



FCC PART 90
FCC PART 22H
TEST REPORT

For

IFLYTEK CO.,LTD.

National Intelligent Speech High-tech Industrialization Base, No. 666, Wangjiang Road West,
Hefei City, Anhui Province, China

FCC ID: 2AMI5-EASYTRANS-900

Report Type: Original Report	Product Type: TD-LTE Wireless Data Terminal
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Reviewed By:	Simon Wang RF Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	TD-LTE Wireless Data Terminal
Model	easytrans 900
Frequency Range	LTE B26: 814-849MHz
Transmit Power	90(S) (814-824MHz):23.12dBm;22H(824-849MHz): 23.08dBm
Modulation Technique	QPSK,16QAM,64QAM
Antenna Specification	4G:FPC Antennas
Voltage Range	N/A
Date of Test	2019-05-28 to 2019-05-29
Sample serial number	190521001
Received date	2019-05-21
Sample/EUT Status	Good condition
Antenna gain	1.9dBi

Objective

This test report is prepared on behalf of *IFLYTEK CO.,LTD.* in accordance with Part 2-Subpart J, Part 22-Subpart H and Part 90 of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

N/A

Test Methodology

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

Part 22 Subpart H - Public Mobile Services
Part 90- PRIVATE LAND MOBILE RADIO SERVICES

Applicable Standards: TIA/EIA 603-D, ANSI C63.4-2014.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF output power, conducted		±0.73dB
Unwanted Emission, conducted		±1.6dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1°C
Humidity		±6%
Supply voltages		±0.4%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

The final qualification test was performed with the EUT operating at normal mode.

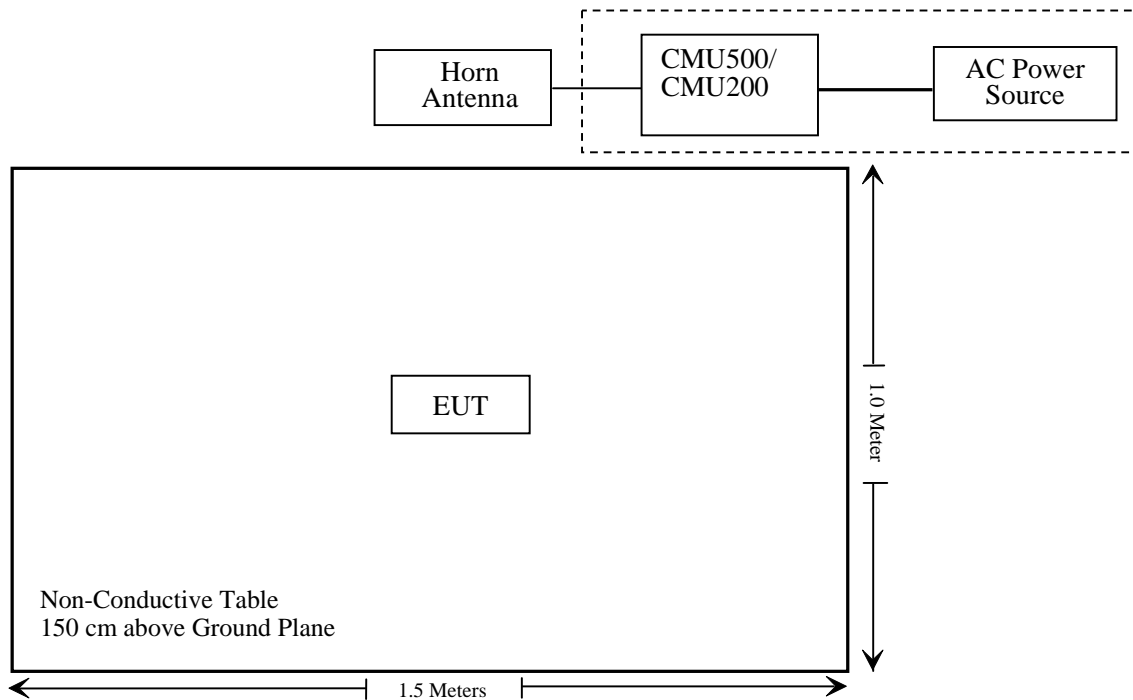
Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1201.002K50-116218-UY

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§2.1046; § 22.913 (a); §90.635 (b)	RF Output Power	Compliance
§ 2.1047	Modulation Characteristics	Not Applicable
§ 2.1049; § 22.905; § 22.917; §90.209	Occupied Bandwidth	Compliance
§ 2.1051; § 22.917 (a); 90.691	Spurious Emissions at Antenna Terminal	Compliance
§ 2.1053; § 22.917 (a); §90.691	Field Strength of Spurious Radiation	Compliance
§ 22.917 (a); §90.691	Band Edge	Compliance
§ 2.1055; § 22.355; §90.213	Frequency stability	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2017-12-22	2020-12-21
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
COM-POWER	Pre-amplifier	PA-122	181919	2018-11-12	2019-11-12
Sonoma Instrument	Amplifier	310N	186238	2018-11-12	2019-11-12
Agilent	Signal Generator	N5183A	MY51040755	2018-12-03	2019-12-03
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2018-07-11	2019-07-11
COM-POWER	Dipole Antenna	AD-100	41000	NCR	NCR
A.H. System	Horn Antenna	SAS-200/571	135	2018-09-01	2021-08-31
UTiFLEX MICRO-COAX	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-11-12	2019-11-12
Ducommun Technologies	RF Cable	104PEA	218124002	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	RG-214	1	2018-11-19	2019-05-21
Ducommun technologies	RF Cable	RG-214	2	2018-11-12	2019-11-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2017-12-29	2020-12-28
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2017-12-29	2020-12-28
Heatsink Required	Amplifier	QLW-18405536-J0	15964001002	2018-11-12	2019-11-12

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
ESPEC	Temperature & Humidity Chamber	EL-10KA	9107726	2019-01-05	2020-01-05
Long Wei	DC Power Supply	TPR-6420D	398363	NCR	NCR
Rohde & Schwarz	Wideband Radio Communication Tester	CMW500	1316.3003K03-101746-zn	2018-08-19	2019-08-19
Ducommun technologies	RF Cable	RG-214	3	Each Time	
WEINSCHHEL	10dB Attenuator	5324	AU 3842	Each Time	
WEINSCHHEL	3dB Attenuator	6231	666	Each Time	
Unknown	Power Splitter	1620	129	Each Time	
Rohde & Schwarz	Signal Analyzer	FSV40	101473	2019-01-09	2020-01-08

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

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & Part 90S there are no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 22.913 (a); §90.635 (b) - RF OUTPUT POWER

Applicable Standard

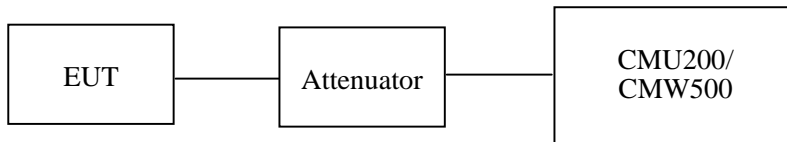
According to FCC §2.1046 and §22.913 (a), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

According to §90.635(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Test Procedure

Conducted method:

The RF output of the transmitter was connected to the CMU200 through sufficient attenuation.



Radiated method:

TIA 603-D section 2.2.17

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Kieron Luo on 2019-05-30.

Conducted Power

LTE Band 26(814-824MHz):

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.48	22.43	22.39
		RB Size=1, RB Offset=2	21.74	21.73	21.62
		RB Size=1, RB Offset=5	21.94	21.92	21.88
		RB Size=3, RB Offset=0	22.52	22.51	22.40
		RB Size=3, RB Offset=1	22.52	22.47	22.37
		RB Size=3, RB Offset=2	21.81	21.76	21.68
		RB Size=6, RB Offset=0	22.91	22.88	22.76
	16QAM	RB Size=1, RB Offset=0	22.34	22.22	22.10
		RB Size=1, RB Offset=2	21.58	21.52	21.40
		RB Size=1, RB Offset=5	21.78	21.73	21.63
		RB Size=3, RB Offset=0	22.36	22.24	22.16
		RB Size=3, RB Offset=1	22.25	22.14	22.05
		RB Size=3, RB Offset=2	21.61	21.57	21.49
		RB Size=6, RB Offset=0	22.72	22.68	22.59
	64QAM	RB Size=1, RB Offset=0	22.74	23.02	22.72
		RB Size=1, RB Offset=2	22.71	22.94	22.63
		RB Size=1, RB Offset=5	22.86	23.12	22.76
		RB Size=3 RB Offset=0	22.26	22.51	22.17
		RB Size=3, RB Offset=1	22.22	22.39	22.14
		RB Size=3, RB Offset=2	22.29	22.63	22.26
		RB Size=6, RB Offset=0	21.54	21.83	21.45

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
3.0	QPSK	RB Size=1, RB Offset=0	22.70	22.70	22.57
		RB Size=1, RB Offset=7	22.56	22.55	22.44
		RB Size=1, RB Offset=14	22.99	22.98	22.92
		RB Size=8, RB Offset=0	22.54	22.56	22.50
		RB Size=8, RB Offset=4	22.55	22.49	22.37
		RB Size=8, RB Offset=7	22.62	22.62	22.53
		RB Size=15, RB Offset=0	22.21	22.16	22.04
	16QAM	RB Size=1, RB Offset=0	22.54	22.49	22.44
		RB Size=1, RB Offset=7	22.34	22.25	22.14
		RB Size=1, RB Offset=14	22.88	22.82	22.78
		RB Size=8, RB Offset=0	22.47	22.40	22.29
		RB Size=8, RB Offset=4	22.25	22.16	22.07
		RB Size=8, RB Offset=7	22.46	22.43	22.33
		RB Size=15, RB Offset=0	21.94	21.83	21.77
	64QAM	RB Size=1, RB Offset=0	22.75	23.03	22.81
		RB Size=1, RB Offset=7	22.63	22.99	22.76
		RB Size=1, RB Offset=14	22.79	23.11	22.93
		RB Size=8, RB Offset=0	21.57	21.84	21.59
		RB Size=8, RB Offset=4	21.52	21.72	21.52
		RB Size=8, RB Offset=7	21.64	21.89	21.69
		RB Size=15, RB Offset=0	21.34	21.59	21.24

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.26	22.4	22.15
		RB Size=1, RB Offset=12	22.21	22.35	22.05
		RB Size=1, RB Offset=24	22.37	22.47	22.24
		RB Size=12, RB Offset=0	21.87	22.06	21.82
		RB Size=12, RB Offset=6	21.80	22.02	21.69
		RB Size=12, RB Offset=11	21.98	22.19	21.92
		RB Size=25, RB Offset=0	21.45	21.79	21.54
	16QAM	RB Size=1, RB Offset=0	22.22	22.43	22.11
		RB Size=1, RB Offset=12	22.12	22.34	22.05
		RB Size=1, RB Offset=24	22.29	22.56	22.16
		RB Size=12, RB Offset=0	21.89	22.15	21.86
		RB Size=12, RB Offset=6	21.82	22.05	21.74
		RB Size=12, RB Offset=11	21.96	22.21	21.99
		RB Size=25, RB Offset=0	21.54	21.83	21.57
	64QAM	RB Size=1, RB Offset=0	21.45	21.70	21.32
		RB Size=1, RB Offset=12	21.40	21.58	21.26
		RB Size=1, RB Offset=24	21.51	21.83	21.42
		RB Size=12, RB Offset=0	21.34	21.51	21.37
		RB Size=12, RB Offset=6	21.24	21.42	21.34
		RB Size=12, RB Offset=11	21.45	21.63	21.42
		RB Size=25, RB Offset=0	21.15	21.37	21.18

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10	QPSK	RB Size=1, RB Offset=0	/	22.12	/
		RB Size=1, RB Offset=24	/	22.07	/
		RB Size=1, RB Offset=49	/	22.21	/
		RB Size=25, RB Offset=0	/	22.07	/
		RB Size=25, RB Offset=12	/	22.00	/
		RB Size=25, RB Offset=24	/	22.15	/
		RB Size=50, RB Offset=0	/	22.00	/
	16QAM	RB Size=1, RB Offset=0	/	21.73	/
		RB Size=1, RB Offset=24	/	21.65	/
		RB Size=1, RB Offset=49	/	21.78	/
		RB Size=25, RB Offset=0	/	21.68	/
		RB Size=25, RB Offset=12	/	21.60	/
		RB Size=25, RB Offset=24	/	21.80	/
		RB Size=50, RB Offset=0	/	21.65	/
	64QAM	RB Size=1, RB Offset=0	/	23.02	/
		RB Size=1, RB Offset=49	/	22.94	/
		RB Size=1, RB Offset=99	/	23.12	/
		RB Size=50, RB Offset=0	/	22.51	/
		RB Size=50, RB Offset=24	/	22.39	/
		RB Size=50, RB Offset=49	/	22.63	/
		RB Size=100, RB Offset=0	/	21.83	/

LTE Band 26(824-849MHz):

Maximum Output Power

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4	QPSK	RB Size=1, RB Offset=0	22.38	22.32	22.25
		RB Size=1, RB Offset=2	22.29	22.24	22.15
		RB Size=1, RB Offset=5	21.99	21.93	21.85
		RB Size=3, RB Offset=0	22.59	22.53	22.46
		RB Size=3, RB Offset=1	22.71	22.66	22.58
		RB Size=3, RB Offset=2	21.87	21.87	21.83
		RB Size=6, RB Offset=0	22.53	22.49	22.39
	16QAM	RB Size=1, RB Offset=0	22.22	22.14	22.02
		RB Size=1, RB Offset=2	22.12	22.03	21.93
		RB Size=1, RB Offset=5	21.72	21.62	21.54
		RB Size=3, RB Offset=0	22.34	22.21	22.08
		RB Size=3, RB Offset=1	22.49	22.36	22.29
		RB Size=3, RB Offset=2	21.77	21.67	21.59
		RB Size=6, RB Offset=0	22.26	22.21	22.10
	64QAM	RB Size=1, RB Offset=0	22.09	22.26	22.03
		RB Size=1, RB Offset=2	22.05	22.14	21.90
		RB Size=1, RB Offset=5	22.19	22.33	22.06
		RB Size=3, RB Offset=0	21.56	21.84	21.61
		RB Size=3, RB Offset=1	21.50	21.73	21.55
		RB Size=3, RB Offset=2	21.64	21.94	21.71
		RB Size=1, RB Offset=0	22.09	22.26	22.03

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
3.0	QPSK	RB Size=1, RB Offset=0	22.30	22.31	22.23
		RB Size=1, RB Offset=7	22.09	22.10	22.00
		RB Size=1, RB Offset=14	22.72	22.72	22.60
		RB Size=8, RB Offset=0	22.32	22.25	22.17
		RB Size=8, RB Offset=4	21.84	21.85	21.74
		RB Size=8, RB Offset=7	21.52	21.53	21.46
		RB Size=15, RB Offset=0	21.62	21.57	21.51
	16QAM	RB Size=1, RB Offset=0	22.38	22.32	22.43
		RB Size=1, RB Offset=7	22.93	22.25	22.56
		RB Size=1, RB Offset=14	22.89	22.11	22.73
		RB Size=8, RB Offset=0	22.91	21.84	22.61
		RB Size=8, RB Offset=4	22.78	21.94	22.62
		RB Size=8, RB Offset=7	22.51	22.21	23.02
		RB Size=15, RB Offset=0	22.49	22.31	22.86
	64QAM	RB Size=1, RB Offset=0	22.01	22.28	22.03
		RB Size=1, RB Offset=7	21.91	22.16	21.93
		RB Size=1, RB Offset=14	22.13	22.33	22.12
		RB Size=8, RB Offset=0	21.64	21.97	21.69
		RB Size=8, RB Offset=4	21.55	21.85	21.62
		RB Size=8, RB Offset=7	21.71	22.05	21.80
		RB Size=15, RB Offset=0	21.35	21.62	21.42

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5.0	QPSK	RB Size=1, RB Offset=0	22.21	22.32	22.36
		RB Size=1, RB Offset=12	22.30	21.99	22.49
		RB Size=1, RB Offset=24	22.56	22.26	22.46
		RB Size=12, RB Offset=0	22.77	21.84	22.62
		RB Size=12, RB Offset=6	22.49	21.97	22.75
		RB Size=12, RB Offset=11	22.67	21.91	23.08
		RB Size=25, RB Offset=0	22.60	21.86	22.80
	16QAM	RB Size=1, RB Offset=0	22.25	22.18	22.33
		RB Size=1, RB Offset=12	22.55	21.95	22.68
		RB Size=1, RB Offset=24	22.79	21.72	22.33
		RB Size=12, RB Offset=0	22.45	22.17	22.46
		RB Size=12, RB Offset=6	22.28	21.95	22.69
		RB Size=12, RB Offset=11	22.36	22.05	22.72
		RB Size=25, RB Offset=0	22.77	21.72	22.50
	64QAM	RB Size=1, RB Offset=0	22.26	22.40	22.21
		RB Size=1, RB Offset=12	22.19	22.33	22.12
		RB Size=1, RB Offset=24	22.36	22.46	22.31
		RB Size=12, RB Offset=0	21.63	21.92	21.66
		RB Size=12, RB Offset=6	21.57	21.87	21.55
		RB Size=12, RB Offset=11	21.75	21.96	21.76
		RB Size=1, RB Offset=0	22.26	22.40	22.21

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
10	QPSK	RB Size=1, RB Offset=0	22.15	22.13	22.28
		RB Size=1, RB Offset=24	22.52	21.87	22.76
		RB Size=1, RB Offset=49	22.38	21.86	22.49
		RB Size=25, RB Offset=0	22.31	21.94	22.58
		RB Size=25, RB Offset=12	22.23	21.83	22.46
		RB Size=25, RB Offset=24	22.63	22.10	22.87
		RB Size=50, RB Offset=0	22.38	21.78	22.77
	16QAM	RB Size=1, RB Offset=0	22.24	22.17	22.24
		RB Size=1, RB Offset=24	21.93	21.98	21.92
		RB Size=1, RB Offset=49	21.92	22.01	21.90
		RB Size=25, RB Offset=0	21.89	21.82	22.03
		RB Size=25, RB Offset=12	22.09	21.75	21.93
		RB Size=25, RB Offset=24	21.90	22.05	21.62
		RB Size=50, RB Offset=0	21.83	21.71	21.78
	64QAM	RB Size=1, RB Offset=0	22.15	22.31	22.17
		RB Size=1, RB Offset=24	22.06	22.19	22.12
		RB Size=1, RB Offset=49	22.19	22.39	22.25
		RB Size=25, RB Offset=0	21.61	21.94	21.63
		RB Size=25, RB Offset=12	21.49	21.82	21.54
		RB Size=25, RB Offset=24	21.70	22.02	21.75
		RB Size=50, RB Offset=0	21.24	21.56	21.34

Bandwidth (MHz)	Modulation	RB size/RB Offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
15	QPSK	RB Size=1, RB Offset=0	22.11	22.13	22.21
		RB Size=1, RB Offset=37	21.78	21.84	22.13
		RB Size=1, RB Offset=74	21.86	21.77	21.89
		RB Size=36, RB Offset=0	21.84	21.76	22.17
		RB Size=36, RB Offset=18	21.71	21.82	21.94
		RB Size=36, RB Offset=37	21.78	21.69	21.85
		RB Size=75, RB Offset=0	22.06	21.82	22.07
	16QAM	RB Size=1, RB Offset=0	21.89	22.05	22.13
		RB Size=1, RB Offset=37	21.41	21.71	21.68
		RB Size=1, RB Offset=74	21.50	21.57	21.92
		RB Size=36, RB Offset=0	21.73	22.00	22.09
		RB Size=36, RB Offset=18	21.73	21.57	21.71
		RB Size=36, RB Offset=37	21.60	21.62	21.23
		RB Size=75, RB Offset=0	21.71	21.82	21.78
	64QAM	RB Size=1, RB Offset=0	21.52	21.45	21.33
		RB Size=1, RB Offset=37	21.27	21.18	21.10
		RB Size=1, RB Offset=74	21.11	21.05	21.00
		RB Size=36, RB Offset=0	21.87	21.81	21.77
		RB Size=36, RB Offset=18	21.92	21.86	21.82
		RB Size=36, RB Offset=37	21.49	21.42	21.31
		RB Size=75, RB Offset=0	21.94	21.90	21.86

Peak-to-average ratio (PAR)

Modulation	Middle Channel (dB)	PAR Limit (dB)	Result
QPSK(1RB Size)	6.73	13	Pass
QPSK(100%RB Size)	6.84	13	Pass
16QAM (1RB Size)	7.08	13	Pass
16QAM (50%RB Size)	7.82	13	Pass
64QAM (1RB Size)	7.75	13	Pass
64QAM (100%RB Size)	7.38	13	Pass

Band26 (814-824MHz)

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
819	90.80	349	2.1	H	20.8	0.67	0	20.13	38.45
819	90.63	171	1.1	V	20.6	0.67	0	19.93	38.45
3 MHz Bandwidth									
819	90.72	301	1.5	H	20.7	0.67	0	20.03	38.45
819	90.51	273	1.8	V	20.5	0.67	0	19.83	38.45
5 MHz Bandwidth									
819	90.72	301	1.5	H	20.7	0.67	0	20.03	38.45
819	90.51	273	1.8	V	20.5	0.67	0	19.83	38.45
10 MHz Bandwidth									
819	90.42	82	1.9	H	20.4	0.67	0	19.73	38.45
819	90.37	73	2.4	V	20.4	0.67	0	19.73	38.45

16QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
819	90.79	321	2.3	V	20.8	0.67	0	20.13	38.45
819	90.74	74	2.1	H	20.7	0.67	0	20.03	38.45
3 MHz Bandwidth									
819	90.74	8	2.1	V	20.7	0.67	0	20.03	38.45
819	90.63	247	1.5	H	20.6	0.67	0	19.93	38.45
5 MHz Bandwidth									
819	90.49	125	2.2	H	20.5	0.67	0	19.83	38.45
819	90.38	184	1.9	V	20.4	0.67	0	19.73	38.45
10 MHz Bandwidth									
819	90.21	349	2.0	H	20.2	0.67	0	19.53	38.45
819	90.14	15	2.2	V	20.1	0.67	0	19.43	38.45

64QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
819	90.64	283	1.6	H	20.6	0.67	0	19.93	38.45
819	90.57	202	1.0	V	20.6	0.67	0	19.93	38.45
3 MHz Bandwidth									
819	90.51	225	1.8	H	20.5	0.67	0	19.83	38.45
819	90.3	149	1.1	V	20.3	0.67	0	19.63	38.45
5 MHz Bandwidth									
819	90.24	21	2.4	H	20.2	0.67	0	19.53	38.45
819	90.08	97	1.3	V	20.1	0.67	0	19.43	38.45
10 MHz Bandwidth									
819	90.12	248	2.3	H	20.1	0.67	0	19.43	38.45
819	89.7	153	1.3	V	19.7	0.67	0	19.03	38.45

Band26 (824-849MHz)

QPSK:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	90.47	26	2.0	H	20.5	0.67	0	19.83	38.45
836.5	90.18	218	1.4	V	20.2	0.67	0	19.53	38.45
3 MHz Bandwidth									
836.5	90.39	0	2.0	H	20.4	0.67	0	19.73	38.45
836.5	90.12	44	1.4	V	20.1	0.67	0	19.43	38.45
5 MHz Bandwidth									
836.5	90.09	325	2.3	H	20.1	0.67	0	19.43	38.45
836.5	89.78	277	1.1	V	19.8	0.67	0	19.13	38.45
10 MHz Bandwidth									
836.5	90.17	346	1.1	H	20.2	0.67	0	19.53	38.45
836.5	89.64	219	2.4	V	19.6	0.67	0	18.93	38.45
15 MHz Bandwidth									
836.5	90.02	162	2.1	H	20	0.67	0	19.33	38.45
836.5	89.38	100	1.8	V	19.4	0.67	0	18.73	38.45

16QAM:

Frequency (MHz)	Receiver Reading (dBµV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	90.37	27	1.4	H	20.4	0.67	0	19.73	38.45
836.5	90.08	230	2.3	V	20.1	0.67	0	19.43	38.45
3 MHz Bandwidth									
836.5	90.19	66	1.5	H	20.2	0.67	0	19.53	38.45
836.5	89.57	234	1.8	V	19.6	0.67	0	18.93	38.45
5 MHz Bandwidth									
836.5	90.06	185	2.0	H	20.1	0.67	0	19.43	38.45
836.5	89.41	59	1.2	V	19.4	0.67	0	18.73	38.45
10 MHz Bandwidth									
836.5	89.87	226	1.4	H	19.9	0.67	0	19.23	38.45
836.5	89.24	311	1.8	V	19.2	0.67	0	18.53	38.45
15 MHz Bandwidth									
836.5	89.52	255	1.7	H	19.5	0.67	0	18.83	38.45
836.5	89.09	355	1.2	V	19.1	0.67	0	18.43	38.45

64QAM:

Frequency (MHz)	Receiver Reading (dBμV)	Turn table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)		
Middle Channel									
1.4 MHz Bandwidth									
836.5	90.28	256	1.5	H	20.3	0.67	0	19.63	38.45
836.5	90.11	98	1.2	V	20.1	0.67	0	19.43	38.45
3 MHz Bandwidth									
836.5	90.14	255	1.5	H	20.1	0.67	0	19.43	38.45
836.5	90.03	191	2.3	V	20	0.67	0	19.33	38.45
5 MHz Bandwidth									
836.5	89.82	303	1.1	H	19.8	0.67	0	19.13	38.45
836.5	89.07	70	2.4	V	19.1	0.67	0	18.43	38.45
10 MHz Bandwidth									
836.5	89.76	347	1.7	H	19.8	0.67	0	19.13	38.45
836.5	88.93	136	2.4	V	18.9	0.67	0	18.23	38.45
15 MHz Bandwidth									
836.5	89.57	3	1.8	H	19.6	0.67	0	18.93	38.45
836.5	88.73	161	1.3	V	18.7	0.67	0	18.03	38.45

Note:

All above data were tested with no amplifier

Absolute Level = SG Level - Cable loss + Antenna Gain

Margin = Limit- Absolute Level

FCC §2.1049, §22.917, §22.905 & §90.209 - OCCUPIED BANDWIDTH

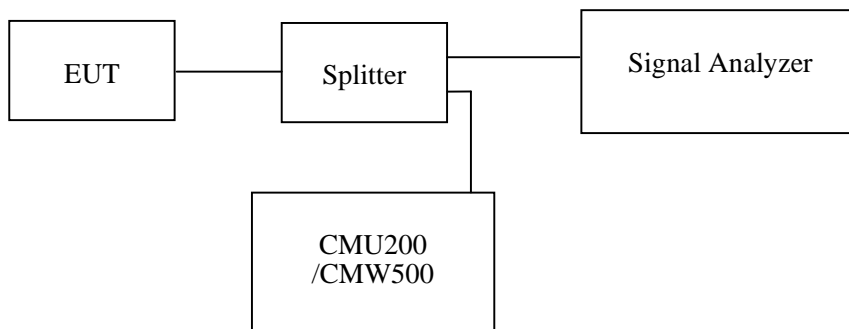
Applicable Standard

FCC 47 §2.1049, §22.917, §22.905 and §90.209.

Test Procedure

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

The resolution bandwidth of the spectrum analyzer was set at 1% -5% of the OBW and the 26 dB & 99% bandwidth was recorded.



Test Data

Environmental Conditions

Temperature:	23~25 °C
Relative Humidity:	48~55 %
ATM Pressure:	100.0~101.0 kPa

The testing was performed by Kieron Luo on 2019-05-29.

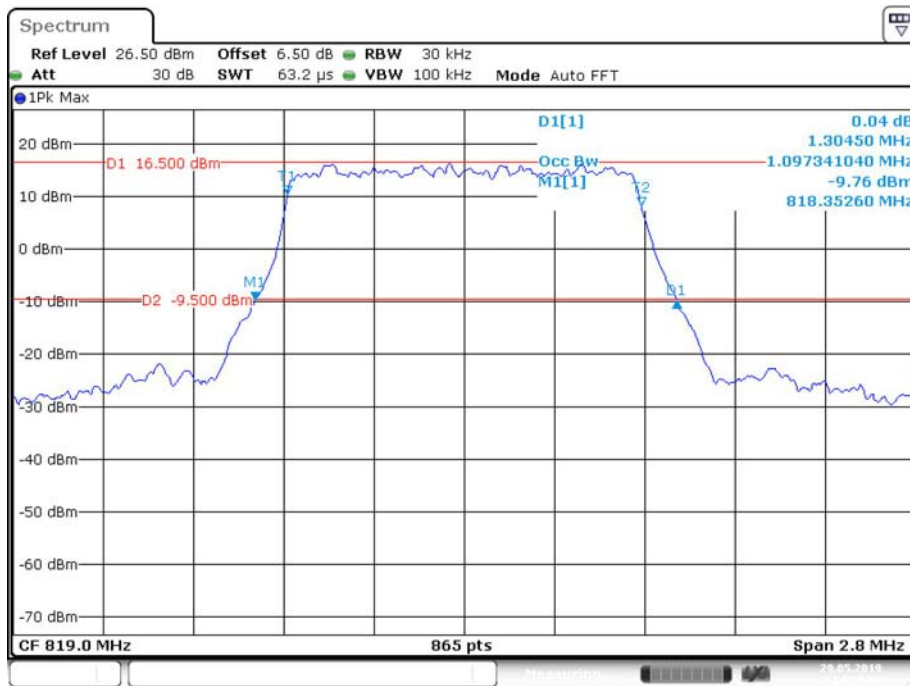
EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables and plots.

