FCC 47 CFR PART 27 SUBPART C, M
&
INDUSTRY CANADA RSS-199

TEST REPORT

For

Chiron pro

Model No.: N635

Trade Name: Mitac, Mio, Navman, Magellan

Issued to

FCC:	**Mitac Digital Technology Corporation** **No.200, Wen Hwa 2nd Rd.,Kuei Shan Dist. Taoyuan, 33383 Taiwan**
IC:	**MiTAC Digital Technology Corporation** **No.200, Wenhua 2nd Rd., Guishan Dist. Taoyuan City 333 Taiwan**

Issued by

Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City 24891, Taiwan. (R.O.C.)
Issued Date: January 17, 2020

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	January 17, 2020	Initial Issue	ALL	Allison Chen

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1. TEST RESULT CERTIFICATION

FCC Applicant:	Mitac Digital Technology Corporation No.200, Wen Hwa 2nd Rd.,Kuei Shan Dist. Taoyuan, 33383 Taiwan
IC Applicant:	MiTAC Digital Technology Corporation No.200, Wenhua 2nd Rd., Guishan Dist. Taoyuan City 333 Taiwan
Manufacturer:	MITAC COMPUTER (KUNSHAN) CO., LTD. No. 269, 2nd Avenue, District A, Comprehensive Free Trade Zone, Kunshan, Jiangsu, P.R. China
Equipment Under Test:	Chiron pro
Trade Name:	Mitac, Mio, Navman, Magellan
Model No.:	N635
Date of Test:	December 16 ~ 18, 2019

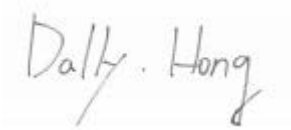
APPLICABLE STANDARDS	
Standard	**TEST RESULT**
FCC Part 27, Subpart C, M, FCC Part 2 & RSS-199 Issue 3 December 2016	No non-compliance noted
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.

Tested by:



Dally Hong
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Chiron pro				
Model No.	N635				
Model Discrepancy	Difference of the those trade names (list on this report) are just for marketing purpose only.				
Trade	Mitac, Mio, Navman, Magellan				
Received Date	November 5, 2019				
Power Supply	1. Power from Rechargeable Li-ion Polymer Battery. Rating: 3.7VDC, 4000mAh, 14.8Wh 2. Power from Adapter. I/P: 100-240VAC, 50/60Hz, 0.5A O/P: 5.0VDC, 2A				
Modulation Technology	LTE Band 41	QPSK, 16QAM			
Frequency Range	LTE Band 41 Channel Bandwidth: 5MHz	2498.5MHz ~2687.5MHz			
	LTE Band 41 Channel Bandwidth: 10MHz	2501MHz ~2685MHz			
	LTE Band 41 Channel Bandwidth: 15MHz	2503.5MHz ~2682.5MHz			
	LTE Band 41 Channel Bandwidth: 20MHz	2506MHz ~2680MHz			
Transmit Power (EIRP Power)	LTE Band 41 Channel Bandwidth: 5MHz	QPSK 16QAM	25.07 24.31	dBm dBm	
	LTE Band 41 Channel Bandwidth: 10MHz	QPSK 16QAM	25.01 24.31	dBm dBm	
	LTE Band 41 Channel Bandwidth: 15MHz	QPSK 16QAM	24.95 24.25	dBm dBm	
	LTE Band 41 Channel Bandwidth: 20MHz	QPSK 16QAM	25.21 24.32	dBm dBm	
Antenna Specification	Antenna type: Integral Band 41: 1.99 dBi				

Note: *1. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.*

3. TEST METHODOLOGY

3.1 DESCRIPTION OF TEST TYPE

The EUT (model: N635) had been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

LTE Band 41: 2496MHz ~ 2690MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	5MHz		10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low CH	39675	2498.5	39700	2501	39725	2503.5	39750	2506
Middle CH	40620	2593	40620	2593	40620	2593	40620	2593
High CH	41565	2687.5	41540	2685	41515	2682.5	41490	2680

3.2 THE WORST MODE OF MEASUREMENT

3.2.1 The worst mode of measurement

Radiated Emission Measurement	
Test Condition	**Band edge, Emission for Unwanted and Fundamental**
Power supply Mode	**Mode1: EUT Power by Battery (DC 3V)** **Mode2: EUT Power by Adapter + Type C USB** **Mode3: EUT Power by Type C USB+ CarCharge (DC12V)** **Mode4: EUT Power by Cradle(N564)+Micro USB+Adapter** **Mode5: EUT Power by Cradle(N564)+Micro USB+ CarCharge (DC12V)** **Mode6: EUT Power by Cradle(N564) + Cable(DC 12V)** **Mode7: EUT Power by Cradle(N564_TN)+Micro USB+Adapter** **Mode8: EUT Power by Cradle(N564_TN)+Micro USB+ CarCharge (DC12V)** **Mode9: EUT Power by Cradle(N564_TN) + Cable(DC 12V)** **Mode10: EUT Power by Cradle(N635_V)+Micro USB+Adapter** **Mode11: EUT Power by Cradle(N635_V)+Micro USB+ CarCharge (DC12V)** **Mode12: EUT Power by Cradle(N635_V) + Cable(DC 12V)** **Mode13: EUT Power by Cradle(N635_VL)+Micro USB+Adapter** **Mode14: EUT Power by Cradle(N635_VL)+Micro USB+ CarCharge (DC12V)** **Mode15: EUT Power by Cradle(N635_VL) + Cable(DC 12V)** **Mode16: EUT Power by Cradle(N635_VHG) + Cable(DC 12V)**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**
Worst Position	☐ **Placed in fixed position.** ☐ **Placed in fixed position at X-Plane (E2-Plane)** ☐ **Placed in fixed position at Y-Plane (E1-Plane)** ☒ **Placed in fixed position at Z-Plane (H-Plane)**

Radiated Emission Measurement Below 1G	
Test Condition	**Radiated Emission Below 1G**
Power supply Mode	**Mode1: EUT Power by Battery (DC 3V)** **Mode2: EUT Power by Adapter + Type C USB** **Mode3: EUT Power by Type C USB+ CarCharge (DC12V)** **Mode4: EUT Power by Cradle(N564)+Micro USB+Adapter** **Mode5: EUT Power by Cradle(N564)+Micro USB+ CarCharge (DC12V)** **Mode6: EUT Power by Cradle(N564) + Cable(DC 12V)** **Mode7: EUT Power by Cradle(N564_TN)+Micro USB+Adapter** **Mode8: EUT Power by Cradle(N564_TN)+Micro USB+ CarCharge (DC12V)** **Mode9: EUT Power by Cradle(N564_TN) + Cable(DC 12V)** **Mode10: EUT Power by Cradle(N635_V)+Micro USB+Adapter** **Mode11: EUT Power by Cradle(N635_V)+Micro USB+ CarCharge (DC12V)** **Mode12: EUT Power by Cradle(N635_V) + Cable(DC 12V)** **Mode13: EUT Power by Cradle(N635_VL)+Micro USB+Adapter** **Mode14: EUT Power by Cradle(N635_VL)+Micro USB+ CarCharge (DC12V)** **Mode15: EUT Power by Cradle(N635_VL) + Cable(DC 12V)** **Mode16: EUT Power by Cradle(N635_VHG) + Cable(DC 12V)**
Worst Mode	☒ **Mode 1** ☐ **Mode 2** ☐ **Mode 3** ☐ **Mode 4**

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Z-Plane) were recorded in this report

4. TEST SUMMARY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
-	-	2	Antenna Requirement	Pass
2.1046 27.50(h)(2)	RSS-199, section 4.4	8.1	ERP and EIRP Measurement	Pass
2.1055, 27.54	RSS-199 section 4.3	8.2	Frequency Stability v.s. temperature measurement	Pass
2.1049	RSS-GEN 6.7 RSS-199, section 4.2	8.3	Occupied Bandwidth Measurement	Pass
27.53(h)	RSS-199 section 4.5	8.4	Peak to Average Ratio	Pass
27.53(h)	RSS-199 section 4.5	8.5	Conducted Band Edge	Pass
27.53(h)	RSS-199 section 4.5	8.6	Conducted Spurious Emission	Pass
27.53(h)	RSS-199 section 4.5	8.7	Spurious Radiation Measurement	Pass

5. INSTRUMENT CALIBRATION

5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

5.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

RF Conducted Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Coaxial Cable	Woken	WC12	CC003	06/28/2019	06/27/2020
Power Divider	Solvang Technology	STI08-0015	008	08/06/2019	08/05/2020
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
Software	N/A				

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/26/2019	02/25/2020
Bilog Antenna	Sunol Sciences	JB3	A030105	07/26/2019	07/25/2020
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/26/2019	02/25/2020
Coaxial Cable	EMCI	EMC105	190914+25111	09/20/2019	09/19/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020
Loop Ant	COM-POWER	AL-130	121051	03/22/2019	03/21/2020
Pre-Amplifier	EMEC	EM330	060609	02/26/2019	02/25/2020
Pre-Amplifier	HP	8449B	3008A00965	02/26/2019	02/25/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/29/2019	05/28/2020
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180413				

5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 and CISPR Publication 22.

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix I for the actual connections between EUT and support equipment.

7.2 SUPPORT EQUIPMENT

No	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

8. TEST PROCEDURE AND RESULT

8.1 EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 27.50 (h)(2): 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.

RSS-199 § 4.4,
For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.

TEST PROCEDURES

CONDUCTED POWER MEASUREMENT:

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

TEST RESULTS

No non-compliance noted.

LTE Band 41

BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	EIRP (dBm)
20	QPSK	1 RB	0	2506	39750	23.17	25.16
				2549.5	40185	23.08	25.07
				2593	40620	**23.22**	25.21
				2636.5	41055	23.07	25.06
				2680	41490	23.15	25.14
			50	2506	39750	22.70	24.69
				2549.5	40185	22.60	24.59
				2593	40620	22.41	24.40
				2636.5	41055	22.66	24.65
				2680	41490	22.57	24.56
			99	2506	39750	22.50	24.49
				2549.5	40185	22.40	24.39
				2593	40620	22.22	24.21
				2636.5	41055	22.45	24.44
				2680	41490	22.23	24.22
		50 RB	0	2506	39750	21.80	23.79
				2549.5	40185	21.75	23.74
				2593	40620	**21.83**	23.82
				2636.5	41055	21.73	23.72
				2680	41490	21.74	23.73
			25	2506	39750	21.62	23.61
				2549.5	40185	21.58	23.57
				2593	40620	21.25	23.24
				2636.5	41055	21.53	23.52
				2680	41490	21.60	23.59
			50	2506	39750	21.63	23.62
				2549.5	40185	21.58	23.57
				2593	40620	21.63	23.62
				2636.5	41055	21.53	23.52
				2680	41490	21.40	23.39
		100RB		2506	39750	21.67	23.66
				2549.5	40185	21.62	23.61
				2593	40620	**21.68**	23.67
				2636.5	41055	21.59	23.58
				2680	41490	21.42	23.41

20	16-QAM	1 RB	0	2506	39750	22.33	24.32
				2549.5	40185	22.24	24.23
				2593	40620	22.13	24.12
				2636.5	41055	22.27	24.26
				2680	41490	22.33	24.32
			50	2506	39750	22.00	23.99
				2549.5	40185	21.99	23.98
				2593	40620	21.79	23.78
				2636.5	41055	21.99	23.98
				2680	41490	21.87	23.86
			99	2506	39750	21.41	23.40
				2549.5	40185	21.34	23.33
				2593	40620	21.23	23.22
				2636.5	41055	21.32	23.31
				2680	41490	21.34	23.33
		50 RB	0	2506	39750	20.84	22.83
				2549.5	40185	20.81	22.80
				2593	40620	20.68	22.67
				2636.5	41055	20.74	22.73
				2680	41490	20.61	22.60
			25	2506	39750	20.64	22.63
				2549.5	40185	20.62	22.61
				2593	40620	20.42	22.41
				2636.5	41055	20.58	22.57
				2680	41490	20.50	22.49
			50	2506	39750	20.52	22.51
				2549.5	40185	20.50	22.49
				2593	40620	20.47	22.46
				2636.5	41055	20.47	22.46
				2680	41490	20.37	22.36
		100RB		2506	39750	20.75	22.74
				2549.5	40185	20.67	22.66
				2593	40620	20.45	22.44
				2636.5	41055	20.72	22.71
				2680	41490	20.66	22.65

20	64-QAM	1 RB	0	2506	39750	21.50	23.49
				2549.5	40185	21.37	23.36
				2593	40620	21.30	23.29
				2636.5	41055	21.32	23.31
				2680	41490	21.16	23.15
			50	2506	39750	21.40	23.39
				2549.5	40185	21.31	23.30
				2593	40620	21.15	23.14
				2636.5	41055	21.28	23.27
				2680	41490	21.04	23.03
			99	2506	39750	21.14	23.13
				2549.5	40185	21.02	23.01
				2593	40620	21.01	23.00
				2636.5	41055	21.06	23.05
				2680	41490	20.98	22.97
		50 RB	0	2506	39750	20.50	22.49
				2549.5	40185	20.39	22.38
				2593	40620	20.44	22.43
				2636.5	41055	20.38	22.37
				2680	41490	20.36	22.35
			25	2506	39750	20.50	22.49
				2549.5	40185	20.46	22.45
				2593	40620	20.46	22.45
				2636.5	41055	20.50	22.49
				2680	41490	20.36	22.35
			50	2506	39750	20.47	22.46
				2549.5	40185	20.39	22.38
				2593	40620	20.33	22.32
				2636.5	41055	20.48	22.47
				2680	41490	20.28	22.27
		100RB		2506	39750	20.35	22.34
				2549.5	40185	20.29	22.28
				2593	40620	20.25	22.24
				2636.5	41055	20.23	22.22
				2680	41490	20.20	22.19

BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	EIRP (dBm)
15	QPSK	1 RB	0	2503.5	39725	22.89	24.88
				2548.3	40173	22.84	24.83
				2593	40620	22.91	24.90
				2637.8	41068	22.96	24.95
				2682.5	41515	22.94	24.93
			36	2503.5	39725	22.48	24.47
				2548.3	40173	22.48	24.47
				2593	40620	22.35	24.34
				2637.8	41068	22.66	24.65
				2682.5	41515	22.51	24.50
			74	2503.5	39725	22.20	24.19
				2548.3	40173	22.37	24.36
				2593	40620	21.93	23.92
				2637.8	41068	22.23	24.22
				2682.5	41515	22.21	24.20
		36 RB	0	2503.5	39725	21.70	23.69
				2548.3	40173	21.66	23.65
				2593	40620	21.27	23.26
				2637.8	41068	21.56	23.55
				2682.5	41515	21.67	23.66
			18	2503.5	39725	21.61	23.60
				2548.3	40173	21.47	23.46
				2593	40620	21.21	23.20
				2637.8	41068	21.24	23.23
				2682.5	41515	21.45	23.44
			37	2503.5	39725	21.46	23.45
				2548.3	40173	21.38	23.37
				2593	40620	21.47	23.46
				2637.8	41068	21.30	23.29
				2682.5	41515	21.30	23.29
		75RB		2503.5	39725	21.47	23.46
				2548.3	40173	21.33	23.32
				2593	40620	21.45	23.44
				2637.8	41068	21.39	23.38
				2682.5	41515	21.42	23.41

15	16-QAM	1 RB	0	2503.5	39725	22.12	24.11
				2548.3	40173	22.04	24.03
				2593	40620	21.89	23.88
				2637.8	41068	22.26	24.25
				2682.5	41515	22.24	24.23
			36	2503.5	39725	22.00	23.99
				2548.3	40173	21.84	23.83
				2593	40620	21.67	23.66
				2637.8	41068	21.82	23.81
				2682.5	41515	21.59	23.58
			74	2503.5	39725	21.31	23.30
				2548.3	40173	21.24	23.23
				2593	40620	20.97	22.96
				2637.8	41068	21.06	23.05
				2682.5	41515	21.22	23.21
		36 RB	0	2503.5	39725	20.58	22.57
				2548.3	40173	20.77	22.76
				2593	40620	20.43	22.42
				2637.8	41068	20.53	22.52
				2682.5	41515	20.33	22.32
			18	2503.5	39725	20.54	22.53
				2548.3	40173	20.38	22.37
				2593	40620	20.33	22.32
				2637.8	41068	20.57	22.56
				2682.5	41515	20.32	22.31
			37	2503.5	39725	20.34	22.33
				2548.3	40173	20.46	22.45
				2593	40620	20.35	22.34
				2637.8	41068	20.42	22.41
				2682.5	41515	20.37	22.36
		75RB		2503.5	39725	20.48	22.47
				2548.3	40173	20.48	22.47
				2593	40620	20.34	22.33
				2637.8	41068	20.52	22.51
				2682.5	41515	20.63	22.62

15	64-QAM	1 RB	0	2503.5	39725	21.37	23.36
				2548.3	40173	21.36	23.35
				2593	40620	21.06	23.05
				2637.8	41068	21.05	23.04
				2682.5	41515	21.06	23.05
			36	2503.5	39725	21.38	23.37
				2548.3	40173	21.21	23.20
				2593	40620	20.86	22.85
				2637.8	41068	21.15	23.14
				2682.5	41515	20.89	22.88
			74	2503.5	39725	21.02	23.01
				2548.3	40173	20.72	22.71
				2593	40620	20.91	22.90
				2637.8	41068	20.81	22.80
				2682.5	41515	20.76	22.75
		36 RB	0	2503.5	39725	20.42	22.41
				2548.3	40173	20.12	22.11
				2593	40620	20.40	22.39
				2637.8	41068	20.32	22.31
				2682.5	41515	20.25	22.24
			18	2503.5	39725	20.47	22.46
				2548.3	40173	20.26	22.25
				2593	40620	20.43	22.42
				2637.8	41068	20.24	22.23
				2682.5	41515	20.09	22.08
			37	2503.5	39725	20.30	22.29
				2548.3	40173	20.30	22.29
				2593	40620	20.10	22.09
				2637.8	41068	20.43	22.42
				2682.5	41515	20.12	22.11
		75RB		2503.5	39725	20.12	22.11
				2548.3	40173	20.27	22.26
				2593	40620	20.05	22.04
				2637.8	41068	20.01	22.00
				2682.5	41515	20.18	22.17

BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	EIRP (dBm)
10	QPSK	1 RB	0	2501	39700	23.02	25.01
				2547	40160	23.01	25.00
				2593	40620	22.77	24.76
				2639	41080	22.80	24.79
				2685	41540	22.84	24.83
			25	2501	39700	22.40	24.39
				2547	40160	22.59	24.58
				2593	40620	22.21	24.20
				2639	41080	22.52	24.51
				2685	41540	22.50	24.49
			49	2501	39700	22.34	24.33
				2547	40160	22.39	24.38
				2593	40620	22.07	24.06
				2639	41080	22.43	24.42
				2685	41540	21.97	23.96
		25 RB	0	2501	39700	21.60	23.59
				2547	40160	21.60	23.59
				2593	40620	21.32	23.31
				2639	41080	21.45	23.44
				2685	41540	21.48	23.47
			12	2501	39700	21.60	23.59
				2547	40160	21.40	23.39
				2593	40620	20.98	22.97
				2639	41080	21.25	23.24
				2685	41540	21.54	23.53
			25	2501	39700	21.37	23.36
				2547	40160	21.32	23.31
				2593	40620	21.44	23.43
				2639	41080	21.50	23.49
				2685	41540	21.27	23.26
		50RB		2501	39700	21.45	23.44
				2547	40160	21.55	23.54
				2593	40620	21.36	23.35
				2639	41080	21.45	23.44
				2685	41540	21.33	23.32

10	16-QAM	1 RB	0	2501	39700	22.32	24.31
				2547	40160	21.95	23.94
				2593	40620	21.88	23.87
				2639	41080	22.09	24.08
				2685	41540	22.06	24.05
			25	2501	39700	21.96	23.95
				2547	40160	21.97	23.96
				2593	40620	21.50	23.49
				2639	41080	21.84	23.83
				2685	41540	21.68	23.67
			49	2501	39700	21.12	23.11
				2547	40160	21.34	23.33
				2593	40620	20.97	22.96
				2639	41080	21.32	23.31
				2685	41540	21.17	23.16
		25 RB	0	2501	39700	20.78	22.77
				2547	40160	20.51	22.50
				2593	40620	20.65	22.64
				2639	41080	20.74	22.73
				2685	41540	20.49	22.48
			12	2501	39700	20.41	22.40
				2547	40160	20.60	22.59
				2593	40620	20.39	22.38
				2639	41080	20.39	22.38
				2685	41540	20.34	22.33
			25	2501	39700	20.32	22.31
				2547	40160	20.27	22.26
				2593	40620	20.29	22.28
				2639	41080	20.23	22.22
				2685	41540	20.26	22.25
		50RB		2501	39700	20.47	22.46
				2547	40160	20.50	22.49
				2593	40620	20.37	22.36
				2639	41080	20.49	22.48
				2685	41540	20.62	22.61

10	64-QAM	1 RB	0	2501	39700	21.50	23.49
				2547	40160	21.35	23.34
				2593	40620	21.22	23.21
				2639	41080	21.08	23.07
				2685	41540	21.16	23.15
			25	2501	39700	21.36	23.35
				2547	40160	21.18	23.17
				2593	40620	21.07	23.06
				2639	41080	21.22	23.21
				2685	41540	20.74	22.73
			49	2501	39700	21.12	23.11
				2547	40160	20.97	22.96
				2593	40620	20.81	22.80
				2639	41080	20.81	22.80
				2685	41540	20.93	22.92
		25 RB	0	2501	39700	20.40	22.39
				2547	40160	20.11	22.10
				2593	40620	20.33	22.32
				2639	41080	20.33	22.32
				2685	41540	20.20	22.19
			12	2501	39700	20.21	22.20
				2547	40160	20.35	22.34
				2593	40620	20.46	22.45
				2639	41080	20.21	22.20
				2685	41540	20.26	22.25
			25	2501	39700	20.20	22.19
				2547	40160	20.38	22.37
				2593	40620	20.19	22.18
				2639	41080	20.28	22.27
				2685	41540	20.28	22.27
		50RB		2501	39700	20.10	22.09
				2547	40160	20.29	22.28
				2593	40620	20.17	22.16
				2639	41080	20.15	22.14
				2685	41540	20.09	22.08

BW(MHz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	EIRP (dBm)
5	QPSK	1 RB	0	2498.5	39675	23.08	25.07
				2547.8	40148	22.79	24.78
				2593	40620	22.79	24.78
				2640.3	41093	22.87	24.86
				2687.5	41565	22.87	24.86
			12	2498.5	39675	22.48	24.47
				2547.8	40148	22.36	24.35
				2593	40620	22.20	24.19
				2640.3	41093	22.64	24.63
				2687.5	41565	22.29	24.28
			24	2498.5	39675	22.31	24.30
				2547.8	40148	22.13	24.12
				2593	40620	22.15	24.14
				2640.3	41093	22.20	24.19
				2687.5	41565	22.13	24.12
		12 RB	0	2498.5	39675	21.52	23.51
				2547.8	40148	21.50	23.49
				2593	40620	21.28	23.27
				2640.3	41093	21.57	23.56
				2687.5	41565	21.71	23.70
			6	2498.5	39675	21.43	23.42
				2547.8	40148	21.45	23.44
				2593	40620	21.16	23.15
				2640.3	41093	21.36	23.35
				2687.5	41565	21.36	23.35
			13	2498.5	39675	21.62	23.61
				2547.8	40148	21.49	23.48
				2593	40620	21.60	23.59
				2640.3	41093	21.29	23.28
				2687.5	41565	21.25	23.24
		25RB		2498.5	39675	21.37	23.36
				2547.8	40148	21.62	23.61
				2593	40620	21.28	23.27
				2640.3	41093	21.45	23.44
				2687.5	41565	21.26	23.25

5	16-QAM	1 RB	0	2498.5	39675	22.32	24.31
				2547.8	40148	21.98	23.97
				2593	40620	21.88	23.87
				2640.3	41093	21.97	23.96
				2687.5	41565	22.05	24.04
			12	2498.5	39675	21.97	23.96
				2547.8	40148	21.69	23.68
				2593	40620	21.61	23.60
				2640.3	41093	21.71	23.70
				2687.5	41565	21.60	23.59
			24	2498.5	39675	21.21	23.20
				2547.8	40148	21.14	23.13
				2593	40620	21.14	23.13
				2640.3	41093	21.20	23.19
				2687.5	41565	21.22	23.21
		12 RB	0	2498.5	39675	20.73	22.72
				2547.8	40148	20.79	22.78
				2593	40620	20.56	22.55
				2640.3	41093	20.50	22.49
				2687.5	41565	20.42	22.41
			6	2498.5	39675	20.60	22.59
				2547.8	40148	20.55	22.54
				2593	40620	20.25	22.24
				2640.3	41093	20.45	22.44
				2687.5	41565	20.48	22.47
			13	2498.5	39675	20.47	22.46
				2547.8	40148	20.21	22.20
				2593	40620	20.21	22.20
				2640.3	41093	20.23	22.22
				2687.5	41565	20.16	22.15
		25RB		2498.5	39675	20.61	22.60
				2547.8	40148	20.41	22.40
				2593	40620	20.23	22.22
				2640.3	41093	20.42	22.41
				2687.5	41565	20.65	22.64

5	64-QAM	1 RB	0	2498.5	39675	21.50	23.49
				2547.8	40148	21.34	23.33
				2593	40620	21.07	23.06
				2640.3	41093	21.17	23.16
				2687.5	41565	21.01	23.00
			12	2498.5	39675	21.30	23.29
				2547.8	40148	21.16	23.15
				2593	40620	21.05	23.04
				2640.3	41093	21.19	23.18
				2687.5	41565	20.74	22.73
			24	2498.5	39675	21.12	23.11
				2547.8	40148	20.73	22.72
				2593	40620	20.94	22.93
				2640.3	41093	20.97	22.96
				2687.5	41565	20.85	22.84
		12 RB	0	2498.5	39675	20.33	22.32
				2547.8	40148	20.12	22.11
				2593	40620	20.37	22.36
				2640.3	41093	20.29	22.28
				2687.5	41565	20.14	22.13
			6	2498.5	39675	20.49	22.48
				2547.8	40148	20.39	22.38
				2593	40620	20.27	22.26
				2640.3	41093	20.20	22.19
				2687.5	41565	20.11	22.10
			13	2498.5	39675	20.18	22.17
				2547.8	40148	20.28	22.27
				2593	40620	20.22	22.21
				2640.3	41093	20.21	22.20
				2687.5	41565	20.18	22.17
		25RB		2498.5	39675	20.20	22.19
				2547.8	40148	20.09	22.08
				2593	40620	20.10	22.09
				2640.3	41093	20.01	22.00
				2687.5	41565	20.04	22.03

8.2 FREQUENCY STABILITY MEASUREMENT

LIMIT

According to the FCC part 27.54 shall be tested the frequency stability. The rule is defined that" The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

According to RSS -199 section 4.3,

The transmitter frequency stability limit shall be determined as follows:

(a) the frequency offset shall be measured according to the procedure described in RSS-Gen and recorded

(b) using a resolution bandwidth equal to that permitted within the 1 MHz band immediately outside the channel edge, as found in section 4.5, reference points will be selected at the unwanted emission limits, which comply with the attenuation specified in section 4.5 for the type of device under test, on the emission mask of the lowest and highest channels. The frequency at these points shall be recorded as fL and fH respectively

The applicant shall ensure compliance with frequency stability requirements by showing that fL minus the frequency offset and fH plus the frequency offset is within the frequency range in which the equipment is designed to operate.

TEST PROCEDURE

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -35 to +65℃

Voltage= 85% to 115% of the nominal value for AC powered equipment.

