



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 22H, PART 24E, PART 27, PART 90 MEASUREMENT AND TEST REPORT

For

Beijing ULINK Technology Co., Ltd

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FCC ID:2AMIWUZ100

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Mobile WiFi
EUT Model:	UZ-100
Multiple Models:	UZ-111-1
Operation modes:	GPRS/EDGE Data, WCDMA(R99 (Data), HSDPA/HSUPA/HSPA+) FDD-LTE,TDD-LTE
Operation Frequency:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 2:1850-1910 MHz(TX), 1930-1990 MHz(RX) LTE Band 4:1710-1755 MHz(TX), 2110-2155 MHz(RX) LTE Band 5:824-849 MHz(TX), 869-894 MHz(RX) LTE Band 7:2500-2570 MHz(TX), 2620-2690 MHz(RX) LTE Band 12: 699-716 MHz(TX), 729-746 MHz(RX) LTE Band 17: 704-716 MHz(TX), 734-746 MHz(RX) LTE Band 18: 815-830 MHz(TX), 860-875 MHz(RX) LTE Band 38: 2570-2620 MHz(TX&RX) LTE Band 40 Lower: 2305-2315 MHz(TX&RX) LTE Band 40 Upper: 2350-2360 MHz(TX&RX) LTE Band 41: 2535-2655 MHz(TX&RX)
Modulation Type:	GMSK, 8PSK, BPSK, QPSK, 16QAM
Rated Input Voltage:	DC 3.63V from Battery or DC 5V from USB port
Serial Number:	RBJ191119050-RF-S3
EUT Received Date:	2019/11/27
EUT Status:	Good

Notes: Model UZ-100 was selected for fully testing, the detailed information about the difference among UZ-111-1 and model UZ-100 can be referred to the declaration letter which was stated and guaranteed by the manufacturer.

Objective

This report is prepared on behalf of **Beijing ULINK Technology Co., Ltd** in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, Part 27, part 90 of the Federal Communications Commission's rules.

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

This device was modify from model: UZ-211-1, FCC ID: 2AMIWUZ211, granted on 2020-04-15, the difference between the new and the original model is below:

1. removed the WWAN module 2.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2AMIWUZ100
 FCC Part 15C DSS submissions with FCC ID: 2AMIWUZ100
 FCC Part 15C DTS submissions with FCC ID: 2AMIWUZ100
 FCC Part 15E NII submissions with FCC ID: 2AMIWUZ100

Test Methodology

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

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services
Part 90 –PRIVATE LAND MOBILE RADIO SERVICES

Applicable Standards: TIA/EIA 603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz: 5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “△”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC§1.1310, §2.1093	RF Exposure	Compliance
FCC§2.1046;§ 22.913 (a); § 24.232 (c);§27.50; §90.635	RF Output Power	Compliance
FCC§ 2.1047	Modulation Characteristics	Not Applicable
FCC§ 2.1049; § 22.905 § 22.917; § 24.238; §27.53 §90.209	Occupied Bandwidth	Compliance*
FCC§ 2.1051, § 22.917 (a); § 24.238 (a); §27.53;§90.691	Spurious Emissions at Antenna Terminal	Compliance*
FCC§ 2.1053 § 22.917 (a); § 24.238 (a); §27.53, §90.691	Field Strength of Spurious Radiation	Compliance
FCC§ 22.917 (a); § 24.238 (a); §27.53; §90.691	Out of band emission, Band Edge	Compliance*
FCC§ 2.1055 § 22.355; § 24.235; §27.54 §90.213	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance*

Compliance*: the modification made to the device don't effect the test result of module 1, the module 1 data please refer to the original report: RBJ190927050-00E, issued on 2020-02-19.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D 2010.

The device support GSM Band 850/1900MHz(only supports GPRS/EDGE),WCDMA Band 2, and LTE band 2/4/5/7/12/17/18/38/40/41. Test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GPRS/EDGE850	0.25	824.2	836.6	848.8
GPRS/EDGE1900	0.25	1850.2	1880	1909.8
WCDMA Band 2	4.2	1852.4	1880	1907.6
LTE Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE Band 7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
LTE Band 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE Band 17	5	706.5	710	713.5
	10	709	710	711
LTE Band 18	5	817.5	822.5	827.5
	10	820	822.5	825
	15	/	822.5	/
LTE Band 38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE Band 40 Lower 2305-2315MHz	5	2307.5	2310	2312.5
	10	/	2310	/
LTE Band 40 Upper 2350-2360MHz	5	2352.5	2355	2357.5
	10	/	2355	/
LTE Band 41	5	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	2645

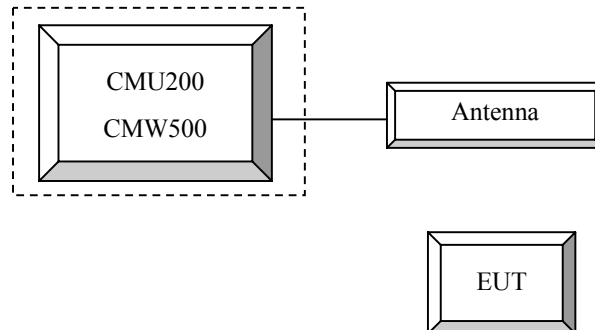
Equipment Modifications

No modification was made to the EUT.

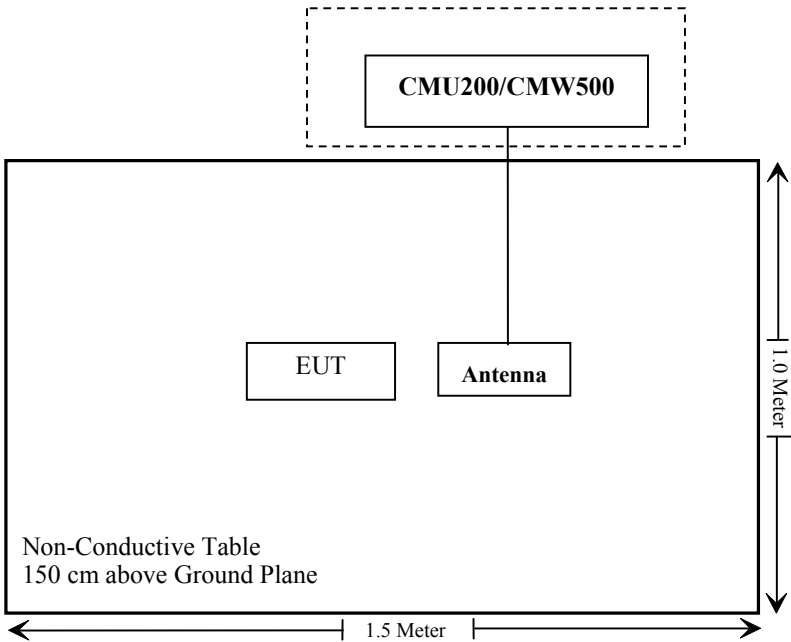
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	106 891
R&S	Wideband Radio Communication Tester	CMW500	147473
Un-Known	ANTENNA	Un-Known	Un-Known

Configuration of Test Setup



Block Diagram of Test Setup



FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RBJ191119050-20.

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FCC § 2.1046, § 22.913 (a) & § 24.232 (c) & § 27.50 & § 90.635- 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 FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. 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.

According to §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.

(c) (10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(h),(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

According to §90.635

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

Test Procedure

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM + GPRS or GSM + EGSM

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850

> 30 dBm for GPRS 1900

> 27 dBm for EGPRS 850

> 26 dBm for EGPRS 1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0 > 4 dB

Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

WCDMA-Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c / β_d	8/15

WCDMA HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c / β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

WCDMA HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs}=\beta_{hs}/\beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E_FCI	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27

HSPA+

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

DC-HSDPA

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

LTE (FDD):

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

LTE(TDD):

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink $\times (T_s) \times \#$ of S + $\#$ of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

where

$T_s = 1/(15000 \times 2048)$ seconds

Radiated method:

ANSI/TIA-603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-05-09	2020-05-09
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
R&S	Universal Radio Communication Tester	CMU200	106 891	2018-12-14	2019-12-14
R&S	Wideband Radio Communication Tester	CMW500	147473	2019-08-03	2020-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	/

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

Test Data**Environmental Conditions**

Test Items:	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	24.3°C	24.3 °C
Relative Humidity:	39 %	39%
ATM Pressure:	102.1 kPa	102.1 kPa
Tester:	Tyler Pan	Lucy Lu
Test Date:	2019-12-21	2019-12-21

Test Result: Compliance

ERP & EIRP

Part 22H

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS 850 Middle Channel								
836.60	V	97.32	22.40	0.00	0.97	21.43	38.45	17.02
836.60	H	100.63	28.84	0.00	0.97	27.87	38.45	10.58
EGPRS850 Middle Channel								
836.60	V	93.63	18.71	0.00	0.97	17.74	38.45	20.71
836.60	H	96.44	24.65	0.00	0.97	23.68	38.45	14.77

Part 24E

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS 1900 Middle Channel								
1880.00	H	84.04	11.43	11.66	2.66	20.43	33.00	12.57
1880.00	V	89.86	17.39	11.66	2.66	26.39	33.00	6.61
EGPRS1900 Middle Channel								
1880.00	H	80.62	8.01	11.66	2.66	17.01	33.00	15.99
1880.00	V	86.25	13.78	11.66	2.66	22.78	33.00	10.22
WCDMA R99 Band 2 middle channel								
1880.00	H	82.14	9.53	11.66	2.66	18.53	33.00	14.47
1880.00	V	86.05	13.58	11.66	2.66	22.58	33.00	10.42

LTE Band 2

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1880.00	1.40	QPSK	H	83.32	10.71	11.66	2.66	19.71	33.00	13.29
1880.00			V	88.58	16.11	11.66	2.66	25.11	33.00	7.89
1880.00	3.00		H	82.23	9.62	11.66	2.66	18.62	33.00	14.38
1880.00			V	87.95	15.48	11.66	2.66	24.48	33.00	8.52
1880.00	5.00		H	81.15	8.54	11.66	2.66	17.54	33.00	15.46
1880.00			V	87.51	15.04	11.66	2.66	24.04	33.00	8.96
1880.00	10.00		H	80.18	7.57	11.66	2.66	16.57	33.00	16.43
1880.00			V	86.88	14.41	11.66	2.66	23.41	33.00	9.59
1880.00	15.00		H	79.05	6.44	11.66	2.66	15.44	33.00	17.56
1880.00			V	87.11	14.64	11.66	2.66	23.64	33.00	9.36
1880.00	20.00		H	78.32	5.71	11.66	2.66	14.71	33.00	18.29
1880.00			V	87.69	15.22	11.66	2.66	24.22	33.00	8.78
1880.00	1.40	16QAM	H	84.12	11.51	11.66	2.66	20.51	33.00	12.49
1880.00			V	89.19	16.72	11.66	2.66	25.72	33.00	7.28
1880.00	3.00		H	83.05	10.44	11.66	2.66	19.44	33.00	13.56
1880.00			V	88.63	16.16	11.66	2.66	25.16	33.00	7.84
1880.00	5.00		H	81.97	9.36	11.66	2.66	18.36	33.00	14.64
1880.00			V	88.01	15.54	11.66	2.66	24.54	33.00	8.46
1880.00	10.00		H	80.97	8.36	11.66	2.66	17.36	33.00	15.64
1880.00			V	87.80	15.33	11.66	2.66	24.33	33.00	8.67
1880.00	15.00		H	79.89	7.28	11.66	2.66	16.28	33.00	16.72
1880.00			V	88.63	16.16	11.66	2.66	25.16	33.00	7.84
1880.00	20.00		H	79.07	6.46	11.66	2.66	15.46	33.00	17.54
1880.00			V	88.39	15.92	11.66	2.66	24.92	33.00	8.08

LTE Band 4

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1732.50	1.40	QPSK	H	88.63	14.58	10.90	2.51	22.97	30.00	7.03
1732.50			V	83.27	8.90	10.90	2.51	17.29	30.00	12.71
1732.50	3.00		H	87.23	13.18	10.90	2.51	21.57	30.00	8.43
1732.50			V	81.98	7.61	10.90	2.51	16.00	30.00	14.00
1732.50	5.00		H	86.76	12.71	10.90	2.51	21.10	30.00	8.90
1732.50			V	81.42	7.05	10.90	2.51	15.44	30.00	14.56
1732.50	10.00		H	86.70	12.65	10.90	2.51	21.04	30.00	8.96
1732.50			V	80.64	6.27	10.90	2.51	14.66	30.00	15.34
1732.50	15.00		H	85.26	11.21	10.90	2.51	19.60	30.00	10.40
1732.50			V	82.02	7.65	10.90	2.51	16.04	30.00	13.96
1732.50	20.00		H	86.37	12.32	10.90	2.51	20.71	30.00	9.29
1732.50			V	82.12	7.75	10.90	2.51	16.14	30.00	13.86
1732.50	1.40	16QAM	H	88.31	14.26	10.90	2.51	22.65	30.00	7.35
1732.50			V	83.35	8.98	10.90	2.51	17.37	30.00	12.63
1732.50	3.00		H	88.05	14.00	10.90	2.51	22.39	30.00	7.61
1732.50			V	81.86	7.49	10.90	2.51	15.88	30.00	14.12
1732.50	5.00		H	87.33	13.28	10.90	2.51	21.67	30.00	8.33
1732.50			V	81.30	6.93	10.90	2.51	15.32	30.00	14.68
1732.50	10.00		H	87.76	13.71	10.90	2.51	22.10	30.00	7.90
1732.50			V	80.28	5.91	10.90	2.51	14.30	30.00	15.70
1732.50	15.00		H	87.35	13.30	10.90	2.51	21.69	30.00	8.31
1732.50			V	80.65	6.28	10.90	2.51	14.67	30.00	15.33
1732.50	20.00		H	87.65	13.60	10.90	2.51	21.99	30.00	8.01
1732.50			V	80.85	6.48	10.90	2.51	14.87	30.00	15.13

LTE Band 5

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
836.50	1.40	QPSK	V	89.80	14.87	0.00	0.97	13.90	38.45	24.55
836.50			H	92.02	20.23	0.00	0.97	19.26	38.45	19.19
836.50	3.00		V	88.50	13.57	0.00	0.97	12.60	38.45	25.85
836.50			H	91.80	20.01	0.00	0.97	19.04	38.45	19.41
836.50	5.00		V	88.47	13.54	0.00	0.97	12.57	38.45	25.88
836.50			H	89.96	18.17	0.00	0.97	17.20	38.45	21.25
836.50	10.00		V	88.24	13.31	0.00	0.97	12.34	38.45	26.11
836.50			H	89.72	17.93	0.00	0.97	16.96	38.45	21.49
836.50	1.40	16QAM	V	90.54	15.61	0.00	0.97	14.64	38.45	23.81
836.50			H	92.37	20.58	0.00	0.97	19.61	38.45	18.84
836.50	3.00		V	89.87	14.94	0.00	0.97	13.97	38.45	24.48
836.50			H	91.57	19.78	0.00	0.97	18.81	38.45	19.64
836.50	5.00		V	89.54	14.61	0.00	0.97	13.64	38.45	24.81
836.50			H	90.50	18.71	0.00	0.97	17.74	38.45	20.71
836.50	10.00		V	88.34	13.41	0.00	0.97	12.44	38.45	26.01
836.50			H	89.88	18.09	0.00	0.97	17.12	38.45	21.33

LTE Band 7

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2535.00	5.00	QPSK	H	86.21	13.60	13.14	3.10	23.64	33.00	9.36
2535.00			V	85.50	14.35	13.14	3.10	24.39	33.00	8.61
2535.00	10.00		H	86.35	13.74	13.14	3.10	23.78	33.00	9.22
2535.00			V	85.39	14.24	13.14	3.10	24.28	33.00	8.72
2535.00	15.00		H	86.17	13.56	13.14	3.10	23.60	33.00	9.40
2535.00			V	85.45	14.30	13.14	3.10	24.34	33.00	8.66
2535.00	20.00		H	86.25	13.64	13.14	3.10	23.68	33.00	9.32
2535.00			V	85.52	14.37	13.14	3.10	24.41	33.00	8.59
2535.00	5.00	16QAM	H	85.82	13.21	13.14	3.10	23.25	33.00	9.75
2535.00			V	84.40	13.25	13.14	3.10	23.29	33.00	9.71
2535.00	10.00		H	85.34	12.73	13.14	3.10	22.77	33.00	10.23
2535.00			V	84.31	13.16	13.14	3.10	23.20	33.00	9.80
2535.00	15.00		H	85.56	12.95	13.14	3.10	22.99	33.00	10.01
2535.00			V	84.19	13.04	13.14	3.10	23.08	33.00	9.92
2535.00	20.00		H	85.69	13.08	13.14	3.10	23.12	33.00	9.88
2535.00			V	86.21	13.60	13.14	3.10	23.64	33.00	9.36

LTE Band 12

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
707.50	1.40	QPSK	H	99.15	22.29	0.00	0.94	21.35	34.77	13.42
707.50			V	94.33	19.91	0.00	0.94	18.97	34.77	15.80
707.50	3.00		H	98.39	21.53	0.00	0.94	20.59	34.77	14.18
707.50			V	93.15	18.73	0.00	0.94	17.79	34.77	16.98
707.50	5.00		H	97.79	20.93	0.00	0.94	19.99	34.77	14.78
707.50			V	93.12	18.70	0.00	0.94	17.76	34.77	17.01
707.50	10.00		H	97.53	20.67	0.00	0.94	19.73	34.77	15.04
707.50			V	92.55	18.13	0.00	0.94	17.19	34.77	17.58
707.50	1.40	16QAM	H	99.07	22.21	0.00	0.94	21.27	34.77	13.50
707.50			V	93.64	19.22	0.00	0.94	18.28	34.77	16.49
707.50	3.00		H	98.92	22.06	0.00	0.94	21.12	34.77	13.65
707.50			V	93.58	19.16	0.00	0.94	18.22	34.77	16.55
707.50	5.00		H	97.99	21.13	0.00	0.94	20.19	34.77	14.58
707.50			V	92.96	18.54	0.00	0.94	17.60	34.77	17.17
707.50	10.00		H	97.58	20.72	0.00	0.94	19.78	34.77	14.99
707.50			V	92.78	18.36	0.00	0.94	17.42	34.77	17.35

LTE Band 17

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
710.00	5.00	QPSK	V	95.71	18.90	0.00	0.94	17.96	34.77	16.81
710.00			H	96.16	21.80	0.00	0.94	20.86	34.77	13.91
710.00	10.00		V	95.86	19.05	0.00	0.94	18.11	34.77	16.66
710.00			H	94.90	20.54	0.00	0.94	19.60	34.77	15.17
710.00	5.00	16QAM	V	96.25	19.44	0.00	0.94	18.50	34.77	16.27
710.00			H	95.36	21.00	0.00	0.94	20.06	34.77	14.71
710.00	10.00		V	96.03	19.22	0.00	0.94	18.28	34.77	16.49
710.00			H	94.99	20.63	0.00	0.94	19.69	34.77	15.08

LTE Band 18

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
822.50	5.00	QPSK	H	98.97	23.94	0.00	0.96	22.98	38.45	15.47
822.50			V	93.23	21.29	0.00	0.96	20.33	38.45	18.12
822.50	10.00		H	98.89	23.86	0.00	0.96	22.90	38.45	15.55
822.50			V	93.92	21.98	0.00	0.96	21.02	38.45	17.43
822.50	15.00		H	98.73	23.70	0.00	0.96	22.74	38.45	15.71
822.50			V	92.58	20.64	0.00	0.96	19.68	38.45	18.77
822.50	5.00	16QAM	H	99.22	24.19	0.00	0.96	23.23	38.45	15.22
822.50			V	93.07	21.13	0.00	0.96	20.17	38.45	18.28
822.50	10.00		H	98.88	23.85	0.00	0.96	22.89	38.45	15.56
822.50			V	93.95	22.01	0.00	0.96	21.05	38.45	17.40
822.50	15.00		H	98.80	23.77	0.00	0.96	22.81	38.45	15.64
822.50			V	92.82	20.88	0.00	0.96	19.92	38.45	18.53

LTE Band 38

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2595.00	5.00	QPSK	H	82.40	12.03	13.20	3.10	22.13	33.00	10.87
2595.00			V	82.17	11.80	13.20	3.10	21.90	33.00	11.10
2595.00	10.00		H	80.46	8.23	13.20	3.10	18.33	33.00	14.67
2595.00			V	80.27	8.04	13.20	3.10	18.14	33.00	14.86
2595.00	15.00		H	80.51	8.28	13.20	3.10	18.38	33.00	14.62
2595.00			V	82.38	12.01	13.20	3.10	22.11	33.00	10.89
2595.00	20.00		H	80.62	8.39	13.20	3.10	18.49	33.00	14.51
2595.00			V	82.20	11.83	13.20	3.10	21.93	33.00	11.07
2595.00	5.00	16QAM	H	79.61	7.38	13.20	3.10	17.48	33.00	15.52
2595.00			V	81.52	11.15	13.20	3.10	21.25	33.00	11.75
2595.00	10.00		H	79.55	7.32	13.20	3.10	17.42	33.00	15.58
2595.00			V	81.45	11.08	13.20	3.10	21.18	33.00	11.82
2595.00	15.00		H	79.68	7.45	13.20	3.10	17.55	33.00	15.45
2595.00			V	81.36	10.99	13.20	3.10	21.09	33.00	11.91
2595.00	20.00		H	79.64	7.41	13.20	3.10	17.51	33.00	15.49
2595.00			V	81.49	11.12	13.20	3.10	21.22	33.00	11.78

LTE Band 40**Lower:**

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2310.00	5.00	QPSK	H	80.44	10.06	11.31	2.98	18.39	24.00	5.61
2310.00			V	82.10	12.40	11.31	2.98	20.73	24.00	3.27
2310.00	10.00		H	80.16	9.78	11.31	2.98	18.11	24.00	5.89
2310.00			V	82.23	12.53	11.31	2.98	20.86	24.00	3.14
2310.00	5.00	16QAM	H	79.56	9.18	11.31	2.98	17.51	24.00	6.49
2310.00			V	81.47	11.77	11.31	2.98	20.10	24.00	3.90
2310.00	10.00		H	79.37	8.99	11.31	2.98	17.32	24.00	6.68
2310.00			V	81.09	11.39	11.31	2.98	19.72	24.00	4.28

Upper:

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2355.00	5.00	QPSK	H	79.79	9.00	11.81	3.05	17.76	24.00	6.24
2355.00			V	81.56	11.53	11.81	3.05	20.29	24.00	3.71
2355.00	10.00		H	79.71	8.92	11.81	3.05	17.68	24.00	6.32
2355.00			V	81.43	11.40	11.81	3.05	20.16	24.00	3.84
2355.00	5.00	16QAM	H	78.75	7.96	11.81	3.05	16.72	24.00	7.28
2355.00			V	80.63	10.60	11.81	3.05	19.36	24.00	4.64
2355.00	10.00		H	78.49	7.70	11.81	3.05	16.46	24.00	7.54
2355.00			V	80.11	10.08	11.81	3.05	18.84	24.00	5.16

Note: the total power result meets the requirement EIRP less than 250mW/5MHz

LTE Band 41

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2595.00	5.00	QPSK	H	83.93	11.69	13.19	3.10	21.78	33.00	11.22
2595.00			V	83.27	12.88	13.19	3.10	22.97	33.00	10.03
2595.00	10.00		H	83.79	11.55	13.19	3.10	21.64	33.00	11.36
2595.00			V	83.06	12.67	13.19	3.10	22.76	33.00	10.24
2595.00	5.00		H	83.86	11.62	13.19	3.10	21.71	33.00	11.29
2595.00			V	83.17	12.78	13.19	3.10	22.87	33.00	10.13
2595.00	10.00		H	83.92	11.68	13.19	3.10	21.77	33.00	11.23
2595.00			V	83.25	12.86	13.19	3.10	22.95	33.00	10.05
2595.00	5.00	16QAM	H	83.74	11.50	13.19	3.10	21.59	33.00	11.41
2595.00			V	82.30	11.91	13.19	3.10	22.00	33.00	11.00
2595.00	10.00		H	83.81	11.57	13.19	3.10	21.66	33.00	11.34
2595.00			V	82.19	11.80	13.19	3.10	21.89	33.00	11.11
2595.00	5.00		H	83.89	11.65	13.19	3.10	21.74	33.00	11.26
2595.00			V	82.21	11.82	13.19	3.10	21.91	33.00	11.09
2595.00	10.00		H	83.78	11.54	13.19	3.10	21.63	33.00	11.37
2595.00			V	82.08	11.69	13.19	3.10	21.78	33.00	11.22

FCC §2.1053, §22.917 & §24.238 & §27.53& §90.691- SPURIOUS RADIATED EMISSIONS

Applicable Standard

FCC § 2.1053, §22.917, § 24.238 and § 27.53; § 90.691

Test Procedure

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

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

The frequency range up to 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 = $10 \lg (\text{TXpwr in Watts}/0.001)$ – the absolute level

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
HP	Amplifier	8447D	2727A05902	2019-09-05	2020-09-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2019-09-05	2020-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-05-09	2020-05-09
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1710-1785MN-0383-003	0383003	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2500-2750MS-1439-001	1437001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2300-2400MS-0777-003	0777003	2019-06-16	2020-06-16
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2019-11-18	2021-11-18
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2019-11-18	2021-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2019-06-27	2020-06-27
Agilent	Signal Generator	E8247C	MY43321350	2019-12-10	2020-12-10

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

Test Data**Environmental Conditions**

Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	25°C	24.4 °C
Relative Humidity:	44%	43%
ATM Pressure:	101.7 kPa	102.5kPa
Tester:	Tyler Pan	Lucy Lu
Test Date:	2020-02-28	2019-11-29

Test Result: Compliance.

EUT Operation Mode: Transmitting

Cellular Band (PART 22H)**30 MHz-10 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS850, Frequency:836.600 MHz								
1673.200	H	62.88	-41.06	10.6	0.73	-31.2	-13.0	18.2
1673.200	V	61.71	-42.83	10.6	0.73	-33.0	-13.0	20.0
2509.800	H	75.06	-27.85	13.1	1.25	-16.0	-13.0	3.0
2509.800	V	74.23	-28.71	13.1	1.25	-16.9	-13.0	3.9
3346.400	H	40.38	-59.3	13.8	1.61	-47.1	-13.0	34.1
3346.400	V	47.35	-52.37	13.8	1.61	-40.2	-13.0	27.2
736.910	H	60.68	-39.72	0.0	0.94	-40.7	-13.0	27.7
737.880	V	66.19	-37.15	0.0	0.94	-38.1	-13.0	25.1

PCS Band (PART 24E)**30 MHz-20 GHz:**

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GSM1900, Frequency:1880.000 MHz								
3760.000	H	41.67	-55.97	13.8	1.63	-43.8	-13.0	30.8
3760.000	V	42.06	-55.44	13.8	1.63	-43.3	-13.0	30.3
5640.000	H	38.99	-54.6	14.0	1.31	-41.9	-13.0	28.9
5640.000	V	39.16	-54.32	14.0	1.31	-41.6	-13.0	28.6
546.010	H	42.88	-60.38	0.0	0.73	-61.1	-13.0	48.1
76.030	V	45.96	-70.3	-2.0	0.32	-72.6	-13.0	59.6
WCDMA Band II, Frequency:1880.000 MHz								
3760.000	H	47.53	-50.11	13.8	1.63	-38.0	-13.0	25.0
3760.000	V	44.42	-53.08	13.8	1.63	-41.0	-13.0	28.0
5640.000	H	51.20	-42.39	14.0	1.31	-29.7	-13.0	16.7
5640.000	V	49.01	-44.47	14.0	1.31	-31.8	-13.0	18.8
227.200	H	44.54	-64.43	0.0	0.5	-64.9	-13.0	51.9
76.030	V	45.20	-71.06	-2.0	0.32	-73.4	-13.0	60.4

LTE Band 2 (30MHz-20GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency:1880.000 MHz								
3760.00	H	54.49	-54.31	13.76	1.63	-42.18	-13.00	29.18
3760.00	V	58.91	-49.76	13.76	1.63	-37.63	-13.00	24.63
5640.00	H	55.60	-50.43	14.02	1.31	-37.72	-13.00	24.72
5640.00	V	56.11	-49.80	14.02	1.31	-37.09	-13.00	24.09
250.00	H	45.36	-63.88	0.00	0.51	-64.39	-13.00	51.39
250.00	V	45.77	-66.89	0.00	0.51	-67.40	-13.00	54.40

LTE Band 4 (30MHz-20GHz):

LTE Band 1 (20MHz FDD)								
Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 1732.500 MHz								
3465.00	H	52.17	-58.07	13.91	1.62	-45.78	-13.00	32.78
3465.00	V	60.44	-49.84	13.91	1.62	-37.55	-13.00	24.55
5197.50	H	49.87	-56.55	14.00	1.52	-44.07	-13.00	31.07
5197.50	V	54.13	-52.36	14.00	1.52	-39.88	-13.00	26.88
250.00	H	45.44	-63.80	0.00	0.51	-64.31	-13.00	51.31
250.00	V	45.75	-66.91	0.00	0.51	-67.42	-13.00	54.42

LTE Band 5(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 836.500 MHz								
1673.00	H	44.08	-59.86	10.61	0.73	-49.98	-13.00	36.98
1673.00	V	48.23	-56.31	10.61	0.73	-46.43	-13.00	33.43
2509.50	H	42.54	-60.37	13.11	1.25	-48.51	-13.00	35.51
2509.50	V	38.65	-64.29	13.11	1.25	-52.43	-13.00	39.43
3346.00	H	41.48	-58.20	13.83	1.61	-45.98	-13.00	32.98
3346.00	V	39.54	-60.18	13.83	1.61	-47.96	-13.00	34.96
250.00	H	45.66	-63.58	0.00	0.51	-64.09	-13.00	51.09
250.00	V	45.58	-67.08	0.00	0.51	-67.59	-13.00	54.59

LTE Band 7 (30MHz-26.5GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 2535.000 MHz								
5070.00	H	60.15	-46.65	13.93	1.34	-34.06	-25.00	9.06
5070.00	V	62.61	-44.00	13.93	1.34	-31.41	-25.00	6.41
7605.00	H	61.03	-39.33	13.21	1.40	-27.52	-25.00	2.52
7605.00	V	62.36	-38.40	13.21	1.40	-26.59	-25.00	1.59
250.00	H	45.58	-63.66	0.00	0.51	-64.17	-25.00	39.17
250.00	V	45.62	-67.04	0.00	0.51	-67.55	-25.00	42.55

