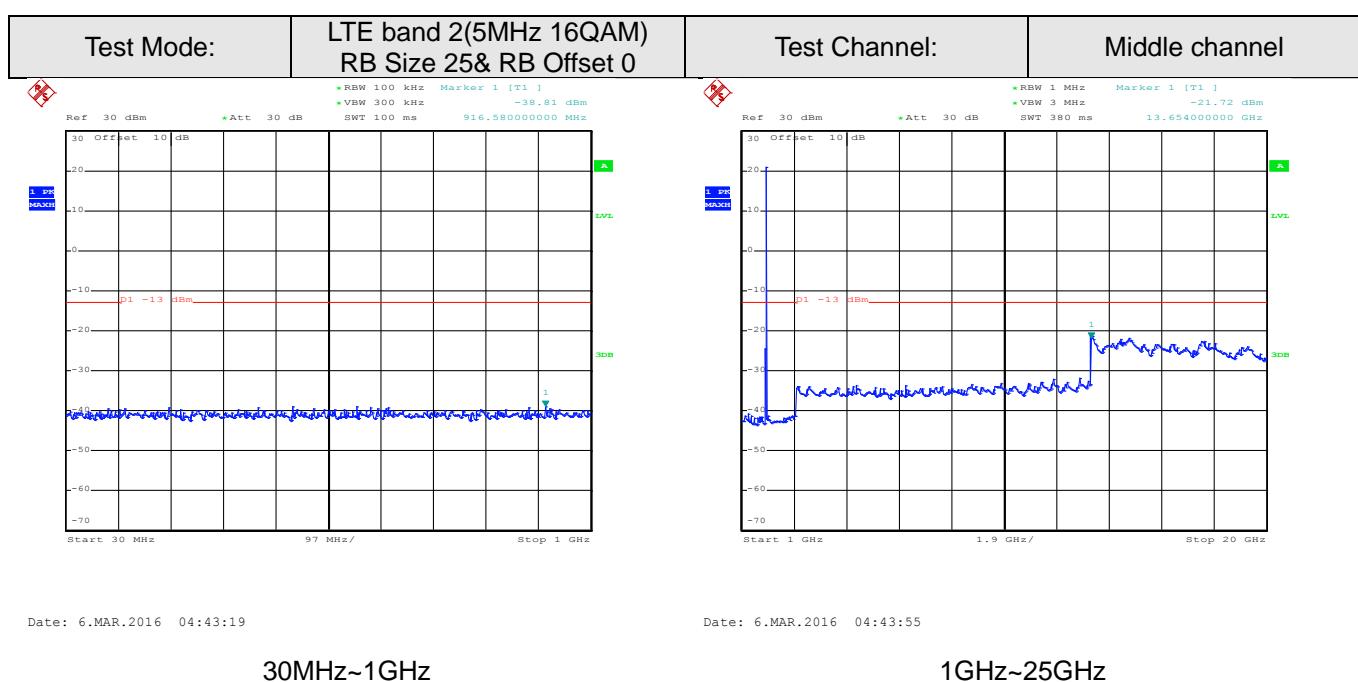
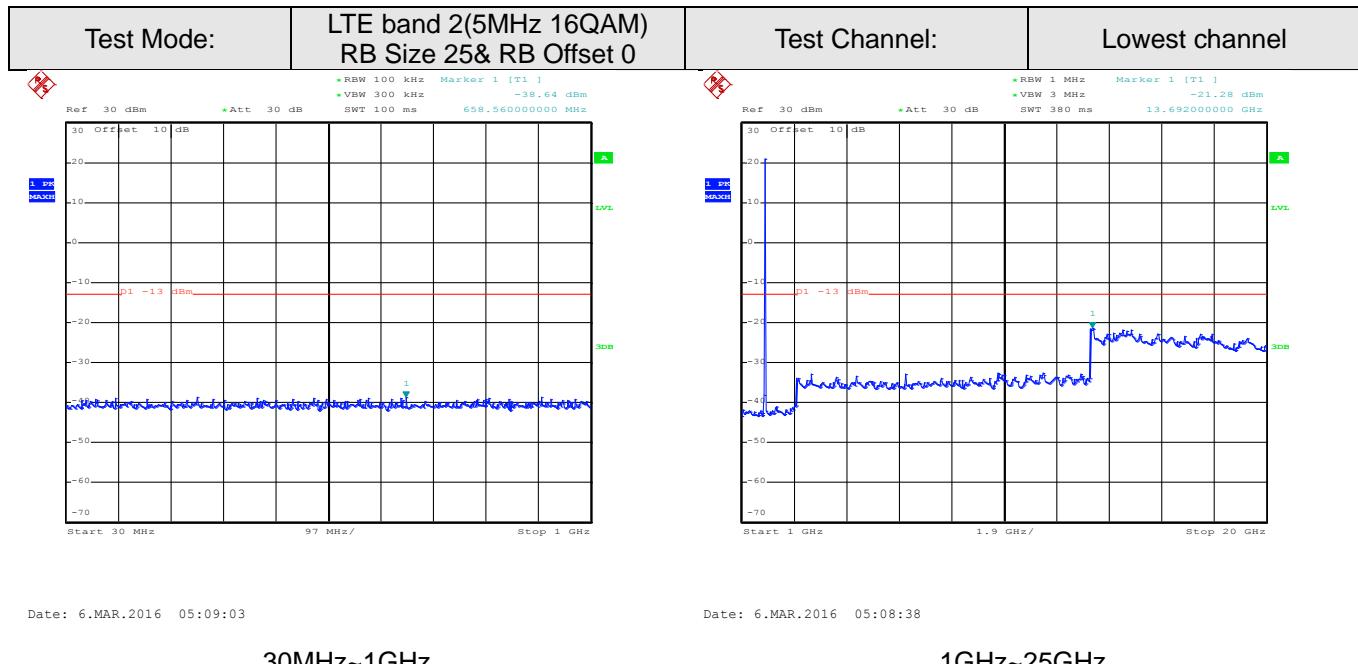