LTE BAND 26(814-824MHz):

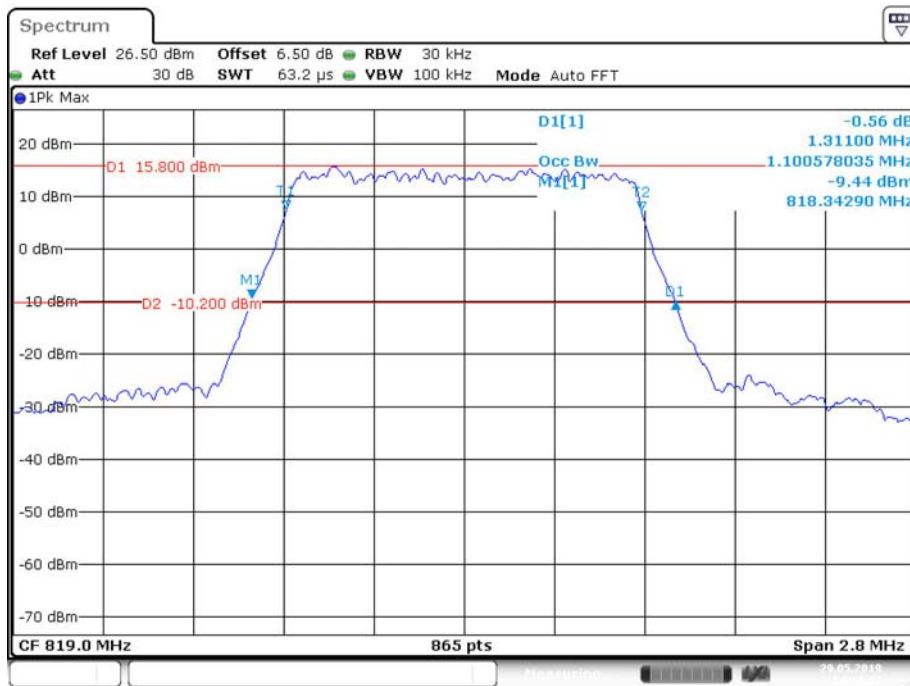
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.097	1.304
	16QAM	1.100	1.311
	64QAM	1.100	1.318
3.0	QPSK	2.684	2.920
	16QAM	2.684	2.948
	64QAM	2.684	2.962
5.0	QPSK	4.486	4.971
	16QAM	4.509	5.029
	64QAM	4.486	4.971
10.0	QPSK	8.925	9.711
	16QAM	8.925	9.595
	64QAM	8.925	9.595

QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



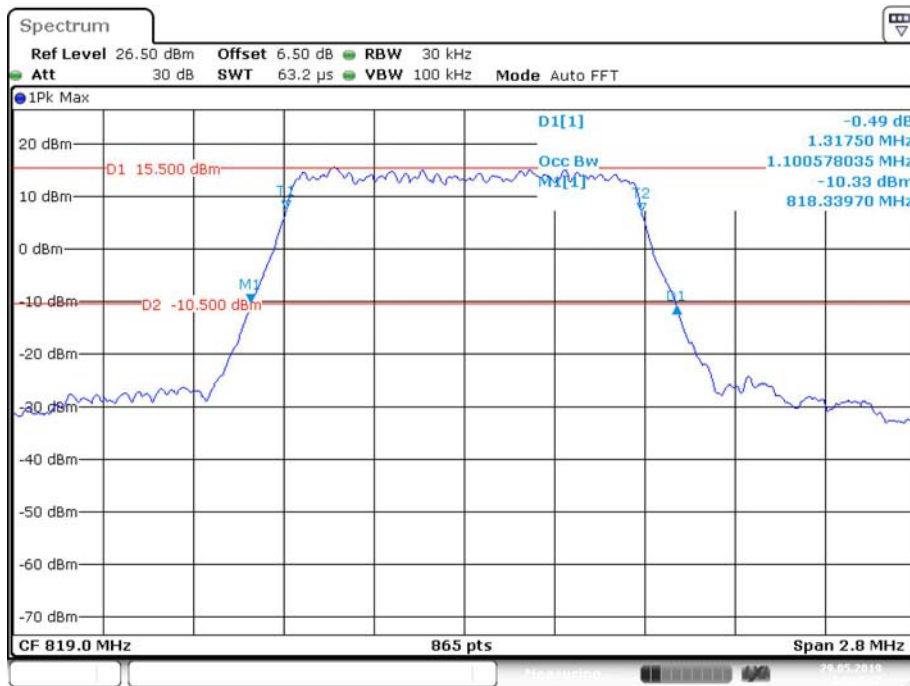
Date: 29.MAY.2019 14:17:10

16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



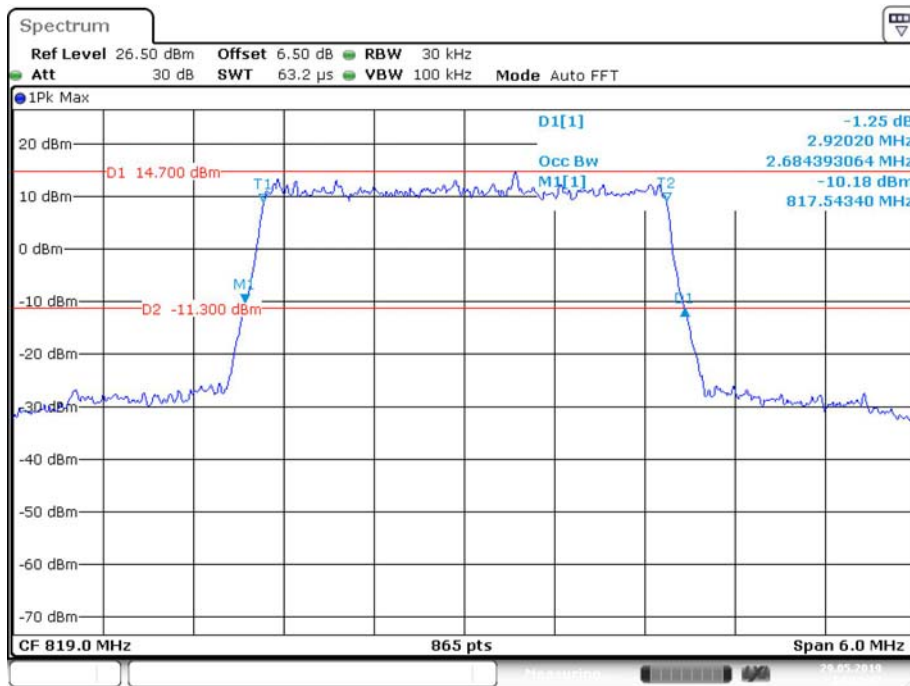
Date: 29.MAY.2019 14:19:16

64-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



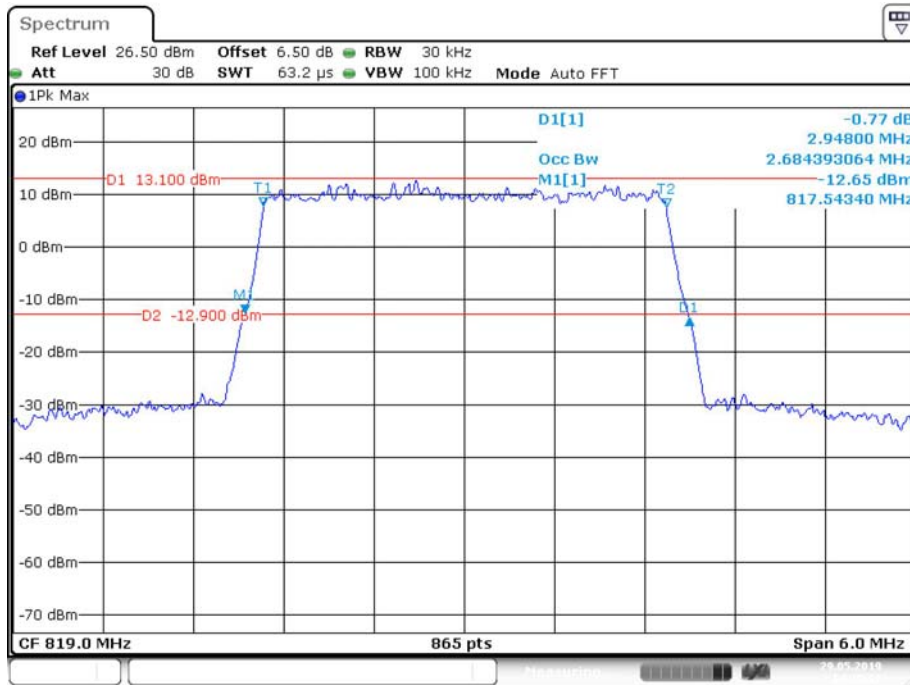
Date: 29.MAY.2019 14:27:57

QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



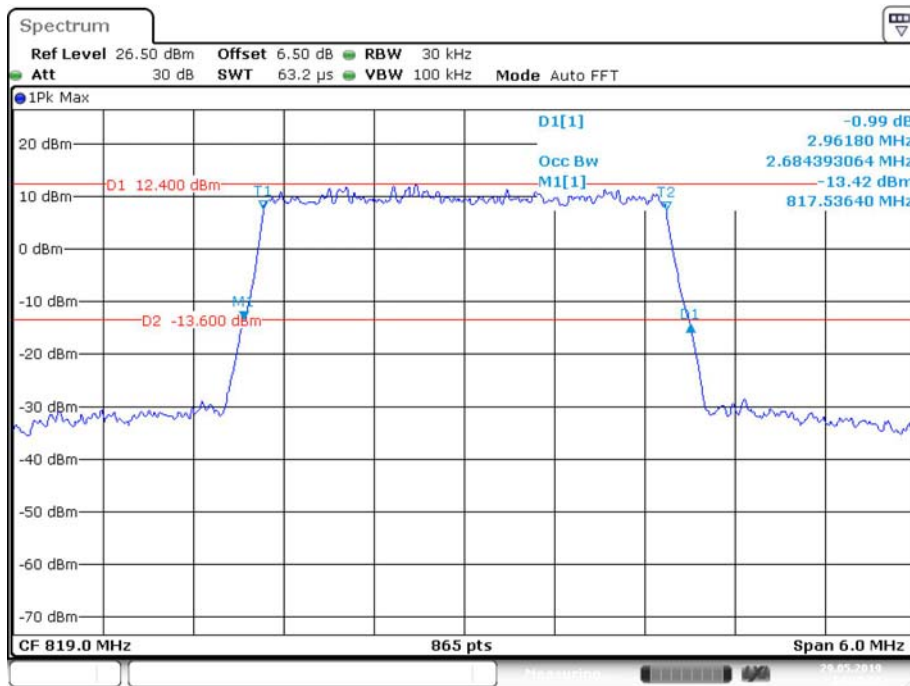
Date: 29.MAY.2019 14:12:47

16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



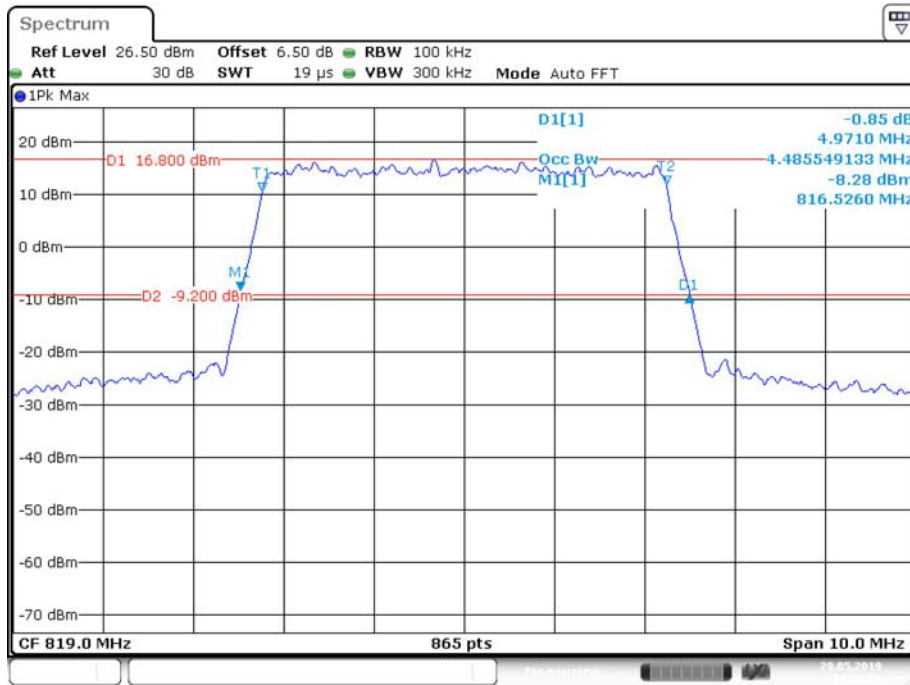
Date: 29.MAY.2019 14:15:32

64-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



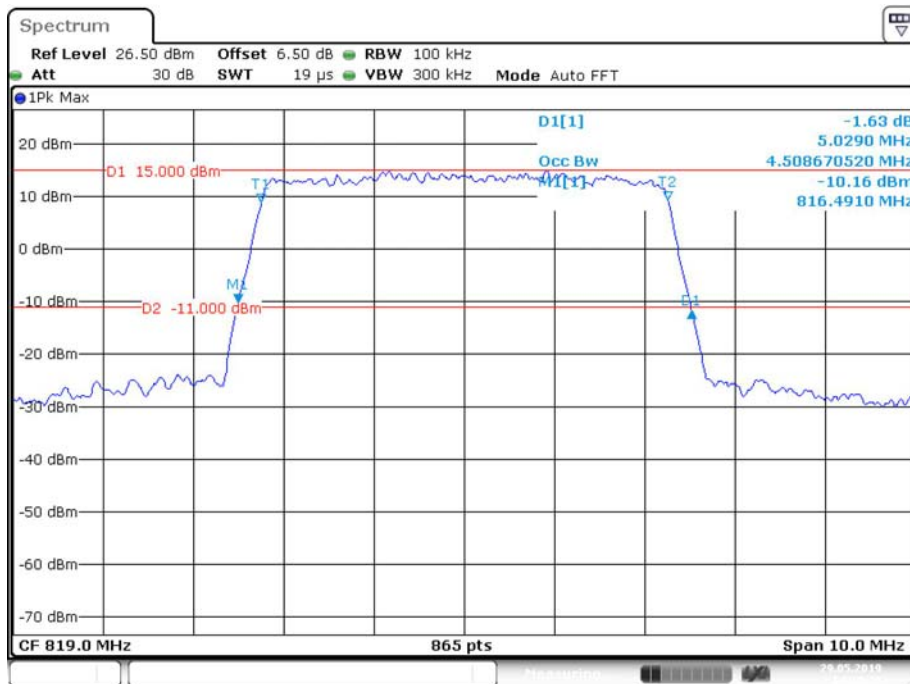
Date: 29.MAY.2019 14:29:05

QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



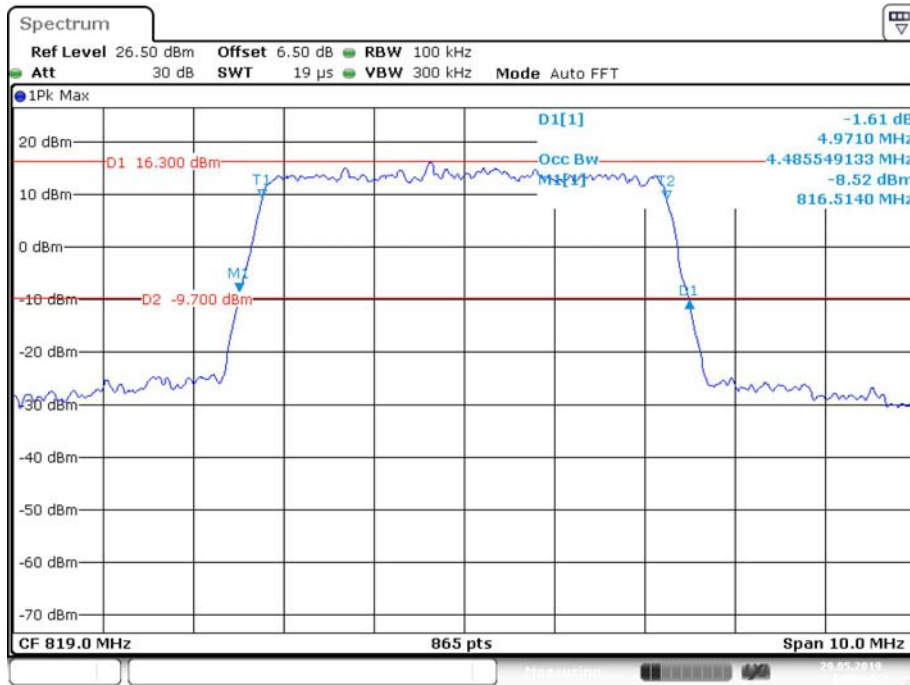
Date: 29.MAY.2019 14:08:05

16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



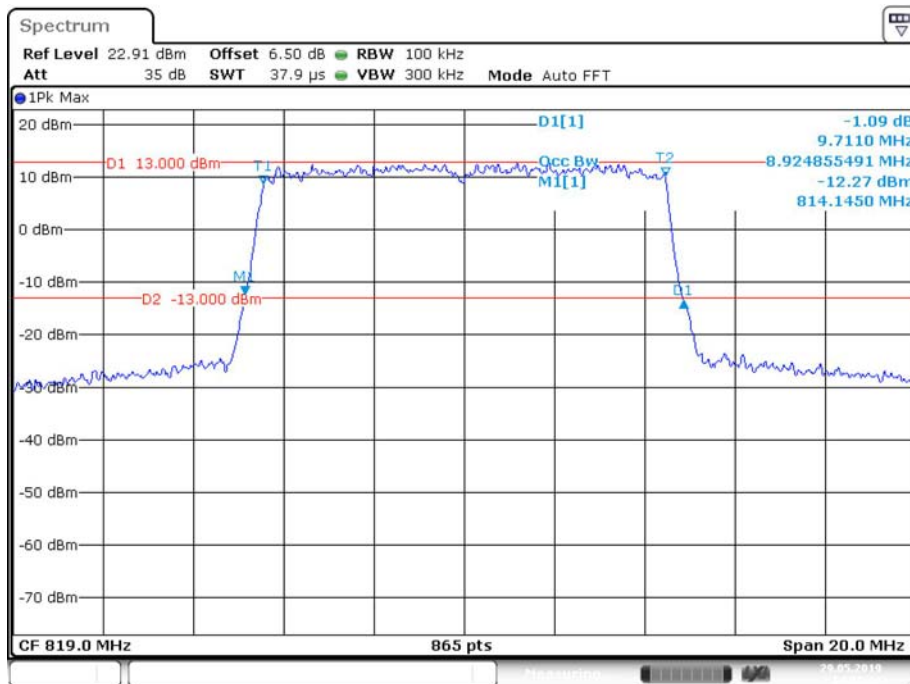
Date: 29.MAY.2019 14:10:25

64-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



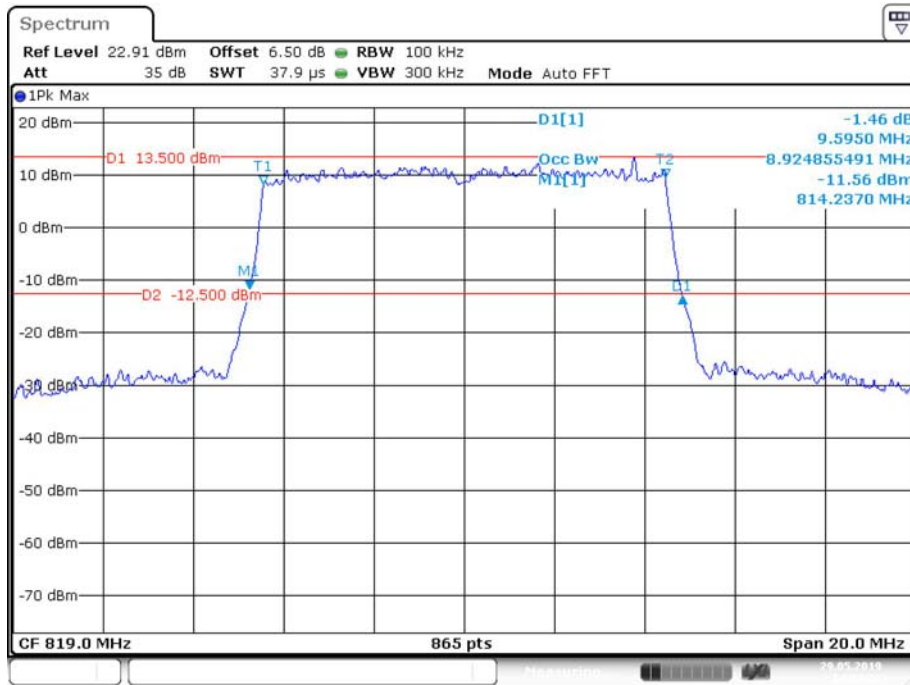
Date: 29.MAY.2019 14:30:44

QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



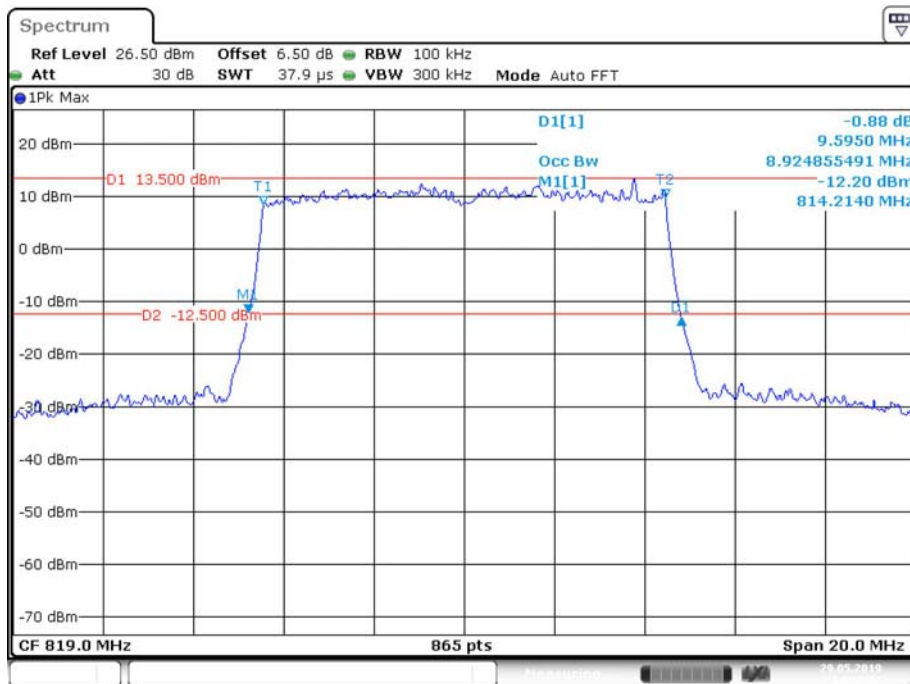
Date: 29.MAY.2019 14:01:10

16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 29.MAY.2019 14:03:20

64-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel

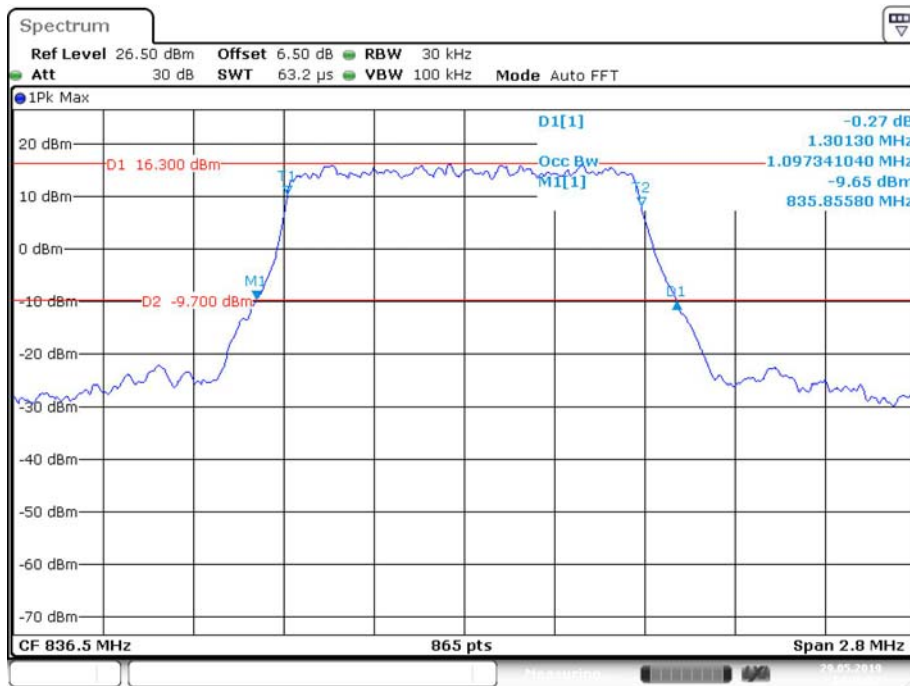


Date: 29.MAY.2019 14:32:21

LTE BAND 26(824-849MHz):

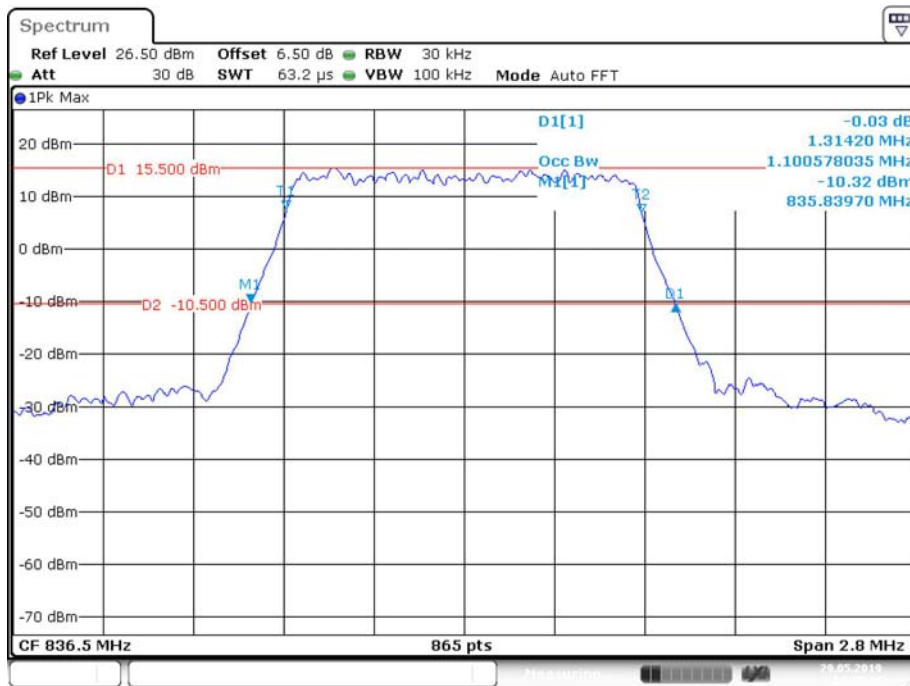
Bandwidth (MHz)	Modulation	99% Occupied Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)
1.4	QPSK	1.097	1.301
	16QAM	1.101	1.314
	64QAM	1.097	1.305
3.0	QPSK	2.684	2.927
	16QAM	2.684	2.948
	64QAM	2.684	2.941
5.0	QPSK	4.509	5.006
	16QAM	4.486	4.983
	64QAM	4.509	5.006
10	QPSK	8.925	9.688
	16QAM	8.925	9.688
	64QAM	8.925	9.803
15.0	QPSK	13.422	14.601
	16QAM	13.387	14.462
	64QAM	13.387	14.497