LTE Band 12(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency:707.5 MHz								
1415.00	H	58.67	-54.83	9.08	1.22	-46.97	-13.00	33.97
1415.00	V	53.06	-60.97	9.08	1.22	-53.11	-13.00	40.11
2122.50	H	77.64	-35.15	11.27	1.11	-24.99	-13.00	11.99
2122.50	V	76.04	-36.73	11.27	1.11	-26.57	-13.00	13.57
2830.00	H	49.12	-62.96	13.34	1.36	-50.98	-13.00	37.98
2830.00	V	54.90	-57.41	13.34	1.36	-45.43	-13.00	32.43
3537.50	H	59.32	-50.82	13.91	1.57	-38.48	-13.00	25.48
3537.50	V	55.95	-54.19	13.91	1.57	-41.85	-13.00	28.85
250.00	H	45.54	-63.70	0.00	0.51	-64.21	-13.00	51.21
250.00	V	45.85	-66.81	0.00	0.51	-67.32	-13.00	54.32

LTE Band 17(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency:710 MHz								
1420.00	H	58.43	-55.17	9.10	1.23	-47.30	-13.00	34.30
1420.00	V	55.74	-58.36	9.10	1.23	-50.49	-13.00	37.49
2130.00	H	77.88	-34.87	11.22	1.11	-24.76	-13.00	11.76
2130.00	V	76.27	-36.45	11.22	1.11	-26.34	-13.00	13.34
2840.00	H	48.81	-63.23	13.42	1.36	-51.17	-13.00	38.17
2840.00	V	54.23	-58.05	13.42	1.36	-45.99	-13.00	32.99
3550.00	H	59.96	-50.19	13.95	1.56	-37.80	-13.00	24.80
3550.00	V	59.91	-50.24	13.95	1.56	-37.85	-13.00	24.85
250.00	H	45.77	-63.47	0.00	0.51	-63.98	-13.00	50.98
250.00	V	45.17	-67.49	0.00	0.51	-68.00	-13.00	55.00

LTE Band 18(30MHz-10GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency:822.500 MHz								
1645.00	H	46.93	-67.51	10.42	0.71	-57.80	-13.00	44.80
1645.00	V	48.78	-66.26	10.42	0.71	-56.55	-13.00	43.55
2467.50	H	50.04	-62.83	12.84	1.26	-51.25	-13.00	38.25
2467.50	V	49.10	-63.84	12.84	1.26	-52.26	-13.00	39.26
3290.00	H	47.56	-63.14	13.60	1.59	-51.13	-13.00	38.13
3290.00	V	48.73	-61.97	13.60	1.59	-49.96	-13.00	36.96
250.00	H	45.25	-63.99	0.00	0.51	-64.50	-13.00	51.50
250.00	V	45.38	-67.28	0.00	0.51	-67.79	-13.00	54.79

LTE Band 38(30MHz-26.5GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK, Frequency: 2595.000 MHz								
5190.00	H	53.69	-52.73	13.99	1.51	-40.25	-25.00	15.25
5190.00	V	60.32	-46.15	13.99	1.51	-33.67	-25.00	8.67
7785.00	H	62.02	-38.42	13.32	1.53	-26.63	-25.00	1.63
7785.00	V	61.95	-38.74	13.32	1.53	-26.95	-25.00	1.95
250.00	H	45.42	-63.82	0.00	0.51	-64.33	-25.00	39.33
250.00	V	45.18	-67.48	0.00	0.51	-67.99	-25.00	42.99

LTE Band 40(30MHz-25GHz):

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency: 2310.000 MHz								
4620.00	H	53.62	-54.83	14.24	1.81	-42.40	-40.00	2.40
4620.00	V	54.09	-54.46	14.24	1.81	-42.03	-40.00	2.03
6930.00	H	48.36	-53.94	13.64	1.81	-42.11	-40.00	2.11
6930.00	V	49.25	-52.91	13.64	1.81	-41.08	-40.00	1.08
250.00	H	45.35	-63.89	0.00	0.51	-64.40	-40.00	24.40
250.00	V	45.62	-67.04	0.00	0.51	-67.55	-40.00	27.55
QPSK,Frequency: 2355.000 MHz								
4710.00	H	48.32	-60.19	14.39	1.66	-47.46	-40.00	7.46
4710.00	V	51.03	-57.58	14.39	1.66	-44.85	-40.00	4.85
7065.00	H	48.02	-53.81	13.31	1.76	-42.26	-40.00	2.26
7065.00	V	48.36	-53.39	13.31	1.76	-41.84	-40.00	1.84
250.00	H	45.33	-63.91	0.00	0.51	-64.42	-40.00	24.42
250.00	V	45.17	-67.49	0.00	0.51	-68.00	-40.00	28.00

LTE Band 41

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
QPSK,Frequency: 2595.000 MHz								
5190.00	H	51.32	-55.09	13.99	1.50	-42.60	-25.00	17.60
5190.00	V	53.02	-53.44	13.99	1.50	-40.95	-25.00	15.95
7785.00	H	61.08	-39.35	13.32	1.53	-27.56	-25.00	2.56
7785.00	V	59.96	-40.73	13.32	1.53	-28.94	-25.00	3.94
250.00	H	45.22	-64.02	0.00	0.51	-64.53	-25.00	39.53
250.00	V	45.36	-67.30	0.00	0.51	-67.81	-25.00	42.81

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

ATTACHMENT



TESTING LABORATORY
CERTIFICATE #4820.01



FCC PART 22H, PART 24E, PART 27, PART 90 MEASUREMENT AND TEST REPORT

For

Beijing ULINK Technology Co., Ltd.

No.9-161, Fuqian street, Niulanshan town, Shunyi District, Beijing, China

FCC ID:2AMIWUZ211

Report Type: Original Report	Product Type: Mobile WiFi
Report Number: RBJ190927050-00E	
Report Date: 2020-02-19	
Reviewed By:	Ivan Cao Assistant Manager 
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	Mobile WiFi
EUT Model:	UZ-211-1
Multiple Models:	UZ-200,UZ-201
Operation modes:	GPRS/EDGE Data, WCDMA(R99 (Data), HSDPA/HSUPA/HSPA+) FDD-LTE,TDD-LTE
RF Module 2 Operation Frequency:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 2:1850-1910 MHz(TX), 1930-1990 MHz(RX) LTE Band 4:1710-1755 MHz(TX), 2110-2155 MHz(RX) LTE Band 5:824-849 MHz(TX), 869-894 MHz(RX) LTE Band 7:2500-2570 MHz(TX), 2620-2690 MHz(RX) LTE Band 18: 815-830 MHz(TX), 860-875 MHz(RX) LTE Band 38: 2570-2620 MHz(TX&RX) LTE Band 40 Lower: 2305-2315 MHz(TX&RX) LTE Band 40 Upper: 2350-2360 MHz(TX&RX) LTE Band 41: 2535-2655 MHz(TX&RX)
RF Module 1 Operation Frequency:	GSM 850: 824-849 MHz(TX); 869-894 MHz(RX) PCS 1900: 1850-1910 MHz(TX); 1930-1990 MHz(RX) WCDMA Band 2: 1850-1910 MHz(TX); 1930-1990 MHz(RX) LTE Band 2:1850-1910 MHz(TX), 1930-1990 MHz(RX) LTE Band 4:1710-1755 MHz(TX), 2110-2155 MHz(RX) LTE Band 5:824-849 MHz(TX), 869-894 MHz(RX) LTE Band 7:2500-2570 MHz(TX), 2620-2690 MHz(RX) LTE Band 12: 699-716 MHz(TX), 729-746 MHz(RX) LTE Band 17: 704-716 MHz(TX), 734-746 MHz(RX) LTE Band 18: 815-830 MHz(TX), 860-875 MHz(RX) LTE Band 38: 2570-2620 MHz(TX&RX) LTE Band 40 Lower: 2305-2315 MHz(TX&RX) LTE Band 40 Upper: 2350-2360 MHz(TX&RX) LTE Band 41: 2535-2655 MHz(TX&RX)
Modulation Type:	GMSK, 8PSK, BPSK, QPSK, 16QAM
Rated Input Voltage:	DC 3.63V from Battery or DC 5V from USB port
Serial Number:	RBJ190927050-RF-S1
EUT Received Date:	2019/10/9
EUT Status:	Good

Notes: Model UZ-211-1 was selected for fully testing, the detailed information about the difference among UZ-200,UZ-201 and model UZ-211-1 can be referred to the declaration letter which was stated and guaranteed by the manufacturer.

Objective

This report is prepared on behalf of **Beijing ULINK Technology Co., Ltd.** in accordance with: Part 2-Subpart J, Part 22-Subpart H, Part 24-Subpart E, Part 27, part 90 of the Federal Communications Commission's rules.

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

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2AMIWUZ211
FCC Part 15C DSS submissions with FCC ID: 2AMIWUZ211
FCC Part 15C DTS submissions with FCC ID: 2AMIWUZ211
FCC Part 15E NII submissions with FCC ID: 2AMIWUZ211

Test Methodology

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

Part 22 Subpart H - Public Mobile Services
Part 24 Subpart E - Personal Communication Services
Part 27 – Miscellaneous wireless communications services
Part 90 –PRIVATE LAND MOBILE RADIO SERVICES

Applicable Standards: TIA/EIA 603-D-2010.

All radiated and conducted emissions measurements were performed at Bay Area Compliance Laboratories Corp.(Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Unwanted Emissions, radiated	30MHz ~ 1GHz: 5.85 dB 1G~26.5GHz: 5.23 dB
Unwanted Emissions, conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%

Note: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol “△”. Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing according to TIA/EIA-603-D 2010.

The device have two RF module support GSM Band 850/1900MHz(only supports GPRS/EDGE),WCDMA Band 2, and LTE band 2/4/5/7/12/17/18/38/40/41(Module 2 don't support LTE Band 12/17). Test was performed with channels as below table:

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
GPRS/EDGE850	0.25	824.2	836.6	848.8
GPRS/EDGE1900	0.25	1850.2	1880	1909.8
WCDMA Band 2	4.2	1852.4	1880	1907.6
LTE Band 2	1.4	1850.7	1880	1909.3
	3	1851.5	1880	1908.5
	5	1852.5	1880	1907.5
	10	1855	1880	1905
	15	1857.5	1880	1902.5
	20	1860	1880	1900
LTE Band 4	1.4	1710.7	1732.5	1754.3
	3	1711.5	1732.5	1753.5
	5	1712.5	1732.5	1752.5
	10	1715	1732.5	1750
	15	1717.5	1732.5	1747.5
	20	1720	1732.5	1745
LTE Band 5	1.4	824.7	836.5	848.3
	3	825.5	836.5	847.5
	5	826.5	836.5	846.5
	10	829	836.5	844
LTE Band 7	5	2502.5	2535	2567.5
	10	2505	2535	2565
	15	2507.5	2535	2562.5
	20	2510	2535	2560
LTE Band 12	1.4	699.7	707.5	715.3
	3	700.5	707.5	714.5
	5	701.5	707.5	713.5
	10	704	707.5	711
LTE Band 17	5	706.5	710	713.5
	10	709	710	711
LTE Band 18	5	817.5	822.5	827.5
	10	820	822.5	825
	15	/	822.5	/
LTE Band 38	5	2572.5	2595	2617.5
	10	2575	2595	2615
	15	2577.5	2595	2612.5
	20	2580	2595	2610

Frequency Bands	Bandwidth (MHz)	Test Frequency(MHz)		
		Low	Middle	High
LTE Band 40 Lower 2305-2315MHz	5	2307.5	2310	2312.5
	10	/	2310	/
LTE Band 40 Upper 2350-2360MHz	5	2352.5	2355	2357.5
	10	/	2355	/
LTE Band 41	5	2537.5	2595	2652.5
	10	2540	2595	2650
	15	2542.5	2595	2647.5
	20	2545	2595	2645

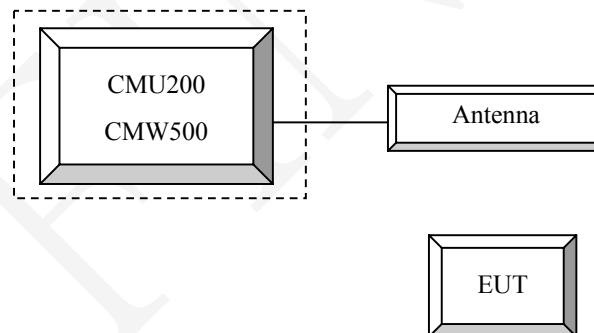
Equipment Modifications

No modification was made to the EUT.

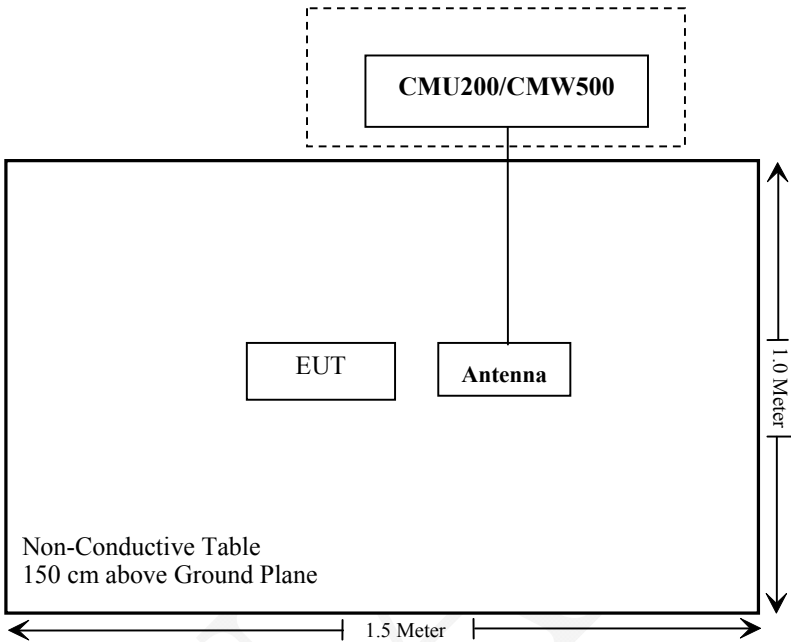
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
R&S	Universal Radio Communication Tester	CMU200	106 891
R&S	Wideband Radio Communication Tester	CMW500	147473
Un-Known	ANTENNA	Un-Known	Un-Known

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Rules	Description of Test	Result
FCC§1.1310, §2.1093	RF Exposure	Compliance
FCC§2.1046;§ 22.913 (a); § 24.232 (c);§27.50; §90.635	RF Output Power	Compliance
FCC§ 2.1047	Modulation Characteristics	Not Applicable
FCC§ 2.1049; § 22.905 § 22.917; § 24.238; §27.53 §90.209	Occupied Bandwidth	Compliance
FCC§ 2.1051, § 22.917 (a); § 24.238 (a); §27.53;§90.691	Spurious Emissions at Antenna Terminal	Compliance
FCC§ 2.1053 § 22.917 (a); § 24.238 (a); §27.53, §90.691	Field Strength of Spurious Radiation	Compliance
FCC§ 22.917 (a); § 24.238 (a); §27.53; §90.691	Out of band emission, Band Edge	Compliance
FCC§ 2.1055 § 22.355; § 24.235; §27.54 §90.213	Frequency stability vs. temperature Frequency stability vs. voltage	Compliance

FCC §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: RBJ190927050-20.

FINAL

FCC §2.1047 - MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E&27&90 there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

FINAL

FCC § 2.1046, § 22.913 (a) & § 24.232 (c) & § 27.50 & § 90.635- 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 FCC §2.1046 and §24.232 (C), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §24.232 (d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. 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.

According to §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.

(c) (10) Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

(d), (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications.

(h),(2) Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

According to §90.635

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

Test Procedure

GSM/GPRS/EGPRS

Function: Menu select > GSM Mobile Station > GSM 850/1900

Press Connection control to choose the different menus

Press RESET > choose all the reset all settings

Connection Press Signal Off to turn off the signal and change settings

Network Support > GSM + GPRS or GSM + EGSM

Main Service > Packet Data

Service selection > Test Mode A – Auto Slot Config. off

MS Signal Press Slot Config Bottom on the right twice to select and change the number of time slots and power setting

> Slot configuration > Uplink/Gamma

> 33 dBm for GPRS 850

> 30 dBm for GPRS 1900

> 27 dBm for EGPRS 850

> 26 dBm for EGPRS 1900

BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel

Frequency Offset > + 0 Hz

Mode > BCCH and TCH

BCCH Level > -85 dBm (May need to adjust if link is not stable)

BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]

Channel Type > Off

P0 > 4 dB

Slot Config > Unchanged (if already set under MS signal)

TCH > choose desired test channel

Hopping > Off

Main Timeslot > 3

Network Coding Scheme > CS4 (GPRS) and MCS5 (EGPRS)

Bit Stream > 2E9-1 PSR Bit Stream

AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input

Connection Press Signal on to turn on the signal and change settings

WCDMA-Release 99

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification. The EUT has a nominal maximum output power of 24dBm (+1.7/-3.7).

WCDMA General Settings	Loopback Mode	Test Mode 1
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c / β_d	8/15

WCDMA HSDPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subset	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set1			
	Power Control Algorithm	Algorithm2			
	β_c	2/15	12/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	β_d (SF)	64			
	β_c / β_d	2/15	12/15	15/8	15/4
	β_{hs}	4/15	24/15	30/15	30/15
	MPR(dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	$A_{hs} = \beta_{hs} / \beta_c$	30/15			

WCDMA HSUPA

The following tests were conducted according to the test requirements outlines in section 5.2 of the 3GPP TS34.121-1 specification.

	Mode	HSUPA	HSUPA	HSUPA	HSUPA	HSUPA
	Subset	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2kbps RMC				
	HSDPA FRC	H-Set1				
	HSUPA Test	HSUPA Loopback				
	Power Control Algorithm	Algorithm2				
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	CM(dB)	1.0	3.0	2.0	3.0	1.0
	MPR(dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				
	DNAK	8				
	DCQI	8				
	Ack-Nack repetition factor	3				
	CQI Feedback	4ms				
	CQI Repetition Factor	2				
	$A_{hs}=\beta_{hs}/\beta_c$	30/15				
HSUPA Specific Settings	DE-DPCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E _{FCI} s	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E-TFCI PO4 E-TFCI 92 E-TFCI PO 18	E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27	E-TFCI 11 E E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO23 E-TFCI 75 E-TFCI PO26 E-TFCI 81 E-TFCI PO 27

HSPA+

The following tests were conducted according to the test requirements in Table C.11.1.4 of 3GPP TS 34.121-1

Sub-test	β_c (Note 3)	β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

DC-HSDPA

The following tests were conducted according to the test requirements in Table C.8.1.12 of 3GPP TS 34.121-1

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

LTE (FDD):

The following tests were conducted according to the test requirements in 3GPP TS36.101

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3

Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

LTE(TDD):

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$			$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

Calculated Duty Cycle = Extended cyclic prefix in uplink $\times (T_s) \times \#$ of S + $\#$ of U

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

where

$T_s = 1/(15000 \times 2048)$ seconds

Radiated method:

ANSI/TIA-603-D section 2.2.17

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESR3	102453	2019-06-26	2020-06-26
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
EMCO	Adjustable Dipole Antenna	3121C	9109-753	N/A	N/A
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0075-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-1400-01	2019-05-06	2020-05-06
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
Agilent	Signal Generator	E8247C	MY43321350	2018-12-10	2019-12-10
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-05-09	2020-05-09
TDK RF	Horn Antenna	HRN-0118	130 084	2018-10-12	2021-10-12
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2019-09-05	2020-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-02	2019-09-05	2020-09-05
R&S	Universal Radio Communication Tester	CMU200	106 891	2018-12-14	2019-12-14
R&S	Wideband Radio Communication Tester	CMW500	147473	2019-08-03	2020-08-03
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	/

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

Test Data**Environmental Conditions**

Test Items:	Radiation Below 1GHz	Radiation Above 1GHz	Conducted Output Power
Temperature:	24.3°C	24.3 °C	28.2 °C
Relative Humidity:	39 %	39%	51%
ATM Pressure:	102.1 kPa	102.1 kPa	100.6kPa
Tester:	Tyler Pan	Lucy Lu	Blake Yang, Lily Xie
Test Date:	2019-12-21	2019-12-21	2019-10-25

Test Result: Compliance

RF Module 2:**Conducted Output Power****Cellular Band & PCS Band****GPRS mode**

Band	Channel No.	Conducted Peak Output Power (dBm)			
		GPRS 1 uplink slot	GPRS 2 uplink slot	GPRS 3 uplink slot	GPRS 4 uplink slot
Cellular	128	32.59	30.82	29.51	28.11
	190	32.24	30.74	29.25	27.84
	251	32.27	30.62	29.18	27.85
PCS	512	30.14	28.91	27.99	26.62
	661	29.94	28.95	28.16	26.98
	810	29.88	29.16	28.22	27.25

EGPRS mode

Band	Channel No.	Conducted Peak Output Power (dBm)			
		EGPRS 1 uplink slot	EGPRS 2 uplink slot	EGPRS 3 uplink slot	EGPRS 4 uplink slot
Cellular	128	24.98	23.68	22.57	21.84
	190	25.11	23.91	22.67	21.92
	251	25.13	24.09	22.78	21.83
PCS	512	26.45	25.11	24.38	23.14
	661	26.35	24.98	24.34	23.24
	810	26.24	24.79	24.27	23.38

WCDMA Band 2

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	23.56	2.64	23.42	2.44	23.39	2.6
HSDPA	1	22.52	4.03	22.48	3.28	22.57	3.97
	2	22.28	2.98	22.34	3.78	22.71	2.48
	3	22.42	4.28	22.24	2.48	22.44	3.38
	4	22.47	2.56	22.09	4.22	22.20	4.42
HSUPA	1	21.98	4.35	21.84	3.42	21.79	3.25
	2	21.62	4.04	21.83	2.34	21.47	2.24
	3	21.54	4.68	22.10	3.24	21.30	2.3
	4	21.50	4.60	22.19	4.32	21.09	2.86
	5	21.24	4.12	21.97	4.58	20.98	3.02
DC-HSDPA	1	21.49	3.84	21.67	3.14	20.95	2.78
	2	21.47	4.10	21.61	4.20	21.22	2.84
	3	21.55	4.40	21.56	3.72	21.41	4.06
	4	21.48	2.24	21.79	2.28	21.62	2.42
HSPA+ (16QAM)	1	21.22	2.78	21.71	4.04	21.90	2.14

LTE Band 2

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.95	22.93	23.16
		RB1#3	23.34	23.43	23.02
		RB1#5	23.32	23.20	22.78
		RB3#0	23.11	23.12	22.99
		RB3#3	23.13	22.85	23.33
		RB6#0	22.28	21.95	22.06
	16QAM	RB1#0	22.29	22.36	22.17
		RB1#3	22.40	22.38	23.04
		RB1#5	22.15	22.23	22.85
		RB3#0	22.28	22.10	22.05
		RB3#3	22.42	21.88	22.10
		RB6#0	21.26	21.07	21.12
3MHz	QPSK	RB1#0	23.15	23.02	23.16
		RB1#8	23.29	22.78	22.98
		RB1#14	23.00	22.71	23.19
		RB6#0	22.01	21.97	22.05
		RB6#9	22.08	21.96	22.18
		RB15#0	22.27	22.16	22.19
	16QAM	RB1#0	22.46	21.69	22.42
		RB1#8	22.52	21.74	22.62
		RB1#14	22.45	21.72	22.43
		RB6#0	20.99	20.86	21.11
		RB6#9	21.04	20.77	21.06
		RB15#0	21.20	20.92	21.21
5MHz	QPSK	RB1#0	22.95	22.65	23.08
		RB1#13	22.87	22.92	23.08
		RB1#24	22.75	22.71	23.04
		RB15#0	22.09	21.94	22.05
		RB15#10	22.04	21.96	22.09
		RB25#0	22.06	21.85	22.07
	16QAM	RB1#0	21.64	22.35	21.95
		RB1#13	21.32	22.56	21.76
		RB1#24	21.22	22.45	21.80
		RB15#0	20.99	20.85	21.05
		RB15#10	21.22	20.86	20.99
		RB25#0	21.09	20.89	20.99

10MHz	QPSK	RB1#0	23.52	22.87	23.23
		RB1#25	23.00	22.86	23.14
		RB1#49	23.28	22.80	22.98
		RB25#0	22.19	21.91	22.09
		RB25#25	22.15	21.97	22.00
		RB50#0	22.09	22.00	22.05
	16QAM	RB1#0	22.42	22.48	21.85
		RB1#25	21.97	22.46	22.20
		RB1#49	21.91	22.62	21.80
		RB25#0	20.99	21.01	21.19
		RB25#25	21.16	21.11	21.15
		RB50#0	20.87	20.89	21.08
15MHz	QPSK	RB1#0	23.40	22.93	22.92
		RB1#38	23.10	22.82	23.01
		RB1#74	23.05	22.81	22.89
		RB36#0	22.19	21.96	22.05
		RB36#39	22.16	21.96	22.09
		RB75#0	22.13	22.01	22.06
	16QAM	RB1#0	22.64	22.68	22.28
		RB1#38	22.21	22.59	22.34
		RB1#74	22.00	22.50	22.18
		RB36#0	21.07	21.23	21.06
		RB36#39	21.03	20.94	20.95
		RB75#0	20.99	20.96	21.06
20MHz	QPSK	RB1#0	23.14	23.10	22.93
		RB1#50	23.10	23.02	23.28
		RB1#99	22.84	23.09	23.07
		RB50#0	22.11	22.00	22.05
		RB50#50	22.06	21.98	22.04
		RB100#0	22.13	22.00	22.03
	16QAM	RB1#0	22.38	22.12	22.78
		RB1#50	22.79	22.02	22.94
		RB1#99	22.57	22.09	22.75
		RB50#0	21.22	21.04	21.01
		RB50#50	20.98	20.98	21.05
		RB100#0	21.02	20.90	21.02

LTE Band 4

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	23.00	22.54	22.67
		RB1#3	22.98	22.86	23.04
		RB1#5	23.11	22.78	22.77
		RB3#0	23.02	22.71	22.75
		RB3#3	22.86	22.72	22.78
		RB6#0	21.94	21.78	21.89
	16QAM	RB1#0	22.16	22.42	21.87
		RB1#3	22.26	22.29	21.72
		RB1#5	22.11	22.44	21.62
		RB3#0	21.96	21.76	21.90
		RB3#3	21.99	22.05	21.84
		RB6#0	20.87	21.00	20.87
3MHz	QPSK	RB1#0	22.86	22.73	22.74
		RB1#8	22.90	22.89	22.75
		RB1#14	22.83	22.56	22.84
		RB6#0	21.94	21.85	21.82
		RB6#9	21.82	21.93	21.79
		RB15#0	21.97	21.79	21.82
	16QAM	RB1#0	22.32	22.30	22.18
		RB1#8	22.35	22.20	22.21
		RB1#14	22.34	22.48	22.16
		RB6#0	20.93	21.06	20.88
		RB6#9	20.88	20.52	20.64
		RB15#0	21.10	20.74	20.63
5MHz	QPSK	RB1#0	22.70	22.66	22.61
		RB1#13	22.71	22.65	22.92
		RB1#24	22.74	22.63	22.79
		RB15#0	21.99	21.75	21.92
		RB15#10	21.94	21.85	21.95
		RB25#0	21.92	21.70	21.98
	16QAM	RB1#0	21.39	22.23	21.77
		RB1#13	21.52	22.55	21.59
		RB1#24	21.13	22.56	21.66
		RB15#0	21.01	20.64	20.80
		RB15#10	20.95	20.96	20.65
		RB25#0	21.00	20.70	20.75

10MHz	QPSK	RB1#0	22.92	22.61	22.95
		RB1#25	22.94	22.68	23.14
		RB1#49	22.84	22.59	22.65
		RB25#0	22.02	21.76	22.00
		RB25#25	21.90	21.82	21.93
		RB50#0	21.96	21.73	22.01
	16QAM	RB1#0	22.44	22.50	21.88
		RB1#25	22.36	22.25	22.06
		RB1#49	22.17	22.17	21.55
		RB25#0	21.06	20.63	21.09
		RB25#25	20.99	20.80	20.98
		RB50#0	20.90	20.76	20.95
15MHz	QPSK	RB1#0	22.90	22.72	22.75
		RB1#38	22.78	22.93	22.89
		RB1#74	22.88	22.84	22.61
		RB36#0	21.95	21.88	21.94
		RB36#39	22.00	21.85	22.03
		RB75#0	21.97	21.83	22.00
	16QAM	RB1#0	22.53	22.24	22.19
		RB1#38	23.10	22.13	22.07
		RB1#74	22.50	22.18	21.60
		RB36#0	21.02	20.65	20.91
		RB36#39	21.01	21.02	20.73
		RB75#0	20.98	20.75	20.93
20MHz	QPSK	RB1#0	22.88	23.04	22.93
		RB1#50	23.06	23.07	22.99
		RB1#99	23.09	22.97	22.46
		RB50#0	21.98	21.88	22.03
		RB50#50	22.03	21.83	22.00
		RB100#0	22.09	21.90	21.95
	16QAM	RB1#0	22.16	22.16	22.82
		RB1#50	22.68	21.91	22.83
		RB1#99	22.57	21.44	22.22
		RB50#0	21.05	21.02	20.97
		RB50#50	20.97	20.92	20.87
		RB100#0	20.92	20.81	20.85

