



# RF TEST REPORT

**Applicant** Huawei Technologies Co., Ltd.  
**FCC ID** QISBLA-L29  
**Product** Smart Phone  
**Model** BLA-L29  
**Report No.** R1809H0120-R2  
**Issue Date** November 16, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2018)/ FCC CFR47 Part 27C (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

*Jiang peng Lan*

*Performed by: Jiangpeng Lan*

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## Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	27.50(h)(2)	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	27.53(m)	PASS
5	Peak-to-Average Power Ratio	27.50(d)/KDB971168 D01(5.7)	PASS
6	Frequency Stability	2.1055 / 27.54	PASS
7	Spurious Emissions at Antenna Terminals	27.53(m)	PASS
8	Radiates Spurious Emission	27.53(m)	PASS
Date of Testing: September 18, 2018 ~ October 27, 2018			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply with the essential requirements in the standard.			

**Note:**

The device has two SIM card slot, and two 2G/3G/4G TX antennas (Main Antenna and Secondary Antenna). Main antenna (Ant1) and Secondary antenna (Ant 2) can't transmit simultaneously which will be chosen based on the RSSI. Only one antenna can be used for 2G/3G/4G transmission at a time.

For SIM card slot and TX antennas RF test, each one should be applied throughout the compliance test respectively, and however, only the worst case (SIM 1) and Main antenna (Ant1) will be recorded in this report.

# 1 Test Laboratory

## 1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

## 1.2 Test facility

### **CNAS (accreditation number: L2264)**

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

### **FCC (Designation number: CN1179, Test Firm Registration Number: 446626)**

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

### **IC (recognition number is 8510A)**

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

### **VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)**

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

### **A2LA (Certificate Number: 3857.01)**

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

### 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.  
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City: Shanghai  
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## 2 General Description of Equipment under Test

### Client Information

<b>Applicant</b>	Huawei Technologies Co., Ltd.
<b>Applicant address</b>	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.
<b>Manufacturer</b>	Huawei Technologies Co., Ltd.
<b>Manufacturer address</b>	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.

### General information

EUT Description			
Model	BLA-L29		
IMEI	IMEI 1:866219030025331 IMEI 2:866219030029333		
Hardware Version	HL1BLAM		
Software Version	BLA-L29 8.0.0.69(C432)		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	LTE Band 7(CA_7C); LTE Band 38(CA_38C), LTE Band 41(CA_41C);		
Test Modulation	QPSK,16QAM, 64QAM		
LTE Category	Category 18		
Maximum E.I.R.P	LTE Band 7(CA_7C):	20.34dBm	
	LTE Band 38(CA_38C):	20.49dBm	
	LTE Band 41(CA_41C):	20.62dBm	
Rated Power Supply Voltage:	3.82V		
Extreme Voltage	Minimum: 3.6V    Maximum: 4.35V		
Extreme Temperature	Lowest: -40°C    Highest: +85°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	LTE Band 7(CA_7C):	2500 ~ 2570	2620 ~ 2690
	LTE Band 38(CA_38C):	2570 ~ 2620	2570 ~ 2620
	LTE Band 41(CA_41C):	2545 ~ 2655	2545 ~ 2655
EUT Accessory			
Battery 1	Manufacturer: SCUD (FUJIAN) Electronics Co., Ltd Model: HB436486ECW Power Rating: DC 3.82V, 3900mAh, Li-ion		
Battery 2	Manufacturer: Sunwoda Electronic Co., LTD Model: HB436486ECW Power Rating: DC 3.82V, 3900mAh, Li-ion		



Battery 3	Manufacturer: Desay Battery Co., Ltd. Model: HB436486ECW Power Rating: DC 3.82V, 3900mAh, Li-ion
Earphone 1	Manufacturer: JIANGXI LIANCHUANG HONGSHENG ELECTRONIC CO., LTD Model: MEND1632B729000
Earphone 2	Manufacturer: BOLUO COUNTY QUANCHENG ELECTRONIC CO., LTD Model: 1311-3301-6001-TC-296
Earphone 3	Manufacturer: Goer Tek Inc Model: WINDY-C
Earphone 4	Manufacturer: MERRY ELECTRONICS (SHENZHEN) CO., LTD. Model: L99EP003-CS-H
Earphone 5	Manufacturer: JIANGXI LIANCHUANG HONGSHENG ELECTRONIC CO., LTD Model: MEND1632B729001
Earphone 6	Manufacturer: BOLUO COUNTY QUANCHENG ELECTRONIC CO., LTD Model: 1311-3301-6001-TC-305
<p>Note: 1. The information of the EUT is declared by the manufacturer. 2. There are more than one Battery and Earphone, each one should be applied throughout the compliance test respectively, and however, only the worst case (Battery 1 and Earphone 1) will be recorded in this report.</p>	

### 3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

#### Test standards

**FCC CFR47 Part 2 (2018)**

**FCC CFR47 Part 27C (2018)**

**ANSI C63.26 (2015)**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

## 4 Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (X axis, vertical polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated.

Subsequently, only the worst case emissions are reported.

The following testing in LTE is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for LTE Band 7/38/41:

Test items	Modes	Bandwidth (MHz) (PCC+SCC)					Modulation			RB#offset (PCC+SCC)			Test Channel		
		5	10	15	15	20	QPSK	16QAM	64QAM	1#max+1#0	1#0+1#max	100%+100%	L	M	H
		+ 20	+ 20	+ 15	+ 20	+ 20									
RF power output	CA_7C	-	O	O	O	O	O	O	O	O	O	O	O	O	O
	CA_38C	-	-	O	-	O	O	O	O	O	O	O	O	O	O
	CA_41C	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Effective Isotropic Radiated power	CA_7C	-	O	O	O	O	O	O	O	O	O	O	O	O	O
	CA_38C	-	-	O	-	O	O	O	O	O	O	O	O	O	O
	CA_41C	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Occupied Bandwidth	CA_7C	-	O	O	O	O	O	O	O	-	-	O	-	O	-
	CA_38C	-	-	O	-	O	O	O	O	-	-	O	-	O	-
	CA_41C	O	O	O	O	O	O	O	O	-	-	O	-	O	-
Band Edge Compliance	CA_7C	-	O	-	-	O	O	O	O	O	-	O	O	-	O
	CA_38C	-	-	O	-	O	O	O	O	O	-	O	O	-	O
	CA_41C	O	-	-	-	O	O	O	O	O	-	O	O	-	O
Peak-to-Average Power Ratio	CA_7C	-	O	O	O	O	O	O	O	-	-	O	-	O	-
	CA_38C	-	-	O	-	O	O	O	O	-	-	O	-	O	-
	CA_41C	O	O	O	O	O	O	O	O	-	-	O	-	O	-
Frequency Stability	CA_7C	-	O	-	-	O	O	O	O	O	O	O	O	O	O
	CA_38C	-	-	O	-	O	O	O	O	O	O	O	O	O	O
	CA_41C	O	-	-	-	O	O	O	O	O	O	O	O	O	O
Spurious Emissions at Antenna Terminals	CA_7C	-	O	-	-	O	O	-	-	O	-	-	O	O	O
	CA_38C	-	-	O	-	O	O	-	-	O	-	-	O	O	O
	CA_41C	O	-	-	-	O	O	-	-	O	-	-	O	O	O
Radiates Spurious Emission	CA_7C	-	O	O	-	O	O	-	-	O	-	-	-	O	-
	CA_38C	-	-	O	-	O	O	-	-	O	-	-	-	O	-
	CA_41C	O	-	O	-	O	O	-	-	O	-	-	-	O	-
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.														

## 5 Test Case Results

### 5.1 RF Power Output

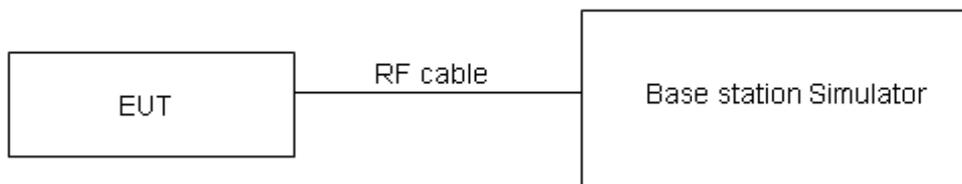
#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

#### Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

#### Limits

No specific RF power output requirements in part 2.1046.

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U=0.4$  dB.

**Test Results**

CA_7C	PCC		SCC1		PCC RB		SCC1 RB		Conducted Power (dBm)		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Size	Offset	Size	Offset	QPSK	16 QAM	64 QAM
10MHz+ 20MHz	20805	2505.5	20949	2519.9	1	49	1	0	21.95	20.68	20.04
	20805	2505.5	20949	2519.9	1	0	1	99	13.43	12.44	11.23
	20805	2505.5	20949	2519.9	50	0	100	0	19.11	18.98	17.56
	21006	2525.6	21150	2540	1	49	1	0	21.26	20.33	19.96
	21006	2525.6	21150	2540	1	0	1	99	12.52	11.86	11.30
	21006	2525.6	21150	2540	50	0	100	0	19.73	18.62	17.44
	21206	2545.6	21350	2560	1	49	1	0	21.55	20.78	19.57
	21206	2545.6	21350	2560	1	0	1	99	12.71	11.89	11.17
	21206	2545.6	21350	2560	50	0	100	0	19.74	18.56	17.43
20MHz+ 10MHz	20850	2510	20994	2524.4	1	99	1	0	22.21	21.32	21.07
	20850	2510	20994	2524.4	1	0	1	49	13.08	12.36	11.16
	20850	2510	20994	2524.4	100	0	50	0	19.93	18.94	17.76
	21051	2530.1	21195	2544.5	1	99	1	0	22.12	21.33	20.73
	21051	2530.1	21195	2544.5	1	0	1	49	13.30	11.62	11.20
	21051	2530.1	21195	2544.5	100	0	50	0	19.69	18.97	17.77
	21251	2550.1	21395	2564.5	1	99	1	0	22.00	21.24	20.86
	21251	2550.1	21395	2564.5	1	0	1	49	12.98	12.18	11.79
	21251	2550.1	21395	2564.5	100	0	50	0	19.73	18.12	17.89
15MHz+ 15MHz	20825	2507.5	20975	2522.5	1	74	1	0	21.87	21.02	20.80
	20825	2507.5	20975	2522.5	1	0	1	74	13.16	12.38	12.07
	20825	2507.5	20975	2522.5	75	0	75	0	19.41	18.35	17.68
	21025	2527.5	21175	2542.5	1	74	1	0	21.80	20.92	20.33
	21025	2527.5	21175	2542.5	1	0	1	74	13.24	12.32	11.12
	21025	2527.5	21175	2542.5	75	0	75	0	19.71	18.55	17.33
	21225	2547.5	21375	2562.5	1	74	1	0	21.77	21.00	20.45
	21225	2547.5	21375	2562.5	1	0	1	74	13.41	12.42	12.03
	21225	2547.5	21375	2562.5	75	0	75	0	19.88	18.76	17.59
15MHz+ 20MHz	20828	2507.8	20999	2524.9	1	74	1	0	21.49	20.16	19.37
	20828	2507.8	20999	2524.9	1	0	1	99	13.02	12.27	12.03
	20828	2507.8	20999	2524.9	75	0	100	0	19.50	18.44	17.22
	21003	2525.3	21174	2542.4	1	74	1	0	21.95	20.59	19.79
	21003	2525.3	21174	2542.4	1	0	1	99	13.31	12.55	12.29
	21003	2525.3	21174	2542.4	75	0	100	0	19.65	18.62	17.38
	21179	2542.9	21350	2560	1	74	1	0	21.55	20.66	19.44
	21179	2542.9	21350	2560	1	0	1	99	13.13	12.81	12.09
	21179	2542.9	21350	2560	75	0	100	0	20.78	19.75	18.51
20MHz+ 15MHz	20850	2510	21021	2527.1	1	99	1	0	22.32	21.39	21.06
	20850	2510	21021	2527.1	1	0	1	74	13.33	12.47	11.27



	20850	2510	21021	2527.1	100	0	75	0	19.83	18.81	17.67
	21026	2527.6	21197	2544.7	1	99	1	0	22.22	21.17	20.67
	21026	2527.6	21197	2544.7	1	0	1	74	13.59	12.66	11.51
	21026	2527.6	21197	2544.7	100	0	75	0	19.80	18.84	18.07
	21201	2545.1	21372	2562.2	1	99	1	0	22.06	21.13	20.83
	21201	2545.1	21372	2562.2	1	0	1	74	13.02	12.42	12.01
	21201	2545.1	21372	2562.2	100	0	75	0	19.25	18.18	17.88
20MHz+ 20MHz	20850	2510	21048	2529.8	1	99	1	0	21.22	20.17	19.83
	20850	2510	21048	2529.8	1	0	1	99	13.54	12.37	11.78
	20850	2510	21048	2529.8	100	0	100	0	19.94	18.88	17.71
	21001	2525.1	21199	2544.9	1	99	1	0	21.70	20.52	19.37
	21001	2525.1	21199	2544.9	1	0	1	99	13.17	12.24	11.13
	21001	2525.1	21199	2544.9	100	0	100	0	19.67	18.62	17.42
	21152	2540.2	21350	2560	1	99	1	0	21.77	20.88	20.70
	21152	2540.2	21350	2560	1	0	1	99	13.22	12.20	11.95
	21152	2540.2	21350	2560	100	0	100	0	19.75	18.69	17.88

CA_38C	PCC		SCC1		PCC RB		SCC1 RB		Conducted Power (dBm)		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Size	Offset	Size	Offset	QPSK	16 QAM	64 QAM
15MHz+ 15MHz	37825	2577.5	37975	2592.5	1	74	1	0	22.64	21.44	21.02
	37825	2577.5	37975	2592.5	1	0	1	74	10.61	10.02	9.59
	37825	2577.5	37975	2592.5	75	0	75	0	20.23	19.27	18.31
	37925	2587.5	38075	2602.5	1	74	1	0	22.34	21.42	20.95
	37925	2587.5	38075	2602.5	1	0	1	74	10.84	9.59	9.03
	37925	2587.5	38075	2602.5	75	0	75	0	20.31	19.32	18.42
	38025	2597.5	38175	2612.5	1	74	1	0	22.88	22.05	21.74
	38025	2597.5	38175	2612.5	1	0	1	74	10.28	9.55	9.03
20MHz+ 20MHz	37850	2580	38048	2599.8	1	99	1	0	21.95	20.75	20.10
	37850	2580	38048	2599.8	1	0	1	99	11.46	9.57	8.77
	37850	2580	38048	2599.8	100	0	100	0	19.88	18.97	18.29
	37901	2585.1	38099	2604.9	1	99	1	0	22.14	20.93	20.57
	37901	2585.1	38099	2604.9	1	0	1	99	10.86	9.10	8.83
	37901	2585.1	38099	2604.9	100	0	100	0	19.97	18.88	17.93
	37952	2590.2	38150	2610	1	99	1	0	22.03	20.97	20.44
	37952	2590.2	38150	2610	1	0	1	99	10.82	9.35	9.11
	37952	2590.2	38150	2610	100	0	100	0	20.03	19.43	18.17

CA_41C	PCC		SCC1		PCC RB		SCC1 RB		Conducted Power (dBm)		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Size	Offset	Size	Offset	QPSK	16 QAM	64 QAM
5MHz+ 20MHz	40165	2547.5	40282	2559.2	1	24	1	0	22.41	21.54	20.32
	40165	2547.5	40282	2559.2	1	0	1	99	10.63	9.92	9.61
	40165	2547.5	40282	2559.2	25	0	100	0	19.95	19.03	18.06
	40598	2590.8	40715	2602.5	1	24	1	0	22.43	21.60	20.39
	40598	2590.8	40715	2602.5	1	0	1	99	10.85	9.42	9.22
	40598	2590.8	40715	2602.5	25	0	100	0	19.89	18.81	17.99
	41023	2633.3	41140	2645	1	24	1	0	22.51	21.49	20.24
	41023	2633.3	41140	2645	1	0	1	99	10.66	9.94	8.78
	41023	2633.3	41140	2645	25	0	100	0	19.89	18.90	17.93
20MHz+ 5MHz	40240	2555	40357	2566.7	1	99	1	0	22.58	21.70	20.86
	40240	2555	40357	2566.7	1	0	1	24	10.86	9.80	8.56
	40240	2555	40357	2566.7	100	0	25	0	20.09	19.13	18.91
	40665	2597.5	40782	2609.2	1	99	1	0	22.46	21.94	20.75
	40665	2597.5	40782	2609.2	1	0	1	24	10.73	9.52	8.27
	40665	2597.5	40782	2609.2	100	0	25	0	19.45	18.54	18.11
	41098	2640.8	41215	2652.5	1	99	1	0	22.06	21.33	21.02
	41098	2640.8	41215	2652.5	1	0	1	24	10.28	9.93	8.71
10MHz+ 20MHz	40190	2550	40334	2564.4	1	49	1	0	21.98	20.94	19.71
	40190	2550	40334	2564.4	1	0	1	99	10.94	9.08	8.86
	40190	2550	40334	2564.4	50	0	100	0	19.97	18.93	17.77
	40596	2590.6	40740	2605	1	49	1	0	21.95	20.96	20.01
	40596	2590.6	40740	2605	1	0	1	99	10.71	9.02	8.83
	40596	2590.6	40740	2605	50	0	100	0	19.88	18.97	18.84
	40996	2630.6	41140	2645	1	49	1	0	21.86	20.65	19.73
	40996	2630.6	41140	2645	1	0	1	99	11.09	10.06	8.87
	40996	2630.6	41140	2645	50	0	100	0	19.91	18.96	17.82
20MHz+ 10MHz	40240	2555	40384	2569.4	1	99	1	0	22.33	21.32	21.06
	40240	2555	40384	2569.4	1	0	1	49	11.03	10.11	8.90
	40240	2555	40384	2569.4	100	0	50	0	19.63	18.97	18.28
	40641	2595.1	40785	2609.5	1	99	1	0	22.38	21.48	21.01
	40641	2595.1	40785	2609.5	1	0	1	49	10.53	9.11	8.88
	40641	2595.1	40785	2609.5	100	0	50	0	20.26	19.31	18.46
	41046	2635.6	41190	2650	1	99	1	0	22.72	21.37	21.04
	41046	2635.6	41190	2650	1	0	1	49	10.19	9.35	9.11
	41046	2635.6	41190	2650	100	0	50	0	20.64	19.60	18.34
15MHz+ 15MHz	40215	2552.5	40365	2567.5	1	74	1	0	21.92	20.96	20.71
	40215	2552.5	40365	2567.5	1	0	1	74	10.36	9.76	8.52



	40215	2552.5	40365	2567.5	75	0	75	0	19.95	18.83	17.86
	40615	2592.5	40765	2607.5	1	74	1	0	22.09	21.35	20.93
	40615	2592.5	40765	2607.5	1	0	1	74	10.52	9.81	8.60
	40615	2592.5	40765	2607.5	75	0	75	0	19.79	18.71	17.48
	41014	2632.5	41165	2647.5	1	74	1	0	22.00	21.14	20.88
	41014	2632.5	41165	2647.5	1	0	1	74	10.32	9.56	8.39
	41014	2632.5	41165	2647.5	75	0	75	0	20.17	19.11	18.93
15MHz+ 20MHz	40215	2552.5	40386	2569.6	1	74	1	0	22.57	20.89	19.59
	40215	2552.5	40386	2569.6	1	0	1	99	10.55	9.77	8.52
	40215	2552.5	40386	2569.6	75	0	100	0	20.30	19.11	18.88
	40593	2590.3	40764	2607.4	1	74	1	0	22.65	21.62	20.41
	40593	2590.3	40764	2607.4	1	0	1	99	11.15	10.18	9.91
	40593	2590.3	40764	2607.4	75	0	100	0	19.74	18.75	18.15
	40969	2627.9	41140	2645	1	74	1	0	21.81	20.84	19.57
40969	2627.9	41140	2645	1	0	1	99	10.71	10.21	9.93	
40969	2627.9	41140	2645	75	0	100	0	20.41	19.33	18.03	
20MHz+ 15MHz	40240	2555	40411	2572.1	1	99	1	0	22.30	21.11	20.75
	40240	2555	40411	2572.1	1	0	1	74	10.44	9.21	8.96
	40240	2555	40411	2572.1	100	0	75	0	20.07	19.04	18.83
	40616	2592.6	40787	2609.7	1	99	1	0	22.18	21.22	20.99
	40616	2592.6	40787	2609.7	1	0	1	74	10.51	9.57	8.35
	40616	2592.6	40787	2609.7	100	0	75	0	19.74	18.86	17.92
	40994	2630.4	41165	2647.5	1	99	1	0	22.70	21.34	20.87
	40994	2630.4	41165	2647.5	1	0	1	74	10.43	9.37	9.09
	40994	2630.4	41165	2647.5	100	0	75	0	19.74	18.59	18.21
20MHz+ 20MHz	40240	2555	40438	2574.8	1	99	1	0	21.88	20.68	19.37
	40240	2555	40438	2574.8	1	0	1	99	10.50	9.66	8.40
	40240	2555	40438	2574.8	100	0	100	0	19.96	18.92	17.68
	40591	2590.1	40789	2609.9	1	99	1	0	21.88	21.04	19.82
	40591	2590.1	40789	2609.9	1	0	1	99	10.53	9.90	8.62
	40591	2590.1	40789	2609.9	100	0	100	0	20.49	19.44	18.18
	40942	2625.2	41140	2645	1	99	1	0	22.28	21.46	20.22
	40942	2625.2	41140	2645	1	0	1	99	10.68	9.63	9.08
	40942	2625.2	41140	2645	100	0	100	0	20.13	18.87	17.64

## 5.2 Effective Isotropic Radiated Power

### Ambient condition

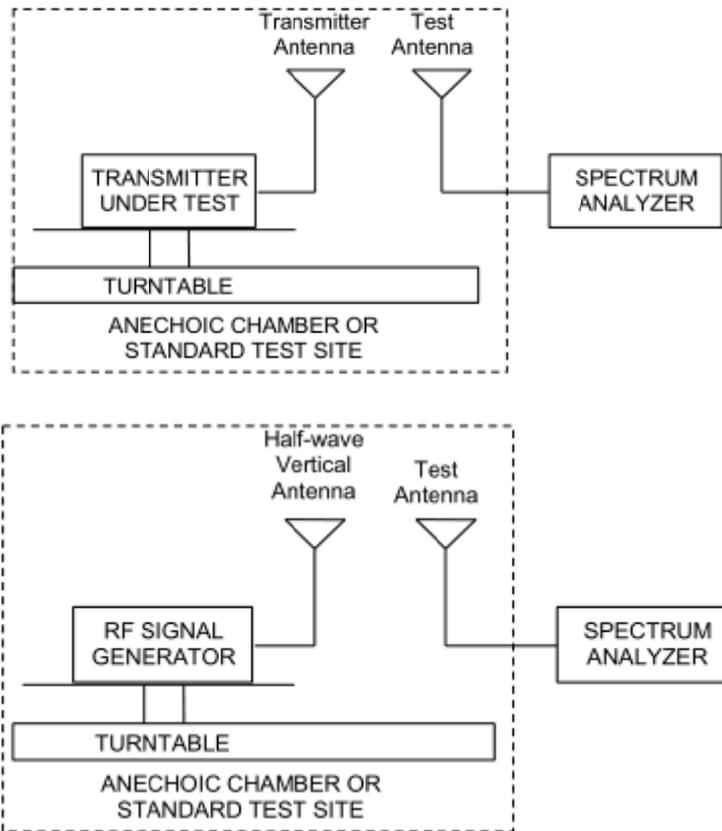
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Methods of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
  - a) Connect the equipment as illustrated. Mount the equipment with the manufacturer specified antenna in a vertical orientation on a manufacturer specified mounting surface located on a non-conducting rotating platform of a RF anechoic chamber (preferred) or a standard radiation site.
  - b) Key the transmitter, then rotate the EUT 360° azimuthally and record spectrum analyzer power level (LVL) measurements at angular increments that are sufficiently small to permit resolution of all peaks. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading at each angular increment. (Note: several batteries may be needed to offset the effect of battery voltage droop, which should not exceed 5% of the manufactured specified battery voltage during transmission).
  - c) Replace the transmitter under test with a vertically polarized half-wave dipole (or an antenna whose gain is known relative to an ideal half-wave dipole). The center of the antenna should be at the same location as the center of the antenna under test.
  - d) Connect the antenna to a signal generator with a known output power and record the path loss (in dB) as LOSS. If a standard radiation test site is used, raise and lower the test antenna to obtain a maximum reading.  $LOSS = \text{Generator Output Power (dBm)} - \text{Analyzer reading (dBm)}$
  - e) Determine the effective radiated output power at each angular position from the readings in steps b) and d) using the following equation:  $ERP \text{ (dBm)} = LVL \text{ (dBm)} + LOSS \text{ (dB)}$
  - f) The maximum ERP is the maximum value determined in the preceding step.
  - g) When calculating ERP, in addition to knowing the antenna radiation and matching characteristics, it is necessary to know the loss values of all elements (e.g. transmission line attenuation, mismatches, filters, combiners) interposed between the point where transmitter output power is measured, and the point where power is applied to the antenna. ERP can then be calculated as follows:  
 $EIRP \text{ (dBm)} = \text{Output Power (dBm)} - \text{Losses (dB)} + \text{Antenna Gain (dBd)}$   
 where: dBd refers to gain relative to an ideal dipole.  
 $EIRP \text{ (dBm)} = ERP \text{ (dBm)} + 2.15 \text{ (dB.)}$

The RB allocation refers to section 5.1, using the maximum output power configuration.

**Test setup**



Note: Area side:2.4mX3.6m

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the worst case was recorded.

**Limits**

Rule Part 27.50(h) (2) specifies that “Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.”

Part 27.50(h)(2) Limit	≤ 2 W (33 dBm)
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**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 1.19$  dB

**Test Results**

The measurement is performed for both of horizontal and vertical antenna Polarization, and only the data of worst mode is recorded in this report.

CA_7C	PCC		SCC1		Polarization	EIRP (dBm)
	Channel	Frequency (MHz)	Channel	Frequency (MHz)		
10MHz+20MHz_QPSK	20805	2505.5	20949	2519.9	H	19.21
10MHz+20MHz_16QAM	20805	2505.5	20949	2519.9	H	18.73
10MHz+20MHz_64QAM	20805	2505.5	20949	2519.9	H	18.67
10MHz+20MHz_QPSK	21006	2525.6	21150	2540	H	18.86
10MHz+20MHz_16QAM	21006	2525.6	21150	2540	H	18.42
10MHz+20MHz_64QAM	21006	2525.6	21150	2540	H	18.23
10MHz+20MHz_QPSK	21206	2545.6	21350	2560	H	18.77
10MHz+20MHz_16QAM	21206	2545.6	21350	2560	H	18.34
10MHz+20MHz_64QAM	21206	2545.6	21350	2560	H	18.13
20MHz+10MHz_QPSK	20850	2510	20994	2524.4	H	19.45
20MHz+10MHz_16QAM	20850	2510	20994	2524.4	H	19.02
20MHz+10MHz_64QAM	20850	2510	20994	2524.4	H	18.86
20MHz+10MHz_QPSK	21051	2530.1	21195	2544.5	H	19.48
20MHz+10MHz_16QAM	21051	2530.1	21195	2544.5	H	19.13
20MHz+10MHz_64QAM	21051	2530.1	21195	2544.5	H	18.97
20MHz+10MHz_QPSK	21251	2550.1	21395	2564.5	H	19.31
20MHz+10MHz_16QAM	21251	2550.1	21395	2564.5	H	18.97
20MHz+10MHz_64QAM	21251	2550.1	21395	2564.5	H	18.67
15MHz+15MHz_QPSK	20825	2507.5	20975	2522.5	H	19.90
15MHz+15MHz_16QAM	20825	2507.5	20975	2522.5	H	19.54
15MHz+15MHz_64QAM	20825	2507.5	20975	2522.5	H	19.36
15MHz+15MHz_QPSK	21025	2527.5	21175	2542.5	H	20.01
15MHz+15MHz_16QAM	21025	2527.5	21175	2542.5	H	19.67
15MHz+15MHz_64QAM	21025	2527.5	21175	2542.5	H	19.48
15MHz+15MHz_QPSK	21225	2547.5	21375	2562.5	H	19.95
15MHz+15MHz_16QAM	21225	2547.5	21375	2562.5	H	19.63
15MHz+15MHz_64QAM	21225	2547.5	21375	2562.5	H	19.50
15MHz+20MHz_QPSK	20828	2507.8	20999	2524.9	H	18.83
15MHz+20MHz_16QAM	20828	2507.8	20999	2524.9	H	18.51
15MHz+20MHz_64QAM	20828	2507.8	20999	2524.9	H	18.32
15MHz+20MHz_QPSK	21003	2525.3	21174	2542.4	H	18.65
15MHz+20MHz_16QAM	21003	2525.3	21174	2542.4	H	18.42
15MHz+20MHz_64QAM	21003	2525.3	21174	2542.4	H	18.21
15MHz+20MHz_QPSK	21179	2542.9	21350	2560	H	18.73
15MHz+20MHz_16QAM	21179	2542.9	21350	2560	H	18.43
15MHz+20MHz_64QAM	21179	2542.9	21350	2560	H	18.23
20MHz+15MHz_QPSK	20850	2510	21021	2527.1	H	19.69



20MHz+15MHz_16QAM	20850	2510	21021	2527.1	H	19.52
20MHz+15MHz_64QAM	20850	2510	21021	2527.1	H	19.23
20MHz+15MHz_QPSK	21026	2527.6	21197	2544.7	H	20.02
20MHz+15MHz_16QAM	21026	2527.6	21197	2544.7	H	19.76
20MHz+15MHz_64QAM	21026	2527.6	21197	2544.7	H	19.55
20MHz+15MHz_QPSK	21201	2545.1	21372	2562.2	H	19.99
20MHz+15MHz_16QAM	21201	2545.1	21372	2562.2	H	19.58
20MHz+15MHz_64QAM	21201	2545.1	21372	2562.2	H	19.24
20MHz+20MHz_QPSK	20850	2510	21048	2529.8	H	19.35
20MHz+20MHz_16QAM	20850	2510	21048	2529.8	H	19.02
20MHz+20MHz_64QAM	20850	2510	21048	2529.8	H	18.76
20MHz+20MHz_QPSK	21001	2525.1	21199	2544.9	H	19.75
20MHz+20MHz_16QAM	21001	2525.1	21199	2544.9	H	19.28
20MHz+20MHz_64QAM	21001	2525.1	21199	2544.9	H	19.03
20MHz+20MHz_QPSK	21152	2540.2	21350	2560	H	20.34
20MHz+20MHz_16QAM	21152	2540.2	21350	2560	H	19.98
20MHz+20MHz_64QAM	21152	2540.2	21350	2560	H	19.75

CA_38C	PCC		SCC1		Polarization	EIRP (dBm)
	Channel	Frequency (MHz)	Channel	Frequency (MHz)		
15MHz+15MHz_QPSK	37825	2577.5	37975	2592.5	H	20.25
15MHz+15MHz_16QAM	37825	2577.5	37975	2592.5	H	19.82
15MHz+15MHz_64QAM	37825	2577.5	37975	2592.5	H	19.78
15MHz+15MHz_QPSK	37925	2587.5	38075	2602.5	H	20.38
15MHz+15MHz_16QAM	37925	2587.5	38075	2602.5	H	19.79
15MHz+15MHz_64QAM	37925	2587.5	38075	2602.5	H	19.65
15MHz+15MHz_QPSK	38025	2597.5	38175	2612.5	H	20.49
15MHz+15MHz_16QAM	38025	2597.5	38175	2612.5	H	20.03
15MHz+15MHz_64QAM	38025	2597.5	38175	2612.5	H	19.89
20MHz+20MHz_QPSK	37850	2580	38048	2599.8	H	19.73
20MHz+20MHz_16QAM	37850	2580	38048	2599.8	H	19.16
20MHz+20MHz_64QAM	37850	2580	38048	2599.8	H	19.10
20MHz+20MHz_QPSK	37901	2585.1	38099	2604.9	H	19.55
20MHz+20MHz_16QAM	37901	2585.1	38099	2604.9	H	19.15
20MHz+20MHz_64QAM	37901	2585.1	38099	2604.9	H	19.01
20MHz+20MHz_QPSK	37952	2590.2	38150	2610	H	19.68
20MHz+20MHz_16QAM	37952	2590.2	38150	2610	H	19.26
20MHz+20MHz_64QAM	37952	2590.2	38150	2610	H	19.12

CA_41C	PCC		SCC1		Polarization	EIRP (dBm)
	Channel	Frequency (MHz)	Channel	Frequency (MHz)		
5MHz+20MHz_QPSK	40165	2547.5	40282	2559.2	H	18.60
5MHz+20MHz_16QAM	40165	2547.5	40282	2559.2	H	18.42
5MHz+20MHz_64QAM	40165	2547.5	40282	2559.2	H	18.21
5MHz+20MHz_QPSK	40598	2590.8	40715	2602.5	H	19.26
5MHz+20MHz_16QAM	40598	2590.8	40715	2602.5	H	18.95
5MHz+20MHz_64QAM	40598	2590.8	40715	2602.5	H	18.68
5MHz+20MHz_QPSK	41023	2633.3	41140	2645	H	19.52
5MHz+20MHz_16QAM	41023	2633.3	41140	2645	H	19.21
5MHz+20MHz_64QAM	41023	2633.3	41140	2645	H	19.07
20MHz+5MHz_QPSK	40240	2555	40357	2566.7	H	20.02
20MHz+5MHz_16QAM	40240	2555	40357	2566.7	H	19.68
20MHz+5MHz_64QAM	40240	2555	40357	2566.7	H	19.54
20MHz+5MHz_QPSK	40665	2597.5	40782	2609.2	H	20.31
20MHz+5MHz_16QAM	40665	2597.5	40782	2609.2	H	20.03
20MHz+5MHz_64QAM	40665	2597.5	40782	2609.2	H	19.75
20MHz+5MHz_QPSK	41098	2640.8	41215	2652.5	H	20.23
20MHz+5MHz_16QAM	41098	2640.8	41215	2652.5	H	19.97
20MHz+5MHz_64QAM	41098	2640.8	41215	2652.5	H	19.65
10MHz+20MHz_QPSK	40190	2550	40334	2564.4	H	18.00
10MHz+20MHz_16QAM	40190	2550	40334	2564.4	H	17.74
10MHz+20MHz_64QAM	40190	2550	40334	2564.4	H	17.51
10MHz+20MHz_QPSK	40596	2590.6	40740	2605	H	20.39
10MHz+20MHz_16QAM	40596	2590.6	40740	2605	H	20.12
10MHz+20MHz_64QAM	40596	2590.6	40740	2605	H	19.78
10MHz+20MHz_QPSK	40996	2630.6	41140	2645	H	19.32
10MHz+20MHz_16QAM	40996	2630.6	41140	2645	H	19.02
10MHz+20MHz_64QAM	40996	2630.6	41140	2645	H	18.75
20MHz+10MHz_QPSK	40240	2555	40384	2569.4	H	19.83
20MHz+10MHz_16QAM	40240	2555	40384	2569.4	H	19.57
20MHz+10MHz_64QAM	40240	2555	40384	2569.4	H	19.24
20MHz+10MHz_QPSK	40641	2595.1	40785	2609.5	H	19.97
20MHz+10MHz_16QAM	40641	2595.1	40785	2609.5	H	19.61
20MHz+10MHz_64QAM	40641	2595.1	40785	2609.5	H	19.42
20MHz+10MHz_QPSK	41046	2635.6	41190	2650	H	20.62
20MHz+10MHz_16QAM	41046	2635.6	41190	2650	H	20.30
20MHz+10MHz_64QAM	41046	2635.6	41190	2650	H	20.08
15MHz+15MHz_QPSK	40215	2552.5	40365	2567.5	H	19.75
15MHz+15MHz_16QAM	40215	2552.5	40365	2567.5	H	19.52
15MHz+15MHz_64QAM	40215	2552.5	40365	2567.5	H	19.32



