



FCC ID: QYLWP7601BC03
Report No.: T181222W03-RP



Page: 1 / 155
Rev.: 00

FCC 47 CFR PART 27 SUBPART C, F, L

TEST REPORT

For

Body Worn Camera

Model No.: BC-03

Trade Name: Getac

Issued to

Getac Technology Corp.
5F, Building A, No.209, Sec.1, Nangang Rd., Nangang Dist., Taipei City
11568, 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: June 4, 2019

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部分複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at www.sgs.com/terms_and_conditions.htm and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sgs.com/terms_e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Report No.: T181222W03-RP

Page: 2 / 155
Rev.: 00

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		June 4, 2019		Initial Issue	ALL	Allison Chen

TABLE OF CONTENTS

1.	TEST RESULT CERTIFICATION	4
2.	EUT DESCRIPTION	5
3.	TEST SUMMARY	7
4.	TEST METHODOLOGY	8
4.1	DESCRIPTION OF TEST TYPE	8
4.2	The worst mode of measurement.....	9
5.	INSTRUMENT CALIBRATION.....	10
5.1	MEASURING INSTRUMENT CALIBRATION	10
5.2	MEASUREMENT EQUIPMENT USED	10
5.3	MEASUREMENT UNCERTAINTY	11
6.	FACILITIES AND ACCREDITATIONS	12
6.1	FACILITIES	12
6.2	EQUIPMENT	12
7.	SETUP OF EQUIPMENT UNDER TEST	13
7.1	SETUP CONFIGURATION OF EUT	13
7.2	SUPPORT EQUIPMENT	13
8.	TEST PROCEDURE AND RESULT	14
8.1	OUTPUT POWER MEASUREMENT	14
8.2	ERP & EIRP MEASUREMENT	23
8.3	FREQUENCY STABILITY MEASUREMENT	29
8.4	OCCUPIED BANDWIDTH MEASUREMENT.....	34
8.5	PEAK TO AVERAGE POWER RATIO	46
8.6	BAND EDGE MEASUREMENT	68
8.7	CONDUCTED SPURIOUS EMISSIONS.....	99
8.8	RADIATED EMISSION MEASUREMENT.....	129
APPENDIX -A PHOTOGRAPHS OF TEST SETUP		A- 1

1. TEST RESULT CERTIFICATION

Applicant: Getac Technology Corp.
5F, Building A, No.209, Sec.1, Nangang Rd., Nangang
Dist., Taipei City 11568, Taiwan.

Manufacturer: Getac Technology Corp.
4F., NO.1, R&D ROAD 2, SCIENCE PARK, HSINCHU,
TAIWAN, R.O.C.

Equipment Under Test: Body Worn Camera

Model: BC-03

Trade Name: Getac

Date of Test: January 24 ~ March 15, 2019

APPLICABLE STANDARDS	
Standard	TEST RESULT
FCC Part 27, Subpart C, F, L, FCC Part 2	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:



Jerry Chuang
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Body Worn Camera		
Trade Name	Getac		
Model:	BC-03		
Model Discrepancy	N/A		
Received Date	December 22, 2018		
Power Supply	1. Power from Docking 2. Power from battery		
Modulation Technology	LTE Band 4	QPSK, 16QAM	
	LTE Band 13	QPSK, 16QAM	
Frequency Range	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~1754.3MHz	
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~1753.5MHz	
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~1752.5MHz	
	LTE Band 4 Channel Bandwidth: 10MHz	1715.0MHz ~1750.0MHz	
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~1747.5MHz	
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~1745MHz	
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz	
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz	
Maximum ERP Power	LTE Band 13 Channel Bandwidth: 5MHz	QPSK:	23.63 dBm
		16QAM:	23.89 dBm
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK:	23.54 dBm
		16QAM:	23.37 dBm
Maximum EIRP Power	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK:	28.79 dBm
		16QAM:	28.58 dBm
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK:	28.91 dBm
		16QAM:	28.22 dBm
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK:	28.47 dBm
		16QAM:	28.09 dBm
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK:	28.75 dBm
		16QAM:	28.19 dBm
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK:	28.46 dBm
		16QAM:	27.97 dBm
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK:	28.79 dBm
		16QAM:	28.08 dBm

Antenna Specification	Getac / BC-03 Type: Embedded Loop antenna with extend GND Antenna LTE Band 4: 2.85 dBi LTE Band 13: -1.21 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 SUMMARY

FCC Standard Section	Report Section	Test Item	Result
-	2	Antenna Requirement	Pass
2.1046	8.1	Output Power measurement	Pass
27.50(c), 27.50(d), 27.50(b)	8.2	ERP and EIRP Measurement	Pass
2.1055, 27.54	8.3	Frequency Stability v.s. temperature measurement	Pass
2.1049	8.4	Occupied Bandwidth Measurement	Pass
27.50(d)	8.5	Peak to Average Ratio	Pass
27.53(c), 27.53(g), 27.53(h)	8.6	Conducted Band Edge	Pass
27.53(c), 27.53(g), 27.53(h)	8.7	Conducted Spurious Emission	Pass
27.53(c), 27.53(g), 27.53(h)	8.8	Spurious Radiation Measurement	Pass

4. TEST METHODOLOGY

4.1 DESCRIPTION OF TEST TYPE

The EUT had been tested under operating condition.

TIA-603-E and KDB 971168 D01 Power Meas License Digital Systems

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

LTE Band 4: 1710MHz ~ 1755MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	19957	1710.7	19965	1711.5	19975	1712.5
Middle channel (M)	20175	1732.5	20175	1732.5	20175	1732.5
High channel (H)	20393	1754.3	20385	1753.5	20375	1752.5
Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	20000	1715.0	20025	1717.5	20050	1720.0
Middle channel (M)	20175	1732.5	20175	1732.5	20175	1732.5
High channel (H)	20350	1750.0	20325	1747.5	20300	1745.0

LTE Band 13: 777 MHz ~ 787 MHz

Three channels had been tested for each channel bandwidth.

Channel	5MHz		10MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Low CH	23205	779.5	-	-
Middle CH	23230	782.0	23230	782.0
High CH	23255	784.5	-	-

For test mode:

The conducted power be measured in 1, 50% and 100% RB allocation, offset to upper edge, centered and lower edge of the channel bandwidth of each required channel.

	QPSK	Worst Mode	16QAM	Worst Mode
Band4	1.4M	1 RB ALLOCATED AT THE LOWER EDGE	1.4M	1 RB ALLOCATED AT THE LOWER EDGE
	3M	1 RB ALLOCATED AT THE LOWER EDGE	3M	1 RB ALLOCATED AT THE LOWER EDGE
	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE
	15M	1 RB ALLOCATED AT THE LOWER EDGE	15M	1 RB ALLOCATED AT THE LOWER EDGE
	20M	1 RB ALLOCATED AT THE LOWER EDGE	20M	1 RB ALLOCATED AT THE LOWER EDGE
Band13	5M	1 RB ALLOCATED AT THE LOWER EDGE	5M	1 RB ALLOCATED AT THE LOWER EDGE
	10M	1 RB ALLOCATED AT THE LOWER EDGE	10M	1 RB ALLOCATED AT THE LOWER EDGE

4.2 The worst mode of measurement

LTE Band 4 & Band 13

Radiated Emission Measurement	
Test Condition	Band edge, Emission for Unwanted and Fundamental
Power supply Mode	Mode 1: EUT Power by Ducking Mode 2: EUT Power by battery.
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
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)

Remark:

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

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.

Conducted Emissions Test Site					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Coaxial Cable	Woken	WC12	CC001	06/29/2018	06/28/2019
Coaxial Cable	Woken	WC12	CC002	06/29/2018	06/28/2019
Coaxial Cable	Woken	WC12	CC003	06/29/2018	06/28/2019
Power Divider	Solvang Technology	STI08-0015	008	07/27/2018	07/26/2019
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/20/2018	04/19/2019
Signal Analyzer	R&S	FSV 40	101073	09/27/2018	09/26/2019
Wireless Communication Test Set	Agilent	8960/E5515C	MY48363204	07/23/2018	07/22/2019
Software	N/A				

Wugu 966 Chamber					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Sunol Sciences	JB3	A030105	07/13/2018	07/12/2019
Cable	HUBER SUHNER	SUCOFLEX 104PEA	25157	06/29/2018	06/28/2019
Digital Radio Communication Tester	R&S	CMU200	116604	07/19/2018	07/18/2019
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/30/2019	01/29/2020
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	08/20/2018	08/19/2019
Pre-Amplifier	EMEC	EM330	060609	06/29/2018	06/28/2019
Pre-Amplifier	HP	8449B	3008A00965	06/29/2018	06/28/2019
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/31/2018	05/30/2019
Wideband Radio Communication Tester	R&S	CMW 500	116875	04/20/2018	04/19/2019
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	EZ-EMC (CCS-3A1RE)				

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.
- ☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan, R.O.C

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.

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	Data Cable
	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 OUTPUT POWER MEASUREMENT

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

LTE Band 13

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
13	5	23205	779.5	QPSK	1	0	0	22.69	0.1858
					1	12	0	22.68	0.1854
					1	24	0	22.65	0.1841
					12	0	1	21.86	0.1535
					12	6	1	21.82	0.1521
					12	11	1	21.76	0.1500
					25	0	1	21.75	0.1496
				16QAM	1	0	1	21.81	0.1517
					1	12	1	21.77	0.1503
					1	24	1	21.88	0.1542
					12	0	2	20.72	0.1180
					12	6	2	20.69	0.1172
					12	11	2	20.66	0.1164
					25	0	2	20.69	0.1172
		23230	782.0	QPSK	1	0	0	22.66	0.1845
					1	12	0	22.67	0.1849
					1	24	0	22.63	0.1832
					12	0	1	21.84	0.1528
					12	6	1	21.80	0.1514
					12	11	1	21.74	0.1493
					25	0	1	21.73	0.1489
				16QAM	1	0	1	21.79	0.1510
					1	12	1	21.75	0.1496
					1	24	1	21.86	0.1535
					12	0	2	20.70	0.1175
					12	6	2	20.67	0.1167
					12	11	2	20.64	0.1159
					25	0	2	20.67	0.1167
		23255	784.5	QPSK	1	0	0	22.73	0.1875
					1	12	0	22.72	0.1871
					1	24	0	22.69	0.1858
					12	0	1	21.90	0.1549
					12	6	1	21.86	0.1535
					12	11	1	21.80	0.1514
					25	0	1	21.79	0.1510
				16QAM	1	0	1	21.85	0.1531
					1	12	1	21.81	0.1517
					1	24	1	21.92	0.1556
					12	0	2	20.76	0.1191
					12	6	2	20.73	0.1183
					12	11	2	20.70	0.1175
					25	0	2	20.73	0.1183

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
13	10	23230	782.0	QPSK	1	0	0	22.75	0.1884
					1	24	0	22.74	0.1879
					1	49	0	22.71	0.1866
					25	0	1	21.92	0.1556
					25	12	1	21.88	0.1542
					25	24	1	21.82	0.1521
					50	0	1	21.81	0.1517
				16QAM	1	0	1	21.87	0.1538
					1	24	1	21.83	0.1524
					1	49	1	21.94	0.1563
					25	0	2	20.78	0.1197
					25	12	2	20.75	0.1189
					25	24	2	20.72	0.1180
					50	0	2	20.75	0.1189

LTE Band 4

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	1.4M	19957	1710.7	QPSK	1	0	0	22.67	0.1849
					1	2	0	22.60	0.1820
					1	5	0	22.58	0.1811
					3	0	1	21.71	0.1483
					3	1	1	21.69	0.1476
					3	2	1	21.79	0.1510
					6	0	1	21.68	0.1472
				16QAM	1	0	1	21.67	0.1469
					1	2	1	21.61	0.1449
					1	5	1	21.58	0.1439
					3	0	2	20.68	0.1169
					3	1	2	20.66	0.1164
					3	2	2	20.76	0.1191
					6	0	2	20.69	0.1172
		20175	1732.5	QPSK	1	0	0	22.17	0.1648
					1	2	0	22.20	0.1660
					1	5	0	22.18	0.1652
					3	0	1	21.45	0.1396
					3	1	1	21.39	0.1377
					3	2	1	21.29	0.1346
					6	0	1	21.41	0.1384
				16QAM	1	0	1	21.40	0.1380
					1	2	1	21.26	0.1337
					1	5	1	21.30	0.1349
					3	0	2	20.26	0.1062
					3	1	2	20.32	0.1076
					3	2	2	20.36	0.1086
					6	0	2	20.33	0.1079
		20393	1754.3	QPSK	1	0	0	22.93	0.1963
					1	2	0	22.78	0.1897
					1	5	0	22.87	0.1936
					3	0	1	22.17	0.1648
					3	1	1	22.07	0.1611
					3	2	1	22.04	0.1600
					6	0	1	22.11	0.1626
				16QAM	1	0	1	22.00	0.1585
					1	2	1	22.06	0.1607
					1	5	1	22.01	0.1589
					3	0	2	21.20	0.1318
					3	1	2	21.06	0.1276
					3	2	2	21.15	0.1303
					6	0	2	21.13	0.1297

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	3M	19665	1711.5	QPSK	1	0	0	22.68	0.1854
					1	7	0	22.61	0.1824
					1	14	0	22.59	0.1816
					8	0	1	21.72	0.1486
					8	4	1	21.70	0.1479
					8	7	1	21.80	0.1514
					15	0	1	21.69	0.1476
				16QAM	1	0	1	21.68	0.1472
					1	7	1	21.62	0.1452
					1	14	1	21.59	0.1442
					8	0	2	20.69	0.1172
					8	4	2	20.67	0.1167
					8	7	2	20.77	0.1194
					15	0	2	20.70	0.1175
		20175	1732.5	QPSK	1	0	0	22.18	0.1652
					1	7	0	22.21	0.1663
					1	14	0	22.19	0.1656
					8	0	1	21.46	0.1400
					8	4	1	21.40	0.1380
					8	7	1	21.30	0.1349
					15	0	1	21.42	0.1387
				16QAM	1	0	1	21.41	0.1384
					1	7	1	21.27	0.1340
					1	14	1	21.31	0.1352
					8	0	2	20.27	0.1064
					8	4	2	20.33	0.1079
					8	7	2	20.37	0.1089
					15	0	2	20.34	0.1081
		20384	1753.4	QPSK	1	0	0	22.94	0.1968
					1	7	0	22.79	0.1901
					1	14	0	22.88	0.1941
					8	0	1	22.18	0.1652
					8	4	1	22.08	0.1614
					8	7	1	22.05	0.1603
					15	0	1	22.12	0.1629
				16QAM	1	0	1	22.01	0.1589
					1	7	1	22.07	0.1611
					1	14	1	22.02	0.1592
					8	0	2	21.21	0.1321
					8	4	2	21.07	0.1279
					8	7	2	21.16	0.1306
					15	0	2	21.14	0.1300

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	5M	19975	1712.5	QPSK	1	0	0	22.70	0.1862
					1	12	0	22.63	0.1832
					1	24	0	22.61	0.1824
					12	0	1	21.74	0.1493
					12	6	1	21.72	0.1486
					12	11	1	21.82	0.1521
					25	0	1	21.71	0.1483
				16QAM	1	0	1	21.70	0.1479
					1	12	1	21.64	0.1459
					1	24	1	21.61	0.1449
					12	0	2	20.71	0.1178
					12	6	2	20.69	0.1172
					12	11	2	20.79	0.1199
					25	0	2	20.72	0.1180
		20175	1732.5	QPSK	1	0	0	22.19	0.1656
					1	12	0	22.22	0.1667
					1	24	0	22.20	0.1660
					12	0	1	21.47	0.1403
					12	6	1	21.41	0.1384
					12	11	1	21.31	0.1352
					25	0	1	21.43	0.1390
				16QAM	1	0	1	21.42	0.1387
					1	12	1	21.28	0.1343
					1	24	1	21.32	0.1355
					12	0	2	20.28	0.1067
					12	6	2	20.34	0.1081
					12	11	2	20.38	0.1091
					25	0	2	20.35	0.1084
		20375	1752.5	QPSK	1	0	0	22.95	0.1972
					1	12	0	22.80	0.1905
					1	24	0	22.89	0.1945
					12	0	1	22.19	0.1656
					12	6	1	22.09	0.1618
					12	11	1	22.06	0.1607
					25	0	1	22.13	0.1633
				16QAM	1	0	1	22.02	0.1592
					1	12	1	22.08	0.1614
					1	24	1	22.03	0.1596
					12	0	2	21.22	0.1324
					12	6	2	21.08	0.1282
					12	11	2	21.17	0.1309
					25	0	2	21.15	0.1303

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	10M	20000	1715.0	QPSK	1	0	0	22.71	0.1866
					1	24	0	22.64	0.1837
					1	49	0	22.62	0.1828
					25	0	1	21.75	0.1496
					25	12	1	21.73	0.1489
					25	24	1	21.83	0.1524
					50	0	1	21.72	0.1486
				16QAM	1	0	1	21.71	0.1483
					1	24	1	21.65	0.1462
					1	49	1	21.62	0.1452
					25	0	2	20.72	0.1180
					25	12	2	20.70	0.1175
					25	24	2	20.80	0.1202
					50	0	2	20.73	0.1183
		20175	1732.5	QPSK	1	0	0	22.21	0.1663
					1	24	0	22.24	0.1675
					1	49	0	22.22	0.1667
					25	0	1	21.49	0.1409
					25	12	1	21.43	0.1390
					25	24	1	21.33	0.1358
					50	0	1	21.45	0.1396
				16QAM	1	0	1	21.44	0.1393
					1	24	1	21.30	0.1349
					1	49	1	21.34	0.1361
					25	0	2	20.30	0.1072
					25	12	2	20.36	0.1086
					25	24	2	20.40	0.1096
					50	0	2	20.37	0.1089
		20350	1750.0	QPSK	1	0	0	22.98	0.1986
					1	24	0	22.83	0.1919
					1	49	0	22.92	0.1959
					25	0	1	22.22	0.1667
					25	12	1	22.12	0.1629
					25	24	1	22.09	0.1618
					50	0	1	22.16	0.1644
				16QAM	1	0	1	22.05	0.1603
					1	24	1	22.11	0.1626
					1	49	1	22.06	0.1607
					25	0	2	21.25	0.1334
					25	12	2	21.11	0.1291
					25	24	2	21.20	0.1318
					50	0	2	21.18	0.1312

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	15M	20025	1717.5	QPSK	1	0	0	22.74	0.1879
					1	37	0	22.67	0.1849
					1	74	0	22.65	0.1841
					36	0	1	21.78	0.1507
					36	18	1	21.76	0.1500
					36	35	1	21.86	0.1535
					75	0	1	21.75	0.1496
				16QAM	1	0	1	21.74	0.1493
					1	37	1	21.68	0.1472
					1	74	1	21.65	0.1462
					36	0	2	20.75	0.1189
					36	18	2	20.73	0.1183
					36	35	2	20.83	0.1211
					75	0	2	20.76	0.1191
		20175	1732.5	QPSK	1	0	0	22.23	0.1671
					1	37	0	22.26	0.1683
					1	74	0	22.24	0.1675
					36	0	1	21.51	0.1416
					36	18	1	21.45	0.1396
					36	35	1	21.35	0.1365
					75	0	1	21.47	0.1403
				16QAM	1	0	1	21.46	0.1400
					1	37	1	21.32	0.1355
					1	74	1	21.36	0.1368
					36	0	2	20.32	0.1076
					36	18	2	20.38	0.1091
					36	35	2	20.42	0.1102
					75	0	2	20.39	0.1094
		20325	1747.5	QPSK	1	0	0	23.00	0.1995
					1	37	0	22.85	0.1928
					1	74	0	22.94	0.1968
					36	0	1	22.24	0.1675
					36	18	1	22.14	0.1637
					36	35	1	22.11	0.1626
					75	0	1	22.18	0.1652
				16QAM	1	0	1	22.07	0.1611
					1	37	1	22.13	0.1633
					1	74	1	22.08	0.1614
					36	0	2	21.27	0.1340
					36	18	2	21.13	0.1297
					36	35	2	21.22	0.1324
					75	0	2	21.20	0.1318

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power(dBm)	Output Power (W)
4	20M	20050	1720.0	QPSK	1	0	0	22.82	0.1914
					1	49	0	22.75	0.1884
					1	99	0	22.73	0.1875
					50	0	1	21.86	0.1535
					50	24	1	21.84	0.1528
					50	49	1	21.94	0.1563
				16QAM	100	0	1	21.83	0.1524
					1	0	1	21.82	0.1521
					1	49	1	21.76	0.1500
					1	99	1	21.73	0.1489
					50	0	2	20.83	0.1211
					50	24	2	20.81	0.1205
					50	49	2	20.91	0.1233
					100	0	2	20.84	0.1213
		20175	1732.5	QPSK	1	0	0	22.29	0.1694
					1	49	0	22.32	0.1706
					1	99	0	22.30	0.1698
					50	0	1	21.57	0.1435
					50	24	1	21.51	0.1416
					50	49	1	21.41	0.1384
				16QAM	100	0	1	21.53	0.1422
					1	0	1	21.52	0.1419
					1	49	1	21.38	0.1374
					1	99	1	21.42	0.1387
					50	0	2	20.38	0.1091
					50	24	2	20.44	0.1107
					50	49	2	20.48	0.1117
					100	0	2	20.45	0.1109
		20300	1745.0	QPSK	1	0	0	23.05	0.2018
					1	49	0	22.90	0.1950
					1	99	0	22.99	0.1991
					50	0	1	22.29	0.1694
					50	24	1	22.19	0.1656
					50	49	1	22.16	0.1644
				16QAM	100	0	1	22.23	0.1671
					1	0	1	22.12	0.1629
					1	49	1	22.18	0.1652
					1	99	1	22.13	0.1633
					50	0	2	21.32	0.1355
					50	24	2	21.18	0.1312
					50	49	2	21.27	0.1340
					100	0	2	21.25	0.1334

8.2 ERP & EIRP MEASUREMENT

LIMIT

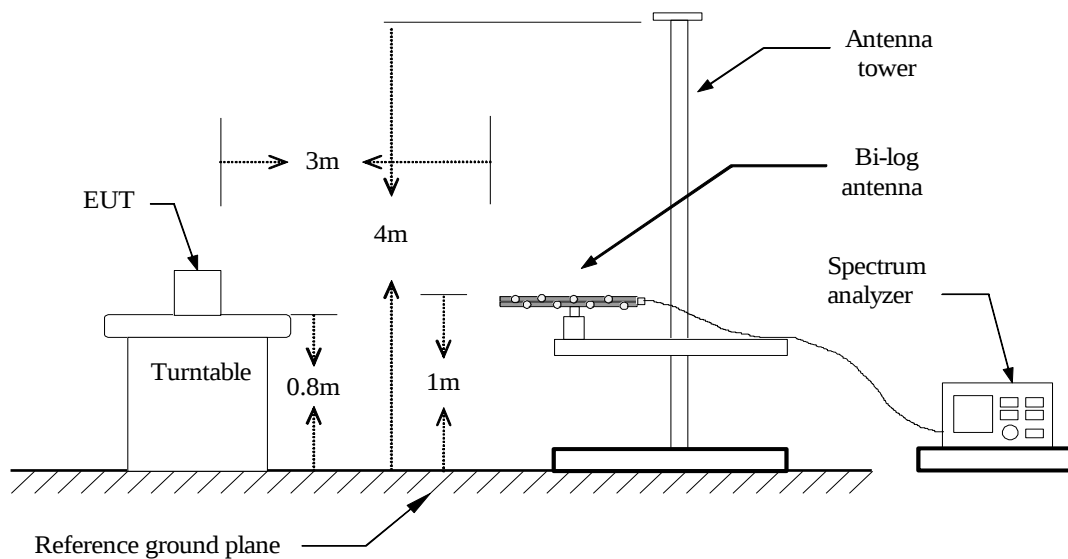
According to FCC §2.1046

FCC 27.50 (d) (4): Fixed, mobile, and portable (handheld) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