NOTE: *The frequency error was recorded frequency error from the communication simulator.*

TEST RESULTS

FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT: LTE Band 41

Reference Frequency: LTE Band 41 Max Bandwidth QPSK, 2593 MHz				
Limit: ± 2.5 ppm = 6482.5 Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	65	0.00	0.000000	+/- 2.5
120	50	0.01	0.000004	
120	40	-0.01	-0.000004	
120	30	-0.01	-0.000004	
120	20	0.00	0.000000	
120	10	0.01	0.000004	
120	0	0.02	0.000008	
120	-10	0.01	0.000004	
120	-20	0.00	0.000000	
120	-35	0.01	0.000004	

Reference Frequency: LTE Band 41 Max Bandwidth 16QAM, 2593 MHz				
Limit: ± 2.5 ppm = 6482.5 Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
120	65	0.01	0.000004	+/- 2.5
120	50	0.01	0.000004	
120	40	-0.01	-0.000004	
120	30	0.00	0.000000	
120	20	0.01	0.000004	
120	10	0.01	0.000004	
120	0	0.00	0.000000	
120	-10	0.01	0.000004	
120	-20	0.01	0.000004	
120	-35	0.00	0.000000	

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT:

LTE Band 41

Reference Frequency: LTE Band 41 Max Bandwidth QPSK, 2593 MHz				
Limit: ± 2.5 ppm = 6482.5 Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	0.00	0.000000	+/- 2.5
120	20	0.02	0.000008	
138	20	0.01	0.000004	

Reference Frequency: LTE Band 41 Max Bandwidth 16QAM, 2593 MHz				
Limit: ± 2.5 ppm = 6482.5 Hz				
Power Supply	Environment	Frequency Error	Frequency Error	Limit (ppm)
Vdc	Temperature (°C)	(Hz)	(ppm)	(ppm)
102	20	-0.01	-0.000004	+/- 2.5
120	20	0.01	0.000004	
138	20	0.02	0.000008	

8.3 OCCUPIED BANDWIDTH MEASUREMENT

LIMITS

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

TEST PROCEDURES

KDB 971168 D01 Power Meas License Digital Systems – Section 4.2

1. The occupied bandwidth was measured with the spectrum analyzer at the lowest, middle and highest channels in each band and different modulation. The 99% and -26dB bandwidth was measured and recorded.
2. RBW = 1-5% of the expected OBW
3. VBW ≥ 3 x RBW
4. Detector = Peak
5. Trace mode = max. hold

TEST RESULTS

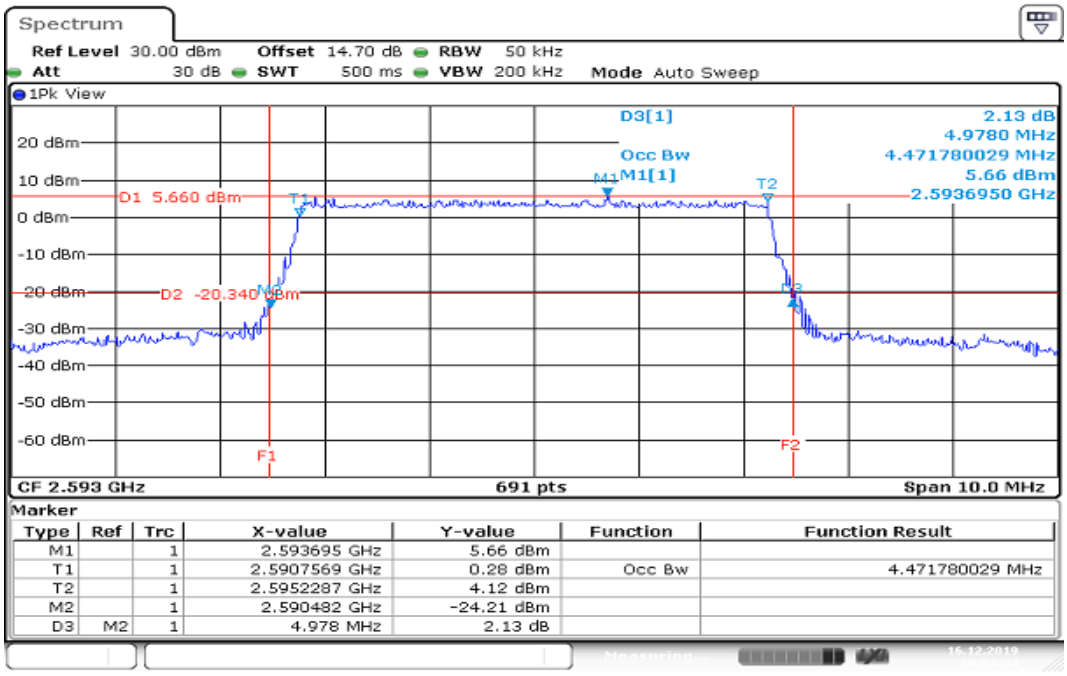
LTE Band 41

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	OBW(99%)(MHz)	26 dB Bandwidth(MHz)
41	5	Middle	2535.0	QPSK	4.4717	4.978
		Middle	2535.0	16QAM	4.4717	4.906
	10	Middle	2535.0	QPSK	8.9146	9.812
		Middle	2535.0	16QAM	8.9435	9.667
	15	Middle	2535.0	QPSK	13.4587	15.051
		Middle	2535.0	16QAM	13.4153	14.66
	20	Middle	2535.0	QPSK	18.1186	21.534
		Middle	2535.0	16QAM	18.0607	21.302

LTE Band 41

CHANNEL BANDWIDTH: 5MHz / QPSK

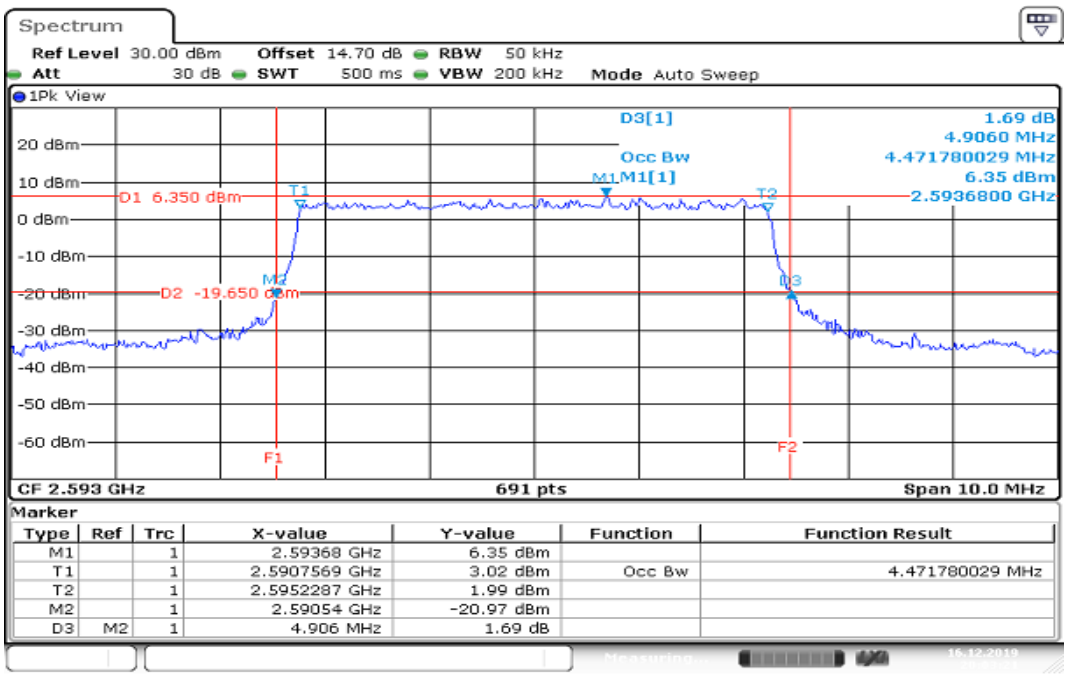
CH Mid



Date: 16.DEC.2019 20:01:34

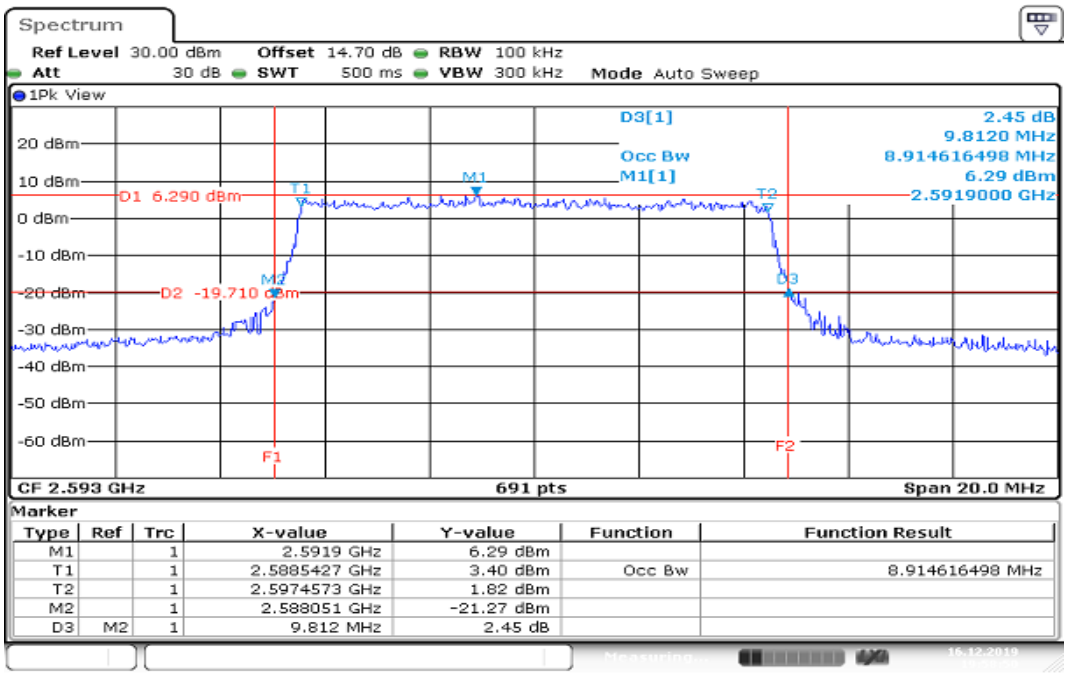
CHANNEL BANDWIDTH: 5MHz / 16QAM

CH Mid



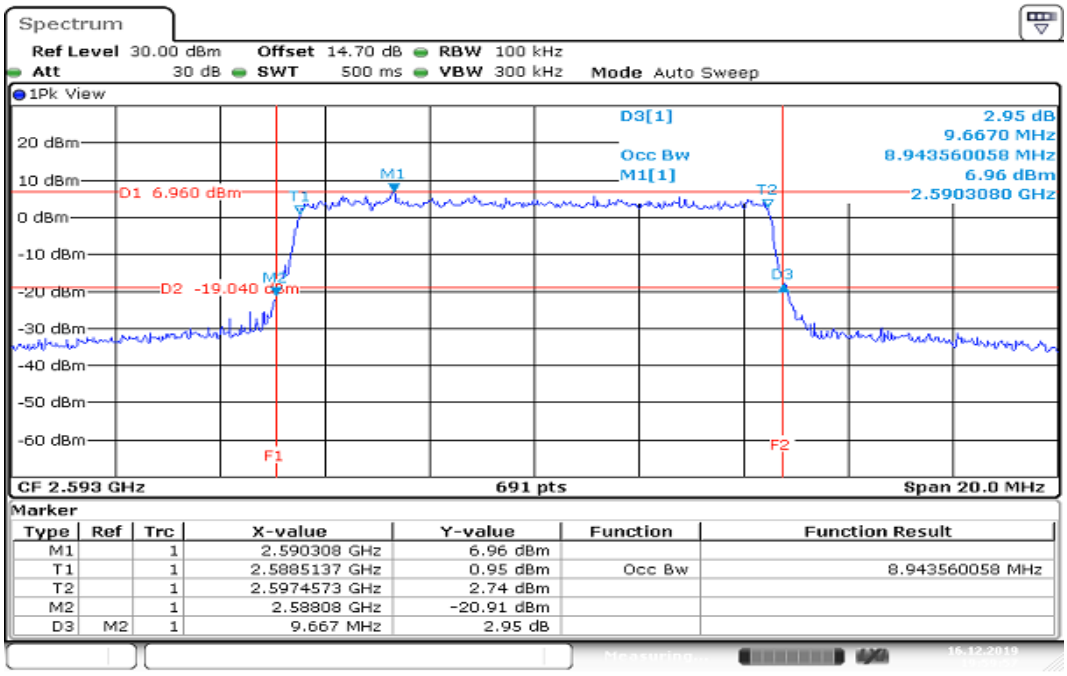
Date: 16.DEC.2019 20:03:22

CHANNEL BANDWIDTH: 10MHz / QPSK
CH Mid



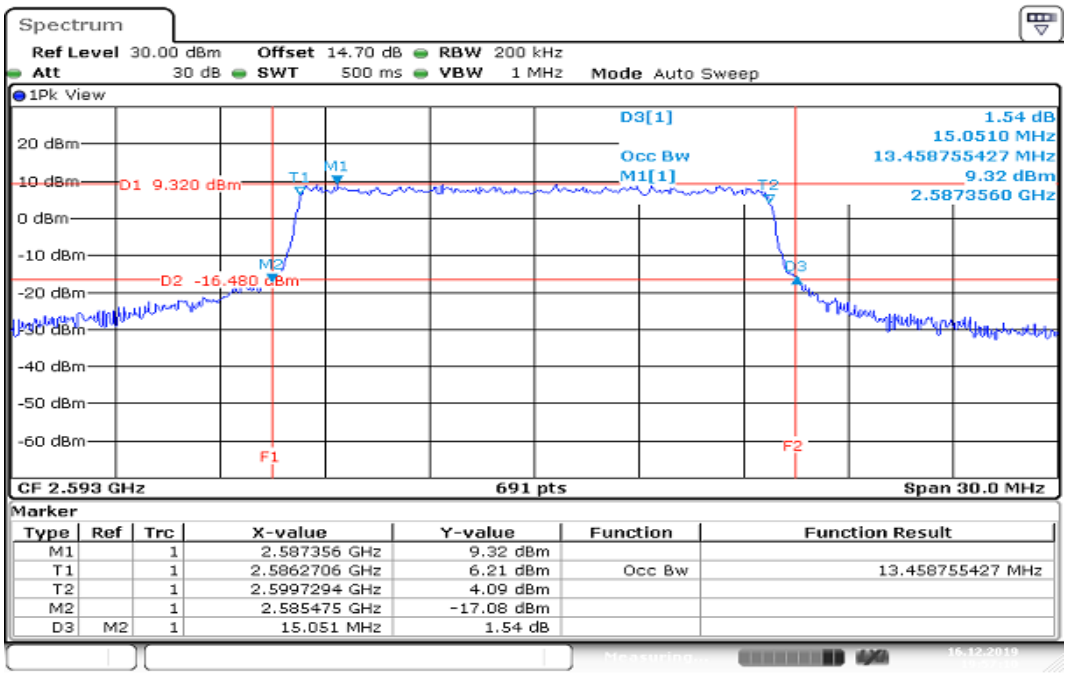
Date: 16.DEC.2019 19:58:50

CHANNEL BANDWIDTH: 10MHz / 16QAM
CH Mid



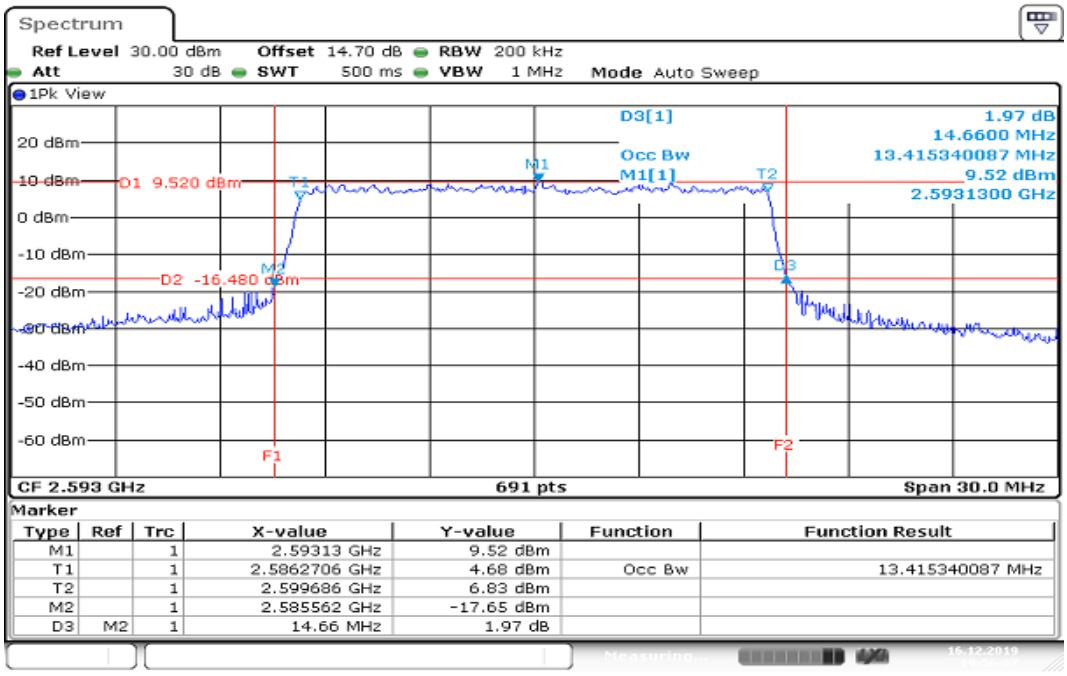
Date: 16.DEC.2019 19:59:57

CHANNEL BANDWIDTH: 15MHz / QPSK
CH Mid



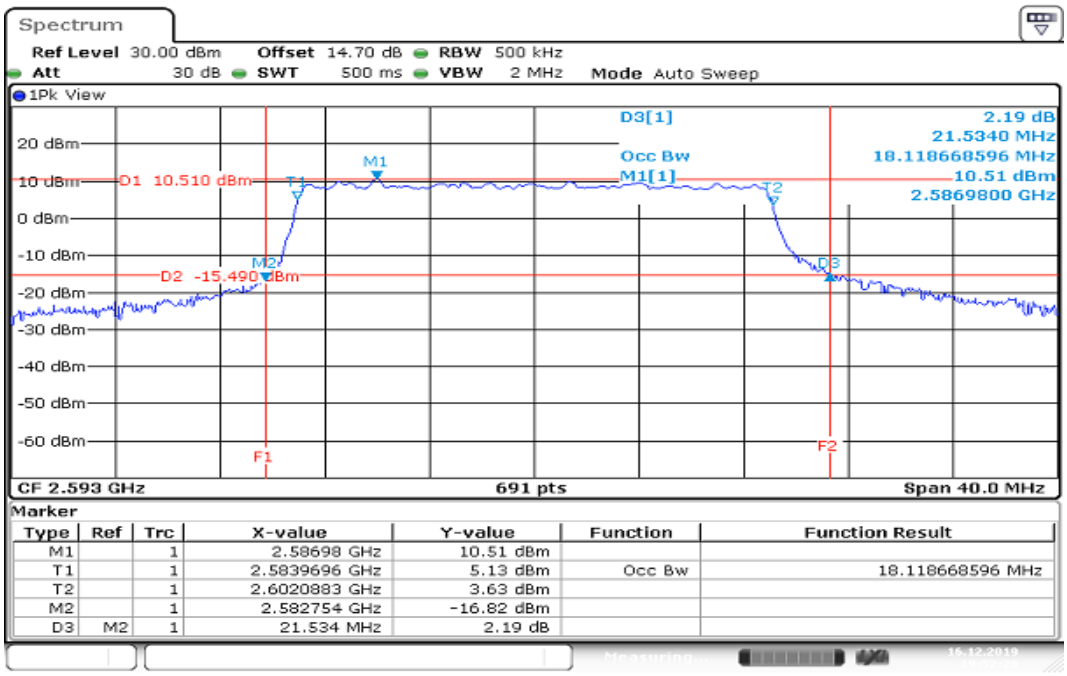
Date: 16.DEC.2019 19:57:11

CHANNEL BANDWIDTH: 15MHz / 16QAM
CH Mid



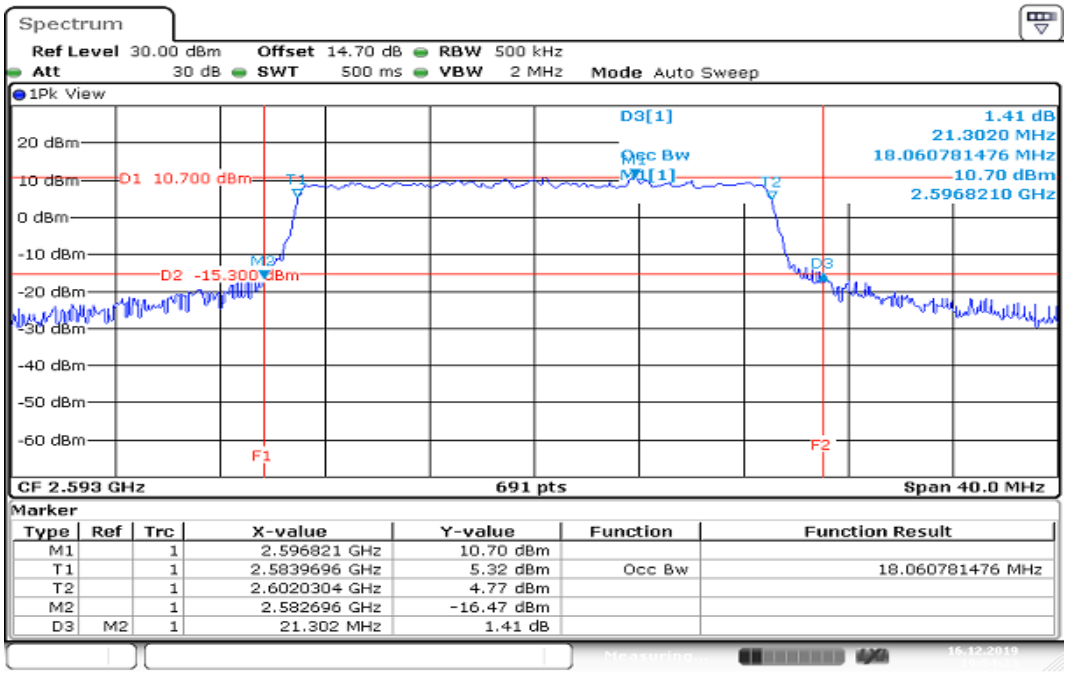
Date: 16.DEC.2019 19:56:07

CHANNEL BANDWIDTH: 20MHz / QPSK
CH Mid



Date: 16.DEC.2019 19:52:28

CHANNEL BANDWIDTH: 20MHz / 16QAM
CH Mid



Date: 16.DEC.2019 19:54:23

8.4 PEAK TO AVERAGE POWER RATIO

LIMIT

In measuring transmissions in this band using an average power technique, peak-to-average power ratio (PAPR) of the transmission may not exceed 13 dB.

TEST PROCEDURES

1. According to KDB 971168D01.
2. The EUT was connect to spectrum analyzer and call box.
3. Set the CCDF function in spectrum analyzer.
4. The highest RF output power were measured and recorded the maximum PAPR level associated with a probability of 0.1%.
5. Record the Peak to Average Power Ratio.

TEST RESULTS

LTE Band 41

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	4.17

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	5.33

CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	4.87

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	3.28

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	6.23

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	5.25

CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	4.64

CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	6.26

Note: We selected worst case to performed test in middle channel, the results can be meet other channel.

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	5.39

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	4.03

CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	4.14

CHANNEL BANDWIDTH: 20MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	4.58

CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	6.55

CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	6.06

CHANNEL BANDWIDTH: 15MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	6.46

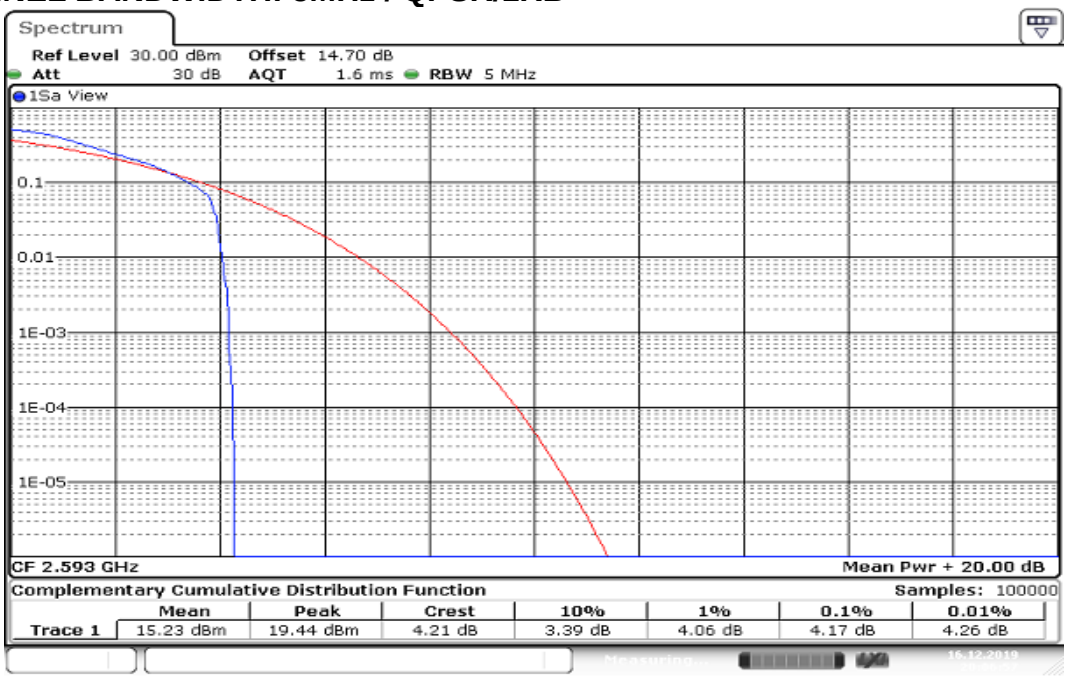
CHANNEL BANDWIDTH: 20MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
40620	2593	6.38

Note: We selected worst case to performed test in middle channel, the results can be meet other channel.