QPSK (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 29.MAY.2019 14:46:51

16-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



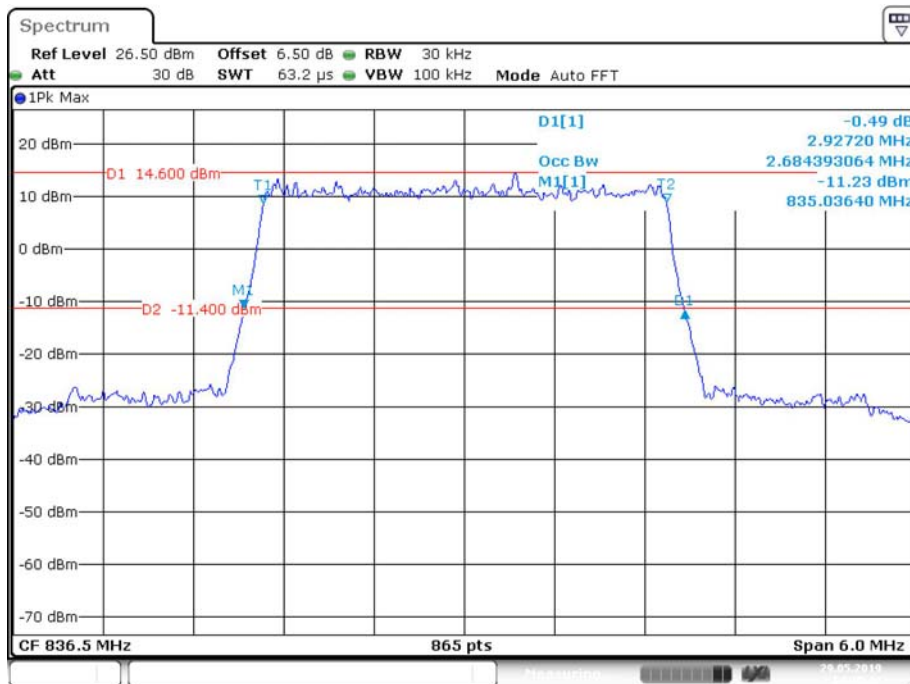
Date: 29.MAY.2019 14:45:40

64-QAM (1.4 MHz) - 99% Occupied Bandwidth, Middle channel



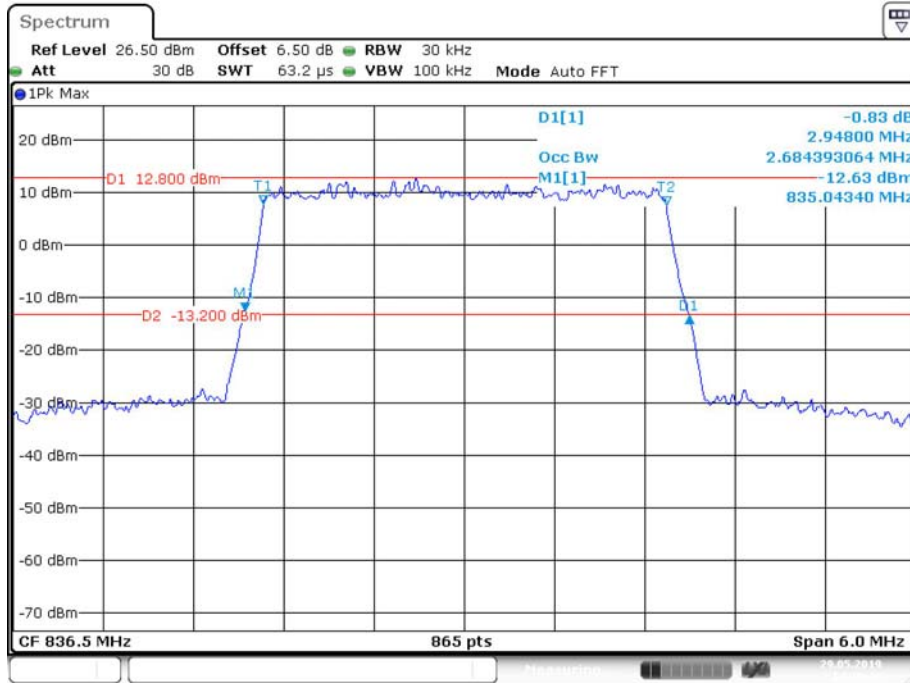
Date: 29.MAY.2019 15:02:00

QPSK (3.0 MHz) - 99% Occupied Bandwidth, Middle channel

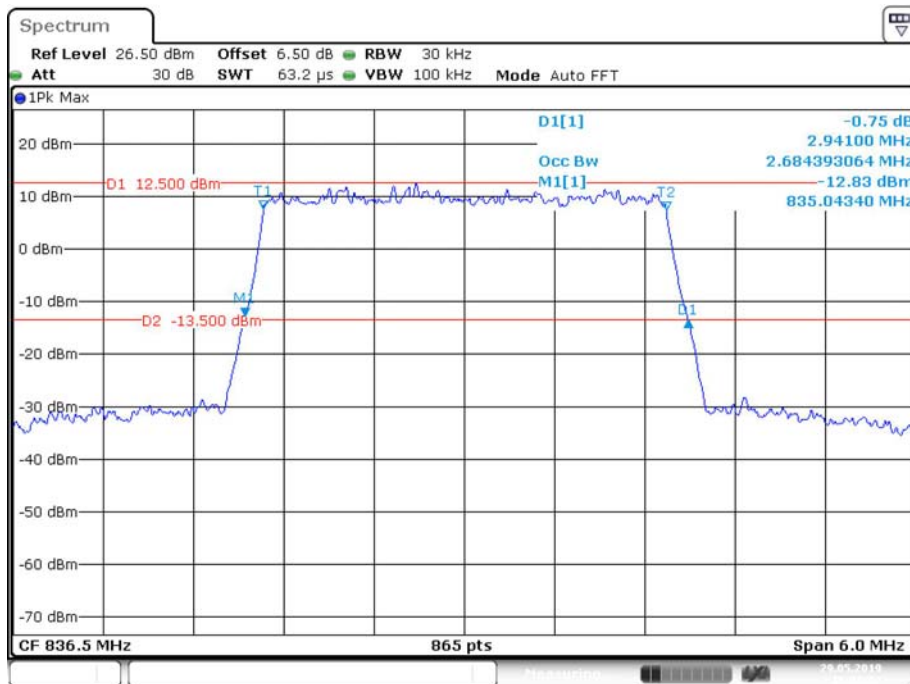


Date: 29.MAY.2019 14:48:12

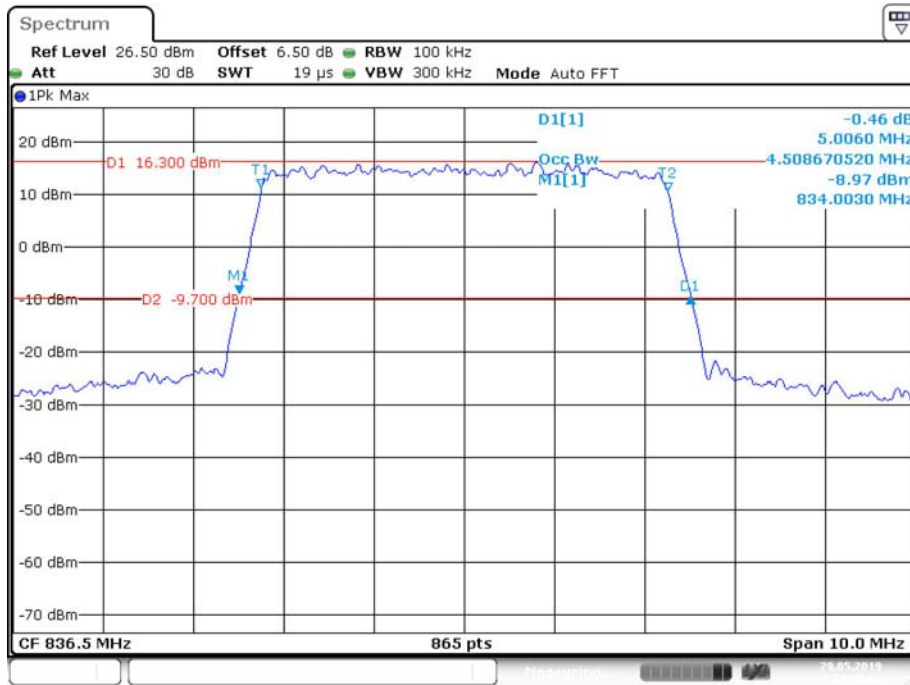
16-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel



64-QAM (3.0 MHz) - 99% Occupied Bandwidth, Middle channel

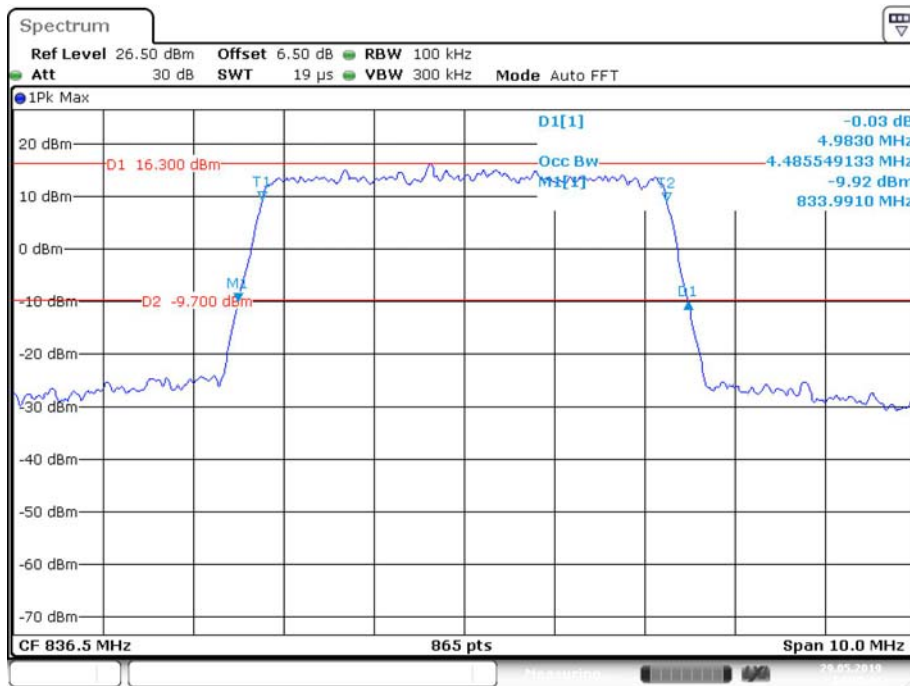


QPSK (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



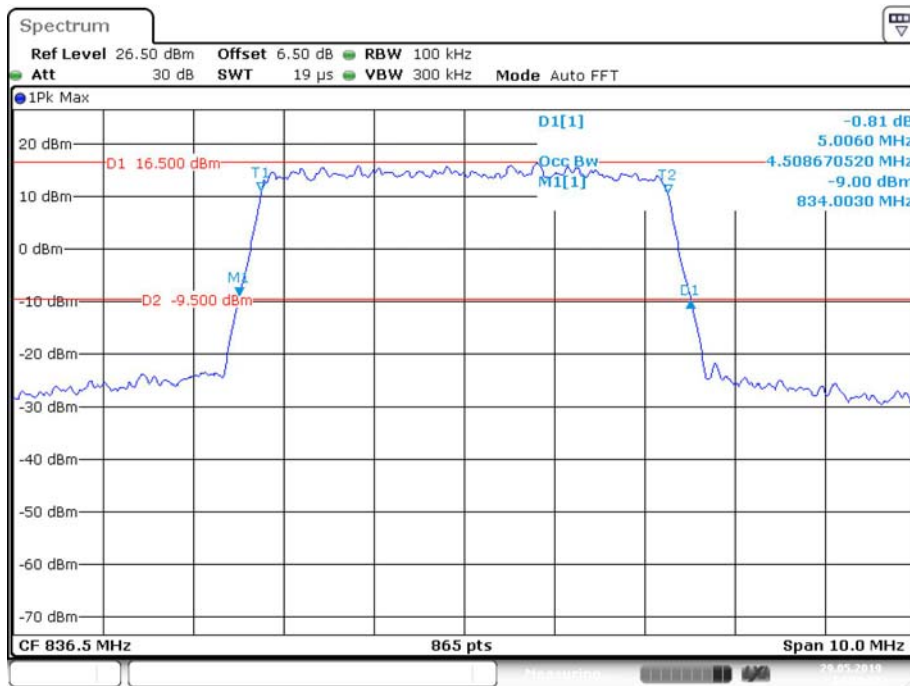
Date: 29.MAY.2019 14:40:36

16-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



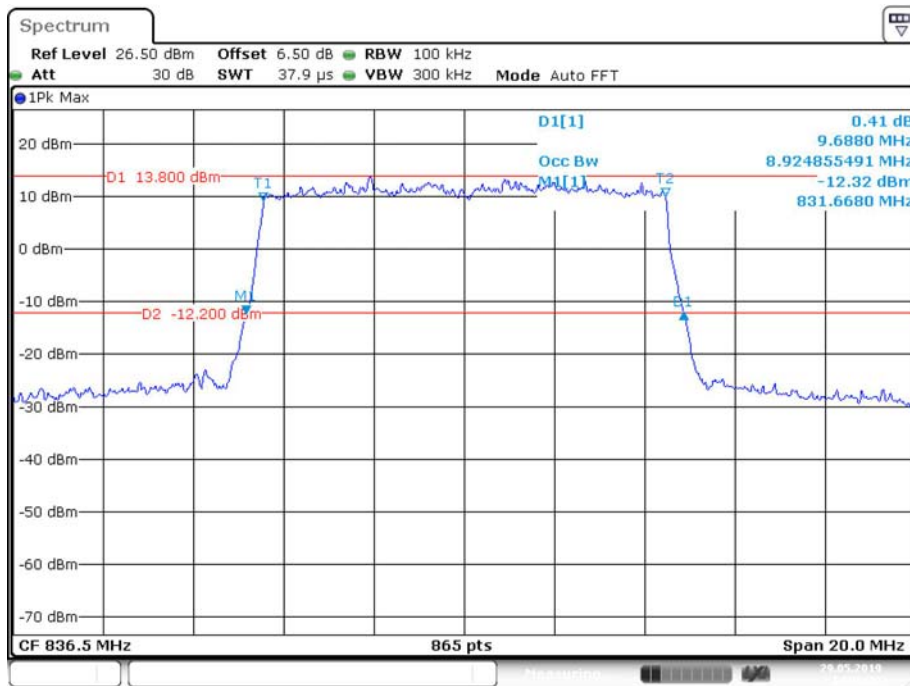
Date: 29.MAY.2019 14:39:13

64-QAM (5.0 MHz) - 99% Occupied Bandwidth, Middle channel



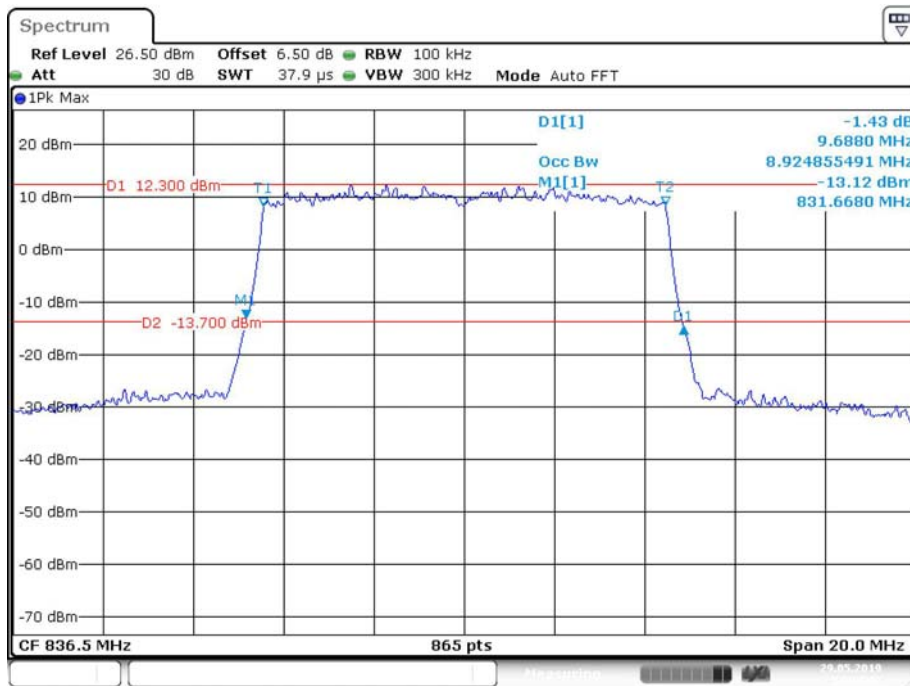
Date: 29.MAY.2019 14:59:57

QPSK (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



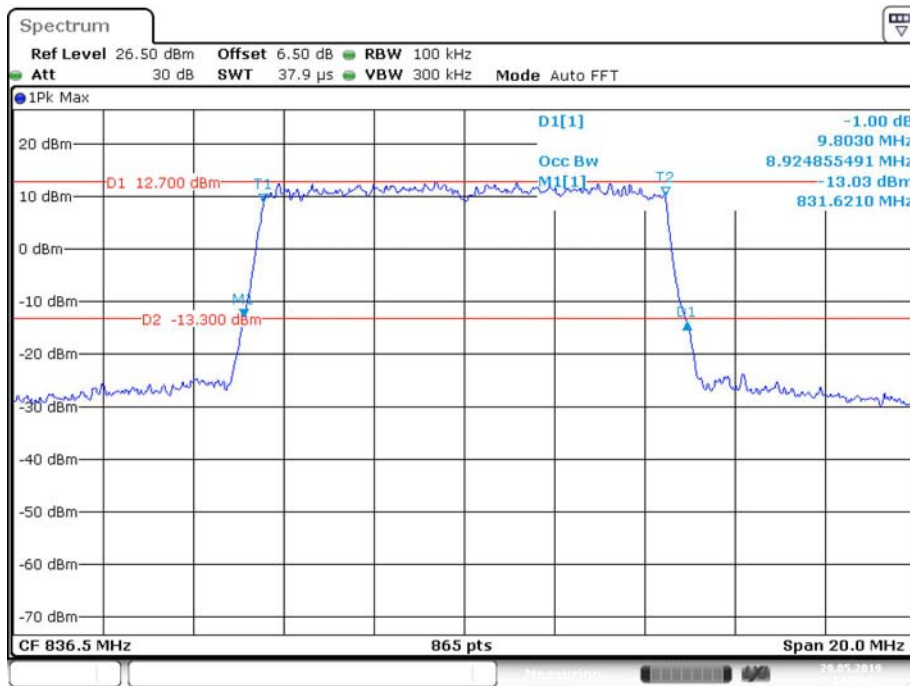
Date: 29.MAY.2019 14:36:28

16-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



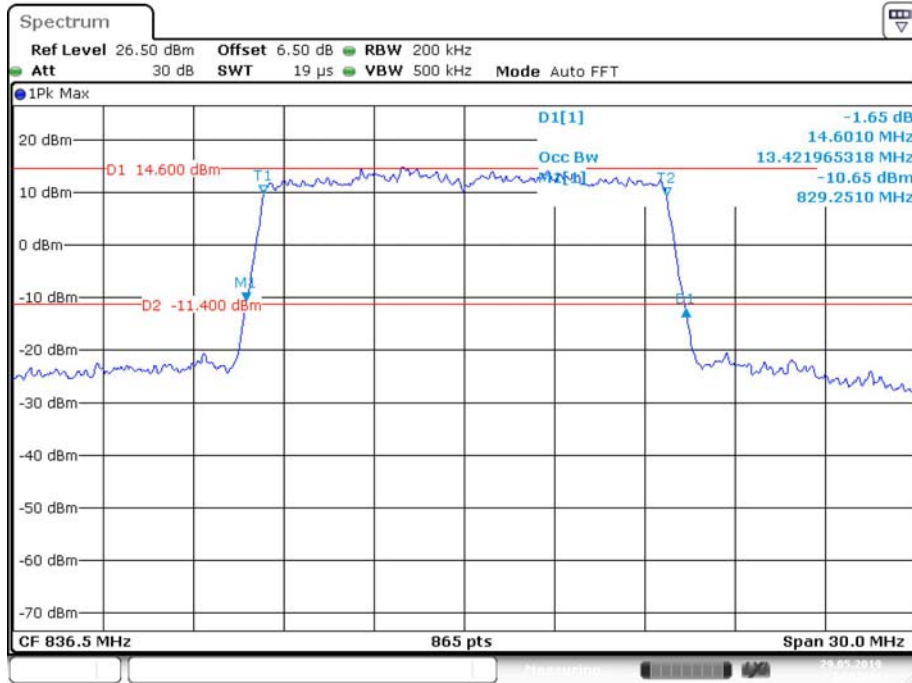
Date: 29.MAY.2019 14:34:42

64-QAM (10.0 MHz) - 99% Occupied Bandwidth, Middle channel



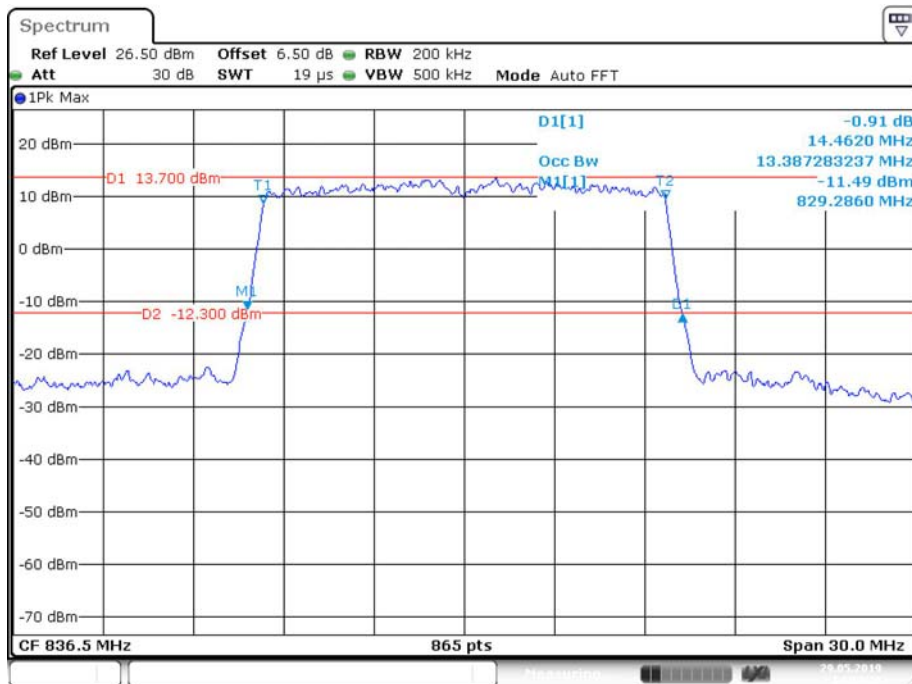
Date: 29.MAY.2019 14:58:30

QPSK (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



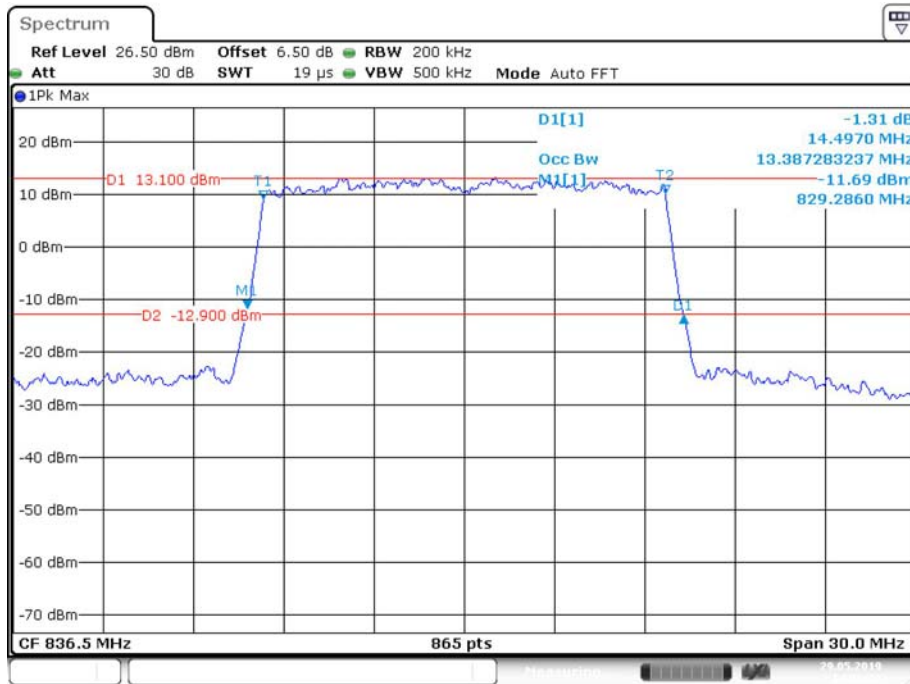
Date: 29.MAY.2019 14:51:43

16-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 29.MAY.2019 14:53:35

64-QAM (15.0 MHz) - 99% Occupied Bandwidth, Middle channel



Date: 29.MAY.2019 14:56:19

FCC §2.1051, §22.917(a) & §90.691 - SPURIOUS EMISSIONS AT ANTENNA TERMINALS

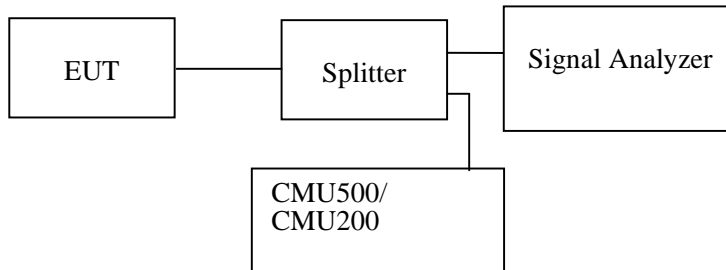
Applicable Standard

FCC §2.1051, §22.917(a) m and §90.691.

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

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Data

Environmental Conditions

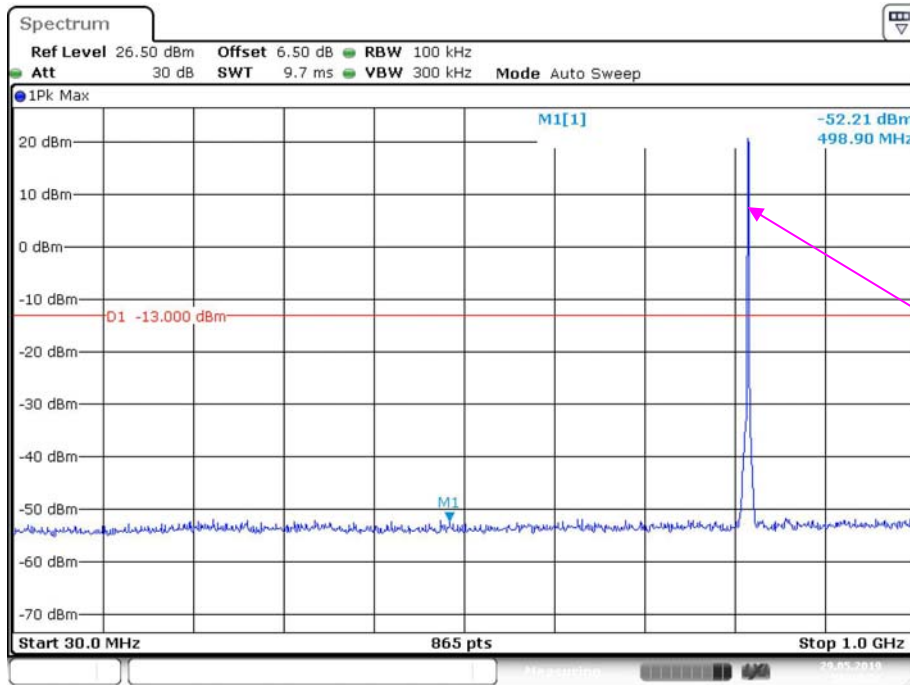
Temperature:	25 °C
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Kieron Luo on 2019-05-29.

EUT operation mode: Transmitting

Test result: Compliance, please refer to the following plots.

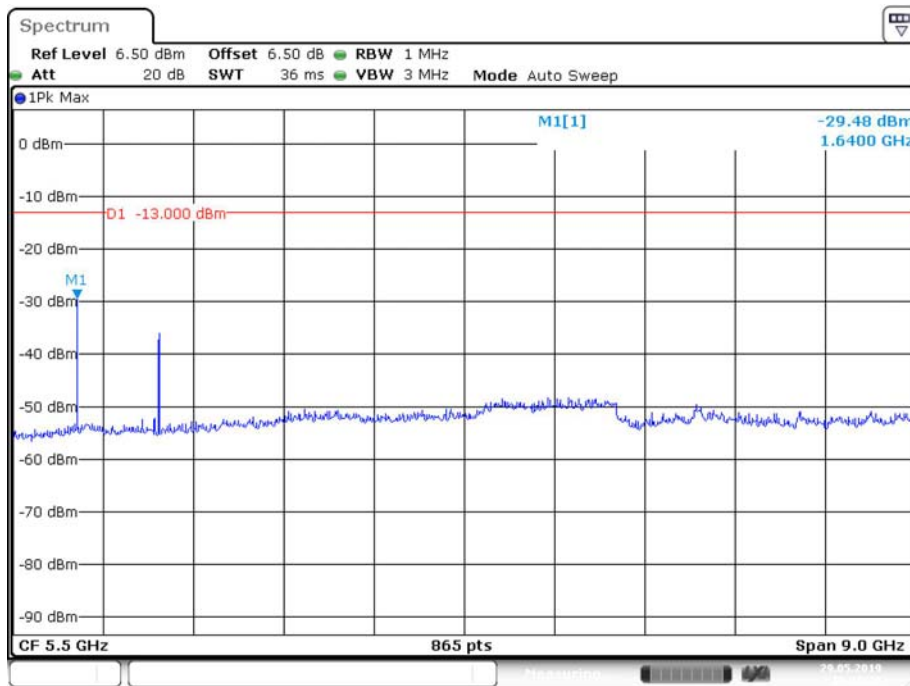
LTE Band 26(814-824MHz):
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