15MHz+15MHz_QPSK	40615	2592.5	40765	2607.5	H	19.83
15MHz+15MHz_16QAM	40615	2592.5	40765	2607.5	H	19.54
15MHz+15MHz_64QAM	40615	2592.5	40765	2607.5	H	19.21
15MHz+15MHz_QPSK	41014	2632.5	41165	2647.5	H	20.31
15MHz+15MHz_16QAM	41014	2632.5	41165	2647.5	H	19.87
15MHz+15MHz_64QAM	41014	2632.5	41165	2647.5	H	19.59
15MHz+20MHz_QPSK	40215	2552.5	40386	2569.6	H	18.23
15MHz+20MHz_16QAM	40215	2552.5	40386	2569.6	H	17.84
15MHz+20MHz_64QAM	40215	2552.5	40386	2569.6	H	17.67
15MHz+20MHz_QPSK	40593	2590.3	40764	2607.4	H	18.28
15MHz+20MHz_16QAM	40593	2590.3	40764	2607.4	H	17.96
15MHz+20MHz_64QAM	40593	2590.3	40764	2607.4	H	17.79
15MHz+20MHz_QPSK	40969	2627.9	41140	2645	H	19.05
15MHz+20MHz_16QAM	40969	2627.9	41140	2645	H	18.87
15MHz+20MHz_64QAM	40969	2627.9	41140	2645	H	18.62
20MHz+15MHz_QPSK	40240	2555	40411	2572.1	H	19.89
20MHz+15MHz_16QAM	40240	2555	40411	2572.1	H	19.65
20MHz+15MHz_64QAM	40240	2555	40411	2572.1	H	19.43
20MHz+15MHz_QPSK	40616	2592.6	40787	2609.7	H	20.05
20MHz+15MHz_16QAM	40616	2592.6	40787	2609.7	H	19.73
20MHz+15MHz_64QAM	40616	2592.6	40787	2609.7	H	19.54
20MHz+15MHz_QPSK	40994	2630.4	41165	2647.5	H	20.26
20MHz+15MHz_16QAM	40994	2630.4	41165	2647.5	H	20.01
20MHz+15MHz_64QAM	40994	2630.4	41165	2647.5	H	19.87
20MHz+20MHz_QPSK	40240	2555	40438	2574.8	H	18.13
20MHz+20MHz_16QAM	40240	2555	40438	2574.8	H	17.95
20MHz+20MHz_64QAM	40240	2555	40438	2574.8	H	17.82
20MHz+20MHz_QPSK	40591	2590.1	40789	2609.9	H	18.19
20MHz+20MHz_16QAM	40591	2590.1	40789	2609.9	H	17.89
20MHz+20MHz_64QAM	40591	2590.1	40789	2609.9	H	17.77
20MHz+20MHz_QPSK	40942	2625.2	41140	2645	H	19.17
20MHz+20MHz_16QAM	40942	2625.2	41140	2645	H	18.76
20MHz+20MHz_64QAM	40942	2625.2	41140	2645	H	18.56

### 5.3 Occupied Bandwidth

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

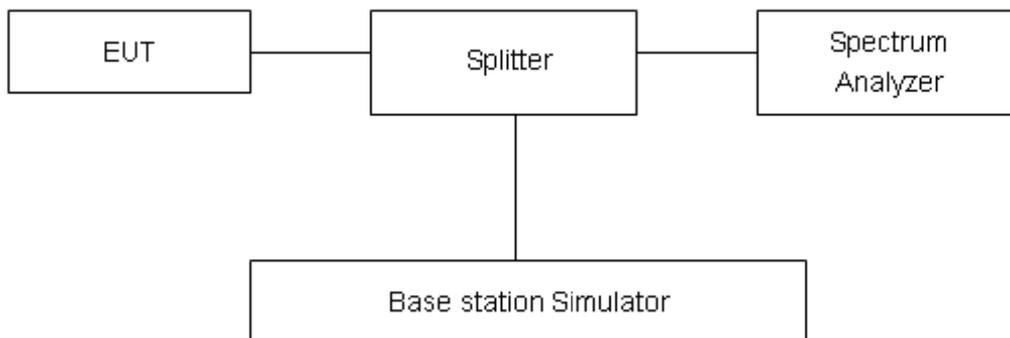
#### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer.

RBW is set to 1MHz, VBW is set to 3MHz for LTE Band 7/38/41.

99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

#### Test Setup



#### Limits

No specific occupied bandwidth requirements in part 2.1049.

#### Measurement Uncertainty

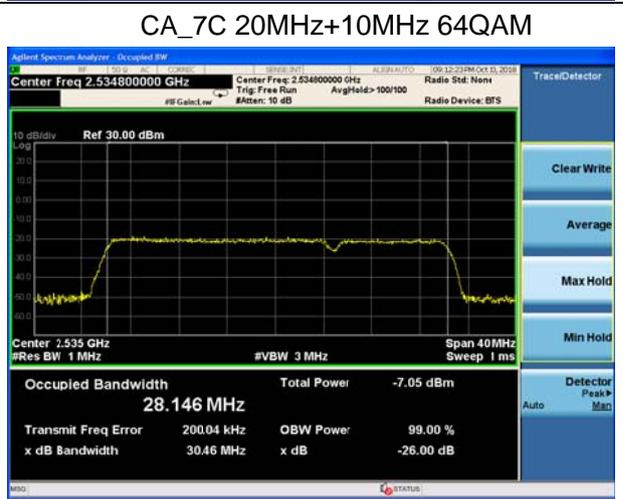
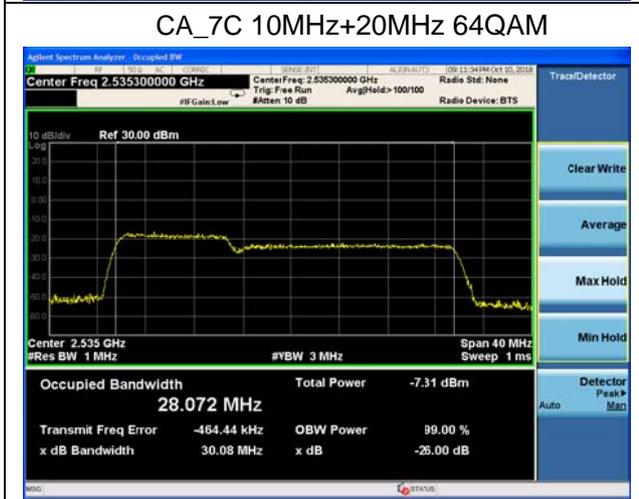
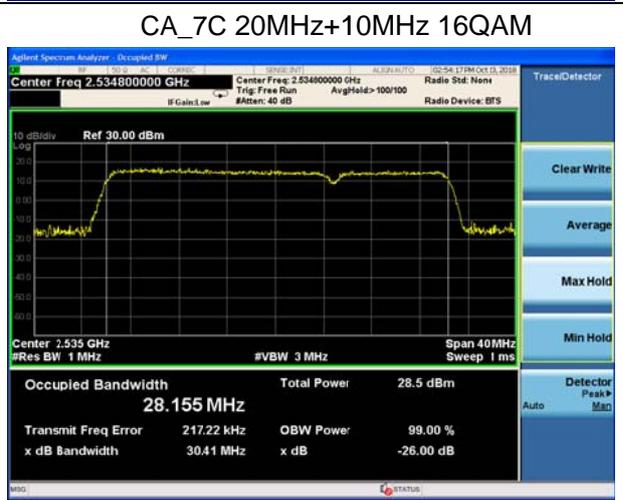
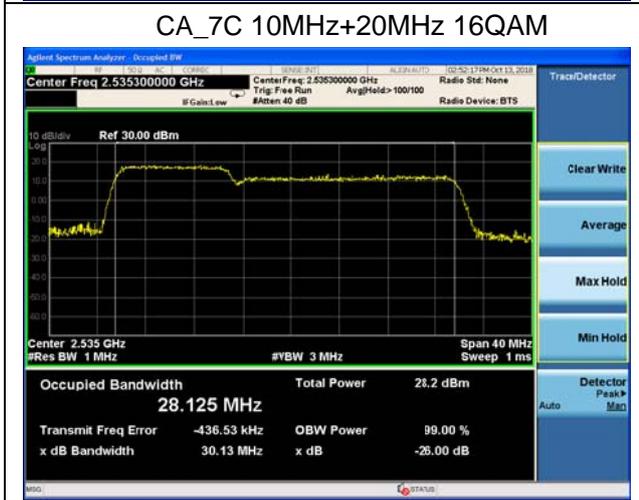
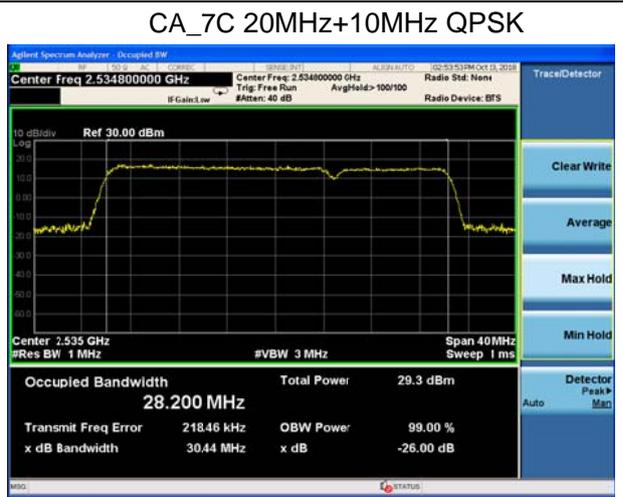
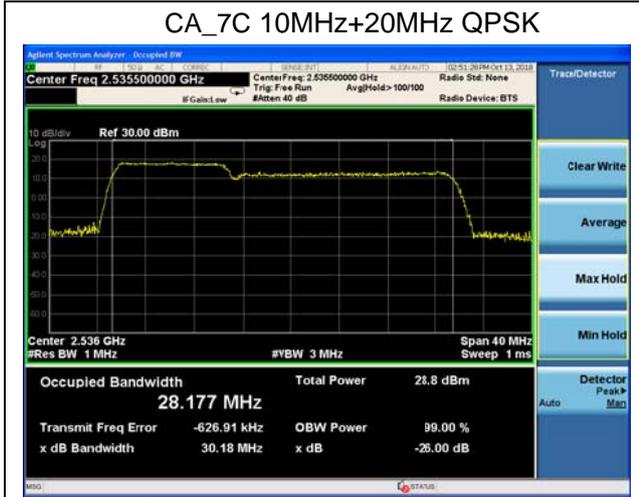
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U=624\text{Hz}$ .

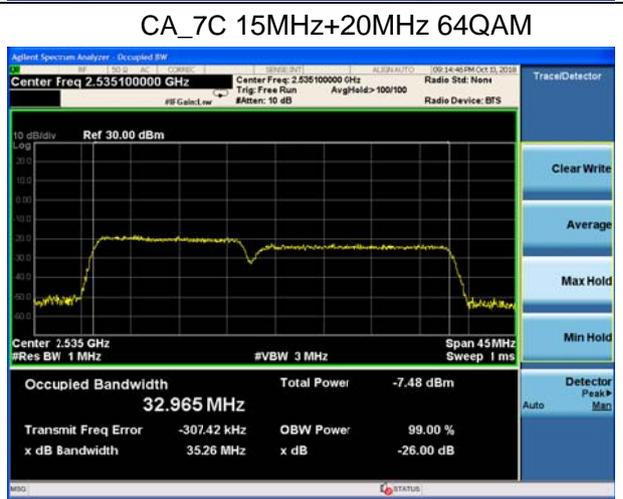
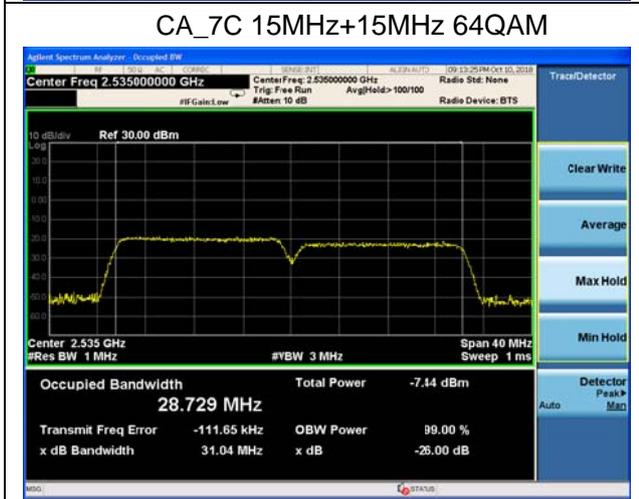
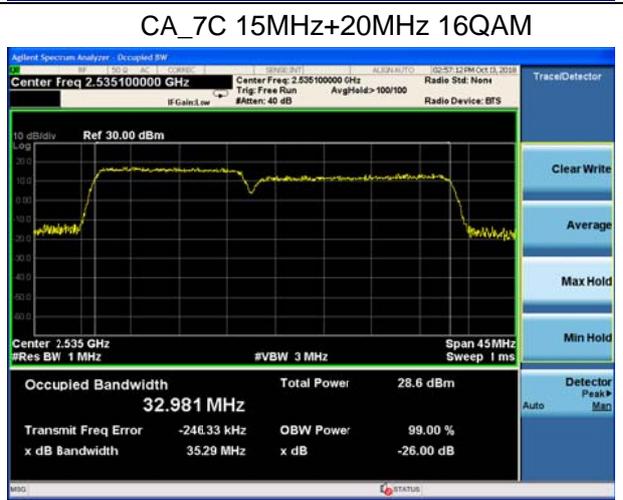
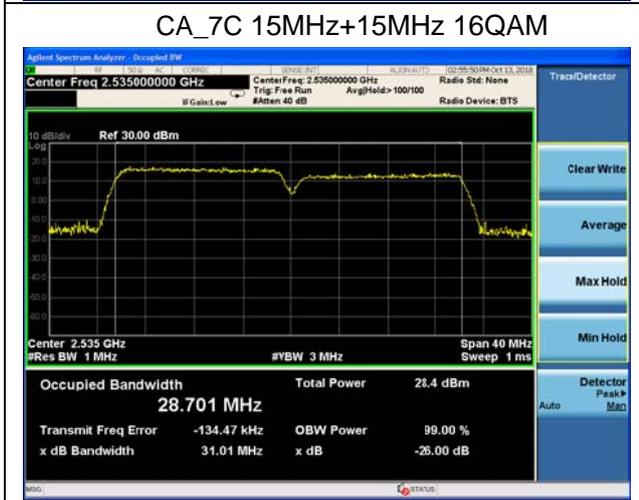
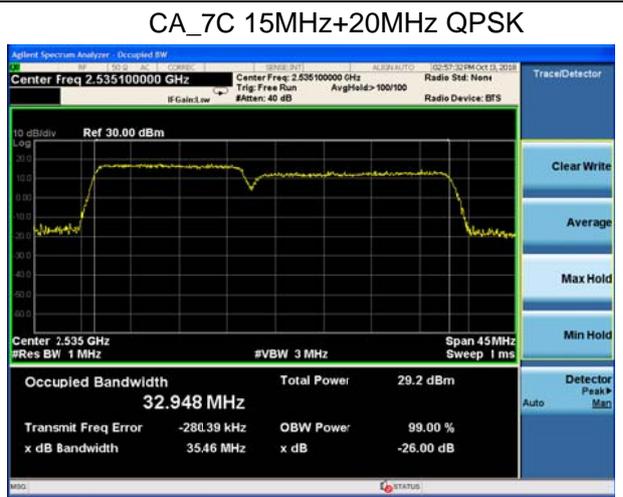
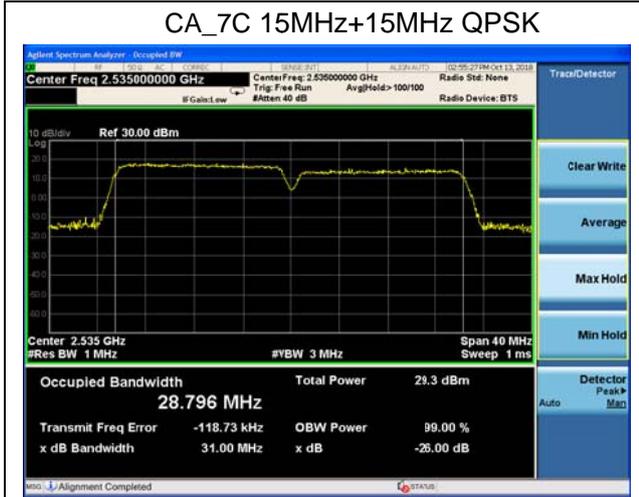
**Test Result**

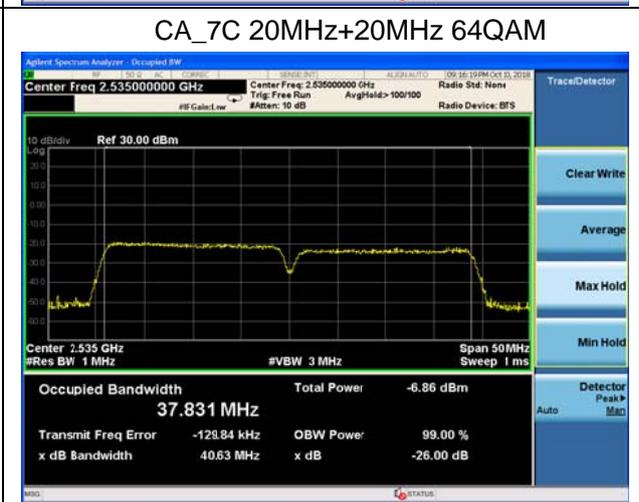
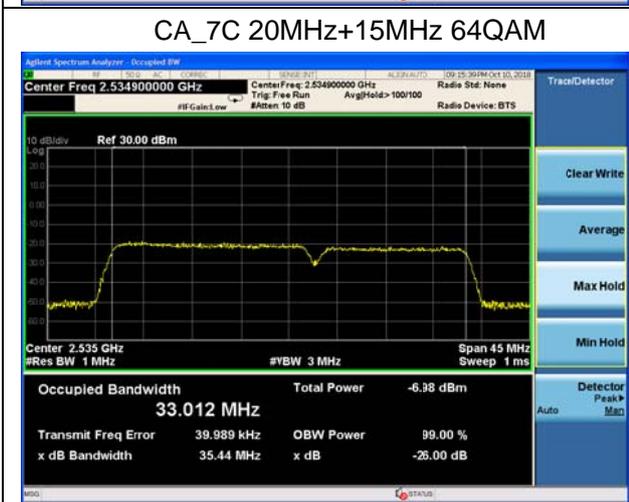
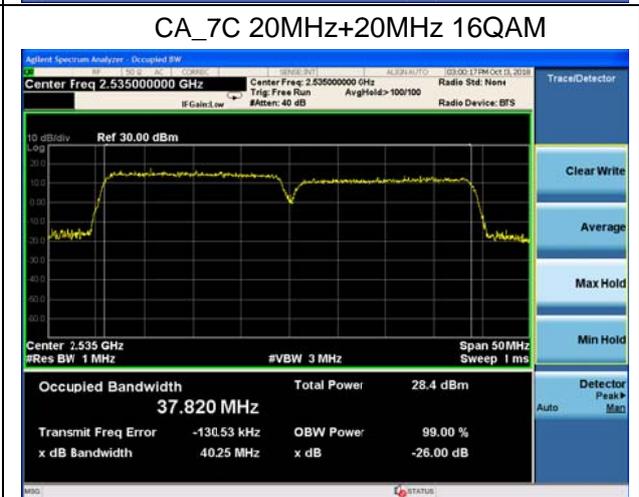
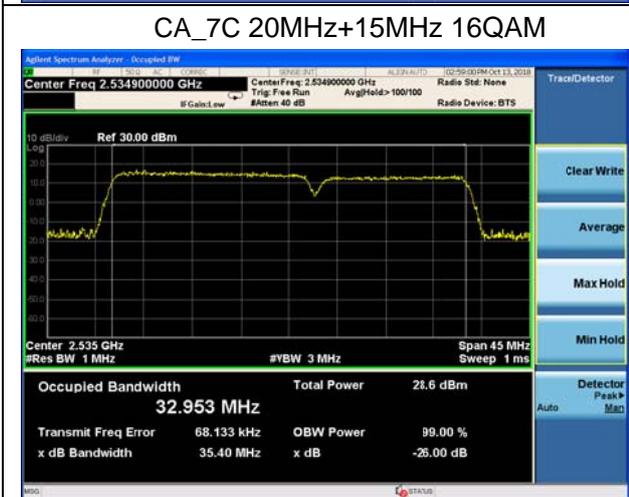
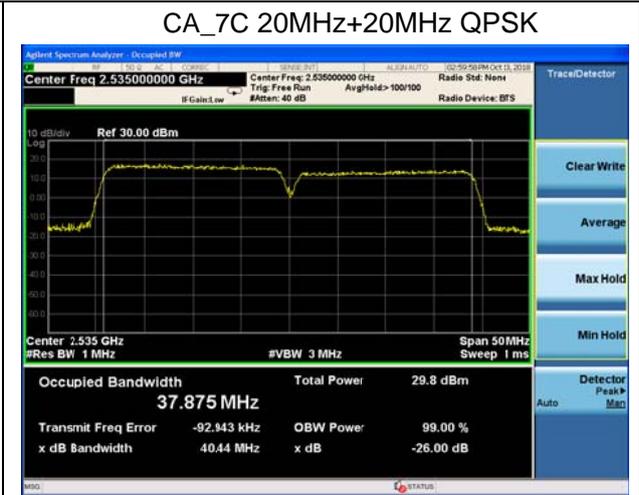
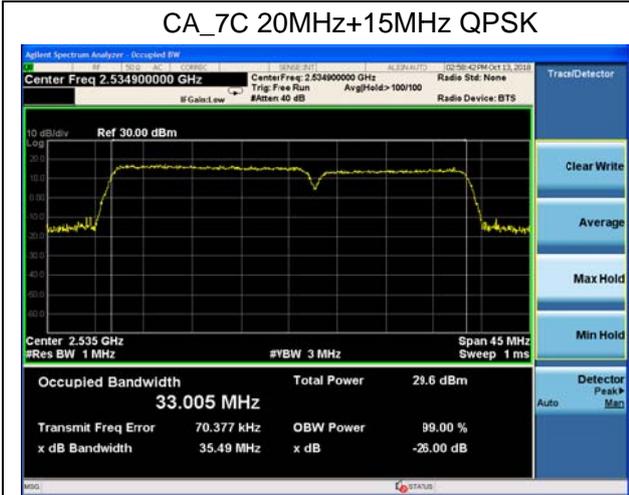
CA_7C	PCC		SCC1		PCC RB	SCC1 RB	Bandwidth(MHz)	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)			99% Power	-26dBc
10MHz+20MHz_QPSK	21006	2525.6	21150	2540	50#0	100#0	28.18	30.18
10MHz+20MHz_16QAM	21006	2525.6	21150	2540	50#0	100#0	28.13	30.13
10MHz+20MHz_64QAM	21006	2525.6	21150	2540	50#0	100#0	28.07	30.08
20MHz+10MHz_QPSK	21051	2530.1	21195	2544.5	100#0	50#0	28.20	30.44
20MHz+10MHz_16QAM	21051	2530.1	21195	2544.5	100#0	50#0	28.16	30.41
20MHz+10MHz_64QAM	21051	2530.1	21195	2544.5	100#0	50#0	28.15	30.46
15MHz+15MHz_QPSK	21025	2527.5	21175	2542.5	75#0	75#0	28.80	31.00
15MHz+15MHz_16QAM	21025	2527.5	21175	2542.5	75#0	75#0	28.70	31.01
15MHz+15MHz_64QAM	21025	2527.5	21175	2542.5	75#0	75#0	28.73	31.04
15MHz+20MHz_QPSK	21003	2525.3	21174	2542.4	75#0	100#0	32.95	35.46
15MHz+20MHz_16QAM	21003	2525.3	21174	2542.4	75#0	100#0	32.98	35.29
15MHz+20MHz_64QAM	21003	2525.3	21174	2542.4	75#0	100#0	32.97	35.26
20MHz+15MHz_QPSK	21026	2527.6	21197	2544.7	100#0	75#0	33.01	35.49
20MHz+15MHz_16QAM	21026	2527.6	21197	2544.7	100#0	75#0	32.95	35.40
20MHz+15MHz_64QAM	21026	2527.6	21197	2544.7	100#0	75#0	33.01	35.44
20MHz+20MHz_QPSK	21001	2525.1	21199	2544.9	100#0	100#0	37.88	40.44
20MHz+20MHz_16QAM	21001	2525.1	21199	2544.9	100#0	100#0	37.82	40.25
20MHz+20MHz_64QAM	21001	2525.1	21199	2544.9	100#0	100#0	37.83	40.63

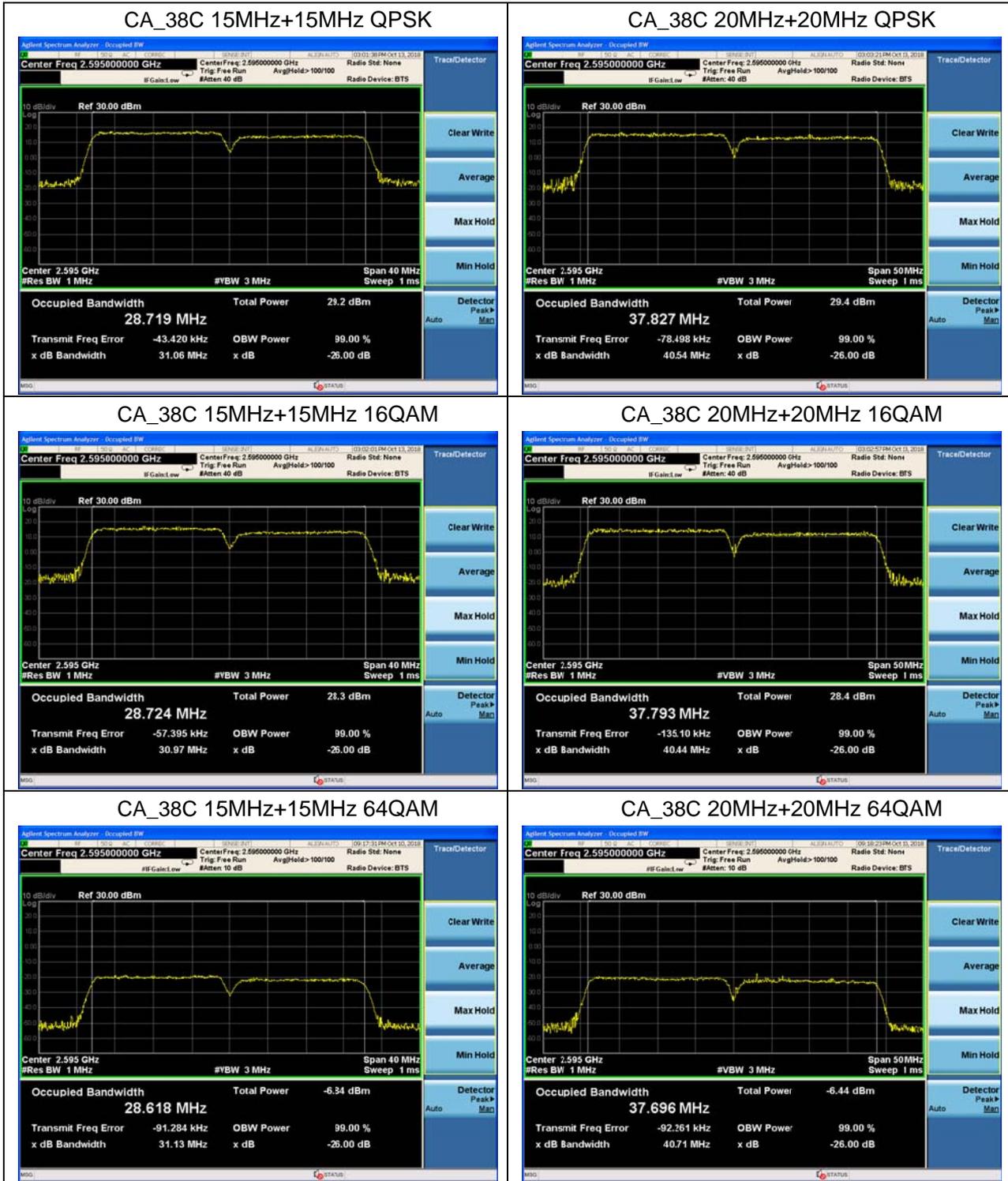
CA_38C	PCC		SCC1		PCC RB	SCC1 RB	Bandwidth(MHz)	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)			99% Power	-26dBc
15MHz+15MHz_QPSK	37925	2587.5	38075	2602.5	75#0	75#0	28.72	31.06
15MHz+15MHz_16QAM	37925	2587.5	38075	2602.5	75#0	75#0	28.72	30.97
15MHz+15MHz_64QAM	37925	2587.5	38075	2602.5	75#0	75#0	28.62	31.13
20MHz+20MHz_QPSK	37901	2585.1	38099	2604.9	100#0	100#0	37.83	40.54
20MHz+20MHz_16QAM	37901	2585.1	38099	2604.9	100#0	100#0	37.79	40.44
20MHz+20MHz_64QAM	37901	2585.1	38099	2604.9	100#0	100#0	37.70	40.71

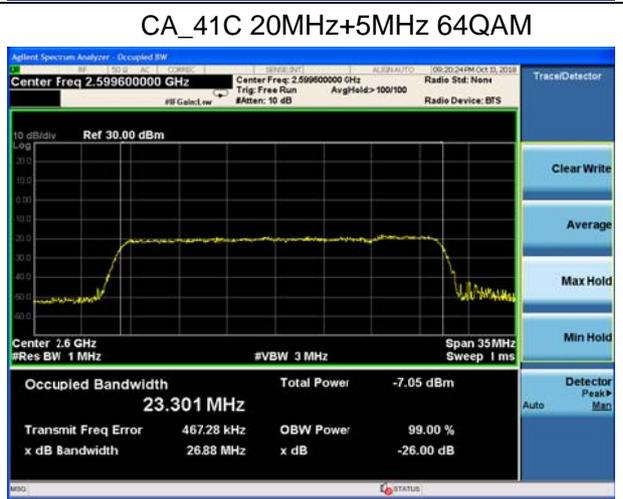
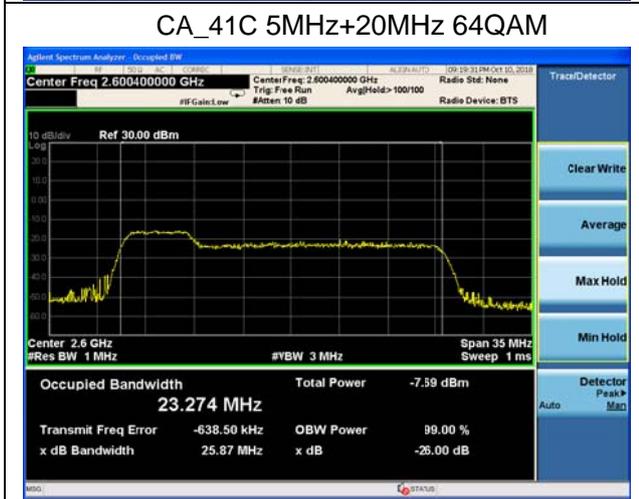
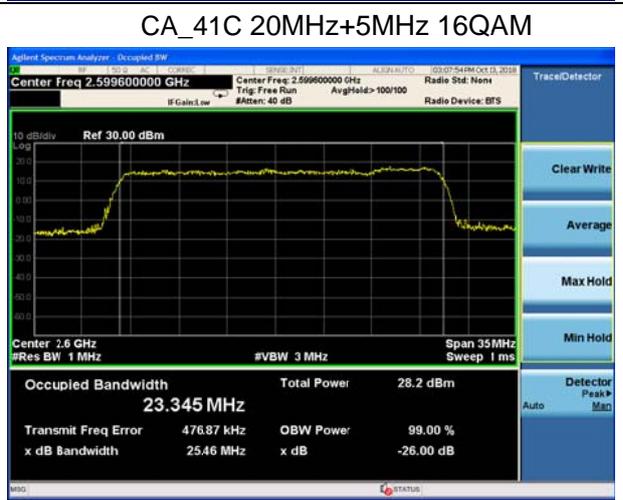
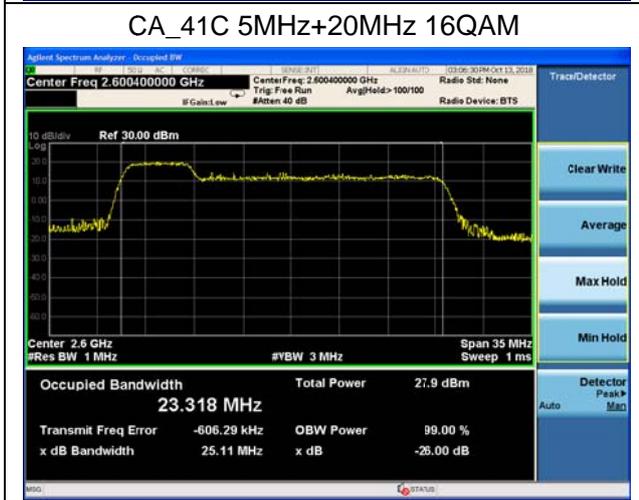
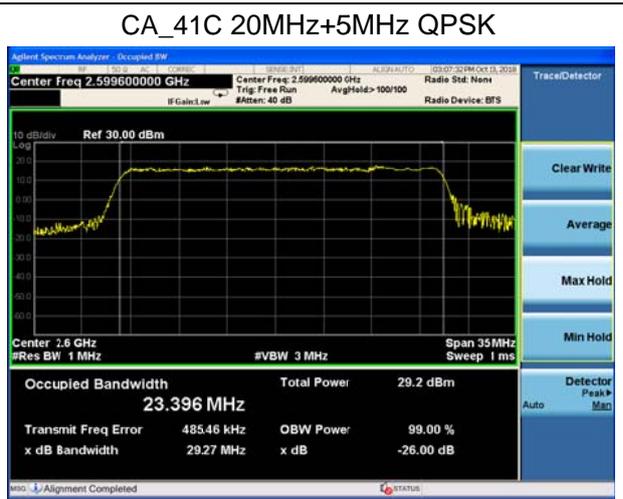
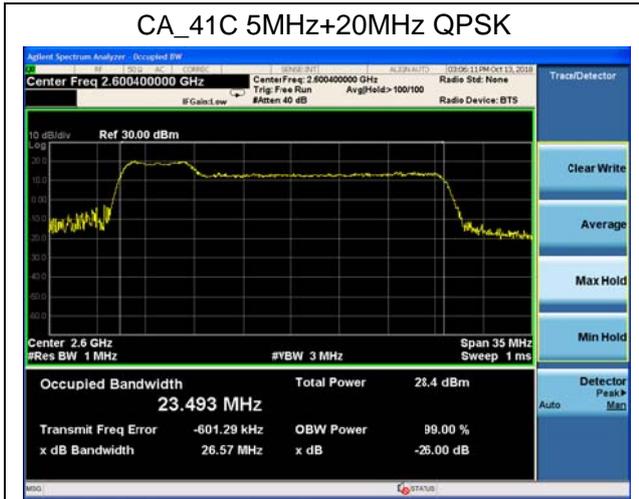
CA_41C	PCC		SCC1		PCC RB	SCC1 RB	Bandwidth(MHz)	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)			99% Power	-26dBc
5MHz+20MHz_QPSK	40598	2590.8	40715	2602.5	25#0	100#0	23.49	26.57
5MHz+20MHz_16QAM	40598	2590.8	40715	2602.5	25#0	100#0	23.32	25.11
5MHz+20MHz_64QAM	40598	2590.8	40715	2602.5	25#0	100#0	23.27	25.87
20MHz+5MHz_QPSK	40665	2597.5	40782	2609.2	100#0	25#0	23.40	29.27
20MHz+5MHz_16QAM	40665	2597.5	40782	2609.2	100#0	25#0	23.35	25.46
20MHz+5MHz_64QAM	40665	2597.5	40782	2609.2	100#0	25#0	23.30	26.88
10MHz+20MHz_QPSK	40596	2590.6	40740	2605	50#0	100#0	28.26	31.35
10MHz+20MHz_16QAM	40596	2590.6	40740	2605	50#0	100#0	20.18	31.18
10MHz+20MHz_64QAM	40596	2590.6	40740	2605	50#0	100#0	28.17	33.45
20MHz+10MHz_QPSK	40641	2595.1	40785	2609.5	100#0	50#0	28.12	30.82
20MHz+10MHz_16QAM	40641	2595.1	40785	2609.5	100#0	50#0	28.10	30.42
20MHz+10MHz_64QAM	40641	2595.1	40785	2609.5	100#0	50#0	28.04	30.33
15MHz+15MHz_QPSK	40615	2592.5	40765	2607.5	75#0	75#0	28.67	31.34
15MHz+15MHz_16QAM	40615	2592.5	40765	2607.5	75#0	75#0	28.62	30.93
15MHz+15MHz_64QAM	40615	2592.5	40765	2607.5	75#0	75#0	28.59	32.11
15MHz+20MHz_QPSK	40593	2590.3	40764	2607.4	75#0	100#0	32.91	36.61
15MHz+20MHz_16QAM	40593	2590.3	40764	2607.4	75#0	100#0	32.92	35.31
15MHz+20MHz_64QAM	40593	2590.3	40764	2607.4	75#0	100#0	32.87	35.39
20MHz+15MHz_QPSK	40616	2592.6	40787	2609.7	100#0	75#0	32.94	35.62
20MHz+15MHz_16QAM	40616	2592.6	40787	2609.7	100#0	75#0	32.92	35.39
20MHz+15MHz_64QAM	40616	2592.6	40787	2609.7	100#0	75#0	32.81	36.01
20MHz+20MHz_QPSK	40591	2590.1	40789	2609.9	100#0	100#0	37.74	41.01
20MHz+20MHz_16QAM	40591	2590.1	40789	2609.9	100#0	100#0	37.76	40.62
20MHz+20MHz_64QAM	40591	2590.1	40789	2609.9	100#0	100#0	37.70	40.12