LTE Band 5

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.96	22.70	22.96
		RB1#3	23.02	22.94	22.84
		RB1#5	23.02	22.80	22.69
		RB3#0	22.99	23.05	22.77
		RB3#3	22.91	22.94	22.71
		RB6#0	21.98	22.02	22.02
	16QAM	RB1#0	22.37	22.64	22.07
		RB1#3	22.31	22.71	21.92
		RB1#5	22.13	22.57	21.77
		RB3#0	21.99	21.97	22.04
		RB3#3	21.81	21.72	22.04
		RB6#0	20.85	21.22	20.78
3MHz	QPSK	RB1#0	22.86	22.86	23.00
		RB1#8	23.01	22.86	22.94
		RB1#14	22.97	22.85	22.76
		RB6#0	22.03	21.93	22.02
		RB6#9	21.96	22.02	22.02
		RB15#0	21.98	22.02	22.03
	16QAM	RB1#0	22.34	22.39	21.83
		RB1#8	22.36	22.43	22.11
		RB1#14	22.35	22.36	21.71
		RB6#0	20.90	21.36	20.84
		RB6#9	20.94	21.09	20.84
		RB15#0	20.64	20.93	21.09
5MHz	QPSK	RB1#0	22.55	22.75	22.72
		RB1#13	22.77	22.62	22.79
		RB1#24	22.67	22.73	22.76
		RB15#0	22.02	21.94	22.04
		RB15#10	22.00	21.97	21.94
		RB25#0	21.94	21.96	22.02
	16QAM	RB1#0	21.34	22.40	21.63
		RB1#13	21.55	22.67	21.69
		RB1#24	21.22	22.65	21.55
		RB15#0	20.88	20.93	21.03
		RB15#10	20.86	20.90	21.03
		RB25#0	20.84	20.90	20.95
10MHz	QPSK	RB1#0	22.86	23.00	22.79
		RB1#25	22.95	22.89	23.40
		RB1#49	22.89	22.86	22.27
		RB25#0	21.99	22.05	22.01
		RB25#25	22.08	21.98	22.08
		RB50#0	22.09	22.02	22.01
	16QAM	RB1#0	22.43	22.38	21.78
		RB1#25	22.65	23.10	22.00
		RB1#49	22.36	22.34	21.49
		RB25#0	20.94	21.12	21.23
		RB25#25	21.11	21.19	21.23
		RB50#0	20.95	21.06	20.93

LTE Band 7

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	22.09	22.37	22.68
		RB1#13	22.42	22.89	23.11
		RB1#24	22.30	22.67	23.03
		RB15#0	21.54	21.87	21.89
		RB15#10	21.69	21.90	21.99
		RB25#0	21.55	21.85	21.91
	16QAM	RB1#0	21.18	22.19	21.86
		RB1#13	21.25	22.56	22.06
		RB1#24	21.21	22.42	21.88
		RB15#0	20.56	20.69	20.89
		RB15#10	20.74	20.70	20.89
10MHz	QPSK	RB1#0	21.84	22.51	22.81
		RB1#25	23.09	23.16	23.05
		RB1#49	23.25	22.88	23.10
		RB25#0	21.77	21.93	22.07
		RB25#25	21.87	22.00	22.11
	16QAM	RB50#0	21.79	21.89	22.07
		RB1#0	20.94	22.29	22.36
		RB1#25	22.46	23.00	22.54
		RB1#49	21.68	22.49	22.37
		RB25#0	20.74	20.92	20.94
15MHz	QPSK	RB1#0	22.08	22.94	22.70
		RB1#38	22.73	23.07	22.93
		RB1#74	22.89	22.91	22.94
		RB36#0	21.73	21.97	21.96
		RB36#39	21.86	22.00	21.98
	16QAM	RB75#0	21.74	21.83	22.06
		RB1#0	21.74	22.18	22.32
		RB1#38	22.95	22.53	22.11
		RB1#74	23.16	22.67	21.60
		RB36#0	20.74	20.89	20.92
20MHz	QPSK	RB36#39	20.72	20.85	20.71
		RB75#0	20.54	20.96	21.03
		RB1#0	21.74	23.01	23.03
		RB1#50	23.03	23.18	22.76
		RB1#99	22.79	23.35	22.84
	16QAM	RB50#0	21.76	21.89	21.94
		RB50#50	21.85	21.94	21.98
		RB100#0	21.79	21.81	21.92
		RB1#0	21.15	22.16	22.72
		RB1#50	22.67	21.93	22.74
		RB1#99	22.15	22.00	22.62
		RB50#0	20.77	20.79	20.87
		RB50#50	20.79	20.94	20.71
		RB100#0	20.72	20.81	20.76

LTE Band 18

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	22.73	22.67	22.76
		RB1#13	22.95	22.84	22.74
		RB1#24	22.72	22.80	22.90
		RB15#0	21.97	21.99	22.08
		RB15#10	22.01	22.07	22.01
		RB25#0	21.99	21.99	22.00
	16QAM	RB1#0	22.16	21.46	22.43
		RB1#13	21.67	21.34	22.85
		RB1#24	21.60	21.36	22.66
		RB15#0	20.89	20.75	20.89
		RB15#10	20.88	20.81	20.85
		RB25#0	21.07	20.87	21.03
10MHz	QPSK	RB1#0	23.01	22.88	22.74
		RB1#25	23.01	23.00	23.40
		RB1#49	22.94	22.98	23.06
		RB25#0	22.06	21.98	22.05
		RB25#25	22.08	22.04	22.20
		RB50#0	22.05	22.03	21.99
	16QAM	RB1#0	22.39	22.21	21.69
		RB1#25	22.36	23.25	21.73
		RB1#49	22.26	22.60	21.84
		RB25#0	20.95	21.13	21.06
		RB25#25	21.06	21.02	21.25
		RB50#0	21.08	20.84	20.80
15MHz	QPSK	RB1#0	\	23.06	\
		RB1#38	\	22.98	\
		RB1#74	\	22.96	\
		RB36#0	\	22.07	\
		RB36#39	\	22.04	\
		RB75#0	\	22.01	\
	16QAM	RB1#0	\	22.67	\
		RB1#38	\	22.38	\
		RB1#74	\	22.53	\
		RB36#0	\	20.88	\
		RB36#39	\	20.79	\
		RB75#0	\	20.86	\

LTE Band 38

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	22.53	22.69	22.35
		RB1#13	22.58	22.73	22.47
		RB1#24	22.52	22.65	22.37
		RB15#0	21.97	21.88	21.80
		RB15#10	22.02	21.78	21.77
		RB25#0	21.95	21.87	21.74
	16QAM	RB1#0	22.02	21.91	21.38
		RB1#13	22.33	21.99	21.47
		RB1#24	22.21	22.10	21.42
		RB15#0	20.93	20.69	20.54
		RB15#10	20.88	20.75	20.51
		RB25#0	20.94	20.84	20.73
10MHz	QPSK	RB1#0	22.85	23.00	22.58
		RB1#25	22.99	22.98	22.58
		RB1#49	22.86	22.96	22.56
		RB25#0	21.89	21.89	21.87
		RB25#25	21.98	21.91	21.82
		RB50#0	21.98	21.89	21.73
	16QAM	RB1#0	21.68	22.43	21.69
		RB1#25	21.81	22.58	22.43
		RB1#49	21.70	22.42	22.15
		RB25#0	20.81	20.96	20.95
		RB25#25	20.81	20.90	20.81
		RB50#0	20.85	20.88	20.82
15MHz	QPSK	RB1#0	22.97	22.93	22.81
		RB1#38	22.96	22.91	22.66
		RB1#74	22.96	22.97	22.68
		RB36#0	21.92	21.90	21.91
		RB36#39	21.92	21.82	21.79
		RB75#0	21.96	21.90	21.81
	16QAM	RB1#0	21.76	22.07	22.03
		RB1#38	21.67	22.26	21.83
		RB1#74	21.45	22.25	21.85
		RB36#0	20.86	20.84	20.73
		RB36#39	20.77	20.84	20.74
		RB75#0	20.97	20.89	20.81
20MHz	QPSK	RB1#0	22.59	22.93	22.91
		RB1#50	22.75	23.24	22.90
		RB1#99	22.62	22.81	22.73
		RB50#0	21.92	21.97	21.86
		RB50#50	21.91	21.91	21.69
		RB100#0	21.96	21.87	21.80
	16QAM	RB1#0	22.12	21.73	22.30
		RB1#50	22.32	21.73	22.63
		RB1#99	22.19	21.60	22.18
		RB50#0	20.92	21.01	20.98
		RB50#50	20.97	20.88	20.69
		RB100#0	20.90	20.63	20.72

LTE Band 40 Lower

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	23.47	23.44	23.43
		RB1#13	23.42	23.57	23.53
		RB1#24	23.28	23.49	23.40
		RB15#0	22.76	22.66	22.68
		RB15#10	22.78	22.62	22.59
		RB25#0	22.69	22.74	22.80
	16QAM	RB1#0	22.80	22.78	22.02
		RB1#13	23.11	23.19	22.20
		RB1#24	23.01	23.09	22.12
		RB15#0	21.72	21.55	21.61
		RB15#10	21.76	21.69	21.60
		RB25#0	21.80	21.45	21.71
10MHz	QPSK	RB1#0	\	23.67	\
		RB1#25	\	23.79	\
		RB1#49	\	23.79	\
		RB25#0	\	22.81	\
		RB25#25	\	22.75	\
		RB50#0	\	22.80	\
	16QAM	RB1#0	\	22.28	\
		RB1#25	\	22.59	\
		RB1#49	\	22.42	\
		RB25#0	\	21.62	\
		RB25#25	\	21.70	\
		RB50#0	\	21.82	\

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the PSD as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm/5MHz)
10MHz	QPSK	RB1#0	21.21
		RB1#25	21.33
		RB1#49	20.87
		RB25#0	20.23
		RB25#25	20.27
		RB50#0	20.41
	16QAM	RB1#0	20.02
		RB1#25	20.08
		RB1#49	19.99
		RB25#0	19.15
		RB25#25	19.21
		RB50#0	19.24

LTE Band 40 Upper

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	23.16	23.04	23.05
		RB1#13	23.18	23.20	23.25
		RB1#24	23.14	23.02	23.32
		RB15#0	22.49	22.34	22.30
		RB15#10	22.48	22.58	22.31
		RB25#0	22.36	22.43	22.34
	16QAM	RB1#0	22.03	22.82	22.34
		RB1#13	21.89	22.84	22.87
		RB1#24	21.86	22.79	22.88
		RB15#0	21.33	21.36	21.27
		RB15#10	21.34	21.40	21.25
		RB25#0	21.38	21.54	21.19
10MHz	QPSK	RB1#0	\	23.50	\
		RB1#25	\	23.51	\
		RB1#49	\	23.46	\
		RB25#0	\	22.52	\
		RB25#25	\	22.54	\
		RB50#0	\	22.50	\
	16QAM	RB1#0	\	22.08	\
		RB1#25	\	22.35	\
		RB1#49	\	22.17	\
		RB25#0	\	21.39	\
		RB25#25	\	21.49	\
		RB50#0	\	21.55	\

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the PSD as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm/5MHz)
10MHz	QPSK	RB1#0	20.98
		RB1#25	20.87
		RB1#49	20.97
		RB25#0	20.12
		RB25#25	20.02
		RB50#0	20.00
	16QAM	RB1#0	19.24
		RB1#25	20.05
		RB1#49	20.00
		RB25#0	19.54
		RB25#25	19.57
		RB50#0	19.65

LTE Band 41

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.61	23.47	23.67
		RB1#13	21.84	23.52	23.71
		RB1#24	21.66	23.55	23.53
		RB15#0	21.50	22.73	23.10
		RB15#10	21.56	22.69	23.01
		RB25#0	21.48	22.73	23.05
	16QAM	RB1#0	20.50	22.75	22.65
		RB1#13	20.86	22.83	22.41
		RB1#24	20.70	23.09	22.30
		RB15#0	20.67	21.53	21.92
		RB15#10	20.76	21.49	21.92
10MHz	QPSK	RB1#0	21.00	23.77	23.72
		RB1#25	22.09	23.82	23.77
		RB1#49	21.41	23.89	23.42
		RB25#0	21.50	22.75	23.13
		RB25#25	21.72	22.75	23.06
	16QAM	RB50#0	21.55	22.71	23.07
		RB1#0	20.13	23.24	22.85
		RB1#25	21.29	23.44	23.91
		RB1#49	20.69	23.29	22.71
		RB25#0	20.61	21.70	22.31
15MHz	QPSK	RB1#0	21.15	23.68	23.81
		RB1#38	22.25	23.68	24.06
		RB1#74	21.89	23.81	23.68
		RB36#0	21.61	22.67	23.06
		RB36#39	22.09	22.73	23.07
	16QAM	RB75#0	22.04	22.71	23.06
		RB1#0	20.66	22.48	22.69
		RB1#38	21.72	22.07	23.56
		RB1#74	21.50	22.48	22.66
		RB36#0	21.16	21.46	21.99
20MHz	QPSK	RB36#39	21.08	21.50	22.05
		RB75#0	21.06	21.63	22.05
	16QAM	RB1#0	20.89	23.58	23.17
		RB1#50	22.47	24.10	24.09
		RB1#99	22.14	23.80	23.41
	16QAM	RB50#0	21.67	22.75	23.00
		RB50#50	22.29	22.79	22.96
		RB100#0	21.99	22.71	22.99
		RB1#0	19.86	22.44	22.38
		RB1#50	21.46	22.51	23.83
		RB1#99	21.24	22.54	22.76
		RB50#0	20.79	21.72	21.85
		RB50#50	21.49	21.69	22.19
		RB100#0	21.16	21.47	22.02

PAR, Band 2

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	3.60	4.20	3.12	13
	100 RB		5.12	5.16	5.04	13
16QAM	1 RB	20 MHz	4.24	4.48	4.08	13
	100 RB		6.08	6.04	5.92	13

PAR, Band 4

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.48	4.72	4.40	13
	100 RB		5.24	5.36	5.08	13
16QAM	1 RB	20 MHz	5.24	5.68	5.08	13
	100 RB		6.08	6.32	6.04	13

PAR, Band 5

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	4.84	4.76	4.92	13
	50 RB		5.32	5.20	5.52	13
16QAM	1 RB	10 MHz	5.72	5.76	5.84	13
	50 RB		6.36	6.20	6.36	13

**Band 40 Duty cycle:
2305-2315MHz**

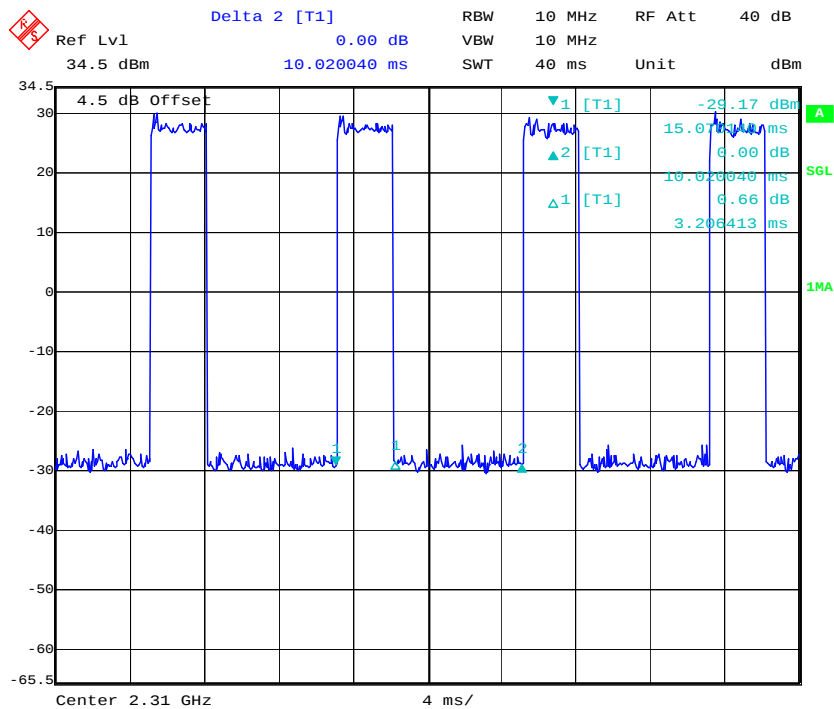
Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.206	10.020	32.00	38
	10M	3.126	10.020	31.20	
16-QAM	5M	3.126	10.020	31.20	
	10M	3.126	10.020	31.20	

2350-2360MHz

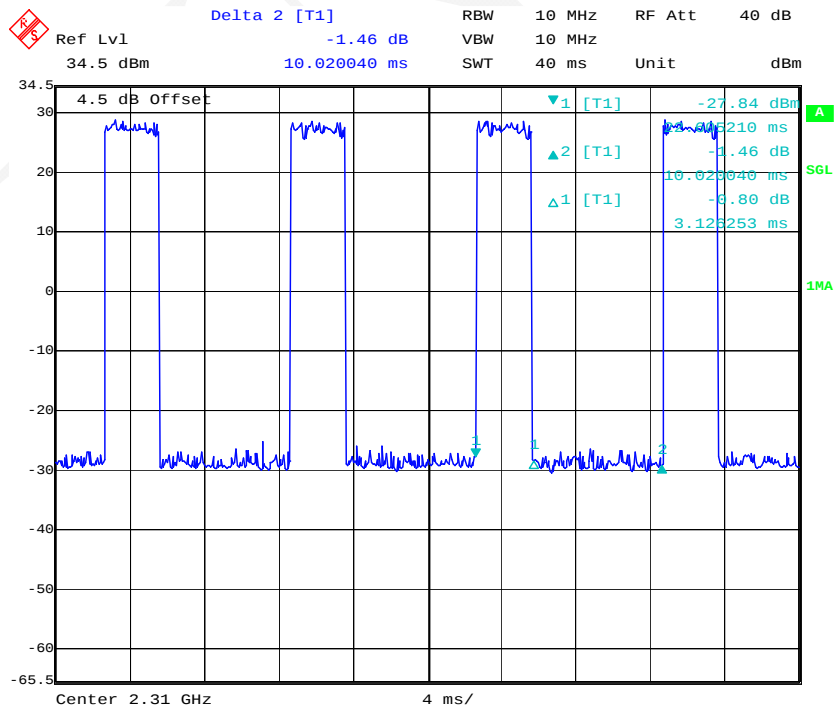
Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.126	10.020	31.20	38
	10M	3.206	10.020	32.00	
16-QAM	5M	3.126	10.020	31.20	
	10M	3.126	10.020	31.20	

Note: EUT setup is as following:

Uplink Downlink configuration	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3	D	S	U	U	U	D	D	D	D	D

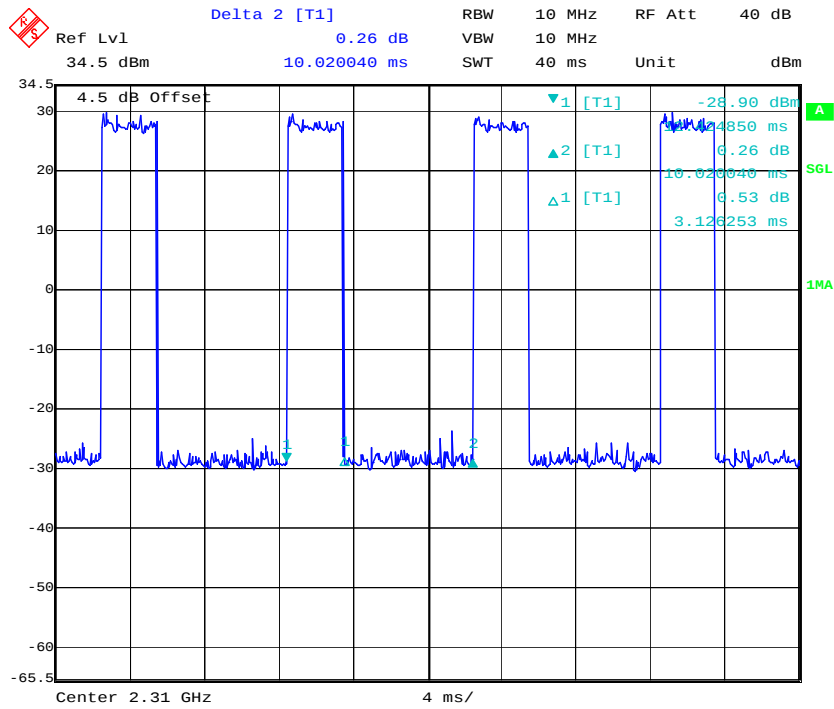
Band 40(2305-2315MHz)**QPSK, 5MHz**

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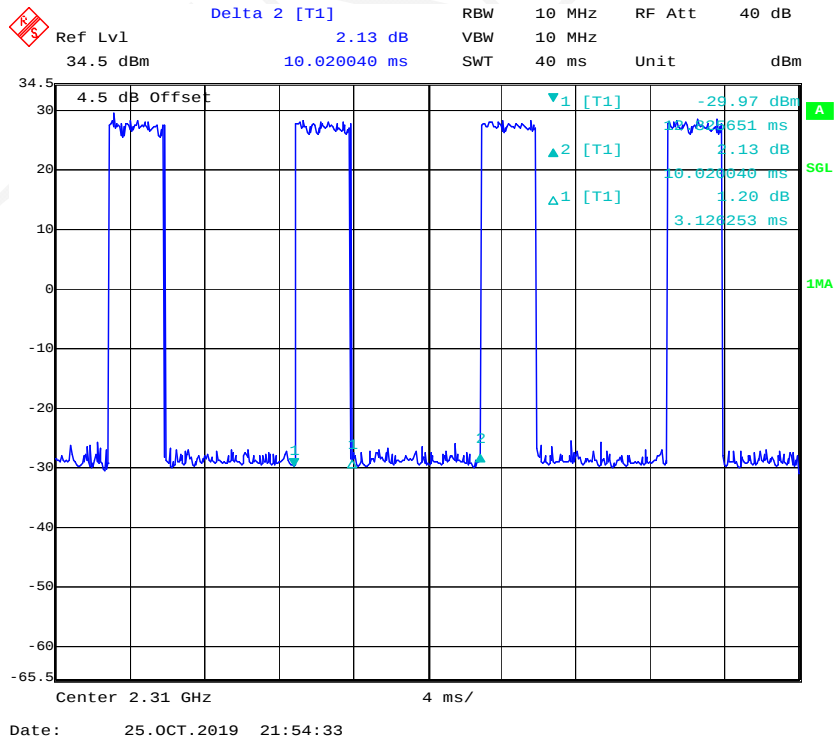
QPSK, 10MHz

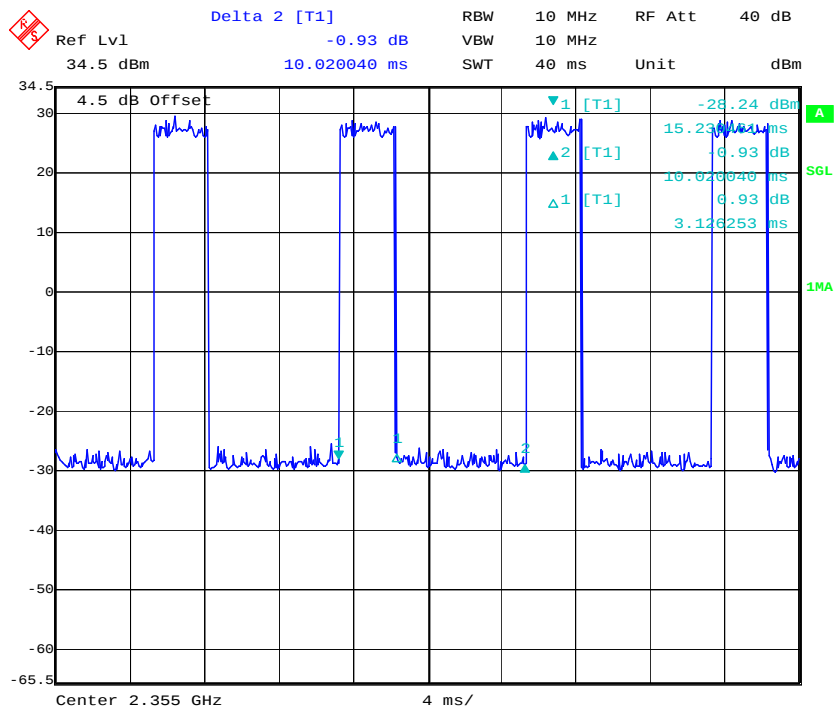
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16-QAM, 5MHz

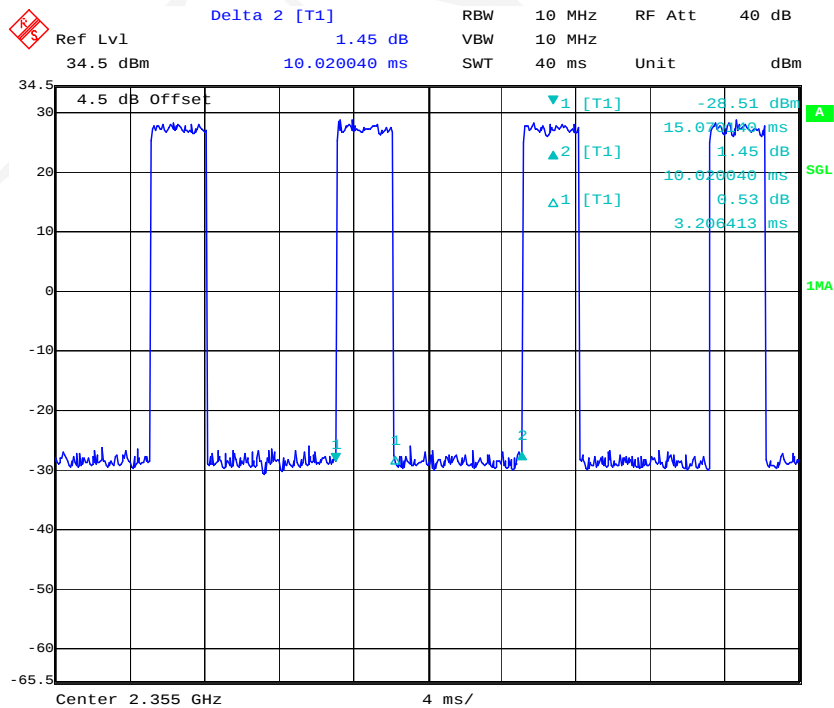


16-QAM, 10MHz



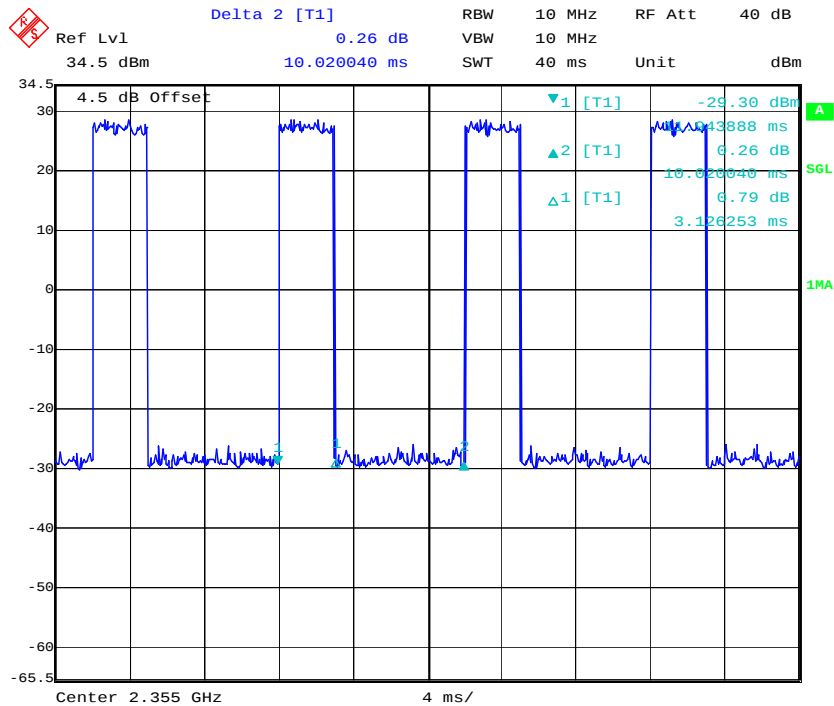
Band 40(2350-2360MHz)**QPSK, 5MHz**

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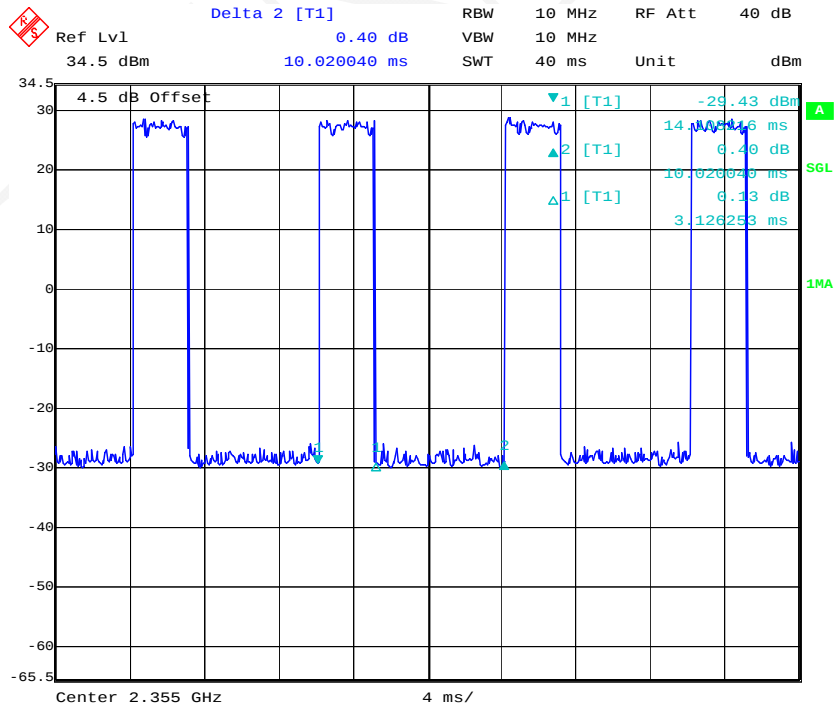
QPSK, 10MHz

Date: 25.OCT.2019 21:57:51

16-QAM, 5MHz



16-QAM, 10MHz



ERP & EIRP

Part 22H

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS 850 Middle Channel								
836.60	H	96.08	21.16	0.00	0.97	20.19	38.45	18.26
836.60	V	99.30	27.51	0.00	0.97	26.54	38.45	11.91
EGPRS850 Middle Channel								
836.60	H	97.34	22.42	0.00	0.97	21.45	38.45	17.00
836.60	V	93.97	22.18	0.00	0.97	21.21	38.45	17.24

Part 24E

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS 1900 Middle Channel								
1880.00	H	82.79	10.18	11.66	2.66	19.18	33.00	13.82
1880.00	V	90.96	18.49	11.66	2.66	27.49	33.00	5.51
EGPRS1900 Middle Channel								
1880.00	H	80.88	8.27	11.66	2.66	17.27	33.00	15.73
1880.00	V	88.92	16.45	11.66	2.66	25.45	33.00	7.55
WCDMA R99 Band 2 middle channel								
1880.00	H	84.20	11.59	11.66	2.66	20.59	33.00	12.41
1880.00	V	86.60	14.13	11.66	2.66	23.13	33.00	9.87

