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TEST REPORT

For

Huawei Technologies Co., Ltd

Administration Building, Headquarters of Huawei Technologies Co., Ltd, Bantian, Longgang
District, Shenzhen, 518129, P.R.C

Model: eA280-135
FCC ID: QISEA280-135
IC: 6369A-EA280135

Report Type: Original Report	Product Type: LTE CPE
Report Number: RDG161201012-00	
Report Date: 2017-10-20	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.(Dongguan).

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
FCC §1.1310, §2.1091& RSS-102 § 4 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)	8
APPLICABLE STANDARD	8
FCC §2.1046, §90.1321(a)&RSS-197§5.6 - RF OUTPUT POWER AND POWER DENSITY	11
APPLICABLE STANDARD	11
TEST PROCEDURE	11
TEST EQUIPMENT LIST AND DETAILS.....	12
TEST DATA	12
FCC §2.1049 ,§90.209& RSS-197 §5.2– OCCUPIED BANDWIDTH.....	25
APPLICABLE STANDARD	25
TEST PROCEDURE	25
TEST EQUIPMENT LIST AND DETAILS.....	25
TEST DATA	25
FCC §2.1051 §90.1323(a) & RSS-197 §5.7- SPURIOUS EMISSIONS AT ANTENNA TERMINALS	44
APPLICABLE STANDARD	44
TEST PROCEDURE	44
TEST EQUIPMENT LIST AND DETAILS.....	44
TEST DATA	45
FCC §2.1053&RSS-197§5.7 - RADIATED SPURIOUS EMISSIONS.....	62
APPLICABLE STANDARD	62
TEST PROCEDURE	62
TEST EQUIPMENT LIST AND DETAILS.....	63
TEST DATA	63
FCC §2.1055, §90.213&RSS-197§5.3- FREQUENCY STABILITY	65
APPLICABLE STANDARD	65
TEST PROCEDURE	65
TEST EQUIPMENT LIST AND DETAILS.....	65
TEST DATA	65

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **Huawei Technologies Co., Ltd**'s product, model number: **eA280-135 (FCC ID: QISEA280-135, IC: 6369A-EA280135)** (the "EUT") in this report was a **LTE CPE**, which was measured approximately: 9.5 cm (D) x 21 cm (H), rated input voltage: DC12.0V from adapter.

LTE Technical Parameters:

Equipment Type	Fixed CPE
Frequency Range	3650-3700MHz(Tx/Rx)
Maximum Output Power	23dBm
Operation Bandwidth	5MHz/10MHz/15MHz/20MHz/ Intra-band contiguous Carrier Aggregation
Maximum Antenna Gain	3 dBi

Switching power adapter information:

MODEL: HW-120200U6W

INPUT: 100-240V~50/60Hz, 0.8A

OUTPUT: DC12.0V 2.0A

* All measurement and test data in this report was gathered from production sample serial number: 161201012-2 (Assigned by BACL). The EUT was received on 2017-09-23.

Objective

This test report is prepared on behalf of **Huawei Technologies Co., Ltd** in accordance with Part 2, and Part 90 of the Federal Communications Commission's rules. RSS-197 Issue 1, February 2010 of the Innovation, Science and Economic Development Canada.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP/15C DTS/15E NII/ Part 27 TNB submissions with FCC ID: QISEA280-135.
RSS-195/ RSS-199/RSS-247 LE-LAN/ RSS-247 DTSs submissions with IC: 6369A-EA280135.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2, part 90, RSS-197 Issue 1, February 2010, RSS-Gen Issue 4, TIA 603-D and ANSI 63.4-2014.

All of the measurements detailed in this test report were performed by Bay Area Compliance Laboratories Corp. (Dongguan).

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.

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a test mode which has been done in the factory.

The device operation on LTE 3650-3700 MHz, test was performed with channels as below table:

Frequency Bands	Modes	Bandwidth (MHz)	Test Frequency (MHz)		
			Low	Middle	High
3650-3700 MHz	Single Carrier	5	3652.5	3675	3697.5
		10	3655	3675	3695
		15	3657.5	3675	3692.5
		20	3660	3675	3690
	Carrier Aggregation	5+20	3653.3+3665	3665.8+3677.5	3678.3+3690
		20+5	3660+3671.7	3672.5+3684.2	3685+3696.7
		10+20	3655.5+3669.9	3665.6+3680	3675.6+3690
		20+10	3660+3674.4	3670.1+3684.5	3680.1+3694.5
		15+15	3657.5+3672.5	3667.5+3682.5	3677.5+3692.5
		15+20	3657.8+3674.9	3665.3+3682.4	3672.9+3690
		20+15	3660+3677.1	3667.6+3684.7	3675.1+3692.2
		20+20	3660+3679.8	3665.1+3684.9	3670.2+3690

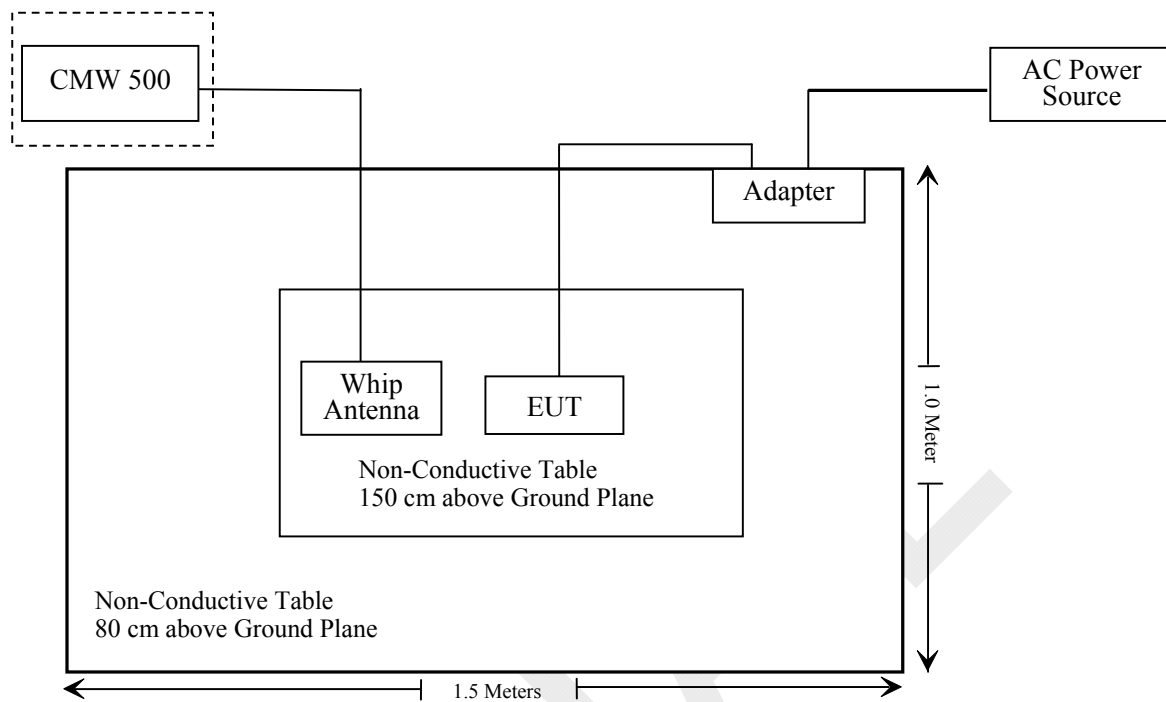
Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Wideband Radio Communication Tester	CMW500	149216
N/A	ANTENNA	N/A	N/A

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
FCC§1.1310 & §2.1091 RSS-102§4	Maximum Permissible Exposure (MPE)	Compliance
FCC§2.1046; §90.1321(a) RSS-197 §5.6	RF Output Power	Compliance
FCC§90.1321(a); RSS-197 §5.6	Peak Power Spectral Density	Compliance
FCC§2.1049; §90.209 RSS-197 §5.2	Occupied Bandwidth	Compliance
FCC§2.1051; §90.1323(a) RSS-197 §5.7	Spurious Emission at Antenna Terminal	Compliance
FCC§2.1051; §90.1323(a) RSS-197 §5.7	Spurious Radiated Emissions	Compliance
FCC§2.1055; §90.213 RSS-197 §5.3	Frequency Stability	Compliance

FCC §1.1310, §2.1091& RSS-102 § 4 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

According to RSS-102 § 4Table 4, RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/ f ^{1.2}
Note: f is frequency in MHz. *Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

Calculation Formula:

Prediction of power density at the distance of the applicable MPE limit:

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Tune-up Power		Evaluation Distance (cm)	Power Density		MPE Limit	
		(dBi)	(numeric)	(dBm)	(mW)		(mW/cm ²)	(W/m ²)	FCC (mW/cm ²)	RSS-102 (W/m ²)
WLAN 2.4GHz	2412-2462	2	1.58	28	630.96	20.00	0.1990	1.99	1.0	5.37
WLAN 5GHz	5150-5850	2	1.58	18	63.10	20.00	0.02	0.2	1.0	9.05
LTE Band 7	2500-2570	3	2.00	24	251.19	20.00	0.10	1.0	1.0	5.50
LTE Band 40	2305-2315	3	2.00	19	79.43	20.00	0.032	0.32	1.0	5.20
	2350-2360	3	2.00	19	79.43	20.00	0.032	0.32	1.0	5.27
LTE Band 41	2500-2690	3	2.00	25	316.23	20.00	0.1256	1.256	1.0	5.49
LTE Band 43	3650-3700	3	2.00	23	199.53	20.00	0.0792	0.792	1.0	7.12

The WLAN 2.4GHz, 5GHz and LTE can transmit simultaneously:

For FCC:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$= S_{2.4}/S_{limit-2.4} + S_5/S_{limit-5} + S_{LTE}/S_{limit-LTE}$$

$$= 0.199/1 + 0.02/1 + 0.1256/1$$

$$= 0.3446$$

$$< 1.0$$

For RSS-102:

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

$$\begin{aligned} &= S_{2.4}/S_{limit-2.4} + S_5/S_{limit-5} + S_{LTE}/S_{limit-LTE} \\ &= 1.99/5.37 + 0.2/9.05 + 1.256/5.49 \\ &= 0.621 \\ &< 1.0 \end{aligned}$$

Result: Compliance, The device meets MPE requirement for Devices Used by the General Public (Uncontrolled Environment) at distance ≥ 20 cm.

FCC §2.1046, §90.1321(a)&RSS-197§5.6 - RF OUTPUT POWER AND POWER DENSITY

Applicable Standard

According to FCC §90.1321:

(a) Base and fixed stations are limited to 25 watts/25 MHz equivalent isotropically radiated power (EIRP). In any event, the peak EIRP power density shall not exceed 1 Watt in any one-megahertz slice of spectrum.

(c) Mobile and portable stations are limited to 1 watt/25 MHz EIRP. In any event, the peak EIRP density shall not exceed 40 milliwatts in any one-megahertz slice of spectrum.

According to RSS-197 §5.6

Transmitter Output Power and Equivalent Isotropically Radiated Power (e.i.r.p.)

5.6.1 The maximum e.i.r.p. density of mobile equipment shall not exceed 40 mW in any 1 MHz bandwidth.

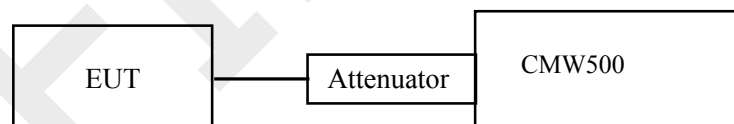
5.6.2 The maximum transmitter output power density of equipment, other than mobile and portable equipment, shall not exceed 1W in any 1 MHz bandwidth.

5.6.3 In addition, equipment, other than mobile and portable equipment, employing antenna systems that emit multiple directional beams, simultaneously or sequentially, for the purpose of directing signals to individual receivers or to groups of receivers, shall comply with the requirements in SRSP-303.65.

Test Procedure

RF output power:

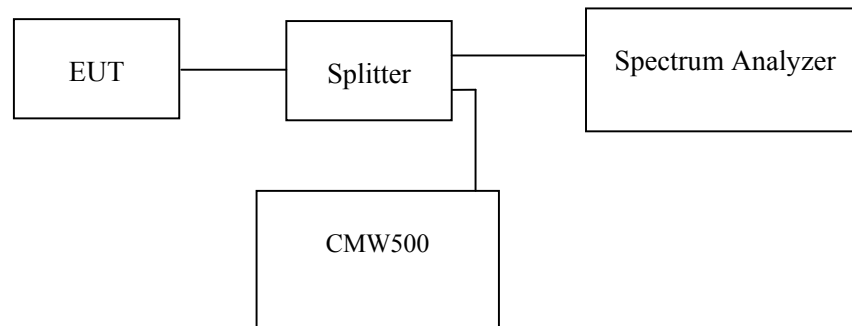
The EUT was connected to a CMW500 through a attenuator, the EUT power was adjusted to produce maximum output power as specified in the owner's manual, measurements were performed at the low, mid and high channels for each of the EUT's bandwidths and modulations.



Power density:

The EUT was connected to a CMW500 & spectrum analyzer through a splitter, the EUT power was adjusted to produce maximum output power as specified in the owner's manual, measurements were performed at the low, mid and high channels for each of the EUT's bandwidths and modulations.

The resolution bandwidth of the spectrum analyzer was set at 1MHz.



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
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	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:	25~26 °C
Relative Humidity:	54~55 %
ATM Pressure:	100.1 kPa

The testing was performed by Sun Zhong on 2017-10-15 and 2017-10-17.

Test Mode: Transmitting

Test Result: Compliance. Please refer to following table.

Single Carrier:**RF Output Power:**

Test Bandwidth	Test Modulation	Frequency (MHz)	Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)
5M	QPSK	3652.5	21.83	3.00	24.83	30
		3675	21.79	3.00	24.79	
		3697.5	21.80	3.00	24.80	
	16-QAM	3652.5	22.57	3.00	25.57	
		3675	22.49	3.00	25.49	
		3697.5	22.46	3.00	25.46	
10M	QPSK	3655	21.70	3.00	24.70	30
		3675	21.68	3.00	24.68	
		3695	21.66	3.00	24.66	
	16-QAM	3655	22.47	3.00	25.47	
		3675	22.42	3.00	25.42	
		3695	22.51	3.00	25.51	
15M	QPSK	3657.5	21.51	3.00	24.51	30
		3675	21.56	3.00	24.56	
		3692.5	21.59	3.00	24.59	
	16-QAM	3657.5	22.31	3.00	25.31	
		3675	22.36	3.00	25.36	
		3692.5	22.41	3.00	25.41	
20M	QPSK	3660	21.76	3.00	24.76	30
		3675	21.72	3.00	24.72	
		3690	21.69	3.00	24.69	
	16-QAM	3660	21.84	3.00	24.84	
		3675	21.81	3.00	24.81	
		3690	21.68	3.00	24.68	

Note: The device is a mobile station, the total power less than 30dBm, so it also meet the requirement 1W/5MHz.

Power Density:

Test Bandwidth	Test Modulation	Frequency (MHz)	Power Density (dBm/MHz)	Antenna Gain (dBi)	EIRP Power Density (dBm/MHz)	Limit (dBm/MHz)
5M	QPSK	3652.5	12.43	3.00	15.43	16
		3675	12.67	3.00	15.67	
		3697.5	12.65	3.00	15.65	
	16-QAM	3652.5	12.61	3.00	15.61	
		3675	12.70	3.00	15.70	
		3697.5	12.59	3.00	15.59	
10M	QPSK	3655	9.45	3.00	12.45	
		3675	10.67	3.00	13.67	
		3695	10.01	3.00	13.01	
	16-QAM	3655	9.68	3.00	12.68	
		3675	11.32	3.00	14.32	
		3695	10.21	3.00	13.21	
15M	QPSK	3657.5	8.03	3.00	11.03	
		3675	8.86	3.00	11.86	
		3692.5	8.17	3.00	11.17	
	16-QAM	3657.5	8.12	3.00	11.12	
		3675	8.89	3.00	11.89	
		3692.5	8.36	3.00	11.36	
20M	QPSK	3660	6.91	3.00	9.91	
		3675	7.74	3.00	10.74	
		3690	7.2	3.00	10.20	
	16-QAM	3660	6.96	3.00	9.96	
		3675	7.88	3.00	10.88	
		3690	7.13	3.00	10.13	