Fundamental test

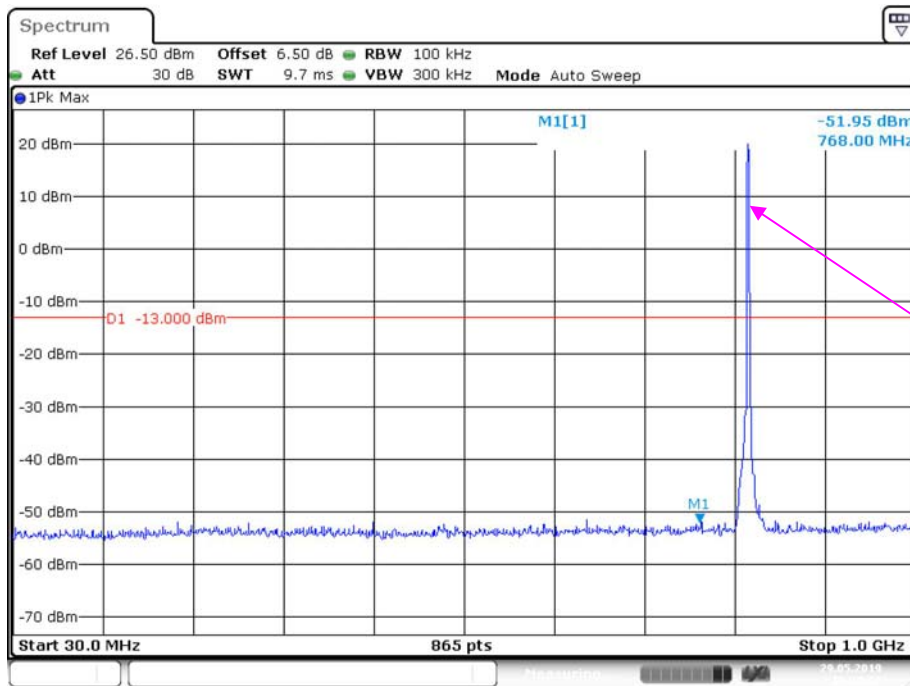
Date: 29.MAY.2019 19:09:32

1 GHz - 10 GHz (1.4 MHz, Middle Channel)



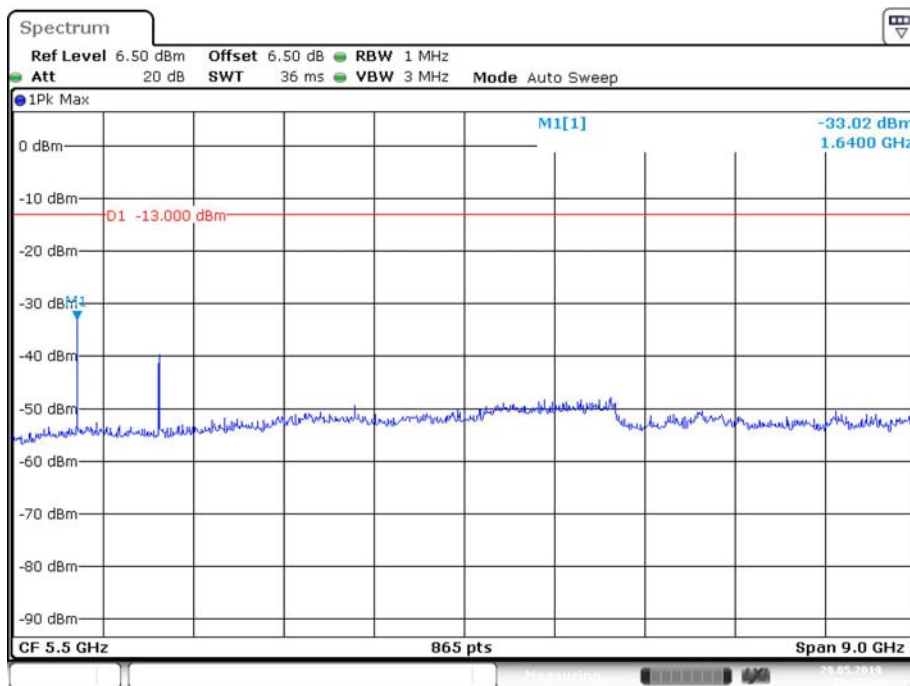
Date: 29.MAY.2019 19:21:35

30 MHz – 1 GHz (3.0 MHz, Middle Channel)



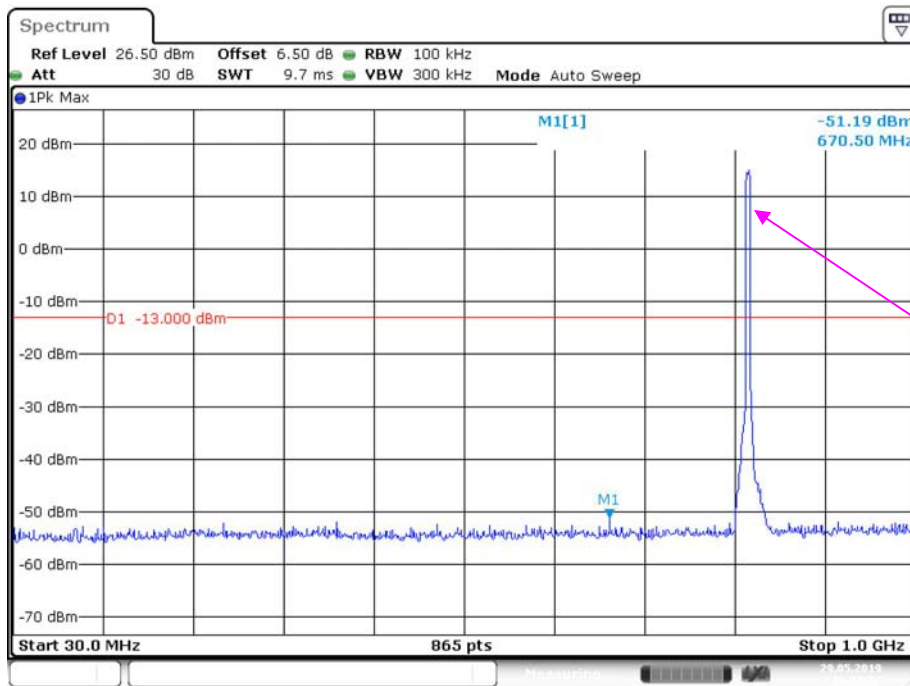
Date: 29.MAY.2019 19:10:21

1 GHz – 10 GHz (3.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:21:16

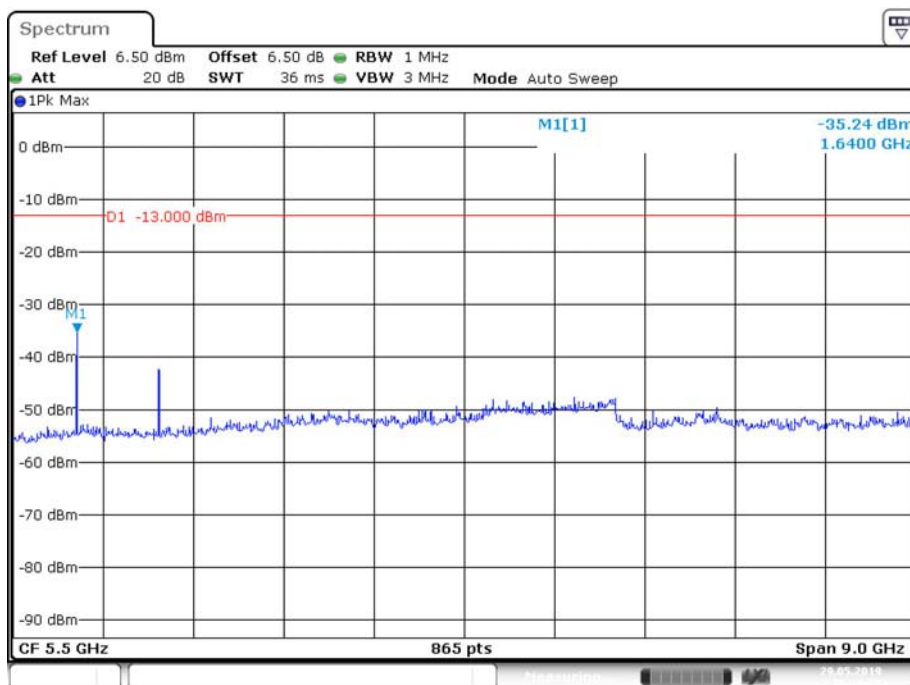
30 MHz – 1.0 GHz (5.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:11:02

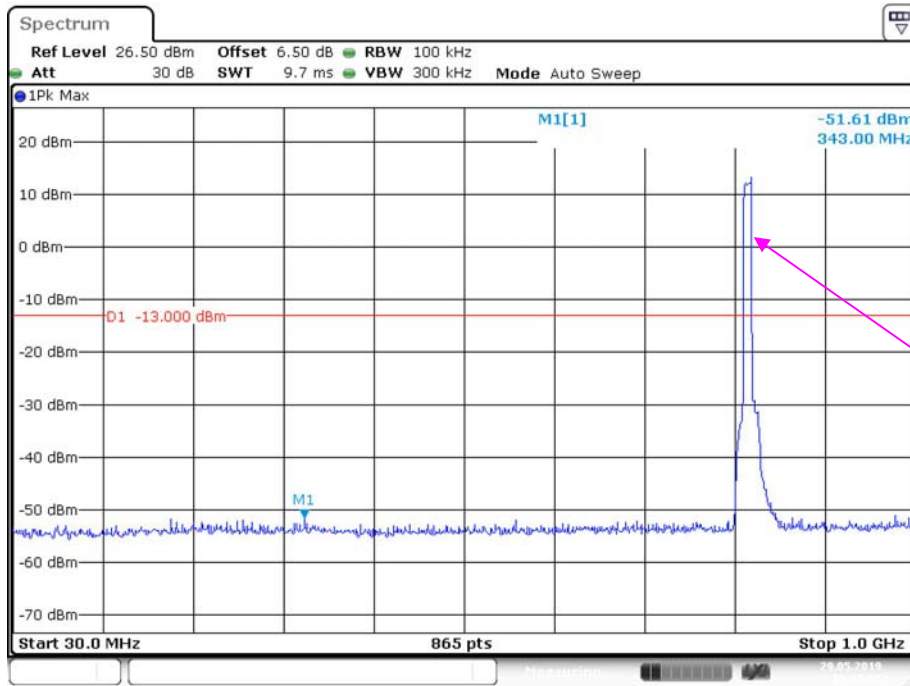
Fundamental test

1 GHz – 10 GHz (5.0 MHz, Middle Channel)



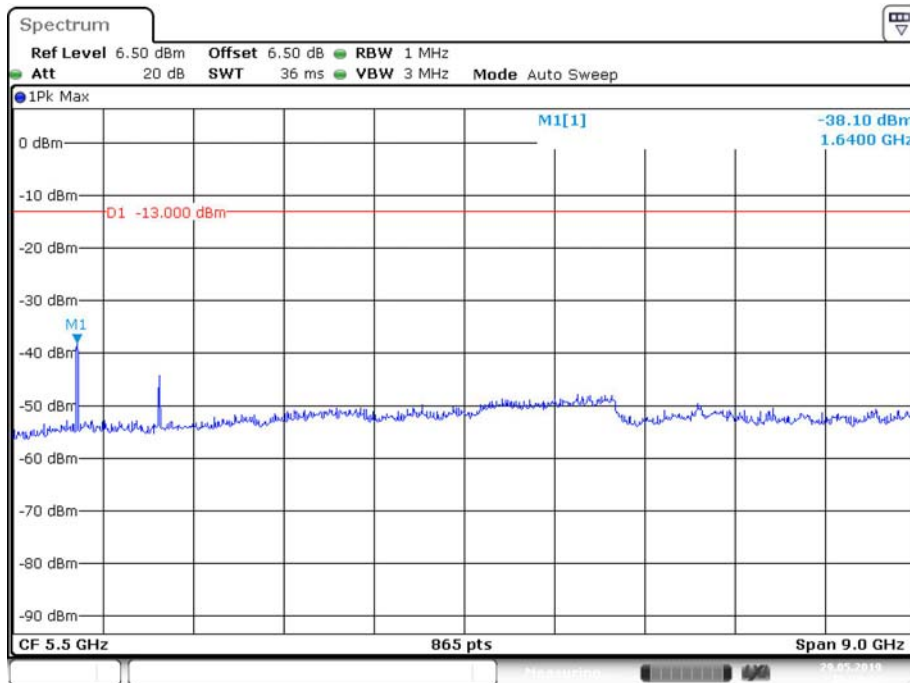
Date: 29.MAY.2019 19:20:58

30 MHz – 1.0 GHz (10.0 MHz, Middle Channel)



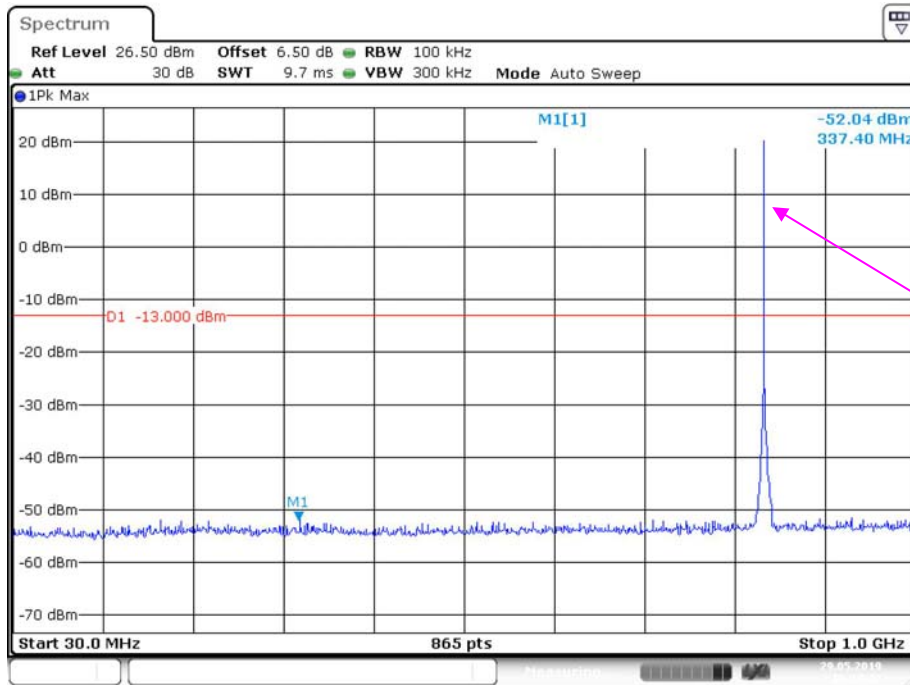
Date: 29.MAY.2019 19:12:05

1 GHz – 10 GHz (10.0 MHz, Middle Channel)



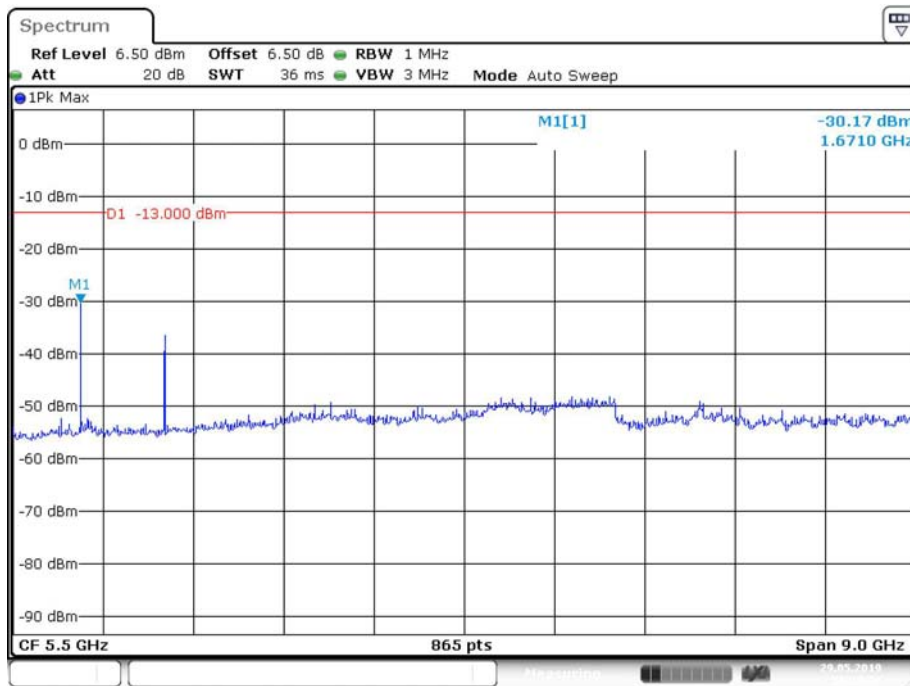
Date: 29.MAY.2019 19:20:36

LTE Band 26(824-849MHz):
30 MHz - 1 GHz (1.4 MHz, Middle Channel)



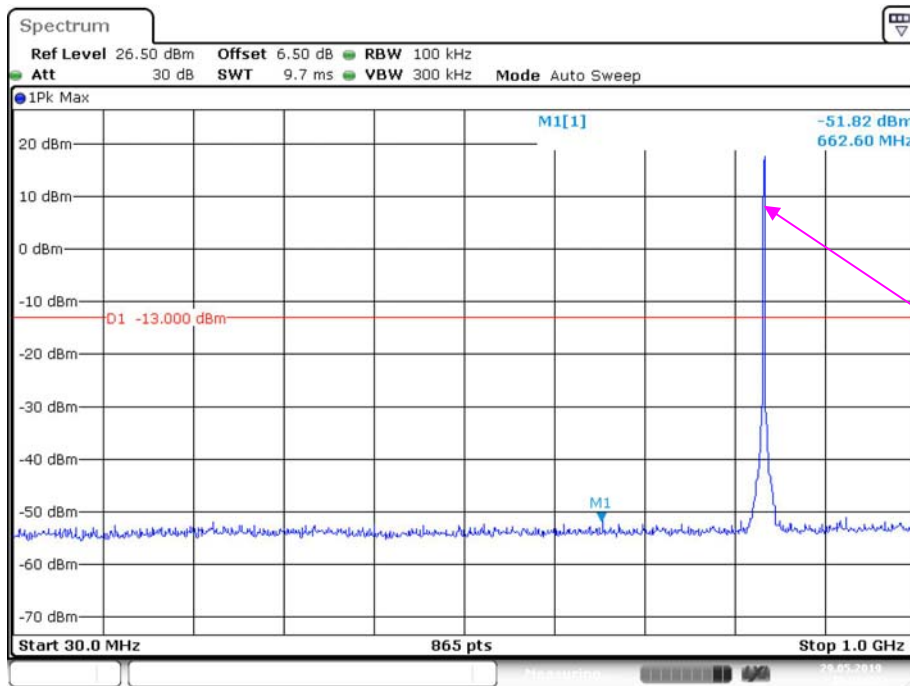
Date: 29.MAY.2019 19:17:22

1 GHz - 10 GHz (1.4 MHz, Middle Channel)



Date: 29.MAY.2019 19:18:30

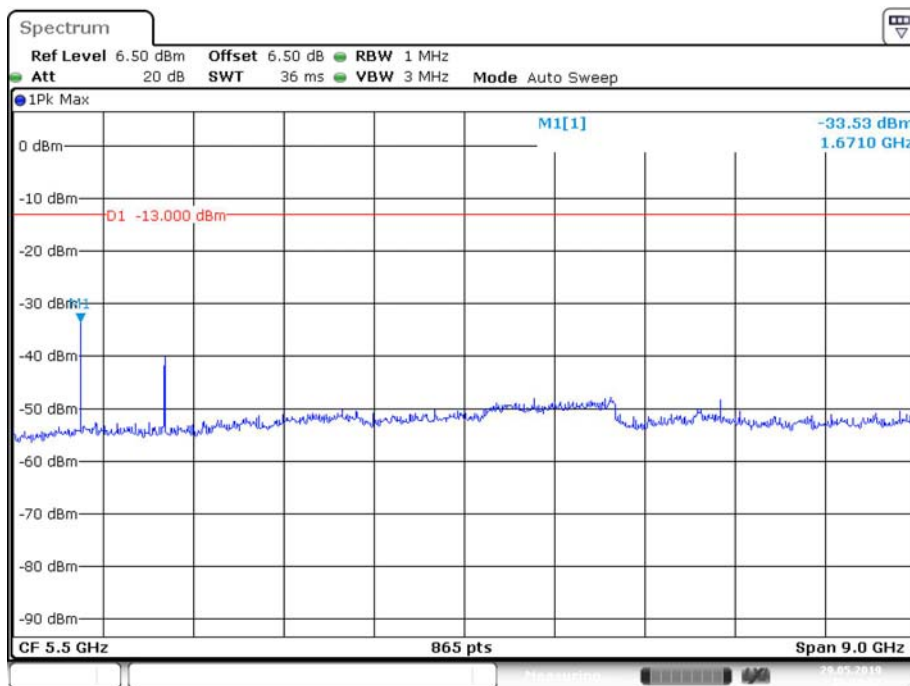
30 MHz – 1 GHz (3.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:16:30

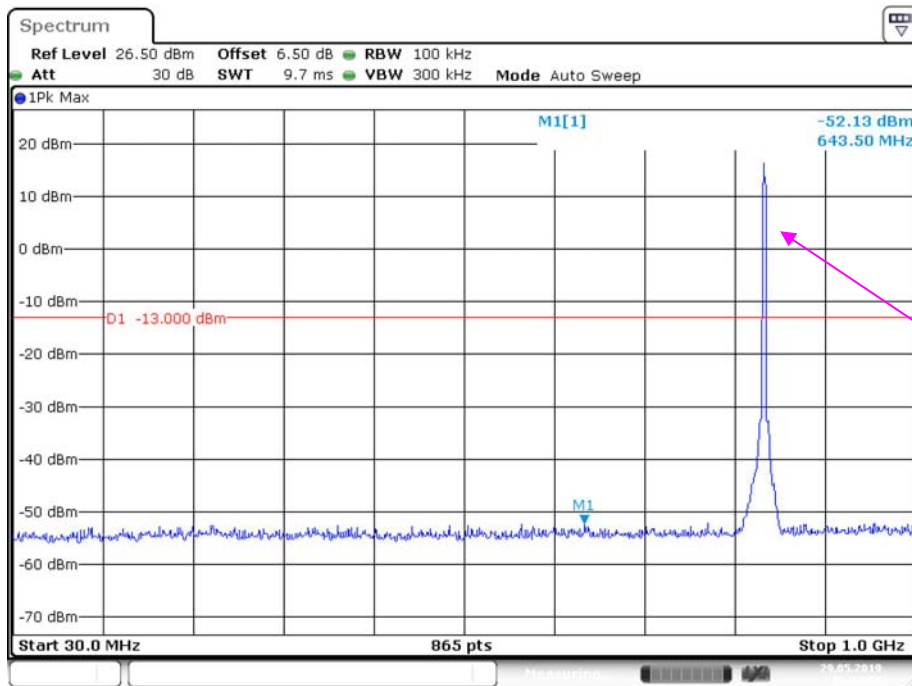
Fundamental test

1 GHz – 10 GHz (3.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:18:52

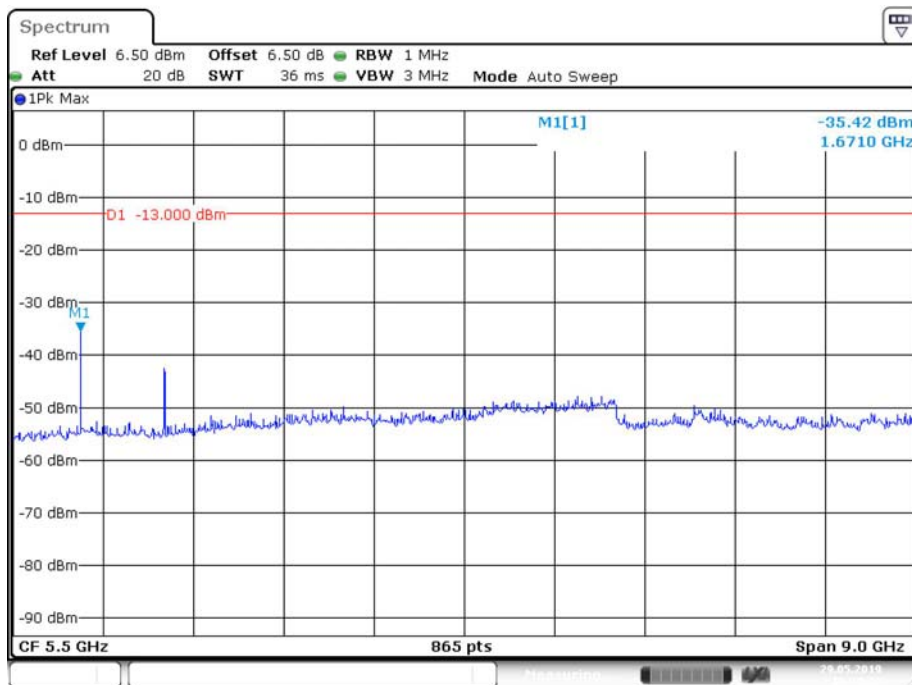
30 MHz – 1.0 GHz (5.0 MHz, Middle Channel)



Fundamental test

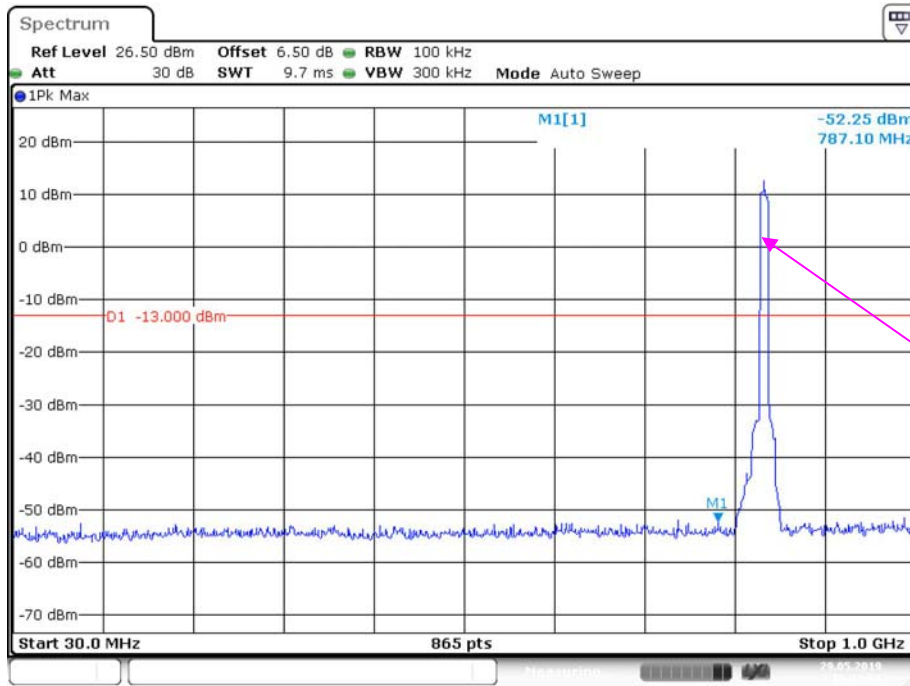
Date: 29.MAY.2019 19:14:05

1 GHz – 10 GHz (5.0 MHz, Middle Channel)



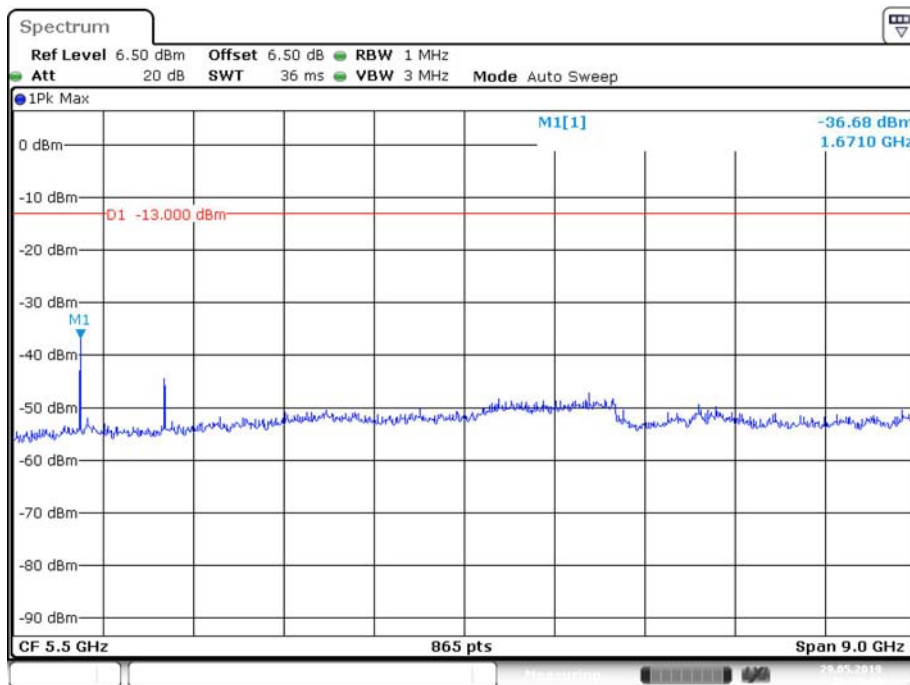
Date: 29.MAY.2019 19:19:26

30 MHz – 1.0 GHz (10.0 MHz, Middle Channel)



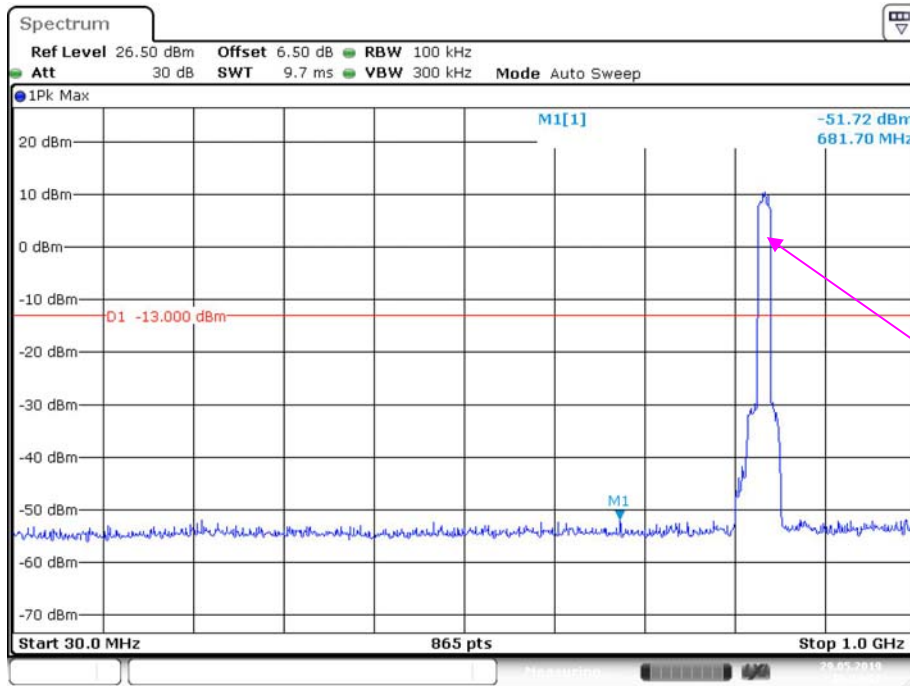
Date: 29.MAY.2019 19:12:53

1 GHz – 10 GHz (10.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:19:44

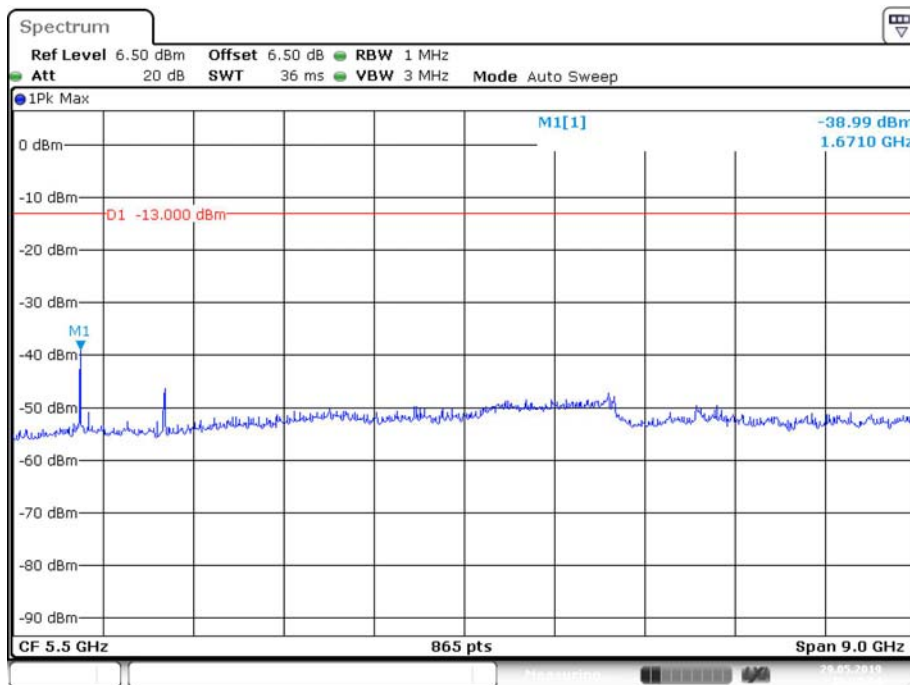
30 MHz – 1.0 GHz (15.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:13:31

Fundamental test

1 GHz – 10 GHz (15.0 MHz, Middle Channel)



Date: 29.MAY.2019 19:20:04

FCC § 2.1053; § 22.917 (a); §90.691 SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917(a) and § 90.691.