LTE Band 2

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1880.00	1.40	QPSK	H	80.52	7.91	11.66	2.66	16.91	33.00	16.09
1880.00			V	84.73	12.26	11.66	2.66	21.26	33.00	11.74
1880.00	3.00		H	80.17	7.56	11.66	2.66	16.56	33.00	16.44
1880.00			V	84.35	11.88	11.66	2.66	20.88	33.00	12.12
1880.00	5.00		H	79.73	7.12	11.66	2.66	16.12	33.00	16.88
1880.00			V	84.03	11.56	11.66	2.66	20.56	33.00	12.44
1880.00	10.00		H	79.41	6.80	11.66	2.66	15.80	33.00	17.20
1880.00			V	83.79	11.32	11.66	2.66	20.32	33.00	12.68
1880.00	15.00		H	79.15	6.54	11.66	2.66	15.54	33.00	17.46
1880.00			V	83.64	11.17	11.66	2.66	20.17	33.00	12.83
1880.00	20.00		H	79.35	6.74	11.66	2.66	15.74	33.00	17.26
1880.00			V	83.55	11.08	11.66	2.66	20.08	33.00	12.92
1880.00	1.40	16QAM	H	79.87	7.26	11.66	2.66	16.26	33.00	16.74
1880.00			V	84.14	11.67	11.66	2.66	20.67	33.00	12.33
1880.00	3.00		H	79.61	7.00	11.66	2.66	16.00	33.00	17.00
1880.00			V	83.74	11.27	11.66	2.66	20.27	33.00	12.73
1880.00	5.00		H	79.24	6.63	11.66	2.66	15.63	33.00	17.37
1880.00			V	83.35	10.88	11.66	2.66	19.88	33.00	13.12
1880.00	10.00		H	78.36	5.75	11.66	2.66	14.75	33.00	18.25
1880.00			V	82.97	10.50	11.66	2.66	19.50	33.00	13.50
1880.00	15.00		H	78.15	5.54	11.66	2.66	14.54	33.00	18.46
1880.00			V	83.25	10.78	11.66	2.66	19.78	33.00	13.22
1880.00	20.00		H	78.40	5.79	11.66	2.66	14.79	33.00	18.21
1880.00			V	83.74	11.27	11.66	2.66	20.27	33.00	12.73

LTE Band 4

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1732.50	1.40	QPSK	H	82.64	8.59	10.90	2.51	16.98	30.00	13.02
1732.50			V	88.44	14.07	10.90	2.51	22.46	30.00	7.54
1732.50	3.00		H	82.54	8.49	10.90	2.51	16.88	30.00	13.12
1732.50			V	88.13	13.76	10.90	2.51	22.15	30.00	7.85
1732.50	5.00		H	82.00	7.95	10.90	2.51	16.34	30.00	13.66
1732.50			V	87.69	13.32	10.90	2.51	21.71	30.00	8.29
1732.50	10.00		H	81.64	7.59	10.90	2.51	15.98	30.00	14.02
1732.50			V	87.42	13.05	10.90	2.51	21.44	30.00	8.56
1732.50	15.00		H	81.29	7.24	10.90	2.51	15.63	30.00	14.37
1732.50			V	87.26	12.89	10.90	2.51	21.28	30.00	8.72
1732.50	20.00		H	81.46	7.41	10.90	2.51	15.80	30.00	14.20
1732.50			V	87.35	12.98	10.90	2.51	21.37	30.00	8.63
1732.50	1.40	16QAM	H	81.56	7.51	10.90	2.51	15.90	30.00	14.10
1732.50			V	87.34	12.97	10.90	2.51	21.36	30.00	8.64
1732.50	3.00		H	81.20	7.15	10.90	2.51	15.54	30.00	14.46
1732.50			V	86.93	12.56	10.90	2.51	20.95	30.00	9.05
1732.50	5.00		H	80.87	6.82	10.90	2.51	15.21	30.00	14.79
1732.50			V	86.45	12.08	10.90	2.51	20.47	30.00	9.53
1732.50	10.00		H	80.63	6.58	10.90	2.51	14.97	30.00	15.03
1732.50			V	86.19	11.82	10.90	2.51	20.21	30.00	9.79
1732.50	15.00		H	80.34	6.29	10.90	2.51	14.68	30.00	15.32
1732.50			V	85.77	11.40	10.90	2.51	19.79	30.00	10.21
1732.50	20.00		H	80.33	6.28	10.90	2.51	14.67	30.00	15.33
1732.50			V	85.96	11.59	10.90	2.51	19.98	30.00	10.02

LTE Band 5

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
836.50	1.40	QPSK	H	90.52	15.59	0.00	0.97	14.62	38.45	23.83
836.50			V	92.22	20.43	0.00	0.97	19.46	38.45	18.99
836.50	3.00		H	88.97	14.04	0.00	0.97	13.07	38.45	25.38
836.50			V	90.94	19.15	0.00	0.97	18.18	38.45	20.27
836.50	5.00		H	87.54	12.61	0.00	0.97	11.64	38.45	26.81
836.50			V	89.77	17.98	0.00	0.97	17.01	38.45	21.44
836.50	10.00		H	87.05	12.12	0.00	0.97	11.15	38.45	27.30
836.50			V	89.11	17.32	0.00	0.97	16.35	38.45	22.10
836.50	1.40	16QAM	H	90.01	15.08	0.00	0.97	14.11	38.45	24.34
836.50			V	92.00	20.21	0.00	0.97	19.24	38.45	19.21
836.50	3.00		H	88.74	13.81	0.00	0.97	12.84	38.45	25.61
836.50			V	90.57	18.78	0.00	0.97	17.81	38.45	20.64
836.50	5.00		H	87.51	12.58	0.00	0.97	11.61	38.45	26.84
836.50			V	89.71	17.92	0.00	0.97	16.95	38.45	21.50
836.50	10.00		H	87.01	12.08	0.00	0.97	11.11	38.45	27.34
836.50			V	89.02	17.23	0.00	0.97	16.26	38.45	22.19

LTE Band 7

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2535.00	5.00	QPSK	H	82.41	9.80	13.14	3.10	19.84	33.00	13.16
2535.00			V	87.17	16.02	13.14	3.10	26.06	33.00	6.94
2535.00	10.00		H	82.14	9.53	13.14	3.10	19.57	33.00	13.43
2535.00			V	86.87	15.72	13.14	3.10	25.76	33.00	7.24
2535.00	15.00		H	81.88	9.27	13.14	3.10	19.31	33.00	13.69
2535.00			V	86.51	15.36	13.14	3.10	25.40	33.00	7.60
2535.00	20.00		H	81.68	9.07	13.14	3.10	19.11	33.00	13.89
2535.00			V	86.35	15.20	13.14	3.10	25.24	33.00	7.76
2535.00	5.00	16QAM	H	81.56	8.95	13.14	3.10	18.99	33.00	14.01
2535.00			V	86.35	15.20	13.14	3.10	25.24	33.00	7.76
2535.00	10.00		H	81.30	8.69	13.14	3.10	18.73	33.00	14.27
2535.00			V	86.01	14.86	13.14	3.10	24.90	33.00	8.10
2535.00	15.00		H	80.97	8.36	13.14	3.10	18.40	33.00	14.60
2535.00			V	85.75	14.60	13.14	3.10	24.64	33.00	8.36
2535.00	20.00		H	80.83	8.22	13.14	3.10	18.26	33.00	14.74
2535.00			V	85.60	14.45	13.14	3.10	24.49	33.00	8.51

LTE Band 18

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
822.50	5.00	QPSK	H	90.28	15.25	0.00	0.96	14.29	38.45	24.16
822.50			V	90.04	18.10	0.00	0.96	17.14	38.45	21.31
822.50	10.00		H	88.87	13.84	0.00	0.96	12.88	38.45	25.57
822.50			V	90.00	18.06	0.00	0.96	17.10	38.45	21.35
822.50	15.00		H	87.50	12.47	0.00	0.96	11.51	38.45	26.94
822.50			V	90.02	18.08	0.00	0.96	17.12	38.45	21.33
822.50	5.00	16QAM	H	89.87	14.84	0.00	0.96	13.88	38.45	24.57
822.50			V	89.97	18.03	0.00	0.96	17.07	38.45	21.38
822.50	10.00		H	88.30	13.27	0.00	0.96	12.31	38.45	26.14
822.50			V	89.57	17.63	0.00	0.96	16.67	38.45	21.78
822.50	15.00		H	87.47	12.44	0.00	0.96	11.48	38.45	26.97
822.50			V	89.80	17.86	0.00	0.96	16.90	38.45	21.55

LTE Band 38

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2595.00	5.00	QPSK	H	82.45	10.22	13.20	3.10	20.32	33.00	12.68
2595.00			V	86.88	16.51	13.20	3.10	26.61	33.00	6.39
2595.00	10.00		H	82.41	10.18	13.20	3.10	20.28	33.00	12.72
2595.00			V	86.35	15.98	13.20	3.10	26.08	33.00	6.92
2595.00	15.00		H	82.06	9.83	13.20	3.10	19.93	33.00	13.07
2595.00			V	86.14	15.77	13.20	3.10	25.87	33.00	7.13
2595.00	20.00		H	81.34	9.11	13.20	3.10	19.21	33.00	13.79
2595.00			V	86.21	15.84	13.20	3.10	25.94	33.00	7.06
2595.00	5.00	16QAM	H	81.40	9.17	13.20	3.10	19.27	33.00	13.73
2595.00			V	85.97	15.60	13.20	3.10	25.70	33.00	7.30
2595.00	10.00		H	81.03	8.80	13.20	3.10	18.90	33.00	14.10
2595.00			V	85.34	14.97	13.20	3.10	25.07	33.00	7.93
2595.00	15.00		H	80.64	8.41	13.20	3.10	18.51	33.00	14.49
2595.00			V	85.07	14.70	13.20	3.10	24.80	33.00	8.20
2595.00	20.00		H	80.24	8.01	13.20	3.10	18.11	33.00	14.89
2595.00			V	82.20	11.83	13.20	3.10	21.93	33.00	11.07

LTE Band 40**Lower:**

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2310.00	5.00	QPSK	H	76.48	6.1	11.31	2.98	14.43	24	9.57
2310.00			V	80.61	10.91	11.31	2.98	19.24	24	4.76
2310.00	10.00		H	76.13	5.75	11.31	2.98	14.08	24	9.92
2310.00			V	80.35	10.65	11.31	2.98	18.98	24	5.02
2310.00	5.00	16QAM	H	75.34	4.96	11.31	2.98	13.29	24	10.71
2310.00			V	79.97	10.27	11.31	2.98	18.6	24	5.4
2310.00	10.00		H	74.93	4.55	11.31	2.98	12.88	24	11.12
2310.00			V	79.5	9.8	11.31	2.98	18.13	24	5.87

Upper:

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/MHz)	Limit (dBmMHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2355.00	5.00	QPSK	H	77.34	6.55	11.81	3.05	15.31	24	8.69
2355.00			V	81.61	11.58	11.81	3.05	20.34	24	3.66
2355.00	10.00		H	76.34	5.55	11.81	3.05	14.31	24	9.69
2355.00			V	80.9	10.87	11.81	3.05	19.63	24	4.37
2355.00	5.00	16QAM	H	76.56	5.77	11.81	3.05	14.53	24	9.47
2355.00			V	81.26	11.23	11.81	3.05	19.99	24	4.01
2355.00	10.00		H	76.03	5.24	11.81	3.05	14	24	10
2355.00			V	80.81	10.78	11.81	3.05	19.54	24	4.46

Note: the total power result meets the requirement EIRP less than 250mW/5MHz

LTE Band 41

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2595.00	5.00	QPSK	H	82.34	10.11	13.20	3.10	20.21	33.00	12.79
2595.00			V	86.70	16.33	13.20	3.10	26.43	33.00	6.57
2595.00	10.00		H	82.13	9.90	13.20	3.10	20.00	33.00	13.00
2595.00			V	86.34	15.97	13.20	3.10	26.07	33.00	6.93
2595.00	5.00		H	81.87	9.64	13.20	3.10	19.74	33.00	13.26
2595.00			V	85.74	15.37	13.20	3.10	25.47	33.00	7.53
2595.00	10.00		H	81.96	9.73	13.20	3.10	19.83	33.00	13.17
2595.00			V	85.36	14.99	13.20	3.10	25.09	33.00	7.91
2595.00	5.00	16QAM	H	81.67	9.44	13.20	3.10	19.54	33.00	13.46
2595.00			V	86.21	15.84	13.20	3.10	25.94	33.00	7.06
2595.00	10.00		H	81.43	9.20	13.20	3.10	19.30	33.00	13.70
2595.00			V	85.89	15.52	13.20	3.10	25.62	33.00	7.38
2595.00	5.00		H	81.02	8.79	13.20	3.10	18.89	33.00	14.11
2595.00			V	85.61	15.24	13.20	3.10	25.34	33.00	7.66
2595.00	10.00		H	81.35	9.12	13.20	3.10	19.22	33.00	13.78
2595.00			V	85.34	14.97	13.20	3.10	25.07	33.00	7.93

Module 1:**Cellular Band & PCS Band****GPRS mode**

Band	Channel No.	Conducted Peak Output Power (dBm)			
		GPRS 1 uplink slot	GPRS 2 uplink slot	GPRS 3 uplink slot	GPRS 4 uplink slot
Cellular	128	32.09	30.57	29.38	27.82
	190	31.88	30.59	29.29	27.69
	251	31.95	30.42	28.99	27.73
PCS	512	30.08	28.63	27.87	27.18
	661	29.51	28.51	27.73	27.06
	810	29.62	28.61	27.94	26.92

EGPRS mode

Band	Channel No.	Conducted Peak Output Power (dBm)			
		EGPRS 1 uplink slot	EGPRS 2 uplink slot	EGPRS 3 uplink slot	EGPRS 4 uplink slot
Cellular	128	26.35	24.84	23.82	22.98
	190	26.25	24.73	23.71	22.84
	251	26.15	24.59	23.61	22.75
PCS	512	24.52	24.29	23.34	22.41
	661	24.64	24.48	23.39	22.46
	810	24.76	24.61	23.54	22.61

WCDMA Band 2

Mode	3GPP Sub Test	Low Channel		Middle Channel		High Channel	
		Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)	Ave. Power (dBm)	PAR (dB)
Rel 99	1	23.74	2.41	23.44	2.64	23.61	2.35
HSDPA	1	22.44	2.93	22.36	3.07	22.56	3.74
	2	22.50	2.96	22.30	2.98	22.24	3.75
	3	22.35	2.93	22.40	3.10	22.38	3.67
	4	22.43	2.98	22.30	3.15	22.27	3.60
HSUPA	1	21.86	3.39	21.82	3.36	21.97	3.22
	2	21.76	3.47	21.91	3.46	21.85	3.27
	3	21.87	3.47	21.86	3.27	21.88	3.22
	4	21.87	3.35	21.86	3.32	21.76	3.13
	5	21.79	3.35	21.77	3.27	21.81	3.21
DC-HSDPA	1	21.94	3.40	21.86	3.27	21.90	3.20
	2	21.72	3.30	21.79	3.32	21.94	3.23
	3	21.71	3.30	21.81	3.24	21.92	3.22
	4	21.87	3.39	21.83	3.28	21.73	3.10
HSPA+ (16QAM)	1	21.71	3.38	21.76	3.43	21.93	3.16

LTE Band 2

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.86	23.05	23.10
		RB1#3	22.95	23.07	23.24
		RB1#5	22.94	23.05	23.16
		RB3#0	22.89	22.95	23.23
		RB3#3	22.88	22.89	23.20
		RB6#0	21.95	21.83	22.02
	16QAM	RB1#0	22.08	22.09	22.83
		RB1#3	21.97	22.22	22.50
		RB1#5	21.90	21.59	22.38
		RB3#0	21.98	21.77	22.21
		RB3#3	22.01	21.94	22.22
		RB6#0	20.77	20.73	21.16
3MHz	QPSK	RB1#0	22.93	22.71	23.29
		RB1#8	22.83	22.65	23.25
		RB1#14	22.90	22.53	23.29
		RB6#0	21.92	21.82	22.01
		RB6#9	21.92	21.89	22.06
		RB15#0	21.97	21.88	22.04
	16QAM	RB1#0	22.32	22.32	22.44
		RB1#8	22.11	22.26	22.05
		RB1#14	22.09	22.26	22.45
		RB6#0	20.82	20.96	20.96
		RB6#9	20.85	20.80	21.13
		RB15#0	20.91	20.92	20.98
5MHz	QPSK	RB1#0	22.75	22.60	23.14
		RB1#13	22.79	22.73	23.27
		RB1#24	22.63	22.49	23.18
		RB15#0	21.90	21.86	22.18
		RB15#10	22.01	21.88	22.11
		RB25#0	21.94	21.92	22.09
	16QAM	RB1#0	21.14	22.44	21.84
		RB1#13	21.50	22.47	21.87
		RB1#24	21.55	22.42	21.74
		RB15#0	20.83	20.61	21.15
		RB15#10	20.89	20.70	21.02
		RB25#0	20.82	20.77	21.07

10MHz	QPSK	RB1#0	22.94	22.81	23.16
		RB1#25	23.06	23.01	23.35
		RB1#49	22.92	22.66	23.48
		RB25#0	22.02	21.88	22.11
		RB25#25	22.04	21.90	22.12
		RB50#0	21.92	21.86	22.18
	16QAM	RB1#0	22.11	22.83	21.89
		RB1#25	23.09	22.35	22.20
		RB1#49	22.36	22.77	21.75
		RB25#0	20.88	21.10	21.12
		RB25#25	21.02	20.86	21.13
		RB50#0	20.94	20.82	21.04
15MHz	QPSK	RB1#0	23.17	22.30	22.44
		RB1#38	22.23	22.10	22.16
		RB1#74	22.38	22.14	22.81
		RB36#0	21.21	21.15	21.41
		RB36#39	21.13	21.05	21.18
		RB75#0	21.16	21.07	21.73
	16QAM	RB1#0	21.14	21.30	21.69
		RB1#38	21.50	21.60	21.56
		RB1#74	21.63	21.89	21.63
		RB36#0	20.22	19.84	20.20
		RB36#39	20.14	19.88	20.23
		RB75#0	20.17	19.85	20.26
20MHz	QPSK	RB1#0	22.44	22.49	22.15
		RB1#50	22.55	22.69	22.69
		RB1#99	22.43	22.41	22.80
		RB50#0	21.21	21.26	21.58
		RB50#50	21.24	21.25	21.30
		RB100#0	21.27	21.24	21.49
	16QAM	RB1#0	21.61	21.17	21.61
		RB1#50	21.91	21.09	22.42
		RB1#99	21.71	21.22	22.47
		RB50#0	20.12	20.03	20.31
		RB50#50	20.17	20.08	20.22
		RB100#0	20.18	20.07	20.37

LTE Band 4

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.67	22.15	22.40
		RB1#3	22.79	22.25	22.71
		RB1#5	22.86	22.16	22.37
		RB3#0	22.69	22.26	22.52
		RB3#3	22.64	22.22	22.39
		RB6#0	21.62	21.43	21.48
	16QAM	RB1#0	21.89	22.02	21.53
		RB1#3	22.01	22.06	21.46
		RB1#5	22.09	22.02	21.31
		RB3#0	21.66	21.54	21.44
		RB3#3	21.71	21.39	21.52
		RB6#0	20.50	20.48	20.39
3MHz	QPSK	RB1#0	22.38	22.32	22.21
		RB1#8	22.51	22.03	22.69
		RB1#14	22.46	22.07	22.29
		RB6#0	21.58	21.32	21.79
		RB6#9	21.63	21.42	21.85
		RB15#0	21.64	21.33	21.84
	16QAM	RB1#0	21.95	21.77	21.64
		RB1#8	21.87	21.83	21.60
		RB1#14	21.80	22.01	21.63
		RB6#0	20.68	20.63	20.71
		RB6#9	20.65	20.47	20.78
		RB15#0	20.85	20.26	20.99
5MHz	QPSK	RB1#0	22.82	22.46	23.03
		RB1#13	22.69	22.41	22.87
		RB1#24	22.66	22.61	22.98
		RB15#0	22.00	21.87	22.05
		RB15#10	22.00	21.84	21.98
		RB25#0	22.05	21.76	22.05
	16QAM	RB1#0	21.53	22.26	21.68
		RB1#13	21.53	22.52	21.70
		RB1#24	21.59	22.26	21.72
		RB15#0	20.97	20.66	21.05
		RB15#10	20.96	20.74	21.04
		RB25#0	21.12	20.76	21.02

10MHz	QPSK	RB1#0	22.92	22.54	22.95
		RB1#25	22.84	22.79	23.30
		RB1#49	22.80	22.49	22.97
		RB25#0	22.00	21.80	21.97
		RB25#25	21.97	21.78	22.00
		RB50#0	21.99	21.77	22.06
	16QAM	RB1#0	22.26	22.25	21.76
		RB1#25	22.36	22.25	21.96
		RB1#49	22.28	22.20	21.84
		RB25#0	21.18	20.88	21.21
		RB25#25	21.01	20.99	21.13
		RB50#0	21.09	20.78	21.00
15MHz	QPSK	RB1#0	22.83	22.77	22.73
		RB1#38	22.86	22.70	22.79
		RB1#74	22.89	22.82	22.88
		RB36#0	22.02	21.83	21.98
		RB36#39	21.97	21.80	22.04
		RB75#0	21.95	21.82	21.97
	16QAM	RB1#0	22.54	22.55	22.12
		RB1#38	22.42	22.36	22.10
		RB1#74	22.46	22.42	22.07
		RB36#0	21.02	20.70	21.05
		RB36#39	20.97	20.79	21.11
		RB75#0	21.07	20.94	21.08
20MHz	QPSK	RB1#0	22.87	23.01	22.73
		RB1#50	23.07	22.92	22.84
		RB1#99	22.66	23.05	22.72
		RB50#0	21.98	21.84	22.06
		RB50#50	21.97	21.80	22.08
		RB100#0	21.96	21.80	22.04
	16QAM	RB1#0	22.39	22.02	22.72
		RB1#50	22.87	21.86	22.76
		RB1#99	22.62	22.05	22.61
		RB50#0	21.01	20.86	20.93
		RB50#50	21.07	20.79	21.03
		RB100#0	21.04	20.87	21.00

LTE Band 5

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.65	22.46	22.74
		RB1#3	22.63	22.61	22.87
		RB1#5	22.84	22.47	22.73
		RB3#0	22.76	22.52	22.76
		RB3#3	22.76	22.65	22.72
		RB6#0	21.73	21.75	21.88
	16QAM	RB1#0	22.13	22.31	21.82
		RB1#3	22.04	22.09	21.80
		RB1#5	21.95	22.27	21.67
		RB3#0	21.78	21.89	22.03
		RB3#3	21.32	21.61	21.94
		RB6#0	20.75	20.92	20.84
3MHz	QPSK	RB1#0	22.60	22.43	21.78
		RB1#8	22.62	22.47	22.16
		RB1#14	22.65	22.42	22.01
		RB6#0	21.77	21.65	20.80
		RB6#9	21.67	21.73	20.95
		RB15#0	21.76	21.68	20.95
	16QAM	RB1#0	22.11	20.49	21.25
		RB1#8	22.13	20.43	21.34
		RB1#14	21.92	20.45	21.46
		RB6#0	20.72	19.38	19.78
		RB6#9	20.69	19.47	19.87
		RB15#0	20.76	19.40	19.87
5MHz	QPSK	RB1#0	21.85	22.24	22.51
		RB1#13	21.61	22.41	22.59
		RB1#24	21.70	22.59	22.68
		RB15#0	20.90	21.57	21.78
		RB15#10	21.69	21.67	21.81
		RB25#0	21.72	21.49	21.72
	16QAM	RB1#0	22.11	21.42	21.17
		RB1#13	21.92	21.32	21.11
		RB1#24	22.18	21.34	21.36
		RB15#0	20.53	20.52	20.57
		RB15#10	20.49	20.48	20.77
		RB25#0	20.53	20.54	20.64
10MHz	QPSK	RB1#0	22.50	22.46	22.59
		RB1#25	22.57	22.55	22.88
		RB1#49	22.42	22.41	22.25
		RB25#0	21.65	21.47	21.66
		RB25#25	21.57	21.71	21.63
		RB50#0	21.59	21.44	21.75
	16QAM	RB1#0	21.95	21.87	21.46
		RB1#25	22.05	22.73	21.57
		RB1#49	21.81	22.07	21.39
		RB25#0	20.44	20.40	20.61
		RB25#25	20.54	20.71	20.72
		RB50#0	20.58	20.30	20.50

LTE Band 7

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.79	21.94	22.42
		RB1#13	22.12	22.23	22.28
		RB1#24	22.37	22.19	23.12
		RB15#0	21.53	21.53	22.47
		RB15#10	21.61	21.56	22.44
		RB25#0	21.56	21.49	22.39
	16QAM	RB1#0	20.37	20.99	21.66
		RB1#13	21.04	21.08	22.08
		RB1#24	21.37	21.04	21.98
		RB15#0	20.69	20.36	21.35
		RB15#10	20.57	20.58	21.24
		RB25#0	20.47	20.43	21.36
10MHz	QPSK	RB1#0	21.43	22.50	22.92
		RB1#25	23.49	23.40	23.70
		RB1#49	23.62	22.95	23.03
		RB25#0	22.54	22.33	22.51
		RB25#25	22.57	22.36	22.42
		RB50#0	22.46	22.26	22.36
	16QAM	RB1#0	21.37	21.84	22.27
		RB1#25	23.36	22.80	23.10
		RB1#49	23.06	22.26	22.41
		RB25#0	21.38	21.45	21.47
		RB25#25	21.56	21.15	21.47
		RB50#0	21.41	21.28	21.36
15MHz	QPSK	RB1#0	22.02	23.07	23.06
		RB1#38	23.30	23.45	23.30
		RB1#74	23.36	23.26	23.24
		RB36#0	22.43	22.27	22.31
		RB36#39	22.40	22.28	22.39
		RB75#0	22.47	22.21	22.45
	16QAM	RB1#0	21.85	22.28	22.85
		RB1#38	23.06	22.86	22.88
		RB1#74	23.04	22.82	22.90
		RB36#0	21.39	21.19	21.32
		RB36#39	21.24	21.21	21.35
		RB75#0	21.26	21.28	21.34
20MHz	QPSK	RB1#0	21.82	23.17	23.13
		RB1#50	23.60	23.68	23.35
		RB1#99	23.15	23.63	22.91
		RB50#0	22.35	22.39	22.38
		RB50#50	22.40	22.35	22.32
		RB100#0	22.32	22.27	22.32
	16QAM	RB1#0	21.09	22.42	23.23
		RB1#50	23.19	22.38	23.44
		RB1#99	22.52	22.50	22.66
		RB50#0	21.33	21.22	21.26
		RB50#50	21.36	21.18	21.23
		RB100#0	21.24	21.29	21.32

LTE Band 12

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
1.4MHz	QPSK	RB1#0	22.95	23.08	22.99
		RB1#3	23.38	23.55	23.34
		RB1#5	23.47	23.38	23.09
		RB3#0	22.87	23.06	23.02
		RB3#3	23.24	23.16	23.08
		RB6#0	22.07	22.03	21.86
	16QAM	RB1#0	22.33	22.37	22.21
		RB1#3	22.27	22.88	22.67
		RB1#5	22.57	22.41	22.64
		RB3#0	22.01	22.06	21.64
		RB3#3	22.18	22.33	21.84
		RB6#0	21.06	21.03	21.11
3MHz	QPSK	RB1#0	23.01	22.75	22.49
		RB1#8	23.27	23.24	22.84
		RB1#14	23.30	23.14	23.05
		RB6#0	22.14	22.10	21.97
		RB6#9	22.25	22.06	22.09
		RB15#0	22.07	22.05	21.96
	16QAM	RB1#0	22.46	21.95	21.90
		RB1#8	22.55	23.06	22.24
		RB1#14	22.70	22.50	22.03
		RB6#0	21.12	21.02	20.71
		RB6#9	21.26	21.40	20.71
		RB15#0	21.24	20.93	20.97
5MHz	QPSK	RB1#0	22.81	22.47	22.78
		RB1#13	23.02	22.91	22.73
		RB1#24	22.95	23.05	22.92
		RB15#0	22.16	22.05	21.88
		RB15#10	22.17	22.10	21.87
		RB25#0	22.03	21.97	21.89
	16QAM	RB1#0	21.68	21.75	21.86
		RB1#13	21.93	22.65	21.41
		RB1#24	21.61	22.62	21.95
		RB15#0	21.08	20.99	20.83
		RB15#10	20.91	21.06	20.81
		RB25#0	21.17	20.98	20.85
10MHz	QPSK	RB1#0	22.85	22.94	22.05
		RB1#25	22.97	23.13	23.42
		RB1#49	23.01	22.30	22.62
		RB25#0	22.03	22.02	22.00
		RB25#25	22.00	22.05	21.93
		RB50#0	22.14	21.96	22.03
	16QAM	RB1#0	22.38	22.42	21.36
		RB1#25	22.54	22.49	22.83
		RB1#49	22.60	21.56	22.01
		RB25#0	20.97	21.25	21.11
		RB25#25	20.97	21.13	20.94
		RB50#0	21.12	21.03	20.80

LTE Band 17

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.47	21.64	21.71
		RB1#13	21.16	22.63	21.35
		RB1#24	22.26	21.35	21.68
		RB15#0	21.04	21.87	21.39
		RB15#10	21.49	21.79	21.34
		RB25#0	21.27	21.73	21.38
	16QAM	RB1#0	20.48	20.98	20.82
		RB1#13	20.30	22.03	20.46
		RB1#24	21.65	20.73	20.82
		RB15#0	20.29	20.80	20.59
		RB15#10	20.76	20.78	20.53
		RB25#0	20.66	20.86	20.59
10MHz	QPSK	RB1#0	20.71	20.37	20.35
		RB1#25	22.63	22.82	22.10
		RB1#49	20.42	20.55	20.86
		RB25#0	21.35	21.64	21.96
		RB25#25	21.90	21.57	21.21
		RB50#0	21.60	21.60	21.62
	16QAM	RB1#0	20.39	19.57	19.70
		RB1#25	22.49	22.13	21.51
		RB1#49	20.27	19.78	20.25
		RB25#0	20.57	20.85	20.99
		RB25#25	21.13	20.72	20.51
		RB50#0	20.79	20.83	20.85