Carrier Aggregation:**RF Output Power:**

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Power (dBm)	E.I.R.P. (dBm)	E.I.R.P. Limits (dBm)
			Size	Offset	Size	Offset			
5MHz + 20MHz	3653.3 + 3665	QPSK	1	24	1	0	20.53	23.53	33.00
			1	12	1	49	20.81	23.81	33.00
			25	0	100	0	21.35	24.35	33.00
		16-QAM	1	24	1	0	20.72	23.72	33.00
			1	12	1	49	20.89	23.89	33.00
			25	0	100	0	21.38	24.38	33.00
5MHz + 20MHz	3665.8 + 3677.5	QPSK	1	24	1	0	20.85	23.85	33.00
			1	12	1	49	21.10	24.1	33.00
			25	0	100	0	22.17	25.17	33.00
		16-QAM	1	24	1	0	20.81	23.81	33.00
			1	12	1	49	21.40	24.4	33.00
			25	0	100	0	23.12	26.12	33.00
5MHz + 20MHz	3678.3 + 3690	QPSK	1	24	1	0	20.39	23.39	33.00
			1	12	1	49	20.62	23.62	33.00
			25	0	100	0	22.06	25.06	33.00
		16-QAM	1	24	1	0	20.47	23.47	33.00
			1	12	1	49	20.84	23.84	33.00
			25	0	100	0	22.04	25.04	33.00
20MHz + 5MHz	3660 + 3671.7	QPSK	1	0	1	0	20.64	23.64	33.00
			1	0	1	24	20.63	23.63	33.00
			1	0	25	0	21.44	24.44	33.00
			1	99	1	0	21.68	24.68	33.00
			1	99	1	24	21.74	24.74	33.00
			1	99	25	0	22.32	25.32	33.00
			100	0	1	0	20.44	23.44	33.00
			100	0	1	24	20.41	23.41	33.00
		16-QAM	100	0	25	0	21.24	24.24	33.00
			1	0	1	0	20.78	23.78	33.00
			1	0	1	24	20.79	23.79	33.00
			1	0	25	0	21.63	24.63	33.00
			1	99	1	0	22.20	25.2	33.00
			1	99	1	24	22.18	25.18	33.00
			1	99	25	0	22.58	25.58	33.00
			100	0	1	0	20.42	23.42	33.00
			100	0	1	24	20.47	23.47	33.00
			100	0	25	0	21.18	24.18	33.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Power (dBm)	E.I.R.P. (dBm)	E.I.R.P. Limits (dBm)
			Size	Offset	Size	Offset			
20MHz + 5MHz	3672.5 + 3684.2	QPSK	1	0	1	0	20.02	23.02	33.00
			1	0	1	24	19.80	22.8	33.00
			1	0	25	0	21.08	24.08	33.00
			1	99	1	0	20.44	23.44	33.00
			1	99	1	24	20.42	23.42	33.00
			1	99	25	0	21.49	24.49	33.00
			100	0	1	0	22.19	25.19	33.00
			100	0	1	24	22.25	25.25	33.00
			100	0	25	0	22.93	25.93	33.00
		16-QAM	1	0	1	0	20.04	23.04	33.00
			1	0	1	24	19.90	22.9	33.00
			1	0	25	0	21.37	24.37	33.00
			1	99	1	0	20.43	23.43	33.00
			1	99	1	24	20.54	23.54	33.00
			1	99	25	0	21.69	24.69	33.00
			100	0	1	0	22.26	25.26	33.00
			100	0	1	24	22.25	25.25	33.00
			100	0	25	0	22.86	25.86	33.00
20MHz + 5MHz	3685 + 3696.7	QPSK	1	0	1	0	20.06	23.06	33.00
			1	0	1	24	19.94	22.94	33.00
			1	0	25	0	21.35	24.35	33.00
			1	99	1	0	20.46	23.46	33.00
			1	99	1	24	20.57	23.57	33.00
			1	99	25	0	21.71	24.71	33.00
			100	0	1	0	22.28	25.28	33.00
			100	0	1	24	22.23	25.23	33.00
			100	0	25	0	22.91	25.91	33.00
		16-QAM	1	0	1	0	20.03	23.03	33.00
			1	0	1	24	19.97	22.97	33.00
			1	0	25	0	21.33	24.33	33.00
			1	99	1	0	20.44	23.44	33.00
			1	99	1	24	20.55	23.55	33.00
			1	99	25	0	21.72	24.72	33.00
			100	0	1	0	22.32	25.32	33.00
			100	0	1	24	22.25	25.25	33.00
			100	0	25	0	22.94	25.94	33.00
10MHz + 20MHz	3655.5 + 3669.9	QPSK	1	49	1	0	20.83	23.83	33.00
			1	24	1	49	20.93	23.93	33.00
			50	0	100	0	21.48	24.48	33.00
		16-QAM	1	49	1	0	21.44	24.44	33.00
			1	24	1	49	21.42	24.42	33.00
			50	0	100	0	21.53	24.53	33.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Power (dBm)	E.I.R.P. (dBm)	E.I.R.P. Limits (dBm)
			Size	Offset	Size	Offset			
10MHz+20MHz	3665.6 + 3680	QPSK	1	49	1	0	20.48	23.48	33.00
			1	24	1	49	20.69	23.69	33.00
			50	0	100	0	22.23	25.23	33.00
		16-QAM	1	49	1	0	20.62	23.62	33.00
			1	24	1	49	20.77	23.77	33.00
			50	0	100	0	22.18	25.18	33.00
10MHz+20MHz	3675.6 + 3690	QPSK	1	49	1	0	20.23	23.23	33.00
			1	24	1	49	20.39	23.39	33.00
			50	0	100	0	22.07	25.07	33.00
		16-QAM	1	49	1	0	20.42	23.42	33.00
			1	24	1	49	20.51	23.51	33.00
			50	0	100	0	22.05	25.05	33.00
20MHz+10MHz	3660 + 3674.4	QPSK	1	99	1	0	20.24	23.24	33.00
			100	0	50	0	22.23	25.23	33.00
		16-QAM	1	99	1	0	20.44	23.44	33.00
			100	0	50	0	22.10	25.1	33.00
20MHz+10MHz	3670.1 + 3684.5	QPSK	1	99	1	0	20.30	23.3	33.00
			100	0	50	0	22.08	25.08	33.00
		16-QAM	1	99	1	0	20.31	23.31	33.00
			100	0	50	0	22.04	25.04	33.00
20MHz+10MHz	3680.1 + 3694.5	QPSK	1	99	1	0	20.91	23.91	33.00
			100	0	50	0	22.79	25.79	33.00
		16-QAM	1	99	1	0	21.06	24.06	33.00
			100	0	50	0	22.73	25.73	33.00
15MHz+15MHz	3657.5 + 3672.5	QPSK	1	74	1	0	20.73	23.73	33.00
			75	0	75	0	22.18	25.18	33.00
		16-QAM	1	74	1	0	20.98	23.98	33.00
			75	0	75	0	22.07	25.07	33.00
15MHz+15MHz	3667.5 + 3682.5	QPSK	1	74	1	0	20.45	23.45	33.00
			75	0	75	0	21.12	24.12	33.00
		16-QAM	1	74	1	0	20.90	23.9	33.00
			75	0	75	0	21.10	24.1	33.00
15MHz+15MHz	3677.5 + 3692.5	QPSK	1	74	1	0	20.33	23.33	33.00
			75	0	75	0	21.10	24.1	33.00
		16-QAM	1	74	1	0	20.55	23.55	33.00
			75	0	75	0	21.07	24.07	33.00
15MHz+20MHz	3657.8 + 3674.9	QPSK	1	74	1	0	20.74	23.74	33.00
			1	36	1	49	20.51	23.51	33.00
			75	0	100	0	21.99	24.99	33.00
		16QAM	1	74	1	0	21.32	24.32	33.00
			1	36	1	49	21.00	24	33.00
			75	0	100	0	21.98	24.98	33.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Power (dBm)	E.I.R.P. (dBm)	E.I.R.P. Limits (dBm)
			Size	Offset	Size	Offset			
15MHz+20MHz	3665.3 + 3682.4	QPSK	1	74	1	0	20.30	23.3	33.00
			1	36	1	49	20.50	23.5	33.00
			75	0	100	0	21.04	24.04	33.00
		16-QAM	1	74	1	0	20.42	23.42	33.00
			1	36	1	49	20.61	23.61	33.00
			75	0	100	0	21.01	24.01	33.00
15MHz+20MHz	3672.9 + 3690	QPSK	1	74	1	0	20.67	23.67	33.00
			1	36	1	49	20.51	23.51	33.00
			75	0	100	0	21.68	24.68	33.00
		16-QAM	1	74	1	0	20.66	23.66	33.00
			1	36	1	49	20.54	23.54	33.00
			75	0	100	0	21.65	24.65	33.00
20MHz+15MHz	3660 + 3677.1	QPSK	1	99	1	0	20.72	23.72	33.00
			100	0	75	0	22.01	25.01	33.00
		16-QAM	1	99	1	0	20.79	23.79	33.00
			100	0	75	0	21.99	24.99	33.00
20MHz+15MHz	3667.6 + 3684.7	QPSK	1	99	1	0	20.62	23.62	33.00
			100	0	75	0	21.92	24.92	33.00
		16-QAM	1	99	1	0	20.57	23.57	33.00
			100	0	75	0	21.83	24.83	33.00
20MHz+15MHz	3675.1 + 3692.2	QPSK	1	99	1	0	21.02	24.02	33.00
			100	0	75	0	21.61	24.61	33.00
		16-QAM	1	99	1	0	21.23	24.23	33.00
			100	0	75	0	21.54	24.54	33.00
20MHz+20MHz	3660+3679.8	QPSK	1	0	1	0	20.61	23.61	33.00
			1	0	1	99	20.66	23.66	33.00
			1	0	100	0	21.57	24.57	33.00
			1	49	1	49	22.33	25.33	33.00
			1	99	1	0	22.57	25.57	33.00
			1	99	1	99	22.69	25.69	33.00
			1	99	100	0	23.19	26.19	33.00
			100	0	1	0	21.06	24.06	33.00
			100	0	1	99	21.05	24.05	33.00
		16-QAM	100	0	100	0	21.81	24.81	33.00
			1	0	1	0	21.15	24.15	33.00
			1	0	1	99	21.14	24.14	33.00
			1	0	100	0	21.83	24.83	33.00
			1	49	1	49	22.79	25.79	33.00
			1	99	1	0	22.04	25.04	33.00
			1	99	1	99	22.07	25.07	33.00
			1	99	100	0	22.24	25.24	33.00
			100	0	1	0	21.00	24	33.00
			100	0	1	99	20.99	23.99	33.00
			100	0	100	0	21.75	24.75	33.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Power (dBm)	E.I.R.P. (dBm)	E.I.R.P. Limits (dBm)
			Size	Offset	Size	Offset			
20MHz+ 20MHz	3665.1 + 3684.9	QPSK	1	0	1	0	20.36	23.36	33.00
			1	0	1	99	20.34	23.34	33.00
			1	0	100	0	21.16	24.16	33.00
			1	49	1	49	20.45	23.45	33.00
			1	99	1	0	20.35	23.35	33.00
			1	99	1	99	20.42	23.42	33.00
			1	99	100	0	21.82	24.82	33.00
			100	0	1	0	20.19	23.19	33.00
			100	0	1	99	20.21	23.21	33.00
			100	0	100	0	20.90	23.9	33.00
		16-QAM	1	0	1	0	20.55	23.55	33.00
			1	0	1	99	20.73	23.73	33.00
			1	0	100	0	21.34	24.34	33.00
			1	49	1	49	20.76	23.76	33.00
			1	99	1	0	20.66	23.66	33.00
			1	99	1	99	20.68	23.68	33.00
			1	99	100	0	21.99	24.99	33.00
			100	0	1	0	20.17	23.17	33.00
			100	0	1	99	20.21	23.21	33.00
			100	0	100	0	20.83	23.83	33.00
20MHz+ 20MHz	3670.2 + 3690	QPSK	1	0	1	0	20.02	23.02	33.00
			1	0	1	99	20.04	23.04	33.00
			1	0	100	0	21.12	24.12	33.00
			1	49	1	49	21.39	24.39	33.00
			1	99	1	0	21.79	24.79	33.00
			1	99	1	99	21.71	24.71	33.00
			1	99	100	0	22.40	25.4	33.00
			100	0	1	0	20.31	23.31	33.00
			100	0	1	99	20.30	23.3	33.00
			100	0	100	0	21.35	24.35	33.00
		16-QAM	1	0	1	0	20.06	23.06	33.00
			1	0	1	99	20.22	23.22	33.00
			1	0	100	0	21.30	24.3	33.00
			1	49	1	49	21.60	24.6	33.00
			1	99	1	0	21.99	24.99	33.00
			1	99	1	99	21.91	24.91	33.00
			1	99	100	0	22.44	25.44	33.00
			100	0	1	0	20.27	23.27	33.00
			100	0	1	99	20.29	23.29	33.00
			100	0	100	0	21.29	24.29	33.00

Note: The device is a mobile station, the total power less than 30dBm, so it also meet the requirement 1W/5MHz.

Power Density:

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Power Density (dBm/MHz)	E.I.R.P. Power Density (dBm/MHz)	E.I.R.P. Power Density Limit (dBm/MHz)
			Size	Offset	Size	Offset			
5MHz + 20MHz	3653.3 + 3665	QPSK	1	24	1	0	8.26	11.26	16.00
			1	12	1	49	8.47	11.47	16.00
			25	0	100	0	8.78	11.78	16.00
		16-QAM	1	24	1	0	8.63	11.63	16.00
			1	12	1	49	8.16	11.16	16.00
			25	0	100	0	9.01	12.01	16.00
5MHz + 20MHz	3665.8 + 3677.5	QPSK	1	24	1	0	8.22	11.22	16.00
			1	12	1	49	8.49	11.49	16.00
			25	0	100	0	10.21	13.21	16.00
		16-QAM	1	24	1	0	8.15	11.15	16.00
			1	12	1	49	9.01	12.01	16.00
			25	0	100	0	10.47	13.47	16.00
5MHz + 20MHz	3678.3 + 3690	QPSK	1	24	1	0	8.19	11.19	16.00
			1	12	1	49	8.26	11.26	16.00
			25	0	100	0	9.58	12.58	16.00
		16-QAM	1	24	1	0	8.41	11.41	16.00
			1	12	1	49	8.44	11.44	16.00
			25	0	100	0	9.36	12.36	16.00
20MHz + 5MHz	3660 + 3671.7	QPSK	1	0	1	0	8.15	11.15	16.00
			1	0	1	24	8.16	11.16	16.00
			1	0	25	0	9.03	12.03	16.00
			1	99	1	0	9.27	12.27	16.00
			1	99	1	24	9.25	12.25	16.00
			1	99	25	0	9.74	12.74	16.00
			100	0	1	0	8.01	11.01	16.00
			100	0	1	24	8.21	11.21	16.00
			100	0	25	0	8.45	11.45	16.00
		16-QAM	1	0	1	0	8.36	11.36	16.00
			1	0	1	24	8.41	11.41	16.00
			1	0	25	0	9.35	12.35	16.00
			1	99	1	0	9.74	12.74	16.00
			1	99	1	24	9.59	12.59	16.00
			1	99	25	0	9.99	12.99	16.00
			100	0	1	0	8.25	11.25	16.00
			100	0	1	24	8.17	11.17	16.00
			100	0	25	0	8.77	11.77	16.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Power Density (dBm/MHz)	E.I.R.P. Power Density (dBm/MHz)	E.I.R.P. Power Density Limit (dBm/MHz)
			Size	Offset	Size	Offset			
20MHz + 5MHz	3672.5 + 3684.2	QPSK	1	0	1	0	7.48	10.48	16.00
			1	0	1	24	7.57	10.57	16.00
			1	0	25	0	8.69	11.69	16.00
			1	99	1	0	8.47	11.47	16.00
			1	99	1	24	8.44	11.44	16.00
			1	99	25	0	9.21	12.21	16.00
			100	0	1	0	9.87	12.87	16.00
			100	0	1	24	9.82	12.82	16.00
			100	0	25	0	10.64	13.64	16.00
		16-QAM	1	0	1	0	8.78	11.78	16.00
			1	0	1	24	7.95	10.95	16.00
			1	0	25	0	9.14	12.14	16.00
			1	99	1	0	8.26	11.26	16.00
			1	99	1	24	8.69	11.69	16.00
			1	99	25	0	9.44	12.44	16.00
			100	0	1	0	9.78	12.78	16.00
			100	0	1	24	9.14	12.14	16.00
			100	0	25	0	10.02	13.02	16.00
20MHz + 5MHz	3685 + 3696.7	QPSK	1	0	1	0	8.47	11.47	16.00
			1	0	1	24	7.69	10.69	16.00
			1	0	25	0	9.25	12.25	16.00
			1	99	1	0	8.69	11.69	16.00
			1	99	1	24	8.77	11.77	16.00
			1	99	25	0	9.87	12.87	16.00
			100	0	1	0	10.02	13.02	16.00
			100	0	1	24	9.77	12.77	16.00
			100	0	25	0	10.36	13.36	16.00
		16-QAM	1	0	1	0	8.01	11.01	16.00
			1	0	1	24	7.98	10.98	16.00
			1	0	25	0	9.29	12.29	16.00
			1	99	1	0	8.74	11.74	16.00
			1	99	1	24	8.04	11.04	16.00
			1	99	25	0	9.25	12.25	16.00
			100	0	1	0	9.87	12.87	16.00
			100	0	1	24	9.59	12.59	16.00
			100	0	25	0	9.89	12.89	16.00
10MHz + 20MHz	3655.5 + 3669.9	QPSK	1	49	1	0	8.78	11.78	16.00
			1	24	1	49	8.25	11.25	16.00
			50	0	100	0	9.02	12.02	16.00
		16-QAM	1	49	1	0	9.25	12.25	16.00
			1	24	1	49	9.21	12.21	16.00
			50	0	100	0	9.29	12.29	16.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Power Density (dBm/MHz)	E.I.R.P. Power Density (dBm/MHz)	E.I.R.P. Power Density Limit (dBm/MHz)
			Size	Offset	Size	Offset			
10MHz+20MHz	3665.6 + 3680	QPSK	1	49	1	0	8.68	11.68	16.00
			1	24	1	49	8.19	11.19	16.00
			50	0	100	0	10.98	13.98	16.00
		16-QAM	1	49	1	0	8.65	11.65	16.00
			1	24	1	49	8.47	11.47	16.00
			50	0	100	0	10.96	13.96	16.00
10MHz+20MHz	3675.6 + 3690	QPSK	1	49	1	0	8.32	11.32	16.00
			1	24	1	49	8.24	11.24	16.00
			50	0	100	0	9.78	12.78	16.00
		16-QAM	1	49	1	0	8.22	11.22	16.00
			1	24	1	49	8.69	11.69	16.00
			50	0	100	0	9.58	12.58	16.00
20MHz+10MHz	3660 + 3674.4	QPSK	1	99	1	0	8.36	11.36	16.00
			100	0	50	0	9.78	12.78	16.00
		16-QAM	1	99	1	0	8.47	11.47	16.00
			100	0	50	0	9.77	12.77	16.00
20MHz+10MHz	3670.1 + 3684.5	QPSK	1	99	1	0	8.06	11.06	16.00
			100	0	50	0	10.36	13.36	16.00
		16-QAM	1	99	1	0	8.64	11.64	16.00
			100	0	50	0	9.78	12.78	16.00
20MHz+10MHz	3680.1 + 3694.5	QPSK	1	99	1	0	8.44	11.44	16.00
			100	0	50	0	10.36	13.36	16.00
		16-QAM	1	99	1	0	9.25	12.25	16.00
			100	0	50	0	10.36	13.36	16.00
15MHz+15MHz	3657.5 + 3672.5	QPSK	1	74	1	0	8.54	11.54	16.00
			75	0	75	0	9.87	12.87	16.00
		16-QAM	1	74	1	0	8.96	11.96	16.00
			75	0	75	0	9.28	12.28	16.00
15MHz+15MHz	3667.5 + 3682.5	QPSK	1	74	1	0	8.69	11.69	16.00
			75	0	75	0	8.74	11.74	16.00
		16-QAM	1	74	1	0	8.77	11.77	16.00
			75	0	75	0	8.47	11.47	16.00
15MHz+15MHz	3677.5 + 3692.5	QPSK	1	74	1	0	8.05	11.05	16.00
			75	0	75	0	8.25	11.25	16.00
		16-QAM	1	74	1	0	8.15	11.15	16.00
			75	0	75	0	8.69	11.69	16.00
15MHz+20MHz	3657.8 + 3674.9	QPSK	1	74	1	0	8.46	11.46	16.00
			1	36	1	49	8.15	11.15	16.00
			75	0	100	0	9.77	12.77	16.00
		16QAM	1	74	1	0	9.54	12.54	16.00
			1	36	1	49	9.02	12.02	16.00
			75	0	100	0	9.48	12.48	16.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Power Density (dBm/MHz)	E.I.R.P. Power Density (dBm/MHz)	E.I.R.P. Power Density Limit (dBm/MHz)
			Size	Offset	Size	Offset			
15MHz+20MHz	3665.3 + 3682.4	QPSK	1	74	1	0	8.22	11.22	16.00
			1	36	1	49	8.36	11.36	16.00
			75	0	100	0	8.74	11.74	16.00
		16-QAM	1	74	1	0	8.56	11.56	16.00
			1	36	1	49	8.44	11.44	16.00
			75	0	100	0	8.87	11.87	16.00
15MHz+20MHz	3672.9 + 3690	QPSK	1	74	1	0	8.65	11.65	16.00
			1	36	1	49	8.14	11.14	16.00
			75	0	100	0	9.05	12.05	16.00
		16-QAM	1	74	1	0	8.24	11.24	16.00
			1	36	1	49	8.25	11.25	16.00
			75	0	100	0	9.14	12.14	16.00
20MHz+15MHz	3660 + 3677.1	QPSK	1	99	1	0	8.74	11.74	16.00
			100	0	75	0	9.11	12.11	16.00
		16-QAM	1	99	1	0	8.47	11.47	16.00
			100	0	75	0	9.25	12.25	16.00
20MHz+15MHz	3667.6 + 3684.7	QPSK	1	99	1	0	8.65	11.65	16.00
			100	0	75	0	9.54	12.54	16.00
		16-QAM	1	99	1	0	8.15	11.15	16.00
			100	0	75	0	9.46	12.46	16.00
20MHz+15MHz	3675.1 + 3692.2	QPSK	1	99	1	0	8.25	11.25	16.00
			100	0	75	0	9.24	12.24	16.00
		16-QAM	1	99	1	0	9.22	12.22	16.00
			100	0	75	0	9.24	12.24	16.00
20MHz+20MHz	3660+3679.8	QPSK	1	0	1	0	9.25	12.25	16.00
			1	0	1	99	8.47	11.47	16.00
			1	0	100	0	9.25	12.25	16.00
			1	49	1	49	9.58	12.58	16.00
			1	99	1	0	9.64	12.64	16.00
			1	99	1	99	9.99	12.99	16.00
			1	99	100	0	10.98	13.98	16.00
			100	0	1	0	9.21	12.21	16.00
			100	0	1	99	8.28	11.28	16.00
			100	0	100	0	9.27	12.27	16.00
		16-QAM	1	0	1	0	8.95	11.95	16.00
			1	0	1	99	8.45	11.45	16.00
			1	0	100	0	8.77	11.77	16.00
			1	49	1	49	9.99	12.99	16.00
			1	99	1	0	10.36	13.36	16.00
			1	99	1	99	10.25	13.25	16.00
			1	99	100	0	10.87	13.87	16.00
			100	0	1	0	8.74	11.74	16.00
			100	0	1	99	8.47	11.47	16.00
			100	0	100	0	8.44	11.44	16.00