For mobile digital stations, the attenuation factor shall be not less than $40 + 10 \log (P)$ dB on all frequencies between the channel edge and 5 megahertz from the channel edge, $43 + 10 \log (P)$ dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and $55 + 10 \log (P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than $43 + 10 \log (P)$ 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.

Test Procedure

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

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

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

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

Spurious emissions in dB = $10 \lg (\text{TX pwr in Watts}/0.001)$ – the absolute level

Spurious attenuation limit in dB = $43 + 10 \text{Log}_{10} (\text{power out in Watts})$

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Curry Xiang on 2019-05-28.

EUT operation mode: Transmitting

Pre-scan with Low, Middle and High channel, the worst case as below:

LTE Band 26:

Test mode: Transmitting (Pre-scan with all the bandwidth, and worse case as below)

Frequency (MHz)	Receiver Reading (dBμV)	Turntable Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (m)	Polar (H/V)	Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Test frequency range: 30 MHz ~ 10 GHz										
427.6	32.92	344	1.2	H	-64.1	0.44	0	-64.54	-13	51.54
427.6	33.15	348	2.3	V	-63.8	0.44	0	-64.24	-13	51.24
1645.00	43.34	225	2.3	H	-64.7	1.40	8.70	-57.40	-13	44.40
1645.00	43.09	31	2.1	V	-64.8	1.40	8.70	-57.50	-13	44.50
2467.50	43.29	316	1.8	H	-60.1	2.60	10.20	-52.50	-13	39.50
2467.50	43.20	139	2.2	V	-59.5	2.60	10.20	-51.90	-13	38.90
3290.00	43.53	301	1.1	H	-57.4	1.50	11.70	-47.20	-13	34.20
3290.00	44.35	76	2.3	V	-56.6	1.50	11.70	-46.40	-13	33.40

Note:

- 1) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 2) Margin = Limit- Absolute Level

FCC § 22.917 (a); §90.691 - BAND EDGES

Applicable Standard

According to § 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.

According to FCC §90.691,:

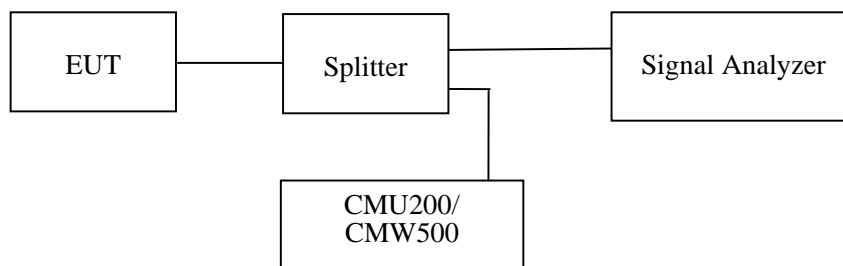
1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz

Test Procedure

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

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



Test Data

Environmental Conditions

Temperature:	23~25 °C
Relative Humidity:	48~54 %
ATM Pressure:	100.0~101.0 kPa

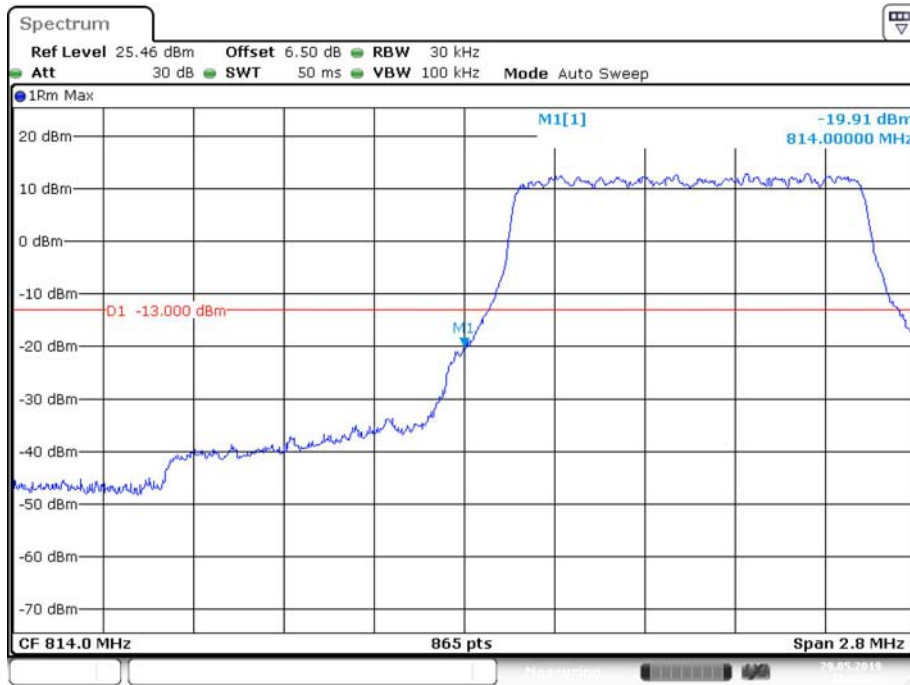
The testing was performed by Kieron Luo on 2019-05-29.

EUT operation mode: Transmitting

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

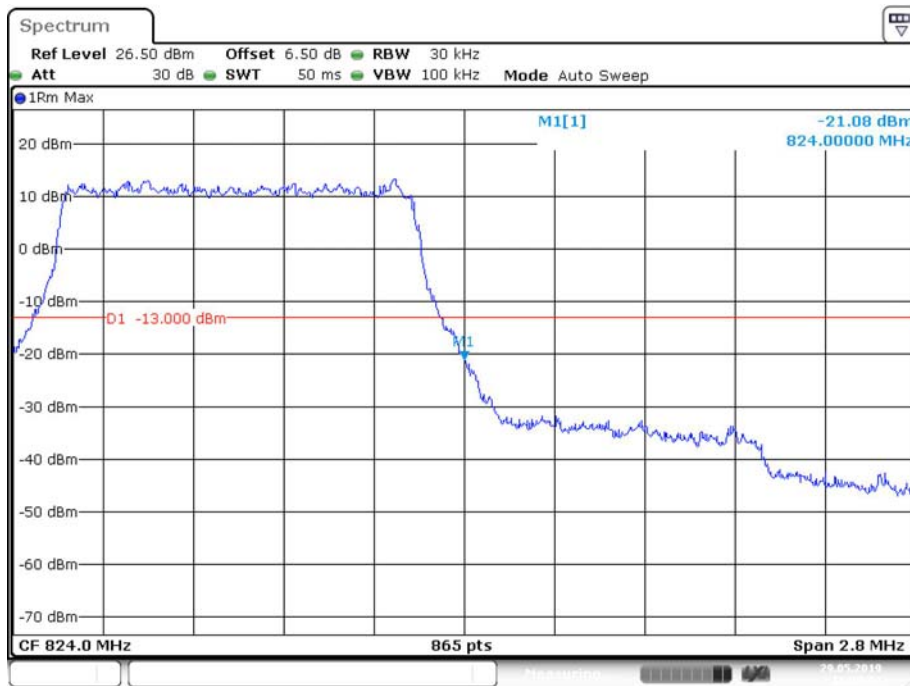
LTE Band 26(814-824MHz):

QPSK (1.4 MHz, FULL RB) - Left Band Edge



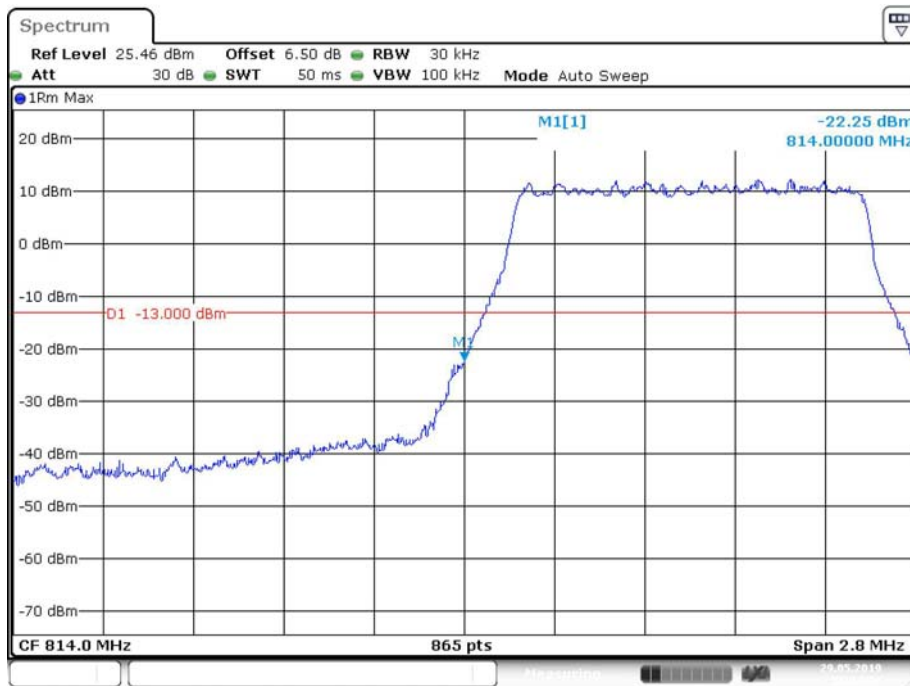
Date: 29.MAY.2019 15:55:33

QPSK (1.4 MHz, FULL RB) - Right Band Edge

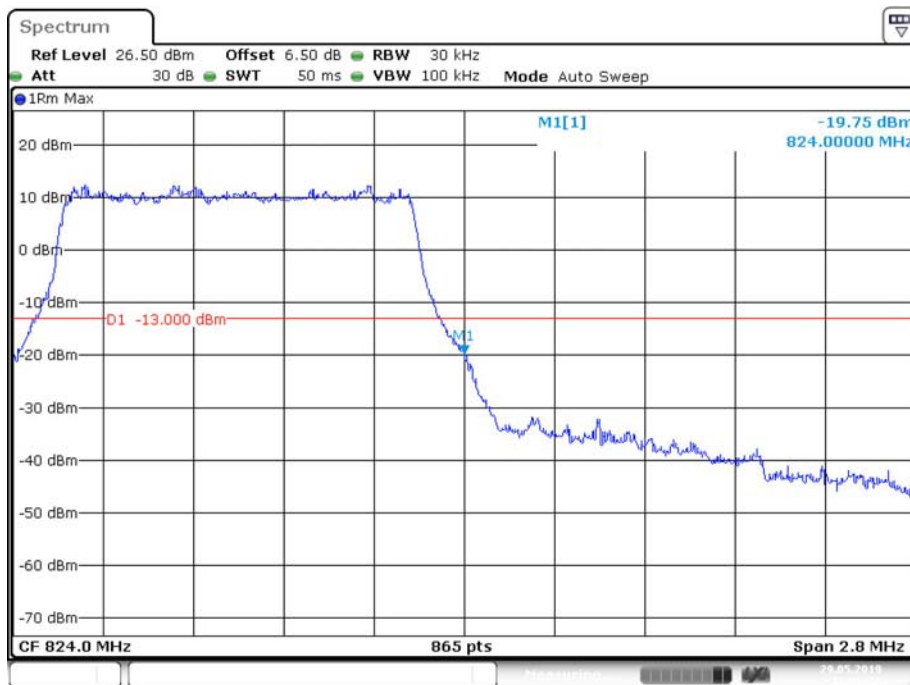


Date: 29.MAY.2019 18:37:03

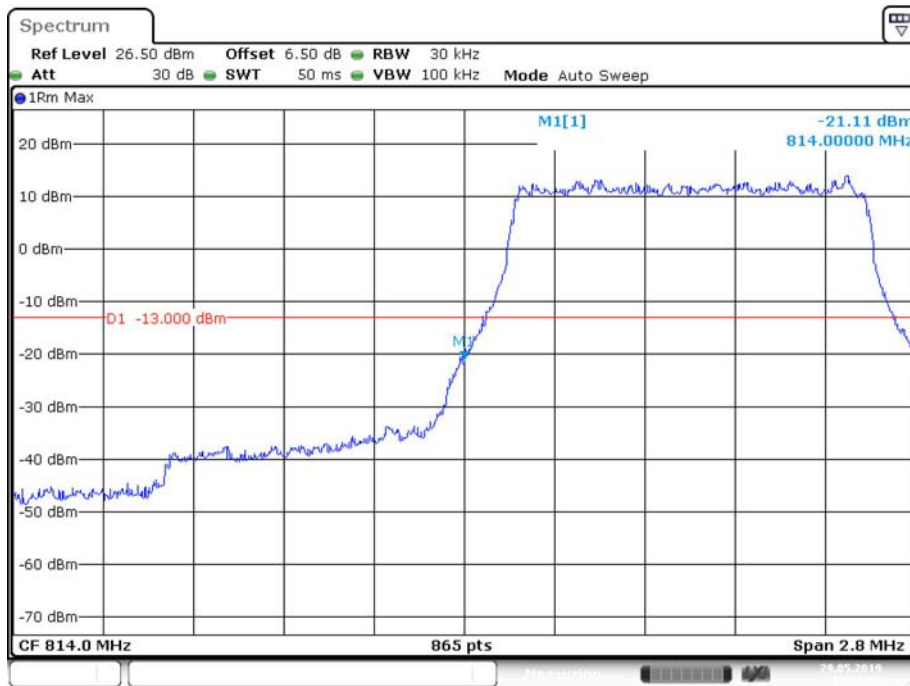
16-QAM (1.4 MHz, FULL RB) - Left Band Edge



