

# FCC REPORT

## (LTE)

**Applicant:** LAVA INTERNATIONAL (H.K) LIMITED

**Address of Applicant:** UNIT L 1/F MAU LAM COMM BLDG 16-18 MAU LAM ST,  
JORDAN KL, HK

### Equipment Under Test (EUT)

**Product Name:** Mobile Phone

**Model No.:** R2

**Trade mark:** LAVA

**FCC ID:** 2AEE8LAVAR2

FCC CFR Title 47 Part 2

FCC CFR Title 47 Part24 Subpart E

FCC CFR Title 47 Part 27 Subpart L

FCC CFR Title 47 Part 27 Subpart M

**Date of sample receipt:** 08 Jun., 2017

**Date of Test:** 08 Jun., to 10 Jul., 2017

**Date of report issued:** 12 Jul., 2017

**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	12 Jul., 2017	Original

**Tested by:**Mike.Ou**Date:**

12 Jul., 2017

**Test Engineer****Reviewed by:**Dyan.Lee**Date:**

12 Jul., 2017

**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) Part 27.50(d)(5)	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 24.235 Part 27.54 Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 24.235 Part 27.54 Part 2.1055(d)(2)	Pass

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

## 5. General Information

### 5.1 Client Information

Applicant:	LAVA INTERNATIONAL (H.K) LIMITED
Address of Applicant:	UNIT L 1/F MAU LAM COMM BLDG 16-18 MAU LAM ST, JORDAN KL, HK
Manufacturer:	LAVA INTERNATIONAL (H.K) LIMITED
Address of Manufacturer:	UNIT L 1/F MAU LAM COMM BLDG 16-18 MAU LAM ST, JORDAN KL, HK

### 5.2 General Description of E.U.T.

Product Name:	Mobile Phone
Model No.:	R2
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: 0.7dBi LTE Band4:0.7dBi LTE Band 7:0.7dBi
AC adapter:	Model: CLV-15 Input: AC100-240V 50/60Hz 0.15A Output: DC 5.0V, 1A
Power supply:	Rechargeable Li-ion Battery DC3.8V-2700mAh

**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). ( <i>LTE band2(1.4MHz), LTE band2(3MHz), LTE band2(5MHz), LTE band2(10MHz), LTE band2(15MHz), LTE band2(20MHz)</i> )
Data mode (LTE band 2(16QAM))	Keep the EUT in data communicating mode on LTE band 2(16QAM). ( <i>LTE band2(1.4MHz), LTE band2(3MHz), LTE band2(5MHz), LTE band2(10MHz), LTE band2(15MHz), LTE band2(20MHz)</i> )
Data mode (LTE band 4(QPSK))	Keep the EUT in data communicating mode on LTE band 4(QPSK). ( <i>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)</i> )
Data mode (LTE band 4(16QAM))	Keep the EUT in data communicating mode on LTE band 4(16QAM). ( <i>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)</i> )
Data mode (LTE band 7(QPSK))	Keep the EUT in data communicating mode on LTE band 7(QPSK). ( <i>LTE band7(5MHz), LTE band 7(10MHz), LTE band 7(15MHz), LTE band 7(20MHz)</i> )
Data mode (LTE band 7(16QAM))	Keep the EUT in data communicating mode on LTE band 7(16QAM). ( <i>LTE band7(5MHz), LTE band7(10MHz), LTE band 7(15MHz), LTE band 7(20MHz)</i> )
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 SectionPart 24 subpart E, Part 27 subpart L, Part 27 Subpart Mof 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 47clause 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 ZhongjianNanfang 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 ZhongjianNanfang 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 ZhongjianNanfang 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 ZhongjianNanfang Testing Co., Ltd.  
Address: No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China  
Website: <http://www.ccis-cb.com>  
Tel: +86-755-23118282  
Fax:+86-755-23116366  
Email: [info@ccis-cb.com](mailto:info@ccis-cb.com)

## 5.8 Test Instruments list

Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m Semi- Anechoic Chamber	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	CCIS0005	02-25-2017	02-24-2018
Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	CCIS0006	02-25-2017	02-24-2018
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	02-25-2017	02-24-2018
Amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	02-25-2017	02-24-2018
Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	02-25-2017	02-24-2018
Horn Antenna	ETS-LINDGREN	3160	GTS217	02-25-2017	02-24-2018
Printer	HP	HP LaserJet P1007	N/A	N/A	N/A
Positioning Controller	UC	UC3000	CCIS0015	N/A	N/A
Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP 30	CCIS0023	02-25-2017	02-24-2018
EMI Test Receiver	Rohde & Schwarz	ESPI	CCIS0022	02-25-2017	02-24-2018
EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	02-25-2017	02-24-2018
Loop antenna	Laplace instrument	RF300	EMC0701	02-25-2017	02-24-2018
Universal radio communication tester	Rhode & Schwarz	CMU200	CCIS0069	02-25-2017	02-24-2018
Signal Analyzer	Rohde & Schwarz	FSIQ3	CCIS0088	02-25-2017	02-24-2018
DC Power Supply	Shenzhen XinNuoEr Technologies Co., Ltd.	WYK-10020K	CCIS0201	10-31-2016	10-30-2017
Temperature Humidity Chamber	Fo Shan HengPu Electronics Co., Ltd.	HPGDS-500	CCIS0240	11-18-2016	11-27-2017

## 6. System test configuration

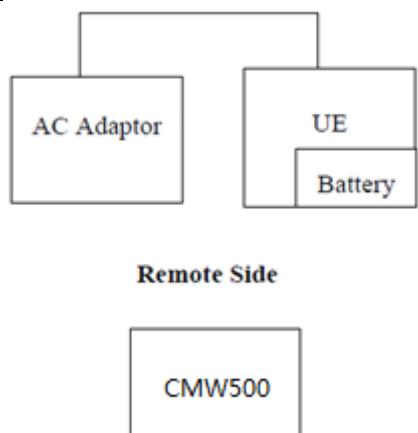
### 6.1 EUT Configuration

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



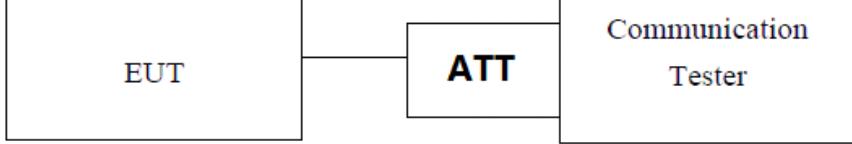
### 6.4 Description of Test Modes

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, LTE Band 7) with power adaptor, earphone and Data cable. The worst-case H mode forLTE Band 2, LTE Band 4, LTE Band 7.

## 6.5 Conducted Output Power

Test Requirement:	Part 24.232 (c), part 27.50(d), 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. On the left, a box labeled "EUT" represents the device under test. A horizontal line extends from the right side of the "EUT" box to the left, then turns vertically upwards to connect to a small rectangular box labeled "ATT". From the right side of the "ATT" box, another horizontal line extends to the right, connecting to a larger rectangular 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	22.81	23.21	22.65
			1	2	22.92	23.28	22.65
			1	5	22.92	23.21	22.72
			3	0	22.93	23.41	22.80
			3	1	23.01	23.26	22.63
			3	2	23	23.36	22.75
			6	0	22.01	22.42	21.78
		16QAM	1	0	21.93	22.71	21.57
			1	2	21.93	22.37	21.74
			1	5	22.25	22.32	22.00
			3	0	21.95	22.39	21.72
			3	1	21.98	22.39	21.65
			3	2	21.87	22.30	21.69
			6	0	20.87	21.32	20.80
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	22.94	23.20	22.67
			1	7	22.87	23.31	22.65
			1	14	22.88	23.20	22.54
			8	0	22.02	22.41	21.84
			8	4	21.99	22.40	21.82
			8	7	22.05	22.36	21.82
			15	0	22.07	22.39	21.87
		16QAM	1	0	21.93	22.29	21.71
			1	7	21.95	22.38	21.72
			1	14	21.88	22.24	21.62
			8	0	20.95	21.34	20.75
			8	4	20.96	21.33	20.76
			8	7	20.92	21.40	20.83
			15	0	20.99	21.35	20.78
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	22.92	23.26	22.87
			1	12	23.04	23.35	22.78
			1	24	22.86	23.25	22.66
			12	0	22.11	22.38	21.85
			12	6	22.09	22.45	21.87
			12	11	22.08	22.36	21.85
			25	0	22.08	22.44	21.84
		16QAM	1	0	22.05	22.32	21.83
			1	12	22.03	22.40	22.11
			1	24	22.01	22.29	21.69
			12	0	21.00	21.36	20.96
			12	6	21.01	21.36	20.79
			12	11	21.00	21.31	20.81
			25	0	21.02	21.36	20.79

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	22.98	23.17	22.87
			1	24	23.03	23.31	22.79
			1	49	23.04	23.14	22.08
			25	0	22.05	22.40	21.93
			25	12	22.06	22.40	21.87
			25	24	22.15	22.36	21.84
			50	0	22.24	22.41	21.94
		16QAM	1	0	22.05	22.29	21.96
			1	24	21.87	22.74	21.85
			1	49	22.13	22.06	21.30
			25	0	21.02	21.35	20.88
			25	12	21.04	21.37	20.93
			25	24	21.05	21.33	20.82
			50	0	21.12	21.39	20.85
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18675	18900	19125
					1857.5MHz	1880.0MHz	1902.5MHz
					18650	18900	19150
2	15	QPSK	1	0	23.06	23.11	23.01
			1	37	23.09	23.32	22.60
			1	74	23.07	22.92	22.02
			36	0	22.12	22.37	22.05
			36	16	22.19	22.45	21.88
			36	35	22.15	22.31	21.90
			75	0	22.08	22.36	21.44
		16QAM	1	0	22.26	22.06	22.59
			1	37	21.78	22.07	21.61
			1	74	21.99	21.81	21.13
			36	0	21.05	21.34	21.12
			36	16	21.12	21.42	20.96
			36	35	21.17	21.28	20.96
			75	0	21.13	21.28	21.11
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					18700	18900	19100
					1860.0MHz	1880.0MHz	1900.0MHz
					18650	18900	19150
2	20	QPSK	1	0	23.10	23.17	23.24
			1	49	23.11	23.31	22.55
			1	99	23.21	22.70	21.97
			50	0	22.28	22.40	22.04
			50	24	22.23	22.39	21.78
			50	49	22.30	22.24	21.77
			100	0	22.15	22.30	21.91
		16QAM	1	0	21.90	22.28	22.40
			1	49	22.03	22.59	21.86
			1	99	22.22	22.05	21.32
			50	0	21.14	21.27	21.11
			50	24	21.14	21.36	20.83
			50	49	21.25	21.20	20.82
			100	0	21.21	21.24	21.01

## 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	22.82	22.84	22.67
			1	2	22.82	22.80	22.64
			1	5	22.71	22.82	22.66
			3	0	22.85	22.94	22.82
			3	1	22.87	22.89	22.75
			3	2	22.81	22.87	22.78
			6	0	21.84	21.93	21.77
		16QAM	1	0	21.94	21.93	21.77
			1	2	21.94	21.95	21.76
			1	5	21.68	21.90	21.73
			3	0	21.99	21.73	21.81
			3	1	22.03	22.02	21.83
			3	2	21.84	21.87	21.85
			6	0	20.90	20.91	20.72
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19965	20175	20385
					1711.5MHz	1732.5MHz	1753.5MHz
4	3	QPSK	1	0	22.83	22.74	22.60
			1	7	22.77	22.82	22.68
			1	14	22.69	22.78	22.64
			8	0	21.87	21.92	21.81
			8	4	21.87	21.91	21.75
			8	7	21.80	21.89	21.75
			15	0	21.91	21.94	21.80
		16QAM	1	0	21.85	22.14	21.67
			1	7	21.89	21.95	21.73
			1	14	21.81	21.64	21.46
			8	0	20.90	20.94	20.94
			8	4	21.04	20.86	20.90
			8	7	20.79	21.06	20.92
			15	0	20.75	20.85	20.68
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					19975	20175	20375
					1712.5MHz	1732.5MHz	1752.5MHz
4	5	QPSK	1	0	22.82	22.87	22.70
			1	12	22.77	22.82	22.75
			1	24	22.56	22.69	22.60
			12	0	21.92	21.94	21.86
			12	6	21.86	21.90	21.77
			12	11	21.82	21.83	21.81
			25	0	21.83	21.89	21.77
		16QAM	1	0	21.98	21.87	22.18
			1	12	21.89	21.72	21.54
			1	24	21.76	21.94	22.06
			12	0	20.89	20.93	20.80
			12	6	20.88	20.89	20.80
			12	11	20.80	20.80	20.81
			25	0	20.80	20.89	20.79

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	22.89	22.81	22.72
			1	24	22.63	22.80	22.69
			1	49	22.60	22.55	22.67
			25	0	21.87	21.85	21.77
			25	12	21.82	21.91	21.78
			25	24	21.75	21.75	21.78
			50	0	21.82	21.91	21.87
		16QAM	1	0	22.35	21.61	22.20
			1	24	21.81	21.95	21.63
			1	49	21.72	21.69	22.07
			25	0	20.80	20.90	20.75
			25	12	20.86	20.86	20.72
			25	24	20.68	20.77	20.79
			50	0	20.85	20.83	20.81
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20025	20175	20325
					1717.5MHz	1732.5MHz	1747.5MHz
					1717.5MHz	1732.5MHz	1747.5MHz
4	15	QPSK	1	0	22.70	22.85	22.71
			1	37	22.71	22.80	22.65
			1	74	22.72	22.57	22.68
			36	0	21.86	21.94	21.82
			36	16	21.89	21.88	21.86
			36	35	21.83	21.75	21.77
			75	0	21.85	21.85	21.78
		16QAM	1	0	22.09	21.97	21.89
			1	37	21.61	21.61	21.88
			1	74	21.58	22.20	22.24
			36	0	20.77	20.90	20.77
			36	16	20.80	20.95	20.83
			36	35	20.78	20.79	20.76
			75	0	20.78	20.80	20.74
LTE Band	Bandwidth (MHz)	Modulation	RB Size	RB Offset	Average Power (dBm)		
					20050	20175	20300
					1720.0MHz	1732.5MHz	1745.0MHz
					1720.0MHz	1732.5MHz	1745.0MHz
4	20	QPSK	1	0	22.91	22.89	22.73
			1	49	22.71	22.88	22.73
			1	99	22.66	22.50	22.68
			50	0	21.90	21.89	21.79
			50	24	21.85	21.87	21.80
			50	49	21.90	21.72	21.83
			100	0	21.84	21.84	21.82
		16QAM	1	0	21.88	22.55	22.08
			1	49	21.64	22.08	21.98
			1	99	22.35	22.19	21.91
			50	0	20.92	20.96	20.74
			50	24	20.86	20.88	20.72
			50	49	20.79	20.71	20.78
			100	0	20.80	20.79	20.78

## 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	22.80	22.69	22.65
			1	12	22.84	22.72	22.10
			1	24	22.98	22.67	22.14
			12	0	22.03	21.82	21.55
			12	6	22.04	21.79	21.22
			12	11	22.03	21.80	21.19
			25	0	21.98	21.87	21.32
		16QAM	1	0	21.83	22.12	22.02
			1	12	21.82	22.09	20.94
			1	24	21.79	22.01	21.34
			12	0	20.97	20.78	20.64
			12	6	20.98	20.79	20.41
			12	11	20.91	20.74	20.40
			25	0	20.96	20.76	20.48
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	22.46	22.79	22.54
			1	24	22.88	22.61	22.23
			1	49	22.91	22.34	21.55
			25	0	22.08	21.85	21.54
			25	12	22.02	21.82	21.37
			25	24	22.00	21.77	21.08
			50	0	22.24	21.90	21.35
		16QAM	1	0	21.57	21.58	21.33
			1	24	21.81	21.69	21.15
			1	49	21.75	21.52	20.66
			25	0	20.92	20.82	20.73
			25	12	20.99	20.75	20.56
			25	24	21.09	20.75	20.37
			50	0	20.95	20.92	20.57

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	22.71	22.80	22.79
			1	37	22.23	22.67	22.44
			1	74	21.62	22.63	21.82
			36	0	21.68	21.92	21.86
			36	16	21.35	21.86	21.59
			36	35	21.96	21.77	21.26
			75	0	21.32	21.86	21.55
		16QAM	1	0	21.41	22.32	22.22
			1	37	21.83	21.54	21.64
			1	74	20.75	21.91	20.69
			36	0	20.77	20.85	20.78
			36	16	20.55	20.90	20.83
			36	35	20.31	20.82	20.43
			75	0	20.50	20.82	20.73
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	22.65	22.78	22.77
			1	49	22.90	22.69	22.62
			1	99	22.96	22.68	21.81
			50	0	22.20	21.99	21.97
			50	24	22.00	21.80	21.79
			50	49	22.14	21.75	21.42
			100	0	22.07	21.91	21.68
		16QAM	1	0	21.59	22.32	21.85
			1	49	22.03	21.94	22.16
			1	99	21.95	21.91	21.12
			50	0	21.02	20.81	20.82
			50	24	20.98	20.82	20.82
			50	49	20.96	20.87	20.54
			100	0	21.00	20.88	20.78

## 6.6 Peak-to-Average Ratio

Test Requirement:	Part 24.232 (d), Part 27.50(d)(5)
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> <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> <li>1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>2 Set the CCDF option in spectrum analyzer, <math>RBW \geq OBW</math>,</li> <li>3 Set the EUT working in highest power level, measured and recorded the 0.1% as PAPR level.</li> <li>4 Repeat step 1~3 at other frequency and modulations.</li> </ol>
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

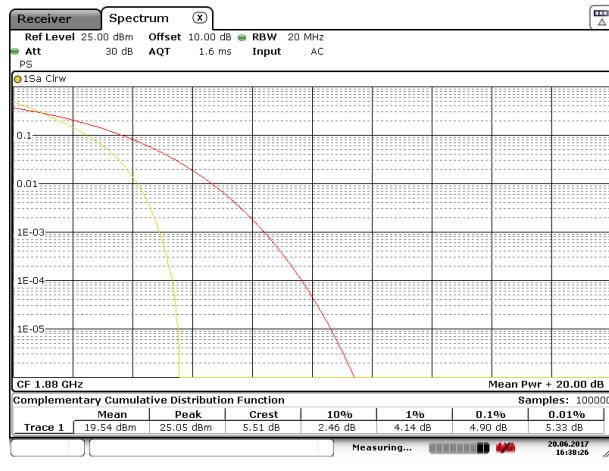
**Measurement Data:**

BW(MHz)	Modulation	RB Size	RB Offset	PAPR
LTE Band 2 (Middle Channel)				
20MHz	QPSK	100	0	4.90
	16QAM	100	0	5.77
LTE Band 4 (Middle Channel)				
20MHz	QPSK	100	0	4.99
	16QAM	100	0	5.97
LTE Band 7 (Middle Channel)				
20MHz	QPSK	100	0	5.04
	16QAM	100	0	5.94

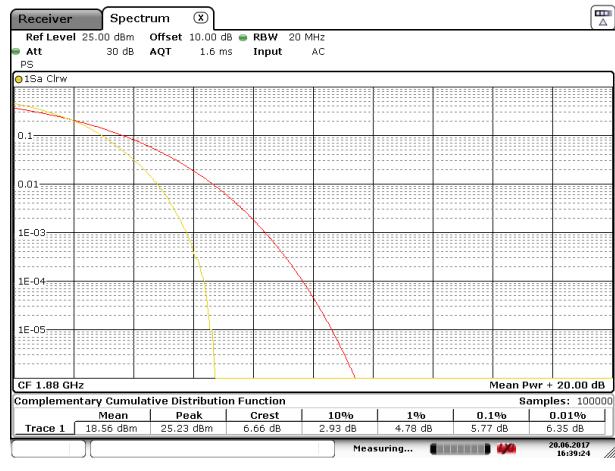
Test plots as below:

### LTE Band 2 Middle channel

Modulation: QPSK

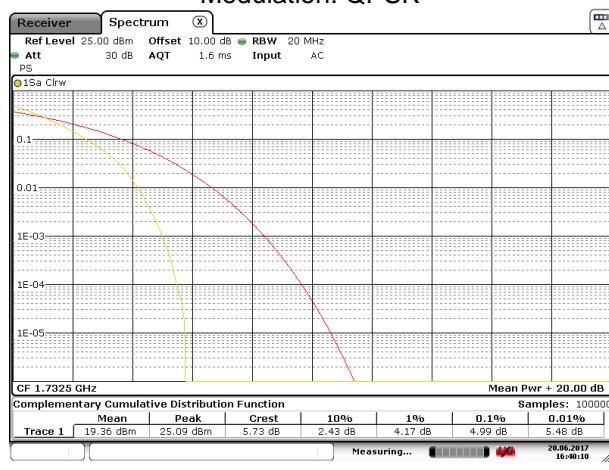


Modulation:16QAM

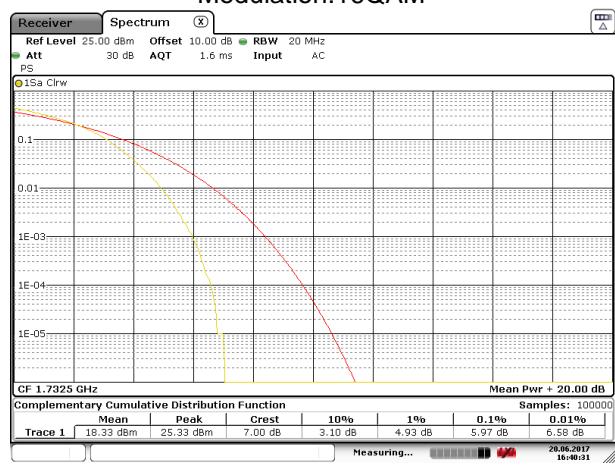


### LTE Band 4 Middle channel

Modulation: QPSK

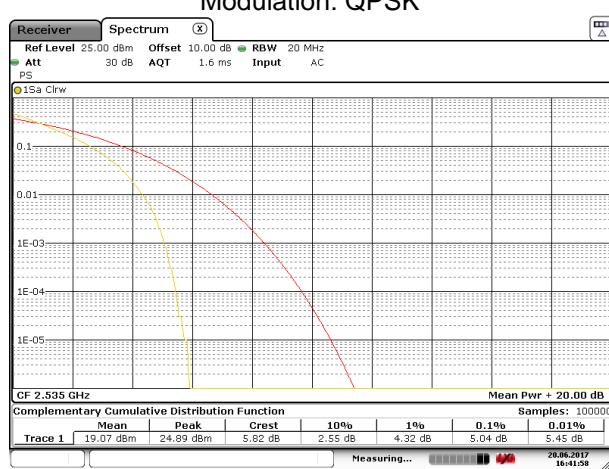


Modulation:16QAM

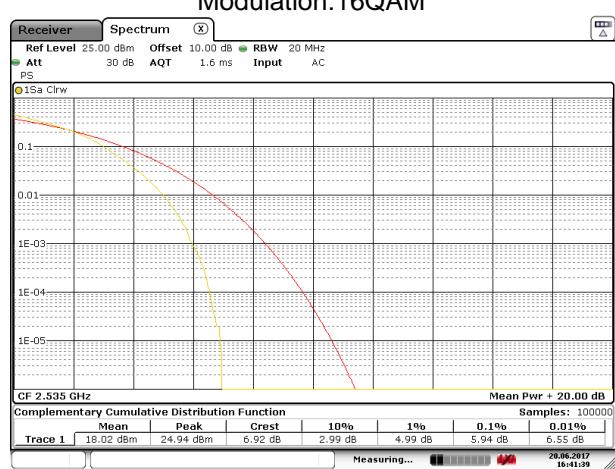


### LTE Band 7 Middle channel

Modulation: QPSK



Modulation:16QAM



## 6.7 Occupy Bandwidth

Test Requirement:	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><b>Test Procedure:</b></p> <ol style="list-style-type: none"> <li>1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer</li> <li>2. RBW was set to about 1% ~ 5% of emission BW, VBW= 3 times RBW.</li> <li>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.</li> </ol>	
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	1278
			QPSK	1104	1272
	18900	1880.00	16QAM	1092	1278
			QPSK	1098	1266
	19193	1909.30	16QAM	1098	1272
			QPSK	1104	1290
3MHz	18615	1851.50	16QAM	2736	2988
			QPSK	2748	3048
	18900	1880.00	16QAM	2736	3012
			QPSK	2736	3048
	19185	1908.50	16QAM	2736	3024
			QPSK	2748	3060
5MHz	18625	1852.50	16QAM	4520	5020
			QPSK	4540	5060
	18900	1880.00	16QAM	4520	5000
			QPSK	4540	4980
	19175	1907.50	16QAM	4500	5000
			QPSK	4540	5020
10MHz	18650	1855.00	16QAM	9080	1016
			QPSK	9120	10320
	18900	1880.00	16QAM	9120	10040
			QPSK	9080	10320
	19150	1905.00	16QAM	9120	10200
			QPSK	9080	10200
15MHz	18675	1857.50	16QAM	13560	14820
			QPSK	13560	15060
	18900	1880.00	16QAM	13500	14760
			QPSK	13560	14820
	19125	1902.50	16QAM	13500	14760
			QPSK	13500	15120
20MHz	18700	1860.00	16QAM	17920	19520
			QPSK	18080	19520
	18900	1880.00	16QAM	17920	19360
			QPSK	17920	19360
	19100	1900.00	16QAM	17920	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	1272
	20175	1732.5	16QAM	1092	1272
			QPSK	1104	1266
	20393	1754.3	16QAM	1098	1254
			QPSK	1098	1266
3MHz	19965	1711.5	16QAM	2724	3024
			QPSK	2736	3024
	20175	1732.5	16QAM	2724	3036
			QPSK	2736	3060
	20385	1750.5	16QAM	2724	3012
			QPSK	2736	3060
5MHz	19975	1712.5	16QAM	4520	4960
			QPSK	4540	5040
	20175	1732.5	16QAM	4520	5020
			QPSK	4540	4980
	20375	1752.5	16QAM	4520	4980
			QPSK	4540	5000
10MHz	20000	1715.0	16QAM	9120	10120
			QPSK	9120	10280
	20175	1732.5	16QAM	9080	10080
			QPSK	9080	10280
	20350	1750.0	16QAM	9080	10080
			QPSK	9040	10240
15MHz	20025	1717.5	16QAM	13560	14820
			QPSK	13560	14940
	20175	1732.5	16QAM	13500	14640
			QPSK	13560	14880
	20325	1747.5	16QAM	13560	14820
			QPSK	13560	14700
20MHz	20050	1720.0	16QAM	17920	19440
			QPSK	18000	19520
	20175	1732.5	16QAM	17920	19200
			QPSK	18000	19520
	20300	1745.0	16QAM	17920	19280
			QPSK	18000	19520

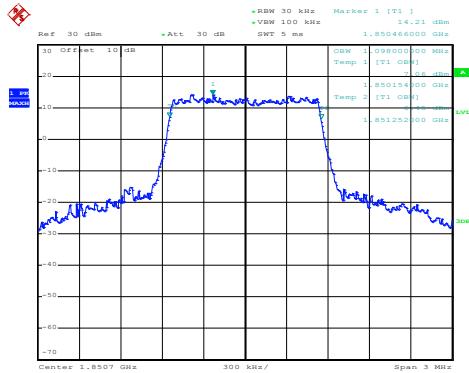
**LTE Band 7 part:**

EUT Mode	Channel	Frequency (MHz)	Modulation	99% OBW (kHz)	-26dB EBW (kHz)
5MHz	20775	2502.5	16QAM	4520	4920
			QPSK	4540	5040
	21100	2535.0	16QAM	4520	5020
			QPSK	4520	5000
	21425	2567.5	16QAM	4520	5020
			QPSK	4520	5040
	20800	2505.0	16QAM	9120	10000
			QPSK	9160	10240
10MHz	21100	2535.0	16QAM	9080	10040
			QPSK	9080	10160
	21400	2565.0	16QAM	9080	10080
			QPSK	9080	10280
15MHz	20825	2507.5	16QAM	13500	14940
			QPSK	13500	14940
	21100	2535.0	16QAM	13560	14820
			QPSK	13560	14940
	21375	2562.5	16QAM	13560	14760
			QPSK	13560	14820
20MHz	20850	2510.0	16QAM	18000	19200
			QPSK	18080	19520
	21100	2535.0	16QAM	17920	19440
			QPSK	18000	19600
	21350	2560.0	16QAM	17920	19280
			QPSK	18000	19520

**Test plot as follows:**  
**LTE Band 2 part**

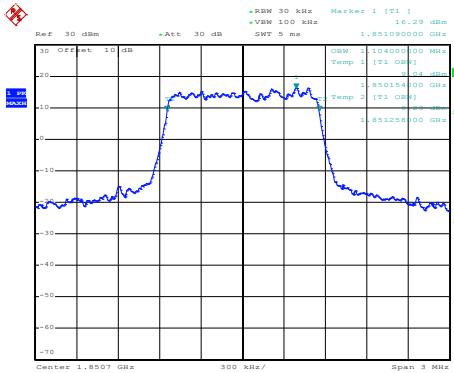
Test Item:99% Occupy bandwidth  
 BW: 1.4MHz

Modulation: 16QAM



Date: 20.JUN.2017 19:16:14

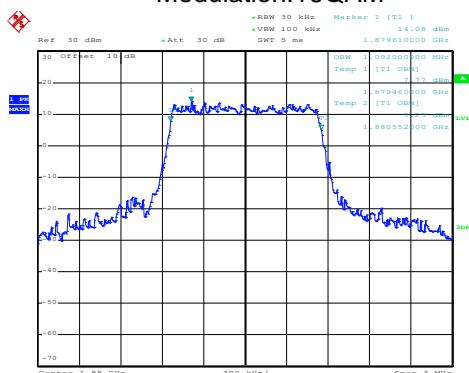
Modulation: QPSK



Date: 20.JUN.2017 19:15:26

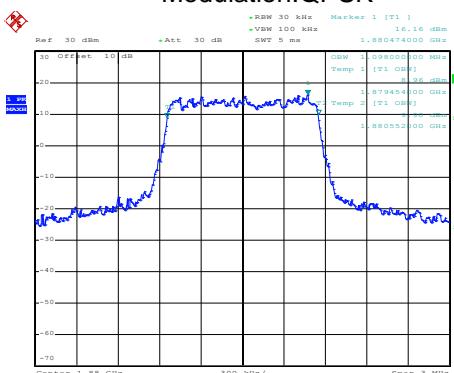
Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 19:16:53

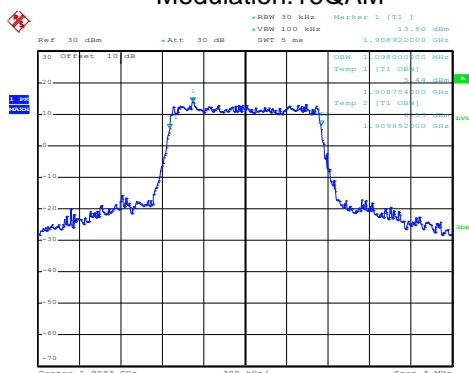
Modulation:QPSK



Date: 20.JUN.2017 19:16:46

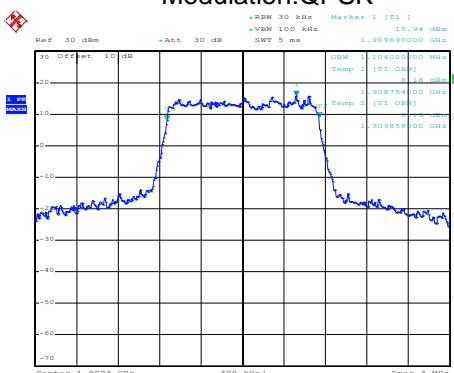
Middle channel

Modulation:16QAM



Date: 20.JUN.2017 19:18:11

Modulation:QPSK

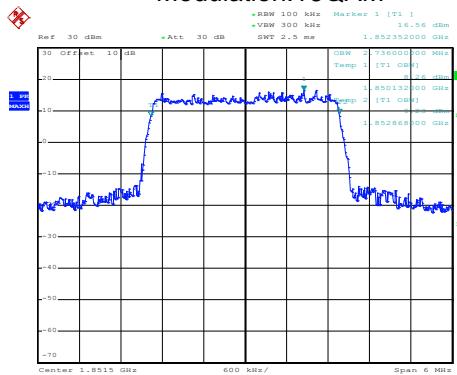


Date: 20.JUN.2017 19:18:04

Highest channel

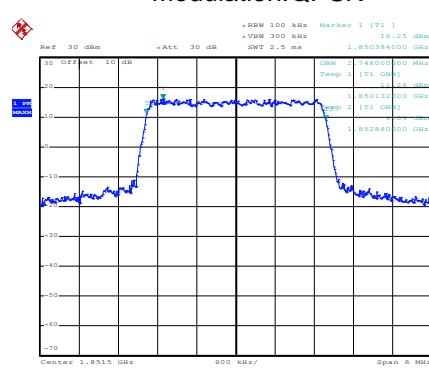
Test Item:99% Occupy bandwidth  
BW: 3MHz

### Modulation:16QAM



Date: 20.JUN.2017 19:19:29

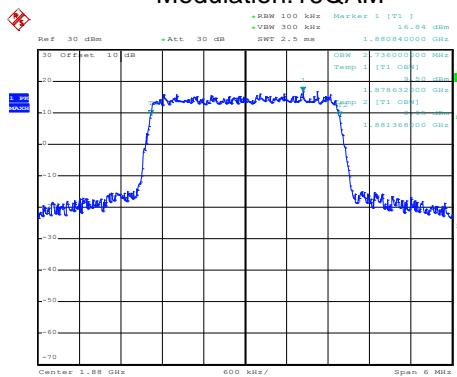
### Modulation:QPSK



Date: 20.JUN.2017 19:19:21

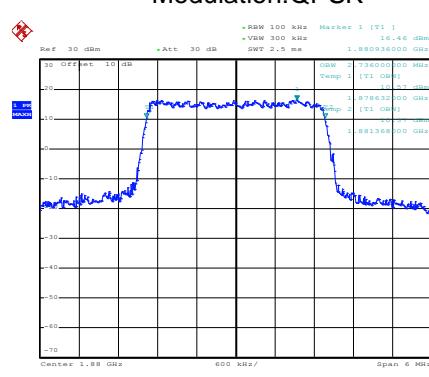
### Lowest channel

### Modulation:16QAM



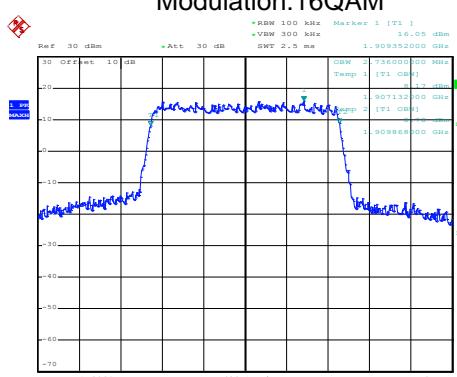
Date: 20.JUN.2017 19:20:54

### Modulation:QPSK



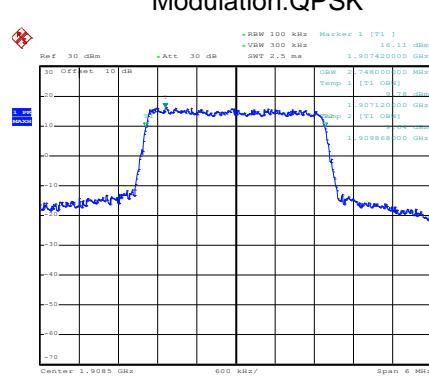
### Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 19:21:29