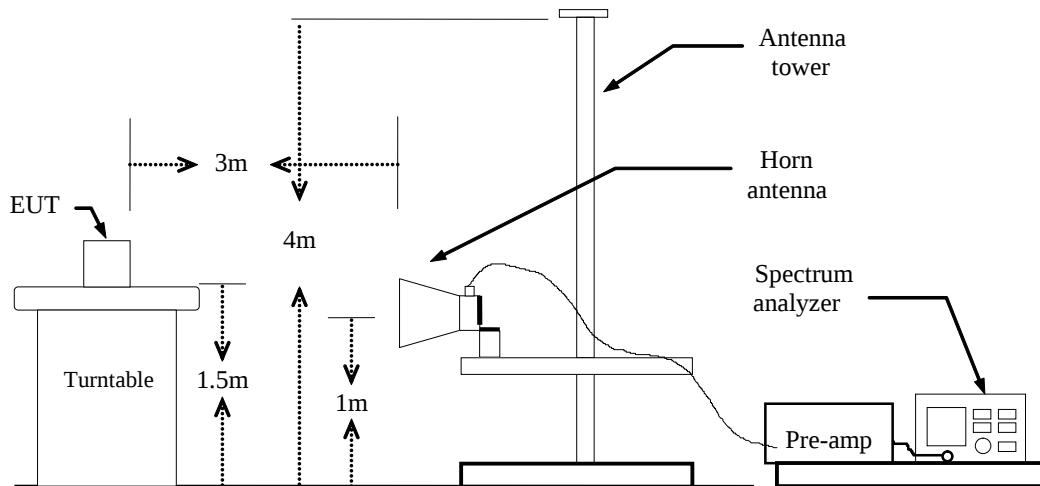
FCC 27.50 (b) (10): Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

Test Configuration

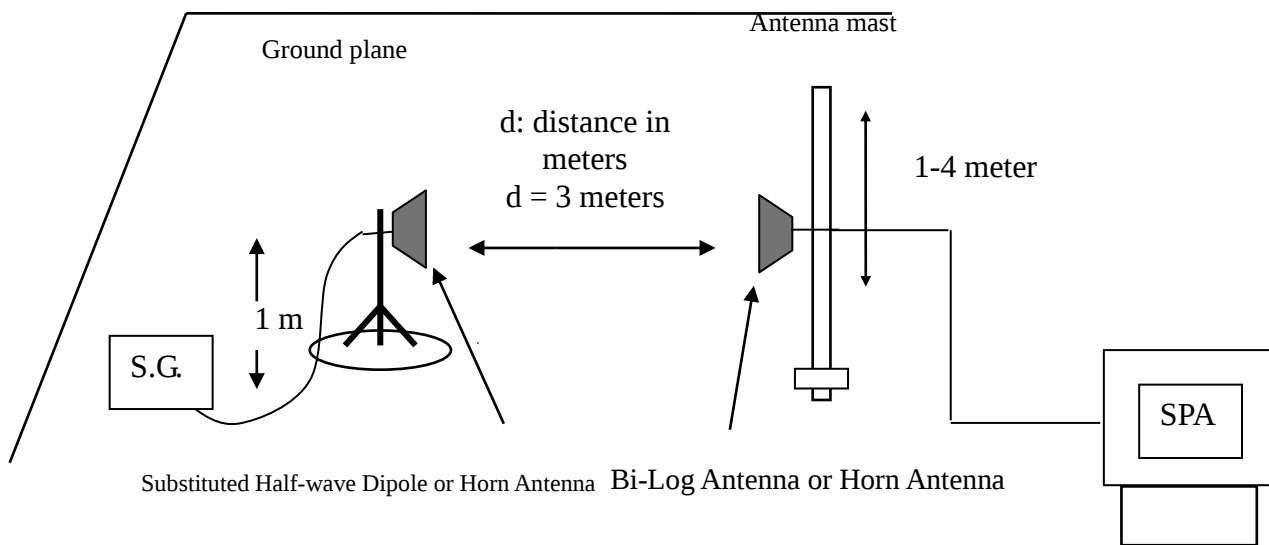
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



TEST PROCEDURE

1. The EUT was placed on a non-conductive rotating platform (0.8m for below 1G and 1.5m for above 1G) in a semi-chamber. The radiated emission at the fundamental frequency was measured at 3m and SA with RMS detector per photograph 5, KDB 971168 D01 Power Meas License Digital Systems.

2. During the measurement, the call box parameters were set to get the maximum output power of the EUT. The maximum emission was recorded from spectrum analyzer power level (LVL) from 360 degrees rotation of turntable and the test antenna raised and lowered over a range from 1m to 4m in both horizontally and vertically polarized orientations.

3. EIRP was measured method according to TIA-603-E. The EUT was replaced by the substitution antenna at same location, and then record the maximum Analyzer reading through raised and lowered the test antenna.

$ERP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$

$EIRP = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$

TEST RESULTS

No non-compliance noted.

ERP POWER

LTE Band 13

Channel Bandwidth: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
13	5	Lowest	QPSK	1	0	7.32	0.0054	23.63	0.2307
		Middle		1	0	6.96	0.0050	23.52	0.2249
		Highest		1	0	7.62	0.0058	23.58	0.2280
		Lowest	16 QAM	1	0	7.44	0.0055	23.89	0.2449
		Middle		1	0	6.55	0.0045	23.21	0.2094
		Highest		1	0	7.36	0.0054	23.57	0.2275

Channel Bandwidth: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						ERP (dBm)	ERP (W)	ERP (dBm)	ERP (W)
13	10	Middle	QPSK	1	0	7.36	0.0054	23.54	0.2259
		Middle	16 QAM	1	0	7.98	0.0063	23.37	0.2173

EIRP POWER

LTE Band 4

Channel Bandwidth: 1.4MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	1.4	Lowest	QPSK	1	0	10.69	0.0117	28.79	0.7568
		Middle		1	0	15.11	0.0324	28.86	0.7691
		Highest		1	0	16.00	0.0398	28.53	0.7129
		Lowest	16 QAM	1	0	11.73	0.0149	28.58	0.7211
		Middle		1	0	15.37	0.0344	28.23	0.6653
		Highest		1	0	15.76	0.0377	28.41	0.6934

Channel Bandwidth: 3MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	3	Lowest	QPSK	1	0	10.92	0.0124	28.91	0.7780
		Middle		1	0	14.81	0.0303	28.38	0.6887
		Highest		1	0	15.34	0.0342	28.19	0.6592
		Lowest	16 QAM	1	0	9.03	0.0080	28.22	0.6637
		Middle		1	0	13.55	0.0226	28.07	0.6412
		Highest		1	0	14.13	0.0259	27.69	0.5875

Channel Bandwidth: 5MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	5	Lowest	QPSK	1	0	10.88	0.0122	28.47	0.7031
		Middle		1	0	14.56	0.0286	28.22	0.6637
		Highest		1	0	15.36	0.0344	27.98	0.6281
		Lowest	16 QAM	1	0	9.76	0.0095	28.08	0.6427
		Middle		1	0	14.12	0.0258	28.09	0.6442
		Highest		1	0	14.30	0.0269	27.20	0.5248

Channel Bandwidth: 10MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	10	Lowest	QPSK	1	0	10.59	0.0115	28.75	0.7499
		Middle		1	0	13.88	0.0244	28.42	0.6950
		Highest		1	0	15.01	0.0317	27.62	0.5781
		Lowest	16 QAM	1	0	9.24	0.0084	28.19	0.6592
		Middle		1	0	13.48	0.0223	28.08	0.6427
		Highest		1	0	14.71	0.0296	27.40	0.5495

Channel Bandwidth: 15MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	15	Lowest	QPSK	1	0	10.72	0.0118	28.31	0.6776
		Middle		1	0	13.31	0.0214	28.46	0.7015
		Highest		1	0	15.02	0.0318	28.14	0.6516
		Lowest	16 QAM	1	0	10.38	0.0109	27.97	0.6266
		Middle		1	0	12.57	0.0181	27.82	0.6053
		Highest		1	0	14.86	0.0306	27.93	0.6209

Channel Bandwidth: 20MHz / RB=1, RB Offset=0

Band	BW (MHz)	Channel	Mode	UL RB Allocation	UL RB offset	Vertical		Horizontal	
						EIRP (dBm)	EIRP (W)	EIRP (dBm)	EIRP (W)
4	20	Lowest	QPSK	1	0	10.40	0.0110	28.79	0.7568
		Middle		1	0	12.96	0.0198	28.18	0.6577
		Highest		1	0	15.29	0.0338	28.45	0.6998
		Lowest	16 QAM	1	0	9.99	0.0100	28.07	0.6412
		Middle		1	0	11.64	0.0146	27.15	0.5188
		Highest		1	0	14.97	0.0314	28.08	0.6427

8.3 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."

TEST PROCEDURE

Use Anritsu 8820 with frequency Error measurement capability.

Temp = -20 to +50°C

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 STABILTY V.S. TEMPERATURE MEASUREMENT

LTE Band 4

Reference Frequency: LTE Band 4 Max Bandwidth QPSK 1732.5 MHz		
Limit: 1720MHz ~1745MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
120	50	0.01
120	40	0.01
120	30	0.00
120	20	0.00
120	10	-0.01
120	0	-0.01
120	-10	0.00
120	-20	0.02

Reference Frequency: LTE Band 4 Max Bandwidth 16QAM 1732.5 MHz		
Limit: 1720MHz ~1745MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
120	50	-0.01
120	40	-0.01
120	30	0.00
120	20	0.01
120	10	0.02
120	0	-0.01
120	-10	-0.01
120	-20	-0.02

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

LTE Band 13

Reference Frequency: LTE Band 13 Max Bandwidth QPSK 782 MHz		
Limit: 782MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
120	50	0.03
120	40	0.03
120	30	0.01
120	20	0.01
120	10	0.01
120	0	0.00
120	-10	0.03
120	-20	0.04

Reference Frequency: LTE Band 13 Max Bandwidth 16QAM 782 MHz		
Limit: 782MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
120	50	0.03
120	40	0.02
120	30	0.02
120	20	0.01
120	10	0.01
120	0	0.00
120	-10	0.00
120	-20	0.01

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

FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT LTE Band 4

Reference Frequency: LTE Band 4 Max Bandwidth QPSK, 1732.5MHz		
Limit: 1720MHz ~1745MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
102	20	0.00
120	20	0.00
138	20	0.01

Reference Frequency: LTE Band IV Max Bandwidth 16QAM, 1732.5MHz		
Limit: 1720MHz ~1745MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
102	20	0.01
120	20	0.00
138	20	0.00

LTE Band 13

Reference Frequency: LTE Band 13 Max Bandwidth QPSK, 782MHz		
Limit: 782MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
102	20	0.02
120	20	0.01
138	20	0.01

Reference Frequency: LTE Band 13 Max Bandwidth 16QAM, 782MHz		
Limit: 782MHz		
Power Supply	Environment	Frequency Error
Vdc	Temperature (°C)	(Hz)
102	20	0.02
120	20	0.02
138	20	0.00

8.4 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,

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 $\geq 3 \times$ RBW
4. Detector = Peak
5. Trace mode = max. hold

TEST RESULTS

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	4.4862

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	4.4862

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	8.9435

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
23230	782.00	8.9435

LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	1.0984

CHANNEL BANDWIDTH: 1.4MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.5	1.0940

CHANNEL BANDWIDTH: 3MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	2.6917

CHANNEL BANDWIDTH: 3MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	2.6917

CHANNEL BANDWIDTH: 5MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	4.4862

CHANNEL BANDWIDTH: 5MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	4.4862

CHANNEL BANDWIDTH: 10MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	8.9435

CHANNEL BANDWIDTH: 10MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	9.9340

CHANNEL BANDWIDTH: 15MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	13.4587

CHANNEL BANDWIDTH: 15MHz / 16QAM

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	14.1690

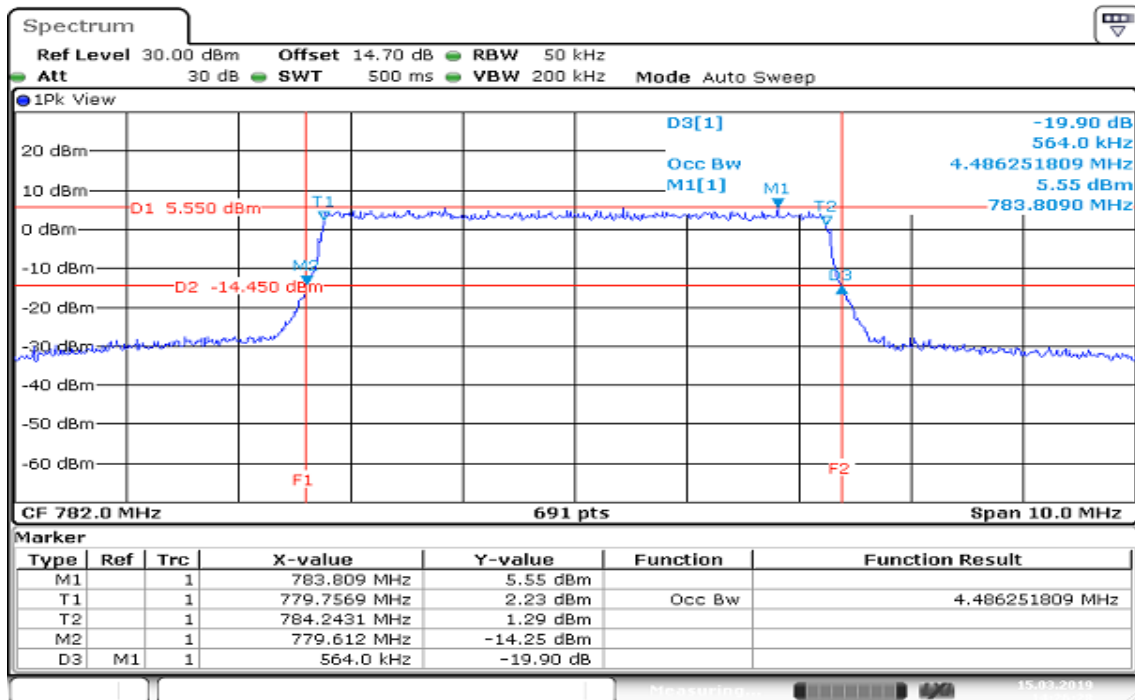
CHANNEL BANDWIDTH: 20MHz / QPSK

Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	18.0607

CHANNEL BANDWIDTH: 20MHz / 16QAM

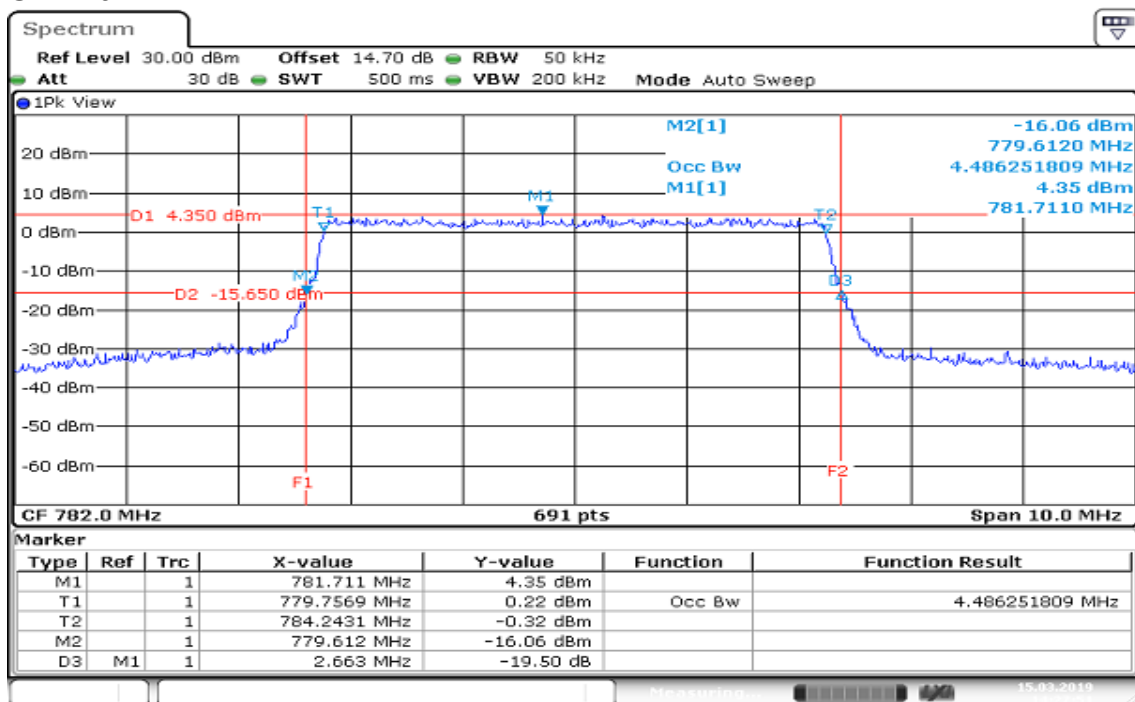
Channel	FREQUENCY (MHz)	Occupied bandwidth (MHz)
20175	1732.50	19.2630