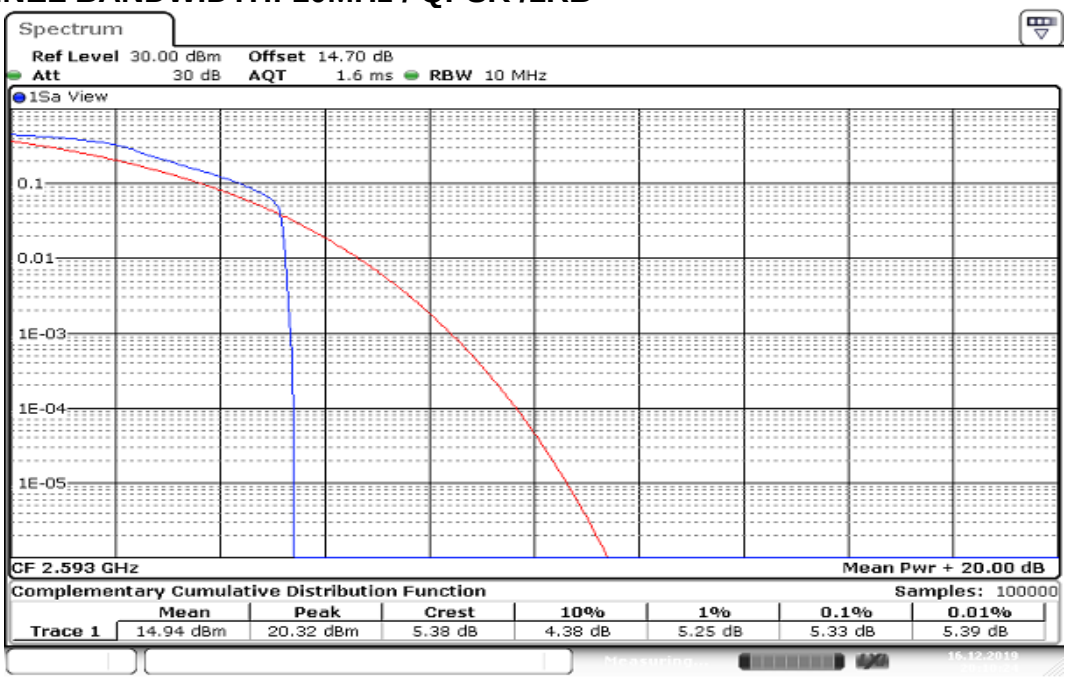
LTE Band 41

CHANNEL BANDWIDTH: 5MHz / QPSK/1RB



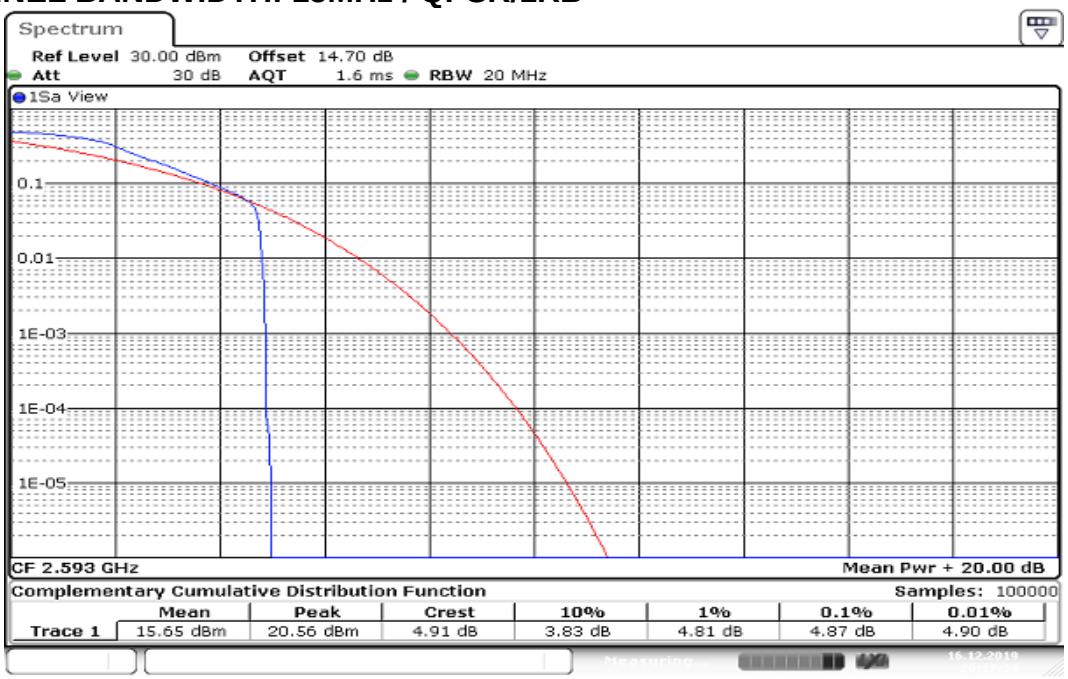
Date: 16.DEC.2019 20:06:58

CHANNEL BANDWIDTH: 10MHz / QPSK /1RB



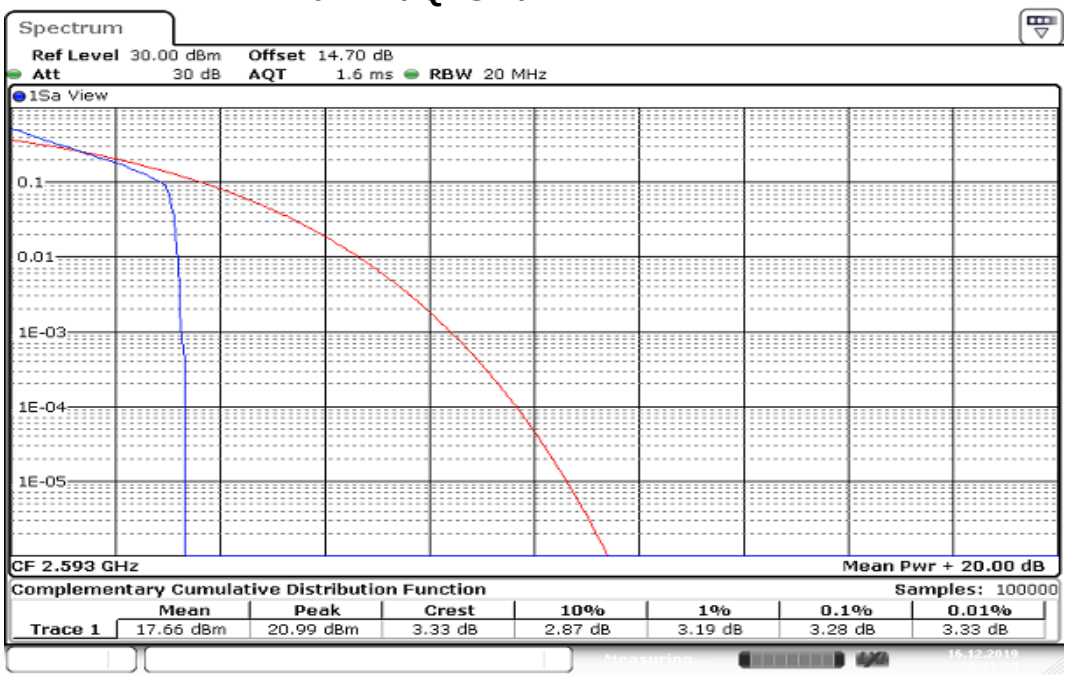
Date: 16.DEC.2019 20:10:24

CHANNEL BANDWIDTH: 15MHz / QPSK/1RB



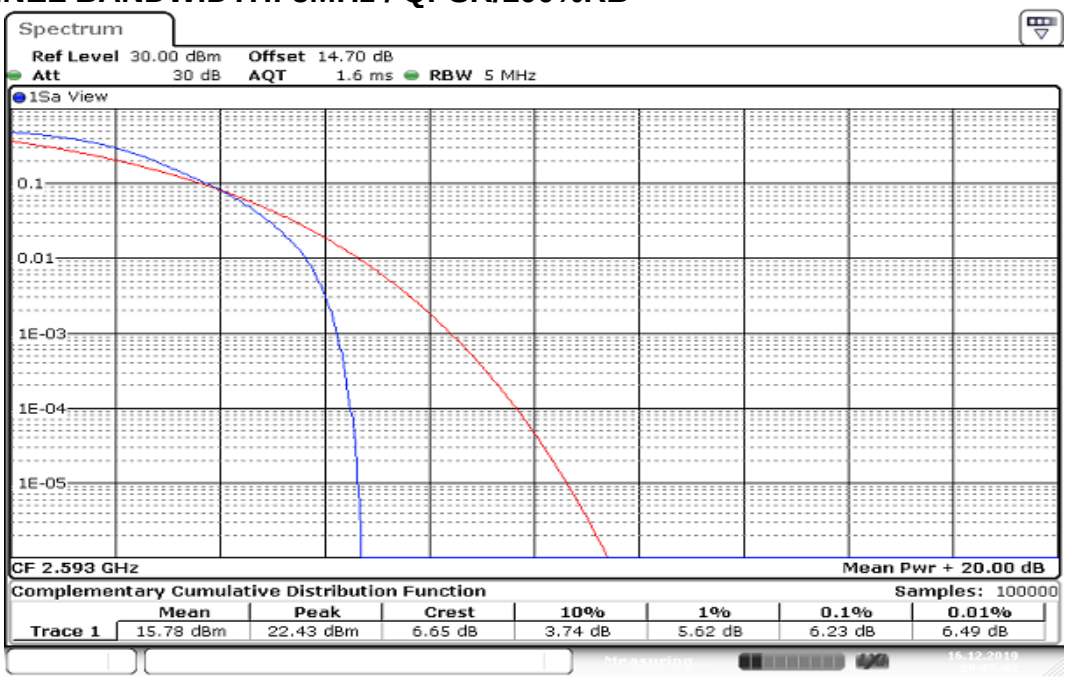
Date: 16.DEC.2019 20:17:34

CHANNEL BANDWIDTH: 20MHz / QPSK /1RB



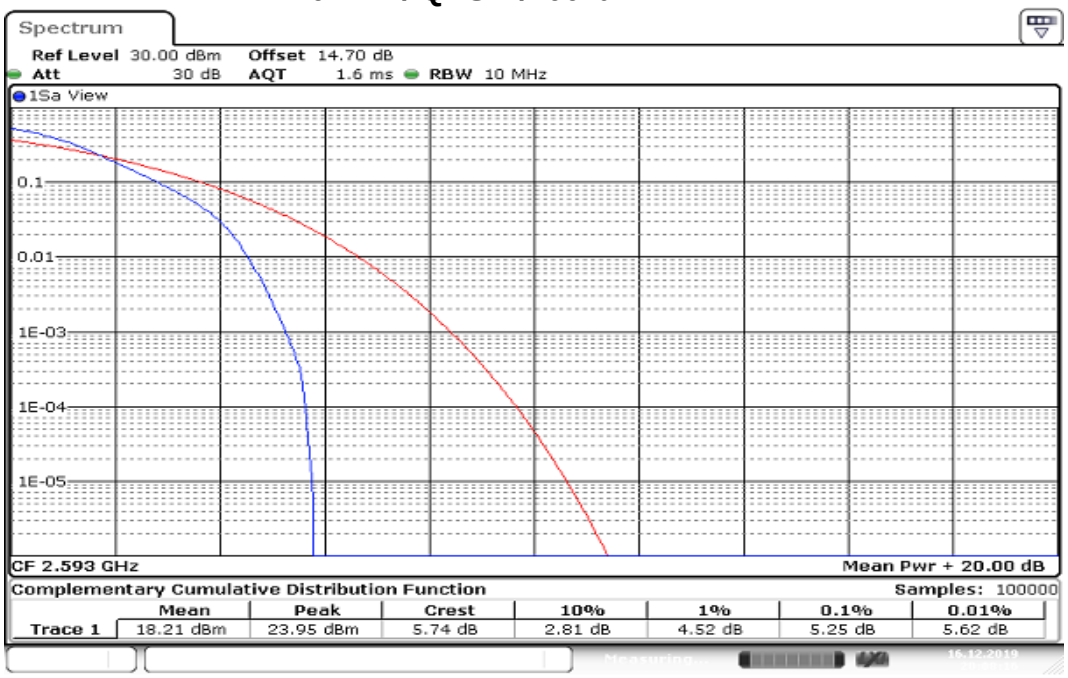
Date: 16.DEC.2019 20:21:39

CHANNEL BANDWIDTH: 5MHz / QPSK/100%RB



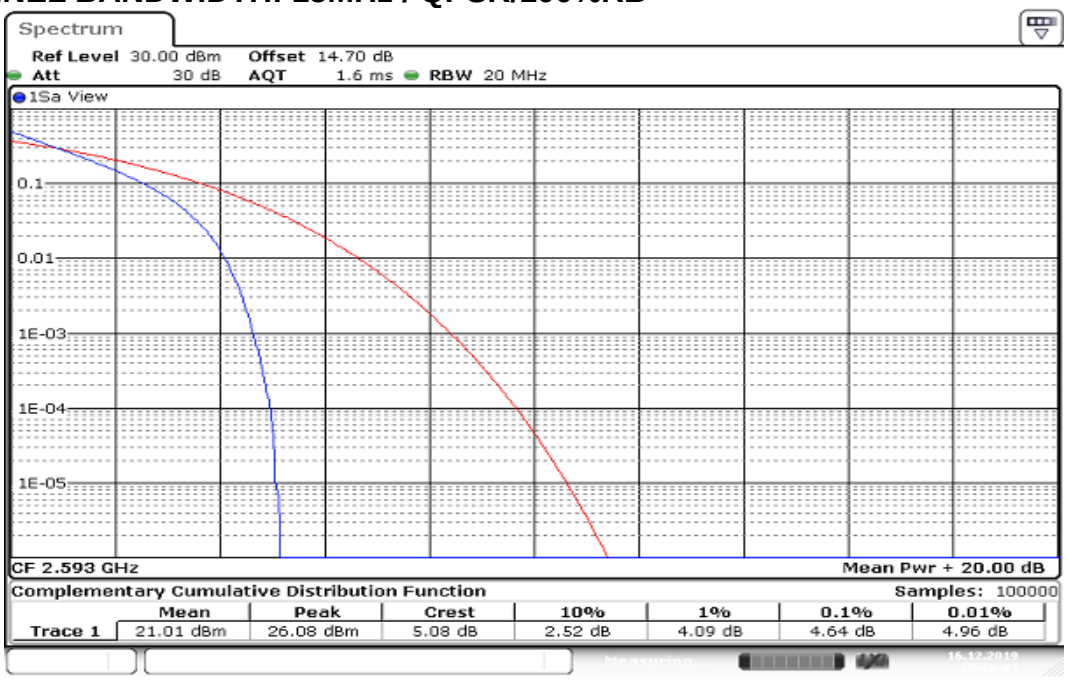
Date: 16.DEC.2019 20:05:03

CHANNEL BANDWIDTH: 10MHz / QPSK /100%RB



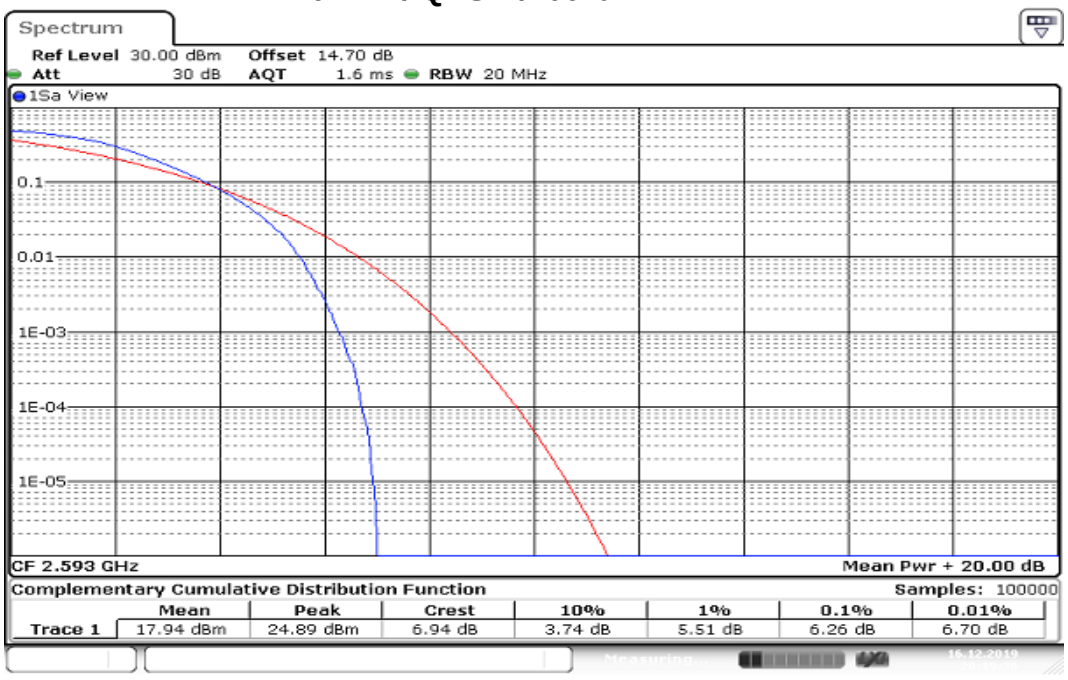
Date: 16.DEC.2019 20:08:16

CHANNEL BANDWIDTH: 15MHz / QPSK/100%RB



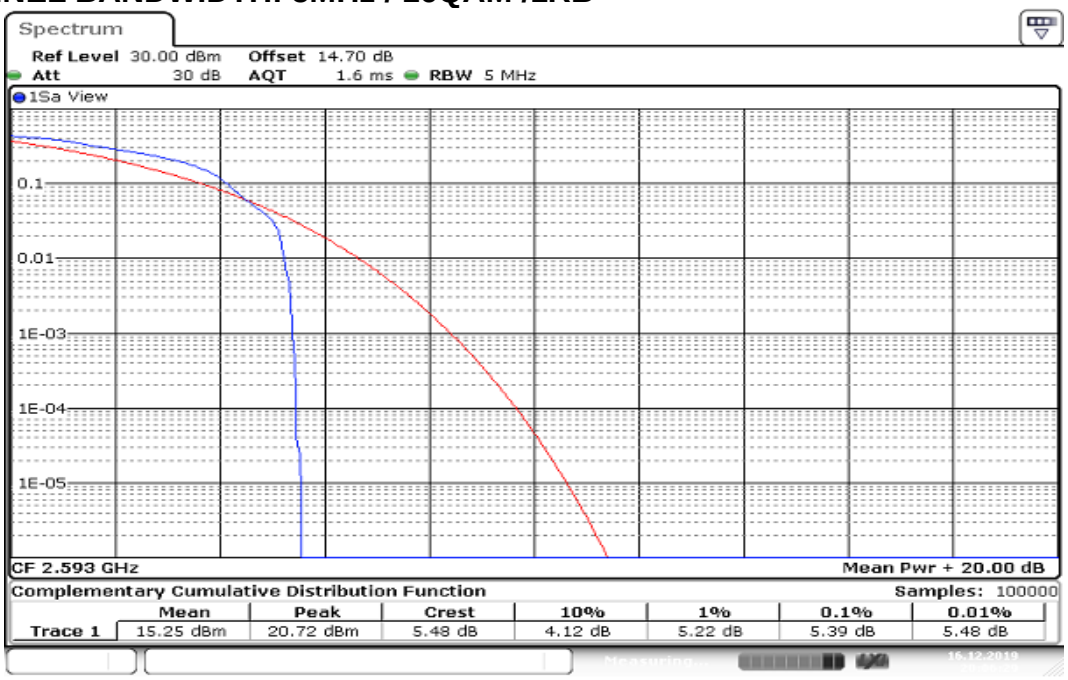
Date: 16.DEC.2019 20:16:03

CHANNEL BANDWIDTH: 20MHz / QPSK /100%RB



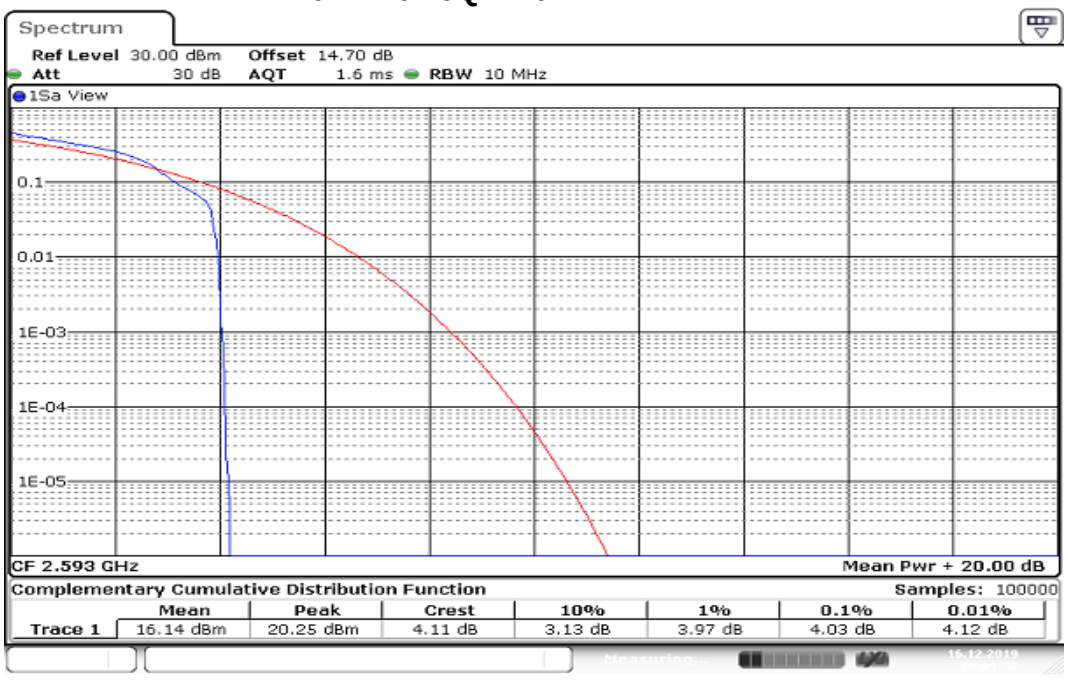
Date: 16.DEC.2019 20:19:36

CHANNEL BANDWIDTH: 5MHz / 16QAM /1RB



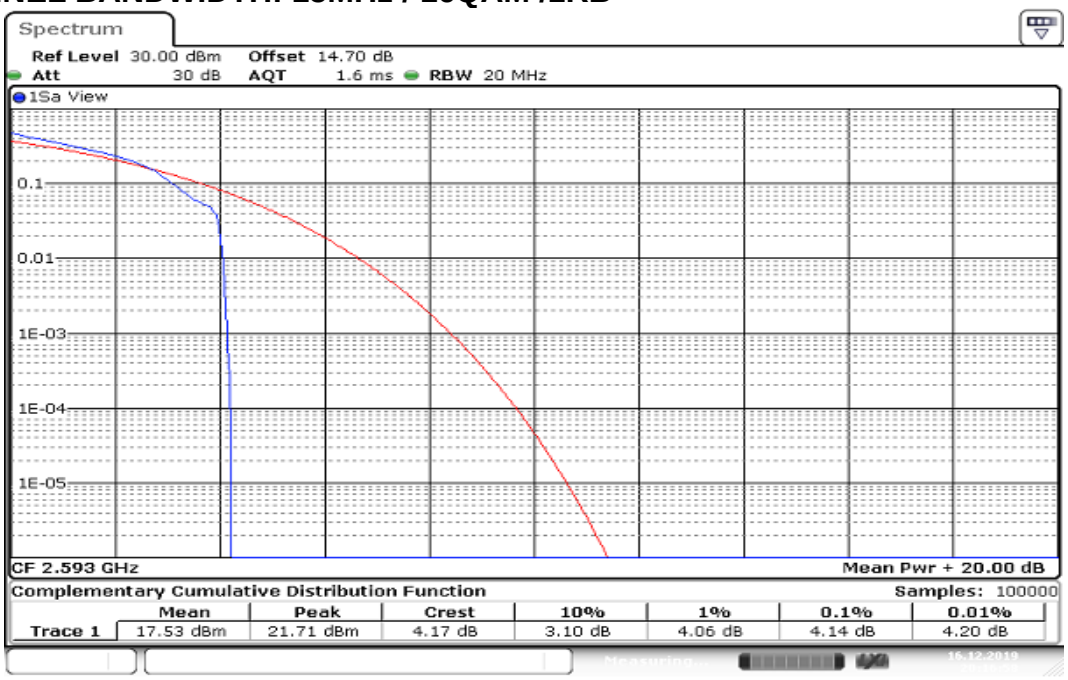
Date: 16.DEC.2019 20:06:30

CHANNEL BANDWIDTH: 10MHz / 16QAM /1RB



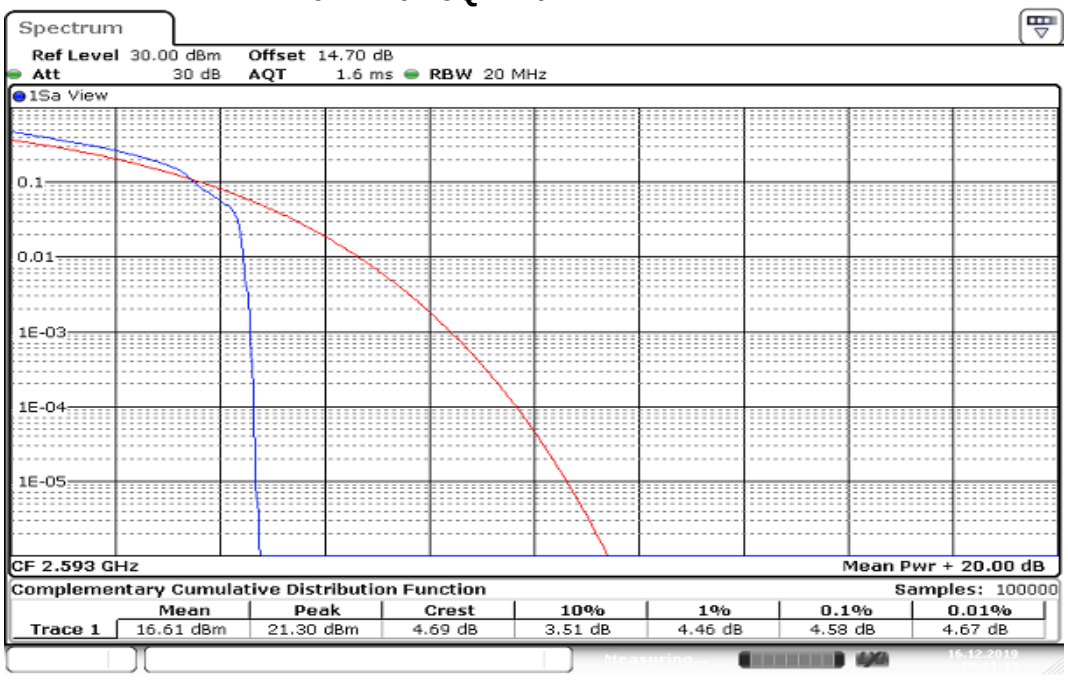
Date: 16.DEC.2019 20:09:52

CHANNEL BANDWIDTH: 15MHz / 16QAM /1RB



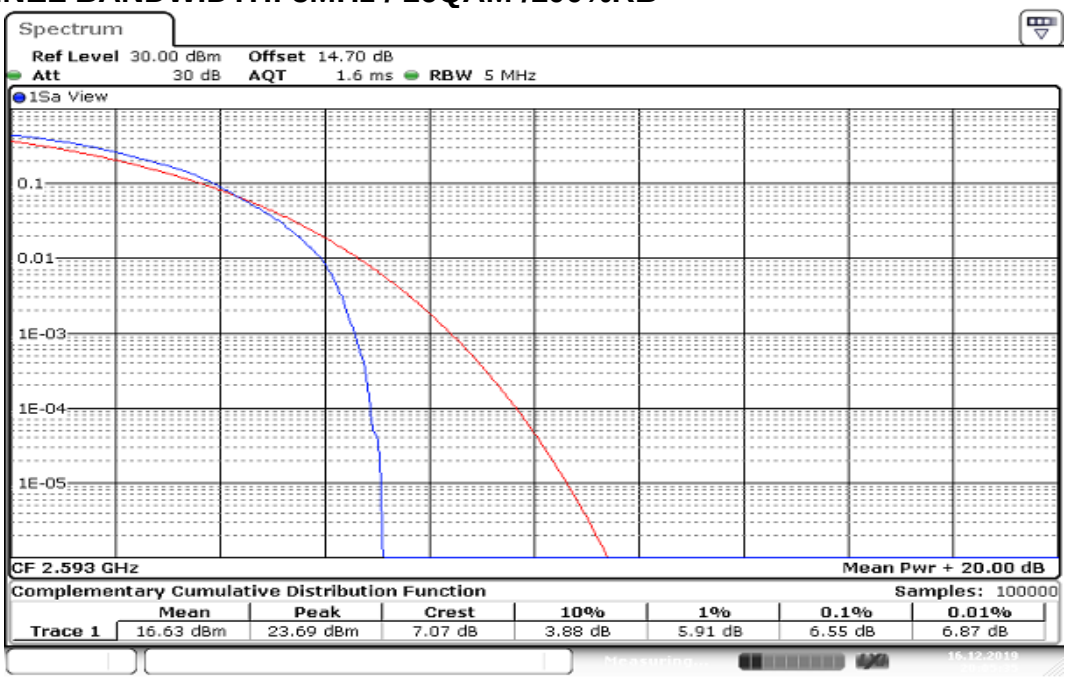
Date: 16.DEC.2019 20:16:58

CHANNEL BANDWIDTH: 20MHz / 16QAM /1RB



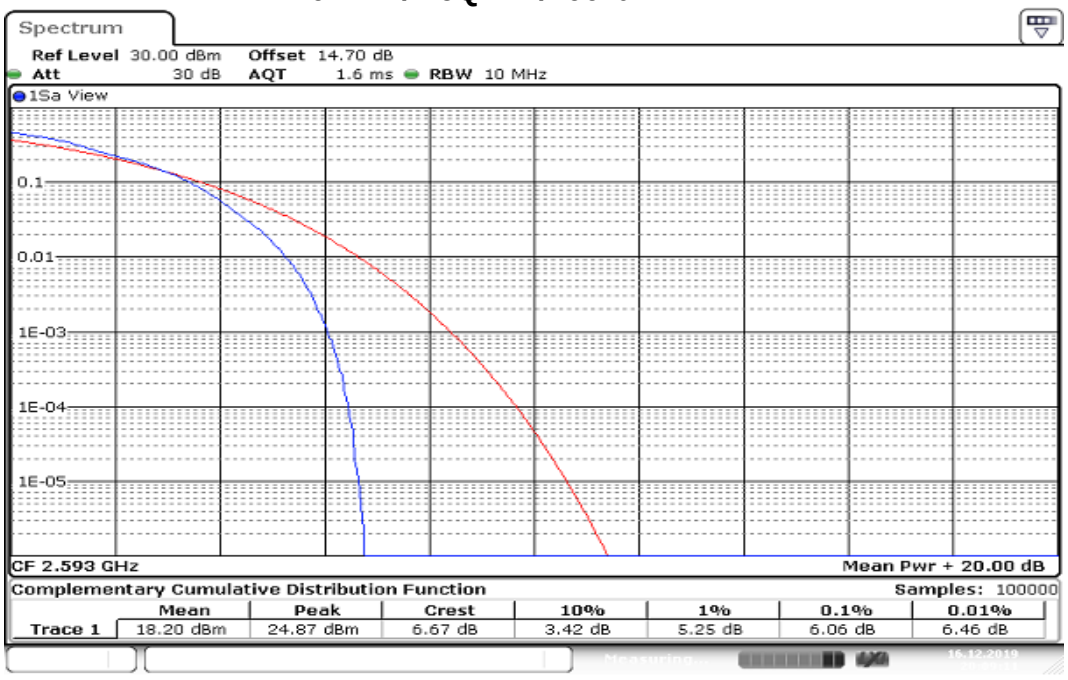
Date: 16.DEC.2019 20:21:14

CHANNEL BANDWIDTH: 5MHz / 16QAM /100%RB



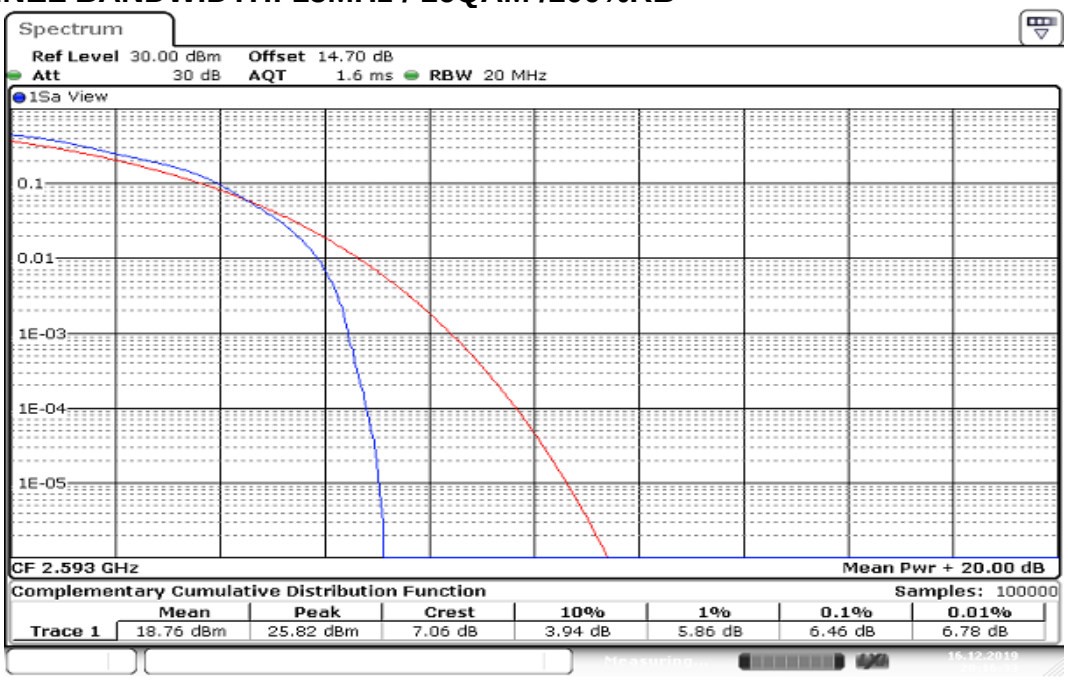
Date: 16.DEC.2019 20:05:36

CHANNEL BANDWIDTH: 10MHz / 16QAM /100%RB



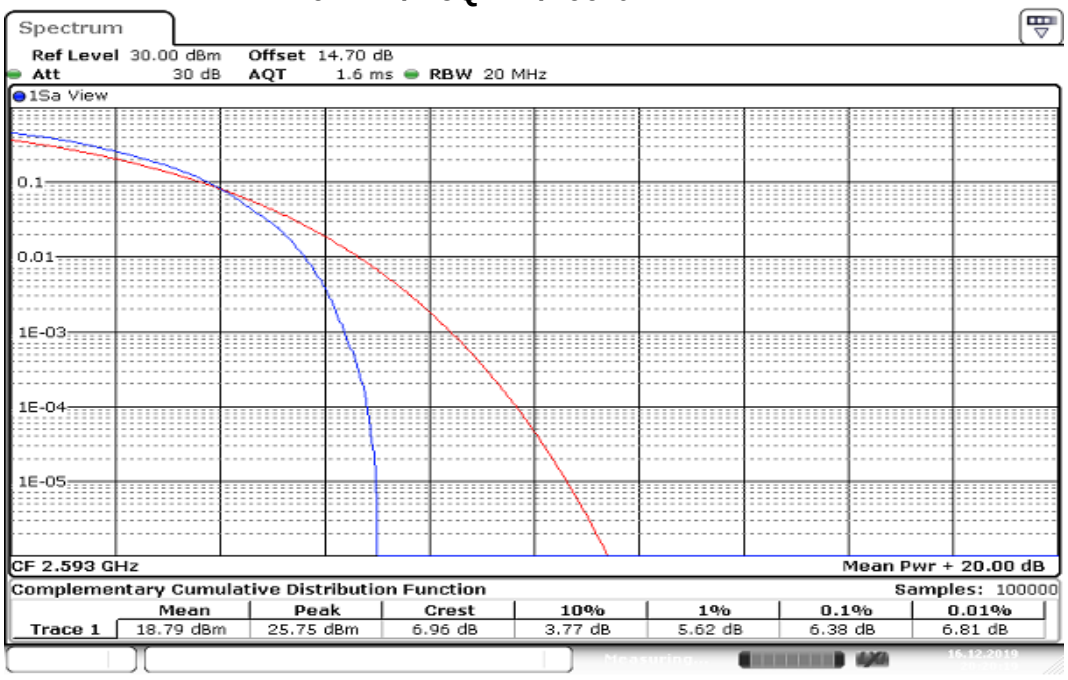
Date: 16.DEC.2019 20:09:11

CHANNEL BANDWIDTH: 15MHz / 16QAM /100%RB



Date: 16.DEC.2019 20:16:33

CHANNEL BANDWIDTH: 20MHz / 16QAM /100%RB



Date: 16.DEC.2019 20:20:19

8.5 BAND EDGE MEASUREMENT

LIMIT

Part 27.53(m) (4), Band 41
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.

According to RSS-199, Band 41
For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

p is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

TEST PROCEDURES

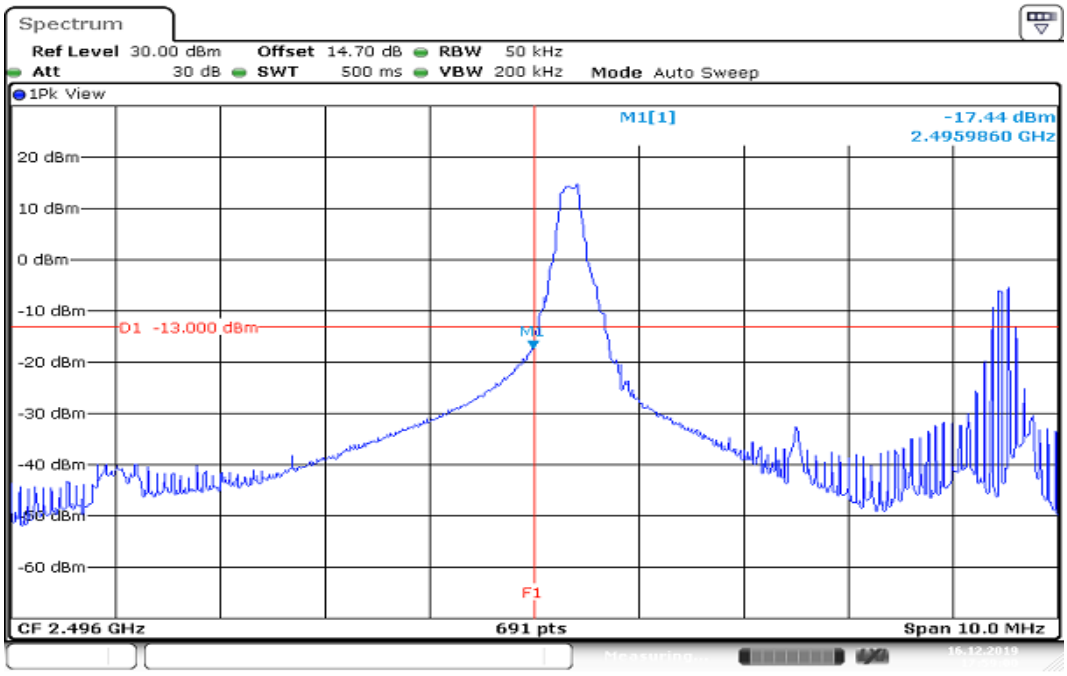
KDB 971168 D01 Power Meas License Digital Systems – Section 6.0
1. RBW ≥ 1% of the emission bandwidth
2. VBW ≥ 3 x RBW
3. Span was set large enough so as to capture all out of emissions near the band edge.