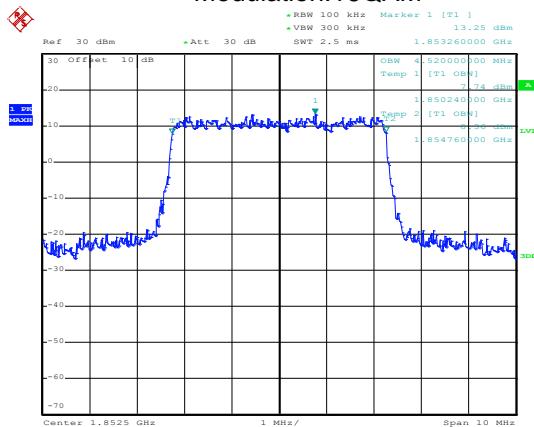
### Modulation:QPSK



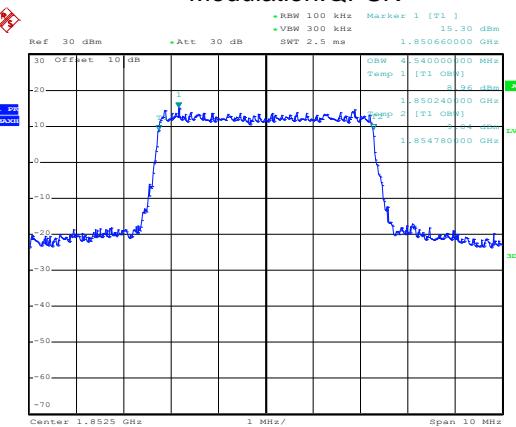
### Highest channel

Test Item:99% Occupy bandwidth  
BW: 5MHz

Modulation:16QAM



## Modulation:QPSK

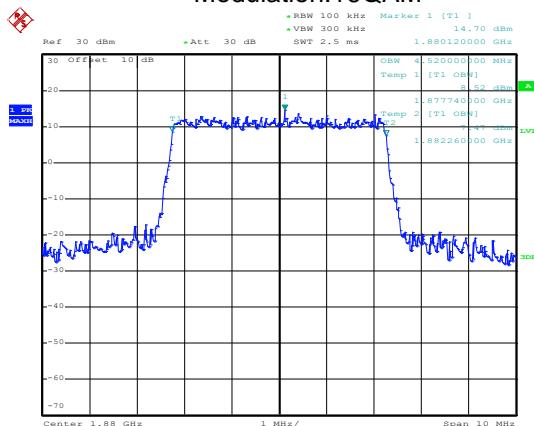


Date: 20.JUN.2017 19:23:40

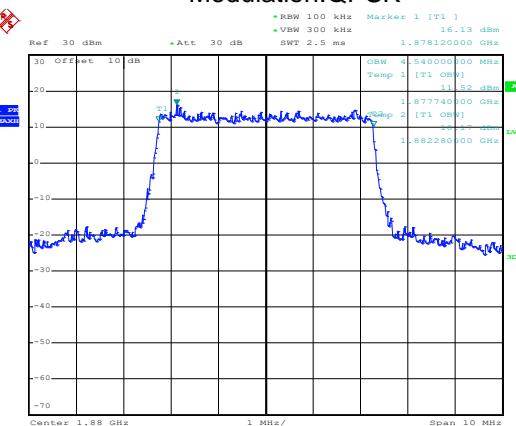
Date: 20.JUN.2017 19:23:34

## Lowest channel

## Modulation:16QAM



## Modulation:QPSK

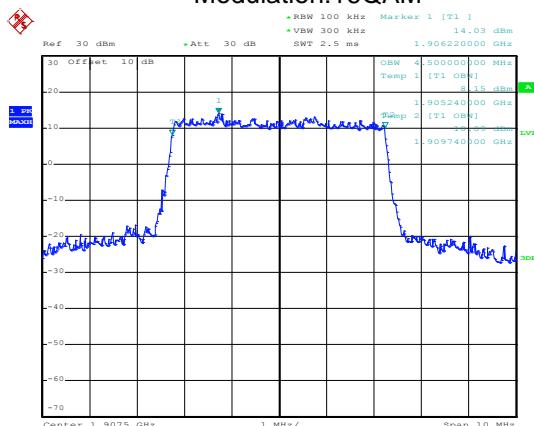


Date: 20.JUN.2017 19:24:09

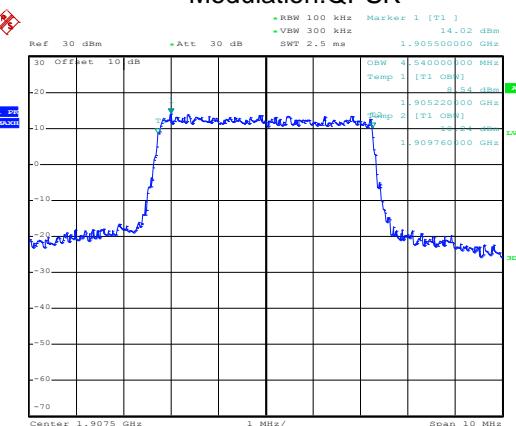
Date: 20.JUN.2017 19:24:03

## Middle channel

## Modulation:16QAM



### Modulation:QPSK



Date: 20.JUN.2017 19:25:38

Date: 20.JUN.2017 19:25:27

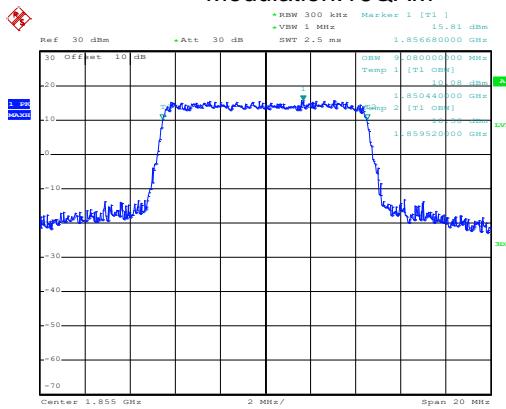
## Highest channel

Shenzhen ZhongjianNanfang Testing Co., Ltd.  
No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China  
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

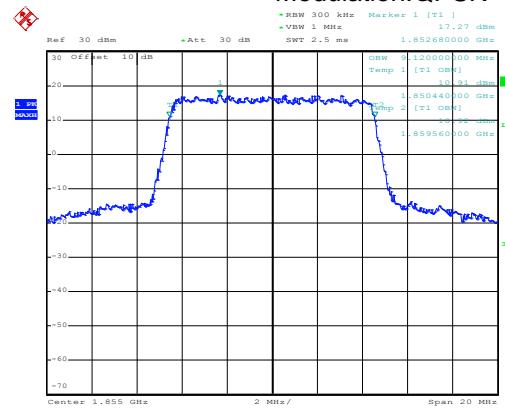
Project No.:CCISE1706044

Test Item:99% Occupy bandwidth  
BW: 10MHz

### Modulation:16QAM



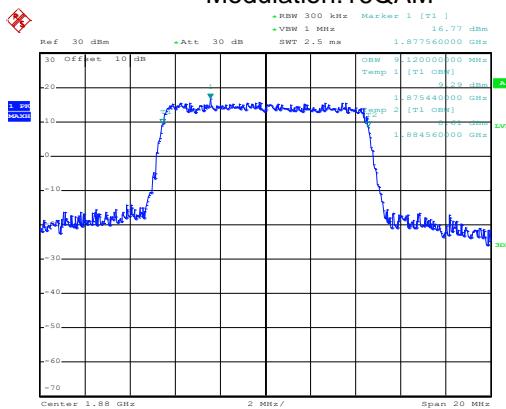
### Modulation:QPSK



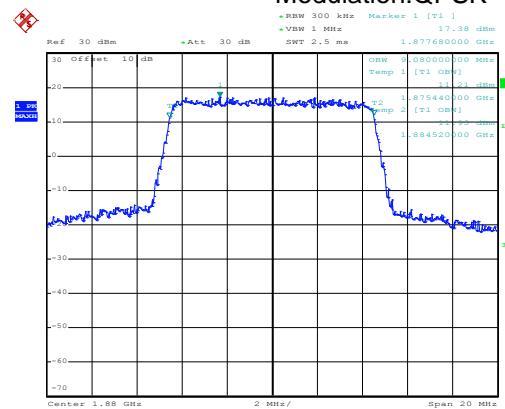
Date: 20.JUN.2017 19:26:57

### Lowest channel

### Modulation:16QAM



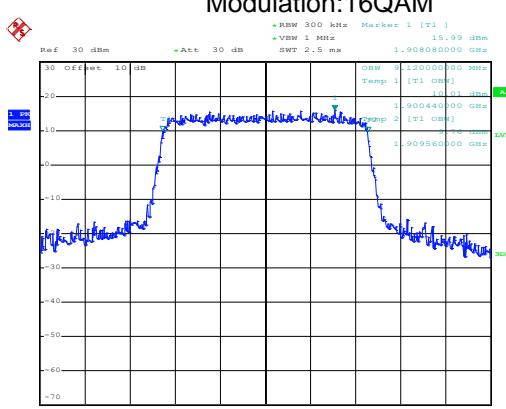
### Modulation:QPSK



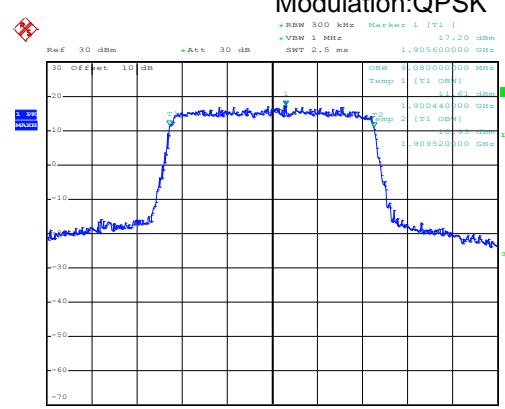
Date: 20.JUN.2017 19:28:23

### Middle channel

### Modulation:16QAM



### Modulation:QPSK

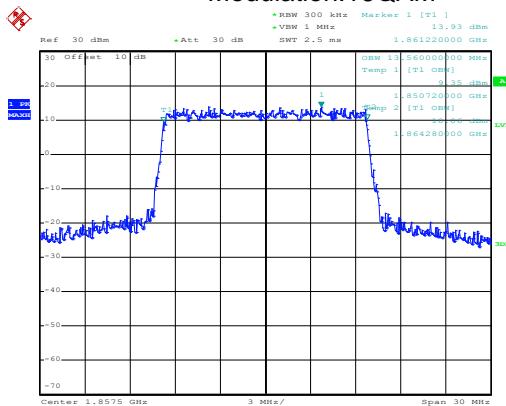


Date: 20.JUN.2017 19:28:49

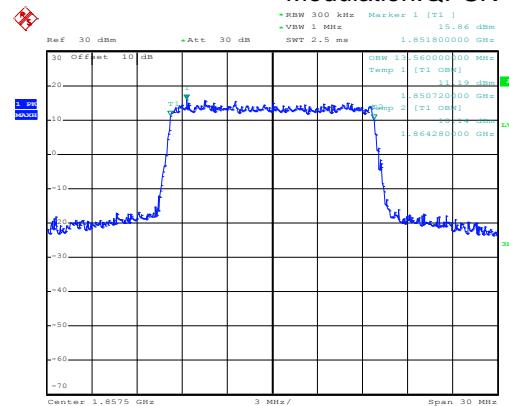
### Highest channel

Test Item:99% Occupy bandwidth  
BW: 15MHz

### Modulation:16QAM



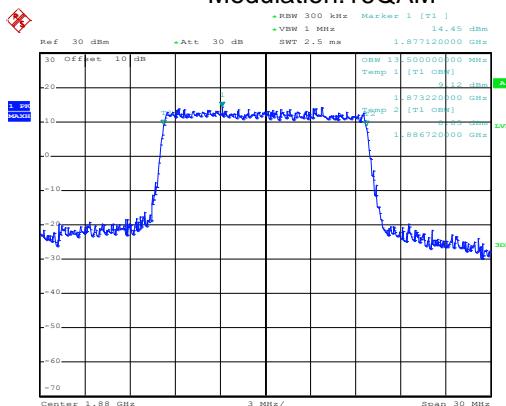
### Modulation:QPSK



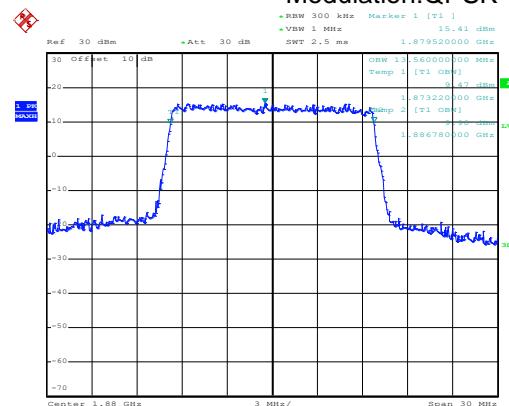
Date: 20.JUN.2017 20:45:43

### Lowest channel

### Modulation:16QAM



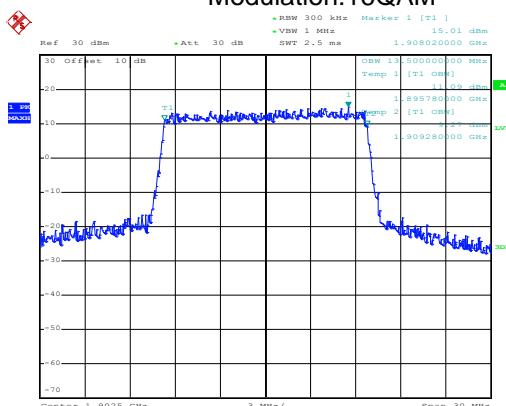
### Modulation:QPSK



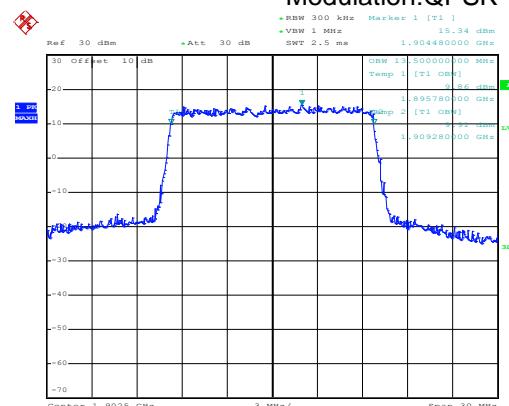
Date: 20.JUN.2017 20:46:07

### Middle channel

### Modulation:16QAM



### Modulation:QPSK

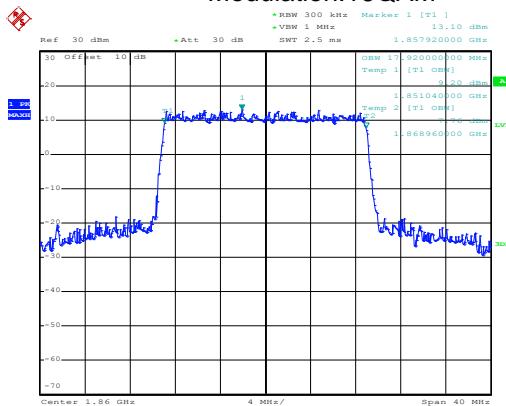


Date: 20.JUN.2017 20:47:07

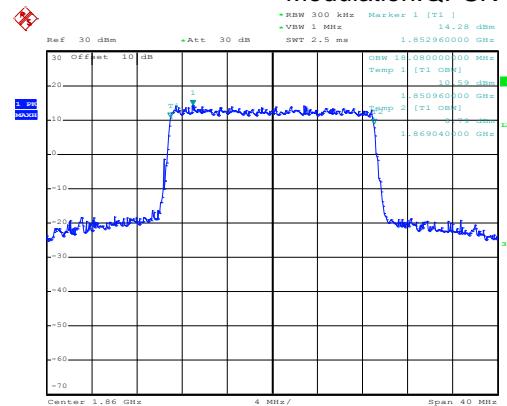
### Highest channel

Test Item:99% Occupy bandwidth  
BW: 20MHz

### Modulation:16QAM

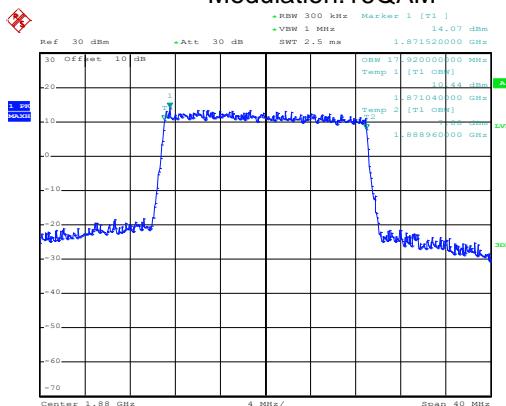


### Modulation:QPSK

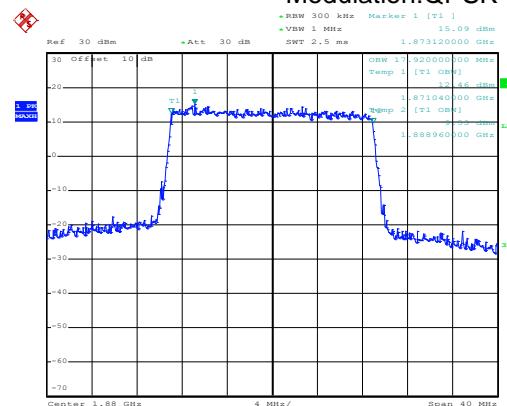


### Lowest channel

### Modulation:16QAM

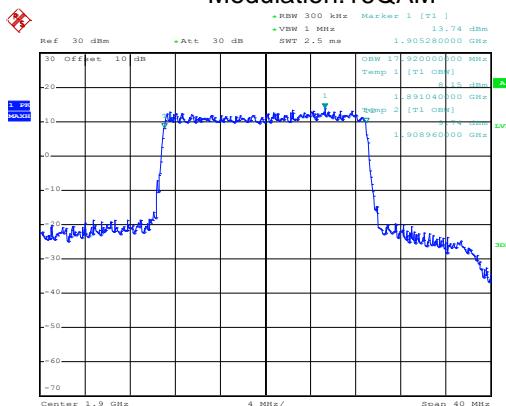


### Modulation:QPSK

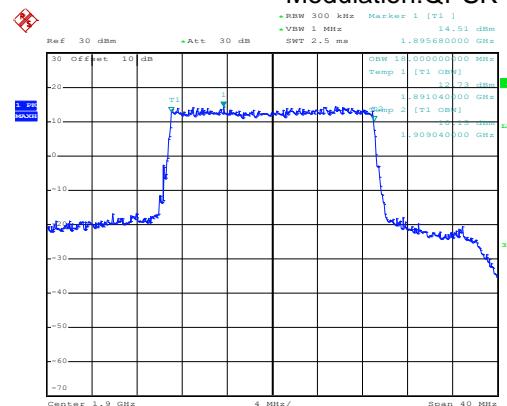


### Middle channel

### Modulation:16QAM



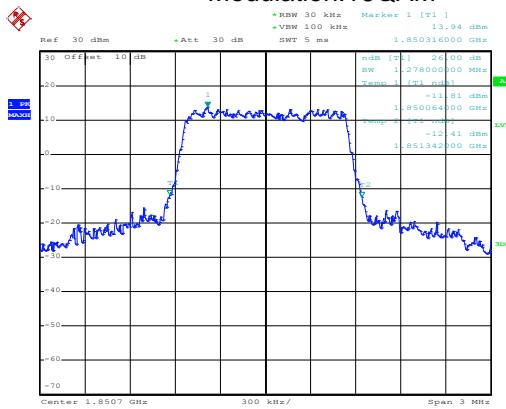
### Modulation:QPSK



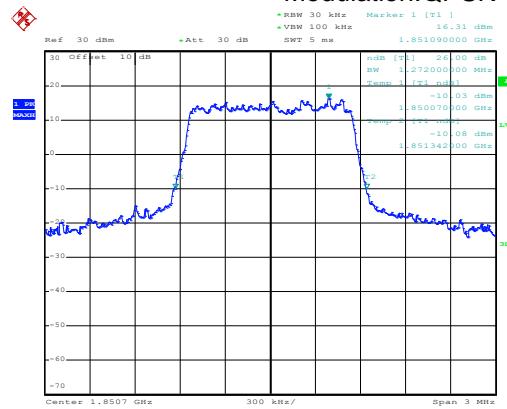
### Highest channel

Test Item:-26dBc bandwidth  
BW: 1.4MHz

### Modulation:16QAM



### Modulation:QPSK

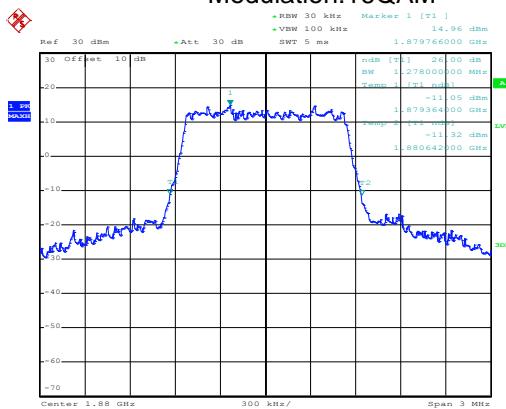


Date: 20.JUN.2017 19:16:01

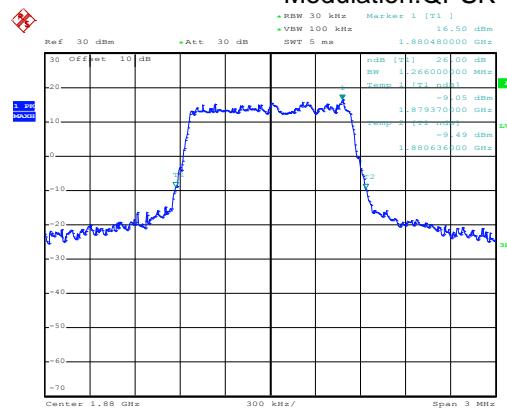
Date: 20.JUN.2017 19:15:44

### Lowest channel

### Modulation:16QAM



### Modulation:QPSK



Date: 20.JUN.2017 19:17:12

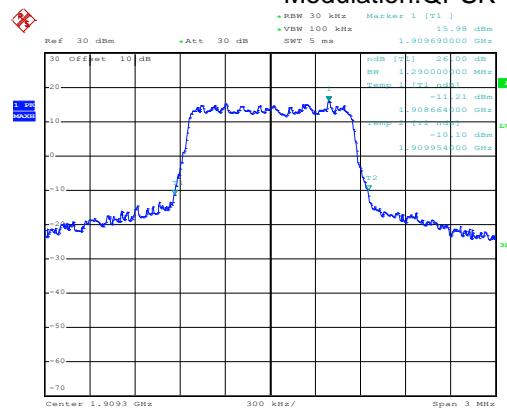
Date: 20.JUN.2017 19:17:04

### Middle channel

### Modulation:16QAM



### Modulation:QPSK



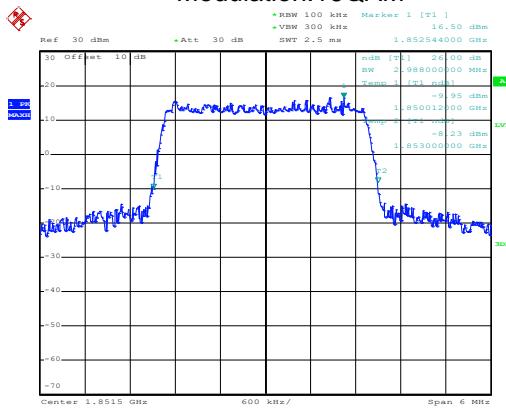
Date: 20.JUN.2017 19:17:50

Date: 20.JUN.2017 19:17:43

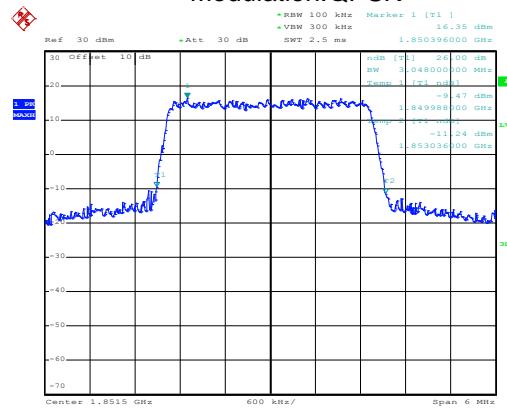
### Highest channel

Test Item:-26dBc bandwidth  
BW: 3MHz

### Modulation:16QAM



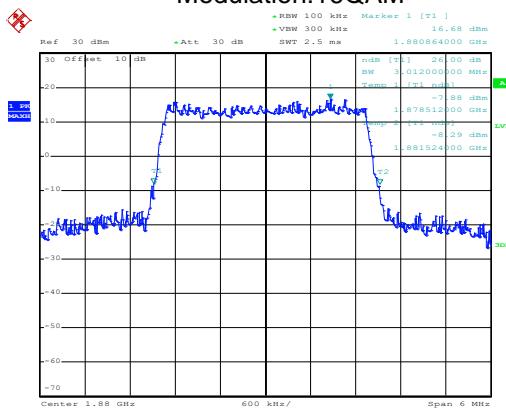
### Modulation:QPSK



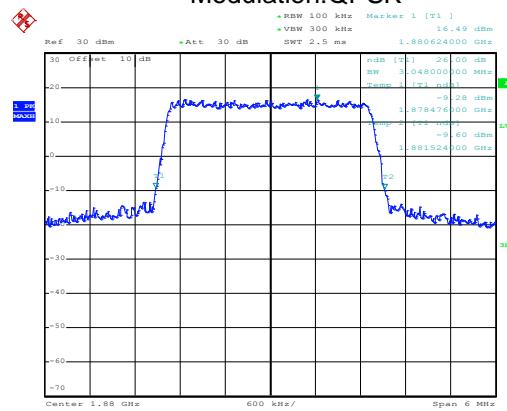
Date: 20.JUN.2017 19:19:44

### Lowest channel

### Modulation:16QAM



### Modulation:QPSK

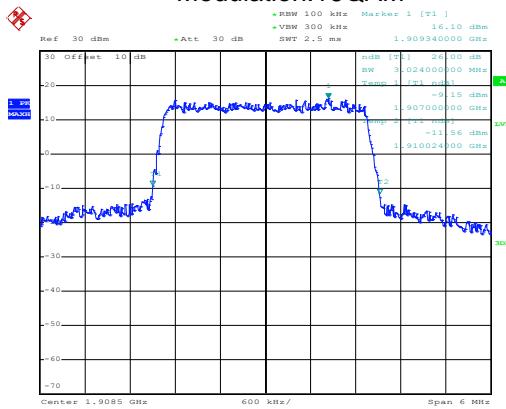


Date: 20.JUN.2017 19:20:35

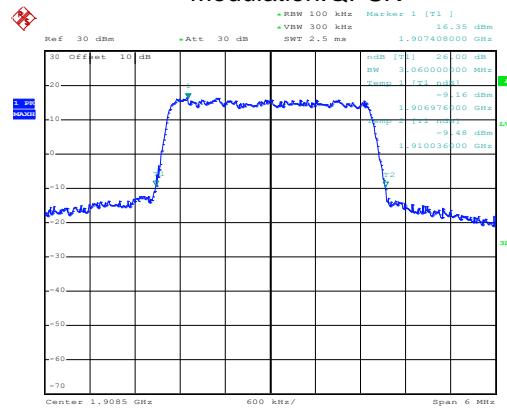
Date: 20.JUN.2017 19:20:29

### Middle channel

### Modulation:16QAM



### Modulation:QPSK



Date: 20.JUN.2017 19:22:09

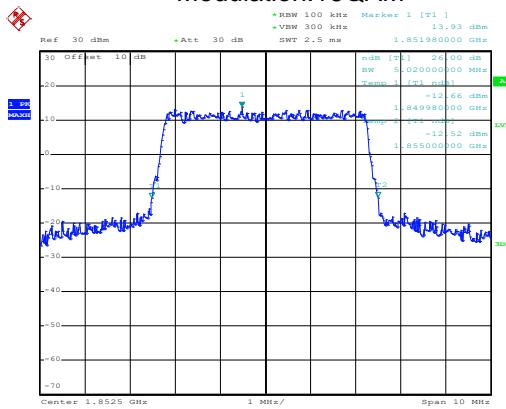
Date: 20.JUN.2017 19:22:00

### Highest channel

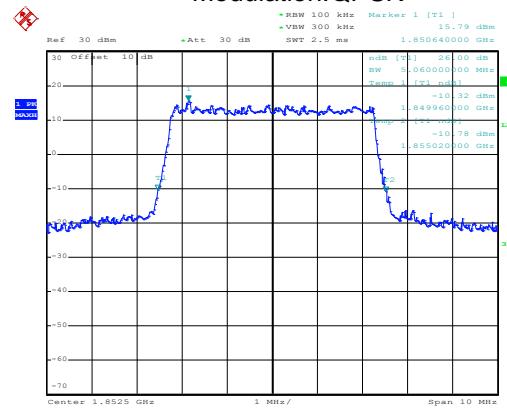
Test Item:-26dBc bandwidth

BW: 5MHz

Modulation:16QAM



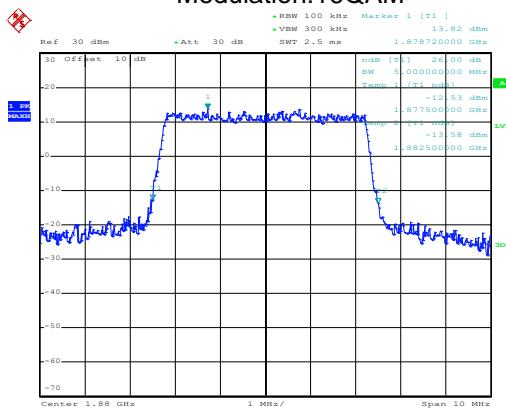
Modulation:QPSK



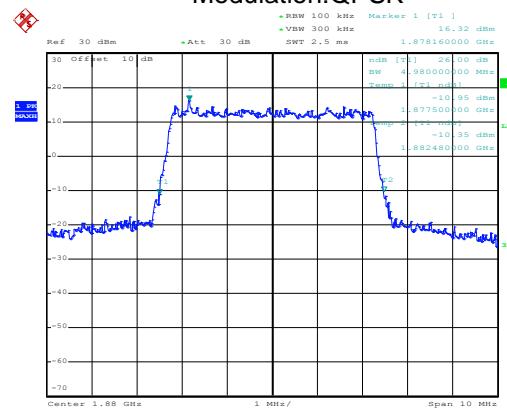
Date: 20.JUN.2017 19:23:22

Lowest channel

Modulation:16QAM



Modulation:QPSK

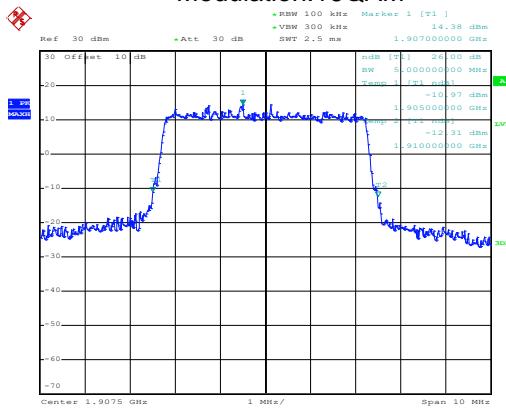


Date: 20.JUN.2017 19:24:33

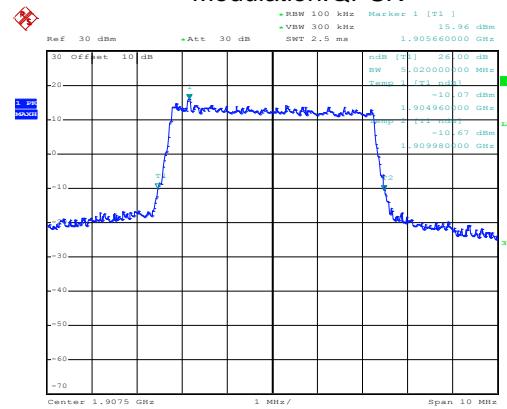
Date: 20.JUN.2017 19:24:22

Middle channel

Modulation:16QAM



Modulation:QPSK



Date: 20.JUN.2017 19:25:17

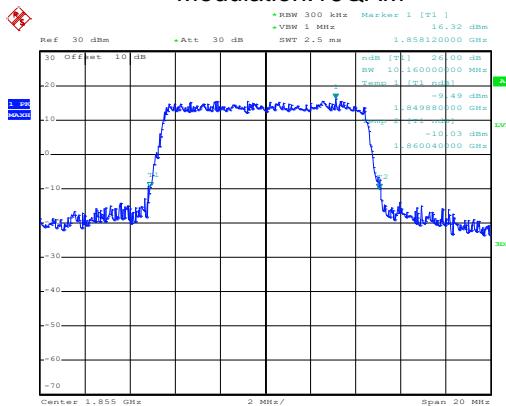
Date: 20.JUN.2017 19:25:08

Highest channel

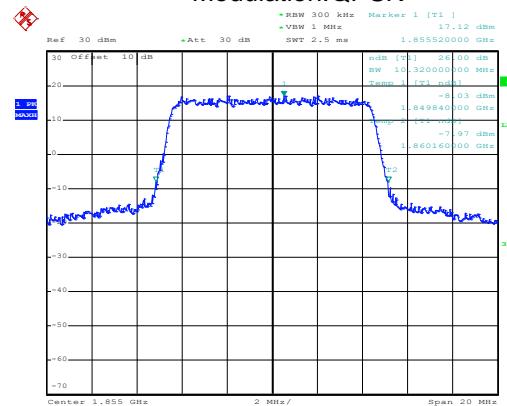
Test Item:-26dBc bandwidth

BW: 10MHz

### Modulation:16QAM



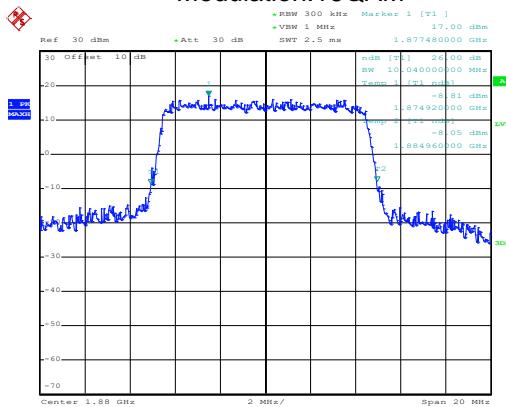
### Modulation:QPSK



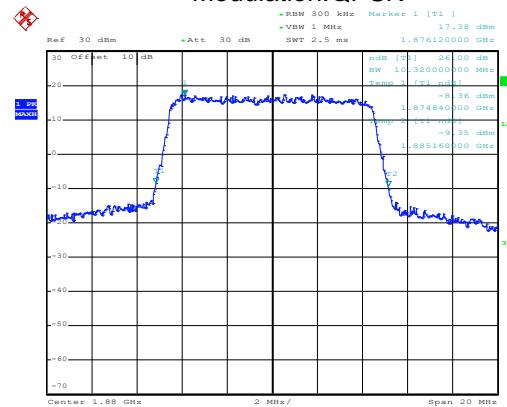
Date: 20.JUN.2017 19:27:28

### Lowest channel

### Modulation:16QAM



### Modulation:QPSK

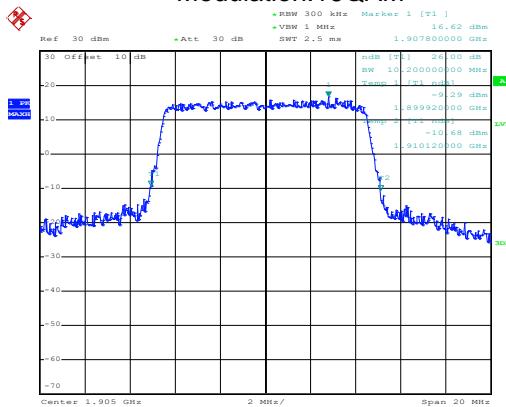


Date: 20.JUN.2017 19:28:05

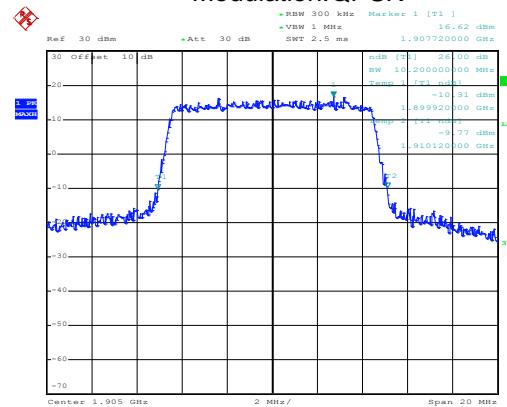
Date: 20.JUN.2017 19:27:59

### Middle channel

### Modulation:16QAM



### Modulation:QPSK



Date: 20.JUN.2017 19:29:14

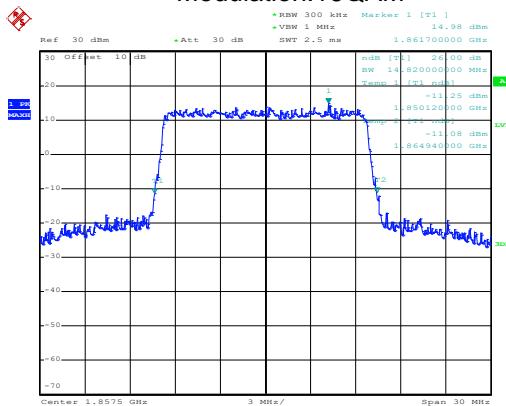
Date: 20.JUN.2017 19:29:03

### Highest channel

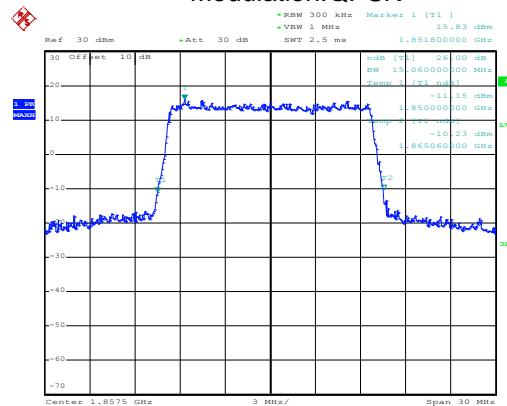
Test Item:-26dBc bandwidth

BW: 15MHz

Modulation:16QAM



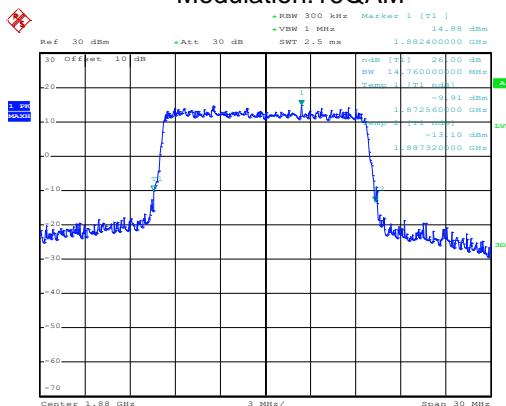
Modulation:QPSK



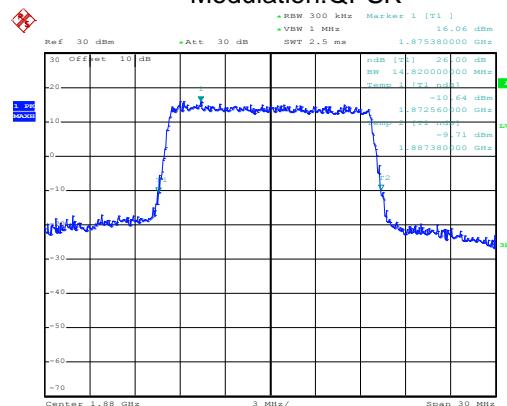
Date: 20.JUN.2017 20:45:29

Lowest channel

Modulation:16QAM



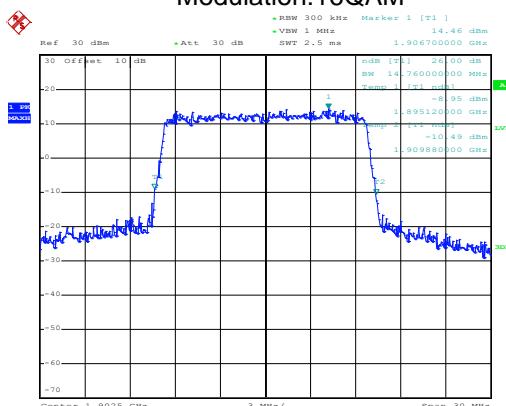
Modulation:QPSK



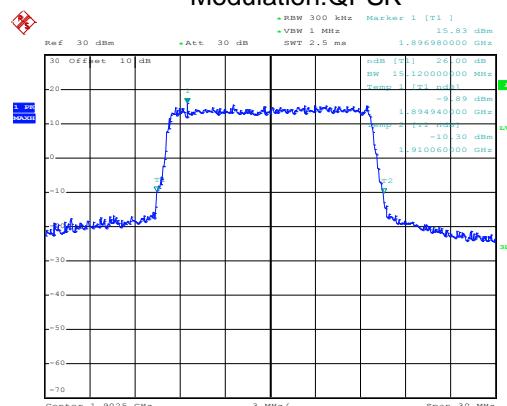
Date: 20.JUN.2017 20:46:24

Middle channel

Modulation:16QAM



Modulation:QPSK



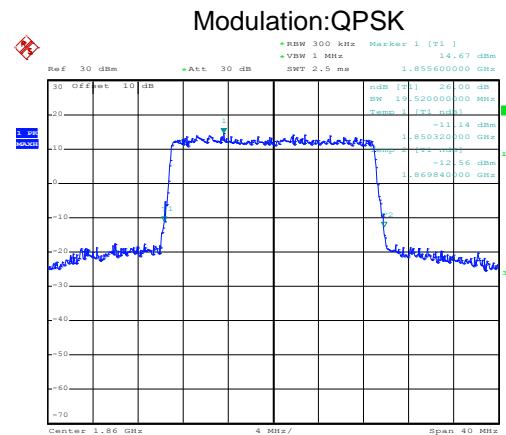
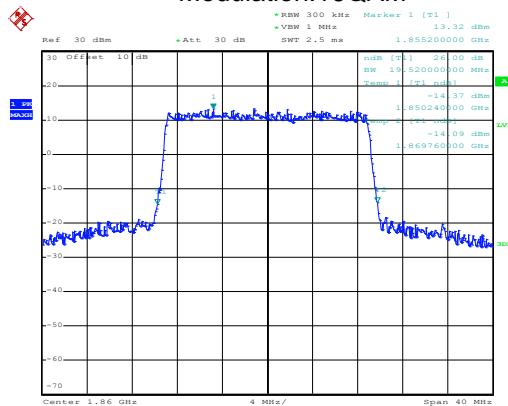
Date: 20.JUN.2017 20:46:53