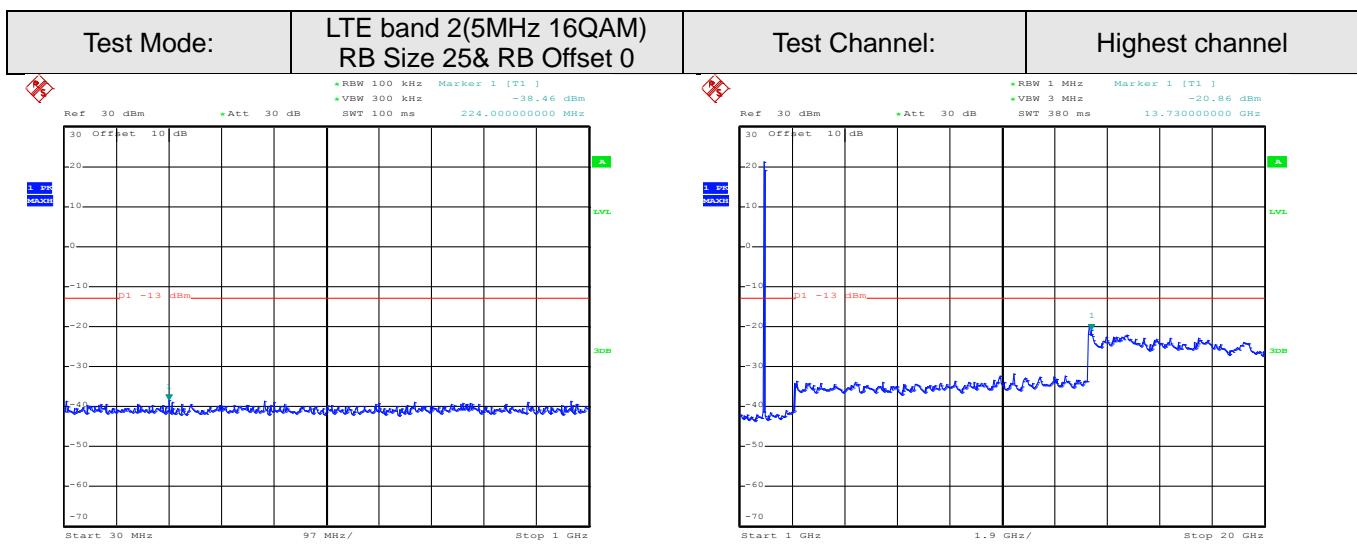
Date: 6.MAR.2016 04:49:22

30MHz~1GHz

Date: 6.MAR.2016 04:46:57

1GHz~25GHz



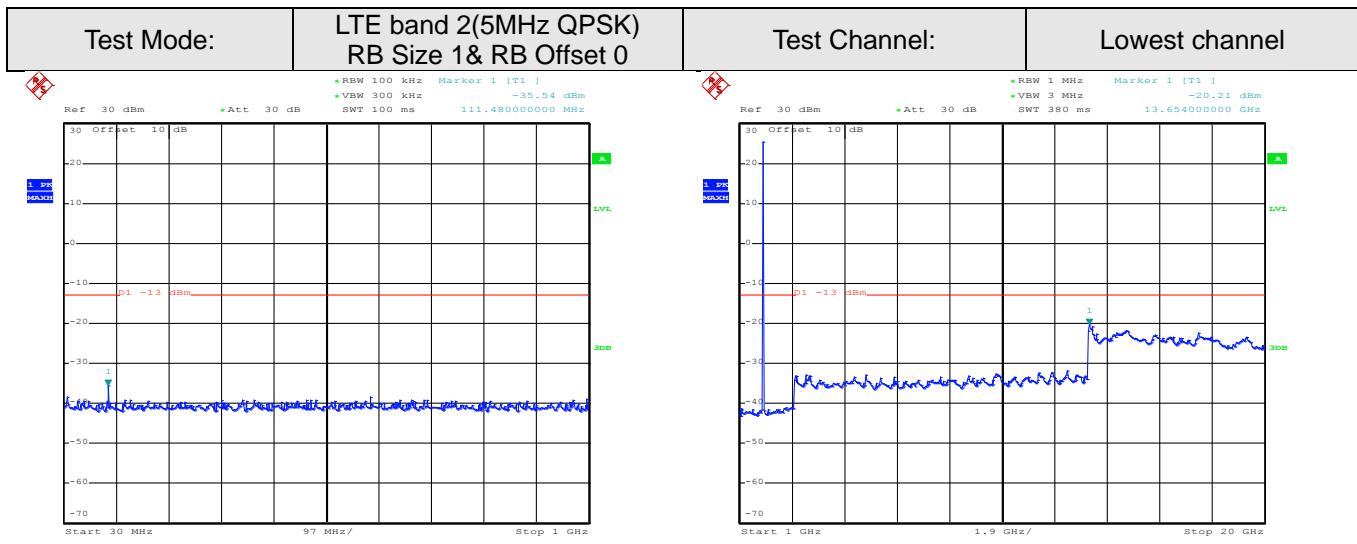