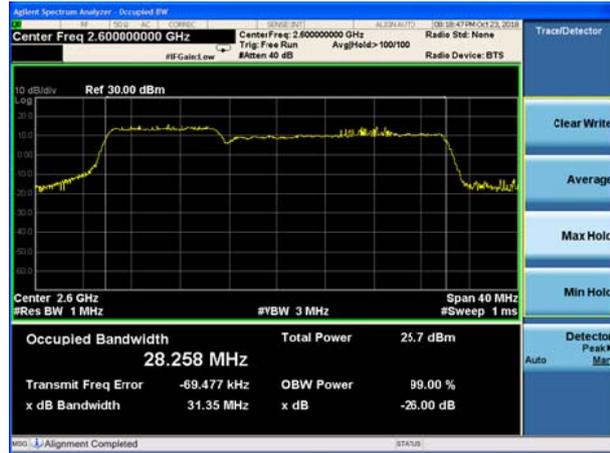




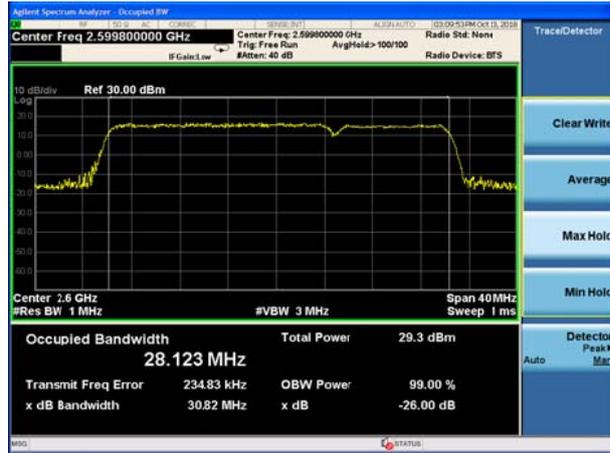




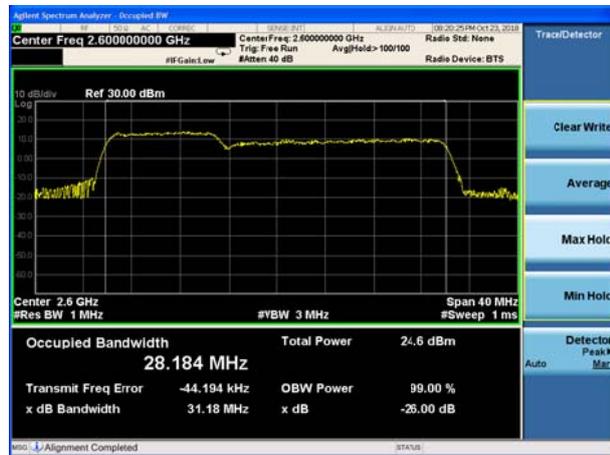
CA\_41C 10MHz+20MHz QPSK



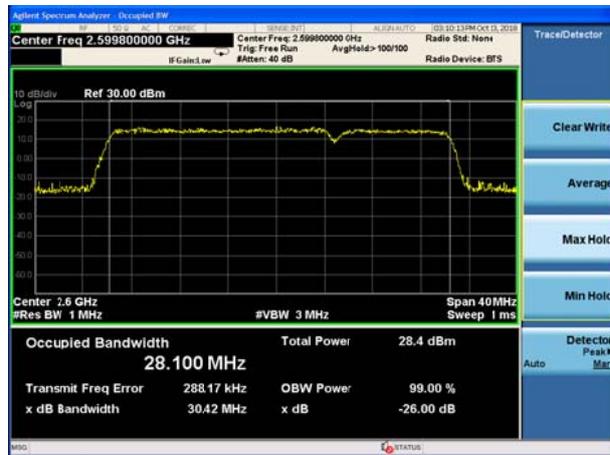
CA\_41C 20MHz+10MHz QPSK



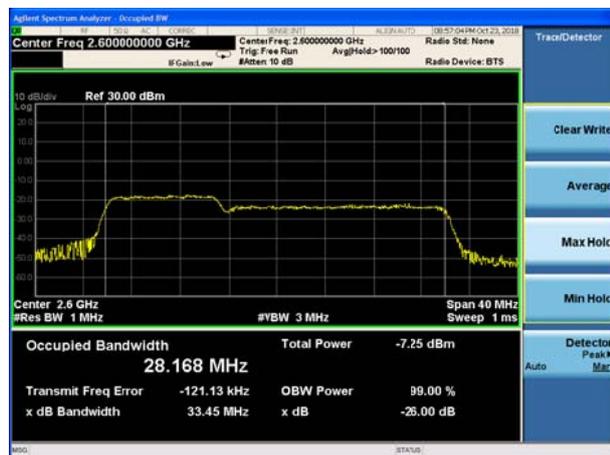
CA\_41C 10MHz+20MHz 16QAM



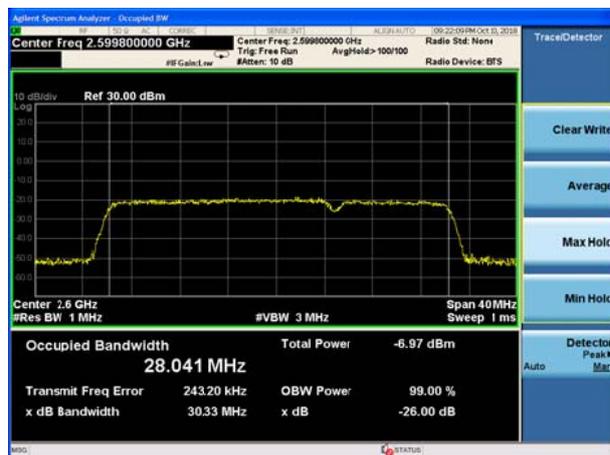
CA\_41C 20MHz+10MHz 16QAM

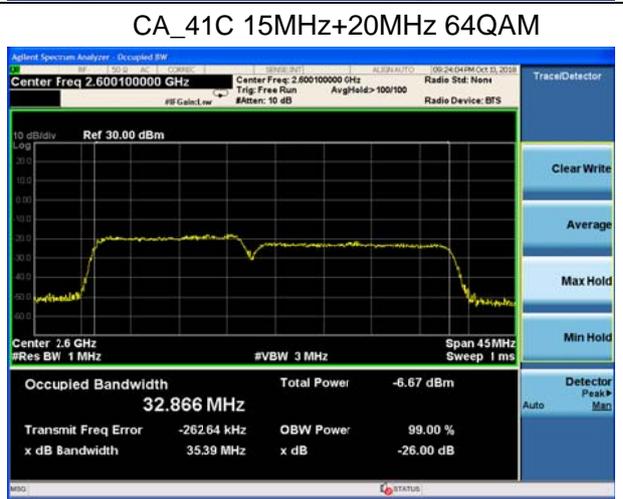
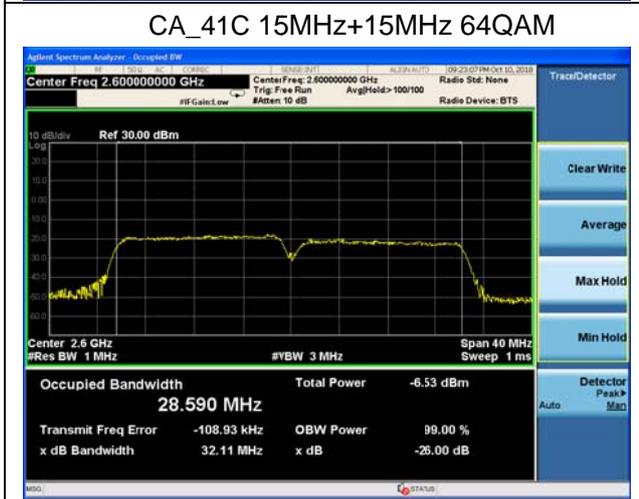
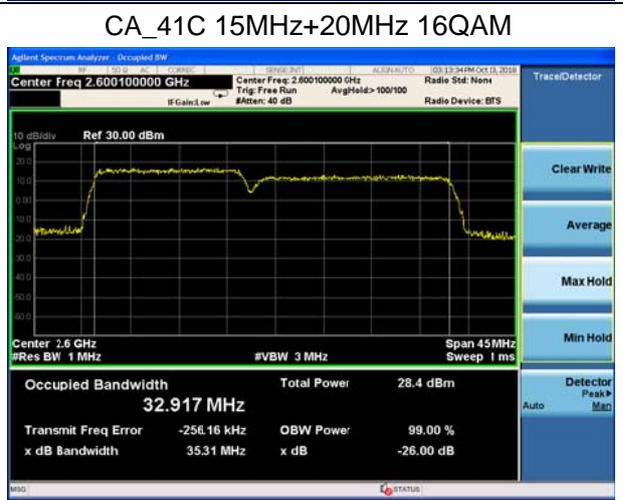
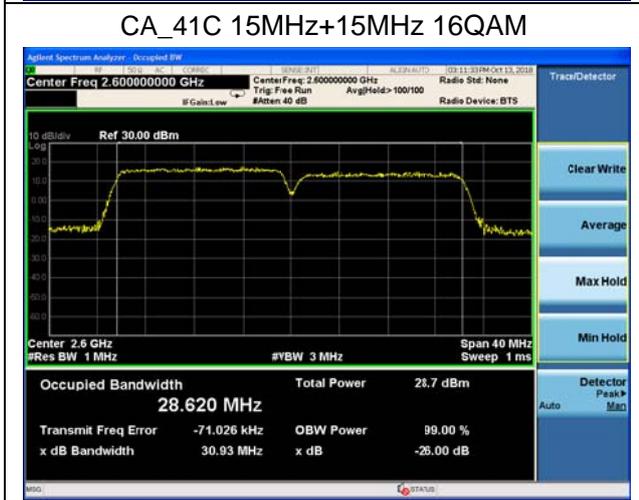
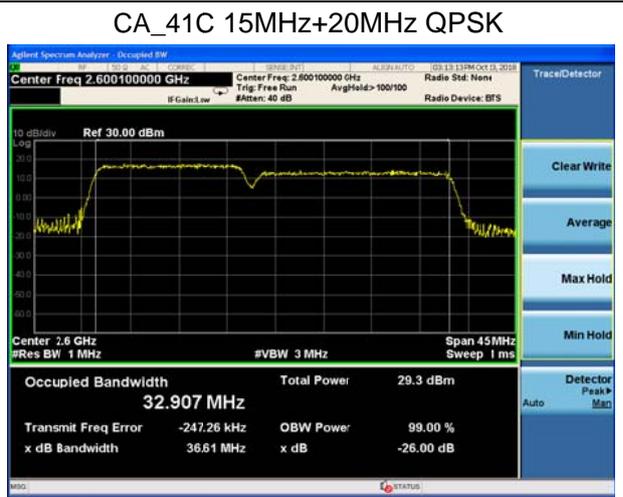
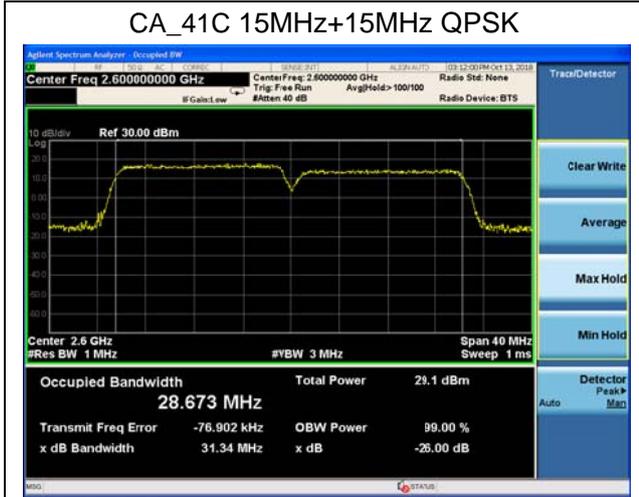


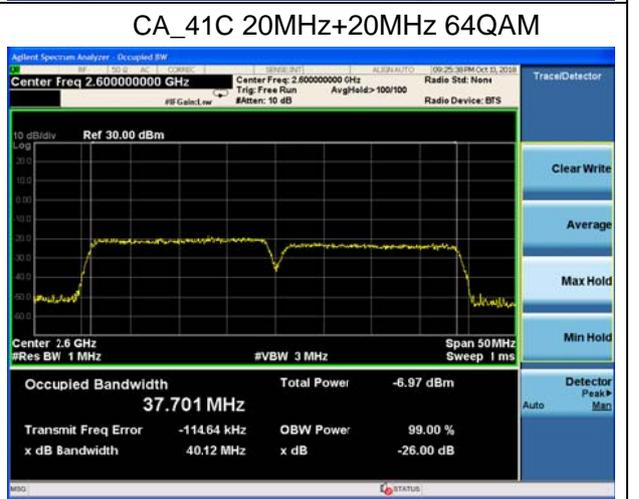
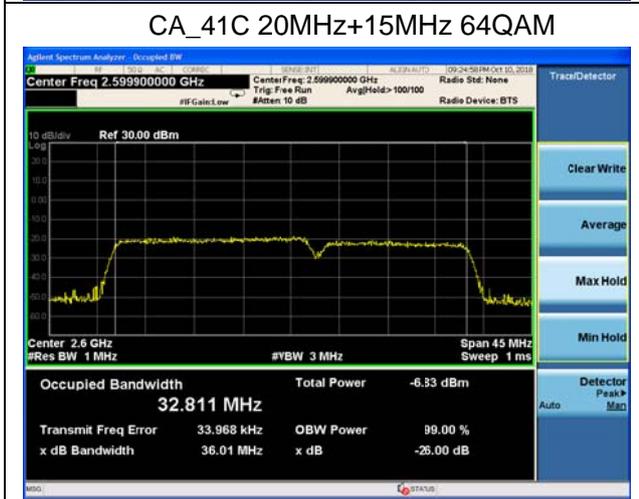
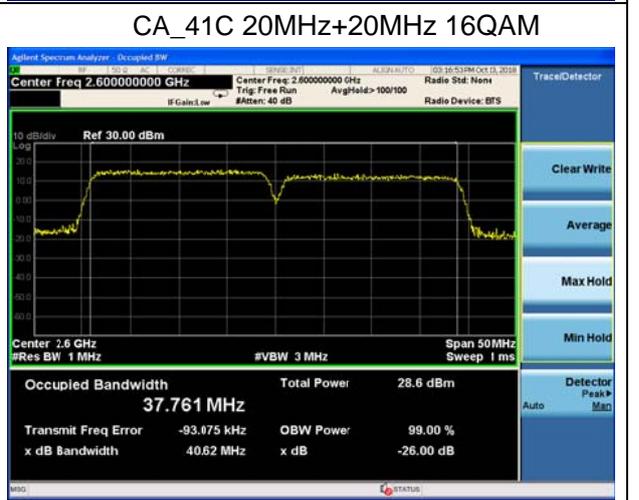
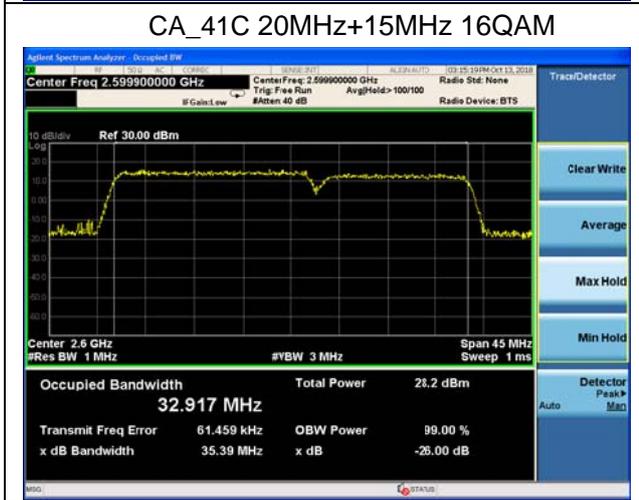
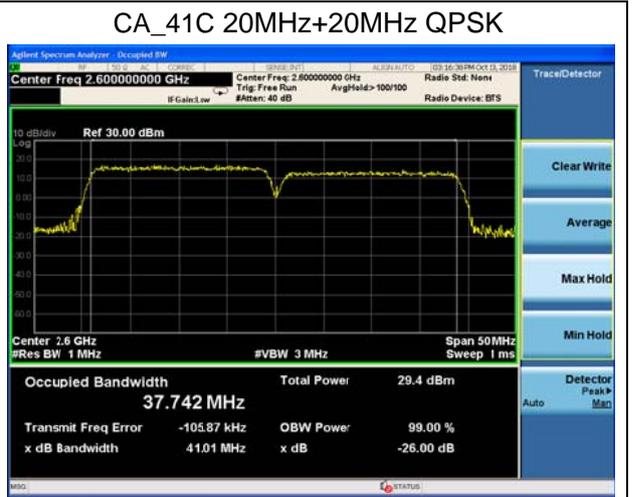
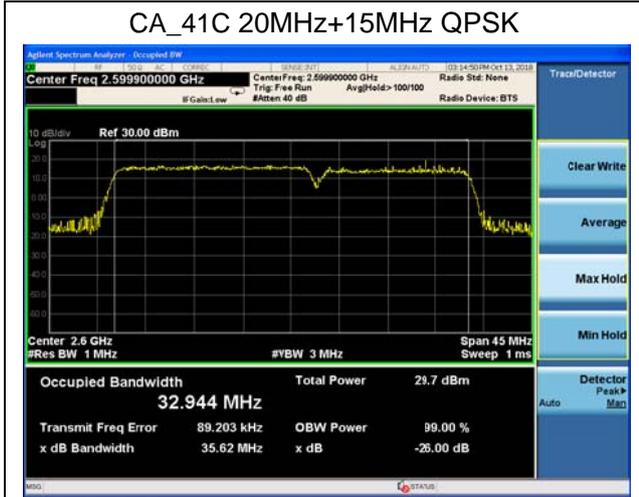
CA\_41C 10MHz+20MHz 64QAM



CA\_41C 20MHz+10MHz 64QAM







### 5.4 Band Edge Compliance

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

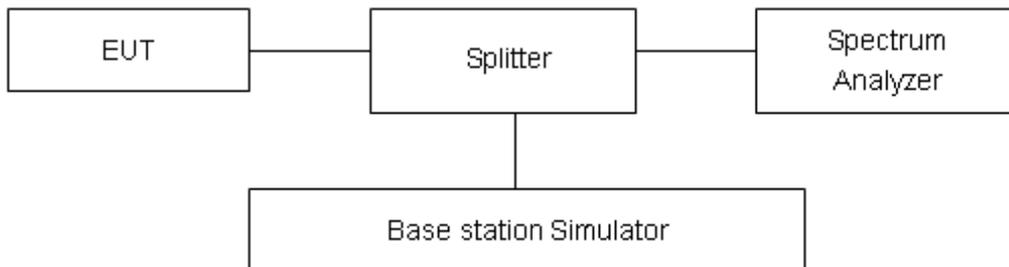
#### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured.

The testing follows KDB 971168 D01 v03r01 Section 6.0

- 1.The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. RBW is set to 500kHz, VBW is set to 2MHz for CA\_7C / CA\_38C / CA\_41C on spectrum analyzer.
4. Set spectrum analyzer with RMS detector.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. Checked that all the results comply with the emission limit line.

#### Test Setup



#### Limits

Part 27.53(m) (4)/ specifies that “for BRS and EBS stations. For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent



channel BRS or EBS licensees.

Example:

The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power  $P$ (Watts)

$$= P(W) - [43 + 10\log(P)] \text{ (dB)}$$

$$= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}.$$

### Measurement Uncertainty

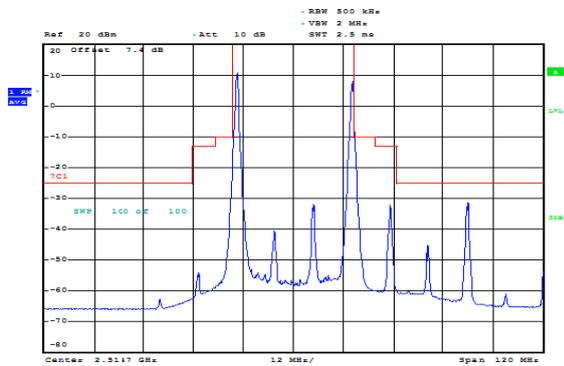
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U=0.684\text{dB}$ .



Test Result

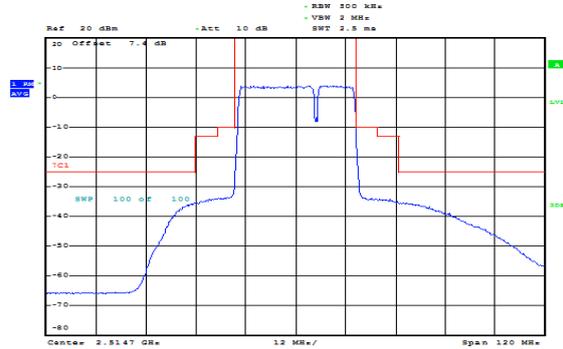
All the test traces in the plots shows the test results clearly.

CA\_7C 20MHz+10MHz QPSK RB=1#0+1#49  
CH- Low



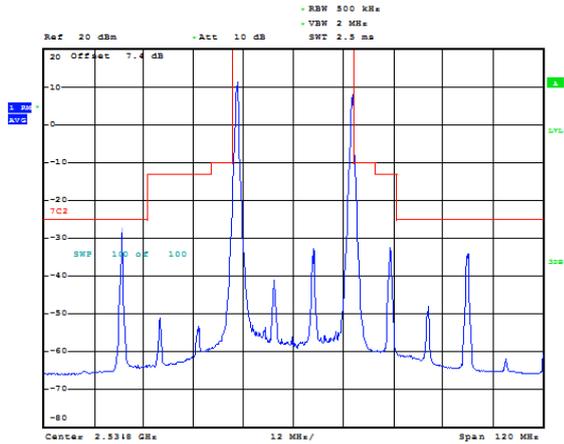
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CH- Low



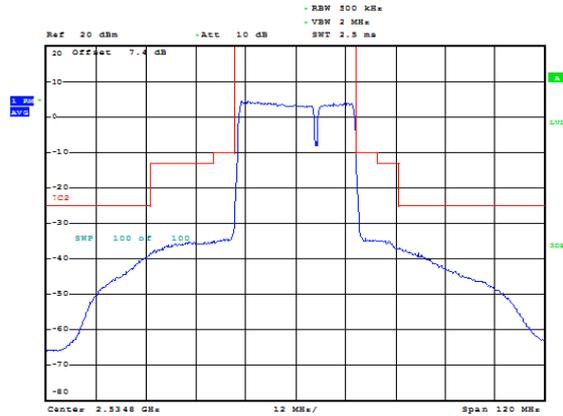
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CA\_7C 20MHz+10MHz QPSK RB=1#0+1#49  
CH- Middle



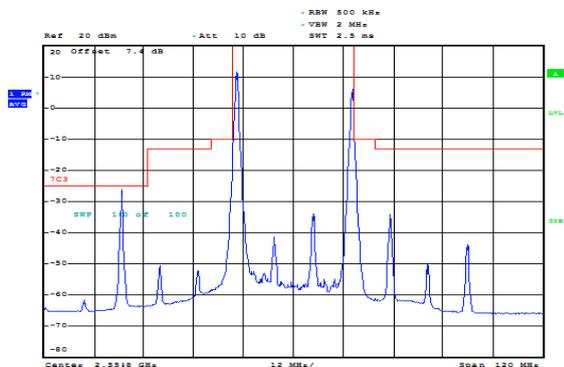
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CH- Middle



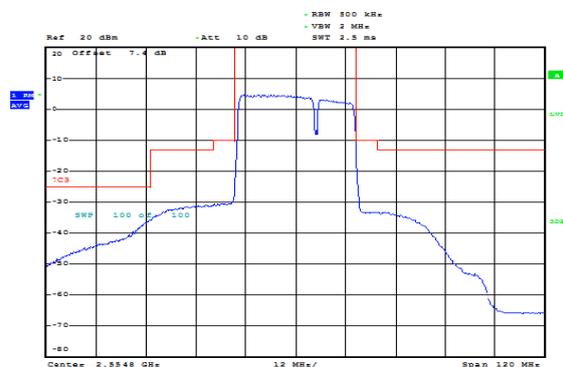
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CA\_7C 20MHz+10MHz QPSK RB=1#0+1#49  
CH- High



Date: 11.OCT.2018 21:09:34

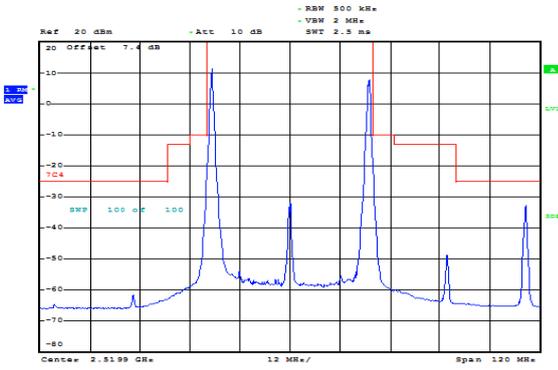
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CH- High



Date: 11.OCT.2018 21:09:11

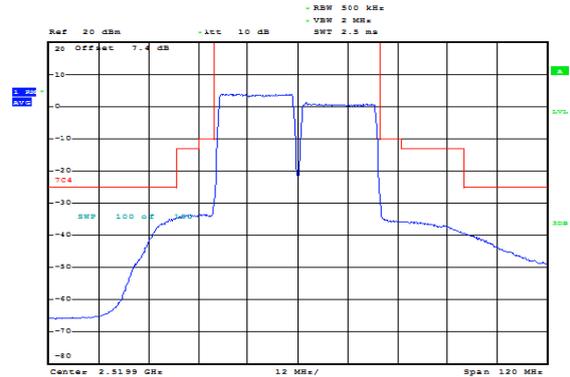


CA\_7C 20MHz+20MHz QPSK RB=1#0+1#99  
CH- Low



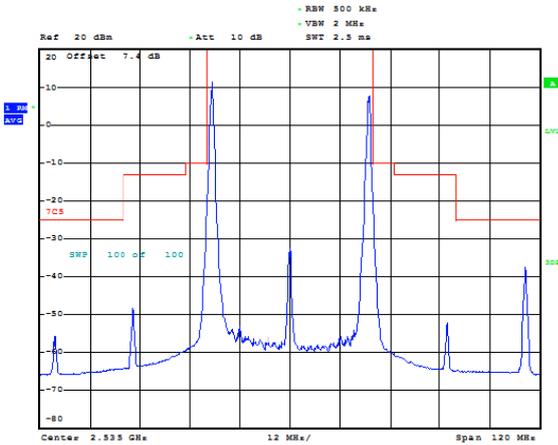
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CH- Low



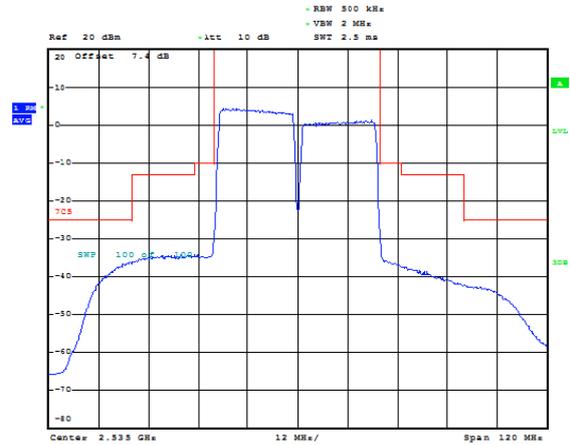
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CA\_7C 20MHz+20MHz QPSK RB=1#0+1#99  
CH- Middle



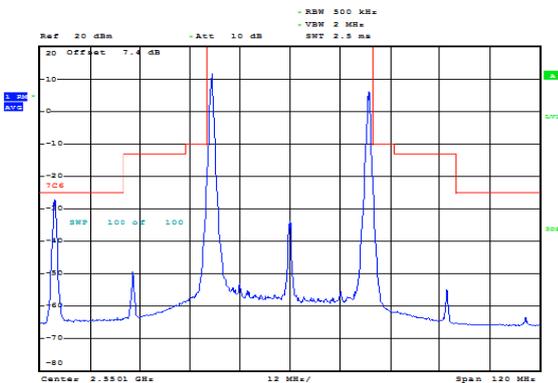
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CA\_7C 20MHz+20MHz QPSK RB=100#0+100#0  
CH- Middle



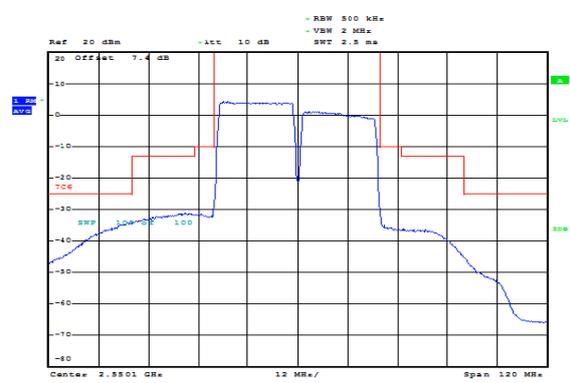
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CA\_7C 20MHz+20MHz QPSK RB=1#0+1#99  
CH- High



Date: 11.OCT.2018 21:15:39

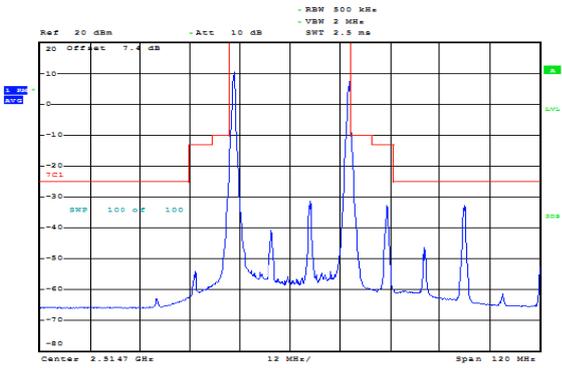
CA\_7C 20MHz+20MHz QPSK RB=100#0+100#0  
CH- High