Highest channel

## Test Item:-26dBc bandwidth

BW: 20MHz

## Modulation:16QAM

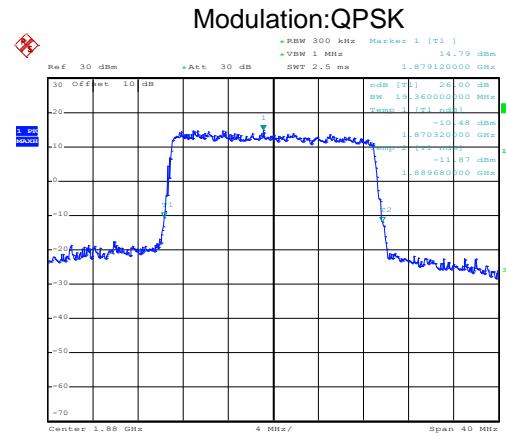
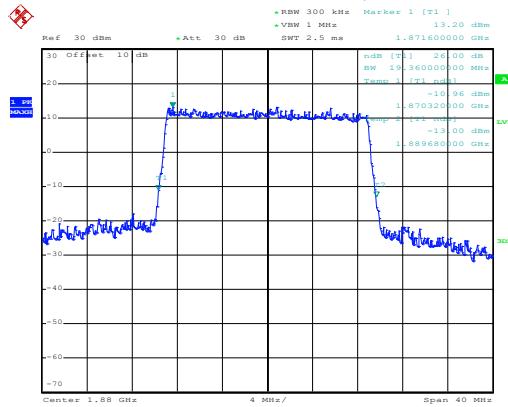


Date: 20.JUN.2017 20:48:10

Date: 20.JUN.2017 20:48:01

## Lowest channel

## Modulation:16QAM

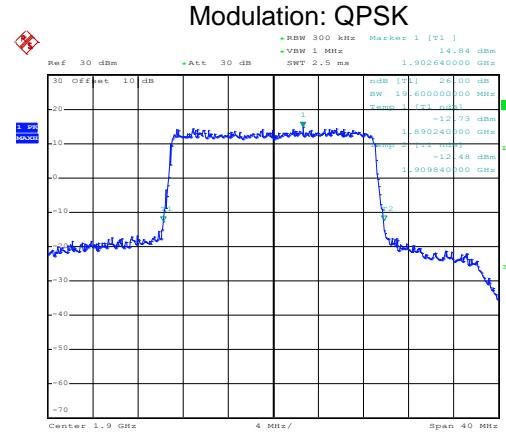
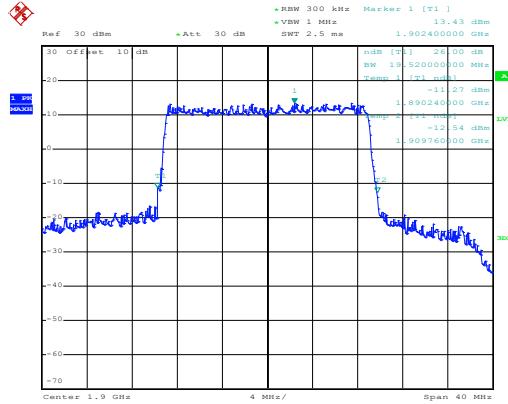


Date: 20.JUN.2017 20:48:37

Date: 20.JUN.2017 20:48:32

## Middle channel

## Modulation:16QAM



Date: 20.JUN.2017 20:49:48

Date: 20.JUN.2017 20:49:41

## Highest channel

Shenzhen ZhongjianNanfang Testing Co., Ltd.  
No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China  
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

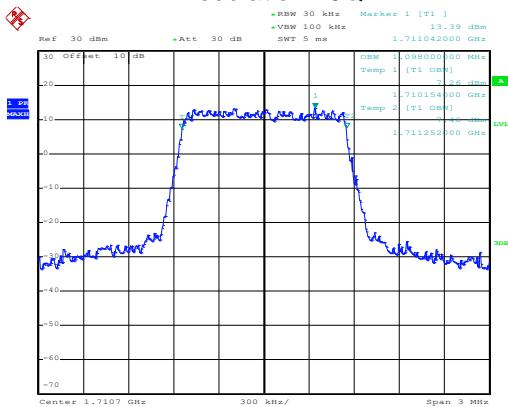
Project No.:CCISE1706044

## LTE Band 4 part

Test Item:99% Occupy bandwidth

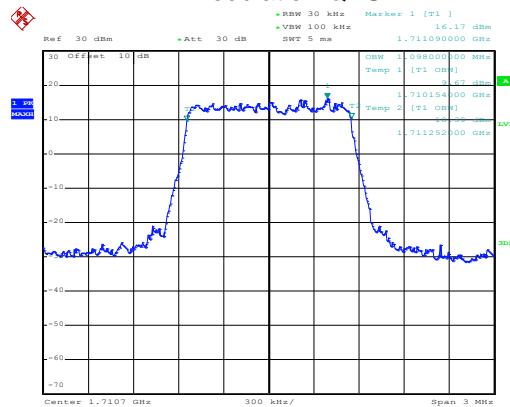
BW: 1.4MHz

Modulation:16QAM



Date: 20.JUN.2017 20:55:30

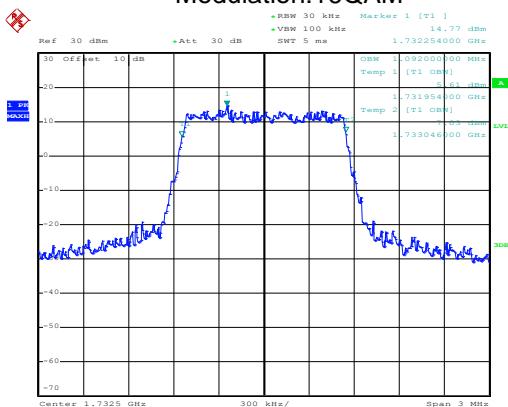
Modulation:QPSK



Date: 20.JUN.2017 20:55:24

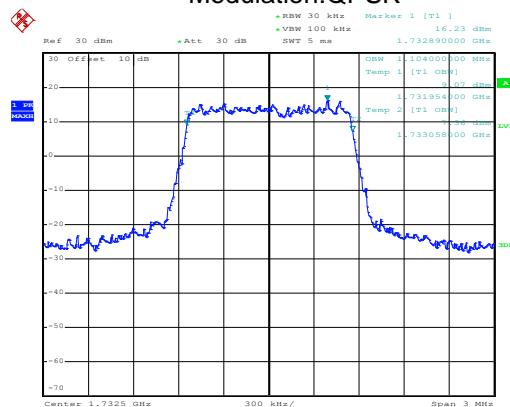
Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 20:56:01

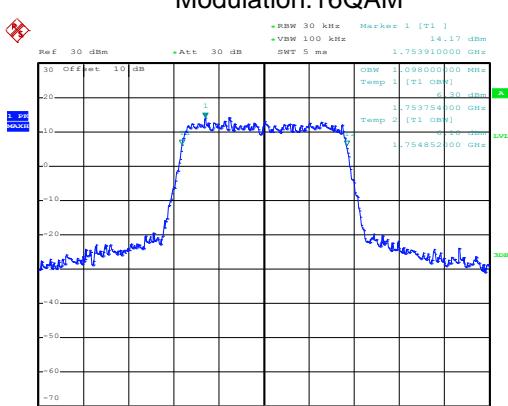
Modulation:QPSK



Date: 20.JUN.2017 20:55:56

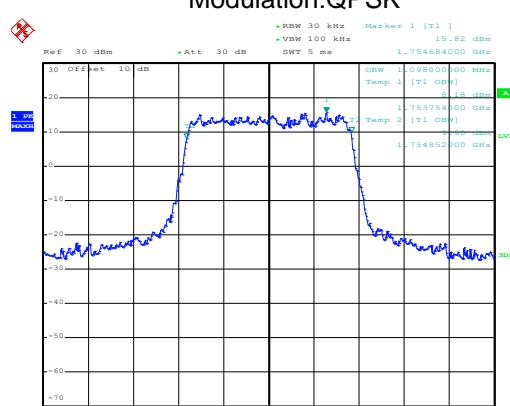
Middle channel

Modulation:16QAM



Date: 20.JUN.2017 20:57:08

Modulation:QPSK



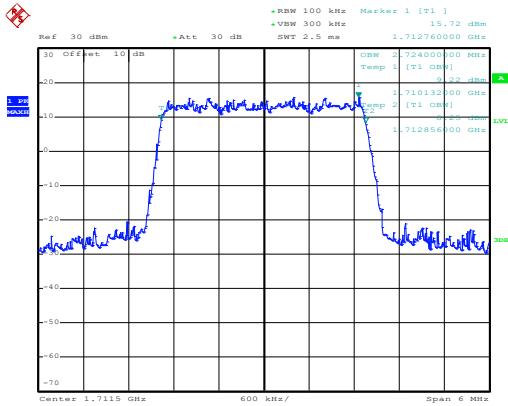
Date: 20.JUN.2017 20:57:03

Highest channel

Test Item:99% Occupy bandwidth

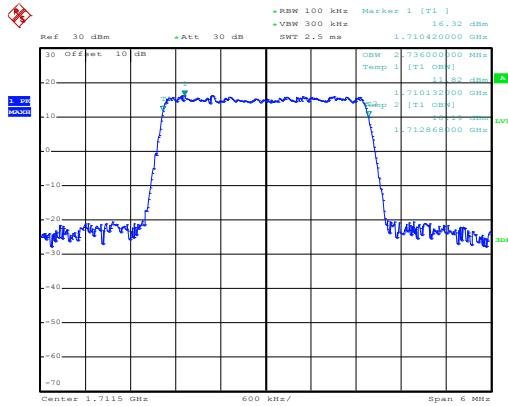
BW: 3MHz

### Modulation:16QAM



Date: 20.JUN.2017 20:58:34

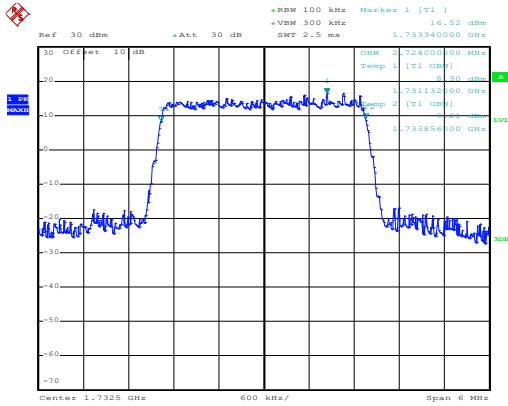
### Modulation:QPSK



Date: 20.JUN.2017 20:58:28

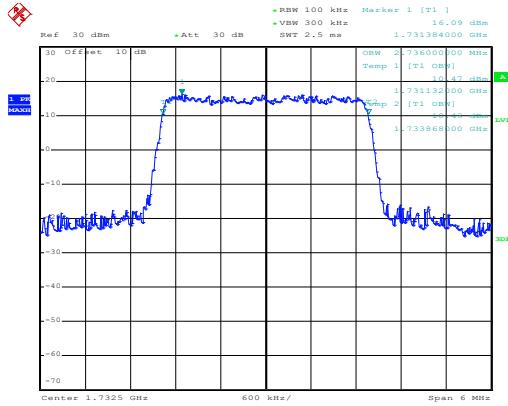
### Lowest channel

### Modulation:16QAM



Date: 20.JUN.2017 20:59:39

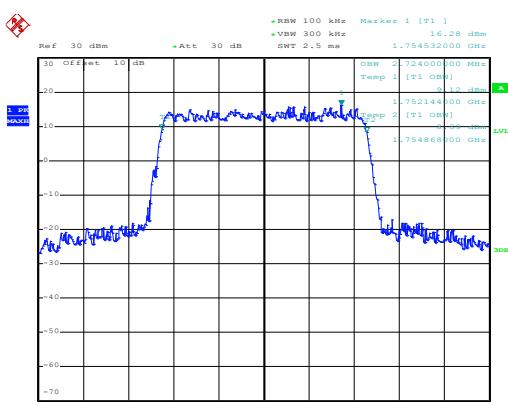
### Modulation:QPSK



Date: 20.JUN.2017 20:59:32

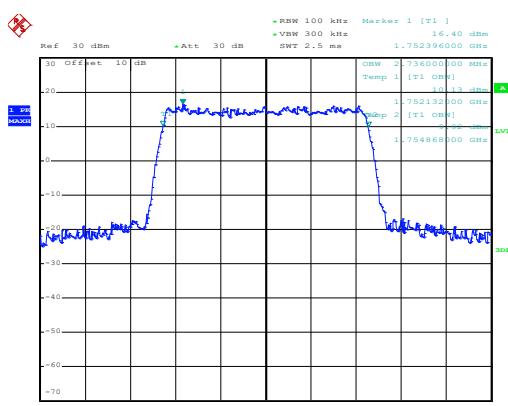
### Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 21:00:07

### Modulation:QPSK



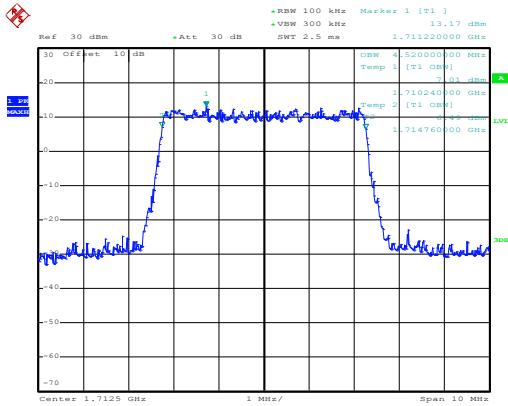
Date: 20.JUN.2017 21:00:01

### Highest channel

### Test Item:99% Occupy bandwidth

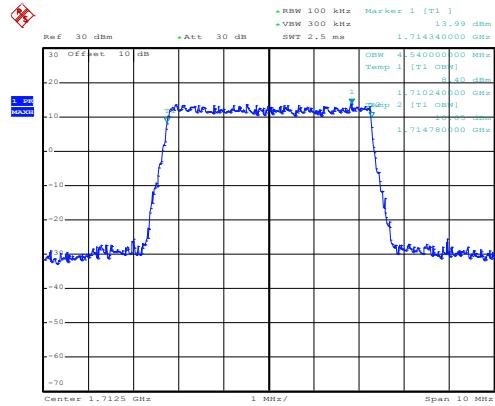
BW: 5MHz

Modulation:16QAM



Date: 20.JUN.2017 21:02:27

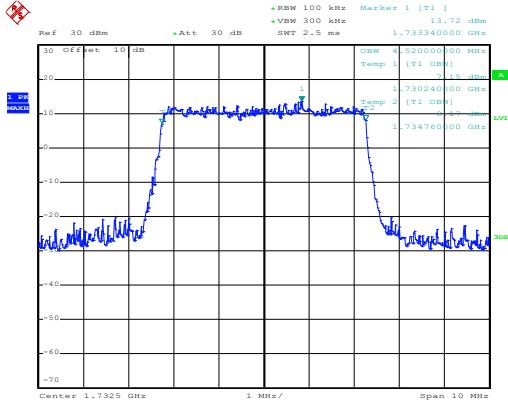
Modulation:QPSK



Date: 20.JUN.2017 21:02:22

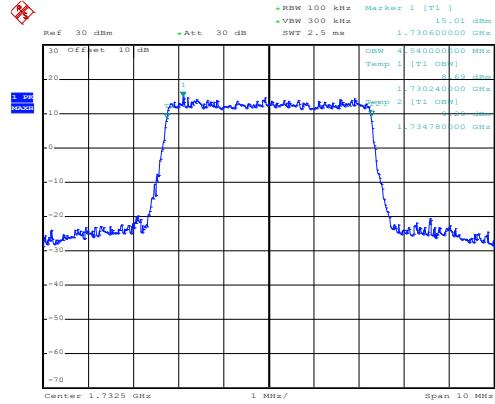
Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 21:02:56

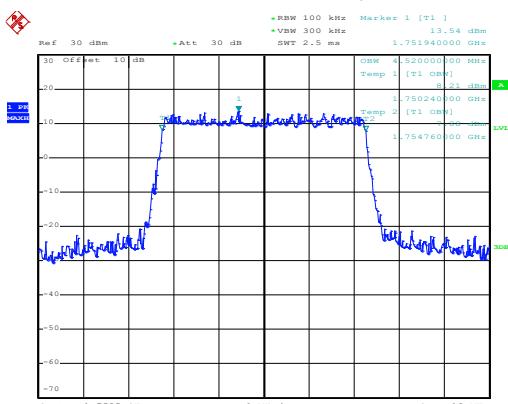
Modulation:QPSK



Date: 20.JUN.2017 21:02:49

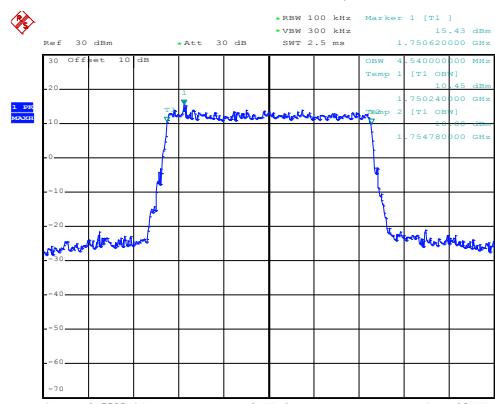
Middle channel

Modulation:16QAM



Date: 20.JUN.2017 21:03:56

Modulation:QPSK



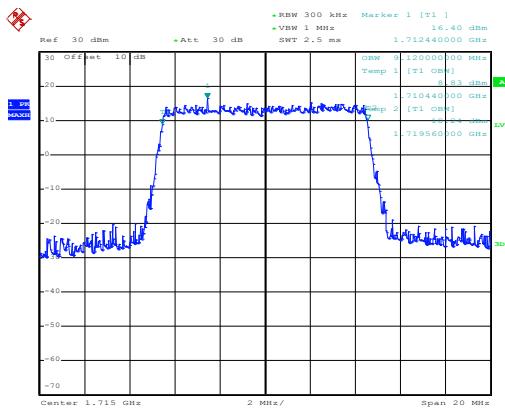
Date: 20.JUN.2017 21:03:51

Highest channel

Test Item:99% Occupy bandwidth

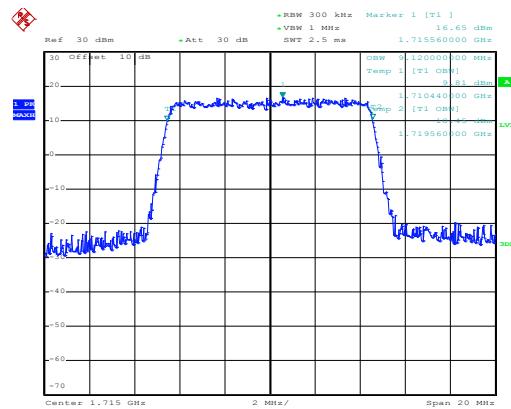
BW: 10MHz

## Modulation:16QAM



Date: 20.JUN.2017 21:05:39

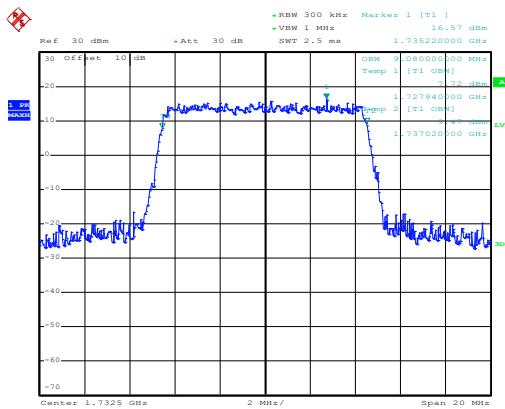
## Modulation:QPSK



Date: 20.JUN.2017 21:05:35

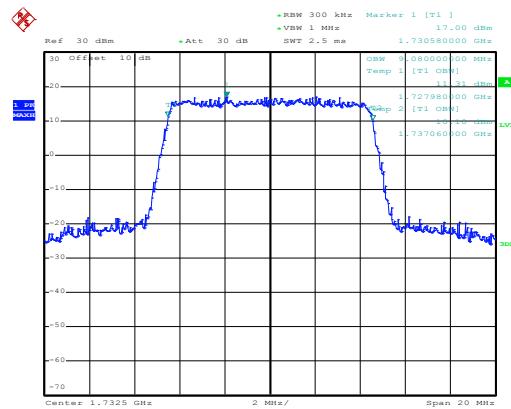
## Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 21:06:01

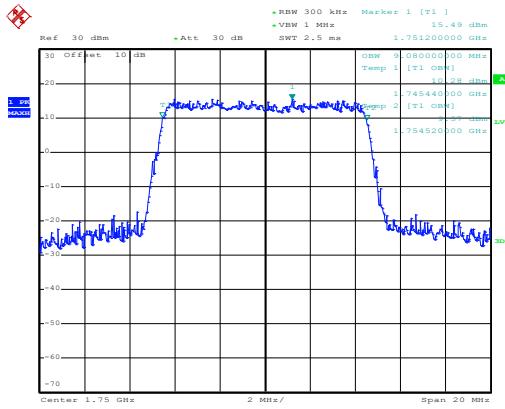
## Modulation:QPSK



Date: 20.JUN.2017 21:05:56

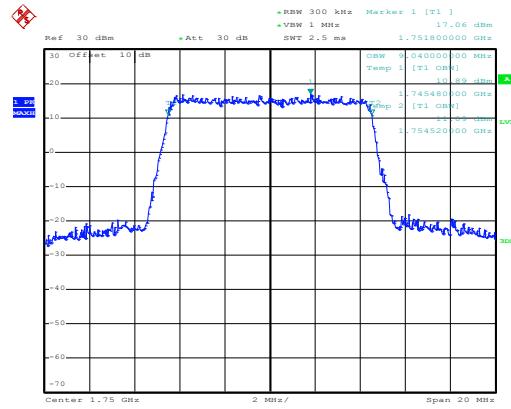
## Middle channel

Modulation:16QAM



Date: 20.JUN.2017 21:06:58

## Modulation:QPSK

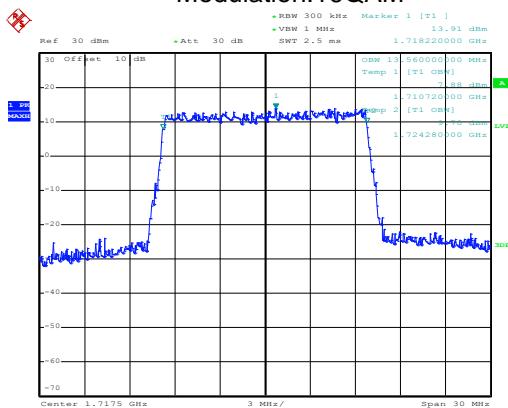


Date: 20.JUN.2017 21:06:53

## Highest channel

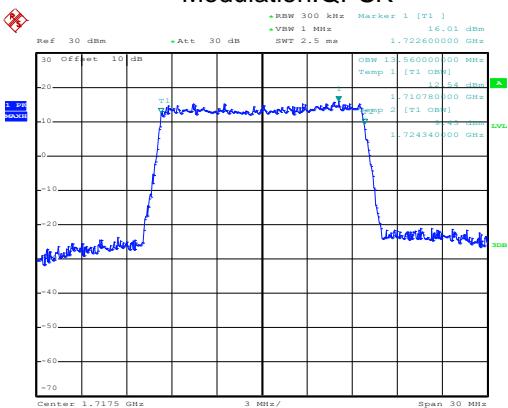
Test Item:99% Occupy bandwidth  
BW: 15MHz

## Modulation:16QAM



Date: 20.JUN.2017 21:07:40

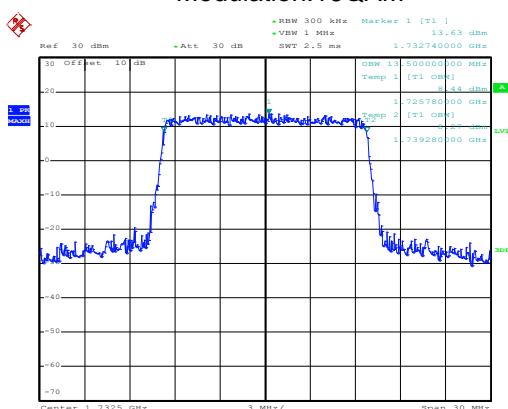
## Modulation:QPSK



Date: 20.JUN.2017 21:07:36

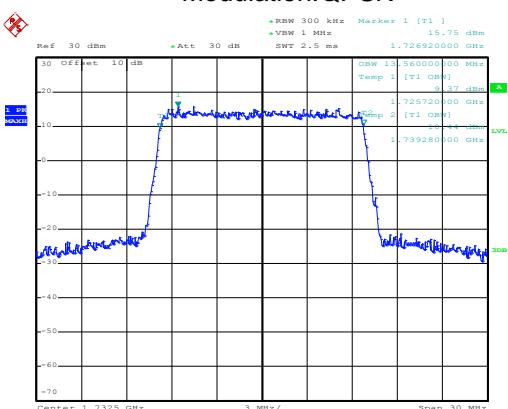
## Lowest channel

### Modulation:16QAM



Date: 20.JUN.2017 21:08:42

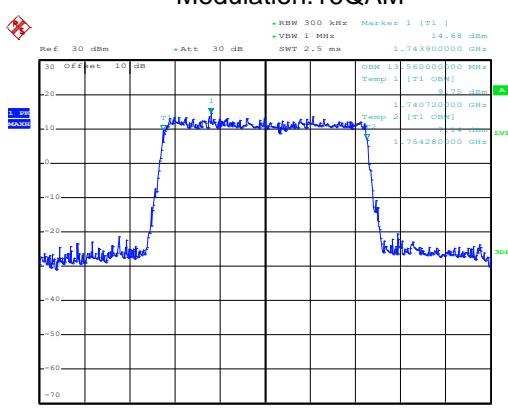
### Modulation:QPSK



Date: 20.JUN.2017 21:08:37

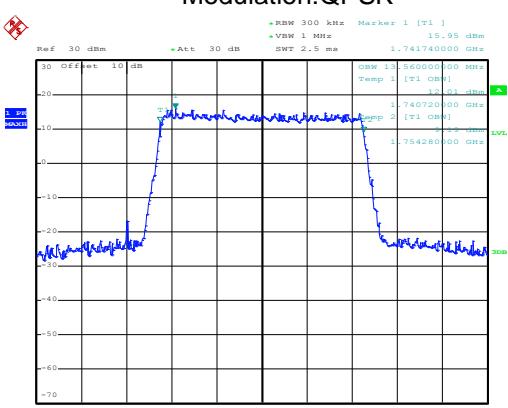
## Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 21:09:06

### Modulation:QPSK

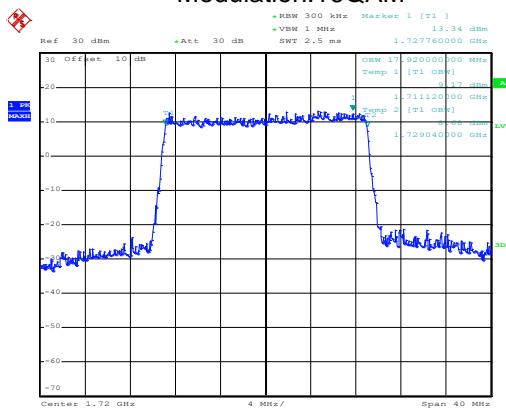


Date: 20.JUN.2017 21:09:02

## Highest channel

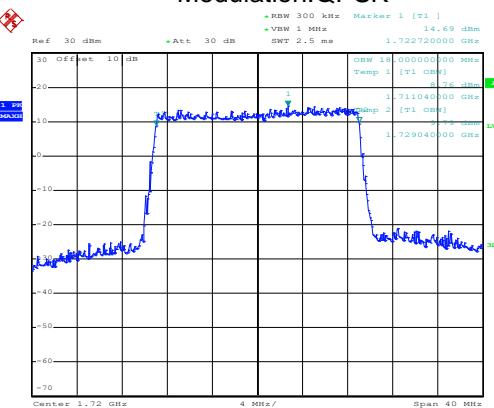
Test Item:99% Occupy bandwidth  
BW: 20MHz

## Modulation:16QAM



Date: 20.JUN.2017 21:10:26

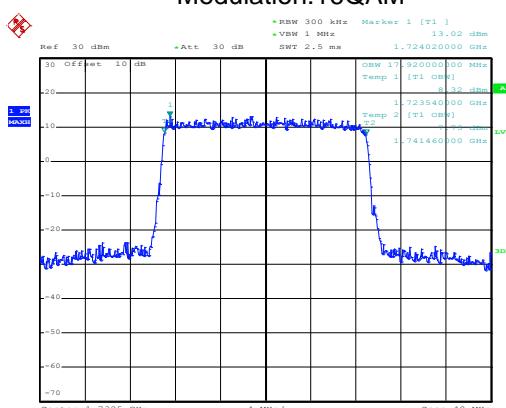
## Modulation:QPSK



Date: 20.JUN.2017 21:10:20

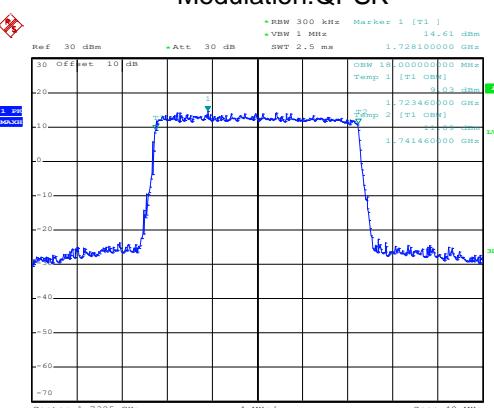
## Lowest channel

### Modulation:16QAM



Date: 20.JUN.2017 21:10:54

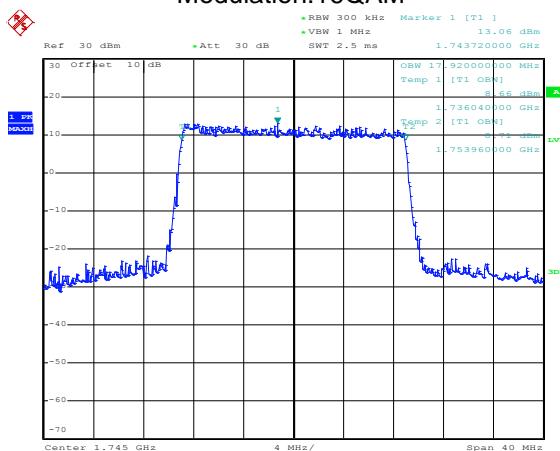
### Modulation:QPSK



Date: 20.JUN.2017 21:10:49

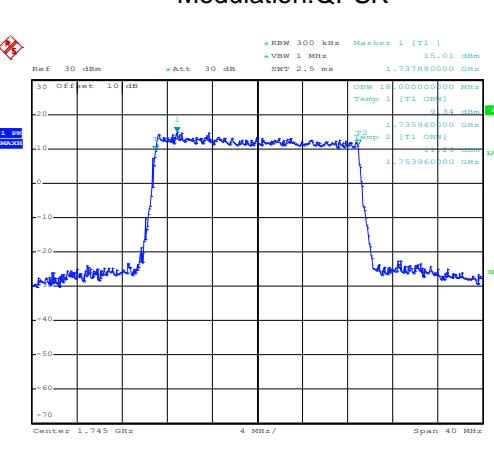
## Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 21:11:53

### Modulation:QPSK



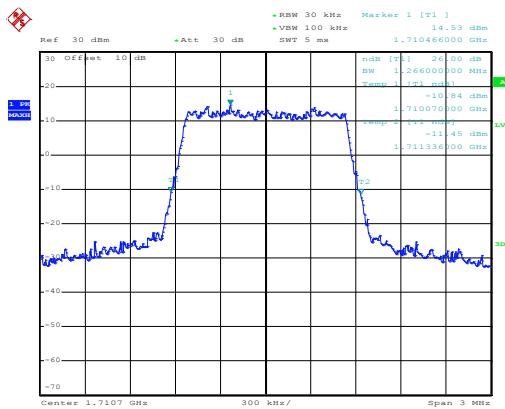
Date: 20.JUN.2017 21:11:46

## Highest channel

### Test Item:-26dBc bandwidth

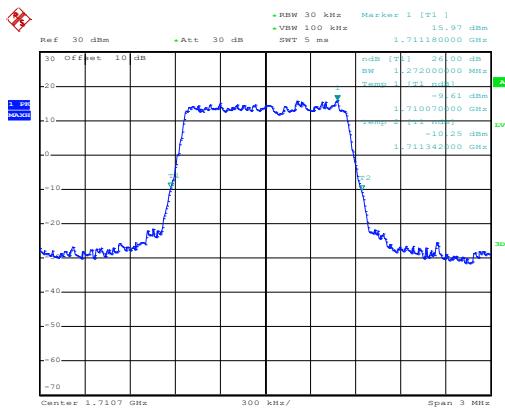
BW: 1.4MHz

## Modulation:16QAM



Date: 20.JUN.2017 20:55:03

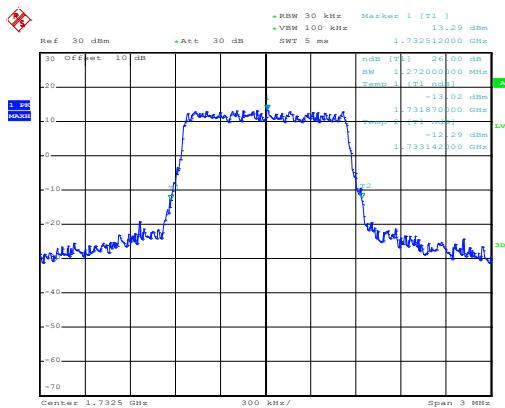
## Modulation:QPSK



Date: 20.JUN.2017 20:54:53

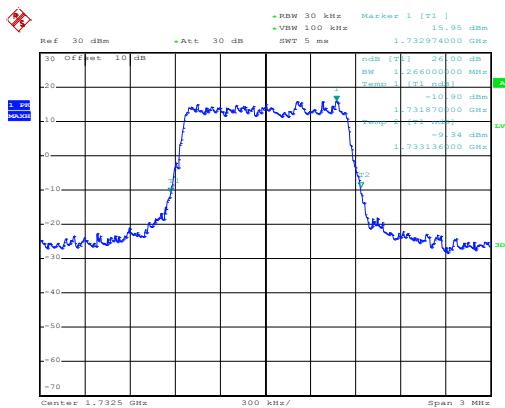
## Lowest channel

### Modulation:16QAM



Date: 20.JUN.2017 20:56:16

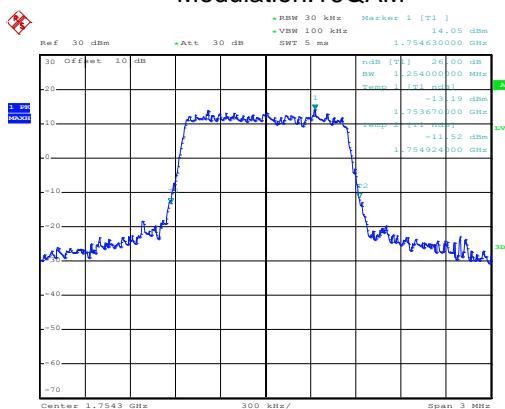
### Modulation:QPSK



Date: 20.JUN.2017 20:56:11

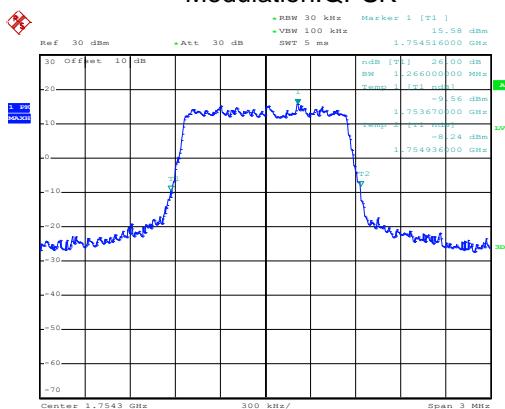
## Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 20:56:53

### Modulation:QPSK



Date: 20.JUN.2017 20:56:48

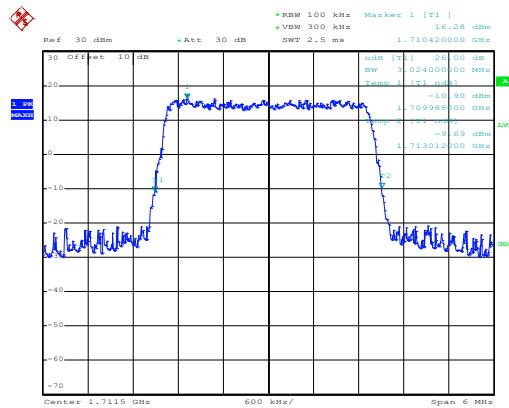
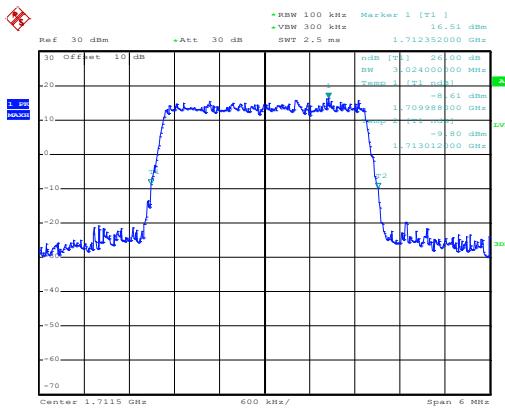
## Highest channel