Date: 6.MAR.2016 04:48:32

30MHz~1GHz

Date: 6.MAR.2016 04:48:07

1GHz~25GHz

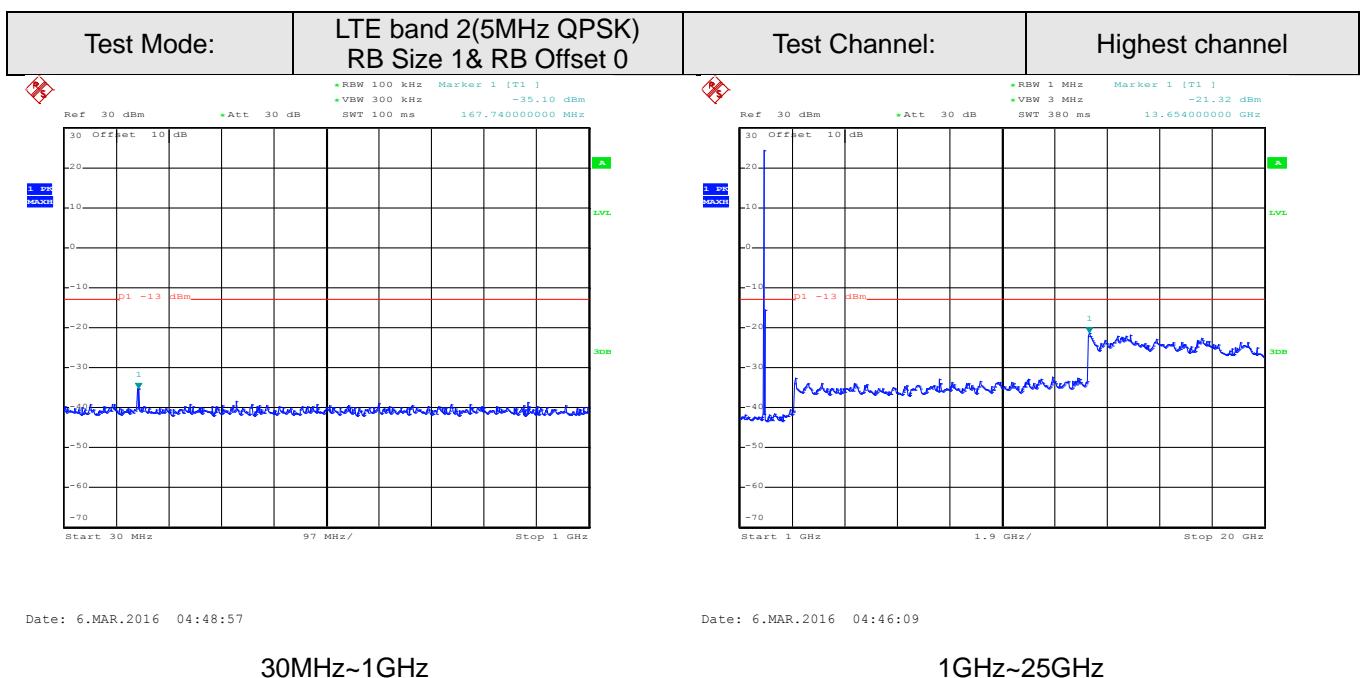
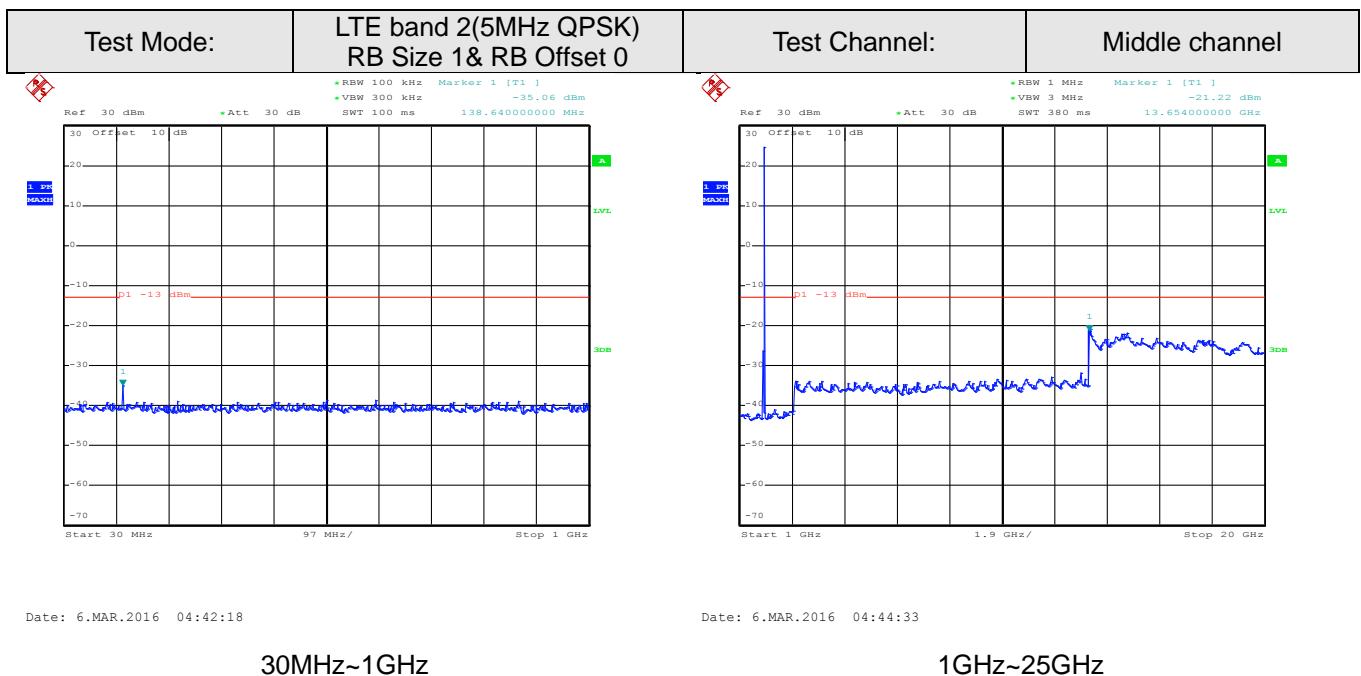