Date: 11.OCT.2018 21:16:30

CA\_7C 20MHz+10MHz 16QAM RB=1#0+1#49

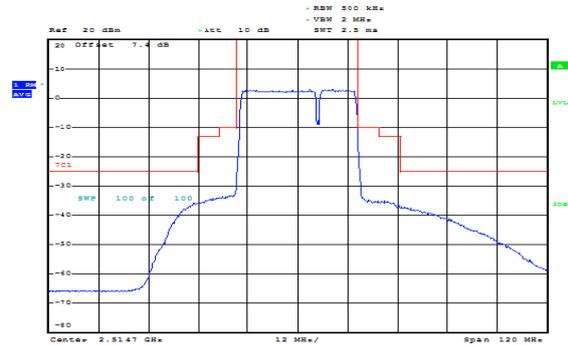
CH- Low



Date: 11.OCT.2018 20:58:56

CA\_7C 20MHz+10MHz 16QAM RB=100#0+50#0

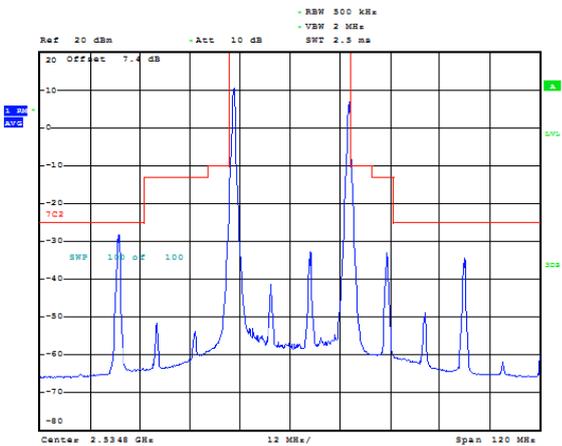
CH- Low



Date: 11.OCT.2018 21:08:45

CA\_7C 20MHz+10MHz 16QAM RB=1#0+1#49

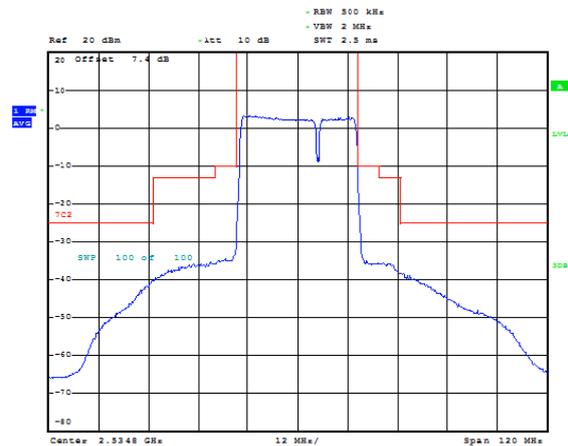
CH- Middle



Date: 11.OCT.2018 21:06:08

CA\_7C 20MHz+10MHz 16QAM RB=100#0+50#0

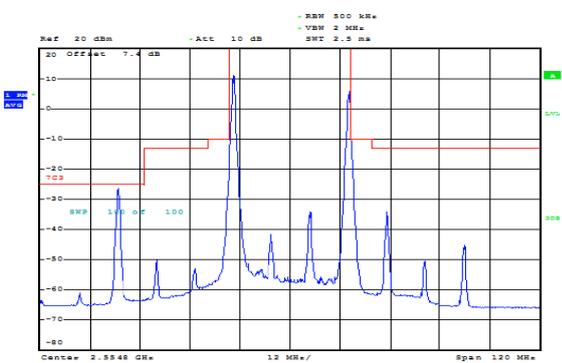
CH- Middle



Date: 11.OCT.2018 21:06:29

CA\_7C 20MHz+10MHz 16QAM RB=1#0+1#49

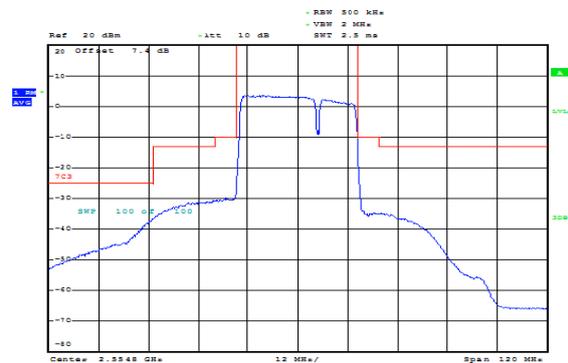
CH- High



Date: 11.OCT.2018 21:08:48

CA\_7C 20MHz+10MHz 16QAM RB=100#0+50#0

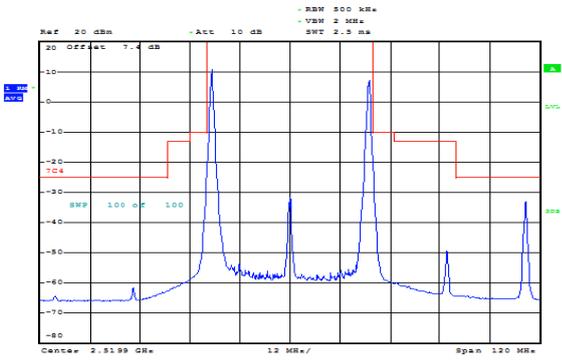
CH- High



Date: 11.OCT.2018 21:09:26

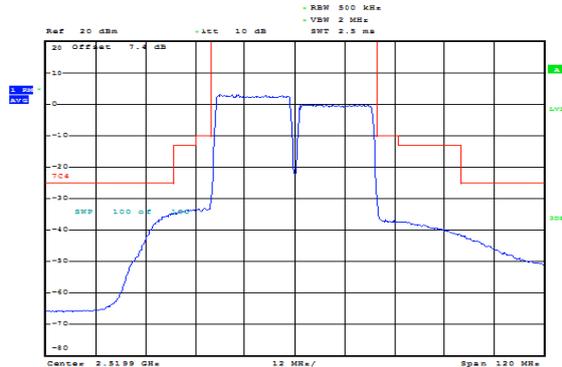


CA\_7C 20MHz+20MHz 16QAM RB=1#0+1#99  
CH- Low



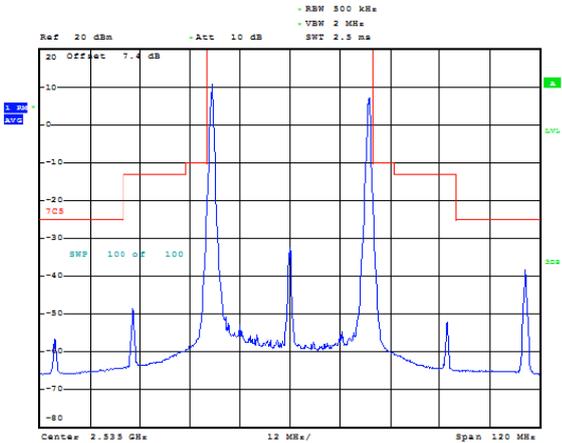
Date: 11.OCT.2018 21:11:12

CA\_7C 20MHz+20MHz 16QAM  
RB=100#0+100#0 CH- Low



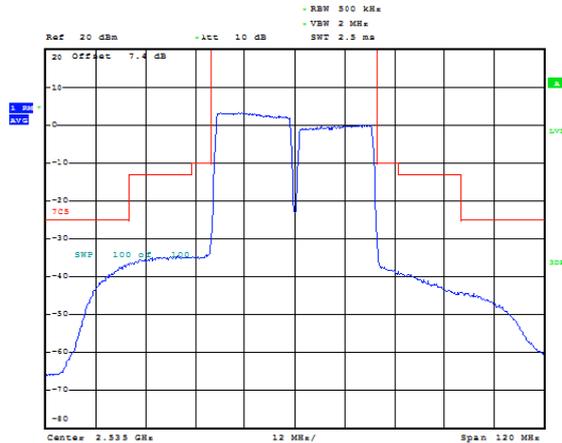
Date: 11.OCT.2018 21:11:56

CA\_7C 20MHz+20MHz 16QAM RB=1#0+1#99  
CH- Middle



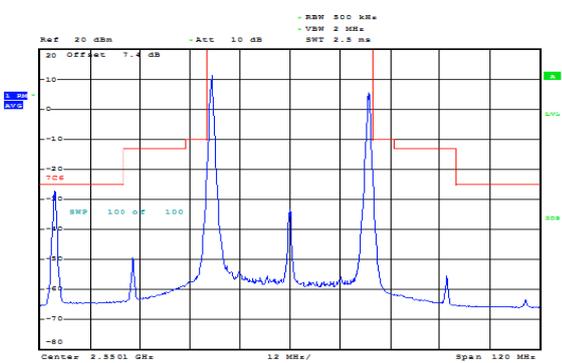
Date: 11.OCT.2018 21:13:53

CA\_7C 20MHz+20MHz 16QAM  
RB=100#0+100#0 CH- Middle



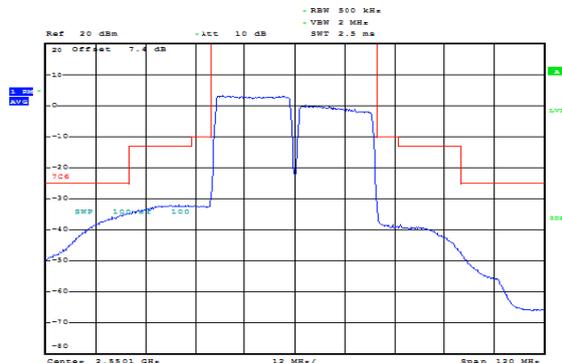
Date: 11.OCT.2018 21:14:33

CA\_7C 20MHz+20MHz 16QAM RB=1#0+1#99  
CH- High



Date: 11.OCT.2018 21:15:55

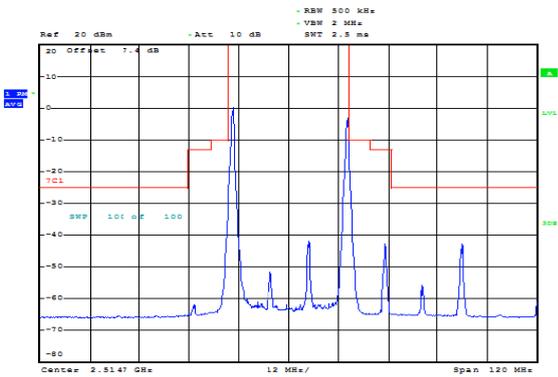
CA\_7C 20MHz+20MHz 16QAM  
RB=100#0+100#0 CH- High



Date: 11.OCT.2018 21:16:15

CA\_7C 20MHz+10MHz 64QAM RB=1#0+1#49

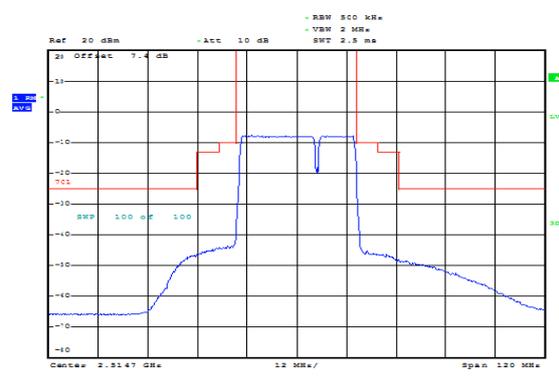
CH- Low



Date: 11.OCT.2018 22:41:55

CA\_7C 20MHz+10MHz 64QAM RB=100#0+50#0

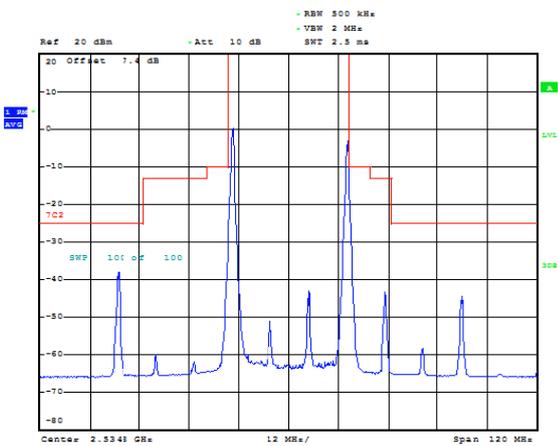
CH- Low



Date: 11.OCT.2018 22:42:19

CA\_7C 20MHz+10MHz 64QAM RB=1#0+1#49

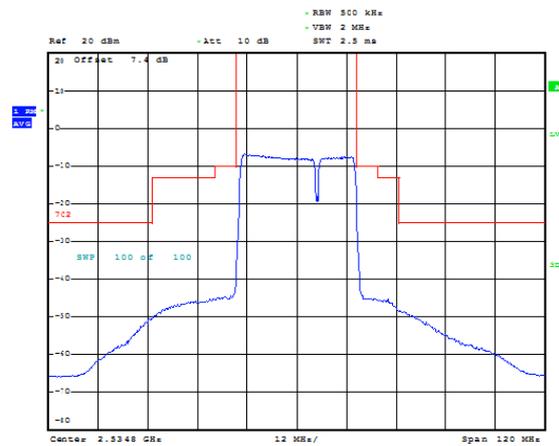
CH- Middle



Date: 11.OCT.2018 22:45:35

CA\_7C 20MHz+10MHz 64QAM RB=100#0+50#0

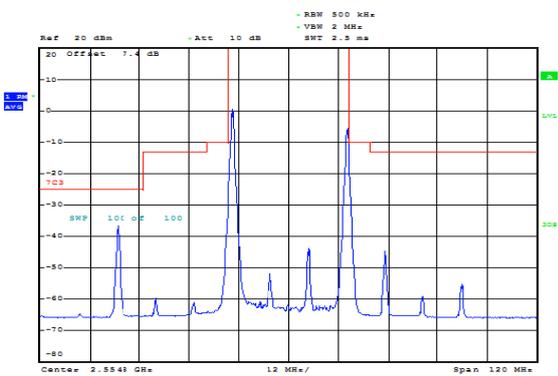
CH- Middle



Date: 11.OCT.2018 22:45:09

CA\_7C 20MHz+10MHz 64QAM RB=1#0+1#49

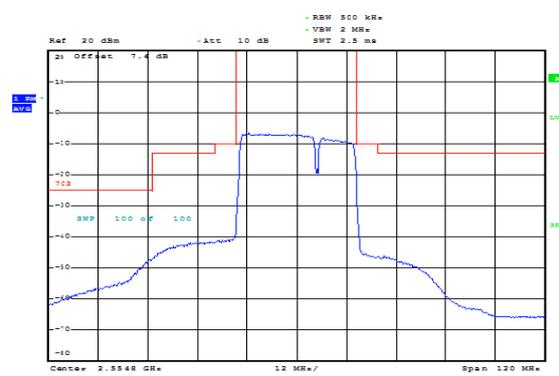
CH- High



Date: 11.OCT.2018 22:46:47

CA\_7C 20MHz+10MHz 64QAM RB=100#0+50#0

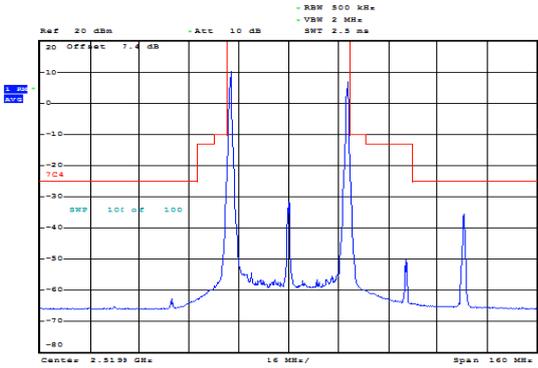
CH- High



Date: 11.OCT.2018 22:47:07

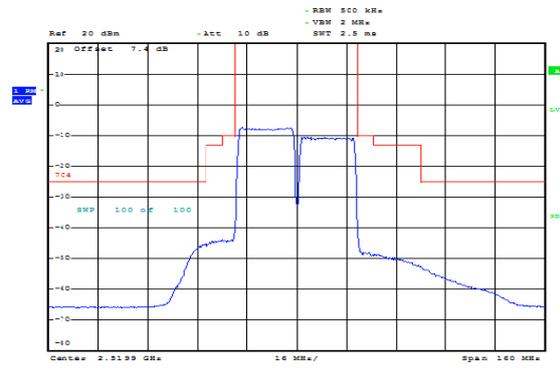


CA\_7C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- Low



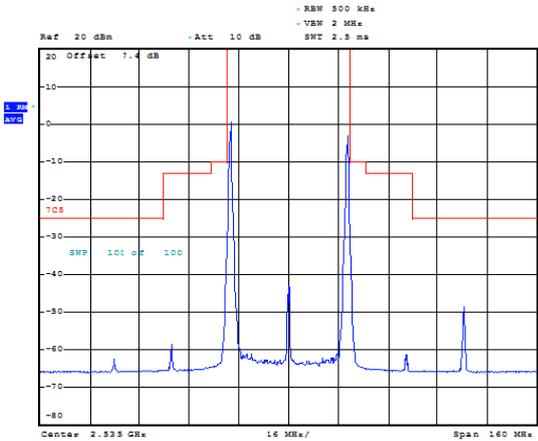
Date: 10.OCT.2018 17:22:26

CA\_7C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- Low



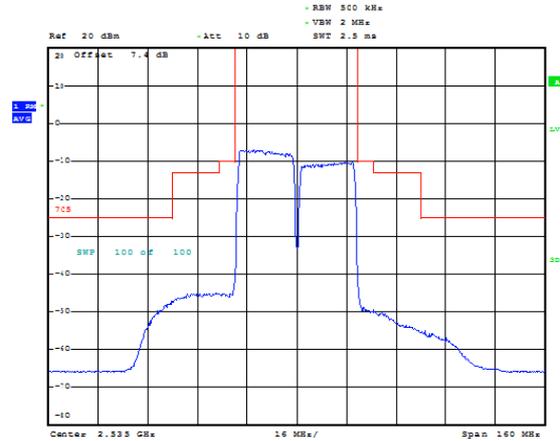
Date: 11.OCT.2018 22:49:30

CA\_7C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- Middle



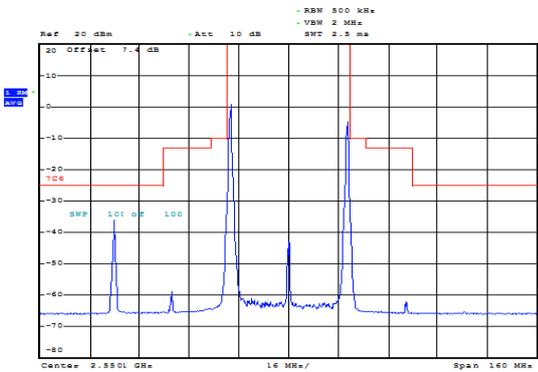
Date: 11.OCT.2018 22:50:37

CA\_7C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- Middle



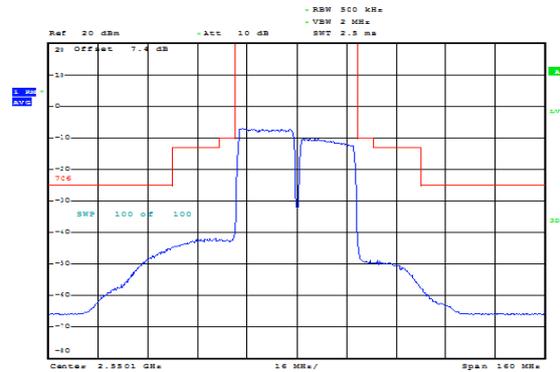
Date: 11.OCT.2018 22:50:13

CA\_7C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- High



Date: 11.OCT.2018 22:51:38

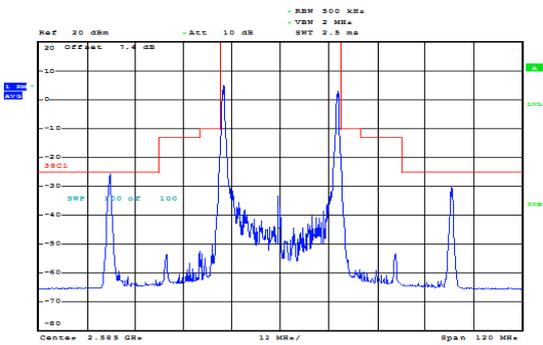
CA\_7C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- High



Date: 11.OCT.2018 22:52:01

CA\_38C 15MHz+15MHz QPSK RB=1#0+1#74

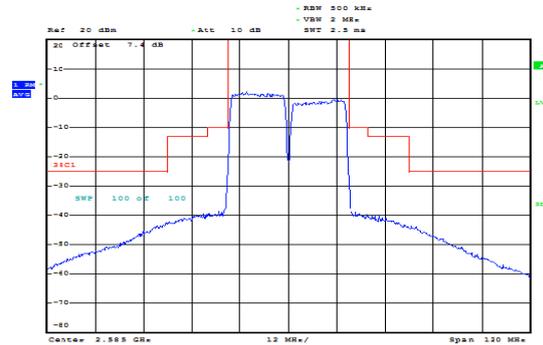
CH- Low



Date: 26.OCT.2018 12:16:41

CA\_38C 15MHz+15MHz QPSK RB=75#0+75#0

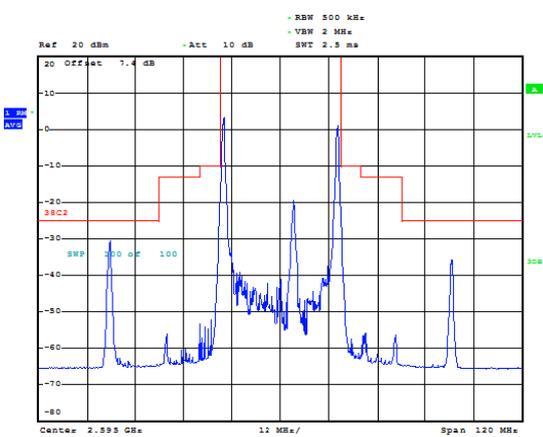
CH- Low



Date: 26.OCT.2018 12:17:18

CA\_38C 15MHz+15MHz QPSK RB=1#0+1#74

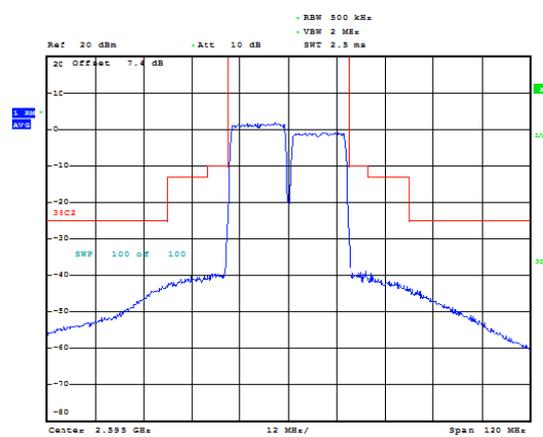
CH- Middle



Date: 26.OCT.2018 12:18:10

CA\_38C 15MHz+15MHz QPSK RB=75#0+75#0

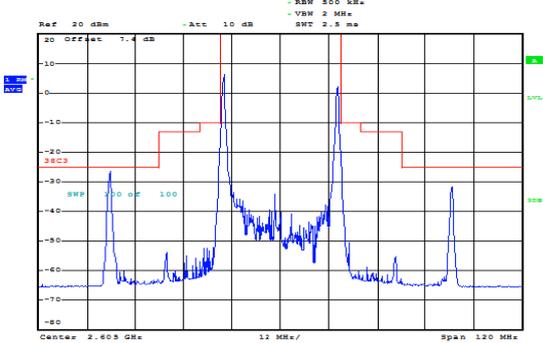
CH- Middle



Date: 26.OCT.2018 12:18:56

CA\_38C 15MHz+15MHz QPSK RB=1#0+1#74

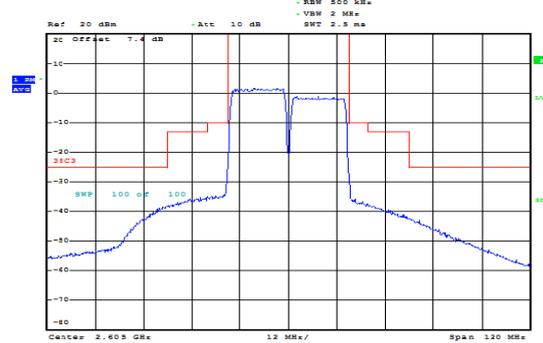
CH- High



Date: 26.OCT.2018 12:21:42

CA\_38C 15MHz+15MHz QPSK RB=75#0+75#0

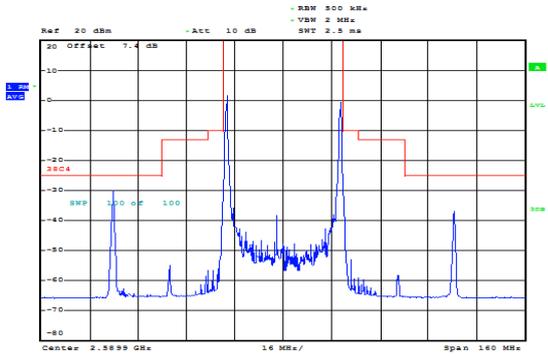
CH- High



Date: 26.OCT.2018 12:22:20

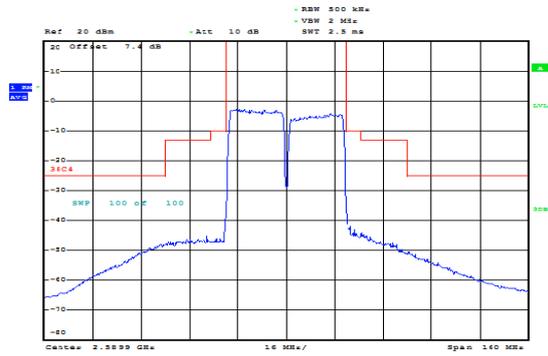


### CA\_38C 20MHz+20MHz QPSK RB=1#0+1#99 CH- Low



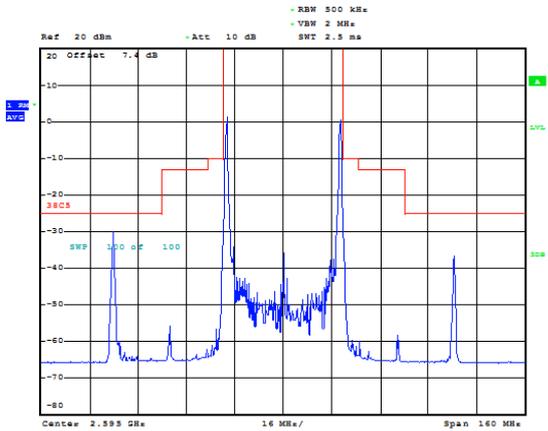
Date: 27.OCT.2018 12:02:46

### CA\_38C 20MHz+20MHz QPSK RB=100#0+100#0 CH- Low



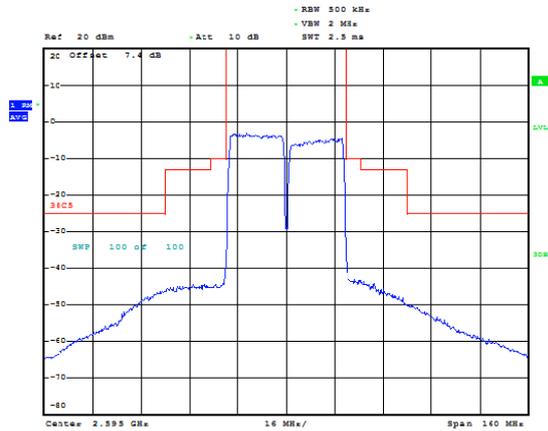
Date: 27.OCT.2018 12:03:54

### CA\_38C 20MHz+20MHz QPSK RB=1#0+1#99 CH- Middle



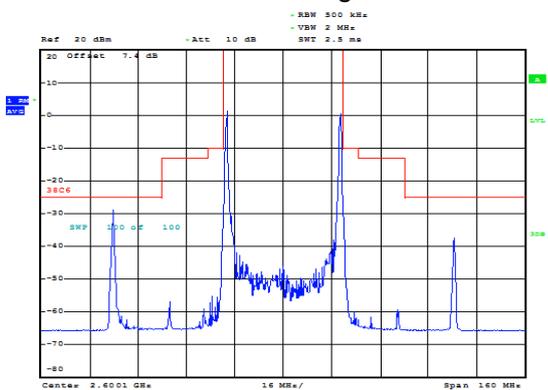
Date: 27.OCT.2018 12:07:55

### CA\_38C 20MHz+20MHz QPSK RB=100#0+100#0 CH- Middle



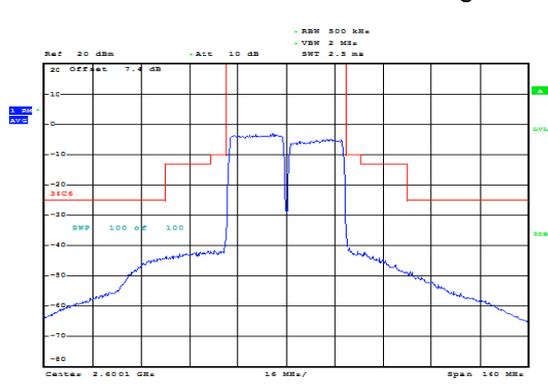
Date: 27.OCT.2018 12:09:00

### CA\_38C 20MHz+20MHz QPSK RB=1#0+1#99 CH- High



Date: 27.OCT.2018 12:09:51

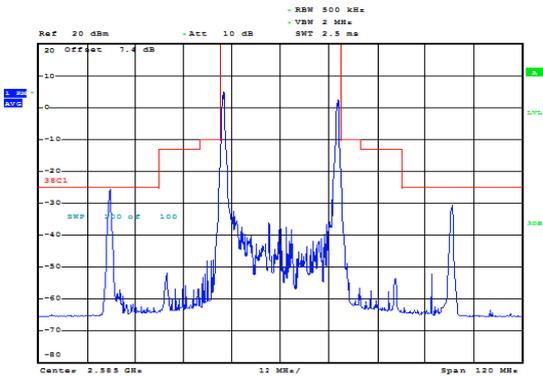
### CA\_38C 20MHz+20MHz QPSK RB=100#0+100#0 CH- High