### Test Item:-26dBc bandwidth

BW: 3MHz

### Modulation:16QAM

### Modulation:QPSK

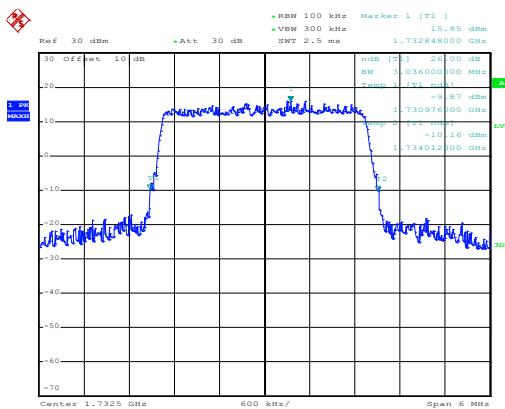


Date: 20.JUN.2017 20:58:52

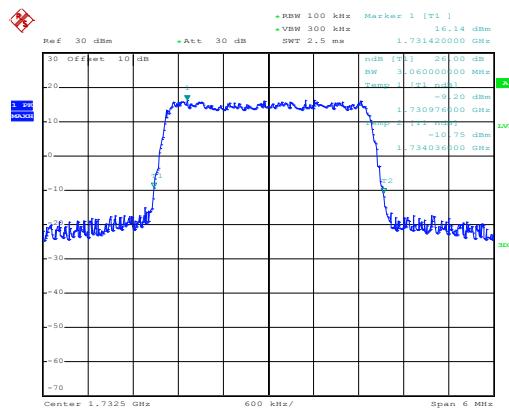
Date: 20.JUN.2017 20:58:44

### Lowest channel

#### Modulation:16QAM



#### Modulation:QPSK

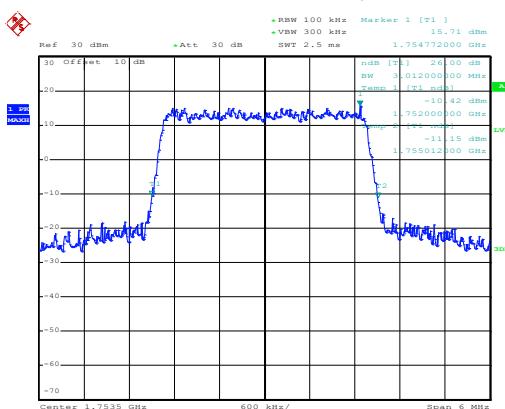


Date: 20.JUN.2017 20:59:21

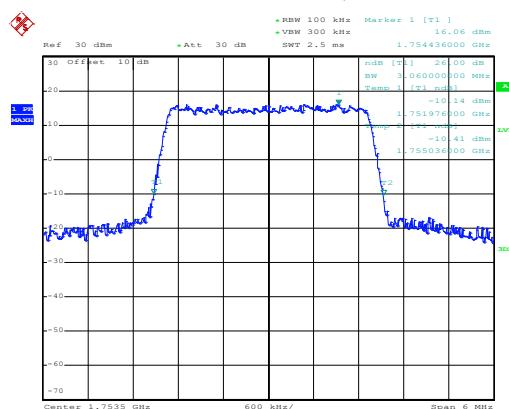
Date: 20.JUN.2017 20:59:14

### Middle channel

#### Modulation:16QAM



#### Modulation:QPSK



Date: 20.JUN.2017 21:00:25

Date: 20.JUN.2017 21:00:20

### Highest channel

#### Test Item:-26dBc bandwidth

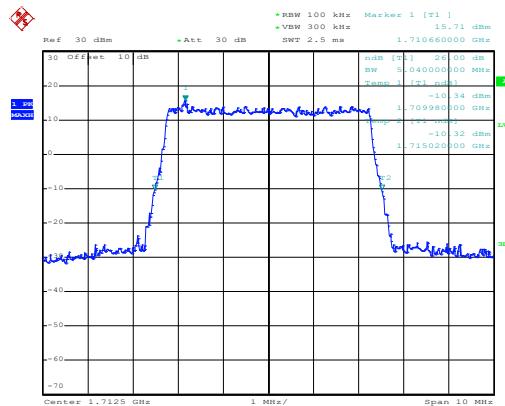
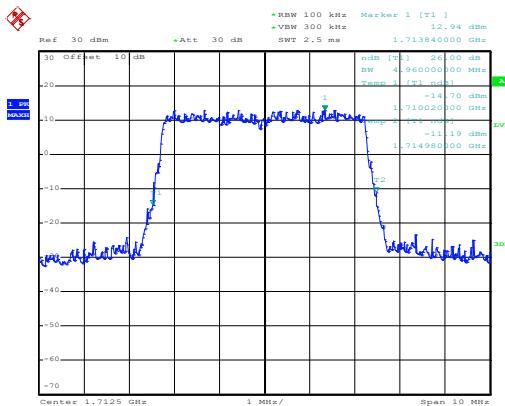
BW: 5MHz

#### Modulation:16QAM

#### Modulation:QPSK

Shenzhen ZhongjianNanfang Testing Co., Ltd.  
No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China  
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

Project No.:CCISE1706044

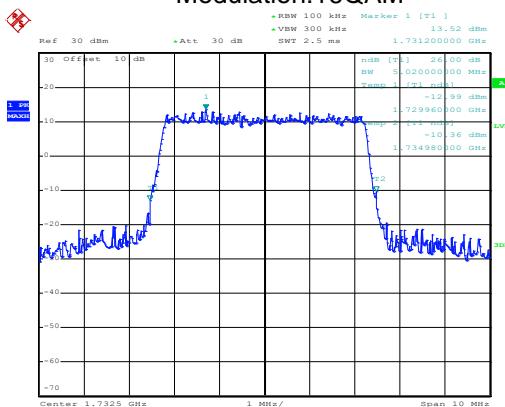


Date: 20.JUN.2017 21:02:11

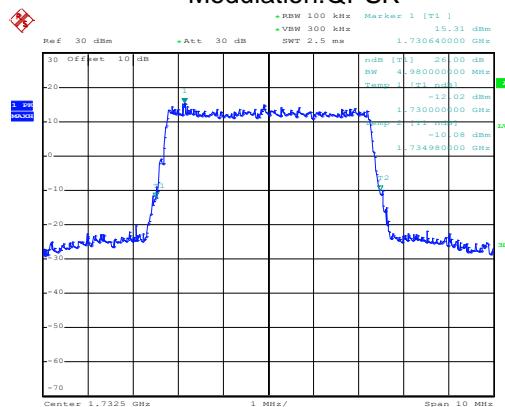
Date: 20.JUN.2017 21:02:04

### Lowest channel

Modulation:16QAM



Modulation:QPSK

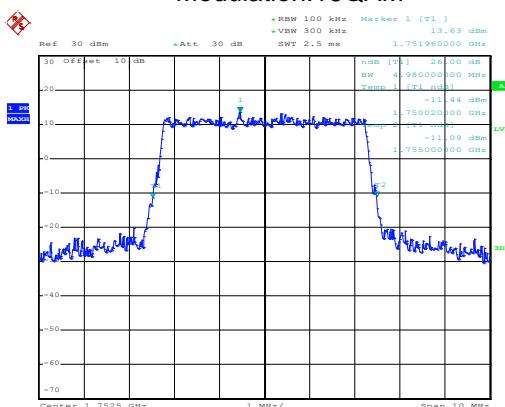


Date: 20.JUN.2017 21:03:12

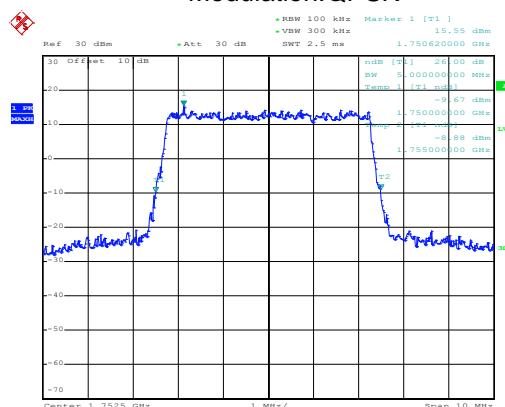
Date: 20.JUN.2017 21:03:06

### Middle channel

Modulation:16QAM



Modulation:QPSK



Date: 20.JUN.2017 21:03:41

Date: 20.JUN.2017 21:04:13

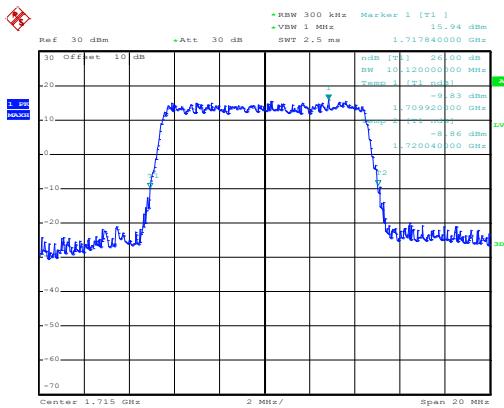
### Highest channel

Test Item:-26dBc bandwidth

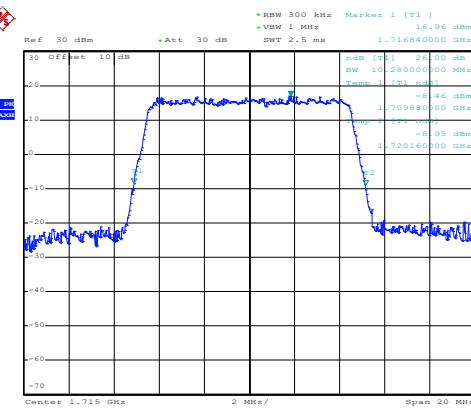
BW: 10MHz

Modulation:16QAM

Modulation:QPSK



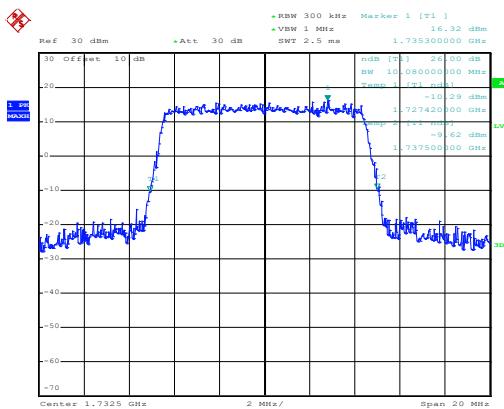
Date: 20.JUN.2017 21:05:25



Date: 20.JUN.2017 21:05:19

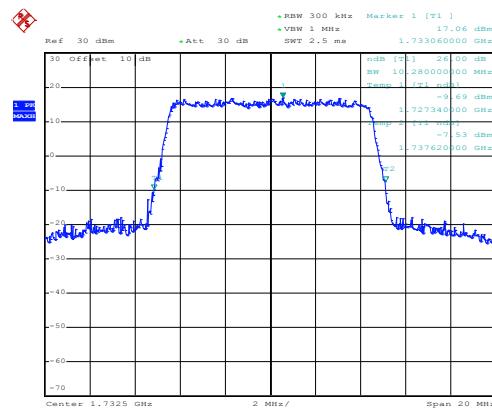
### Lowest channel

#### Modulation:16QAM



Date: 20.JUN.2017 21:06:17

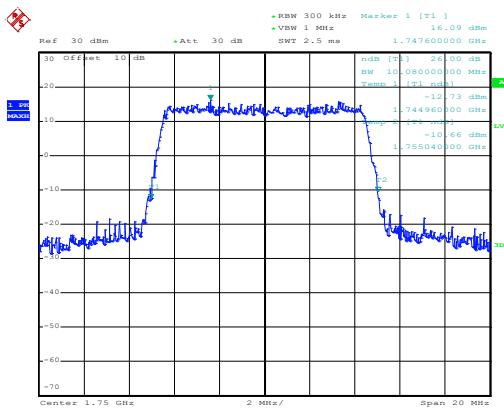
#### Modulation:QPSK



Date: 20.JUN.2017 21:06:13

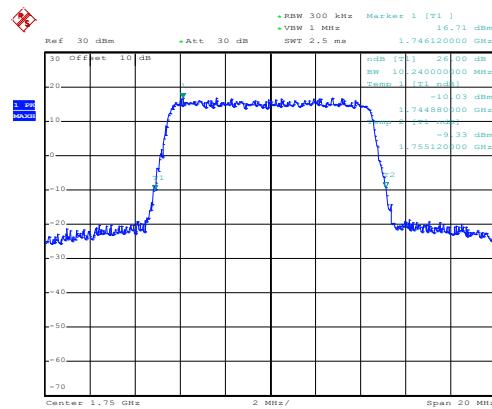
### Middle channel

#### Modulation:16QAM



Date: 20.JUN.2017 21:06:44

#### Modulation:QPSK



Date: 20.JUN.2017 21:06:40

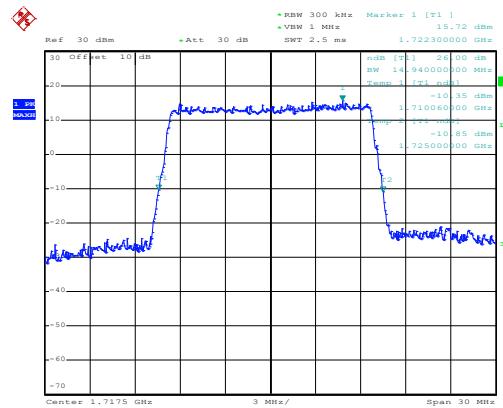
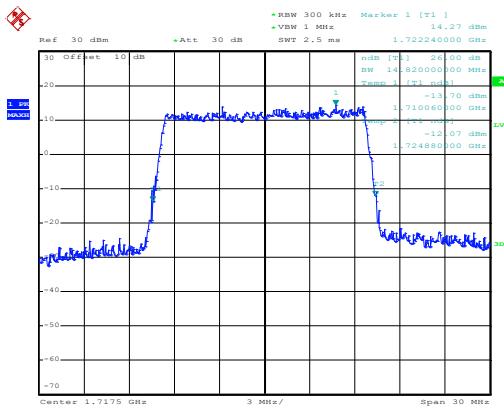
### Highest channel

#### Test Item:-26dBc bandwidth

BW: 15MHz

#### Modulation:16QAM

#### Modulation:QPSK

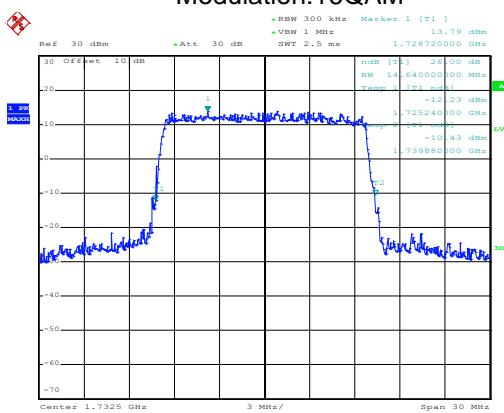


Date: 20.JUN.2017 21:07:53

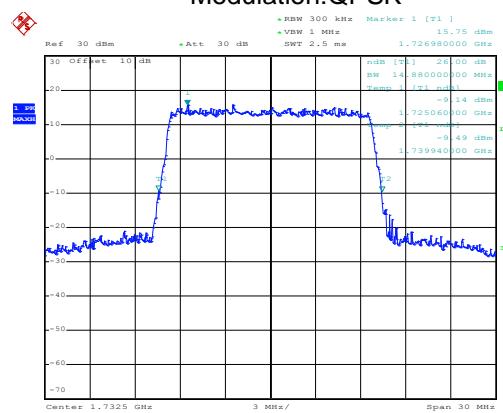
Date: 20.JUN.2017 21:07:49

### Lowest channel

Modulation:16QAM



Modulation:QPSK

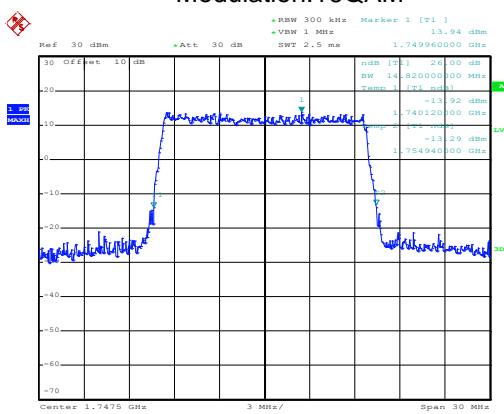


Date: 20.JUN.2017 21:08:25

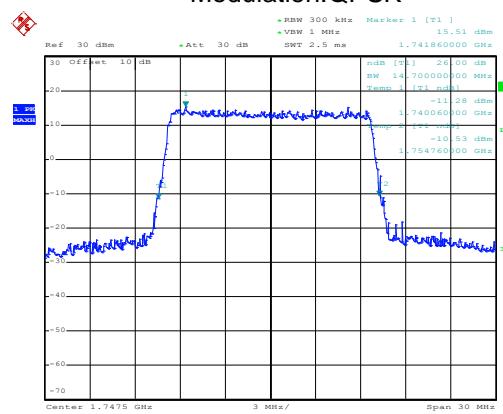
Date: 20.JUN.2017 21:08:20

### Middle channel

Modulation:16QAM



Modulation:QPSK



Date: 20.JUN.2017 21:09:21

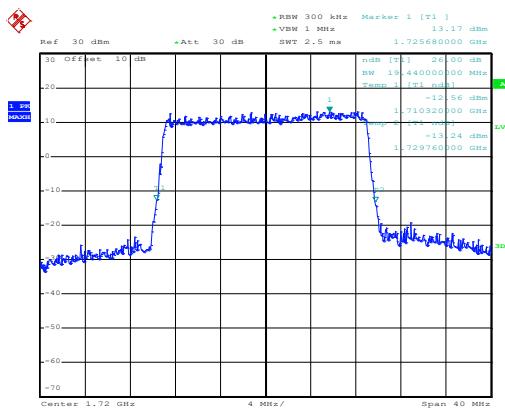
Date: 20.JUN.2017 21:09:16

### Highest channel

Test Item:-26dBc bandwidth

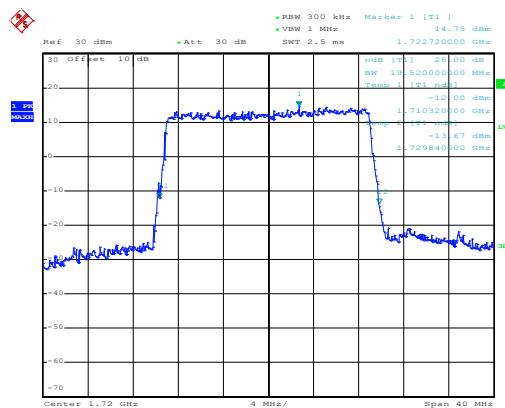
BW: 20MHz

Modulation:16QAM



Date: 20.JUN.2017 21:10:10

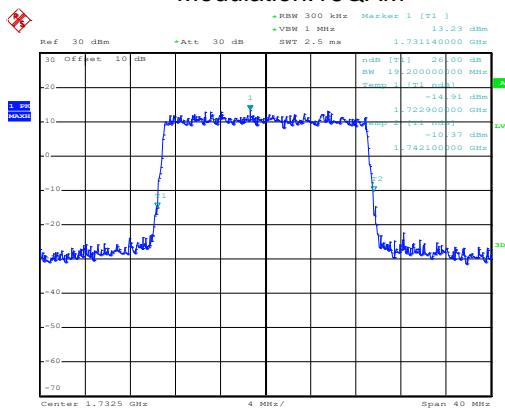
Modulation:QPSK



Date: 20.JUN.2017 21:10:02

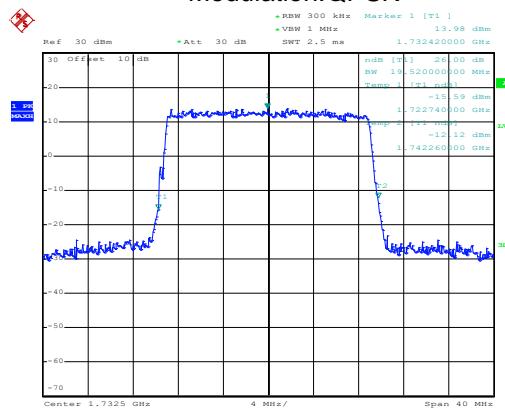
Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 21:11:08

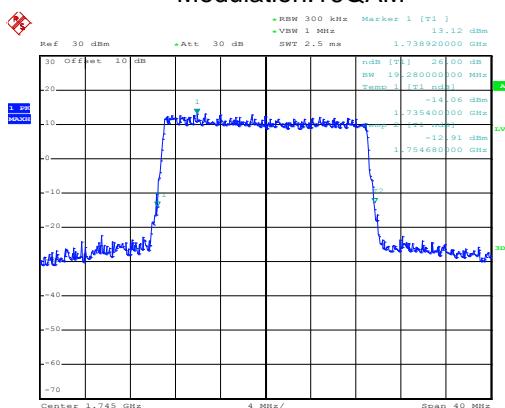
Modulation:QPSK



Date: 20.JUN.2017 21:11:04

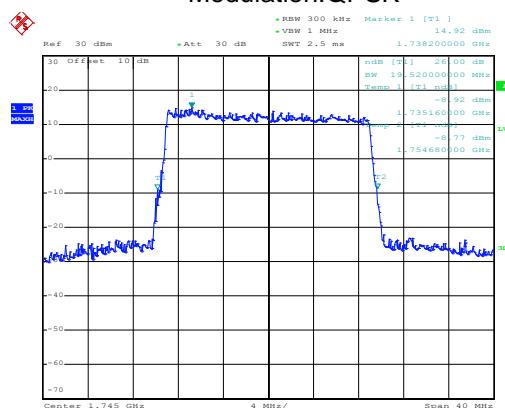
Middle channel

Modulation:16QAM



Date: 20.JUN.2017 21:11:35

Modulation:QPSK



Date: 20.JUN.2017 21:11:28

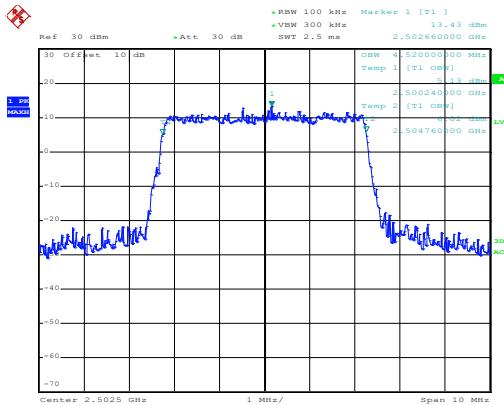
Highest channel

## LTE-Band 7 part

Test Item:99% Occupy bandwidth

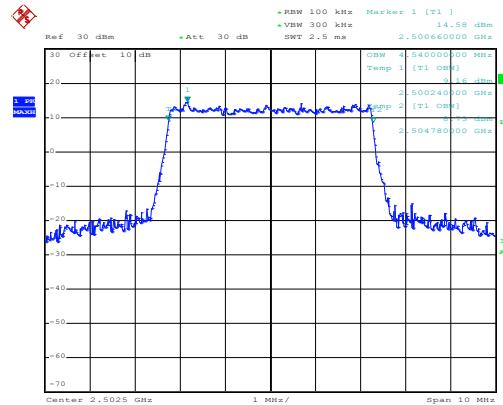
BW: 5MHz

### Modulation:16QAM



Date: 20.JUN.2017 21:39:35

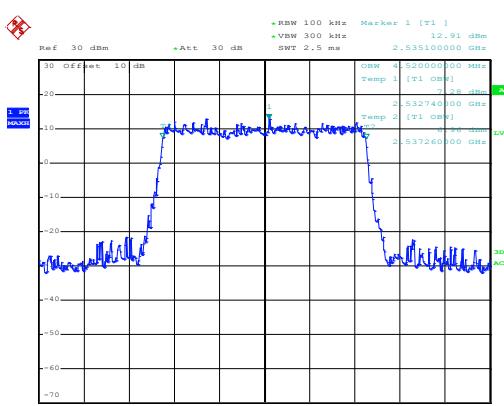
### Modulation:QPSK



Date: 20.JUN.2017 21:39:26

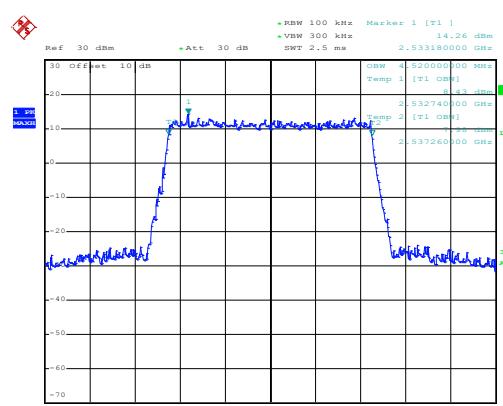
### Lowest channel

### Modulation:16QAM



Date: 20.JUN.2017 21:40:54

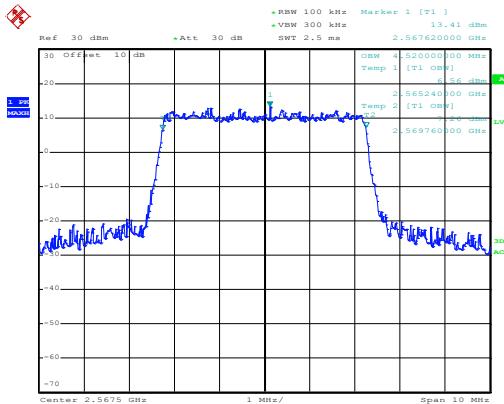
### Modulation:QPSK



Date: 20.JUN.2017 21:40:48

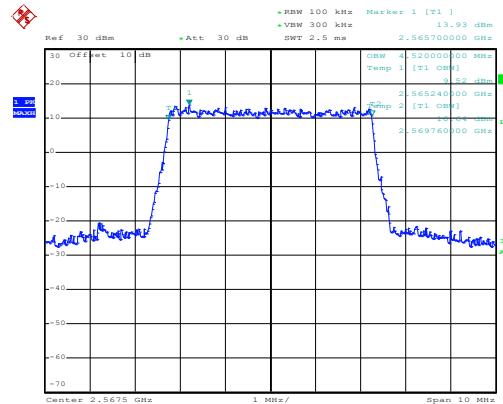
### Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 21:41:36

### Modulation:QPSK



Date: 20.JUN.2017 21:42:12

### Highest channel

Shenzhen ZhongjianNanfang Testing Co., Ltd.

No.B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,  
Bao'an District, Shenzhen, Guangdong, China

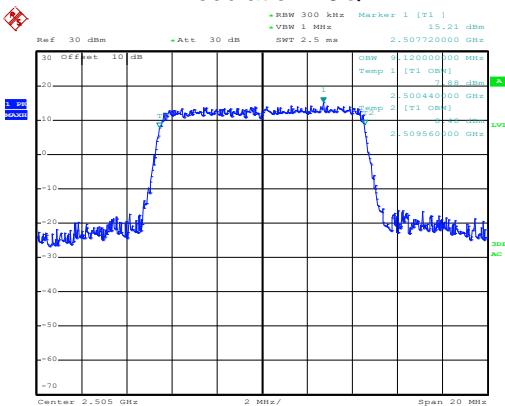
Telephone: +86 (0) 755 23118282 Fax: +86 (0) 755 23116366

Project No.:CCISE1706044

Test Item:99% Occupy bandwidth

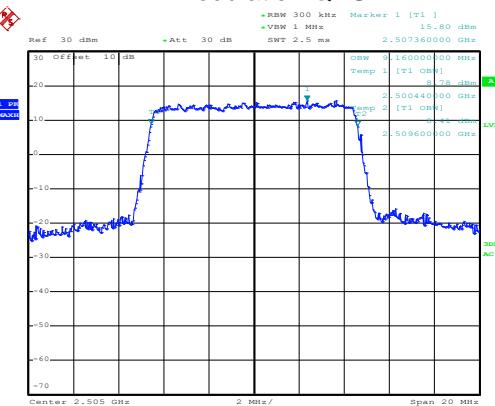
BW: 10MHz

Modulation:16QAM



Date: 20.JUN.2017 21:43:10

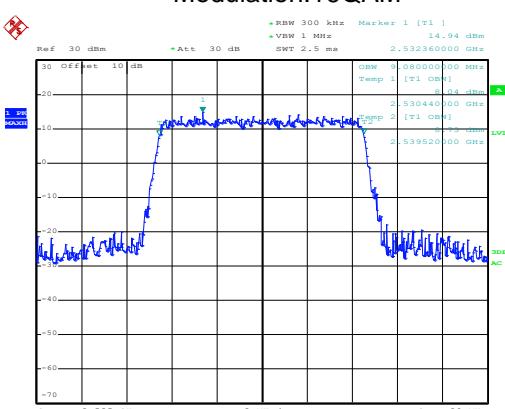
Modulation:QPSK



Date: 20.JUN.2017 21:43:03

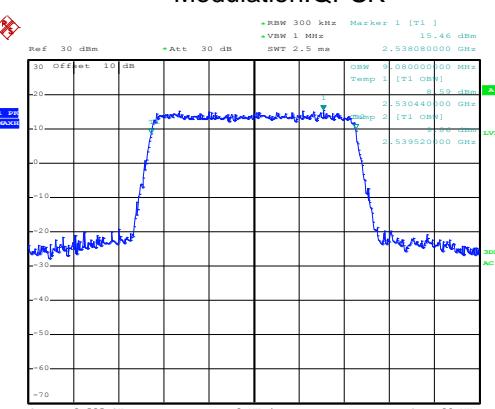
Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 21:44:15

