FCC PART 24E, PART 27

MEASUREMENT AND TEST REPORT

For

Shenzhen AEE Aviation Technology Co.,Ltd

AEE Hi-Tech Park,Tangtou Crossroads,Shiyan Town, Baoan District Shenzhen,P.R.C.

FCC ID: 2AGZG-AEEP61

Report Type:	**Product Type:**
Original Report	BODY WORN CAMERA

Report Number:	RDG170322803-00C
Report Date:	2018-01-10
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***Shenzhen AEE Aviation Technology Co.,Ltd***'s product, model number: ***P61 (FCC ID: 2AGZG-AEEP61)*** (the "EUT") in this report was a ***BODY WORN CAMERA,*** which was measured approximately: 7.2 cm (L) x 5.6 cm (W) x 3.4 cm (H), rated input voltage: DC3.8V from battery or DC 5V from USB port.

Note: The series product, model P61, P61A, EES-61A, P61B, EES-61B, P61C, P61D, P61U, P61R, P61F, EES-61C, P61PRO, P61 ADVANCED, P61 STANDARD, P62C and P63D are electrically identical, we selected P61 for fully testing, the difference details between them was explained in the declaration letter.

**All measurement and test data in this report was gathered from production sample serial number: 170322803 (Assigned by BACL,Dongguan). The EUT was received on 2017-07-22.*

Objective

This report is prepared on behalf of *Shenzhen AEE Aviation Technology Co.,Ltd* in accordance with: Part 24-Subpart E and Part 27 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Rules for output power, modulation characteristic, occupied bandwidth, spurious emissions at antenna terminal, spurious radiated emission, frequency stability and band edge.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: 2AGZG-AEEP61.
FCC Part 15B JBP submissions with FCC ID: 2AGZG-AEEP61.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services

Applicable Standards: TIA/EIA 603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz:5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218,the FCC Designation No. : CN1220.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D 2010.

The test items were performed with the EUT operating at testing mode.

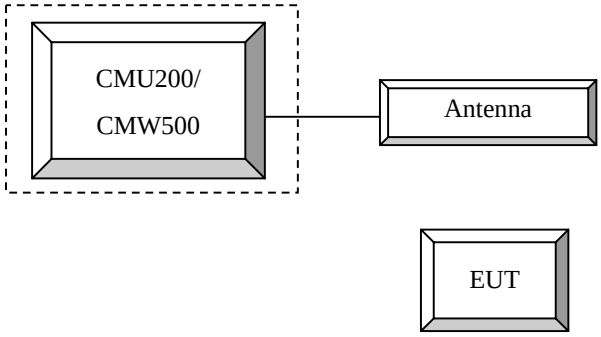
Equipment Modifications

No modification was made to the EUT.

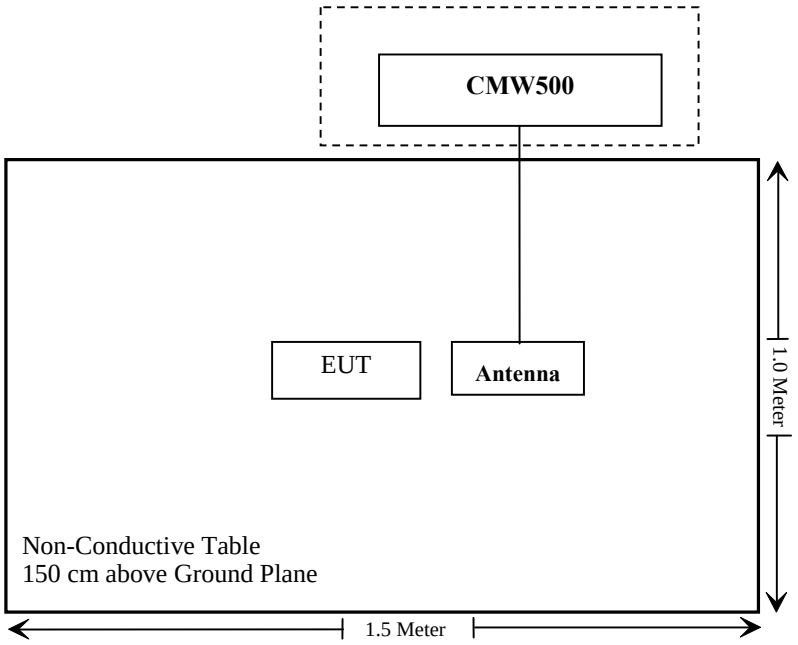
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Wideband Radio Communication Tester	CMW500	147473
N/A	ANTENNA	N/A	N/A

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310, §2.1093	RF Exposure	Compliance
§2.1046; § 24.232 (c); §27.50	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 24.238; §27.53	Occupied Bandwidth	Compliance
§ 2.1051, § 24.238 (a); §27.53	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053 § 24.238 (a); §27.53	Field Strength of Spurious Radiation	Compliance
§ 2.1053 § 24.238 (a); §27.53	Band Edge	Compliance
§ 2.1055 § 24.235; §27.54	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliant, please refer to the SAR report: RDG170322803-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

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

FCC § 2.1046, § 24.232 (c) & § 27.50 - RF OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

According to §27.50

(b)(10) Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

(c) (10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(h),(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

Test Procedure

LTE (FDD):

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

Radiated method:

ANSI/TIA-603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-06	2017-11-05
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
HP	Signal Generator	1026	320408	2016-12-08	2017-12-08
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each Time	/
R&S	Wideband Radio Communication Tester	CMW500	147473	2017-08-31	2018-08-31

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24.6 °C
Relative Humidity:	37 %
ATM Pressure:	101.7 kPa

** The testing was performed by Kakaxi Chen on 2017-10-29.*

Conducted Output Power

LTE Band 2 (PART 24)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	23.97	22.78	23.45
		1#3	23.85	22.81	23.42
		1#5	23.99	22.85	23.39
		3#0	23.95	22.91	23.45
		3#2	23.91	22.93	23.42
		3#3	23.87	22.94	23.38
		6#0	23.00	21.98	22.47
	16QAM	1#0	22.78	21.60	22.42
		1#3	22.71	21.49	22.37
		1#5	22.80	21.64	22.25
		3#0	22.65	21.53	22.18
		3#2	22.58	21.44	22.05
		3#3	22.53	21.34	21.95
		6#0	22.05	20.97	21.54
3MHz	QPSK	1#0	23.97	22.96	23.64
		1#8	23.94	22.89	23.67
		1#14	24.02	22.78	23.27
		10#0	22.98	21.88	22.64
		10#3	22.95	21.84	22.63
		10#5	22.96	21.83	22.61
		15#0	23.03	21.89	22.67
	16QAM	1#0	22.87	21.71	23.16
		1#8	22.83	21.65	23.08
		1#14	22.83	21.59	22.84
		10#0	22.76	21.54	22.93
		10#3	22.71	21.49	22.88
		10#5	22.67	21.47	22.85
		15#0	22.08	21.02	21.76
5MHz	QPSK	1#0	23.89	23.10	23.56
		1#13	23.84	23.04	23.52
		1#24	23.95	22.93	23.51
		10#0	23.04	22.00	22.65
		10#7	22.99	22.02	22.61
		10#15	22.98	22.03	22.61
		25#0	22.98	21.89	22.58
	16QAM	1#0	22.58	22.24	22.81
		1#13	22.56	22.21	22.76
		1#24	22.64	21.98	22.74
		10#0	22.51	22.13	22.67
		10#7	22.46	22.15	22.57
		10#15	22.43	22.02	22.54
		25#0	22.15	20.89	21.78

10MHz	QPSK	1#0	23.86	22.97	23.21
		1#25	23.69	22.80	23.16
		1#49	23.61	22.74	23.25
		25#0	22.97	22.10	22.42
		25#12	22.91	22.16	22.38
		25#25	22.96	21.82	22.34
		50#0	22.74	21.87	22.39
	16QAM	1#0	22.62	21.71	22.81
		1#25	22.69	22.43	22.72
		1#49	22.57	22.43	22.94
		25#0	22.45	22.37	22.68
		25#12	22.41	22.35	22.60
		25#25	22.37	22.16	22.51
		50#0	21.80	20.86	21.50
15MHz	QPSK	1#0	23.90	23.34	23.02
		1#38	23.84	23.37	22.97
		1#74	23.46	22.83	23.23
		36#0	22.73	22.79	23.45
		36#19	22.69	21.75	23.41
		36#39	22.67	21.74	23.39
		75#0	22.74	21.76	22.29
	16QAM	1#0	23.41	22.25	21.97
		1#38	23.37	22.29	21.93
		1#74	22.88	21.78	23.37
		36#0	22.94	22.15	22.37
		36#19	22.87	22.13	22.26
		36#39	22.86	22.05	22.14
		75#0	21.63	20.82	21.32
20MHz	QPSK	1#0	24.00	23.37	22.98
		1#50	23.86	23.31	22.87
		1#99	23.57	22.94	23.33
		50#0	22.78	21.93	21.88
		50#25	22.73	22.85	22.91
		50#50	22.74	21.91	21.92
		100#0	22.67	21.90	22.23
	16QAM	1#0	24.91	22.54	22.18
		1#50	24.87	22.51	22.13
		1#99	23.26	22.09	22.59
		50#0	23.53	22.12	22.26
		50#25	23.54	22.06	22.19
		50#50	23.47	21.94	22.15
		100#0	21.65	20.94	21.26

LTE Band 4 (PART 27)

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	1#0	25.24	23.42	24.38
		1#3	25.17	23.38	24.35
		1#5	25.14	23.60	24.16
		3#0	25.07	23.52	24.42
		3#2	25.13	23.49	24.40
		3#3	25.24	23.47	24.37
		6#0	24.30	22.55	23.48
	16QAM	1#0	24.05	22.17	23.35
		1#3	24.12	22.24	23.24
		1#5	24.02	22.34	23.32
		3#0	23.87	22.15	23.16
		3#2	23.90	22.13	23.06
		3#3	23.92	22.03	22.94
		6#0	23.36	21.55	22.47
3MHz	QPSK	1#0	25.32	23.30	24.41
		1#8	25.24	23.24	24.35
		1#14	24.85	23.43	24.02
		10#0	24.22	22.42	23.45
		10#3	24.19	22.43	23.46
		10#5	24.17	22.38	23.43
		15#0	24.16	22.43	23.59
	16QAM	1#0	24.15	22.01	24.12
		1#8	24.06	22.07	24.07
		1#14	23.75	22.32	23.83
		10#0	23.65	21.92	23.74
		10#3	23.57	21.97	23.78
		10#5	23.47	22.06	23.83
		15#0	23.27	21.57	22.72
5MHz	QPSK	1#0	25.33	23.32	24.96
		1#13	25.27	23.25	24.87
		1#24	24.84	23.63	24.29
		10#0	24.17	22.31	23.82
		10#7	24.15	22.27	23.77
		10#15	24.12	22.26	23.76
		25#0	24.02	22.48	23.58
	16QAM	1#0	24.51	22.04	24.41
		1#13	24.46	22.08	24.37
		1#24	24.08	22.35	24.32
		10#0	24.31	22.15	24.16
		10#7	24.15	22.06	24.04
		10#15	23.94	21.98	23.87
		25#0	22.93	21.56	22.64

10MHz	QPSK	1#0	25.16	23.05	24.55
		1#25	25.03	22.96	24.37
		1#49	23.81	23.86	25.04
		25#0	23.97	22.17	23.64
		25#12	23.92	22.11	23.59
		25#25	23.86	22.05	23.54
		50#0	23.54	22.32	23.42
	16QAM	1#0	24.03	22.62	23.37
		1#25	23.89	22.46	23.31
		1#49	22.70	23.19	24.16
		25#0	22.65	22.57	23.86
		25#12	22.69	22.54	23.81
		25#25	22.71	22.48	23.75
		50#0	22.58	21.27	22.56
15MHz	QPSK	1#0	25.27	23.03	24.45
		1#38	25.06	22.87	24.31
		1#74	23.14	24.33	24.59
		36#0	22.32	22.06	23.48
		36#19	22.44	22.25	23.41
		36#39	22.53	22.34	23.45
		75#0	22.94	22.38	23.38
	16QAM	1#0	24.71	21.95	23.31
		1#38	24.58	21.84	23.14
		1#74	22.57	23.21	24.04
		36#0	23.41	21.75	23.24
		36#19	23.29	21.71	23.16
		36#39	23.15	21.64	23.07
		75#0	22.06	24.43	22.40
20MHz	QPSK	1#0	25.18	23.12	23.91
		1#50	24.56	23.04	23.75
		1#99	23.30	24.51	24.48
		50#0	23.49	21.99	23.21
		50#25	23.31	21.84	23.16
		50#50	23.16	21.74	23.06
		100#0	22.80	22.60	23.38
	16QAM	1#0	24.79	22.32	23.85
		1#50	24.54	22.16	23.73
		1#99	23.02	23.65	23.36
		50#0	23.15	22.41	23.64
		50#25	22.94	22.37	23.51
		50#50	22.76	22.18	23.27
		100#0	21.84	21.62	22.38

PAR, Band 2

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.64	5.76	4.08	13
	100 RB		6.48	6.48	6.40	13
16QAM	1 RB	20 MHz	5.64	6.40	5.04	13
	100 RB		7.20	7.16	7.20	13

PAR, Band 4

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	5.32	3.20	2.84	13
	100 RB		6.52	6.44	6.32	13
16QAM	1 RB	20 MHz	6.08	4.04	3.88	13
	100 RB		7.16	7.04	7.12	13

Note: peak-to-average ratio (PAR) <13 dB.

ERP & EIRP

LTE Band 2

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK 1.4M BW Middle Channel 1880.0 MHz								
1880.000	H	85.22	12.6	11.7	2.7	21.6	33.0	11.4
1880.000	V	81.42	9	11.7	2.7	18.0	33.0	15.0
16QAM 1.4M BW Middle Channel 1880.0 MHz								
1880.000	H	84.67	12.1	11.7	2.7	21.1	33.0	11.9
1880.000	V	81.14	8.7	11.7	2.7	17.7	33.0	15.3
QPSK 3M BW Middle Channel 1880.0 MHz								
1880.000	H	84.34	11.7	11.7	2.7	20.7	33.0	12.3
1880.000	V	80.85	8.4	11.7	2.7	17.4	33.0	15.6
16QAM 3M BW Middle Channel 1880.0 MHz								
1880.000	H	84.16	11.6	11.7	2.7	20.6	33.0	12.4
1880.000	V	80.64	8.2	11.7	2.7	17.2	33.0	15.8
QPSK 5M BW Middle Channel 1880.0 MHz								
1880.000	H	83.97	11.4	11.7	2.7	20.4	33.0	12.6
1880.000	V	80.25	7.8	11.7	2.7	16.8	33.0	16.2
16QAM 5M BW Middle Channel 1880.0 MHz								
1880.000	H	83.42	10.8	11.7	2.7	19.8	33.0	13.2
1880.000	V	79.68	7.2	11.7	2.7	16.2	33.0	16.8
QPSK 10M BW Middle Channel 1880.0 MHz								
1880.000	H	83.22	10.6	11.7	2.7	19.6	33.0	13.4
1880.000	V	79.28	6.8	11.7	2.7	15.8	33.0	17.2
16QAM 10M BW Middle Channel 1880.0 MHz								
1880.000	H	83.10	10.5	11.7	2.7	19.5	33.0	13.5
1880.000	V	79.15	6.7	11.7	2.7	15.7	33.0	17.3
QPSK 15M BW Middle Channel 1880.0 MHz								
1880.000	H	82.75	10.1	11.7	2.7	19.1	33.0	13.9
1880.000	V	78.68	6.2	11.7	2.7	15.2	33.0	17.8
16QAM 15M BW Middle Channel 1880.0 MHz								
1880.000	H	82.51	9.9	11.7	2.7	18.9	33.0	14.1
1880.000	V	78.35	5.9	11.7	2.7	14.9	33.0	18.1
QPSK 20M BW Middle Channel 1880.0 MHz								
1880.000	H	82.13	9.5	11.7	2.7	18.5	33.0	14.5
1880.000	V	78.14	5.7	11.7	2.7	14.7	33.0	18.3
16QAM 20M BW Middle Channel 1880.0 MHz								
1880.000	H	81.75	9.1	11.7	2.7	18.1	33.0	14.9
1880.000	V	77.82	5.4	11.7	2.7	14.4	33.0	18.6

LTE Band 4

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK 1.4M BW Middle Channel 1732.5 MHz								
1732.500	H	85.66	11.6	10.9	2.5	20.0	30.0	10.0
1732.500	V	82.97	8.6	10.9	2.5	17.0	30.0	13.0
16QAM 1.4M BW Middle Channel 1732.5 MHz								
1732.500	H	85.34	11.3	10.9	2.5	19.7	30.0	10.3
1732.500	V	82.67	8.3	10.9	2.5	16.7	30.0	13.3
QPSK 3M BW Middle Channel 1732.5 MHz								
1732.500	H	85.14	11.1	10.9	2.5	19.5	30.0	10.5
1732.500	V	82.32	8	10.9	2.5	16.4	30.0	13.6
16QAM 3M BW Middle Channel 1732.5 MHz								
1732.500	H	84.82	10.8	10.9	2.5	19.2	30.0	10.8
1732.500	V	81.94	7.6	10.9	2.5	16.0	30.0	14.0
QPSK 5M BW Middle Channel 1732.5 MHz								
1732.500	H	84.64	10.6	10.9	2.5	19.0	30.0	11.0
1732.500	V	81.75	7.4	10.9	2.5	15.8	30.0	14.2
16QAM 5M BW Middle Channel 1732.5 MHz								
1732.500	H	84.31	10.3	10.9	2.5	18.7	30.0	11.3
1732.500	V	81.55	7.2	10.9	2.5	15.6	30.0	14.4
QPSK 10M BW Middle Channel 1732.5 MHz								
1732.500	H	84.11	10.1	10.9	2.5	18.5	30.0	11.5
1732.500	V	81.39	7	10.9	2.5	15.4	30.0	14.6
16QAM 10M BW Middle Channel 1732.5 MHz								
1732.500	H	83.74	9.7	10.9	2.5	18.1	30.0	11.9
1732.500	V	81.04	6.7	10.9	2.5	15.1	30.0	14.9
QPSK 15M BW Middle Channel 1732.5 MHz								
1732.500	H	83.42	9.4	10.9	2.5	17.8	30.0	12.2
1732.500	V	80.75	6.4	10.9	2.5	14.8	30.0	14.2
16QAM 15M BW Middle Channel 1732.5 MHz								
1732.500	H	83.21	9.2	10.9	2.5	17.6	30.0	12.4
1732.500	V	80.52	6.2	10.9	2.5	14.6	30.0	15.4
QPSK 20M BW Middle Channel 1732.5 MHz								
1732.500	H	84.11	10.1	10.9	2.5	18.5	30.0	11.5
1732.500	V	80.14	5.8	10.9	2.5	14.2	30.0	15.8
16QAM 20M BW Middle Channel 1732.5 MHz								
1732.500	H	83.82	9.8	10.9	2.5	18.2	30.0	11.8
1732.500	V	79.82	5.5	10.9	2.5	13.9	30.0	16.1

Note:
1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

FCC §2.1049, §24.238 & §27.53- OCCUPIED BANDWIDTH

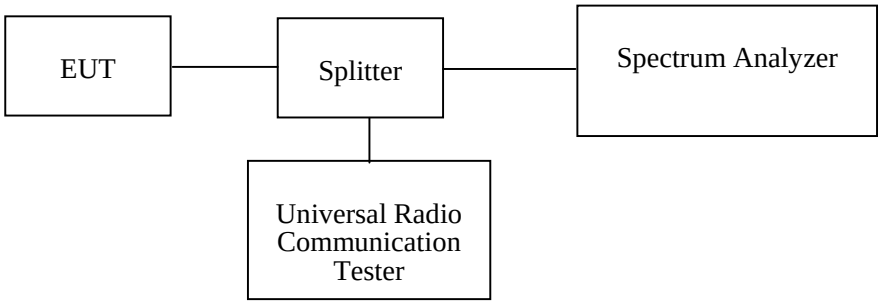
Applicable Standard

FCC §2.1049, §24.238 and §27.53.

Test Procedure

The RF output of the transmitter was connected to the simulator and the spectrum analyzer through sufficient attenuation.

The 26 dB & 99% bandwidth was recorded.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
R&S	Wideband Radio Communication Tester	CMW500	147473	2017-08-31	2018-08-31
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23.4°C
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Harry Yang on 2017-12-11.

Test Mode: Transmitting

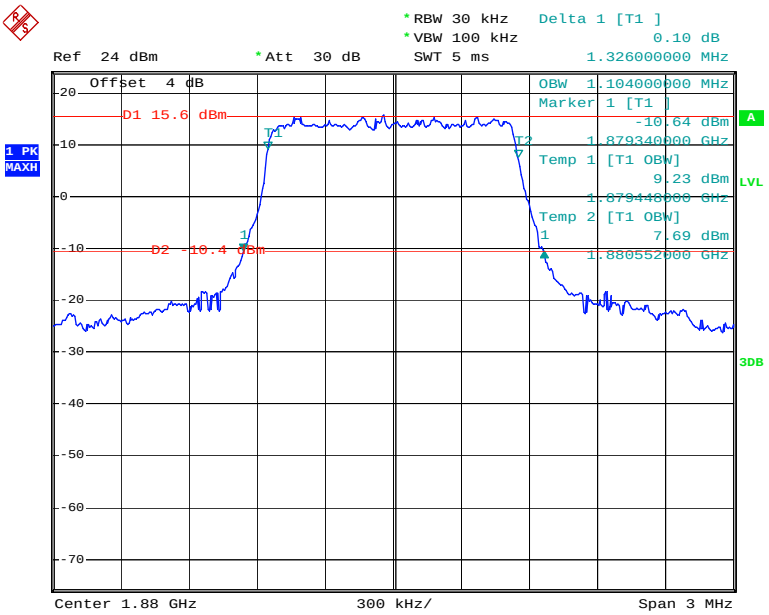
Test Result: Compliant. Please refer to the following table and plots.