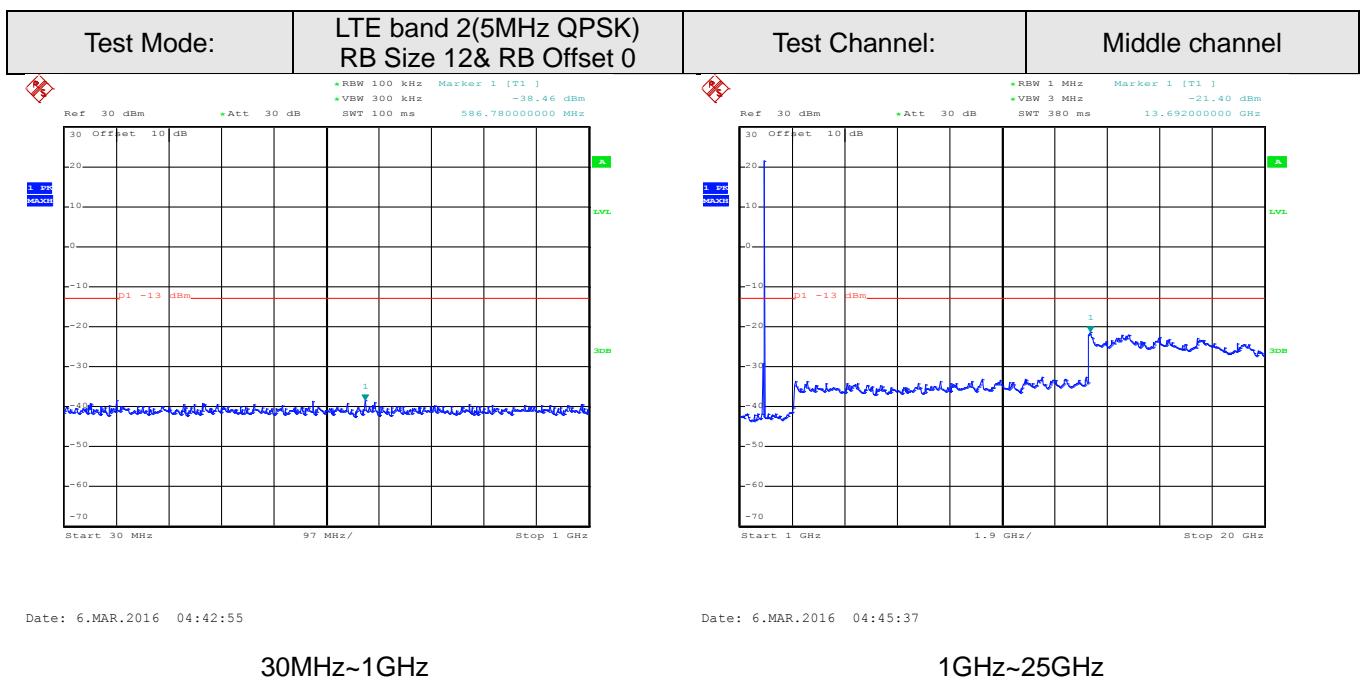
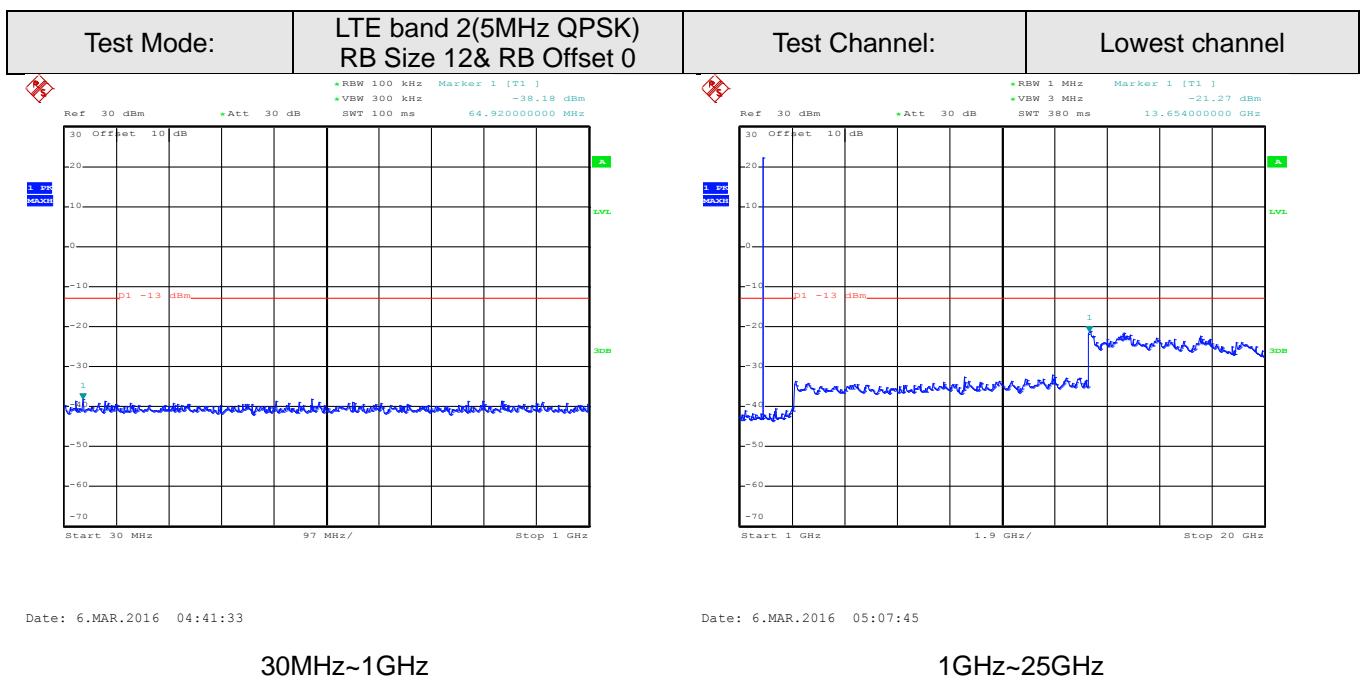
Date: 6.MAR.2016 05:09:51