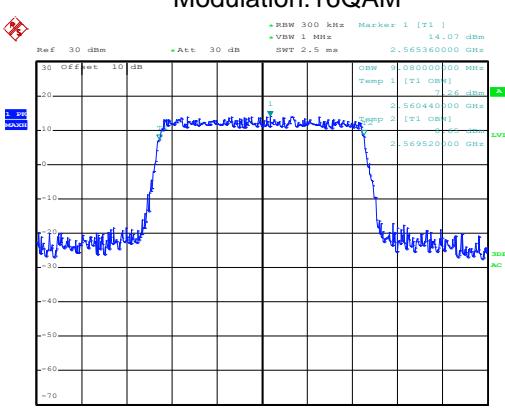
Modulation:QPSK



Date: 20.JUN.2017 21:44:10

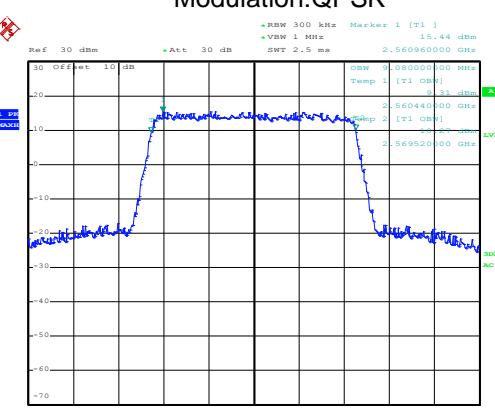
Middle channel

Modulation:16QAM



Date: 20.JUN.2017 21:44:39

Modulation:QPSK

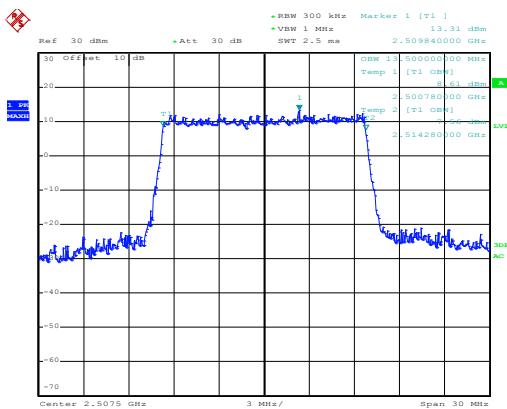


Date: 20.JUN.2017 21:44:34

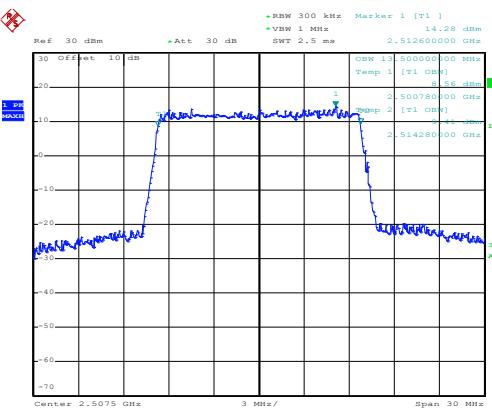
Highest channel

Test Item:99% Occupy bandwidth  
BW: 15MHz

Modulation:16QAM



Modulation:QPSK

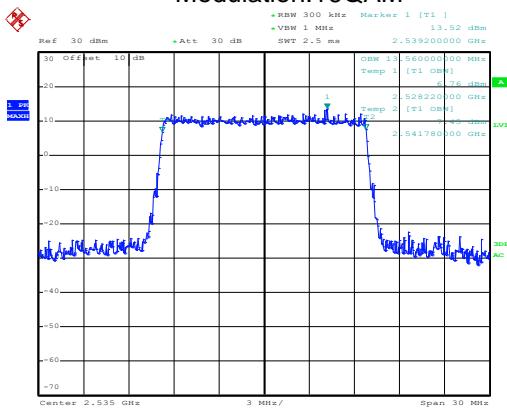


Date: 20.JUN.2017 21:46:03

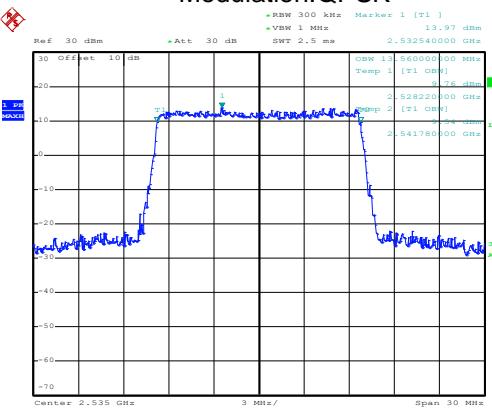
Date: 20.JUN.2017 21:45:58

Lowest channel

Modulation:16QAM



Modulation:QPSK

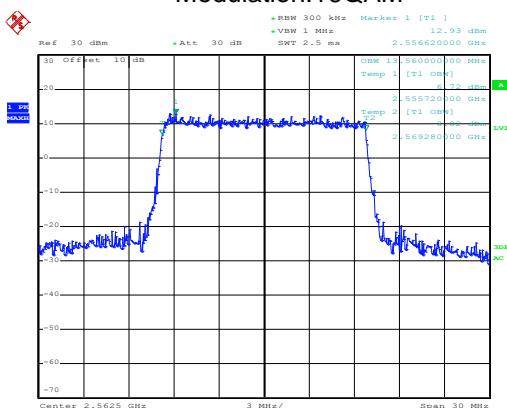


Date: 20.JUN.2017 21:46:29

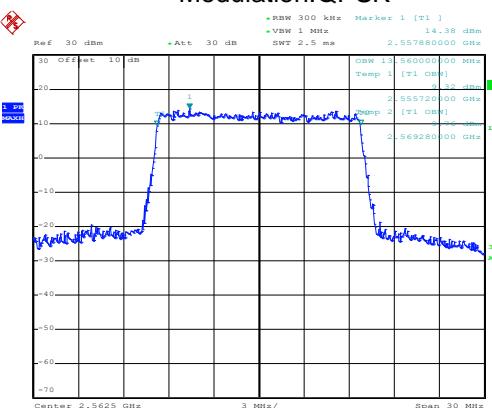
Date: 20.JUN.2017 21:46:24

Middle channel

Modulation:16QAM



Modulation:QPSK



Date: 20.JUN.2017 21:47:32

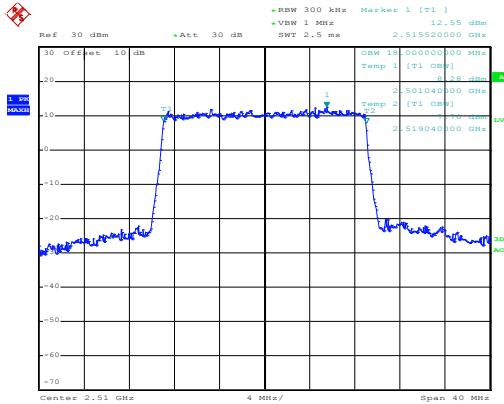
Date: 20.JUN.2017 21:47:26

Highest channel

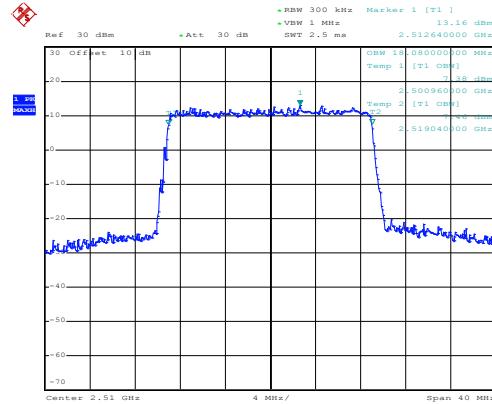
Test Item:99% Occupy bandwidth

BW: 20MHz

### Modulation:16QAM

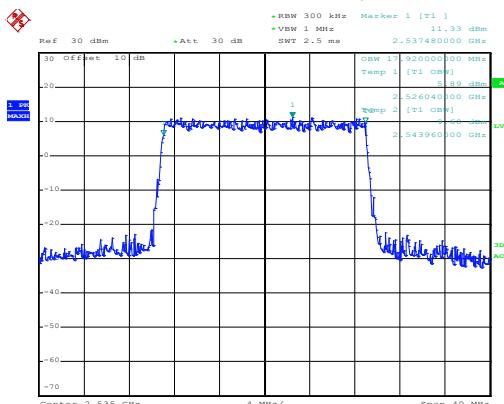


### Modulation:QPSK

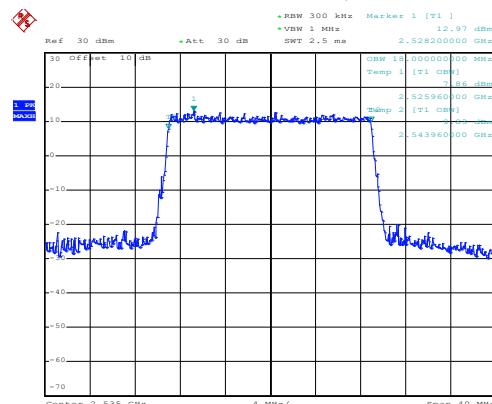


### Lowest channel

### Modulation:16QAM

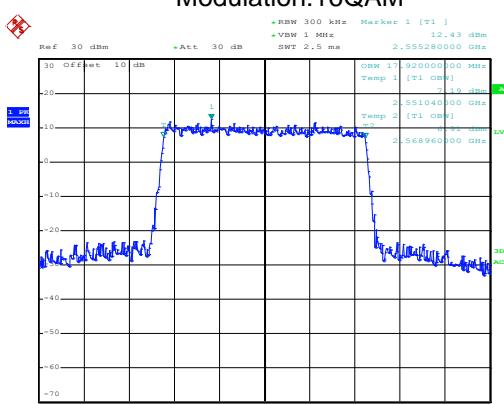


### Modulation:QPSK

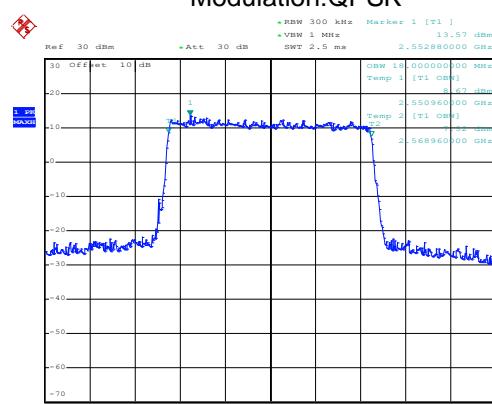


### Middle channel

### Modulation:16QAM



### Modulation:QPSK

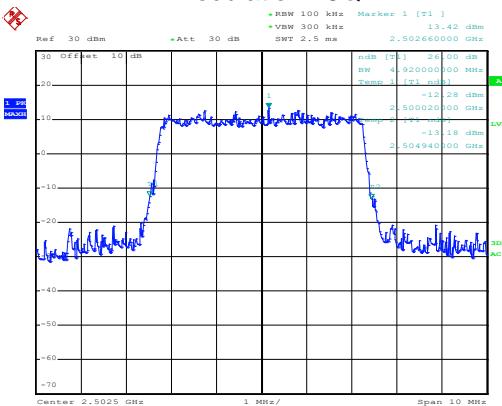


### Highest channel

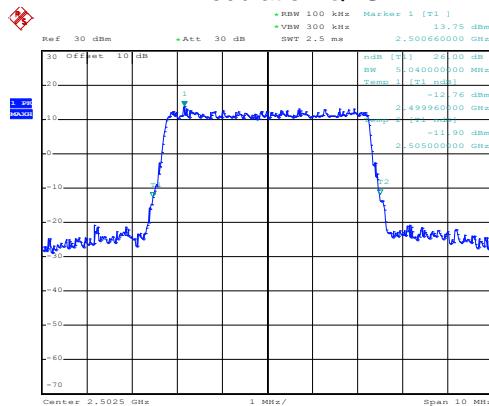
Test Item:-26dBc bandwidth

BW: 5MHz

### Modulation:16QAM



### Modulation:QPSK

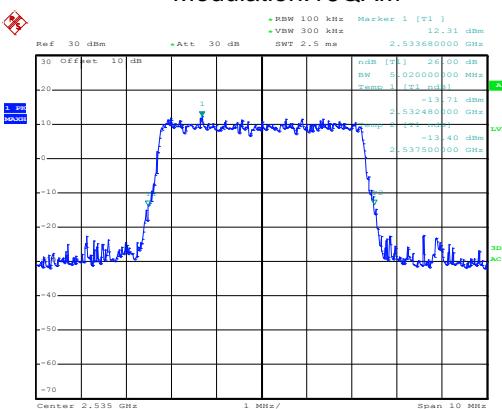


Date: 20.JUN.2017 21:39:59

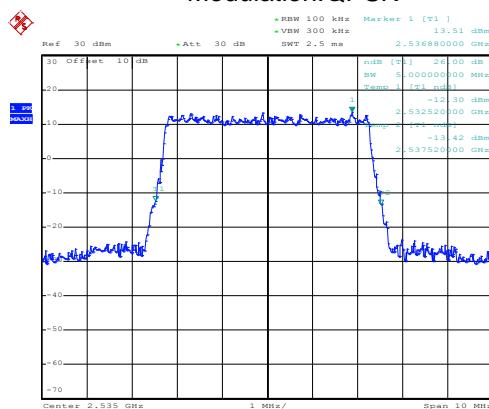
Date: 20.JUN.2017 21:39:53

### Lowest channel

### Modulation:16QAM



### Modulation:QPSK

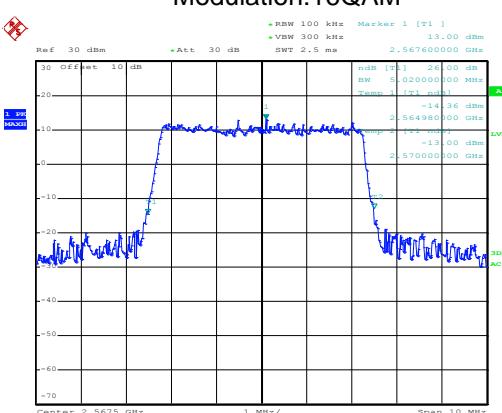


Date: 20.JUN.2017 21:40:36

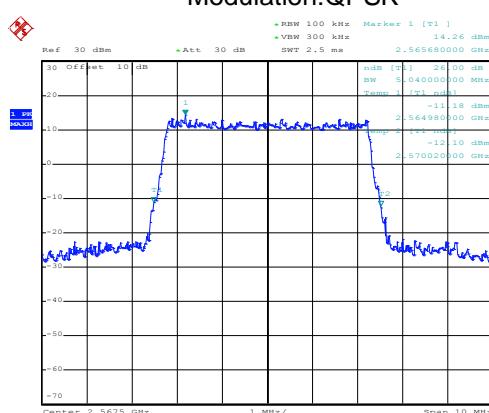
Date: 20.JUN.2017 21:40:31

### Middle channel

### Modulation:16QAM



### Modulation:QPSK



Date: 20.JUN.2017 21:41:55

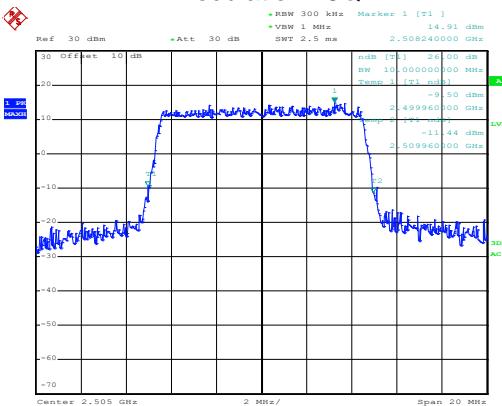
Date: 20.JUN.2017 21:41:47

### Highest channel

Test Item:-26dBc bandwidth

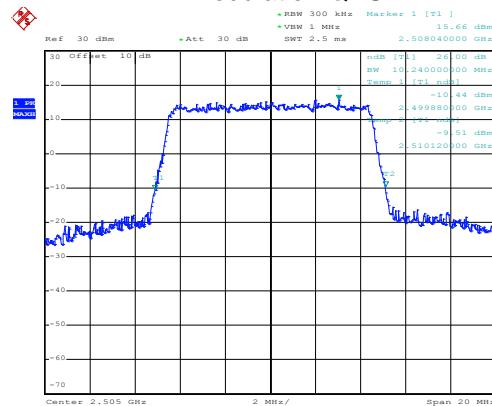
BW: 10MHz

### Modulation:16QAM



Date: 20.JUN.2017 21:43:26

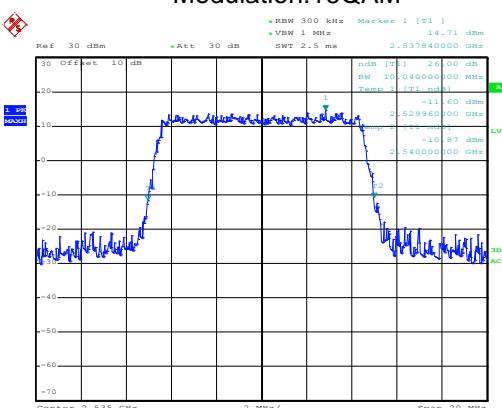
### Modulation:QPSK



Date: 20.JUN.2017 21:43:19

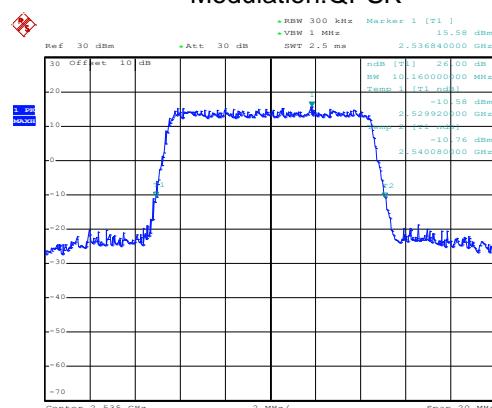
### Lowest channel

### Modulation:16QAM



Date: 20.JUN.2017 21:43:54

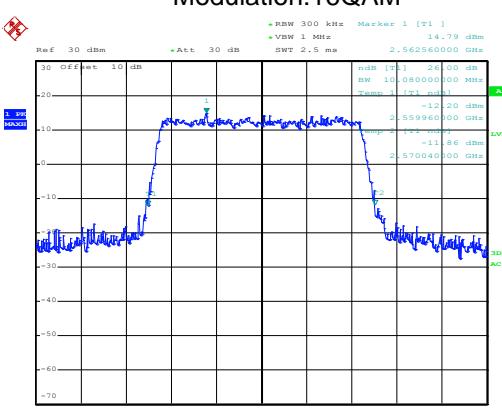
### Modulation:QPSK



Date: 20.JUN.2017 21:43:50

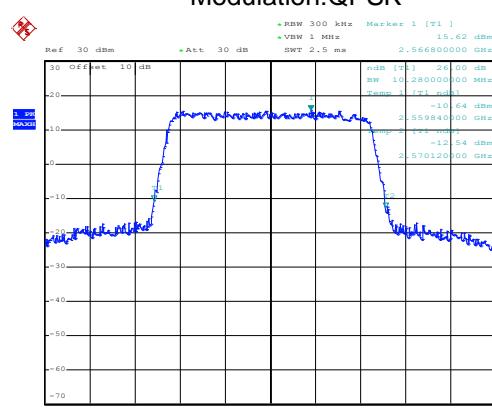
### Middle channel

### Modulation:16QAM



Date: 20.JUN.2017 21:45:02

### Modulation:QPSK



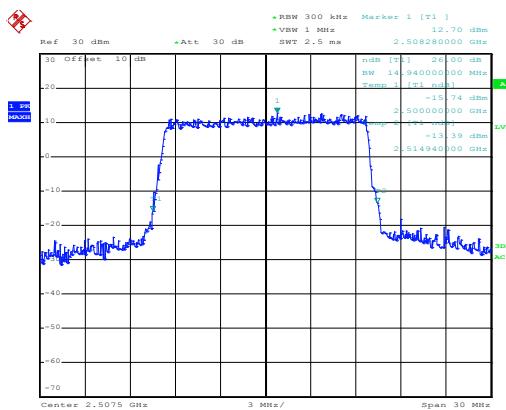
Date: 20.JUN.2017 21:44:56

### Highest channel

Test Item:-26dBc bandwidth

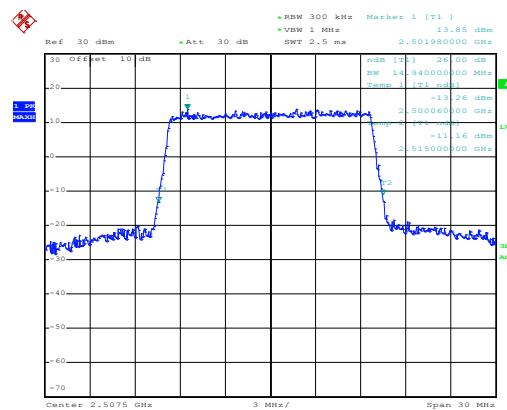
BW: 15MHz

Modulation:16QAM



Date: 20.JUN.2017 21:45:47

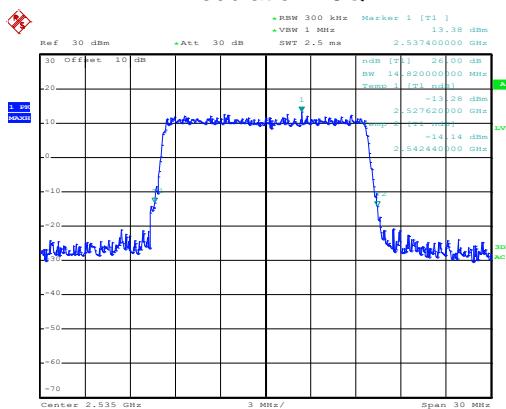
Modulation:QPSK



Date: 20.JUN.2017 21:45:42

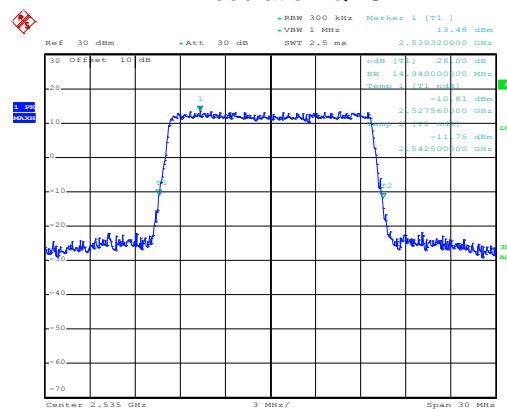
Lowest channel

Modulation:16QAM



Date: 20.JUN.2017 21:46:46

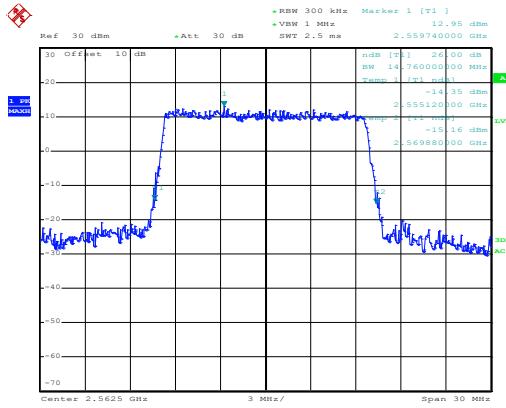
Modulation:QPSK



Date: 20.JUN.2017 21:46:40

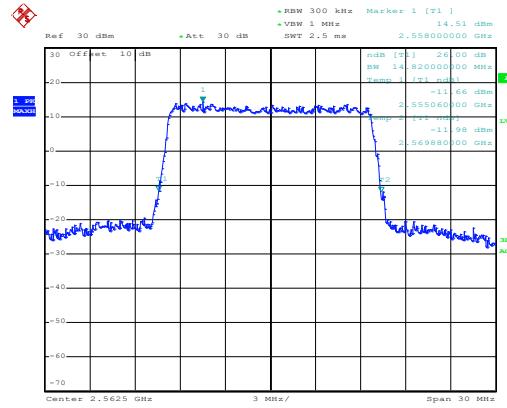
Middle channel

Modulation:16QAM



Date: 20.JUN.2017 21:47:15

Modulation:QPSK



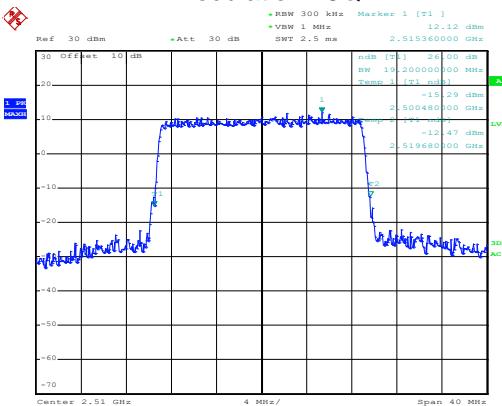
Date: 20.JUN.2017 21:47:10

Highest channel

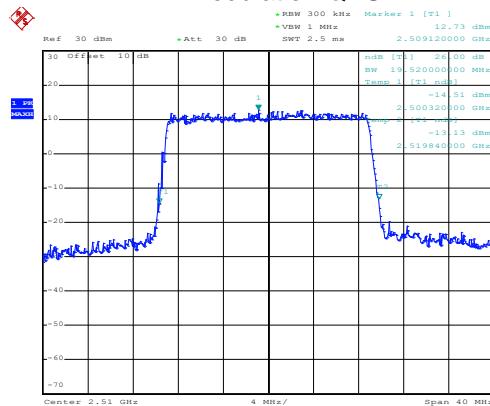
Test Item:-26dBc bandwidth

BW: 20MHz

### Modulation:16QAM



### Modulation:QPSK

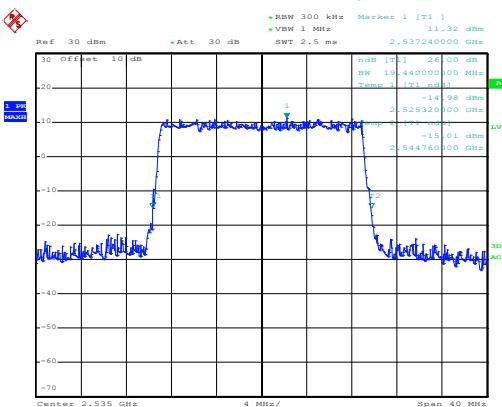


Date: 20.JUN.2017 21:51:04

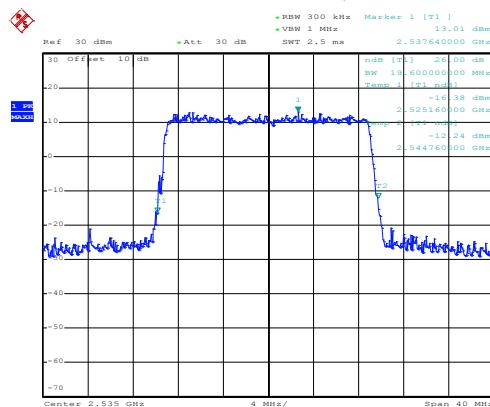
Date: 20.JUN.2017 21:50:58

### Lowest channel

### Modulation:16QAM



### Modulation:QPSK

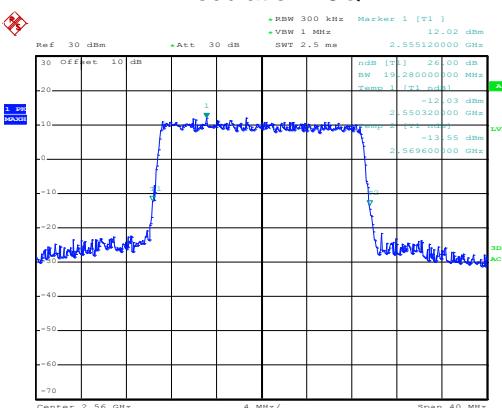


Date: 20.JUN.2017 21:51:29

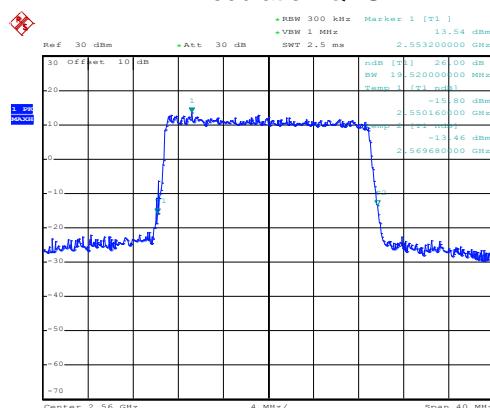
Date: 20.JUN.2017 21:51:24

### Middle channel

### Modulation:16QAM



### Modulation:QPSK



Date: 20.JUN.2017 21:52:26

Date: 20.JUN.2017 21:52:20

### Highest channel

## 6.8 Modulation Characteristic

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

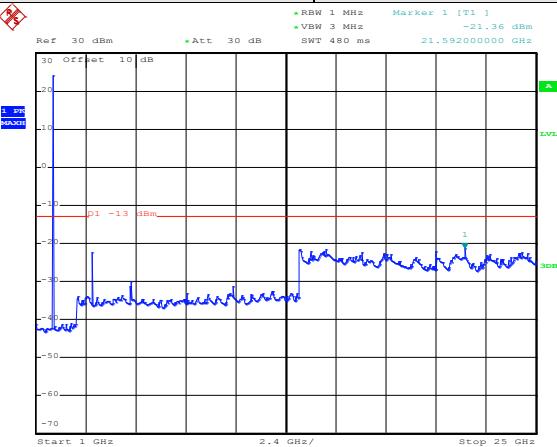
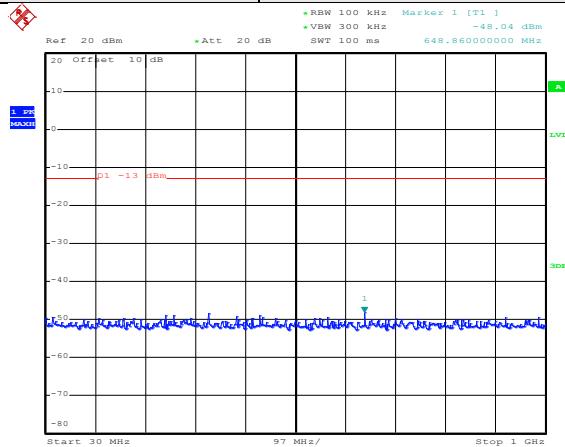
## 6.9 Out of band emission at antenna terminals

Test Requirement:	Part 24.238 (a),part 27.53(h), Part 27.53(m)
Test Method:	FCC part2.1051
Limit:	<p>Band2, Band4, Band17: The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least <math>43 + 10 \log_{10}(P)</math> dB (-13 dBm).</p> <p>Band7: For mobile digital stations, the attenuation factor shall be not less than <math>40 + 10 \log(P)</math> dB on all frequencies between the channel edge and 5 megahertz from the channel edge, <math>43 + 10 \log(P)</math> dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and <math>55 + 10 \log(P)</math> 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> <p>In addition, the attenuation factor shall not be less than <math>43 + 10 \log(P)</math> dB on all frequencies between 2490.5 MHz and 2496 MHz and <math>55 + 10 \log(P)</math> dB at or below 2490.5 MHz.</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"> <li>The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation.</li> <li>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.</li> <li>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.</li> <li>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.</li> </ol>
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**

Test Mode:	LTE band 2(1.4 MHz 16QAM) RB Size 1 & RB Offset 0	Test Channel:	Lowest channel
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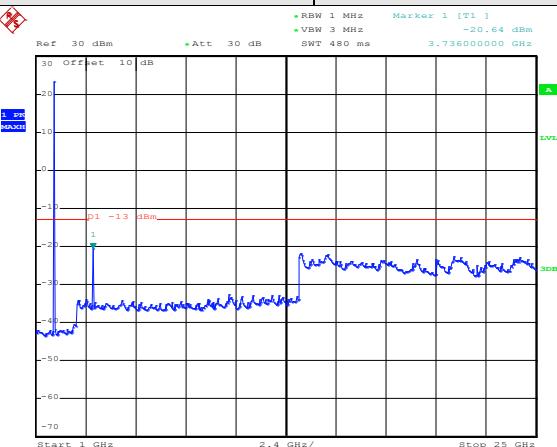
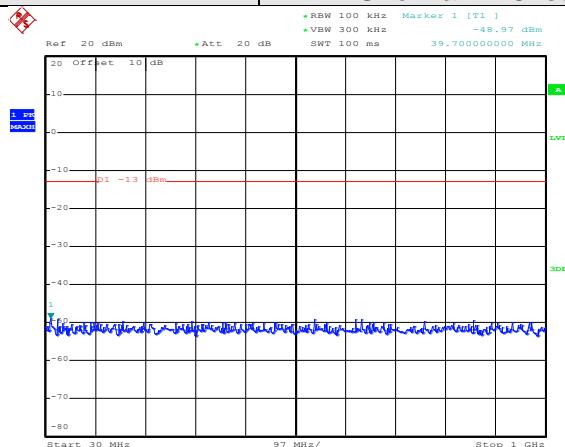
Date: 22.JUN.2017 16:04:09

30MHz~1GHz

Date: 21.JUN.2017 22:19:37

1GHz~25GHz

Test Mode:	LTE band 2(1.4 MHz 16QAM) RB Size 1 & RB Offset 0	Test Channel:	Middle channel
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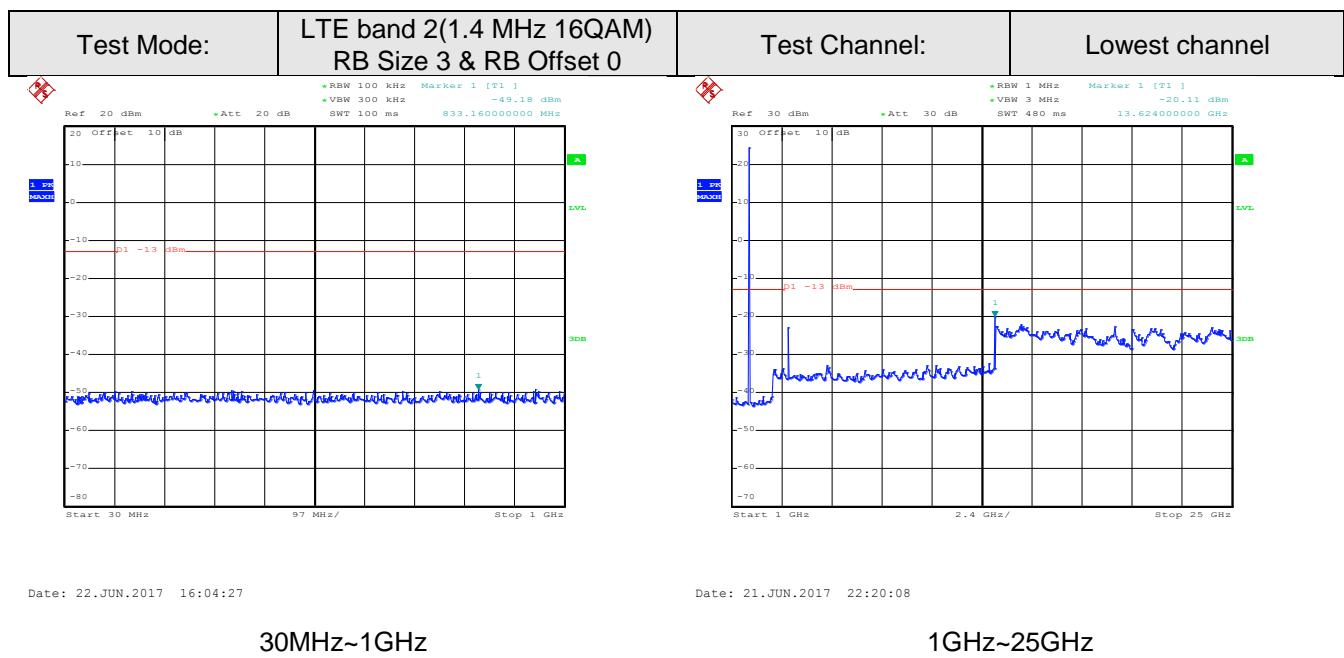
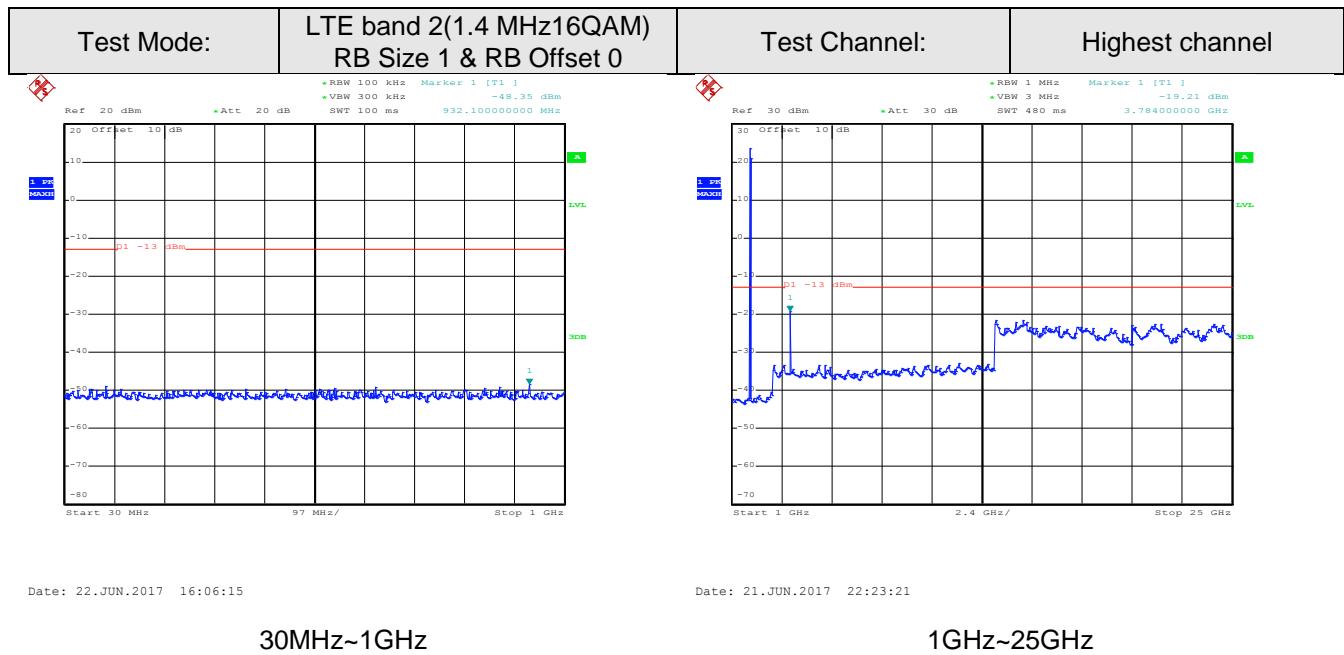


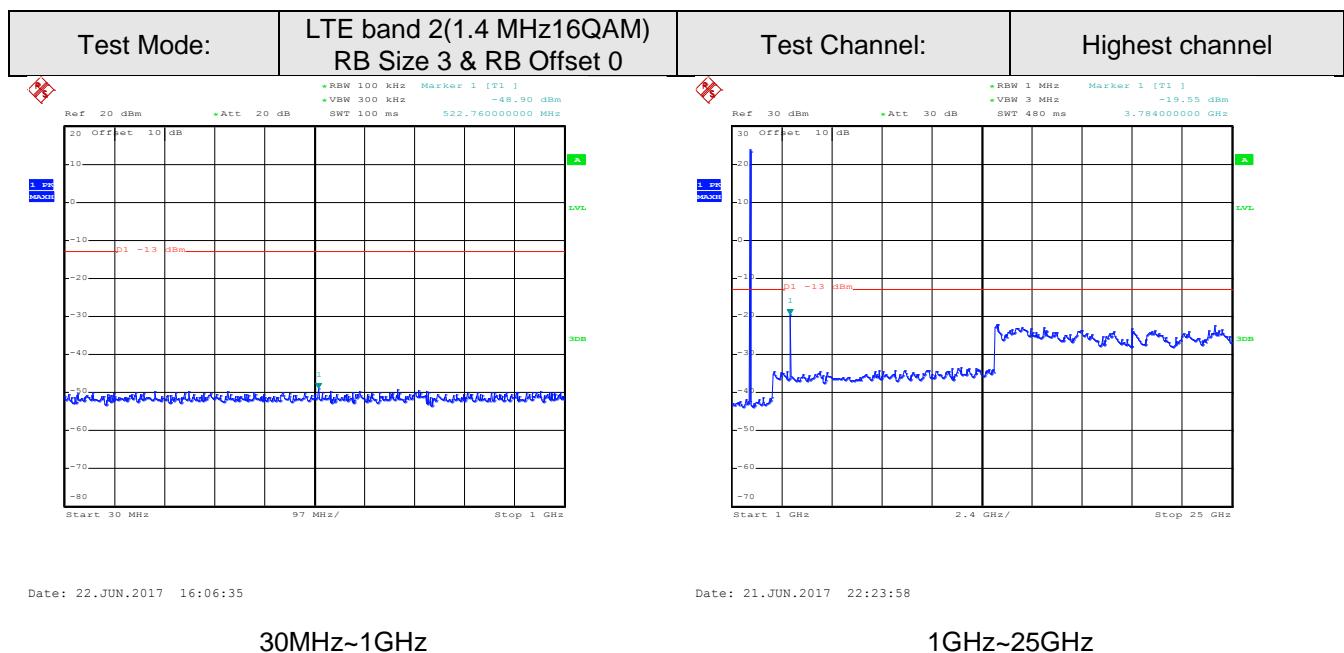
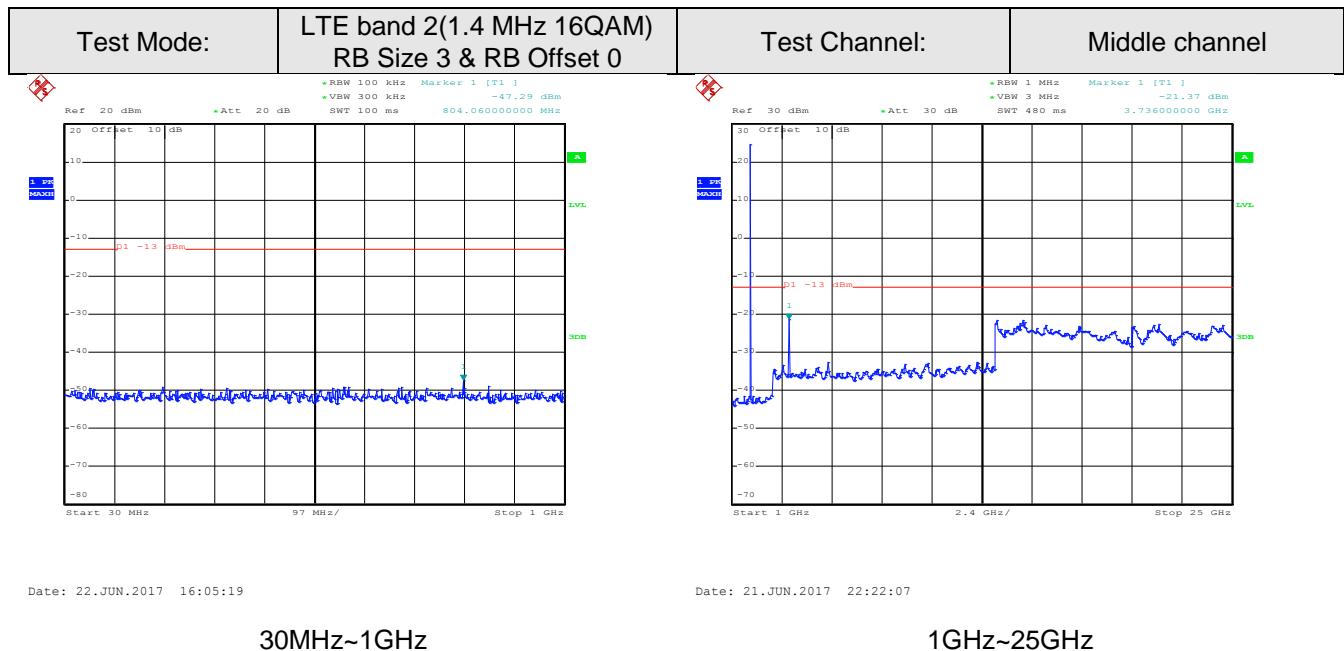
Date: 22.JUN.2017 16:05:00