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band 2	QPSK	1.4	M	1.104	1.326
		3		2.700	2.970
		5		4.560	5.154
		10		8.960	9.874
		15		13.500	15.114
		20		17.920	19.634
	16QAM	1.4	M	1.110	1.344
		3		2.700	3.030
		5		4.520	5.074
		10		8.960	9.754
		15		13.500	15.114
		20		18.000	19.794

Band	Test Modulation	Test Bandwidth (MHz)	Test Channel	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
LTE Band 4	QPSK	1.4	M	1.110	1.362
		3		2.700	2.994
		5		4.540	5.154
		10		8.960	9.934
		15		13.560	15.194
		20		18.000	19.614
	16QAM	1.4	M	1.110	1.338
		3		2.700	3.042
		5		4.540	5.094
		10		8.960	9.854
		15		13.500	15.074
		20		18.000	19.774

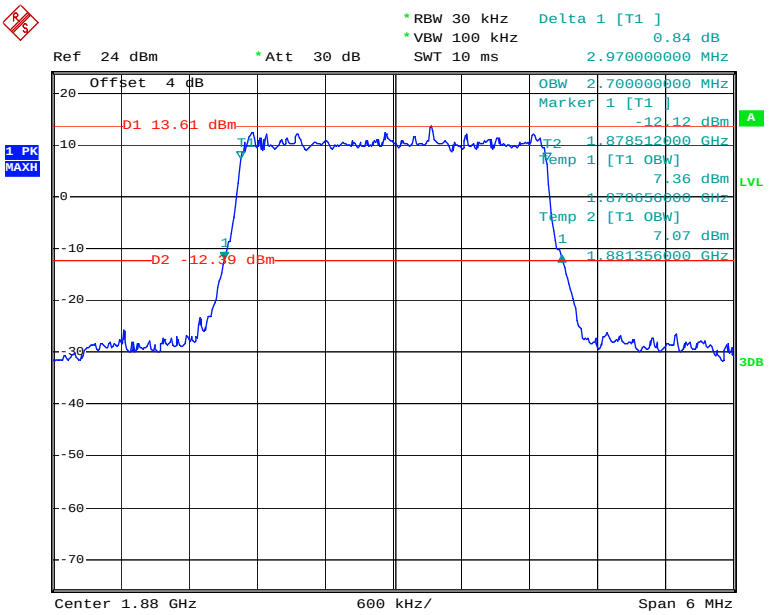
LTE Band 2

QPSK_1.4 MHz



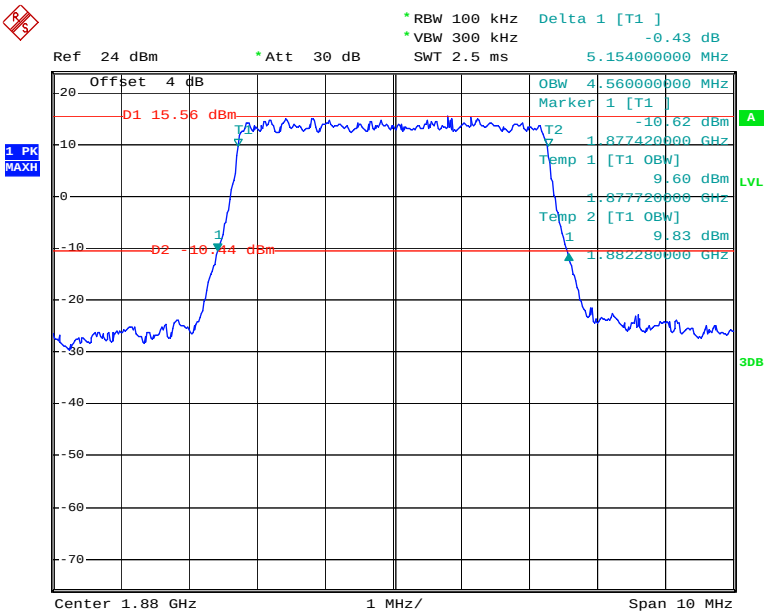
Date: 11.DEC.2017 08:48:13

QPSK_3 MHz



Date: 11.DEC.2017 08:50:04

QPSK_5 MHz



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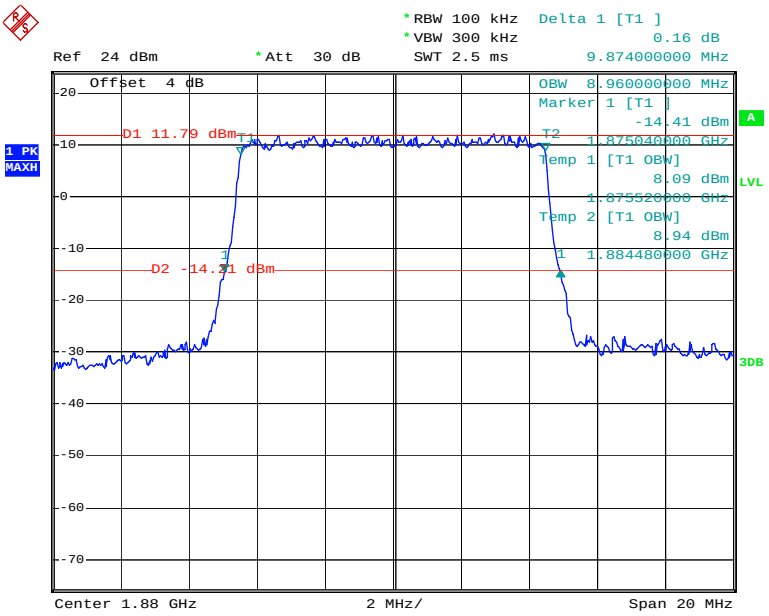
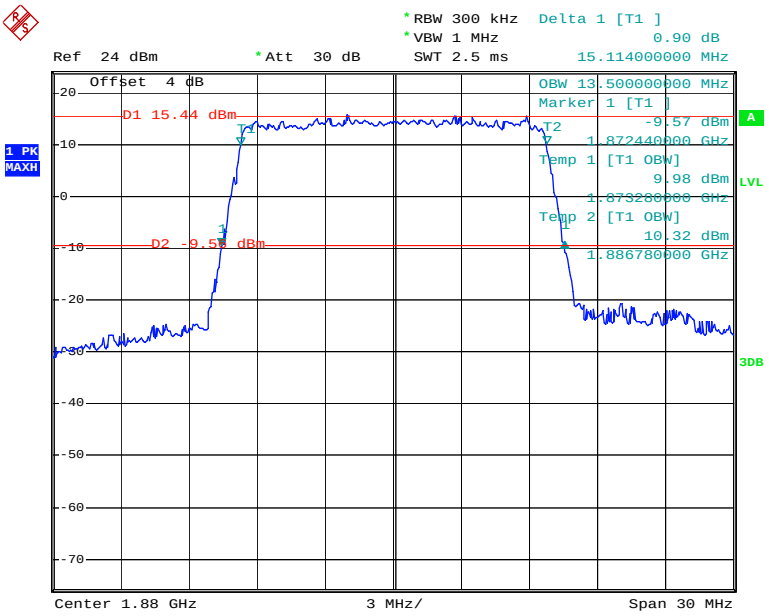
QPSK_10 MHz



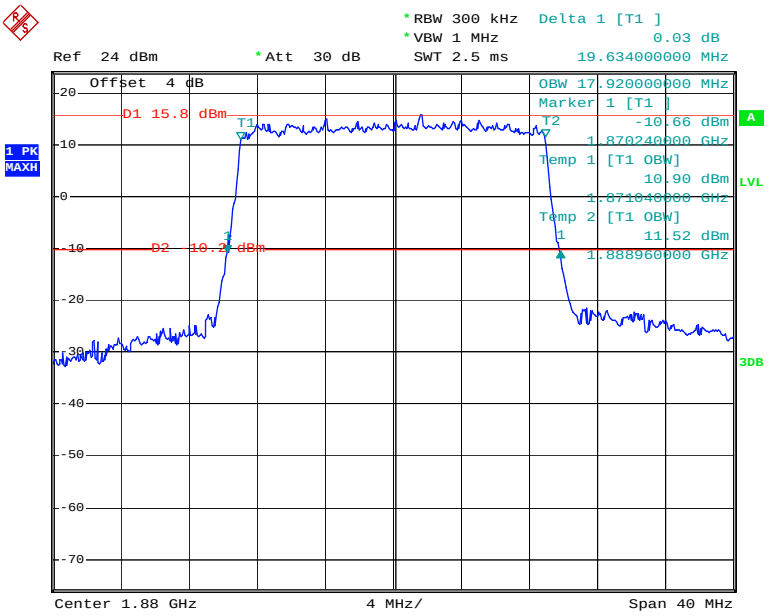
Date: 11.DEC.2017 08:40:10

QPSK_15 MHz



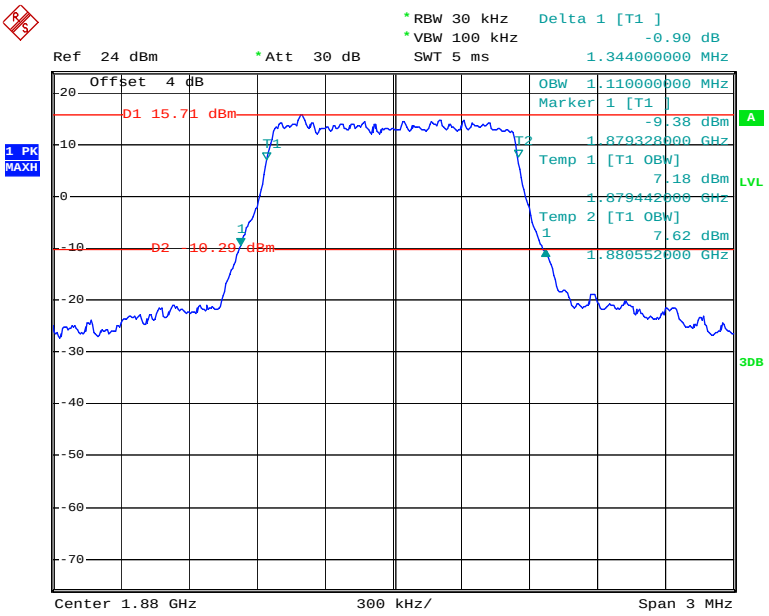
Date: 11.DEC.2017 08:42:38

QPSK_20 MHz



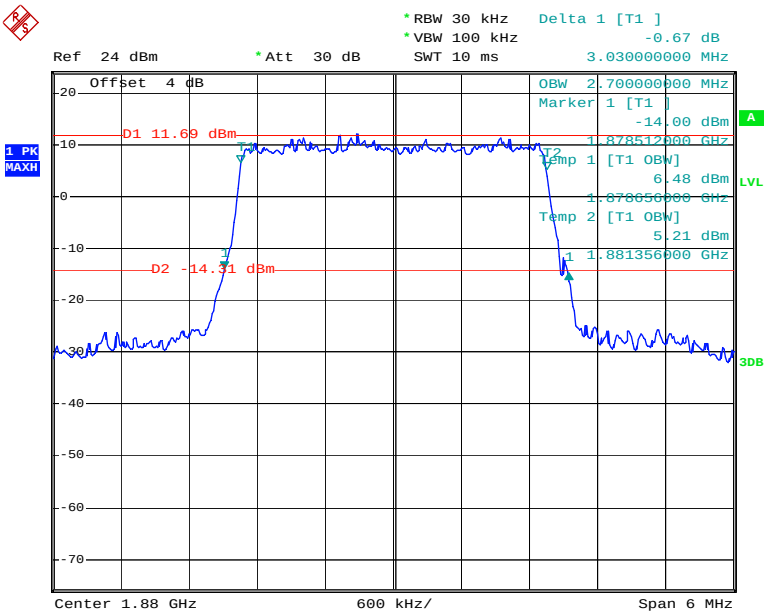
Date: 11.DEC.2017 08:44:57

16QAM_1.4 MHz



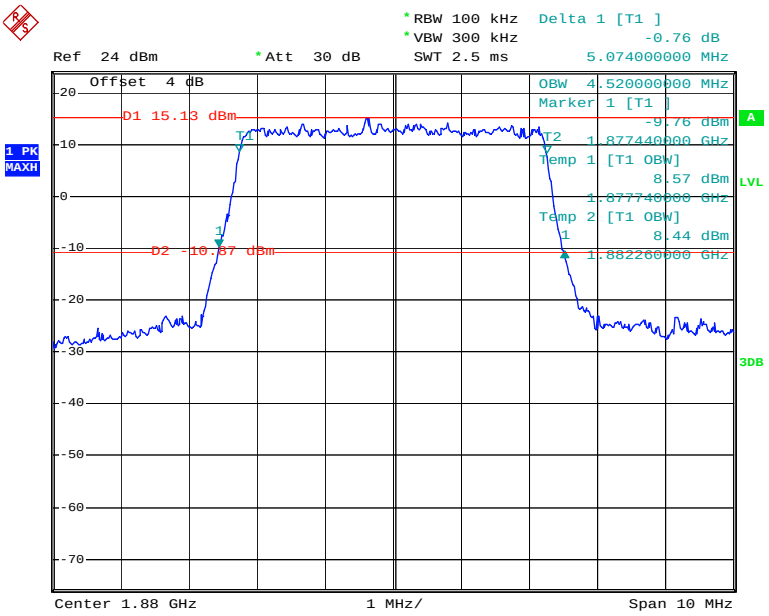
Date: 11.DEC.2017 08:47:28

16QAM_3 MHz



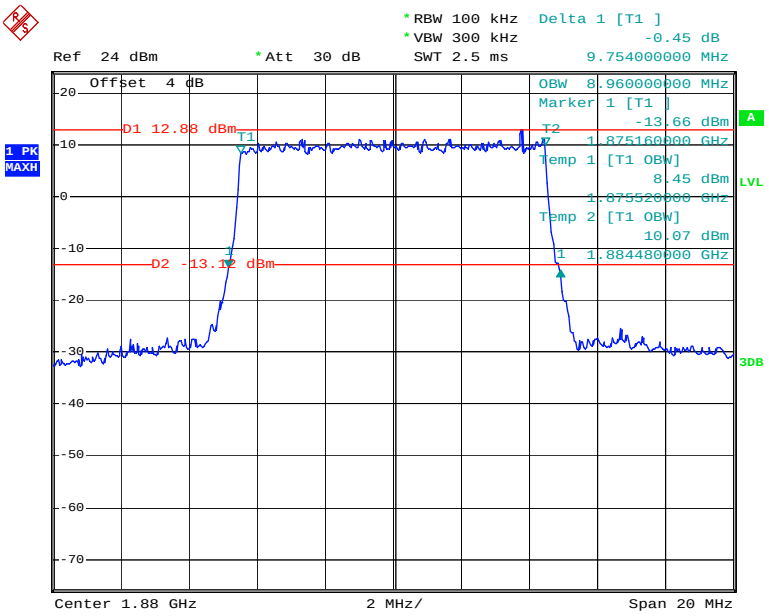
Date: 11.DEC.2017 08:49:12

16QAM_5 MHz



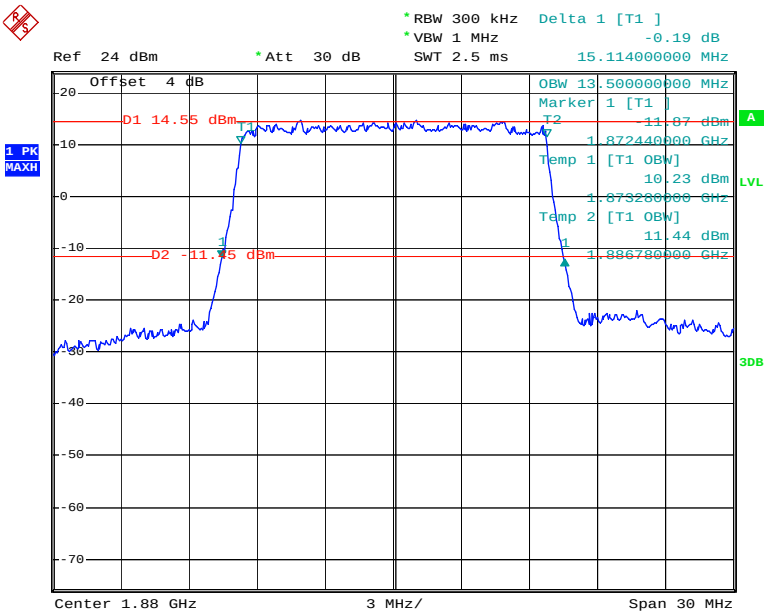
Date: 11.DEC.2017 08:39:01

16QAM_10 MHz



Date: 11.DEC.2017 08:41:14

16QAM_15 MHz



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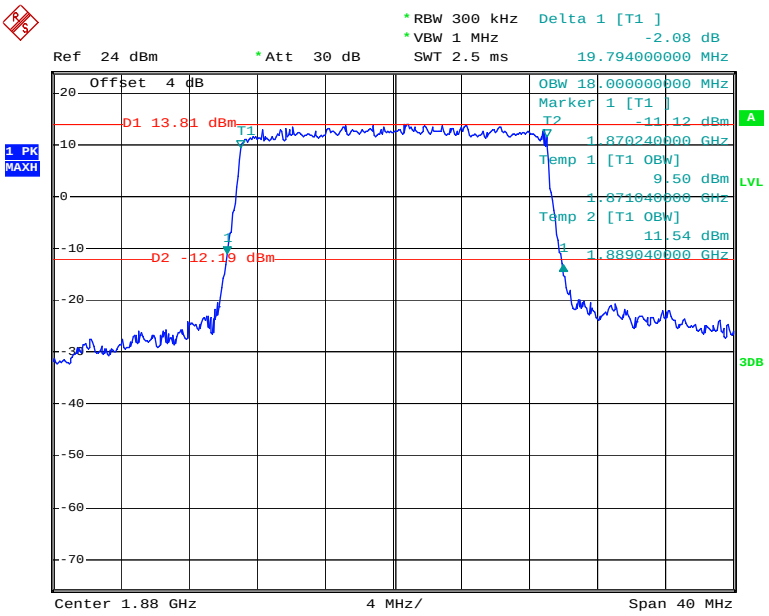
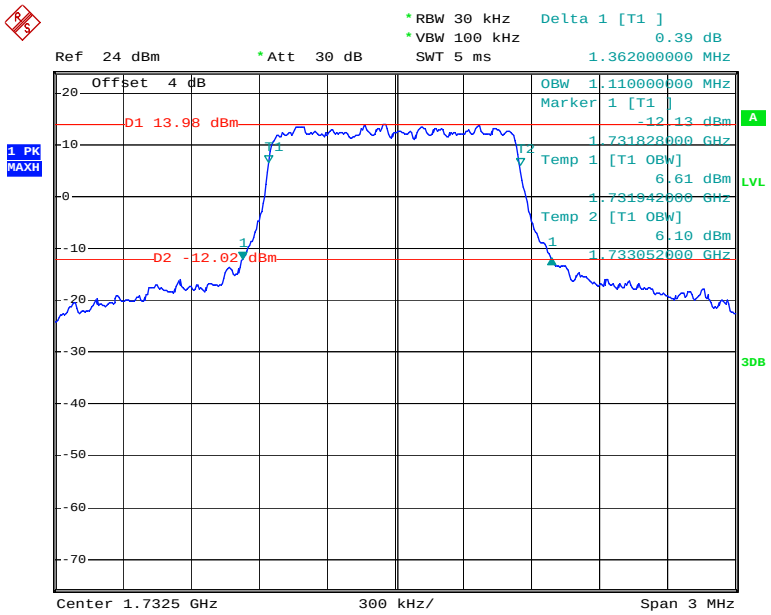
16QAM_20 MHz



Date: 11.DEC.2017 08:46:05

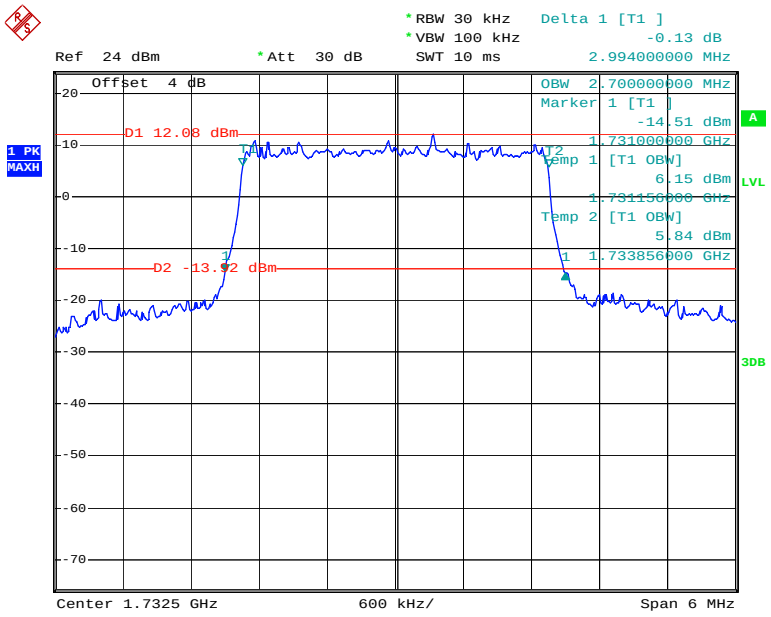
LTE Band 4:

QPSK_1.4 MHz



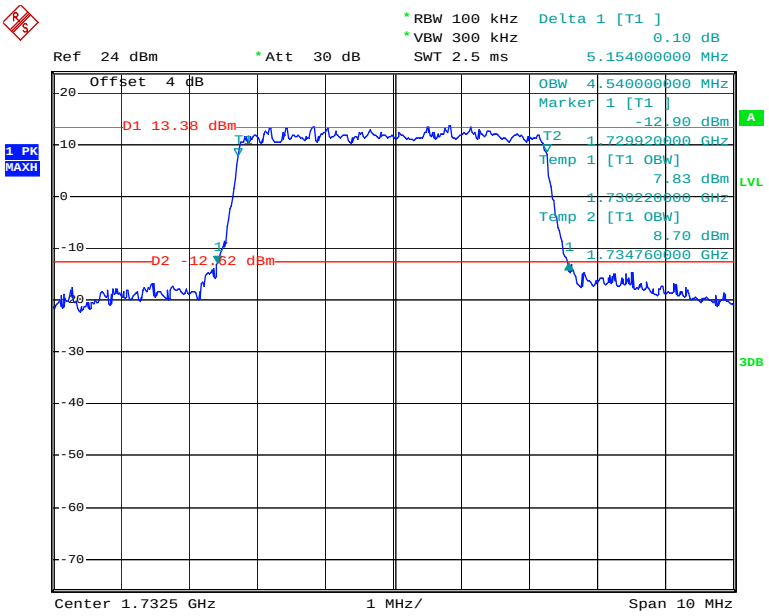
Date: 11.DEC.2017 08:52:17

QPSK_3 MHz



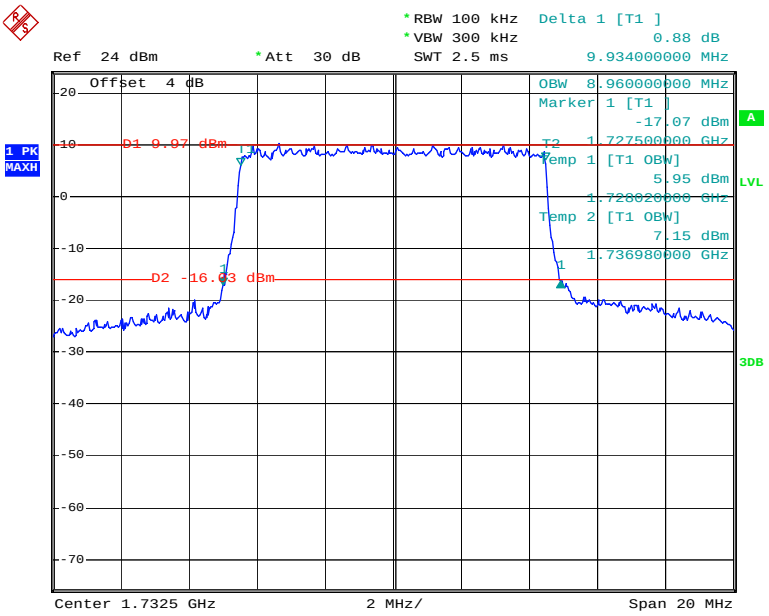
Date: 11.DEC.2017 08:54:09

QPSK_5 MHz



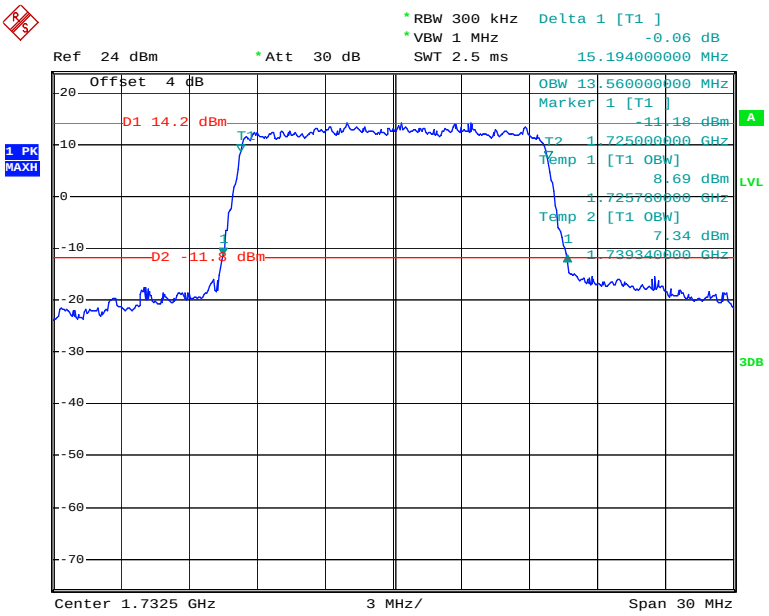
Date: 11.DEC.2017 08:58:02

QPSK_10 MHz



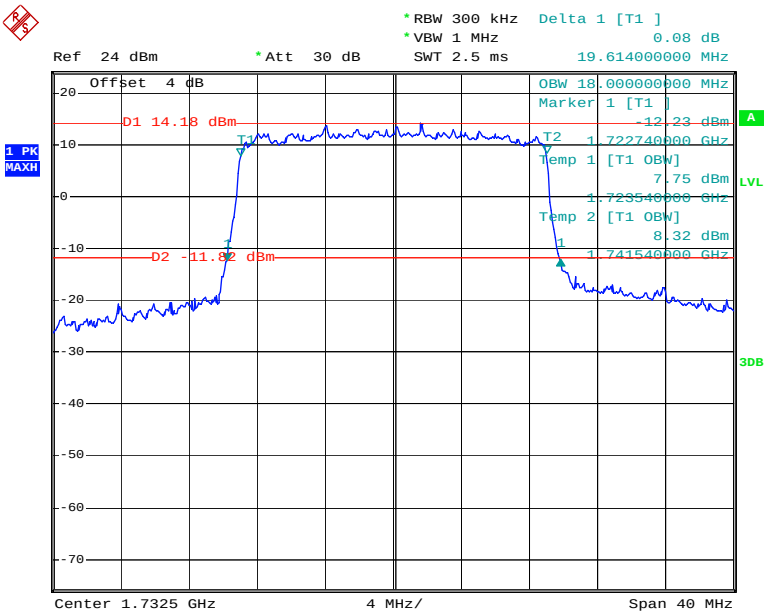
Date: 11.DEC.2017 09:12:47

QPSK_15 MHz



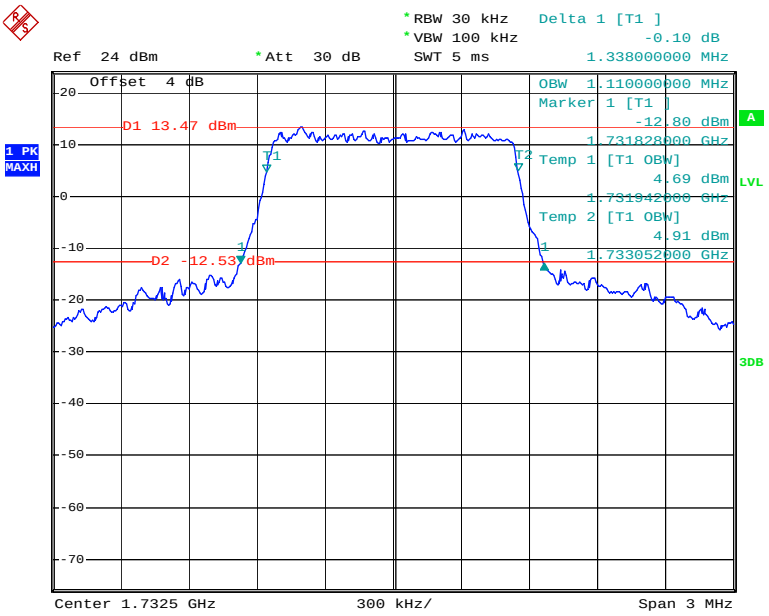
Date: 11.DEC.2017 09:15:01

QPSK_20 MHz



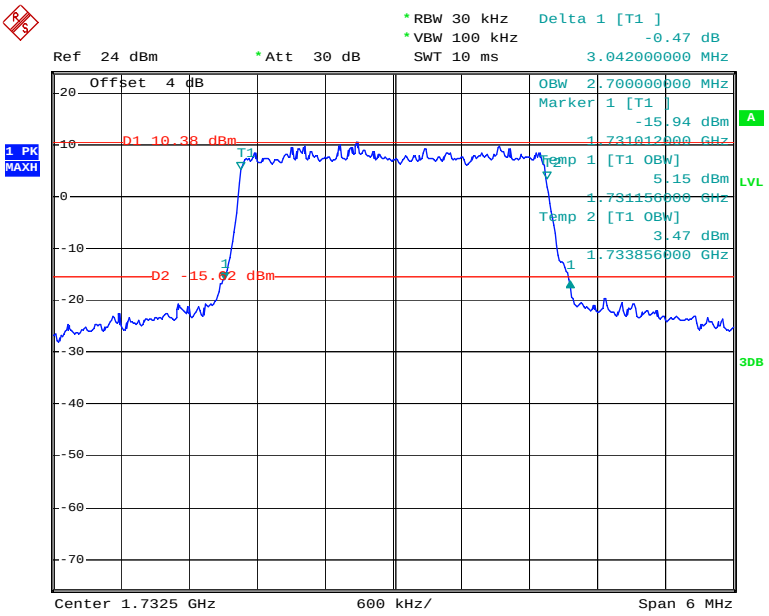
Date: 11.DEC.2017 09:17:20

16QAM_1.4 MHz



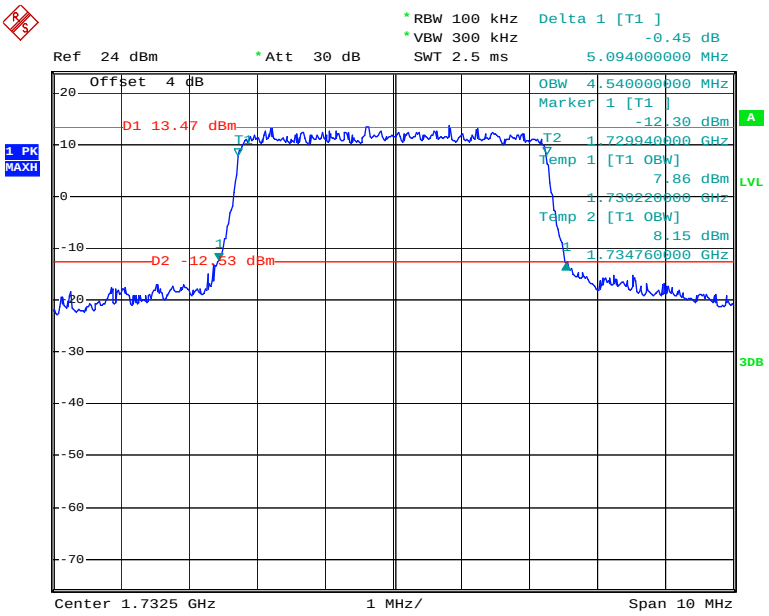
Date: 11.DEC.2017 08:53:01

16QAM_3 MHz



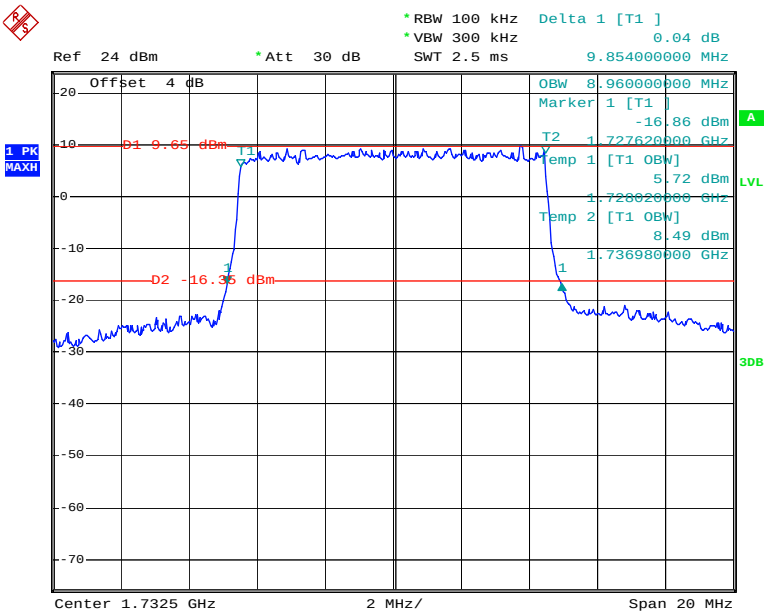
Date: 11.DEC.2017 08:55:30

16QAM_5 MHz



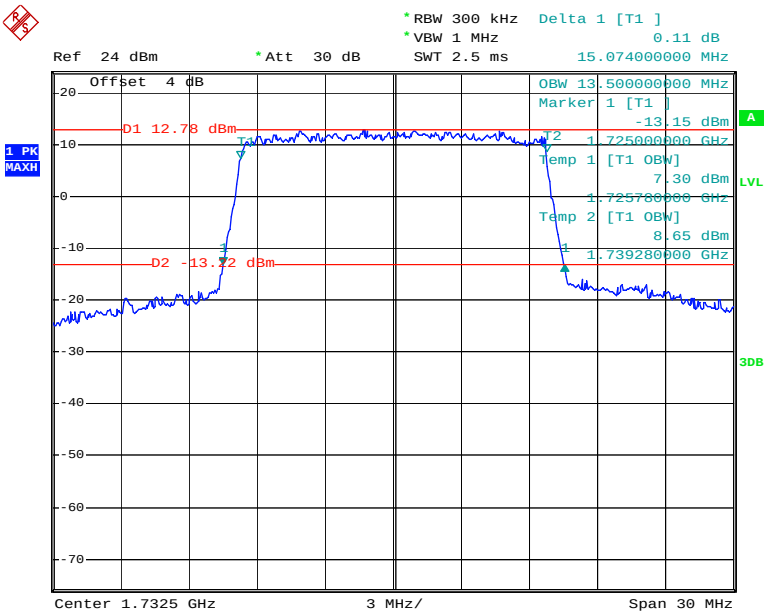
Date: 11.DEC.2017 08:57:19

16QAM_10 MHz



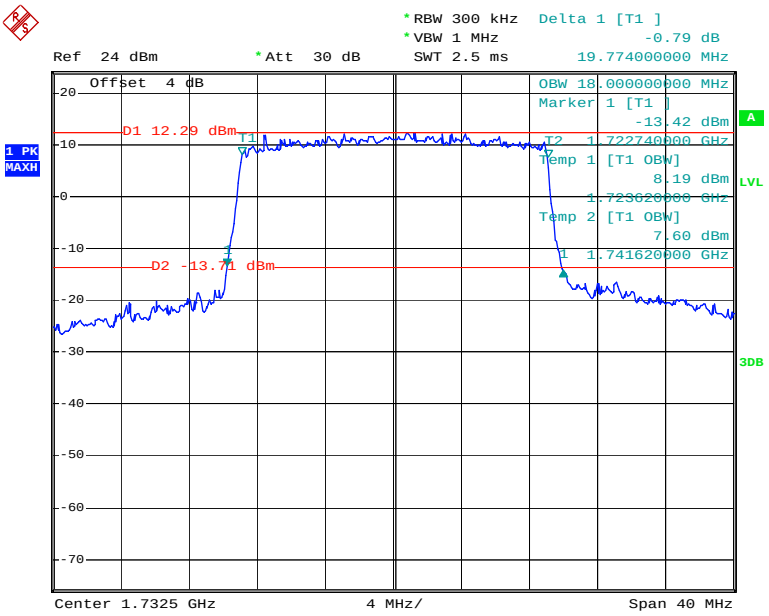
Date: 11.DEC.2017 09:12:02

16QAM_15 MHz



Date: 11.DEC.2017 09:13:54

16QAM_20 MHz



Date: 11.DEC.2017 09:16:00

FCC §2.1051, §24.238(a) & §27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

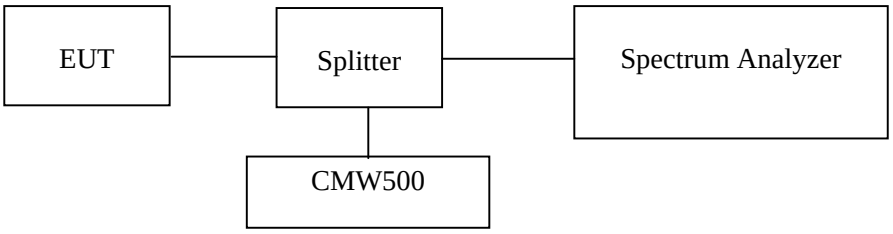
Applicable Standard

FCC §2.1051, §24.238(a) and §27.53.

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in § 2.1051.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Wideband Radio Communication Tester	CMW500	149216	2017-10-08	2018-10-08
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

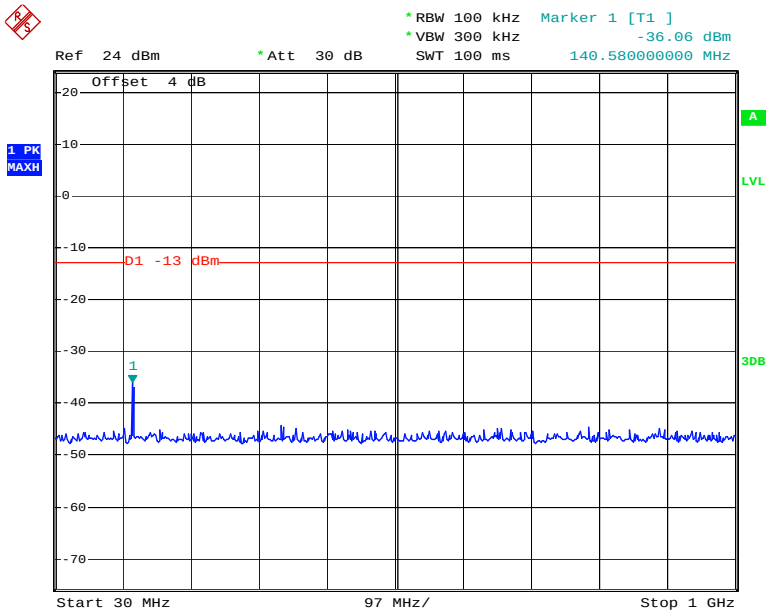
Temperature:	23.4°C
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Harry Yang on 2017-12-11.

Please refer to the following plots.

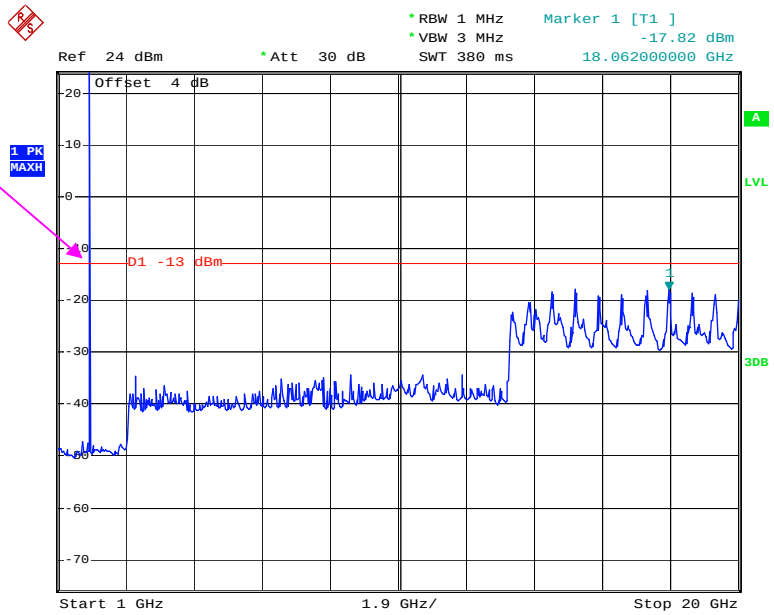
LTE Band 2 (Middle Channel)

QPSK_1.4 MHz



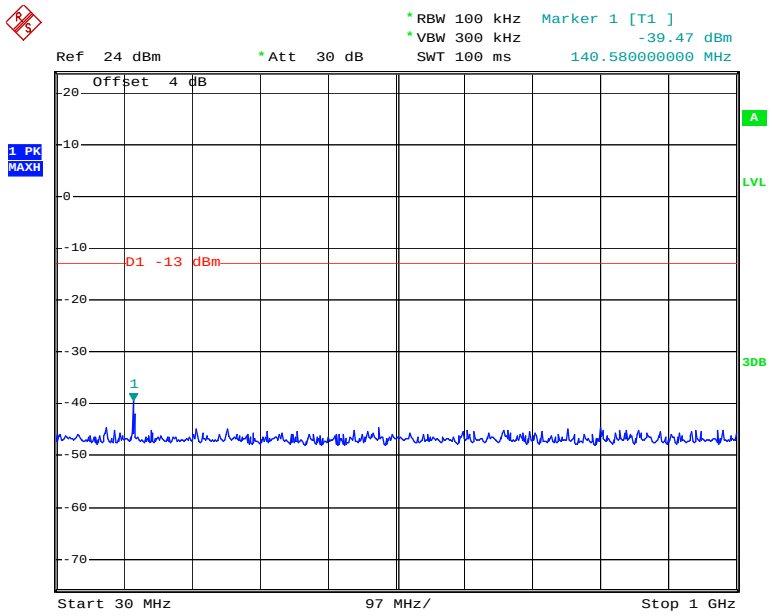
Date: 11.DEC.2017 10:13:13

Fundamental



Date: 11.DEC.2017 10:12:46

QPSK_3 MHz



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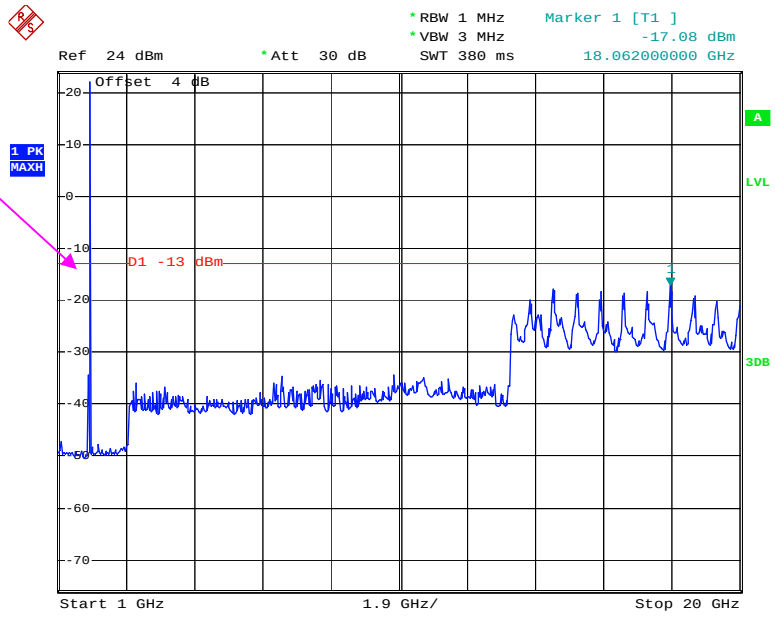
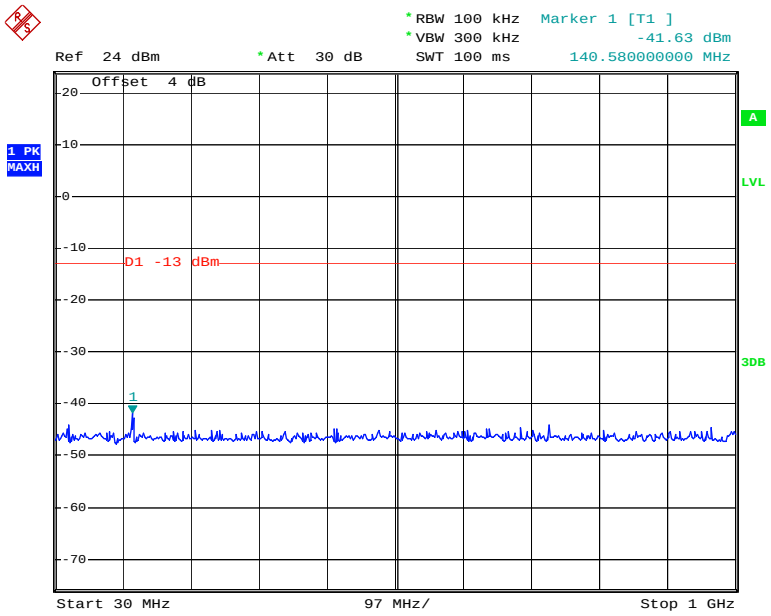