Bandwidth	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Power Density (dBm/MHz)	E.I.R.P. Power Density (dBm/MHz)	E.I.R.P. Power Density Limit (dBm/MHz)
			Size	Offset	Size	Offset			
20MHz+ 20MHz	3665.1 + 3684.9	QPSK	1	0	1	0	8.14	11.14	16.00
			1	0	1	99	8.25	11.25	16.00
			1	0	100	0	8.99	11.99	16.00
			1	49	1	49	8.14	11.14	16.00
			1	99	1	0	8.02	11.02	16.00
			1	99	1	99	8.29	11.29	16.00
			1	99	100	0	9.54	12.54	16.00
			100	0	1	0	8.14	11.14	16.00
			100	0	1	99	8.62	11.62	16.00
			100	0	100	0	8.45	11.45	16.00
		16-QAM	1	0	1	0	8.15	11.15	16.00
			1	0	1	99	8.26	11.26	16.00
			1	0	100	0	9.14	12.14	16.00
			1	49	1	49	8.47	11.47	16.00
			1	99	1	0	8.19	11.19	16.00
			1	99	1	99	8.25	11.25	16.00
			1	99	100	0	9.54	12.54	16.00
			100	0	1	0	8.03	11.03	16.00
			100	0	1	99	8.08	11.08	16.00
			100	0	100	0	8.49	11.49	16.00
20MHz+ 20MHz	3670.2 + 3690	QPSK	1	0	1	0	7.95	10.95	16.00
			1	0	1	99	8.05	11.05	16.00
			1	0	100	0	8.49	11.49	16.00
			1	49	1	49	9.14	12.14	16.00
			1	99	1	0	8.99	11.99	16.00
			1	99	1	99	8.79	11.79	16.00
			1	99	100	0	10.02	13.02	16.00
			100	0	1	0	8.19	11.19	16.00
			100	0	1	99	8.26	11.26	16.00
			100	0	100	0	8.99	11.99	16.00
		16-QAM	1	0	1	0	7.85	10.85	16.00
			1	0	1	99	8.14	11.14	16.00
			1	0	100	0	9.02	12.02	16.00
			1	49	1	49	9.52	12.52	16.00
			1	99	1	0	9.44	12.44	16.00
			1	99	1	99	9.58	12.58	16.00
			1	99	100	0	10.02	13.02	16.00
			100	0	1	0	8.25	11.25	16.00
			100	0	1	99	8.74	11.74	16.00
			100	0	100	0	9.03	12.03	16.00

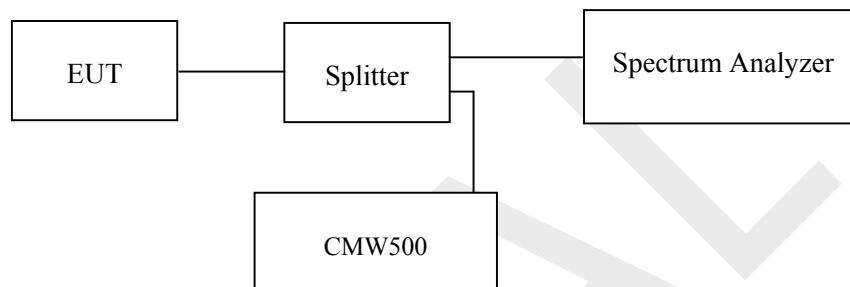
FCC §2.1049 ,§90.209& RSS-197 §5.2– OCCUPIED BANDWIDTH

Applicable Standard

FCC §2.1049, §90.209 and RSS-197 §5.2

Test Procedure

The EUT was connected to a CMW500 & spectrum analyzer through a splitter, the EUT power was adjusted to produce maximum output power as specified in the owner's manual, measurements were performed at middle channel for each of the EUT's bandwidths and modulations.



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
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	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

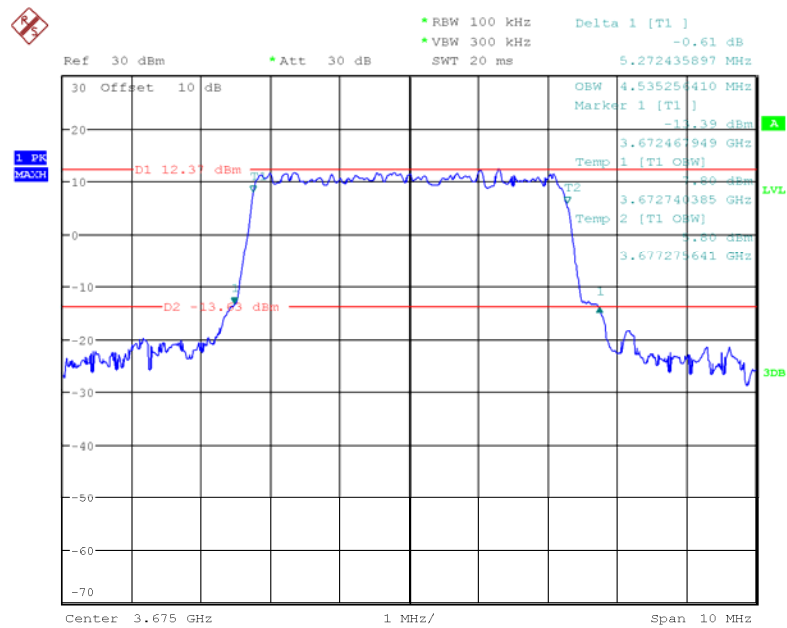
Temperature:	19.3~20.5℃
Relative Humidity:	56~60 %
ATM Pressure:	100.1~100.2 kPa

The testing was performed by Sun Zhong on 2017-10-17 on 2017-10-18.

Single Carrier:

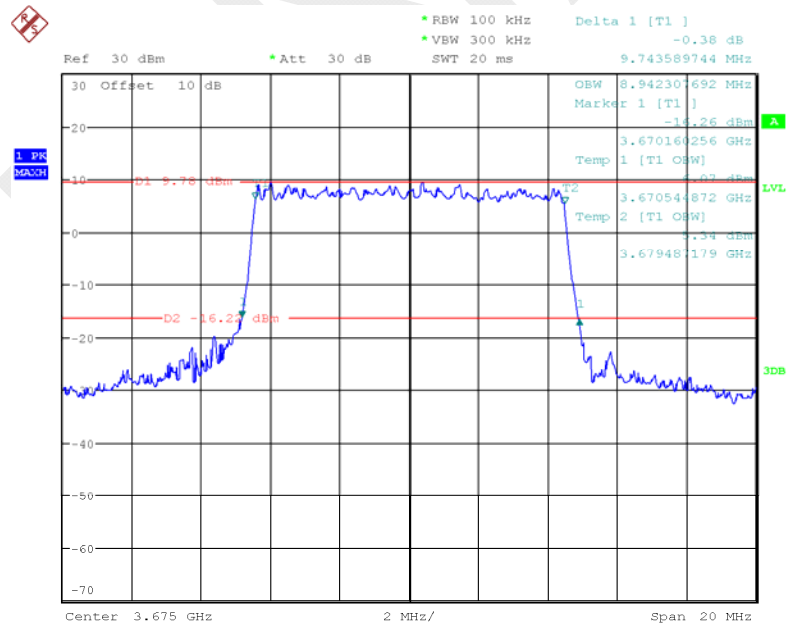
Test Modulation	Test Bandwidth	Test Channel	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
QPSK	5M	M	4.54	5.27
	10M		8.94	9.74
	15M		13.61	15.72
	20M		18.08	20.02
16-QAM	5M	M	4.54	5.24
	10M		8.94	9.71
	15M		13.61	15.82
	20M		18.08	20.08

QPSK_5M_RB#25



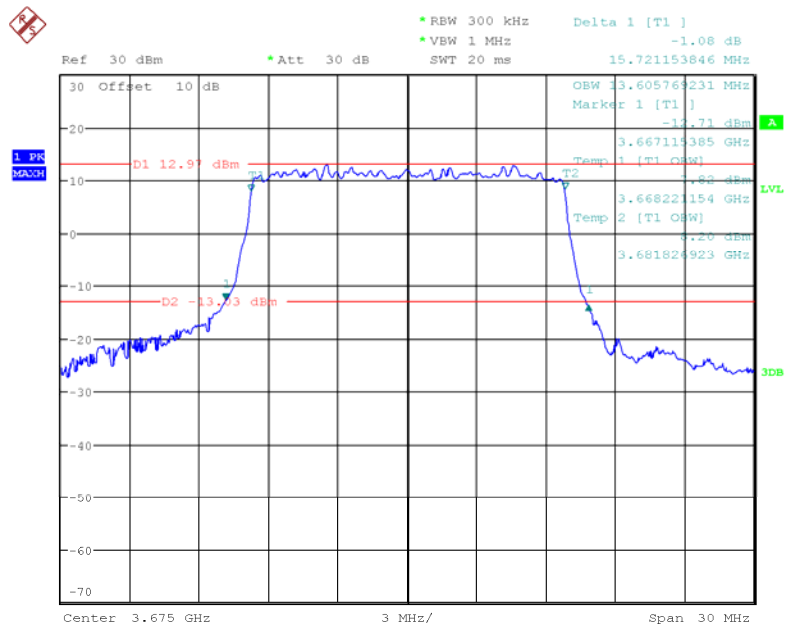
Date: 17.OCT.2017 18:27:30

QPSK_10M_RB#50



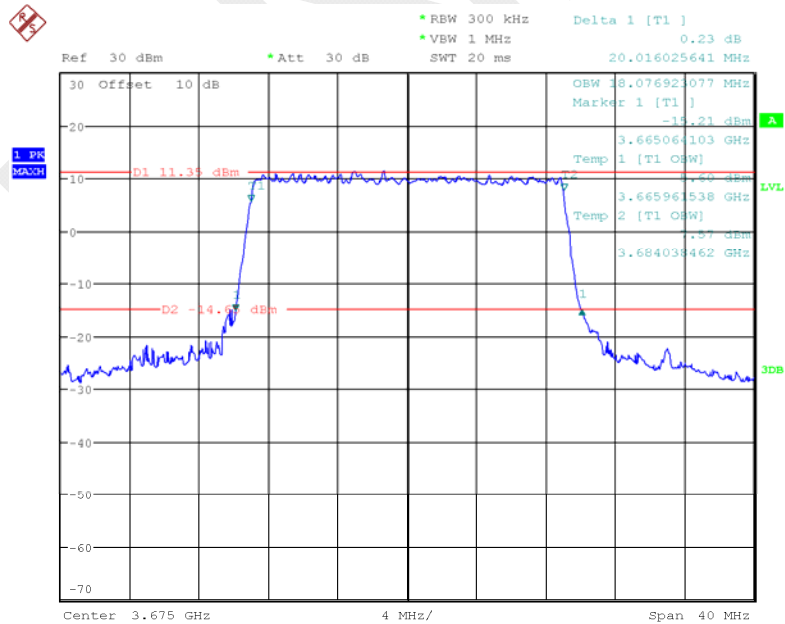
Date: 17.OCT.2017 18:32:05

QPSK_15M_RB#75



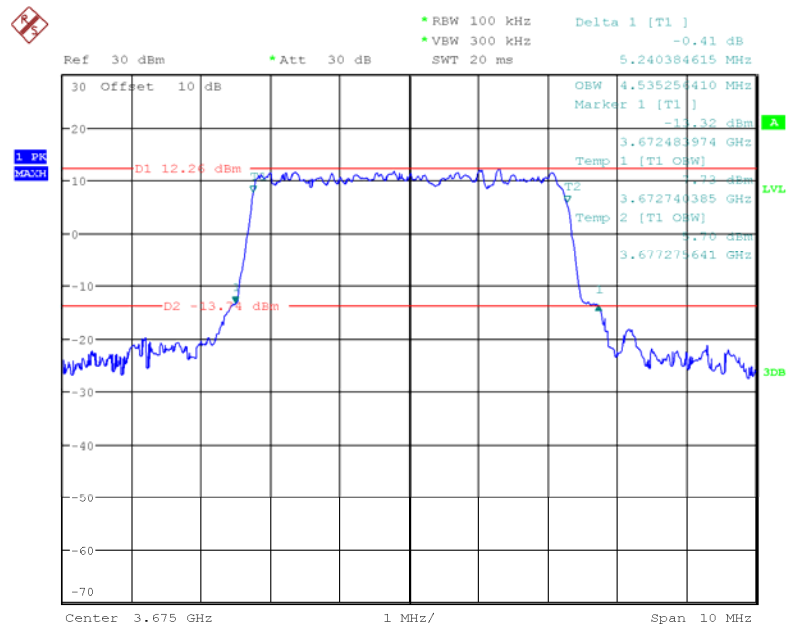
Date: 17.OCT.2017 18:35:53

QPSK_20M_RB#100



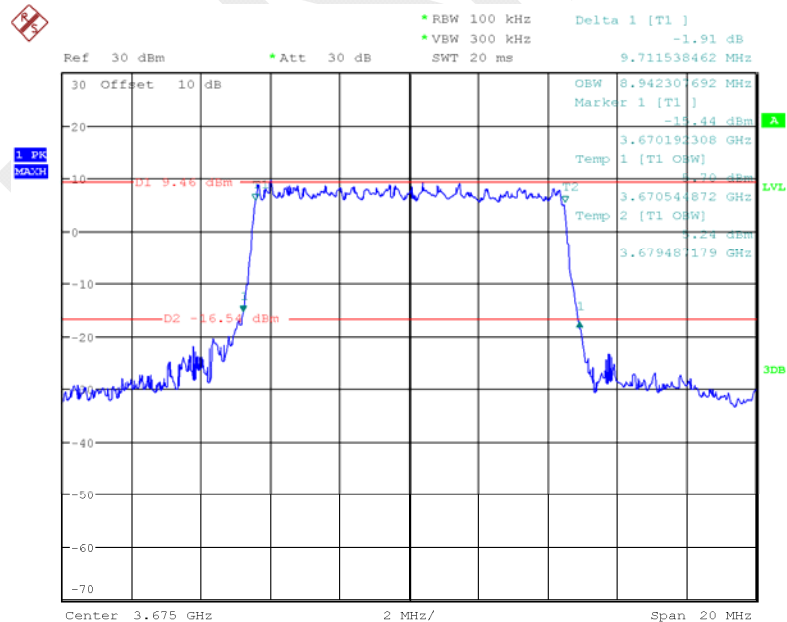
Date: 17.OCT.2017 18:38:33

16-QAM_5M_RB#25

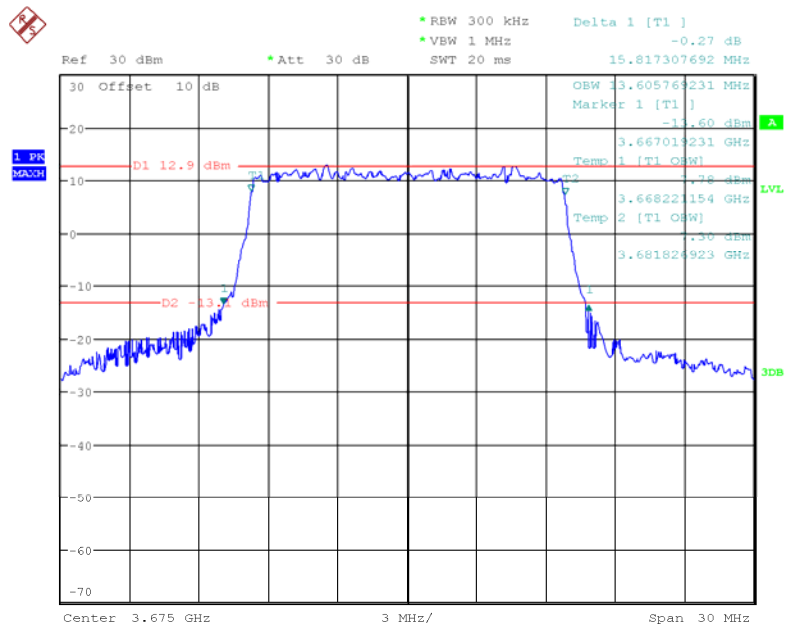


Date: 17.OCT.2017 18:28:32

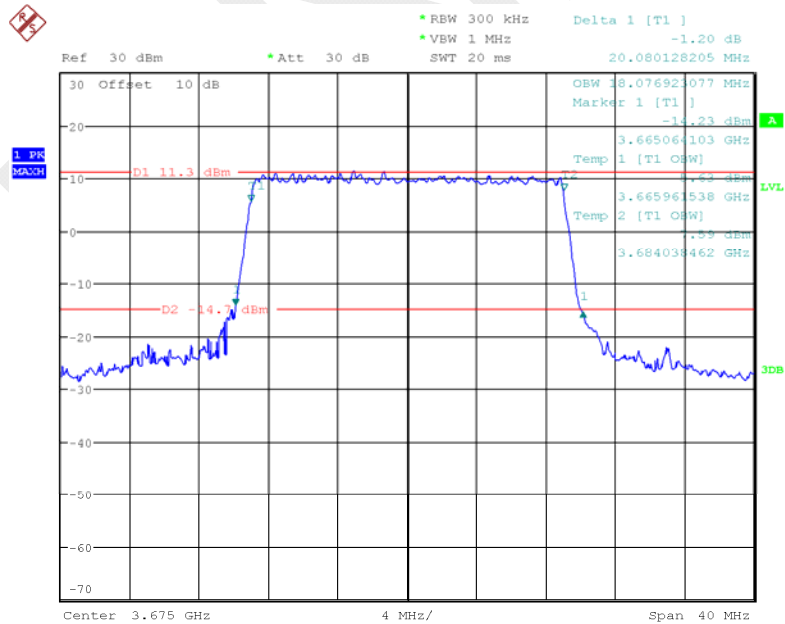
16-QAM_10M_RB#50



Date: 17.OCT.2017 18:32:56

16-QAM_15M_RB#75

Date: 17.OCT.2017 18:36:46

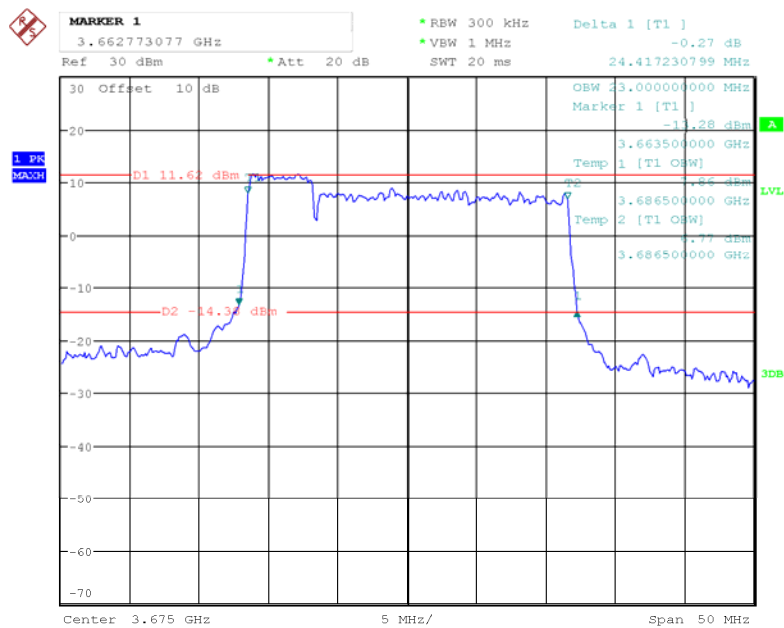
16-QAM_20M_RB#100

Date: 17.OCT.2017 18:39:22

Carrier Aggregation:

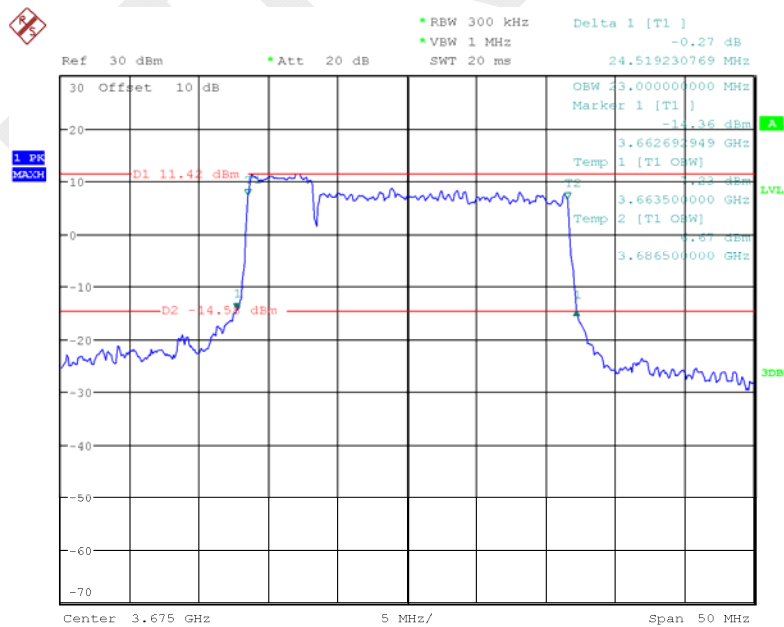
Bandwidth (MHz)	Frequency (MHz)	Modulation	PCC RB	PCC RB	SCC1 RB	SCC1 RB	99% Occupied Bandwidth (MHz)	26dB Bandwidth (MHz)
			Size	Offset	Size	Offset		
5+20	3675.00	QPSK	25	0	100	0	23.00	24.42
		16-QAM	25	0	100	0	23.00	24.52
5	3684.20	QPSK	25	0	0	0	4.52	5.03
			1	0	0	0	0.24	0.40
		16-QAM	25	0	0	0	4.54	5.01
			1	0	0	0	0.24	0.38
10+20	3675.00	QPSK	50	0	100	0	27.84	29.55
		16-QAM	50	0	100	0	27.84	29.65
15+15	3675.00	QPSK	75	0	75	0	28.32	29.87
		16-QAM	75	0	75	0	28.32	29.87
15+20	3675.00	QPSK	75	0	100	0	33.32	39.38
		16-QAM	75	0	100	0	33.32	39.07
20+5	3675.00	QPSK	100	0	25	0	22.90	24.26
		16-QAM	100	0	25	0	22.90	24.27
20+10	3675.00	QPSK	100	0	50	0	27.72	30.17
		16-QAM	100	0	50	0	27.72	29.80
20+15	3675.00	QPSK	100	0	75	0	33.32	37.67
		16-QAM	100	0	75	0	33.30	37.30
20+20	3675.00	QPSK	100	0	100	0	38.24	41.70
		16-QAM	100	0	100	0	38.08	41.52
20	3684.90	QPSK	100	0	0	0	18.00	19.75
			1	0	0	0	0.24	0.58
		16-QAM	100	0	0	0	18.08	19.75
			1	0	0	0	0.24	0.58

5&20MHz_QPSK_P25#0&S100#0



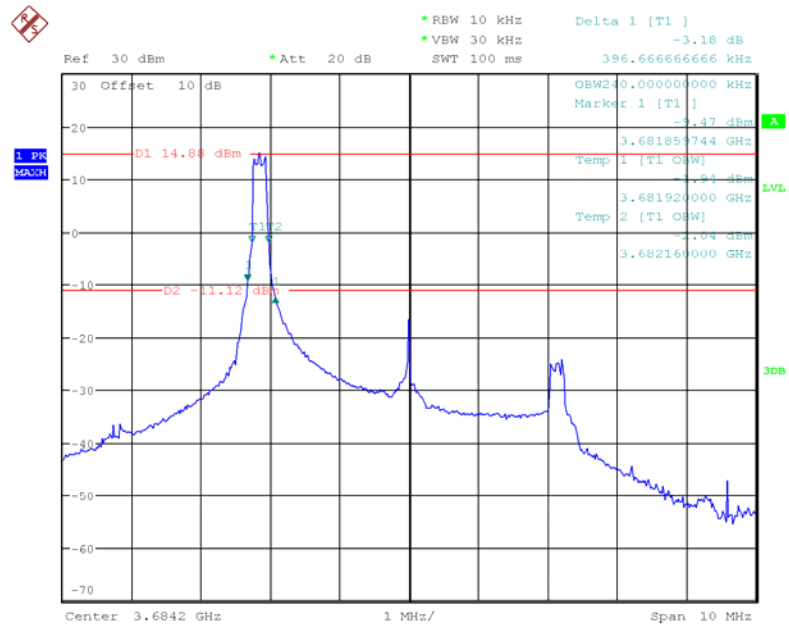
Date: 18.OCT.2017 17:52:44

5&20MHz_16QAM_P25#0&S100#0



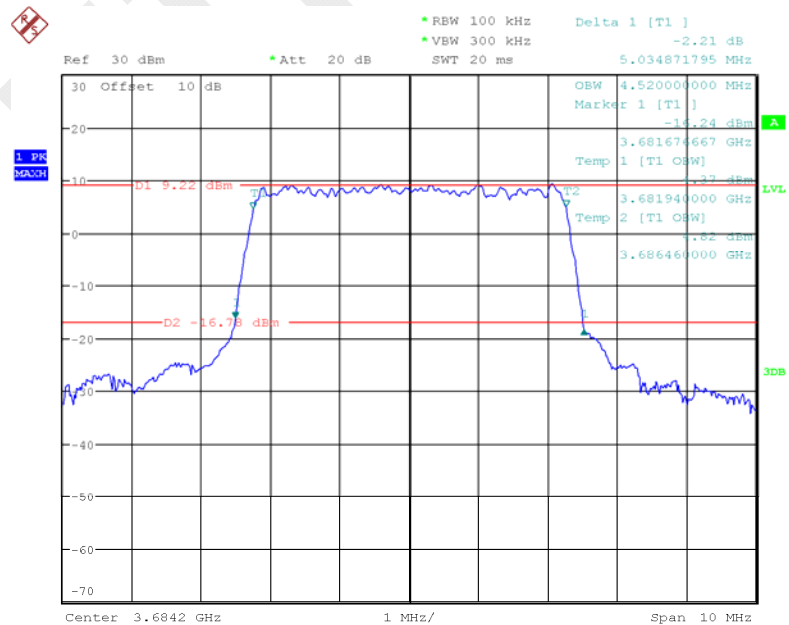
Date: 18.OCT.2017 17:54:12

5MHz_QPSK_RB1



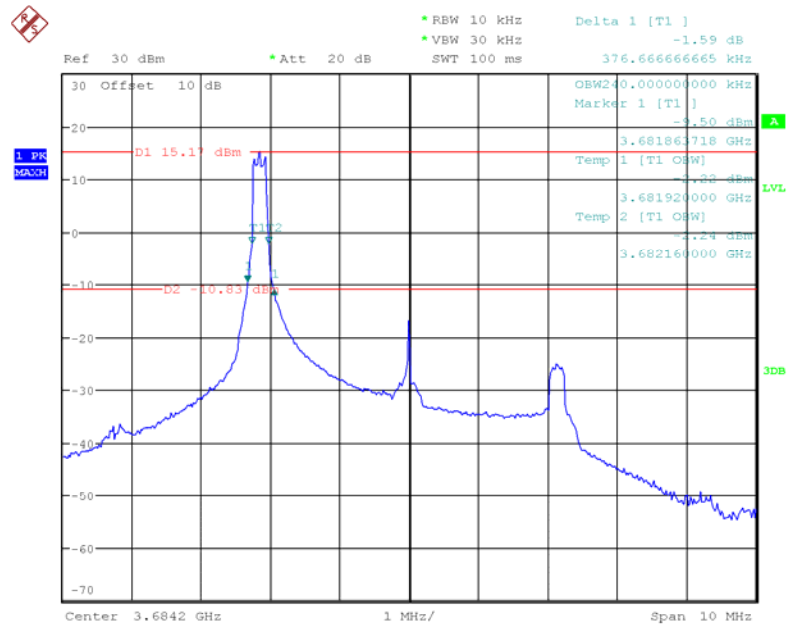
Date: 18.OCT.2017 18:45:21

5MHz_QPSK_RB25



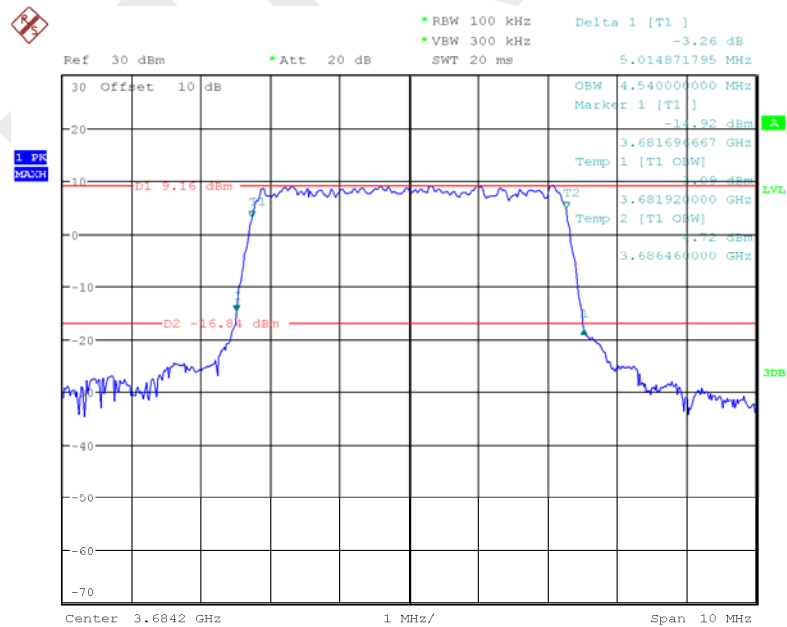
Date: 18.OCT.2017 18:41:33

5MHz_16QAM_RB1



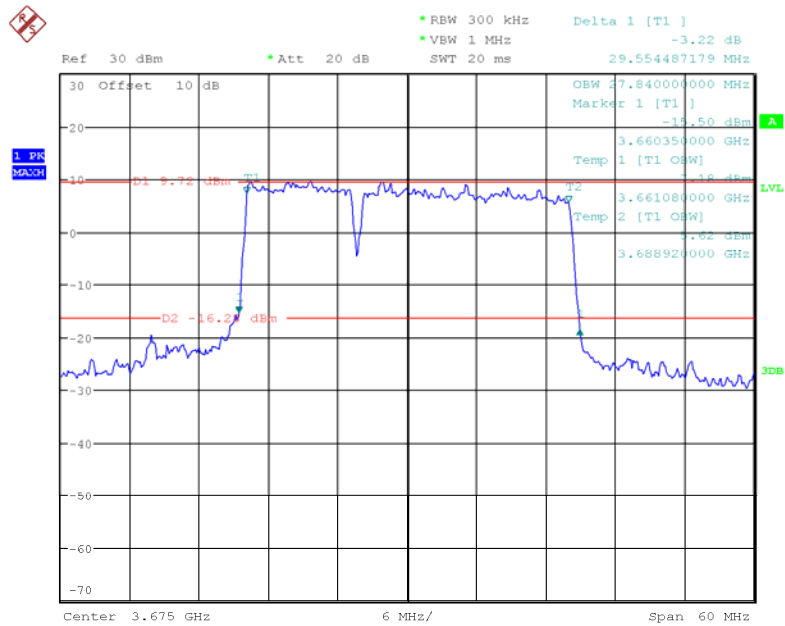
Date: 18.OCT.2017 18:47:12

5MHz_16QAM_RB25



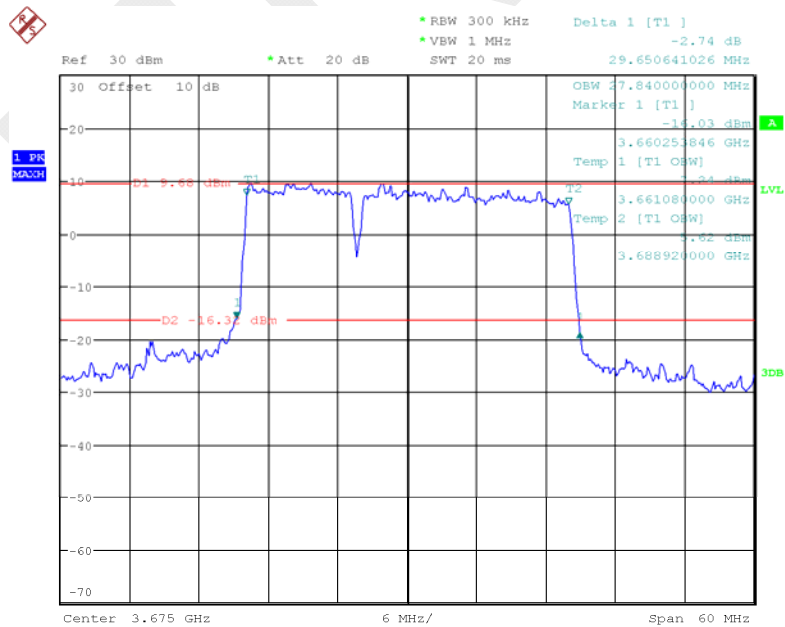
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10&20MHz_QPSK_P50#0&S100#0



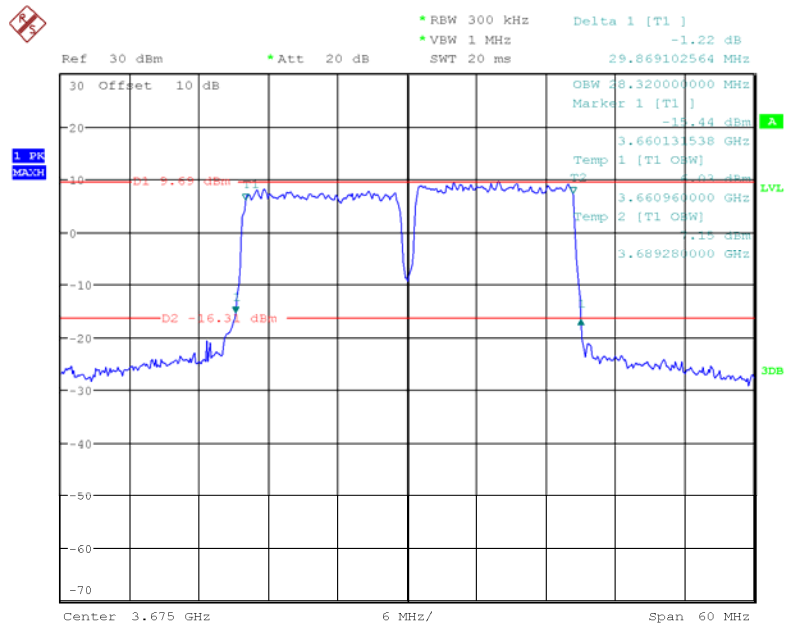
Date: 18.OCT.2017 18:01:30

10&20MHz_16QAM_P50#0&S100#0



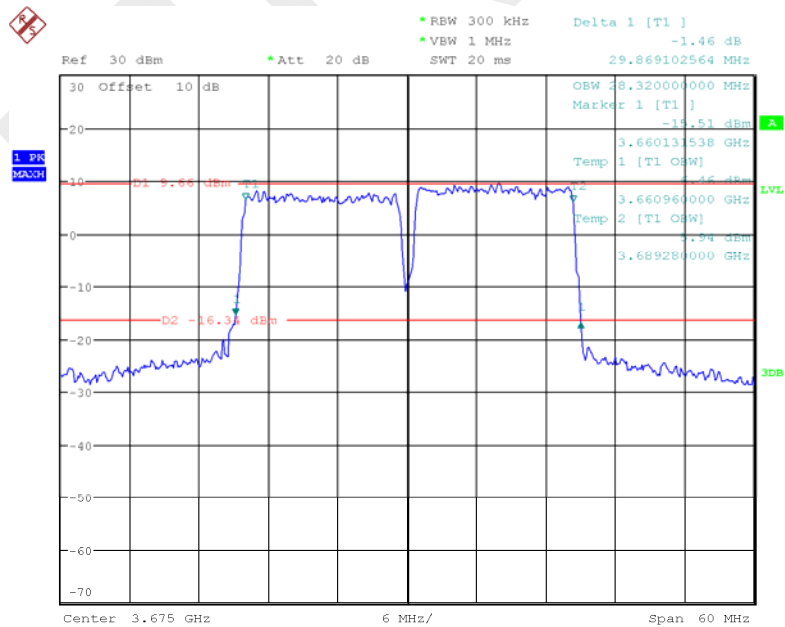
Date: 18.OCT.2017 18:02:26

15&15MHz_QPSK_P75#0&S75#0



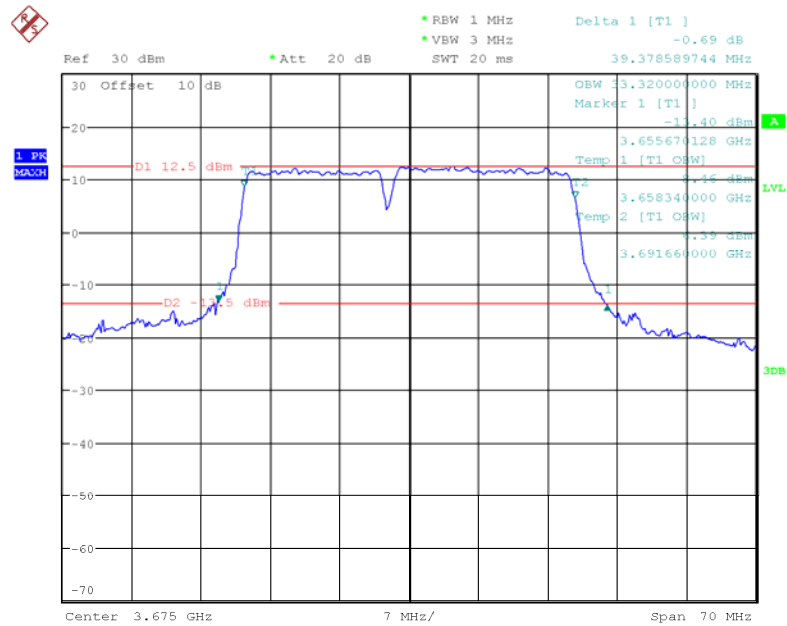
Date: 18.OCT.2017 18:07:07

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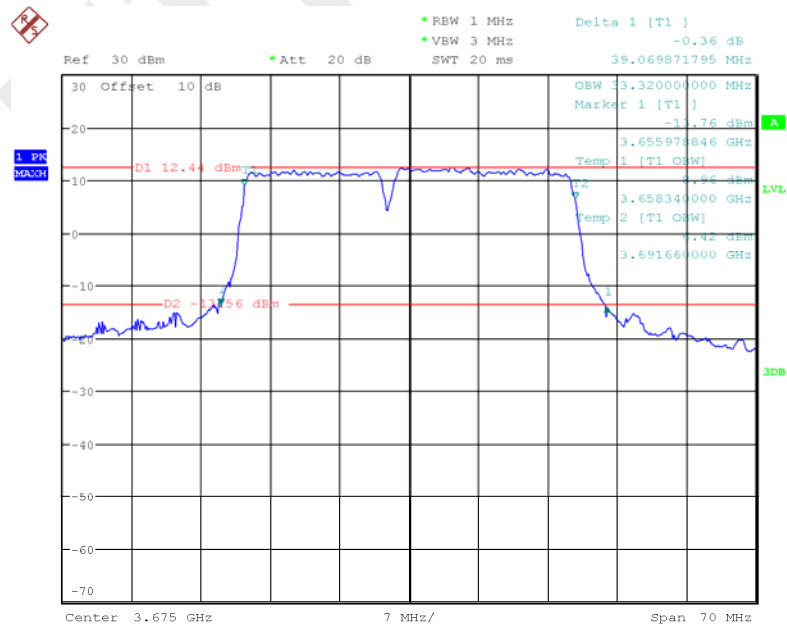
Date: 18.OCT.2017 18:08:02