TEST RESULTS:

LTE Band 41

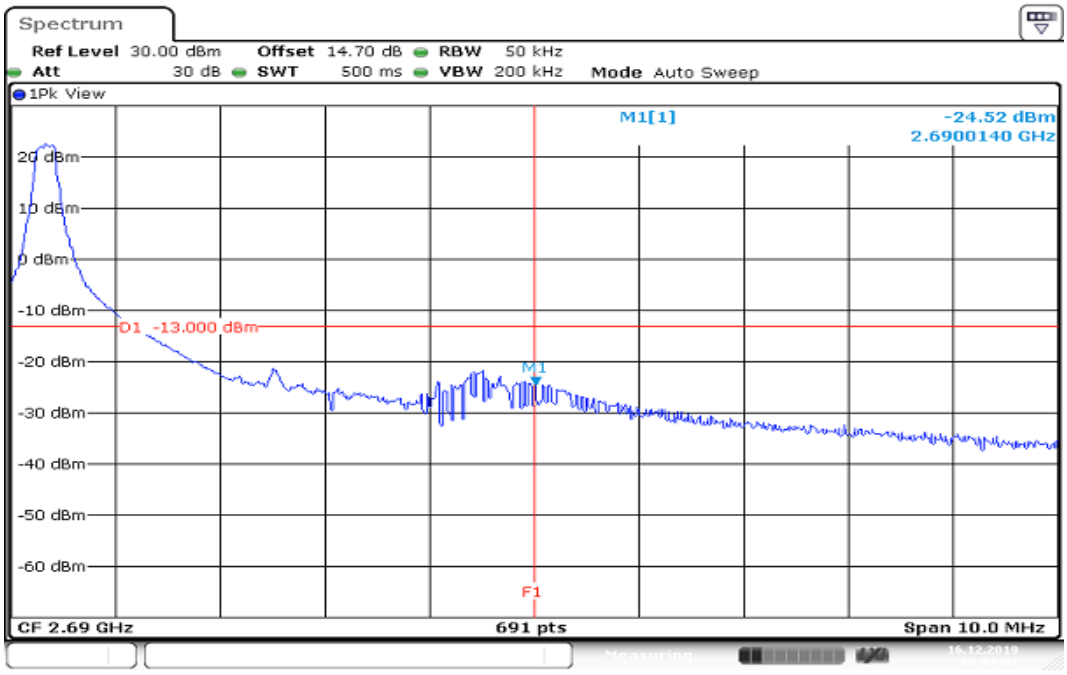
CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB ALLOCATION

LOWER BAND EDGE



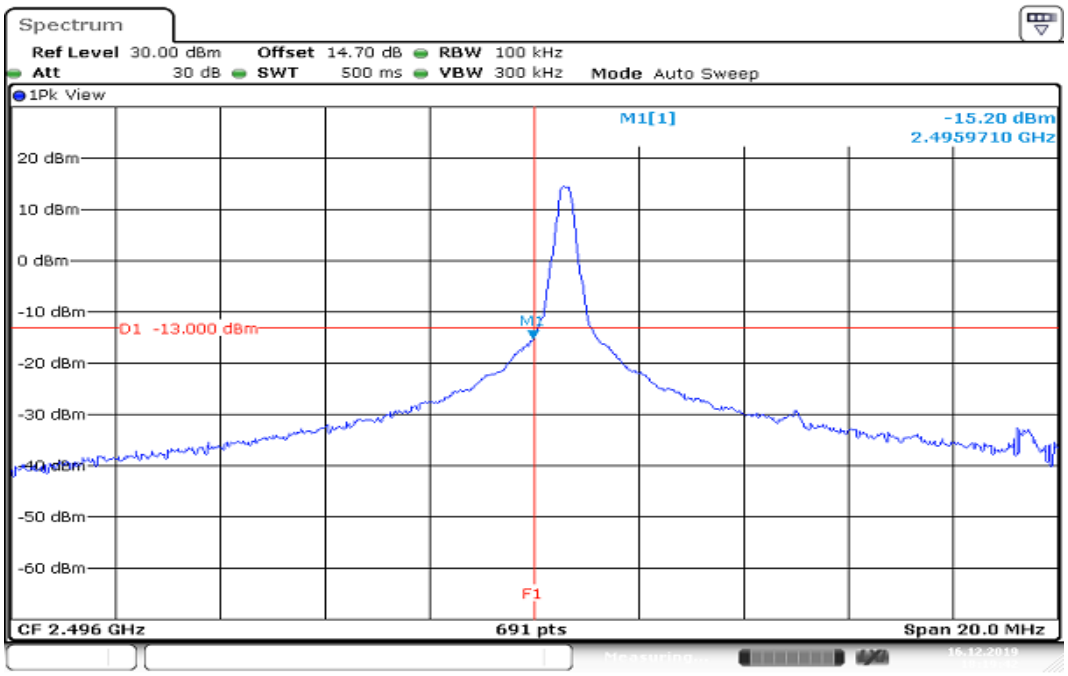
Date: 16.DEC.2019 17:59:01

HIGHER BAND EDGE



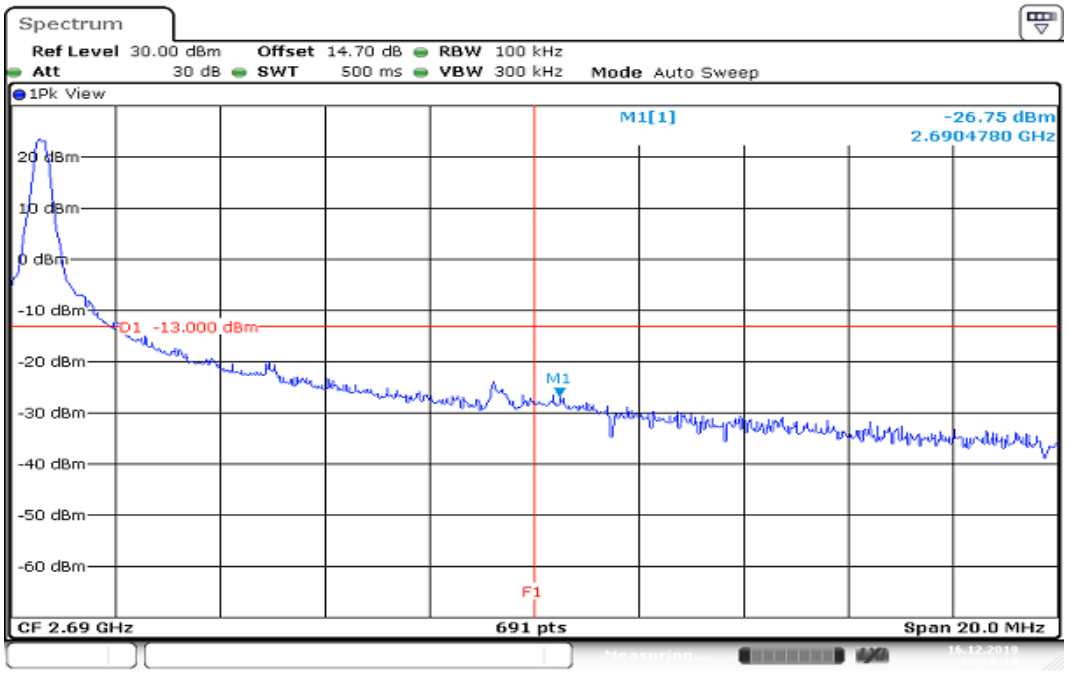
Date: 16.DEC.2019 18:07:58

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB ALLOCATION
LOWER BAND EDGE



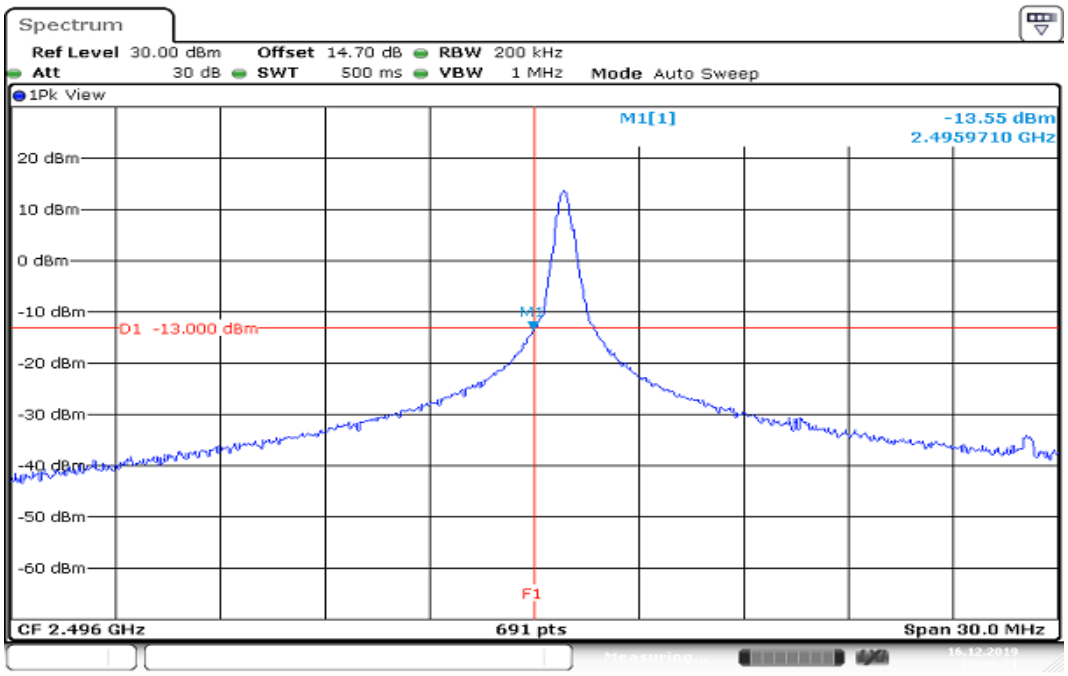
Date: 16.DEC.2019 18:19:42

HIGHER BAND EDGE



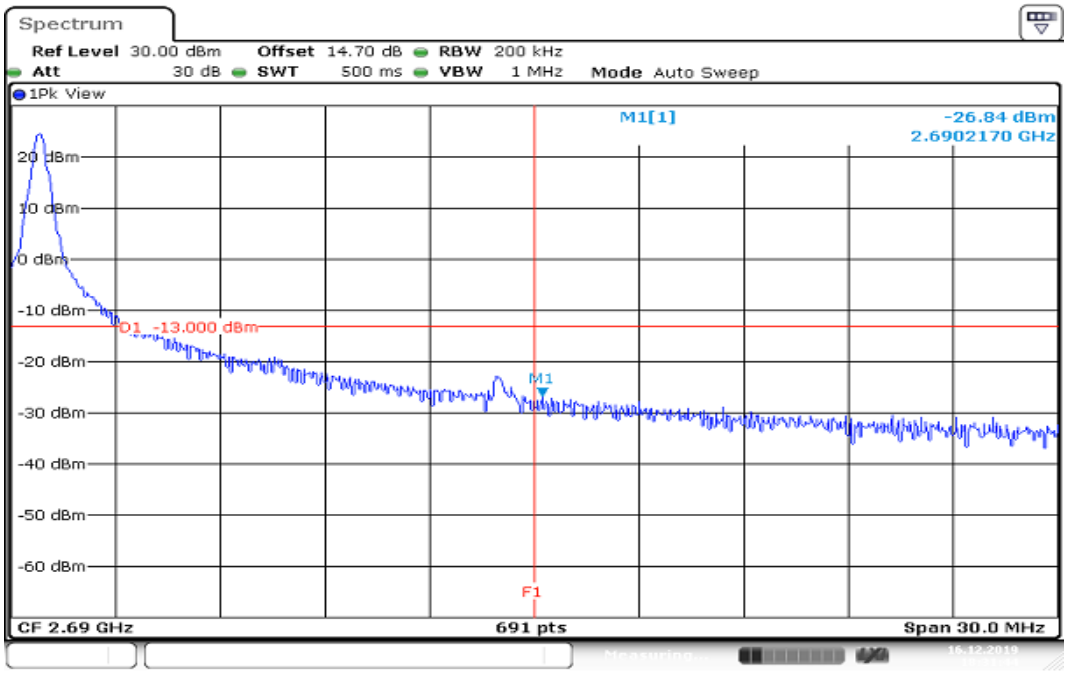
Date: 16.DEC.2019 18:15:19

CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB ALLOCATION
LOWER BAND EDGE



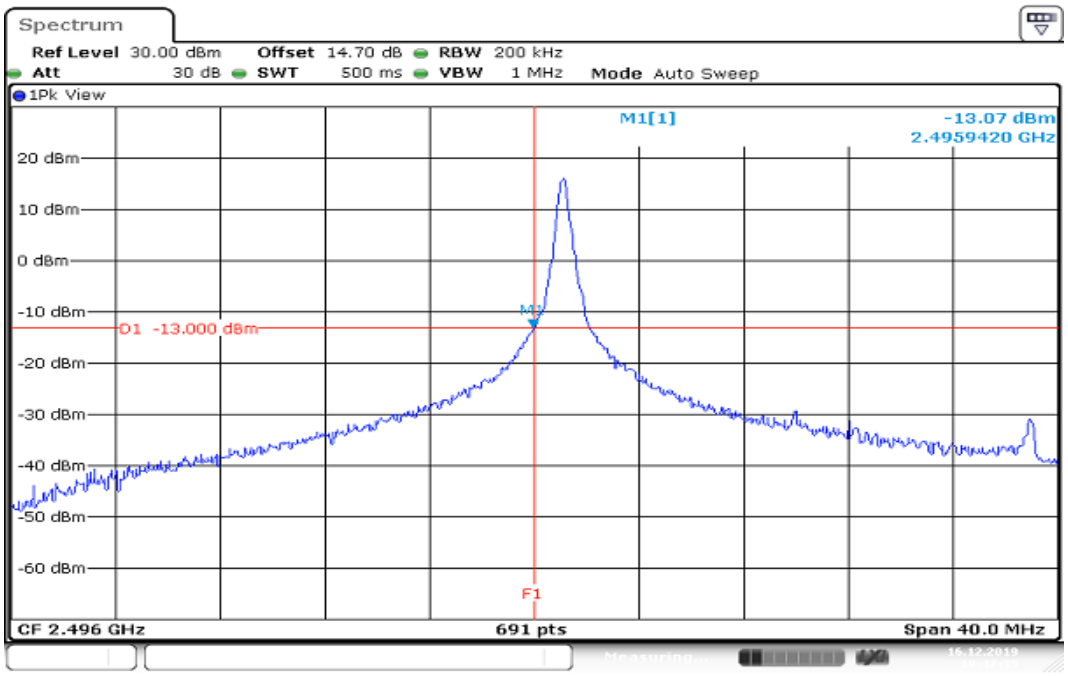
Date: 16.DEC.2019 18:30:21

HIGHER BAND EDGE



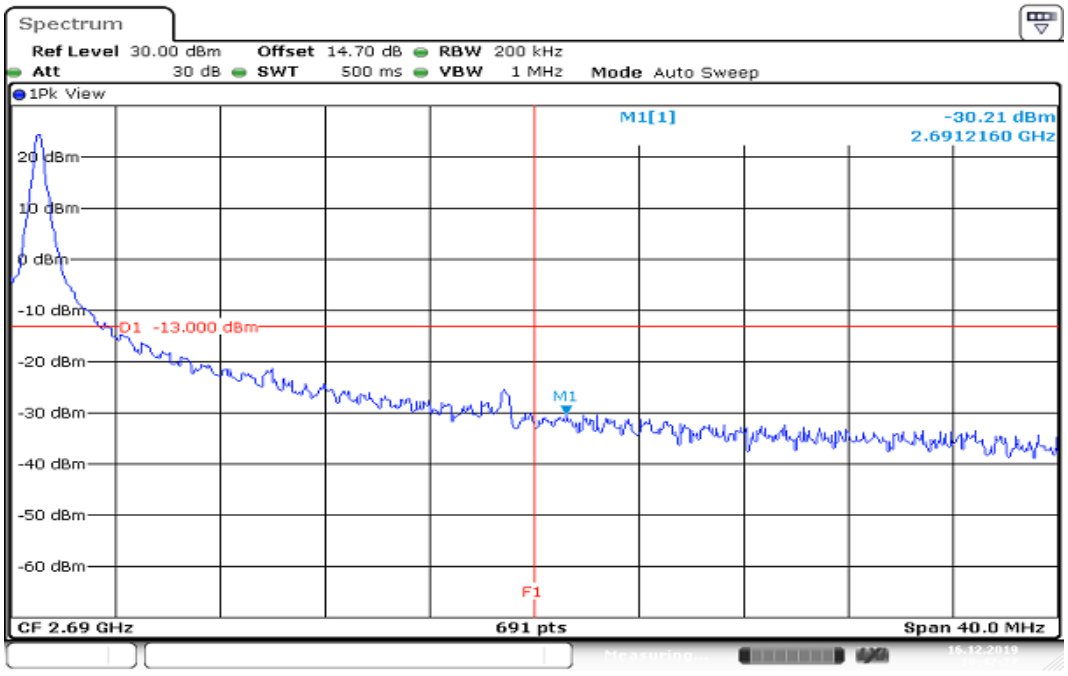
Date: 16.DEC.2019 18:31:45

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB ALLOCATION
LOWER BAND EDGE