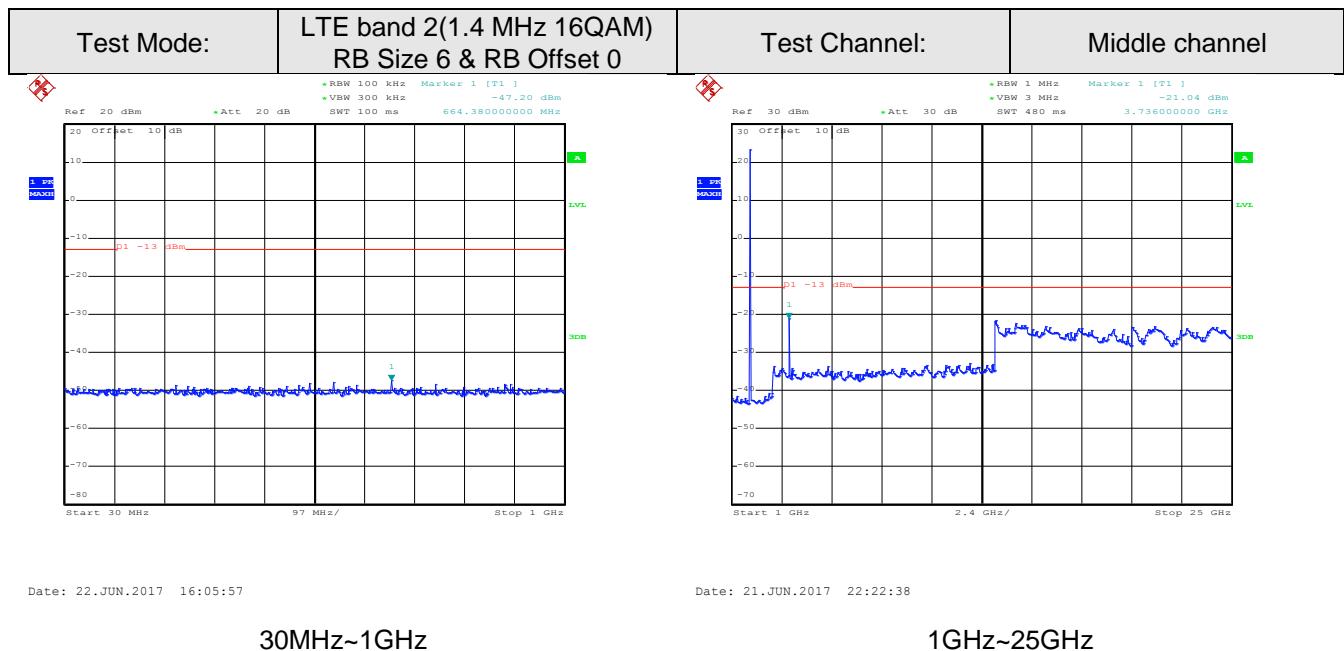
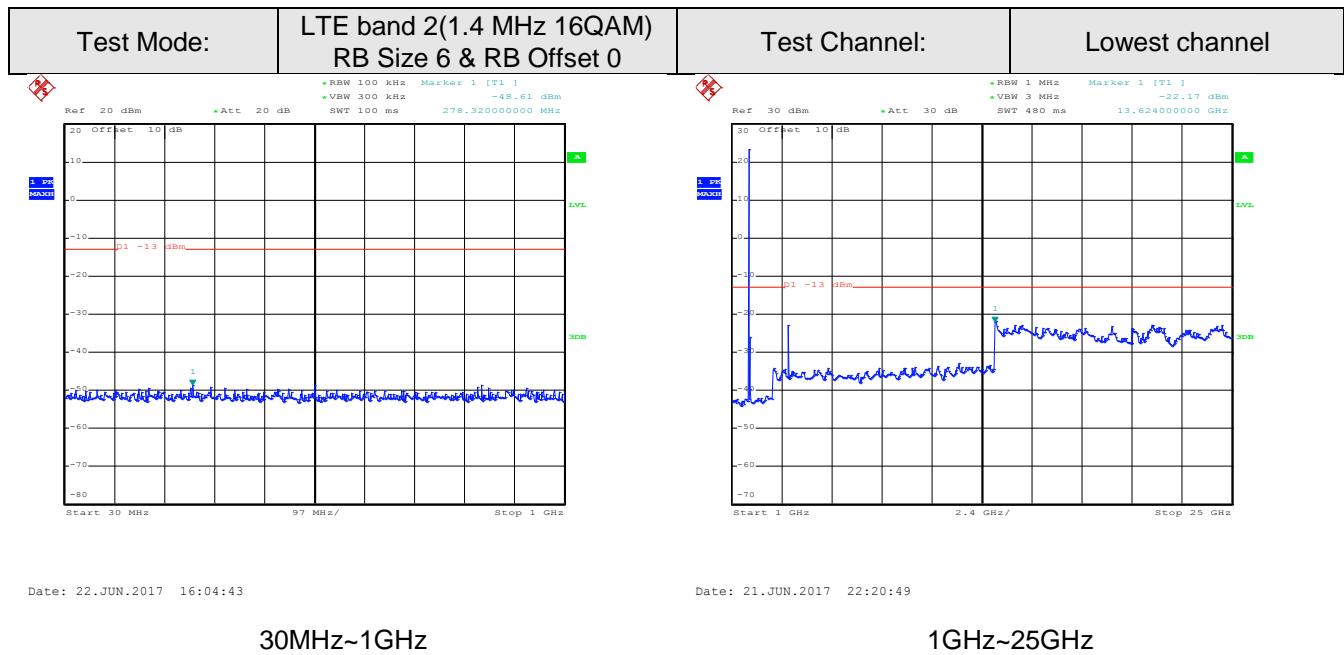
30MHz~1GHz

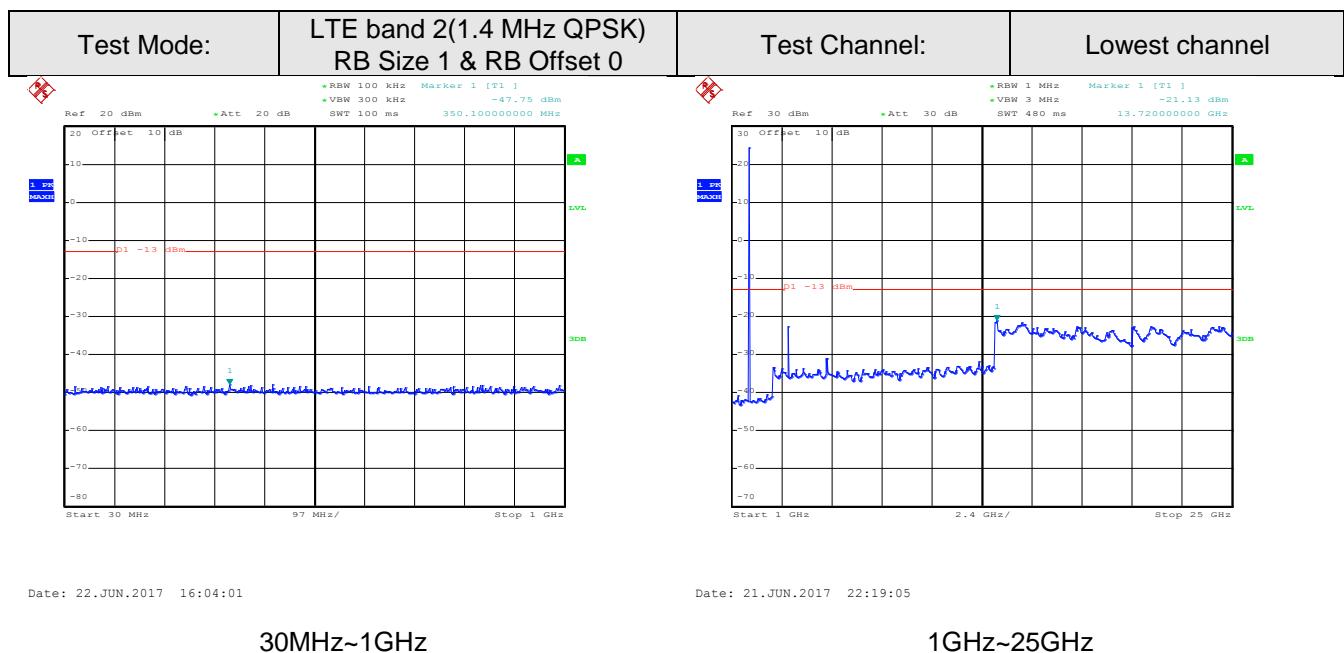
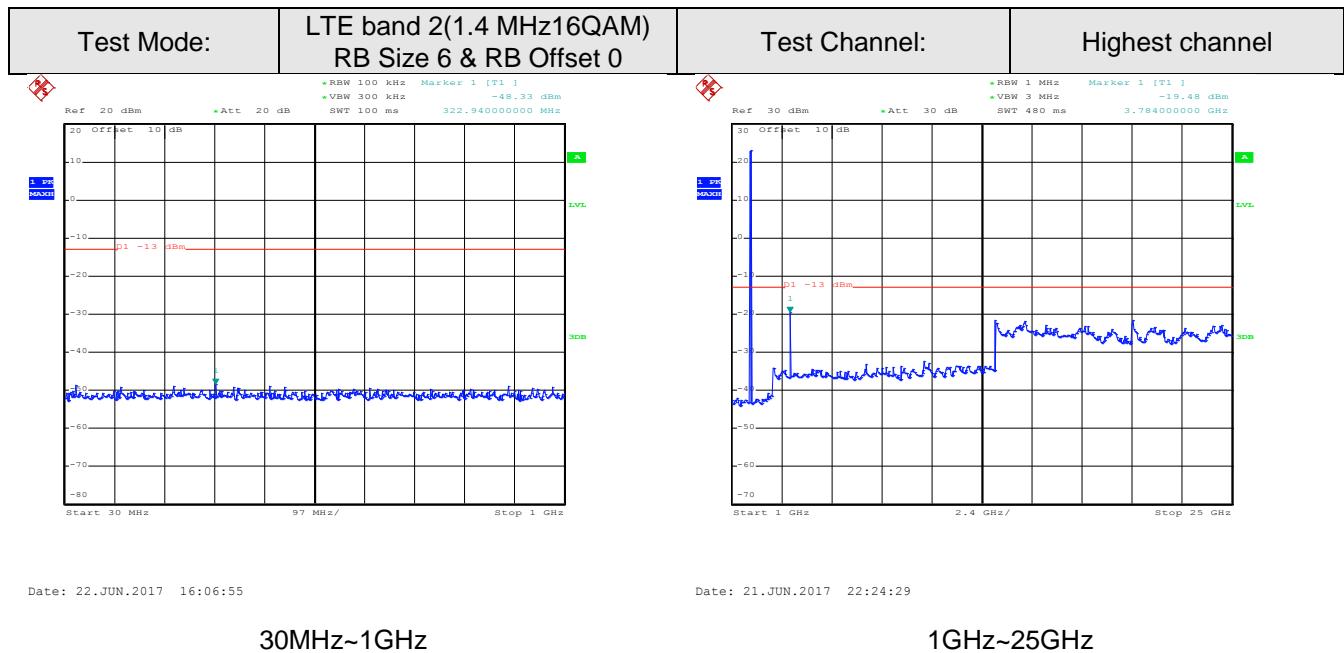
Date: 21.JUN.2017 22:21:32

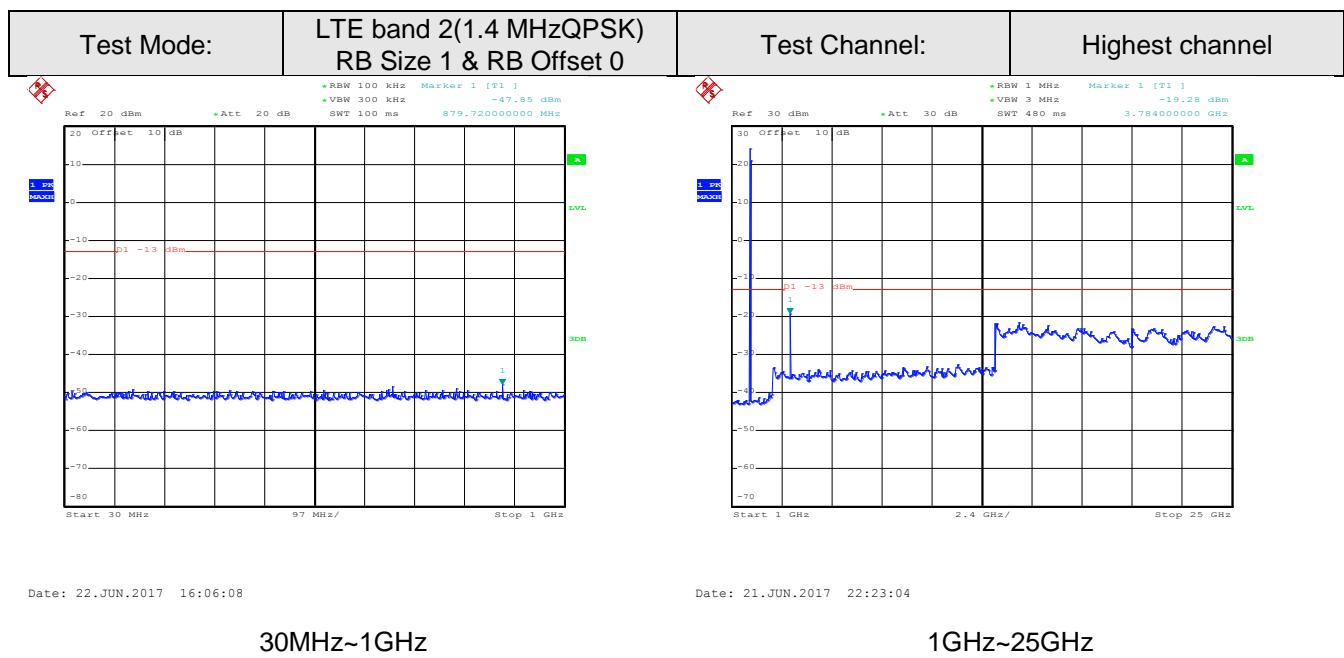
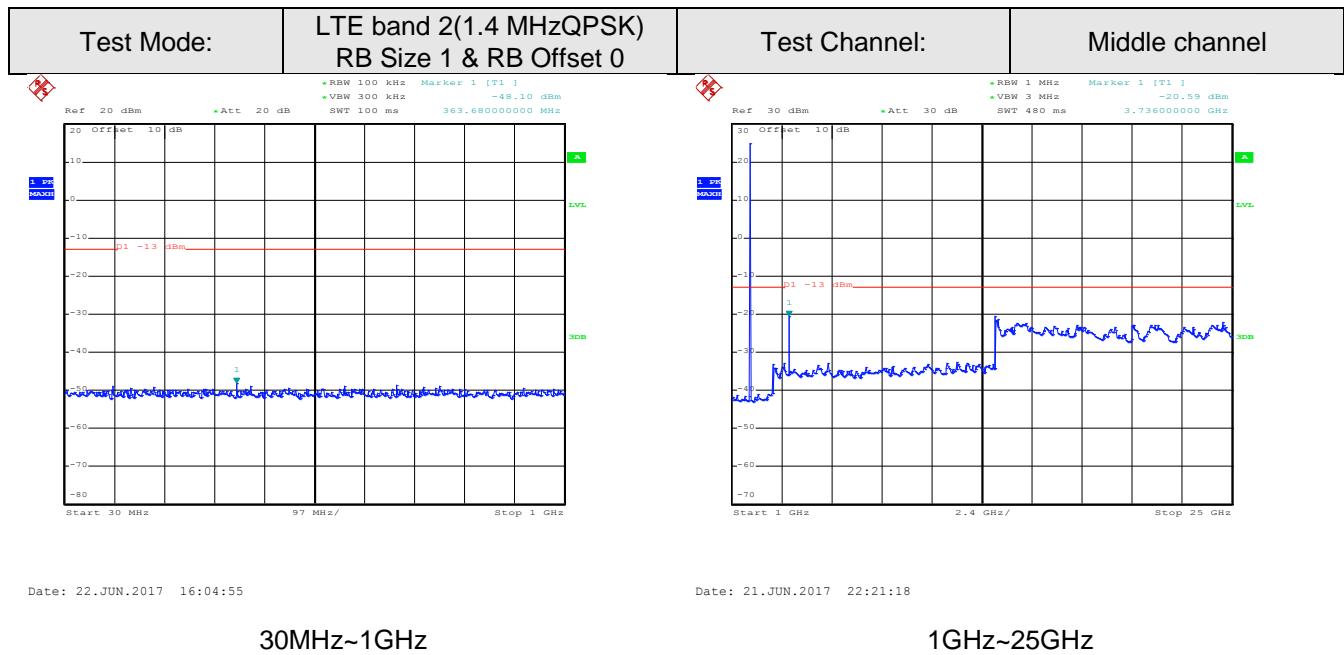
1GHz~25GHz



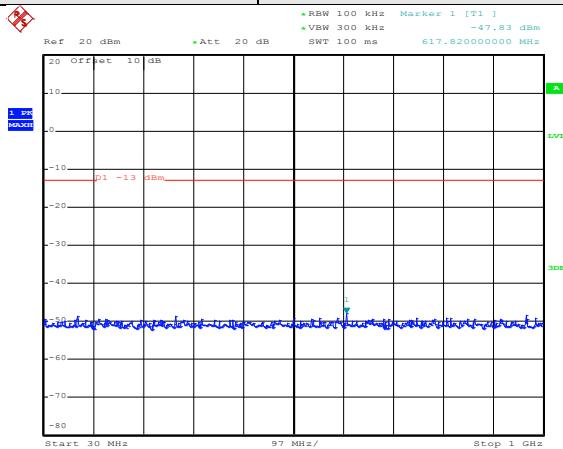






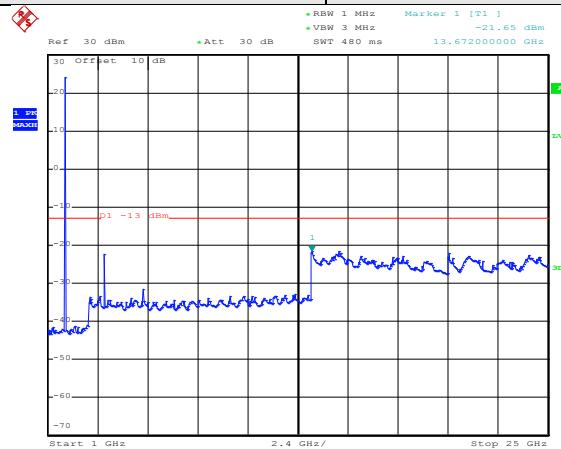


Test Mode:	LTE band 2(1.4 MHz QPSK) RB Size 3 & RB Offset 0	Test Channel:	Lowest channel
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Date: 22.JUN.2017 16:04:21

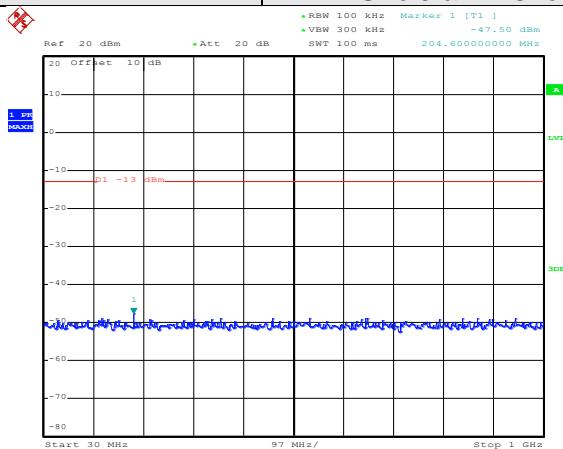
30MHz~1GHz



Date: 21.JUN.2017 22:19:56

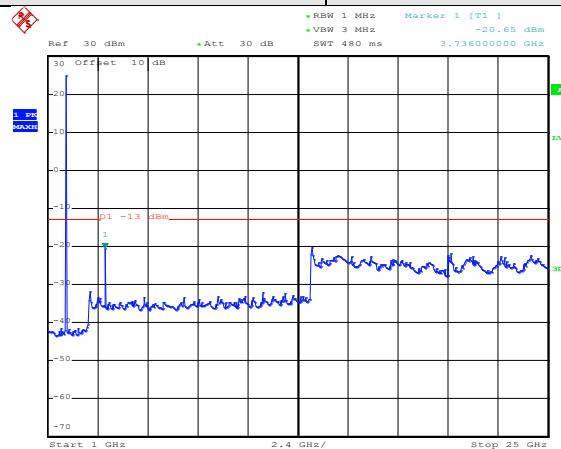
1GHz~25GHz

Test Mode:	LTE band 2(1.4 MHzQPSK) RB Size 3 & RB Offset 0	Test Channel:	Middle channel
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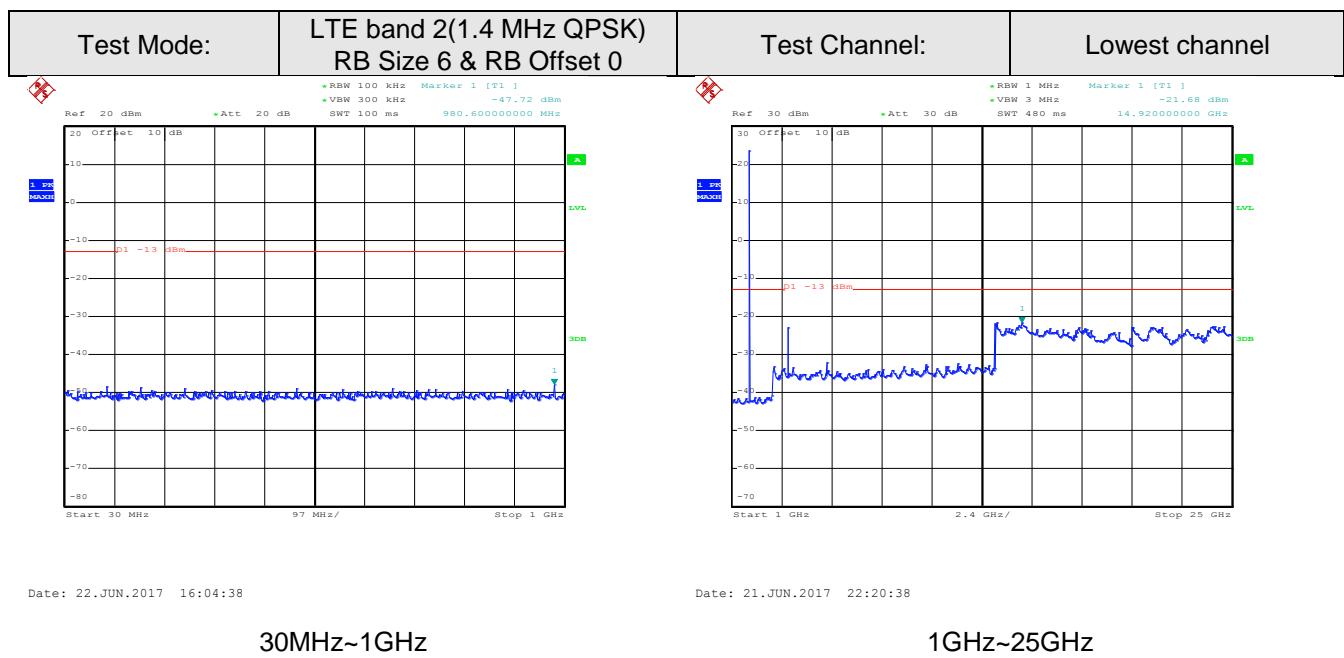
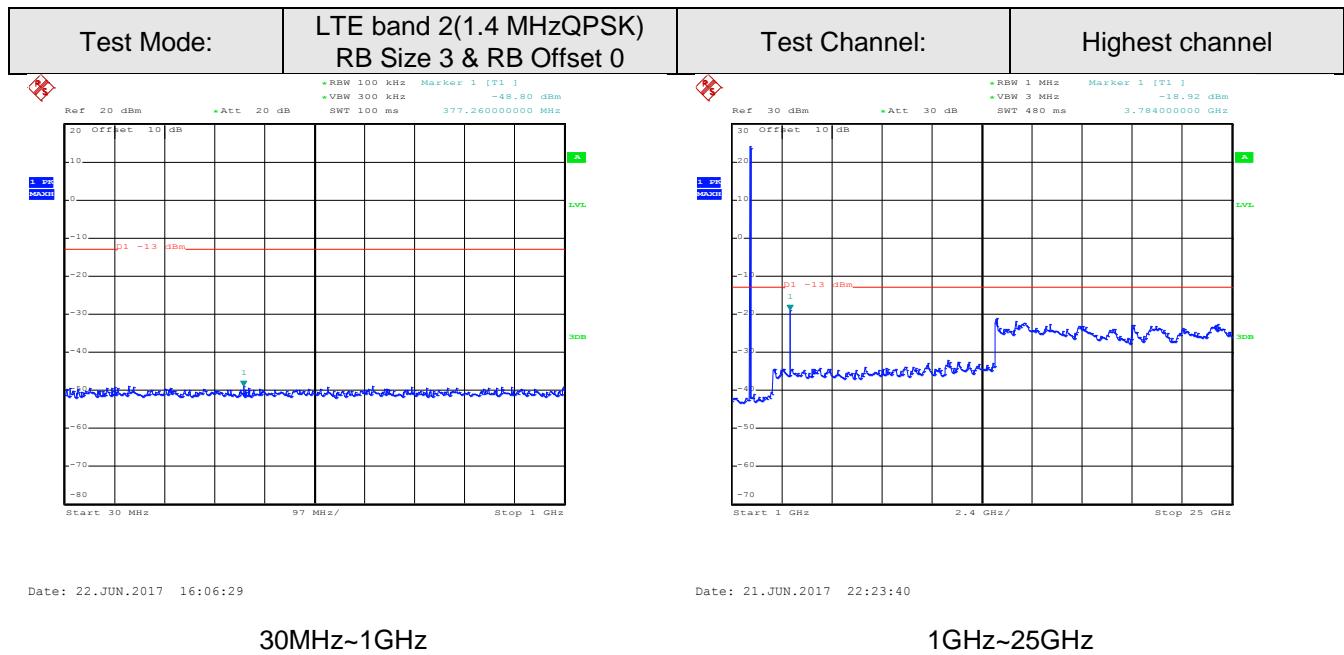
Date: 22.JUN.2017 16:05:13

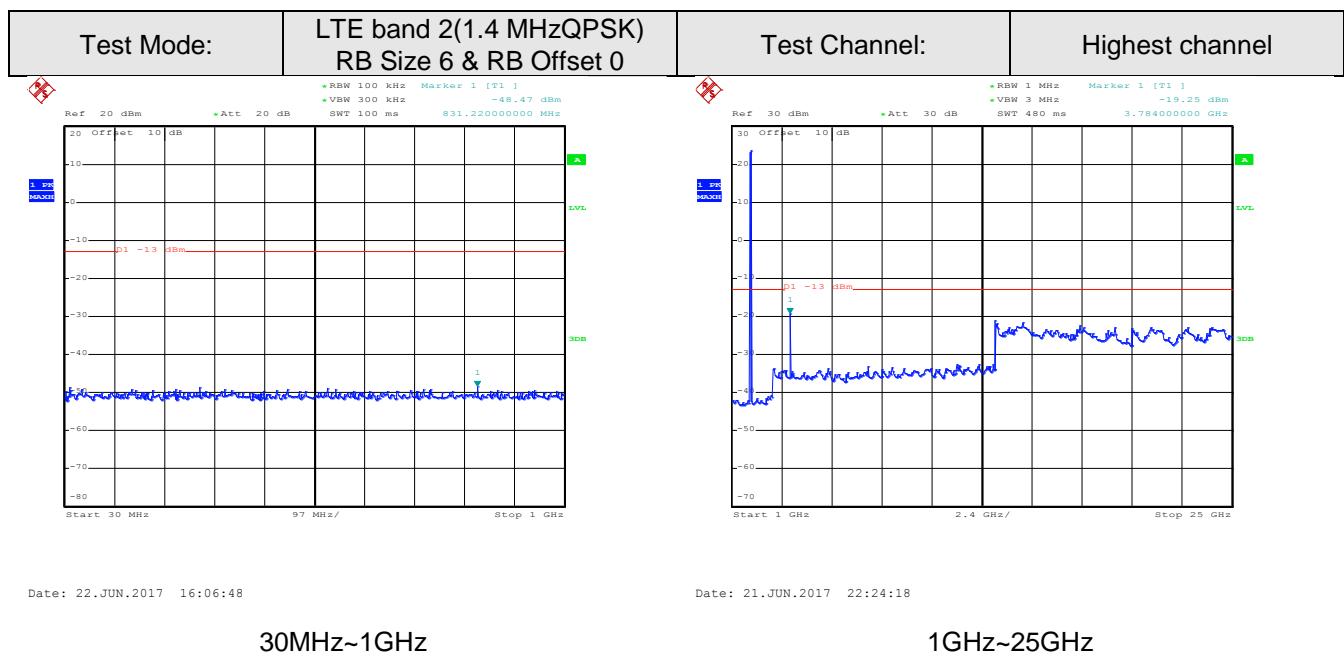
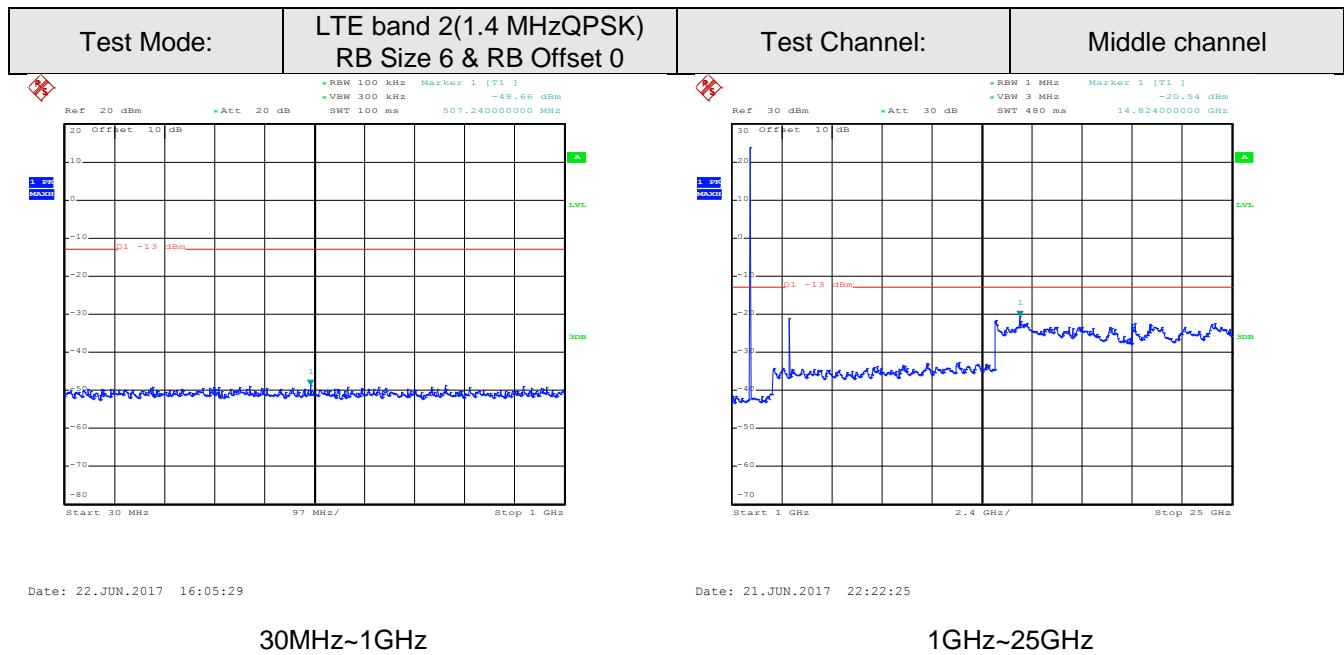
30MHz~1GHz



Date: 21.JUN.2017 22:21:53

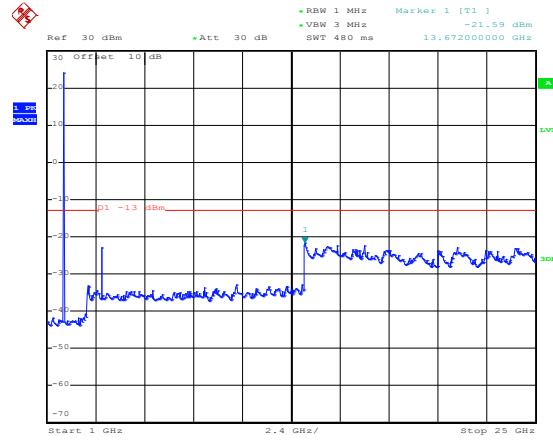
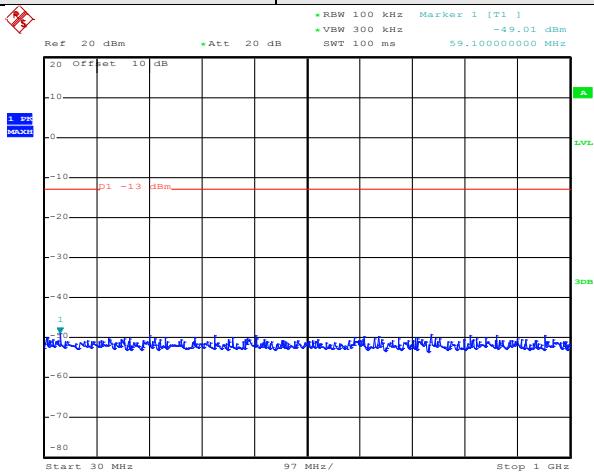
1GHz~25GHz





## 3MHz

Test Mode:	LTE band 2(3MHz 16QAM) RB Size 1 & RB Offset 0	Test Channel:	Lowest channel
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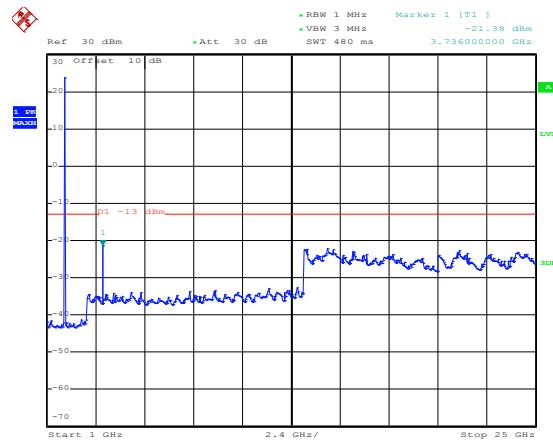
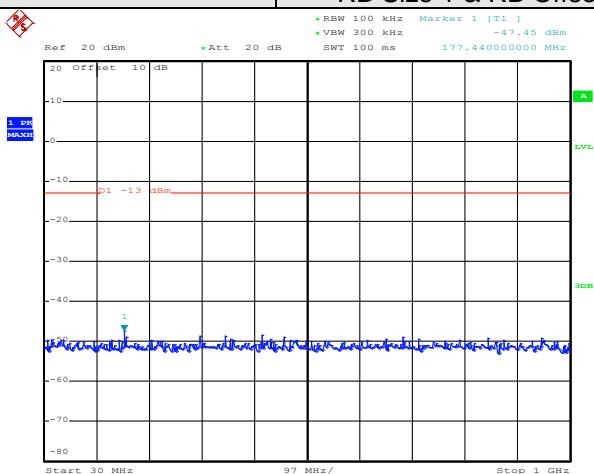
Date: 22.JUN.2017 16:07:58

Date: 21.JUN.2017 22:25:28

30MHz~1GHz

1GHz~25GHz

Test Mode:	LTE band 2(3MHz 16QAM) RB Size 1 & RB Offset 0	Test Channel:	Middle channel
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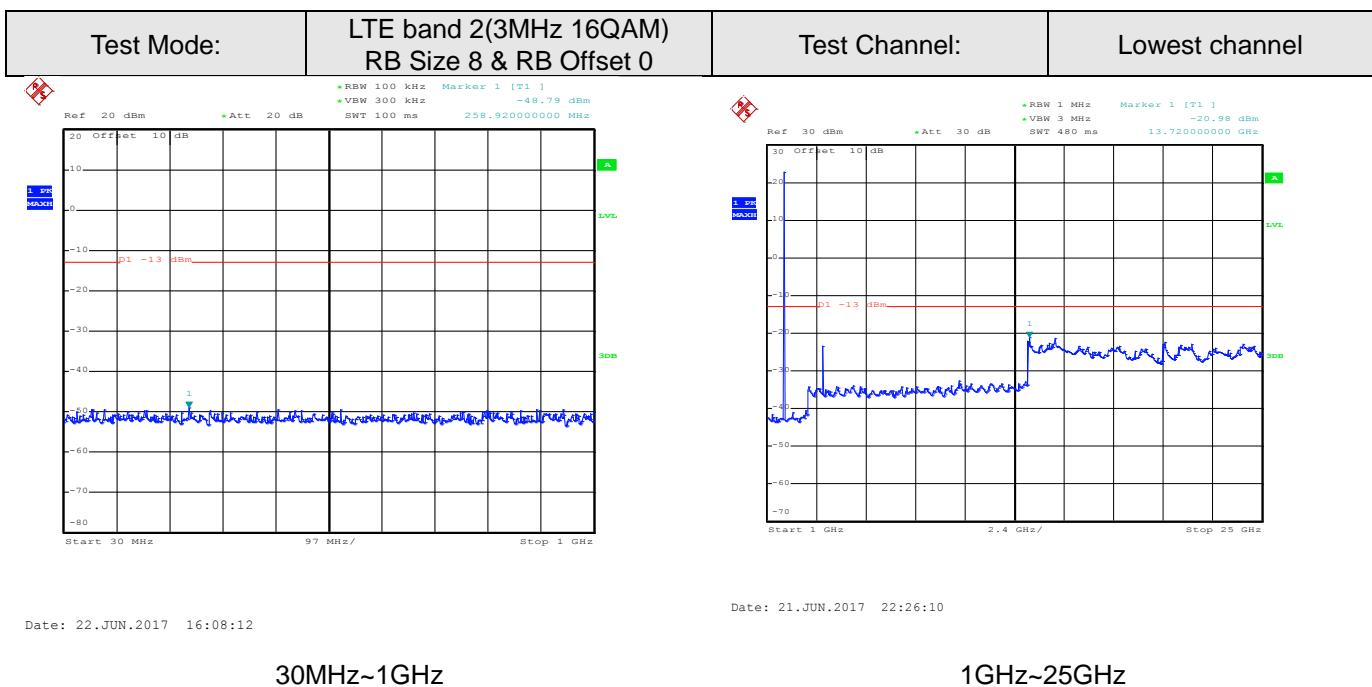
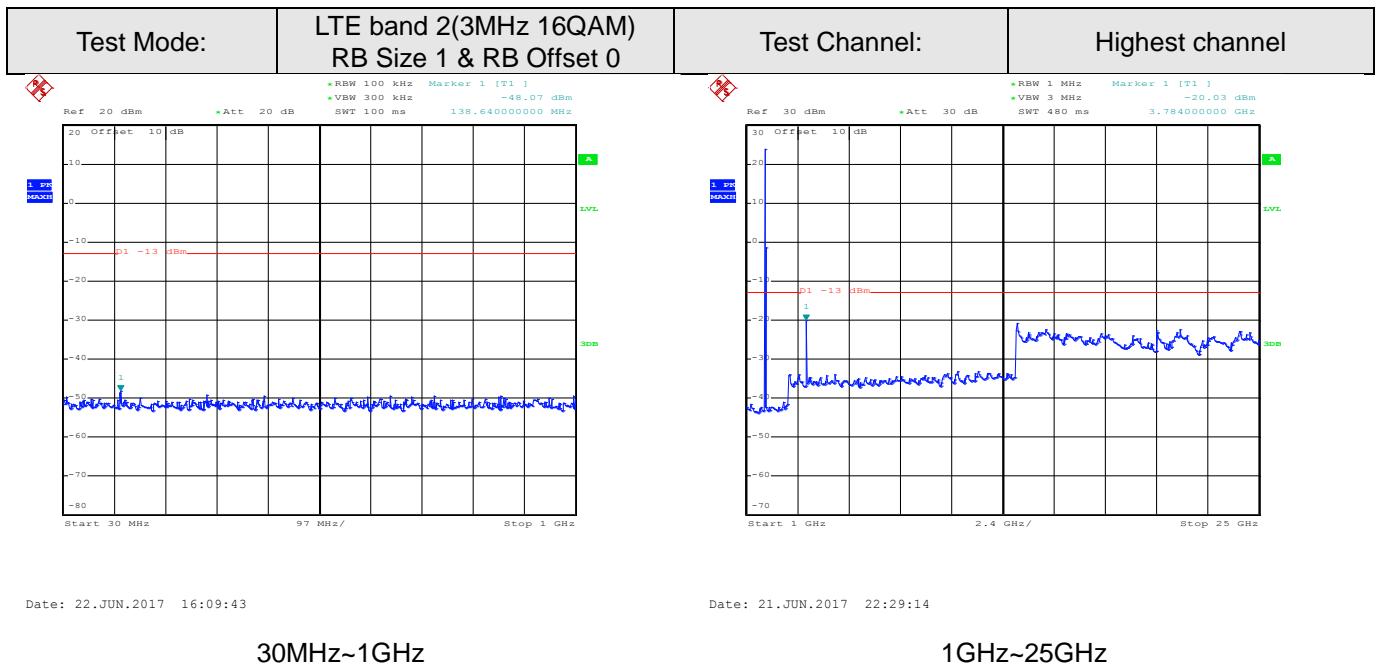