15&20MHz_QPSK_P75#0&S100#0



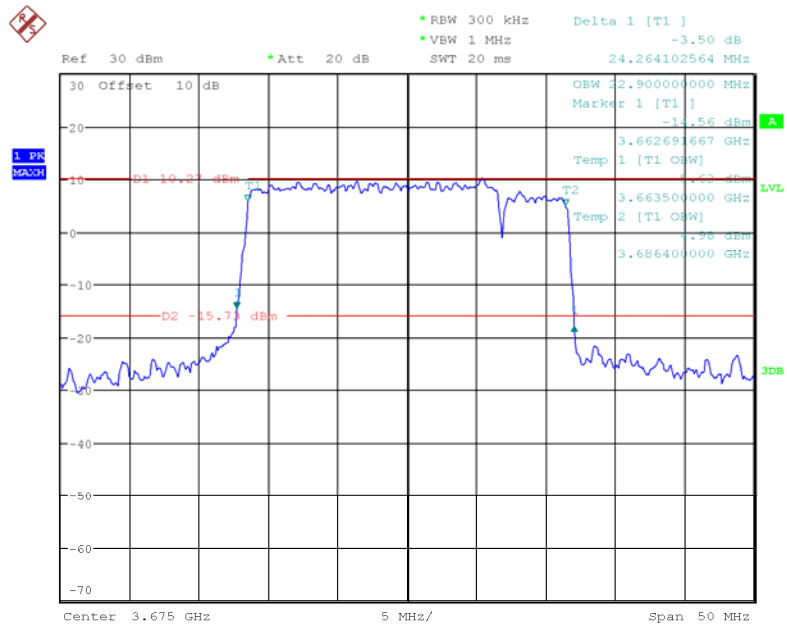
Date: 18.OCT.2017 18:10:11

15&20MHz_16QAM_P75#0&S100#0



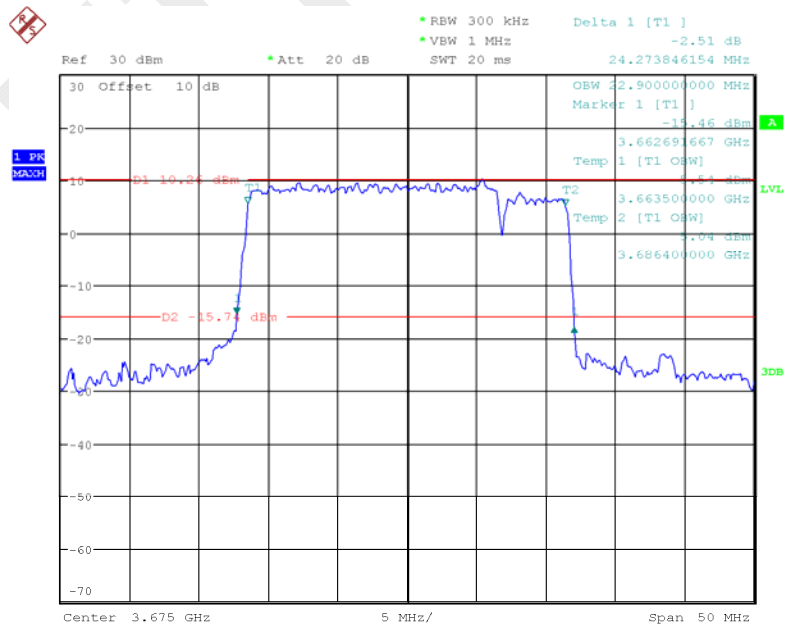
Date: 18.OCT.2017 18:11:09

20&5MHz_QPSK_P100#0&S25#0



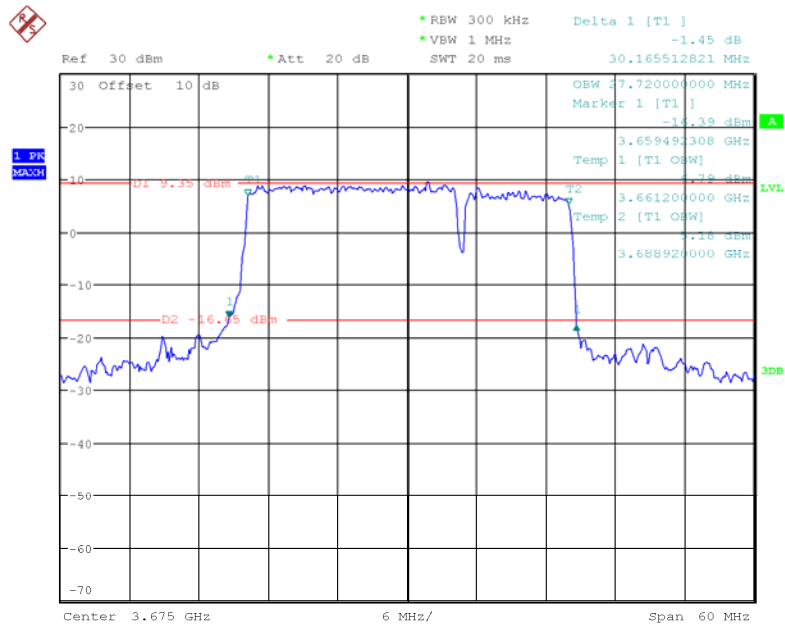
Date: 18.OCT.2017 18:15:57

20&5MHz_16QAM_P100#0&S25#0



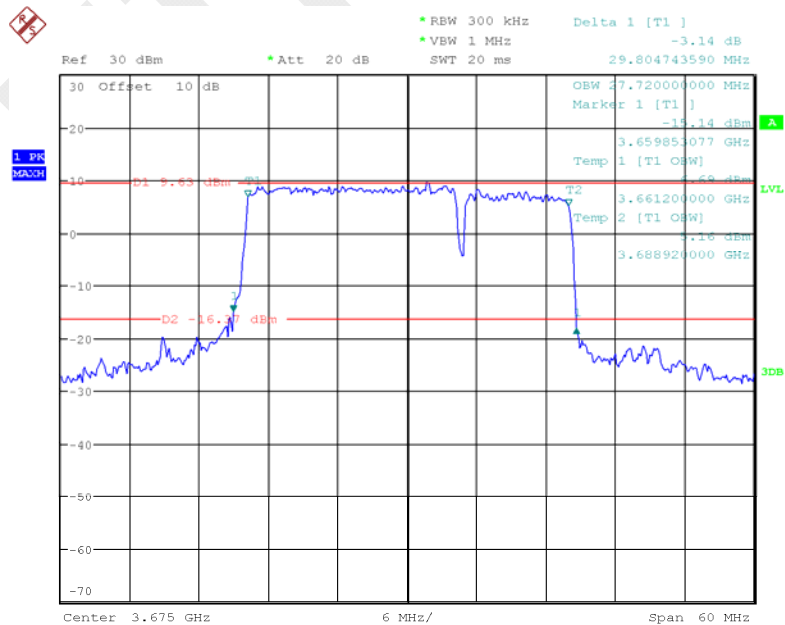
Date: 18.OCT.2017 18:17:46

20&10MHz_QPSK_P100#0&S50#0



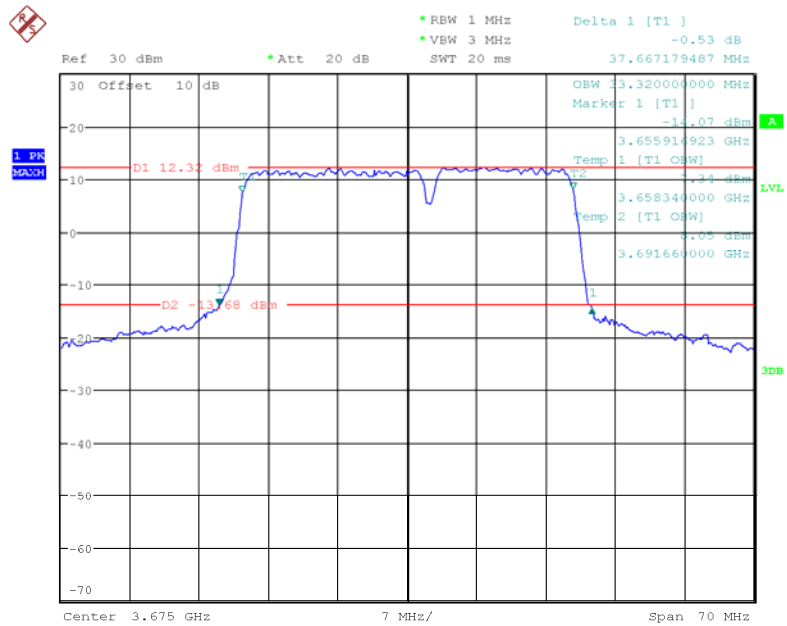
Date: 18.OCT.2017 18:20:26

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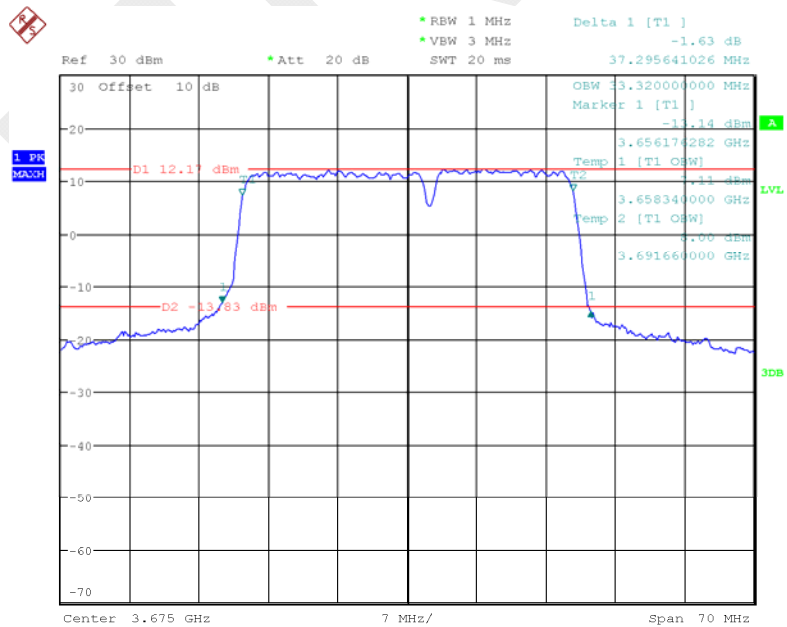
Date: 18.OCT.2017 18:21:13

20&15MHz_QPSK_P100#0&S75#0



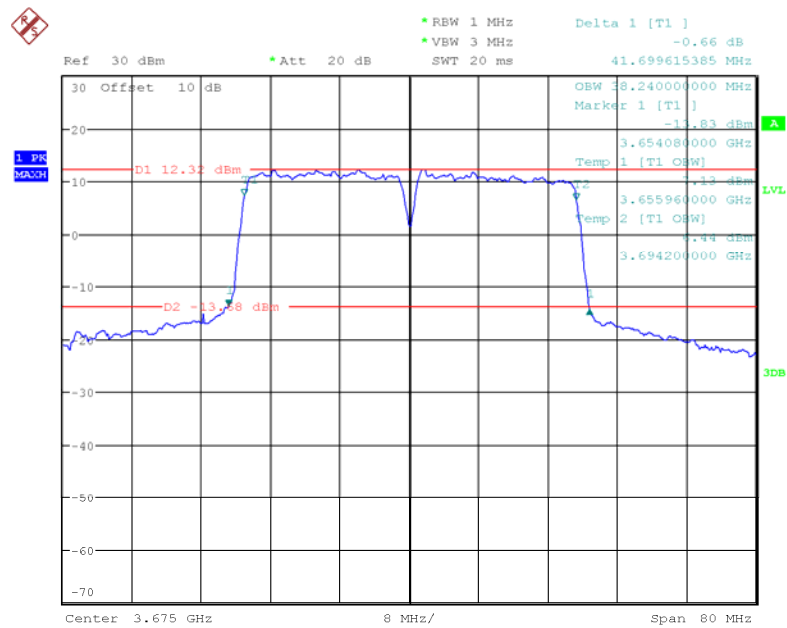
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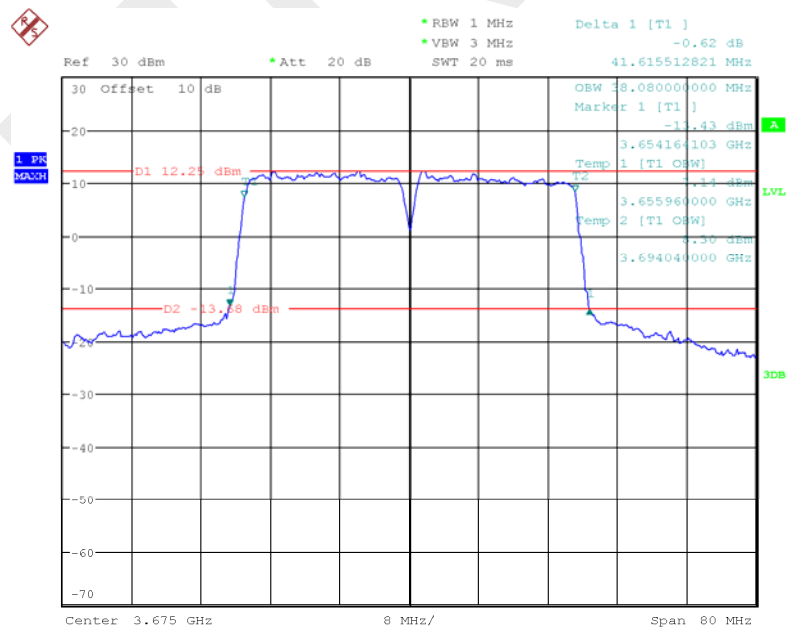
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20&20MHz_QPSK_P100#0&S100#0



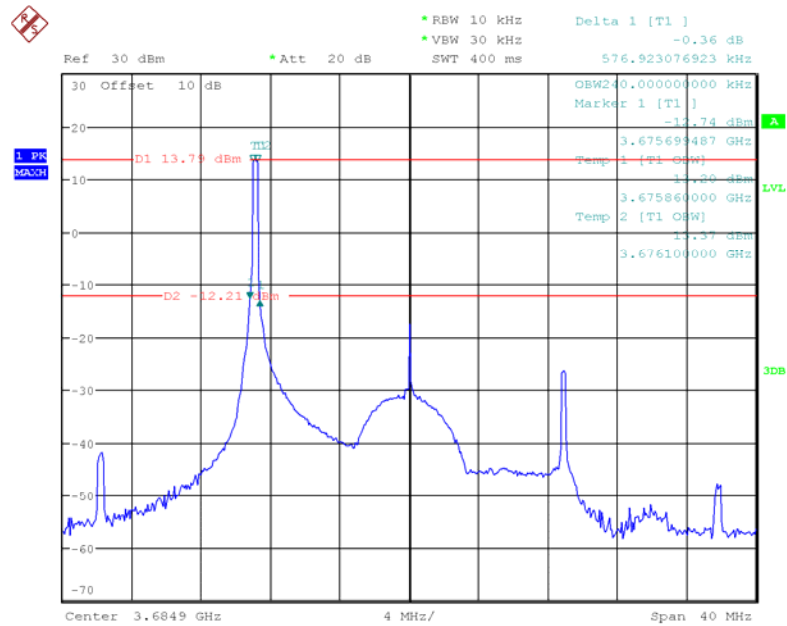
Date: 18.OCT.2017 18:26:57

20&20MHz_16QAM_P100#0&S100#0



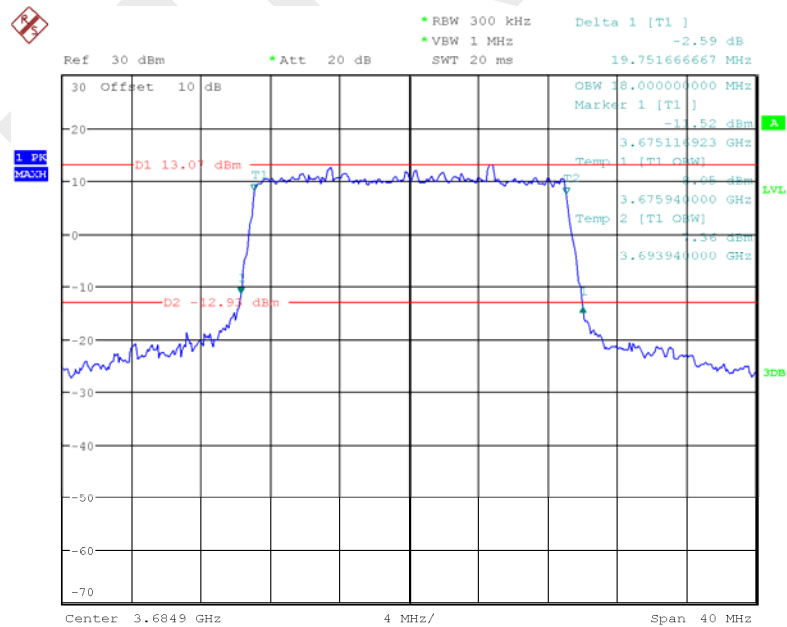
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20MHz_QPSK_RB1