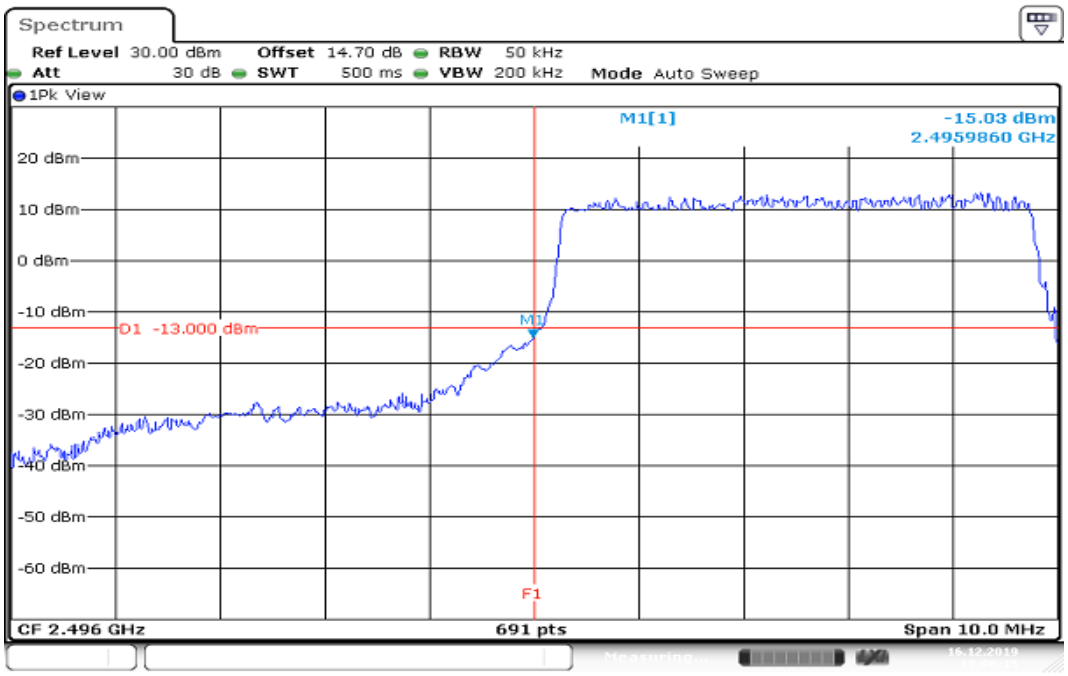
Date: 16.DEC.2019 18:47:35

HIGHER BAND EDGE



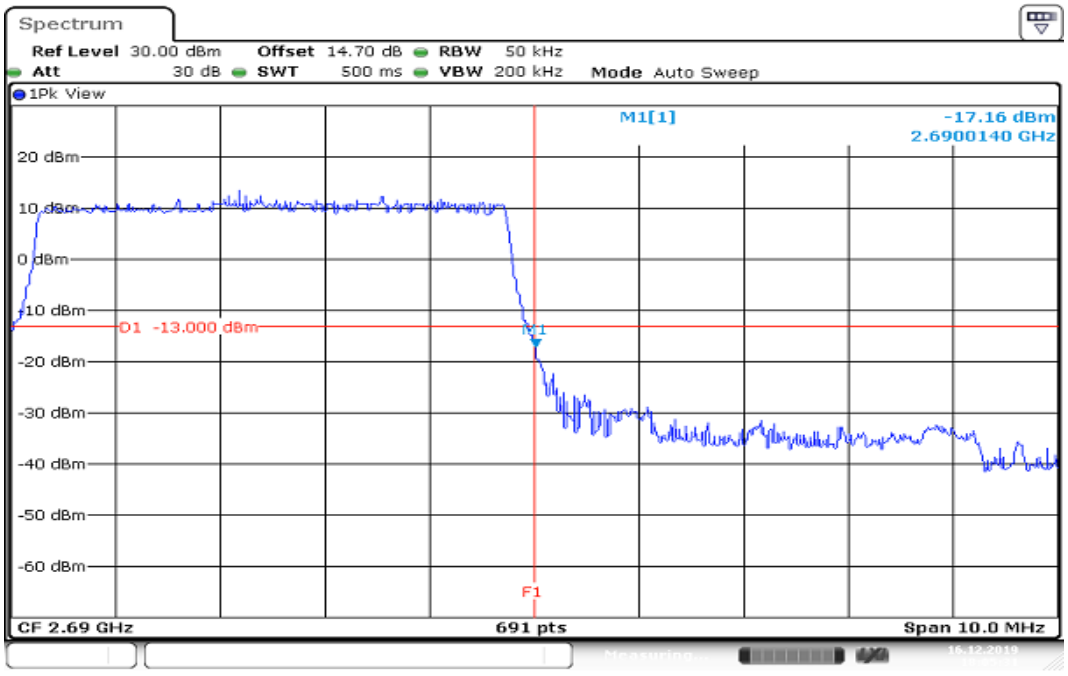
Date: 16.DEC.2019 18:42:28

CHANNEL BANDWIDTH: 5MHz / QPSK / FULLRB ALLOCATION
LOWER BAND EDGE



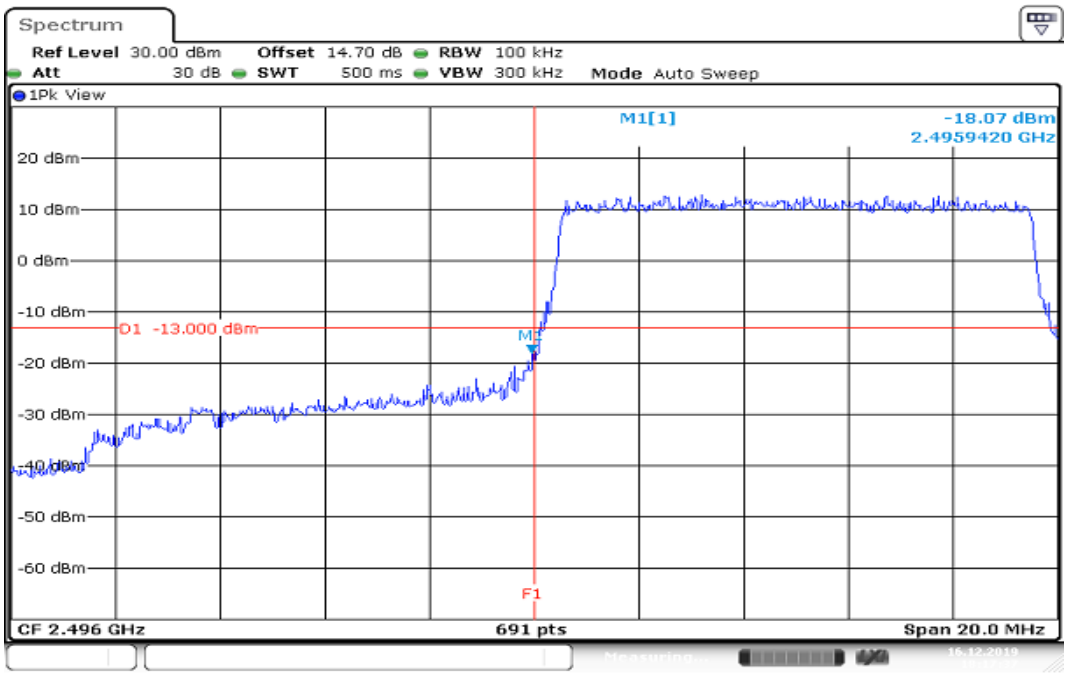
Date: 16.DEC.2019 18:00:15

HIGHER BAND EDGE



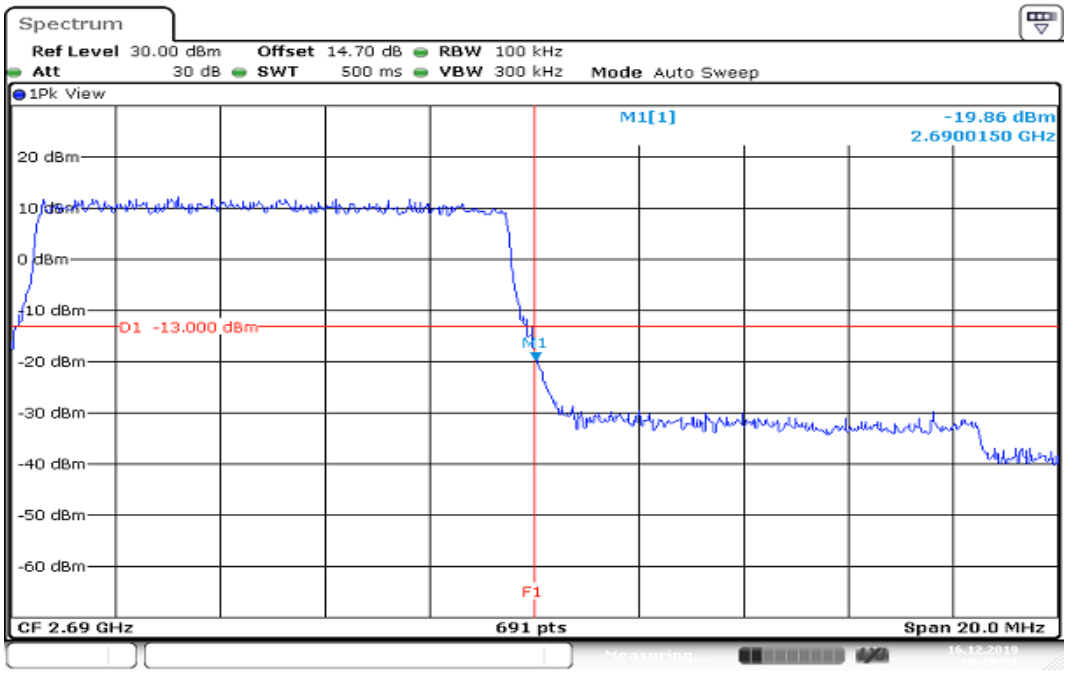
Date: 16.DEC.2019 18:05:31

CHANNEL BANDWIDTH: 10MHz / QPSK / FULLRB ALLOCATION
LOWER BAND EDGE



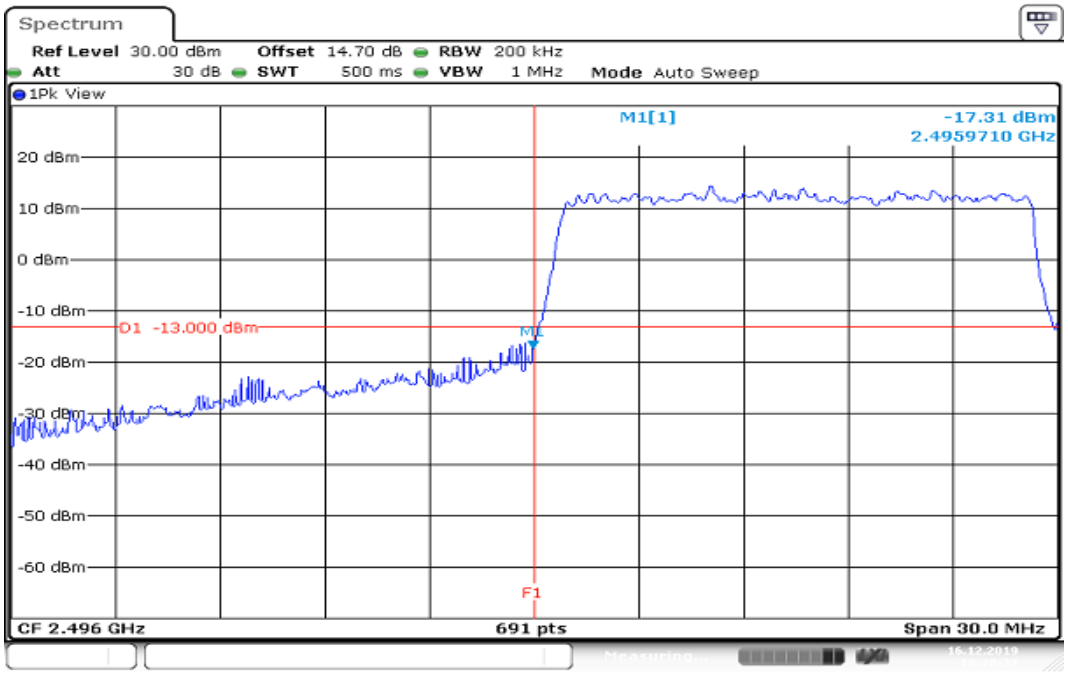
Date: 16.DEC.2019 18:17:38

HIGHER BAND EDGE



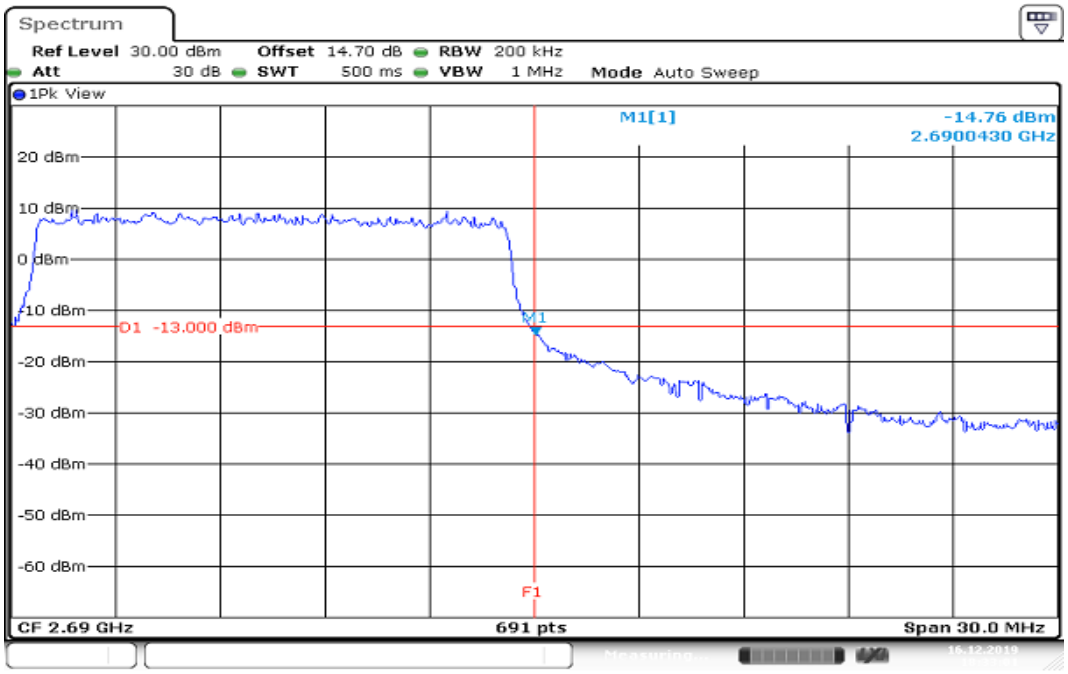
Date: 16.DEC.2019 18:15:52

CHANNEL BANDWIDTH: 15MHz / QPSK / FULLRB ALLOCATION
LOWER BAND EDGE



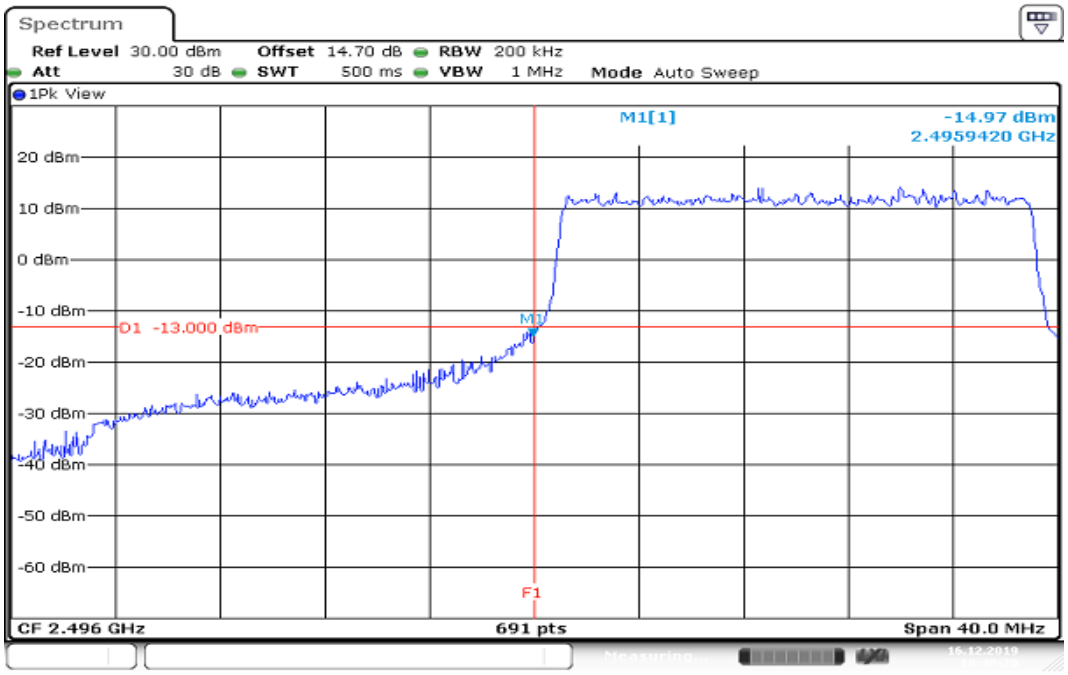
Date: 16.DEC.2019 18:28:37

HIGHER BAND EDGE



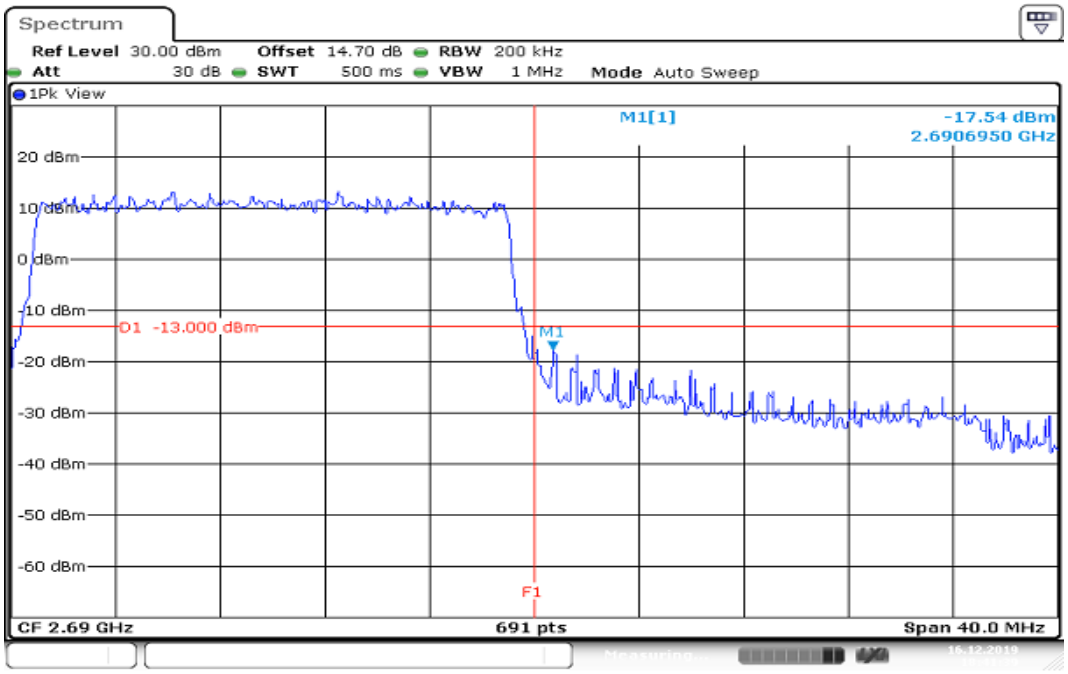
Date: 16.DEC.2019 18:33:01

CHANNEL BANDWIDTH: 20MHz / QPSK / FULLRB ALLOCATION
LOWER BAND EDGE



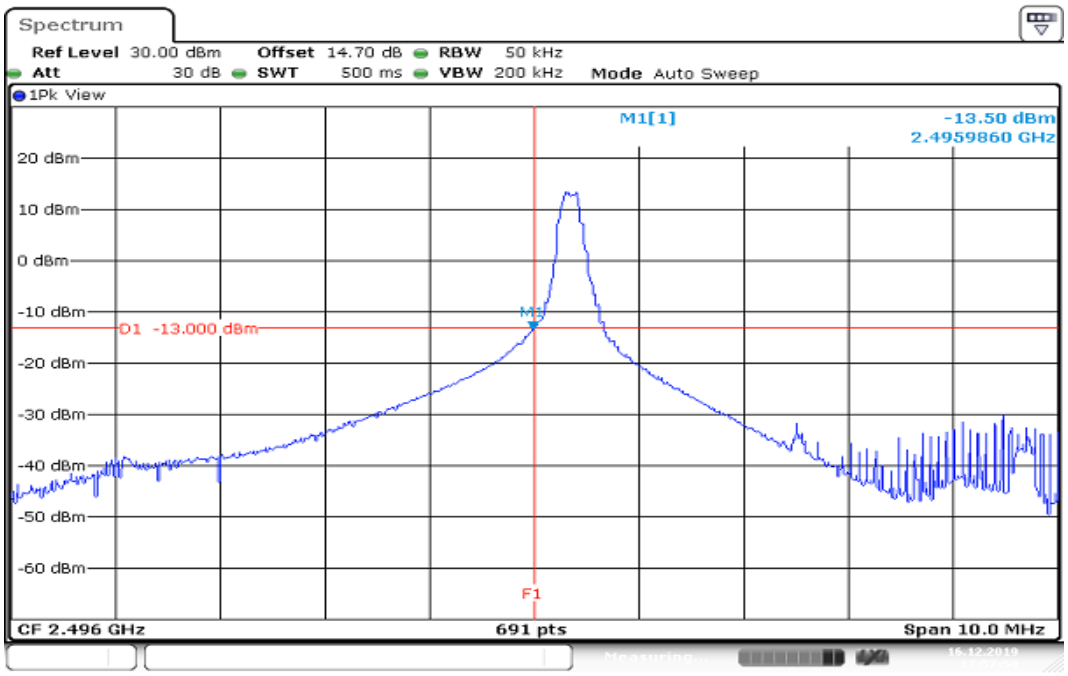
Date: 16.DEC.2019 18:48:21

HIGHER BAND EDGE



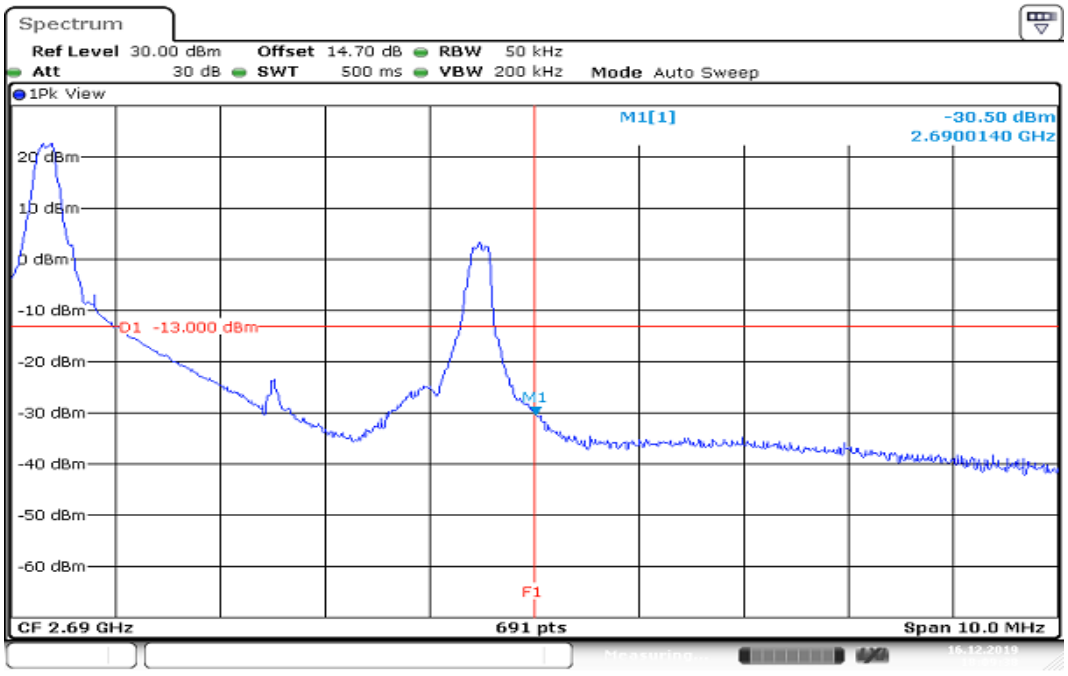
Date: 16.DEC.2019 18:41:39

CHANNEL BANDWIDTH: 5MHz / 16QAM/ 1RB ALLOCATION
LOWER BAND EDGE



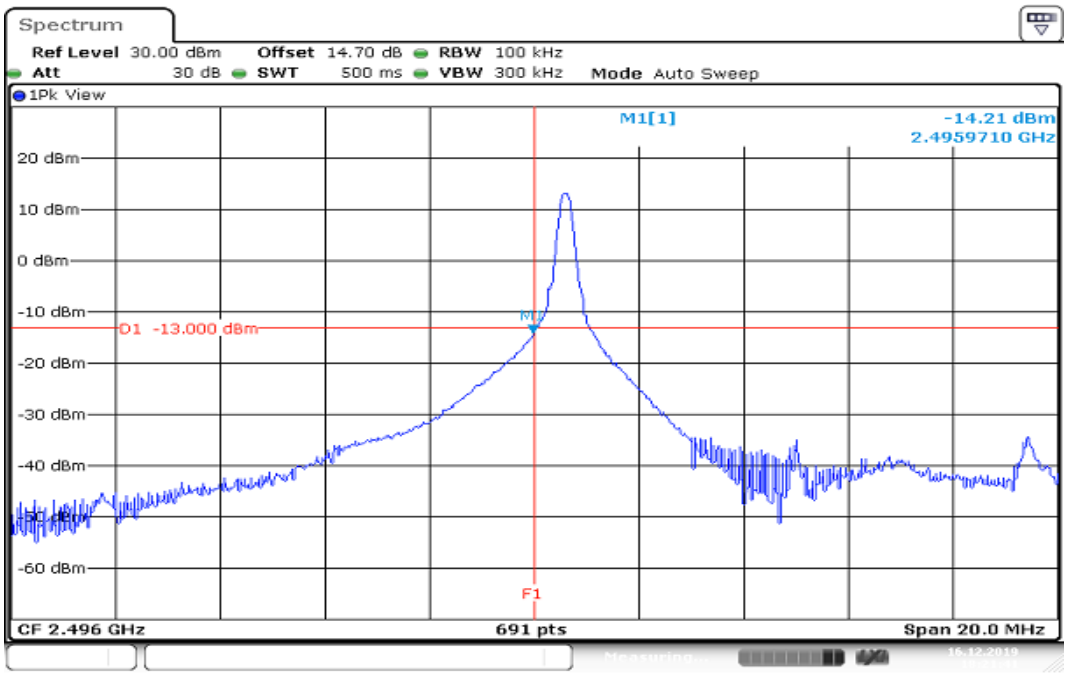
Date: 16.DEC.2019 17:57:51

HIGHER BAND EDGE



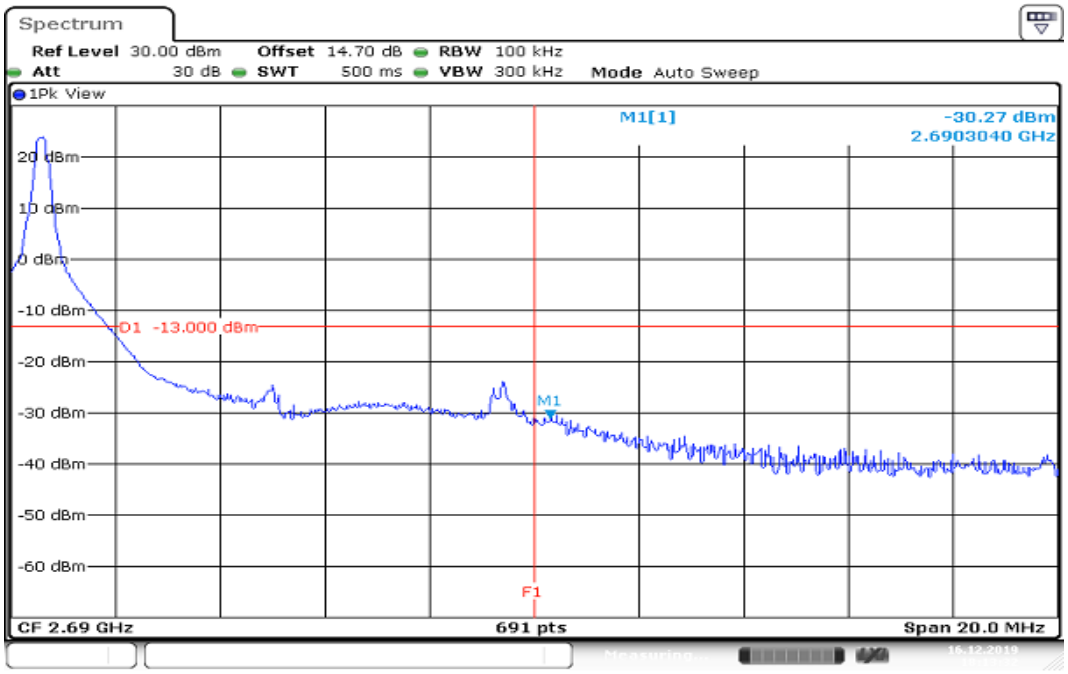
Date: 16.DEC.2019 18:09:38

CHANNEL BANDWIDTH: 10MHz / 16QAM/ 1RB ALLOCATION
LOWER BAND EDGE



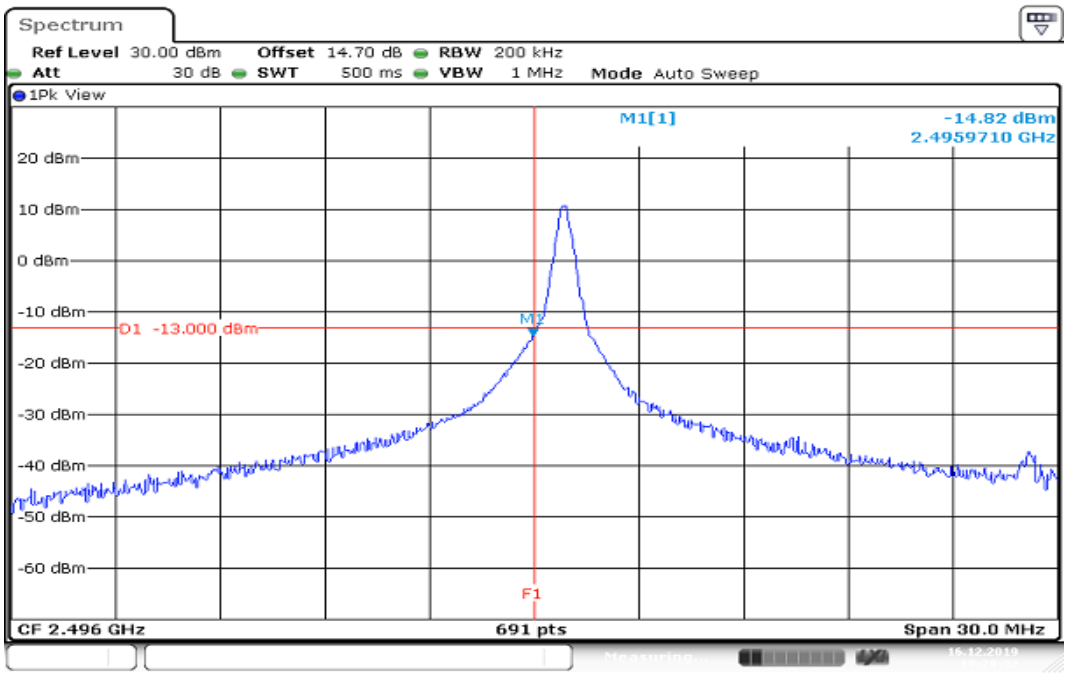
Date: 16.DEC.2019 18:21:41

HIGHER BAND EDGE



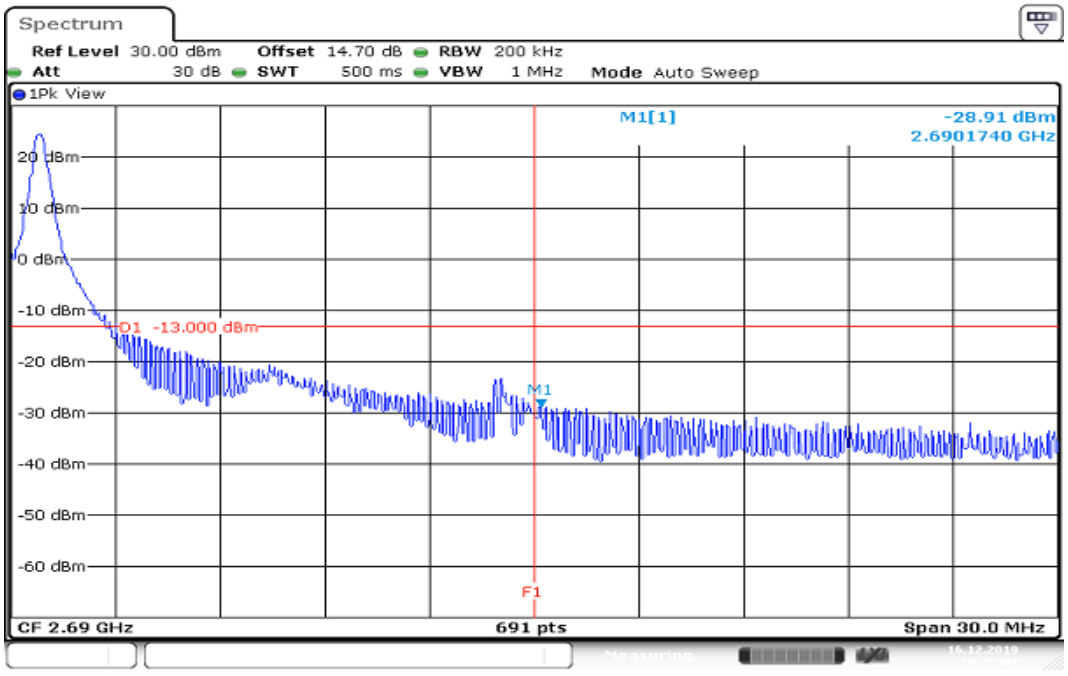
Date: 16.DEC.2019 18:13:32

CHANNEL BANDWIDTH: 15MHz / 16QAM/ 1RB ALLOCATION
LOWER BAND EDGE



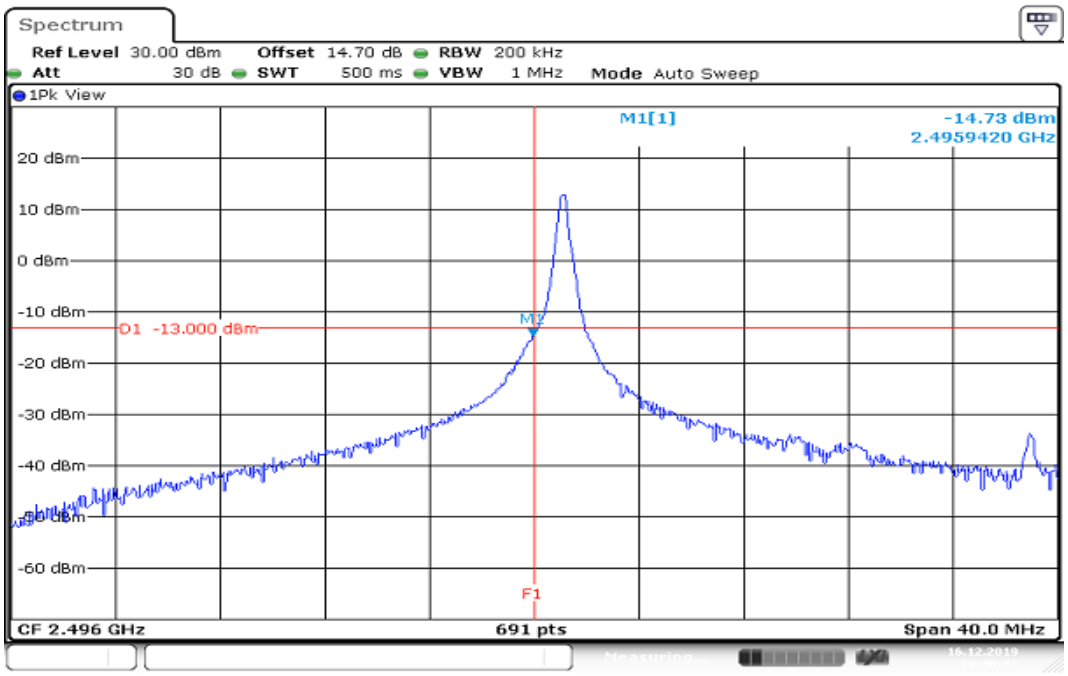
Date: 16.DEC.2019 18:29:32

HIGHER BAND EDGE