Date: 27.OCT.2018 12:11:00

CA\_38C 15MHz+15MHz 16QAM RB=1#0+1#74

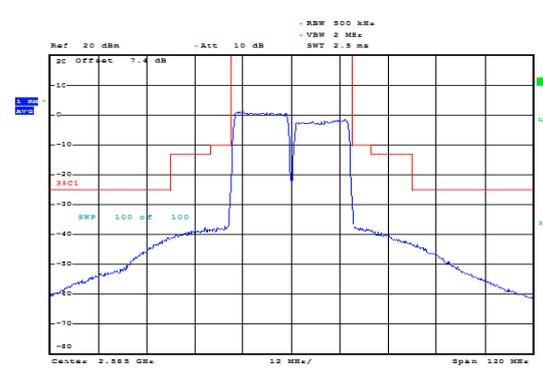
CH- Low



Date: 26.OCT.2018 12:16:52

CA\_38C 15MHz+15MHz 16QAM RB=75#0+75#0

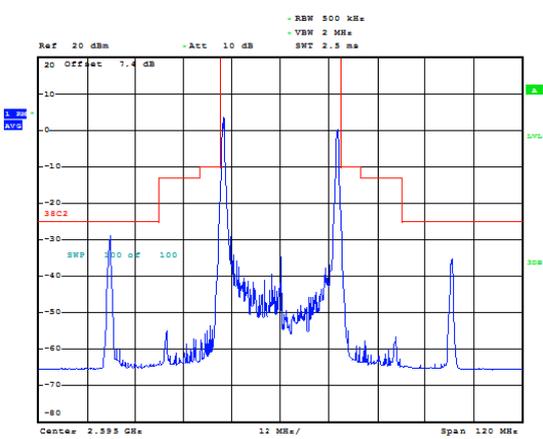
CH- Low



Date: 26.OCT.2018 12:17:07

CA\_38C 15MHz+15MHz 16QAM RB=1#0+1#74

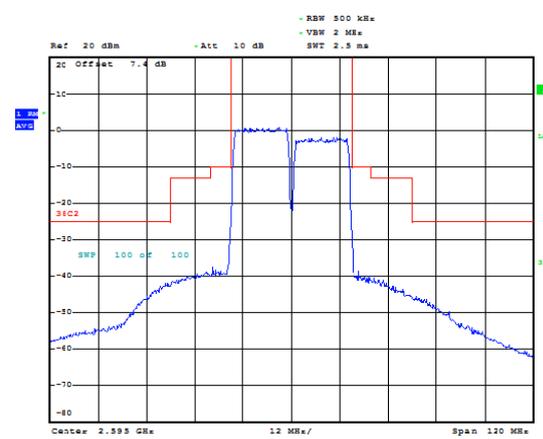
CH- Middle



Date: 26.OCT.2018 12:18:20

CA\_38C 15MHz+15MHz 16QAM RB=75#0+75#0

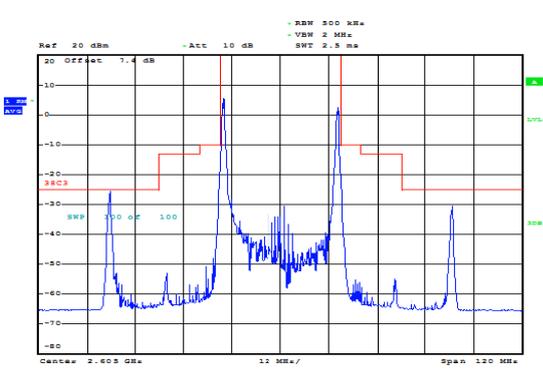
CH- Middle



Date: 26.OCT.2018 12:18:43

CA\_38C 15MHz+15MHz 16QAM RB=1#0+1#74

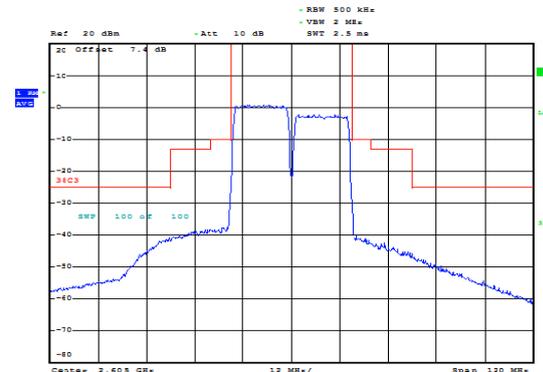
CH- High



Date: 26.OCT.2018 12:21:56

CA\_38C 15MHz+15MHz 16QAM RB=75#0+75#0

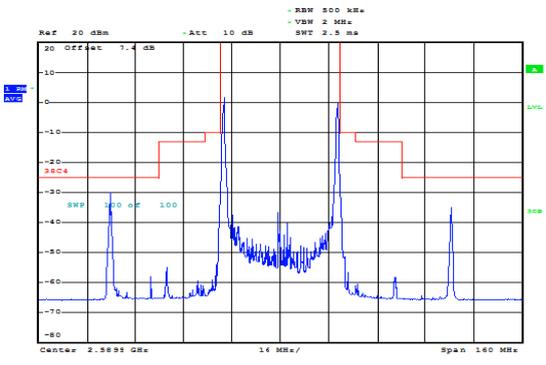
CH- High



Date: 26.OCT.2018 12:22:10

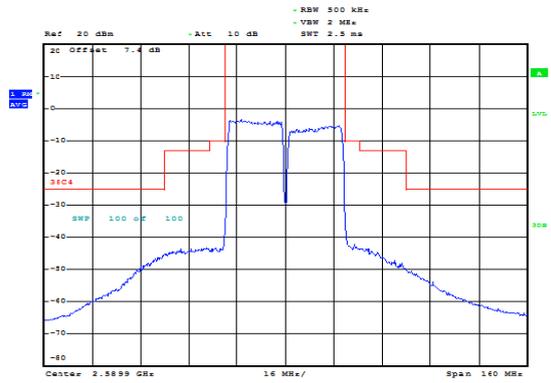


### CA\_38C 20MHz+20MHz 16QAM RB=1#0+1#99 CH- Low



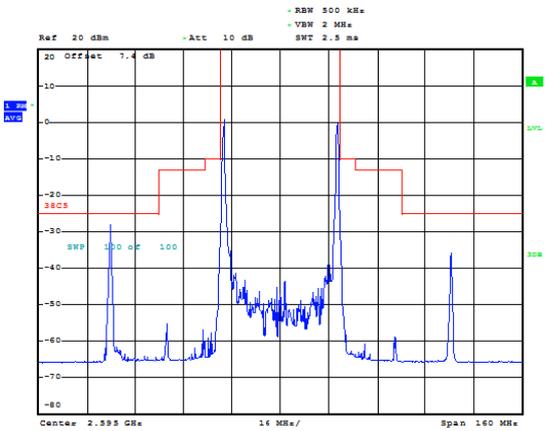
Date: 27.OCT.2018 12:02:09

### CA\_38C 20MHz+20MHz 16QAM RB=100#0+100#0 CH- Low



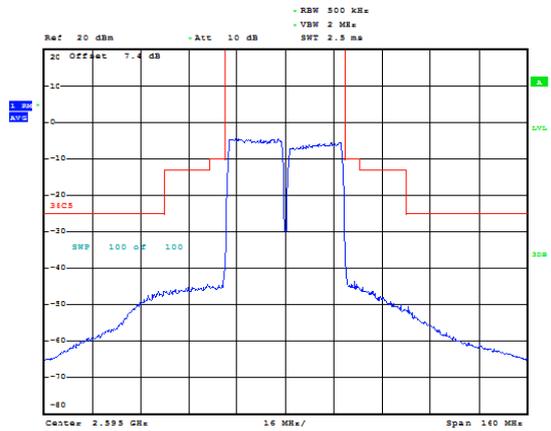
Date: 27.OCT.2018 12:02:29

### CA\_38C 20MHz+20MHz 16QAM RB=1#0+1#99 CH- Middle



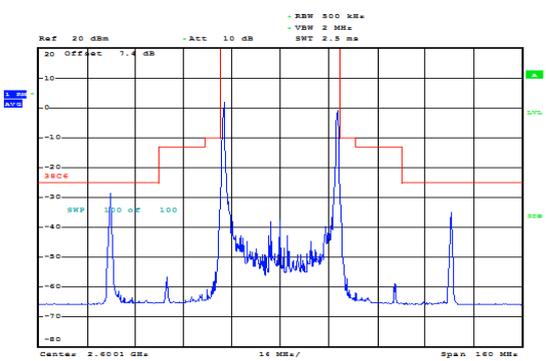
Date: 27.OCT.2018 12:08:09

### CA\_38C 20MHz+20MHz 16QAM RB=100#0+100#0 CH- Middle



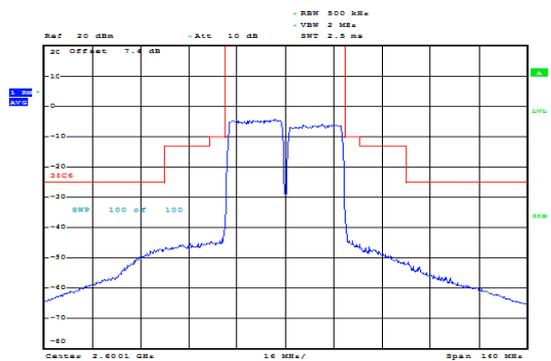
Date: 27.OCT.2018 12:08:50

### CA\_38C 20MHz+20MHz 16QAM RB=1#0+1#99 CH- High



Date: 27.OCT.2018 12:10:28

### CA\_38C 20MHz+20MHz 16QAM RB=100#0+100#0 CH- High

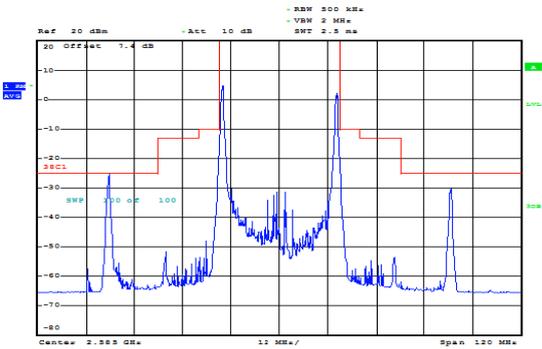


Date: 27.OCT.2018 12:10:48



CA\_38C 15MHz+15MHz 64QAM RB=1#0+1#74

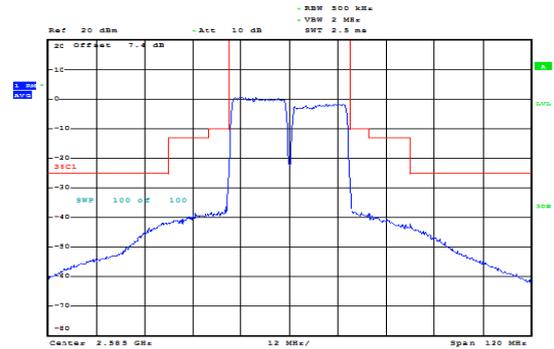
CH- Low



Date: 26.OCT.2018 12:15:31

CA\_38C 15MHz+15MHz 64QAM RB=75#0+75#0

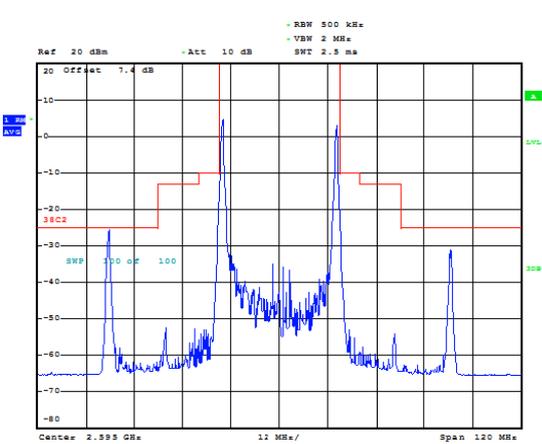
CH- Low



Date: 26.OCT.2018 12:16:03

CA\_38C 15MHz+15MHz 64QAM RB=1#0+1#74

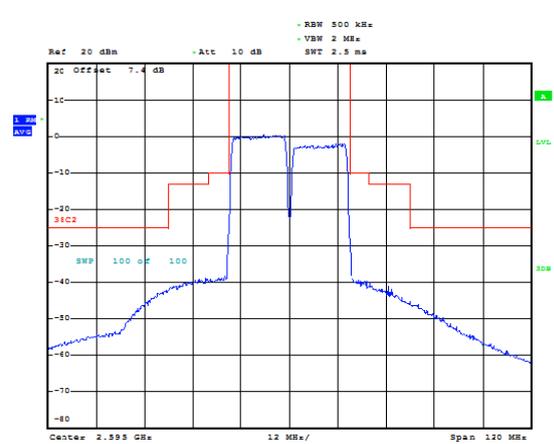
CH- Middle



Date: 26.OCT.2018 12:19:44

CA\_38C 15MHz+15MHz 64QAM RB=75#0+75#0

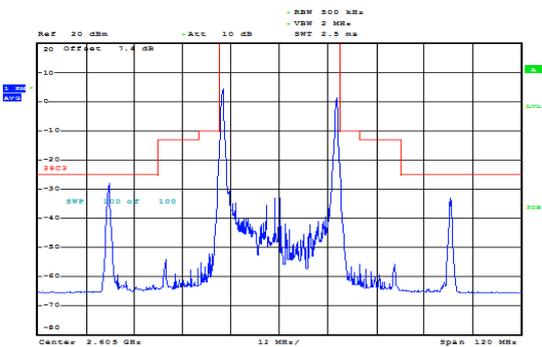
CH- Middle



Date: 26.OCT.2018 12:19:21

CA\_38C 15MHz+15MHz 64QAM RB=1#0+1#74

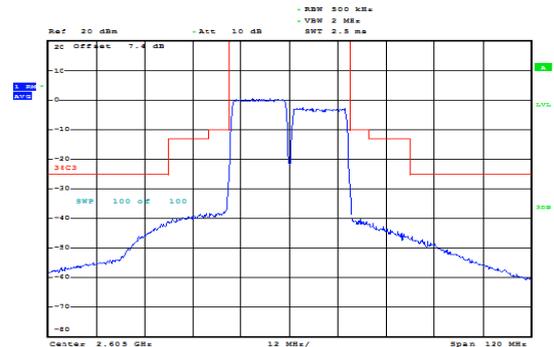
CH- High



Date: 26.OCT.2018 12:20:54

CA\_38C 15MHz+15MHz 64QAM RB=75#0+75#0

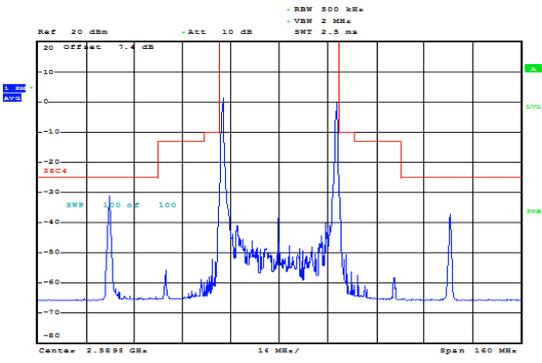
CH- High



Date: 26.OCT.2018 12:21:15

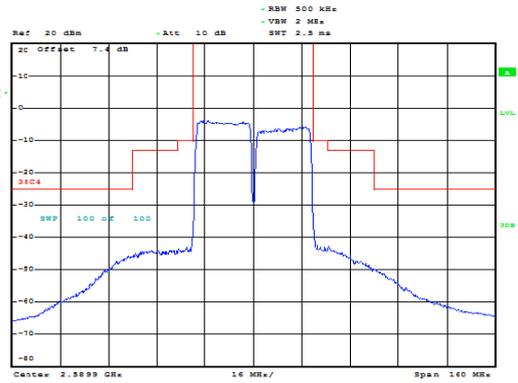


CA\_38C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- Low



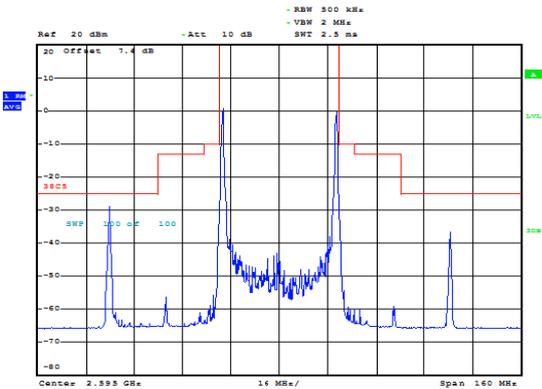
Date: 27.OCT.2018 12:05:42

CA\_38C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- Low



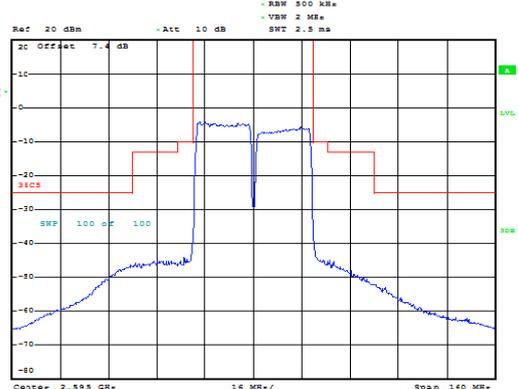
Date: 27.OCT.2018 12:05:28

CA\_38C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- Middle



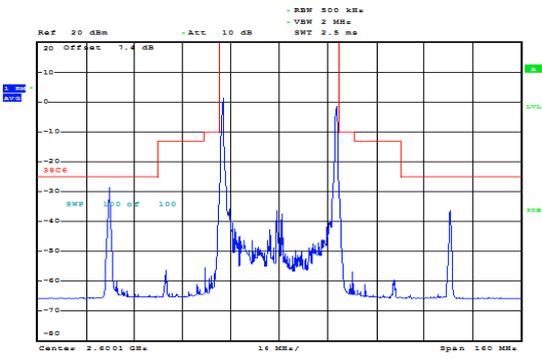
Date: 27.OCT.2018 12:06:52

CA\_38C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- Middle



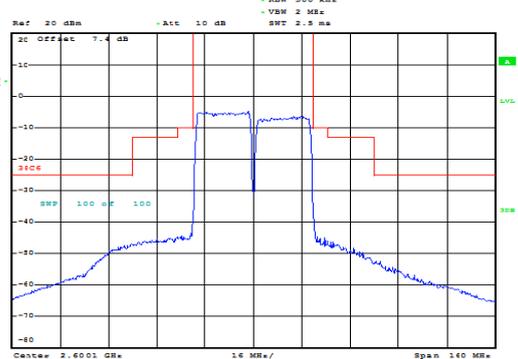
Date: 27.OCT.2018 12:07:22

CA\_38C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- High



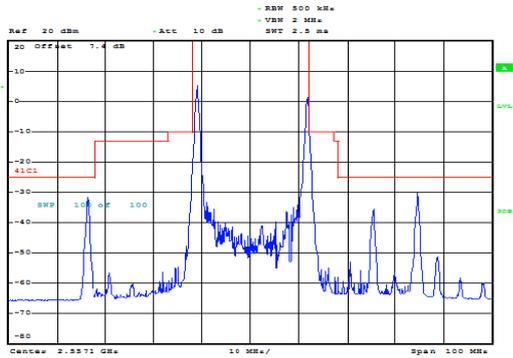
Date: 27.OCT.2018 12:11:59

CA\_38C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- High



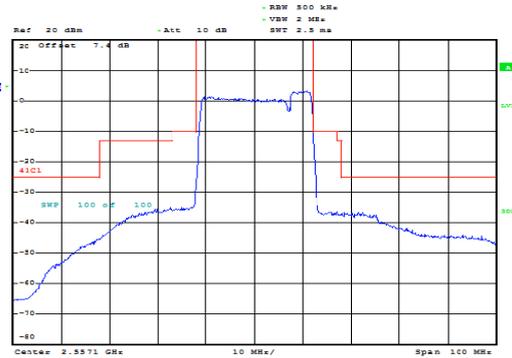
Date: 27.OCT.2018 12:11:38

CA\_41C 20MHz+5MHz QPSK RB=1#0+1#24  
CH- Low



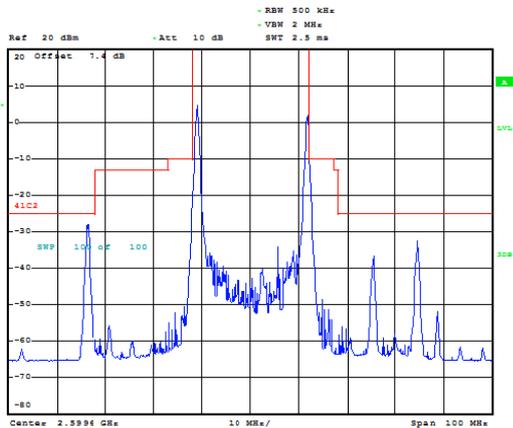
Date: 26.OCT.2018 12:54:02

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CH- Low



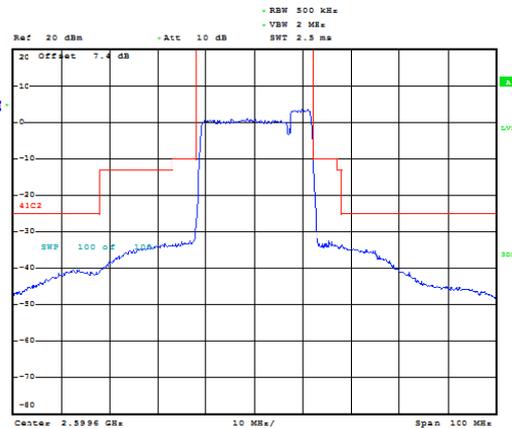
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CH- Middle



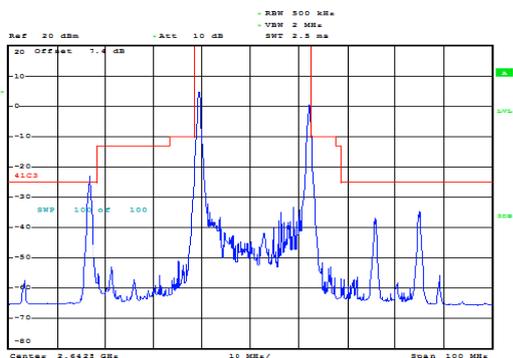
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CH- Middle



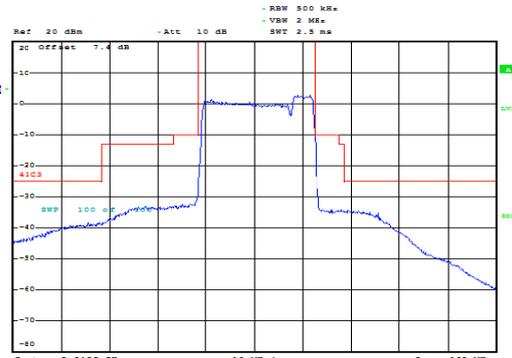
Date: 26.OCT.2018 12:56:37

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CH- High



Date: 26.OCT.2018 13:09:18

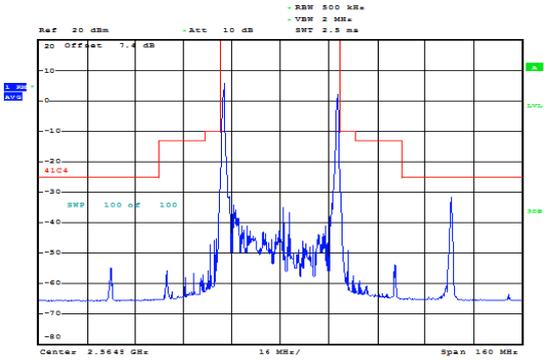
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CH- High



Date: 26.OCT.2018 13:08:30

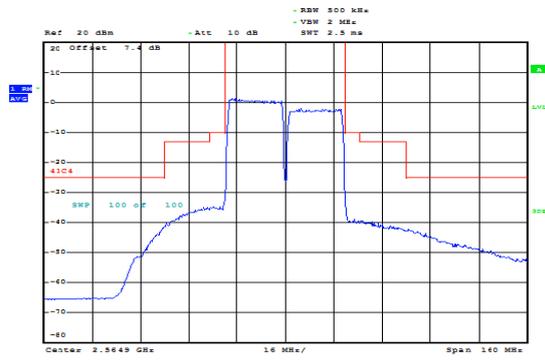


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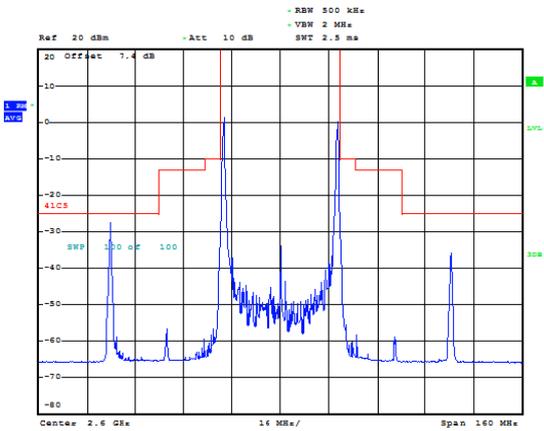
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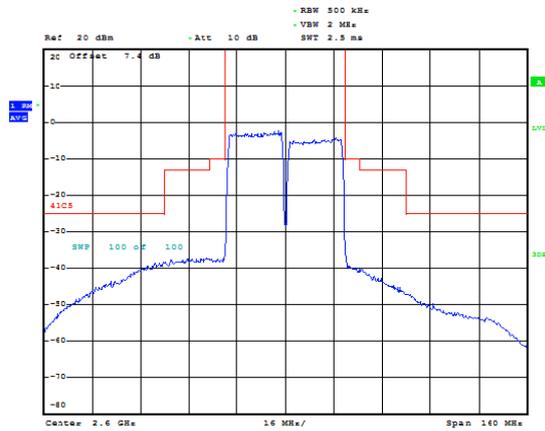
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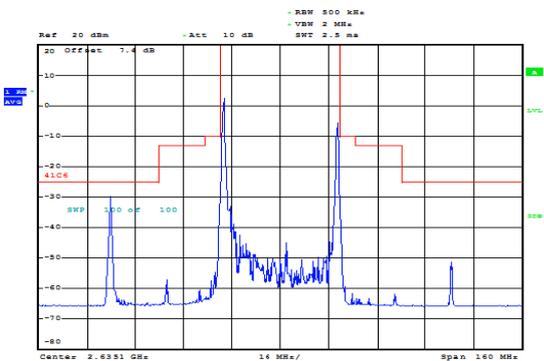
Date: 27.OCT.2018 11:38:22

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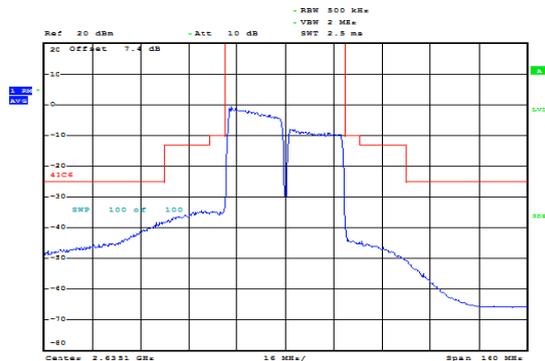
Date: 27.OCT.2018 11:43:59

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Date: 27.OCT.2018 11:50:02

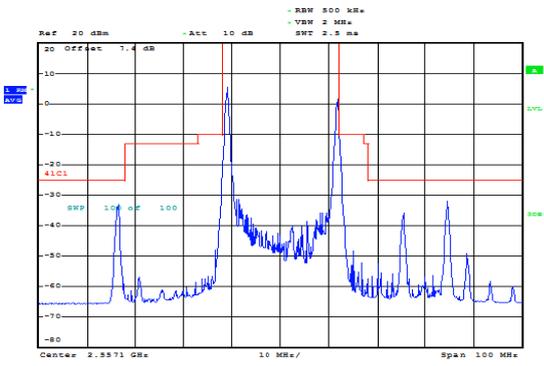
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Date: 27.OCT.2018 11:50:53

CA\_41C 20MHz+5MHz 16QAM RB=1#0+1#24

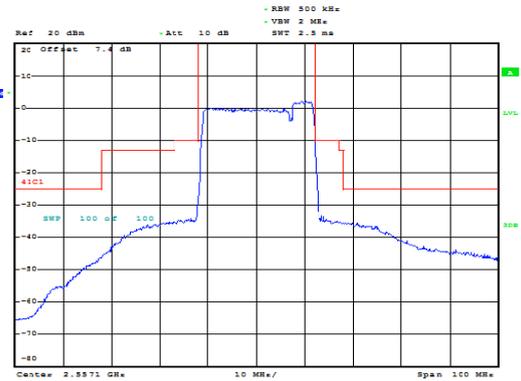
CH- Low



Date: 26.OCT.2018 12:54:18

CA\_41C 20MHz+5MHz 16QAM RB=100#0+25#0

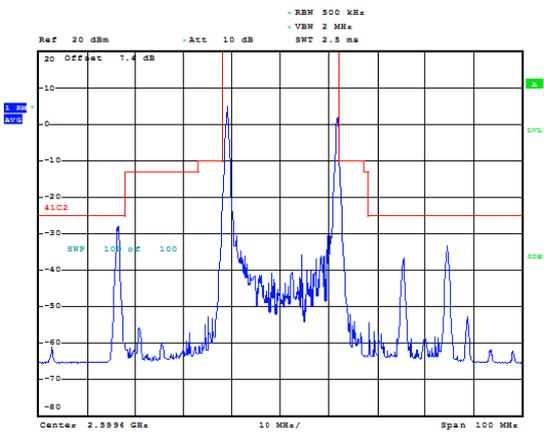
CH- Low



Date: 26.OCT.2018 12:54:49

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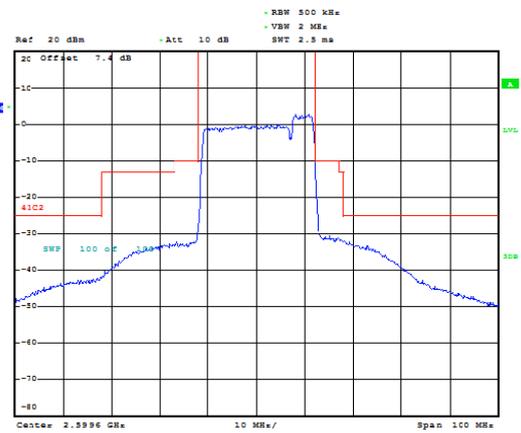
CH- Middle



Date: 26.OCT.2018 12:56:09

CA\_41C 20MHz+5MHz 16QAM RB=100#0+25#0

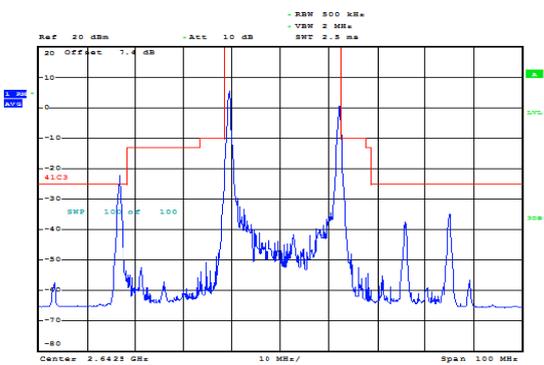
CH- Middle



Date: 26.OCT.2018 12:56:48

CA\_41C 20MHz+5MHz 16QAM RB=1#0+1#24

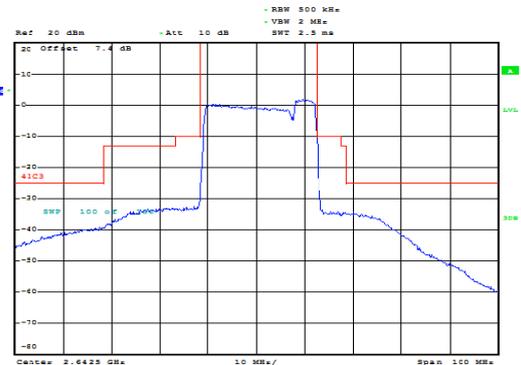
CH- High



Date: 26.OCT.2018 13:08:11

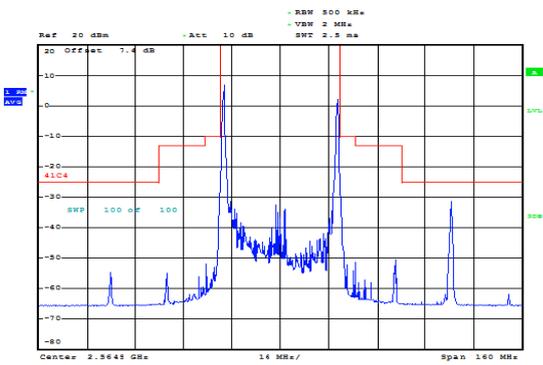
CA\_41C 20MHz+5MHz 16QAM RB=100#0+25#0

CH- High



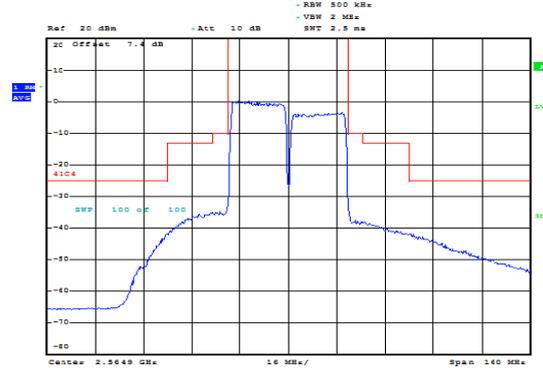
Date: 26.OCT.2018 13:08:41

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CH- Low



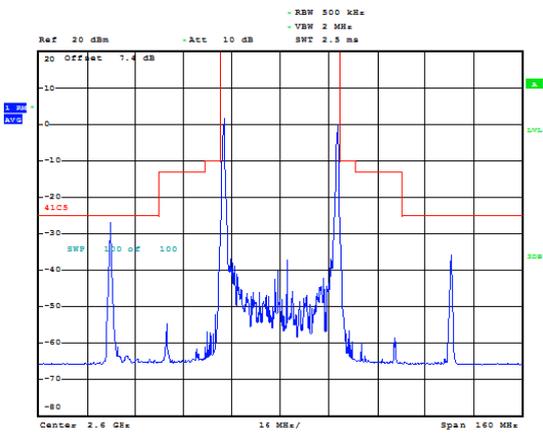
Date: 26.OCT.2018 13:11:58

CA\_41C 20MHz+20MHz 16QAM  
RB=100#0+100#0 CH- Low



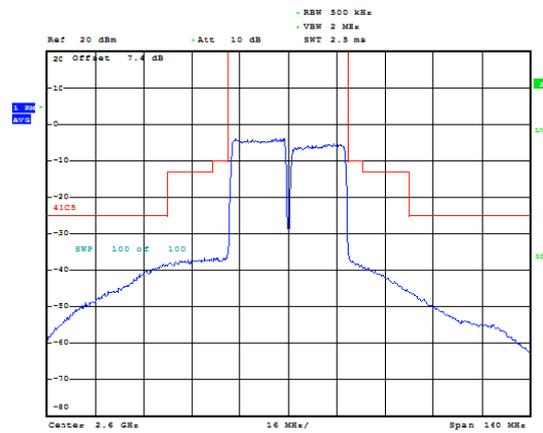
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CH- Middle



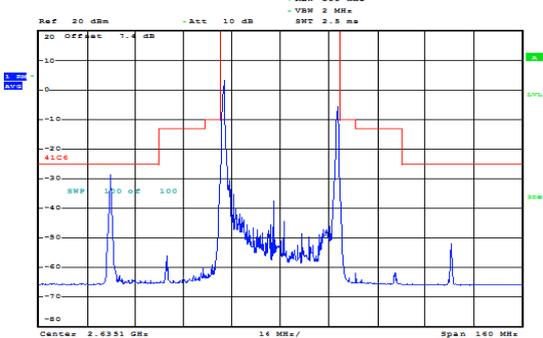
Date: 27.OCT.2018 11:49:22

CA\_41C 20MHz+20MHz 16QAM  
RB=100#0+100#0 CH- Middle



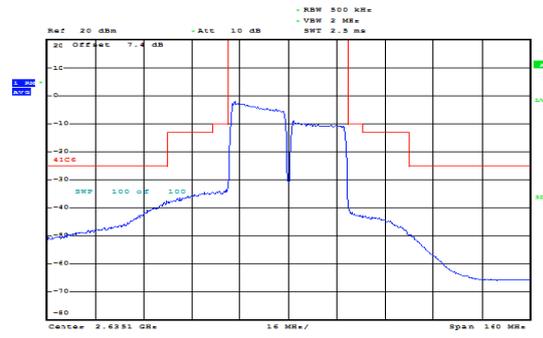
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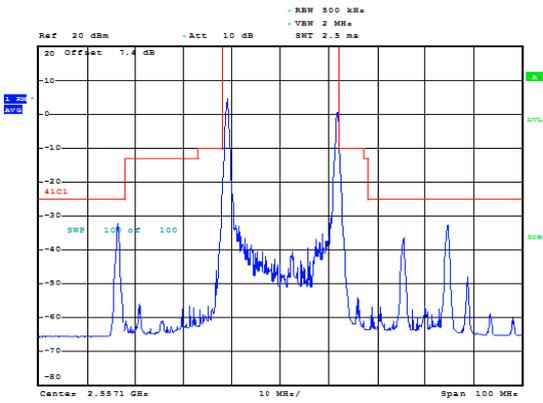
CA\_41C 20MHz+20MHz 16QAM  
RB=100#0+100#0 CH- High