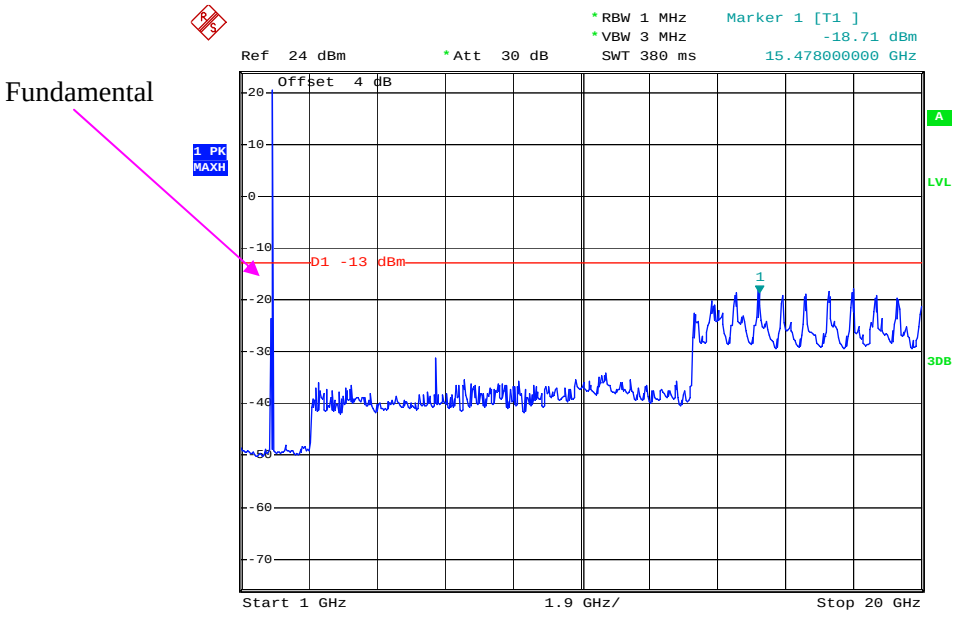
Fundamental

Date: 11.DEC.2017 10:12:00

QPSK_5 MHz

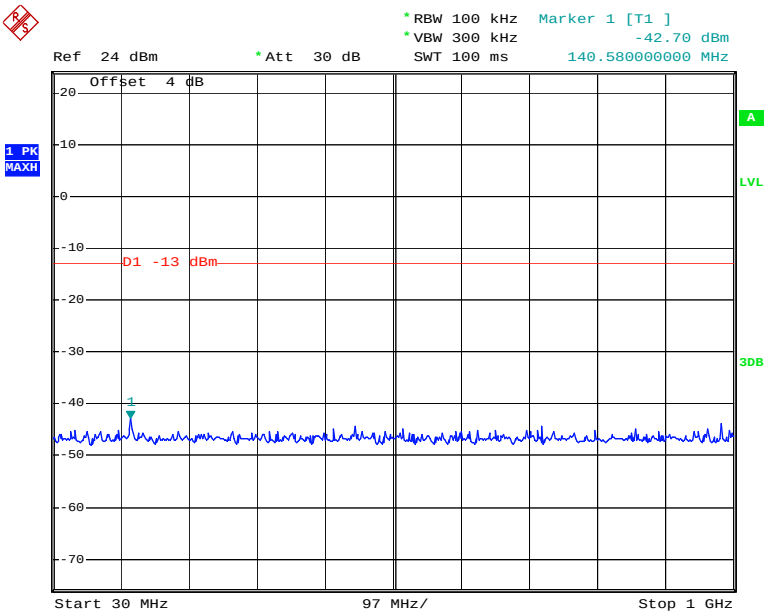


Date: 11.DEC.2017 10:11:03



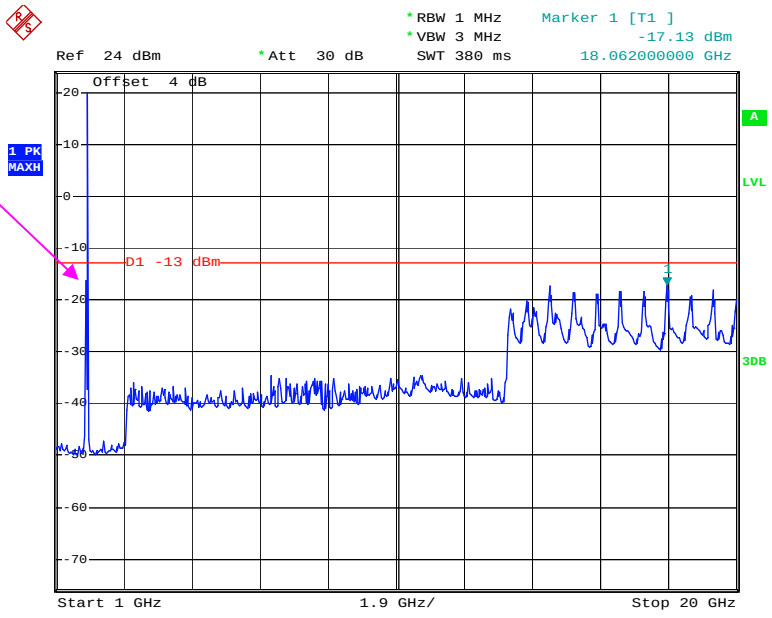
Date: 11.DEC.2017 10:10:33

QPSK_10 MHz



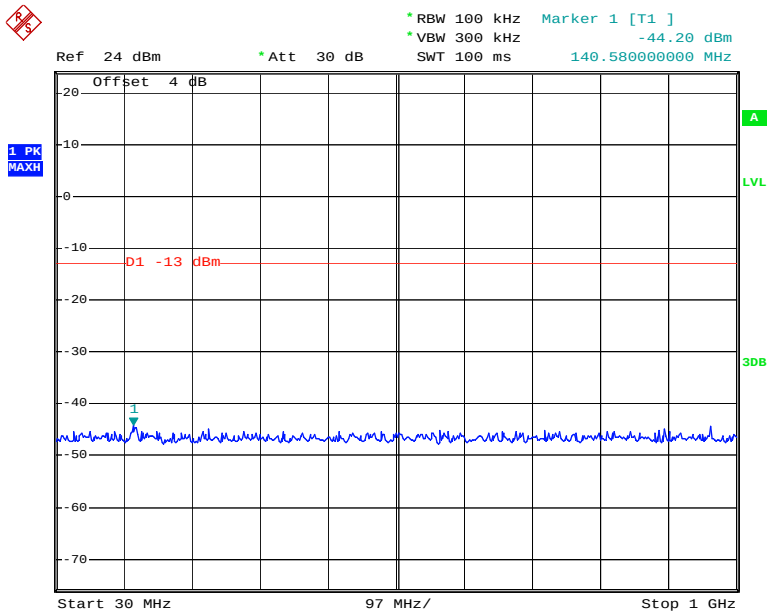
Date: 11.DEC.2017 10:08:50

Fundamental



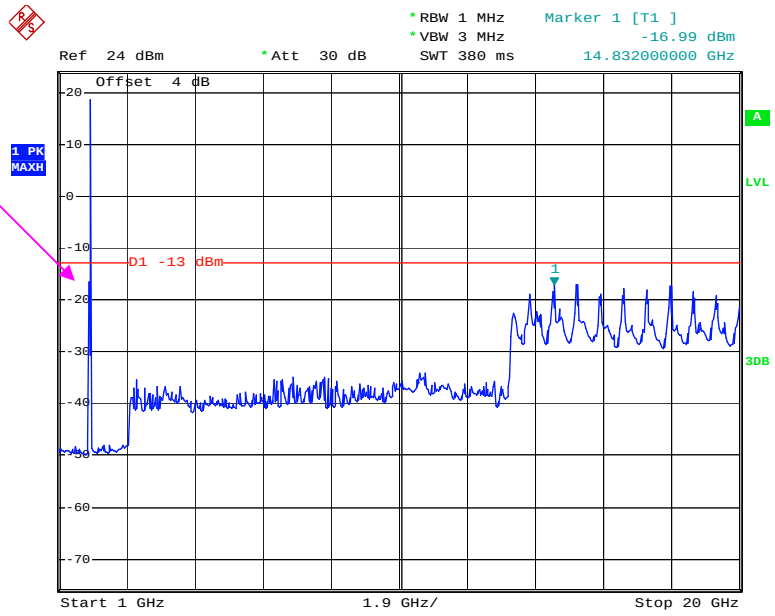
Date: 11.DEC.2017 10:09:45

QPSK_15 MHz



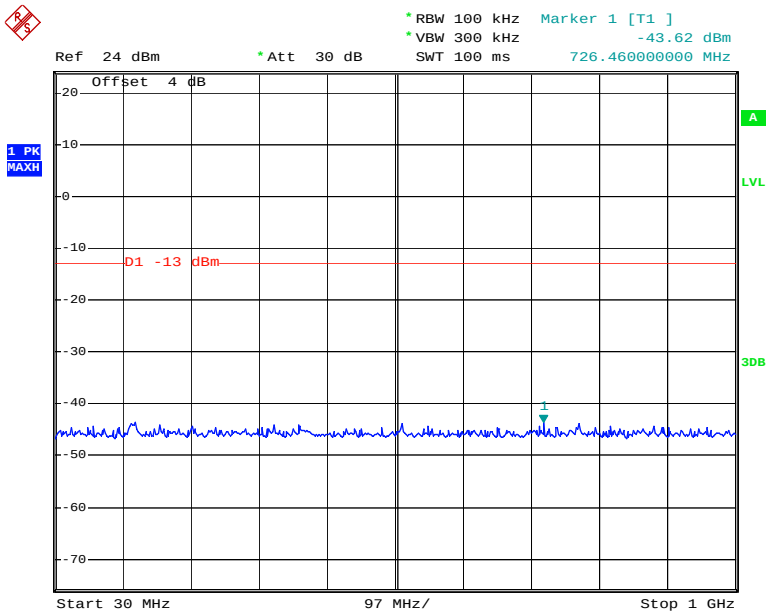
Date: 11.DEC.2017 10:08:25

Fundamental

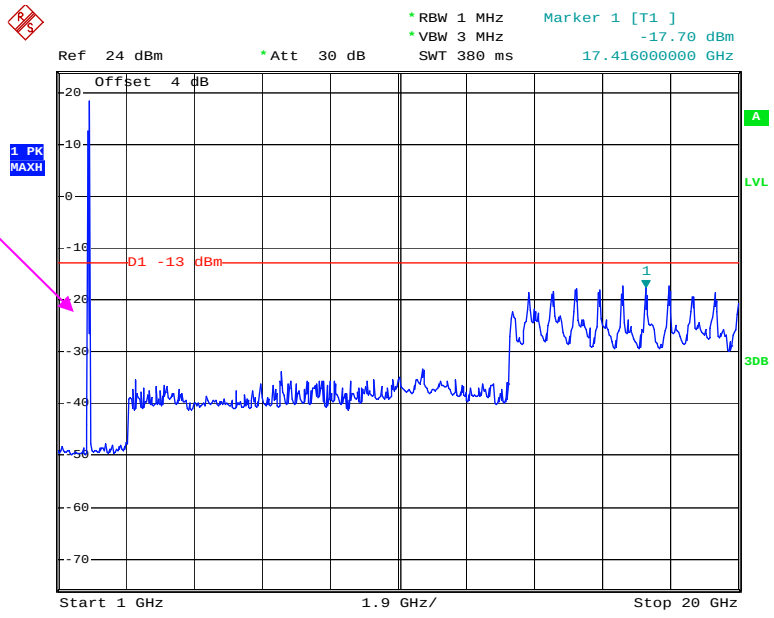


Date: 11.DEC.2017 10:07:58

QPSK_20 MHz



Date: 11.DEC.2017 10:06:12

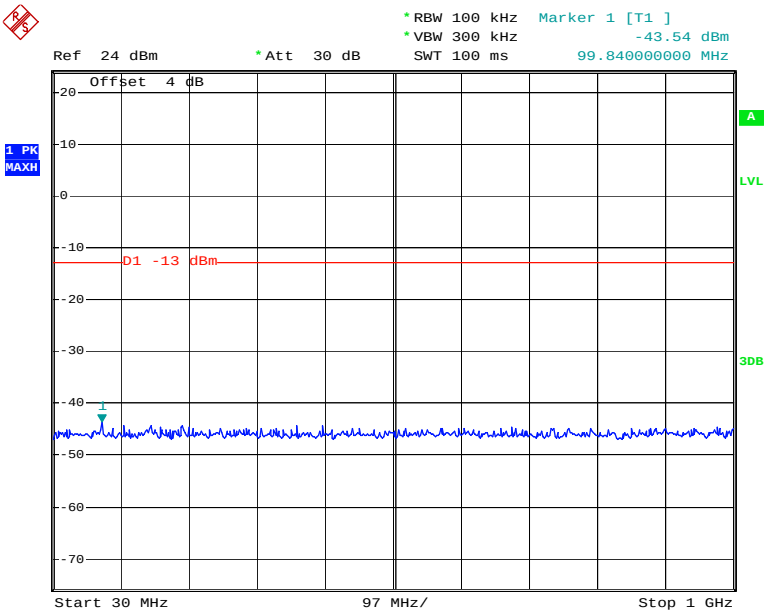


Fundamental

Date: 11.DEC.2017 10:06:55

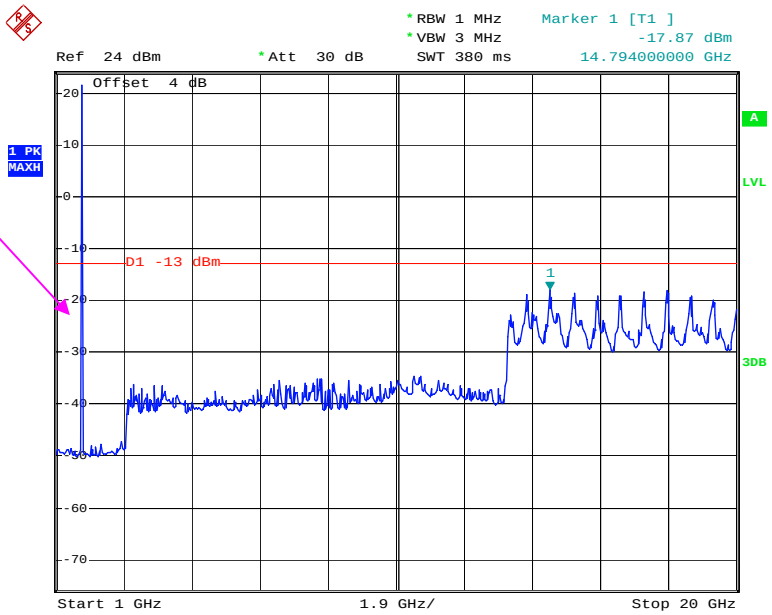
LTE Band 4 (Middle Channel)