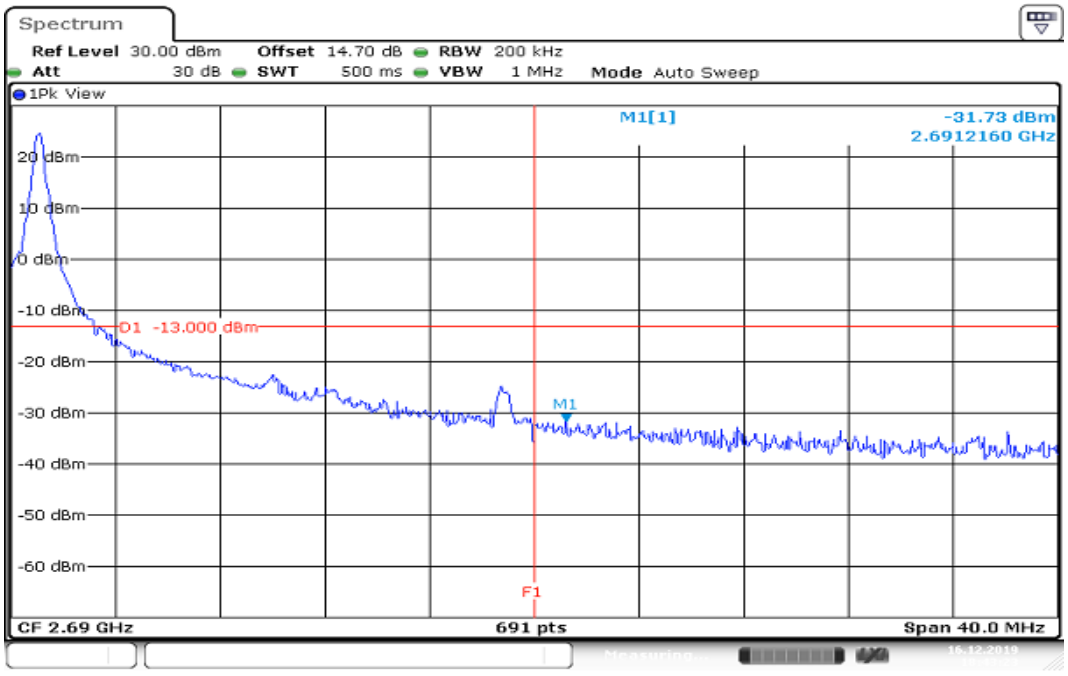
Date: 16.DEC.2019 18:35:08

CHANNEL BANDWIDTH: 20MHz / 16QAM/ 1RB ALLOCATION
LOWER BAND EDGE



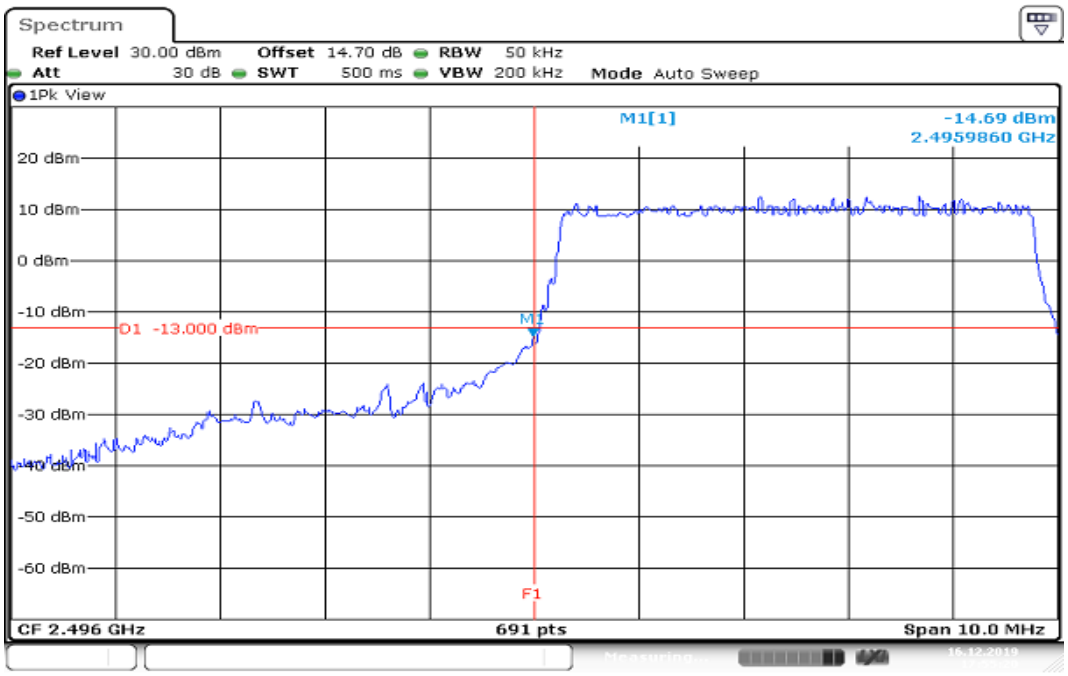
Date: 16.DEC.2019 18:46:42

HIGHER BAND EDGE



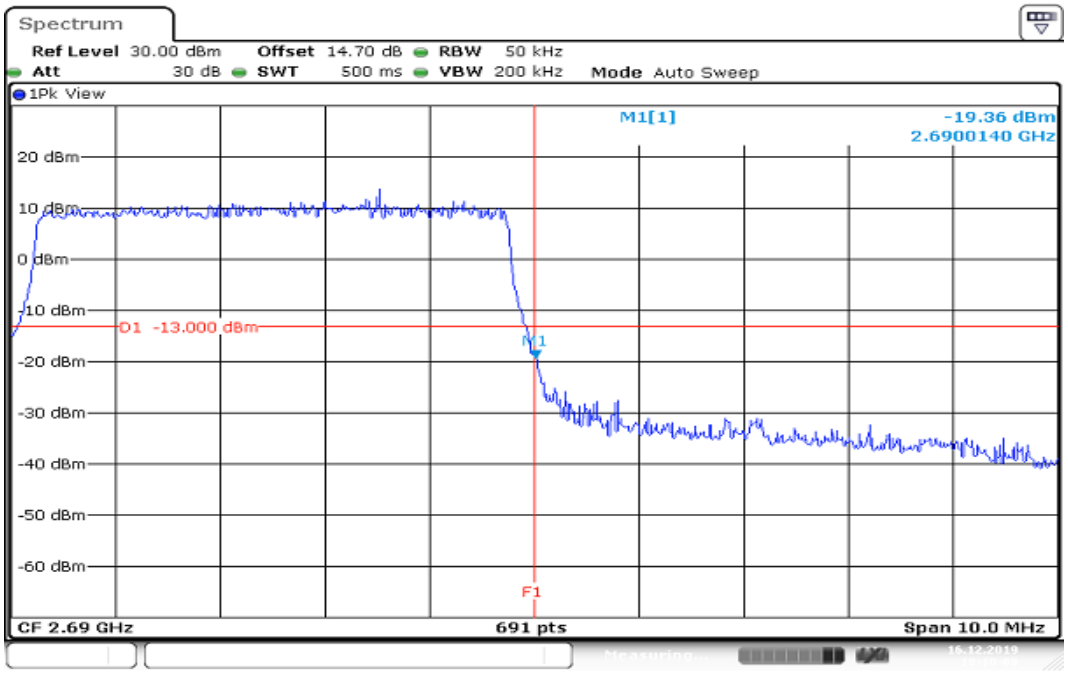
Date: 16.DEC.2019 18:43:24

CHANNEL BANDWIDTH: 5MHz / 16QAM/ FULLRB ALLOCATION
LOWER BAND EDGE



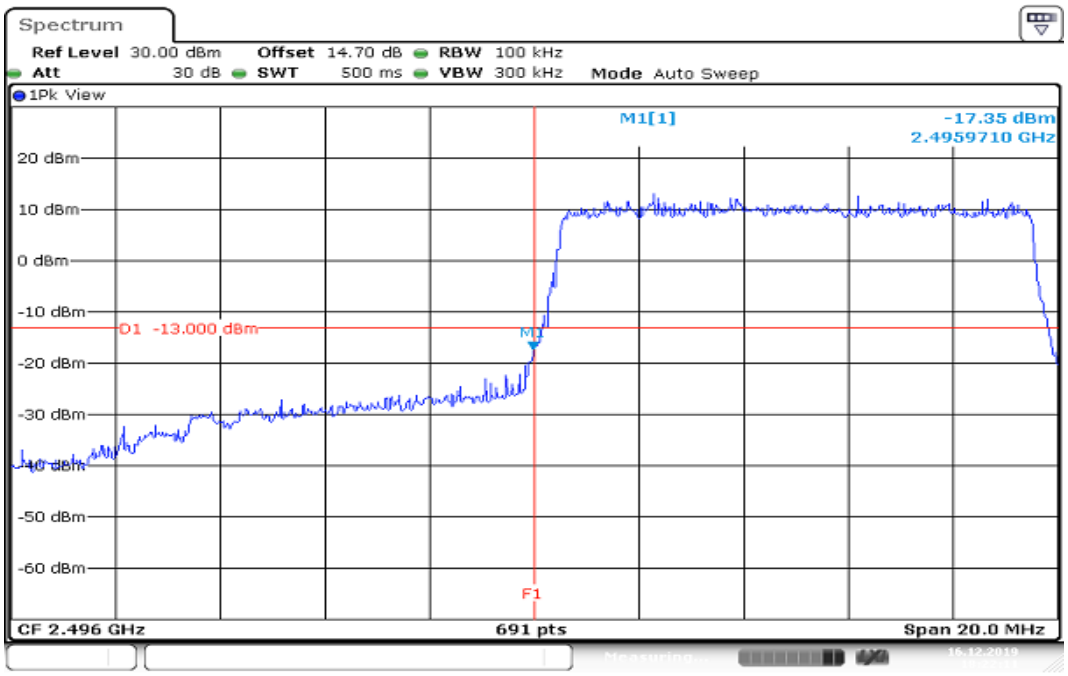
Date: 16.DEC.2019 17:55:20

HIGHER BAND EDGE



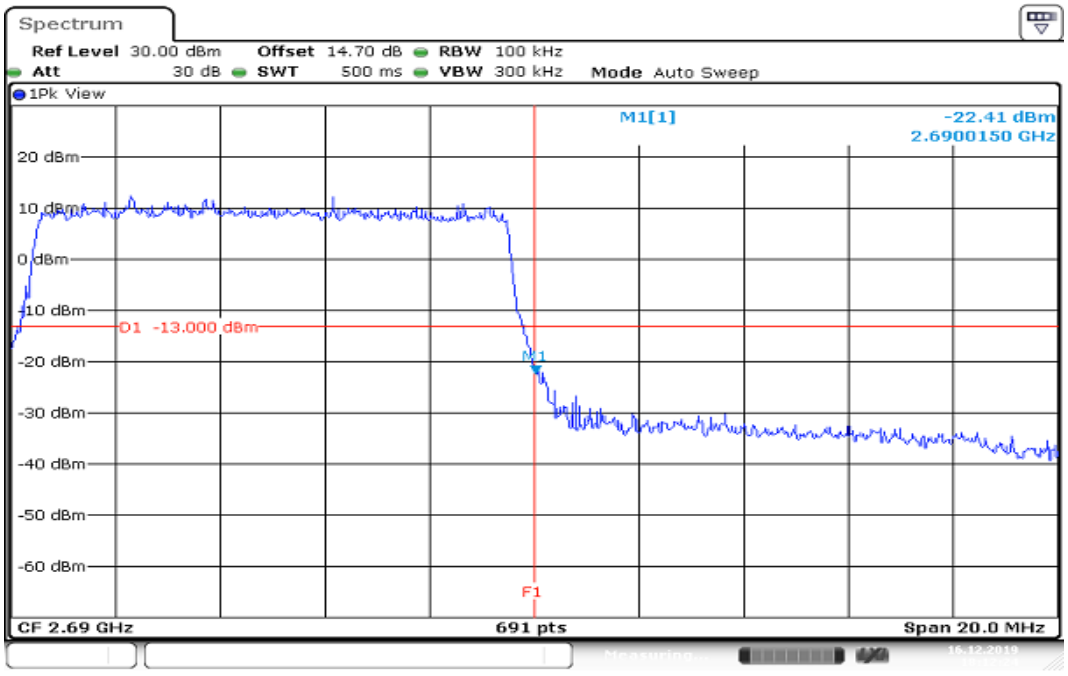
Date: 16.DEC.2019 18:10:08

CHANNEL BANDWIDTH: 10MHz / 16QAM/ FULLRB ALLOCATION
LOWER BAND EDGE



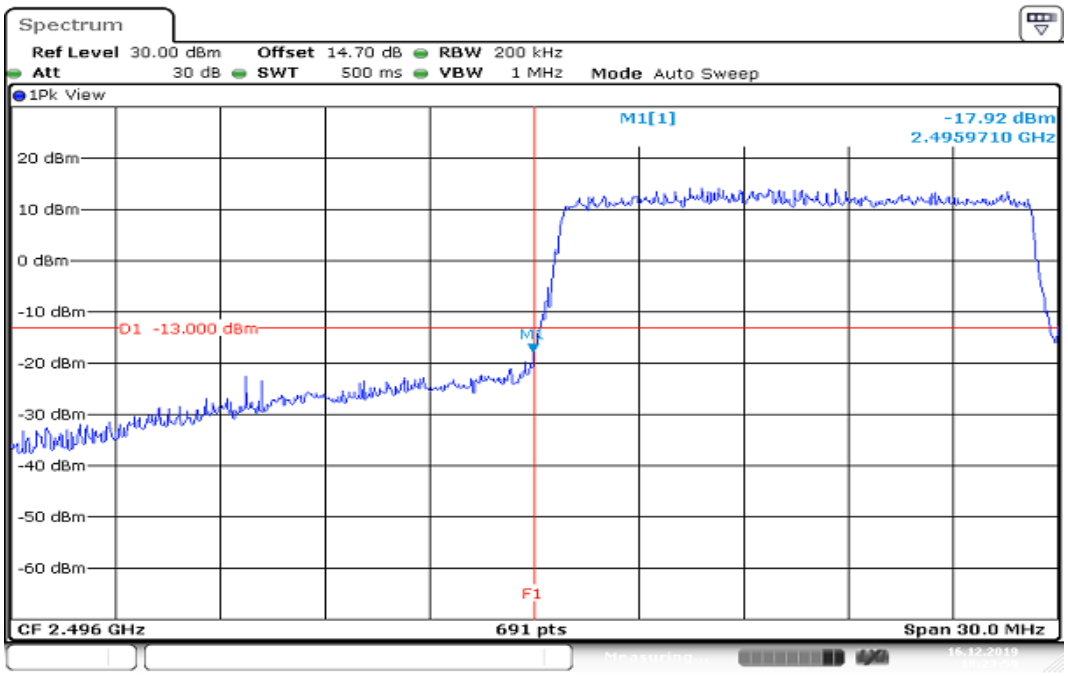
Date: 16.DEC.2019 18:22:11

HIGHER BAND EDGE



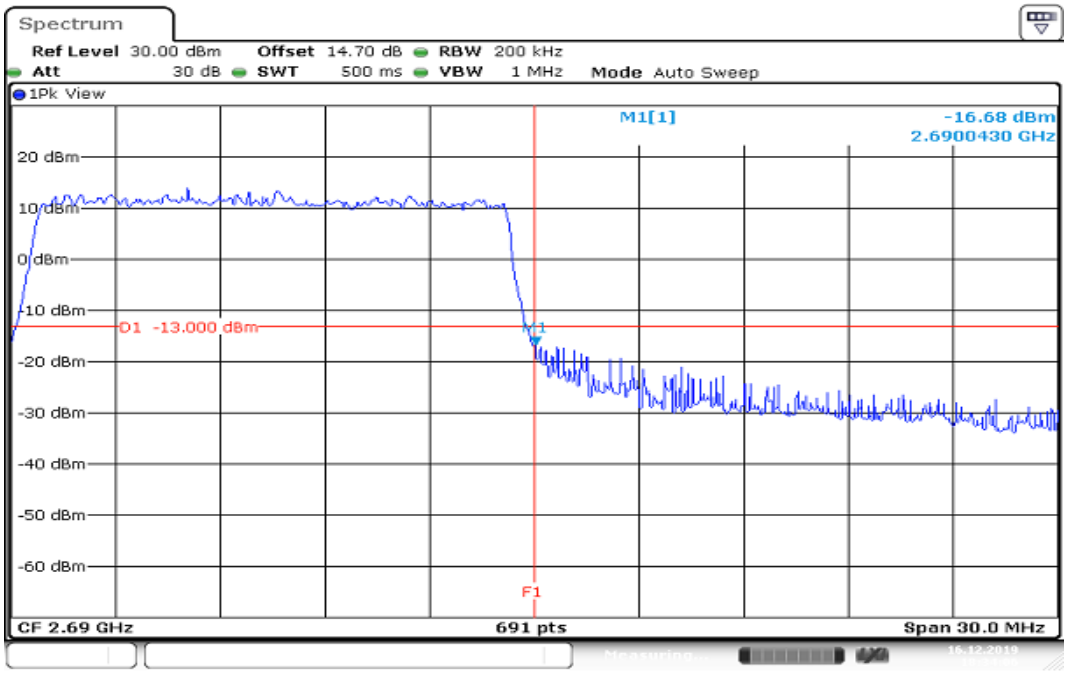
Date: 16.DEC.2019 18:12:25

CHANNEL BANDWIDTH: 15MHz / 16QAM/ FULLRB ALLOCATION
LOWER BAND EDGE



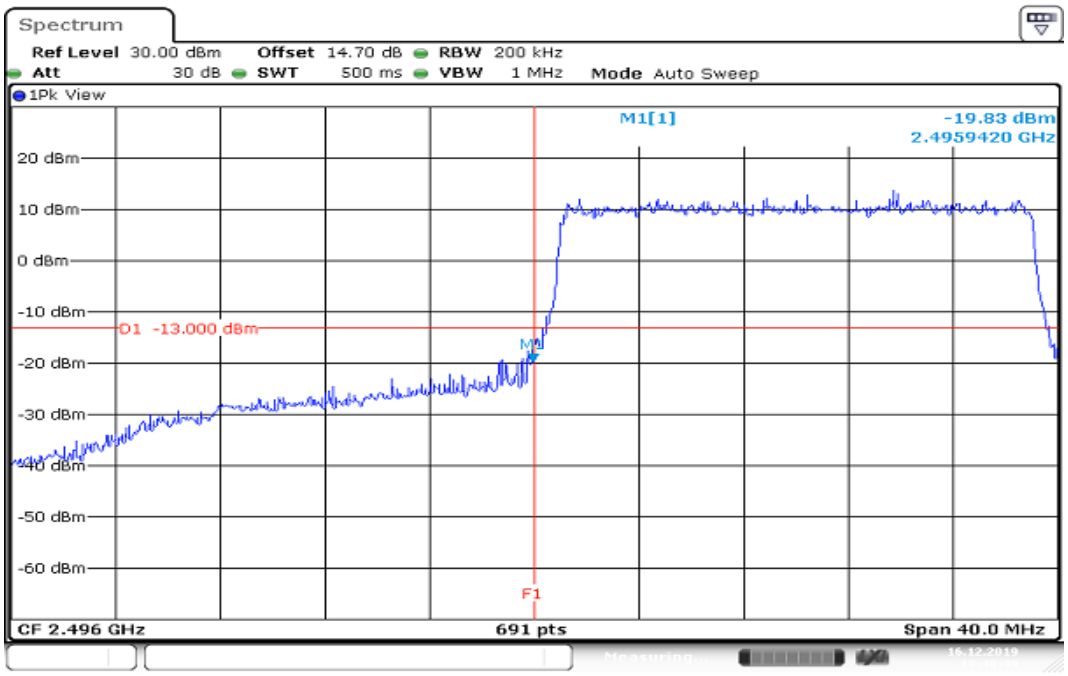
Date: 16.DEC.2019 18:23:59

HIGHER BAND EDGE



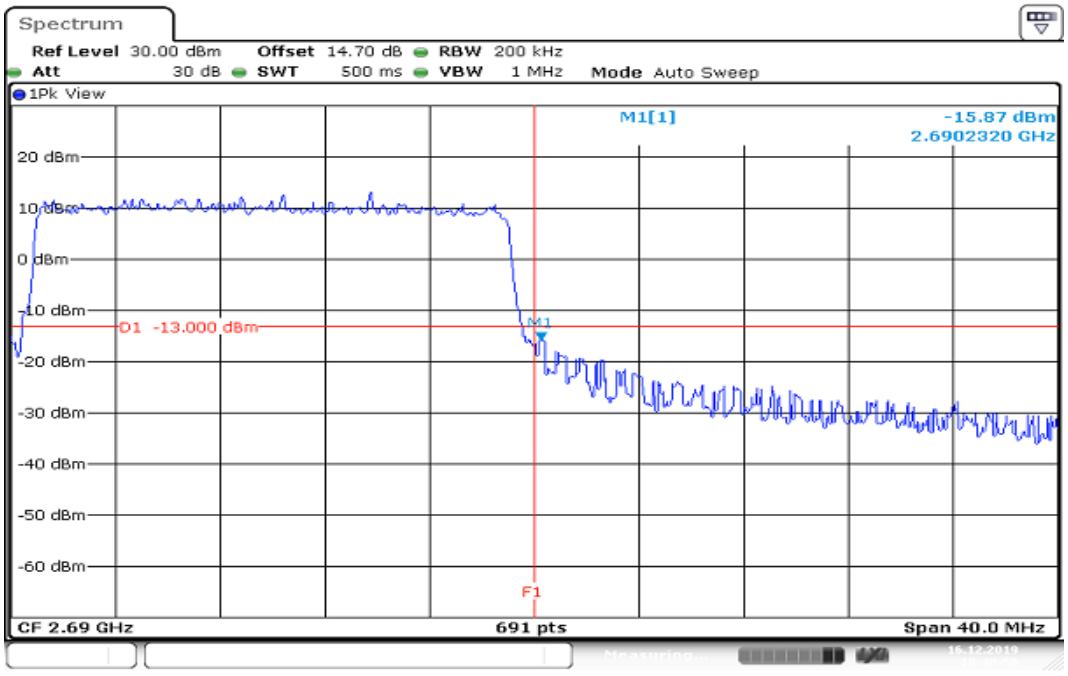
Date: 16.DEC.2019 18:34:06

CHANNEL BANDWIDTH: 20MHz / 16QAM/ FULLRB ALLOCATION
LOWER BAND EDGE



Date: 16.DEC.2019 18:48:49

HIGHER BAND EDGE



Date: 16.DEC.2019 18:40:56

8.6 CONDUCTED SPURIOUS EMISSIONS

LIMITS

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 +10 log10(P) dB. The limit of emission equal to –13dBm

TEST PROCEDURES

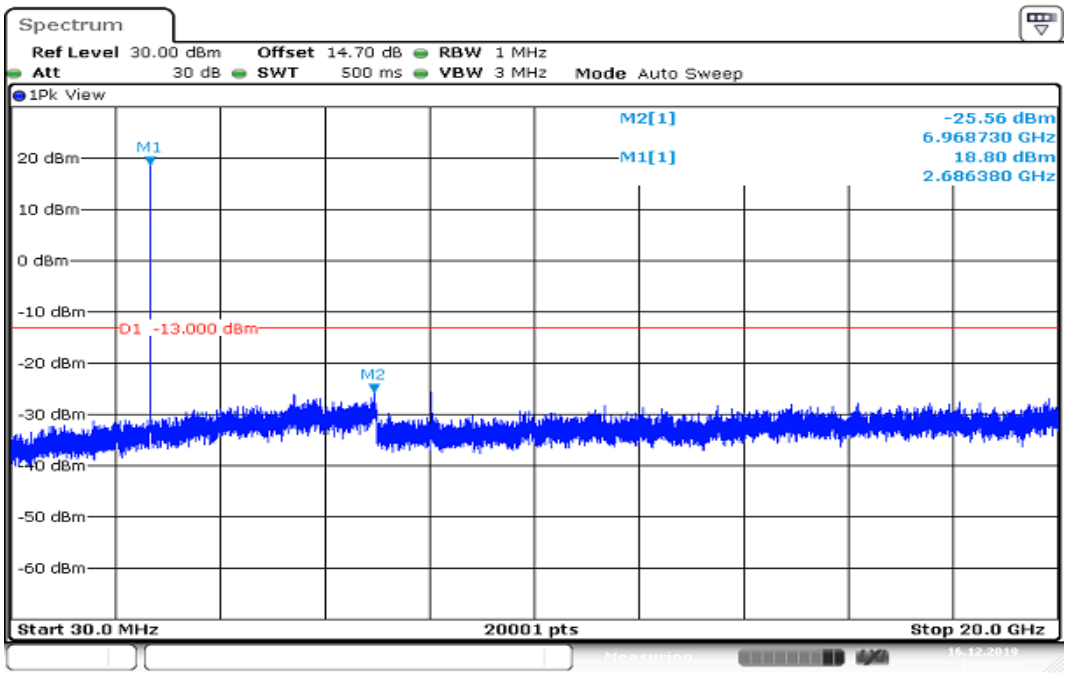
1. According to KDB 971168D01, photograph 6.0
2. The EUT was connect to spectrum analyzer and call box.
3. The RF output of EUT was connected to the spectrum analyzer.
4. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
5. Record the maximum spurious emission.
6. The fundamental frequency should be excluded against the limit in operating band.