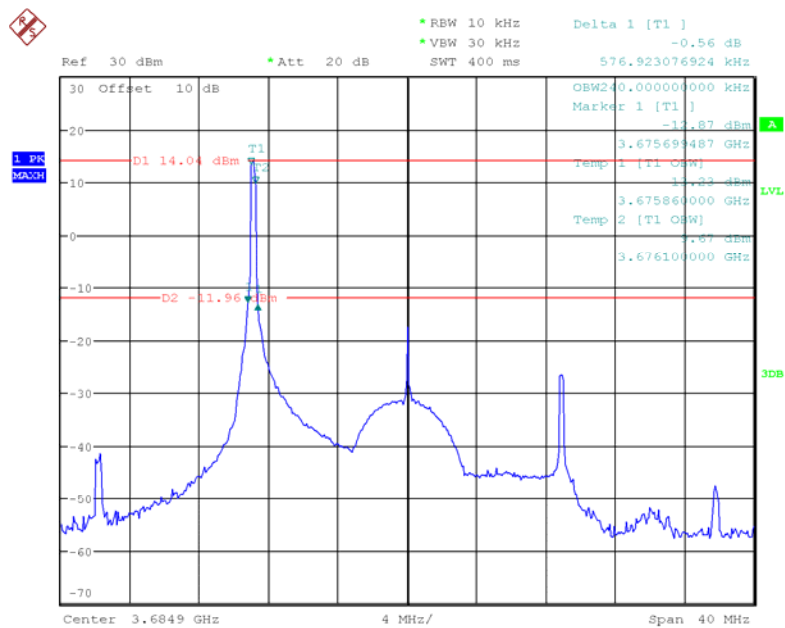


Date: 18.OCT.2017 18:56:30

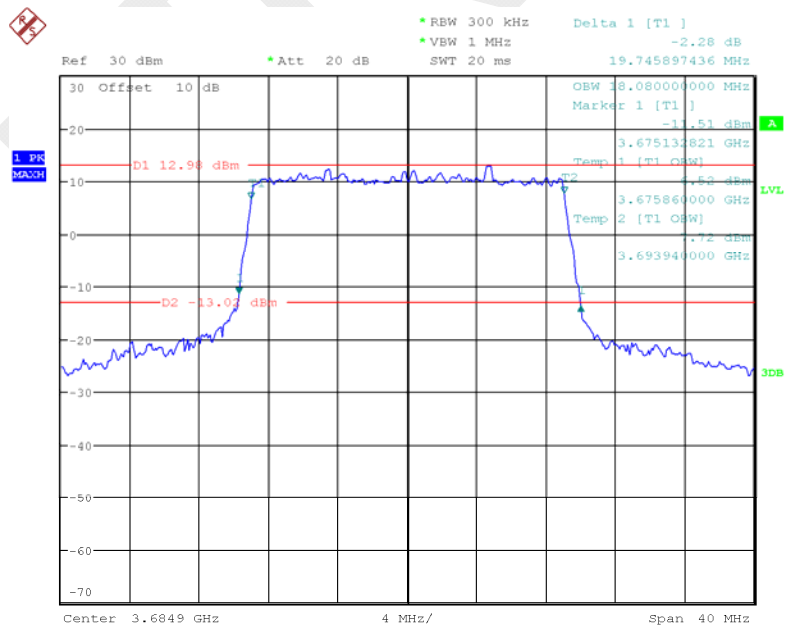
20MHz_QPSK_RB100



Date: 18.OCT.2017 18:51:01

20MHz_16QAM_RB1

Date: 18.OCT.2017 18:55:07

20MHz_16QAM_RB100

Date: 18.OCT.2017 18:52:45

FCC §2.1051 §90.1323(a) & RSS-197 §5.7- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

According to FCC §90.1323(a), The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth.

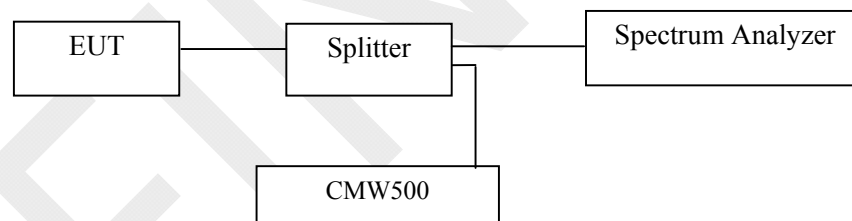
According to RSS-197 §5.7

The unwanted emissions shall be measured at the frequencies of the highest and lowest channel of all bandwidths and types of modulation that the equipment can operate with a resolution bandwidth of 1 MHz or less, but at least 1% of the occupied bandwidth of the transmitter, provided that the measured power is integrated over a 1 MHz bandwidth.

The power of any emissions outside the frequency band 3650-3700 MHz shall be attenuated below the channel transmitter power P (dBW) by $43 + 10 \log (p)$, where p is measured in watts.

Test Procedure

The EUT was connected to a CMW500 & spectrum analyzer through a splitter, the EUT power was adjusted to produce maximum output power as specified in the owner's manual, measurements were performed at low, middle high channels for each of the EUT's bandwidths and modulations.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Wideband Radio Communication Tester	CMW500	149216	2017-10-8	2018-10-8
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-8	2017-12-8
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each Time	/
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/

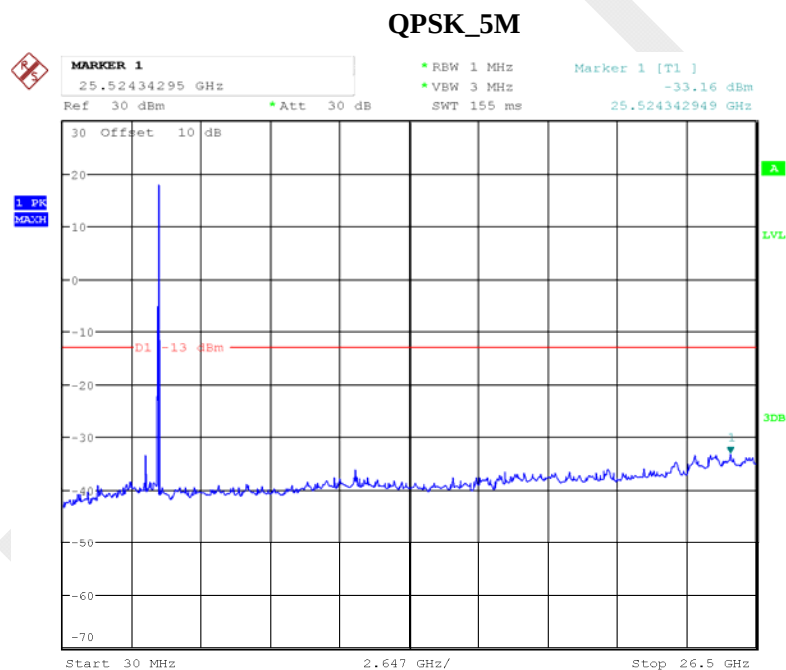
*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	19.3~20.5℃
Relative Humidity:	56~60 %
ATM Pressure:	100.1~100.2 kPa

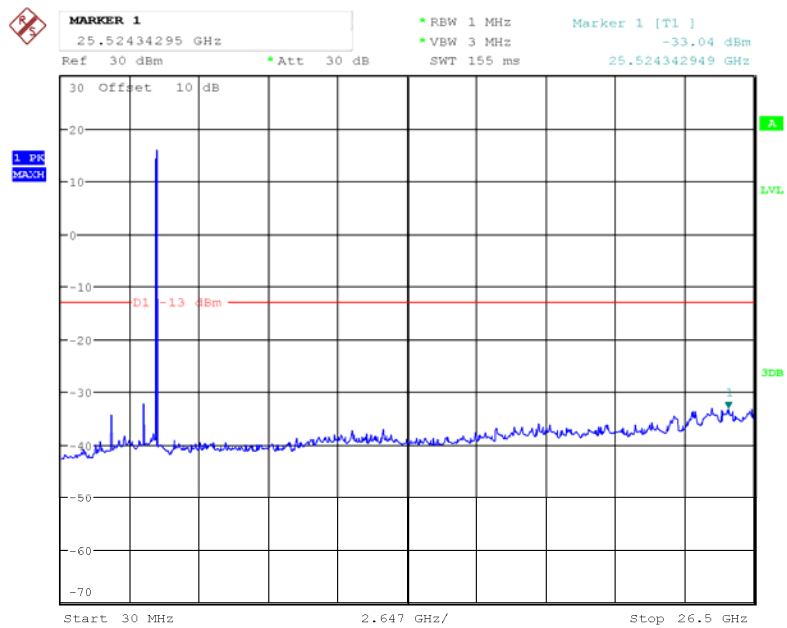
The testing was performed by Sun Zhong on 2017-10-17 & 2017-10-18.

Test Mode: Transmitting(No emission was detected in the range 26.5-37GHz)

**Conducted Spurious Emissions:
Single Carrier:**

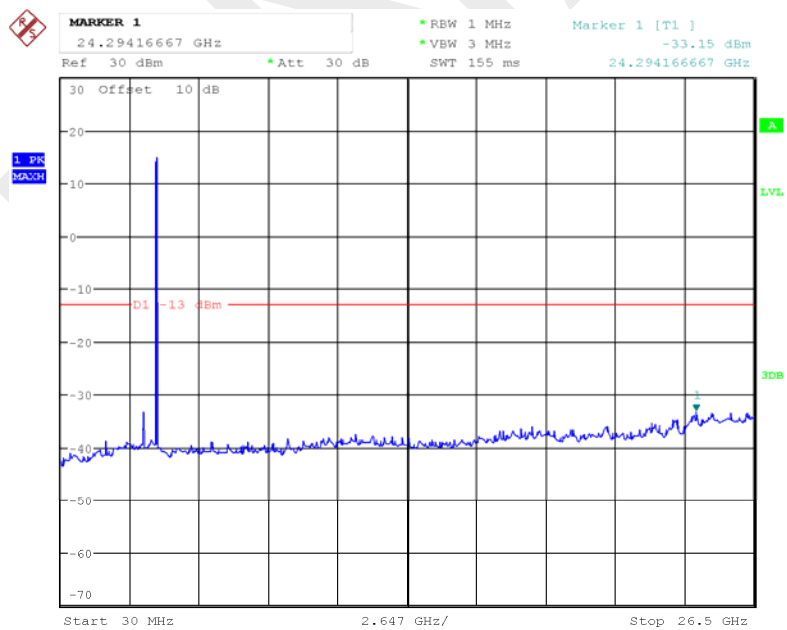
Date: 17.OCT.2017 19:44:13

QPSK_10M



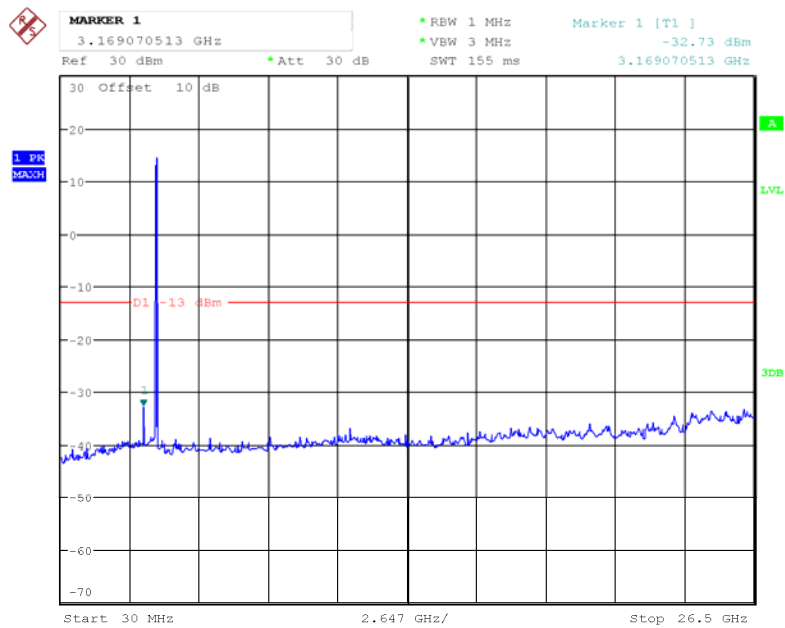
Date: 17.OCT.2017 19:48:36

QPSK_15M



Date: 17.OCT.2017 19:49:55

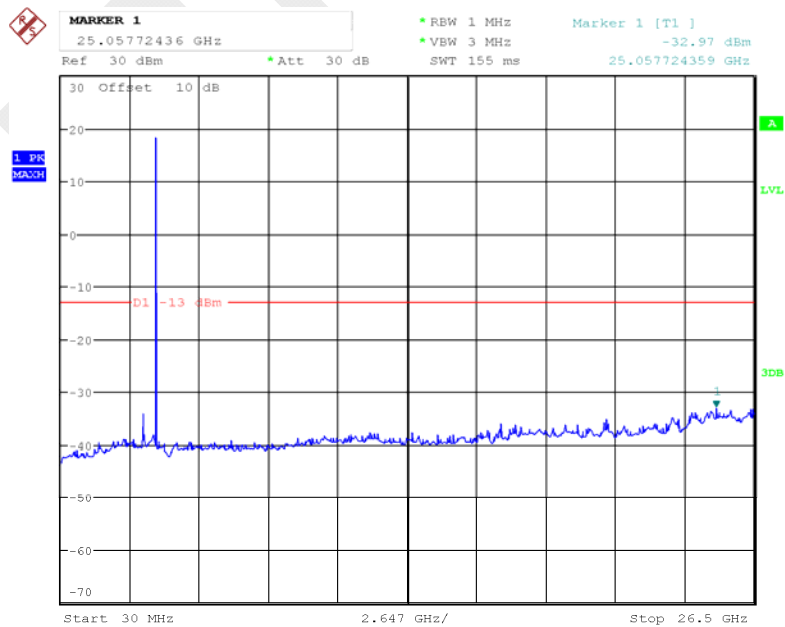
QPSK_20M



Date: 17.OCT.2017 19:50:59

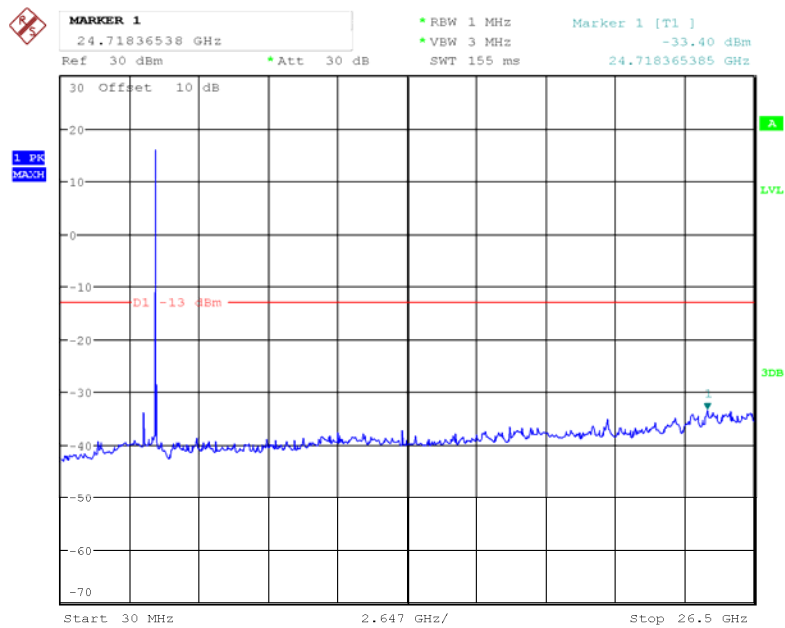
Carrier Aggregation:

QPSK_5+20M



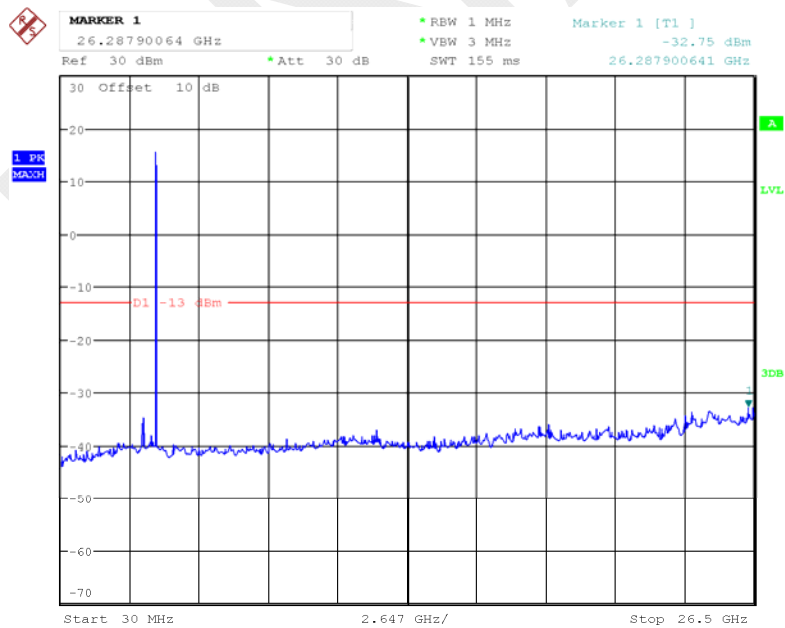
Date: 17.OCT.2017 19:55:57

QPSK_10+20M



Date: 17.OCT.2017 19:57:52

QPSK_15+20M



Date: 17.OCT.2017 19:59:26

MARKER 1
25.56676282 GHz

Ref 30 dBm Att 30 dB

RBW 1 MHz VBW 3 MHz
SWT 155 ms

Marker 1 [T1]
-33.79 dBm
25.566762821 GHz

30 Offset 10 dB

1 PK
MAGN

D1 -13 dBm

30dB

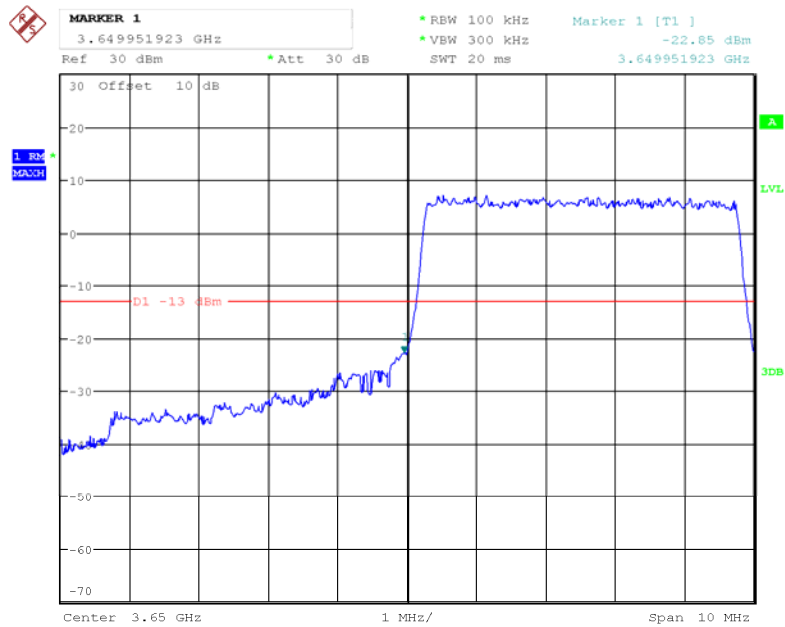
Start 30 MHz 2.647 GHz/ Stop 26.5 GHz

Date: 17.OCT.2017 20:03:07

Band Edge:

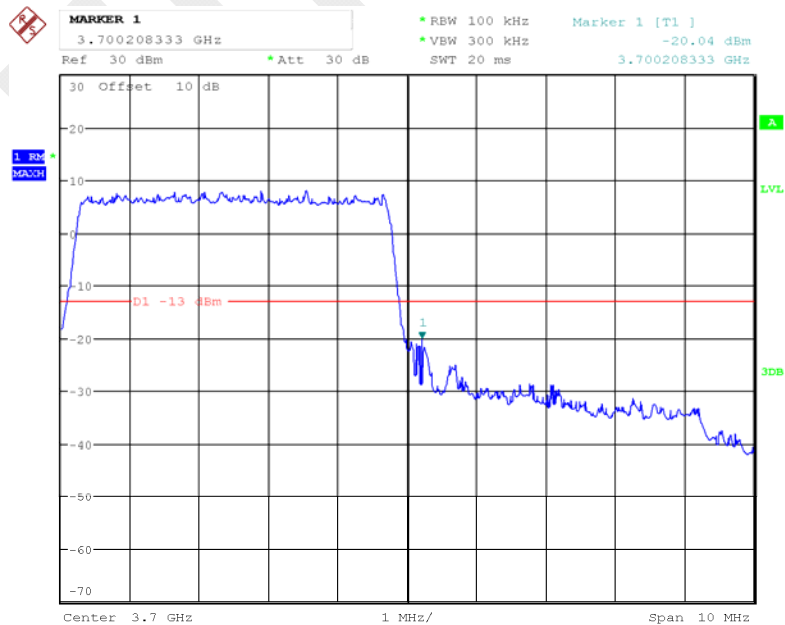
Single Carrier:

QPSK_5M_RB#25_Left Side



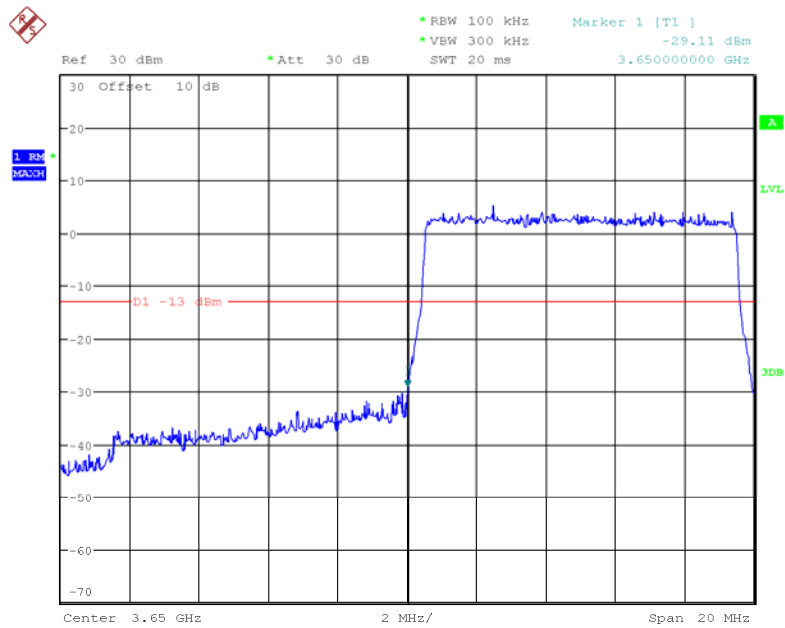
Date: 17.OCT.2017 18:49:19

QPSK_5M_RB#25_Right Side



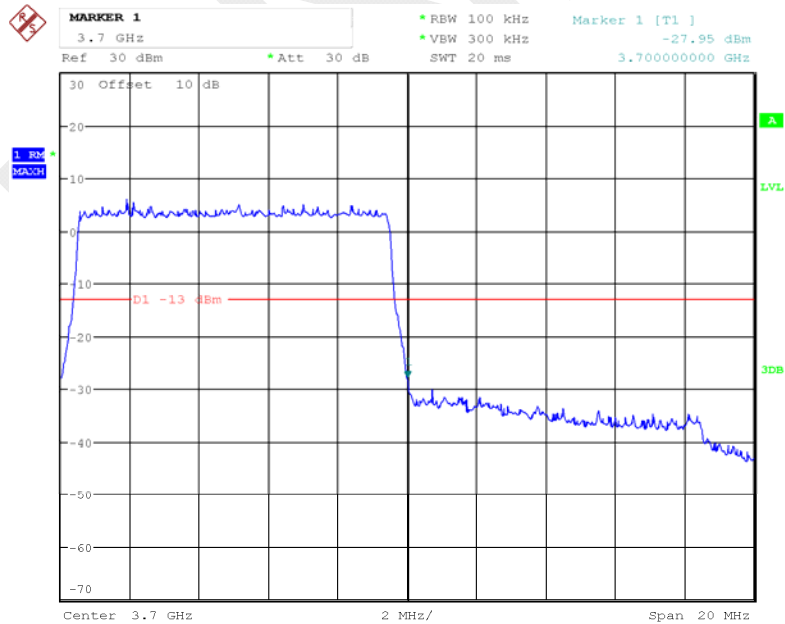
Date: 17.OCT.2017 19:26:55

QPSK_10M_RB#50_Left Side



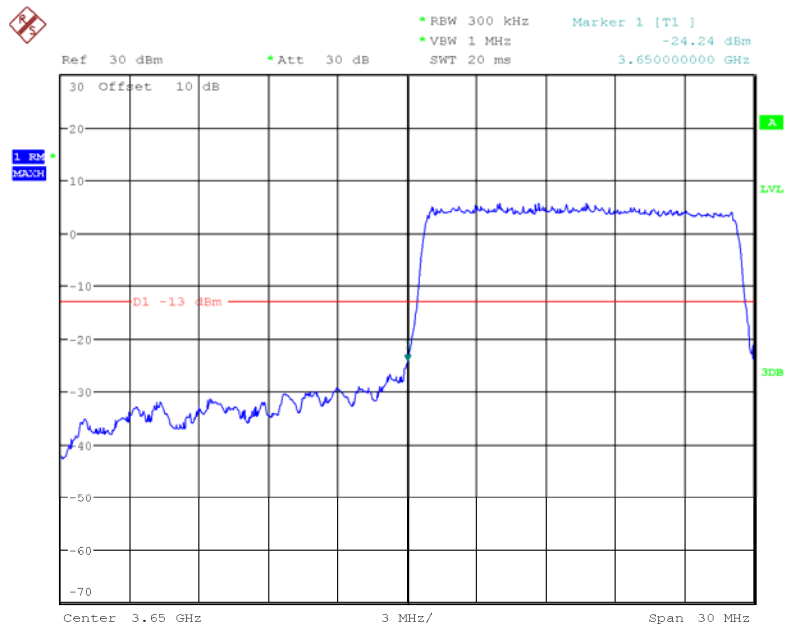
Date: 17.OCT.2017 18:51:20

QPSK_10M_RB#50_Right Side



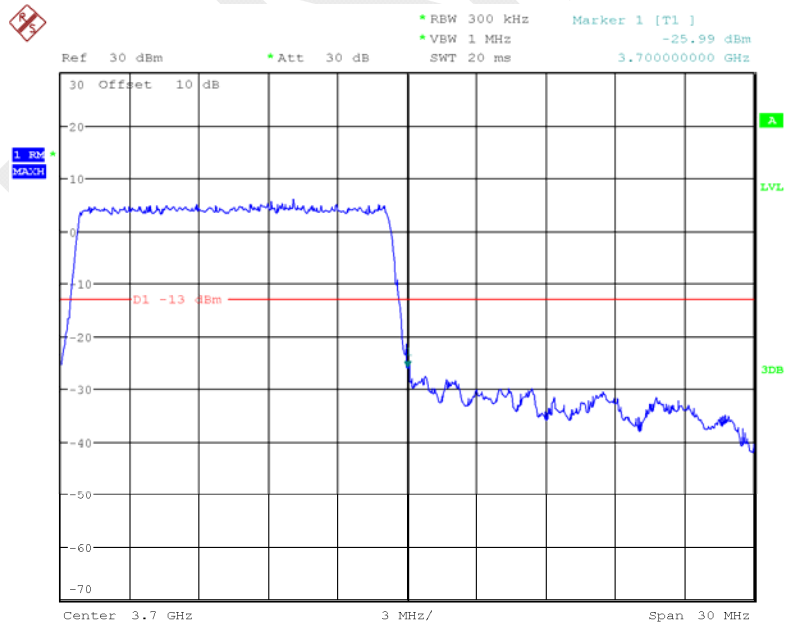
Date: 17.OCT.2017 19:33:08

QPSK_15M_RB#75_Left Side



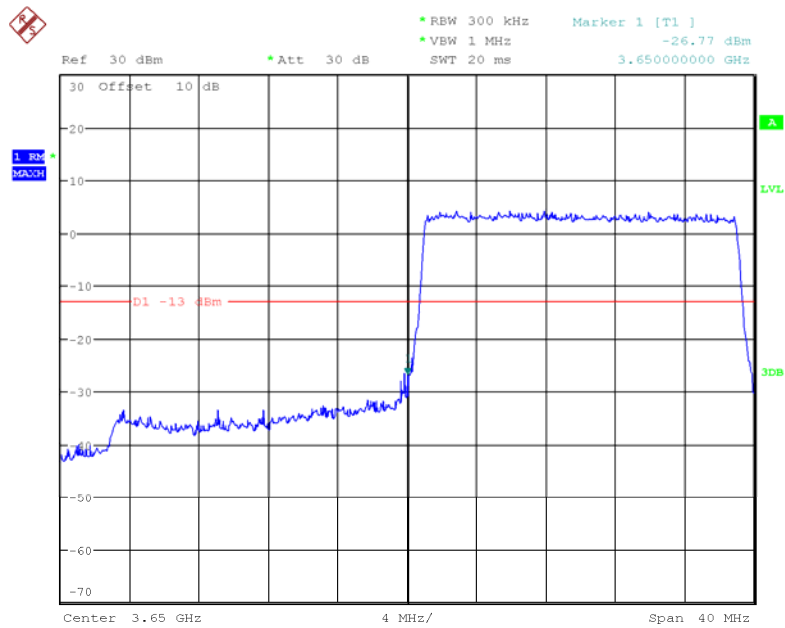
Date: 17.OCT.2017 18:52:42

QPSK_15M_RB#75_Right Side



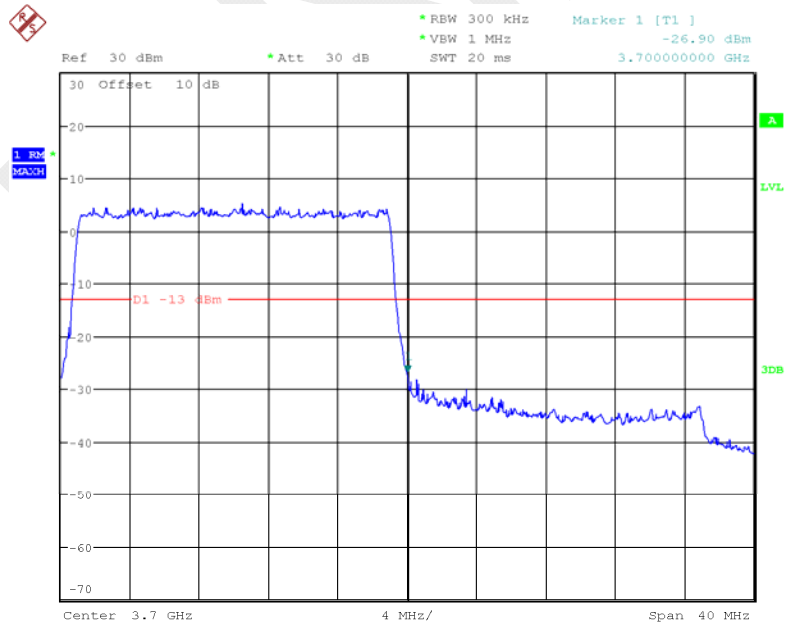
Date: 17.OCT.2017 19:39:52

QPSK_20M_RB#100_Left Side



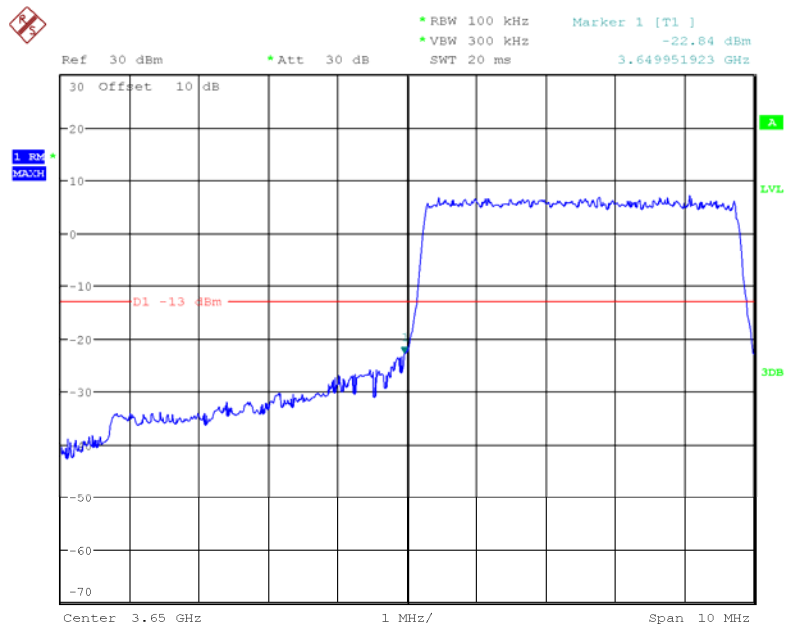
Date: 17.OCT.2017 18:54:08

QPSK_20M_RB#100_Right Side



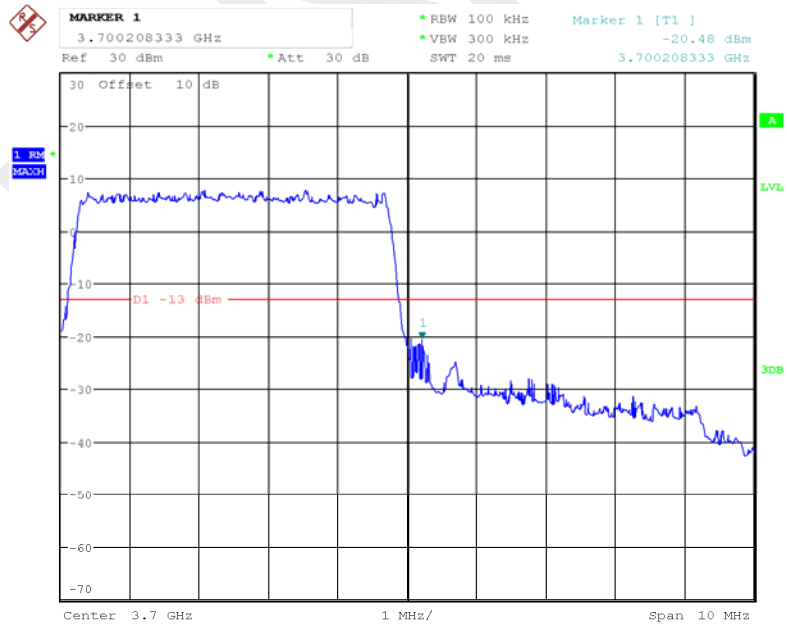
Date: 17.OCT.2017 19:41:16

16-QAM_5M_RB#25_Left Side



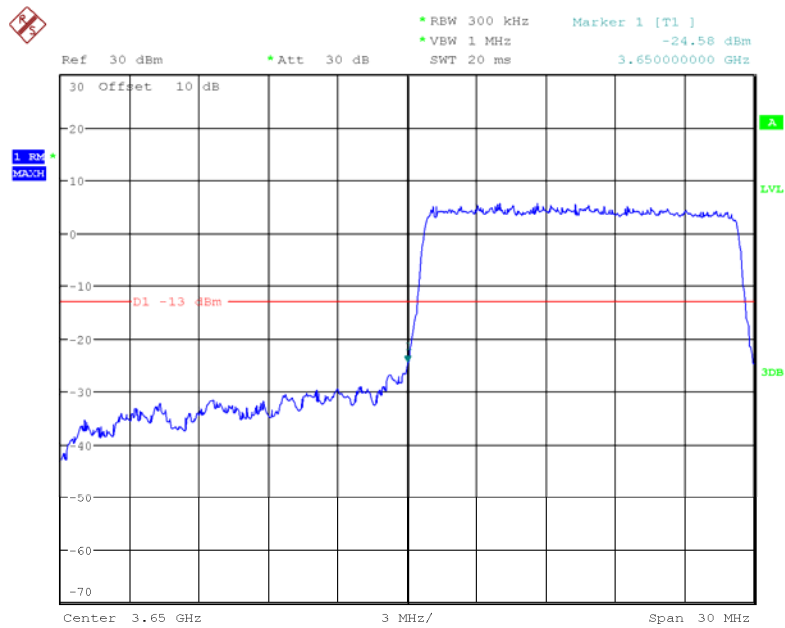
Date: 17.OCT.2017 18:49:50

16-QAM_5M_RB#25_Right Side



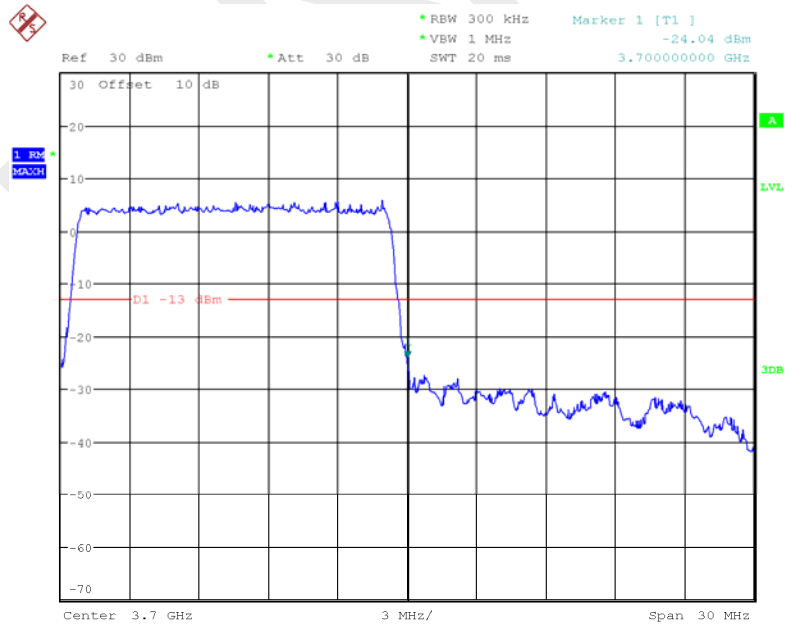
Date: 17.OCT.2017 19:27:30

16-QAM_15M_RB#75_Left Side



Date: 17.OCT.2017 18:53:03

16-QAM_15M_RB#75_Right Side



Date: 17.OCT.2017 19:40:08

Ref 30 dBm * Att 30 dB

* RBW 300 kHz Marker 1 [T1]
 * VBW 1 MHz -29.94 dBm
 SWT 20 ms 3.65000000 GHz

30 Offset 10 dB

1 RBW
 MAG

D1 -13 dBm

Center 3.65 GHz 4 MHz/ Span 40 MHz

Date: 17.OCT.2017 18:54:20

Ref 30 dBm * Att 30 dB * RBW 300 kHz Marker 1 [T1] -26.96 dBm
 * VBW 1 MHz SWT 20 ms 3.700000000 GHz