LTE Band 13 CHANNEL BANDWIDTH: 5MHz / QPSK CH Mid



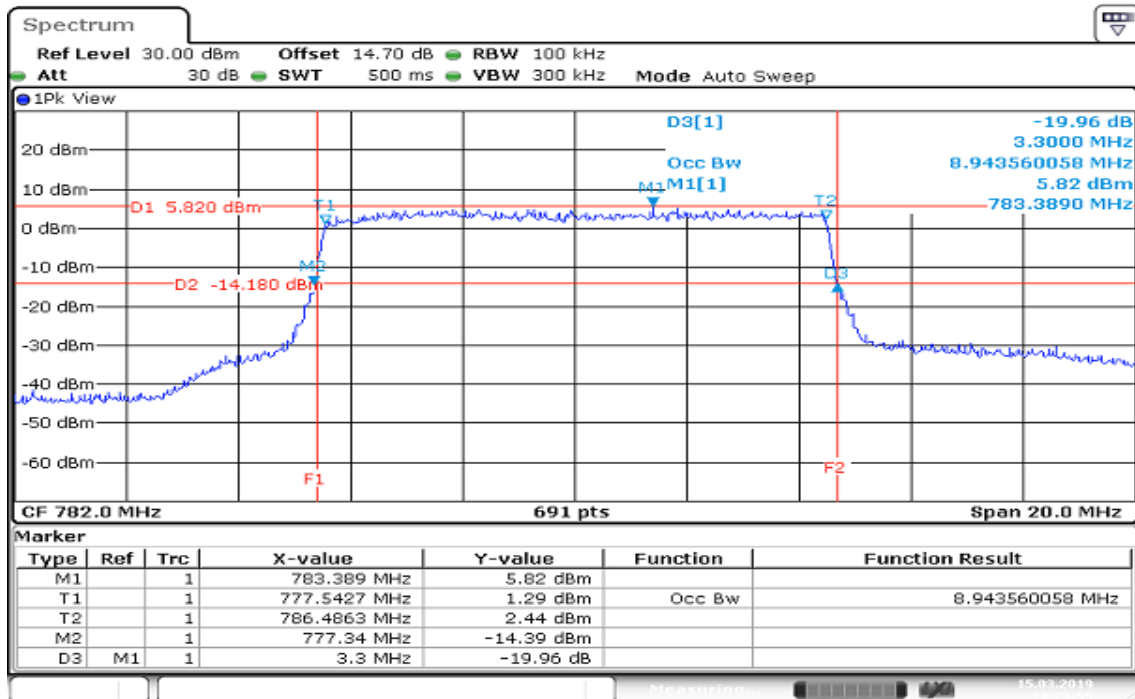
Date: 15.MAR.2019 14:26:28

CHANNEL BANDWIDTH: 5MHz / 16QAM CH Mid



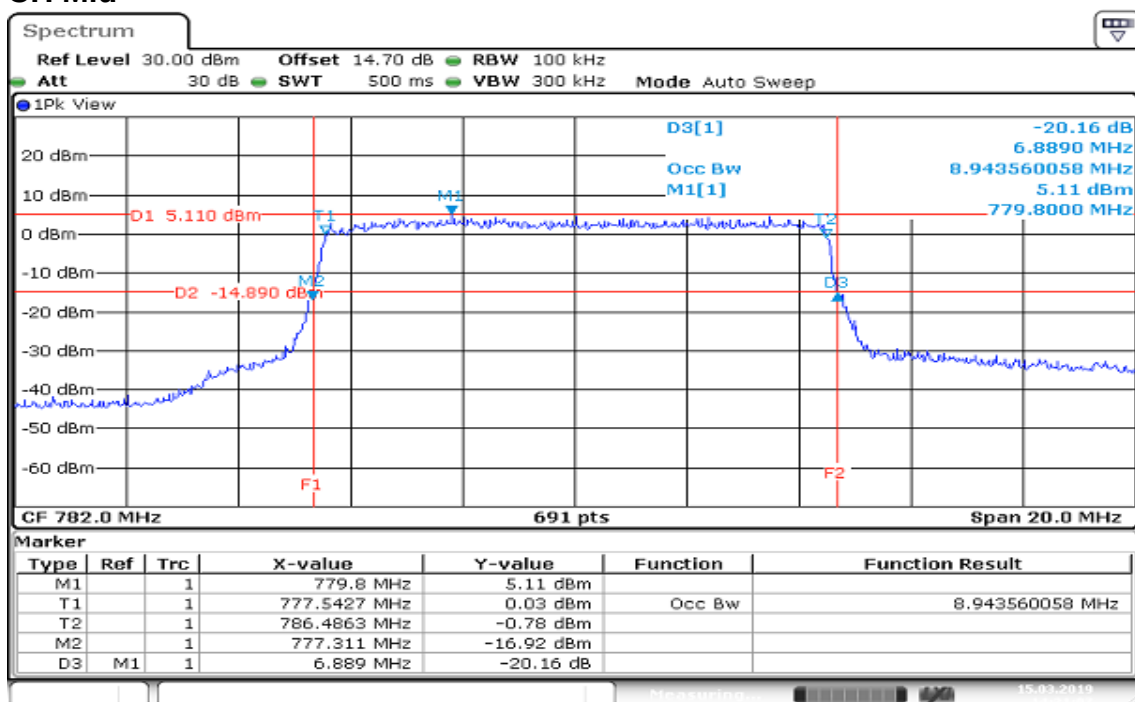
Date: 15.MAR.2019 14:27:51

CHANNEL BANDWIDTH: 10MHz / QPSK CH Mid



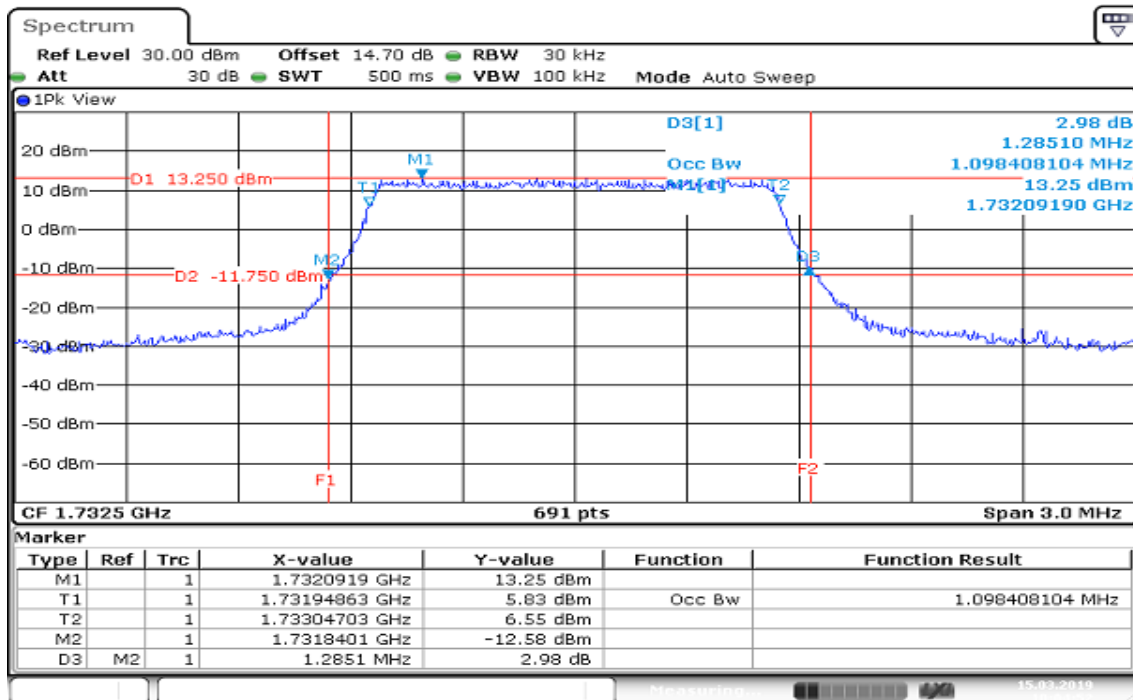
Date: 15.MAR.2019 14:29:56

CHANNEL BANDWIDTH: 10MHz / 16QAM CH Mid



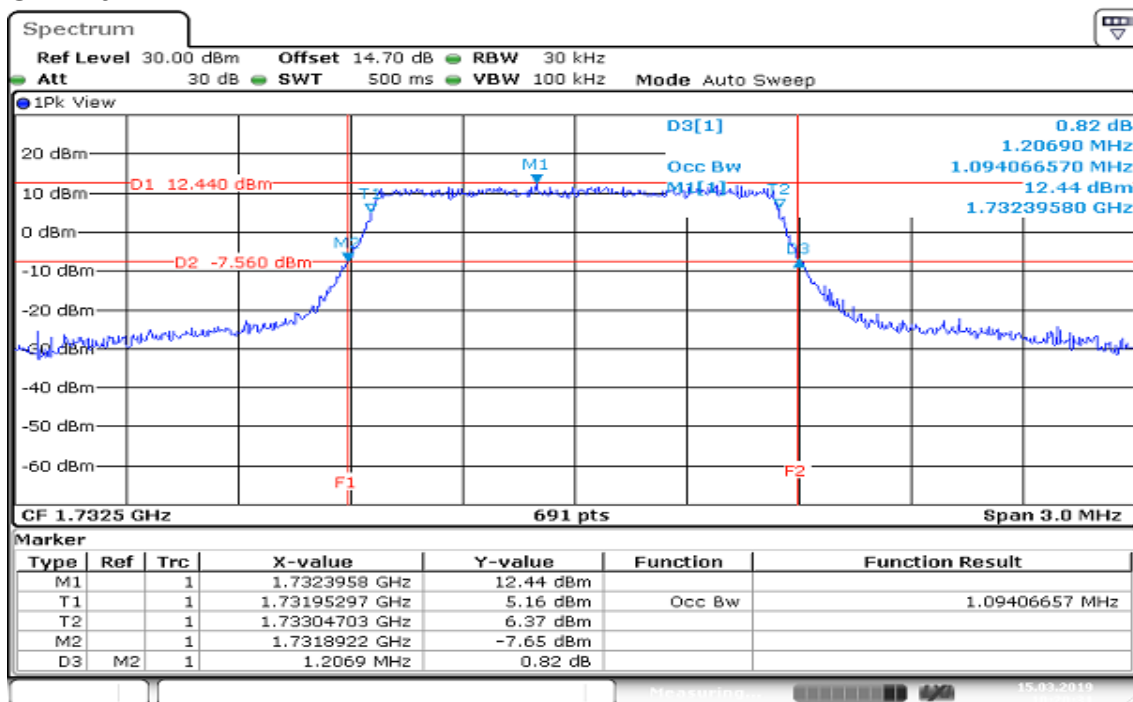
Date: 15.MAR.2019 14:31:08

LTE Band 4 CHANNEL BANDWIDTH: 1.4MHz / QPSK CH Mid



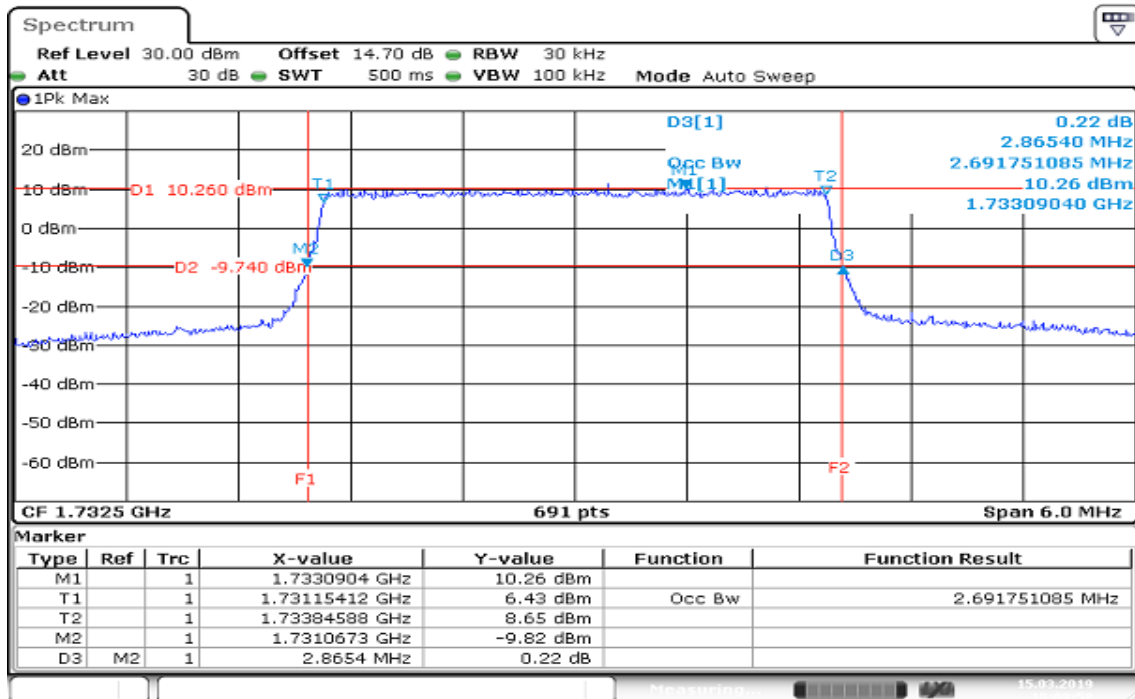
Date: 15.MAR.2019 10:04:53

CHANNEL BANDWIDTH: 1.4MHz / 16QAM CH Mid



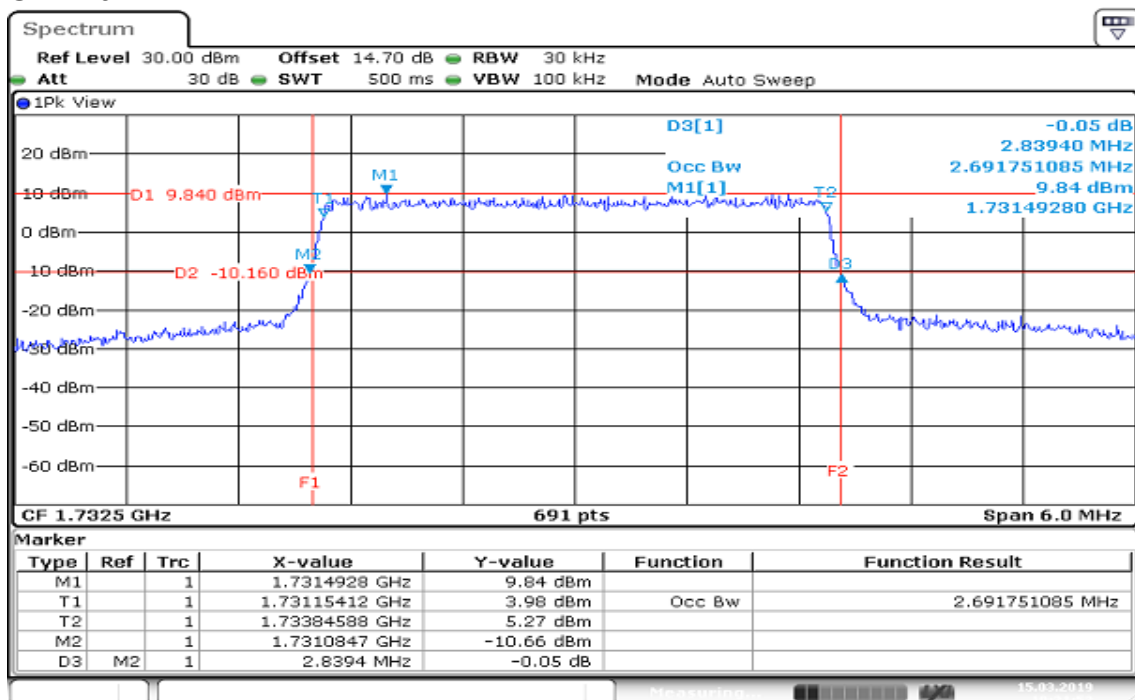
Date: 15.MAR.2019 10:20:31

CHANNEL BANDWIDTH: 3MHz / QPSK CH Mid



Date: 15.MAR.2019 10:09:59

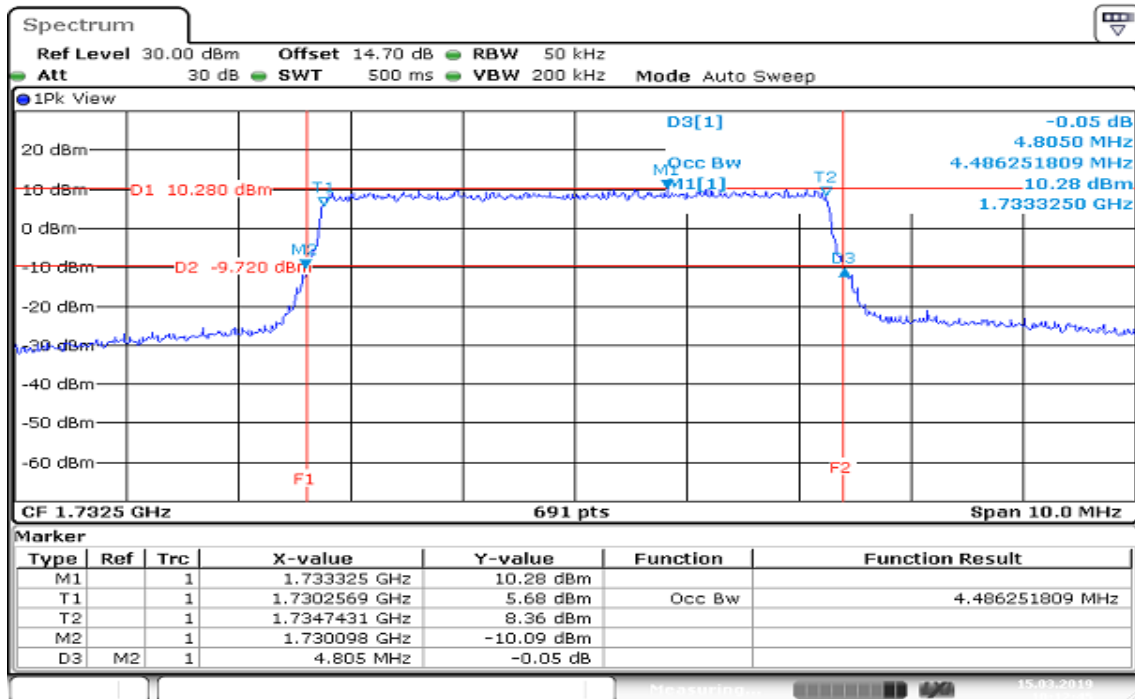
CHANNEL BANDWIDTH: 3MHz / 16QAM CH Mid



Date: 15.MAR.2019 10:21:52

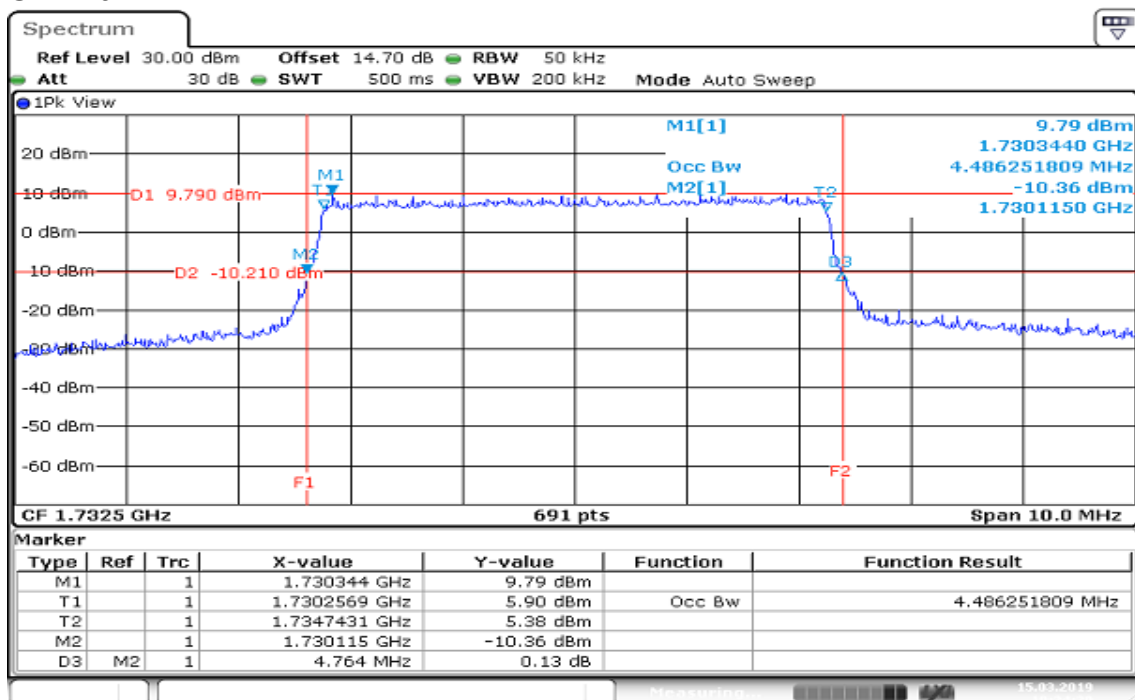
Report No.: T181222W03-RP

CHANNEL BANDWIDTH: 5MHz / QPSK CH Mid



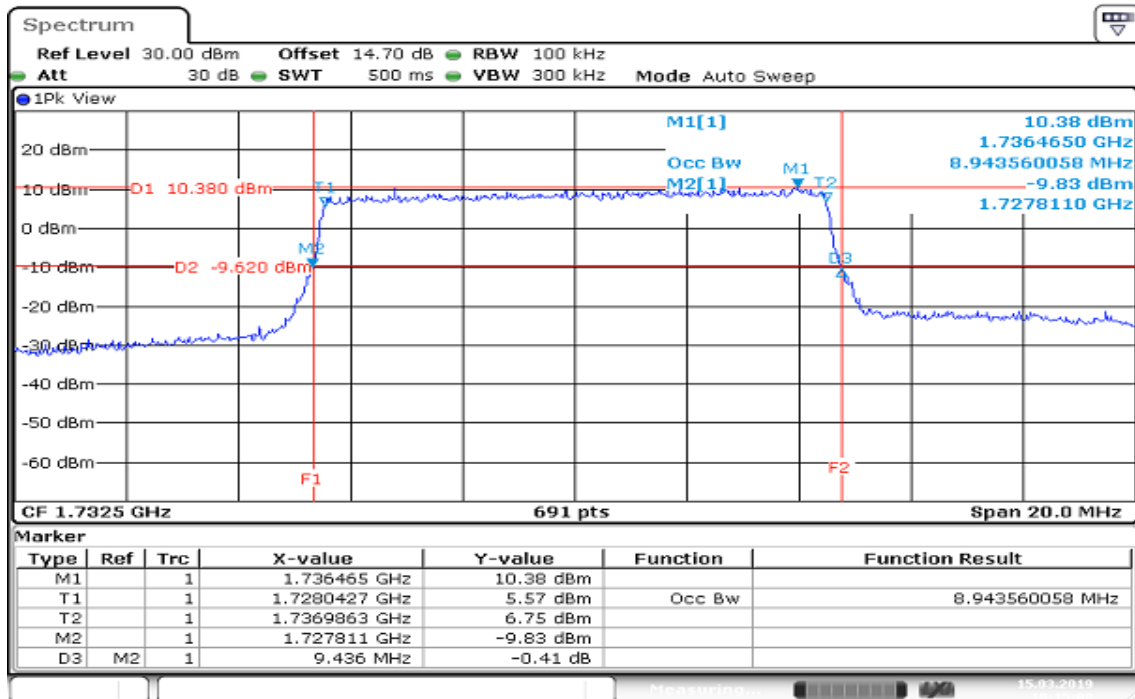
Date: 15.MAR.2019 10:12:45

CHANNEL BANDWIDTH: 5MHz / 16QAM CH Mid



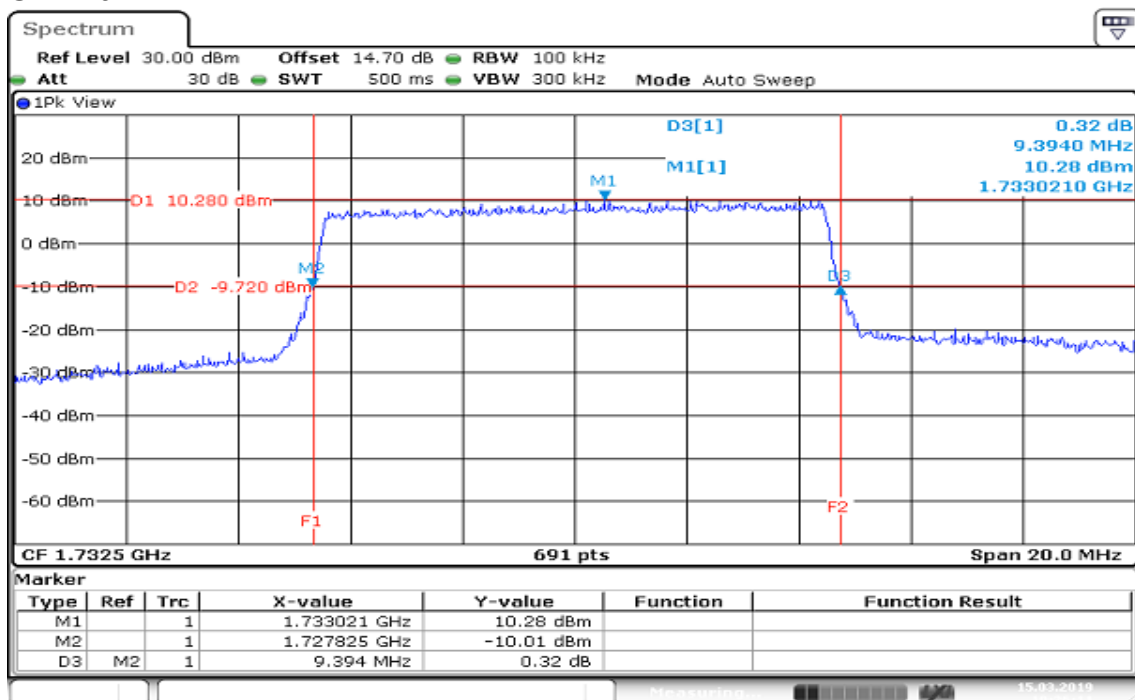
Date: 15.MAR.2019 10:24:21

CHANNEL BANDWIDTH: 10MHz / QPSK CH Mid



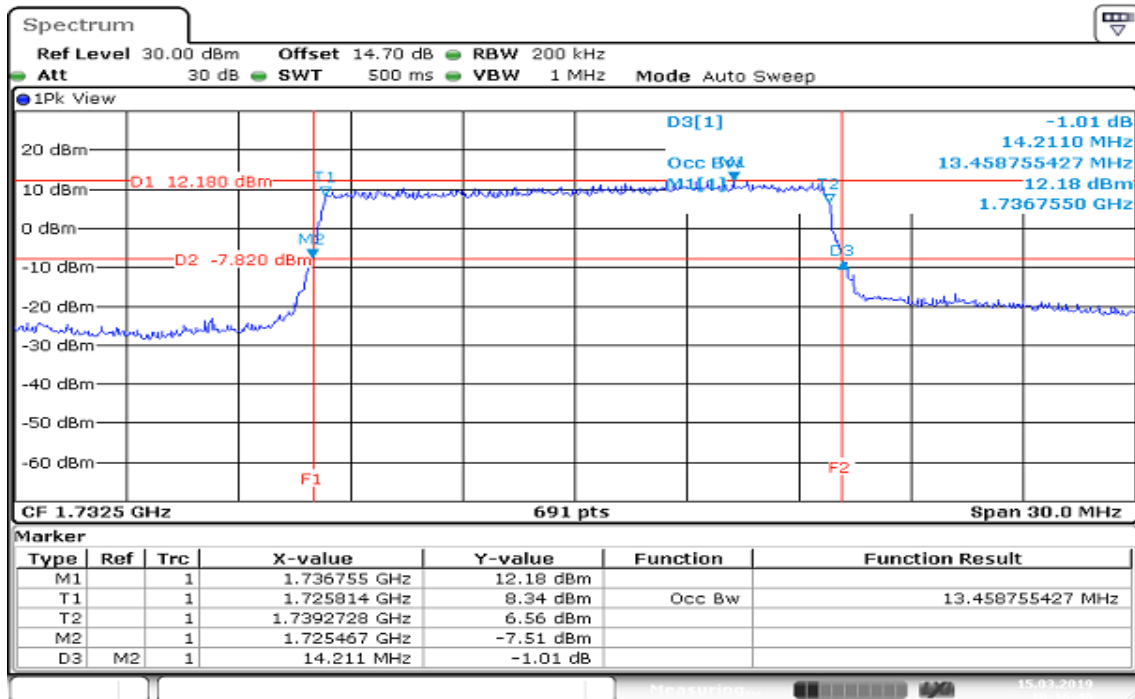
Date: 15.MAR.2019 10:15:08

CHANNEL BANDWIDTH: 10MHz / 16QAM CH Mid



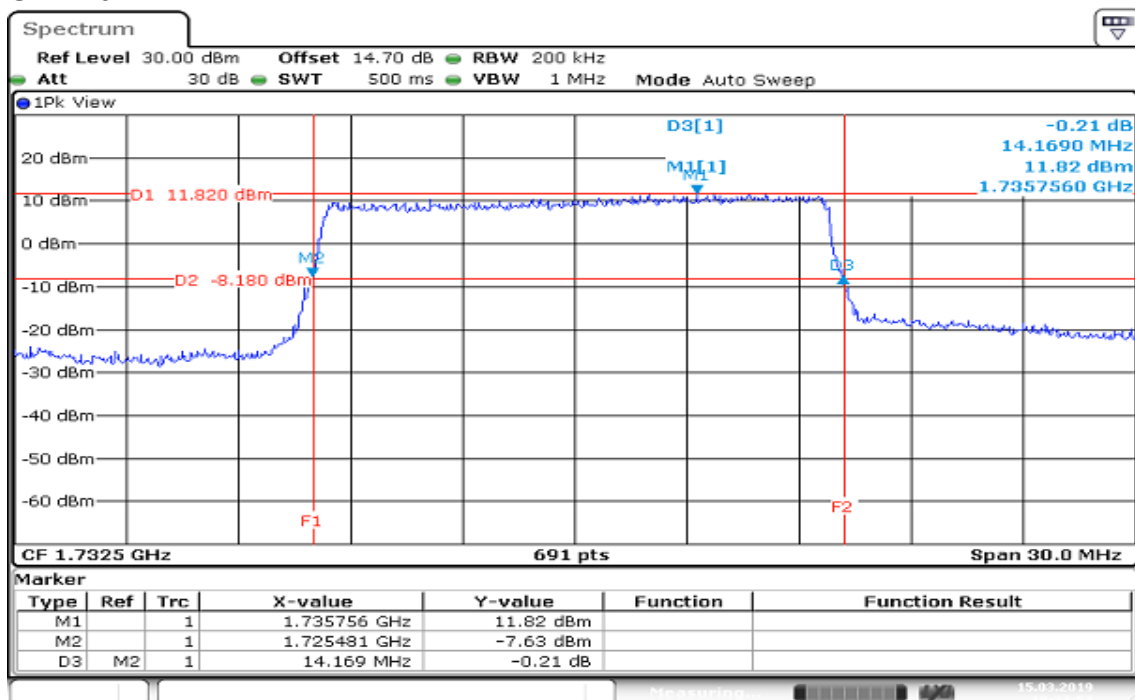
Date: 15.MAR.2019 10:26:11

CHANNEL BANDWIDTH: 15MHz / QPSK CH Mid



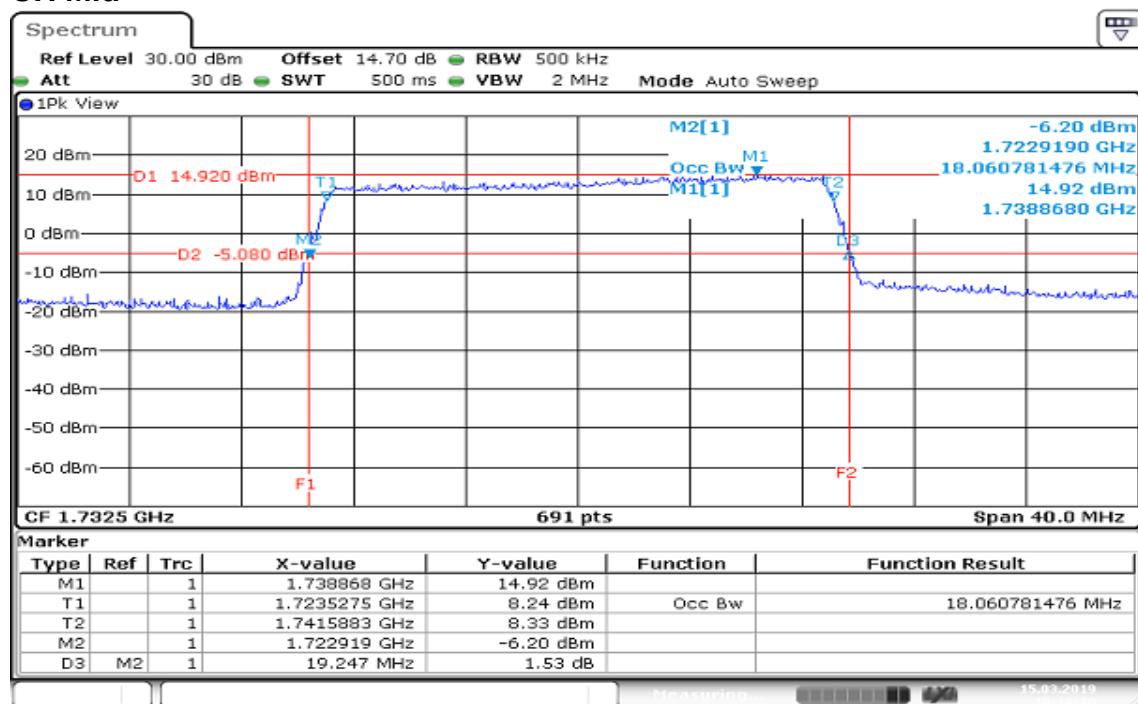
Date: 15.MAR.2019 10:16:47

CHANNEL BANDWIDTH: 15MHz / 16QAM CH Mid



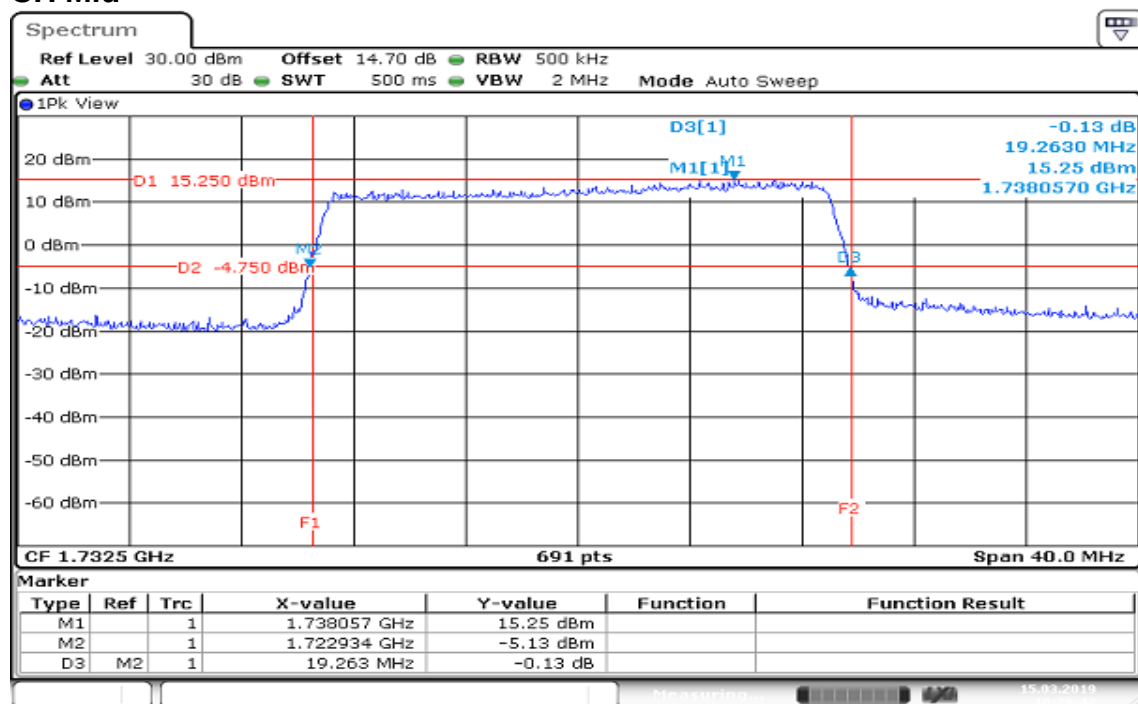
Date: 15.MAR.2019 10:27:57

CHANNEL BANDWIDTH: 20MHz / QPSK CH Mid



Date: 15.MAR.2019 10:18:10

CHANNEL BANDWIDTH: 20MHz / 16QAM CH Mid



Date: 15.MAR.2019 10:29:42

8.5 PEAK TO AVERAGE POWER RATIO

LIMIT

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.

TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PAPR level associated with a probability of 0.1%.

TEST RESULTS

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	2.41

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	3.30

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	3.86