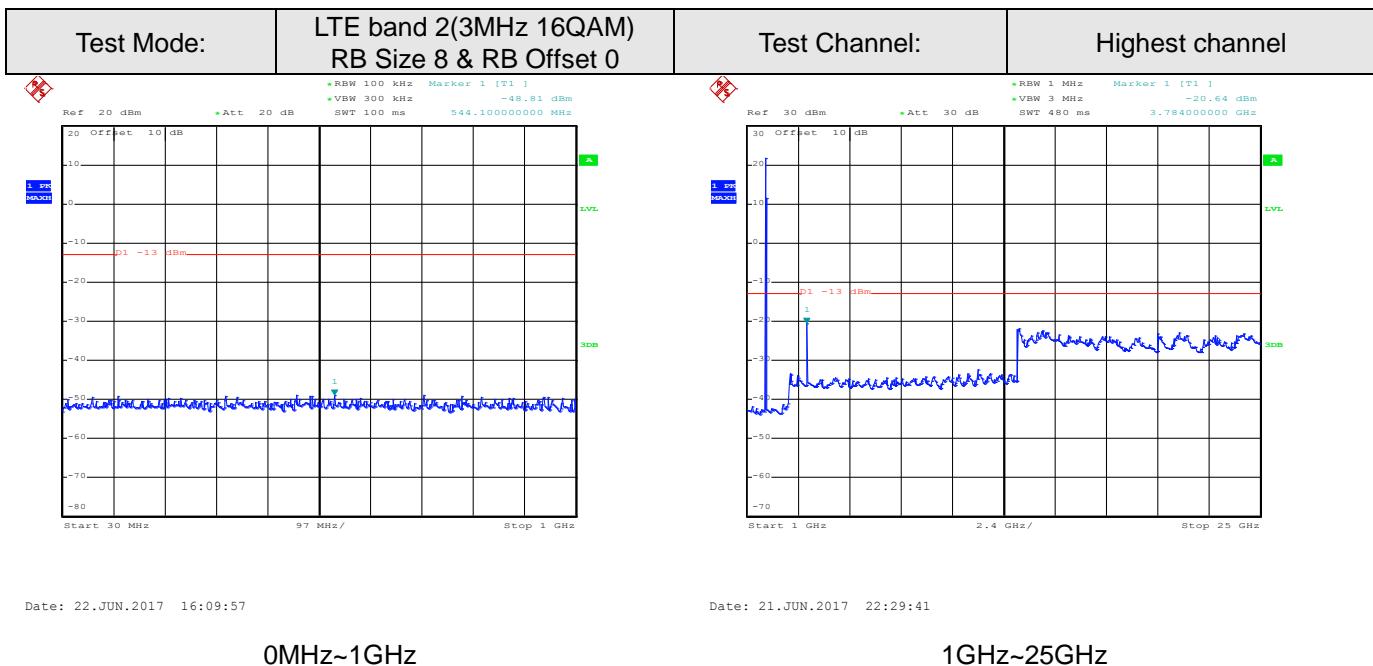
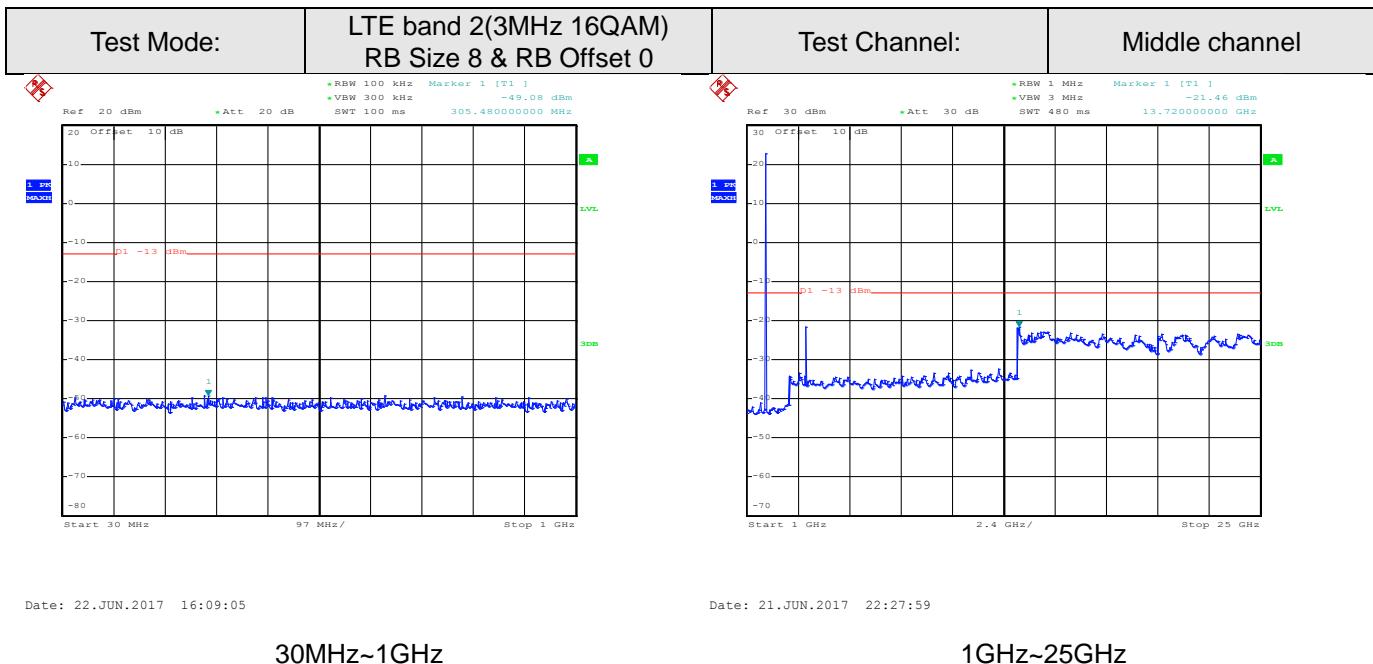
Date: 22.JUN.2017 16:08:48

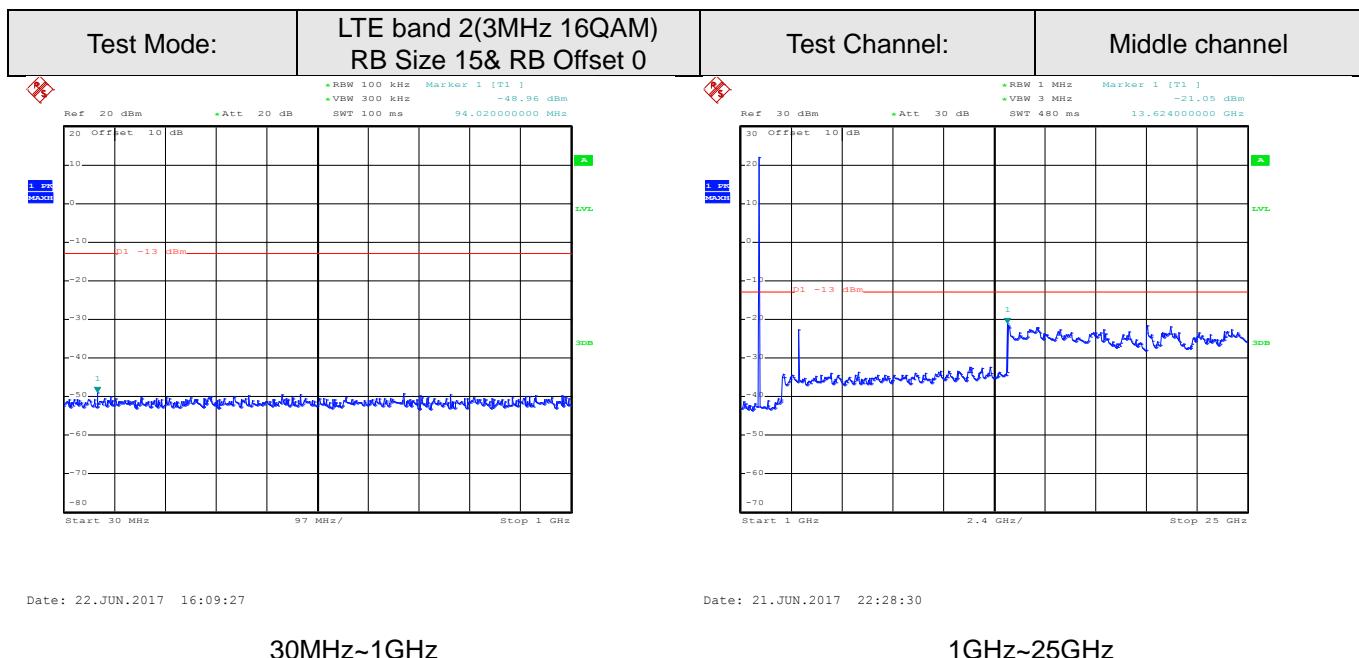
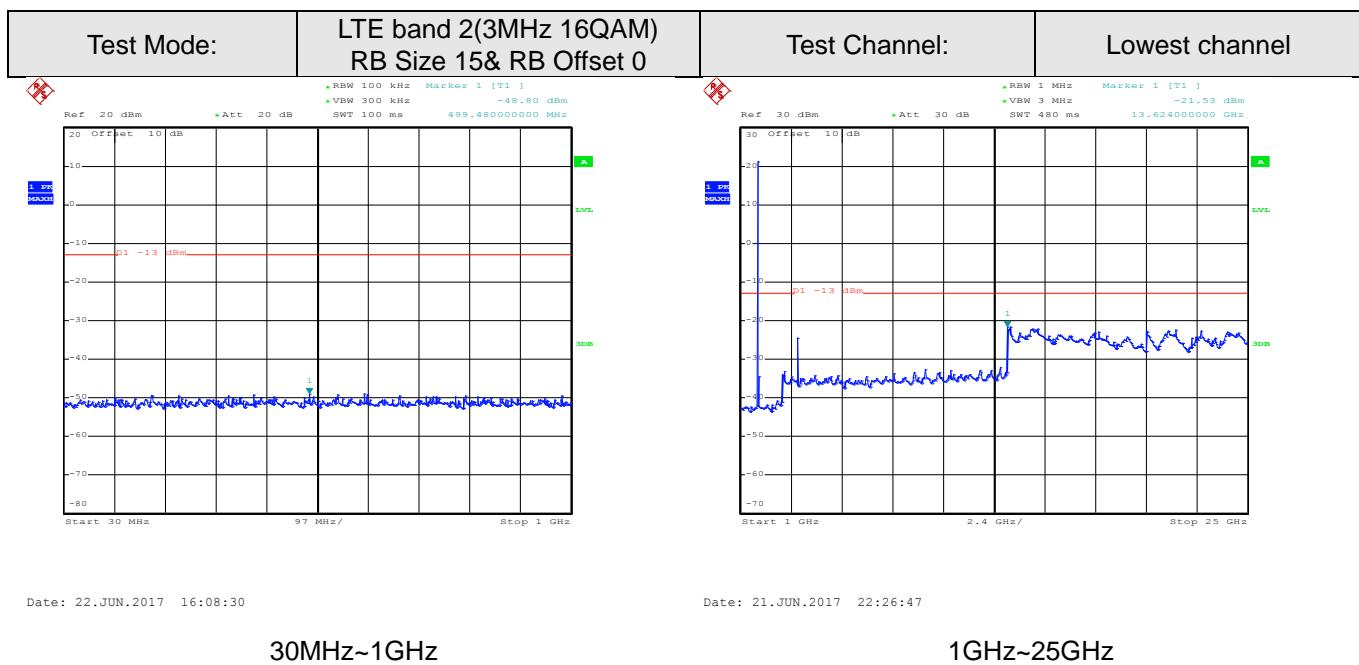
Date: 21.JUN.2017 22:27:27

30MHz~1GHz

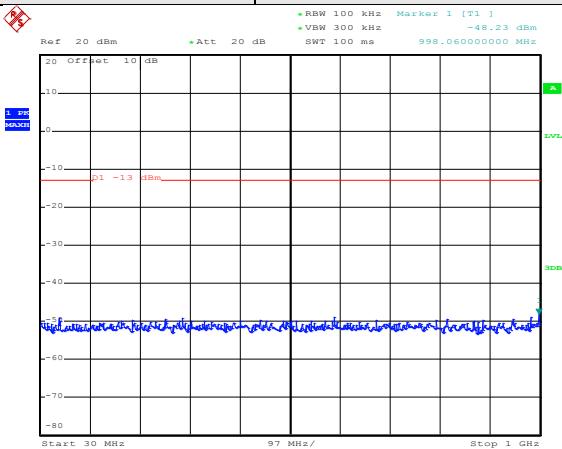
1GHz~25GHz





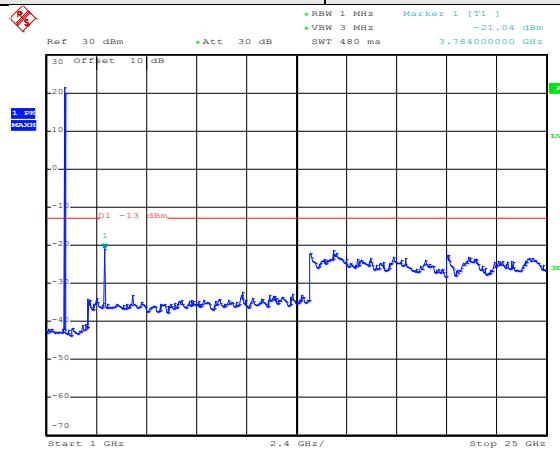


Test Mode:	LTE band 2(3MHz 16QAM) RB Size 15& RB Offset 0	Test Channel:	Highest channel
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Date: 22.JUN.2017 16:10:16

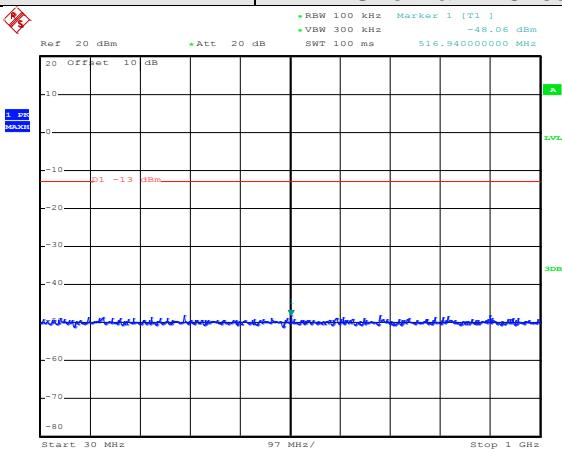
30MHz~1GHz



Date: 21.JUN.2017 22:30:09

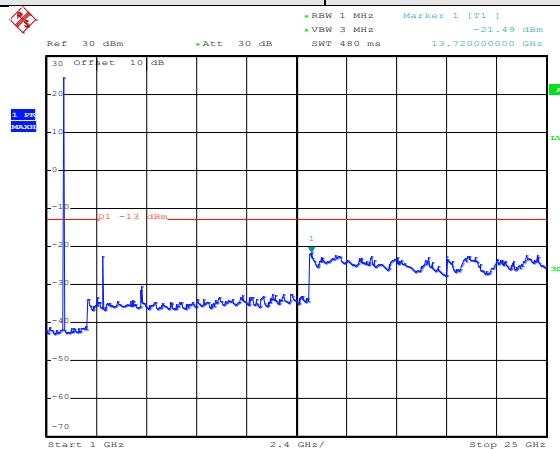
1GHz~25GHz

Test Mode:	LTE band 2(3MHz QPSK) RB Size 1 & RB Offset 0	Test Channel:	Lowest channel
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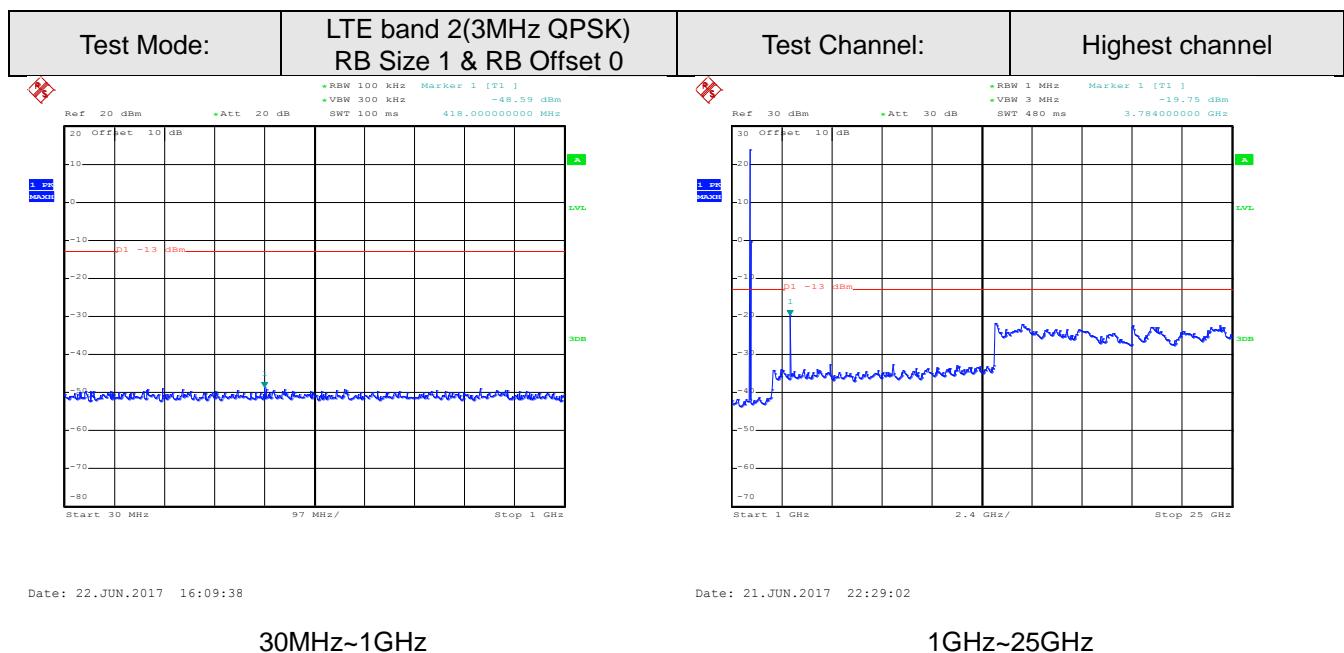
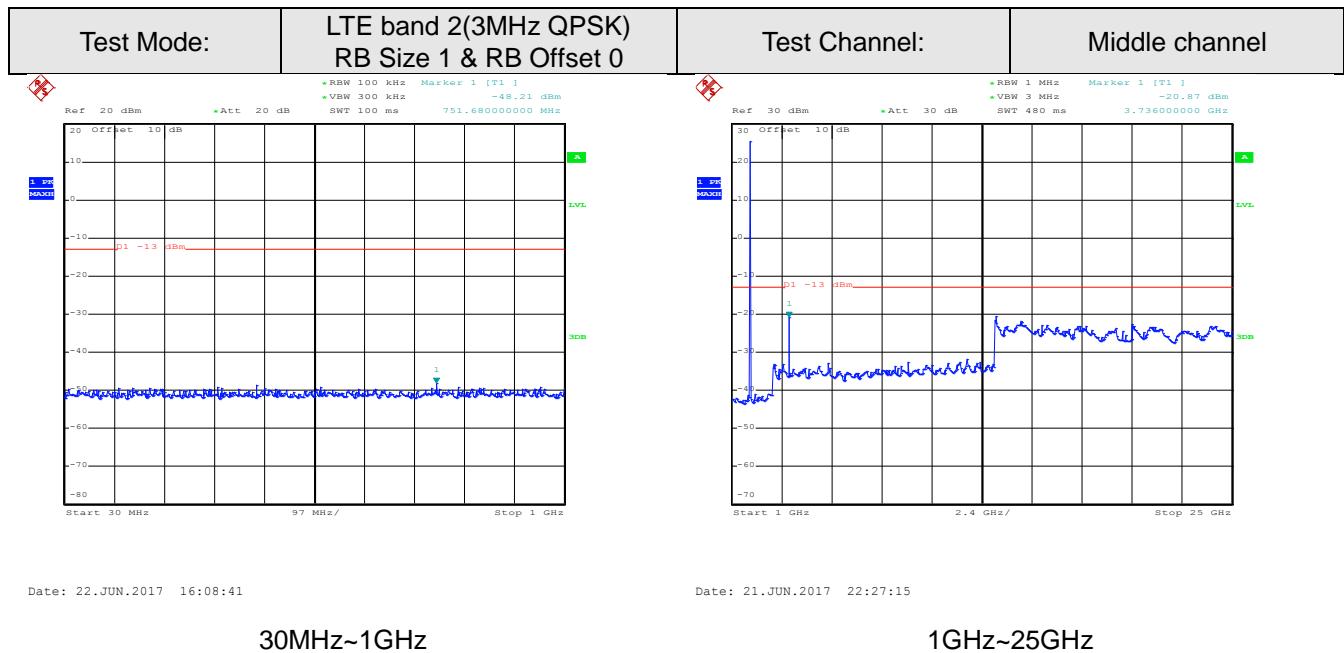
Date: 22.JUN.2017 16:07:53

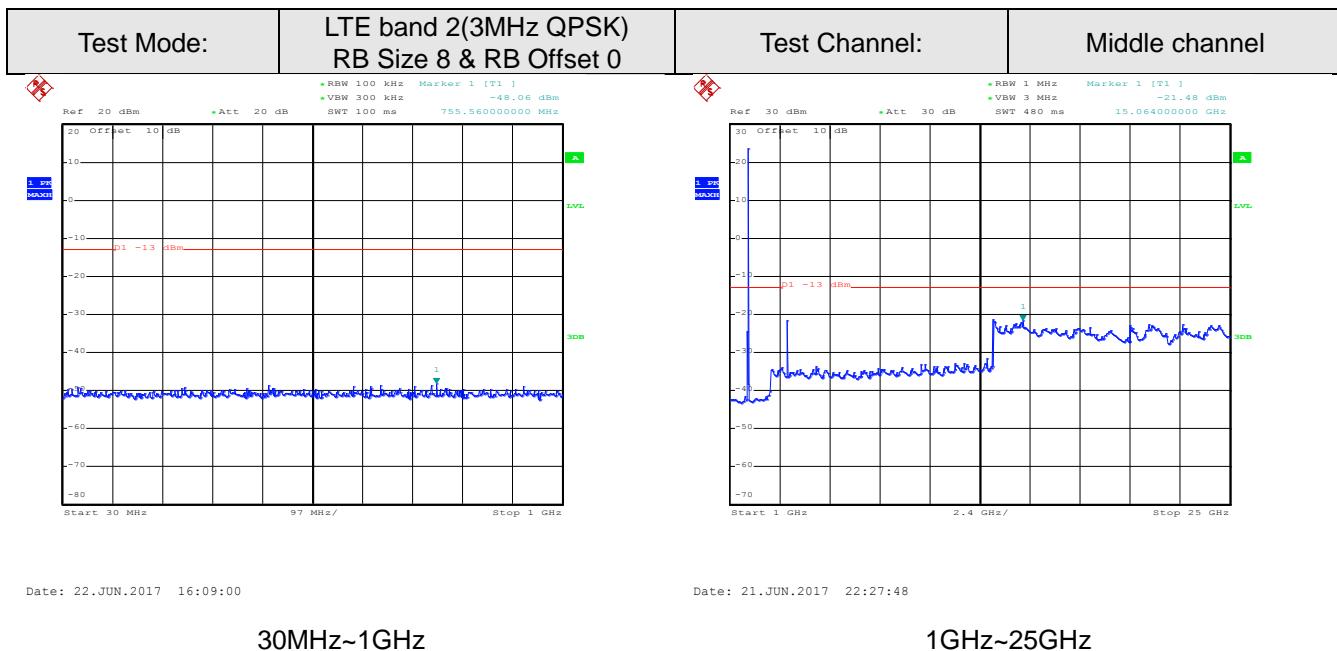
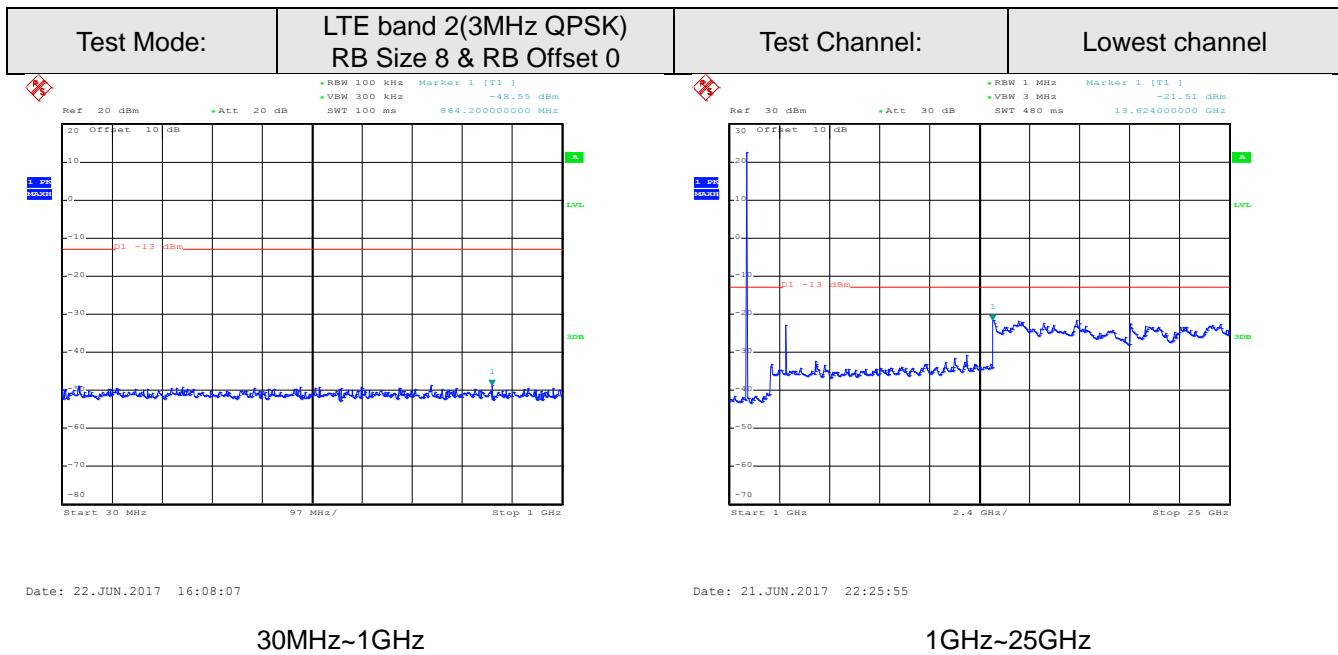
30MHz~1GHz



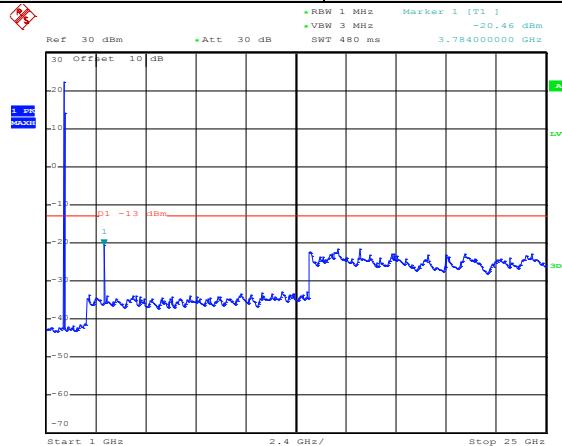
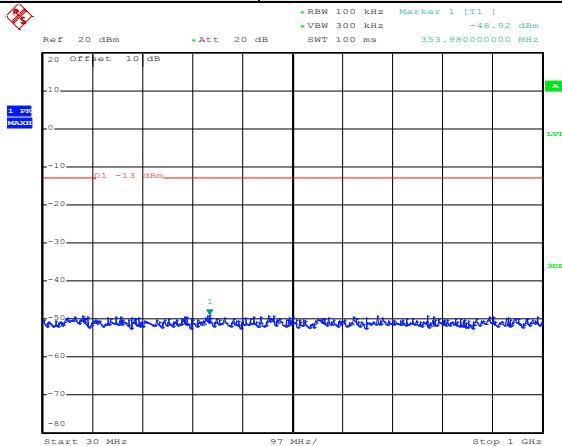
Date: 21.JUN.2017 22:25:16

1GHz~25GHz





Test Mode:	LTE band 2(3MHz QPSK) RB Size 8 & RB Offset 0	Test Channel:	Highest channel
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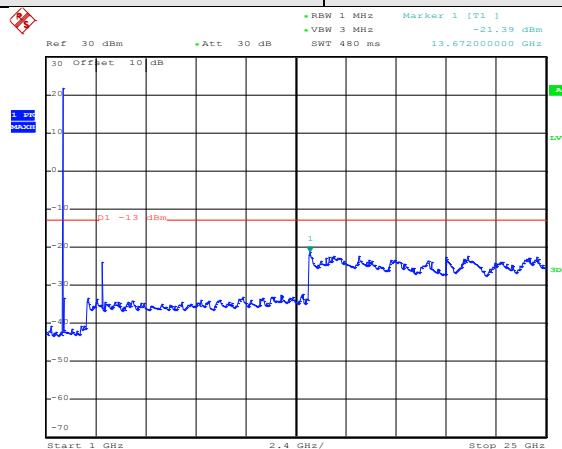
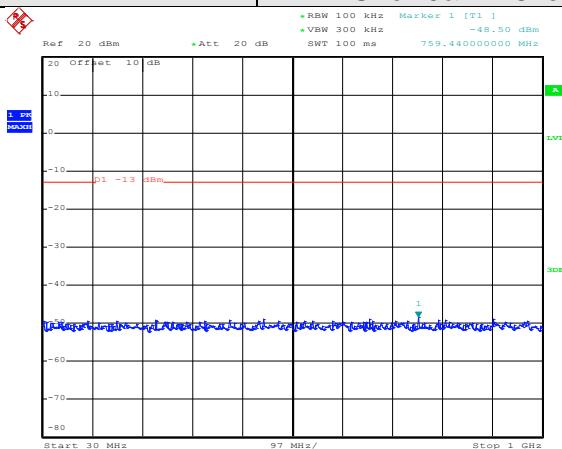
Date: 22.JUN.2017 16:09:51

30MHz~1GHz

Date: 21.JUN.2017 22:29:30

1GHz~25GHz

Test Mode:	LTE band 2(3MHz QPSK) RB Size 15& RB Offset 0	Test Channel:	Lowest channel
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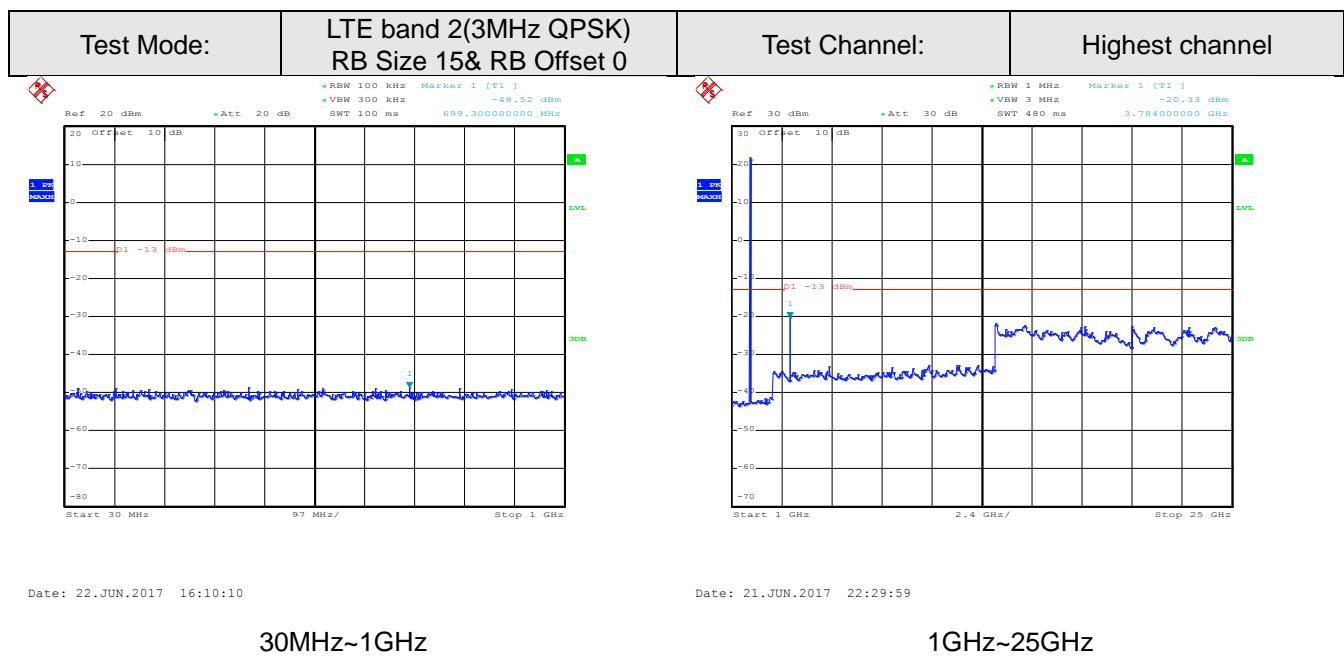
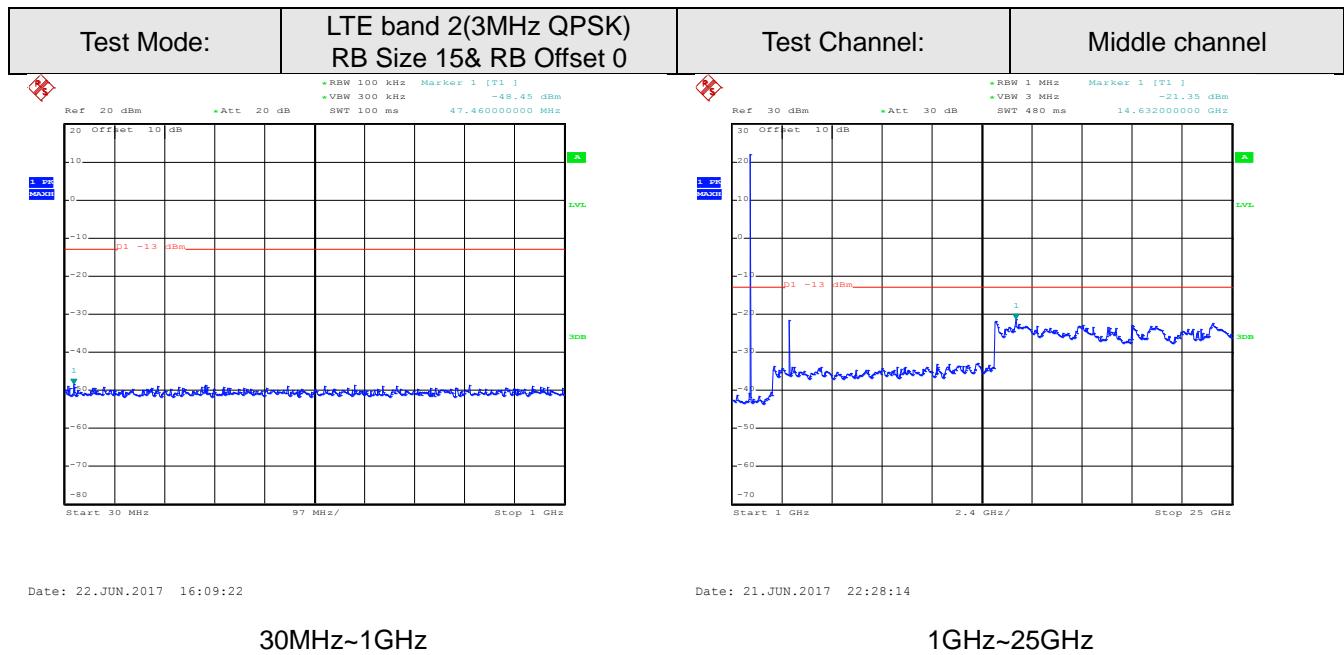