30 Offset 10 dB

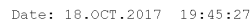
1 RM
 MAXH

D1 -13 dBm

Center 3.7 GHz 4 MHz/ Span 40 MHz

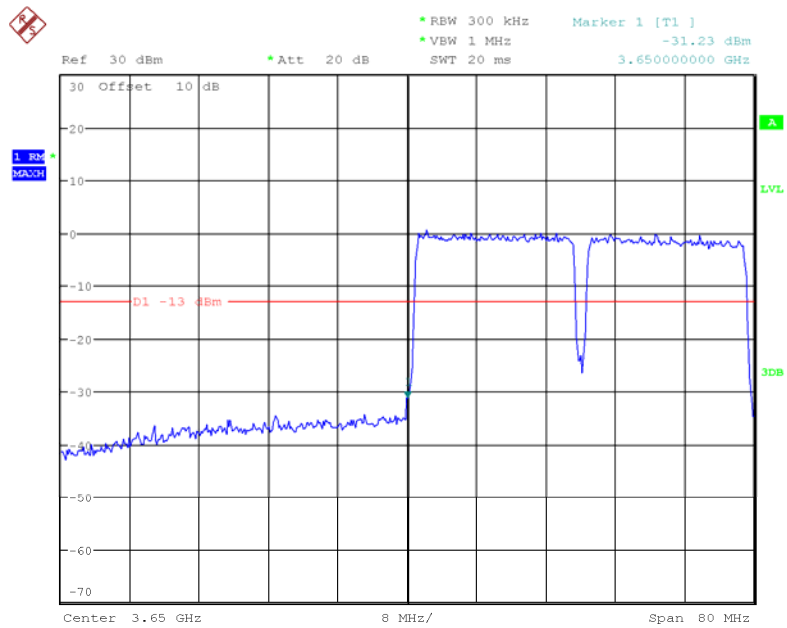
Date: 17.OCT.2017 20:46:19

QPSK_RB(25+100)_Low Channel



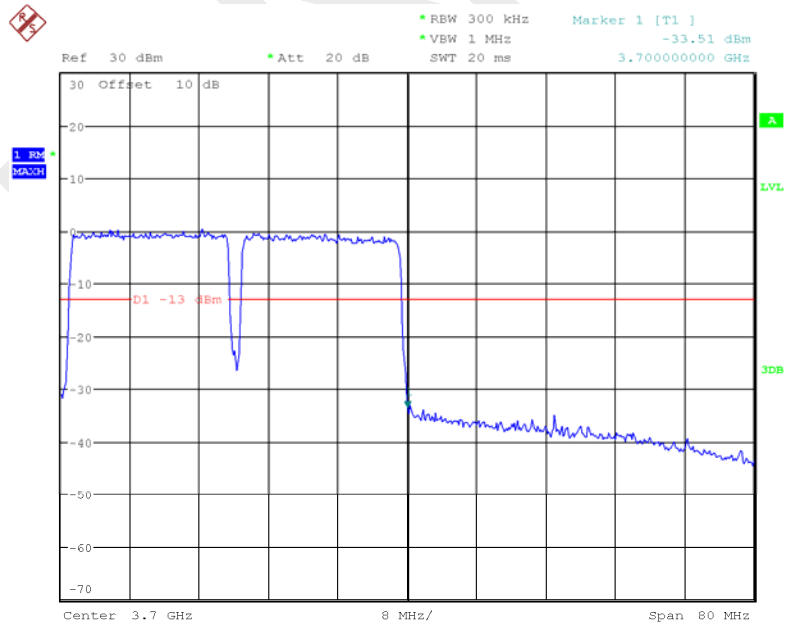
Date: 18.OCT.2017 19:52:38

QPSK_RB(100+100)_Low Channel



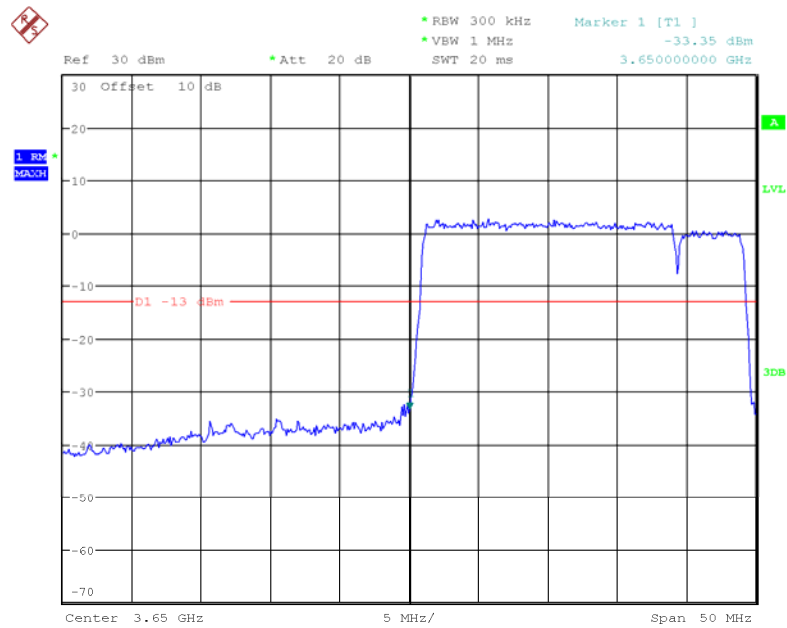
Date: 18.OCT.2017 19:57:12

QPSK_RB(100+100)_High Channel



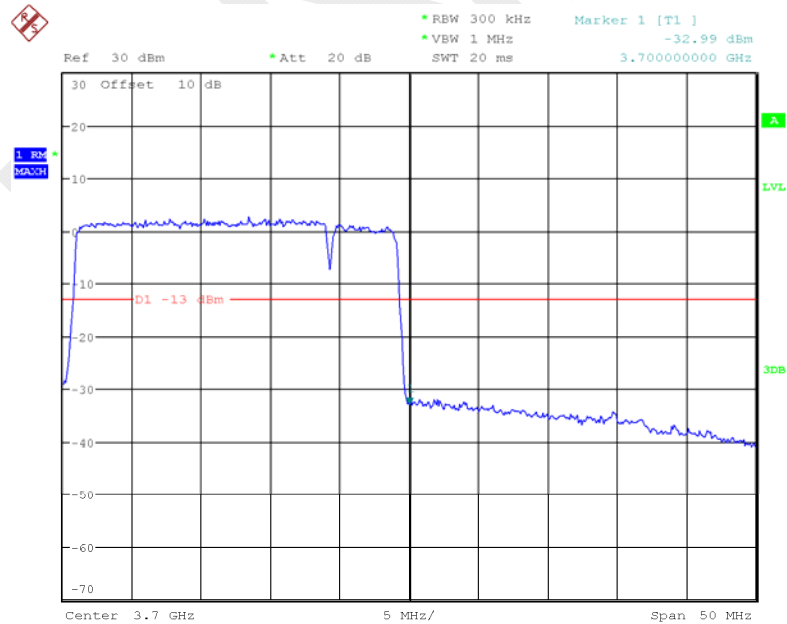
Date: 18.OCT.2017 19:54:56

16-QAM_RB(25+100)_Low Channel



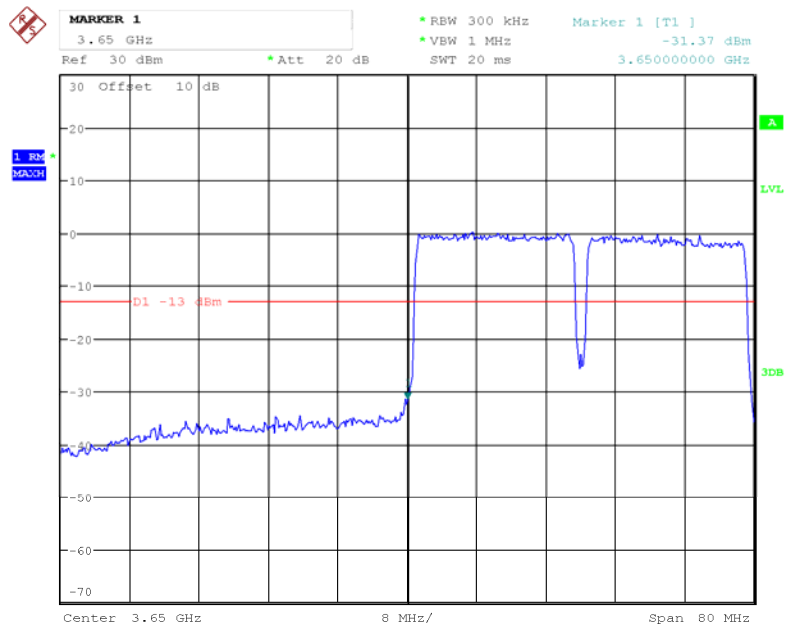
Date: 18.OCT.2017 19:46:27

16-QAM_RB(25+100)_High Channel



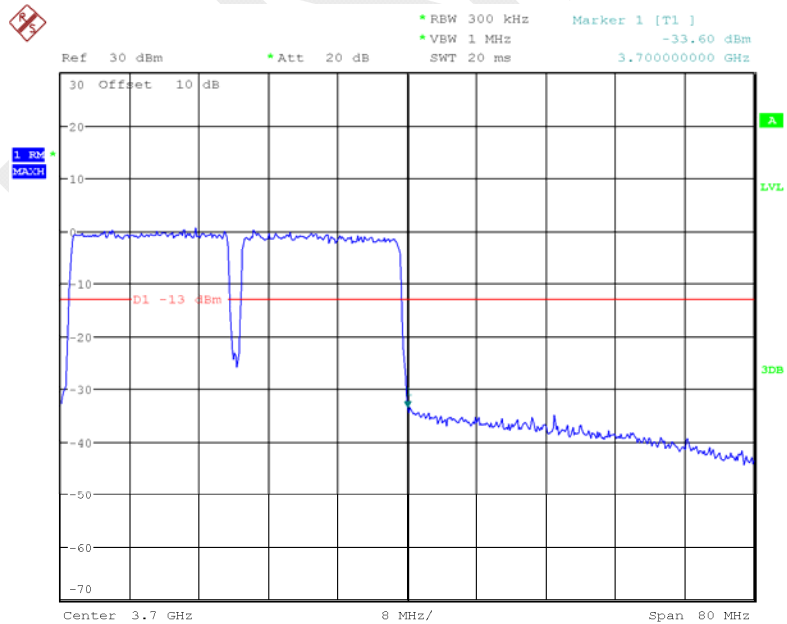
Date: 18.OCT.2017 19:53:19

16-QAM_RB(100+100)_Low Channel



Date: 18.OCT.2017 19:56:44

16-QAM_RB(100+100)_High Channel



Date: 18.OCT.2017 19:55:36

FCC §2.1053&RSS-197§5.7 - RADIATED SPURIOUS EMISSIONS

Applicable Standard

According to FCC §90.1323(a), The power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth.

According to RSS-197 §5.7

The unwanted emissions shall be measured at the frequencies of the highest and lowest channel of all bandwidths and types of modulation that the equipment can operate with a resolution bandwidth of 1 MHz or less, but at least 1% of the occupied bandwidth of the transmitter, provided that the measured power is integrated over a 1 MHz bandwidth.

The power of any emissions outside the frequency band 3650-3700 MHz shall be attenuated below the channel transmitter power P (dBW) by $43 + 10 \log (p)$, where p is measured in watts.

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 teeth 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 attenuation limit in dB $= 43 + 10 \log_{10} (\text{power out in Watts})$

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	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2017-09-05	2018-09-05
R&S	Spectrum Analyzer	FSP 38	100478	2016-12-08	2017-12-08
ETS LINDGREN	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
HP	Signal Generator	1026	320408	2016-12-08	2017-12-08
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-021304	2017-06-16	2020-06-15
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-011304	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-021302	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-011302	2016-11-18	2019-11-18
TDK RF	Horn Antenna	HRN-0118	130 084	2016-01-05	2019-01-04
Unknown	Coaxial Cable	Chamber A-1	4m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber B-1	0.75m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber A-2	10m	2016-09-01	2017-09-01
Unknown	Coaxial Cable	Chamber B-2	8m	2016-09-01	2017-09-01

*** 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:	18~22 °C
Relative Humidity:	55~60 %
ATM Pressure:	100~100.2 kPa

The testing was performed by Sun Zhong from 2017-10-10 to 2017-10-12.

Test Mode: Transmitting (prescan with low/middle/high channel, and worst case as below)

30MHz-37GHz

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)			
Sigle Carrier,QPSK,Frequency:3675.000 MHz								
7350.000	H	32.60	-55.6	13.2	3	-45.4	-13.0	32.4
7350.000	V	32.47	-55.5	13.2	3	-45.3	-13.0	32.3
11025.000	H	32.54	-49.2	13.0	5.2	-41.4	-13.0	28.4
11025.000	V	32.55	-47.5	13.0	5.2	-39.7	-13.0	26.7
450.240	H	33.30	-58.5	0.0	0.7	-59.2	-13.0	46.2
450.240	V	32.78	-57	0.0	0.7	-57.7	-13.0	44.7
Sigle Carrier, 16-QAM,Frequency: 3675.000 MHz								
7350.000	H	32.56	-55.7	13.2	3	-45.5	-13.0	32.5
7350.000	V	32.87	-55.1	13.2	3	-44.9	-13.0	31.9
11025.000	H	32.51	-49.2	13.0	5.2	-41.4	-13.0	28.4
11025.000	V	33.02	-47	13.0	5.2	-39.2	-13.0	26.2
450.240	H	32.62	-59.2	0.0	0.7	-59.9	-13.0	46.9
450.240	V	32.60	-57.2	0.0	0.7	-57.9	-13.0	44.9
Carrier Aggregation, BW:20M+20M,QPSK,Frequency:3675.000 MHz								
7350.000	H	31.02	-57.2	13.2	3	-47.0	-13.0	34.0
7350.000	V	31.62	-56.3	13.2	3	-46.1	-13.0	33.1
11025.000	H	29.50	-52.3	13.0	5.2	-44.5	-13.0	31.5
11025.000	V	28.70	-51.3	13.0	5.2	-43.5	-13.0	30.5
450.240	H	32.69	-59.1	0.0	0.7	-59.8	-13.0	46.8
450.240	V	33.54	-56.3	0.0	0.7	-57.0	-13.0	44.0
Carrier Aggregation, BW:20M+20M,16-QAM,Frequency: 3675.000 MHz								
7350.000	H	33.25	-55	13.2	3	-44.8	-13.0	31.8
7350.000	V	31.78	-56.1	13.2	3	-45.9	-13.0	32.9
11025.000	H	30.85	-50.9	13.0	5.2	-43.1	-13.0	30.1
11025.000	V	32.04	-48	13.0	5.2	-40.2	-13.0	27.2
450.240	H	32.07	-59.8	0.0	0.7	-60.5	-13.0	47.5
450.240	V	31.27	-58.6	0.0	0.7	-59.3	-13.0	46.3

Note:

Absolute Level = Substituted Level - Cable loss + Antenna Gain

Margin = Limit - Absolute Level

FCC §2.1055, §90.213&RSS-197§5.3- FREQUENCY STABILITY

Applicable Standard

FCC §2.1055, §90.213 and RSS-197§5.3

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external AC power supply and the RF output was connected to a frequency counter via feed-through attenuators. The EUT was placed inside the temperature chamber. The AC 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 counter.

Test Equipment List and Details

Manufacturer	Description	Model No.	Serial No.	Calibration Date	Calibration Due Date
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-4	2017-09-10	2018-09-09
UNI-T	Multimeter	UT39A	M130199938	2017-04-10	2018-04-10
R&S	Wideband Radio Communication Tester	CMW500	149216	2017-10-8	2018-10-8
Unknown	Coaxial Cable	0.1m	C-1	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:	25 °C
Relative Humidity:	54 %
ATM Pressure:	100.1 kPa

The testing was performed by Sun Zhong on 2017-10-14.

Test Mode: Transmitting

Single Carrier:

QPSK, Channel Bandwidth:10MHz Middle Channel, $f_c = 3675$ MHz			
Power Supplied	Temperature	Frequency Error	Frequency Error
Vac	°C	Hz	ppm
120	-30	60.32	0.0164
	-20	69.23	0.0188
	-10	44.12	0.0120
	0	56.82	0.0155
	10	54.32	0.0148
	20	57.08	0.0155
	30	48.26	0.0131
	40	47.23	0.0129
	50	47.16	0.0128
102	25	48.25	0.0131
138	25	38.91	0.0106

16-QAM, Channel Bandwidth:10MHz Middle Channel, $f_c = 3675$ MHz			
Power Supplied	Temperature	Frequency Error	Frequency Error
Vac	°C	Hz	ppm
120	-30	60.33	0.0164
	-20	69.22	0.0188
	-10	43.32	0.0118
	0	54.32	0.0148
	10	51.32	0.0140
	20	52.28	0.0142
	30	43.34	0.0118
	40	44.22	0.0120
	50	43.22	0.0118
102	25	43.54	0.0118
138	25	34.31	0.0093

Carrier Aggregation:

QPSK, Channel Bandwidth:20+20 MHz Middle Channel, $f_c = 3675$ MHz			
Power Supplied	Temperature	Frequency Error	Frequency Error
Vac	°C	Hz	ppm
120	-30	67.45	0.0184
	-20	67.35	0.0183
	-10	67.86	0.0185
	0	62.31	0.0170
	10	62.35	0.0170
	20	65.38	0.0178
	30	65.54	0.0178
	40	65.46	0.0178
	50	66.73	0.0182
102	25	66.34	0.0181
138	25	64.32	0.0175

16-QAM, Channel Bandwidth: :20+20 MHz Middle Channel, $f_c = 3675$ MHz			
Power Supplied	Temperature	Frequency Error	Frequency Error
Vac	°C	Hz	ppm
120	-30	34.33	0.0093
	-20	49.24	0.0134
	-10	45.32	0.0123
	0	34.35	0.0093
	10	41.33	0.0112
	20	42.28	0.0115
	30	43.35	0.0118
	40	44.22	0.0120
	50	33.25	0.0090
102	25	44.34	0.0121
138	25	36.31	0.0099

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