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.61

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	3.19

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	4.29

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	5.36

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23230	782.00	6.43

LTE Band 4

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	3.94

CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	3.83

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	3.94

CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.72

CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	1.65

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	1.59

CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.49

CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.46

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.14

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.75

CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	6.17

CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	6.67

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.64

CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.93

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	4.75

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.65

CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	1.57

CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	1.54

CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.65

CHANNEL BANDWIDTH: 3MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.54

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	5.48

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	6.29

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

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	7.10

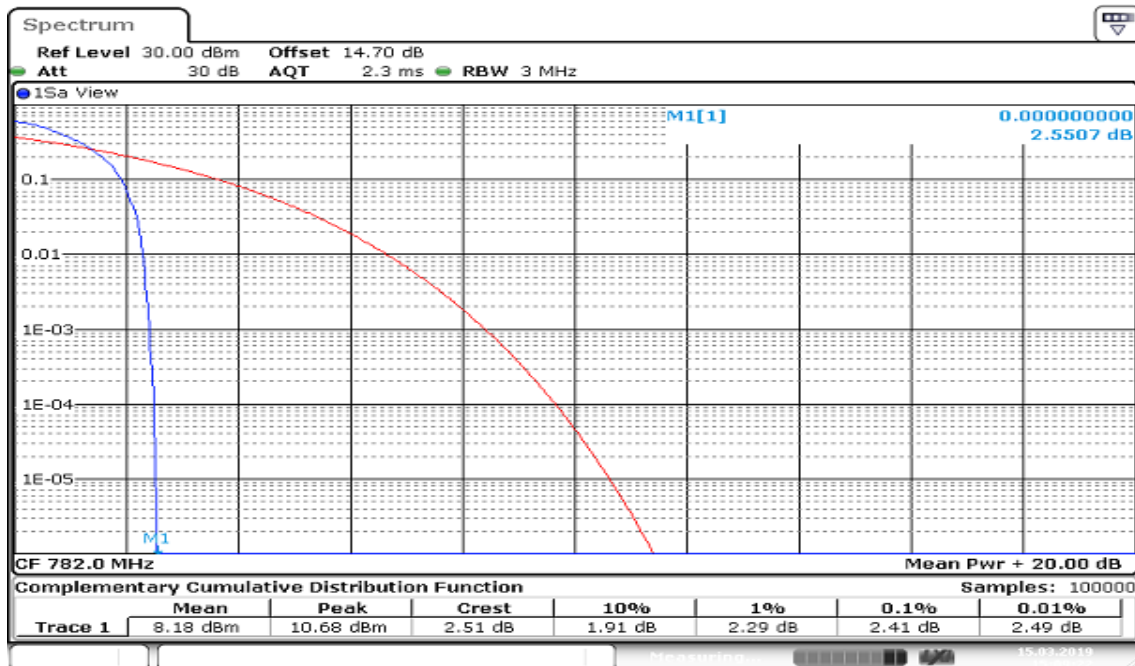
CHANNEL BANDWIDTH: 20MHz / 16QAM / 100%RB

Channel	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20175	1732.5	7.30

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB

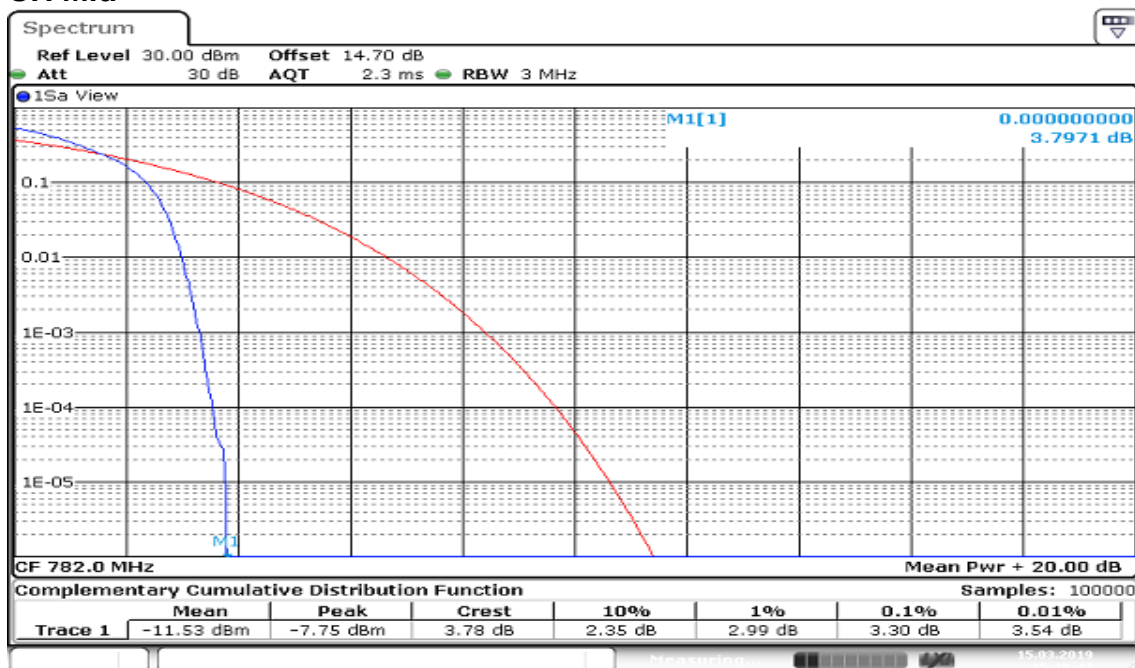
CH Mid



Date: 15.MAR.2019 15:09:23

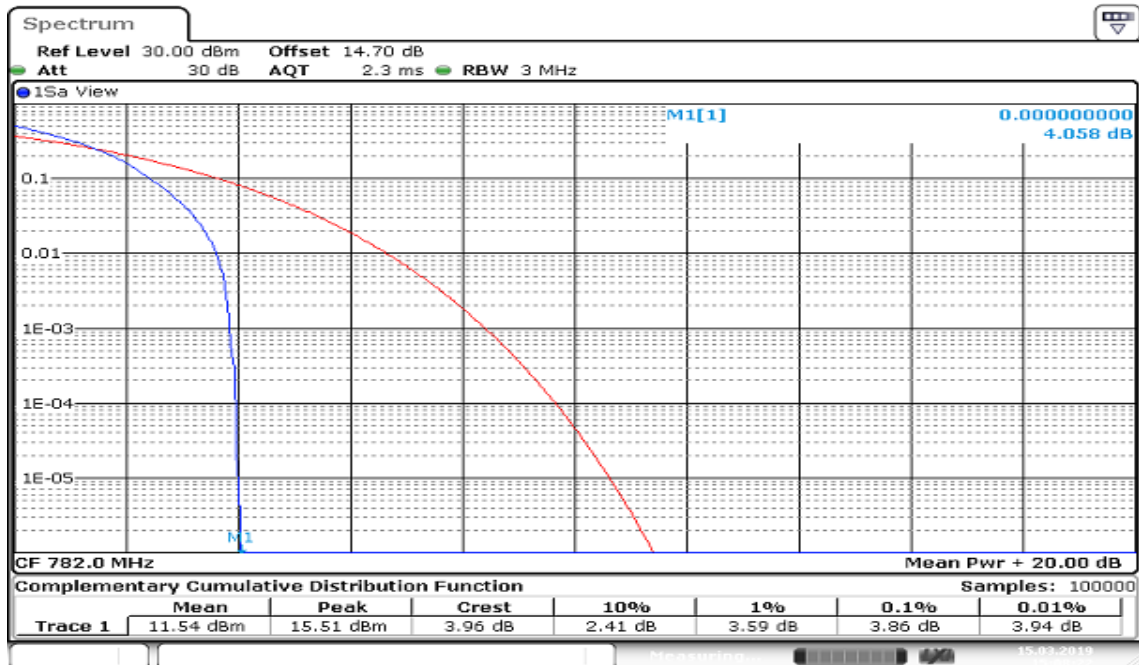
CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB

CH Mid



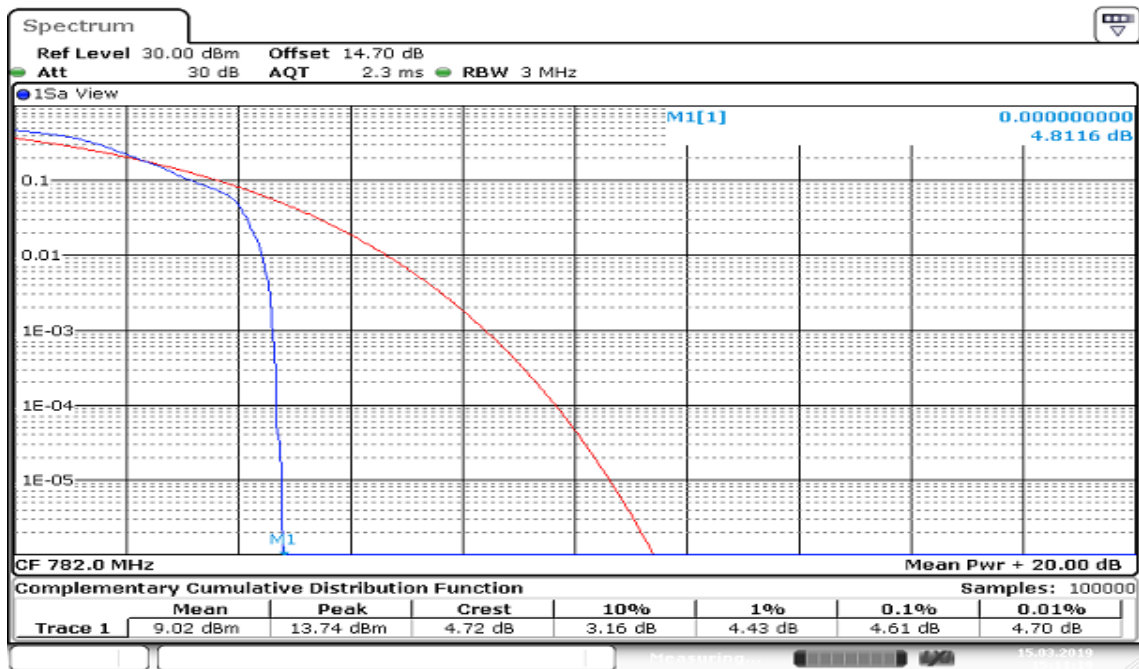
Date: 15.MAR.2019 15:10:47

CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB CH Mid



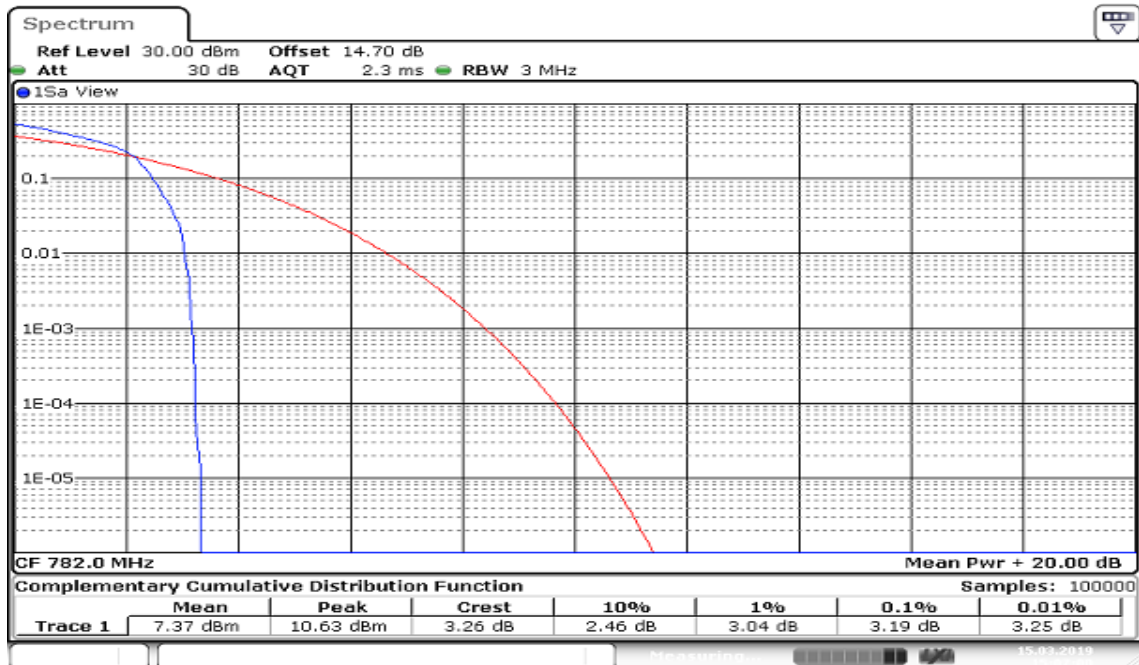
Date: 15.MAR.2019 15:08:22

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB CH Mid



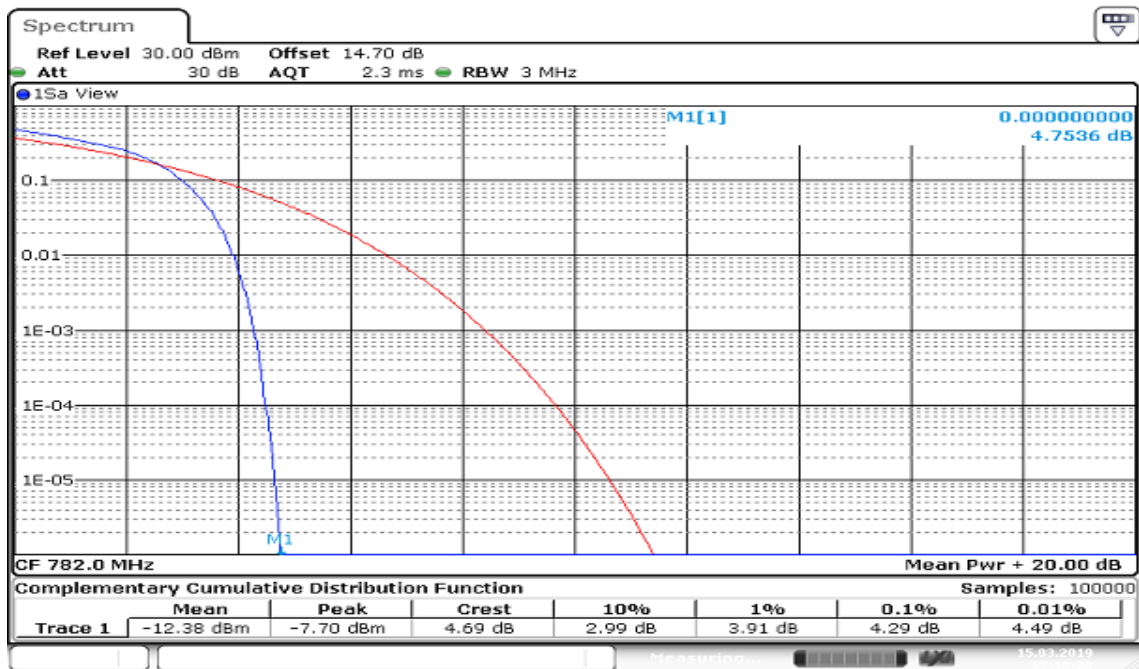
Date: 15.MAR.2019 15:11:20

CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB CH Mid



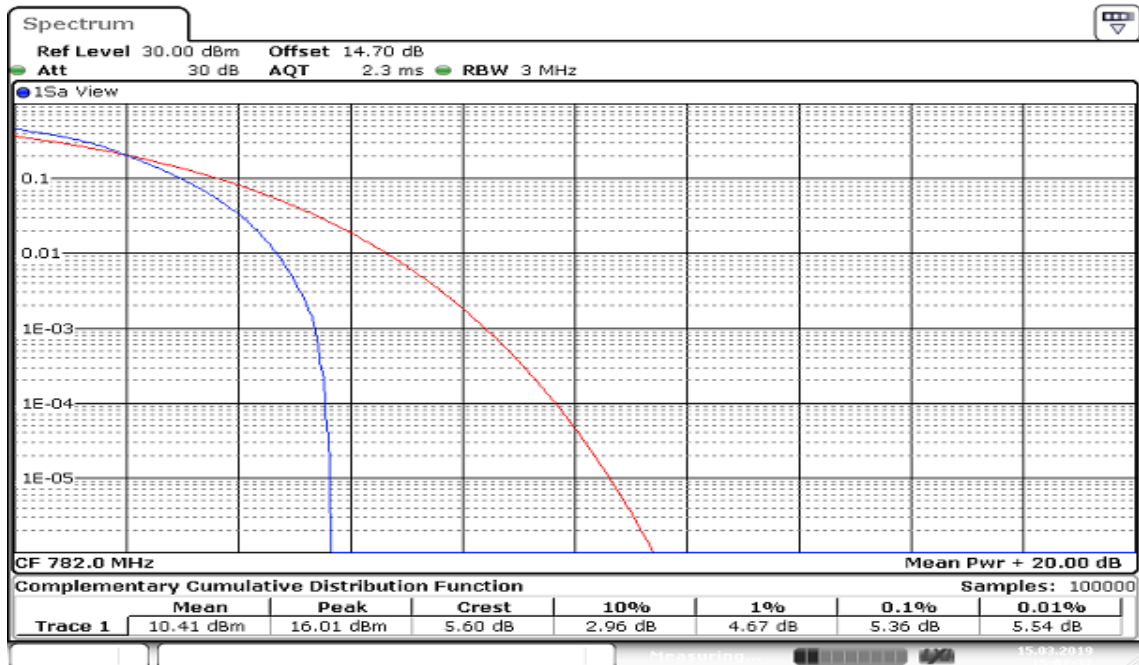
Date: 15.MAR.2019 15:07:00

CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB CH Mid



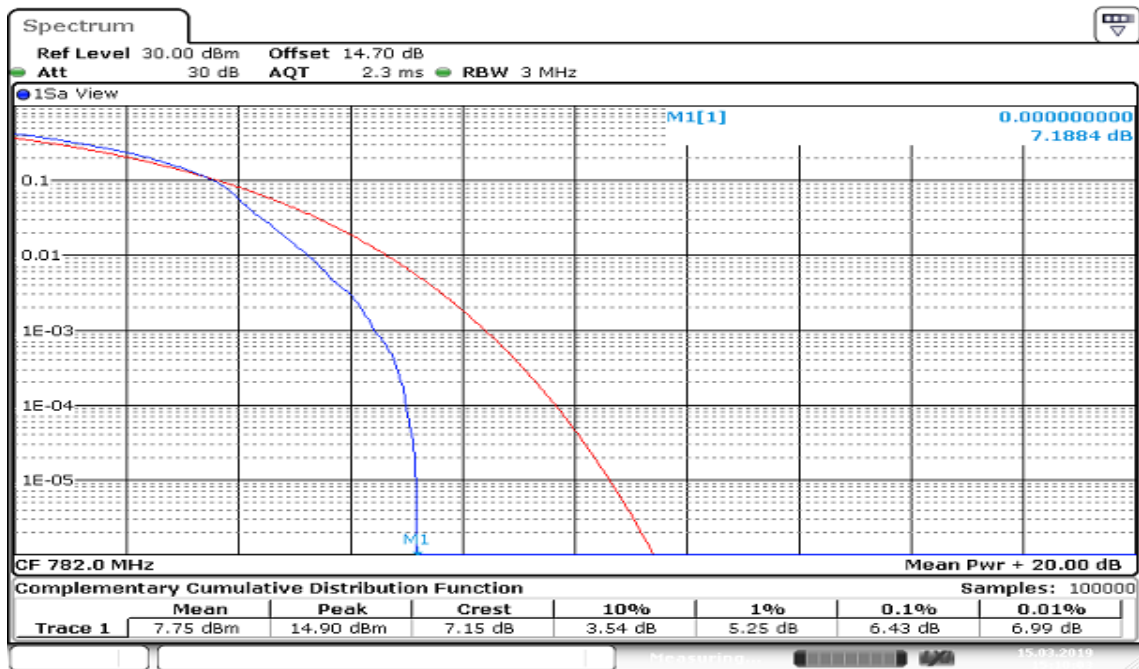
Date: 15.MAR.2019 15:10:28

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



Date: 15.MAR.2019 15:07:38

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

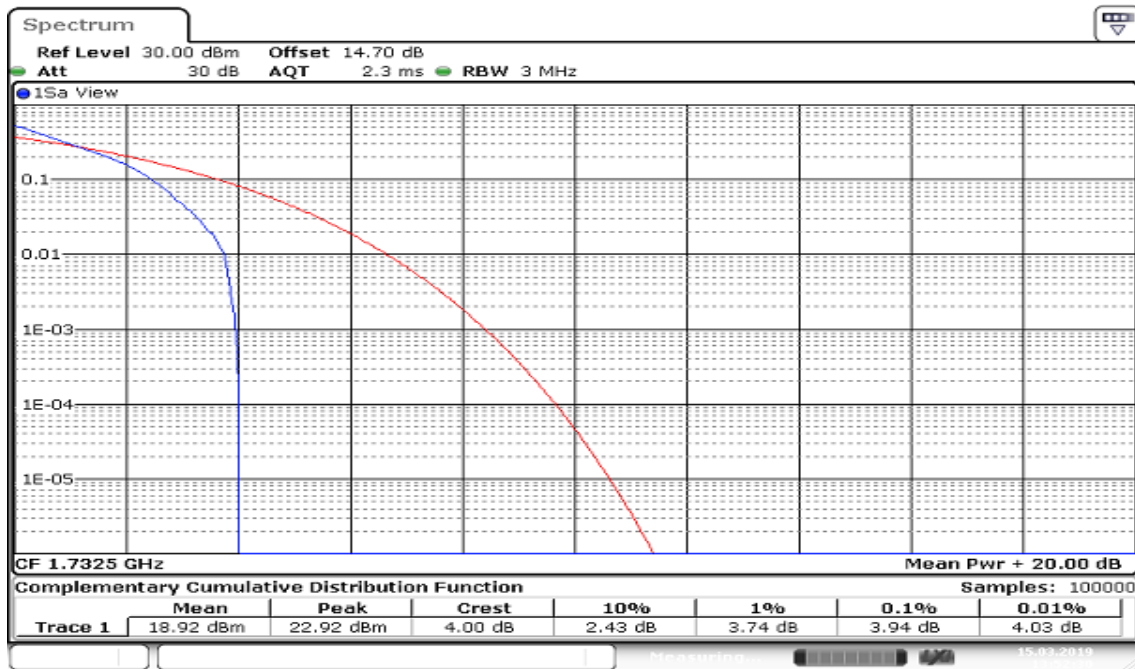


Date: 15.MAR.2019 15:10:03

LTE Band 4

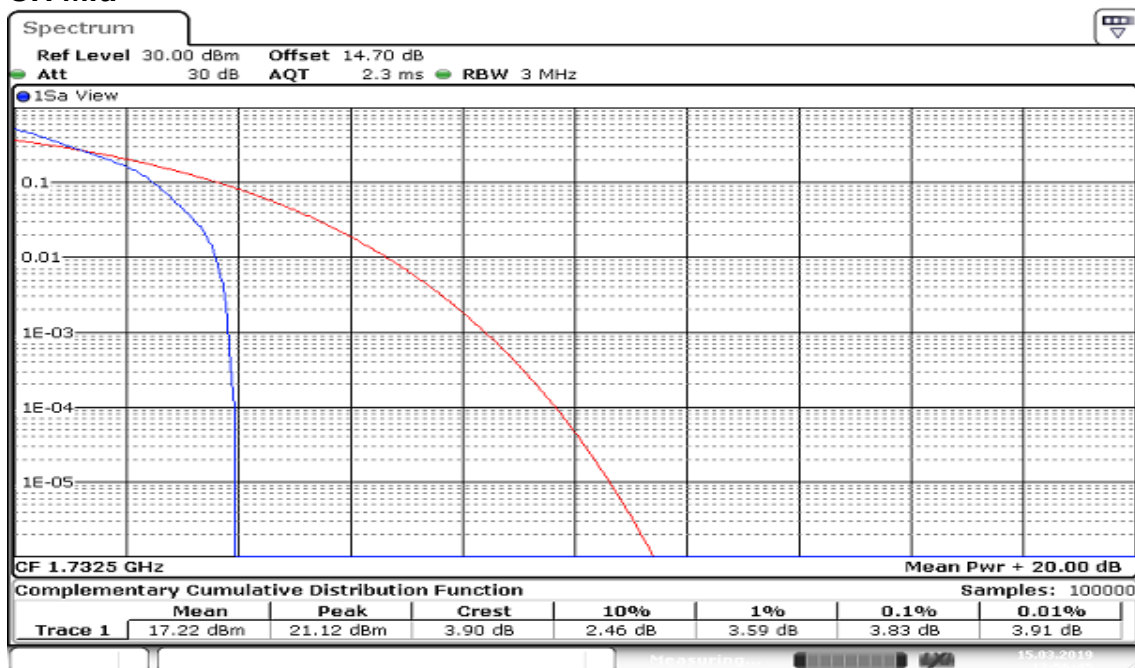
CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB

CH Mid

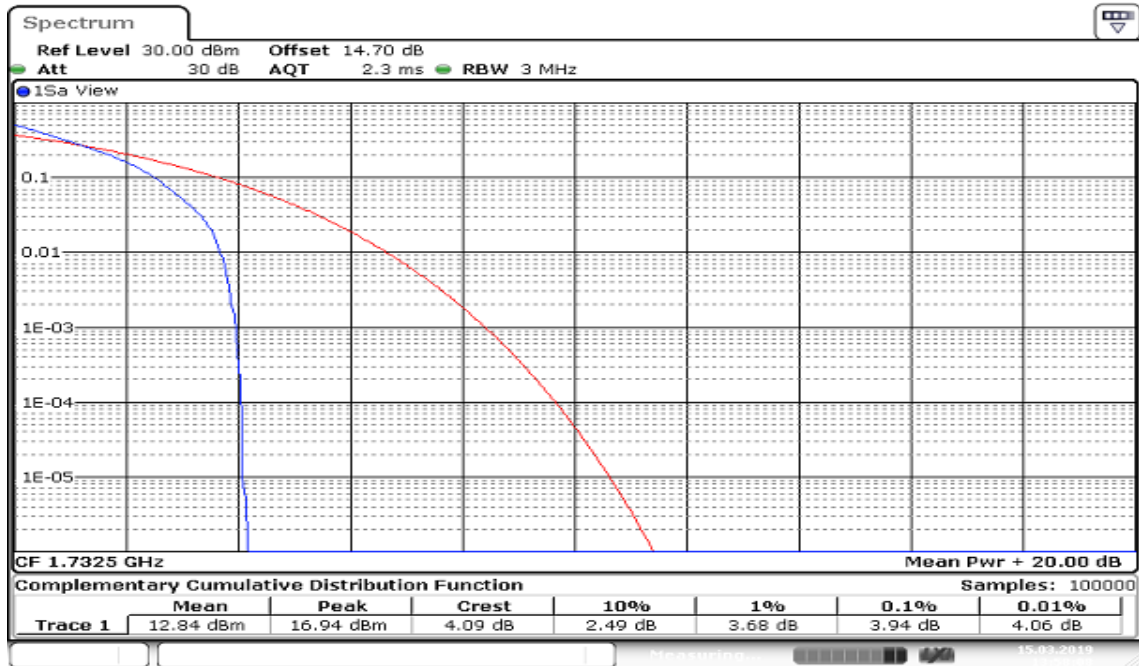


CHANNEL BANDWIDTH: 3MHz / QPSK / 1RB

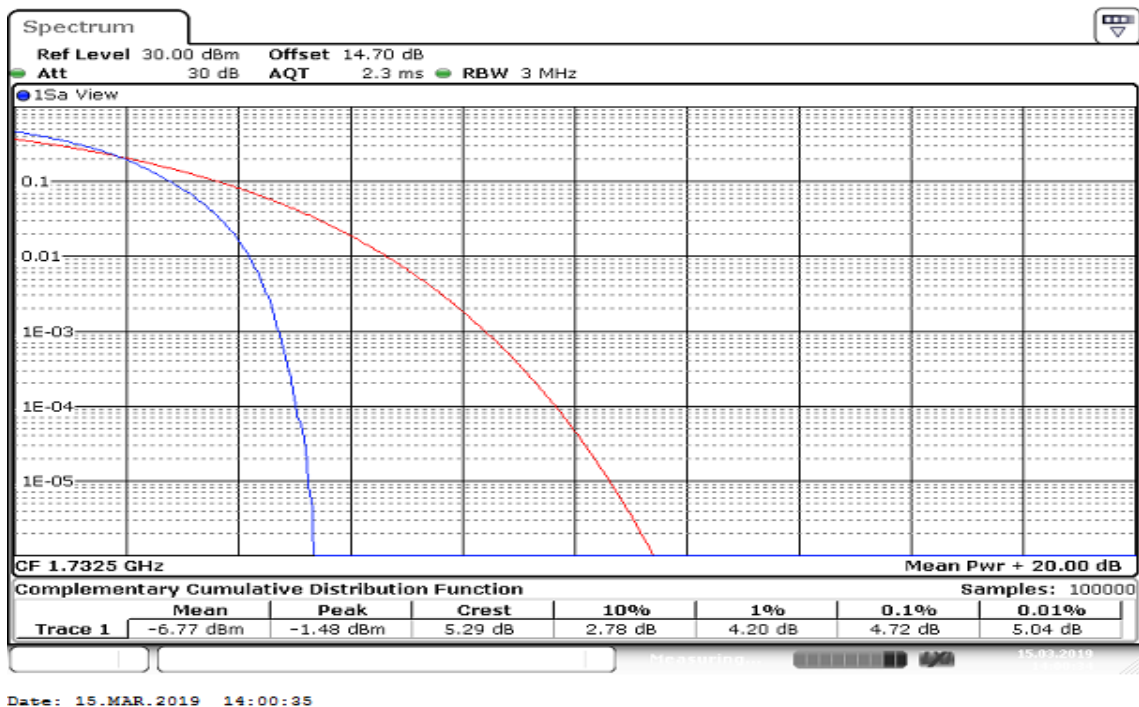
CH Mid



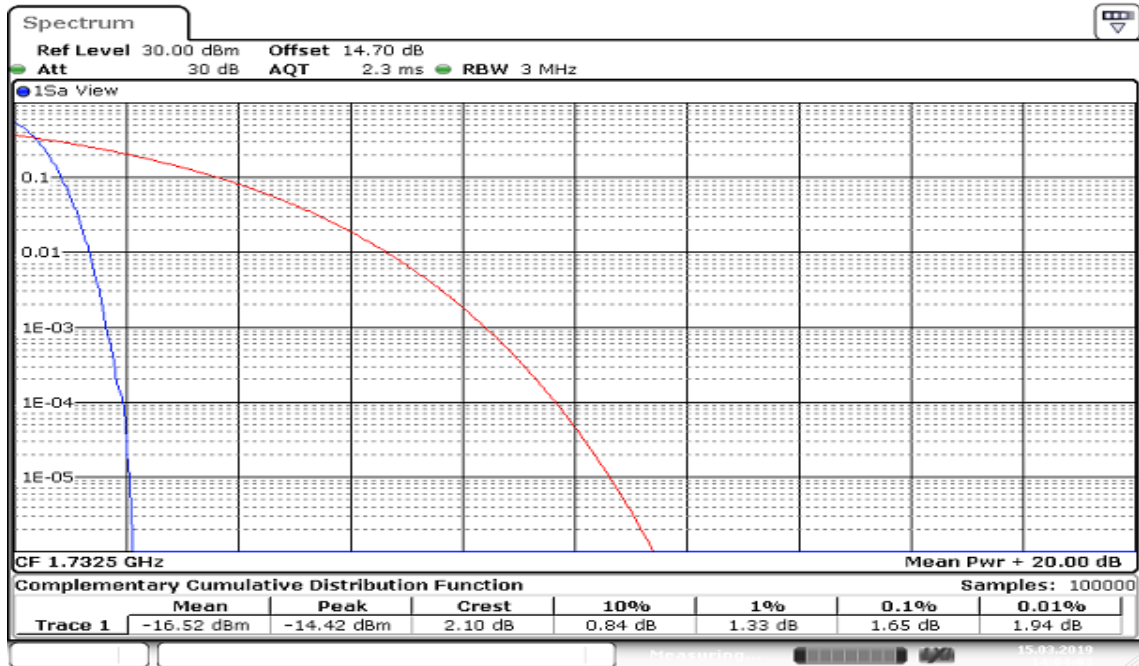
CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB CH Mid



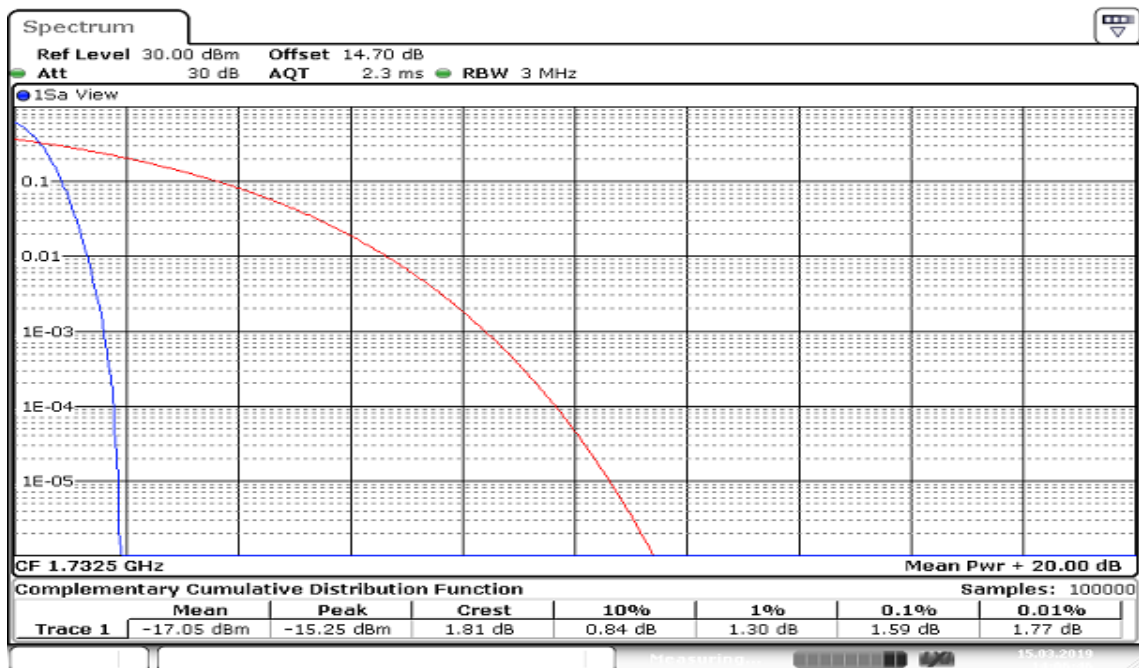
CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB CH Mid



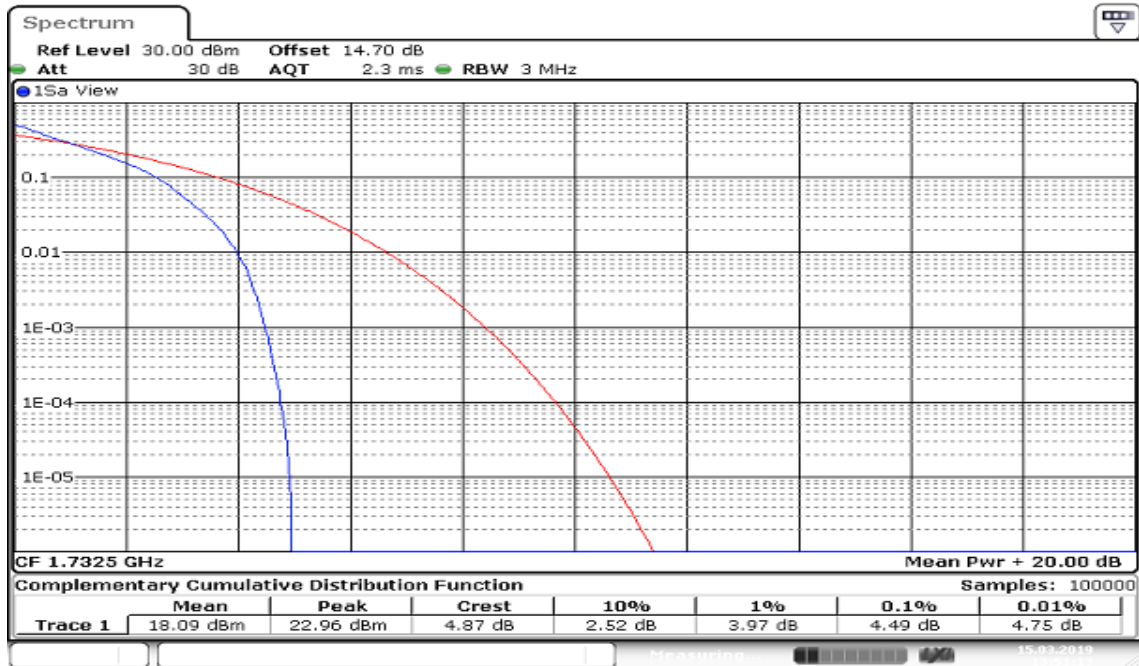
CHANNEL BANDWIDTH: 15MHz / QPSK / 1RB CH Mid



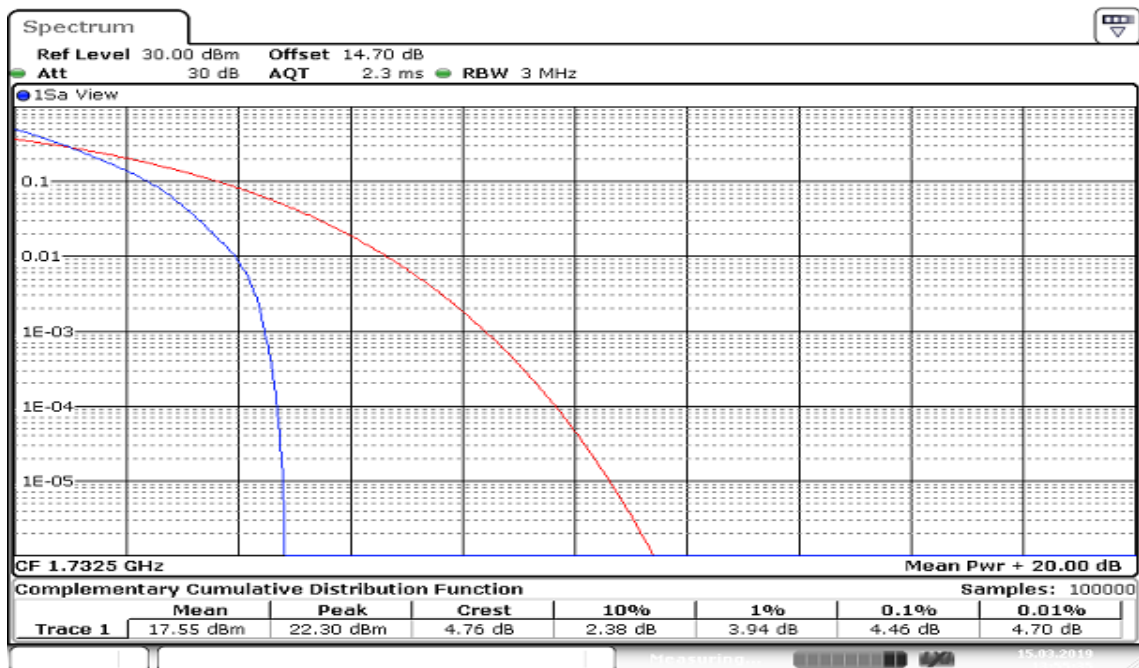
CHANNEL BANDWIDTH: 20MHz / QPSK / 1RB CH Mid