16-QAM (1.4 MHz, FULL RB) - Right Band Edge

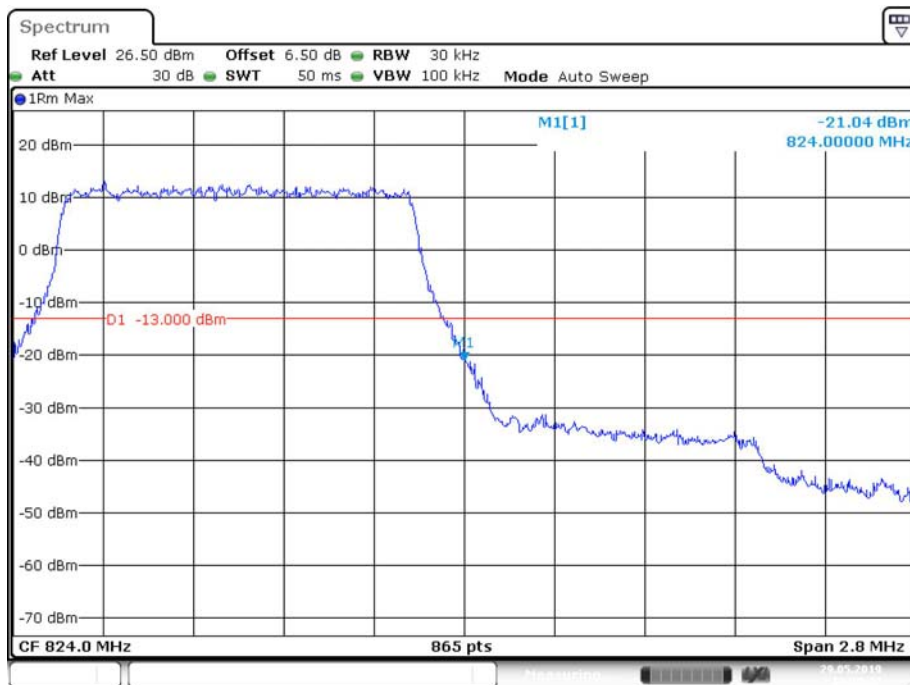


64-QAM (1.4 MHz, FULL RB) - Left Band Edge



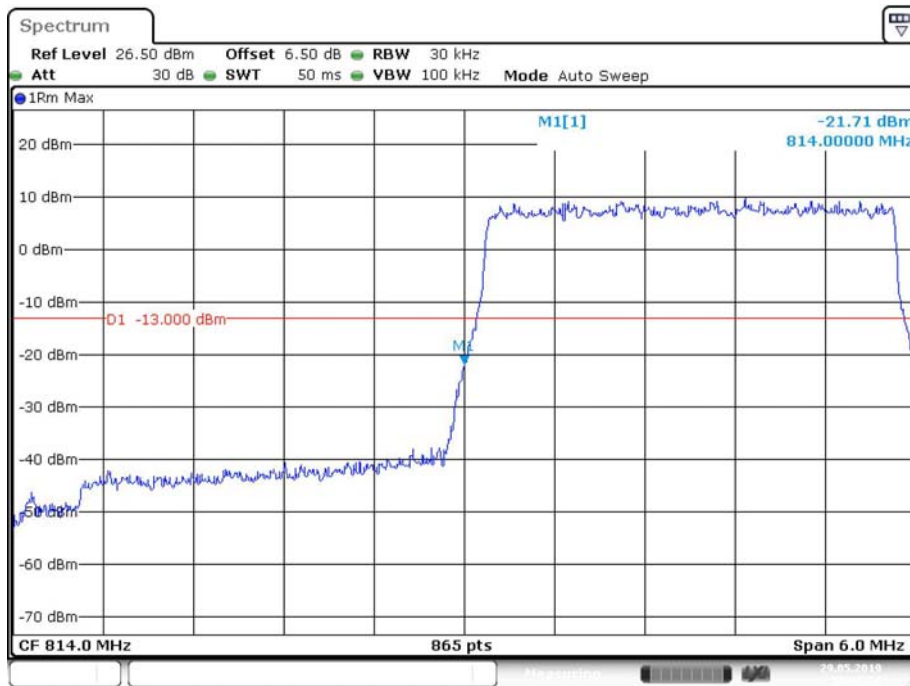
Date: 29.MAY.2019 19:01:08

64-QAM (1.4 MHz, FULL RB) - Right Band Edge



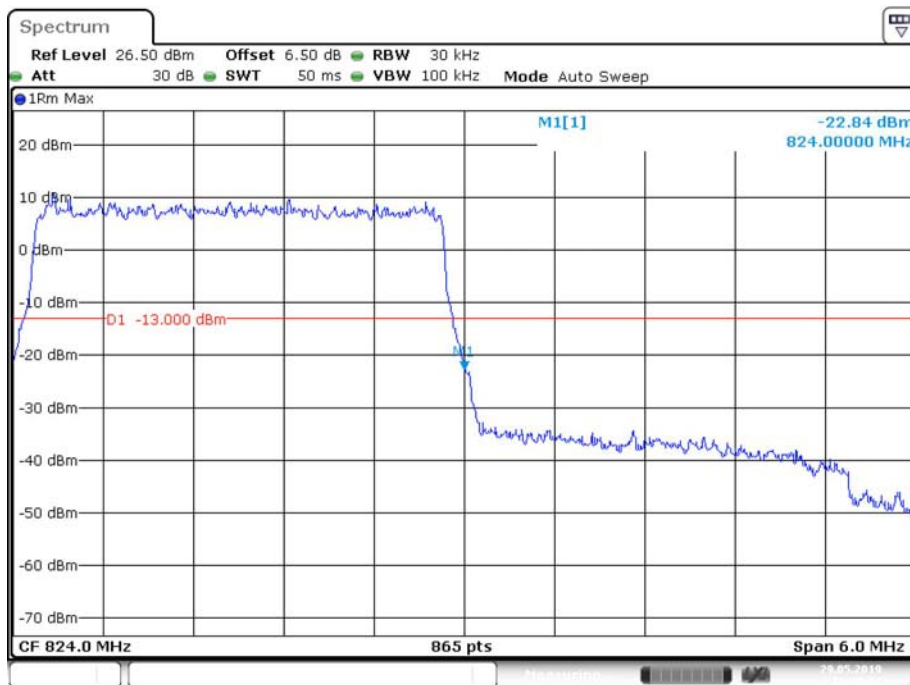
Date: 29.MAY.2019 19:00:37

QPSK (3.0 MHz, FULL RB) - Left Band Edge



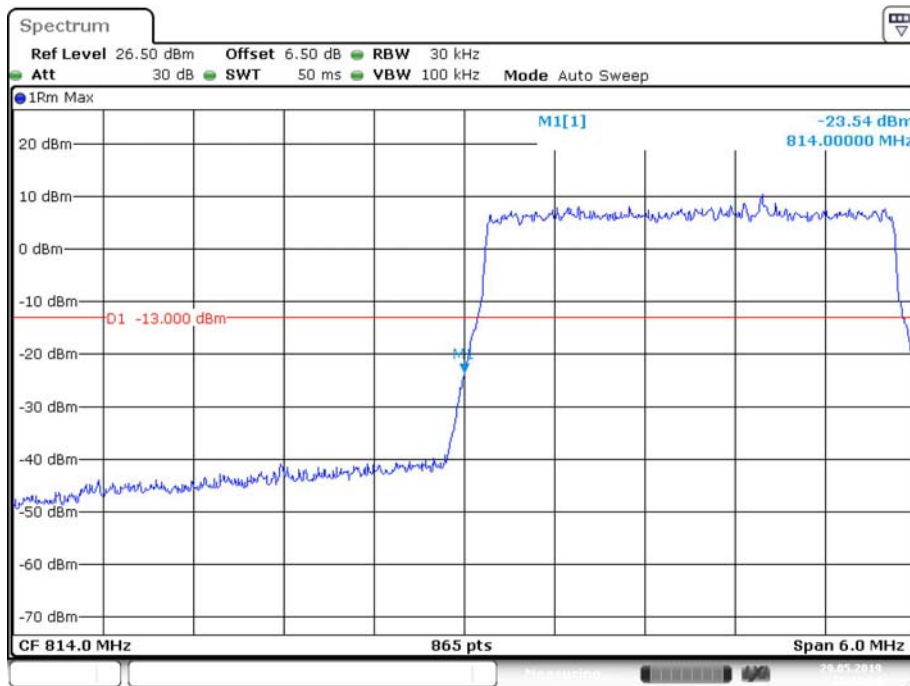
Date: 29.MAY.2019 18:41:01

QPSK (3.0 MHz, FULL RB) - Right Band Edge



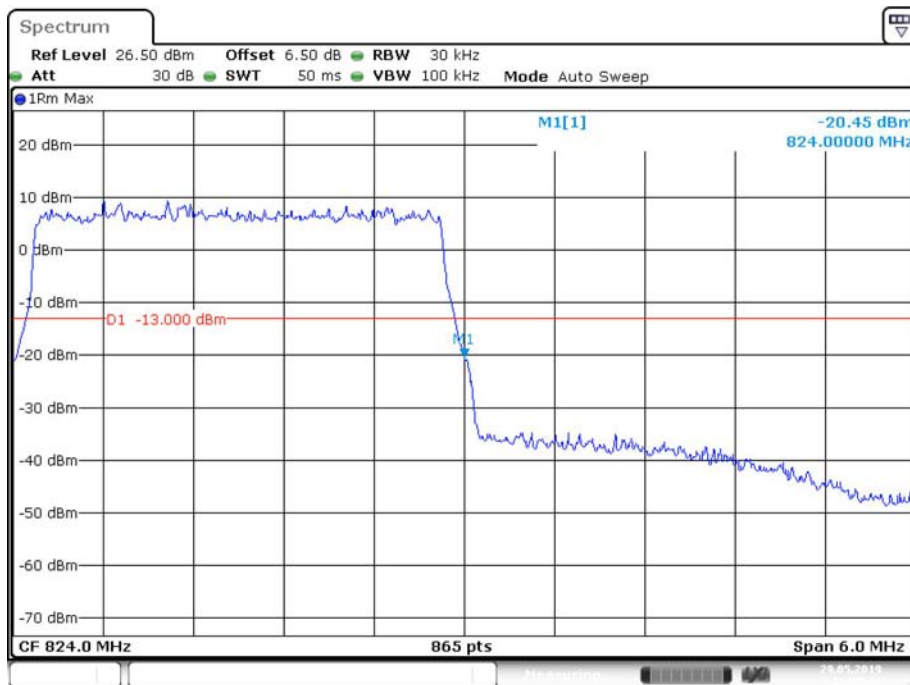
Date: 29.MAY.2019 18:40:02

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



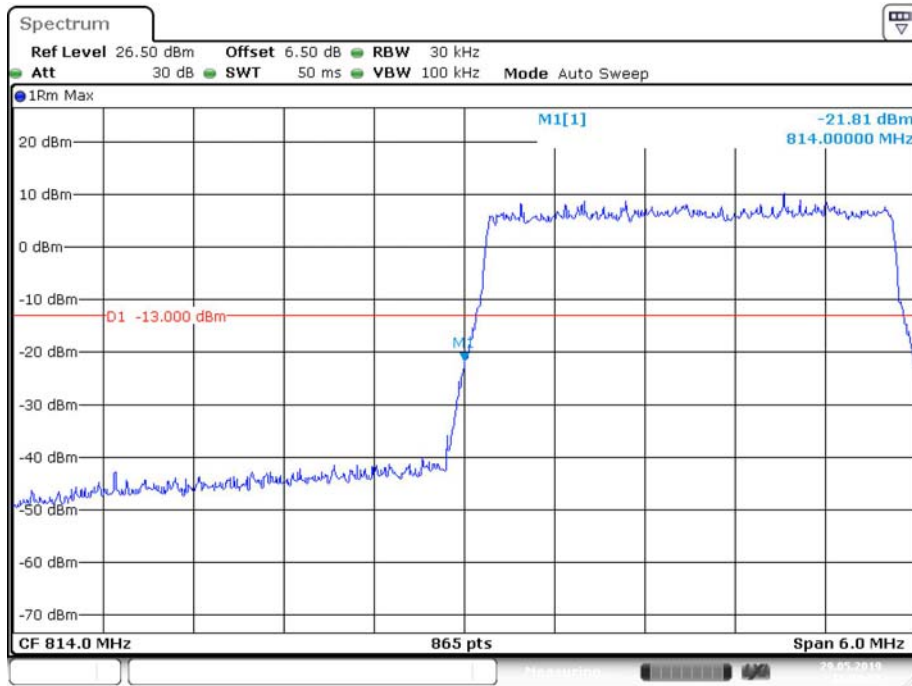
Date: 29.MAY.2019 18:41:54

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



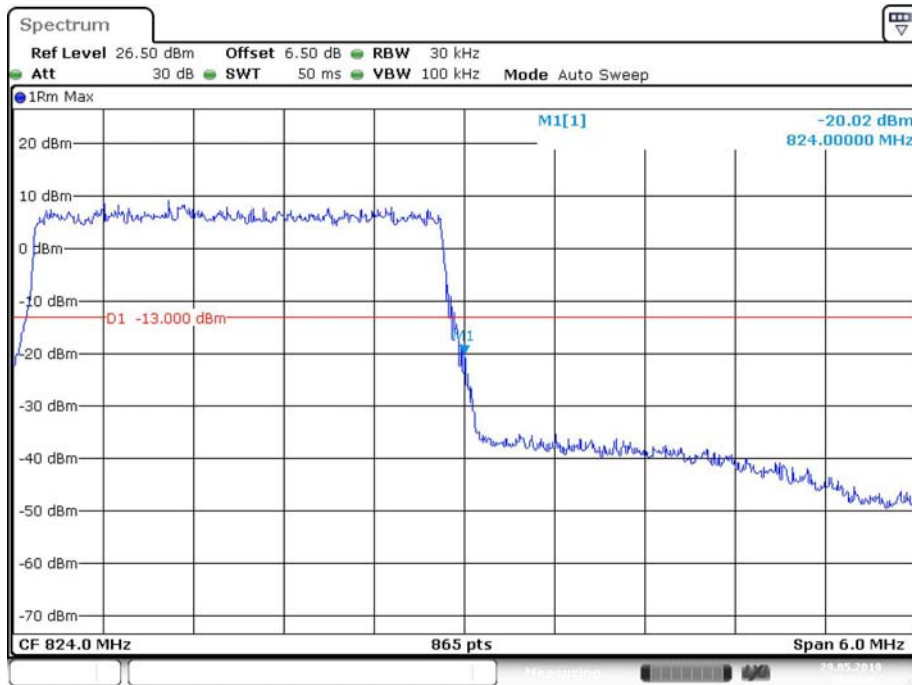
Date: 29.MAY.2019 18:39:19

64-QAM (3.0 MHz, FULL RB) - Left Band Edge



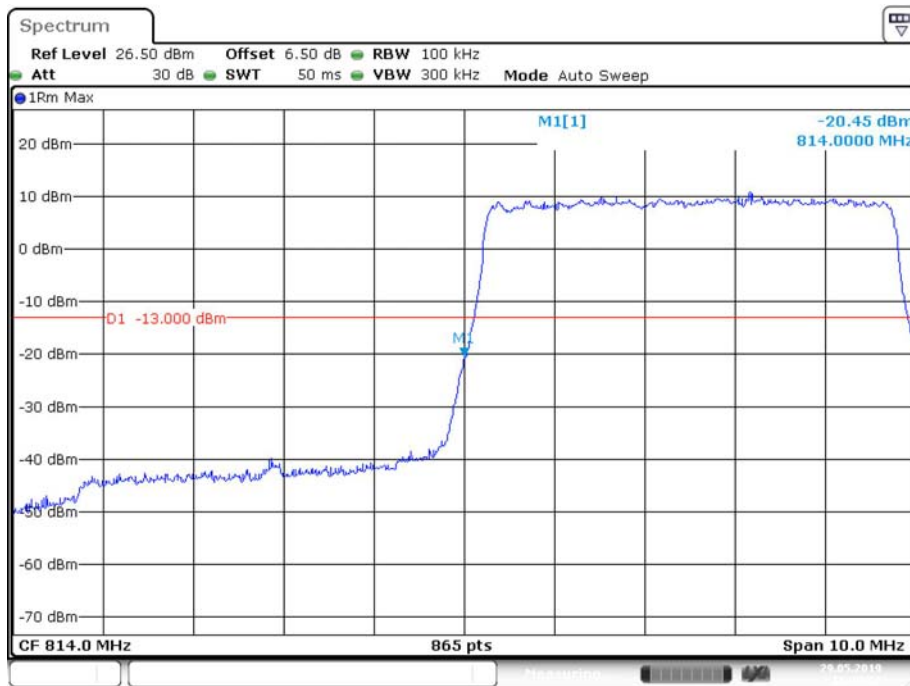
Date: 29.MAY.2019 18:58:55

64-QAM (3.0 MHz, FULL RB) - Right Band Edge



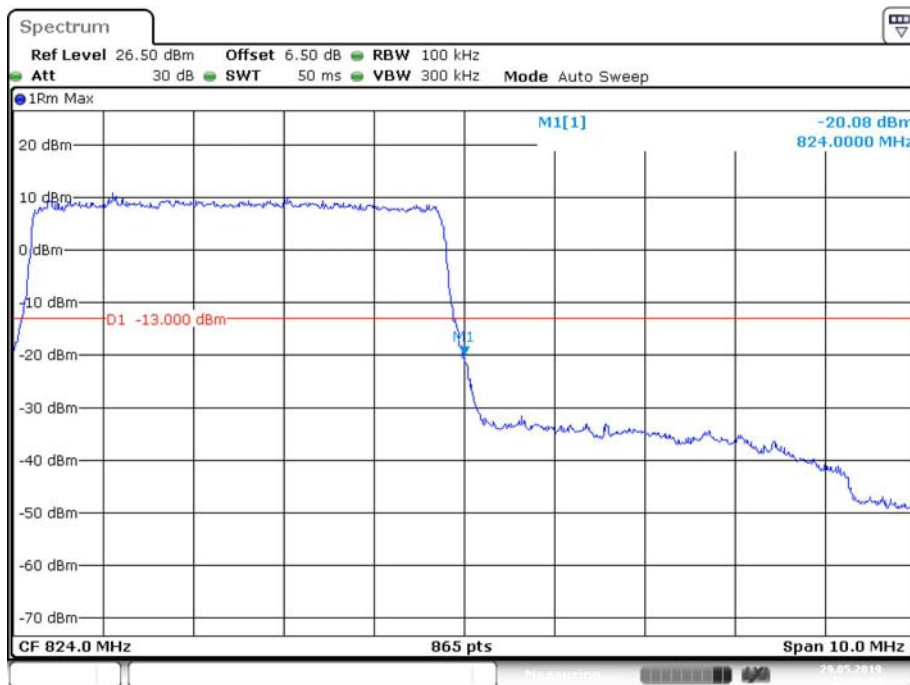
Date: 29.MAY.2019 18:59:49

QPSK (5.0 MHz, FULL RB) - Left Band Edge



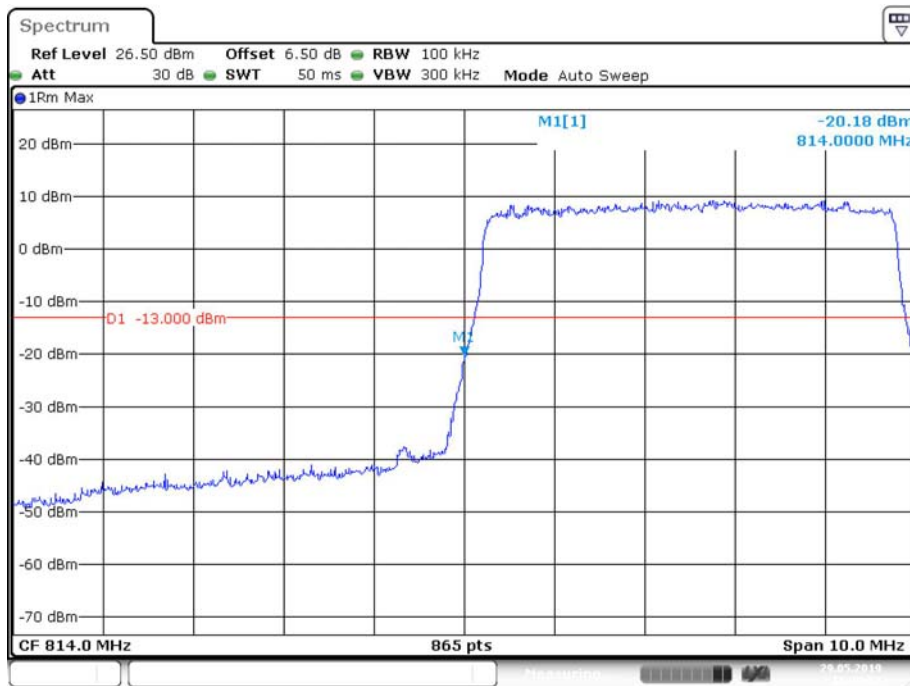
Date: 29.MAY.2019 18:43:21

QPSK (5.0 MHz, FULL RB) - Right Band Edge



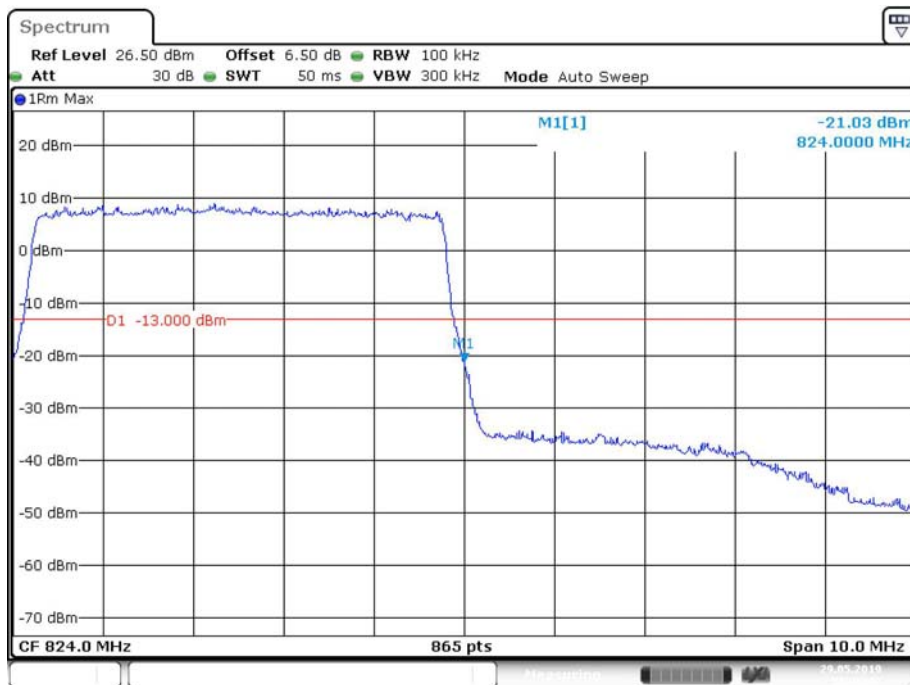
Date: 29.MAY.2019 18:46:24

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



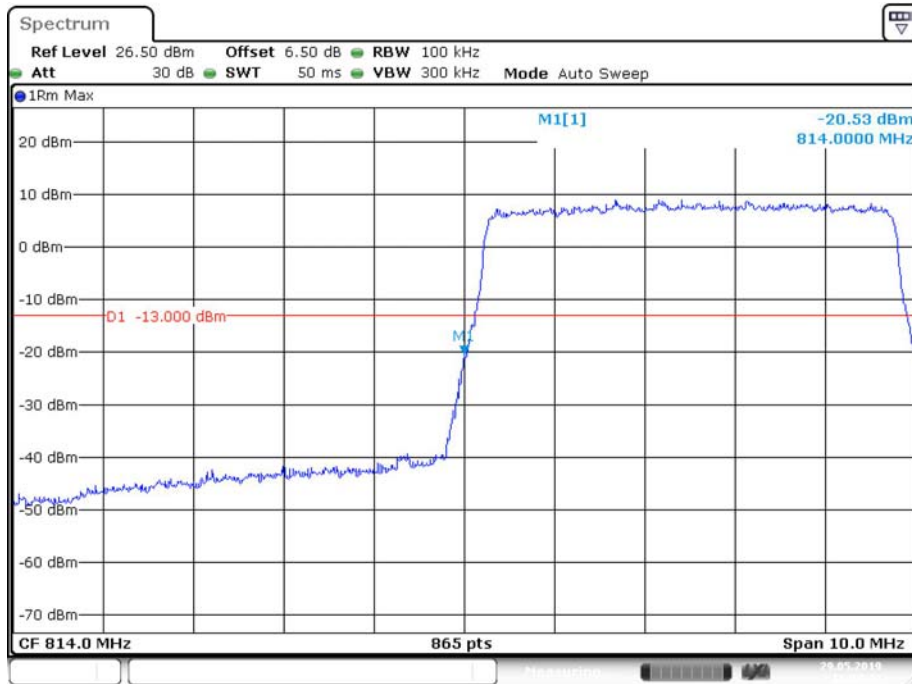
Date: 29.MAY.2019 18:43:53

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



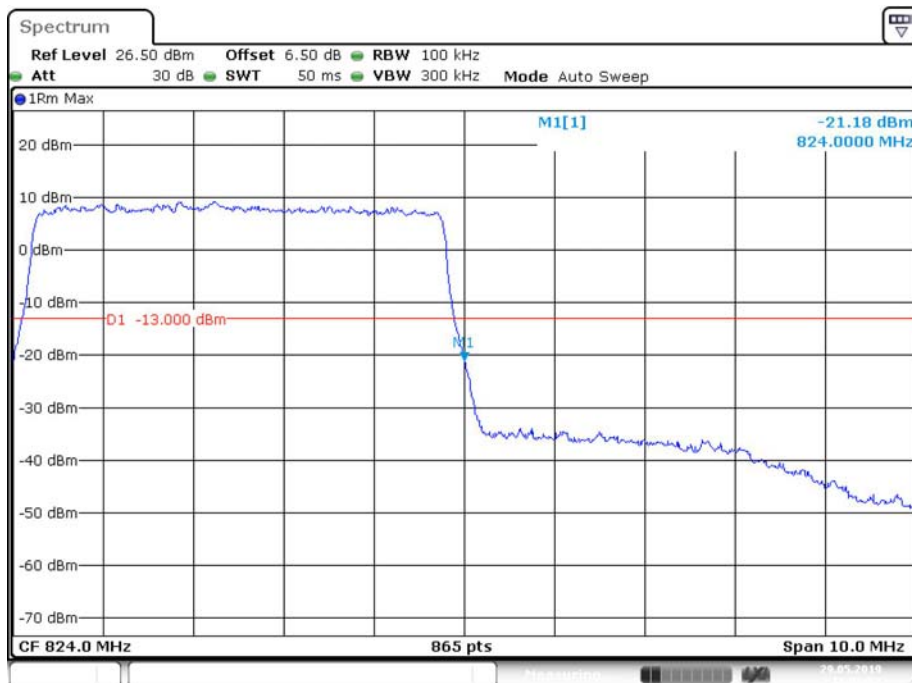
Date: 29.MAY.2019 18:45:42

64-QAM (5.0 MHz, FULL RB) - Left Band Edge



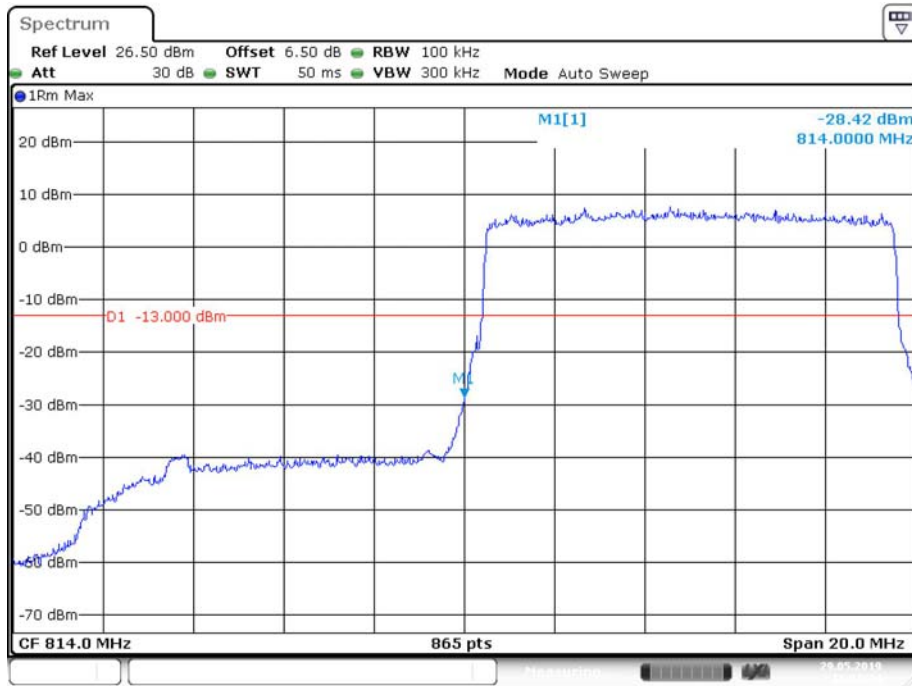
Date: 29.MAY.2019 18:57:33

64-QAM (5.0 MHz, FULL RB) - Right Band Edge



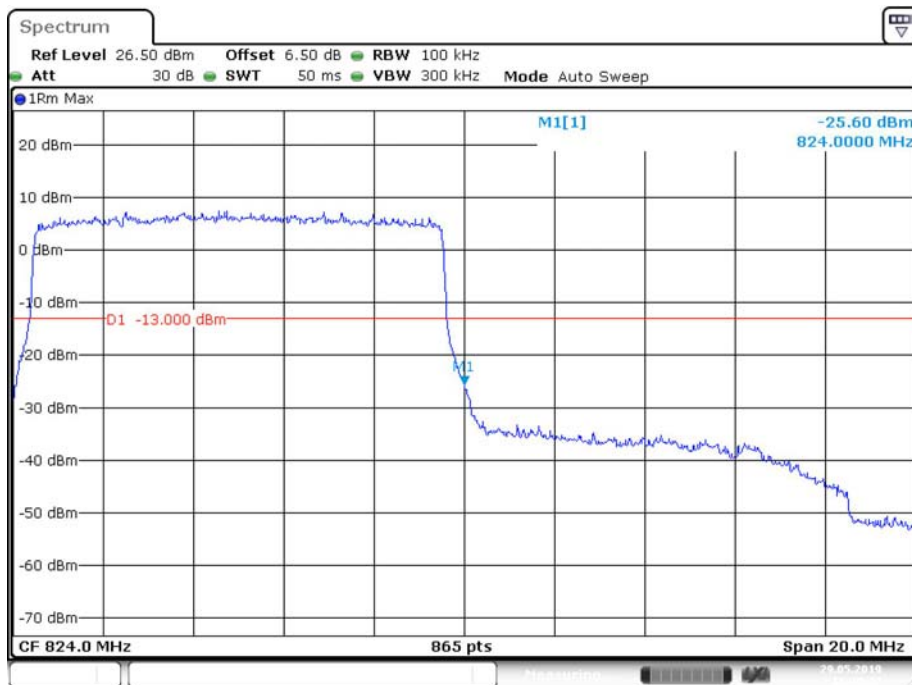
Date: 29.MAY.2019 18:56:52

QPSK (10.0 MHz, FULL RB) - Left Band Edge



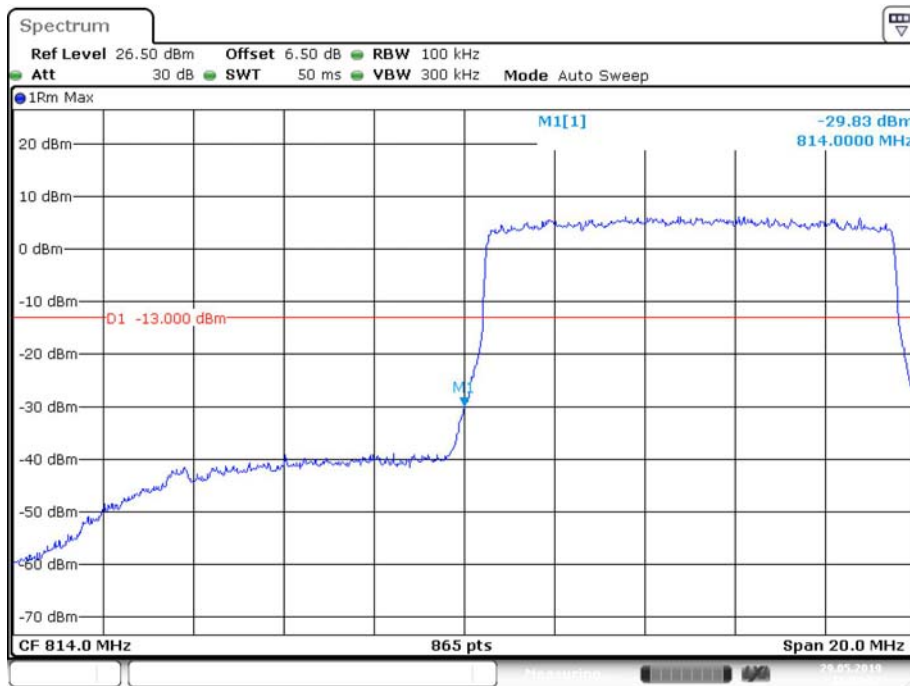
Date: 29.MAY.2019 18:51:24

QPSK (10.0 MHz, FULL RB) - Right Band Edge



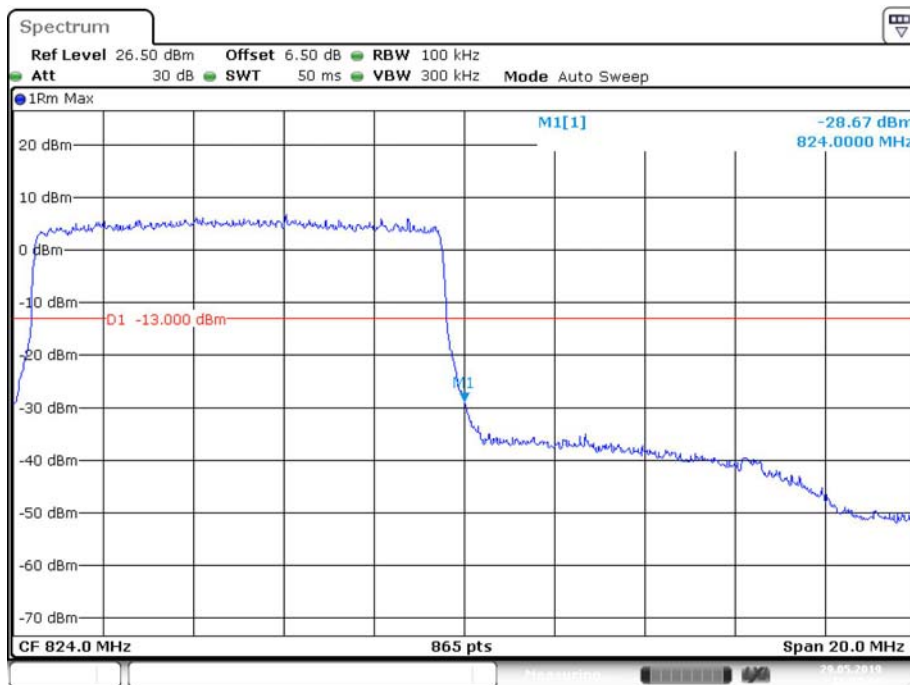
Date: 29.MAY.2019 18:49:27

16-QAM (10.0 MHz, FULL RB) - Left Band Edge



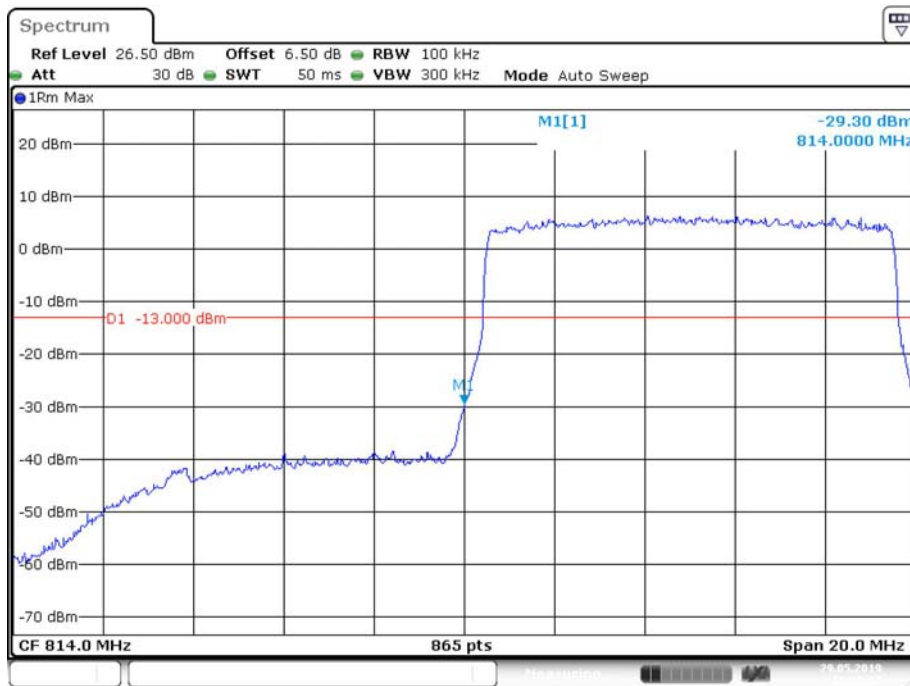
Date: 29.MAY.2019 18:53:52

16-QAM (10.0 MHz, FULL RB) - Right Band Edge



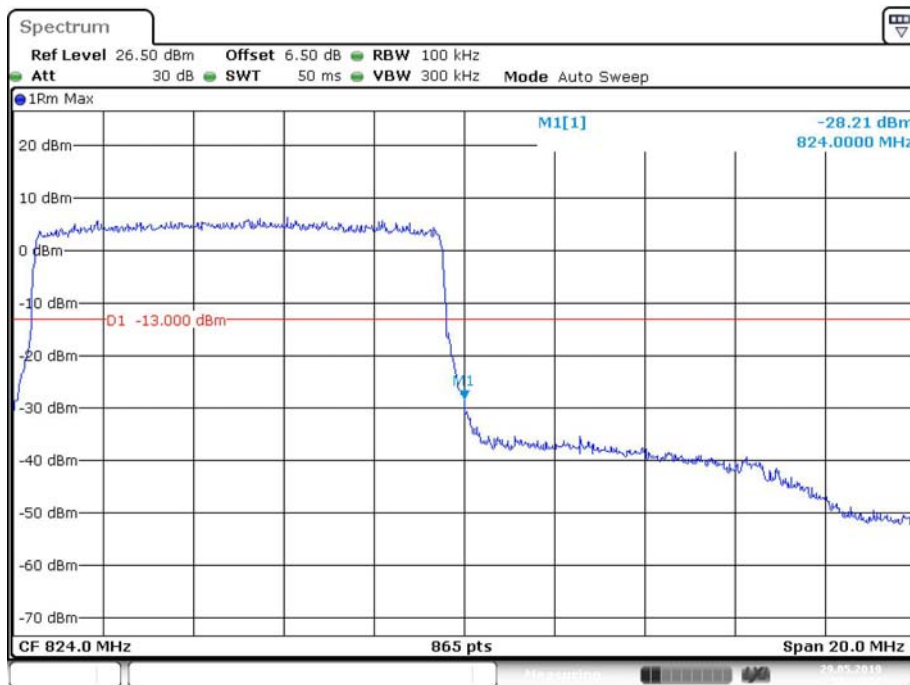
Date: 29.MAY.2019 18:50:07

64-QAM (10.0 MHz, FULL RB) - Left Band Edge



Date: 29.MAY.2019 18:55:06

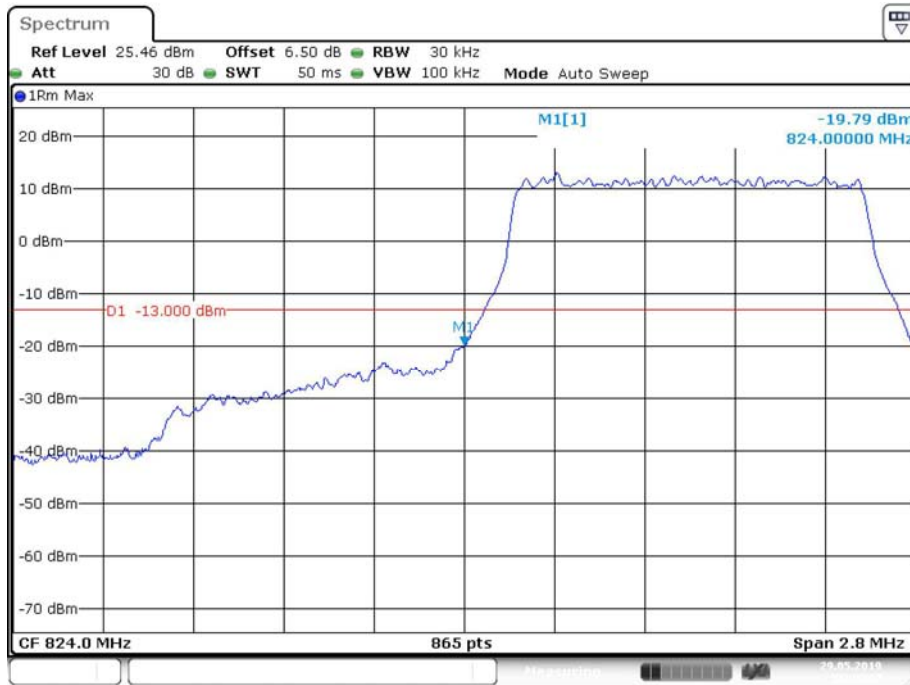
64-QAM (10.0 MHz, FULL RB) - Right Band Edge



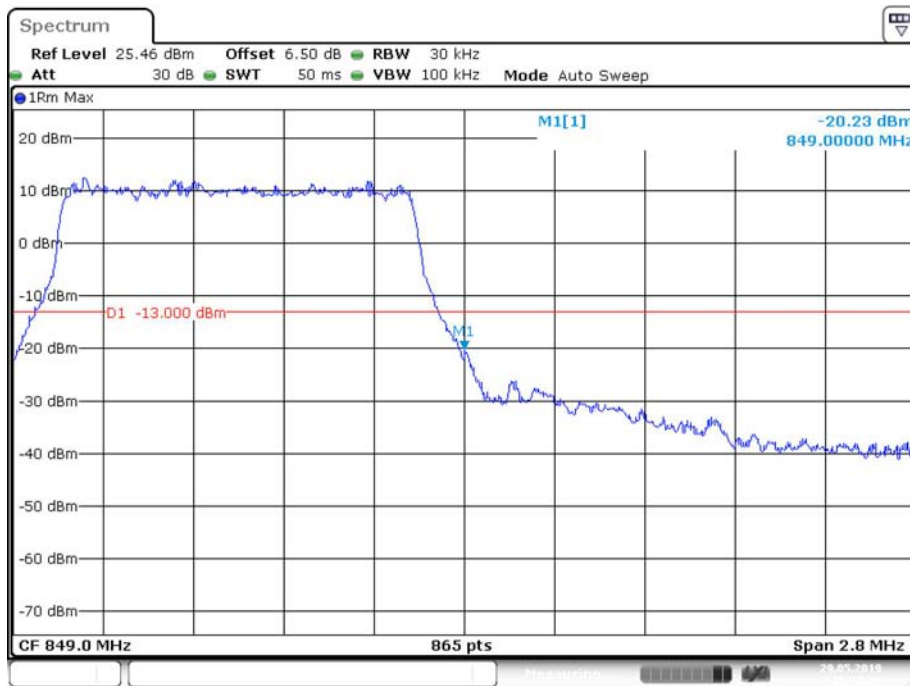
Date: 29.MAY.2019 18:55:30

LTE Band 26(824-849MHz):

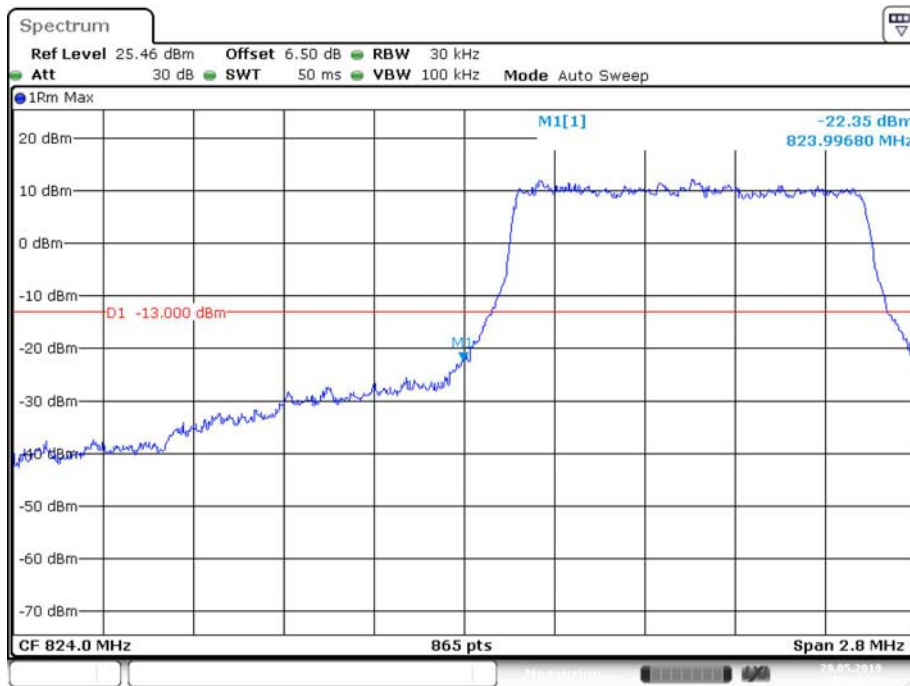
QPSK (1.4 MHz, FULL RB) - Left Band Edge