LTE Band 18

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	23.02	22.72	22.81
		RB1#13	22.86	23.21	22.92
		RB1#24	23.00	22.95	22.59
		RB15#0	22.02	21.90	22.01
		RB15#10	22.04	21.93	22.02
		RB25#0	22.10	21.89	22.01
	16QAM	RB1#0	21.97	21.44	22.32
		RB1#13	21.73	22.12	22.63
		RB1#24	21.68	22.10	22.41
		RB15#0	20.83	20.72	21.05
		RB15#10	21.00	20.83	21.05
		RB25#0	20.84	21.06	21.04
10MHz	QPSK	RB1#0	22.89	22.86	22.81
		RB1#25	23.07	22.96	23.33
		RB1#49	22.90	22.98	22.83
		RB25#0	21.88	21.88	21.85
		RB25#25	21.98	22.04	21.97
		RB50#0	21.96	21.90	21.91
	16QAM	RB1#0	22.54	22.46	22.02
		RB1#25	23.24	23.22	22.24
		RB1#49	22.33	22.52	21.99
		RB25#0	20.78	21.00	20.92
		RB25#25	21.07	20.95	21.10
		RB50#0	20.91	21.09	20.80
15MHz	QPSK	RB1#0	\	22.76	\
		RB1#38	\	22.94	\
		RB1#74	\	22.85	\
		RB36#0	\	21.92	\
		RB36#39	\	21.93	\
		RB75#0	\	21.85	\
	16QAM	RB1#0	\	22.44	\
		RB1#38	\	23.17	\
		RB1#74	\	22.54	\
		RB36#0	\	20.77	\
		RB36#39	\	20.92	\
		RB75#0	\	20.72	\

LTE Band 38

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	22.54	22.73	22.85
		RB1#13	22.57	22.77	22.85
		RB1#24	22.46	22.50	22.84
		RB15#0	21.84	22.07	22.27
		RB15#10	21.70	22.06	22.16
		RB25#0	21.75	22.04	22.22
	16QAM	RB1#0	21.83	21.72	22.10
		RB1#13	22.18	21.71	22.16
		RB1#24	21.85	21.51	21.98
		RB15#0	20.73	20.90	21.05
		RB15#10	20.67	20.85	21.16
10MHz	QPSK	RB1#0	22.45	22.99	23.26
		RB1#25	22.45	23.01	23.35
		RB1#49	22.53	23.07	23.18
		RB25#0	21.86	21.97	22.08
		RB25#25	21.97	22.04	22.23
	16QAM	RB50#0	21.80	21.98	22.24
		RB1#0	22.43	21.47	22.69
		RB1#25	22.85	21.89	23.07
		RB1#49	22.36	21.25	22.90
		RB25#0	20.88	21.03	21.18
15MHz	QPSK	RB1#0	22.62	23.11	22.98
		RB1#38	22.95	23.04	22.95
		RB1#74	22.78	23.24	23.17
		RB36#0	21.77	22.06	22.24
		RB36#39	21.91	22.02	22.19
	16QAM	RB75#0	21.84	21.98	22.11
		RB1#0	21.22	22.51	22.12
		RB1#38	21.30	22.56	22.09
		RB1#74	21.36	22.74	22.27
		RB36#0	20.73	20.75	21.30
20MHz	QPSK	RB36#39	20.73	20.93	21.27
		RB75#0	21.06	20.98	21.17
	16QAM	RB1#0	22.56	22.83	22.96
		RB1#50	22.92	23.34	23.20
		RB1#99	22.71	23.02	23.37
	16QAM	RB50#0	21.90	22.13	22.07
		RB50#50	21.92	22.06	21.97
		RB100#0	21.90	21.99	21.99
		RB1#0	22.03	21.75	22.49
		RB1#50	22.34	21.86	23.05
		RB1#99	21.92	21.88	22.90
		RB50#0	21.00	20.87	21.04
		RB50#50	21.01	20.94	21.00
		RB100#0	20.98	20.69	21.07

LTE Band 40 Lower Band

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	23.35	23.67	23.36
		RB1#13	23.44	23.69	23.51
		RB1#24	23.31	23.60	23.62
		RB15#0	22.77	22.88	22.67
		RB15#10	22.79	22.83	22.73
		RB25#0	22.81	22.72	22.81
	16QAM	RB1#0	22.85	22.82	22.43
		RB1#13	23.20	22.99	22.50
		RB1#24	23.13	22.78	22.49
		RB15#0	21.72	21.64	21.58
		RB15#10	21.87	21.63	21.58
		RB25#0	21.80	21.78	21.89
10MHz	QPSK	RB1#0	\	23.64	\
		RB1#25	\	23.66	\
		RB1#49	\	23.65	\
		RB25#0	\	22.75	\
		RB25#25	\	22.70	\
		RB50#0	\	22.74	\
	16QAM	RB1#0	\	22.32	\
		RB1#25	\	22.55	\
		RB1#49	\	22.39	\
		RB25#0	\	21.58	\
		RB25#25	\	21.57	\
		RB50#0	\	21.67	\

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the PSD as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm/5MHz)
10MHz	QPSK	RB1#0	20.46
		RB1#25	20.62
		RB1#49	20.62
		RB25#0	19.75
		RB25#25	19.72
		RB50#0	19.73
	16QAM	RB1#0	19.31
		RB1#25	19.27
		RB1#49	19.43
		RB25#0	18.23
		RB25#25	18.54
		RB50#0	18.69

LTE Band 40 Upper Band

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	23.13	23.10	23.10
		RB1#13	23.15	23.04	23.28
		RB1#24	23.07	22.96	23.07
		RB15#0	22.45	22.38	22.26
		RB15#10	22.42	22.44	22.30
		RB25#0	22.42	22.43	22.25
	16QAM	RB1#0	22.00	22.54	22.38
		RB1#13	21.84	22.59	22.54
		RB1#24	21.79	22.49	22.59
		RB15#0	21.30	21.40	21.31
		RB15#10	21.34	21.35	21.29
		RB25#0	21.54	21.46	21.32
10MHz	QPSK	RB1#0	\	23.53	\
		RB1#25	\	23.47	\
		RB1#49	\	23.41	\
		RB25#0	\	22.45	\
		RB25#25	\	22.56	\
		RB50#0	\	22.42	\
	16QAM	RB1#0	\	22.10	\
		RB1#25	\	22.26	\
		RB1#49	\	22.12	\
		RB25#0	\	21.40	\
		RB25#25	\	21.23	\
		RB50#0	\	21.57	\

Note: the device is a mobile station. For 5MHz mode, the channel power is equal to the test result in dBm/5MHz. For 10MHz mode, the PSD as below:

Channel Bandwidth	Modulation	Resource Block & RB offset	Middle Channel (dBm/5MHz)
10MHz	QPSK	RB1#0	20.66
		RB1#25	20.54
		RB1#49	20.64
		RB25#0	19.54
		RB25#25	19.75
		RB50#0	19.54
	16QAM	RB1#0	19.53
		RB1#25	19.52
		RB1#49	19.45
		RB25#0	18.65
		RB25#25	18.54
		RB50#0	18.45

LTE Band 41

Channel Bandwidth	Modulation	Resource Block & RB offset	Low Channel (dBm)	Middle Channel (dBm)	High Channel (dBm)
5MHz	QPSK	RB1#0	21.87	23.53	23.81
		RB1#13	22.11	23.63	23.79
		RB1#24	21.90	23.65	23.62
		RB15#0	21.73	22.76	23.12
		RB15#10	21.80	22.75	23.07
		RB25#0	21.74	22.84	23.17
	16QAM	RB1#0	20.78	22.88	22.81
		RB1#13	21.16	23.06	22.82
		RB1#24	21.00	23.00	22.69
		RB15#0	20.91	21.61	22.00
		RB15#10	21.00	21.73	21.93
10MHz	QPSK	RB1#0	21.15	23.95	23.83
		RB1#25	22.26	23.94	23.62
		RB1#49	21.56	23.92	23.60
		RB25#0	21.63	22.79	22.93
		RB25#25	21.88	22.82	23.00
	16QAM	RB50#0	21.73	22.87	22.87
		RB1#0	20.28	23.33	22.96
		RB1#25	21.43	23.51	23.64
		RB1#49	20.82	23.46	22.90
		RB25#0	20.76	21.89	22.08
15MHz	QPSK	RB1#0	21.22	23.78	23.69
		RB1#38	22.30	23.78	23.88
		RB1#74	21.92	23.76	23.59
		RB36#0	21.65	22.77	23.00
		RB36#39	22.05	22.62	23.01
	16QAM	RB75#0	21.83	22.72	23.03
		RB1#0	20.30	23.19	22.83
		RB1#38	21.54	23.06	22.97
		RB1#74	21.18	22.79	22.93
		RB36#0	20.76	21.65	22.14
20MHz	QPSK	RB36#39	21.17	21.62	22.06
		RB75#0	20.94	21.64	22.00
		RB1#0	20.77	23.63	23.05
		RB1#50	22.41	24.04	24.02
		RB1#99	22.02	23.70	23.29
	16QAM	RB50#0	21.55	22.68	22.93
		RB50#50	22.15	22.81	23.06
		RB100#0	21.84	22.63	22.90
		RB1#0	19.75	22.57	22.24
		RB1#50	21.43	22.43	23.72
		RB1#99	21.12	22.47	22.66
		RB50#0	20.66	21.77	22.10
		RB50#50	21.28	21.70	21.85
		RB100#0	20.97	21.48	22.00

PAR, Band 2

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.12	4.20	3.68	13
	100 RB		5.20	5.20	5.12	13
16QAM	1 RB	20 MHz	4.88	4.80	4.44	13
	100 RB		6.16	6.20	6.00	13

PAR, Band 4

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	20 MHz	4.36	4.80	4.48	13
	100 RB		5.12	5.20	5.16	13
16QAM	1 RB	20 MHz	5.20	5.76	5.12	13
	100 RB		6.08	5.76	6.08	13

PAR, Band 5

Test Modulation		Channel Bandwidth	Low Channel PAR (dB)	Middle Channel PAR (dB)	High Channel PAR (dB)	Limit (dB)
QPSK	1 RB	10 MHz	4.92	4.76	4.84	13
	50 RB		5.44	5.16	5.44	13
16QAM	1 RB	10 MHz	5.76	5.72	5.80	13
	50 RB		6.32	6.16	6.52	13

Note: peak-to-average ratio (PAR) <13 dB.

**Band 40 Duty cycle:
2305-2315MHz**

Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.166	10.06	31.47	38
	10M	3.086	10.06	30.68	
16-QAM	5M	3.086	10.06	30.68	
	10M	3.086	10.06	30.68	

2350-2360MHz

Test Modulation	Test Bandwidth	Ton (ms)	Total (ms)	Duty Cycle (%)	Limit (%)
QPSK	5M	3.086	10.06	30.68	38
	10M	3.086	10.06	30.68	
16-QAM	5M	3.166	10.06	31.47	
	10M	3.166	10.06	31.47	

Note: EUT setup is as following:

Uplink Downlink configuration	Subframe number									
	0	1	2	3	4	5	6	7	8	9
3	D	S	U	U	U	D	D	D	D	D

QPSK, 5MHz

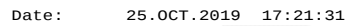


Date: 25.OCT.2019 17:18:42

Date: 25.OCT.2019 17:20:14

Date: 25.OCT.2019 17:19:16

QPSK, 5MHz



Delta 2 [T1] -0.40 dB

Ref Lvl 34.5 dBm 10.060120 ms

RBW 10 MHz RF Att 40 dB

SWT 40 ms Unit dBm

4.5 dB Offset

Center 2.355 GHz 4 ms/

12.505010 ms -28.64 dBm

10.060120 ms -0.40 dB

3.083172 ms 6.53 dB

1 [T1]

2 [T1]

Δ1 [T1]

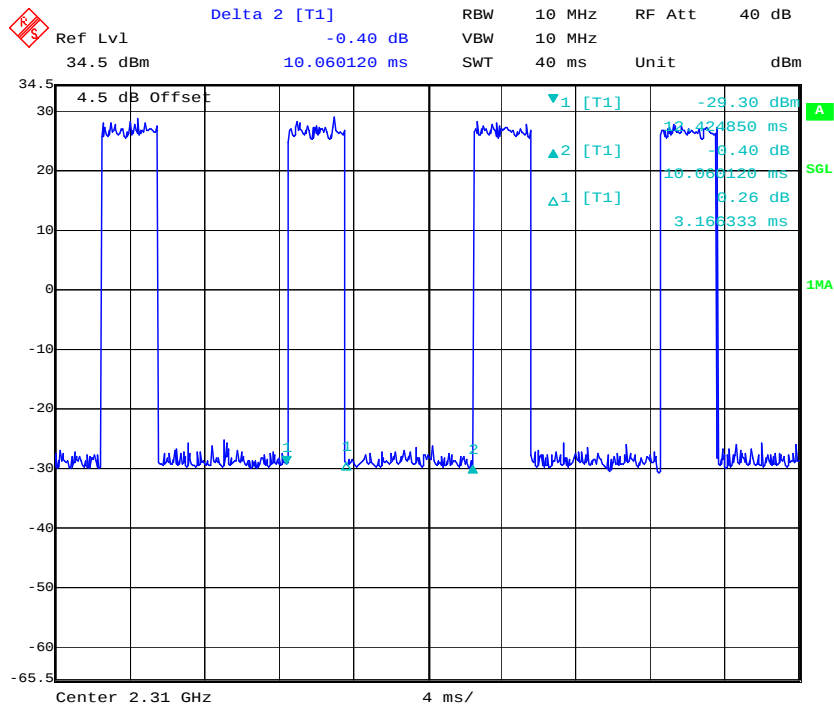
1MA

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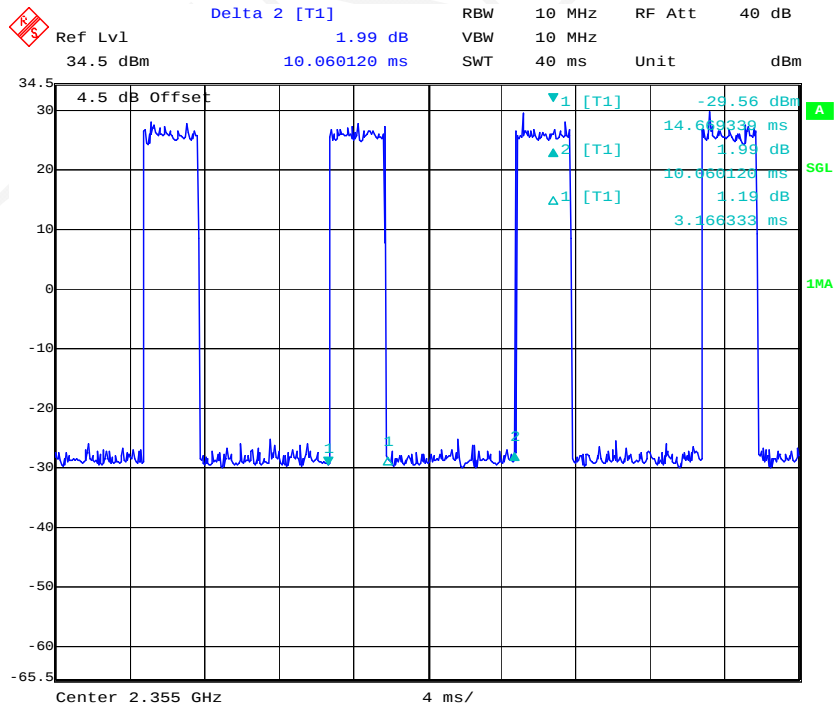
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16-QAM, 5MHz



16-QAM, 10MHz



ERP & EIRP

Part 22H

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS 850 Middle Channel								
836.60	H	101.36	26.44	0.00	0.97	25.47	38.45	12.98
836.60	V	94.37	22.58	0.00	0.97	21.61	38.45	16.84
EGPRS850 Middle Channel								
836.60	H	97.21	22.29	0.00	0.97	21.32	38.45	17.13
836.60	V	90.75	18.96	0.00	0.97	17.99	38.45	20.46

Part 24E

Frequency (MHz)	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
GPRS 1900 Middle Channel								
1880.00	H	85.90	13.29	11.66	2.66	22.29	33.00	10.71
1880.00	V	90.00	17.53	11.66	2.66	26.53	33.00	6.47
EGPRS1900 Middle Channel								
1880.00	H	81.20	8.59	11.66	2.66	17.59	33.00	15.41
1880.00	V	84.67	12.20	11.66	2.66	21.20	33.00	11.80
WCDMA R99 Band 2 middle channel								
1880.00	H	81.35	13.74	11.66	2.66	16.74	33.00	5.26
1880.00	V	84.58	12.11	11.66	2.66	21.11	33.00	11.89

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

LTE Band 2

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)	
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)				
1880.00	1.40	QPSK	H	86.41	13.80	11.66	2.66	22.80	33.00	10.20	
1880.00			V	88.57	16.10	11.66	2.66	25.10	33.00	7.90	
1880.00	3.00		H	86.50	13.89	11.66	2.66	22.89	33.00	10.11	
1880.00			V	88.14	15.67	11.66	2.66	24.67	33.00	8.33	
1880.00	5.00		H	86.37	13.76	11.66	2.66	22.76	33.00	10.24	
1880.00			V	88.23	15.76	11.66	2.66	24.76	33.00	8.24	
1880.00	10.00		H	86.26	13.65	11.66	2.66	22.65	33.00	10.35	
1880.00			V	87.66	15.19	11.66	2.66	24.19	33.00	8.81	
1880.00	15.00		H	86.40	13.79	11.66	2.66	22.79	33.00	10.21	
1880.00			V	88.32	15.85	11.66	2.66	24.85	33.00	8.15	
1880.00	20.00		H	86.11	13.50	11.66	2.66	22.50	33.00	10.50	
1880.00			V	87.79	15.32	11.66	2.66	24.32	33.00	8.68	
1880.00	1.40		16QAM	H	85.67	13.06	11.66	2.66	22.06	33.00	10.94
1880.00				V	87.47	15.00	11.66	2.66	24.00	33.00	9.00
1880.00	3.00			H	85.59	12.98	11.66	2.66	21.98	33.00	11.02
1880.00				V	87.17	14.70	11.66	2.66	23.70	33.00	9.30
1880.00	5.00	H		85.55	12.94	11.66	2.66	21.94	33.00	11.06	
1880.00		V		87.44	14.97	11.66	2.66	23.97	33.00	9.03	
1880.00	10.00	H		85.33	12.72	11.66	2.66	21.72	33.00	11.28	
1880.00		V		87.15	14.68	11.66	2.66	23.68	33.00	9.32	
1880.00	15.00	H		85.46	12.85	11.66	2.66	21.85	33.00	11.15	
1880.00		V		87.24	14.77	11.66	2.66	23.77	33.00	9.23	
1880.00	20.00	H		85.09	12.48	11.66	2.66	21.48	33.00	11.52	
1880.00		V		87.54	15.07	11.66	2.66	24.07	33.00	8.93	

LTE Band 4

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
1732.50	1.40	QPSK	H	84.95	10.90	10.90	2.51	19.29	30.00	10.71
1732.50			V	88.62	14.25	10.90	2.51	22.64	30.00	7.36
1732.50	3.00		H	85.01	10.96	10.90	2.51	19.35	30.00	10.65
1732.50			V	88.49	14.12	10.90	2.51	22.51	30.00	7.49
1732.50	5.00		H	84.86	10.81	10.90	2.51	19.20	30.00	10.80
1732.50			V	88.39	14.02	10.90	2.51	22.41	30.00	7.59
1732.50	10.00		H	84.94	10.89	10.90	2.51	19.28	30.00	10.72
1732.50			V	88.18	13.81	10.90	2.51	22.20	30.00	7.80
1732.50	15.00		H	84.71	10.66	10.90	2.51	19.05	30.00	10.95
1732.50			V	88.25	13.88	10.90	2.51	22.27	30.00	7.73
1732.50	20.00		H	84.87	10.82	10.90	2.51	19.21	30.00	10.79
1732.50			V	88.01	13.64	10.90	2.51	22.03	30.00	7.97
1732.50	1.40	16QAM	H	84.23	10.18	10.90	2.51	18.57	30.00	11.43
1732.50			V	88.11	13.74	10.90	2.51	22.13	30.00	7.87
1732.50	3.00		H	84.12	10.07	10.90	2.51	18.46	30.00	11.54
1732.50			V	88.04	13.67	10.90	2.51	22.06	30.00	7.94
1732.50	5.00		H	84.19	10.14	10.90	2.51	18.53	30.00	11.47
1732.50			V	88.04	13.67	10.90	2.51	22.06	30.00	7.94
1732.50	10.00		H	83.81	9.76	10.90	2.51	18.15	30.00	11.85
1732.50			V	87.79	13.42	10.90	2.51	21.81	30.00	8.19
1732.50	15.00		H	83.98	9.93	10.90	2.51	18.32	30.00	11.68
1732.50			V	88.00	13.63	10.90	2.51	22.02	30.00	7.98
1732.50	20.00		H	84.48	10.43	10.90	2.51	18.82	30.00	11.18
1732.50			V	87.95	13.58	10.90	2.51	21.97	30.00	8.03

LTE Band 5

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
836.50	1.40	QPSK	H	92.56	17.63	0.00	0.97	16.66	38.45	21.79
836.50			V	82.88	11.09	0.00	0.97	10.12	38.45	28.33
836.50	3.00		H	90.54	15.61	0.00	0.97	14.64	38.45	23.81
836.50			V	82.80	11.01	0.00	0.97	10.04	38.45	28.41
836.50	5.00		H	88.21	13.28	0.00	0.97	12.31	38.45	26.14
836.50			V	82.78	10.99	0.00	0.97	10.02	38.45	28.43
836.50	10.00		H	90.66	15.73	0.00	0.97	14.76	38.45	23.69
836.50			V	81.01	9.22	0.00	0.97	8.25	38.45	30.20
836.50	1.40	16QAM	H	92.39	17.46	0.00	0.97	16.49	38.45	21.96
836.50			V	82.57	10.78	0.00	0.97	9.81	38.45	28.64
836.50	3.00		H	91.25	16.32	0.00	0.97	15.35	38.45	23.10
836.50			V	82.14	10.35	0.00	0.97	9.38	38.45	29.07
836.50	5.00		H	88.04	13.11	0.00	0.97	12.14	38.45	26.31
836.50			V	82.64	10.85	0.00	0.97	9.88	38.45	28.57
836.50	10.00		H	90.14	15.21	0.00	0.97	14.24	38.45	24.21
836.50			V	81.64	9.85	0.00	0.97	8.88	38.45	29.57

LTE Band 7

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2535.00	5.00	QPSK	H	83.89	11.28	13.14	3.10	21.32	33.00	11.68
2535.00			V	88.18	17.03	13.14	3.10	27.07	33.00	5.93
2535.00	10.00		H	83.74	11.13	13.14	3.10	21.17	33.00	11.83
2535.00			V	87.97	16.82	13.14	3.10	26.86	33.00	6.14
2535.00	15.00		H	84.00	11.39	13.14	3.10	21.43	33.00	11.57
2535.00			V	88.10	16.95	13.14	3.10	26.99	33.00	6.01
2535.00	20.00		H	83.97	11.36	13.14	3.10	21.40	33.00	11.60
2535.00			V	88.23	17.08	13.14	3.10	27.12	33.00	5.88
2535.00	5.00	16QAM	H	82.96	10.35	13.14	3.10	20.39	33.00	12.61
2535.00			V	87.15	16.00	13.14	3.10	26.04	33.00	6.96
2535.00	10.00		H	82.65	10.04	13.14	3.10	20.08	33.00	12.92
2535.00			V	86.99	15.84	13.14	3.10	25.88	33.00	7.12
2535.00	15.00		H	82.83	10.22	13.14	3.10	20.26	33.00	12.74
2535.00			V	87.03	15.88	13.14	3.10	25.92	33.00	7.08
2535.00	20.00		H	82.91	10.30	13.14	3.10	20.34	33.00	12.66
2535.00			V	87.13	15.98	13.14	3.10	26.02	33.00	6.98

LTE Band 12

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
707.50	1.40	QPSK	H	99.95	23.09	0.00	0.94	22.15	34.77	12.62
707.50			V	92.07	17.65	0.00	0.94	16.71	34.77	18.06
707.50	3.00		H	99.57	22.71	0.00	0.94	21.77	34.77	13.00
707.50			V	91.87	17.45	0.00	0.94	16.51	34.77	18.26
707.50	5.00		H	99.48	22.62	0.00	0.94	21.68	34.77	13.09
707.50			V	91.64	17.22	0.00	0.94	16.28	34.77	18.49
707.50	10.00		H	98.32	21.46	0.00	0.94	20.52	34.77	14.25
707.50			V	88.42	14.00	0.00	0.94	13.06	34.77	21.71
707.50	1.40	16QAM	H	99.61	22.75	0.00	0.94	21.81	34.77	12.96
707.50			V	92.00	17.58	0.00	0.94	16.64	34.77	18.13
707.50	3.00		H	99.42	22.56	0.00	0.94	21.62	34.77	13.15
707.50			V	91.81	17.39	0.00	0.94	16.45	34.77	18.32
707.50	5.00		H	99.31	22.45	0.00	0.94	21.51	34.77	13.26
707.50			V	90.64	16.22	0.00	0.94	15.28	34.77	19.49
707.50	10.00		H	98.28	21.42	0.00	0.94	20.48	34.77	14.29
707.50			V	88.40	13.98	0.00	0.94	13.04	34.77	21.73

LTE Band 17

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
710.00	5.00	QPSK	H	98.59	21.78	0.00	0.94	20.84	34.77	13.93
710.00			V	89.77	15.41	0.00	0.94	14.47	34.77	20.30
710.00	10.00		H	98.34	21.53	0.00	0.94	20.59	34.77	14.18
710.00			V	87.56	13.20	0.00	0.94	12.26	34.77	22.51
710.00	5.00	16QAM	H	98.31	21.50	0.00	0.94	20.56	34.77	14.21
710.00			V	88.67	14.31	0.00	0.94	13.37	34.77	21.40
710.00	10.00		H	98.30	21.49	0.00	0.94	20.55	34.77	14.22
710.00			V	88.60	14.24	0.00	0.94	13.30	34.77	21.47

LTE Band 18

ETB Band 10										
Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
822.50	5.00	QPSK	H	98.59	23.56	0.00	0.96	22.60	38.45	15.85
822.50			V	88.65	16.71	0.00	0.96	15.75	38.45	22.70
822.50	10.00		H	98.14	23.11	0.00	0.96	22.15	38.45	16.30
822.50			V	88.47	16.53	0.00	0.96	15.57	38.45	22.88
822.50	15.00		H	97.60	22.57	0.00	0.96	21.61	38.45	16.84
822.50			V	88.89	16.95	0.00	0.96	15.99	38.45	22.46
822.50	5.00	16QAM	H	98.17	23.14	0.00	0.96	22.18	38.45	16.27
822.50			V	88.61	16.67	0.00	0.96	15.71	38.45	22.74
822.50	10.00		H	98.01	22.98	0.00	0.96	22.02	38.45	16.43
822.50			V	88.34	16.40	0.00	0.96	15.44	38.45	23.01
822.50	15.00		H	97.47	22.44	0.00	0.96	21.48	38.45	16.97
822.50			V	88.72	16.78	0.00	0.96	15.82	38.45	22.63

LTE Band 38

ETE Band 50										
Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2595.00	5.00	QPSK	H	79.41	7.18	13.20	3.10	17.28	33.00	15.72
2595.00			V	81.82	11.45	13.20	3.10	21.55	33.00	11.45
2595.00	10.00		H	79.33	7.10	13.20	3.10	17.20	33.00	15.80
2595.00			V	81.89	11.52	13.20	3.10	21.62	33.00	11.38
2595.00	15.00		H	79.10	6.87	13.20	3.10	16.97	33.00	16.03
2595.00			V	81.57	11.20	13.20	3.10	21.30	33.00	11.70
2595.00	20.00		H	79.26	7.03	13.20	3.10	17.13	33.00	15.87
2595.00			V	81.68	11.31	13.20	3.10	21.41	33.00	11.59
2595.00	5.00	16QAM	H	78.15	5.92	13.20	3.10	16.02	33.00	16.98
2595.00			V	80.99	10.62	13.20	3.10	20.72	33.00	12.28
2595.00	10.00		H	78.03	5.80	13.20	3.10	15.90	33.00	17.10
2595.00			V	80.89	10.52	13.20	3.10	20.62	33.00	12.38
2595.00	15.00		H	77.91	5.68	13.20	3.10	15.78	33.00	17.22
2595.00			V	80.79	10.42	13.20	3.10	20.52	33.00	12.48
2595.00	20.00		H	78.11	5.88	13.20	3.10	15.98	33.00	17.02
2595.00			V	80.84	10.47	13.20	3.10	20.57	33.00	12.43

LTE Band 40**Lower:**

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2310.00	5.00	QPSK	H	80.12	9.74	11.31	2.98	18.07	24	5.93
2310.00			V	82.13	12.43	11.31	2.98	20.76	24	3.24
2310.00	10.00		H	79.98	9.60	11.31	2.98	17.93	24	6.07
2310.00			V	82.01	12.31	11.31	2.98	20.64	24	3.36
2310.00	5.00	16QAM	H	78.23	7.85	11.31	2.98	16.18	24	7.82
2310.00			V	81.57	11.87	11.31	2.98	20.20	24	3.8
2310.00	10.00		H	78.52	8.14	11.31	2.98	16.47	24	7.53
2310.00			V	81.37	11.67	11.31	2.98	20.00	24	4

Upper:

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm/MHz)	Limit (dBm/MHz)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2355.00	5.00	QPSK	H	79.66	8.87	11.81	3.05	17.63	24	6.37
2355.00			V	81.74	11.71	11.81	3.05	20.47	24	3.53
2355.00	10.00		H	79.25	8.46	11.81	3.05	17.22	24	6.78
2355.00			V	81.84	11.81	11.81	3.05	20.57	24	3.43
2355.00	5.00	16QAM	H	79.42	8.63	11.81	3.05	17.39	24	6.61
2355.00			V	81.34	11.31	11.81	3.05	20.07	24	3.93
2355.00	10.00		H	78.85	8.06	11.81	3.05	16.82	24	7.18
2355.00			V	79.66	8.87	11.81	3.05	17.63	24	6.37

Note: the total power result meets the requirement EIRP less than 250mW/5MHz

LTE Band 41

Frequency (MHz)	BW (MHz)	Modulation	Polar (H/V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
					Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
2595.00	5.00	QPSK	H	79.93	7.69	13.19	3.10	17.78	33.00	15.22
2595.00			V	84.30	13.91	13.19	3.10	24.00	33.00	9.00
2595.00	10.00		H	79.84	7.60	13.19	3.10	17.69	33.00	15.31
2595.00			V	83.72	13.33	13.19	3.10	23.42	33.00	9.58
2595.00	5.00		H	79.80	7.56	13.19	3.10	17.65	33.00	15.35
2595.00			V	83.99	13.60	13.19	3.10	23.69	33.00	9.31
2595.00	10.00		H	79.75	7.51	13.19	3.10	17.60	33.00	15.40
2595.00			V	83.62	13.23	13.19	3.10	23.32	33.00	9.68
2595.00	5.00	16QAM	H	78.36	6.12	13.19	3.10	16.21	33.00	16.79
2595.00			V	83.40	13.01	13.19	3.10	23.10	33.00	9.90
2595.00	10.00		H	78.44	6.20	13.19	3.10	16.29	33.00	16.71
2595.00			V	83.05	12.66	13.19	3.10	22.75	33.00	10.25
2595.00	5.00		H	78.19	5.95	13.19	3.10	16.04	33.00	16.96
2595.00			V	83.27	12.88	13.19	3.10	22.97	33.00	10.03
2595.00	10.00		H	78.10	5.86	13.19	3.10	15.95	33.00	17.05
2595.00			V	83.13	12.74	13.19	3.10	22.83	33.00	10.17

Note:

- 1) The unit of Antenna Gain is dBd for frequency below 1GHz, and the unit of Antenna Gain is dBi for frequency above 1GHz.
- 2) Absolute Level = Substituted Level - Cable loss + Antenna Gain
- 3) Margin = Limit-Absolute Level

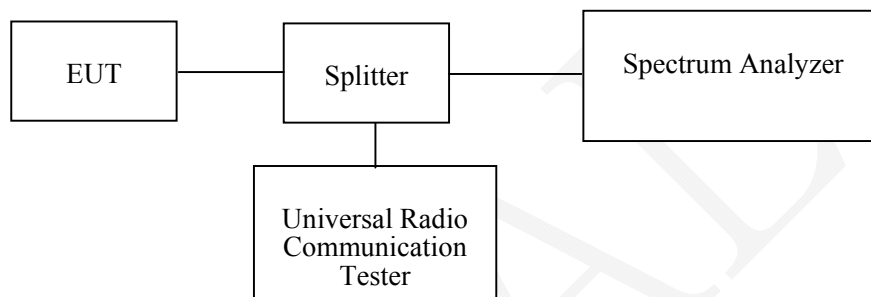
FCC §2.1049, §22.917, §22.905 & §24.238 & §27.53- OCCUPIED BANDWIDTH**Applicable Standard**

FCC §2.1049, §22.917, §22.905, §24.238 and §27.53.