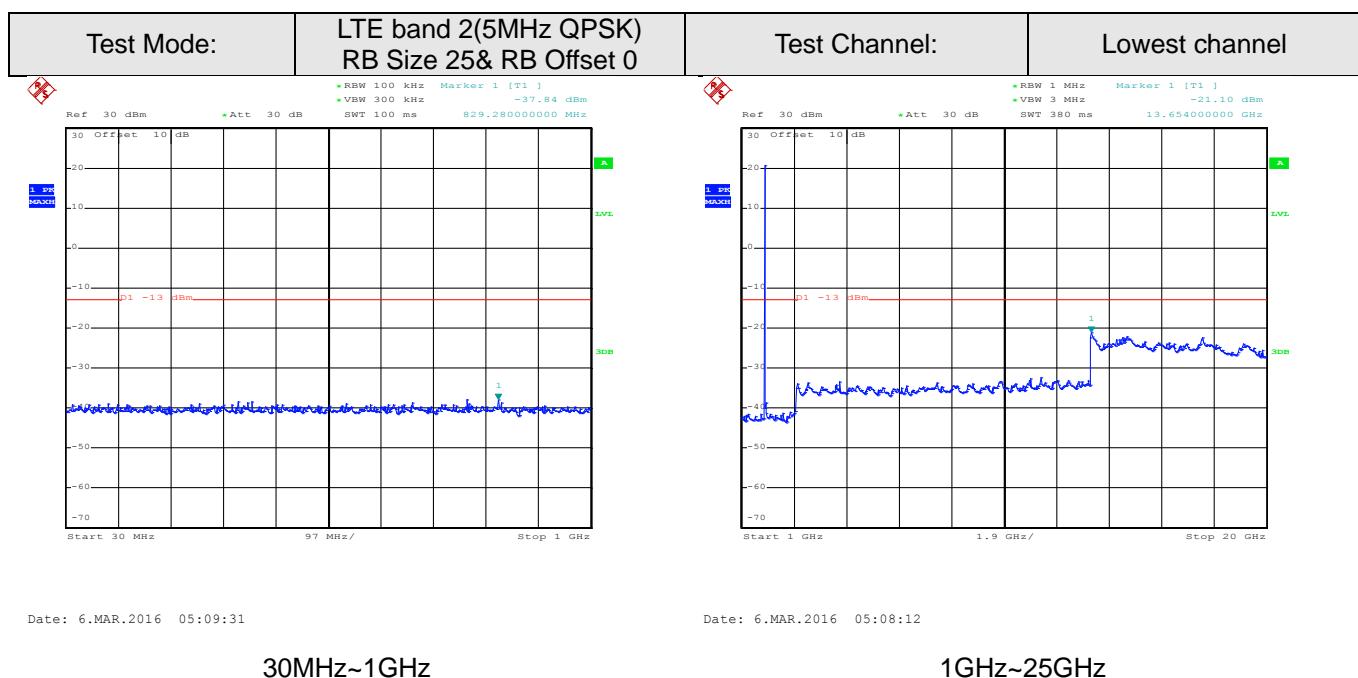
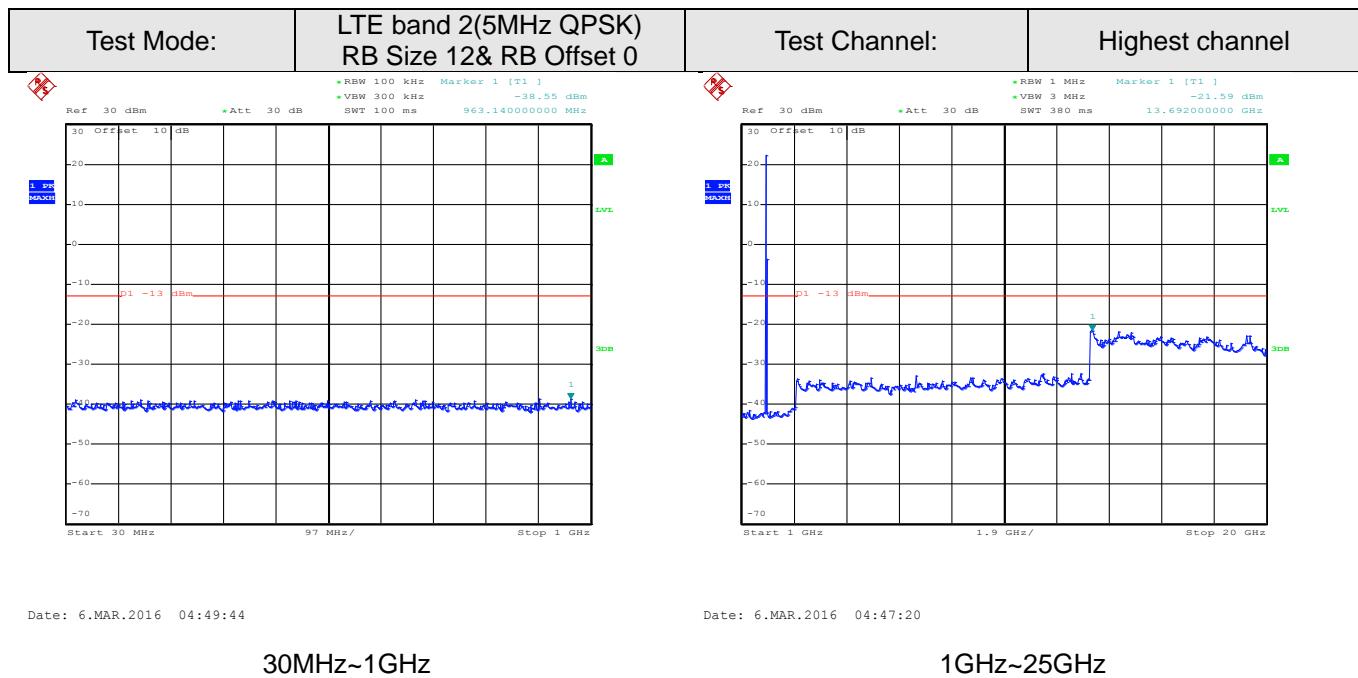
30MHz~1GHz