QPSK (1.4 MHz, FULL RB) - Right Band Edge

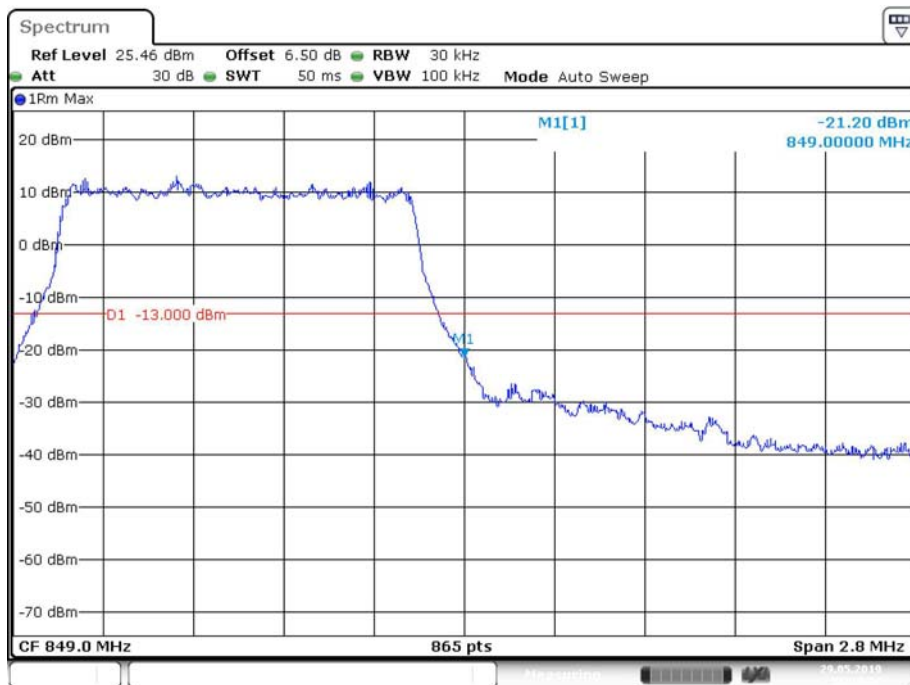


16-QAM (1.4 MHz, FULL RB) - Left Band Edge



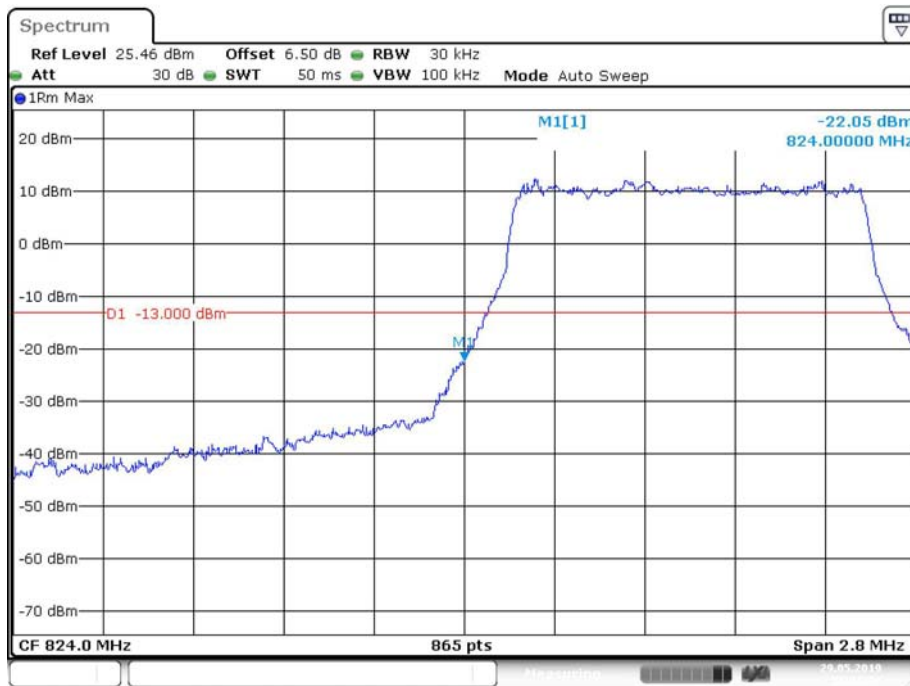
Date: 29.MAY.2019 15:16:15

16-QAM (1.4 MHz, FULL RB) - Right Band Edge



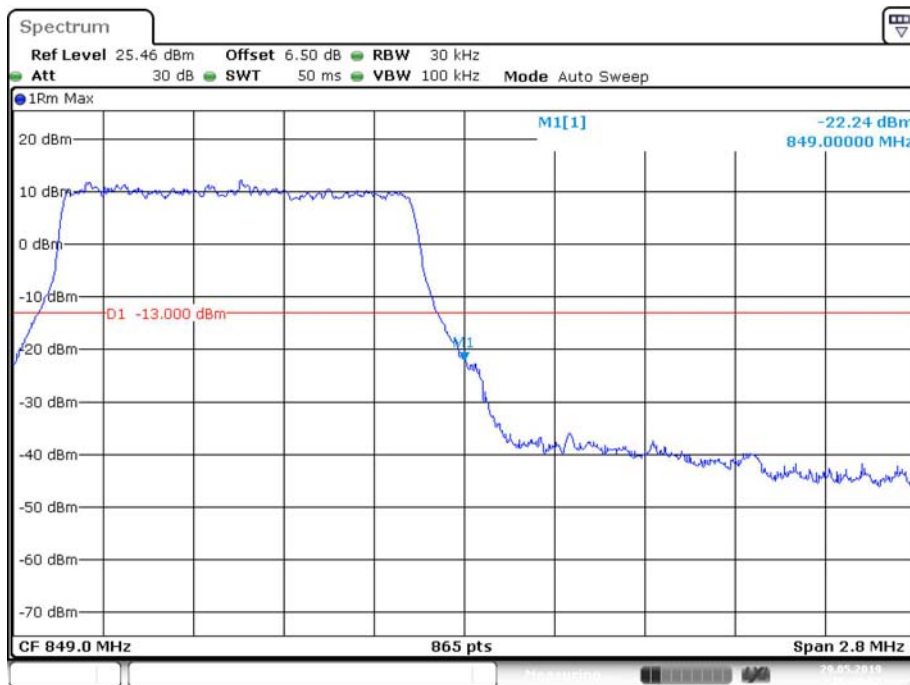
Date: 29.MAY.2019 15:18:06

64-QAM (1.4 MHz, FULL RB) - Left Band Edge



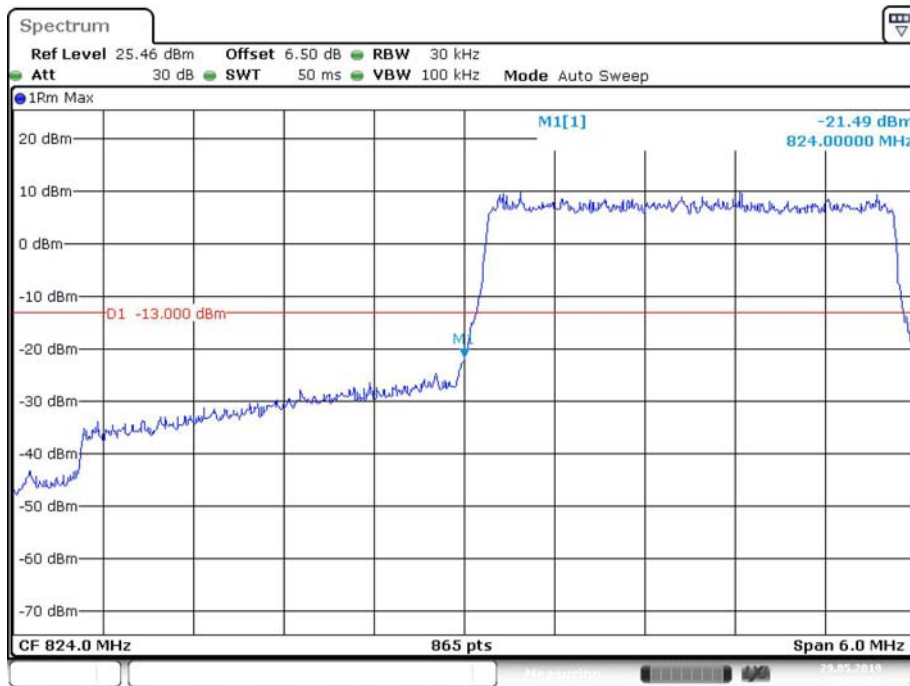
Date: 29.MAY.2019 15:51:37

64-QAM (1.4 MHz, FULL RB) - Right Band Edge



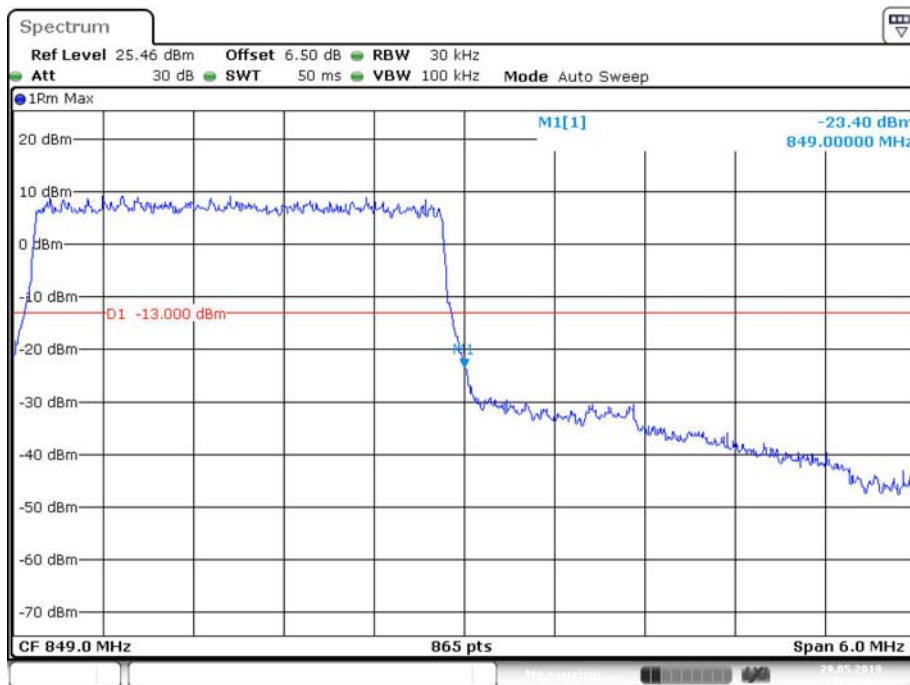
Date: 29.MAY.2019 15:49:51

QPSK (3.0 MHz, FULL RB) - Left Band Edge



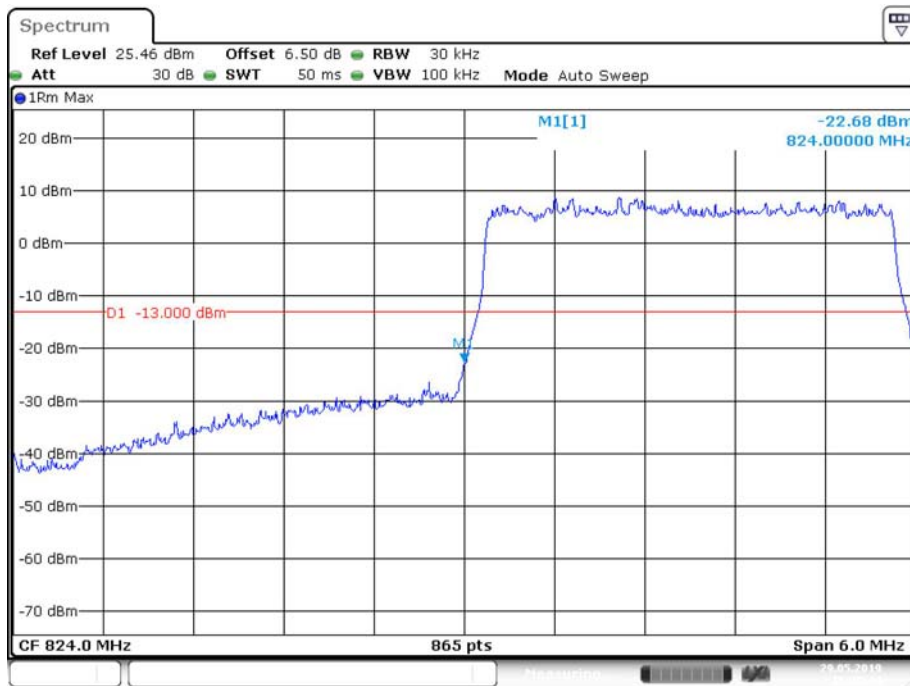
Date: 29.MAY.2019 15:24:50

QPSK (3.0 MHz, FULL RB) - Right Band Edge



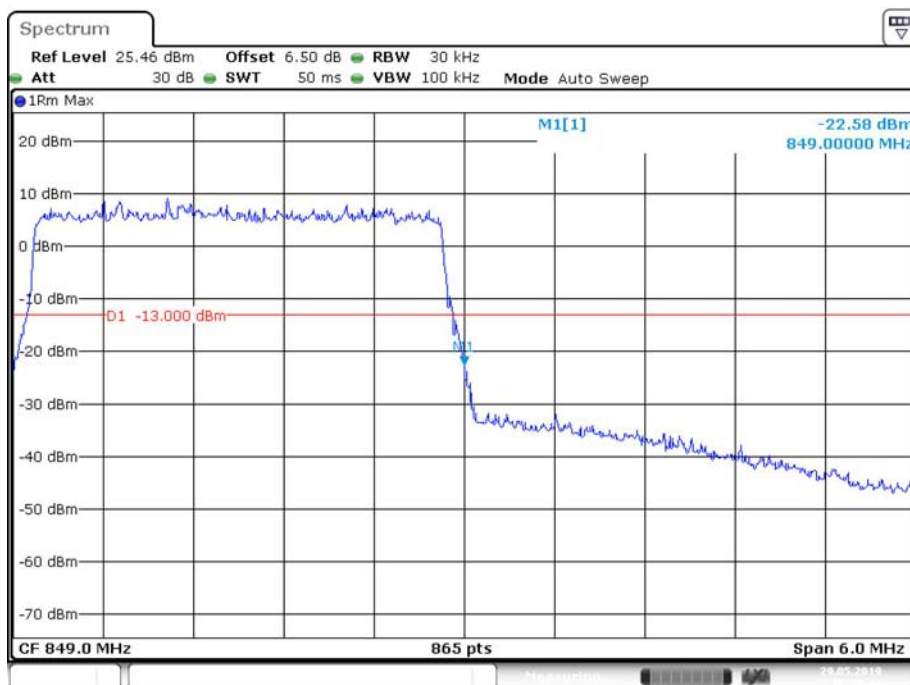
Date: 29.MAY.2019 15:23:56

16-QAM (3.0 MHz, FULL RB) - Left Band Edge



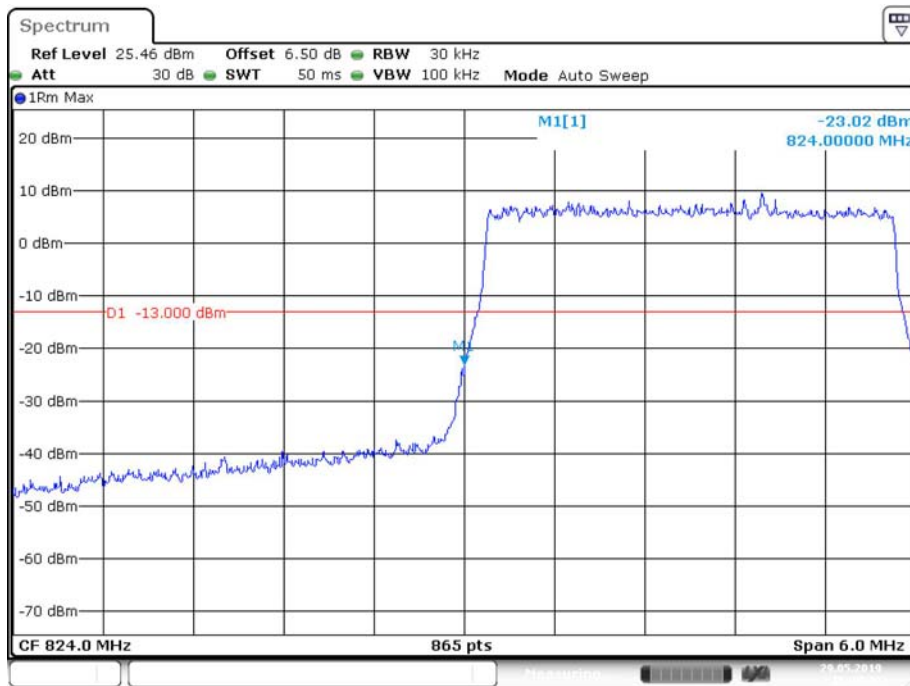
Date: 29.MAY.2019 15:25:44

16-QAM (3.0 MHz, FULL RB) - Right Band Edge



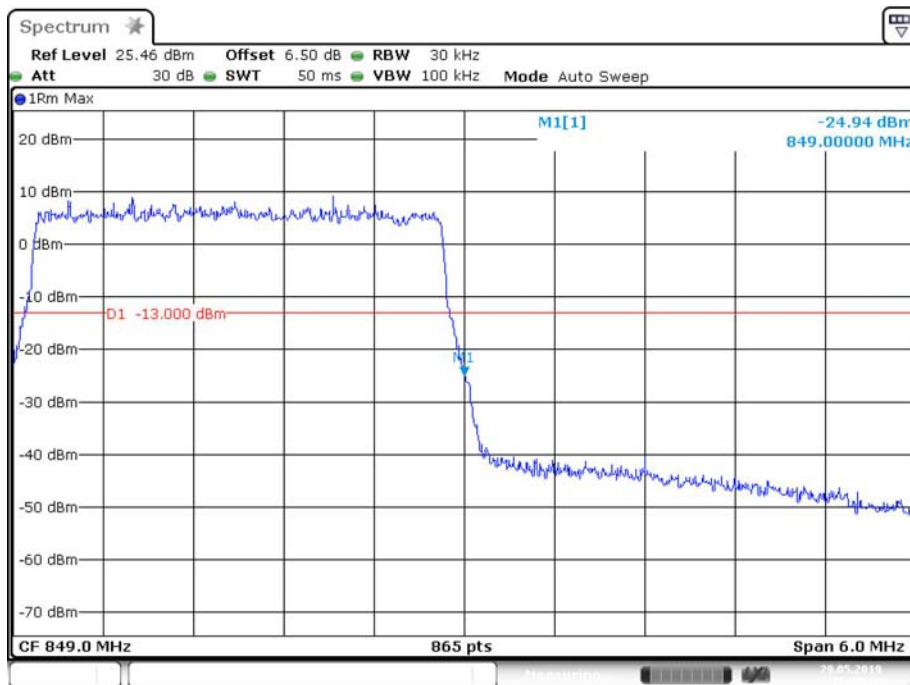
Date: 29.MAY.2019 15:21:19

64-QAM (3.0 MHz, FULL RB) - Left Band Edge



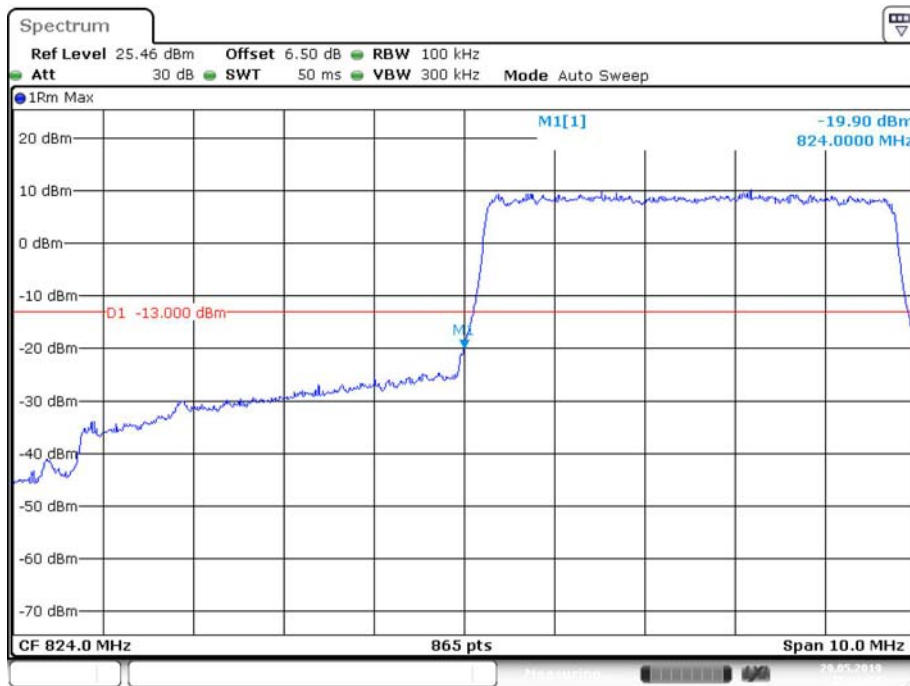
Date: 29.MAY.2019 15:47:39

64-QAM (3.0 MHz, FULL RB) - Right Band Edge



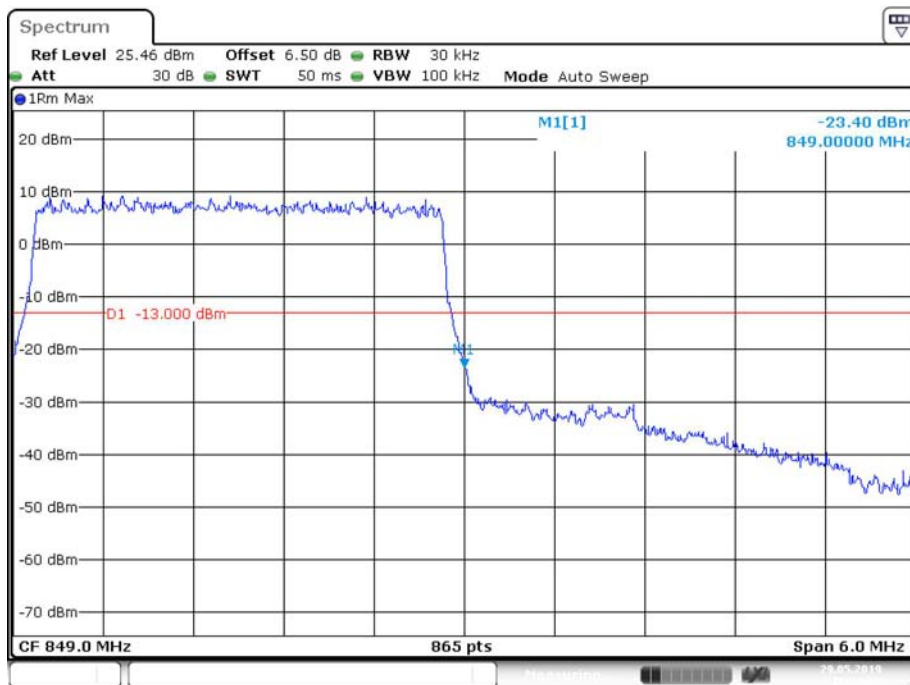
Date: 29.MAY.2019 15:48:16

QPSK (5.0 MHz, FULL RB) - Left Band Edge



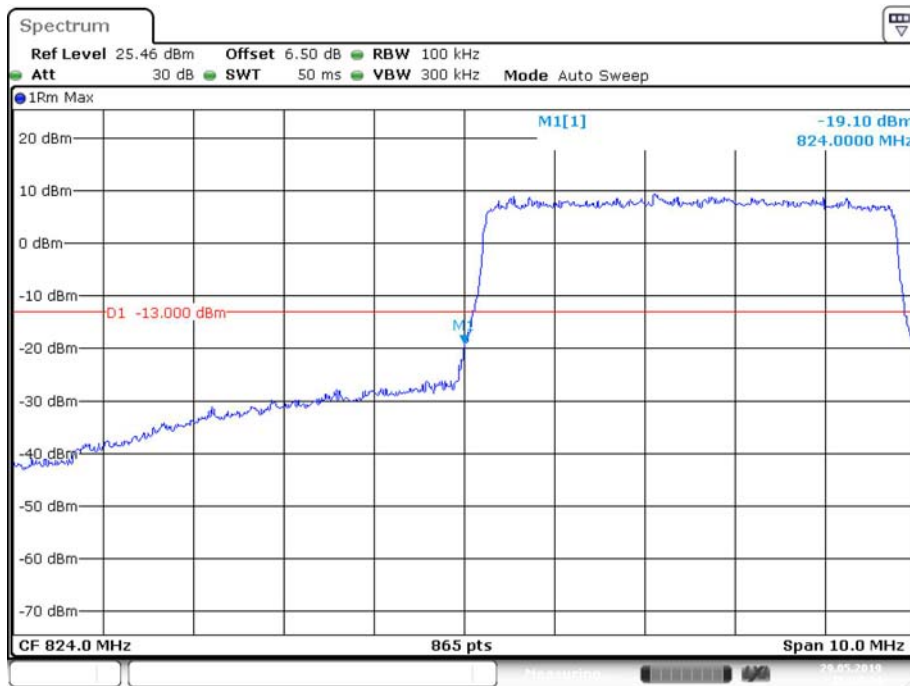
Date: 29.MAY.2019 15:27:00

QPSK (5.0 MHz, FULL RB) - Right Band Edge



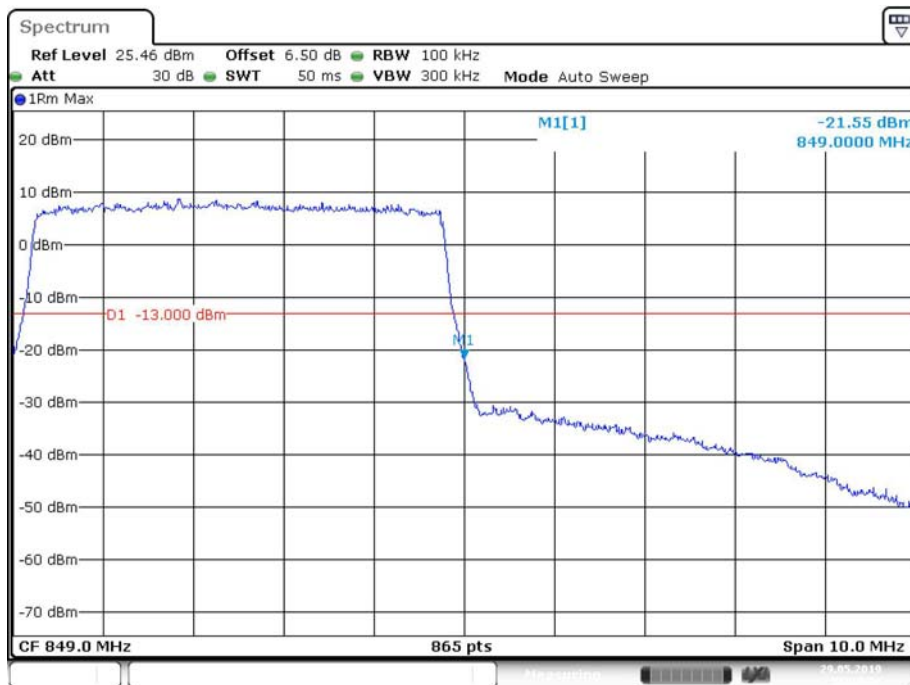
Date: 29.MAY.2019 15:23:56

16-QAM (5.0 MHz, FULL RB) - Left Band Edge



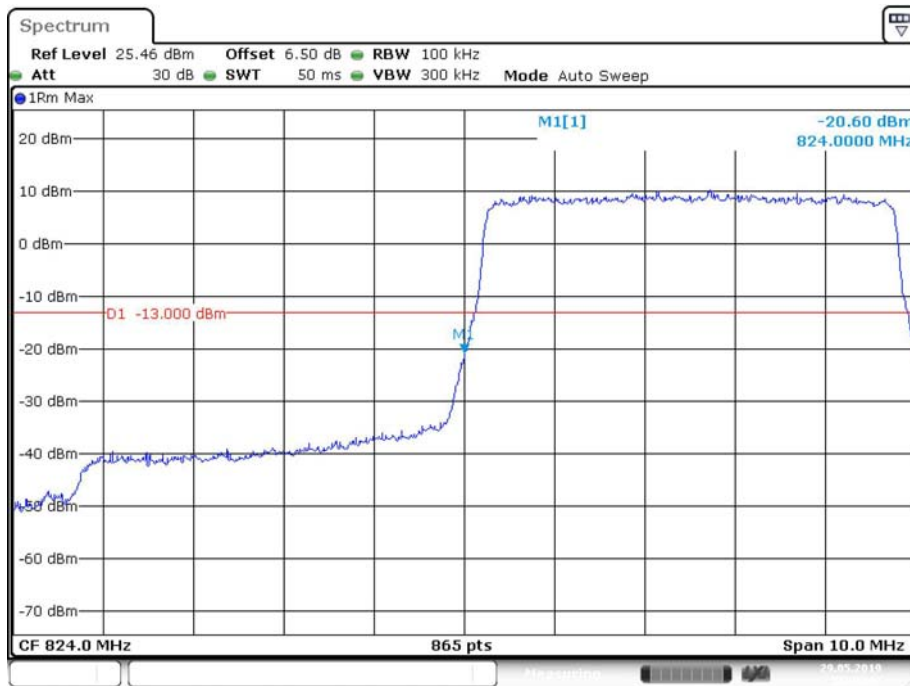
Date: 29.MAY.2019 15:27:34

16-QAM (5.0 MHz, FULL RB) - Right Band Edge



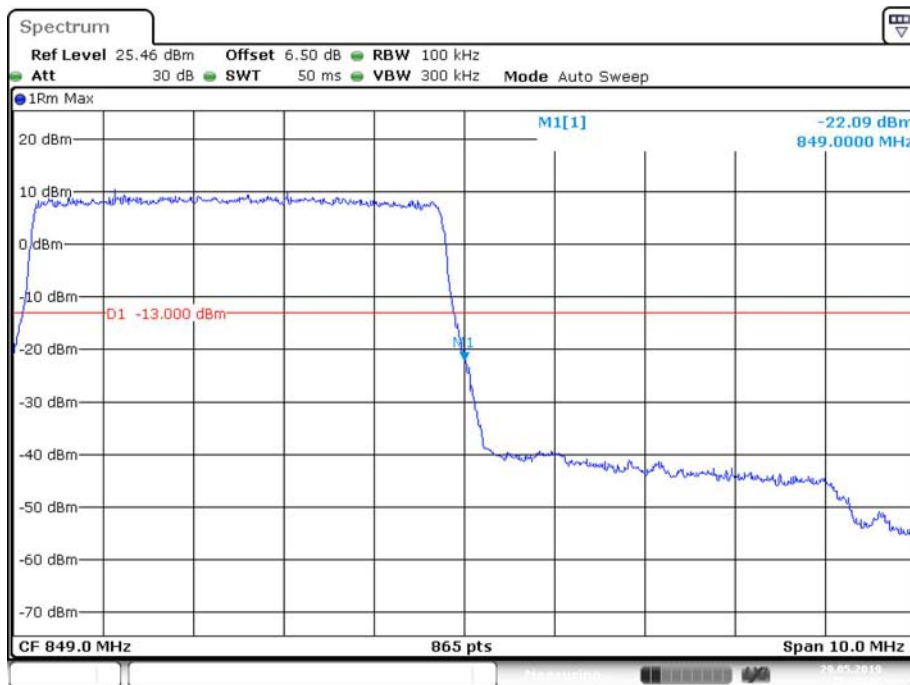
Date: 29.MAY.2019 15:28:30

64-QAM (5.0 MHz, FULL RB) - Left Band Edge



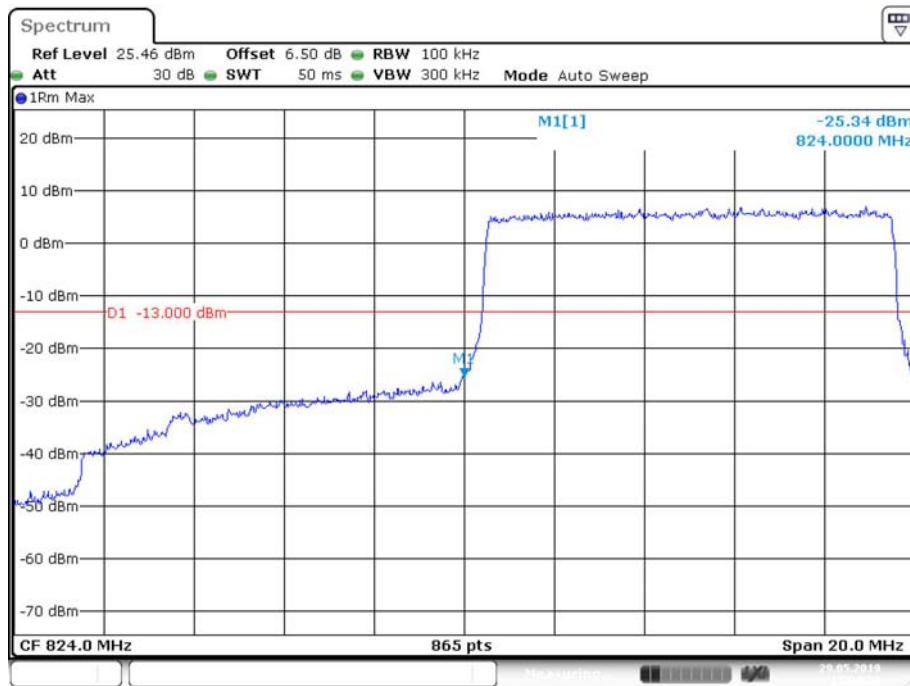
Date: 29.MAY.2019 15:45:49

64-QAM (5.0 MHz, FULL RB) - Right Band Edge



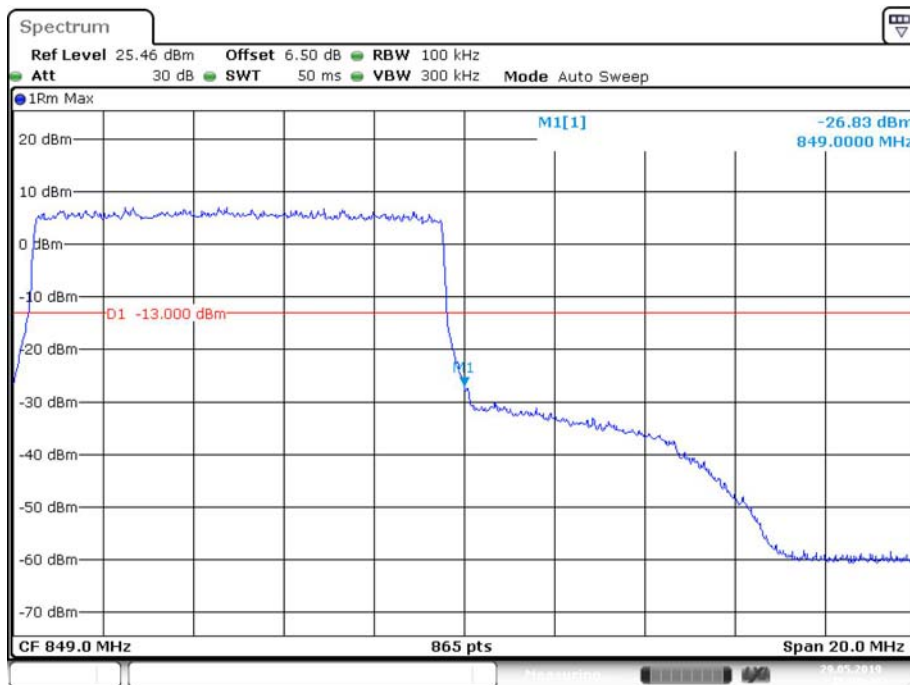
Date: 29.MAY.2019 15:45:12

QPSK (10.0 MHz, FULL RB) - Left Band Edge



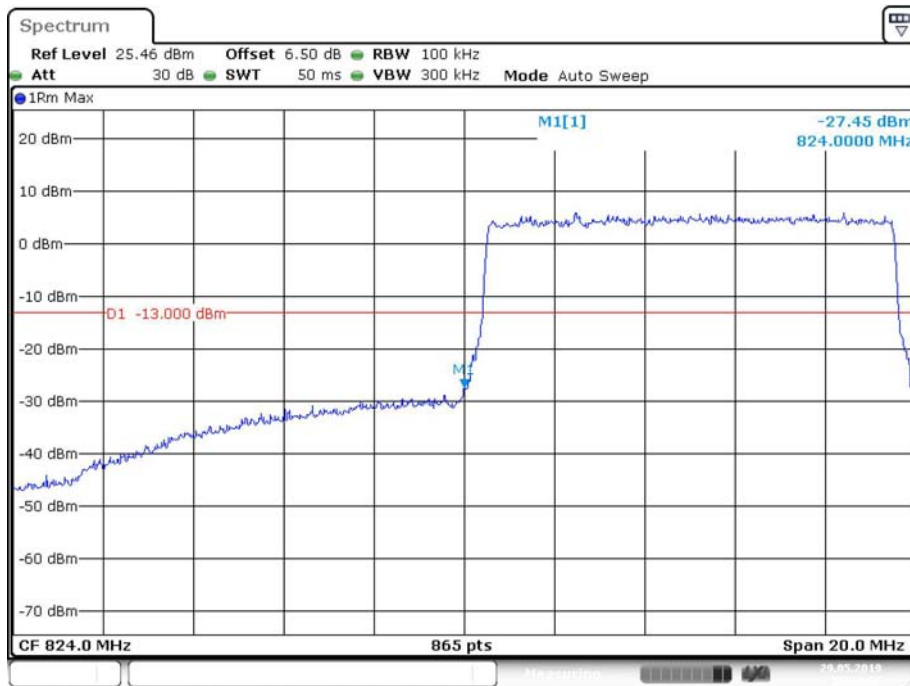
Date: 29.MAY.2019 15:34:30

QPSK (10.0 MHz, FULL RB) - Right Band Edge

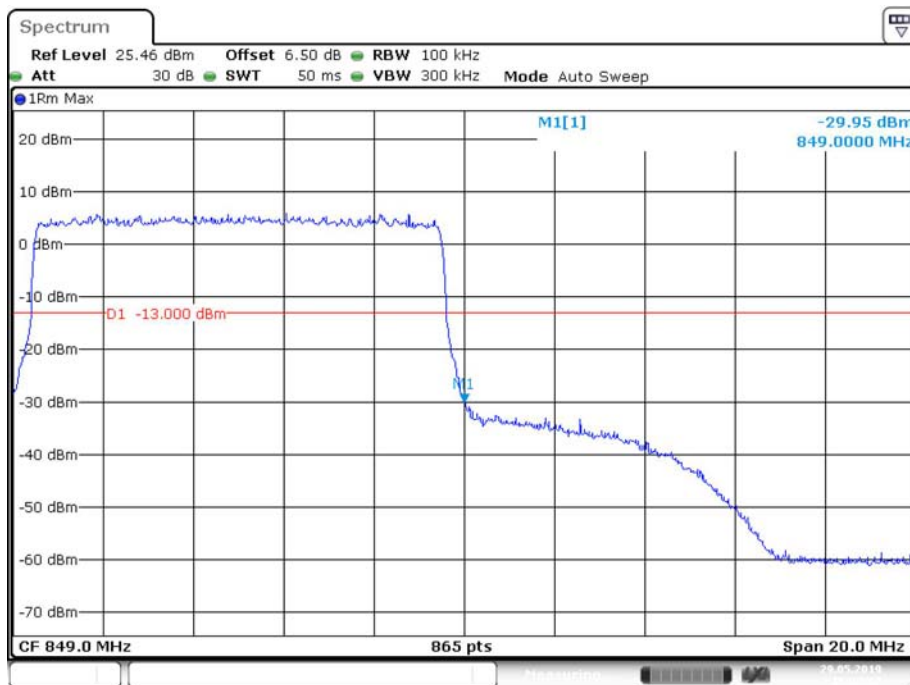


Date: 29.MAY.2019 15:30:49

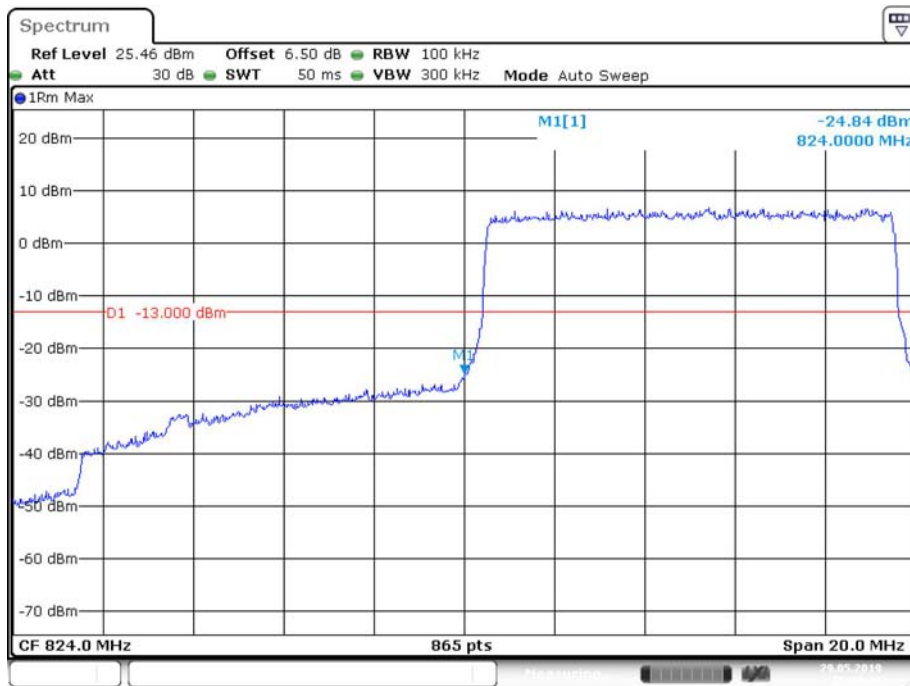
16-QAM (10.0 MHz, FULL RB) - Left Band Edge



16-QAM (10.0 MHz, FULL RB) - Right Band Edge

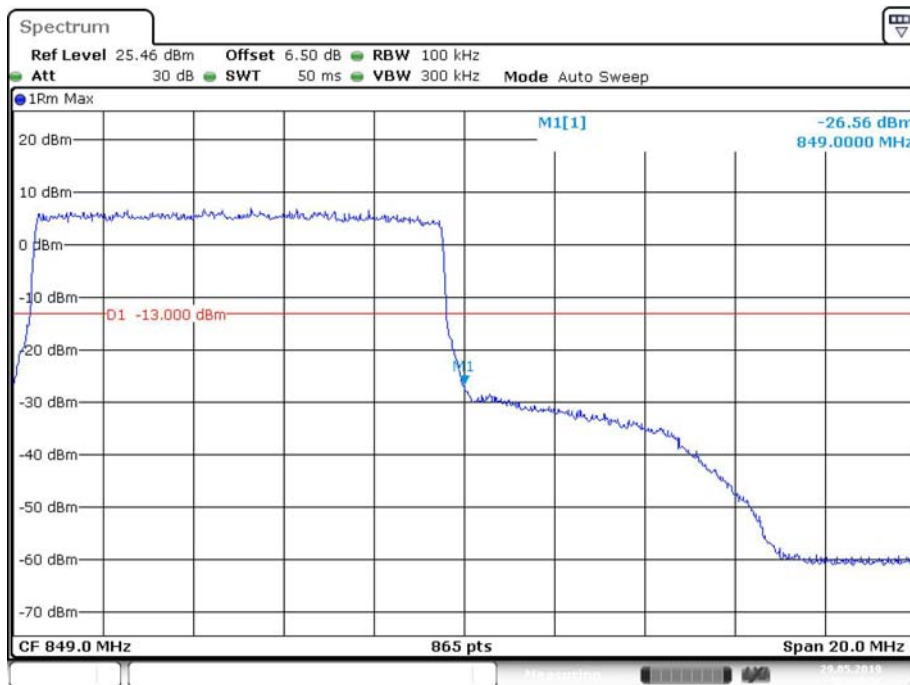


64-QAM (10.0 MHz, FULL RB) - Left Band Edge



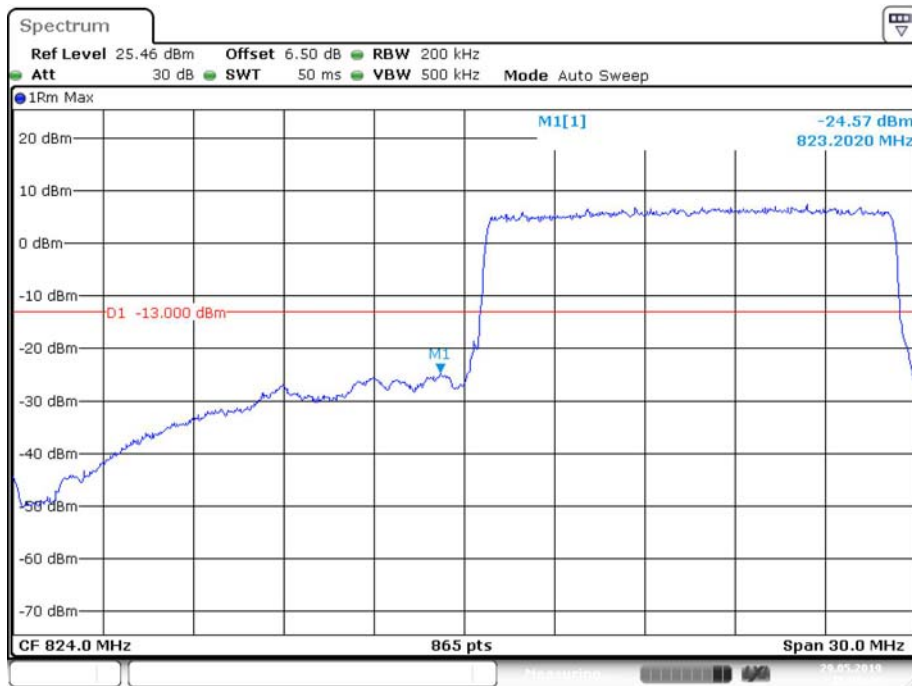
Date: 29.MAY.2019 15:43:49

64-QAM (10.0 MHz, FULL RB) - Right Band Edge



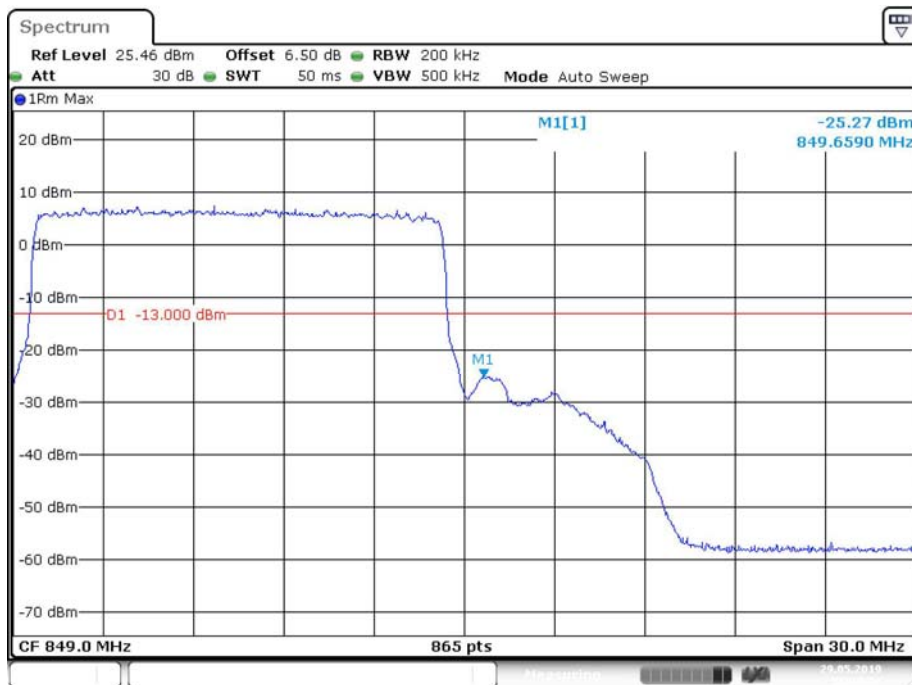
Date: 29.MAY.2019 15:44:22

QPSK (15.0 MHz, FULL RB) - Left Band Edge



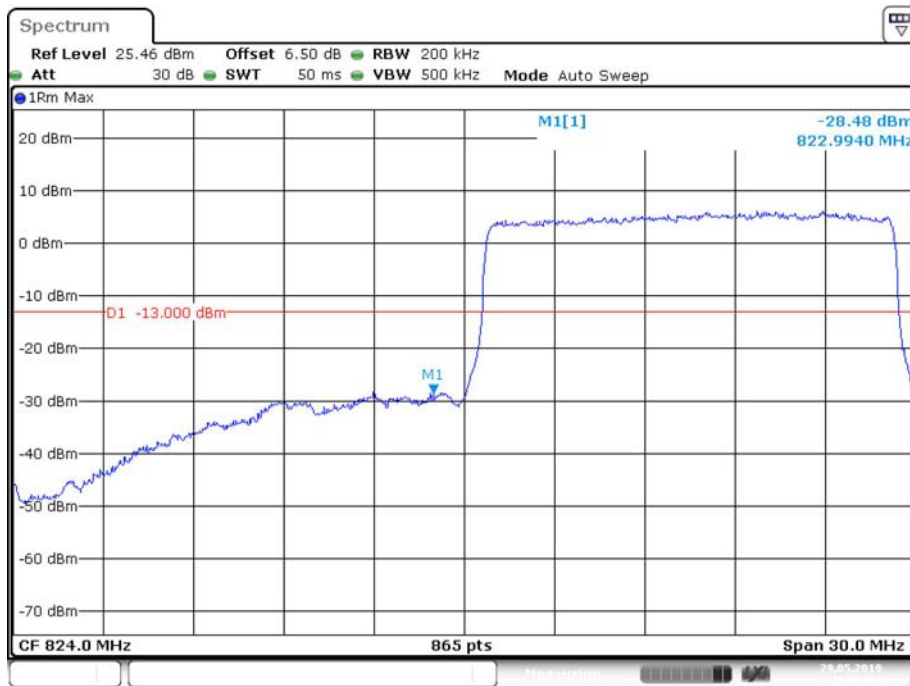
Date: 29.MAY.2019 15:36:46

QPSK (15.0 MHz, FULL RB) - Right Band Edge



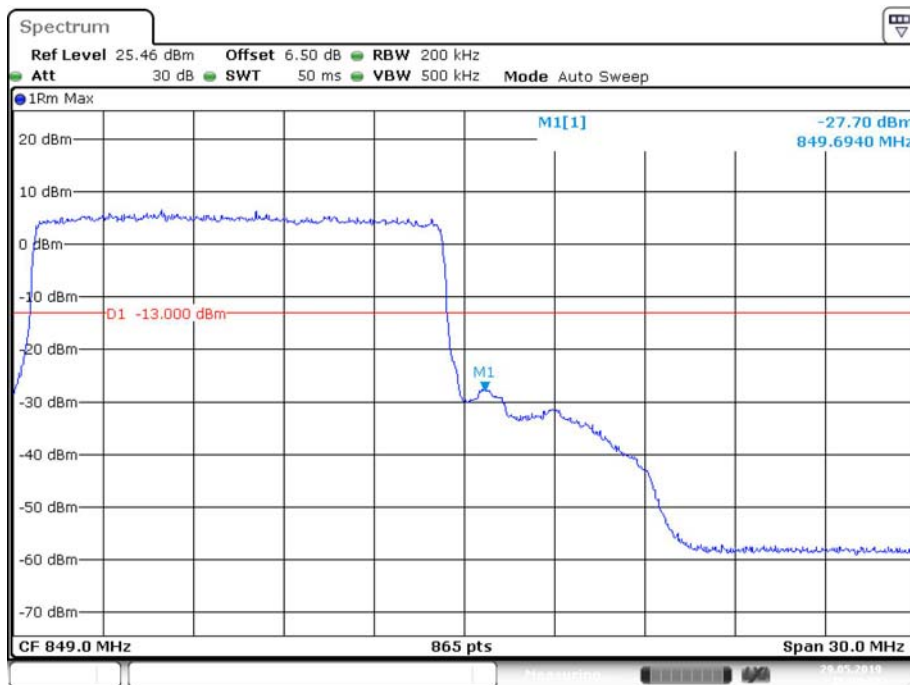
Date: 29.MAY.2019 15:38:37

16-QAM (15.0 MHz, FULL RB) - Left Band Edge



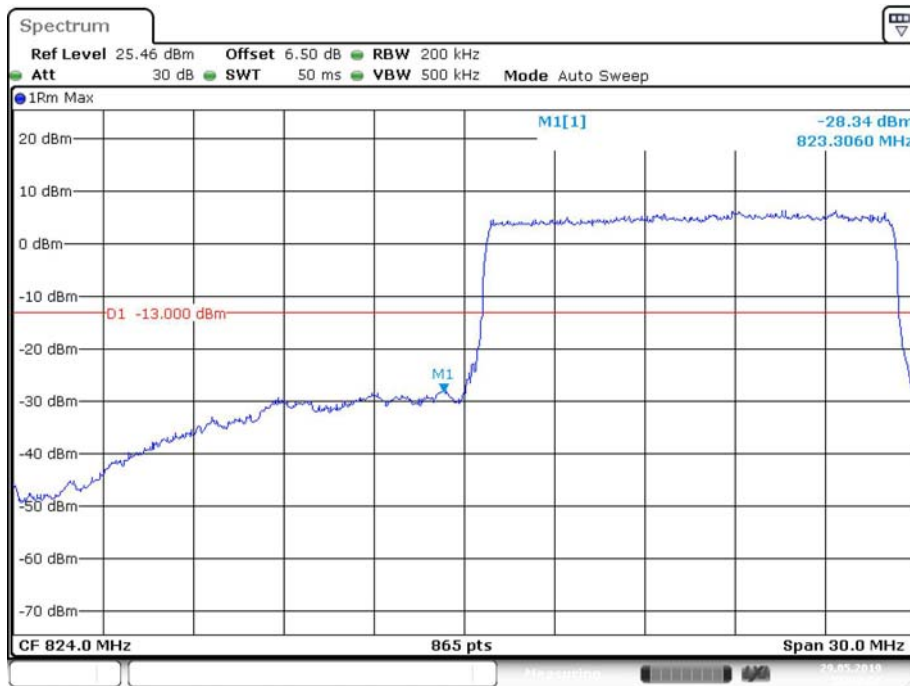
Date: 29.MAY.2019 15:36:03

16-QAM (15.0 MHz, FULL RB) - Right Band Edge



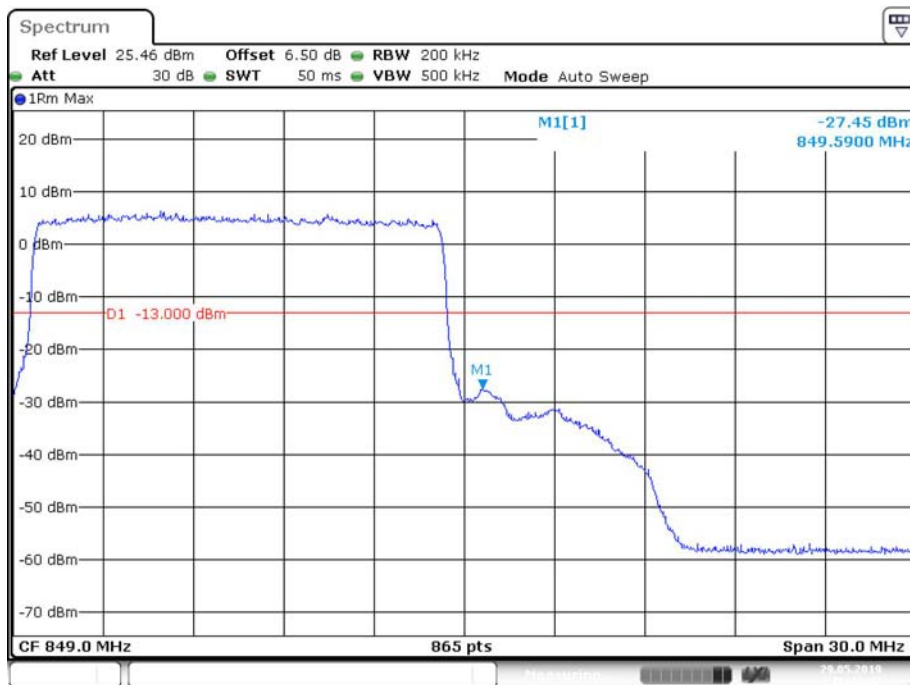
Date: 29.MAY.2019 15:39:50

64-QAM (15.0 MHz, FULL RB) - Left Band Edge



Date: 29.MAY.2019 15:42:49

64-QAM (15.0 MHz, FULL RB) - Right Band Edge