Test Procedure

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

The 26 dB & 99% bandwidth was recorded.

**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2019-01-09	2020-01-09
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2019-08-03	2020-08-03
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	/
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	/

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

Test Data**Environmental Conditions**

Temperature:	26.3~28.2 °C
Relative Humidity:	47~56%
ATM Pressure:	100.2~101.9kPa
Tester:	Blake Yang, Lily Xie
Test Date:	2019-10-15~2019-10-25

Test Mode: Transmitting

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

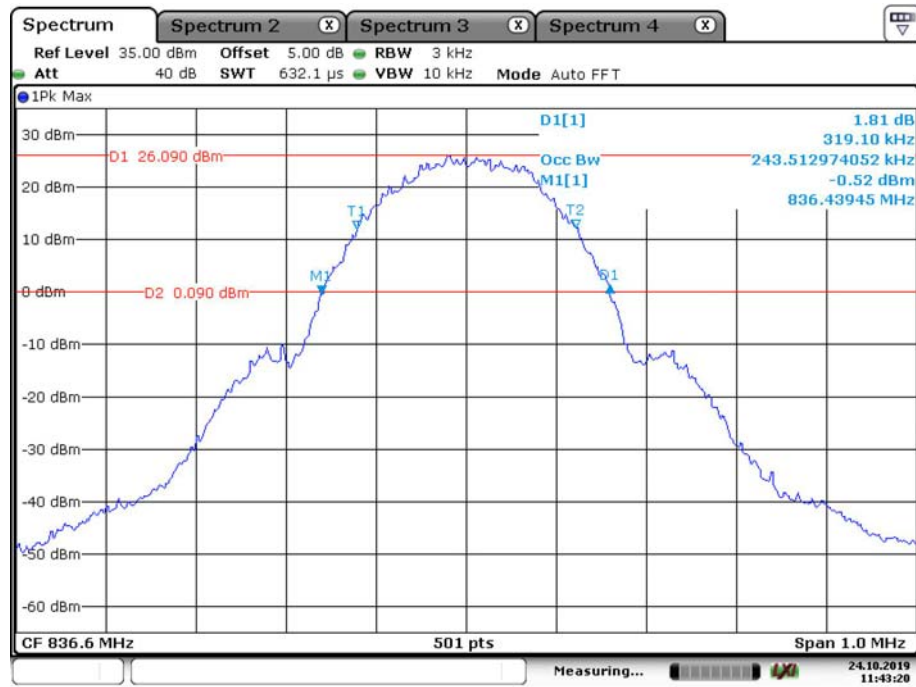
Module 2:

Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	Middle	GPRS	0.244	0.319
		EGPRS	0.246	0.308
PCS		GPRS	0.244	0.318
		EGPRS	0.246	0.312
WCDMA Band 2		Rel 99	4.180	4.780
		HSDPA	4.132	4.721
		HSUPA	4.132	4.710

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 2	1.4 MHz	QPSK	1.106	1.281
		16QAM	1.100	1.293
	3 MHz	QPSK	2.693	2.922
		16QAM	2.705	2.970
	5 MHz	QPSK	4.549	5.030
		16QAM	4.529	5.030
	10 MHz	QPSK	8.978	9.739
		16QAM	8.938	9.659
	15 MHz	QPSK	13.467	14.850
		16QAM	13.467	14.850
LTE Band 4	1.4 MHz	QPSK	17.956	19.319
		16QAM	17.956	19.399
	1.4 MHz	QPSK	1.094	1.293
		16QAM	1.100	1.305
	3 MHz	QPSK	2.693	2.910
		16QAM	2.693	2.982
	5 MHz	QPSK	4.529	5.010
		16QAM	4.529	5.010
	10 MHz	QPSK	8.938	9.659
		16QAM	8.938	9.739
LTE Band 4	15 MHz	QPSK	13.467	14.850
		16QAM	13.527	14.850
	20 MHz	QPSK	17.876	19.319
		16QAM	17.956	19.399

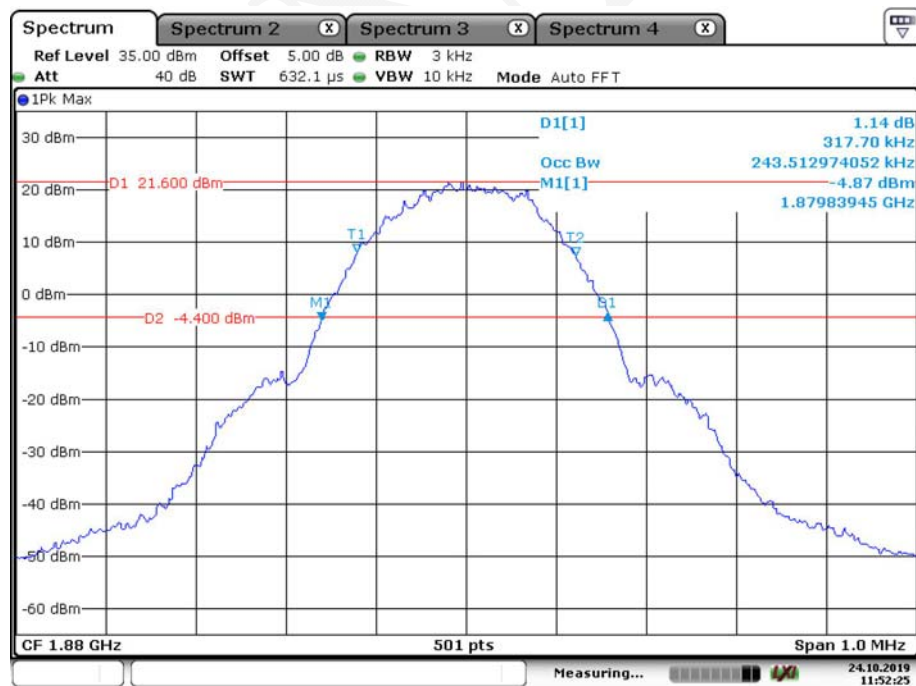
Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 5	1.4 MHz	QPSK	1.100	1.293
		16QAM	1.112	1.299
	3 MHz	QPSK	2.693	2.922
		16QAM	2.693	2.946
	5 MHz	QPSK	4.529	4.990
		16QAM	4.529	5.010
	10 MHz	QPSK	8.978	9.739
		16QAM	8.938	9.619
LTE Band 7	5 MHz	QPSK	4.529	5.010
		16QAM	4.529	5.010
	10 MHz	QPSK	8.978	9.779
		16QAM	8.978	9.659
	15 MHz	QPSK	13.527	14.910
		16QAM	13.527	14.729
	20 MHz	QPSK	17.956	19.319
		16QAM	17.956	19.479
LTE Band 18	5 MHz	QPSK	4.529	5.050
		16QAM	4.549	5.030
	10 MHz	QPSK	8.978	9.659
		16QAM	8.938	9.619
	15 MHz	QPSK	13.467	14.790
		16QAM	13.467	14.790
LTE Band 38	5 MHz	QPSK	4.529	4.990
		16QAM	4.509	5.030
	10 MHz	QPSK	8.938	10.381
		16QAM	8.978	9.659
	15 MHz	QPSK	13.587	15.812
		16QAM	13.527	16.172
	20 MHz	QPSK	17.876	19.238
		16QAM	17.956	19.639
LTE Band 40 Lower	5 MHz	QPSK	4.529	4.990
		16QAM	4.549	5.070
	10 MHz	QPSK	8.978	9.749
		16QAM	8.978	9.709
LTE Band 40 Upper	5 MHz	QPSK	4.529	5.090
		16QAM	4.509	5.631
	10 MHz	QPSK	8.938	10.060
		16QAM	8.938	9.619
LTE Band 41	5 MHz	QPSK	4.509	5.030
		16QAM	4.509	4.990
	10 MHz	QPSK	9.018	10.020
		16QAM	8.938	9.619
	15 MHz	QPSK	13.467	15.691
		16QAM	13.467	15.631
	20 MHz	QPSK	17.956	19.319
		16QAM	17.876	19.479

GPRS Cellular 850



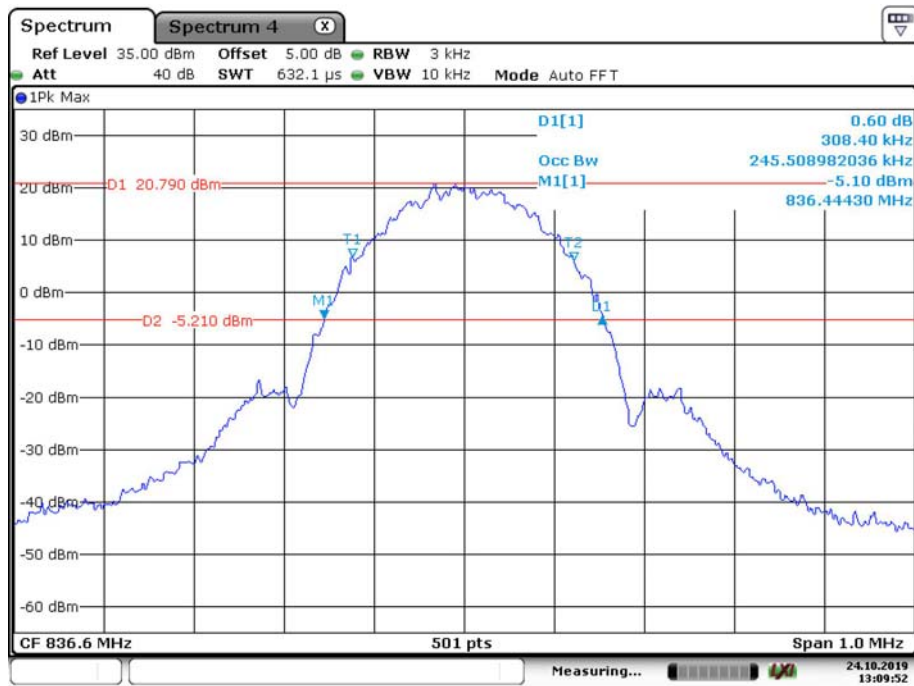
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GPRS PCS 1900



Date: 24.OCT.2019 11:52:25

EDGE Cellular 850



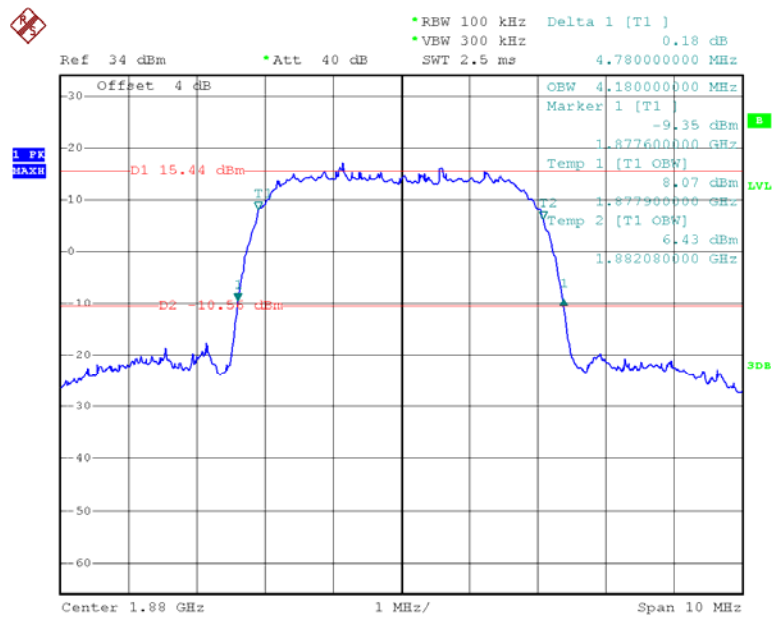
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EDGE PCS 1900



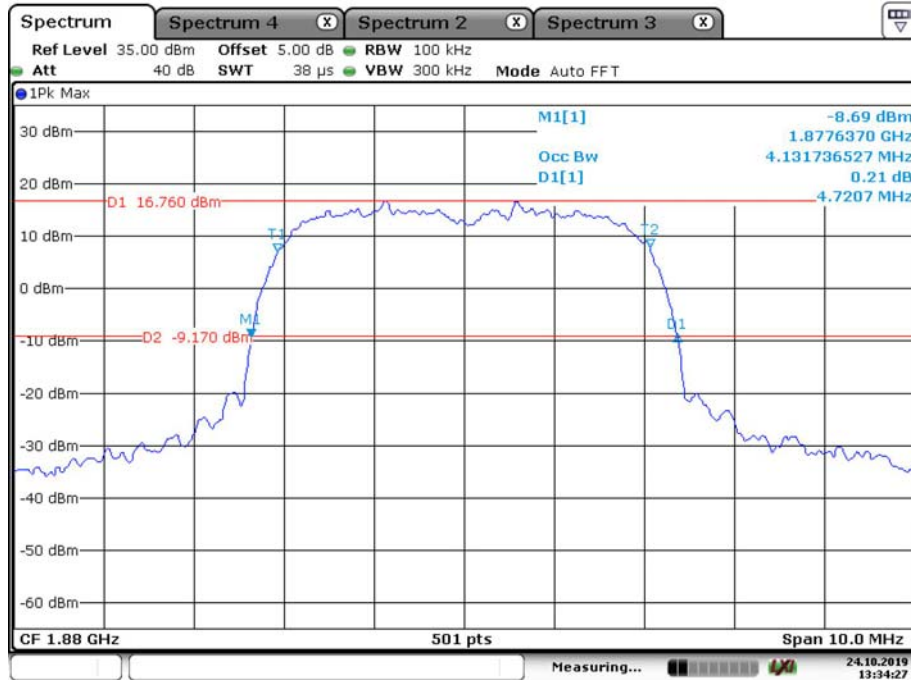
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WCDMA Band 2 Rel 99



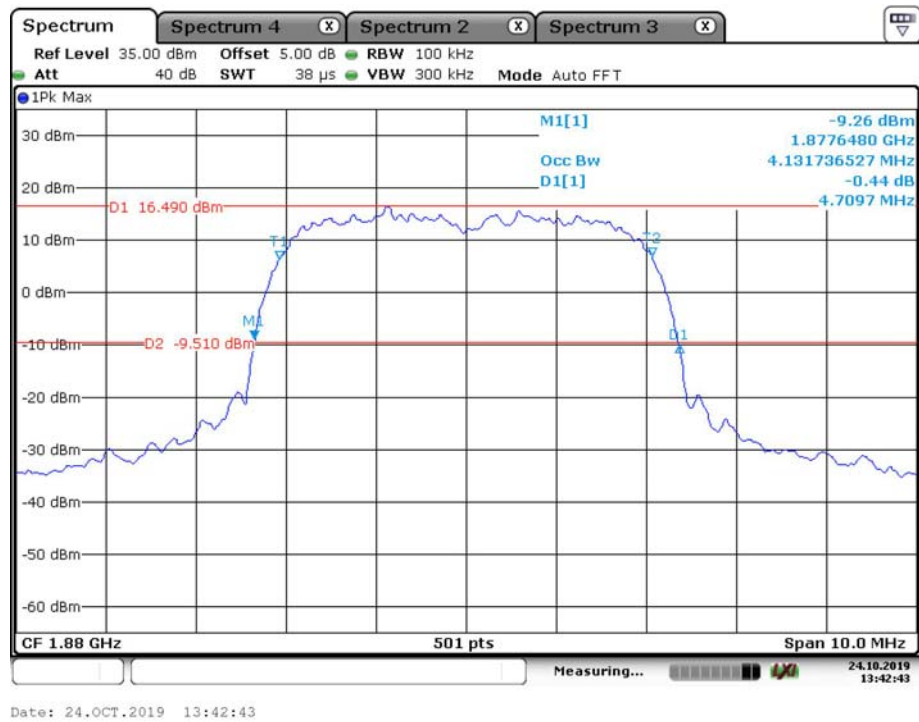
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WCDMA Band 2 HSDPA



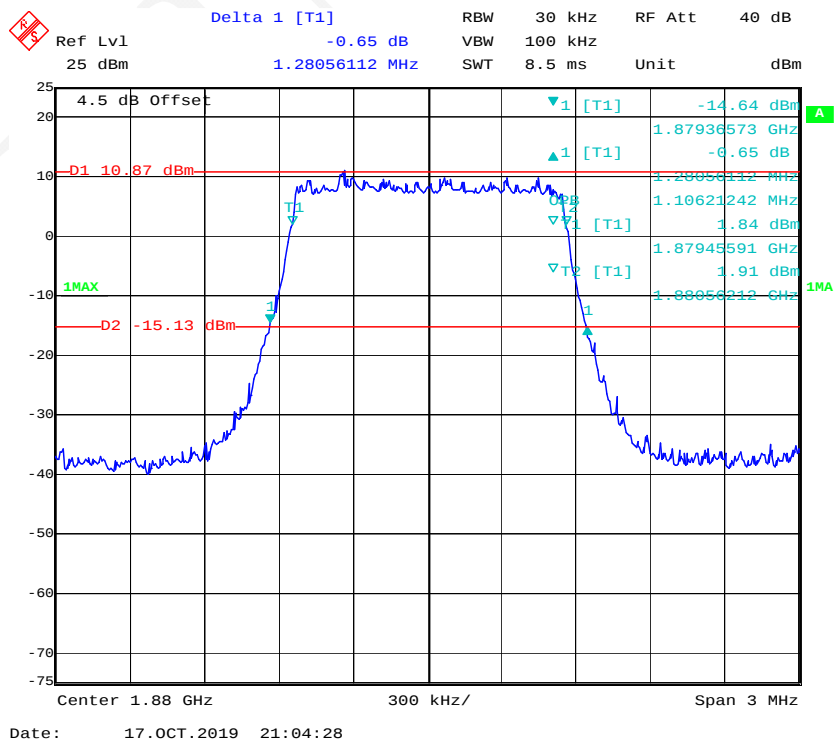
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WCDMA Band 2 HSDPA