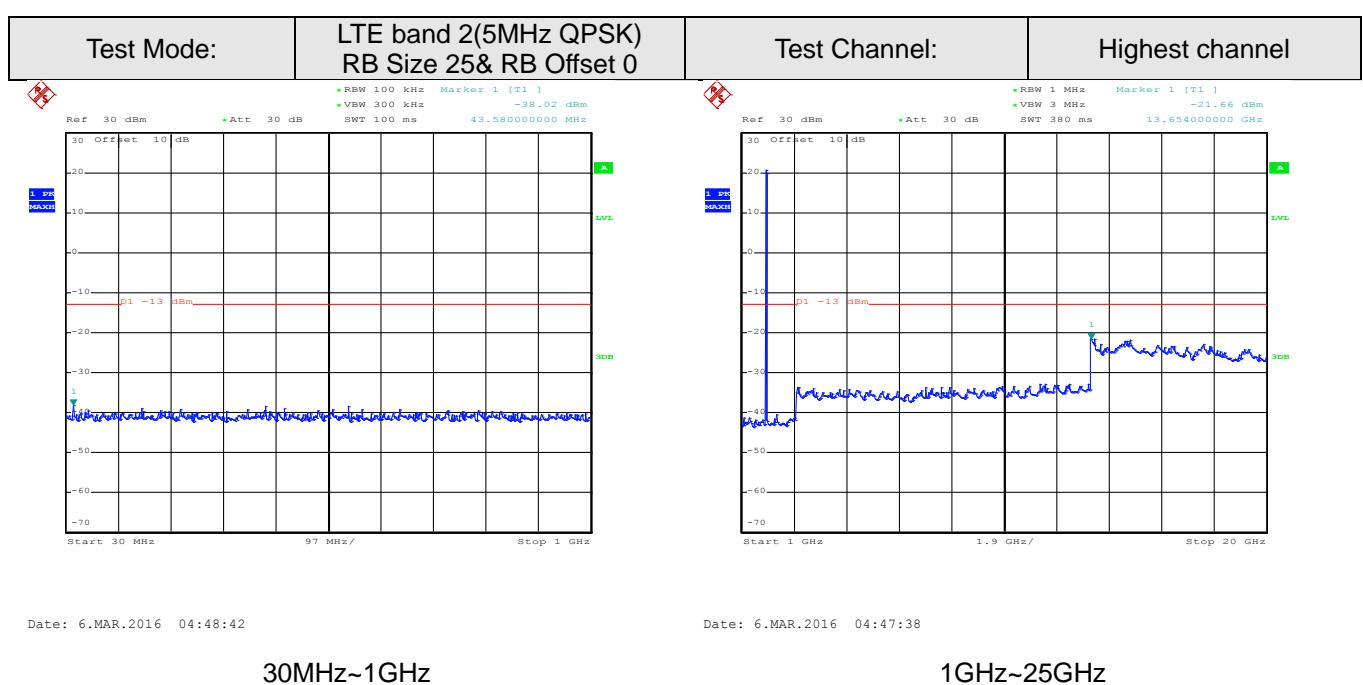
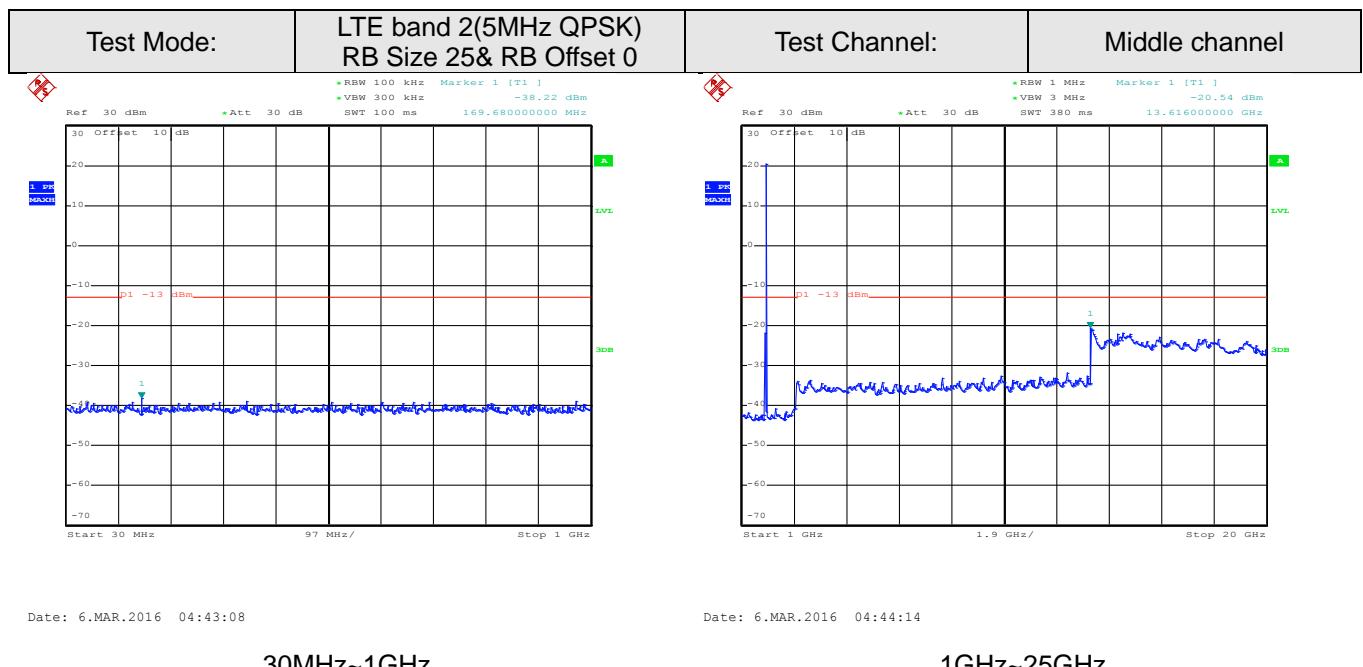
Date: 6.MAR.2016 05:06:13