Date: 27.OCT.2018 11:50:34

CA\_41C 20MHz+5MHz 64QAM RB=1#0+1#24

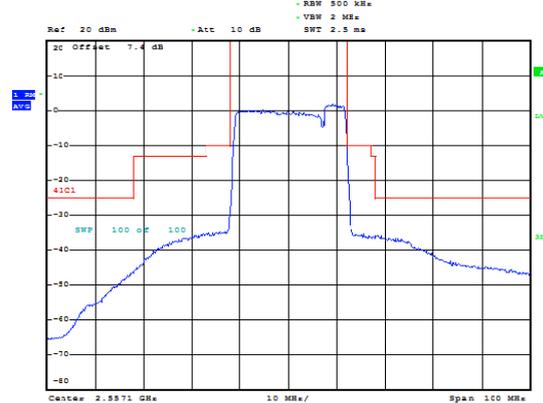
CH- Low



Date: 26.OCT.2018 12:59:01

CA\_41C 20MHz+5MHz 64QAM RB=100#0+25#0

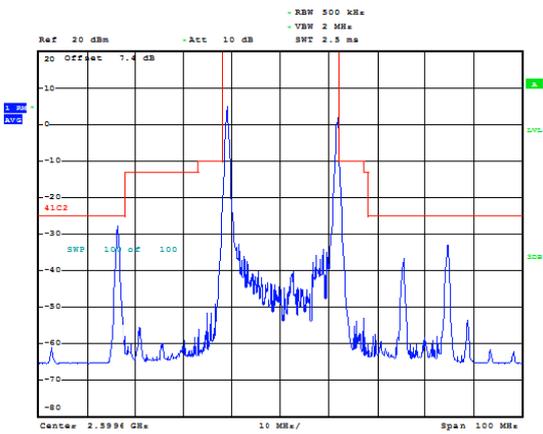
CH- Low



Date: 26.OCT.2018 12:59:32

CA\_41C 20MHz+5MHz 64QAM RB=1#0+1#24

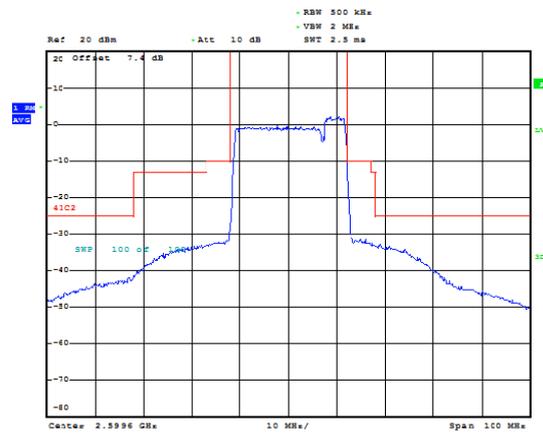
CH- Middle



Date: 26.OCT.2018 12:57:39

CA\_41C 20MHz+5MHz 64QAM RB=100#0+25#0

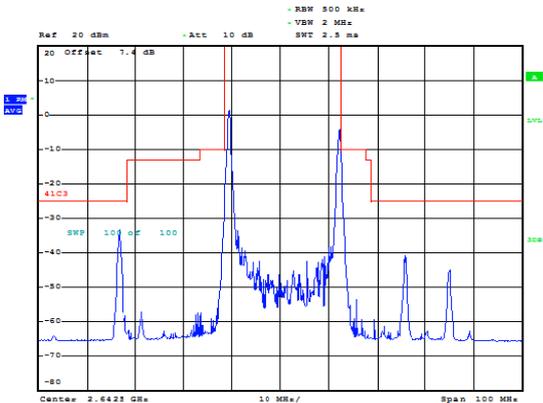
CH- Middle



Date: 26.OCT.2018 12:57:21

CA\_41C 20MHz+5MHz 64QAM RB=1#0+1#24

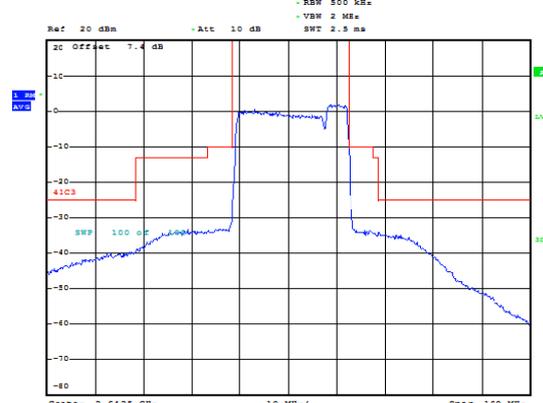
CH- High



Date: 26.OCT.2018 12:59:54

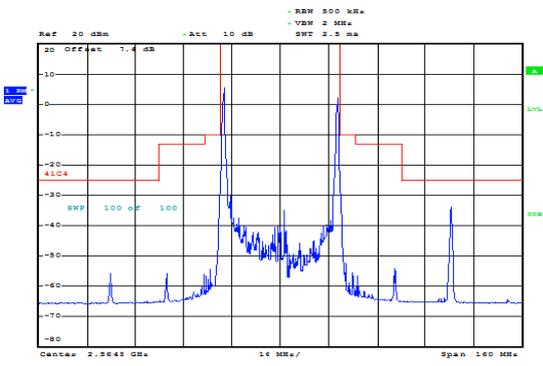
CA\_41C 20MHz+5MHz 64QAM RB=100#0+25#0

CH- High



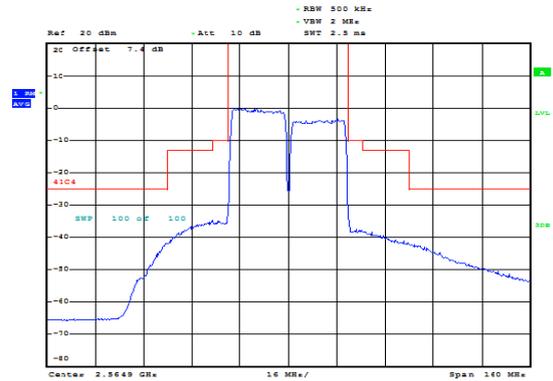
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CA\_41C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- Low



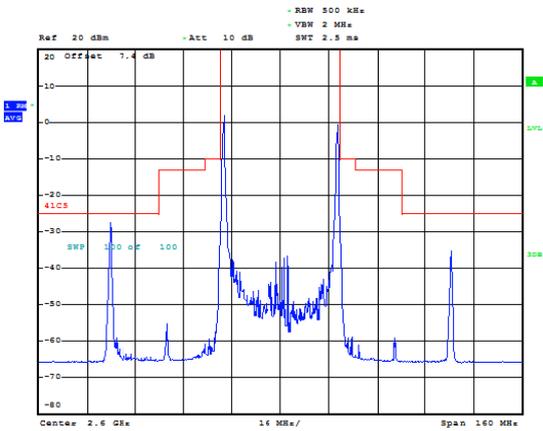
Date: 26.OCT.2018 13:13:27

CA\_41C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- Low



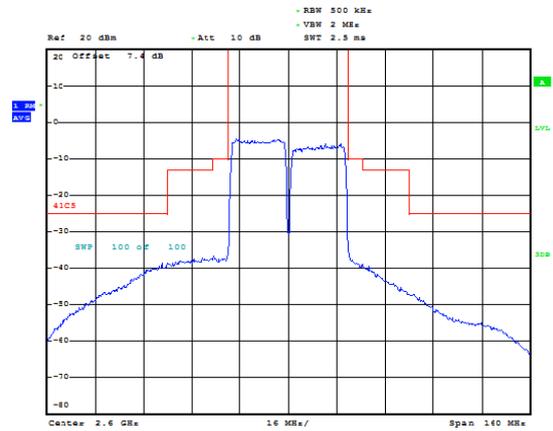
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CA\_41C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- Middle



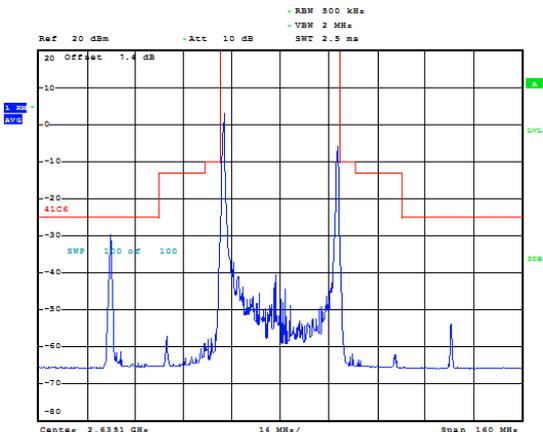
Date: 27.OCT.2018 11:44:50

CA\_41C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- Middle



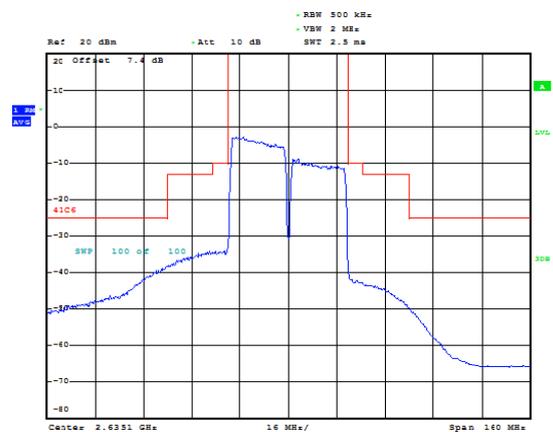
Date: 27.OCT.2018 11:46:46

CA\_41C 20MHz+20MHz 64QAM RB=1#0+1#99  
CH- High



Date: 27.OCT.2018 11:48:57

CA\_41C 20MHz+20MHz 64QAM  
RB=100#0+100#0 CH- High



Date: 27.OCT.2018 11:48:27

### 5.5 Peak-to-Average Power Ratio (PAPR)

#### Ambient condition

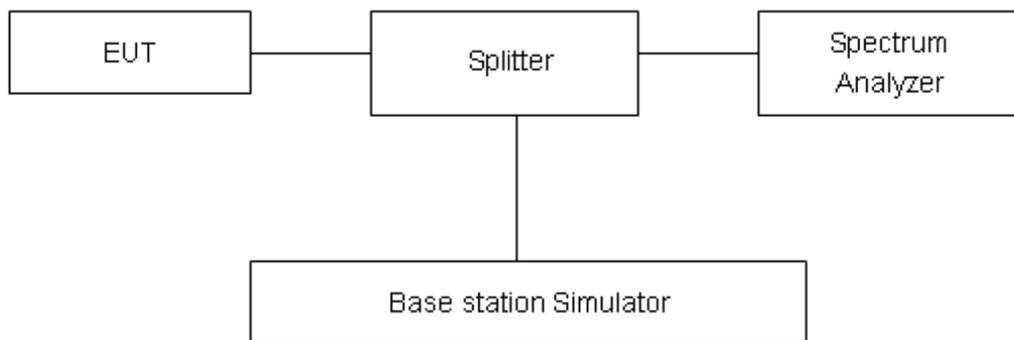
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Methods of Measurement

Measure the total peak power and record as PPK. And measure the total average power and record as PAvg. Both the peak and average power levels must be expressed in the same logarithmic units (e.g., dBm). Determine the PAPR from:

$$PAPR (dB) = PPK (dBm) - PAvg (dBm).$$

#### Test Setup



#### Limits

Rule Part 27.50(d)(5) Equipment employed must be authorized in accordance with the provisions of 24.51. 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 (d)(6) of this section. 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.

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.4$  dB.

**Test Results**

CA_7C Bandwidth	PCC		SCC1		Modulation	Peak-to-Average Power Ratio (PAPR)		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)		Peak (dBm)	Avg (dBm)	PAPR (dB)
10MHz+20MHz	21006	2525.6	21150	2540	QPSK	25.92	19.73	6.19
10MHz+20MHz	21006	2525.6	21150	2540	16QAM	25.34	18.62	6.72
10MHz+20MHz	21006	2525.6	21150	2540	64QAM	24.35	17.44	6.91
20MHz+10MHz	21051	2530.1	21195	2544.5	QPSK	26.07	19.69	6.38
20MHz+10MHz	21051	2530.1	21195	2544.5	16QAM	25.86	18.97	6.89
20MHz+10MHz	21051	2530.1	21195	2544.5	64QAM	24.71	17.77	6.94
15MHz+15MHz	21025	2527.5	21175	2542.5	QPSK	26.15	19.71	6.44
15MHz+15MHz	21025	2527.5	21175	2542.5	16QAM	25.40	18.55	6.85
15MHz+15MHz	21025	2527.5	21175	2542.5	64QAM	24.27	17.33	6.94
15MHz+20MHz	21003	2525.3	21174	2542.4	QPSK	26.25	19.65	6.60
15MHz+20MHz	21003	2525.3	21174	2542.4	16QAM	25.66	18.62	7.04
15MHz+20MHz	21003	2525.3	21174	2542.4	64QAM	24.47	17.38	7.09
20MHz+15MHz	21026	2527.6	21197	2544.7	QPSK	26.58	19.80	6.78
20MHz+15MHz	21026	2527.6	21197	2544.7	16QAM	26.09	18.84	7.25
20MHz+15MHz	21026	2527.6	21197	2544.7	64QAM	25.35	18.07	7.28
20MHz+20MHz	21001	2525.1	21199	2544.9	QPSK	25.37	19.67	5.70
20MHz+20MHz	21001	2525.1	21199	2544.9	16QAM	24.49	18.62	5.87
20MHz+20MHz	21001	2525.1	21199	2544.9	64QAM	24.80	17.42	7.38

CA_38C Bandwidth	PCC		SCC1		Modulation	Peak-to-Average Power Ratio (PAPR)		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)		Peak (dBm)	Avg (dBm)	PAPR (dB)
15MHz+15MHz	37925	2587.5	38075	2602.5	QPSK	30.34	20.31	10.03
15MHz+15MHz	37925	2587.5	38075	2602.5	16QAM	29.94	19.32	10.62
15MHz+15MHz	37925	2587.5	38075	2602.5	64QAM	29.16	18.42	10.74
20MHz+20MHz	37901	2585.1	38099	2604.9	QPSK	30.80	19.97	10.83
20MHz+20MHz	37901	2585.1	38099	2604.9	16QAM	29.83	18.88	10.95
20MHz+20MHz	37901	2585.1	38099	2604.9	64QAM	28.62	17.93	10.69

CA_41C Bandwidth	PCC		SCC1		Modulation	Peak-to-Average Power Ratio (PAPR)		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)		Peak (dBm)	Avg (dBm)	PAPR (dB)
5MHz+20MHz	40598	2590.8	40715	2602.5	QPSK	29.87	19.89	9.98
5MHz+20MHz	40598	2590.8	40715	2602.5	16QAM	29.10	18.81	10.29
5MHz+20MHz	40598	2590.8	40715	2602.5	64QAM	28.93	17.99	10.94
20MHz+5MHz	40665	2597.5	40782	2609.2	QPSK	28.77	19.45	9.32
20MHz+5MHz	40665	2597.5	40782	2609.2	16QAM	28.82	18.54	10.28
20MHz+5MHz	40665	2597.5	40782	2609.2	64QAM	28.55	18.11	10.44
10MHz+20MHz	40596	2590.6	40740	2605	QPSK	29.53	19.88	9.65
10MHz+20MHz	40596	2590.6	40740	2605	16QAM	29.47	18.97	10.50
10MHz+20MHz	40596	2590.6	40740	2605	64QAM	28.24	18.84	9.40
20MHz+10MHz	40641	2595.1	40785	2609.5	QPSK	30.37	20.26	10.11
20MHz+10MHz	40641	2595.1	40785	2609.5	16QAM	29.88	19.31	10.57
20MHz+10MHz	40641	2595.1	40785	2609.5	64QAM	29.04	18.46	10.58
15MHz+15MHz	40615	2592.5	40765	2607.5	QPSK	30.00	19.79	10.21
15MHz+15MHz	40615	2592.5	40765	2607.5	16QAM	28.91	18.71	10.20
15MHz+15MHz	40615	2592.5	40765	2607.5	64QAM	27.87	17.48	10.39
15MHz+20MHz	40593	2590.3	40764	2607.4	QPSK	29.88	19.74	10.14
15MHz+20MHz	40593	2590.3	40764	2607.4	16QAM	29.27	18.75	10.52
15MHz+20MHz	40593	2590.3	40764	2607.4	64QAM	28.74	18.15	10.59
20MHz+15MHz	40616	2592.6	40787	2609.7	QPSK	29.06	19.74	9.32
20MHz+15MHz	40616	2592.6	40787	2609.7	16QAM	29.11	18.86	10.25
20MHz+15MHz	40616	2592.6	40787	2609.7	64QAM	28.73	17.92	10.81
20MHz+20MHz	40591	2590.1	40789	2609.9	QPSK	29.19	20.49	8.70
20MHz+20MHz	40591	2590.1	40789	2609.9	16QAM	28.12	19.44	8.68
20MHz+20MHz	40591	2590.1	40789	2609.9	64QAM	28.66	18.18	10.48

## 5.6 Frequency Stability

### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

#### Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -40°C to +85°C in 10°C step size.

(1) With all power removed, the temperature was decreased to -10°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -40°C to +85°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

#### Frequency Stability (Voltage Variation)

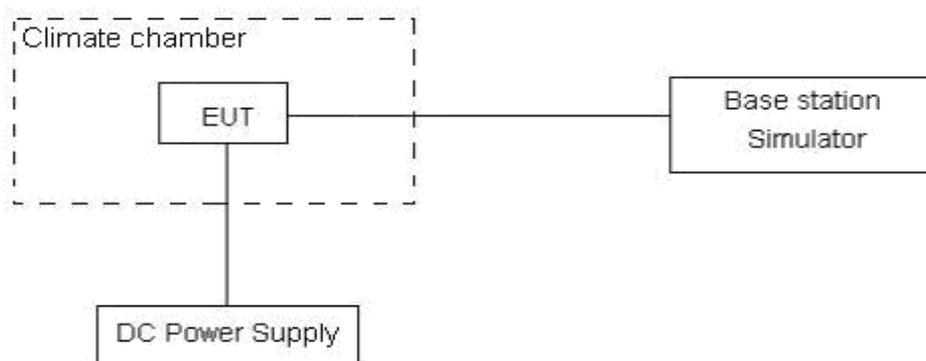
The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.35 V, with a nominal voltage of 3.82V.

### Test setup



### Limits

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 3, U = 0.01\text{ppm}$ .

**Test Result**

CA_7C_QPSK		20MHz+10MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2500	2570	Delta (Hz)	Frequency Stability (ppm)	2500	2570	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Normal(25°C)	Normal	2501.1856	2568.8834	-2.48	-0.00132	2501.1981	2568.8709	-2.36	-0.00126
Extreme(85°C)		2501.1815	2568.8874	-3.54	-0.00188	2501.1926	2568.8763	-3.05	-0.00162
Extreme(80°C)		2501.1849	2568.8863	-0.74	-0.00039	2501.2117	2568.8595	-1.25	-0.00066
Extreme(70°C)		2501.1823	2568.8801	-2.69	-0.00143	2501.2208	2568.8416	0.58	0.00031
Extreme(60°C)		2501.1805	2568.8823	-1.24	-0.00066	2501.2074	2568.8554	-2.34	-0.00124
Extreme(50°C)		2501.1815	2568.8819	-0.68	-0.00036	2501.1941	2568.8693	-1.78	-0.00095
Extreme(40°C)		2501.1867	2568.8891	-2.98	-0.00159	2501.2336	2568.8422	-0.86	-0.00046
Extreme(30°C)		2501.1858	2568.8852	-1.26	-0.00067	2501.2011	2568.8699	-2.48	-0.00132
Extreme(20°C)		2501.1889	2568.8803	-2.31	-0.00123	2501.2158	2568.8534	-2.06	-0.00110
Extreme(10°C)		2501.1823	2568.8874	-2.06	-0.00110	2501.2165	2568.8532	1.58	0.00084
Extreme(0°C)		2501.1817	2568.8829	1.67	0.00089	2501.2181	2568.8465	-2.61	-0.00139
Extreme(-10°C)		2501.1863	2568.8811	-2.37	-0.00126	2501.2176	2568.8498	-2.82	-0.00150
Extreme(-20°C)		2501.1827	2568.8865	-1.58	-0.00084	2501.1939	2568.8753	-0.67	-0.00036
Extreme(-30°C)		2501.1807	2568.8859	-3.29	-0.00175	2501.203	2568.8636	-2.19	-0.00116
Extreme(-40°C)		2501.1869	2568.8828	-1.06	-0.00056	2501.2216	2568.8481	-3.07	-0.00163
25°C	LV	2501.1817	2568.8827	-0.59	-0.00031	2501.2111	2568.8533	-2.64	-0.00140
	HV	2501.1803	2568.8831	2.35	0.00125	2501.1971	2568.8663	-0.91	-0.00048
CA_7C_16QAM		20MHz+10MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2500	2570	Delta (Hz)	Frequency Stability (ppm)	2500	2570	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Normal(25°C)	Normal	2501.1882	2568.8808	-2.36	-0.00126	2501.2007	2568.8683	-2.31	-0.00123
Extreme(85°C)		2501.1883	2568.8806	-2.14	-0.00114	2501.1994	2568.8695	-2.85	-0.00152
Extreme(80°C)		2501.1896	2568.8816	-2.09	-0.00111	2501.2164	2568.8548	-1.06	-0.00056
Extreme(70°C)		2501.1908	2568.8716	-1.67	-0.00089	2501.2293	2568.8331	-2.47	-0.00131
Extreme(60°C)		2501.1869	2568.8759	-0.26	-0.00014	2501.2138	2568.849	-0.68	-0.00036
Extreme(50°C)		2501.1846	2568.8788	-2.67	-0.00142	2501.1972	2568.8662	-1.98	-0.00105
Extreme(40°C)		2501.1962	2568.8796	-1.69	-0.00090	2501.2431	2568.8327	-0.75	-0.00040
Extreme(30°C)		2501.1904	2568.8806	-3.19	-0.00170	2501.2057	2568.8653	-0.26	-0.00014
Extreme(20°C)		2501.195	2568.8742	-2.68	-0.00143	2501.2219	2568.8473	-3.85	-0.00205
Extreme(10°C)		2501.186	2568.8837	-3.49	-0.00186	2501.2202	2568.8495	-4.64	-0.00247
Extreme(0°C)		2501.1885	2568.8761	-0.58	-0.00031	2501.2249	2568.8397	1.56	0.00083
Extreme(-10°C)		2501.1954	2568.872	0.57	0.00030	2501.2267	2568.8407	-0.68	-0.00036
Extreme(-20°C)		2501.1896	2568.8796	-0.68	-0.00036	2501.2008	2568.8684	-2.07	-0.00110
Extreme(-30°C)		2501.1883	2568.8783	0.99	0.00053	2501.2106	2568.856	-1.34	-0.00071



CA_7C_64QAM		20MHz+10MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Temperature	Voltage	2500	2570	Delta (Hz)	Frequency Stability (ppm)	2500	2570	Delta (Hz)	Frequency Stability (ppm)
		F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Extreme(-40°C)		2501.1907	2568.879	-2.57	-0.00137	2501.2254	2568.8443	-3.59	-0.00191
25°C	LV	2501.1885	2568.8759	-2.94	-0.00156	2501.2179	2568.8465	-3.67	-0.00195
	HV	2501.187	2568.8764	-3.49	-0.00186	2501.2038	2568.8596	-4.29	-0.00228
Normal(25°C)	Normal	2501.1907	2568.8783	-2.67	-0.00142	2501.2032	2568.8658	-2.57	-0.00137
Extreme(85°C)		2501.1951	2568.8738	-1.21	-0.00064	2501.2062	2568.8627	-2.49	-0.00132
Extreme(80°C)		2501.1922	2568.879	-1.86	-0.00099	2501.219	2568.8522	-1.65	-0.00088
Extreme(70°C)		2501.1943	2568.8681	-2.94	-0.00156	2501.2328	2568.8296	-1.06	-0.00056
Extreme(60°C)		2501.1895	2568.8733	-0.29	-0.00015	2501.2164	2568.8464	-0.81	-0.00043
Extreme(50°C)		2501.1932	2568.8702	0.57	0.00030	2501.2058	2568.8576	-3.61	-0.00192
Extreme(40°C)		2501.2023	2568.8735	1.68	0.00089	2501.2492	2568.8266	-4.59	-0.00244
Extreme(30°C)		2501.1968	2568.8742	-2.67	-0.00142	2501.2121	2568.8589	-0.28	-0.00015
Extreme(20°C)		2501.1977	2568.8715	1.38	0.00073	2501.2246	2568.8446	-1.06	-0.00056
Extreme(10°C)		2501.1928	2568.8769	-3.81	-0.00203	2501.227	2568.8427	-2.39	-0.00127
Extreme(0°C)		2501.1949	2568.8697	-0.29	-0.00015	2501.2313	2568.8333	2.02	0.00107
Extreme(-10°C)		2501.2018	2568.8656	-1.69	-0.00090	2501.2331	2568.8343	0.49	0.00026
Extreme(-20°C)		2501.1978	2568.8714	-0.58	-0.00031	2501.209	2568.8602	1.28	0.00068
Extreme(-30°C)		2501.1944	2568.8722	-0.67	-0.00036	2501.2167	2568.8499	-0.67	-0.00036
Extreme(-40°C)	2501.1963	2568.8734	-3.94	-0.00210	2501.231	2568.8387	-1.24	-0.00066	
25°C	LV	2501.1928	2568.8716	-2.69	-0.00143	2501.2222	2568.8422	1.26	0.00067
	HV	2501.1946	2568.8688	-1.94	-0.00103	2501.2114	2568.852	-2.37	-0.00126

CA_38C_QPSK		15MHz+15MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Temperature	Voltage	2570	2620	Delta (Hz)	Frequency Stability (ppm)	2570	2620	Delta (Hz)	Frequency Stability (ppm)
		F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Normal(25°C)	Normal	2571.1718	2618.2724	-16.58	-0.00882	2571.1843	2618.2599	-15.24	-0.00811
Extreme(85°C)		2571.1702	2618.2731	-15.67	-0.00834	2571.1813	2618.262	-15.67	-0.00834
Extreme(80°C)		2571.1736	2618.2708	-18.95	-0.01008	2571.2004	2618.244	-13.09	-0.00696
Extreme(70°C)		2571.1728	2618.2707	-20.16	-0.01072	2571.2113	2618.2322	-18.67	-0.00993
Extreme(60°C)		2571.1717	2618.2769	-21.68	-0.01153	2571.1986	2618.25	-16.94	-0.00901
Extreme(50°C)		2571.1713	2618.2727	-20.87	-0.01110	2571.1839	2618.2601	-11.04	-0.00587
Extreme(40°C)		2571.1723	2618.2733	-19.58	-0.01041	2571.2192	2618.2264	-20.88	-0.01111
Extreme(30°C)		2571.1767	2618.2718	-18.27	-0.00972	2571.192	2618.2565	-14.00	-0.00745
Extreme(20°C)		2571.1707	2618.2704	-17.36	-0.00923	2571.1976	2618.2435	-13.87	-0.00738
Extreme(10°C)		2571.1708	2618.2708	-15.28	-0.00813	2571.205	2618.2366	-16.51	-0.00878
Extreme(0°C)		2571.1726	2618.2779	-17.96	-0.00955	2571.209	2618.2415	-16.97	-0.00903
Extreme(-10°C)		2571.1738	2618.2737	-14.29	-0.00760	2571.2051	2618.2424	-12.74	-0.00678



Extreme(-20°C)		2571.1798	2618.2738	-13.22	-0.00703	2571.191	2618.2626	-13.65	-0.00726
Extreme(-30°C)		2571.1797	2618.2781	-12.68	-0.00674	2571.202	2618.2558	-15.84	-0.00843
Extreme(-40°C)		2571.1793	2618.2782	-16.57	-0.00881	2571.214	2618.2435	-16.35	-0.00870
25°C	LV	2571.1708	2618.2702	-15.29	-0.00813	2571.2002	2618.2408	-16.58	-0.00882
	HV	2571.1701	2618.2701	-17.34	-0.00922	2571.1869	2618.2533	-17.56	-0.00934
CA_38C_16QAM		15MHz+15MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2570	2620	Delta (Hz)	Frequency Stability (ppm)	2570	2620	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
		Normal	Normal(25°C)	2571.1744	2618.2698	-15.27	-0.00812	2571.187	2618.2572
Extreme(85°C)	2571.177		2618.2663	-14.53	-0.00773	2571.2134	2618.2299	-13.75	-0.00731
Extreme(80°C)	2571.1783		2618.2661	-12.34	-0.00656	2571.2047	2618.2397	-15.94	-0.00848
Extreme(70°C)	2571.1813		2618.2622	-19.67	-0.01046	2571.1981	2618.2454	-17.86	-0.00950
Extreme(60°C)	2571.1781		2618.2705	-20.57	-0.01094	2571.1943	2618.2543	-16.42	-0.00873
Extreme(50°C)	2571.1744		2618.2696	-21.64	-0.01151	2571.1874	2618.2566	-16.97	-0.00903
Extreme(40°C)	2571.1818		2618.2638	-19.55	-0.01040	2571.1972	2618.2484	-18.33	-0.00975
Extreme(30°C)	2571.1813		2618.2672	-16.37	-0.00871	2571.2044	2618.2441	-17.45	-0.00928
Extreme(20°C)	2571.1768		2618.2643	-17.35	-0.00923	2571.1924	2618.2487	-16.91	-0.00899
Extreme(10°C)	2571.1745		2618.2671	-15.58	-0.00829	2571.2009	2618.2407	-15.67	-0.00834
Extreme(0°C)	2571.1794		2618.2711	-16.30	-0.00867	2571.2217	2618.2288	-16.73	-0.00890
Extreme(-10°C)	2571.1829		2618.2646	-18.20	-0.00968	2571.2083	2618.2392	-18.54	-0.00986
Extreme(-20°C)	2571.1867		2618.2669	-19.57	-0.01041	2571.1998	2618.2538	-13.29	-0.00707
Extreme(-30°C)	2571.1873		2618.2705	-18.20	-0.00968	2571.2027	2618.2551	-15.67	-0.00834
Extreme(-40°C)	2571.1831		2618.2744	-19.62	-0.01044	2571.2024	2618.2551	-15.24	-0.00811
25°C	LV	2571.1776	2618.2633	-18.60	-0.00989	2571.1912	2618.2498	-13.71	-0.00729
	HV	2571.1768	2618.2634	-19.33	-0.01028	2571.2115	2618.2287	-16.62	-0.00884
CA_38C_64QAM		15MHz+15MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2570	2620	Delta (Hz)	Frequency Stability (ppm)	2570	2620	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
		Normal	Normal(25°C)	2571.1769	2618.2673	-16.39	-0.00872	2571.1894	2618.2548
Extreme(85°C)	2571.1838		2618.2595	-17.52	-0.00932	2571.1949	2618.2484	-15.42	-0.00820
Extreme(80°C)	2571.1809		2618.2635	-19.53	-0.01039	2571.2077	2618.2367	-14.37	-0.00764
Extreme(70°C)	2571.1848		2618.2587	-17.46	-0.00929	2571.2233	2618.2202	-16.80	-0.00894
Extreme(60°C)	2571.1807		2618.2679	-19.20	-0.01021	2571.2076	2618.241	-16.57	-0.00881
Extreme(50°C)	2571.183		2618.261	-20.56	-0.01094	2571.1956	2618.2484	-20.68	-0.01100
Extreme(40°C)	2571.1879		2618.2577	-20.19	-0.01074	2571.2348	2618.2108	-19.35	-0.01029
Extreme(30°C)	2571.1877		2618.2608	-21.57	-0.01147	2571.203	2618.2455	-20.67	-0.01099
Extreme(20°C)	2571.1795		2618.2616	-18.54	-0.00986	2571.2064	2618.2347	-18.73	-0.00996
Extreme(10°C)	2571.1813		2618.2603	-18.82	-0.01001	2571.2155	2618.2261	-16.25	-0.00864
Extreme(0°C)	2571.1858		2618.2647	-19.30	-0.01027	2571.2222	2618.2283	-15.34	-0.00816



Extreme(-10°C)		2571.1893	2618.2582	-18.06	-0.00961	2571.2206	2618.2269	-15.42	-0.00820
Extreme(-20°C)		2571.1949	2618.2587	-16.47	-0.00876	2571.2061	2618.2475	-15.84	-0.00843
Extreme(-30°C)		2571.1934	2618.2644	-19.64	-0.01045	2571.2157	2618.2421	-16.43	-0.00874
Extreme(-40°C)		2571.1887	2618.2688	-20.20	-0.01074	2571.2234	2618.2341	-17.62	-0.00937
25°C	LV	2571.1819	2618.2591	-15.29	-0.00813	2571.2113	2618.2297	-19.66	-0.01046
	HV	2571.1844	2618.2558	-16.37	-0.00871	2571.2012	2618.239	-16.94	-0.00901

CA_41C_QPSK		20MHz+5MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2545	2655	Delta (Hz)	Frequency Stability (ppm)	2545	2655	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Normal(25°C)	Normal	2546.1849	2653.8758	-16.34	-0.00869	2546.1974	2653.8633	-13.68	-0.00728
Extreme(85°C)		2546.1844	2653.8715	-12.18	-0.00648	2546.1955	2653.8604	-15.27	-0.00812
Extreme(80°C)		2546.1839	2653.8736	-15.37	-0.00818	2546.2107	2653.8468	-12.58	-0.00669
Extreme(70°C)		2546.1862	2653.8743	-16.94	-0.00901	2546.2247	2653.8358	-15.34	-0.00816
Extreme(60°C)		2546.1839	2653.8725	-19.27	-0.01025	2546.2108	2653.8456	-11.06	-0.00588
Extreme(50°C)		2546.1833	2653.8763	-20.66	-0.01099	2546.1959	2653.8637	-15.18	-0.00807
Extreme(40°C)		2546.1825	2653.8754	-21.37	-0.01137	2546.2294	2653.8285	-16.84	-0.00896
Extreme(30°C)		2546.1841	2653.8742	-16.89	-0.00898	2546.1994	2653.8589	-16.35	-0.00870
Extreme(20°C)		2546.1835	2653.8768	-19.57	-0.01041	2546.2104	2653.8499	-17.59	-0.00936
Extreme(10°C)		2546.1828	2653.8723	-18.65	-0.00992	2546.217	2653.8381	-16.28	-0.00866
Extreme(0°C)		2546.1819	2653.8719	-15.24	-0.00811	2546.2183	2653.8355	-16.37	-0.00871
Extreme(-10°C)		2546.1842	2653.8764	-16.82	-0.00895	2546.2155	2653.8451	-13.29	-0.00707
Extreme(-20°C)		2546.1859	2653.8751	-17.71	-0.00942	2546.1971	2653.8639	-17.59	-0.00936
Extreme(-30°C)		2546.1819	2653.8729	-16.34	-0.00869	2546.2042	2653.8506	-19.68	-0.01047
Extreme(-40°C)		2546.1829	2653.8719	-15.82	-0.00841	2546.2176	2653.8372	-20.35	-0.01082
25°C	LV	2546.1847	2653.8718	-20.91	-0.01112	2546.2141	2653.8424	-13.05	-0.00694
	HV	2546.1852	2653.8753	-21.88	-0.01164	2546.202	2653.8585	-14.26	-0.00759

CA_41C_16QAM		20MHz+5MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2545	2655	Delta (Hz)	Frequency Stability (ppm)	2545	2655	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Normal(25°C)	Normal	2546.1875	2653.8732	-14.29	-0.00760	2546.2001	2653.8606	-14.74	-0.00784
Extreme(85°C)		2546.1912	2653.8647	-12.95	-0.00689	2546.2276	2653.8283	-16.33	-0.00869
Extreme(80°C)		2546.1886	2653.8689	-15.26	-0.00812	2546.215	2653.8425	-15.64	-0.00832
Extreme(70°C)		2546.1947	2653.8658	-11.67	-0.00621	2546.2115	2653.849	-16.40	-0.00872
Extreme(60°C)		2546.1903	2653.8661	-15.68	-0.00834	2546.2065	2653.8499	-11.12	-0.00591
Extreme(50°C)		2546.1864	2653.8732	-16.85	-0.00896	2546.1994	2653.8602	-16.24	-0.00864
Extreme(40°C)		2546.192	2653.8659	-18.94	-0.01007	2546.2074	2653.8505	-18.76	-0.00998



Extreme(30°C)		2546.1887	2653.8696	-19.34	-0.01029	2546.2118	2653.8465	-17.41	-0.00926
Extreme(20°C)		2546.1896	2653.8707	-20.16	-0.01072	2546.2052	2653.8551	-18.65	-0.00992
Extreme(10°C)		2546.1865	2653.8686	-17.43	-0.00927	2546.2129	2653.8422	-16.91	-0.00899
Extreme(0°C)		2546.1887	2653.8651	-12.38	-0.00659	2546.231	2653.8228	-17.00	-0.00904
Extreme(-10°C)		2546.1933	2653.8673	-15.39	-0.00819	2546.2187	2653.8419	-13.92	-0.00740
Extreme(-20°C)		2546.1928	2653.8682	-14.67	-0.00780	2546.2059	2653.8551	-15.22	-0.00810
Extreme(-30°C)		2546.1895	2653.8653	-19.24	-0.01023	2546.2049	2653.8499	-20.31	-0.01080
Extreme(-40°C)		2546.1867	2653.8681	-20.95	-0.01114	2546.206	2653.8488	-27.98	-0.01488
25°C	LV	2546.1915	2653.865	-16.83	-0.00895	2546.2051	2653.8514	-11.84	-0.00630
	HV	2546.1919	2653.8686	-18.66	-0.00993	2546.2266	2653.8339	-15.26	-0.00812
CA_41C_64QAM		20MHz+5MHz (Bandwidth)				20MHz+20MHz (Bandwidth)			
Condition		2545	2655	Delta (Hz)	Frequency Stability (ppm)	2545	2655	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	F low@ -13dBm (MHz)	F high@ -13dBm (MHz)			F low@ -13dBm (MHz)	F high@ -13dBm (MHz)		
Normal(25°C)	Normal	2546.19	2653.8707	-15.69	-0.00835	2546.2025	2653.8582	-15.26	-0.00812
Extreme(85°C)		2546.198	2653.8579	-17.29	-0.00920	2546.2091	2653.8468	-16.25	-0.00864
Extreme(80°C)		2546.1912	2653.8663	-15.54	-0.00827	2546.218	2653.8395	-8.59	-0.00457
Extreme(70°C)		2546.1982	2653.8623	-12.09	-0.00643	2546.2367	2653.8238	-15.39	-0.00819
Extreme(60°C)		2546.1929	2653.8635	-15.60	-0.00830	2546.2198	2653.8366	-17.73	-0.00943
Extreme(50°C)		2546.195	2653.8646	-17.05	-0.00907	2546.2076	2653.852	-21.06	-0.01120
Extreme(40°C)		2546.1981	2653.8598	-19.67	-0.01046	2546.245	2653.8129	-20.36	-0.01083
Extreme(30°C)		2546.1951	2653.8632	-15.33	-0.00815	2546.2104	2653.8479	-18.64	-0.00991
Extreme(20°C)		2546.1923	2653.868	-18.64	-0.00991	2546.2192	2653.8411	-19.56	-0.01040
Extreme(10°C)		2546.1933	2653.8618	-15.29	-0.00813	2546.2275	2653.8276	-18.24	-0.00970
Extreme(0°C)		2546.1951	2653.8587	-19.50	-0.01037	2546.2315	2653.8223	-14.25	-0.00758
Extreme(-10°C)		2546.1997	2653.8609	-12.96	-0.00689	2546.231	2653.8296	-16.48	-0.00877
Extreme(-20°C)		2546.201	2653.86	-15.37	-0.00818	2546.2122	2653.8488	-16.79	-0.00893
Extreme(-30°C)		2546.1956	2653.8592	-16.82	-0.00895	2546.2179	2653.8369	-11.06	-0.00588
Extreme(-40°C)		2546.1923	2653.8625	-15.46	-0.00822	2546.227	2653.8278	-16.37	-0.00871
25°C	LV	2546.1958	2653.8607	-15.27	-0.00812	2546.2252	2653.8313	-13.69	-0.00728
	HV	2546.1995	2653.861	-16.91	-0.00899	2546.2163	2653.8442	-18.48	-0.00983

### 5.7 Spurious Emissions at Antenna Terminals

#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 9kHz to the 10th harmonic of the carrier. The peak detector is used.