QPSK_1.4 MHz



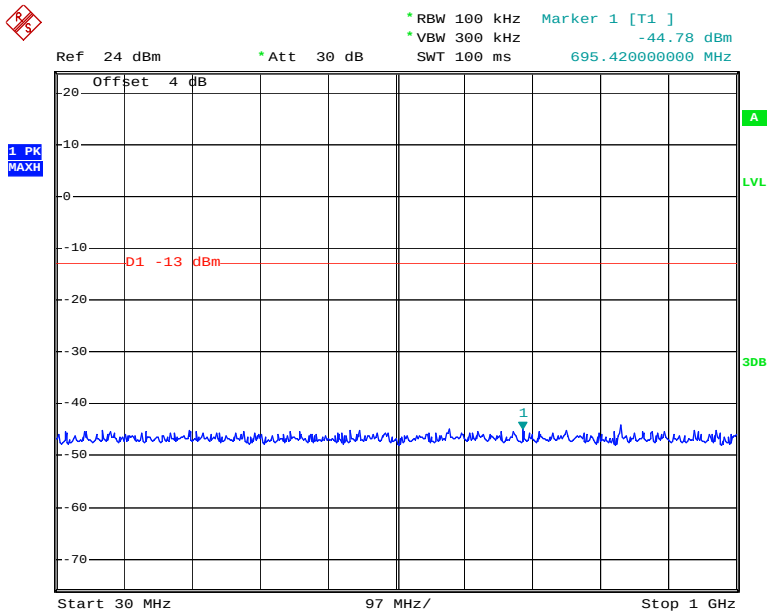
Date: 11.DEC.2017 10:15:18

Fundamental

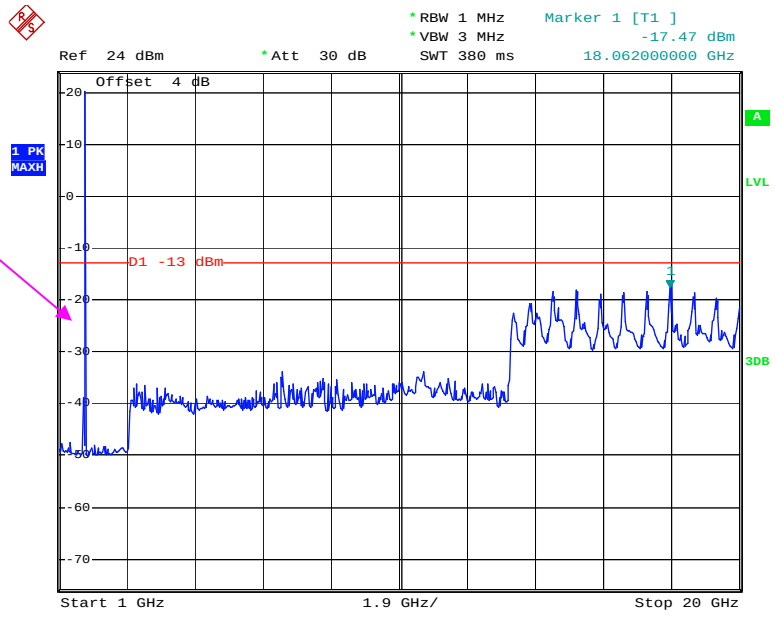


Date: 11.DEC.2017 10:15:45

QPSK_3 MHz



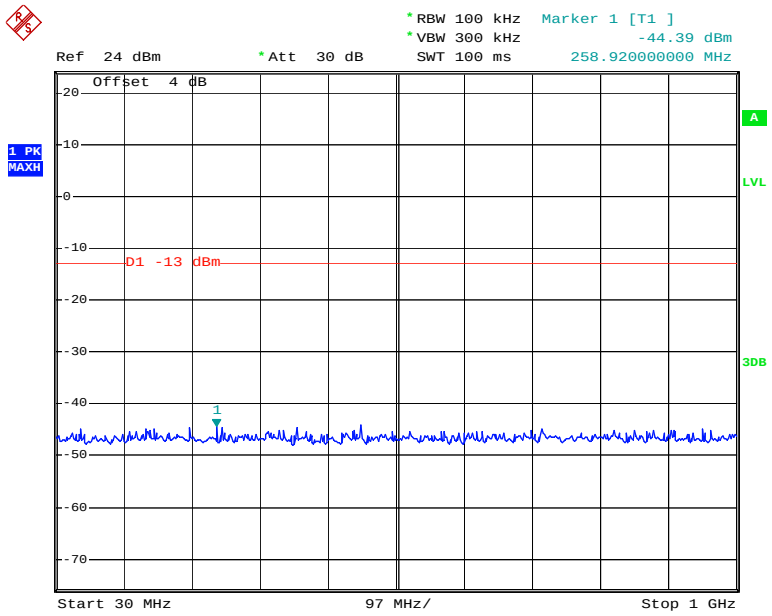
Date: 11.DEC.2017 10:16:43



Fundamental

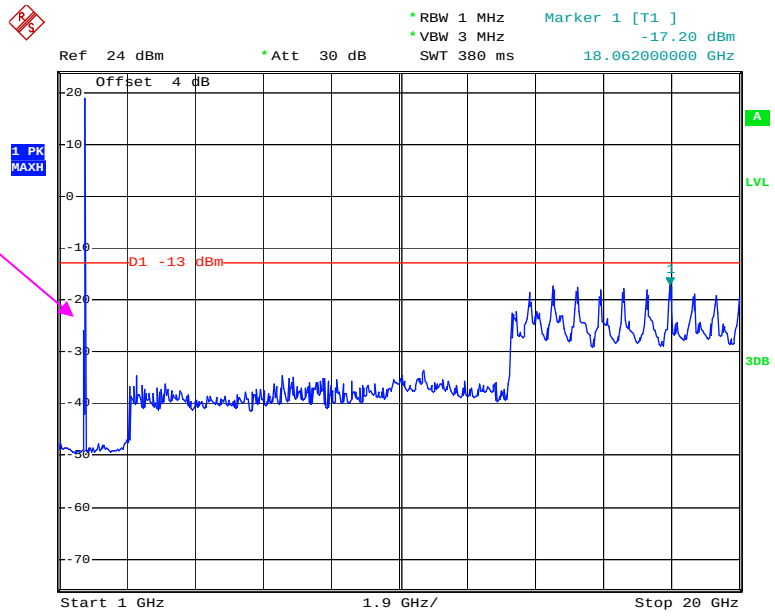
Date: 11.DEC.2017 10:16:20

QPSK_5 MHz



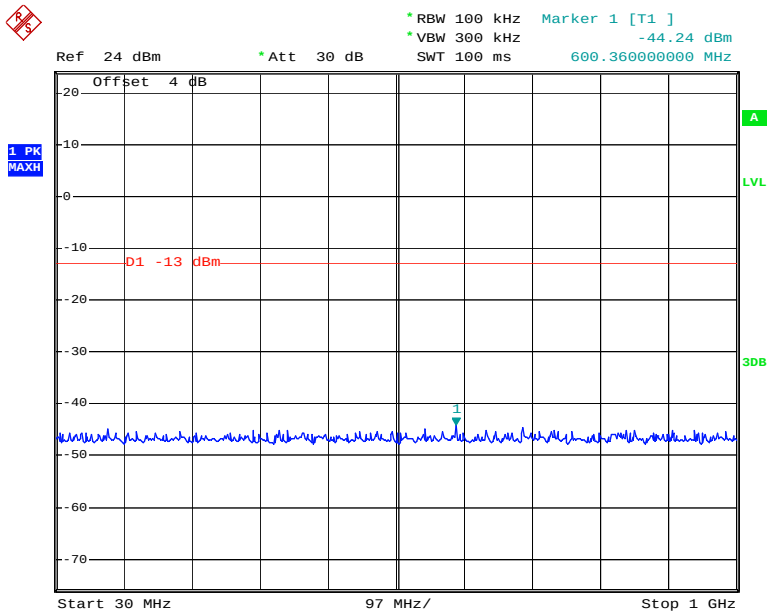
Date: 11.DEC.2017 10:17:08

Fundamental



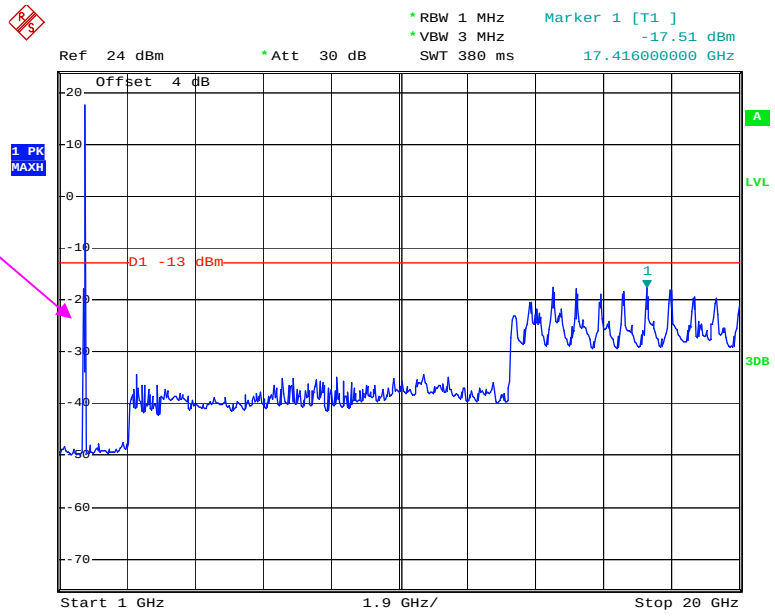
Date: 11.DEC.2017 10:18:57

QPSK_10 MHz



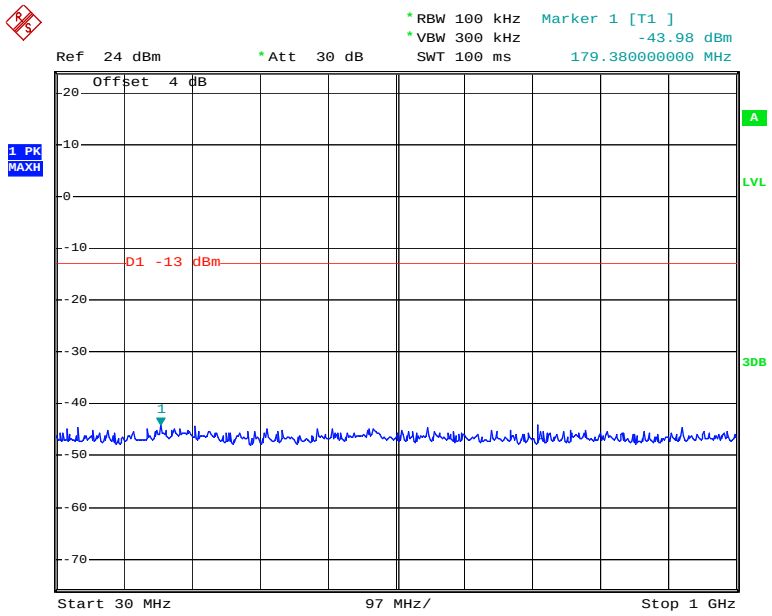
Date: 11.DEC.2017 10:20:07

Fundamental



Date: 11.DEC.2017 10:19:43

QPSK_15 MHz



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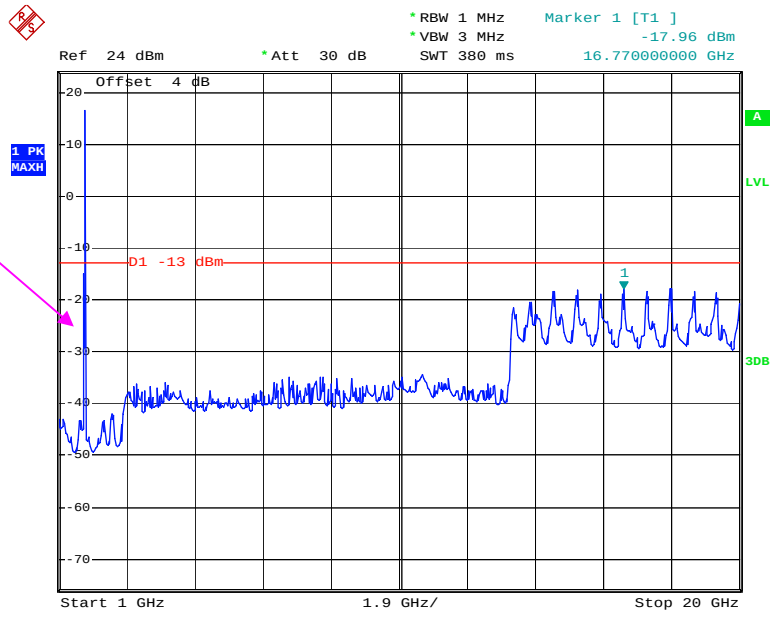
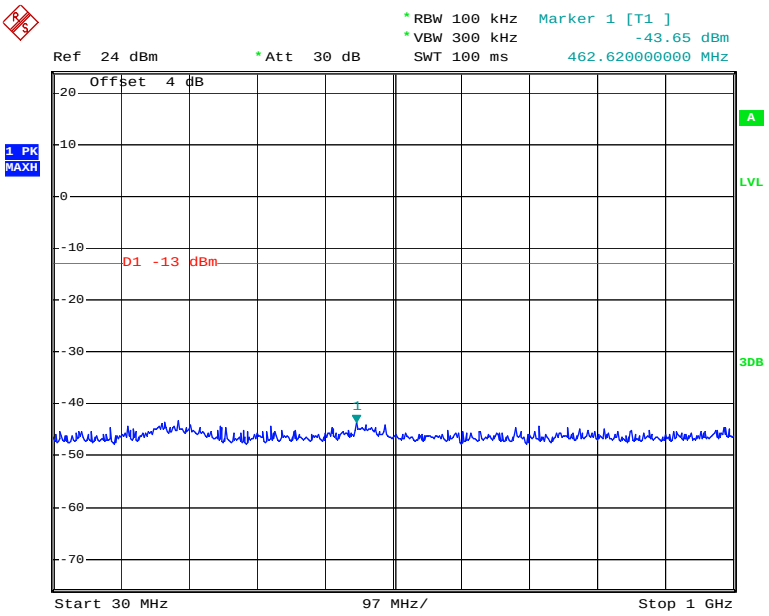


Fundamental

Date: 11.DEC.2017 10:21:06

QPSK_20 MHz



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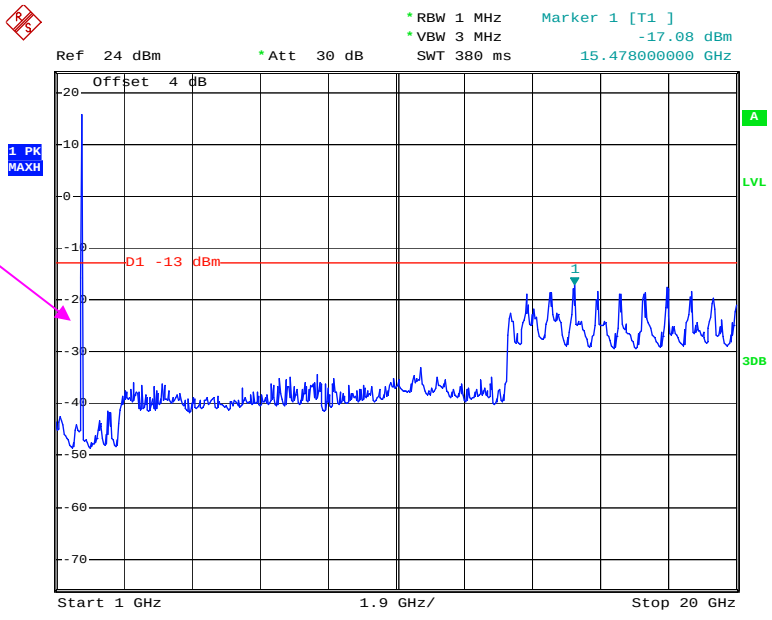


Fundamental

Date: 11.DEC.2017 10:21:48

FCC §2.1053, §24.238 & §27.53 - SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, § 24.238 and § 27.53.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to tenth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001) – the absolute level

Spurious attenuation limit in dB = 43 + 10 Log_{10} (power out in Watts)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2014-11-10	2017-11-10
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
Mini-Circuit	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
HP	Signal Generator	1026	320408	2016-12-08	2017-12-08
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-02 1304	2016-11-18	2019-11-18
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	24.6~24.9°C
Relative Humidity:	37~38 %
ATM Pressure:	101.7 kPa

** The testing was performed by Sunny Cen and Steven Zuo from 2017-10-29 to 2017-10-30.*

EUT Operation Mode: Transmitting

LTE Band 2 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:1880.000 MHz								
341.000	H	42.88	-64.2	0.0	0.6	-64.8	-13.0	51.8
341.000	V	45.67	-63.6	0.0	0.6	-64.2	-13.0	51.2
3760.000	H	47.50	-61.3	13.8	1.6	-49.1	-13.0	36.1
3760.000	V	42.15	-66.5	13.8	1.6	-54.3	-13.0	41.3
5640.000	H	48.42	-57.6	14.0	1.3	-44.9	-13.0	31.9
5640.000	V	43.21	-62.7	14.0	1.3	-50.0	-13.0	37.0
4122.000	H	45.88	-63.2	13.8	1.4	-50.8	-13.0	37.8
4122.000	V	45.29	-63.9	13.8	1.4	-51.5	-13.0	38.5

LTE Band 4 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBµV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:1732.500 MHz								
381.000	H	42.79	-62.7	0.0	0.6	-63.3	-13.0	50.3
381.000	V	46.72	-61.8	0.0	0.6	-62.4	-13.0	49.4
3465.000	H	51.64	-58.6	13.9	1.6	-46.3	-13.0	33.3
3465.000	V	53.56	-56.7	13.9	1.6	-44.4	-13.0	31.4
5197.500	H	50.55	-55.9	14.0	1.5	-43.4	-13.0	30.4
5197.500	V	53.13	-53.4	14.0	1.5	-40.9	-13.0	27.9
4155.000	H	46.27	-62.8	13.9	1.5	-50.4	-13.0	37.4
4155.000	V	45.24	-63.8	13.9	1.5	-51.4	-13.0	38.4

Note:
1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
3) Margin = Limit-Absolute Level

FCC § 2.1053, §24.238(a) & §27.53 - BAND EDGES

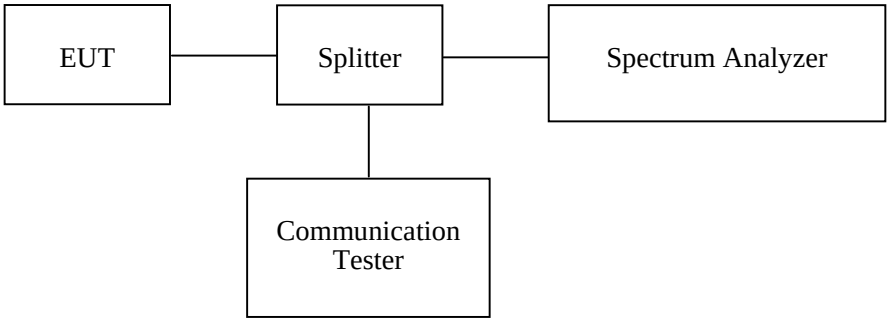
Applicable Standard

FCC § 2.1053, § 24.238 and § 27.53.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Wideband Radio Communication Tester	CMW500	147473	2017-08-31	2018-08-31
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each Time	/
Pasternack	RF Coaxial Cable	0.5m	C-5	Each Time	/
E-Microwave	Two-way Spliter	ODP-1-6-2S	OE0120142	Each Time	/
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23.4°C
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

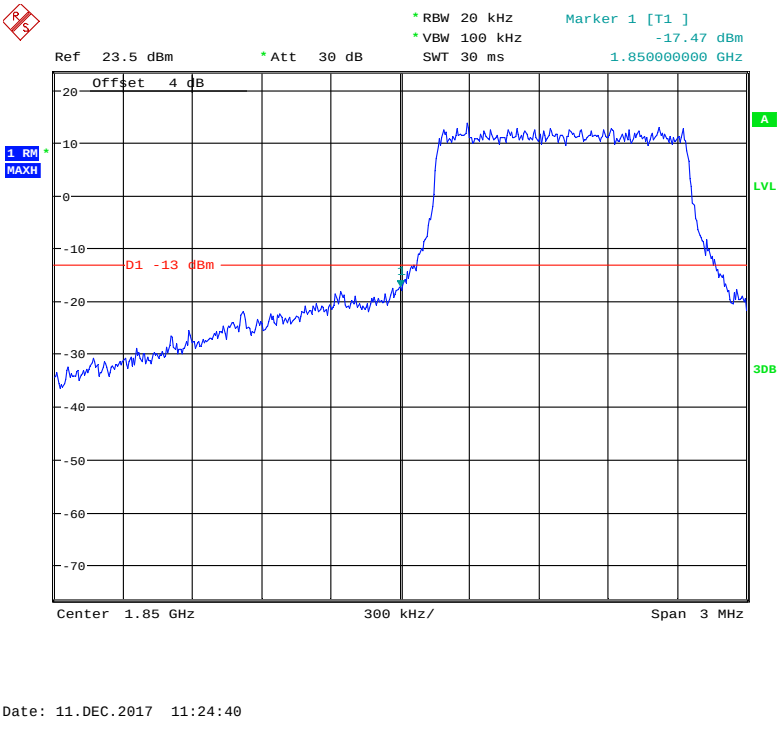
The testing was performed by Harry Yang on 2017-12-11.

Test Mode: Transmitting

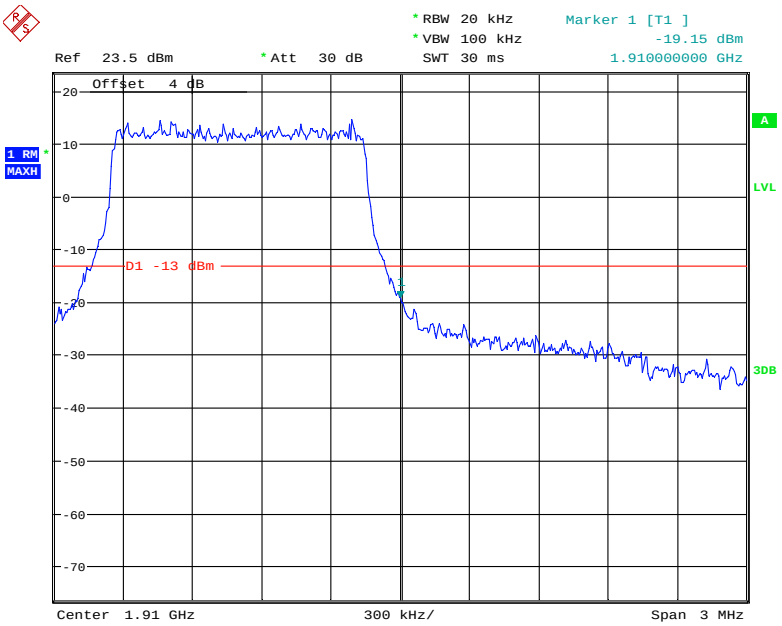
Test Result: Compliant. Please refer to the following plots.