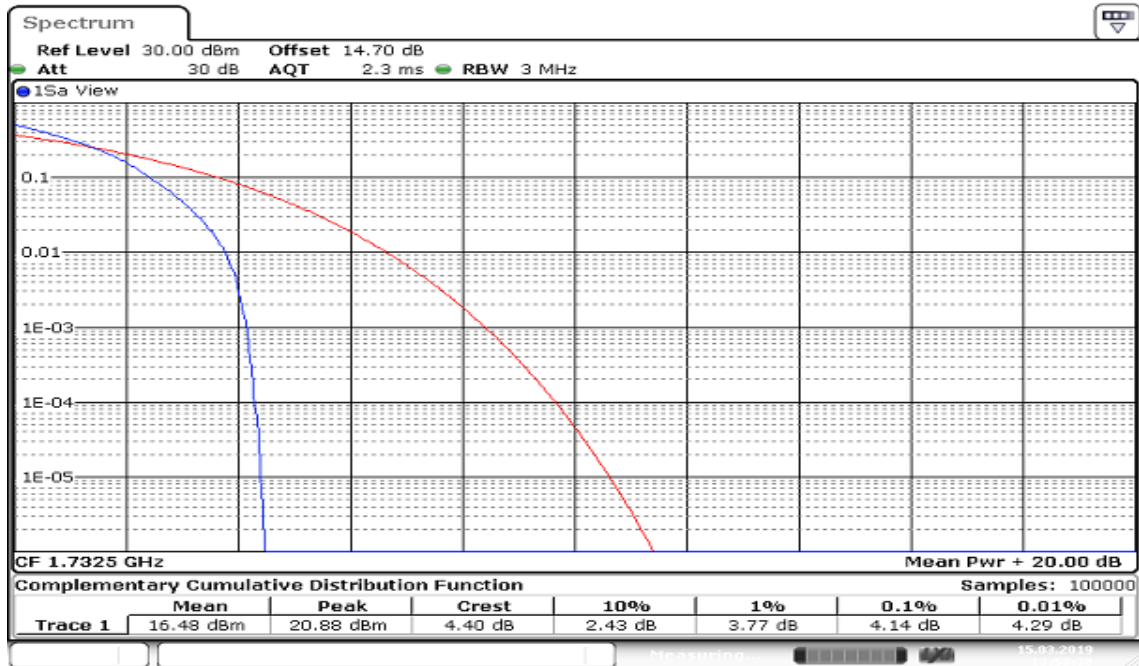
CHANNEL BANDWIDTH: 1.4MHz / QPSK / 100%RB CH Mid



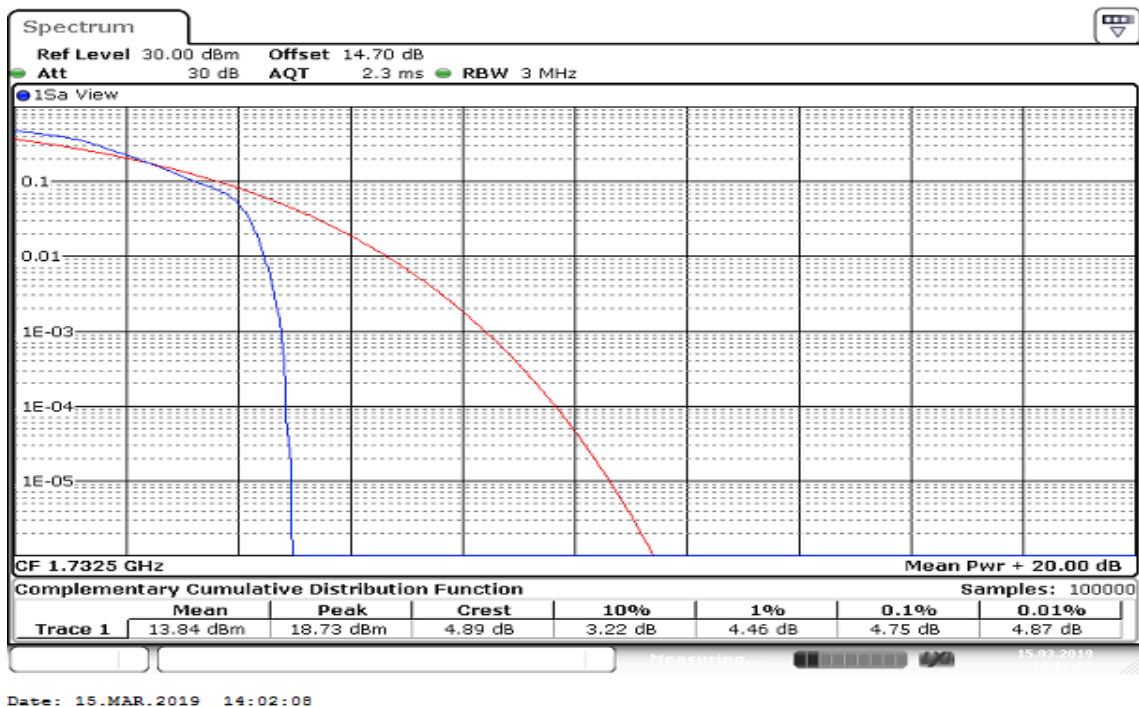
CHANNEL BANDWIDTH: 3MHz / QPSK / 100%RB CH Mid



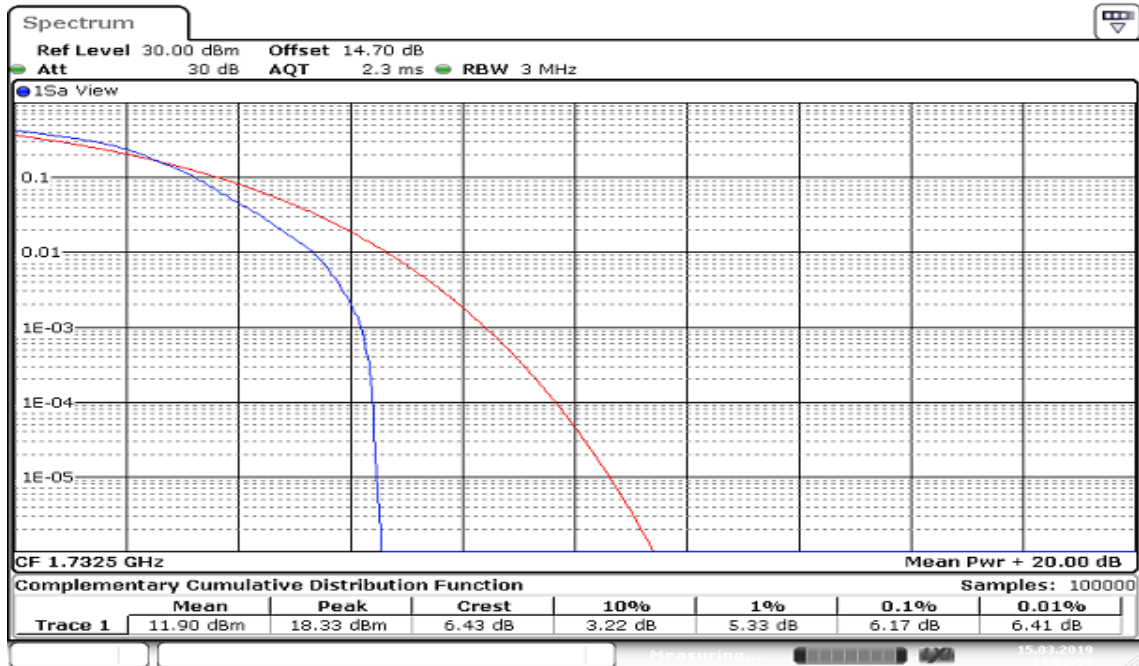
CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB CH Mid



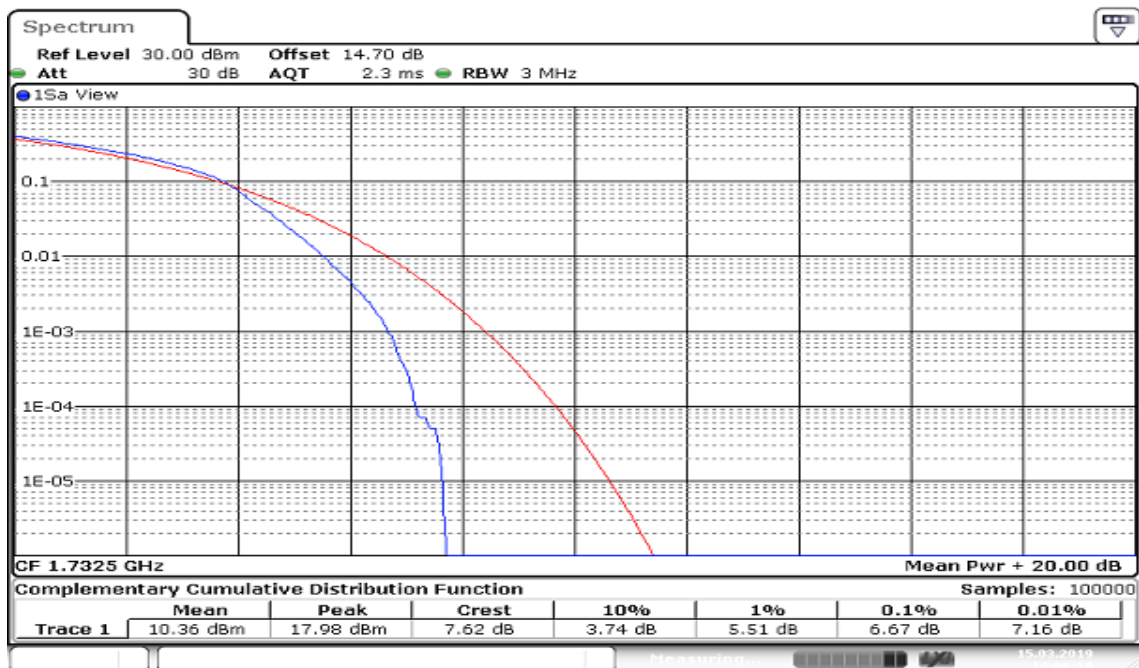
CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB CH Mid



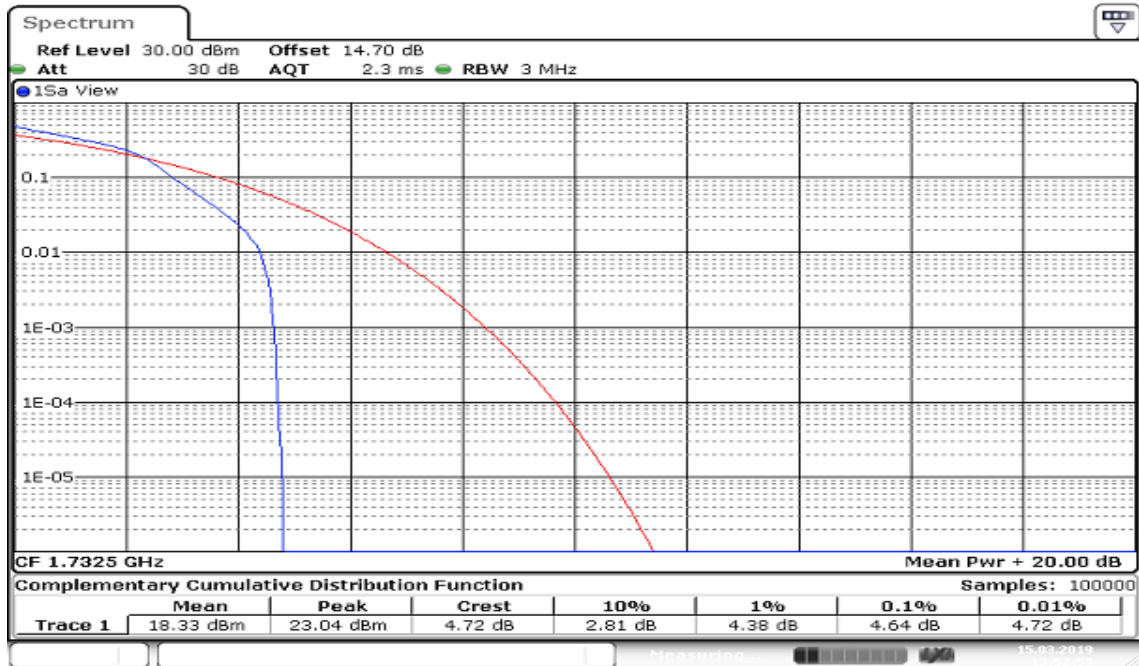
CHANNEL BANDWIDTH: 15MHz / QPSK / 100%RB CH Mid



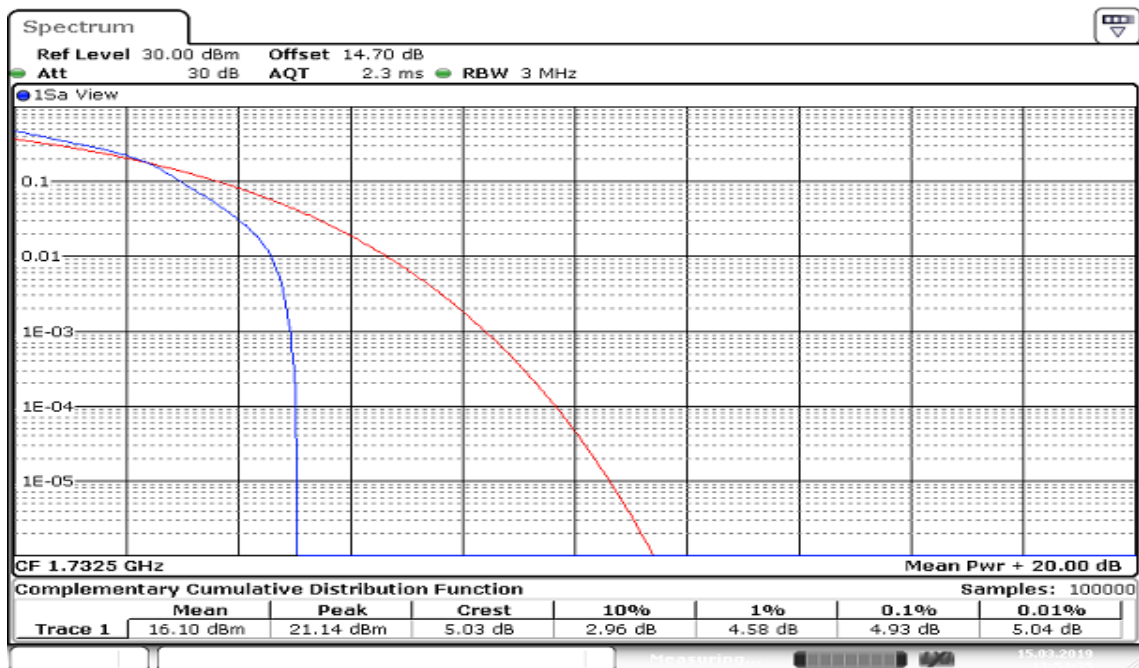
CHANNEL BANDWIDTH: 20MHz / QPSK / 100%RB CH Mid



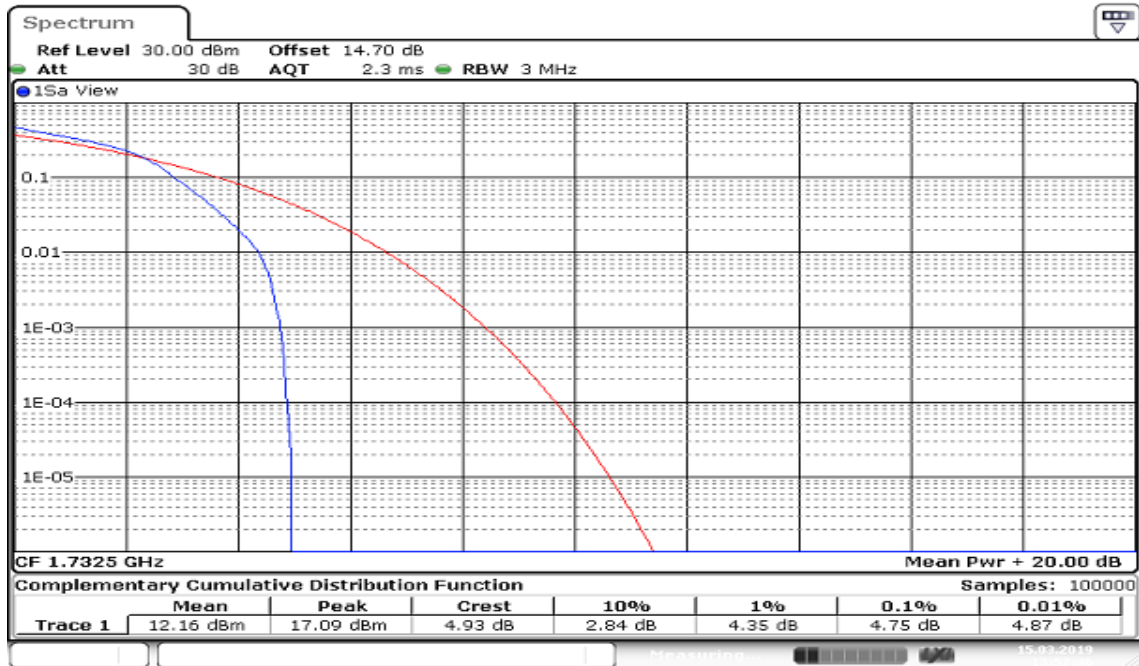
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 1RB CH Mid



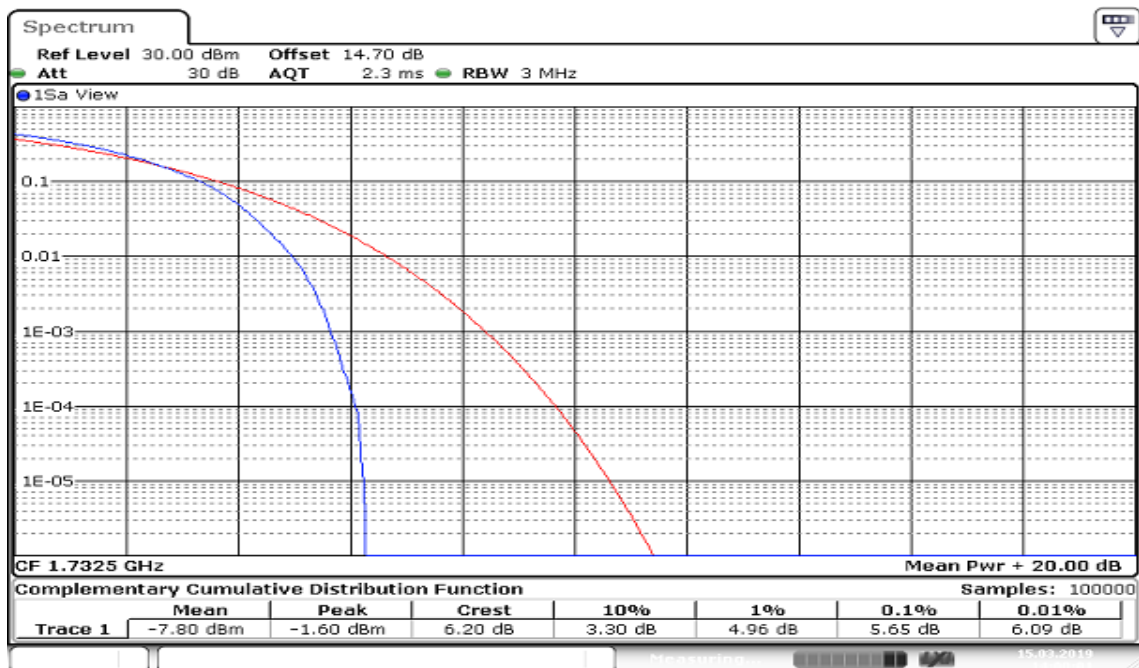
CHANNEL BANDWIDTH: 3MHz / 16QAM / 1RB CH Mid



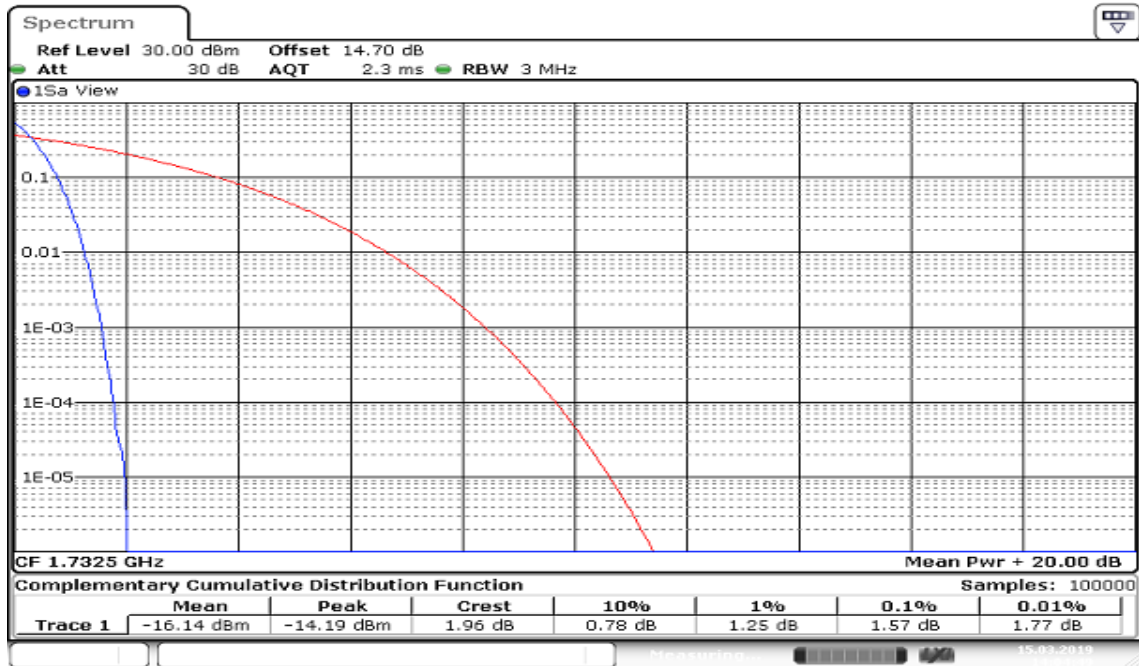
CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB CH Mid



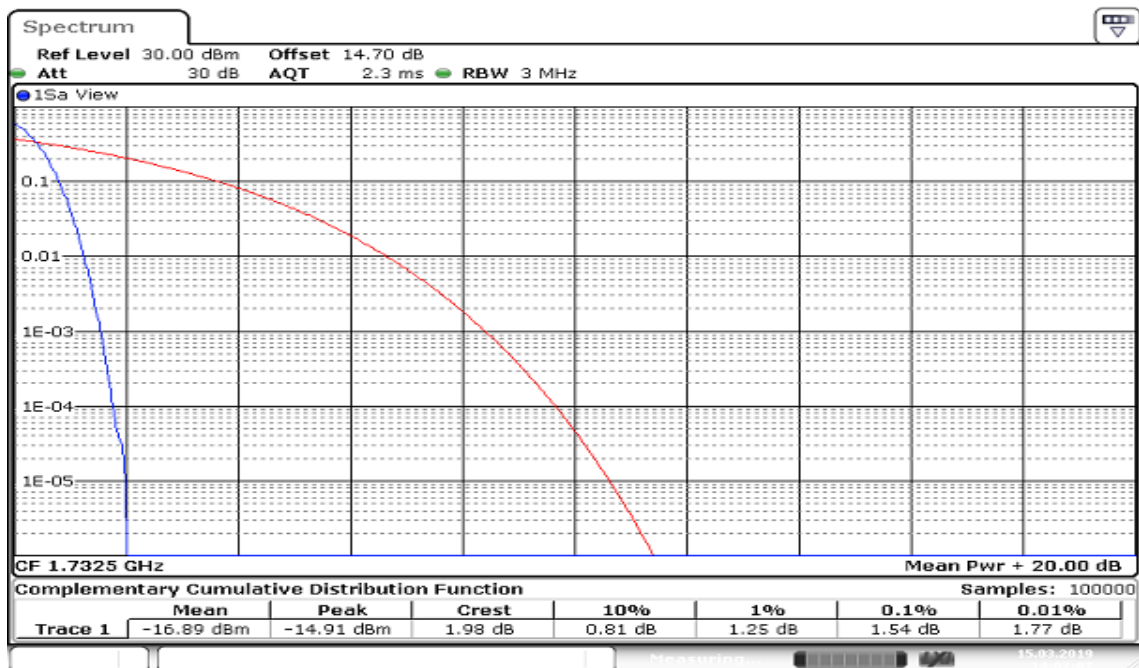
CHANNEL BANDWIDTH: 10MHz / 16QAM / 1RB CH Mid