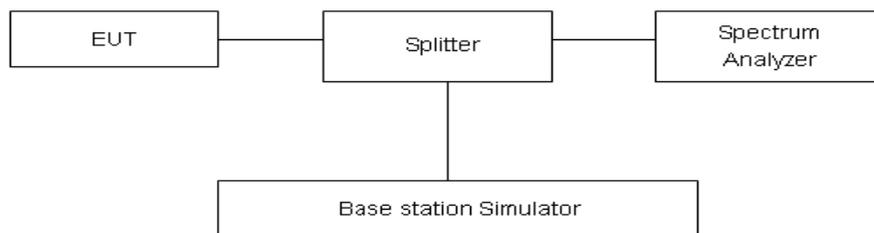
RBW is set to 100kHz, VBW is set to 300kHz for 30MHz~1GHz

RBW is set to 1MHz, VBW is set to 3MHz for above 1GHz, Sweep is set to ATUO.

Of those disturbances below (limit – 20 dB), the mark is not required for the EUT.

The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

#### Test setup



#### Limits

Rule Part 27.53(m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 27.53(m) Limit	-25 dBm
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#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

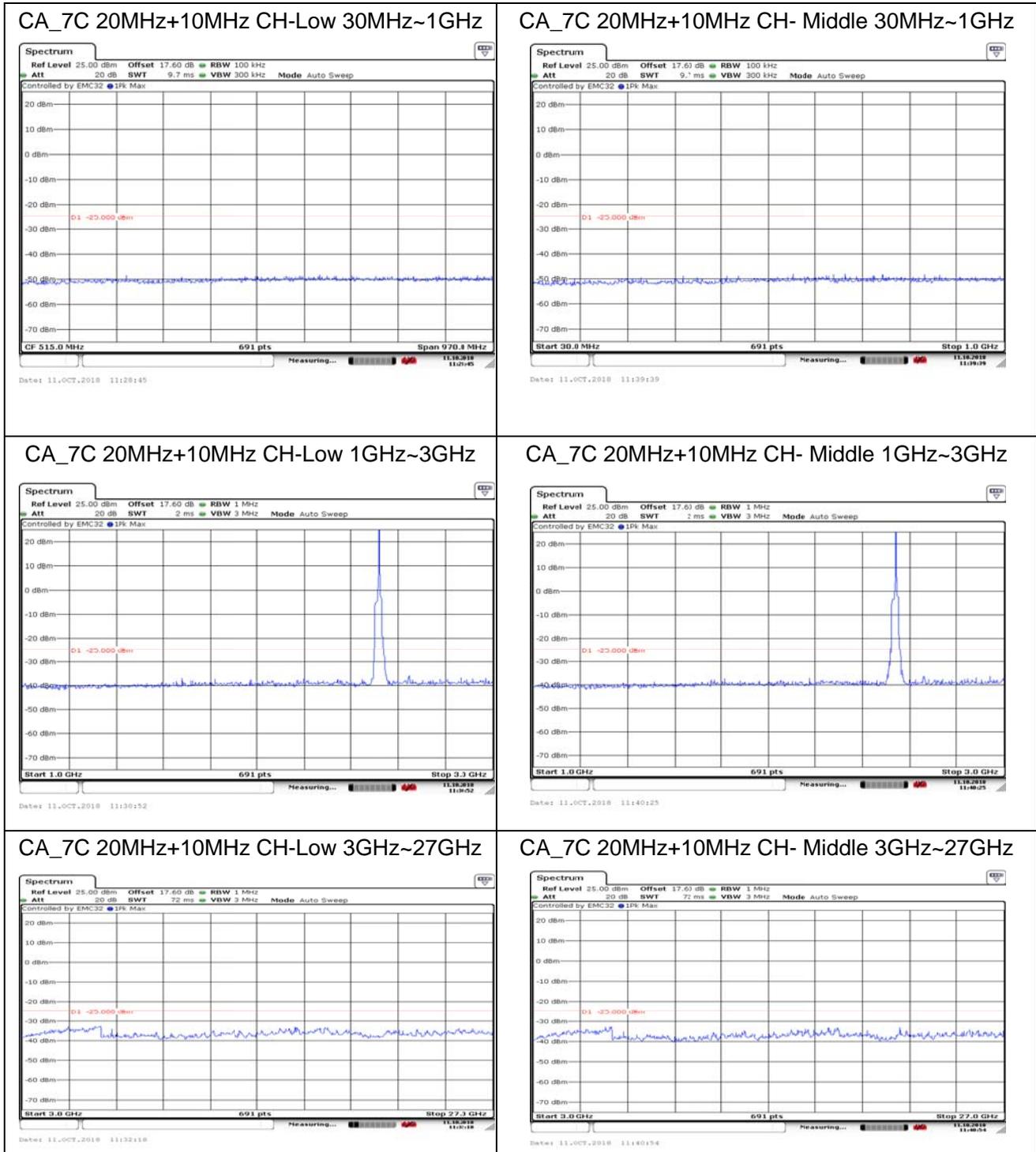


Frequency	Uncertainty
9kHz-1GHz	0.684 dB
1GHz-27GHz	1.407 dB

**Test Result**

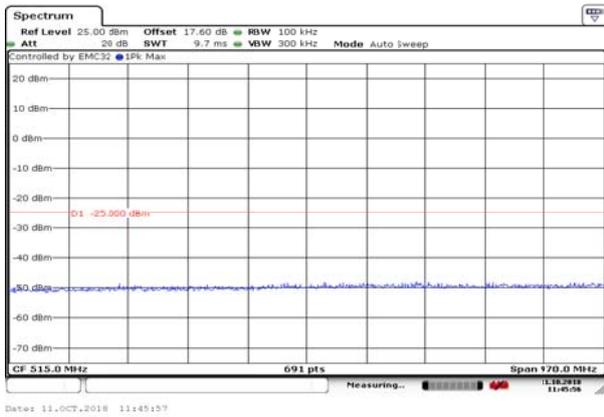
Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

The signal beyond the limit is carrier.

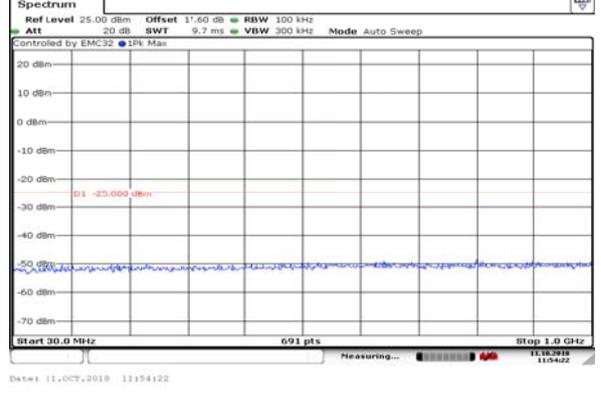




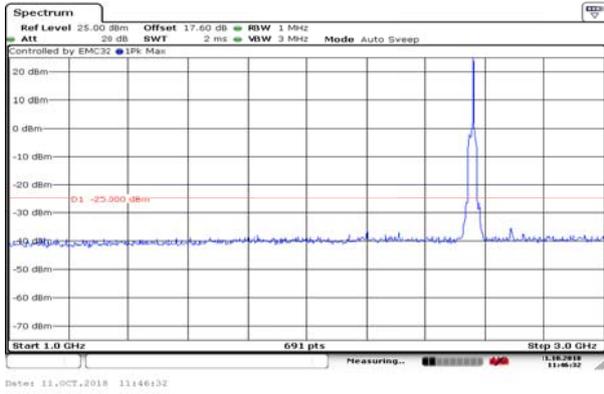
### CA\_7C 20MHz+10MHz CH- High 30MHz~1GHz



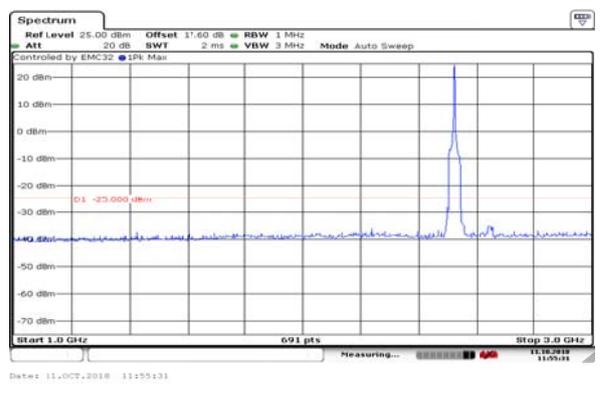
### CA\_7C 20MHz+20MHz CH-Low 30MHz~1GHz



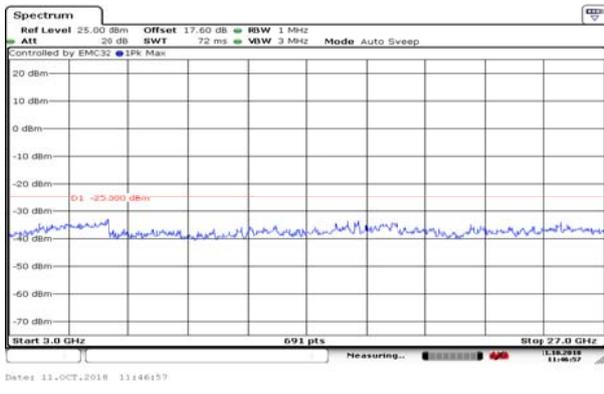
### CA\_7C 20MHz+10MHz CH- High 1GHz~3GHz



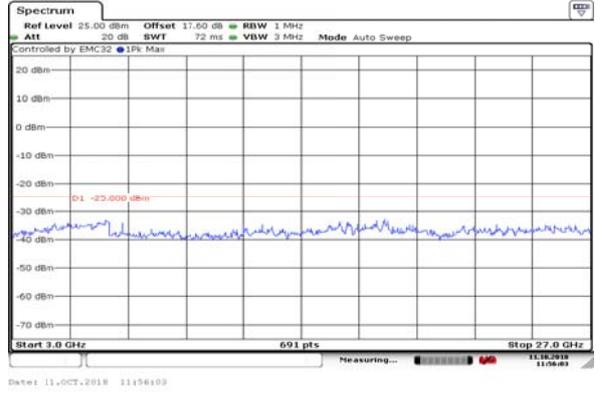
### CA\_7C 20MHz+20MHz CH-Low 1GHz~3GHz



### CA\_7C 20MHz+10MHz CH- High 3GHz~27GHz

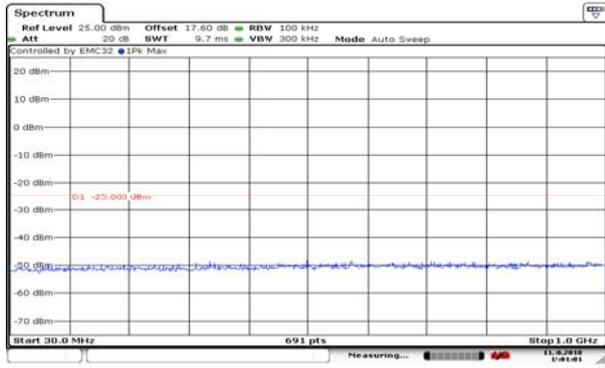


### CA\_7C 20MHz+20MHz CH-Low 3GHz~27GHz

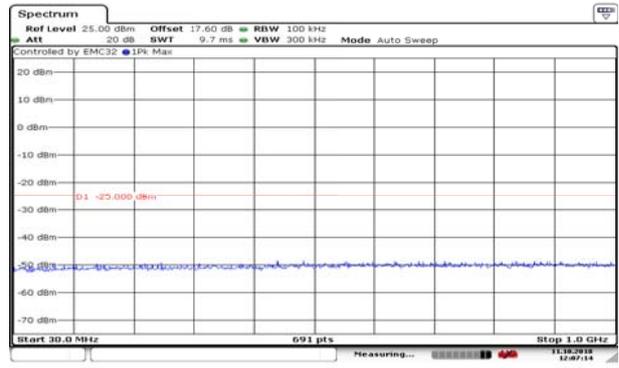




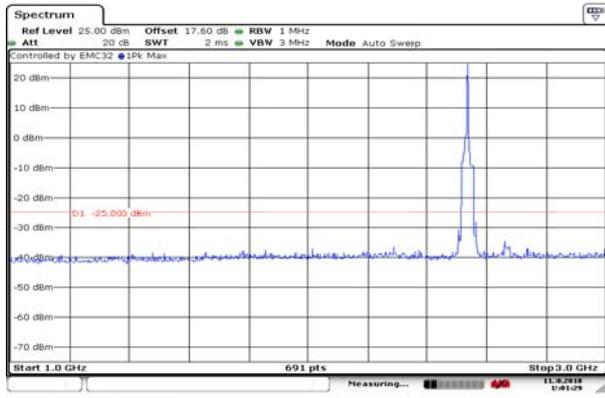
CA\_7C 20MHz+20MHz CH- Middle 30MHz~1GHz



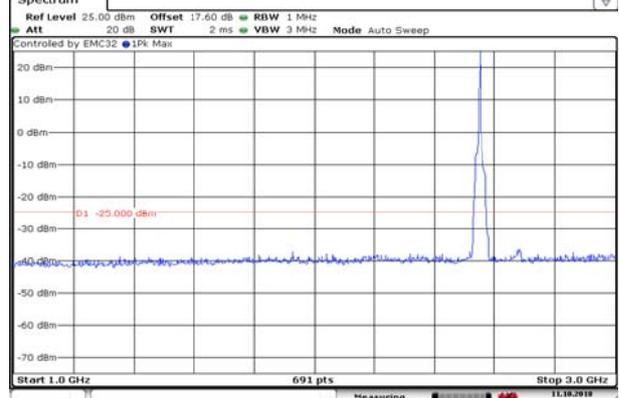
CA\_7C 20MHz+20MHz CH- High 30MHz~1GHz



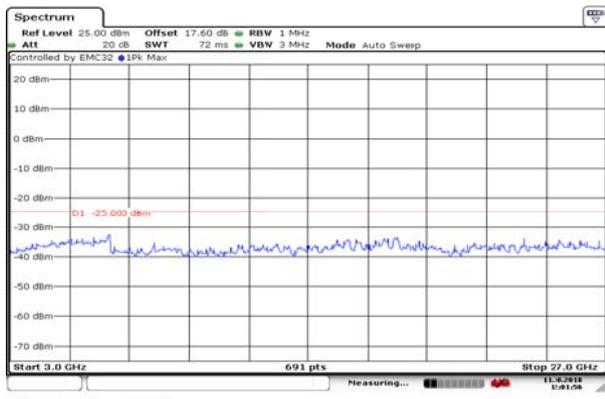
CA\_7C 20MHz+20MHz CH- Middle 1GHz~3GHz



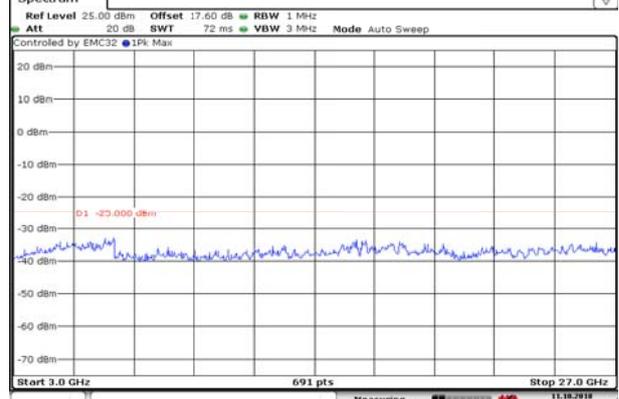
CA\_7C 20MHz+20MHz CH- High 1GHz~3GHz



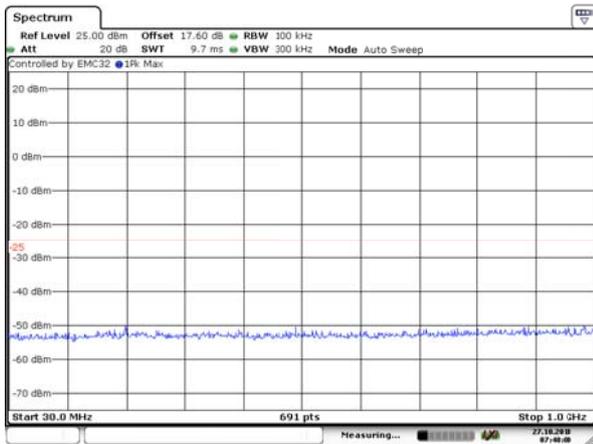
CA\_7C 20MHz+20MHz CH- Middle 3GHz~27GHz



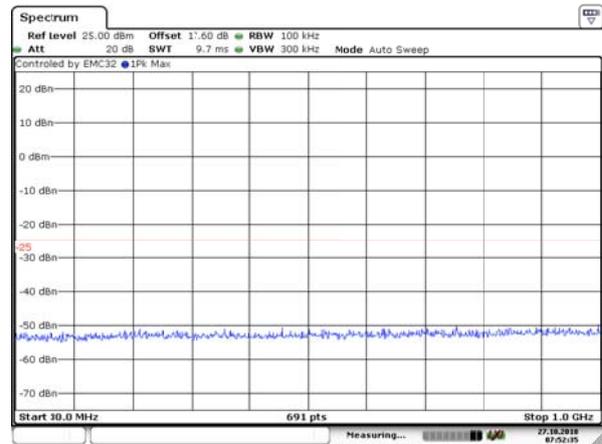
CA\_7C 20MHz+20MHz CH- High 3GHz~27GHz



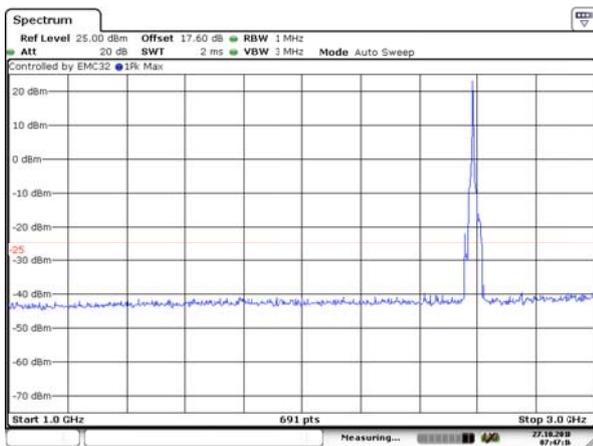
CA\_38C 15MHz+15MHz CH-Low 30MHz~1GHz



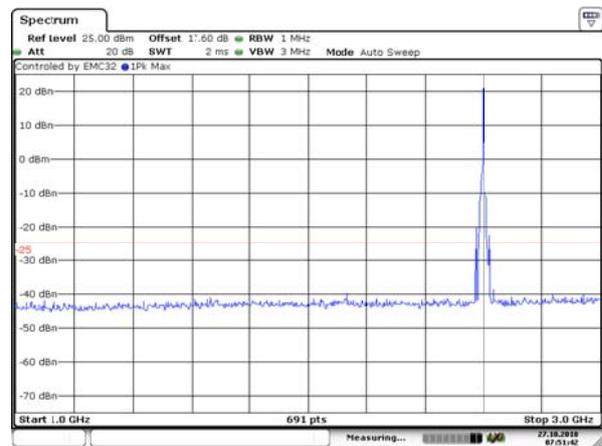
CA\_38C 15MHz+15MHz CH- Middle 30MHz~1GHz



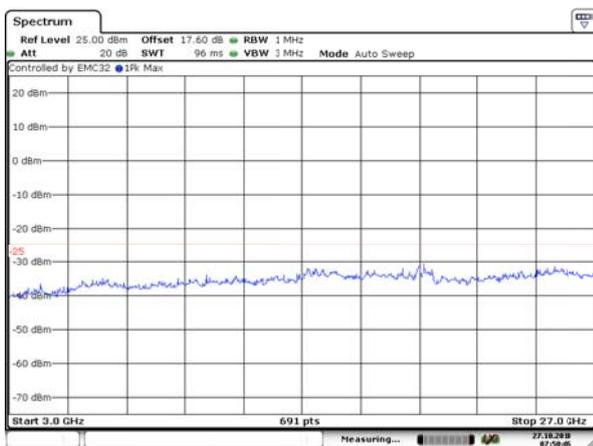
CA\_38C 15MHz+15MHz CH-Low 1GHz~3GHz



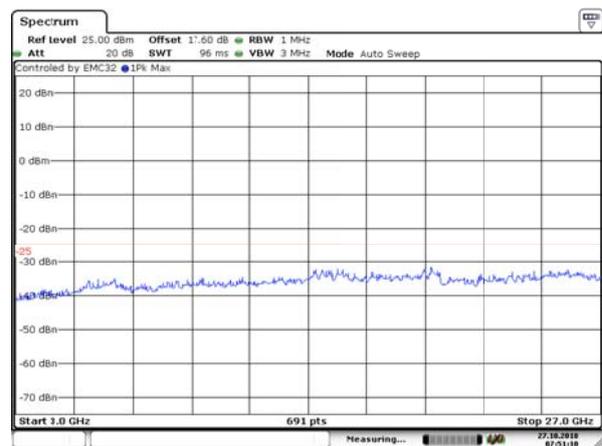
CA\_38C 15MHz+15MHz CH- Middle 1GHz~3GHz



CA\_38C 15MHz+15MHz CH-Low 3GHz~27GHz

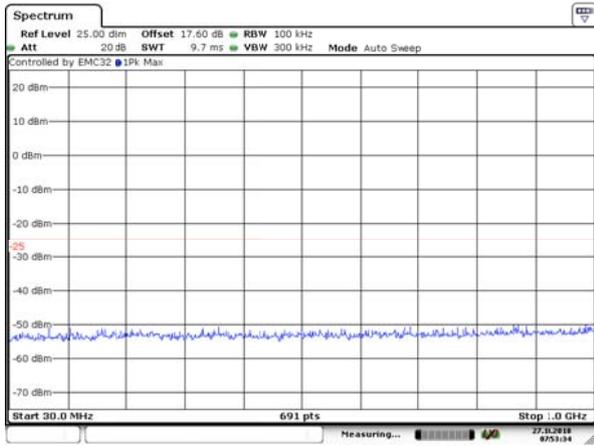


CA\_38C 15MHz+15MHz CH- Middle 3GHz~27GHz



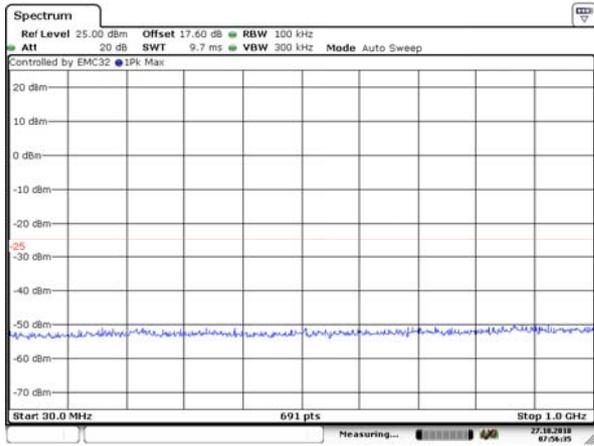


CA\_38C 15MHz+15MHz CH- High 30MHz~1GHz



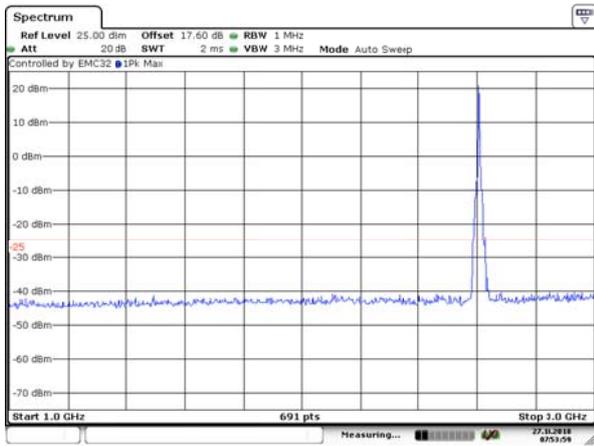
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CA\_38C 20MHz+20MHz CH-Low 30MHz~1GHz



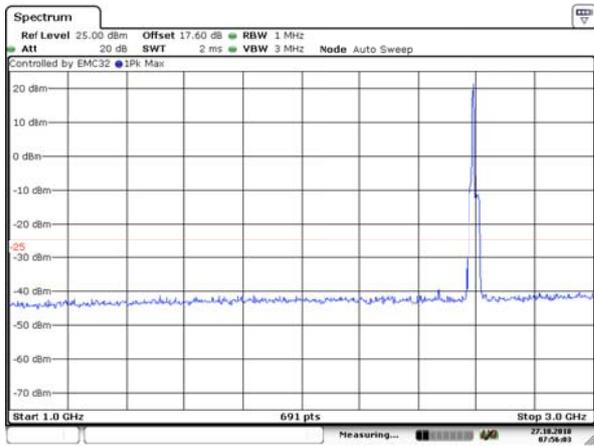
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CA\_38C 15MHz+15MHz CH- High 1GHz~3GHz



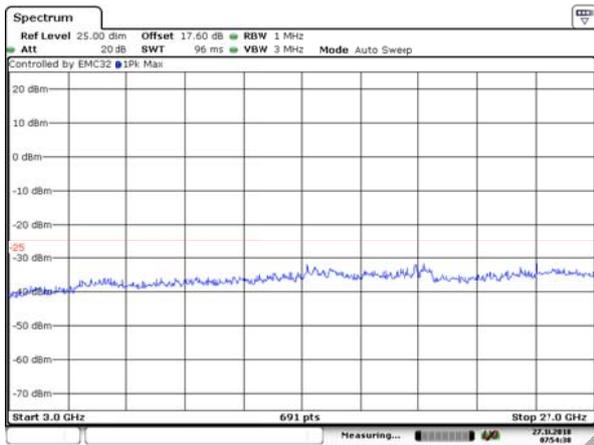
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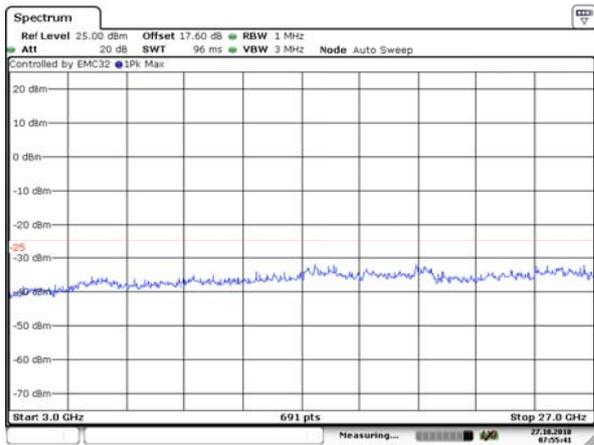
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CA\_38C 15MHz+15MHz CH- High 3GHz~27GHz



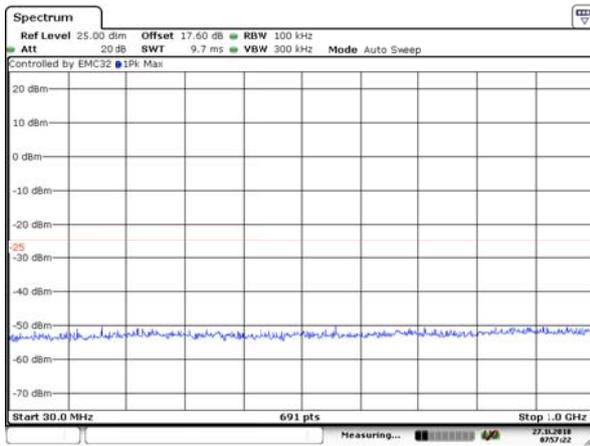
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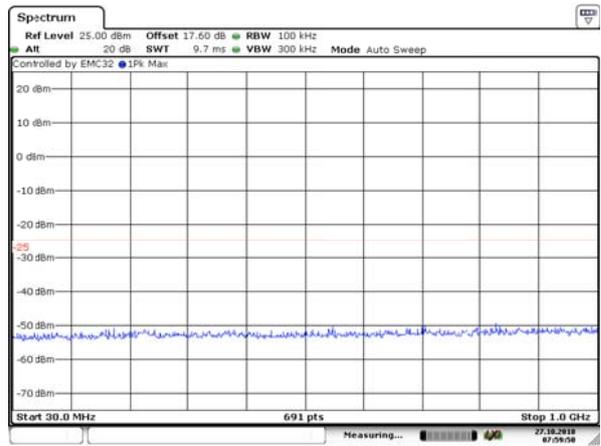
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CA\_38C 20MHz+20MHz CH- Middle 30MHz~1GHz



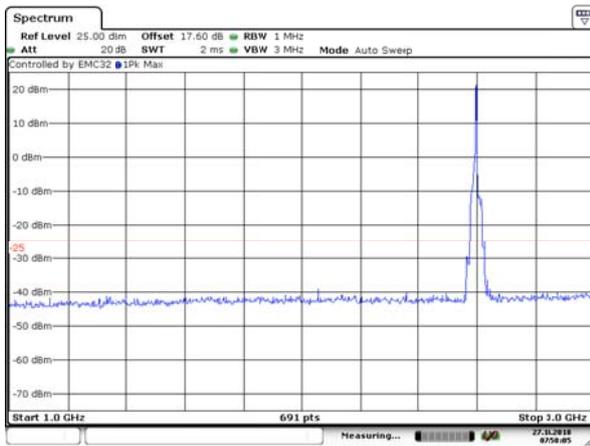
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CA\_38C 20MHz+20MHz CH- High 30MHz~1GHz



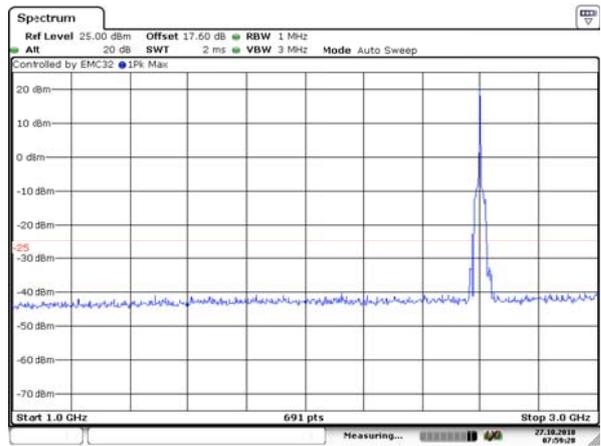
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CA\_38C 20MHz+20MHz CH- Middle 1GHz~3GHz



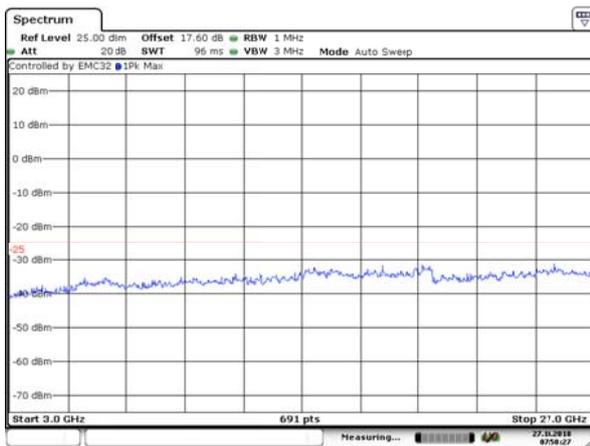
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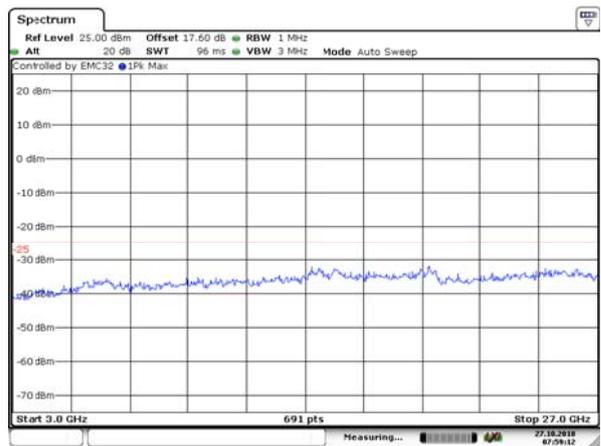
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CA\_38C 20MHz+20MHz CH- Middle 3GHz~27GHz