LTE Band II

QPSK_1.4MHz_ 6 RB_ Left

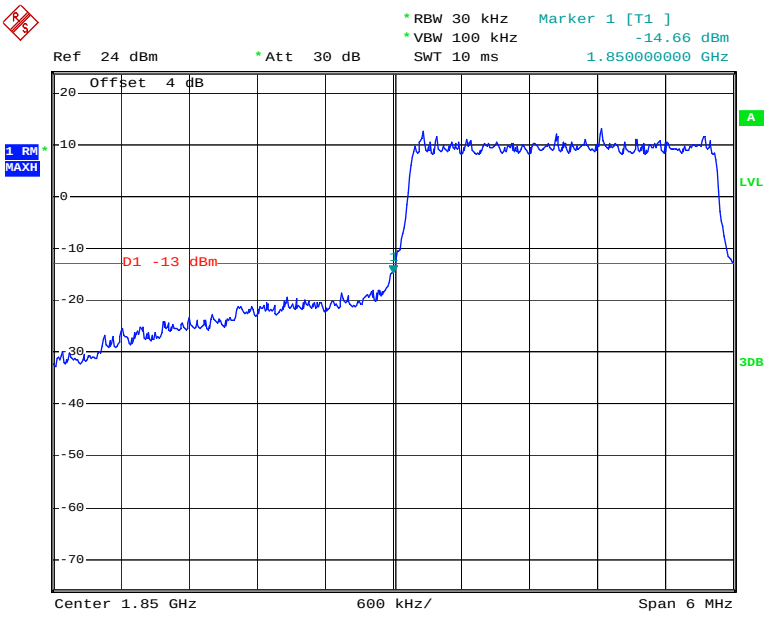


QPSK_1.4MHz_ 6 RB_ Right



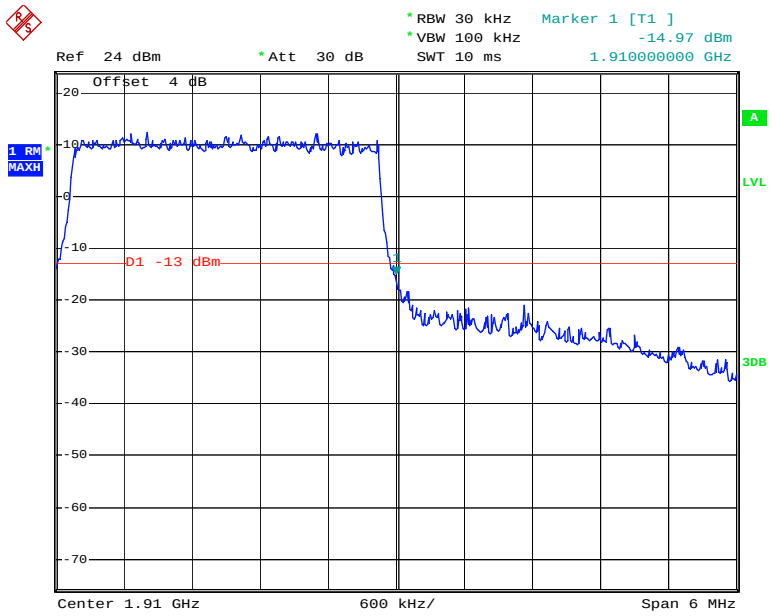
Date: 11.DEC.2017 11:26:16

QPSK_3MHz_ 15 RB_ Left



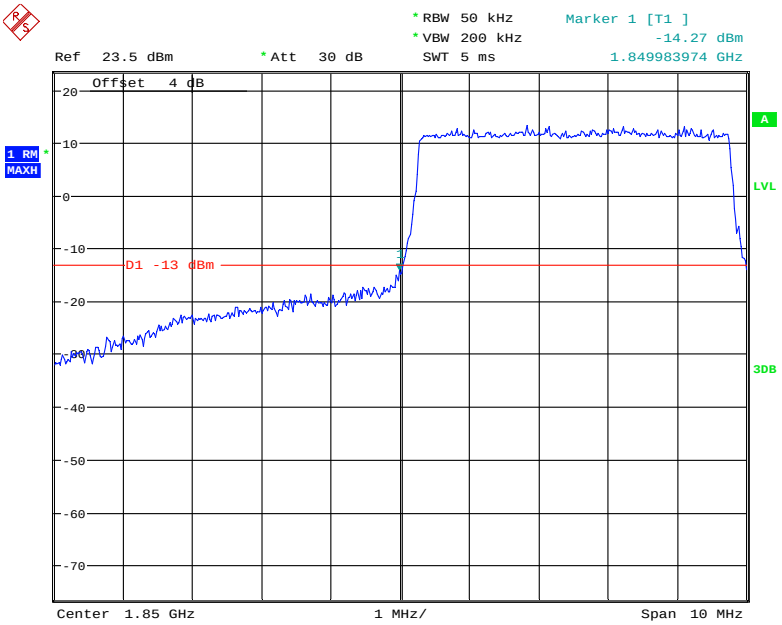
Date: 11.DEC.2017 09:43:54

QPSK_3MHz_ 15 RB_ Right



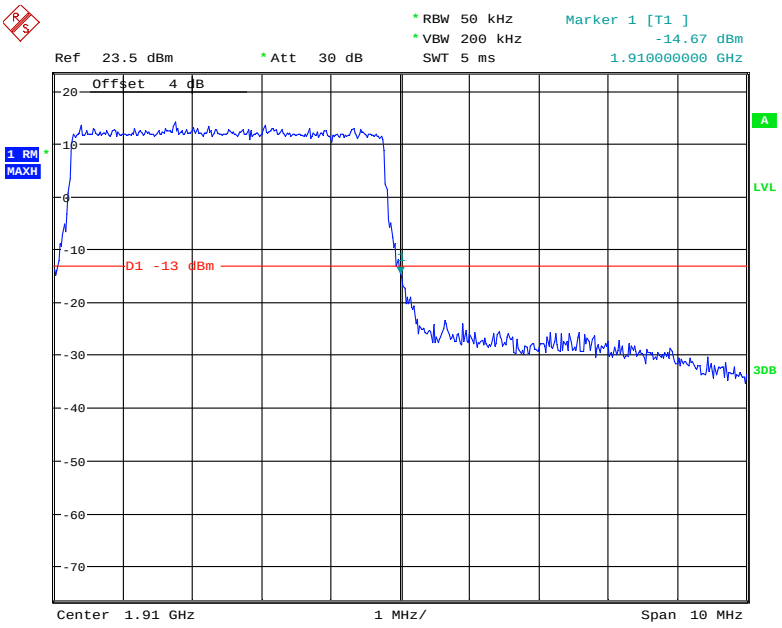
Date: 11.DEC.2017 09:46:53

QPSK_5MHz_ 25 RB_ Left



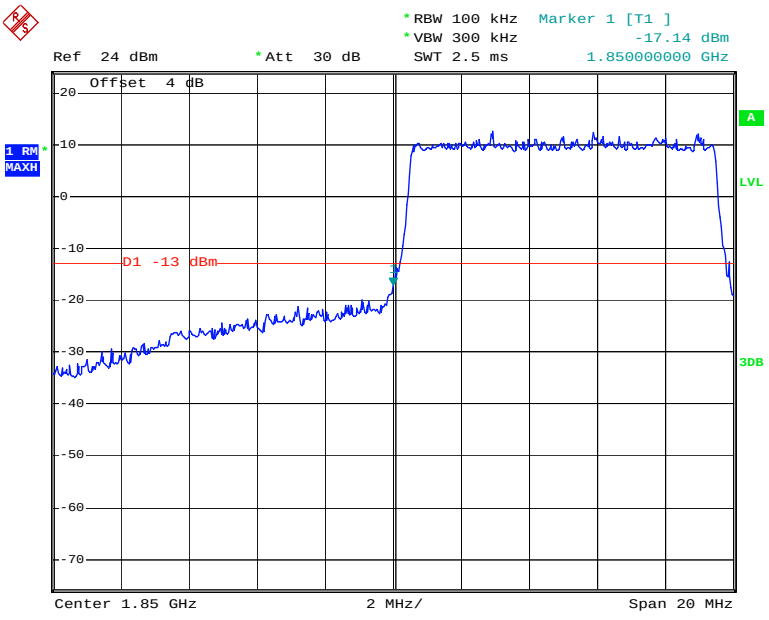
Date: 11.DEC.2017 11:29:45

QPSK_5MHz_ 25 RB_ Right



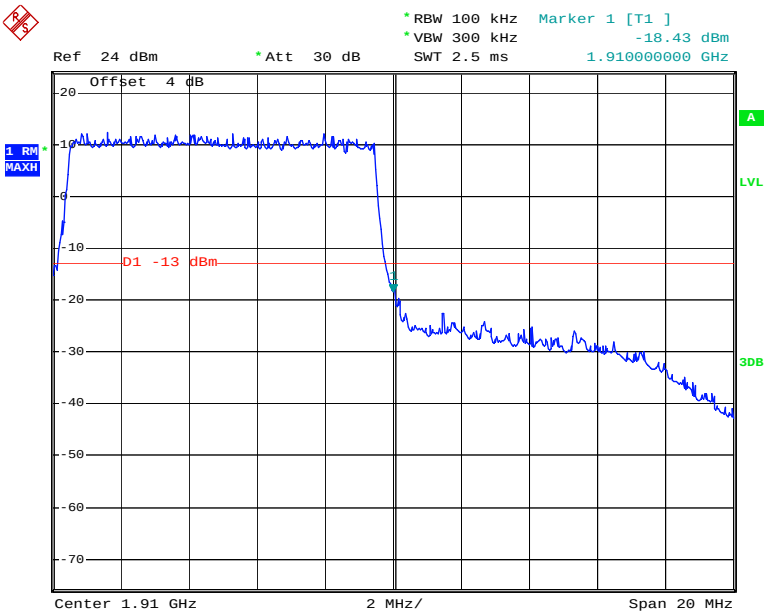
Date: 11.DEC.2017 11:27:16

QPSK_10MHz_ 50 RB_ Left



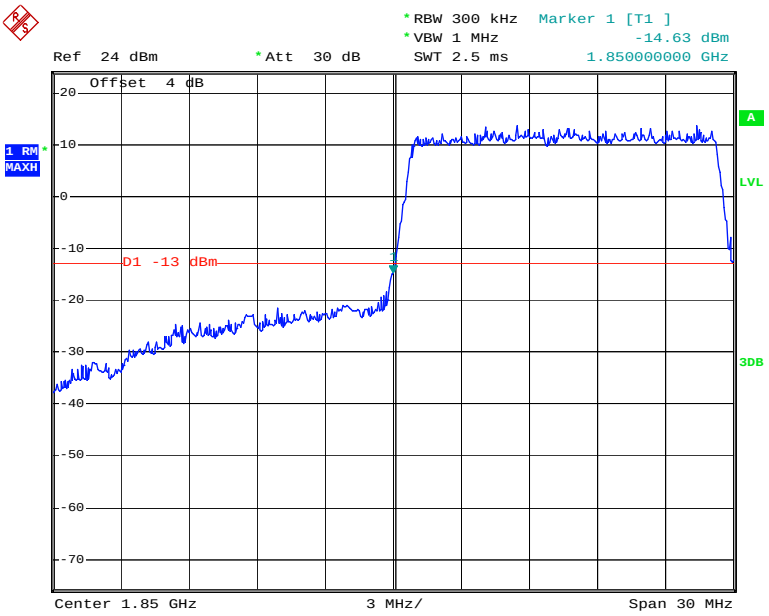
Date: 11.DEC.2017 09:52:46

QPSK_10MHz_ 50 RB_ Right



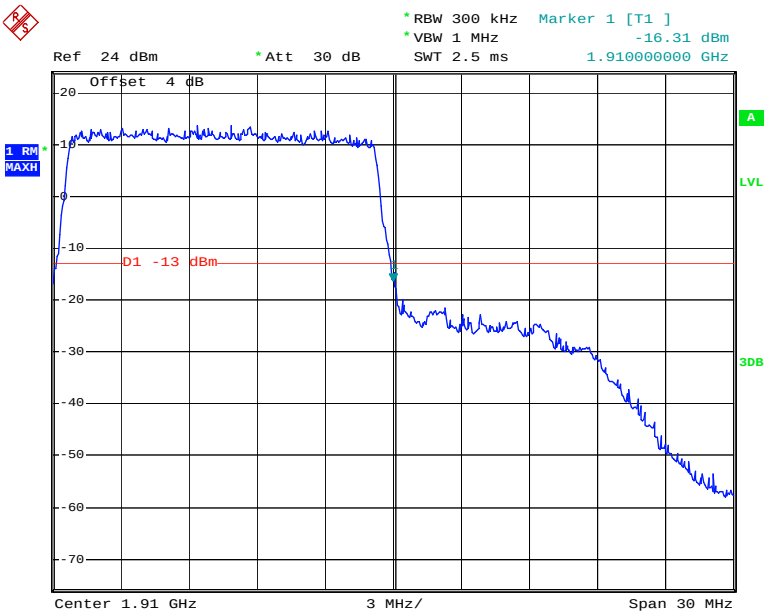
Date: 11.DEC.2017 09:49:30

QPSK_15MHz_ 75 RB_ Left



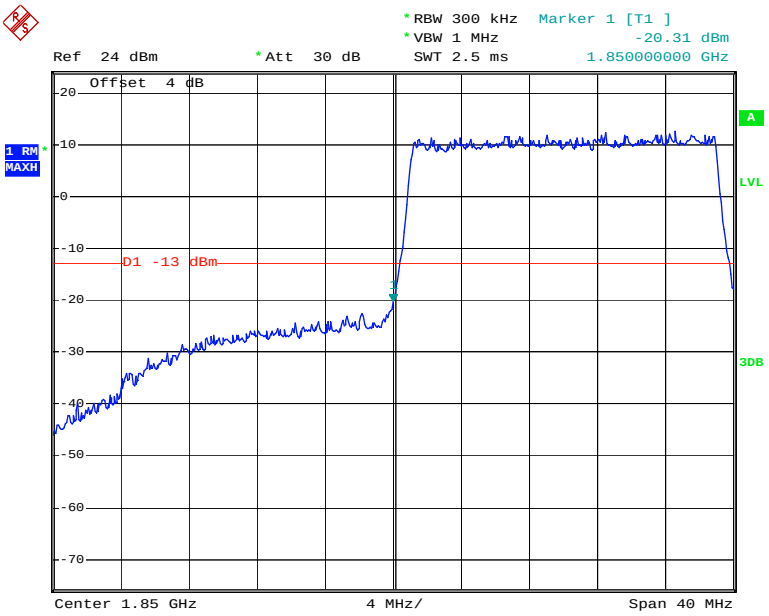
Date: 11.DEC.2017 09:54:14

QPSK_15MHz_ 75 RB_ Right



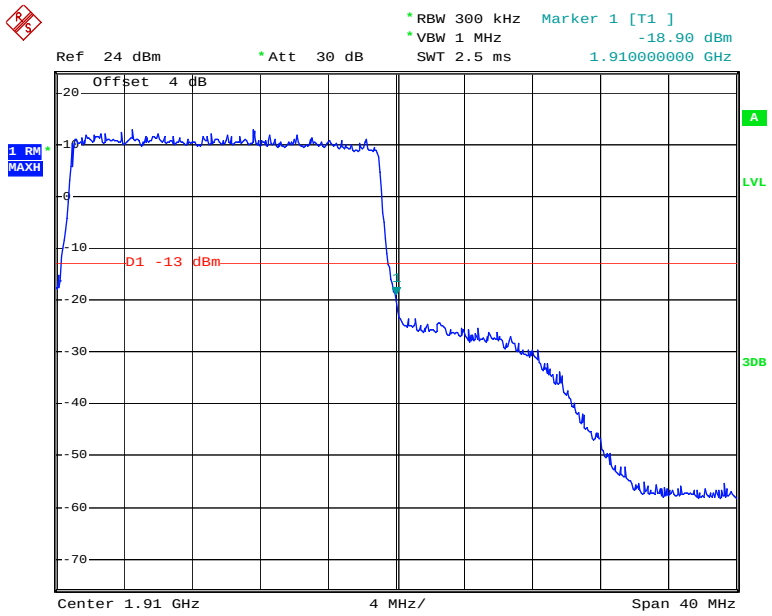
Date: 11.DEC.2017 09:56:42

QPSK_20MHz_ FULL RB_ Left



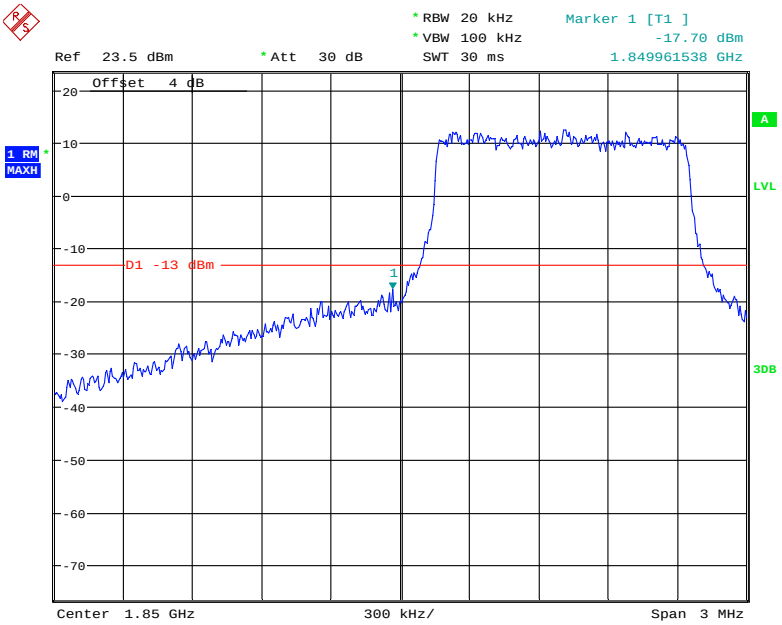
Date: 11.DEC.2017 10:02:21

QPSK_20MHz_ FULL RB_ Right



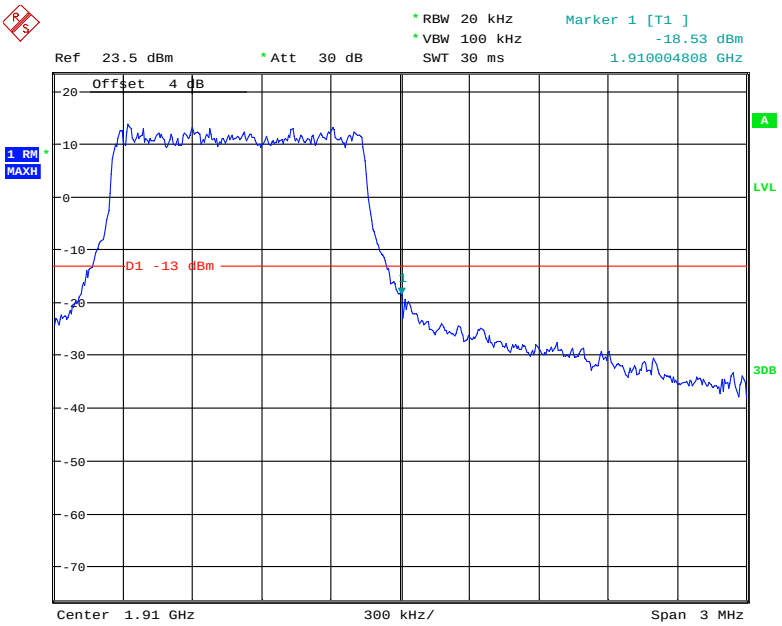
Date: 11.DEC.2017 09:58:49

16QAM_1.4MHz_ 6 RB_ Left



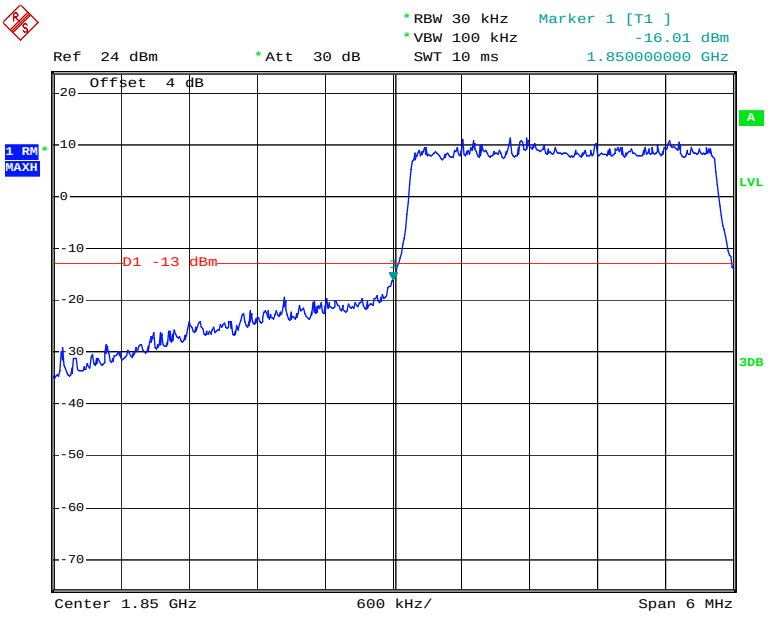
Date: 11.DEC.2017 11:25:09

16QAM_1.4MHz_ 6 RB_ Right



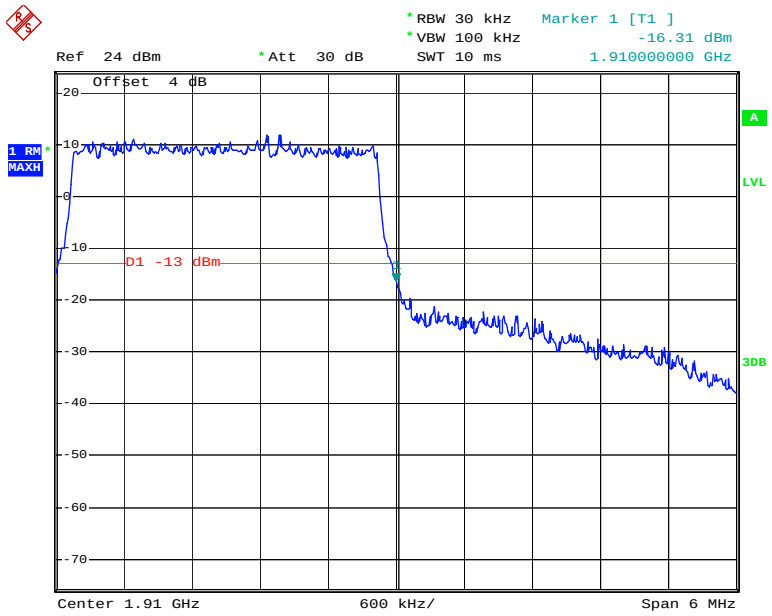
Date: 11.DEC.2017 11:25:50

16QAM_3MHz_ 15 RB_ Left



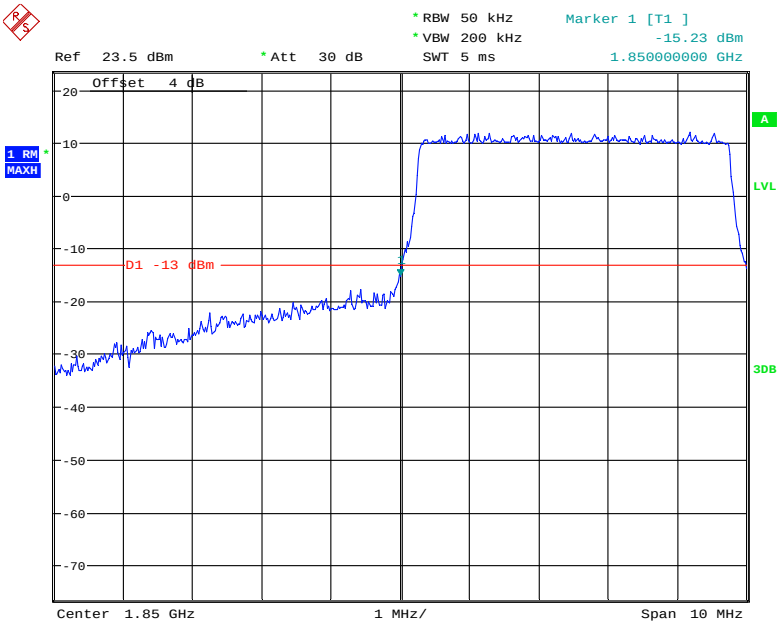
Date: 11.DEC.2017 09:44:52

16QAM_3MHz_ 15 RB_ Right



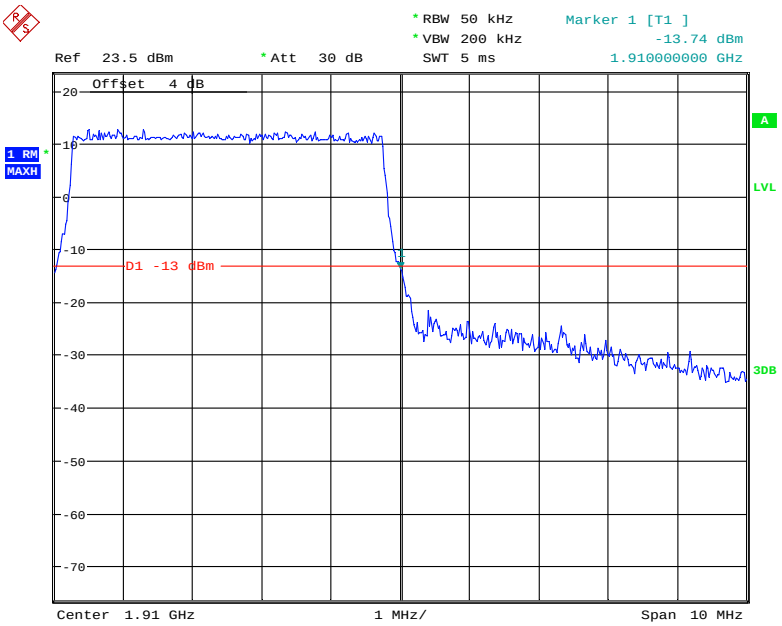
Date: 11.DEC.2017 09:45:51

16QAM_5MHz_ 25 RB_ Left



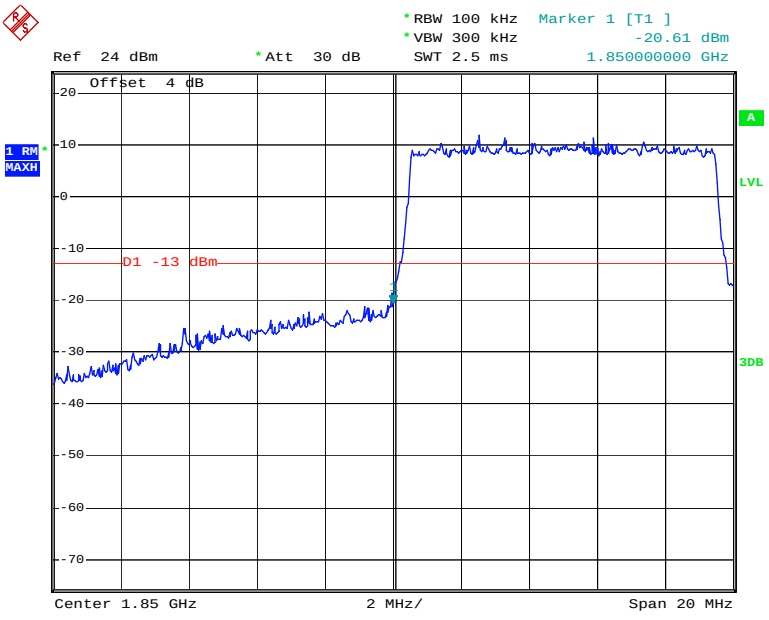
Date: 11.DEC.2017 11:28:55

16QAM_5MHz_ 25 RB_ Right



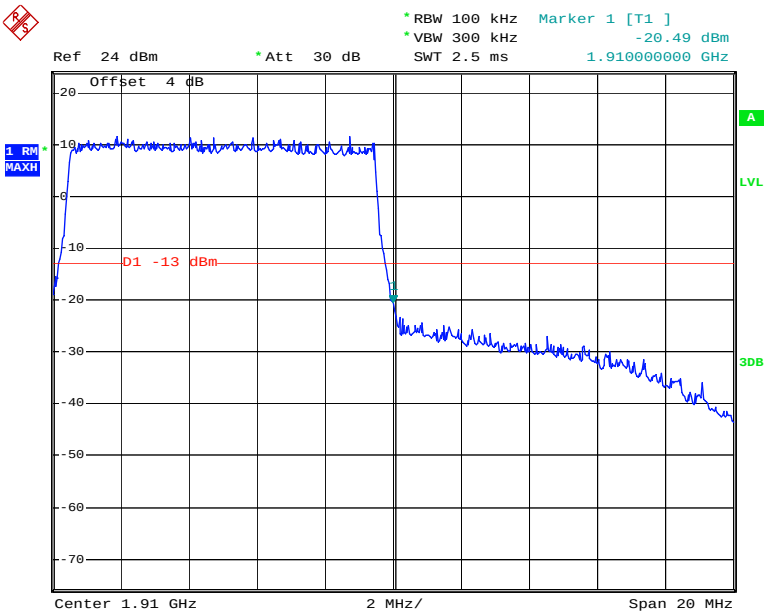
Date: 11.DEC.2017 11:28:07

16QAM_10MHz_ 50 RB_ Left



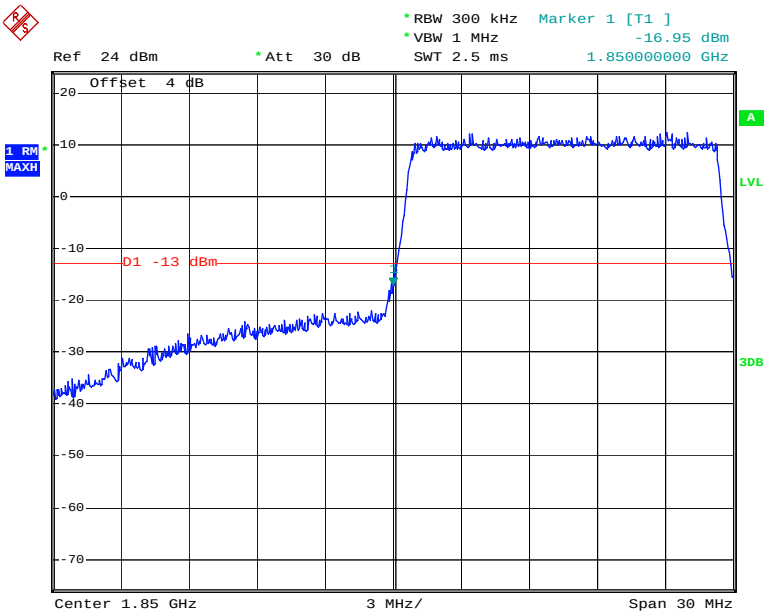
Date: 11.DEC.2017 09:51:46

16QAM_10MHz_ 50 RB_ Right



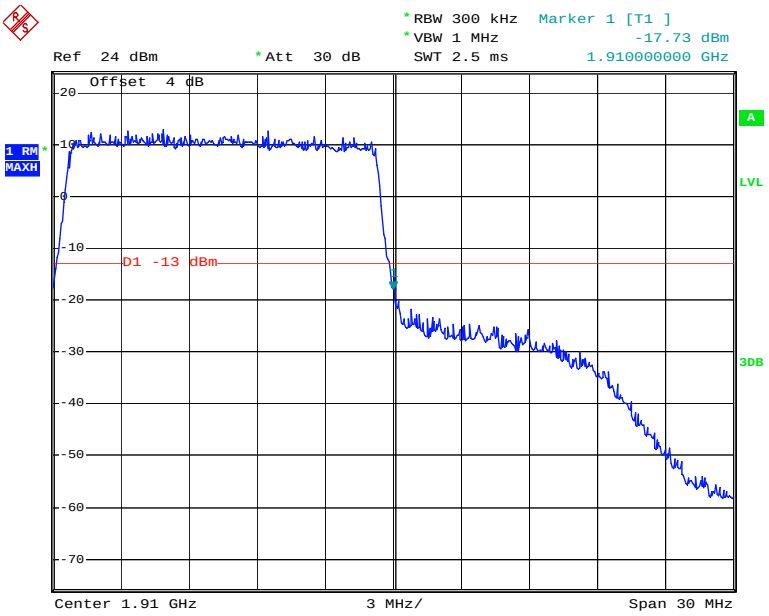
Date: 11.DEC.2017 09:50:33

16QAM_15MHz_ 75 RB_ Left



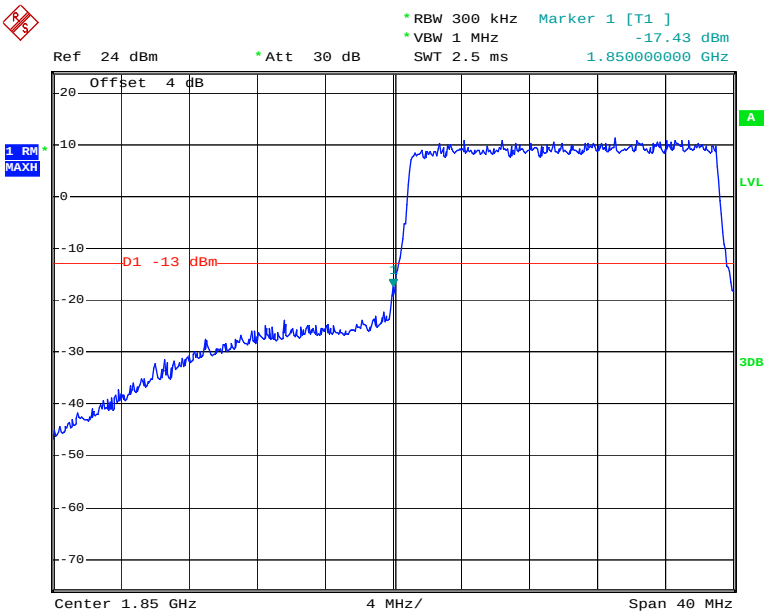
Date: 11.DEC.2017 09:55:09

16QAM_15MHz_ 75 RB_ Right



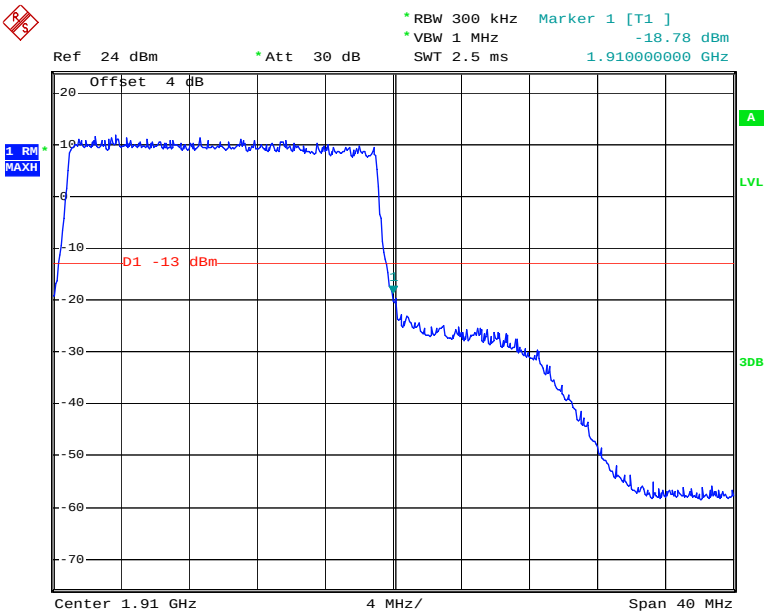
Date: 11.DEC.2017 09:55:51

16QAM_20MHz_ FULL RB_ Left



Date: 11.DEC.2017 10:01:09

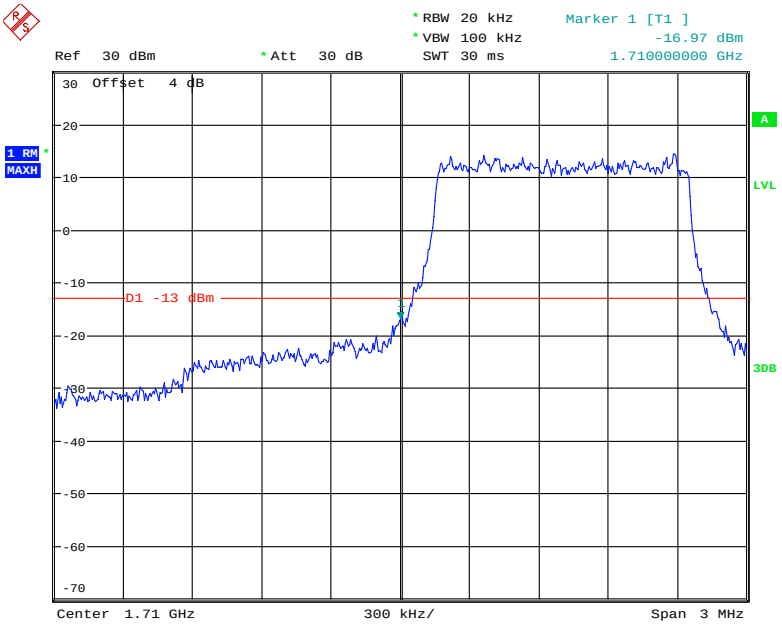
16QAM_20MHz_ FULL RB_ Right



Date: 11.DEC.2017 10:00:08

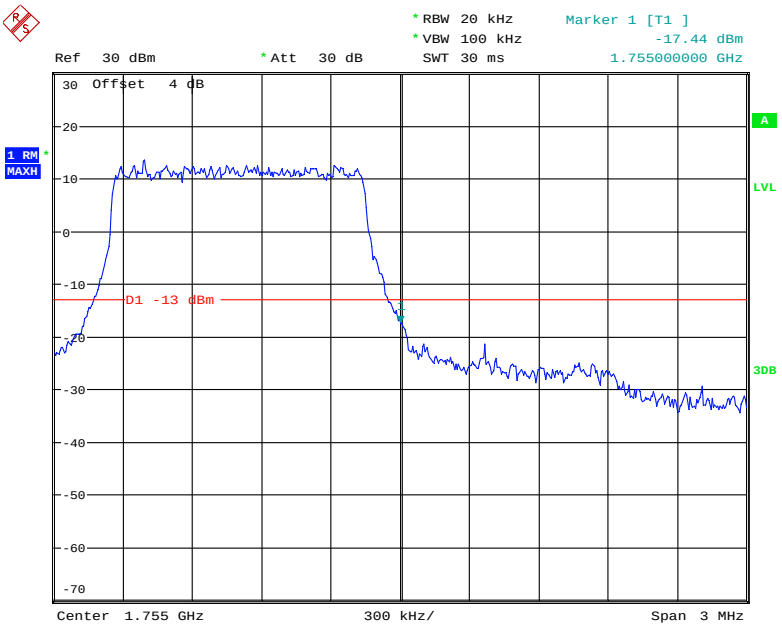
LTE Band IV:

QPSK_1.4MHz_ 6 RB_ Left



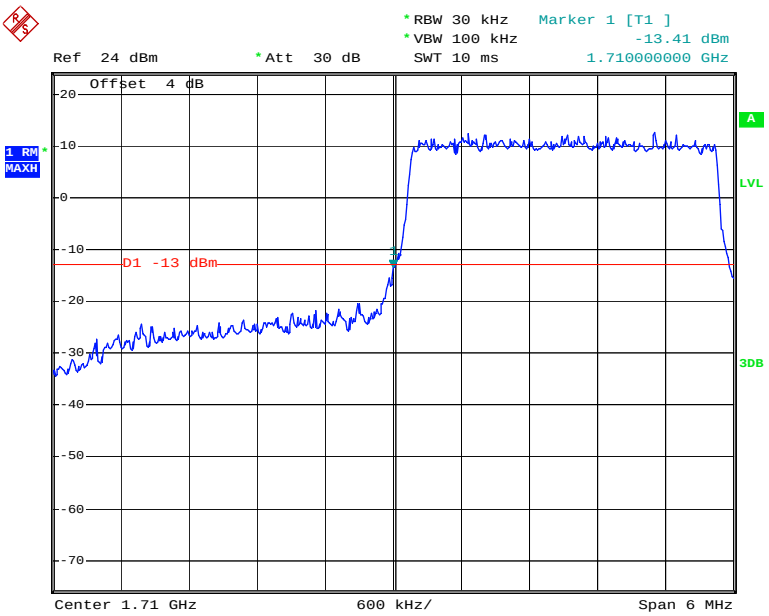
Date: 11.DEC.2017 11:36:25

QPSK_1.4MHz_ 6 RB_ Right



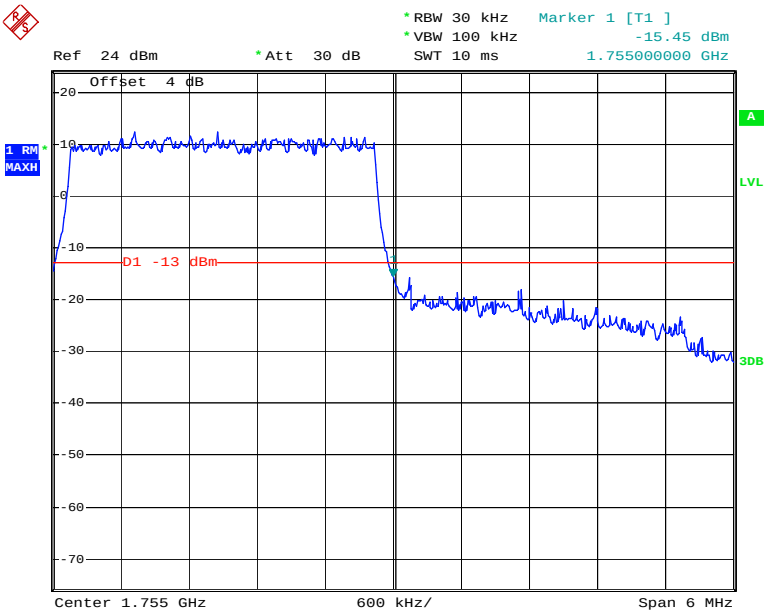
Date: 11.DEC.2017 11:34:17

QPSK_3MHz_ 15 RB_ Left



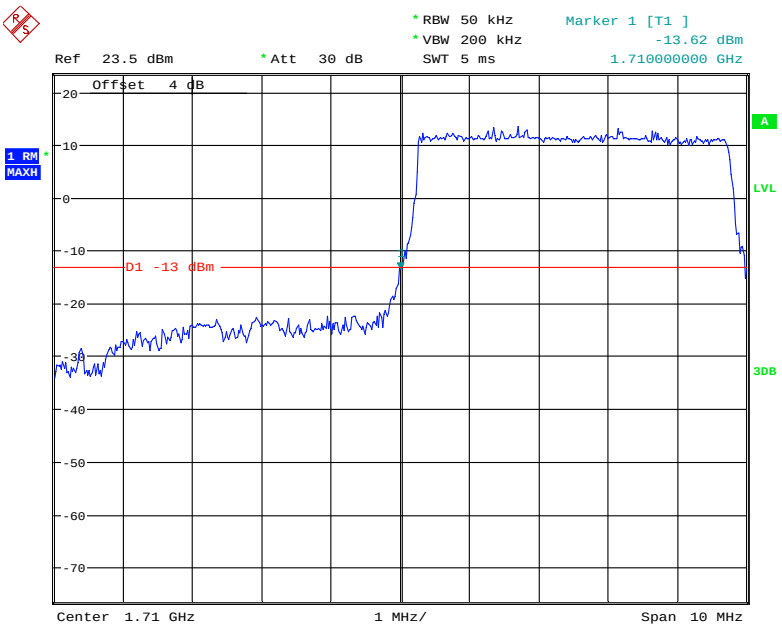
Date: 11.DEC.2017 09:36:34

QPSK_3MHz_ 15 RB_ Right



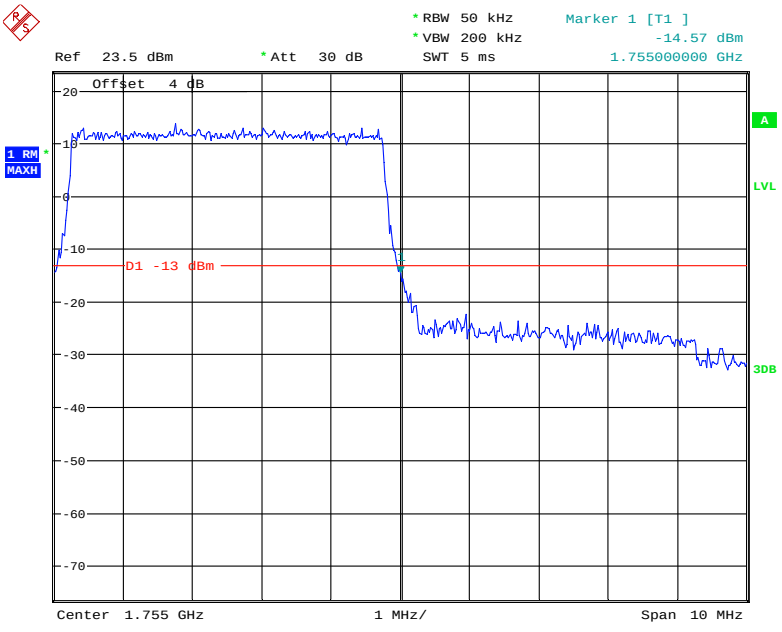
Date: 11.DEC.2017 09:37:28

QPSK_5MHz_ 25 RB_ Left



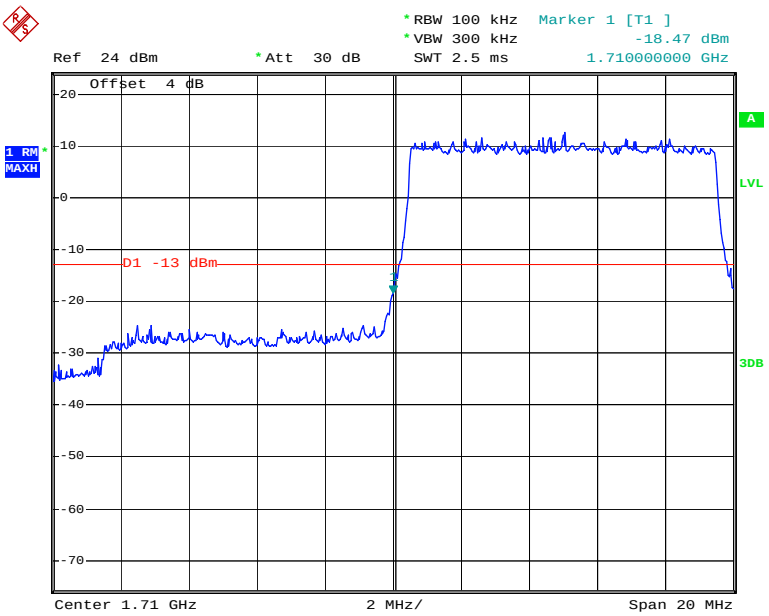
Date: 11.DEC.2017 11:31:40

QPSK_5MHz_ 25 RB_ Right



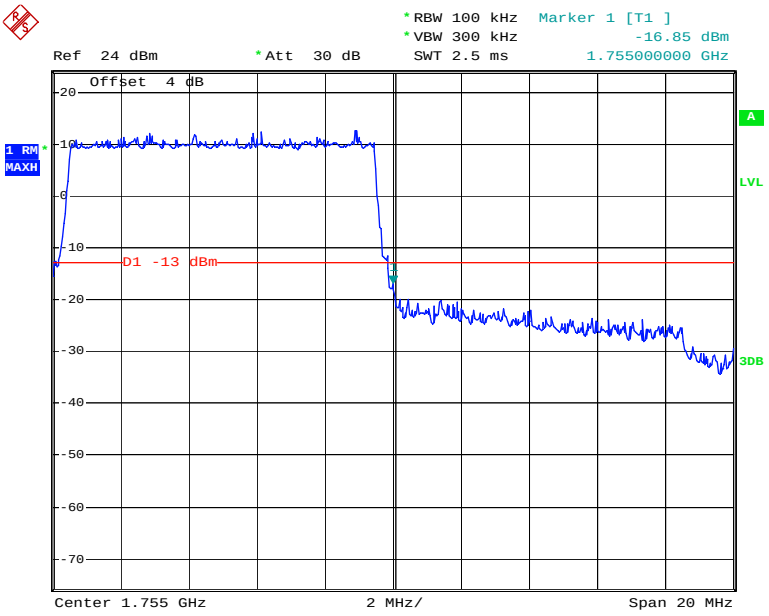
Date: 11.DEC.2017 11:33:26

QPSK_10MHz_ 50 RB_ Left



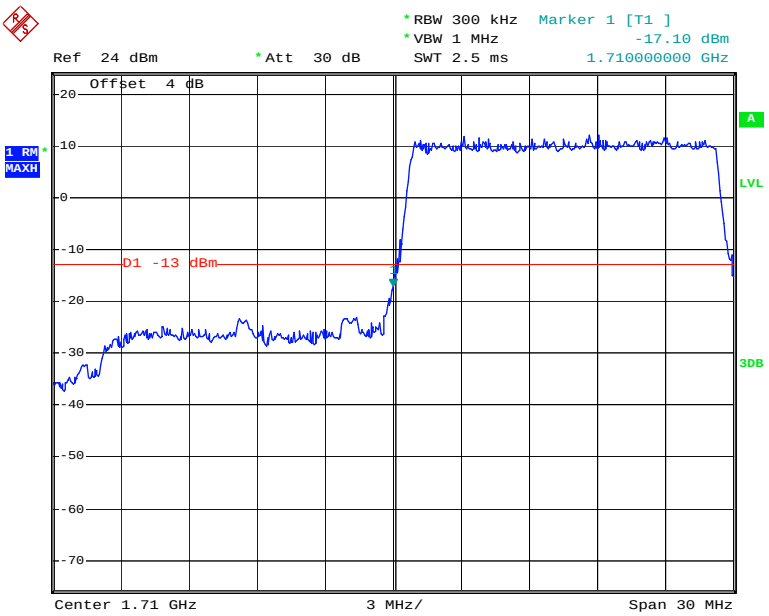
Date: 11.DEC.2017 09:29:11

QPSK_10MHz_ 50 RB_ Right



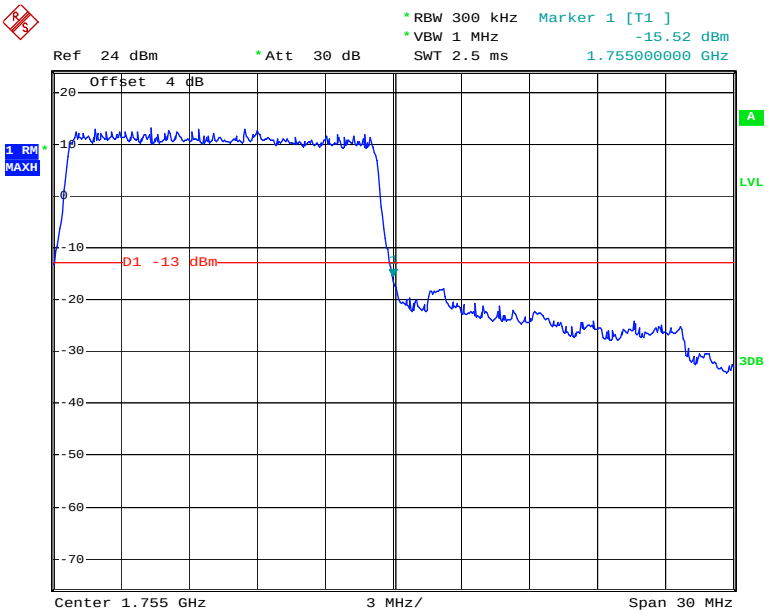
Date: 11.DEC.2017 09:27:06

QPSK_15MHz_ 75 RB_ Left



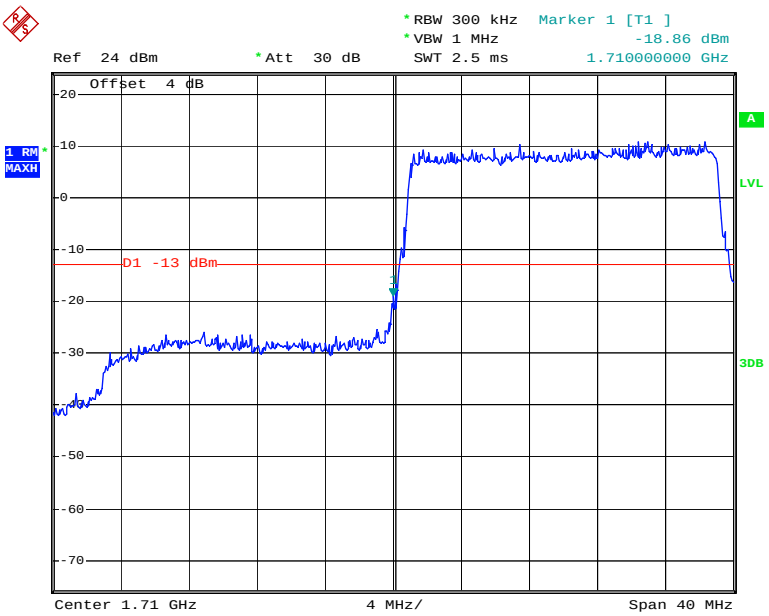
Date: 11.DEC.2017 09:23:54

QPSK_15MHz_ 75 RB_ Right



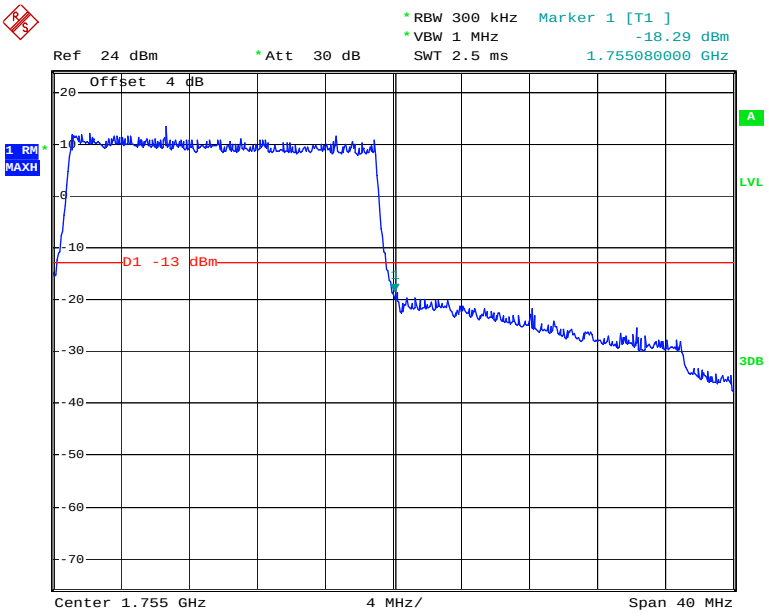
Date: 11.DEC.2017 09:25:51

QPSK_20MHz_ FULL RB_ Left



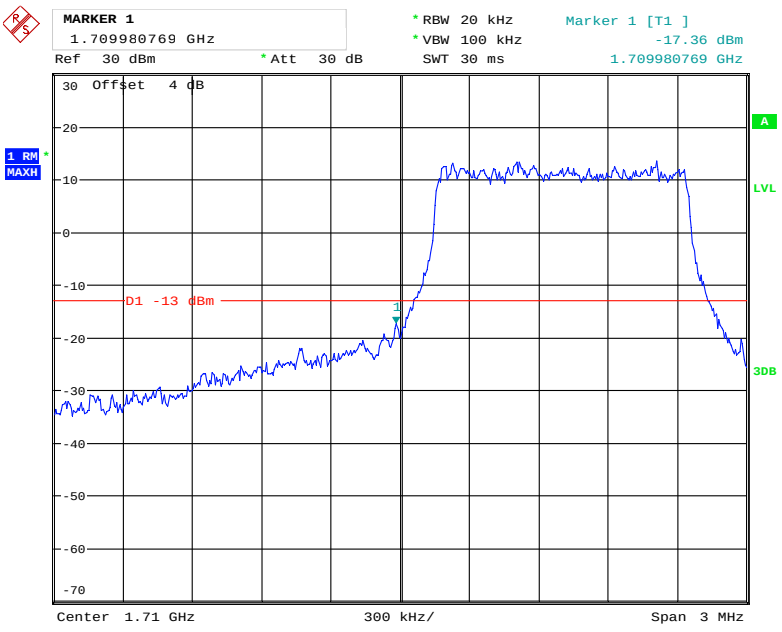
Date: 11.DEC.2017 09:22:50

QPSK_20MHz_ FULL RB_ Right



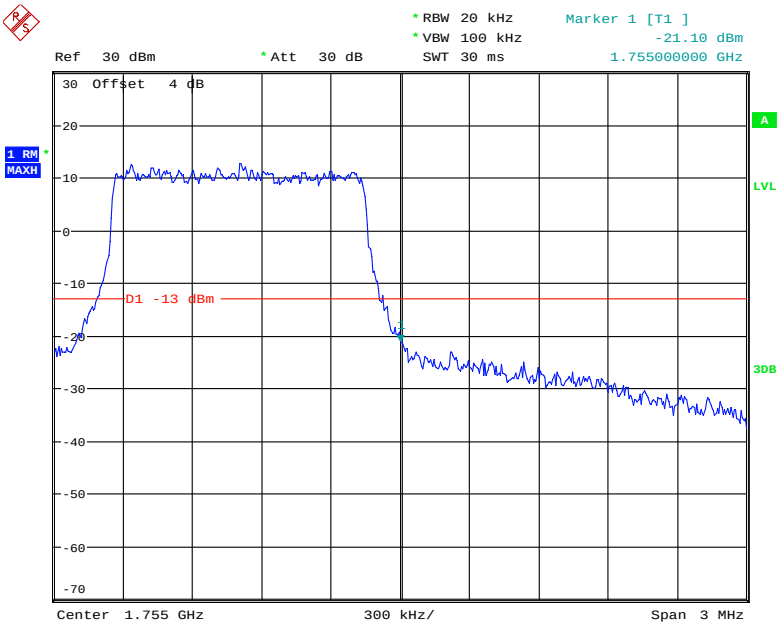
Date: 11.DEC.2017 09:20:35

16QAM_1.4MHz_ 6 RB_ Left



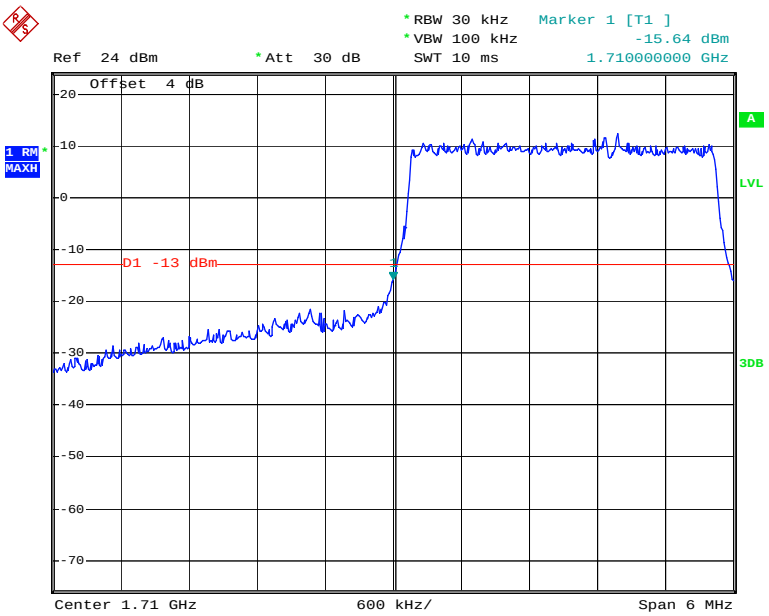
Date: 11.DEC.2017 11:35:44

16QAM_1.4MHz_ 6 RB_ Right



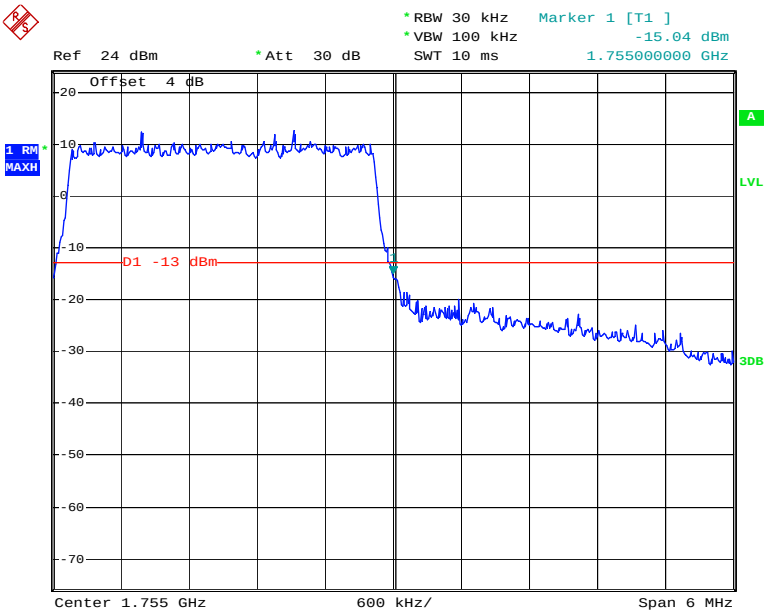
Date: 11.DEC.2017 11:34:46

16QAM_3MHz_ 15 RB_ Left



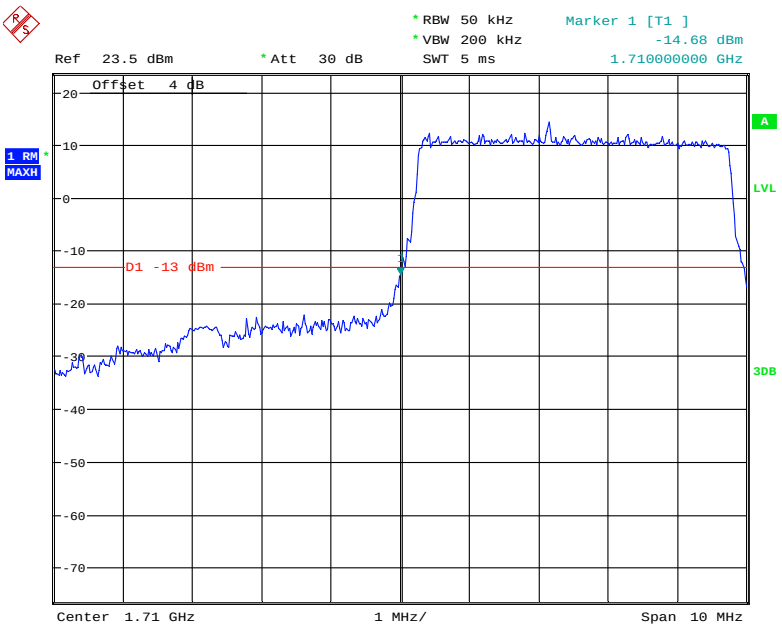
Date: 11.DEC.2017 09:35:56

16QAM_3MHz_ 15 RB_ Right



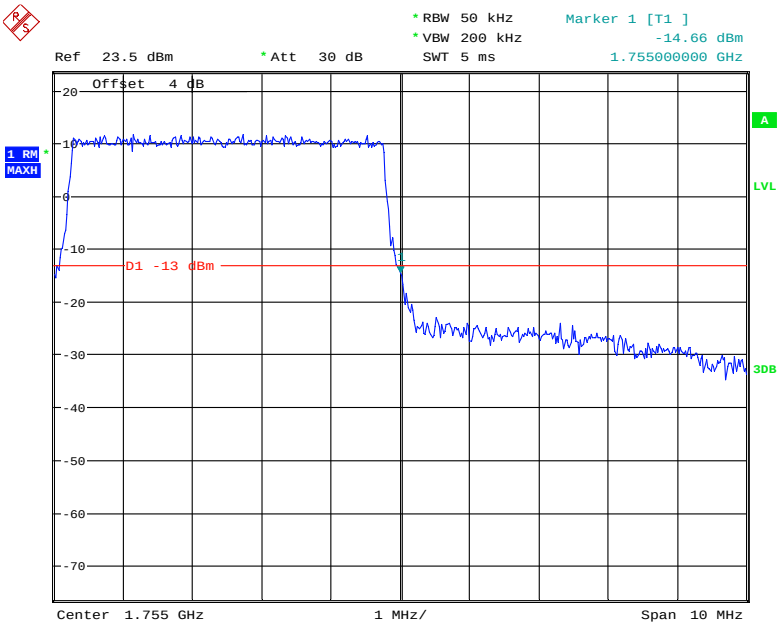
Date: 11.DEC.2017 09:38:10

16QAM_5MHz_ 25 RB_ Left



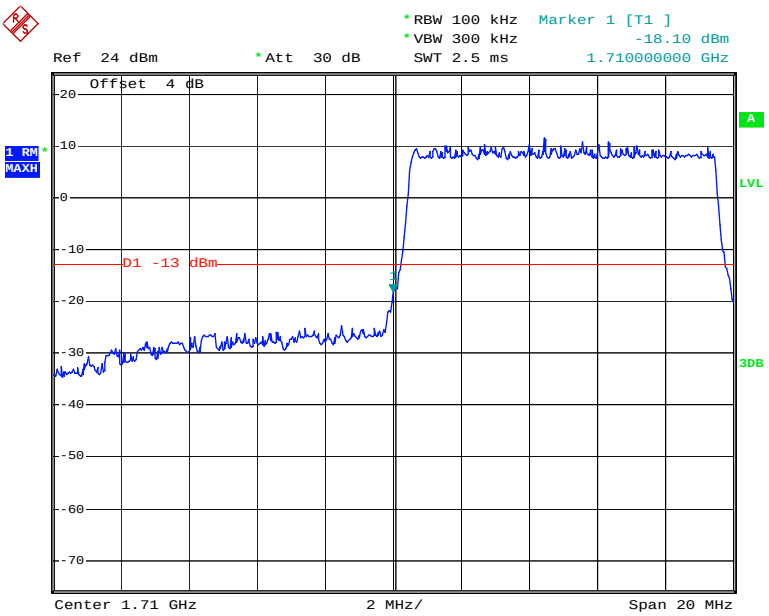
Date: 11.DEC.2017 11:32:18

16QAM_5MHz_ 25 RB_ Right



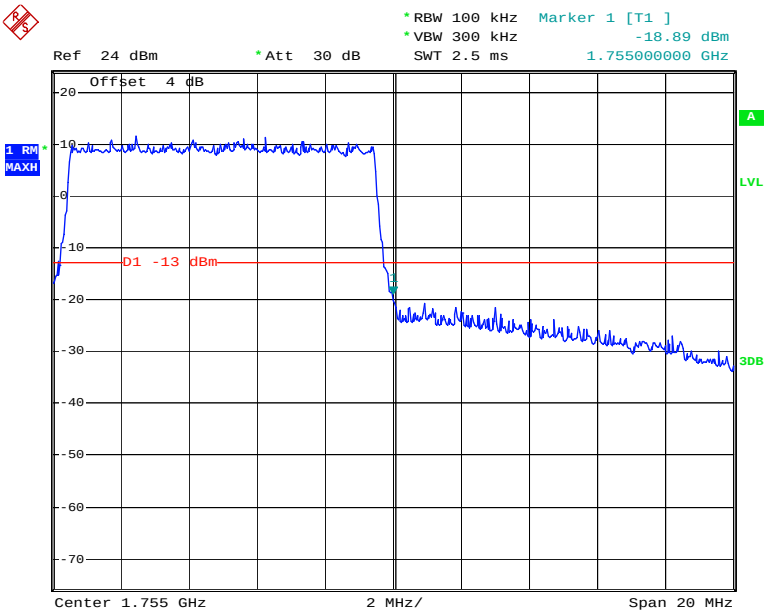
Date: 11.DEC.2017 11:32:51

16QAM_10MHz_ 50 RB_ Left



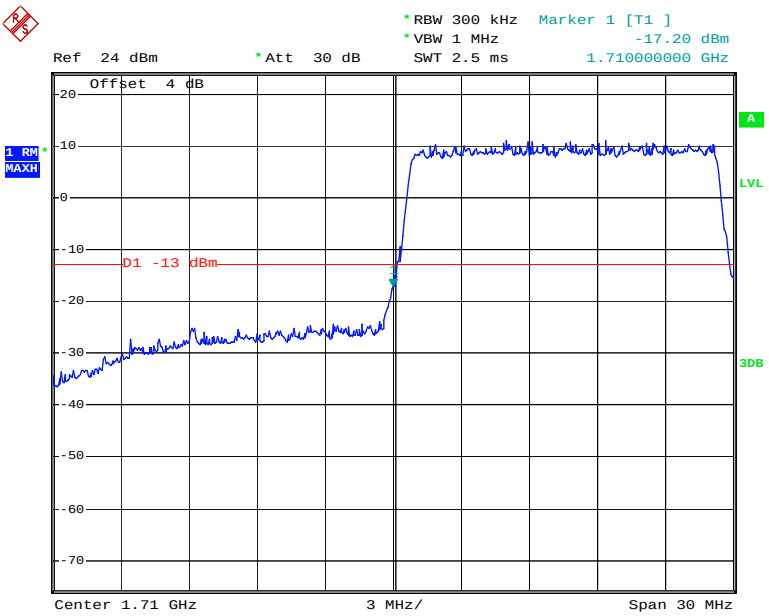
Date: 11.DEC.2017 09:28:23

16QAM_10MHz_ 50 RB_ Right



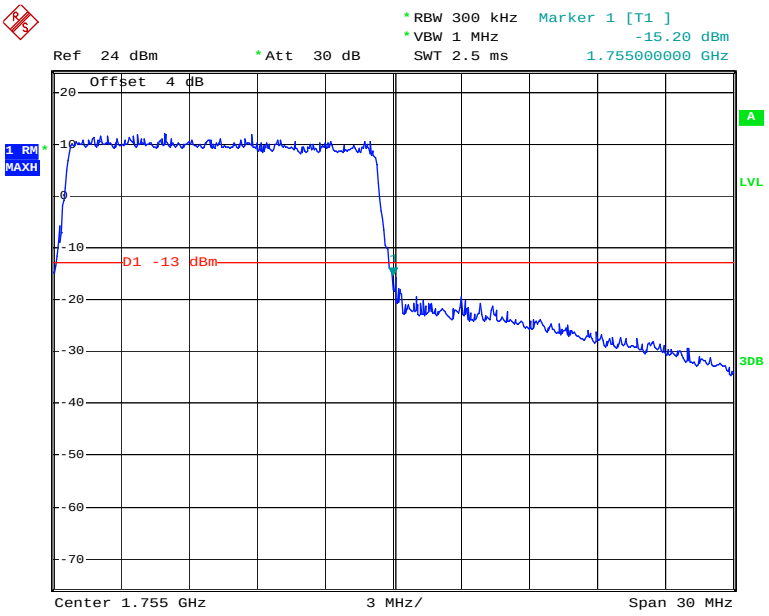
Date: 11.DEC.2017 09:27:46

16QAM_15MHz_ 75 RB_ Left



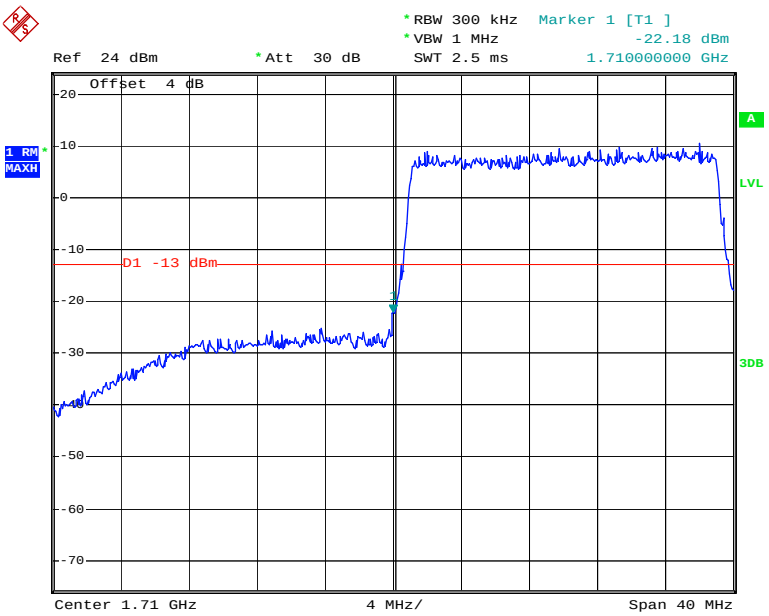
Date: 11.DEC.2017 09:24:35

16QAM_15MHz_ 75 RB_ Right



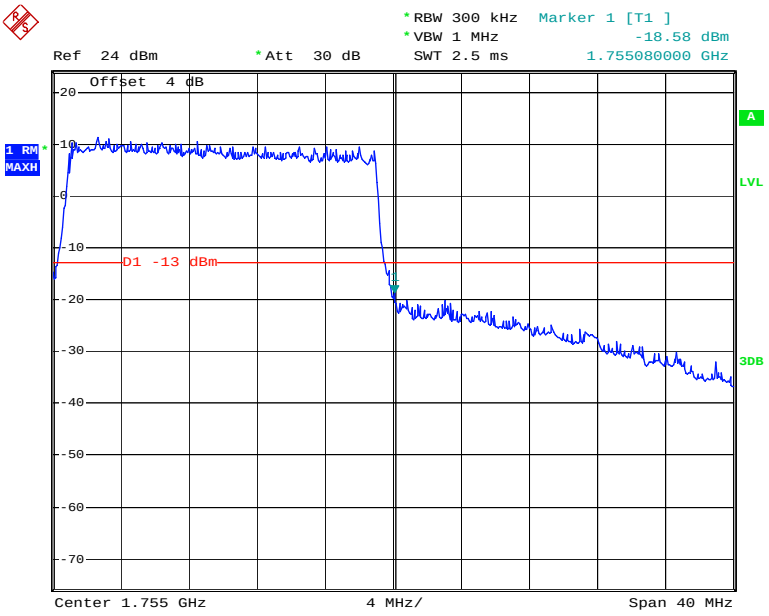
Date: 11.DEC.2017 09:25:13

16QAM_20MHz_ FULL RB_ Left



Date: 11.DEC.2017 09:22:14

16QAM_20MHz_ FULL RB_ Right



Date: 11.DEC.2017 09:21:31

FCC §2.1055, §24.235 & §27.54 - FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055 (a), § 2.1055 (d), §24.235, §27.54

According to §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table below:

Frequency Tolerance for Transmitters in the Public Mobile Services

Frequency Range (MHz)	Base, fixed (ppm)	Mobile > 3 watts (ppm)	Mobile ≤ 3 watts (ppm)
25 to 50	20.0	20.0	50.0
50 to 450	5.0	5.0	50.0
450 to 512	2.5	5.0	5.0
821 to 896	1.5	2.5	2.5
928 to 929.	5.0	N/A	N/A