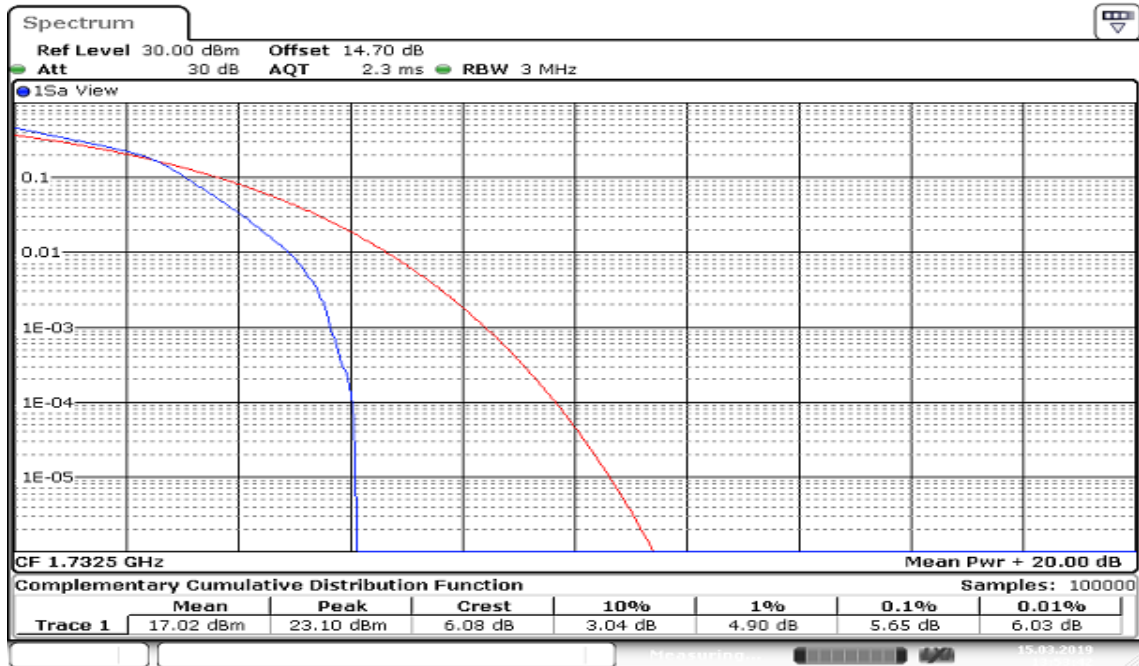
CHANNEL BANDWIDTH: 15MHz / 16QAM / 1RB CH Mid



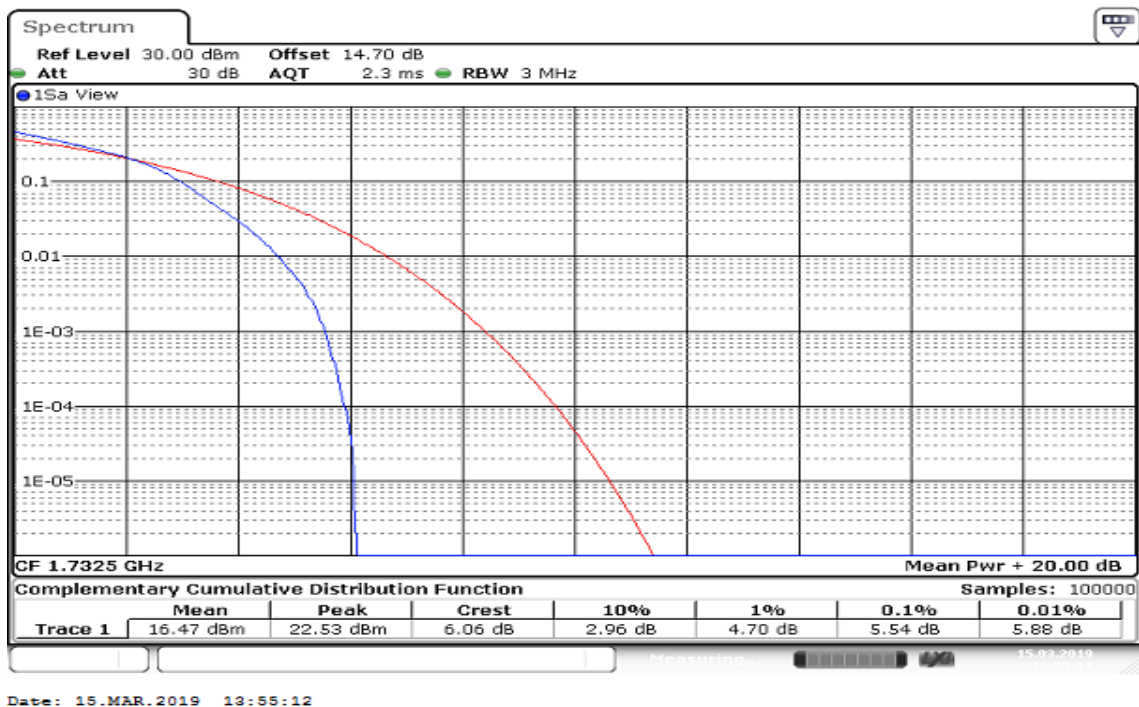
CHANNEL BANDWIDTH: 20MHz / 16QAM / 1RB CH Mid



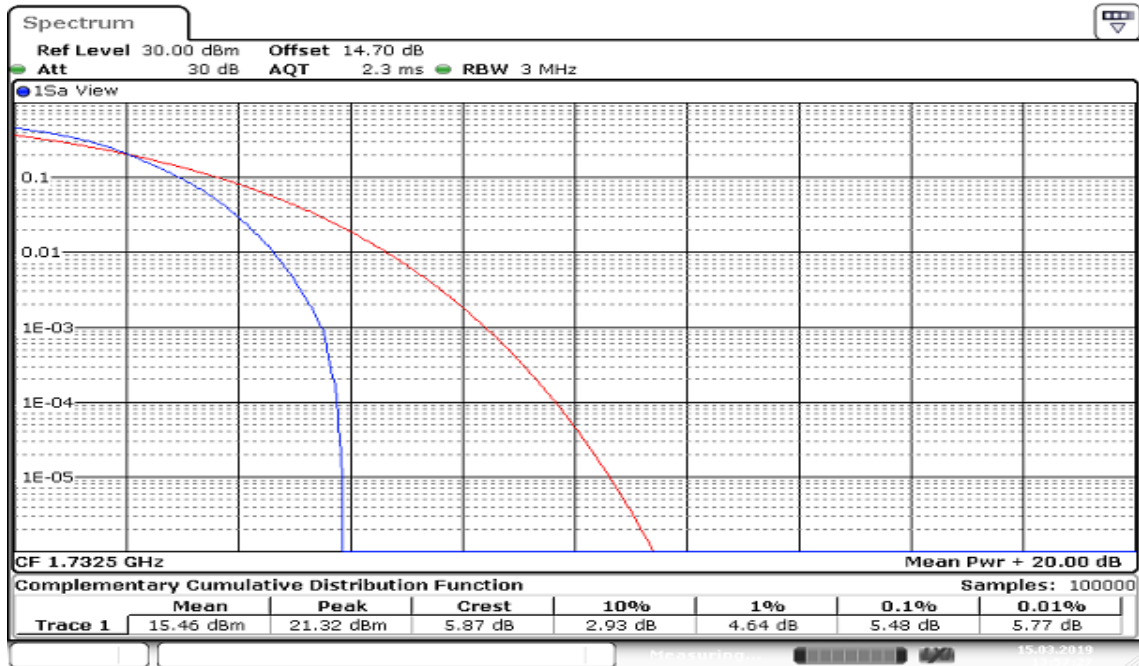
CHANNEL BANDWIDTH: 1.4MHz / 16QAM / 100%RB CH Mid



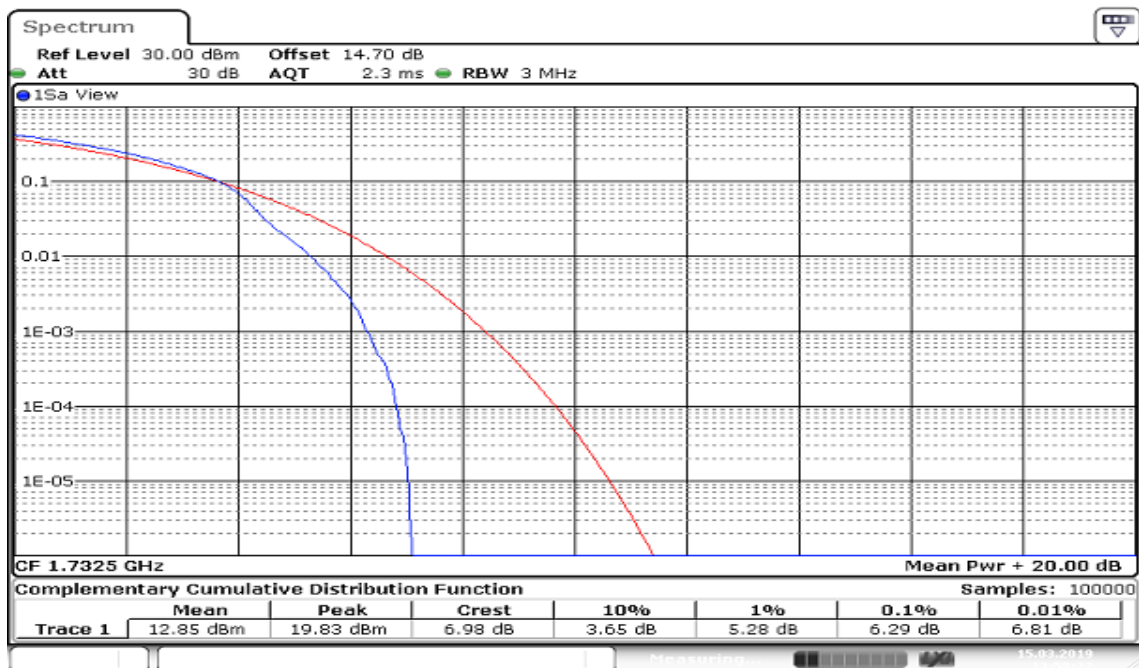
CHANNEL BANDWIDTH: 3MHz / 16QAM / 100%RB CH Mid



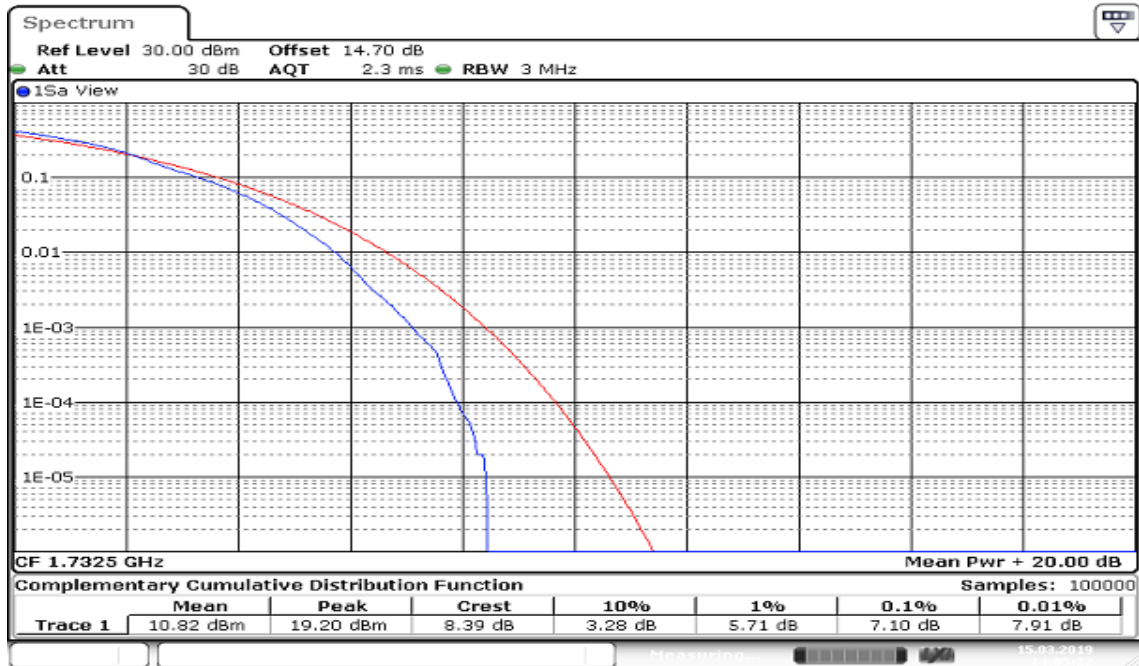
CHANNEL BANDWIDTH: 5MHz / 16QAM / 100%RB CH Mid



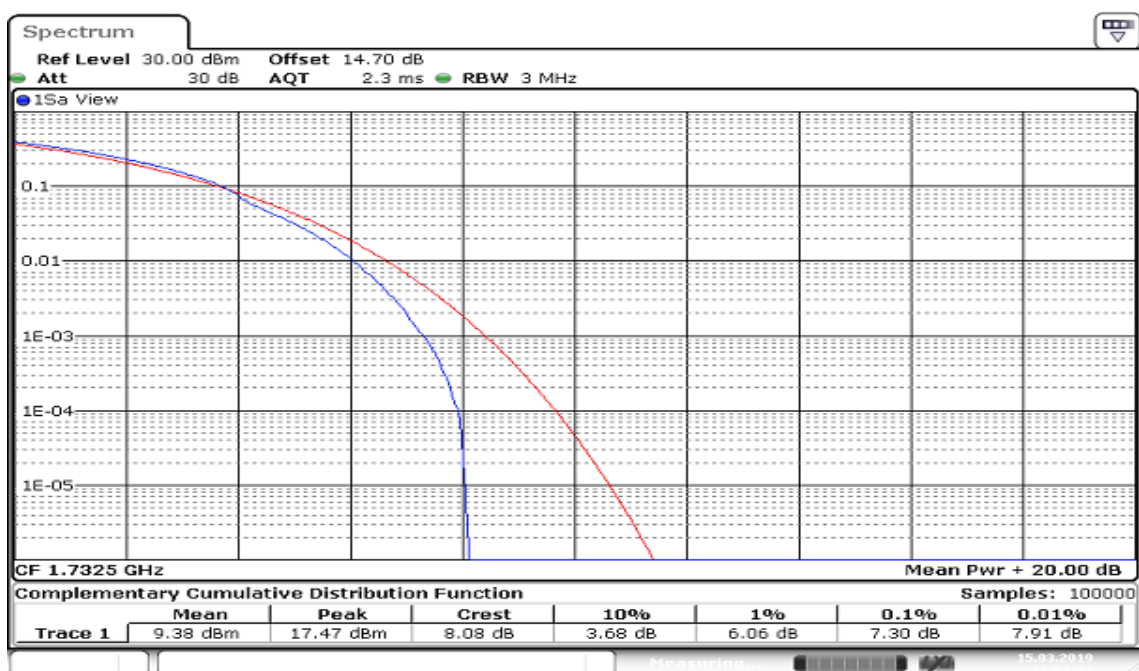
CHANNEL BANDWIDTH: 10MHz / 16QAM / 100%RB CH Mid



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



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



8.6 BAND EDGE MEASUREMENT

LIMIT

For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

The limit of emission equal to -13dBm . In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

TEST PROCEDURE

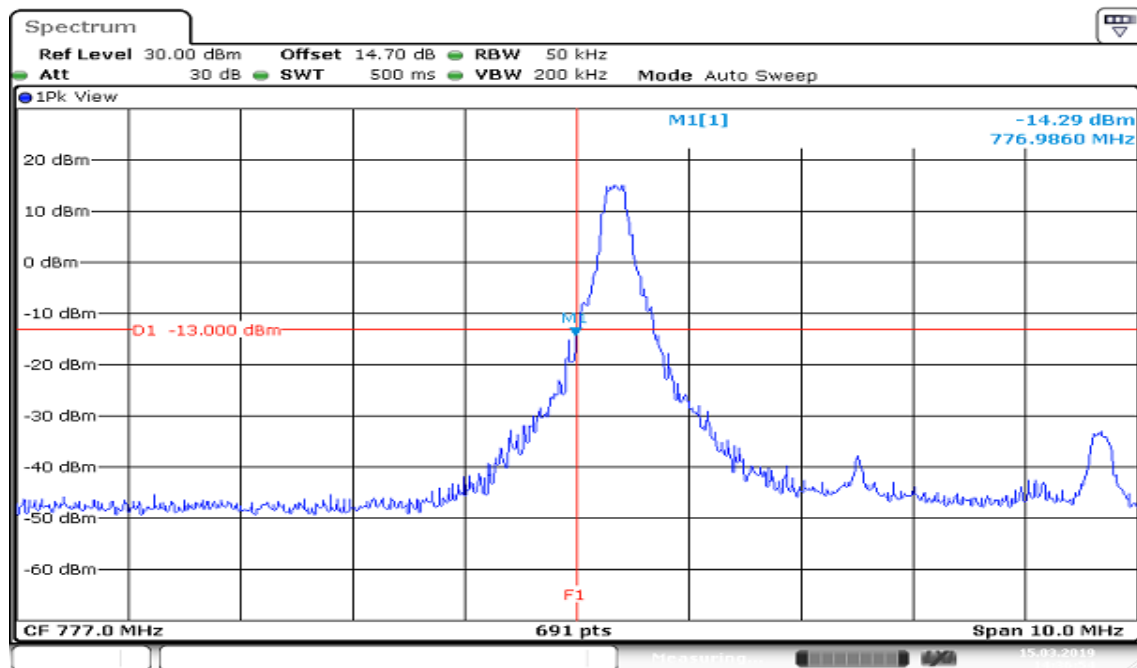
1. The EUT was set up for the maximum peak power with LTE link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 2 channels (low and high operational frequency range.).
2. The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer. This splitter loss and cable loss are the worst loss 7.2 dB in the transmitted path track.
3. The center frequency of spectrum is the band edge frequency and span is 1 MHz. RB of the spectrum is 50kHz and VB of the spectrum is 200kHz.
4. Record the max trace plot into the test report.

TEST RESULTS:

LTE Band 13

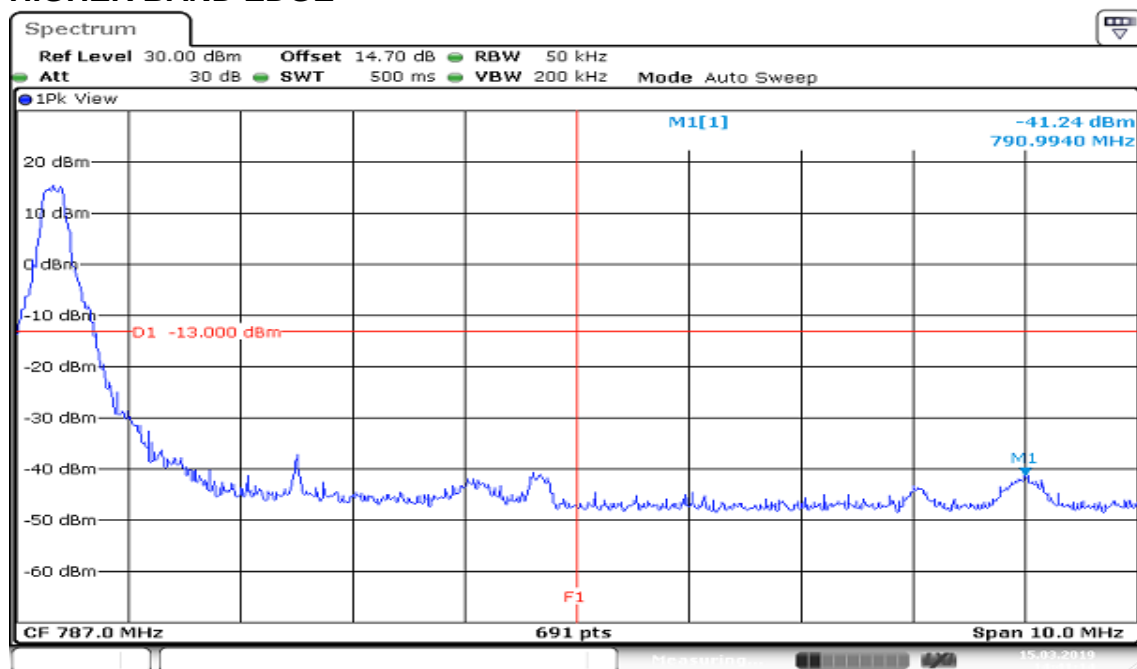
CHANNEL BANDWIDTH: 5MHz / QPSK / 1RB ALLOCATED