TEST RESULTS

LTE Band 41

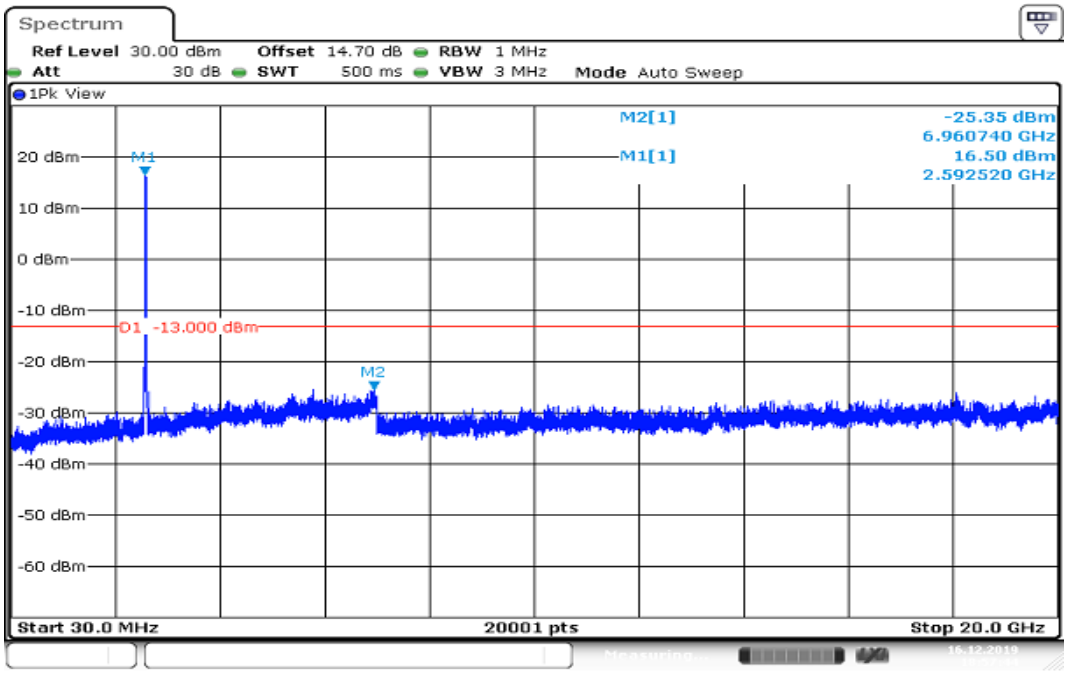
CHANNEL BANDWIDTH: 5MHz /QPSK

CH Low



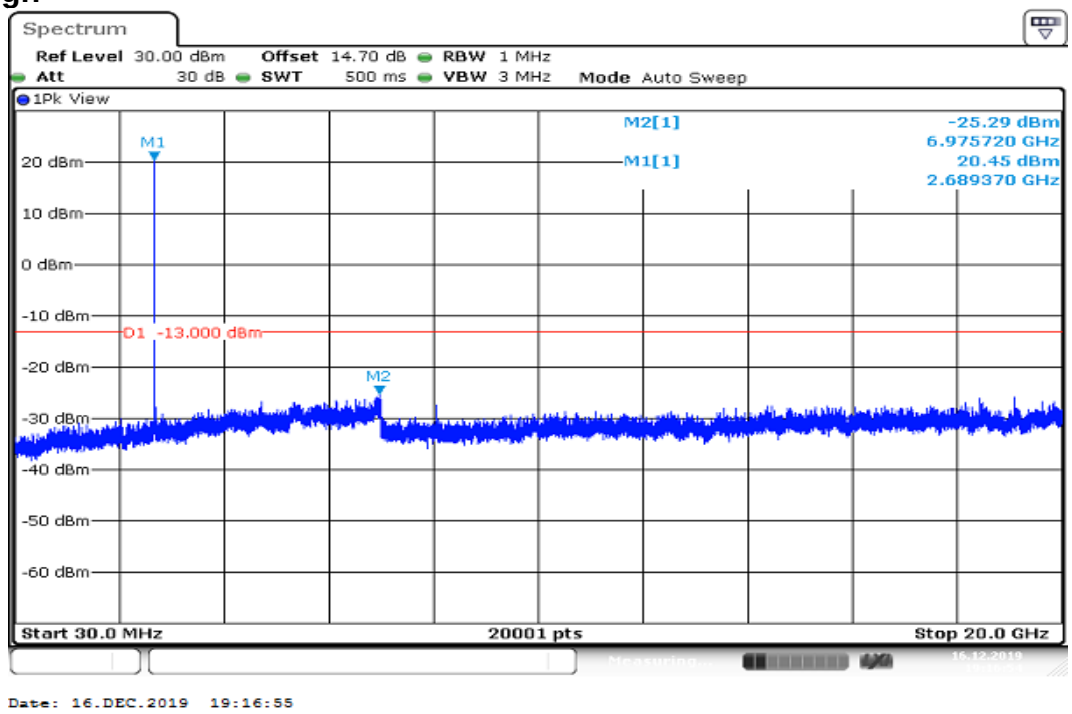
Date: 16.DEC.2019 19:13:39

CH Mid



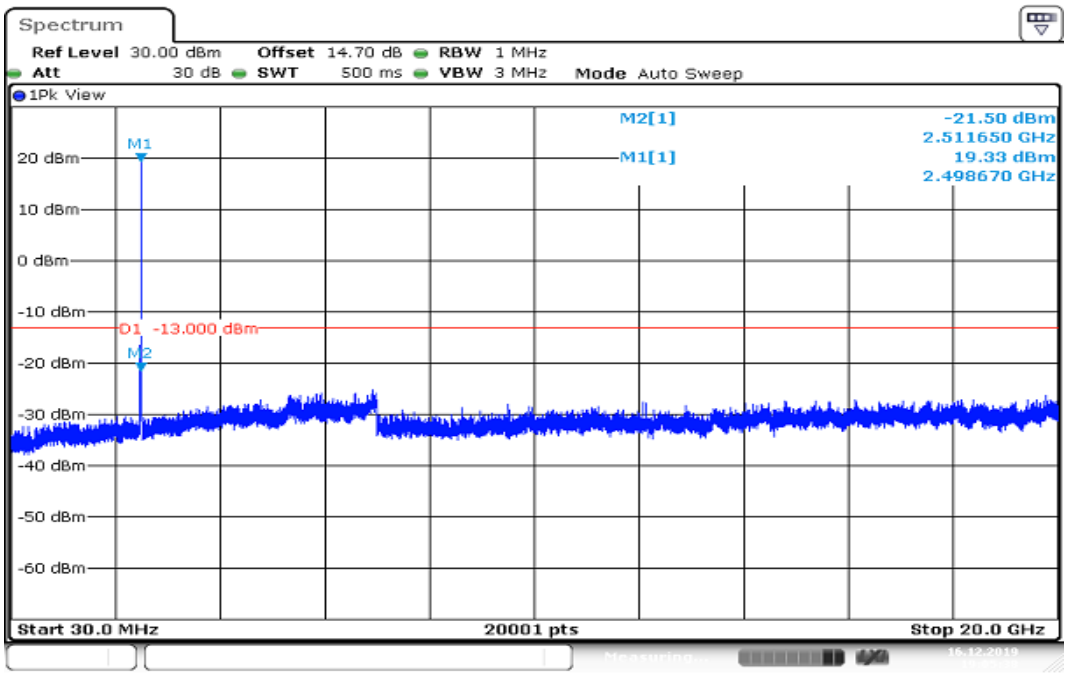
Date: 16.DEC.2019 18:57:45

CH High



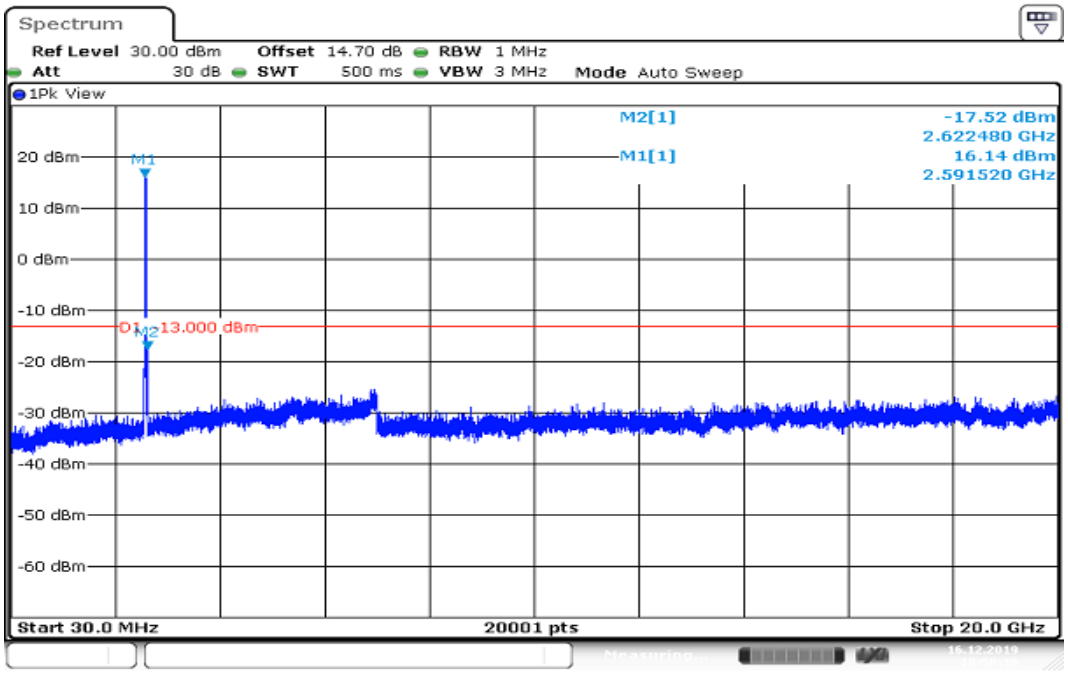
CHANNEL BANDWIDTH: 10MHz /QPSK

CH Low



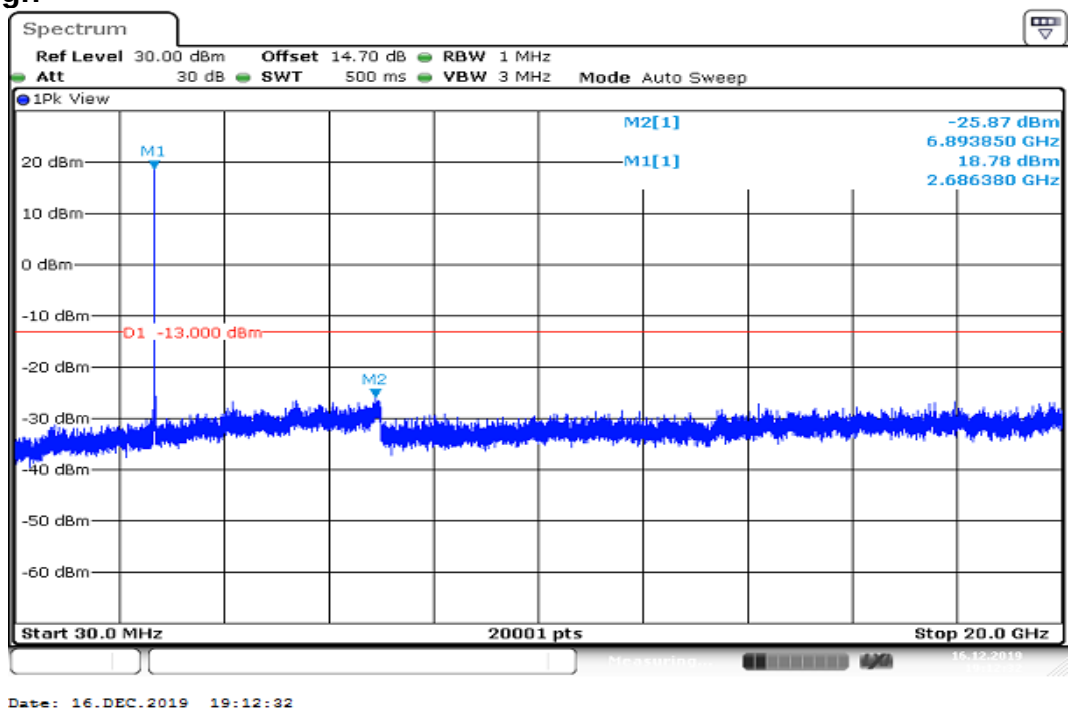
Date: 16.DEC.2019 19:05:38

CH Mid



Date: 16.DEC.2019 18:58:16

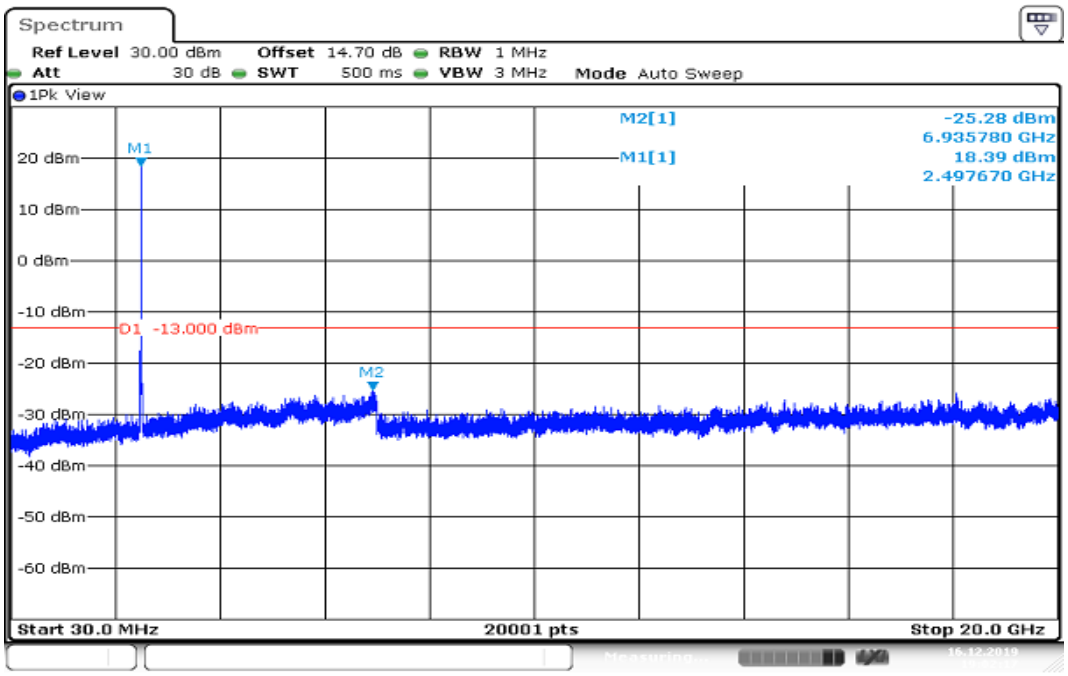
CH High



Date: 16.DEC.2019 19:12:32

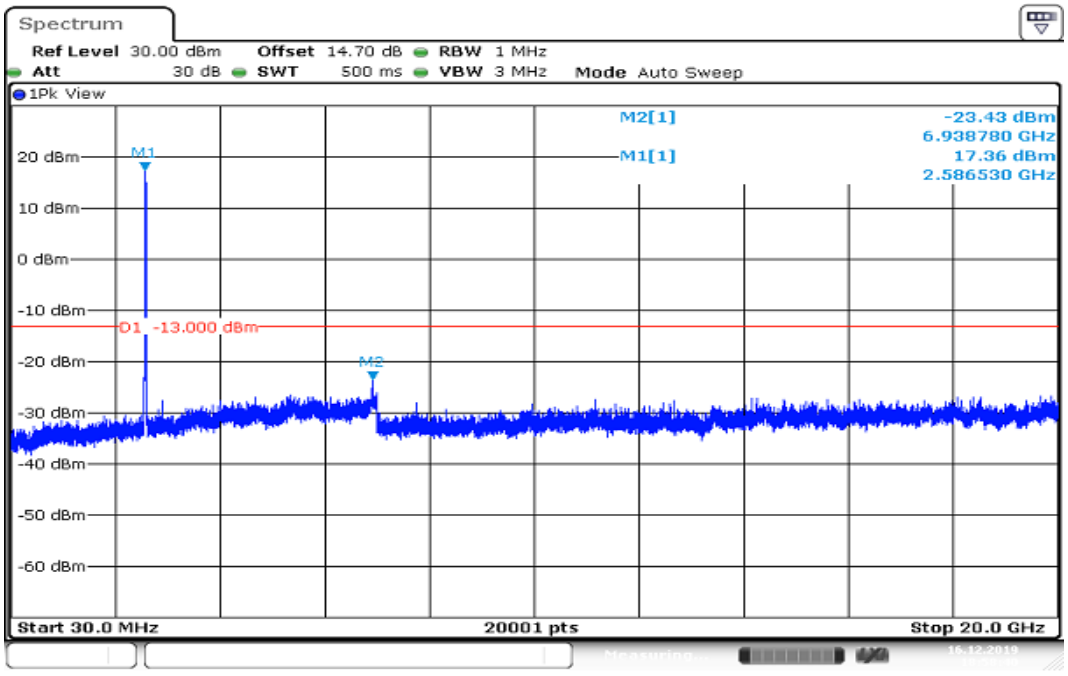
CHANNEL BANDWIDTH: 15MHz /QPSK

CH Low



Date: 16.DEC.2019 19:02:17

CH Mid



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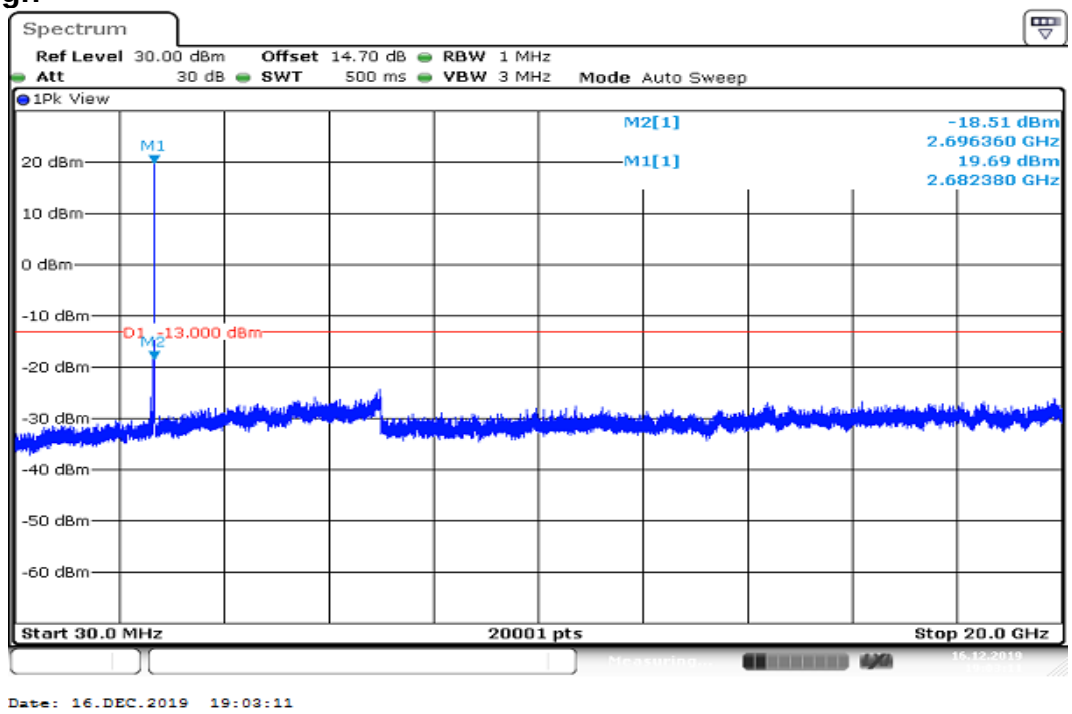
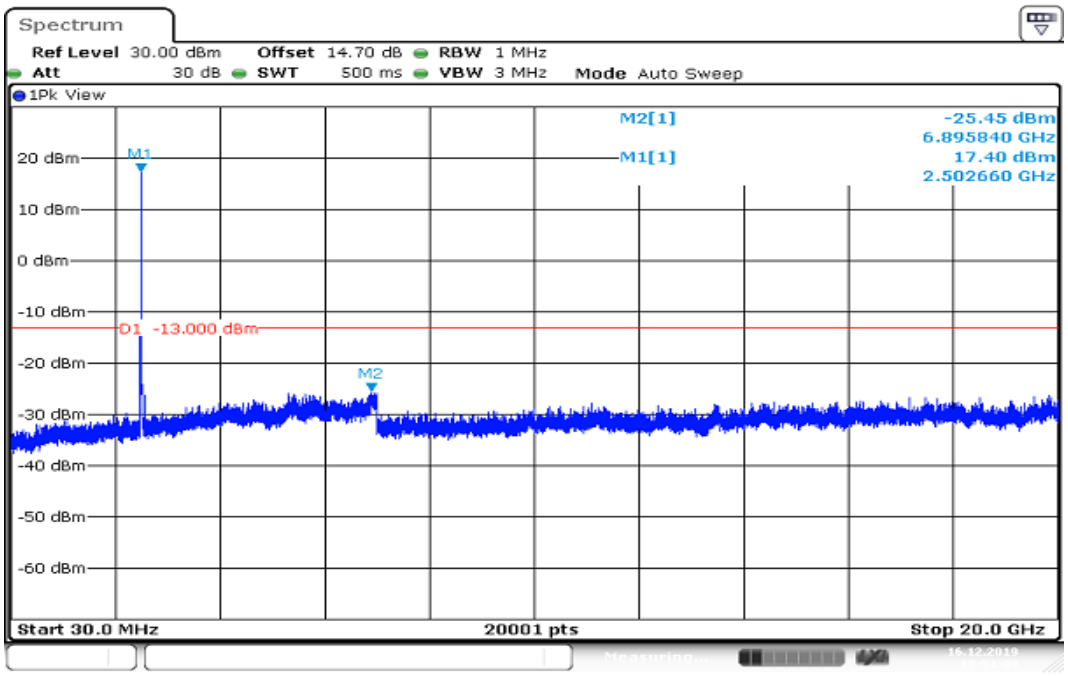
CH High



Date: 16.DEC.2019 19:03:11

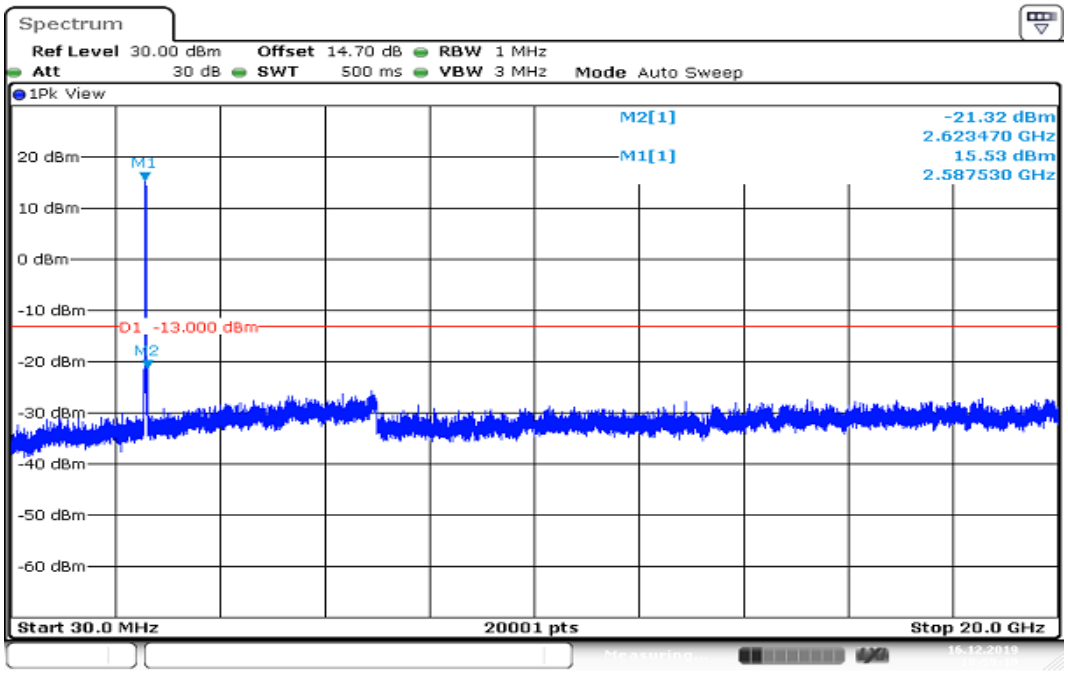
CHANNEL BANDWIDTH: 20MHz /QPSK

CH Low



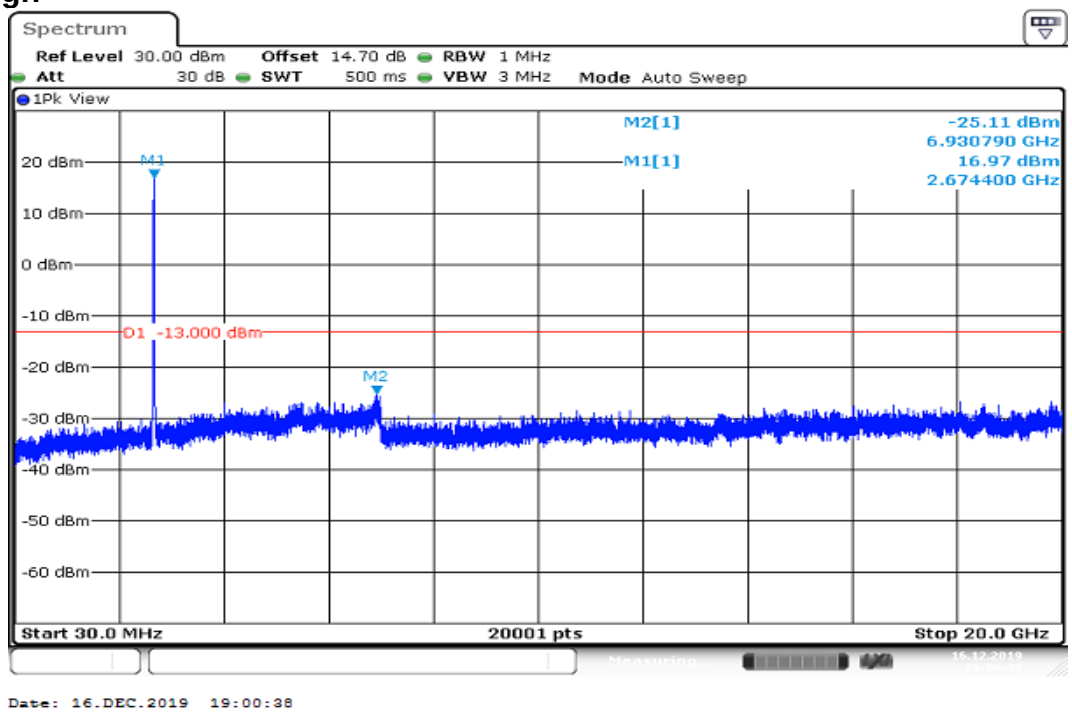
Date: 16.DEC.2019 18:51:09

CH Mid



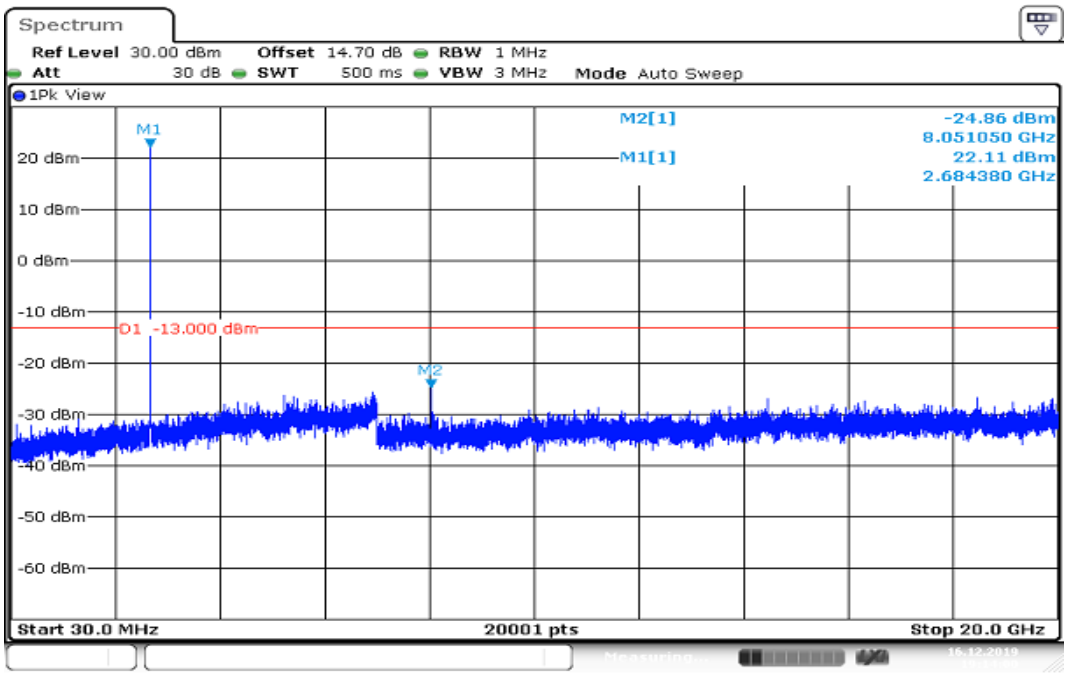
Date: 16.DEC.2019 18:59:10

CH High



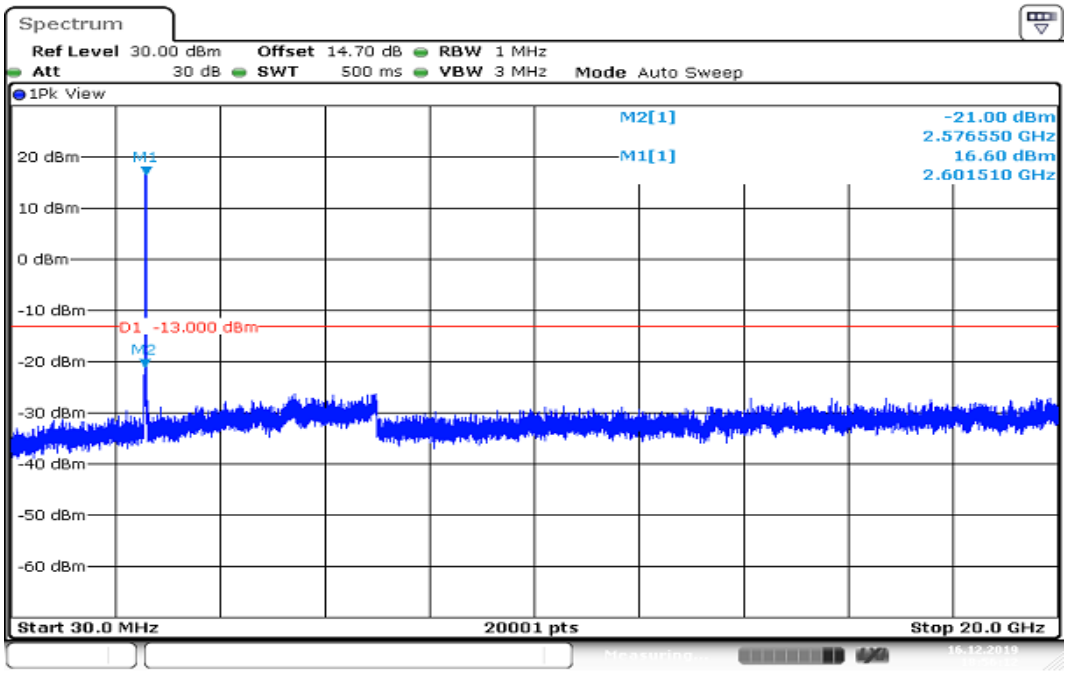
CHANNEL BANDWIDTH:5MHz /16QAM

CH Low



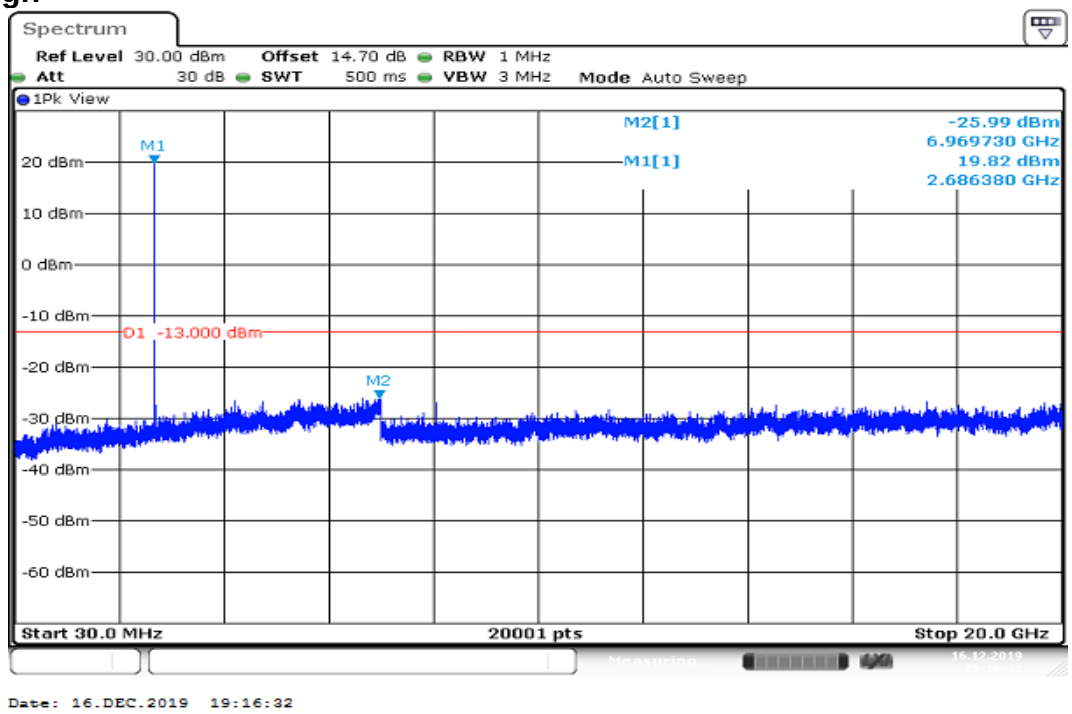
Date: 16.DEC.2019 19:14:01

CH Mid



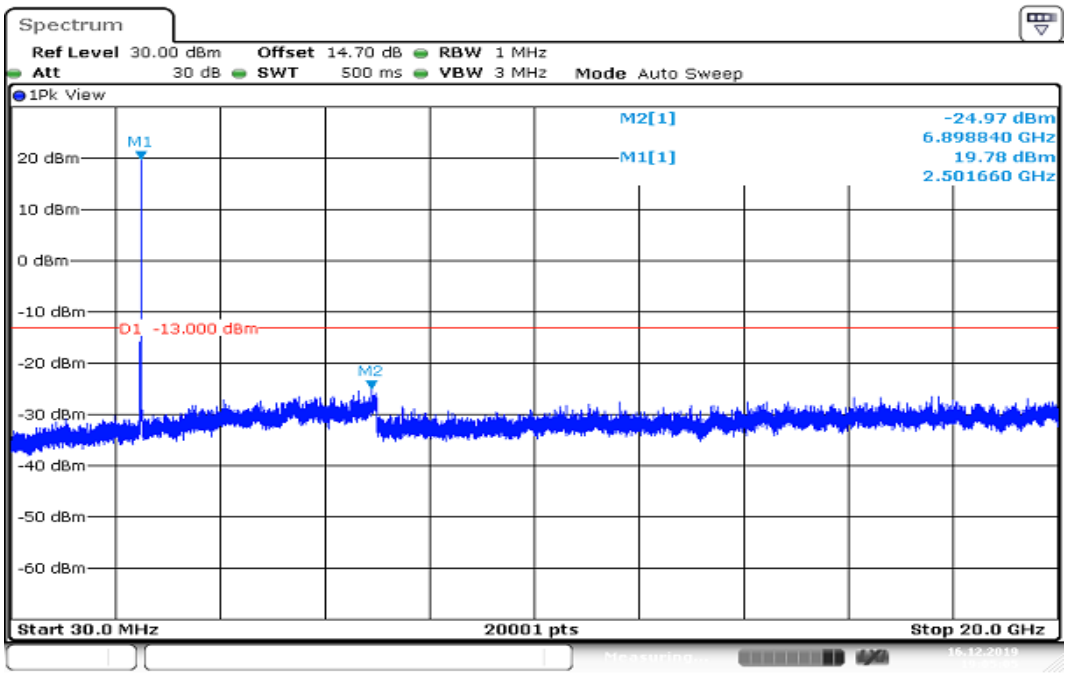
Date: 16.DEC.2019 18:56:12

CH High



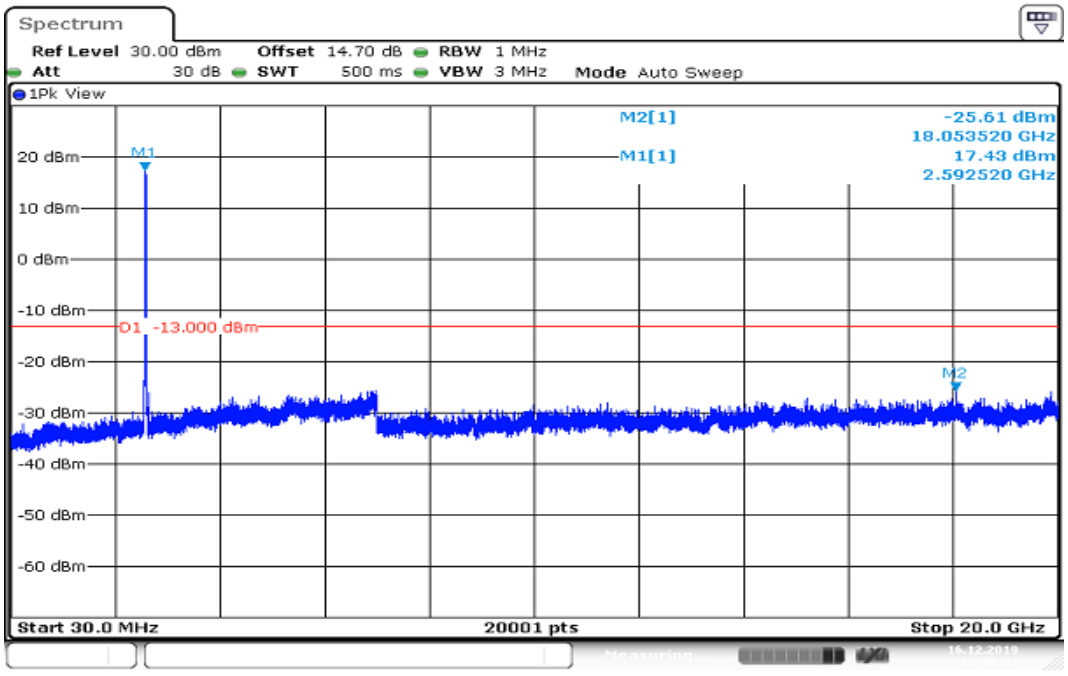
CHANNEL BANDWIDTH:10MHz /16QAM

CH Low



Date: 16.DEC.2019 19:05:05

CH Mid



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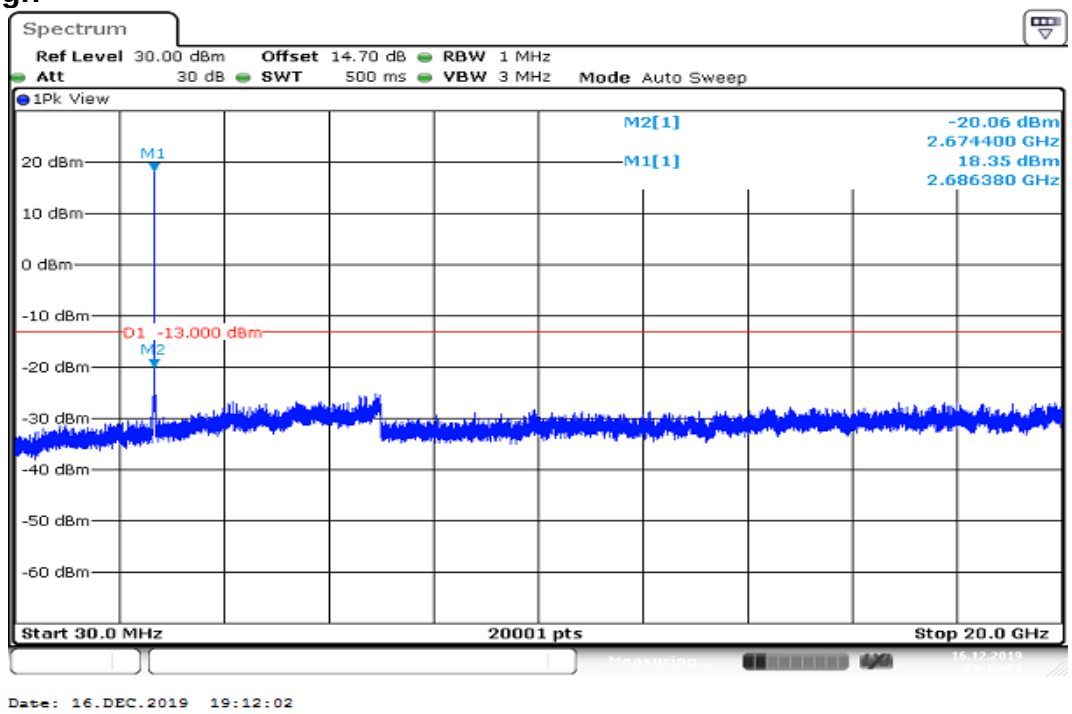
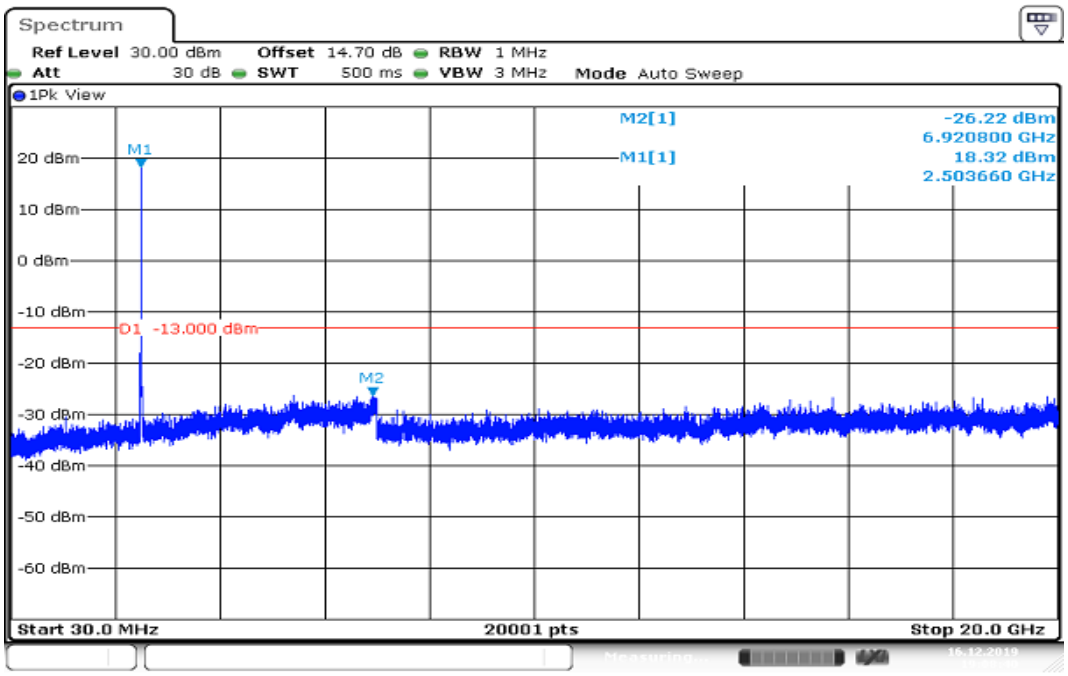
CH High