1GHz~25GHz

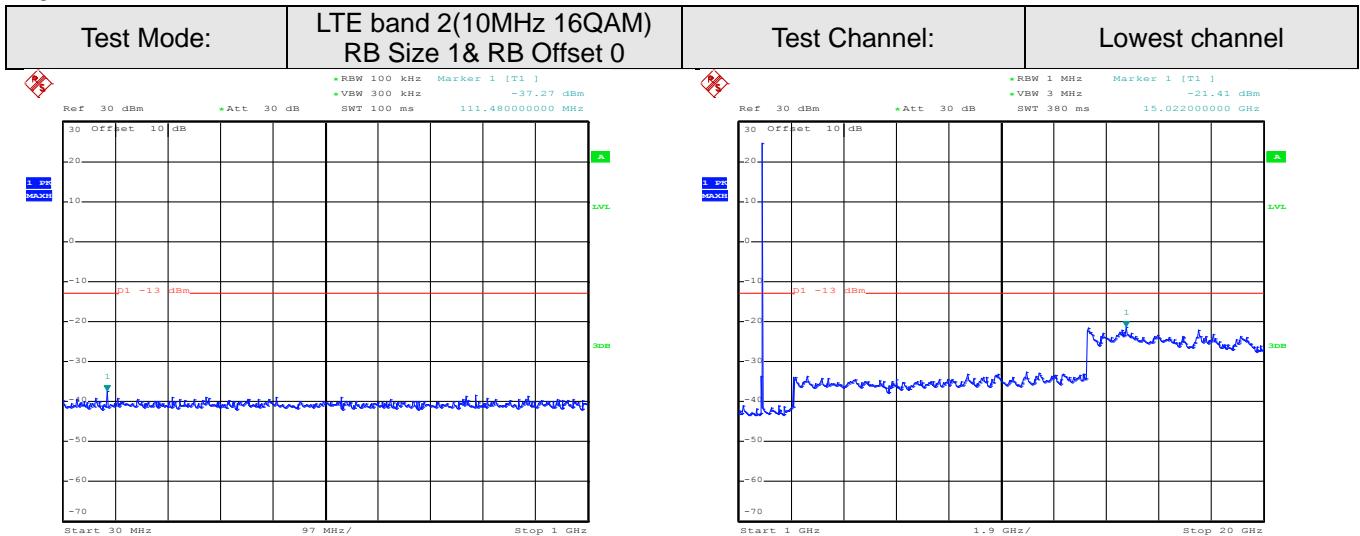








10MHz

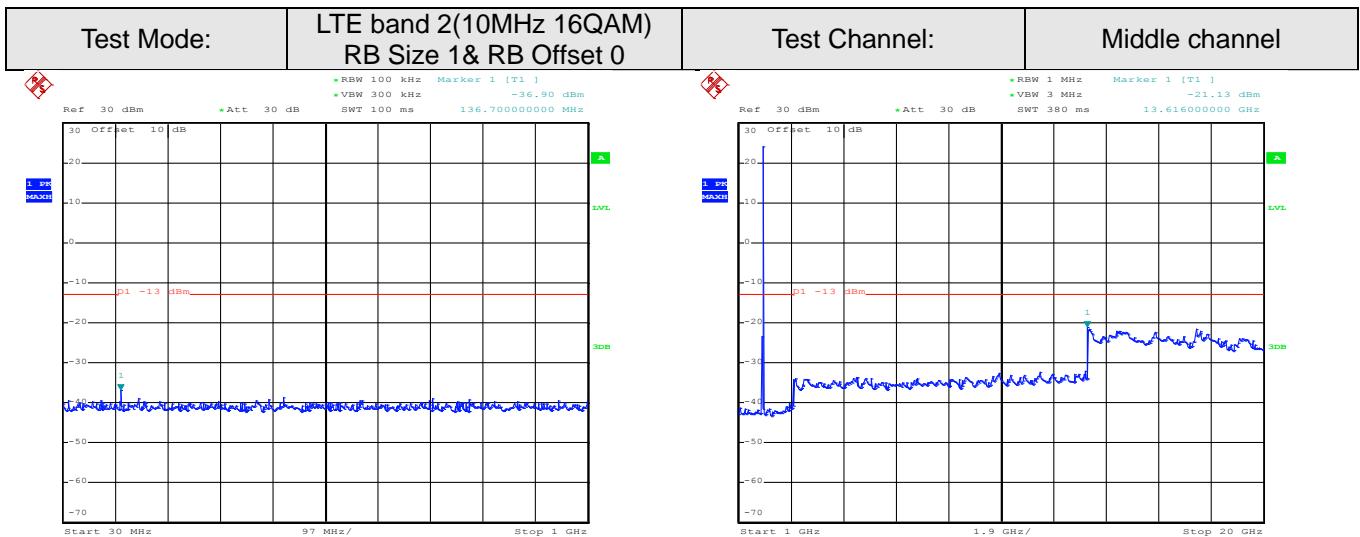


Date: 6.MAR.2016 04:50:44

Date: 6.MAR.2016 04:53:25

30MHz~1GHz

1GHz~25GHz

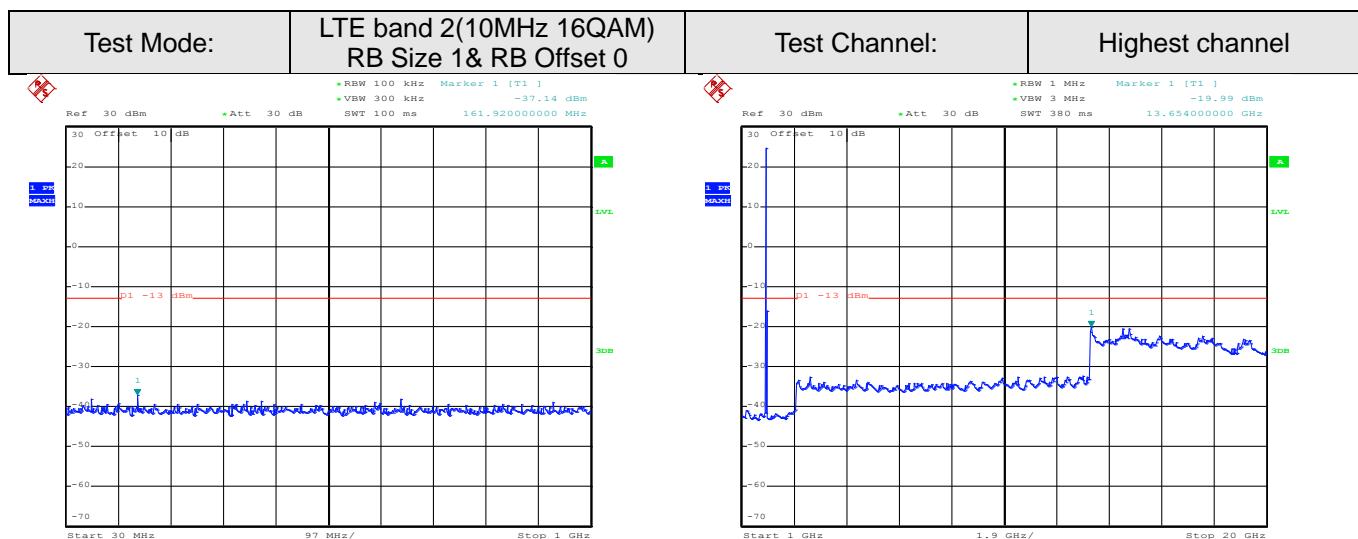


Date: 6.MAR.2016 05:07:07