LOWER BAND EDGE



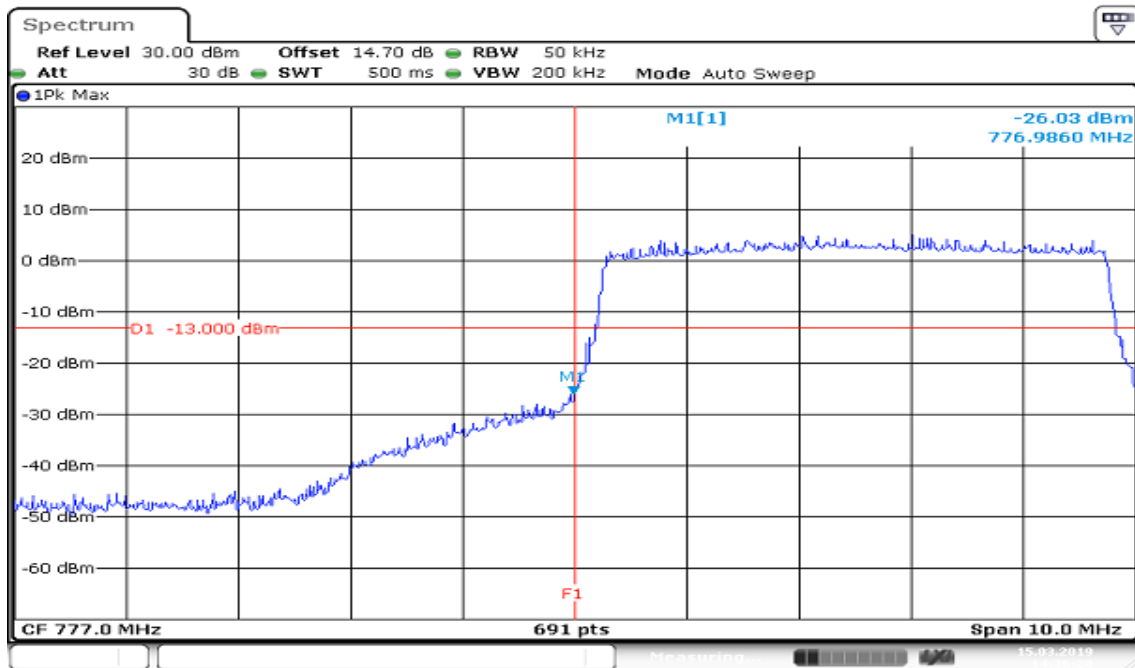
Date: 15.MAR.2019 14:36:55

HIGHER BAND EDGE

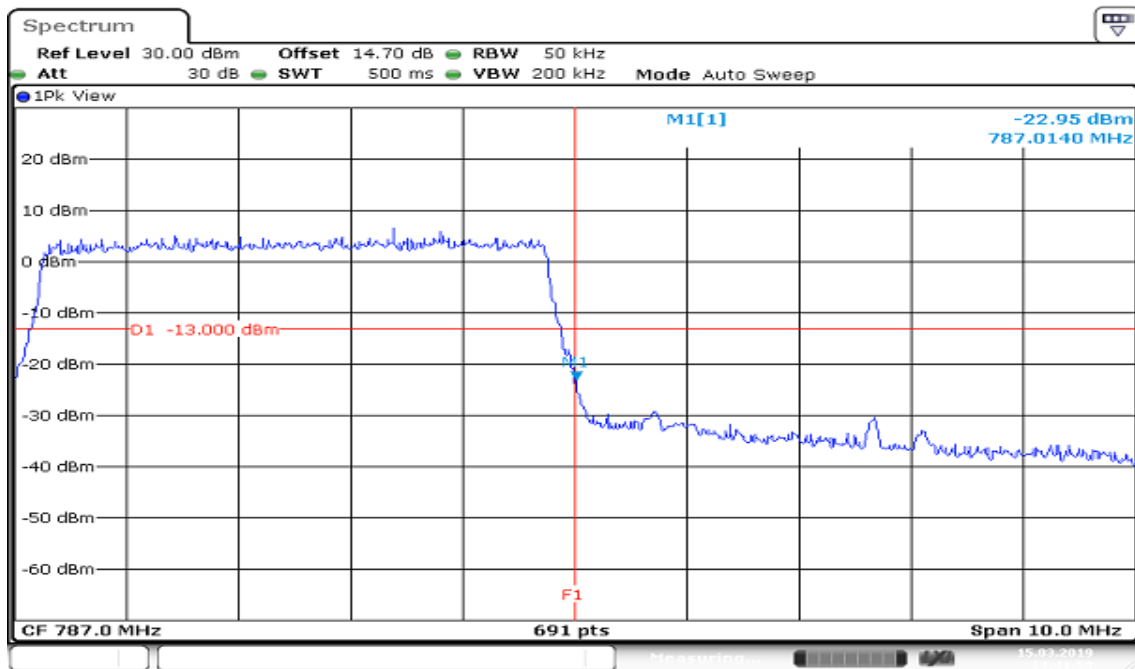


Date: 15.MAR.2019 14:41:15

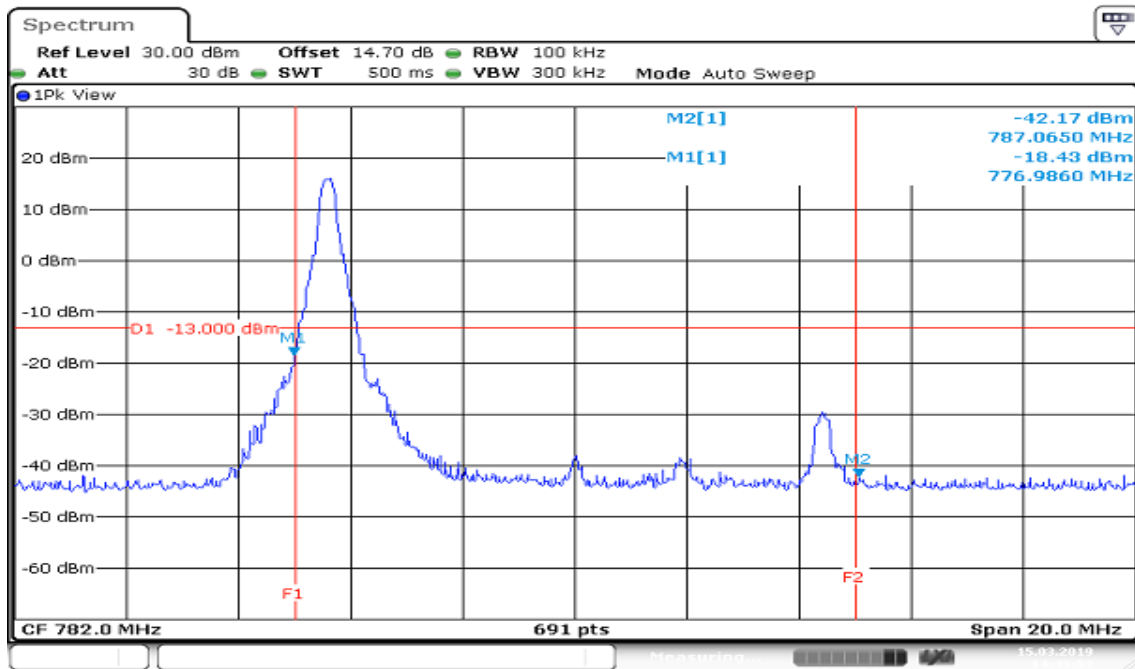
CHANNEL BANDWIDTH: 5MHz / QPSK / 100%RB ALLOCATED LOWER BAND EDGE



HIGHER BAND EDGE

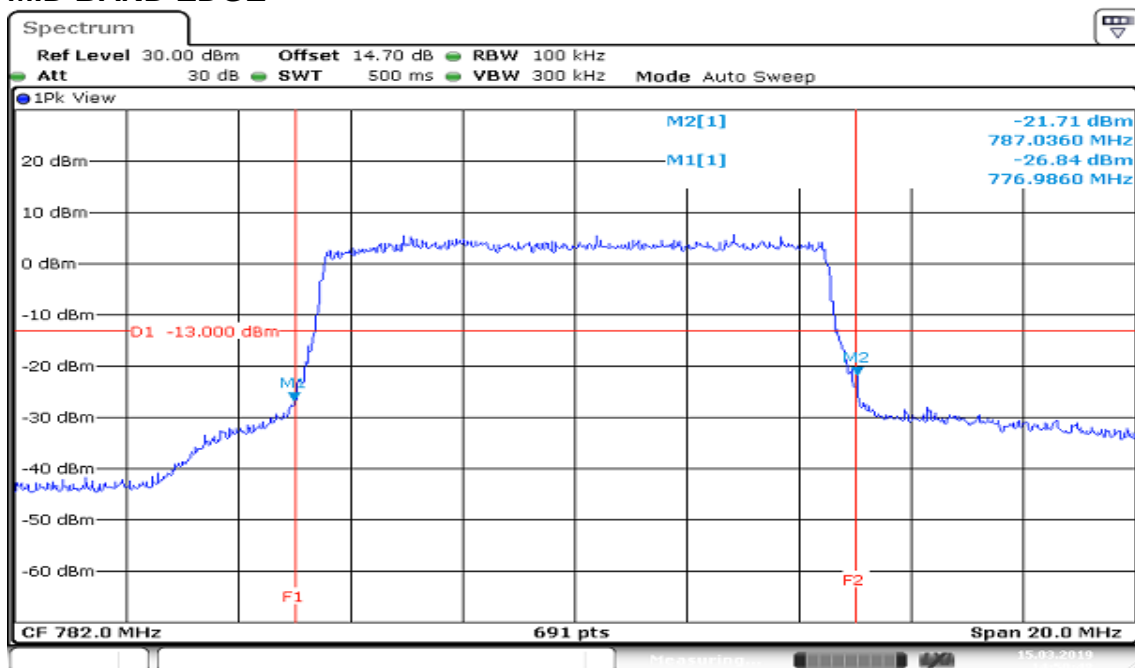


CHANNEL BANDWIDTH: 10MHz / QPSK / 1RB ALLOCATED MID BAND EDGE



Date: 15.MAR.2019 14:49:53

CHANNEL BANDWIDTH: 10MHz / QPSK / 100%RB ALLOCATED MID BAND EDGE

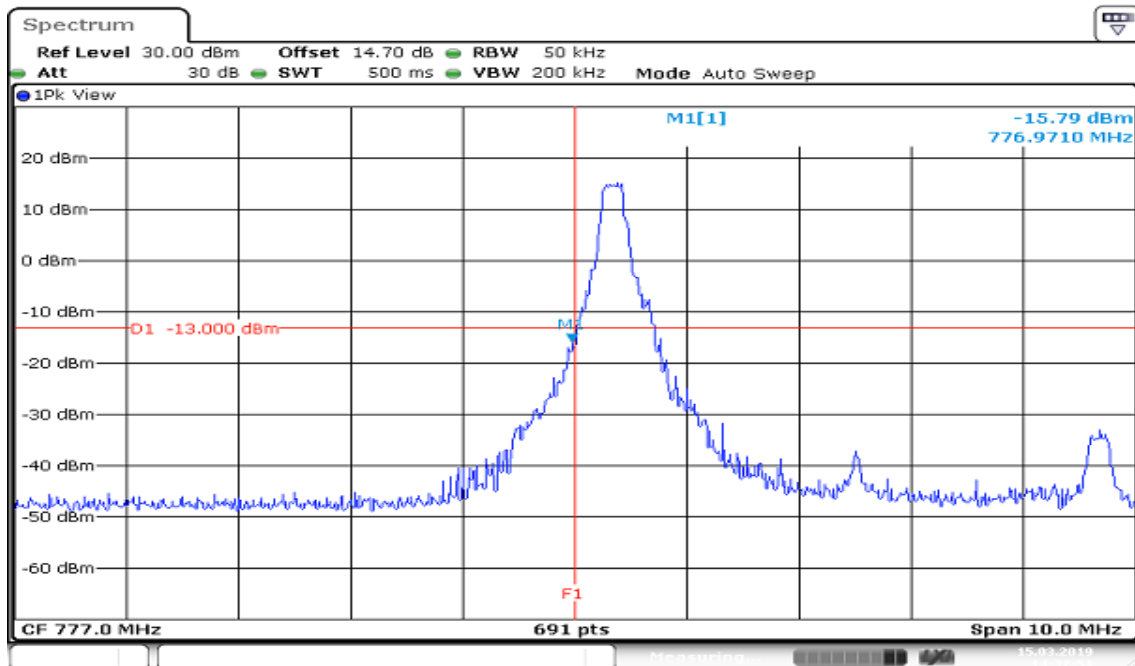


Date: 15.MAR.2019 14:50:49

LTE Band 13

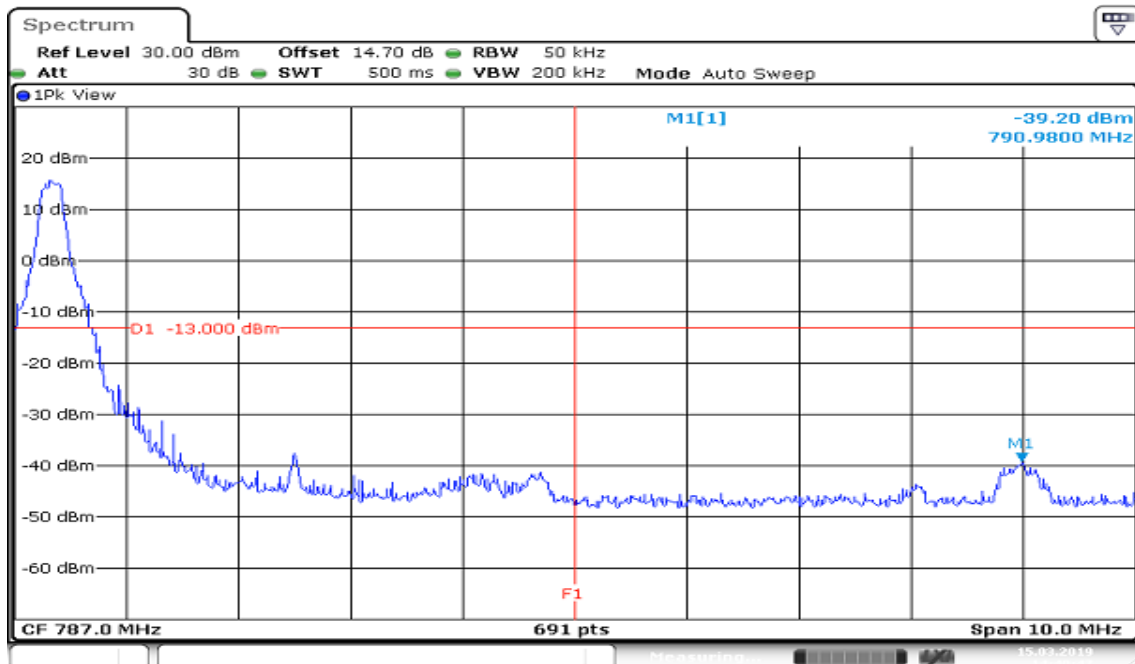
CHANNEL BANDWIDTH: 5MHz / 16QAM / 1RB ALLOCATED

LOWER BAND EDGE



Date: 15.MAR.2019 14:37:52

HIGHER BAND EDGE

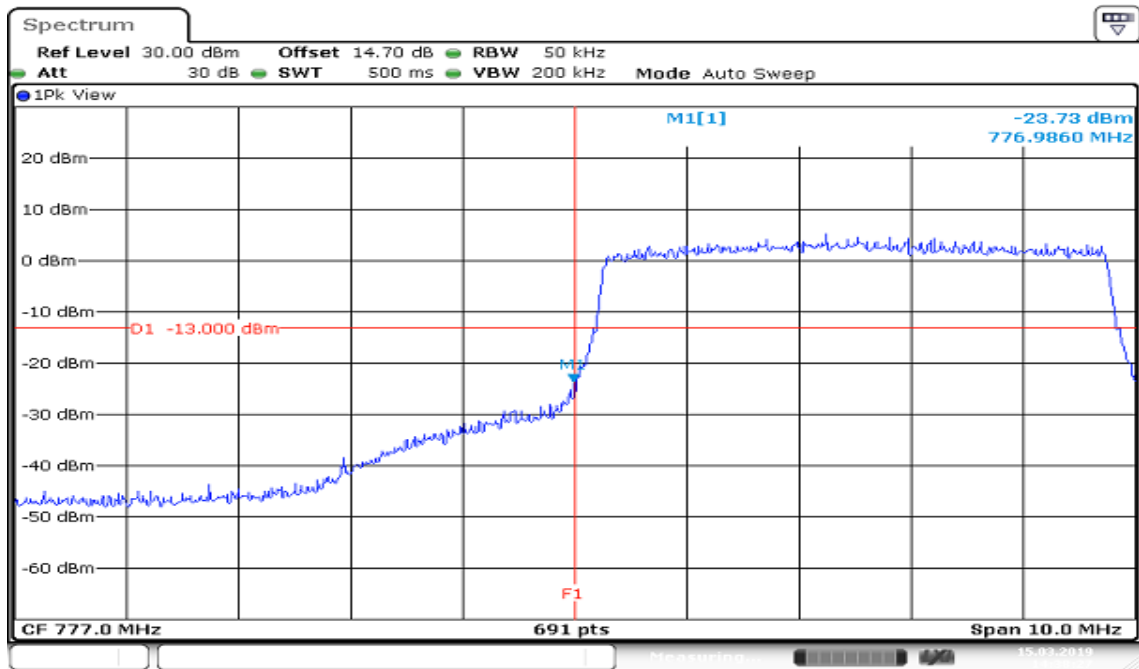


Date: 15.MAR.2019 14:40:47

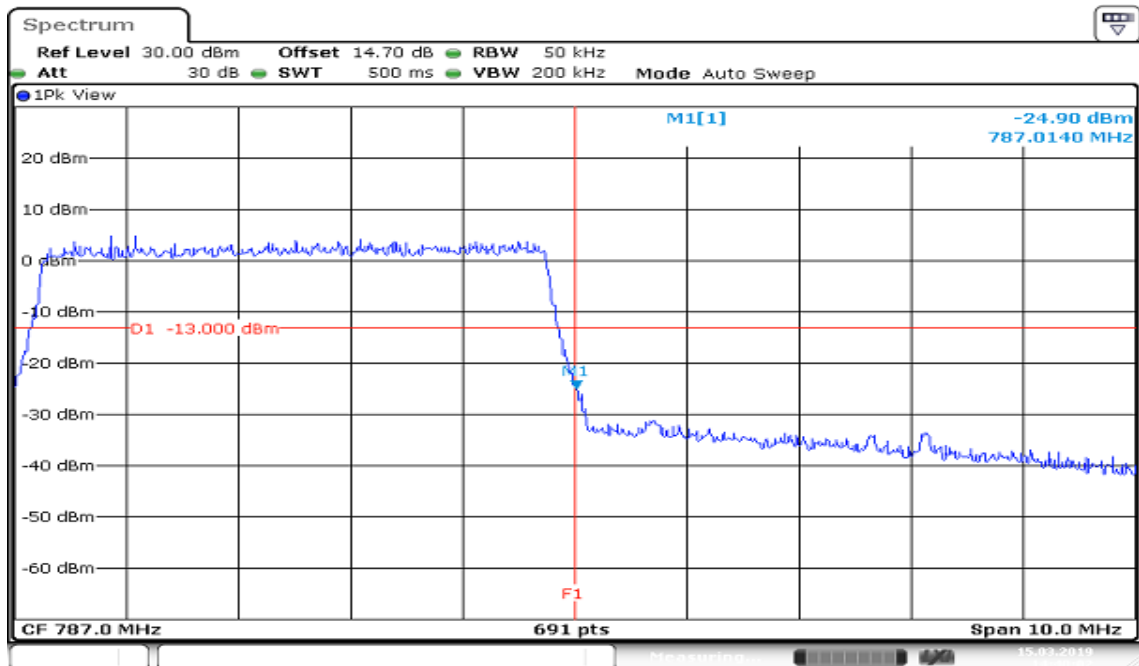
LTE Band 13

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

LOWER BAND EDGE



HIGHER BAND EDGE



Report No.: T181222W03-RP

Spectrum

Ref Level 30.00 dBm Offset 14.70 dB RBW 100 kHz
Att 30 dB SWT 500 ms VBW 300 kHz Mode Auto Sweep

1Pk View

20 dBm
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm

M2[1]
M1[1]

O1 -13.000 dBm

F1 F2

CF 782.0 MHz 691 pts Span 20.0 MHz

-41.87 dBm
787.0070 MHz
-18.06 dBm
776.9860 MHz

Date: 15.MAR.2019 14:49:04

Spectrum

Ref Level 30.00 dBm Offset 14.70 dB RBW 100 kHz
 Att 30 dB SWT 500 ms VBW 300 kHz Mode Auto Sweep

1Pk View

20 dBm
 10 dBm
 0 dBm
 -10 dBm
 -20 dBm
 -30 dBm
 -40 dBm
 -50 dBm
 -60 dBm

M2[1] -26.05 dBm
 787.0070 MHz
 M1[1] -28.14 dBm
 776.9860 MHz

O1 -13.000 dBm

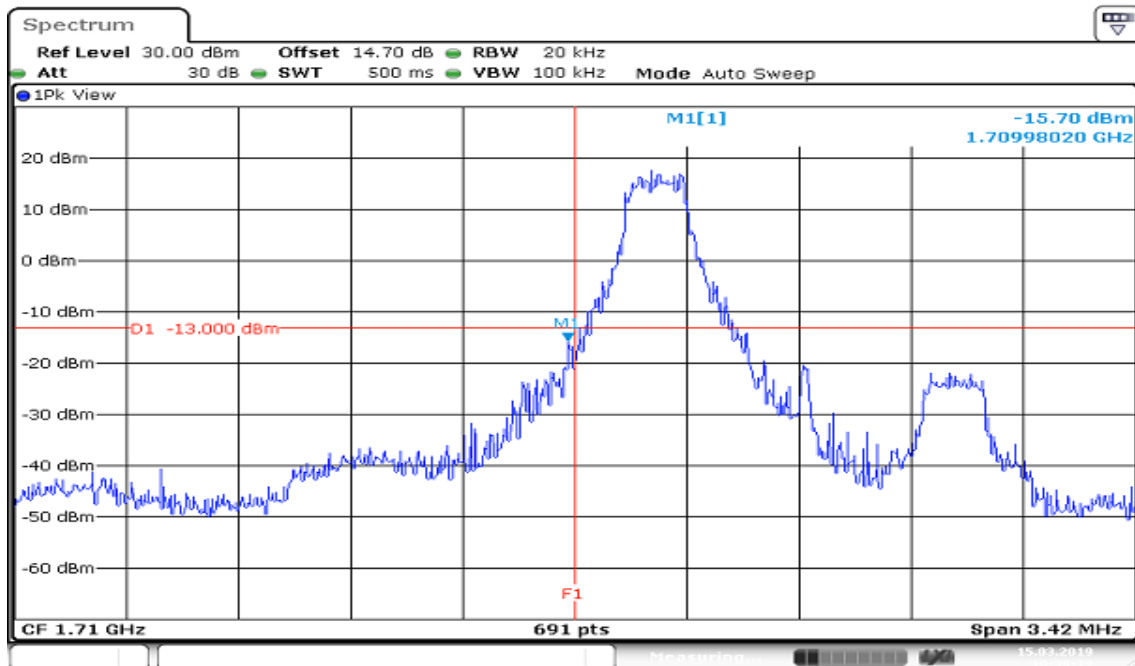
F1 F2

CF 782.0 MHz 691 pts Span 20.0 MHz

15.03.2019

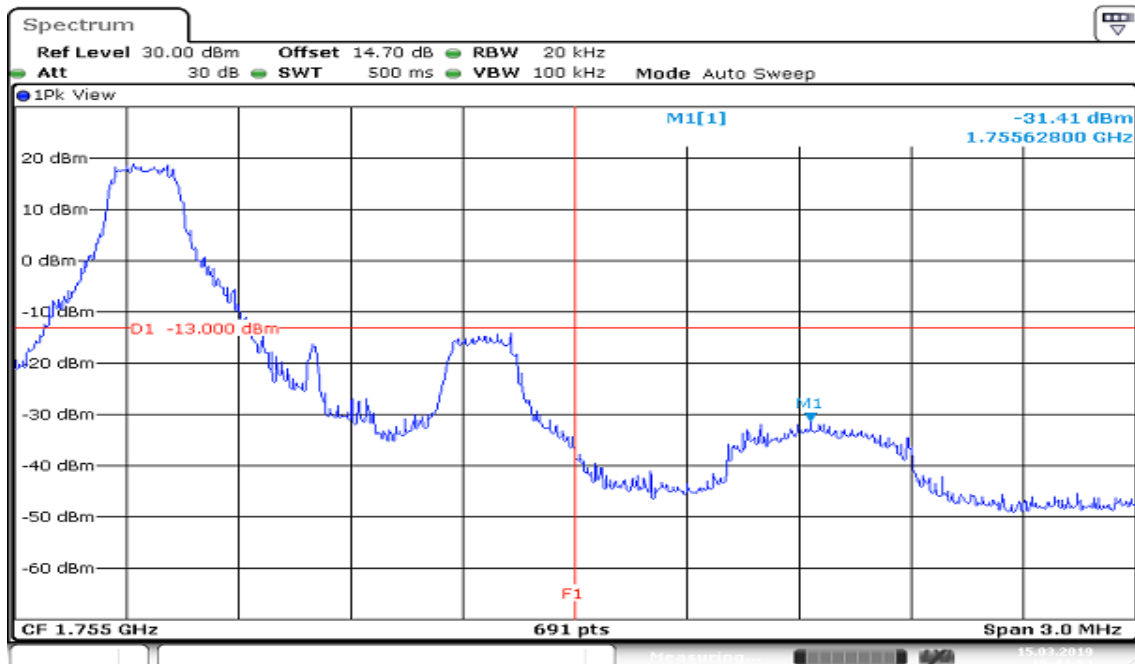
Date: 15.MAR.2019 14:47:56

LTE Band 4 CHANNEL BANDWIDTH: 1.4MHz / QPSK / 1RB ALLOCATED LOWER BAND EDGE



Date: 15.MAR.2019 10:38:13

HIGHER BAND EDGE



Date: 15.MAR.2019 10:44:03