Date: 16.DEC.2019 19:12:02

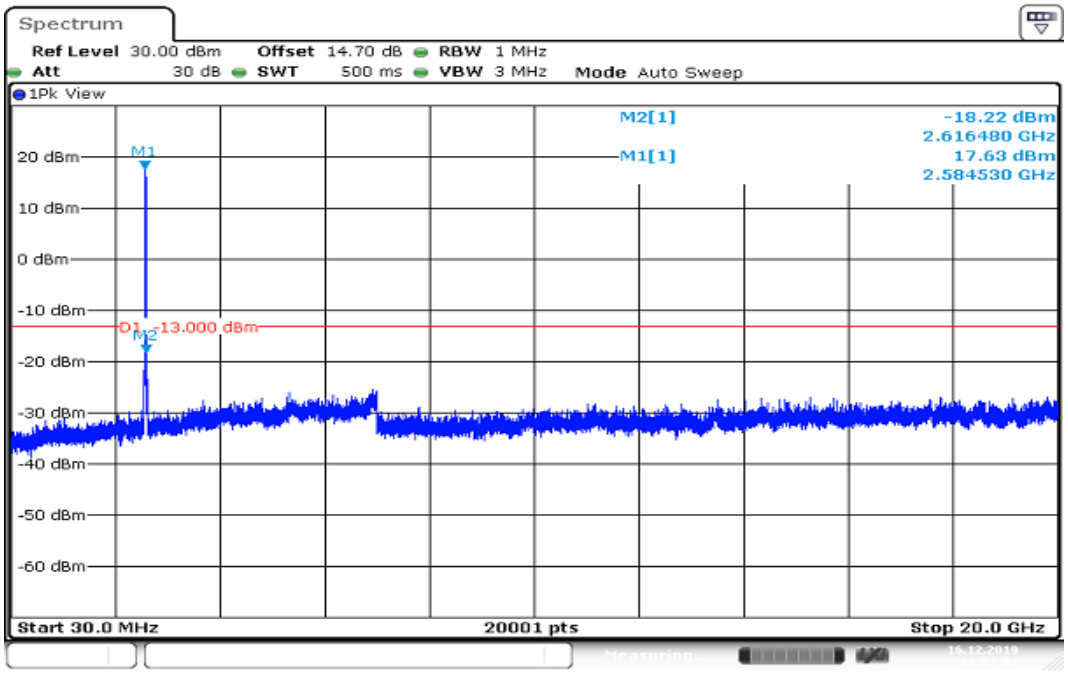
CHANNEL BANDWIDTH:15MHz /16QAM

CH Low



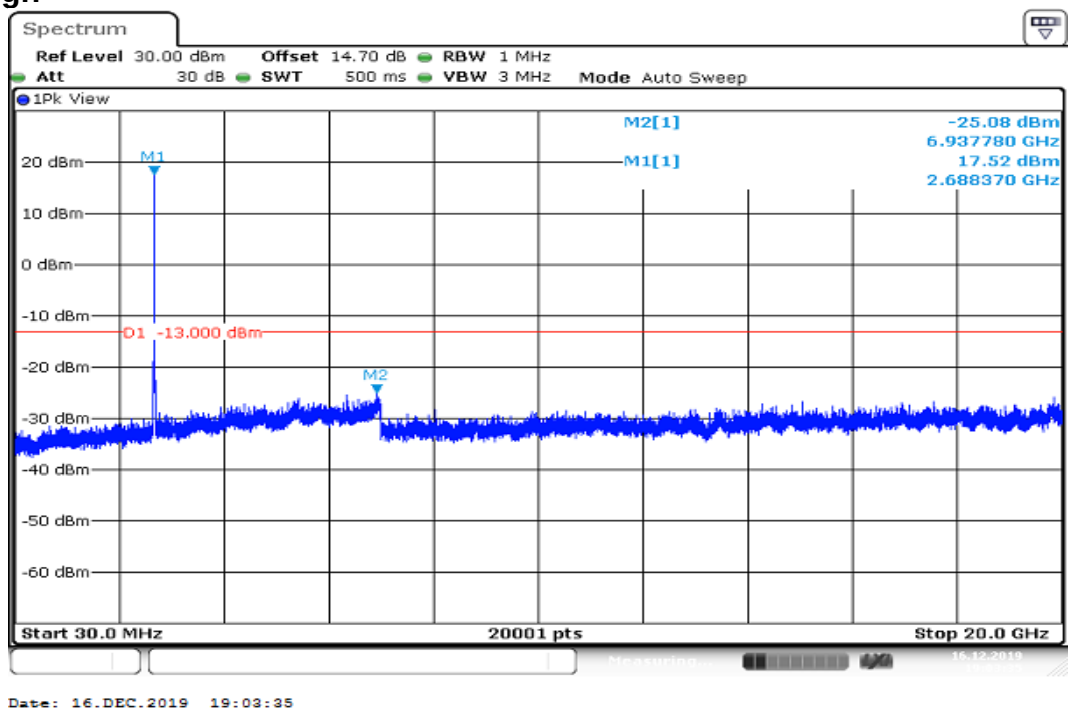
Date: 16.DEC.2019 19:08:41

CH Mid



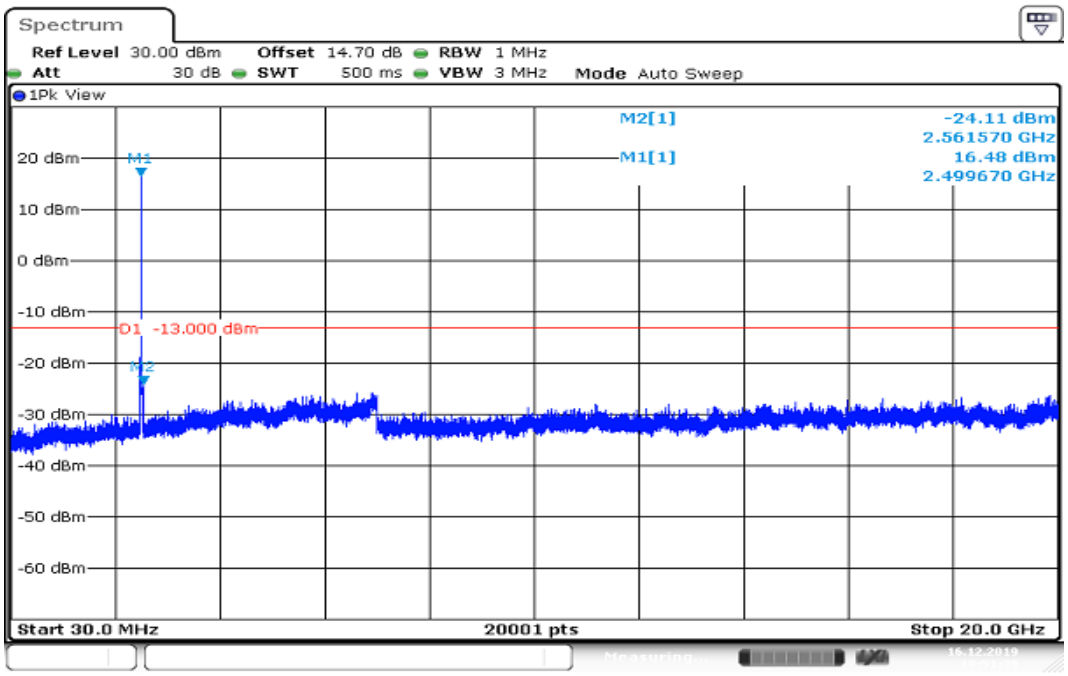
Date: 16.DEC.2019 18:57:07

CH High



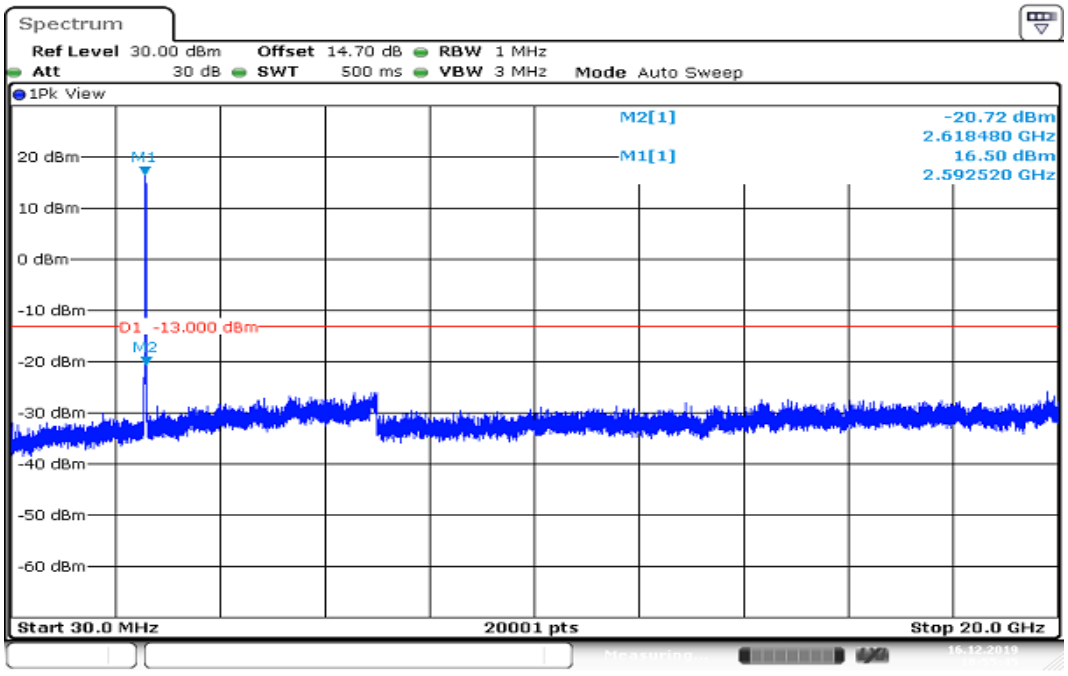
CHANNEL BANDWIDTH:20MHz /16QAM

CH Low



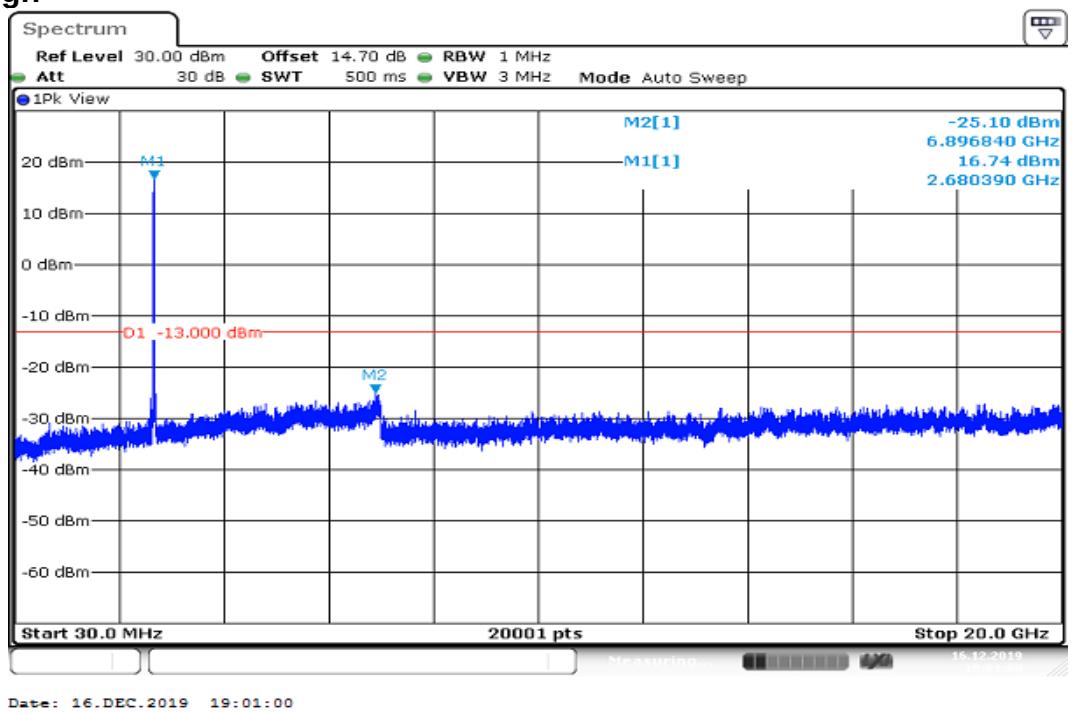
Date: 16.DEC.2019 18:51:38

CH Mid



Date: 16.DEC.2019 18:55:46

CH High



8.7 RADIATED EMISSION MEASUREMENT

LIMITS

FCC §27.53(h), Band 41

General protection levels. Except as otherwise specified below, for operations in the 1710-1755MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least 43 + 10 log10 (P) dB.

According to RSS-199, Band 41

For mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
(i) 40 + 10 log10 p from the channel edges to 5 MHz away
(ii) 43 + 10 log10 p between 5 MHz and X MHz from the channel edges, and
(iii) 55 + 10 log10 p at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than 43 + 10 log10 p on all frequencies between 2490.5 MHz and 2496 MHz, and 55 + 10 log10 p at or below 2490.5 MHz.

p is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

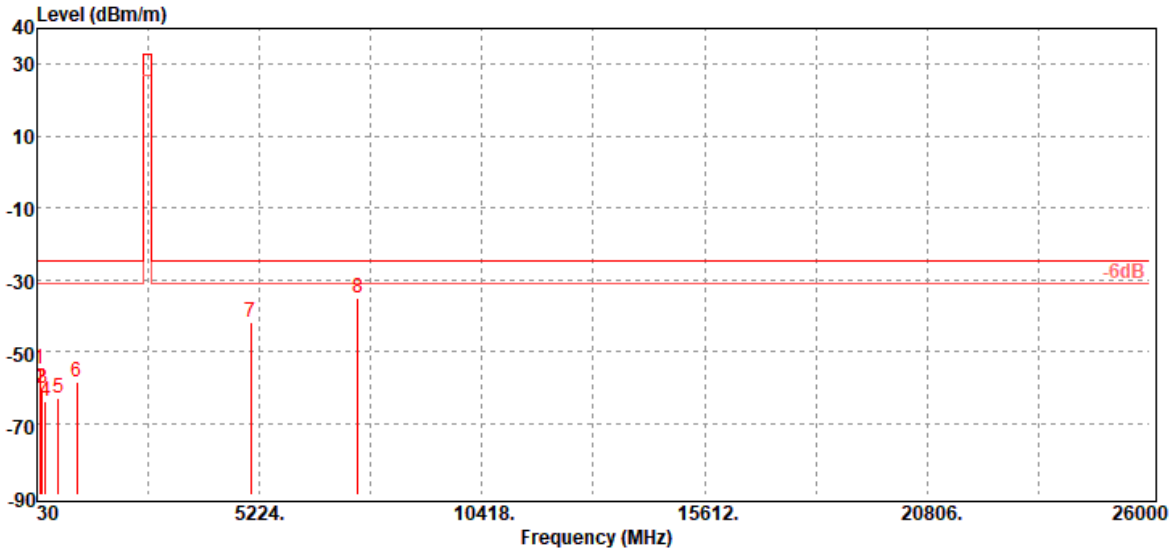
TEST PROCEDURES

1. According to KDB 971168 D01 and TIA-603-E.
2. The EUT was placed on a turntable
   (1) Below 1G : 0.8m
   (2) Above 1G : 1.5m
   (3) EUT set 3m from the receiving antenna
   (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.

Test Results

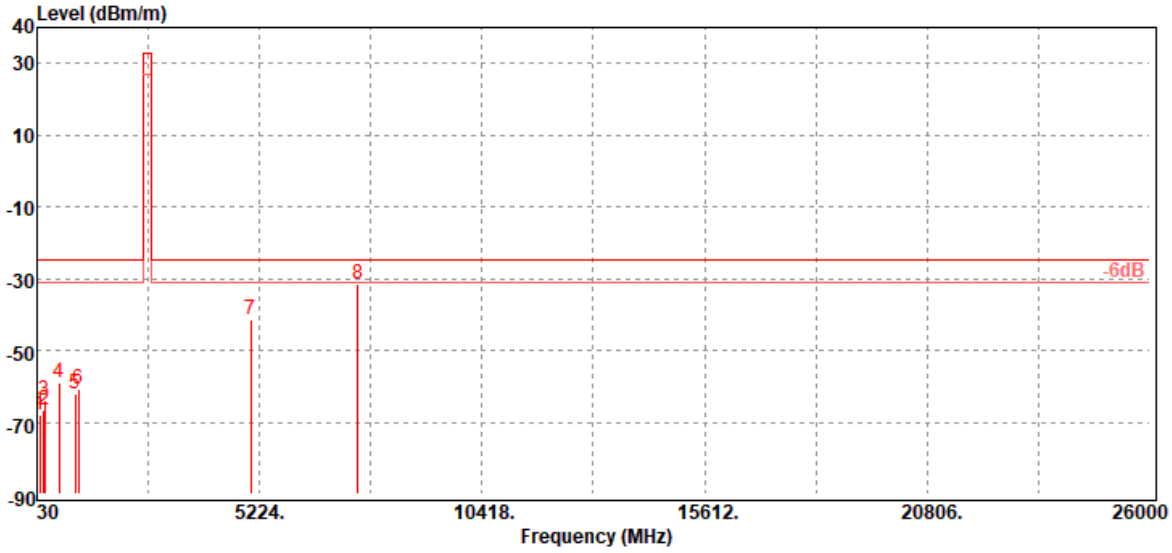
LTE Band 41 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode:	Tx / Low CH	**Test Date:**	December 18, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59% RH	**Polarity:**	Ver.



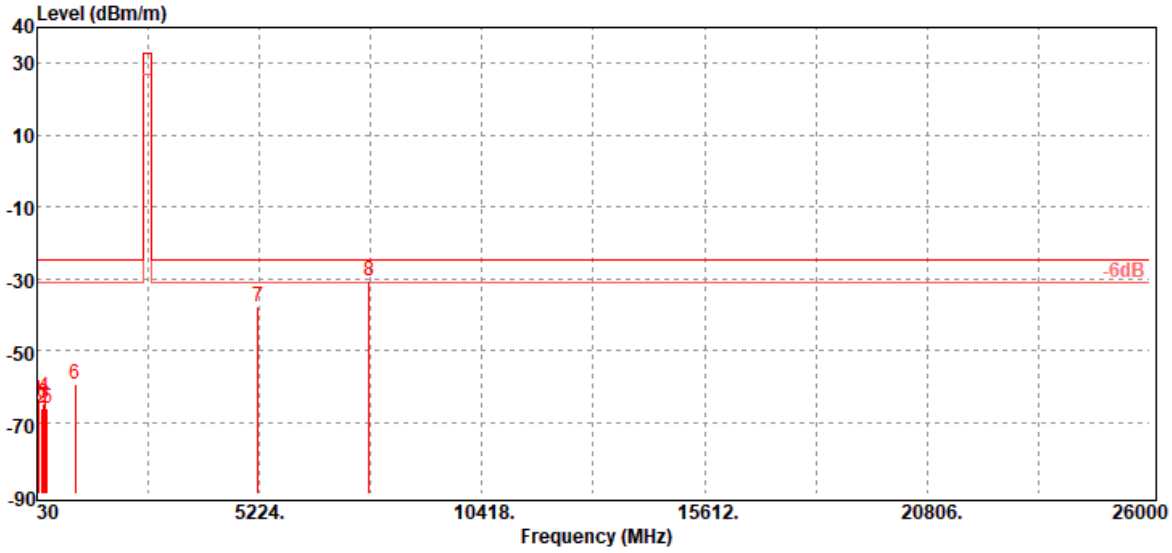
Freq. MHz	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB	Antenna Polarization (V/H)
99.84	-54.84	-45.77	-8.25	-0.82	-25.00	-29.84	V
129.91	-60.22	-49.1	-10.19	-0.93	-25.00	-35.22	V
153.19	-60.47	-52.73	-6.72	-1.02	-25.00	-35.47	V
224.00	-63.80	-60.65	-1.92	-1.23	-25.00	-38.80	V
531.49	-63.02	-59.8	-1.30	-1.92	-25.00	-38.02	V
956.35	-58.35	-54.5	-1.23	-2.62	-25.00	-33.35	V
5012.00	-41.70	-47.61	12.48	-6.57	-25.00	-16.70	V
7518.00	-35.03	-37.76	10.84	-8.11	-25.00	-10.03	V

Operation Mode:	Tx / Low CH	**Test Date:**	December 18, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59% RH	**Polarity:**	Hor.



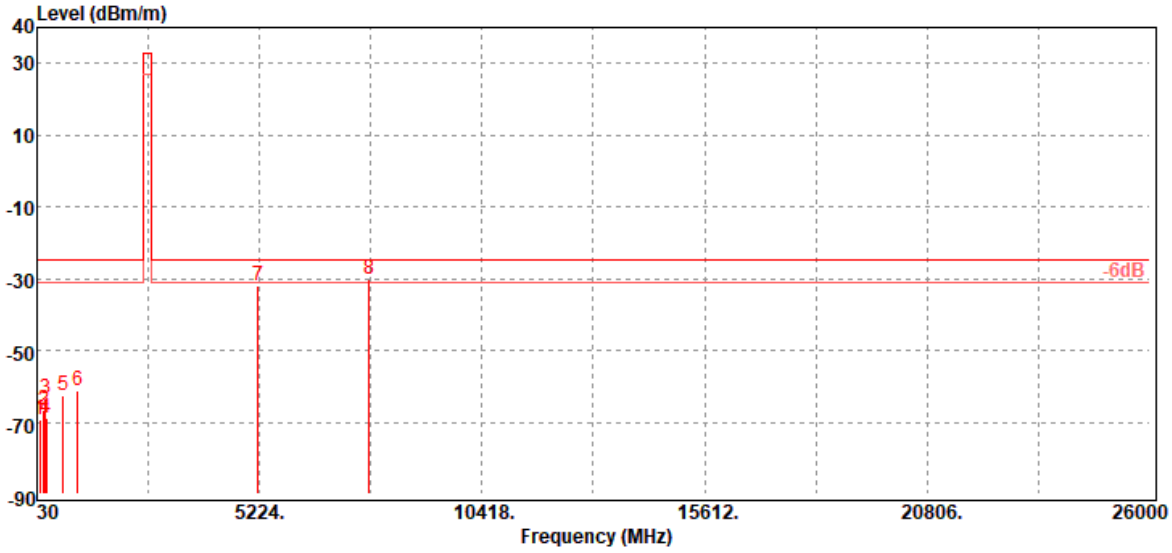
Freq. MHz	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB	Antenna Polarization (V/H)
95.96	-68.08	-59.88	-7.40	-0.80	-25.00	-43.08	H
188.11	-66.63	-61.6	-3.90	-1.13	-25.00	-41.63	H
217.21	-63.86	-60.59	-2.06	-1.21	-25.00	-38.86	H
546.04	-58.93	-55.79	-1.20	-1.94	-25.00	-33.93	H
919.49	-62.01	-58.14	-1.30	-2.57	-25.00	-37.01	H
990.30	-60.66	-56.6	-1.40	-2.66	-25.00	-35.66	H
5012.00	-41.45	-47.36	12.48	-6.57	-25.00	-16.45	H
7518.00	-31.57	-34.3	10.84	-8.11	-25.00	-6.57	H

Operation Mode:	Tx / Mid CH	**Test Date:**	December 18, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59% RH	**Polarity:**	Ver.



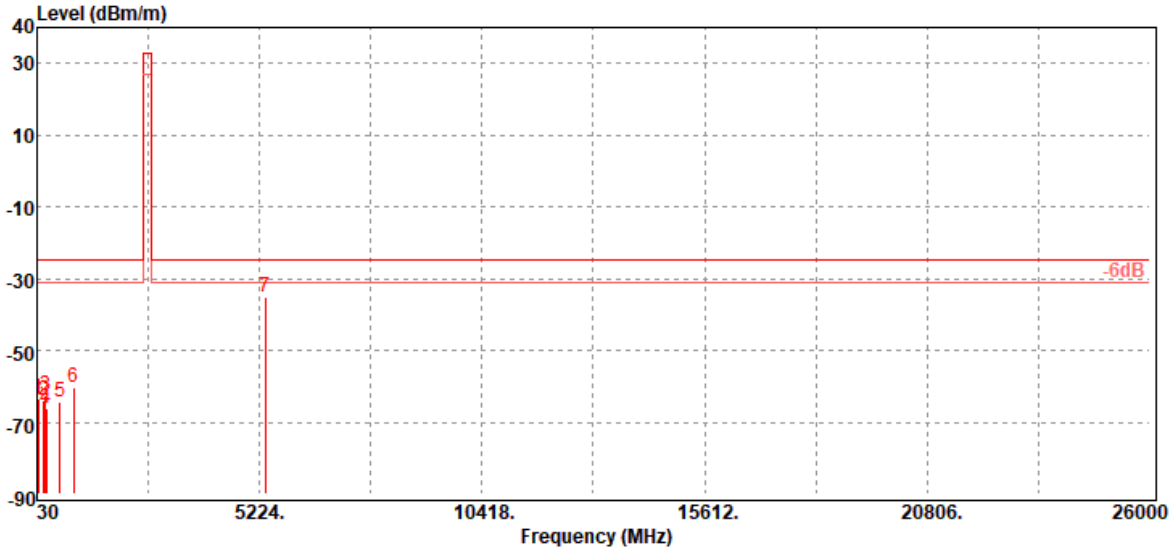
Freq. MHz	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB	Antenna Polarization (V/H)
56.19	-63.91	-52.8	-10.50	-0.61	-25.00	-38.91	V
153.19	-65.95	-58.21	-6.72	-1.02	-25.00	-40.95	V
185.20	-64.80	-59.6	-4.08	-1.12	-25.00	-39.80	V
217.21	-62.82	-59.55	-2.06	-1.21	-25.00	-37.82	V
259.89	-65.98	-62.85	-1.80	-1.33	-25.00	-40.98	V
930.16	-59.47	-55.58	-1.30	-2.59	-25.00	-34.47	V
5186.00	-37.87	-44.05	12.92	-6.74	-25.00	-12.87	V
7779.00	-30.65	-33.53	11.14	-8.26	-25.00	-5.65	V

Operation Mode:	Tx / Mid CH	**Test Date:**	December 18, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59% RH	**Polarity:**	Hor.



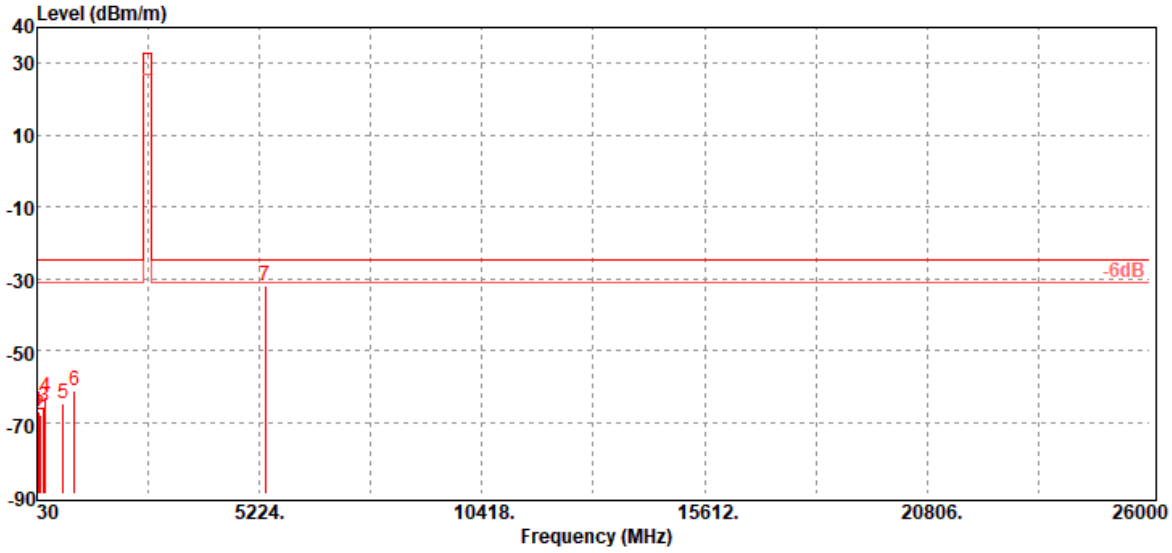
Freq. MHz	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB	Antenna Polarization (V/H)
100.81	-69.09	-59.81	-8.46	-0.82	-25.00	-44.09	H
183.26	-66.68	-61.4	-4.17	-1.11	-25.00	-41.68	H
219.15	-63.45	-60.21	-2.02	-1.22	-25.00	-38.45	H
246.31	-68.91	-65.75	-1.87	-1.29	-25.00	-43.91	H
633.34	-62.38	-58.63	-1.63	-2.12	-25.00	-37.38	H
982.54	-61.28	-57.28	-1.35	-2.65	-25.00	-36.28	H
5186.00	-32.17	-38.35	12.92	-6.74	-25.00	-7.17	H
7779.00	-29.97	-32.85	11.14	-8.26	-25.00	-4.97	H

Operation Mode:	Tx / High CH	**Test Date:**	December 18, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59% RH	**Polarity:**	Ver.



Freq. MHz	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB	Antenna Polarization (V/H)
56.19	-63.53	-52.42	-10.50	-0.61	-25.00	-38.53	V
187.14	-63.88	-58.76	-3.99	-1.13	-25.00	-38.88	V
221.09	-62.54	-59.34	-1.98	-1.22	-25.00	-37.54	V
250.19	-66.18	-63.09	-1.79	-1.30	-25.00	-41.18	V
563.50	-64.28	-60.9	-1.40	-1.98	-25.00	-39.28	V
891.36	-60.40	-56.64	-1.23	-2.53	-25.00	-35.40	V
5360.00	-34.90	-41.25	13.26	-6.91	-25.00	-9.90	V

Operation Mode:	Tx / High CH	**Test Date:**	December 18, 2019
Temperature:	18.6℃	**Tested by:**	Jerry Chang
Humidity:	59% RH	**Polarity:**	Hor.



Freq. MHz	ERP/EIRP dBm	SG Output Level dBm	Antenna Gain dBd/dBi	Cable Loss dB	Limit dBm	Margin dB	Antenna Polarization (V/H)
65.89	-66.89	-56.38	-9.84	-0.67	-25.00	-41.89	H
100.81	-68.16	-58.88	-8.46	-0.82	-25.00	-43.16	H
197.81	-65.83	-60.09	-4.58	-1.16	-25.00	-40.83	H
225.94	-62.88	-59.71	-1.94	-1.23	-25.00	-37.88	H
631.40	-65.01	-61.33	-1.56	-2.12	-25.00	-40.01	H
896.21	-61.43	-57.61	-1.28	-2.54	-25.00	-36.43	H
5360.00	-31.79	-38.14	13.26	-6.91	-25.00	-6.79	H

- End of Test Report -