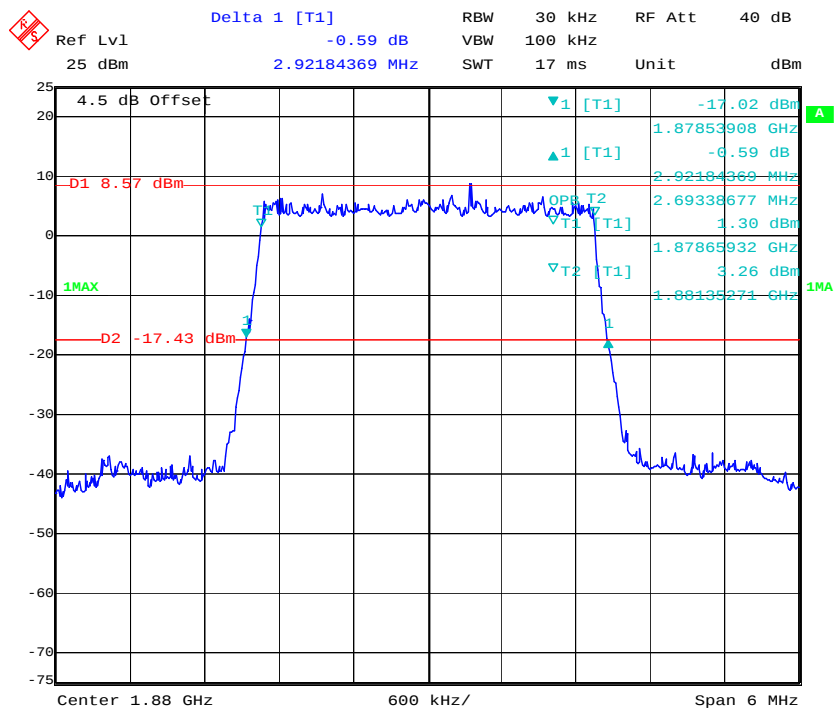


LTE Band 2

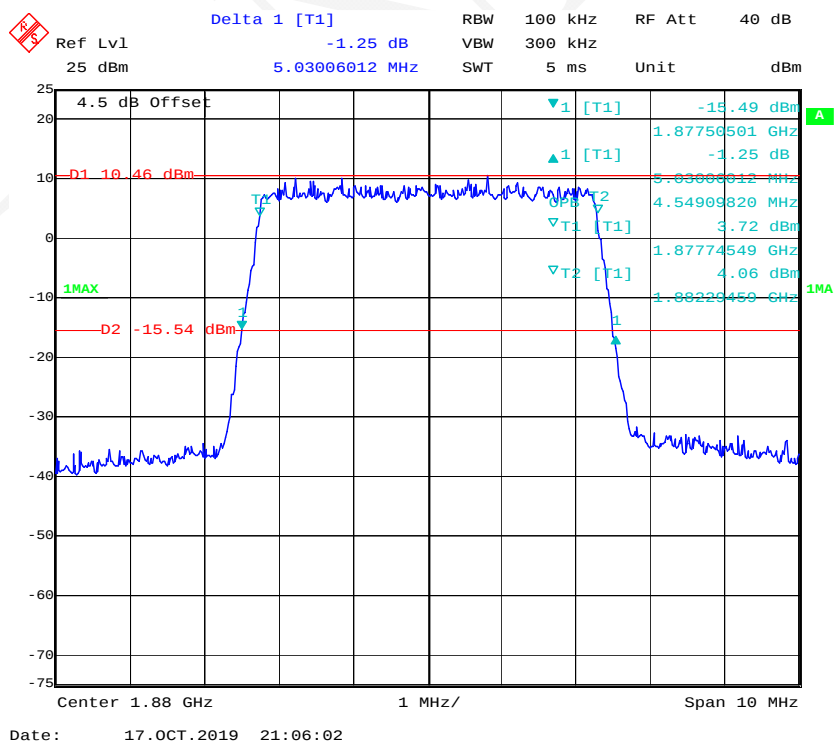
QPSK_1.4 MHz



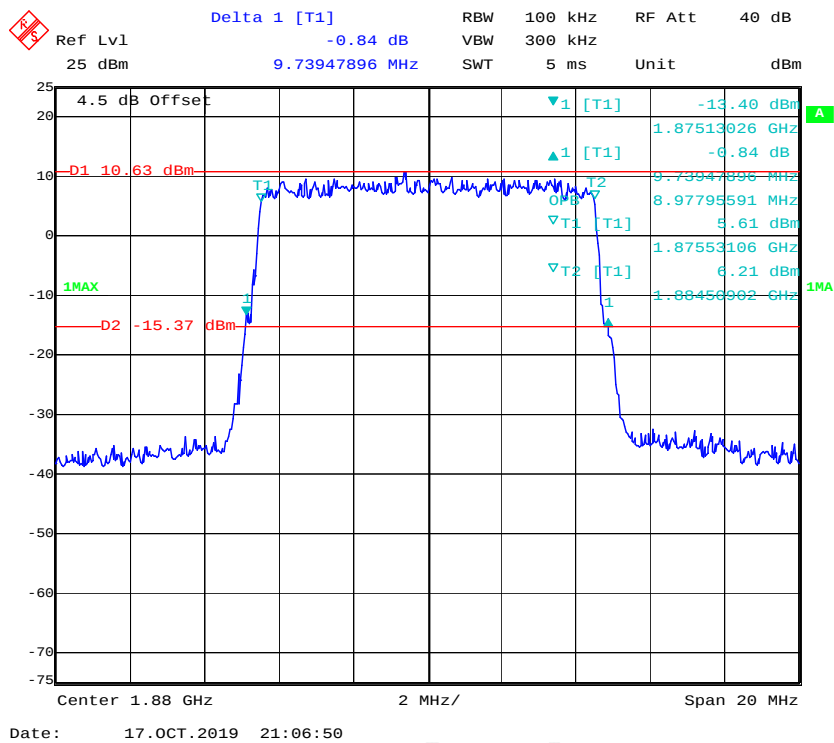
QPSK_3 MHz



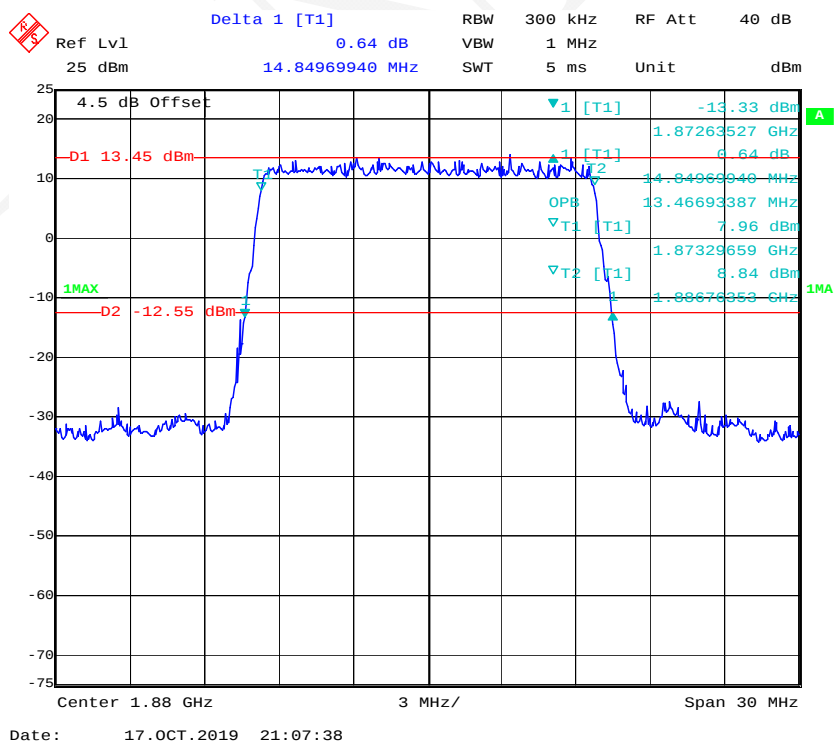
QPSK_5 MHz



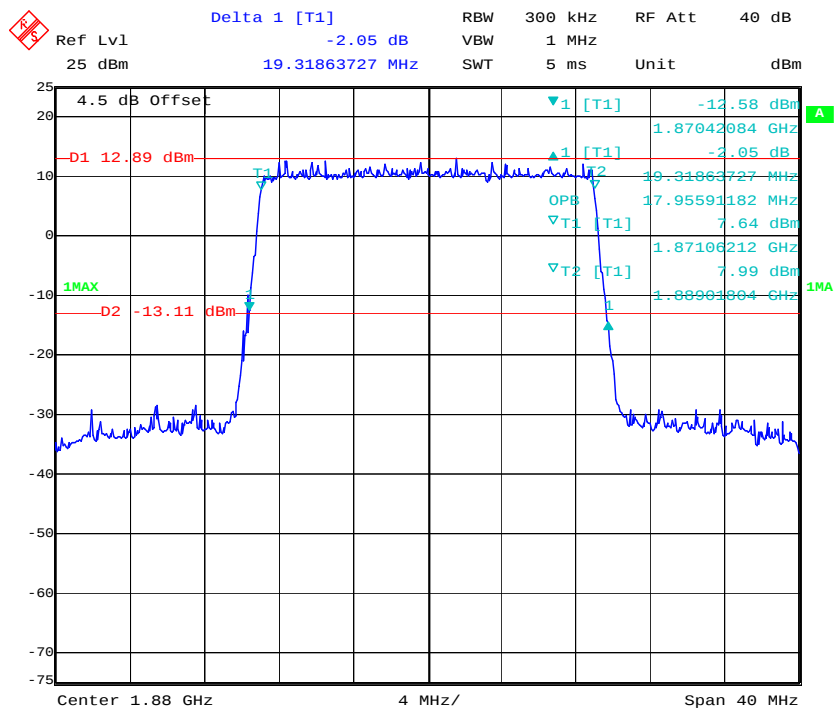
QPSK_10 MHz



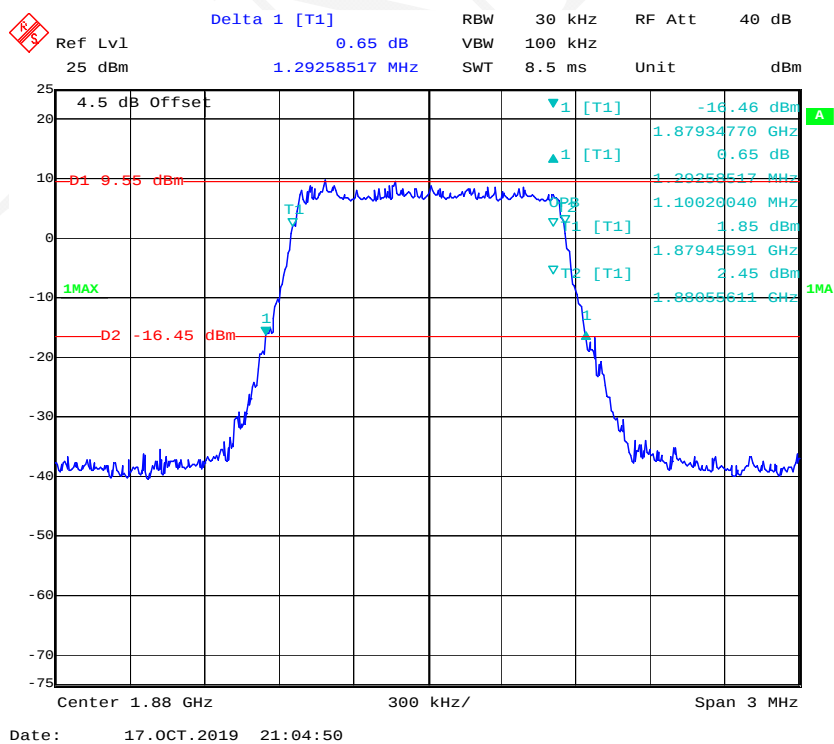
QPSK_15 MHz



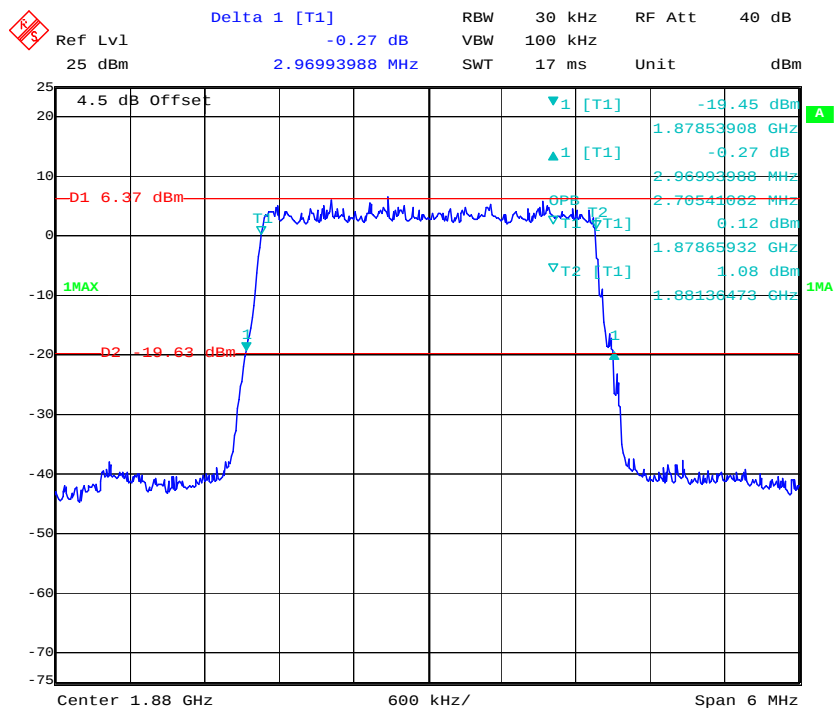
QPSK_20 MHz



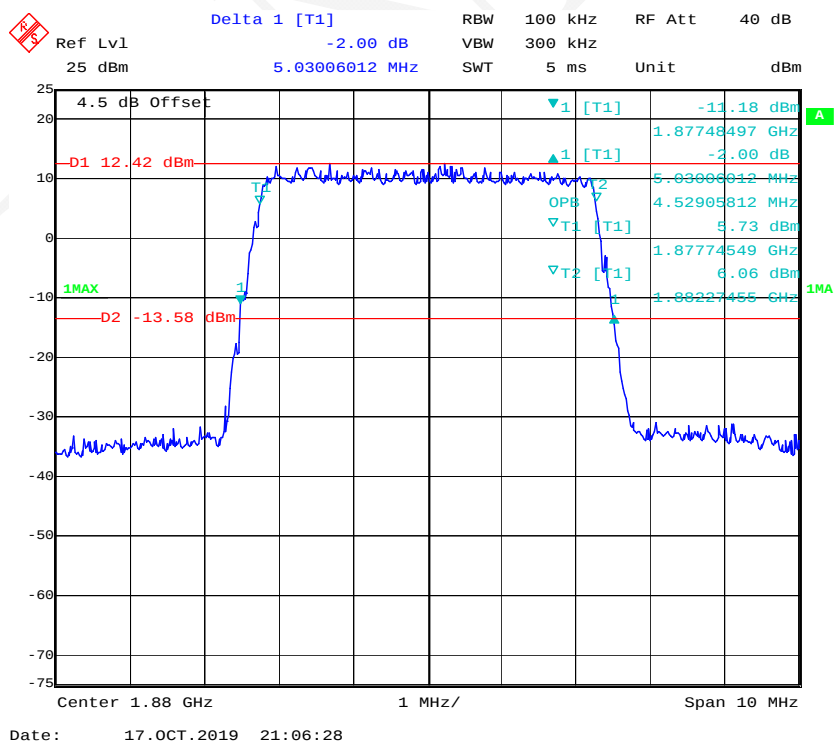
16QAM_1.4 MHz



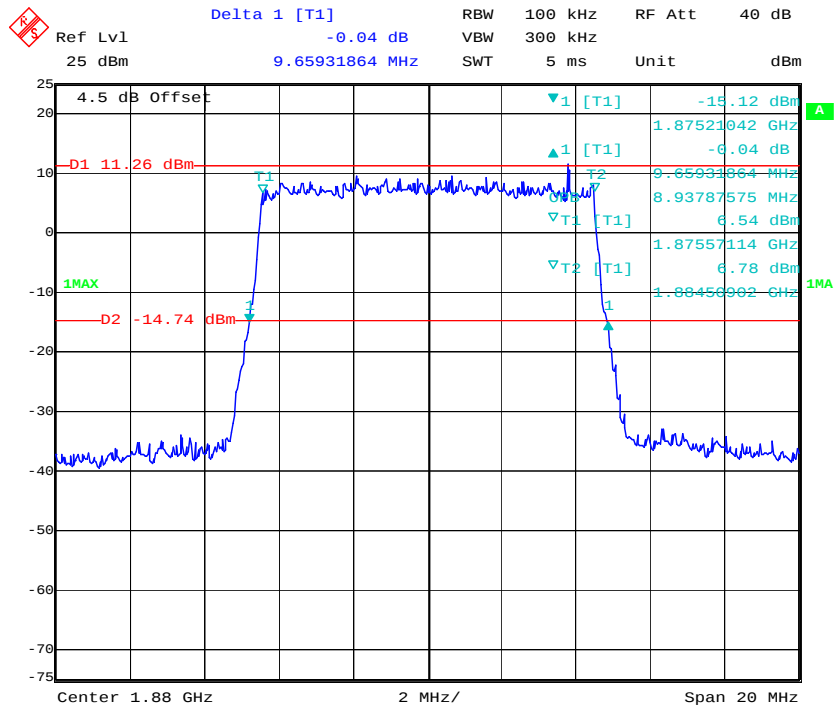
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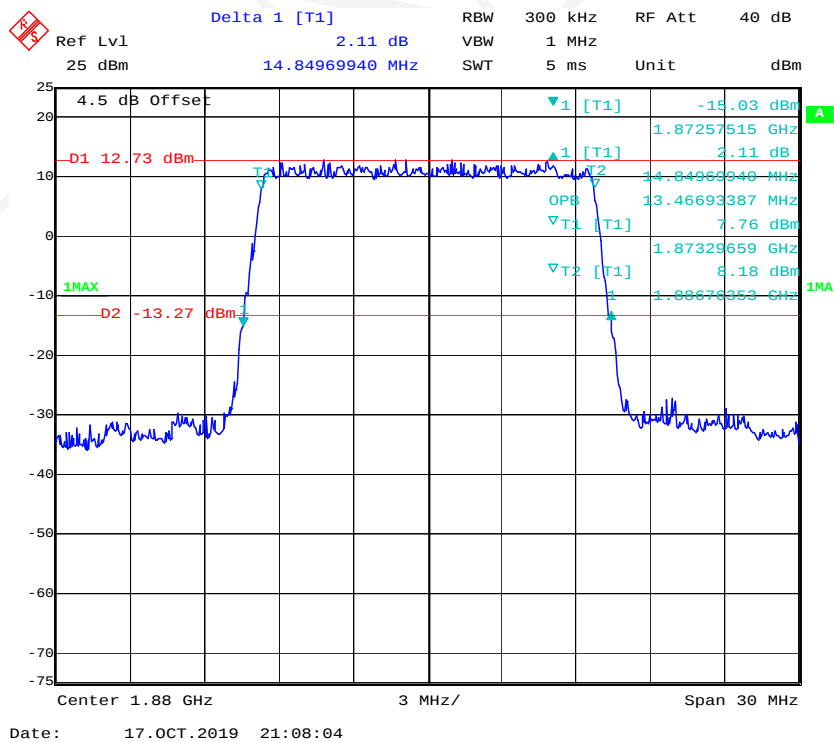
16QAM_5 MHz



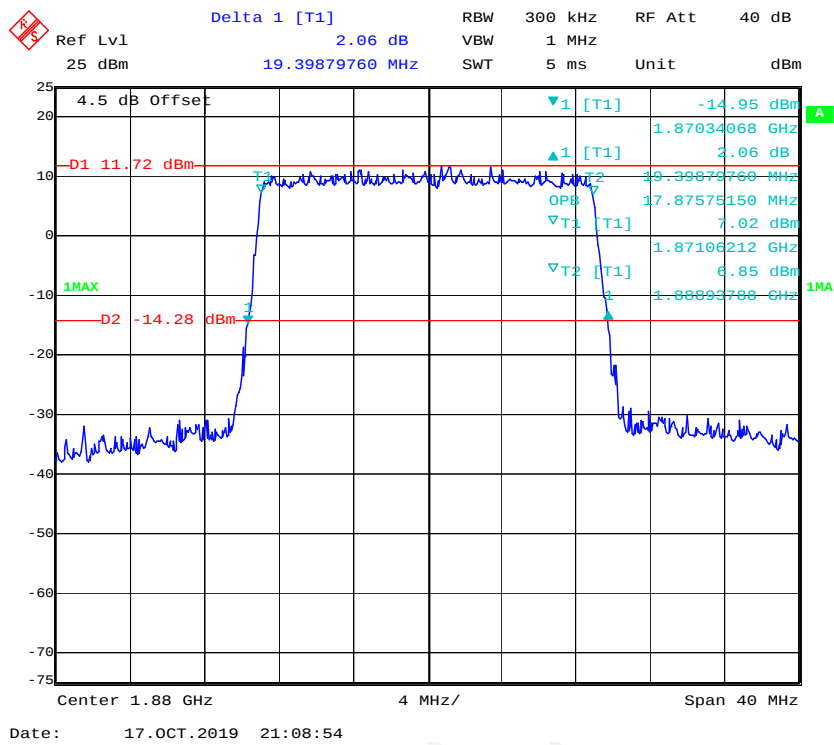
16QAM_10 MHz



16QAM_15 MHz

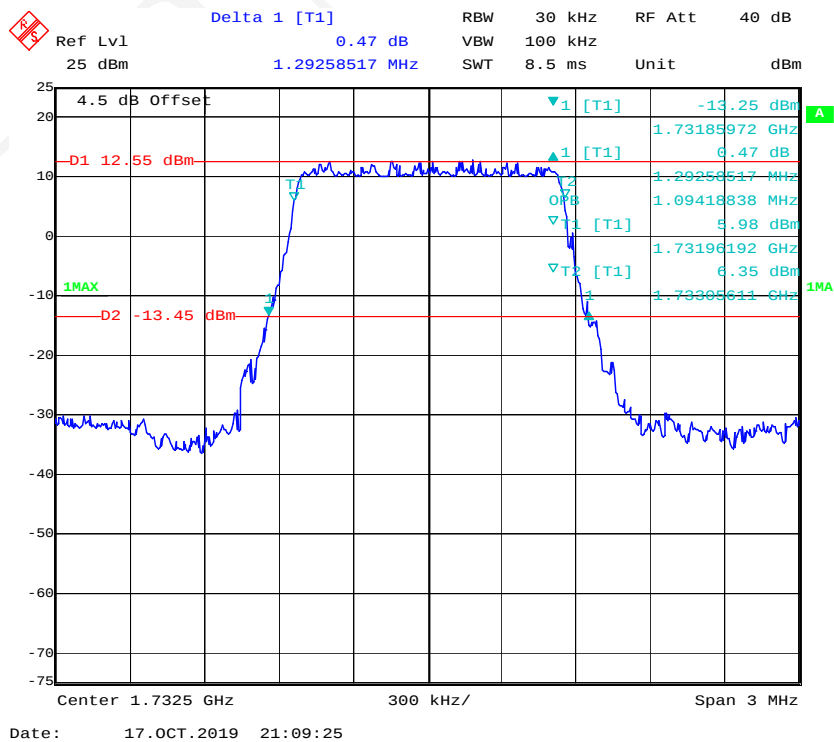


16QAM_20 MHz

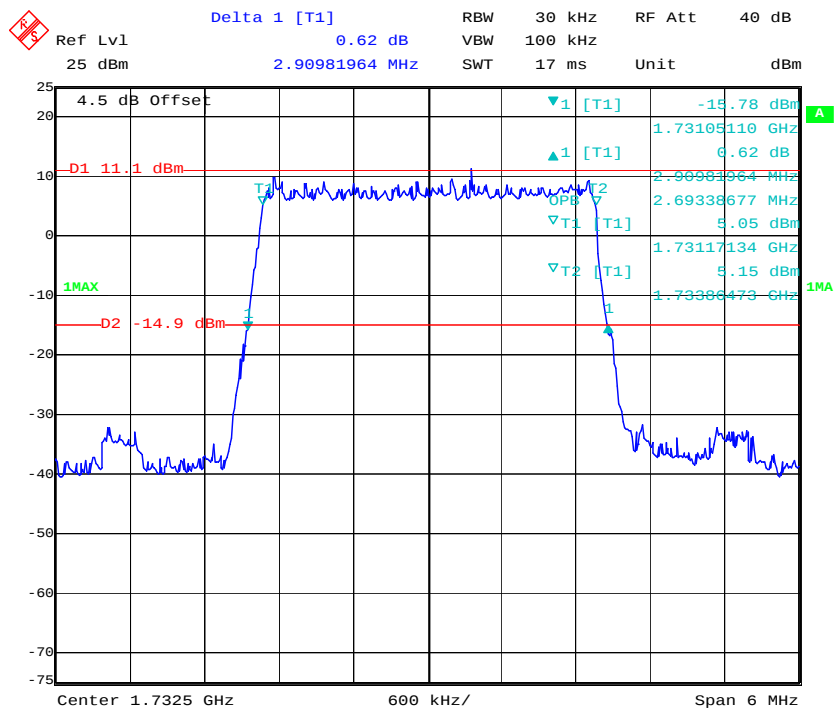


LTE Band 4

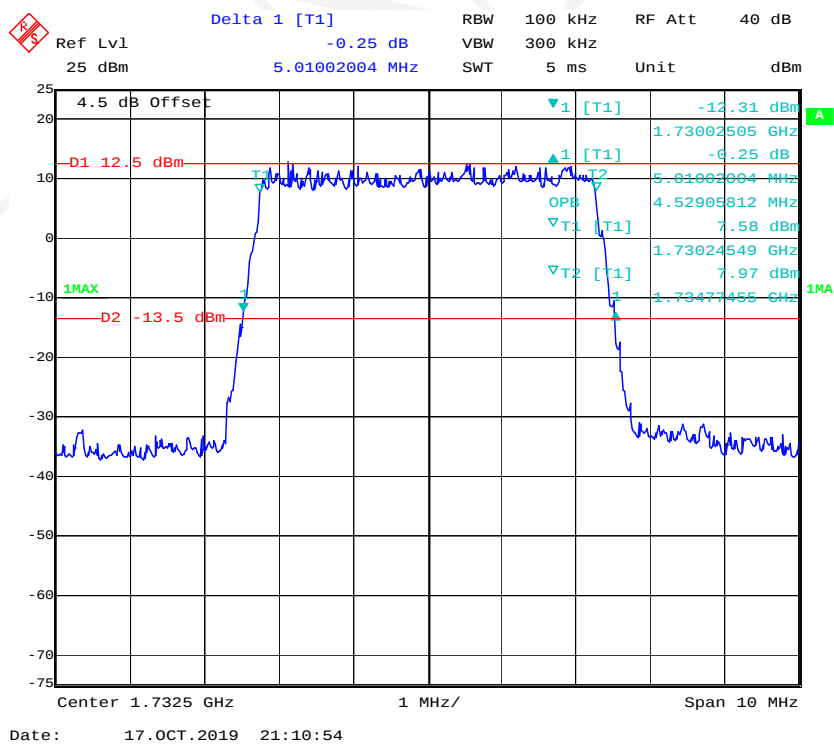
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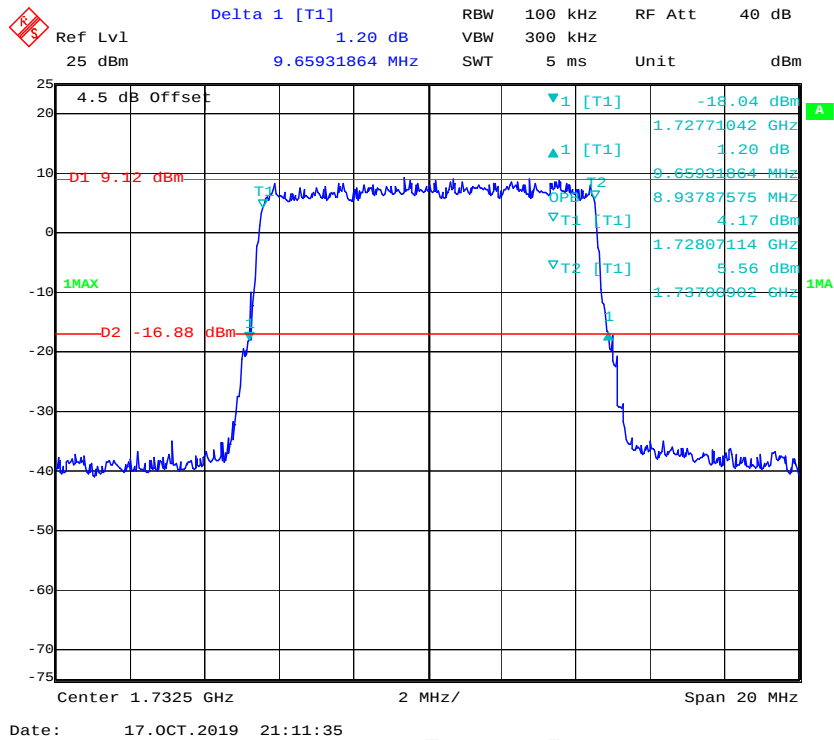
QPSK_3 MHz



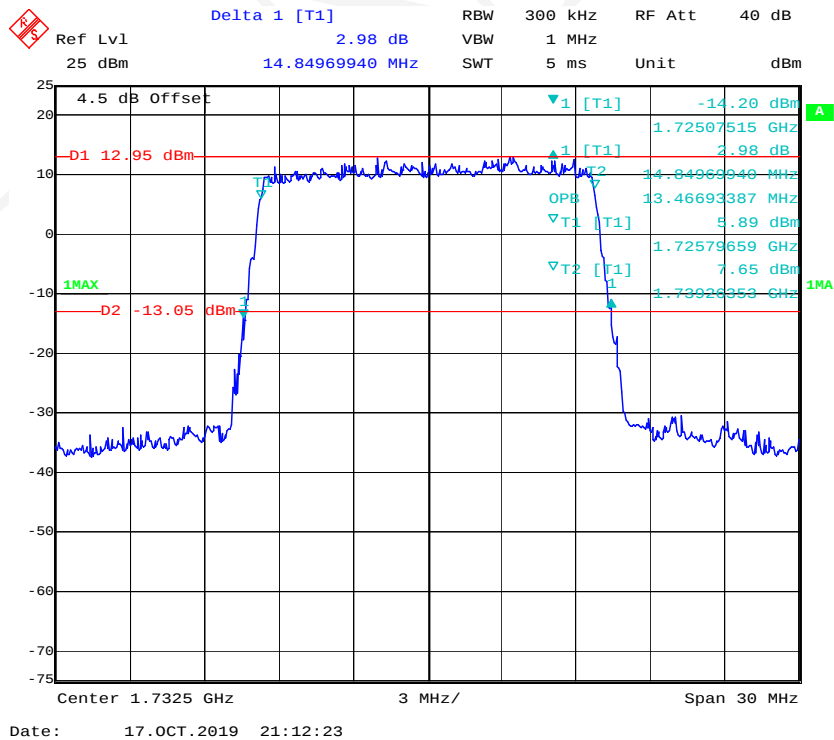
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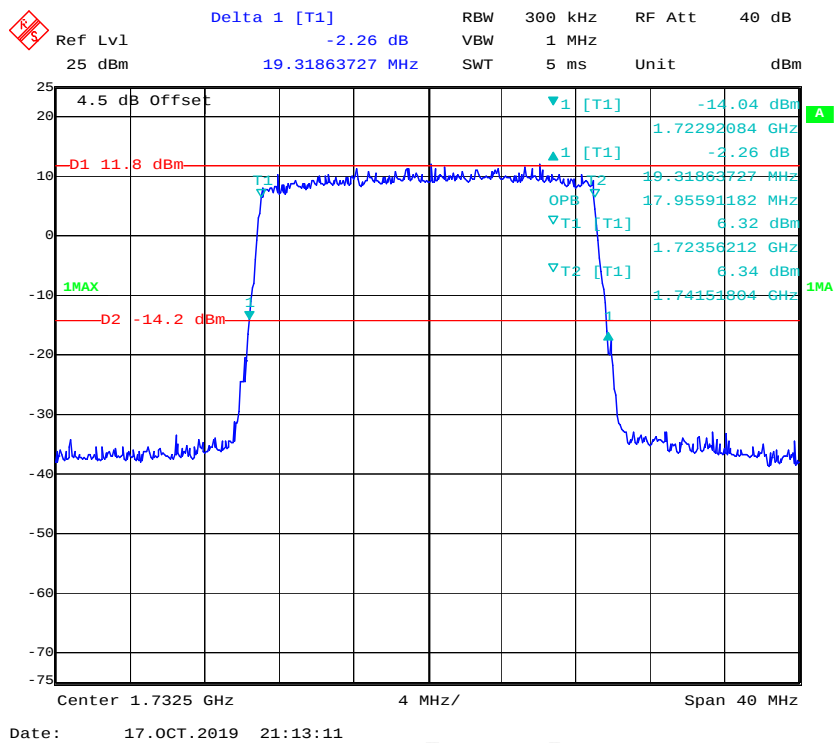
QPSK_10 MHz