Date: 29.MAY.2019 15:41:46

FCC § 2.1055; § 22.355; §90.213- FREQUENCY STABILITY

Applicable Standard

FCC § 2.1055, §22.355, and §90.213.

According to FCC §2.1055, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

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

Frequency Tolerance for Transmitters in the Public Mobile Services

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

According to §90.213:

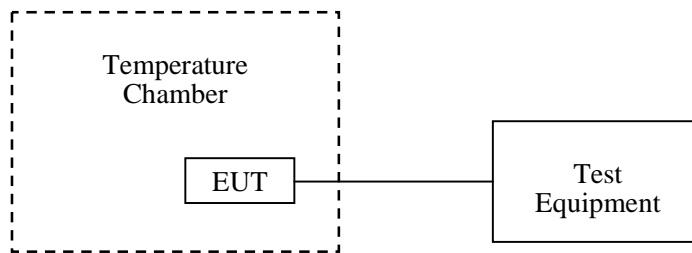
Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	1 2 3 100	100	200
25-50	20	20	50
72-76	5		50
150-174	5 11 5	6 5	4 6 50
216-220	1.0		1.0
220-222 ¹²	0.1	1.5	1.5
421-512	7 11 14 2.5	8 5	8 5
806-809	14 1.0	1.5	1.5
809-824	14 1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	14 0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928 ¹³	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	9 300	300	300
Above 2450 ¹⁰			

Test Procedure

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

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

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Kieron Luo on 2017-05-29.

EUT operation mode: Transmitting

Test Result: Compliance. Please refer to the following tables.

LTE Band 26(814-824):

QPSK

10.0 MHz Middle Channel, $f_0=819$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.85	-4	-0.0049	2.5
-20		-5	-0.0061	2.5
-10		-4	-0.0049	2.5
0		-4	-0.0049	2.5
10		-3	-0.0037	2.5
20		-3	-0.0037	2.5
30		-2	-0.0024	2.5
40		-3	-0.0037	2.5
50		-5	-0.0061	2.5
20		V _{min} = 4.4	-4	-0.0049

16-QAM

10.0 MHz Middle Channel, $f_0=819$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.85	-7	-0.0085	2.5
-20		-4	-0.0049	2.5
-10		-5	-0.0061	2.5
0		-4	-0.0049	2.5
10		-4	-0.0049	2.5
20		-3	-0.0037	2.5
30		-1	-0.0012	2.5
40		-2	-0.0024	2.5
50		-5	-0.0061	2.5
20		V _{min} = 4.4	-2	-0.0024

64-QAM

10.0 MHz Middle Channel, $f_o = 819$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.85	-7	-0.0085	2.5
-20		-4	-0.0049	2.5
-10		-5	-0.0061	2.5
0		-4	-0.0049	2.5
10		-4	-0.0049	2.5
20		-3	-0.0037	2.5
30		-1	-0.0012	2.5
40		-2	-0.0024	2.5
50		-5	-0.0061	2.5
20	V _{min} = 4.4	-2	-0.0024	-4

Band 26(824-849MHz)

QPSK

10.0 MHz Middle Channel, $f_o = 836.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.85	-3	-0.0036	2.5
-20		-3	-0.0036	2.5
-10		-5	-0.0060	2.5
0		-4	-0.0048	2.5
10		-3	-0.0036	2.5
20		-3	-0.0036	2.5
30		-2	-0.0024	2.5
40		0	0.0000	2.5
50		-1	-0.0012	2.5
20	V _{min} = 4.4	-2	-0.0024	-2

16-QAM

10.0 MHz Middle Channel, $f_o = 836.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.85	-6	-0.0072	2.5
-20		-5	-0.0060	2.5
-10		-1	-0.0012	2.5
0		-4	-0.0048	2.5
10		-5	-0.0060	2.5
20		-3	-0.0036	2.5
30		-3	-0.0036	2.5
40		-3	-0.0036	2.5
50		-2	-0.0024	2.5
20	V _{min} = 4.4	-6	-0.0072	-2

64-QAM

10.0 MHz Middle Channel, $f_o = 836.5$ MHz				
Temperature (°C)	Power Supplied (V _{DC})	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.85	-6	-0.0072	2.5
-20		-5	-0.0060	2.5
-10		-1	-0.0012	2.5
0		-4	-0.0048	2.5
10		-5	-0.0060	2.5
20		-3	-0.0036	2.5
30		-3	-0.0036	2.5
40		-3	-0.0036	2.5
50		-2	-0.0024	2.5
20	V _{min} = 4.4	-6	-0.0072	-4

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