929 to 960.	1.5	N/A	N/A
2110 to 2220	10.0	N/A	N/A

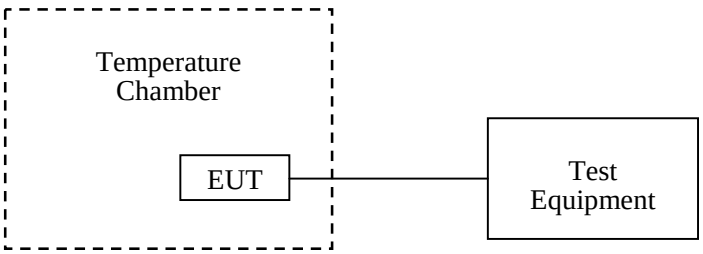
According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emissions stays within the authorized frequency block.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: An external variable DC power supply was connected to the battery terminals of the equipment under test. The voltage was set from 85% to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the battery end point. The output frequency was recorded for each battery voltage.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-4	2017-09-10	2018-09-09
R&S	Wideband Radio Communication Tester	CMW500	147473	2017-08-31	2018-08-31
UNI-T	Multimeter	UT39A	M130199938	2017-04-02	2018-04-02
Unknown	Coaxial Cable	C-SJ00-0010	C0010/01	Each Time	/
Pro instrument	DC Power Supply	pps3300	N/A	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23.4 °C
Relative Humidity:	35 %
ATM Pressure:	101.3 kPa

The testing was performed by Harry Yang on 2017-12-11.

LTE Band 2:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-11.24	-0.0060	Pass
-20		-10.83	-0.0058	Pass
-10		-7.65	-0.0041	Pass
0		-4.37	-0.0023	Pass
10		-8.74	-0.0046	Pass
20		-6.51	-0.0035	Pass
30		-3.21	-0.0017	Pass
40		-1.37	-0.0007	Pass
50		-6.84	-0.0036	Pass
25	3.6	-3.54	-0.0019	Pass
25	4.35	-1.38	-0.0007	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1880 MHz				
Temperature	**Voltage**	**Frequency Error**	**Frequency Error**	**Result**
℃	**V_{DC}**	**Hz**	**ppm**	
-30	3.8	-8.56	-0.0046	Pass
-20		-5.42	-0.0029	Pass
-10		-7.65	-0.0041	Pass
0		-1.37	-0.0007	Pass
10		-5.61	-0.0030	Pass
20		-4.32	-0.0023	Pass
30		-5.98	-0.0032	Pass
40		-0.34	-0.0002	Pass
50		-5.84	-0.0031	Pass
25	3.6	-9.14	-0.0049	Pass
25	4.35	-2.34	-0.0012	Pass

LTE Band 4:

QPSK, Channel Bandwidth:10MHz Middle Channel, f_c = 1732.5 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.8	1.65	0.0010	Pass
-20		2.37	0.0014	Pass
-10		3.51	0.0020	Pass
0		3.39	0.0020	Pass
10		2.75	0.0016	Pass
20		1.93	0.0011	Pass
30		3.17	0.0018	Pass
40		2.67	0.0015	Pass
50		1.74	0.0010	Pass
25	3.6	3.32	0.0019	Pass
25	4.35	2.85	0.0016	Pass

16QAM, Channel Bandwidth:10MHz Middle Channel, f_c =1732.5 MHz				
Temperature	Voltage	Frequency Error	Frequency Error	Result
℃	V_{DC}	Hz	ppm	
-30	3.8	3.43	0.0020	Pass
-20		2.54	0.0015	Pass
-10		1.74	0.0010	Pass
0		2.35	0.0014	Pass
10		1.37	0.0008	Pass
20		1.87	0.0011	Pass
30		2.67	0.0015	Pass
40		3.11	0.0018	Pass
50		2.68	0.0015	Pass
25	3.6	3.44	0.0020	Pass
25	4.35	2.46	0.0014	Pass

Note: The fundamental emissions stay within the authorized bands of operation based on the frequency deviation measured is small, the extreme voltage was declared by applicant.

******* END OF REPORT *******