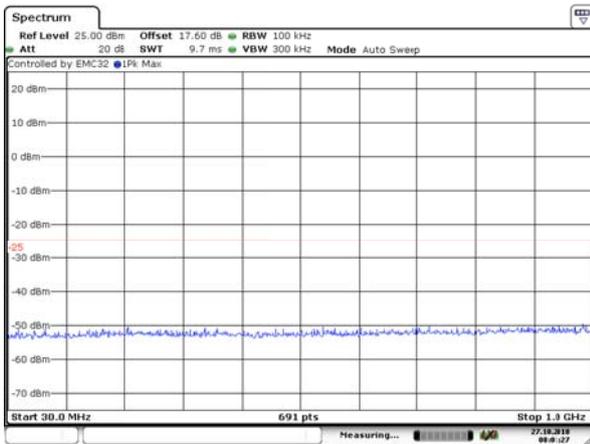
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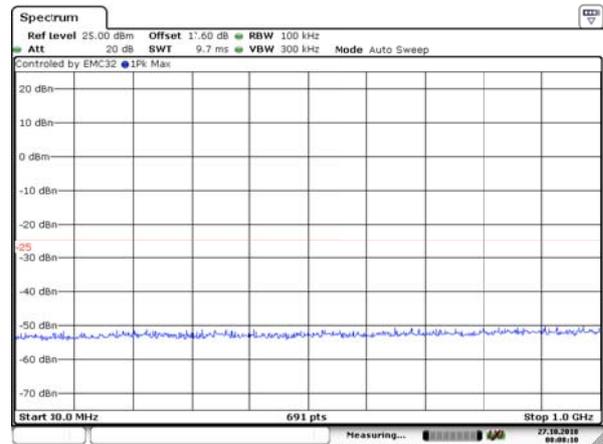


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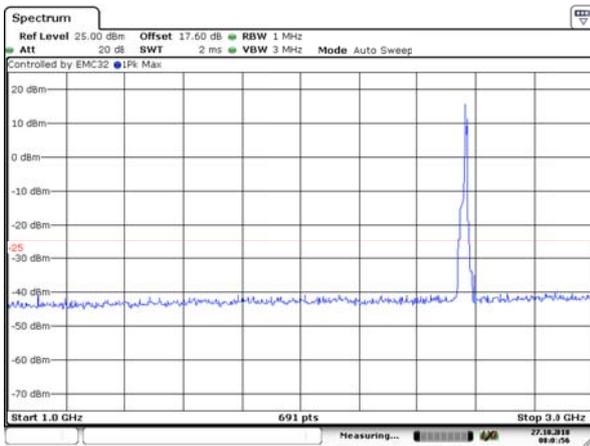
CA\_41C 20MHz+5MHz CH-Low 30MHz~1GHz



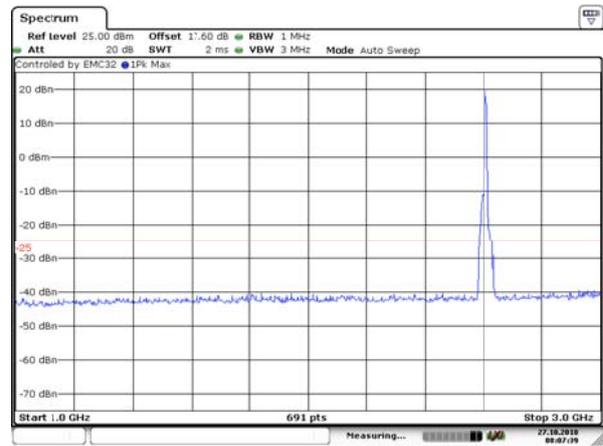
CA\_41C 20MHz+5MHz CH- Middle 30MHz~1GHz



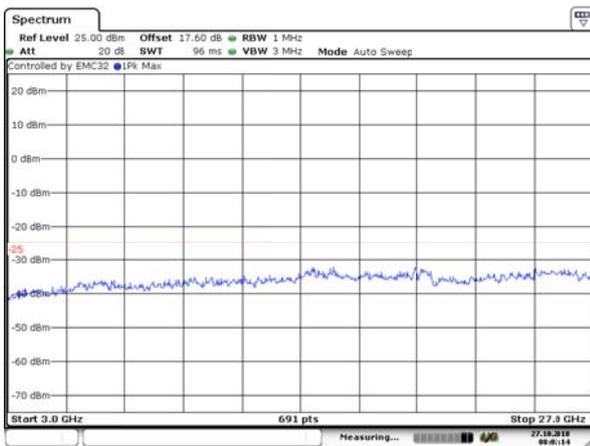
CA\_41C 20MHz+5MHz CH-Low 1GHz~3GHz



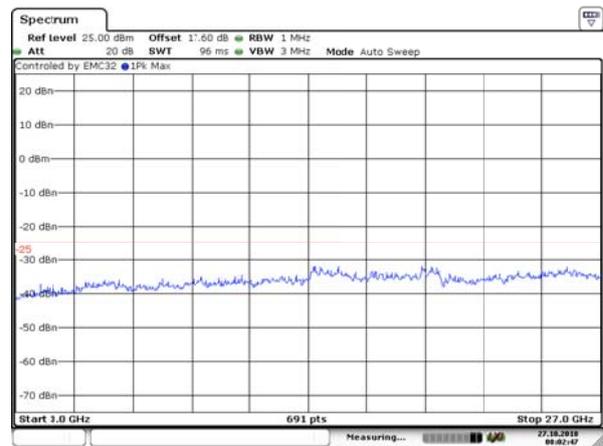
CA\_41C 20MHz+5MHz CH- Middle 1GHz~3GHz



CA\_41C 20MHz+5MHz CH-Low 3GHz~27GHz

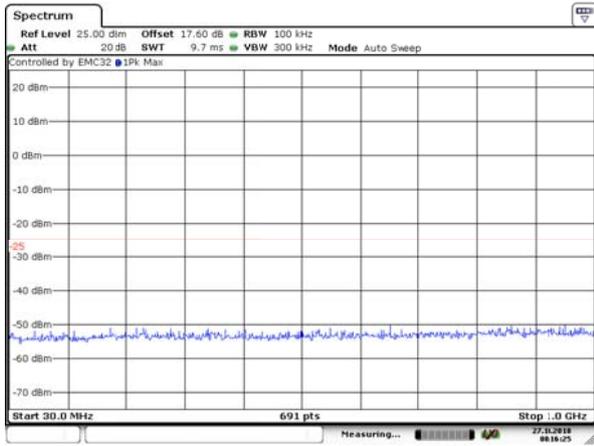


CA\_41C 20MHz+5MHz CH- Middle 3GHz~27GHz



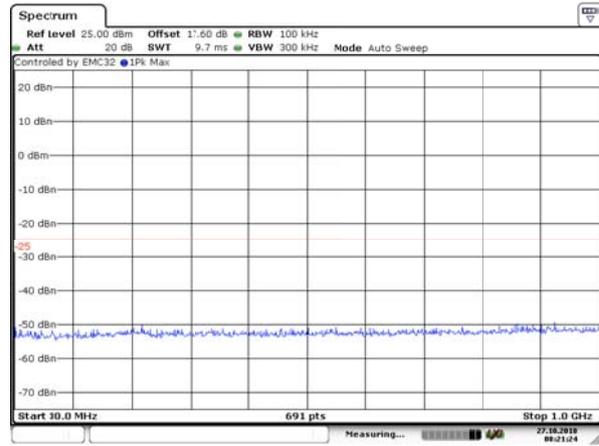


CA\_41C 20MHz+5MHz CH- High 30MHz~1GHz



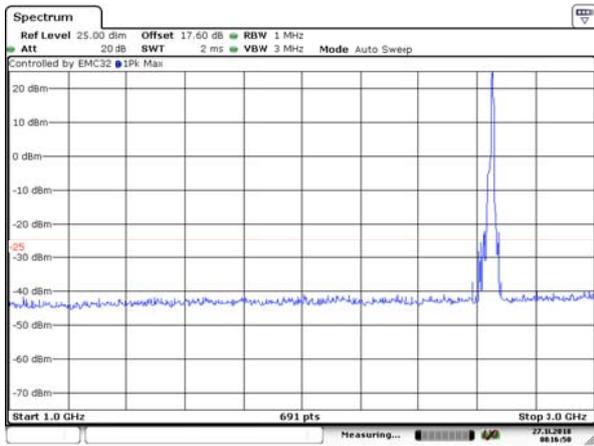
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CA\_41C 20MHz+20MHz CH-Low 30MHz~1GHz



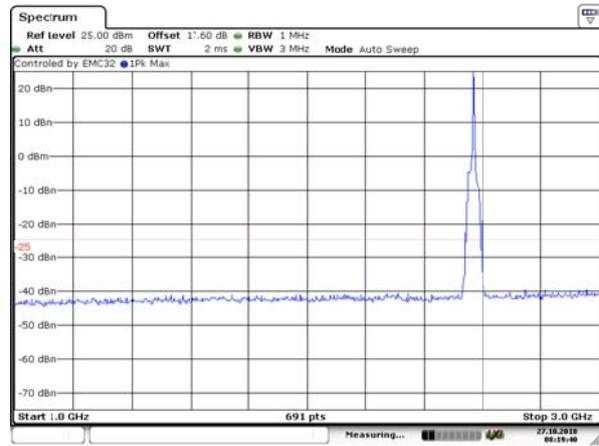
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CA\_41C 20MHz+5MHz CH- High 1GHz~3GHz



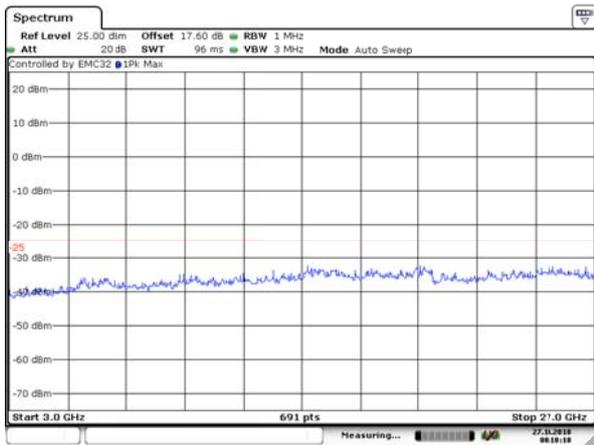
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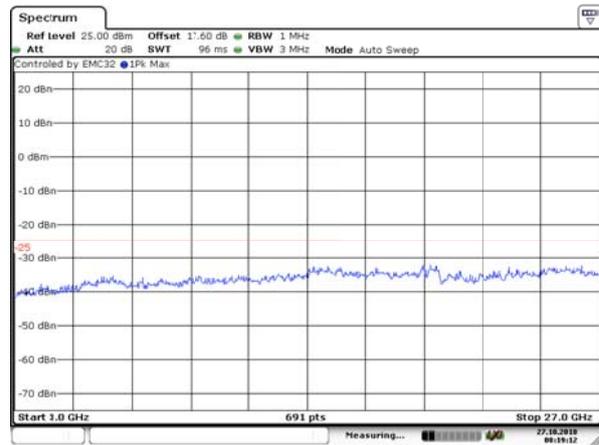
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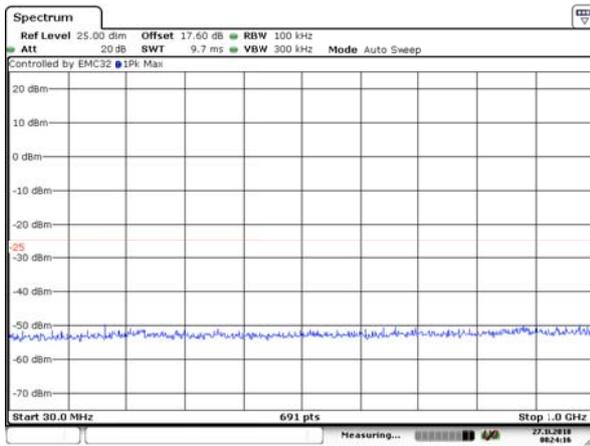
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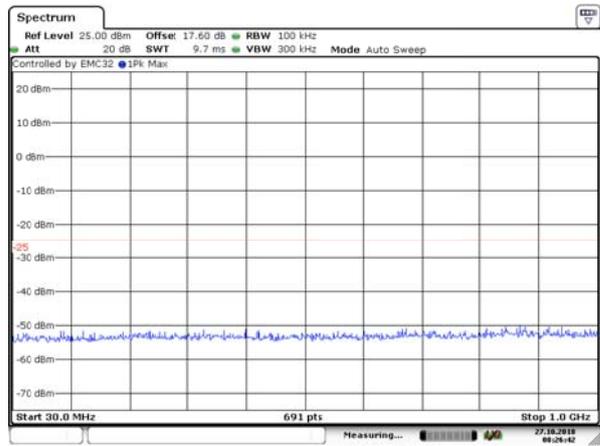
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CA\_41C 20MHz+20MHz CH- Middle 30MHz~1GHz



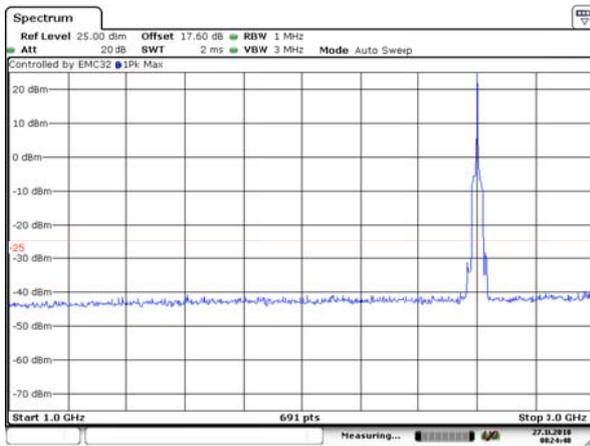
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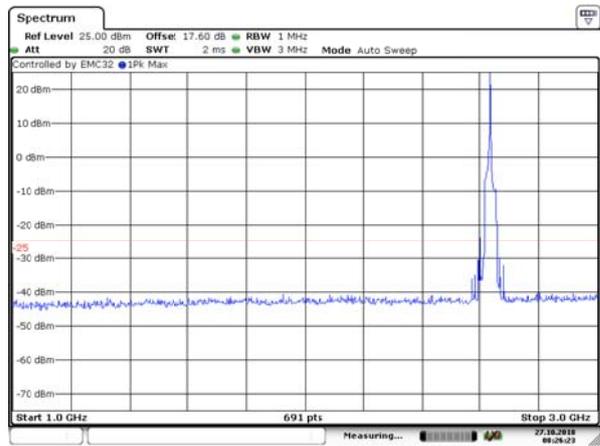
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CA\_41C 20MHz+20MHz CH- Middle 1GHz~3GHz



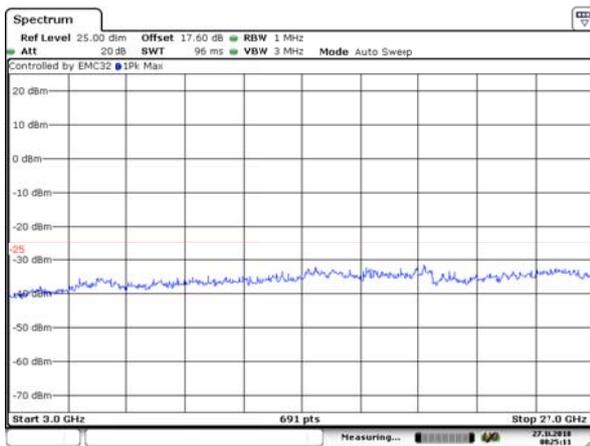
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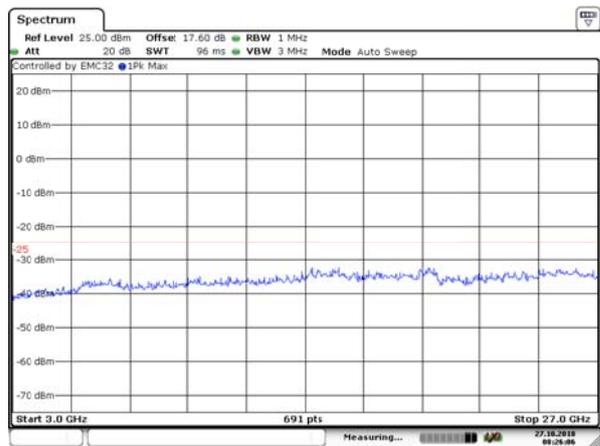
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CA\_41C 20MHz+20MHz CH- Middle 3GHz~27GHz



Date: 27.OCT.2018 08:21:12

CA\_41C 20MHz+20MHz CH- High 3GHz~27GHz



Date: 27.OCT.2018 08:26:06

## 5.8 Radiates Spurious Emission

### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Above 30MHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz for above 1GHz and RBW=100kHz, VBW=300kHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAG) should be recorded after test.
7. The measurement results are obtained as described below:  

$$\text{Power(EIRP)} = \text{PMea} - \text{PAG} - \text{Pcl} + \text{Ga}$$
 The measurement results are amend as described below:  

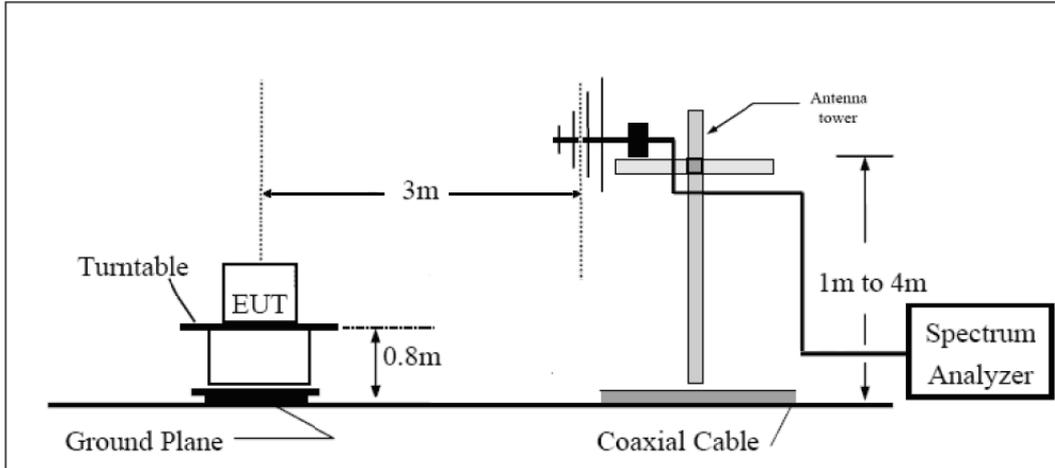
$$\text{Power(EIRP)} = \text{PMea} - \text{Pcl} + \text{Ga}$$
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP

= EIRP-2.15dBi.

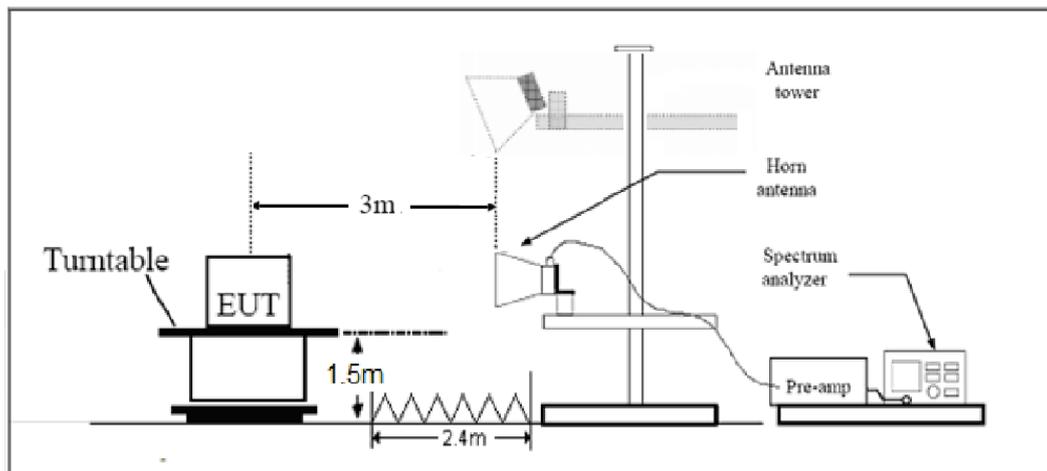
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

**Test setup**

**30MHz~~~ 1GHz**



**Above 1GHz**



Note: Area side:2.4mX3.6m



**Limits**

Rule Part 27.53(m)(4) (4) For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Part 27.53(m) Limit	-25 dBm
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**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = \pm 1.96$ ,  $U = \pm 3.55$  dB.

**Test Result**

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

**Antenna 1**

CA\_7C QPSK 10MHz+20MHz CH-Middle, RB=1#49 + 1#0

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5051.2	-65.51	2.00	10.15	Horizontal	-57.36	-25.00	32.36	135
3	7576.8	-62.79	2.50	11.35	Horizontal	-53.94	-25.00	28.94	90
4	10102.4	-46.82	4.20	12.05	Horizontal	-38.97	-25.00	13.97	270
5	12628.0	-58.15	5.20	14.85	Horizontal	-48.50	-25.00	23.50	315
6	15153.6	-53.76	5.50	13.23	Horizontal	-46.03	-25.00	21.03	0
7	17679.2	-53.13	5.70	12.15	Horizontal	-46.68	-25.00	21.68	45
8	20204.8	--	--	--	--	--	--	--	--
9	22730.4	--	--	--	--	--	--	--	--
10	25256.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
2. The worst emission was found in the antenna is Horizontal position.

CA\_7C QPSK 15MHz+15MHz CH-Middle, RB=1#74 + 1#0

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5055.0	-62.65	2.00	10.15	Horizontal	-54.50	-25.00	29.50	135
3	7582.5	-58.25	2.50	11.35	Horizontal	-49.40	-25.00	24.40	45
4	10110.0	-54.97	4.20	12.05	Horizontal	-47.12	-25.00	22.12	0
5	12637.5	-54.63	5.20	14.85	Horizontal	-44.98	-25.00	19.98	315
6	15165.0	-54.69	5.50	13.23	Horizontal	-46.96	-25.00	21.96	135
7	17692.5	-51.80	5.70	12.15	Horizontal	-45.35	-25.00	20.35	45
8	20220.0	--	--	--	--	--	--	--	--
9	22747.5	--	--	--	--	--	--	--	--
10	25275.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
2. The worst emission was found in the antenna is Horizontal position.

**CA\_7C QPSK 20MHz+ 20MHz CH-Middle, RB=1#100 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5050.2	-62.45	2.00	10.15	Horizontal	-54.30	-25.00	29.30	180
3	7575.3	-46.62	2.50	11.35	Horizontal	-37.77	-25.00	12.77	90
4	10100.4	-50.55	4.20	12.05	Horizontal	-42.70	-25.00	17.70	0
5	12625.5	-54.80	5.20	14.85	Horizontal	-45.15	-25.00	20.15	90
6	15150.6	-53.52	5.50	13.23	Horizontal	-45.79	-25.00	20.79	135
7	17675.7	-50.61	5.70	12.15	Horizontal	-44.16	-25.00	19.16	45
8	20200.8	--	--	--	--	--	--	--	--
9	22725.9	--	--	--	--	--	--	--	--
10	25251.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

**CA\_38C QPSK 15MHz+15MHz CH-Middle, RB=1#74 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5175.0	-62.34	2.00	10.15	Horizontal	-54.19	-25.00	29.19	135
3	7762.5	-58.52	2.50	11.35	Horizontal	-49.67	-25.00	24.67	45
4	10350.0	-53.92	4.20	12.05	Horizontal	-46.07	-25.00	21.07	0
5	12937.5	-55.53	5.20	14.85	Horizontal	-45.88	-25.00	20.88	315
6	15525.0	-54.97	5.50	13.23	Horizontal	-47.24	-25.00	22.24	135
7	18112.5	--	--	--	--	--	--	--	--
8	20700.0	--	--	--	--	--	--	--	--
9	23287.5	--	--	--	--	--	--	--	--
10	25875.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

**CA\_38C QPSK 20MHz+ 20MHz CH-Middle, RB=1#100 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5170.2	-60.24	2.00	10.15	Horizontal	-52.09	-25.00	27.09	135
3	7755.3	-58.19	2.50	11.35	Horizontal	-49.34	-25.00	24.34	315
4	10340.4	-54.65	4.20	12.05	Horizontal	-46.80	-25.00	21.80	0
5	12925.5	-54.03	5.20	14.85	Horizontal	-44.38	-25.00	19.38	135
6	15510.6	-54.72	5.50	13.23	Horizontal	-46.99	-25.00	21.99	225
7	18095.7	--	--	--	--	--	--	--	--
8	20680.8	--	--	--	--	--	--	--	--
9	23265.9	--	--	--	--	--	--	--	--
10	25851.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

**CA\_41C QPSK 5MHz+20MHz CH-Middle, RB=1#24 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5167.6	-60.50	2.00	10.15	Horizontal	-52.35	-25.00	27.35	225
3	7751.4	-58.02	2.50	11.35	Horizontal	-49.17	-25.00	24.17	45
4	10335.2	-53.96	4.20	12.05	Horizontal	-46.11	-25.00	21.11	180
5	12919.0	-53.96	5.20	14.85	Horizontal	-44.31	-25.00	19.31	90
6	15502.8	-55.57	5.50	13.23	Horizontal	-47.84	-25.00	22.84	0
7	18086.6	--	--	--	--	--	--	--	--
8	20670.4	--	--	--	--	--	--	--	--
9	23254.2	--	--	--	--	--	--	--	--
10	25838.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

**CA\_41C QPSK 15MHz+15MHz CH-Middle, RB=1#74 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5171.0	-62.88	2.00	10.15	Horizontal	-54.73	-25.00	29.73	135
3	7756.5	-58.37	2.50	11.35	Horizontal	-49.52	-25.00	24.52	45
4	10342.0	-54.66	4.20	12.05	Horizontal	-46.81	-25.00	21.81	0
5	12927.5	-54.64	5.20	14.85	Horizontal	-44.99	-25.00	19.99	315
6	15513.0	-55.59	5.50	13.23	Horizontal	-47.86	-25.00	22.86	135
7	18098.5	--	--	--	--	--	--	--	--
8	20684.0	--	--	--	--	--	--	--	--
9	23269.5	--	--	--	--	--	--	--	--
10	25855.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
2. The worst emission was found in the antenna is Horizontal position.

**CA\_41C QPSK 20MHz+20MHz CH-Middle, RB=1#100 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5166.2	-60.65	2.00	10.15	Horizontal	-52.50	-25.00	27.50	135
3	7749.3	-58.07	2.50	11.35	Horizontal	-49.22	-25.00	24.22	45
4	10332.4	-53.04	4.20	12.05	Horizontal	-45.19	-25.00	20.19	0
5	12915.5	-55.45	5.20	14.85	Horizontal	-45.80	-25.00	20.80	315
6	15498.6	-54.65	5.50	13.23	Horizontal	-46.92	-25.00	21.92	135
7	18081.7	--	--	--	--	--	--	--	--
8	20664.8	--	--	--	--	--	--	--	--
9	23247.9	--	--	--	--	--	--	--	--
10	25831.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
2. The worst emission was found in the antenna is Horizontal position.

**Antenna 2**

CA\_7C QPSK 10MHz+20MHz CH-Middle, RB=1#49 + 1#0

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5051.2	-65.37	2.00	10.15	Horizontal	-57.22	-25.00	32.22	270
3	7576.8	-63.12	2.50	11.35	Horizontal	-54.27	-25.00	29.27	0
4	10102.4	-56.92	4.20	12.05	Horizontal	-49.07	-25.00	24.07	135
5	12628.0	-56.98	5.20	14.85	Horizontal	-47.33	-25.00	22.33	45
6	15153.6	-53.17	5.50	13.23	Horizontal	-45.44	-25.00	20.44	225
7	17679.2	--	--	--	--	--	--	--	--
8	20204.8	--	--	--	--	--	--	--	--
9	22730.4	--	--	--	--	--	--	--	--
10	25256.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

CA\_7C QPSK 15MHz+15MHz CH-Middle, RB=1#74 + 1#0

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5055.0	-59.11	2.00	10.15	Horizontal	-50.96	-25.00	25.96	135
3	7582.5	-45.03	2.50	11.35	Horizontal	-36.18	-25.00	11.18	45
4	10110.0	-48.26	4.20	12.05	Horizontal	-40.41	-25.00	15.41	0
5	12637.5	-49.75	5.20	14.85	Horizontal	-40.10	-25.00	15.10	180
6	15165.0	-53.66	5.50	13.23	Horizontal	-45.93	-25.00	20.93	135
7	17692.5	-50.74	5.70	12.15	Horizontal	-44.29	-25.00	19.29	45
8	20220.0	--	--	--	--	--	--	--	--
9	22747.5	--	--	--	--	--	--	--	--
10	25275.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

**CA\_7C QPSK 20MHz+ 20MHz CH-Middle, RB=1#100 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5050.2	-56.76	2.00	10.15	Horizontal	-48.61	-25.00	23.61	180
3	7575.3	-49.98	2.50	11.35	Horizontal	-41.13	-25.00	16.13	90
4	10100.4	-48.68	4.20	12.05	Horizontal	-40.83	-25.00	15.83	0
5	12625.5	-47.47	5.20	14.85	Horizontal	-37.82	-25.00	12.82	90
6	15150.6	-50.88	5.50	13.23	Horizontal	-43.15	-25.00	18.15	135
7	17675.7	-49.55	5.70	12.15	Horizontal	-43.10	-25.00	18.10	45
8	20200.8	--	--	--	--	--	--	--	--
9	22725.9	--	--	--	--	--	--	--	--
10	25251.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
2. The worst emission was found in the antenna is Horizontal position.

**CA\_38C QPSK 15MHz+15MHz CH-Middle, RB=1#74 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5175.0	-48.92	2.00	10.15	Horizontal	-40.77	-25.00	15.77	135
3	7762.5	-52.82	2.50	11.35	Horizontal	-43.97	-25.00	18.97	45
4	10350.0	-49.89	4.20	12.05	Horizontal	-42.04	-25.00	17.04	0
5	12937.5	-52.97	5.20	14.85	Horizontal	-43.32	-25.00	18.32	180
6	15525.0	-51.90	5.50	13.23	Horizontal	-44.17	-25.00	19.17	135
7	18112.5	--	--	--	--	--	--	--	--
8	20700.0	--	--	--	--	--	--	--	--
9	23287.5	--	--	--	--	--	--	--	--
10	25875.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
2. The worst emission was found in the antenna is Horizontal position.

CA\_38C QPSK 20MHz+ 20MHz CH-Middle, RB=1#100 + 1#0

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5170.2	-48.72	2.00	10.15	Horizontal	-40.57	-25.00	15.57	135
3	7755.3	-47.28	2.50	11.35	Horizontal	-38.43	-25.00	13.43	315
4	10340.4	-46.28	4.20	12.05	Horizontal	-38.43	-25.00	13.43	0
5	12925.5	-47.62	5.20	14.85	Horizontal	-37.97	-25.00	12.97	135
6	15510.6	-43.57	5.50	13.23	Horizontal	-35.84	-25.00	10.84	225
7	18095.7	--	--	--	--	--	--	--	--
8	20680.8	--	--	--	--	--	--	--	--
9	23265.9	--	--	--	--	--	--	--	--
10	25851.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

CA\_41C QPSK 5MHz+20MHz CH-Middle, RB=1#24 + 1#0

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5167.6	-60.59	2.00	10.15	Horizontal	-52.44	-25.00	27.44	45
3	7751.4	-57.35	2.50	11.35	Horizontal	-48.50	-25.00	23.50	225
4	10335.2	-53.41	4.20	12.05	Horizontal	-45.56	-25.00	20.56	315
5	12919.0	-53.67	5.20	14.85	Horizontal	-44.02	-25.00	19.02	270
6	15502.8	-55.80	5.50	13.23	Horizontal	-48.07	-25.00	23.07	0
7	18086.6	--	--	--	--	--	--	--	--
8	20670.4	--	--	--	--	--	--	--	--
9	23254.2	--	--	--	--	--	--	--	--
10	25838.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

**CA\_41C QPSK 15MHz+15MHz CH-Middle, RB=1#74 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5171.0	-49.42	2.00	10.15	Horizontal	-41.27	-25.00	16.27	135
3	7756.5	-53.23	2.50	11.35	Horizontal	-44.38	-25.00	19.38	45
4	10342.0	-49.03	4.20	12.05	Horizontal	-41.18	-25.00	16.18	0
5	12927.5	-52.25	5.20	14.85	Horizontal	-42.60	-25.00	17.60	90
6	15513.0	-53.04	5.50	13.23	Horizontal	-45.31	-25.00	20.31	135
7	18098.5	--	--	--	--	--	--	--	--
8	20684.0	--	--	--	--	--	--	--	--
9	23269.5	--	--	--	--	--	--	--	--
10	25855.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

**CA\_41C QPSK 20MHz+20MHz CH-Middle, RB=1#100 + 1#0**

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5166.2	-48.19	2.00	10.15	Horizontal	-40.04	-25.00	15.04	135
3	7749.3	-50.35	2.50	11.35	Horizontal	-41.50	-25.00	16.50	45
4	10332.4	-48.84	4.20	12.05	Horizontal	-40.99	-25.00	15.99	0
5	12915.5	-53.08	5.20	14.85	Horizontal	-43.43	-25.00	18.43	315
6	15498.6	-52.76	5.50	13.23	Horizontal	-45.03	-25.00	20.03	45
7	18081.7	--	--	--	--	--	--	--	--
8	20664.8	--	--	--	--	--	--	--	--
9	23247.9	--	--	--	--	--	--	--	--
10	25831.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.  
 2. The worst emission was found in the antenna is Horizontal position.

## 6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	150415	2018-05-20	2019-05-19
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2018-05-20	2019-05-19
Signal Analyzer	R&S	FSV30	100815	2017-12-17	2018-12-16
EMI Test Receiver	R&S	ESCI	100948	2018-05-20	2019-05-19
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2019-11-17
Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Signal generator	R&S	SMB 100A	102594	2018-05-20	2019-05-19
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preamplifier	R&S	SCU18	102327	2018-05-20	2019-05-19
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2018-05-21	2019-05-20
RF Cable	Agilent	SMA 15cm	0001	/	/
Software	R&S	EMC32	9.26.0	/	/

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