Date: 22.JUN.2017 16:08:23

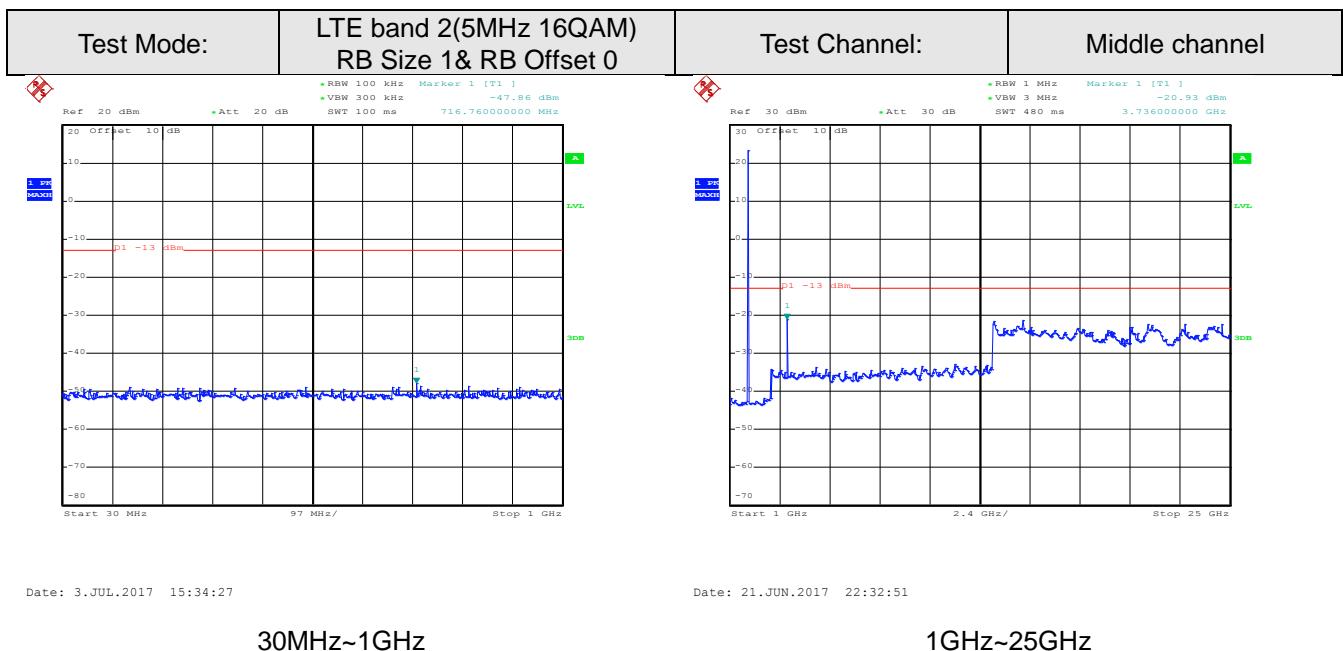
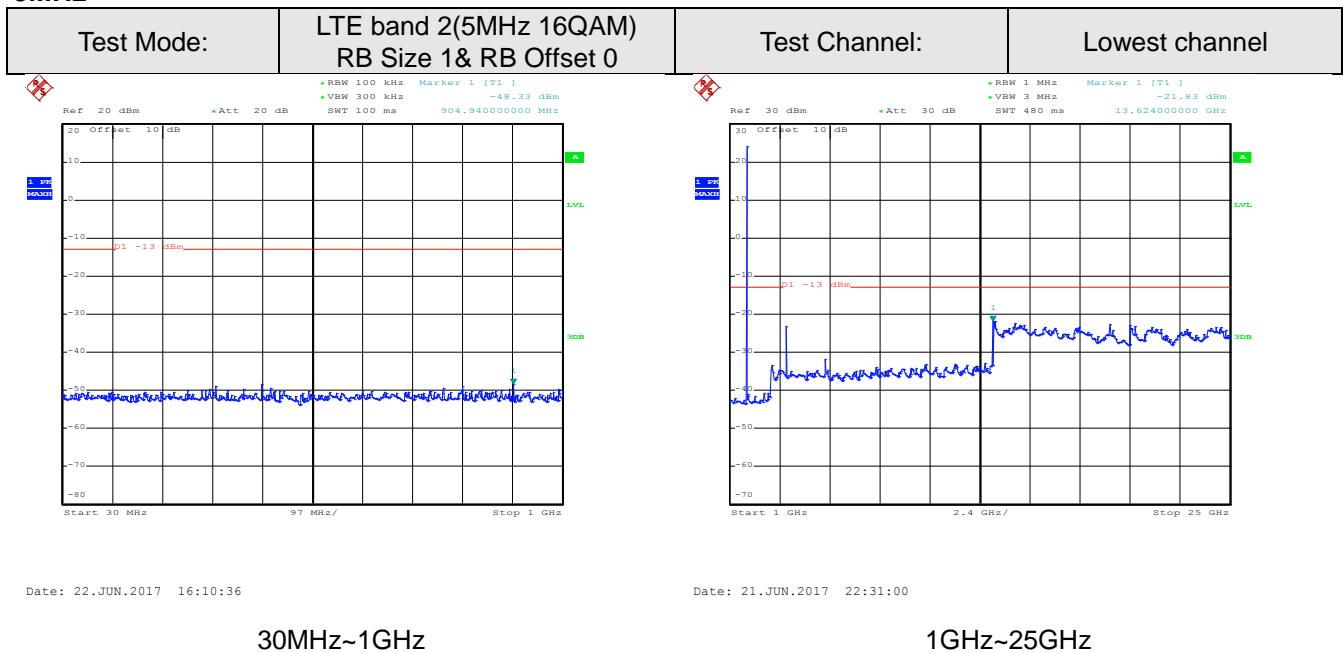
30MHz~1GHz

Date: 21.JUN.2017 22:26:32

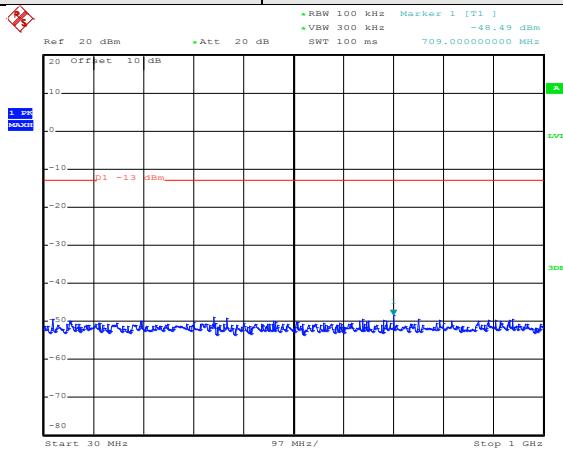
1GHz~25GHz



## 5MHz

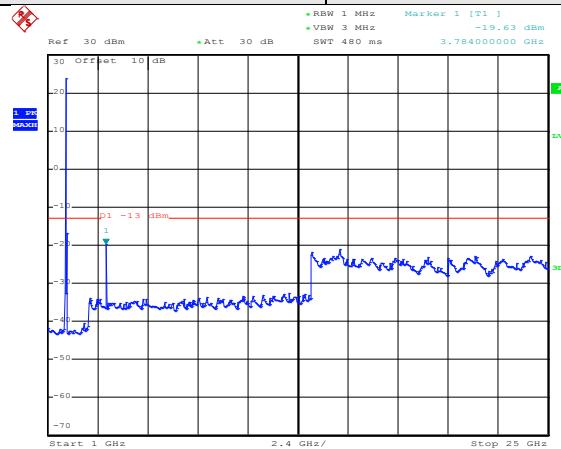


Test Mode:	LTE band 2(5MHz 16QAM) RB Size 1& RB Offset 0	Test Channel:	Highest channel
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Date: 3.JUL.2017 15:35:15

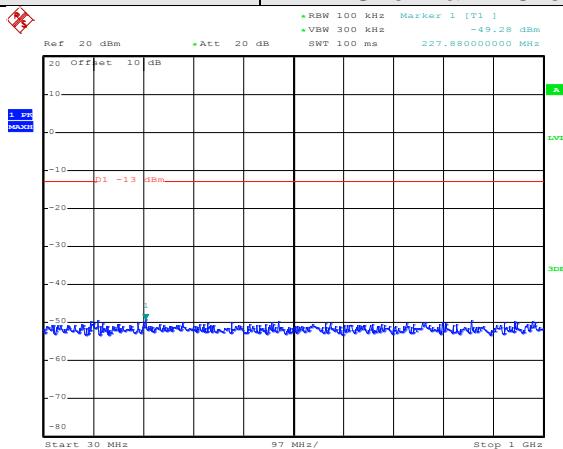
30MHz~1GHz



Date: 21.JUN.2017 22:34:56

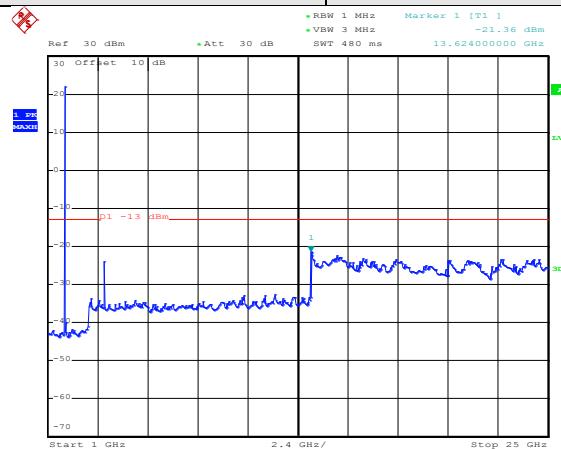
1GHz~25GHz

Test Mode:	LTE band 2(5MHz 16QAM) RB Size 12& RB Offset 0	Test Channel:	Lowest channel
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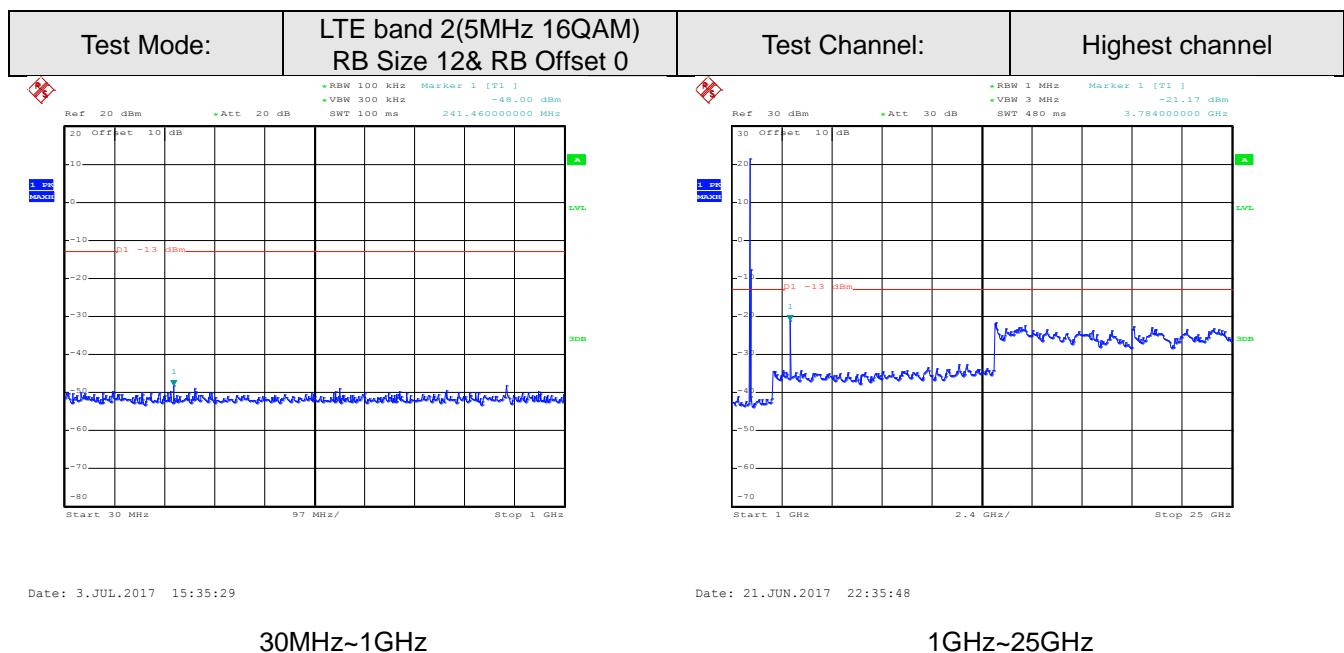
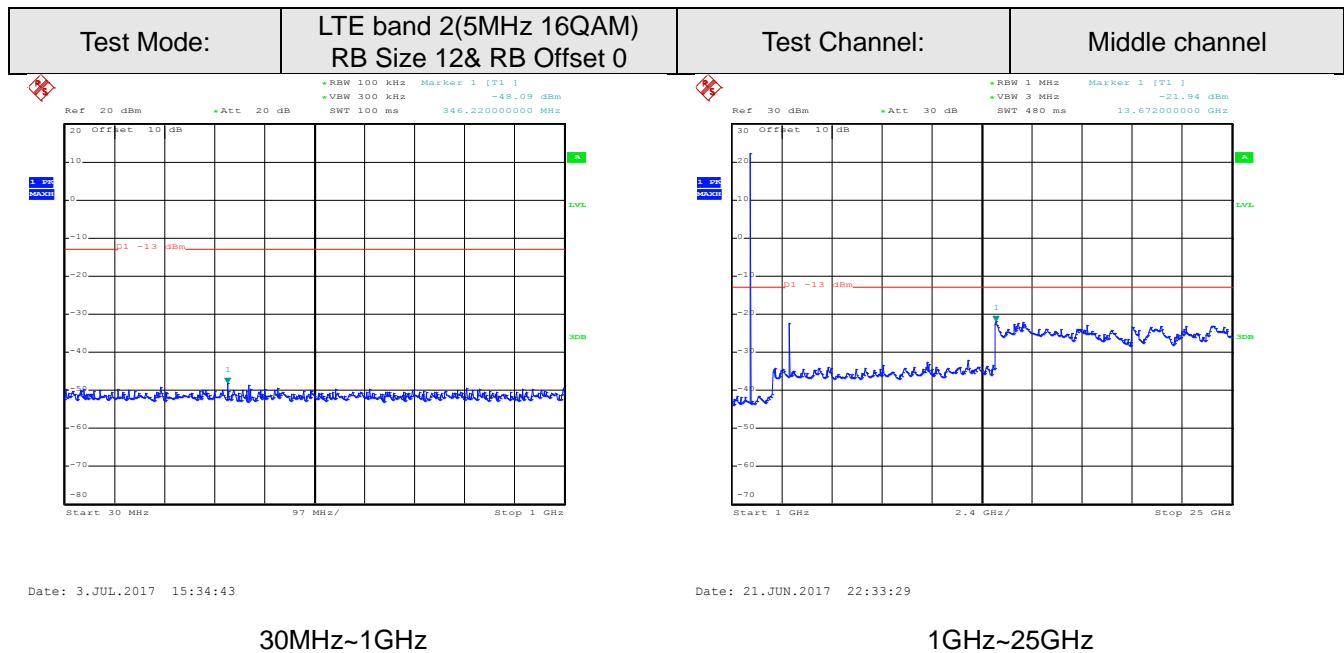
Date: 22.JUN.2017 16:10:50

30MHz~1GHz

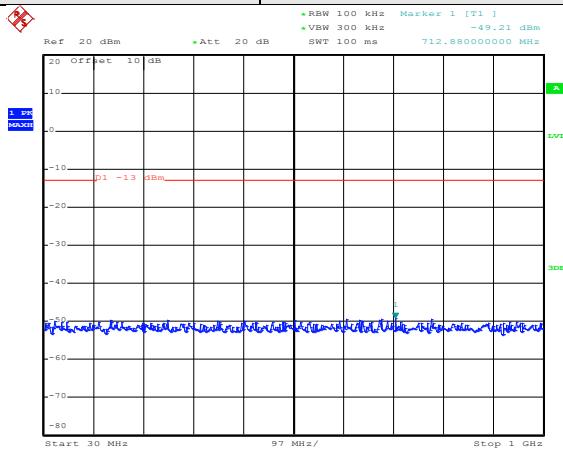


Date: 21.JUN.2017 22:31:40

1GHz~25GHz

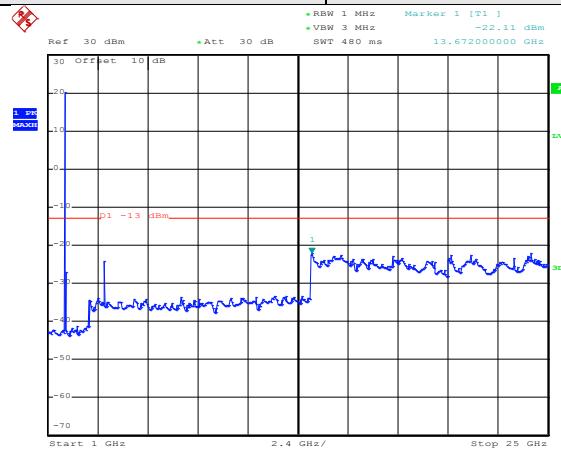


Test Mode:	LTE band 2(5MHz 16QAM) RB Size 25& RB Offset 0	Test Channel:	Lowest channel
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Date: 22.JUN.2017 16:11:04

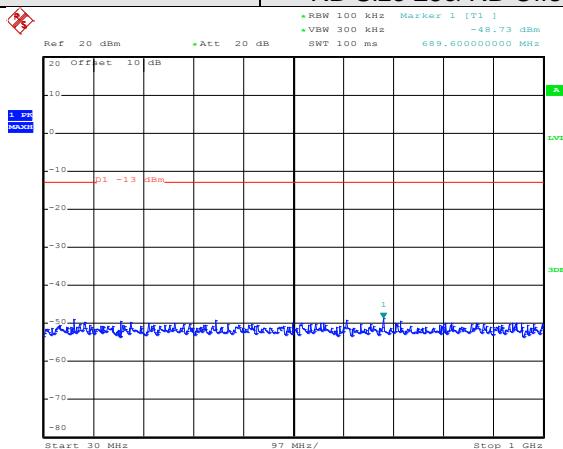
30MHz~1GHz



Date: 21.JUN.2017 22:32:12

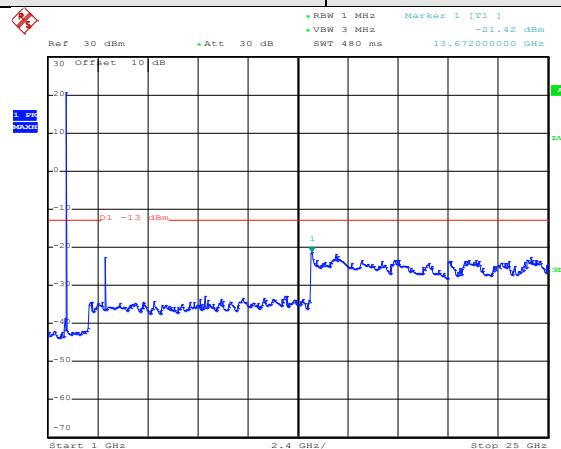
1GHz~25GHz

Test Mode:	LTE band 2(5MHz 16QAM) RB Size 25& RB Offset 0	Test Channel:	Middle channel
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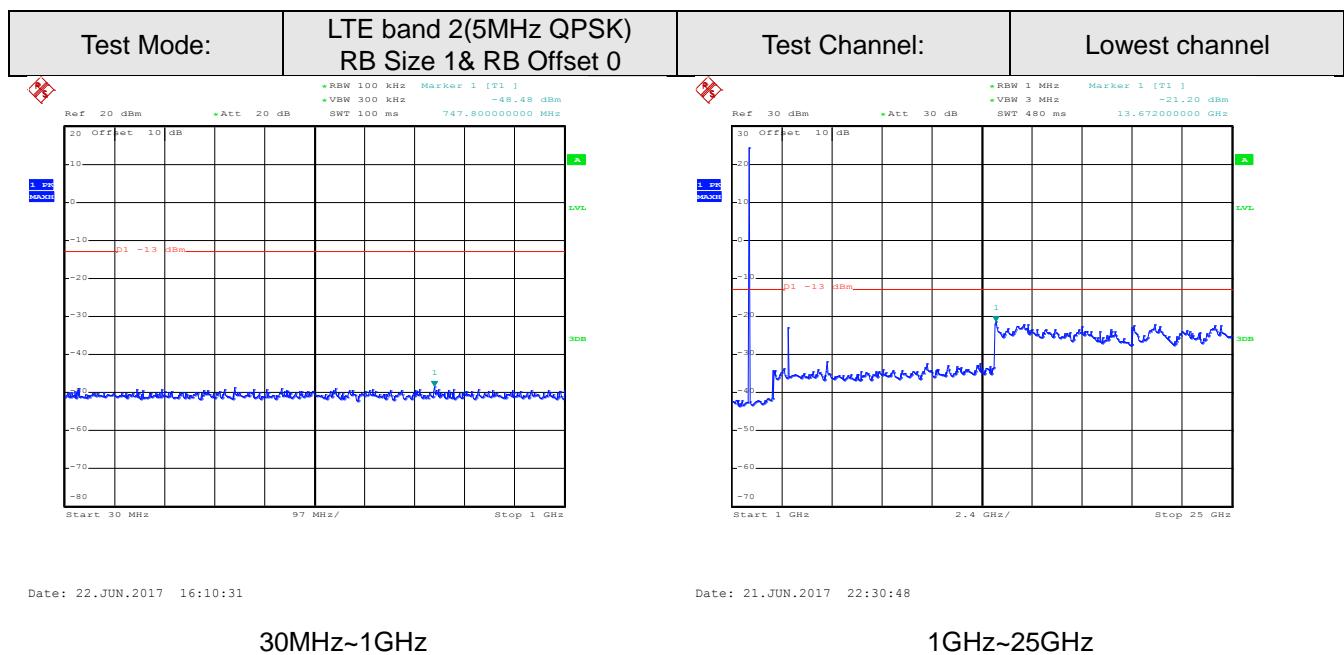
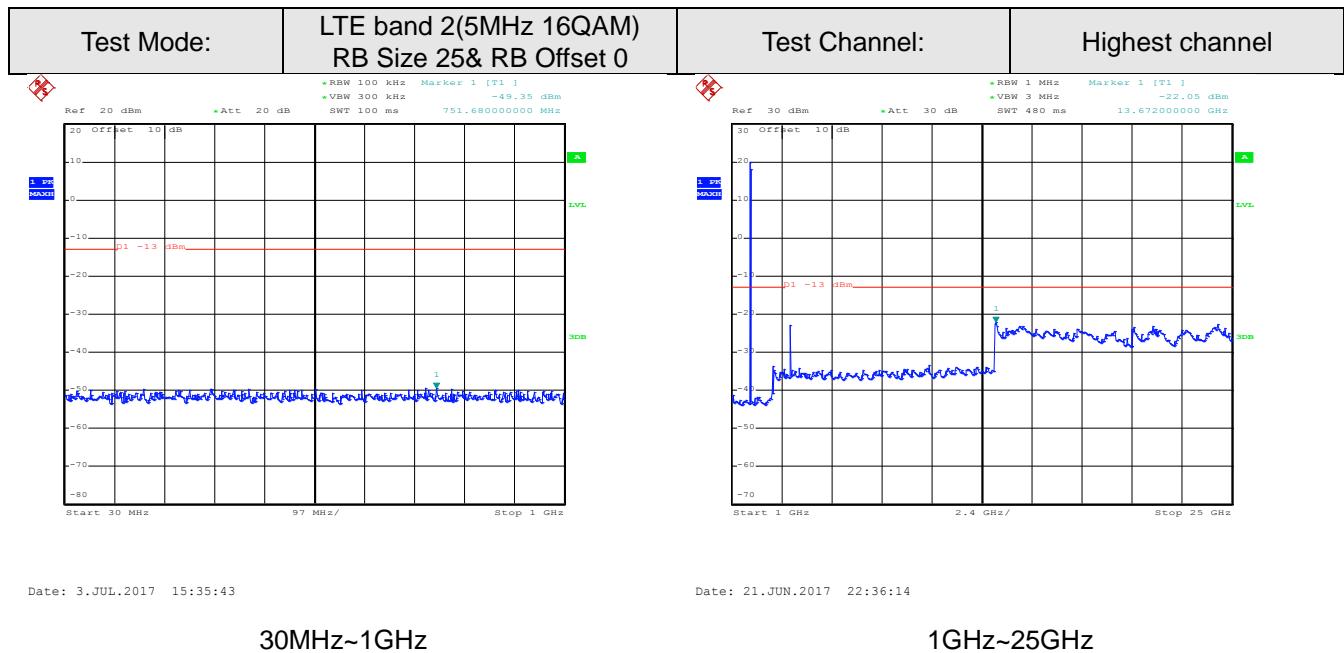
Date: 3.JUL.2017 15:34:57

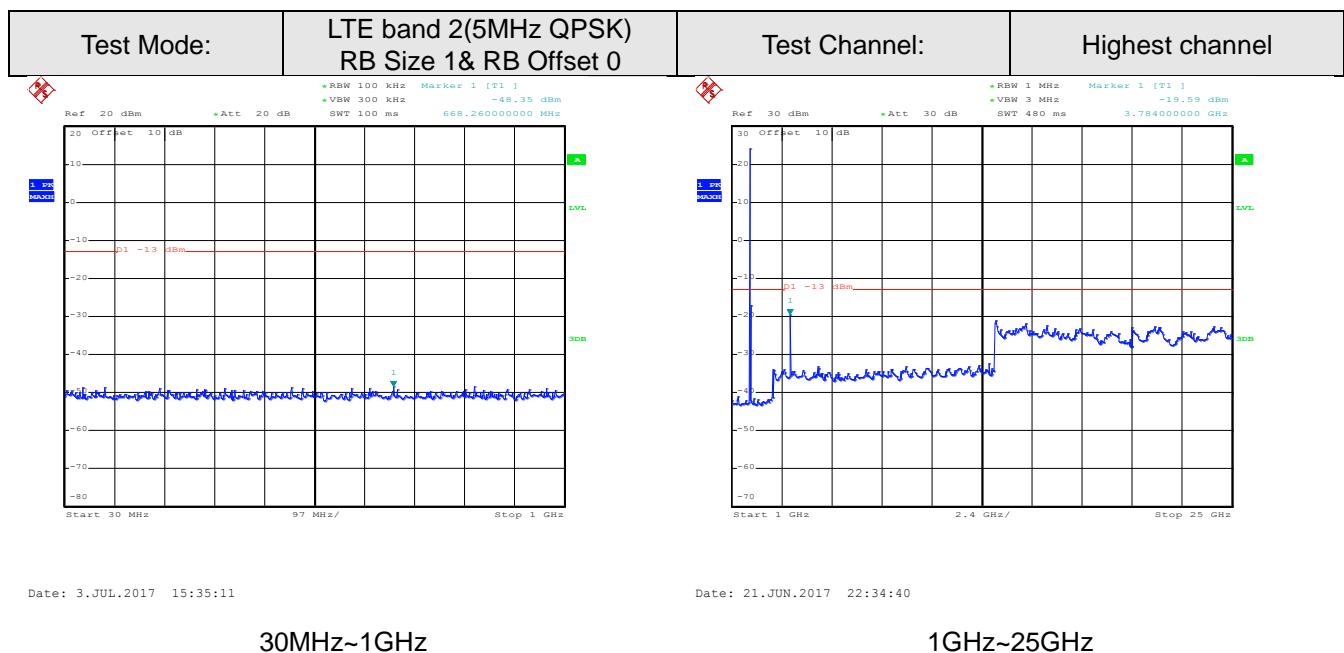
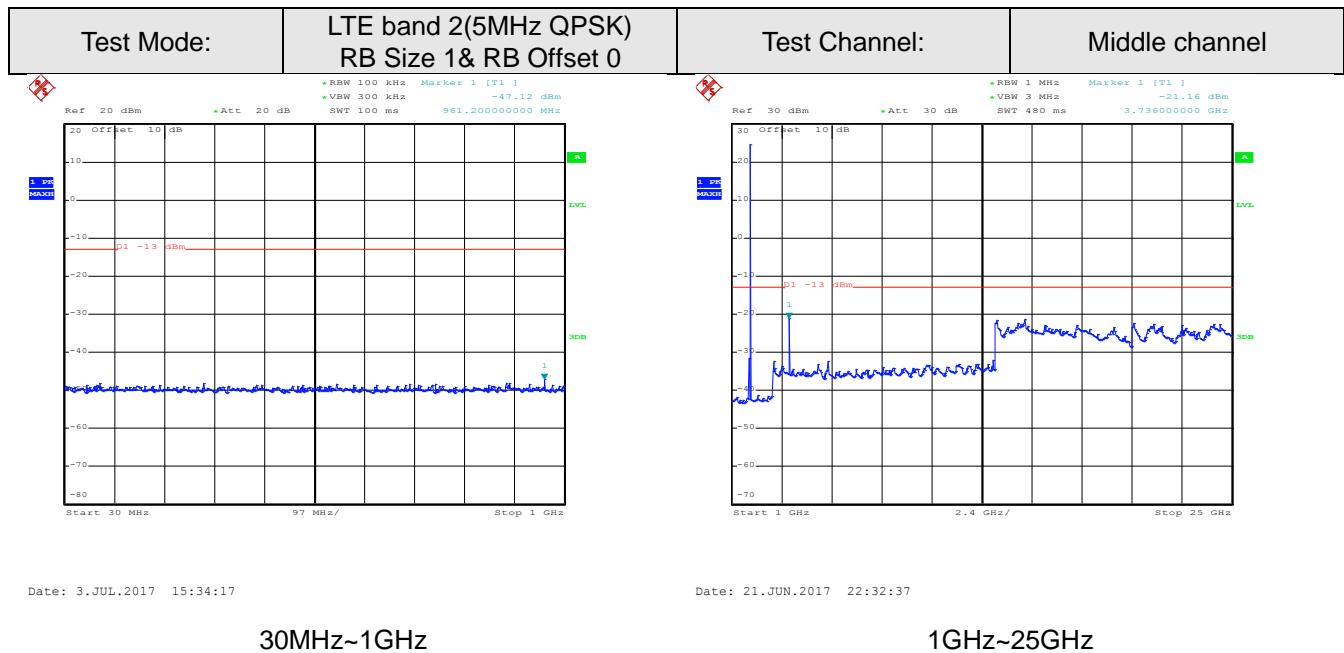
30MHz~1GHz

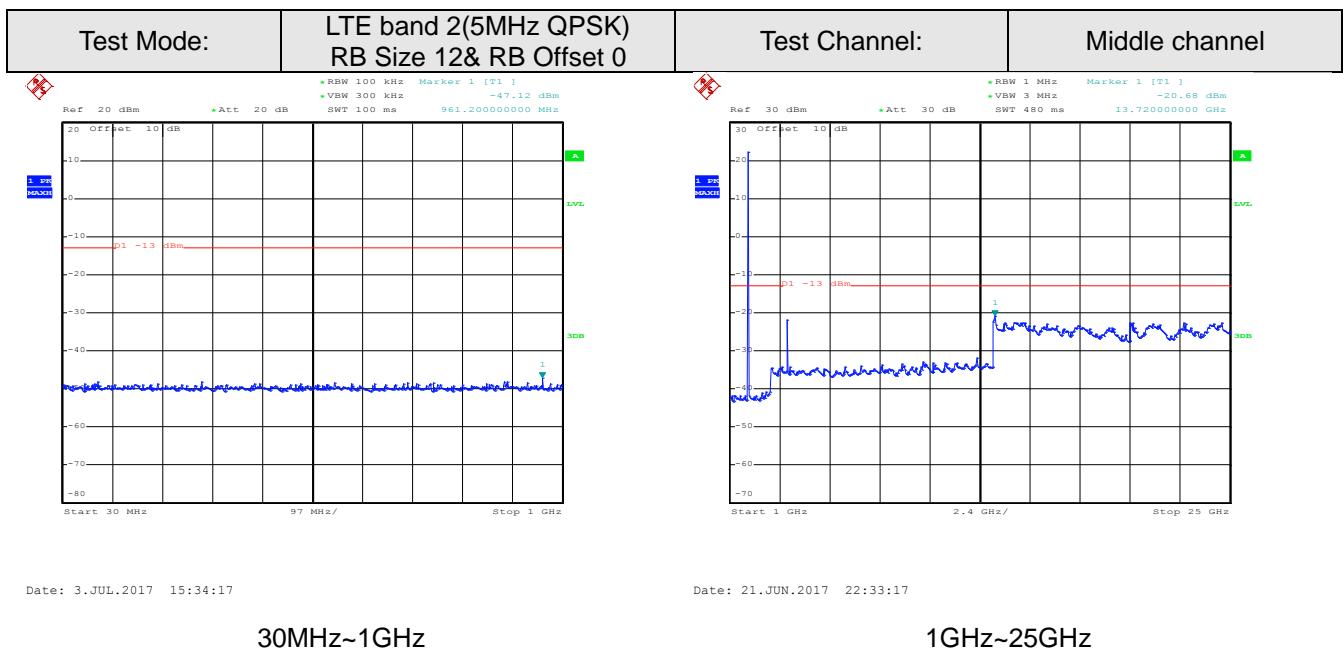
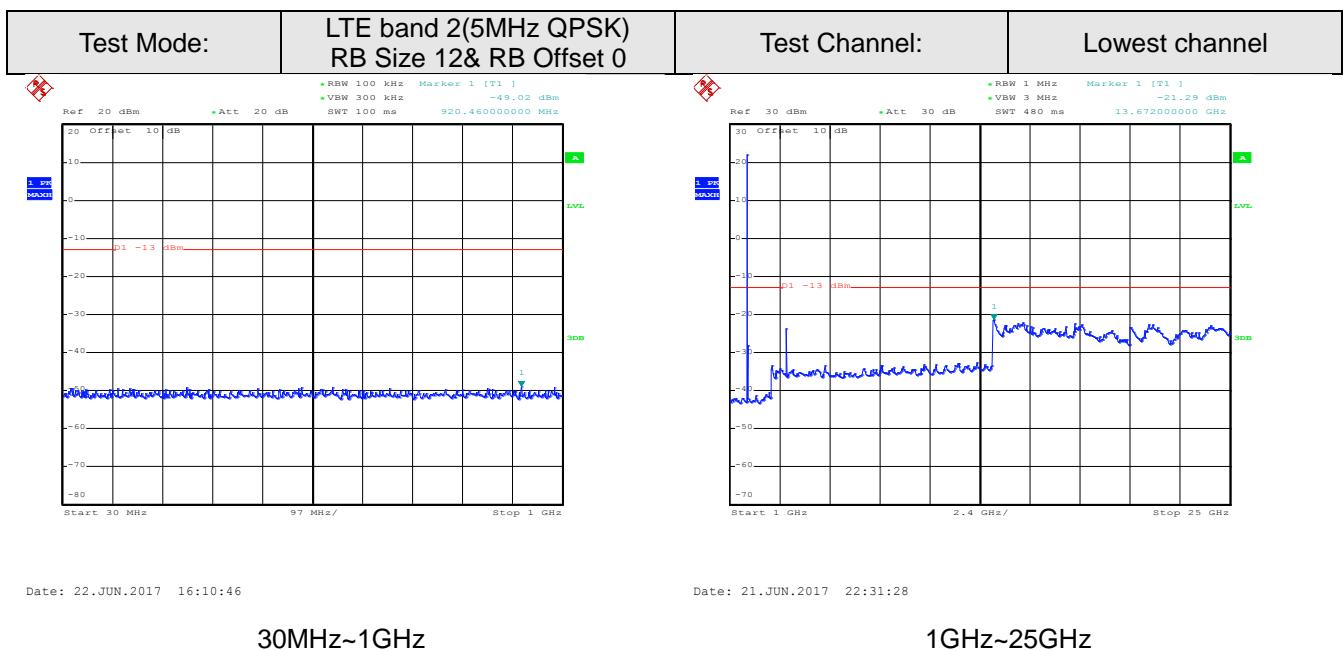


Date: 21.JUN.2017 22:34:14

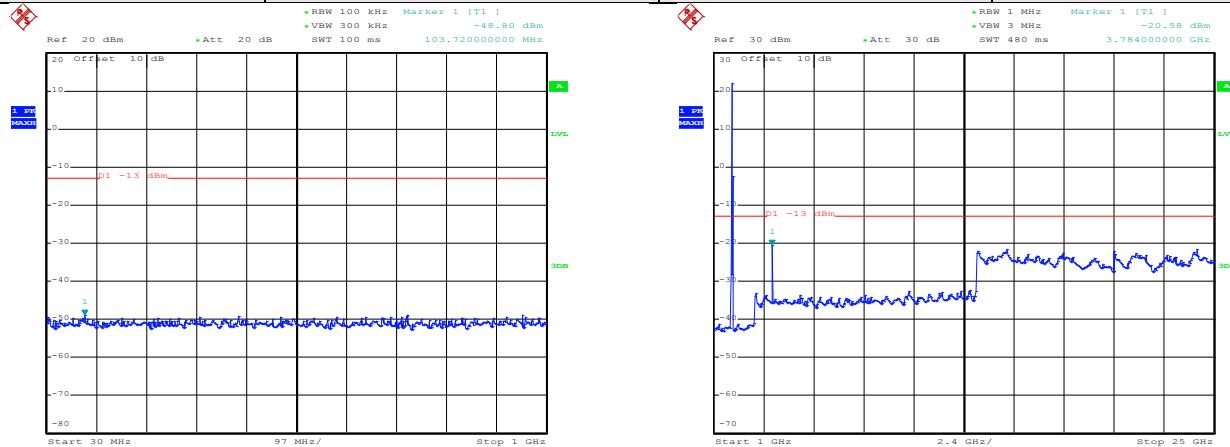
1GHz~25GHz







Test Mode:	LTE band 2(5MHz QPSK) RB Size 12& RB Offset 0	Test Channel:	Highest channel
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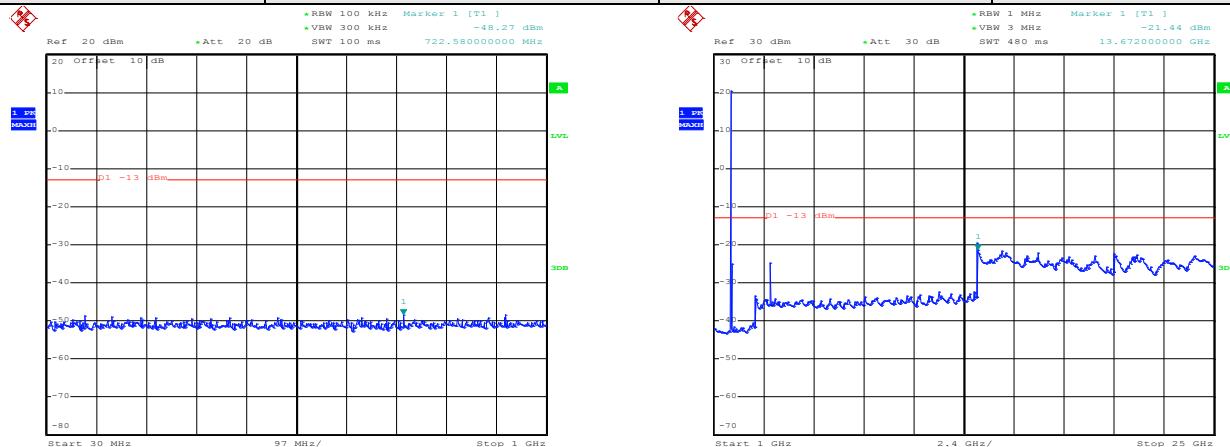
Date: 3.JUL.2017 15:35:24

30MHz~1GHz

Date: 21.JUN.2017 22:35:33

1GHz~25GHz

Test Mode:	LTE band 2(5MHz QPSK) RB Size 25& RB Offset 0	Test Channel:	Lowest channel
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Date: 22.JUN.2017 16:10:59

30MHz~1GHz

Date: 21.JUN.2017 22:32:01

1GHz~25GHz