Date: 6.MAR.2016 04:57:41

30MHz~1GHz

1GHz~25GHz

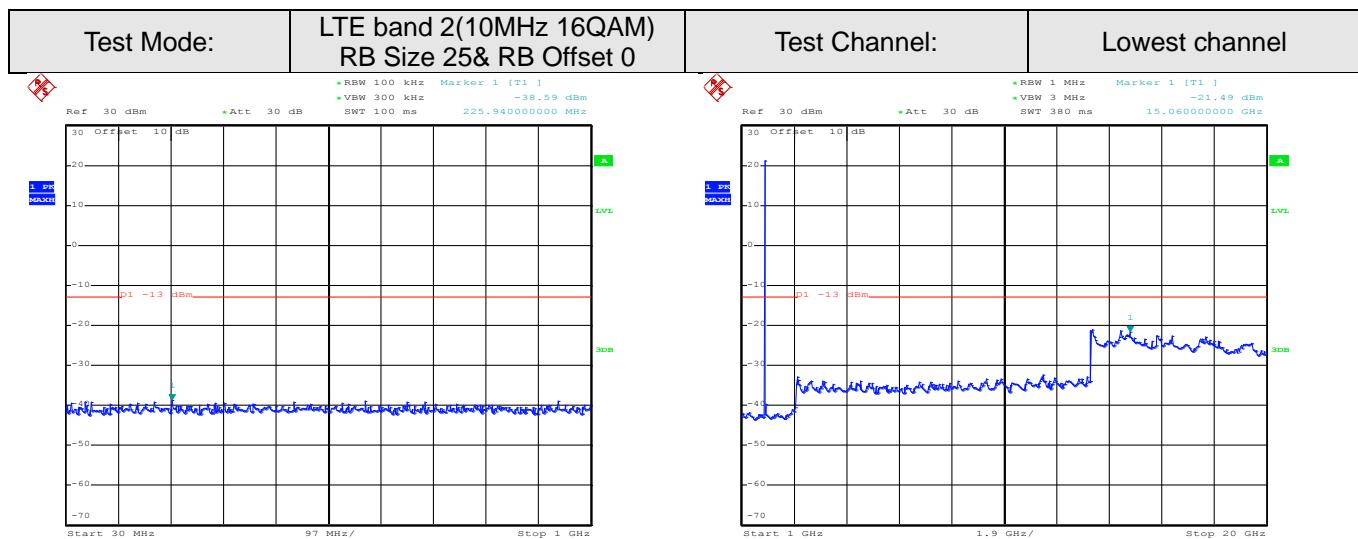


Date: 6.MAR.2016 17:49:51

30MHz~1GHz

Date: 6.MAR.2016 17:52:34

1GHz~25GHz



Date: 6.MAR.2016 04:50:58

30MHz~1GHz

Date: 6.MAR.2016 04:56:13

1GHz~25GHz