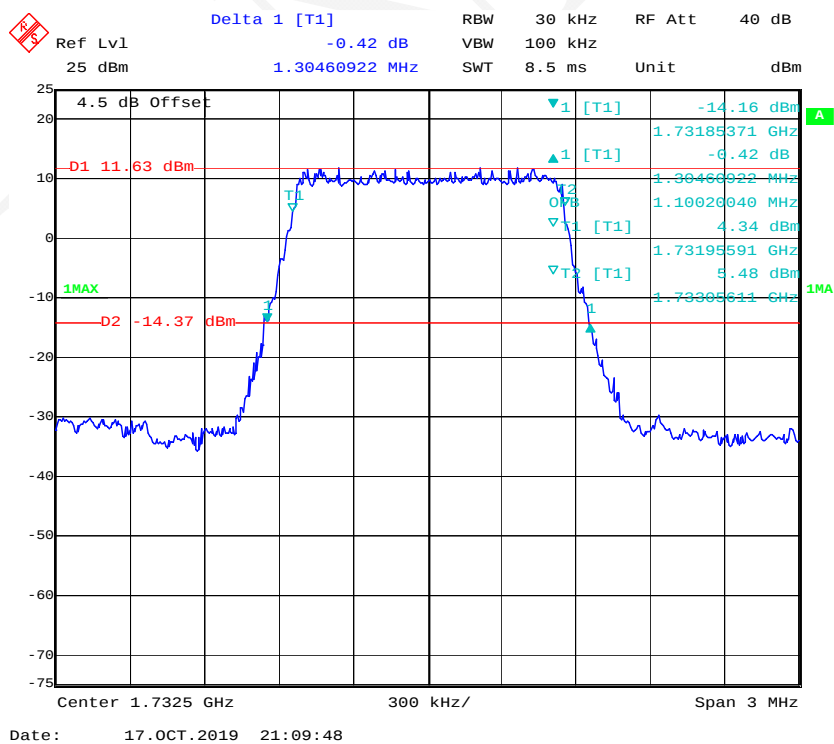
QPSK_15 MHz



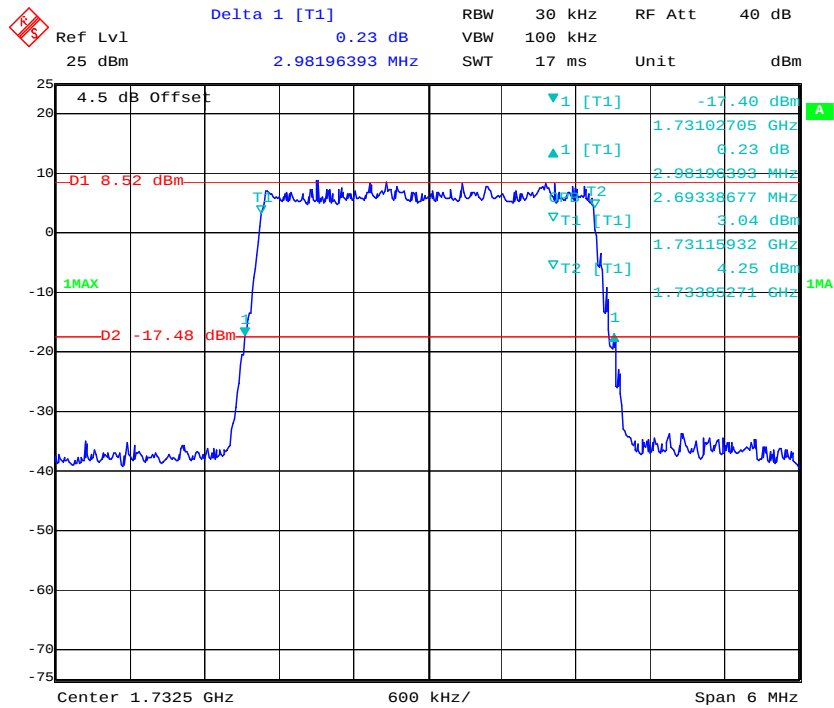
QPSK_20 MHz



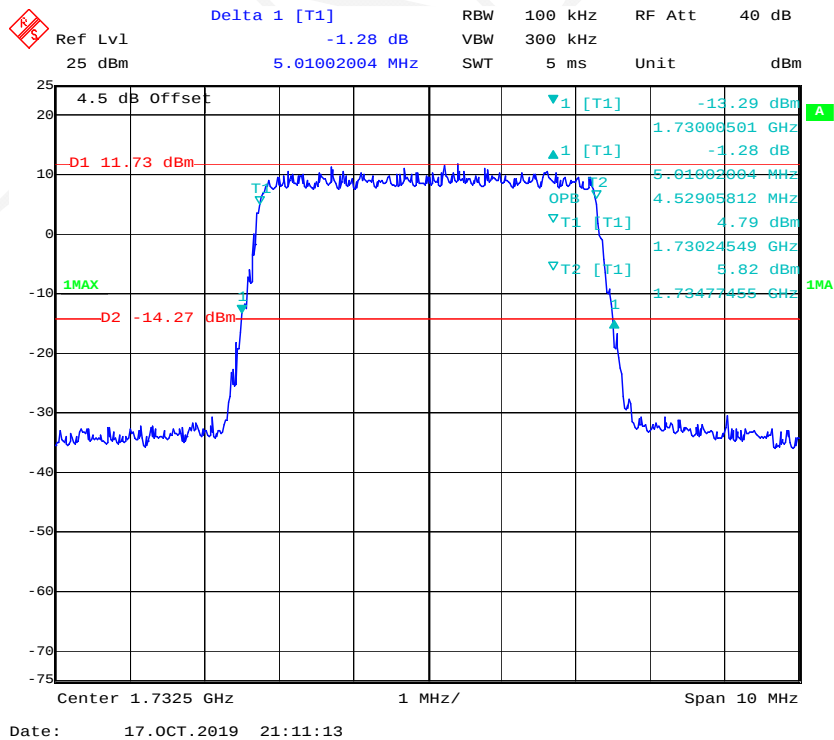
16QAM_1.4 MHz



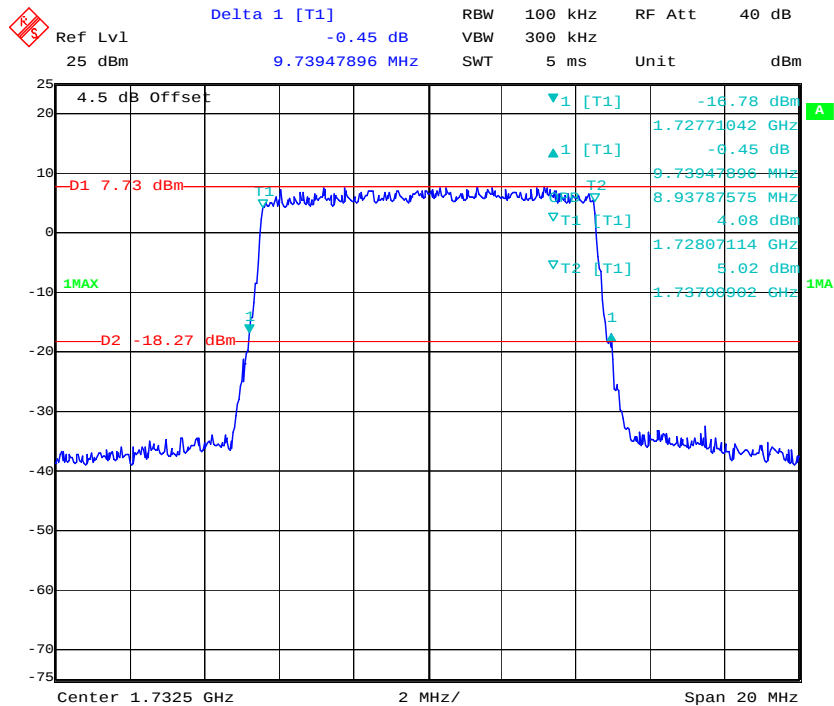
16QAM_3 MHz



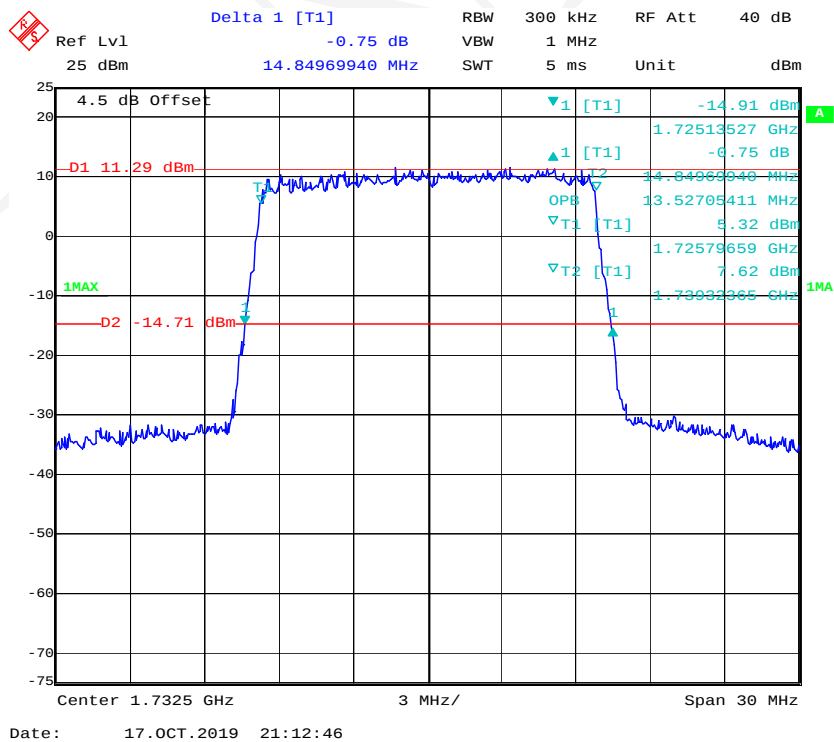
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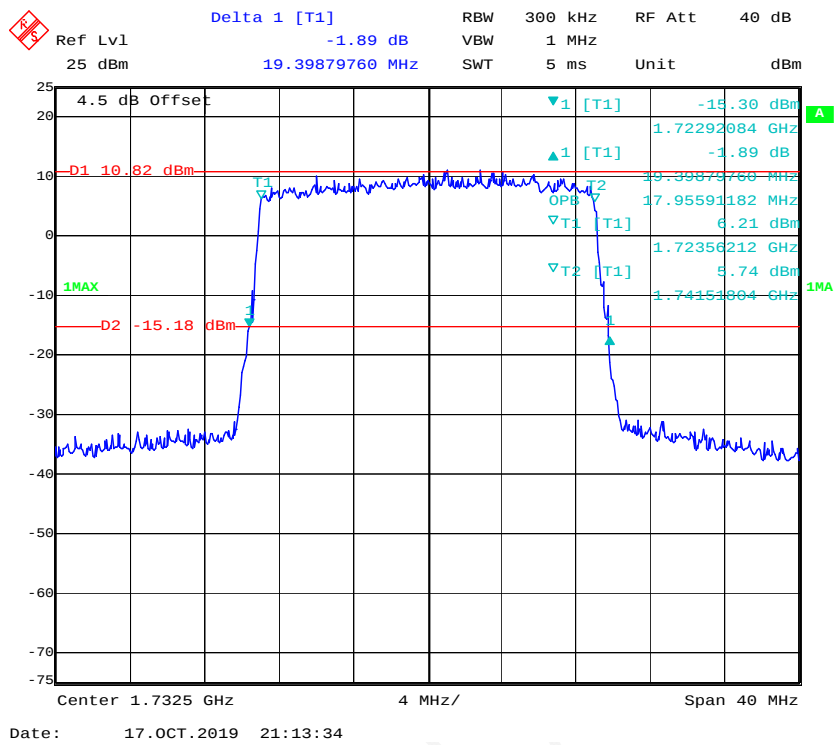
16QAM_10 MHz



16QAM_15 MHz

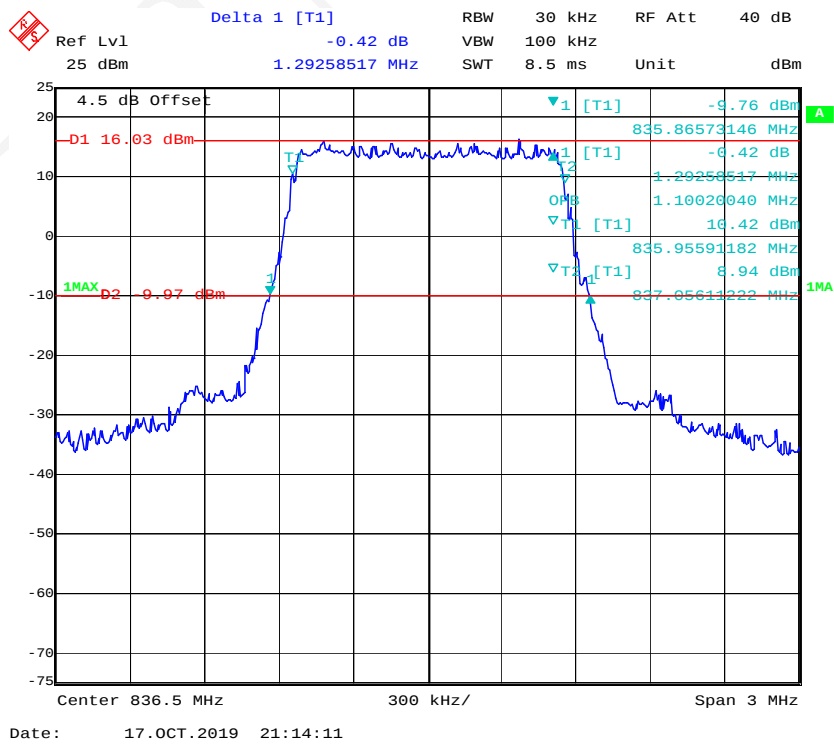


16QAM_20 MHz

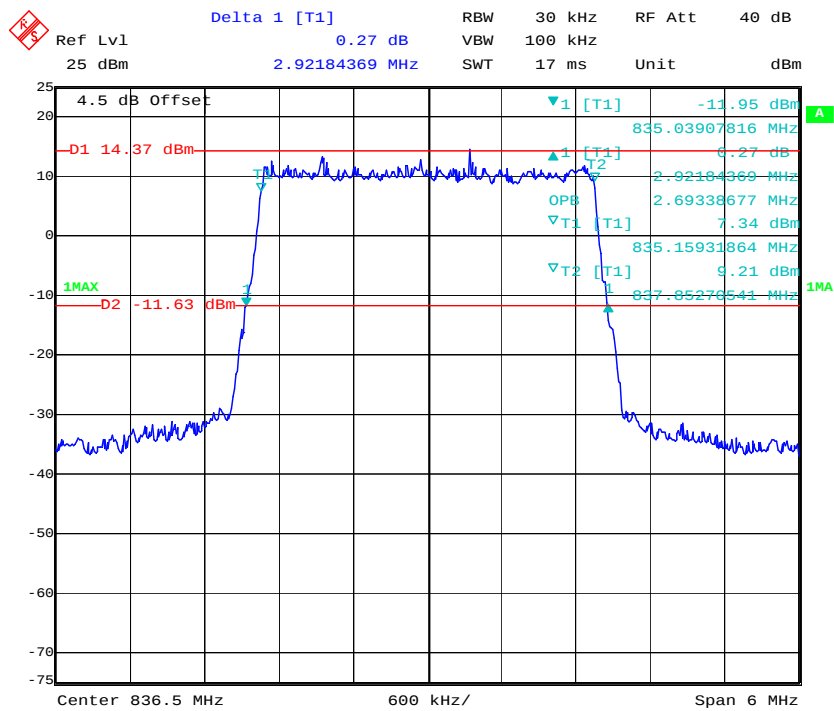


LTE Band 5:

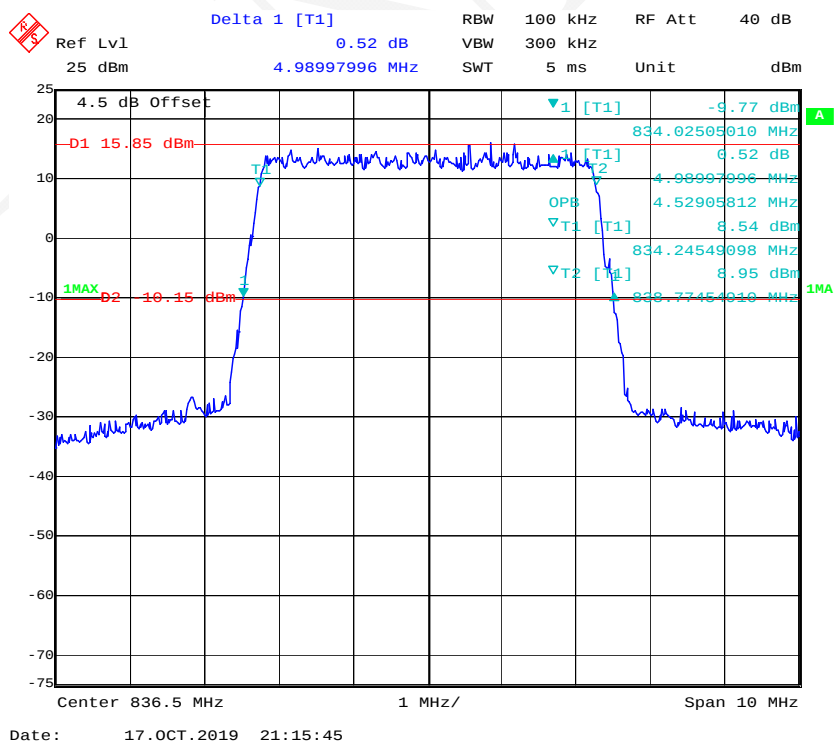
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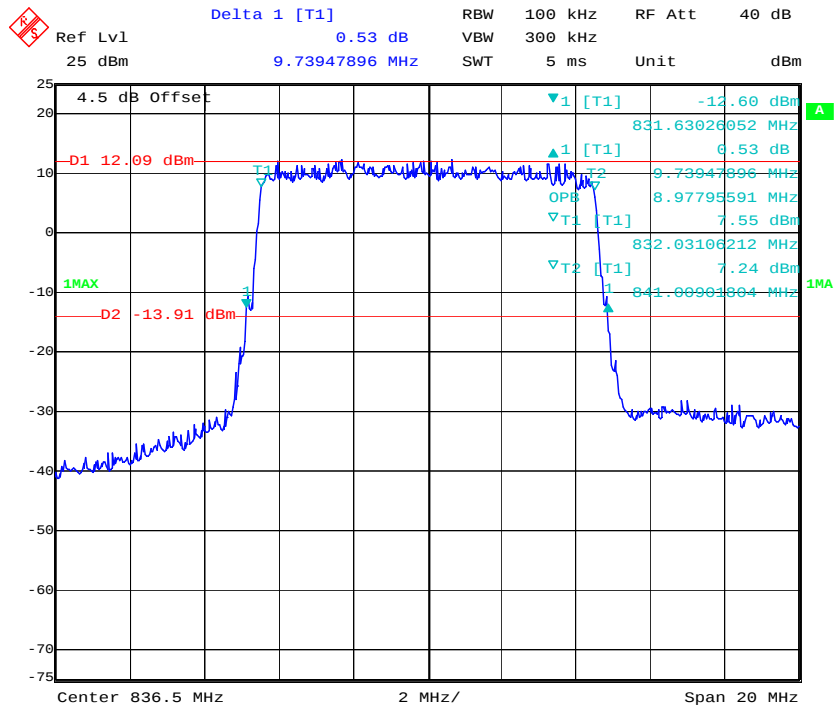
QPSK_3 MHz



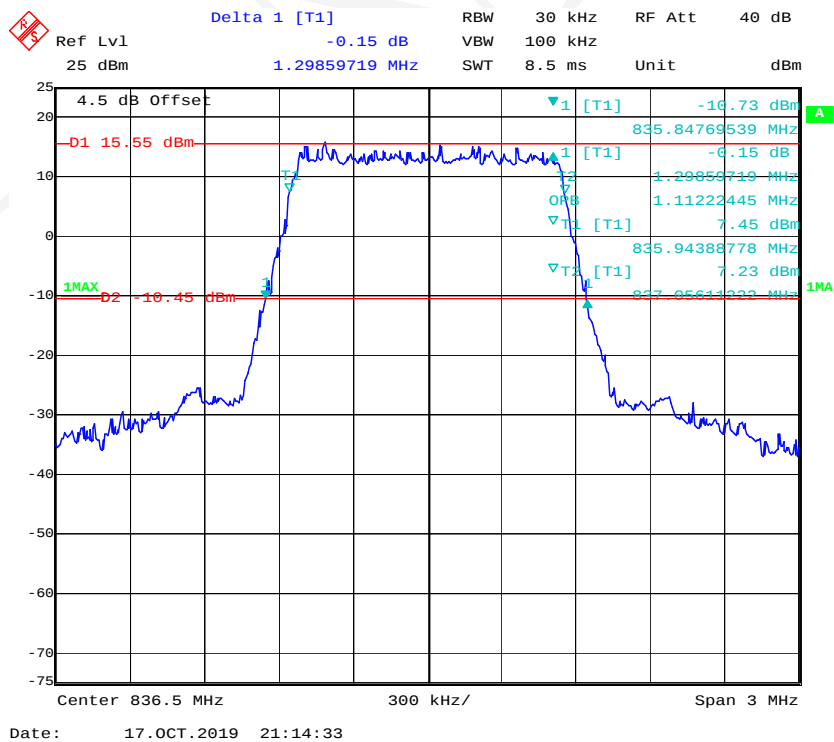
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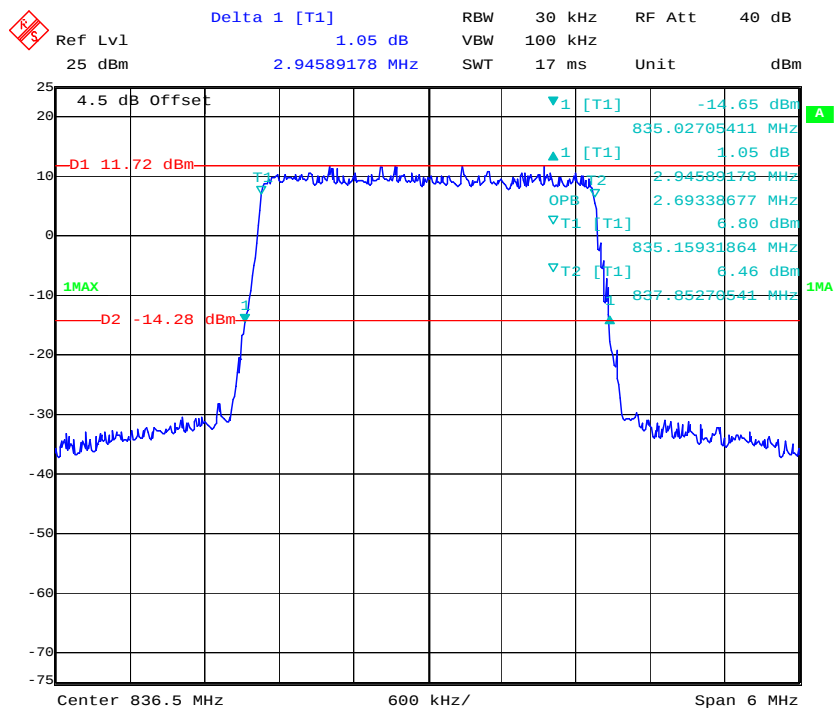
QPSK_10 MHz



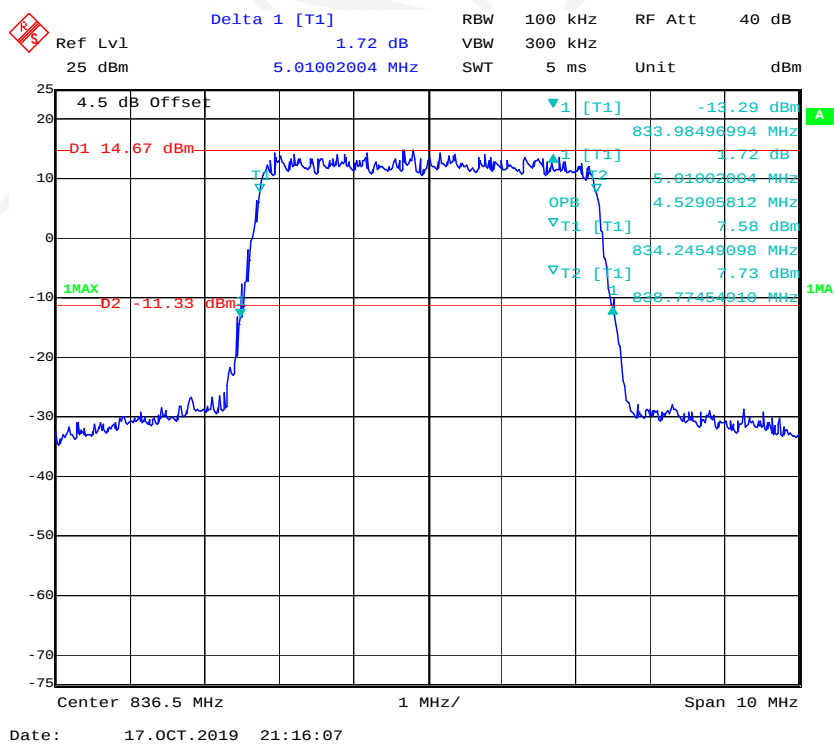
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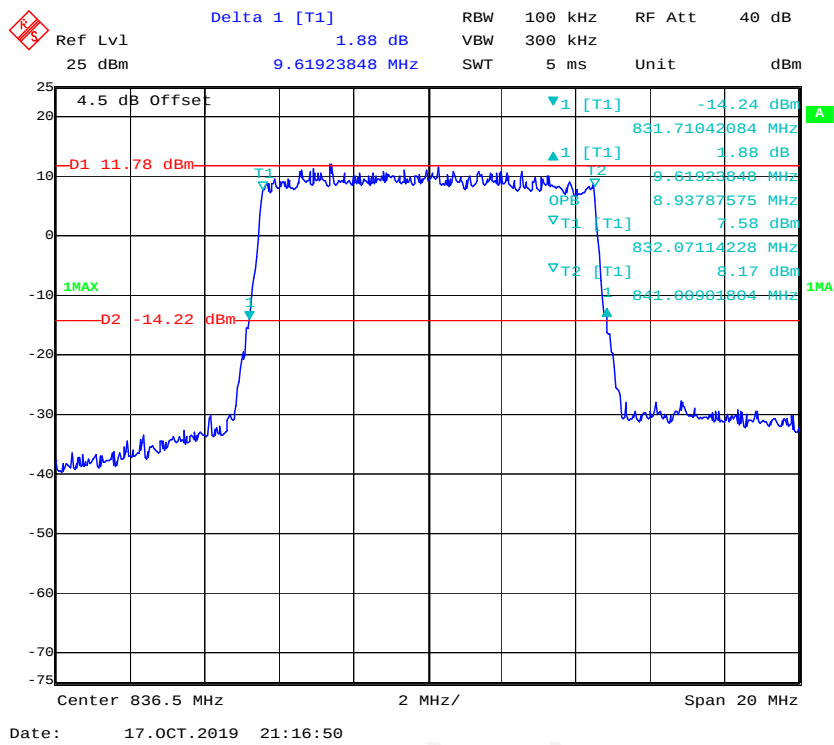
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16QAM_5 MHz

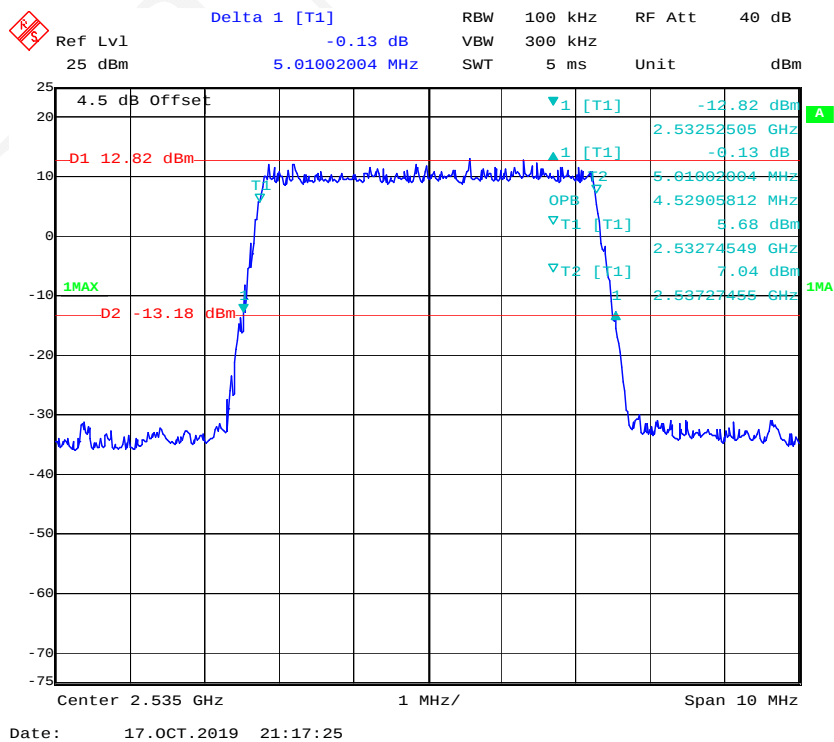


16QAM_10 MHz

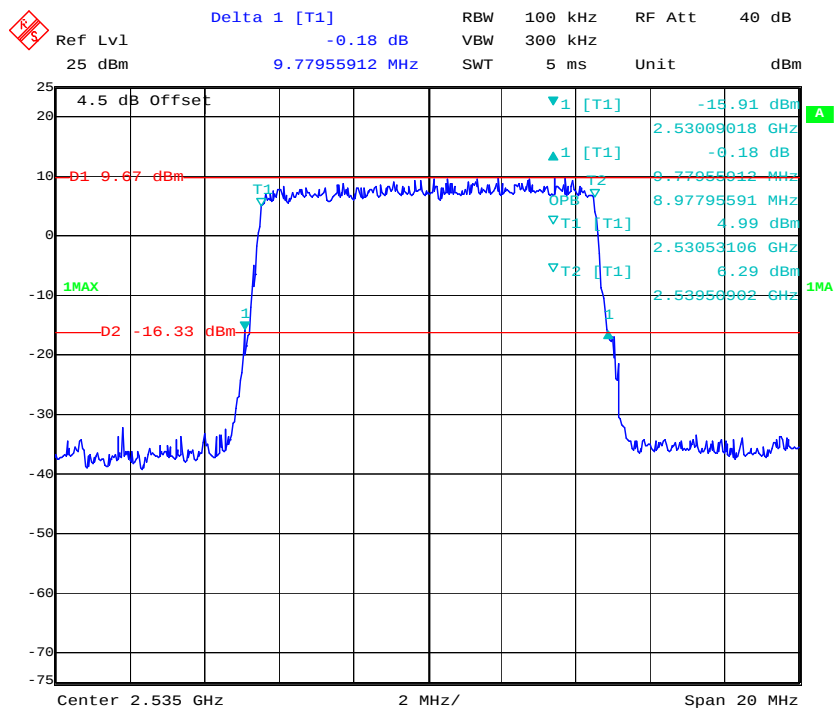


LTE Band 7:

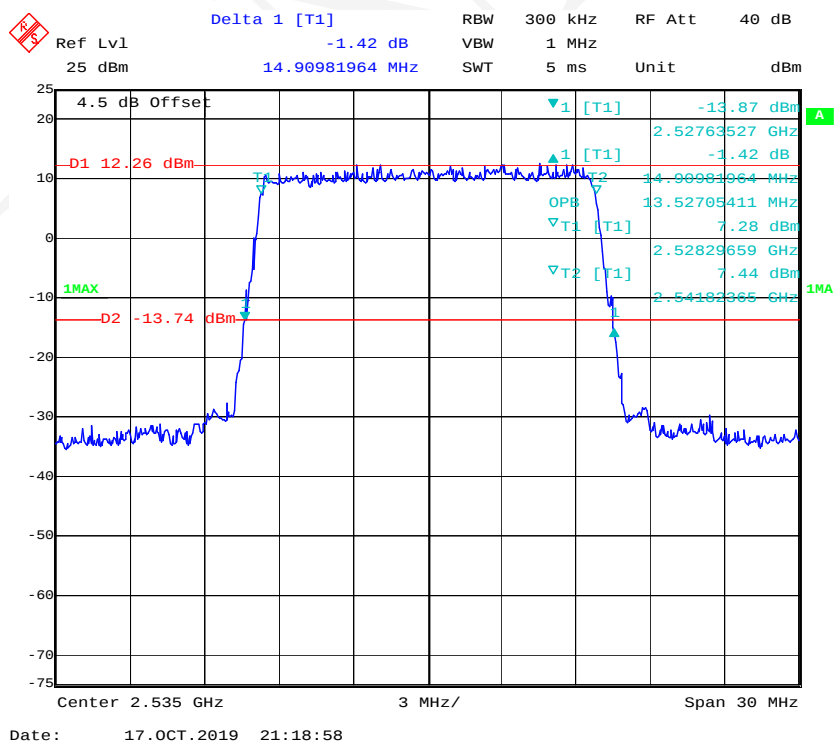
QPSK_5 MHz



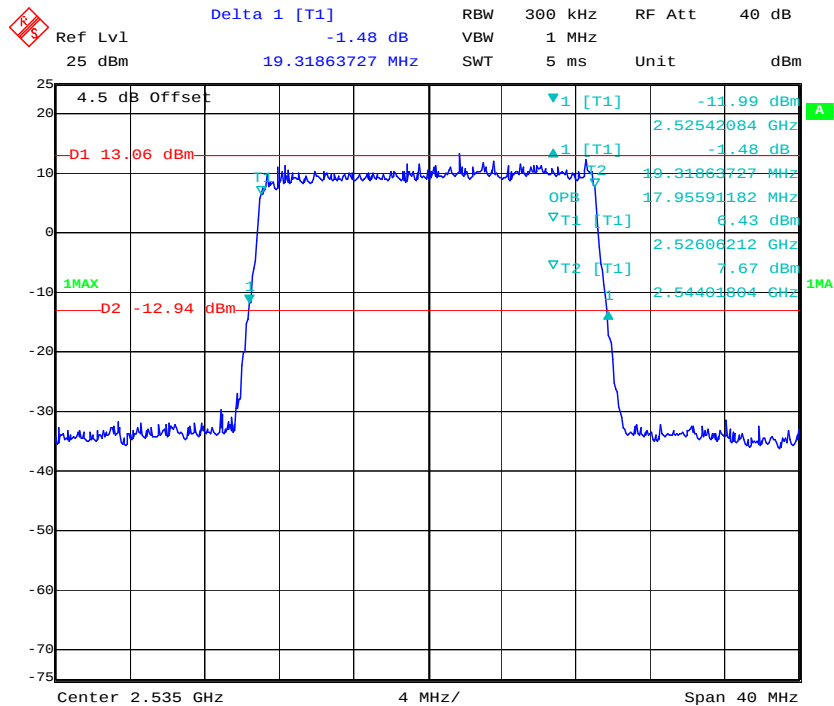
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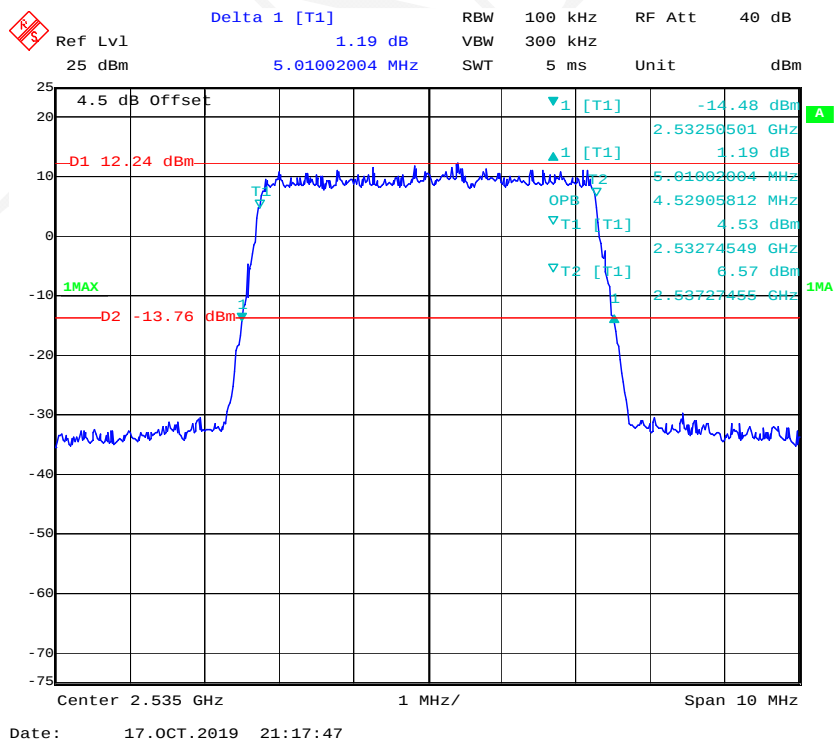
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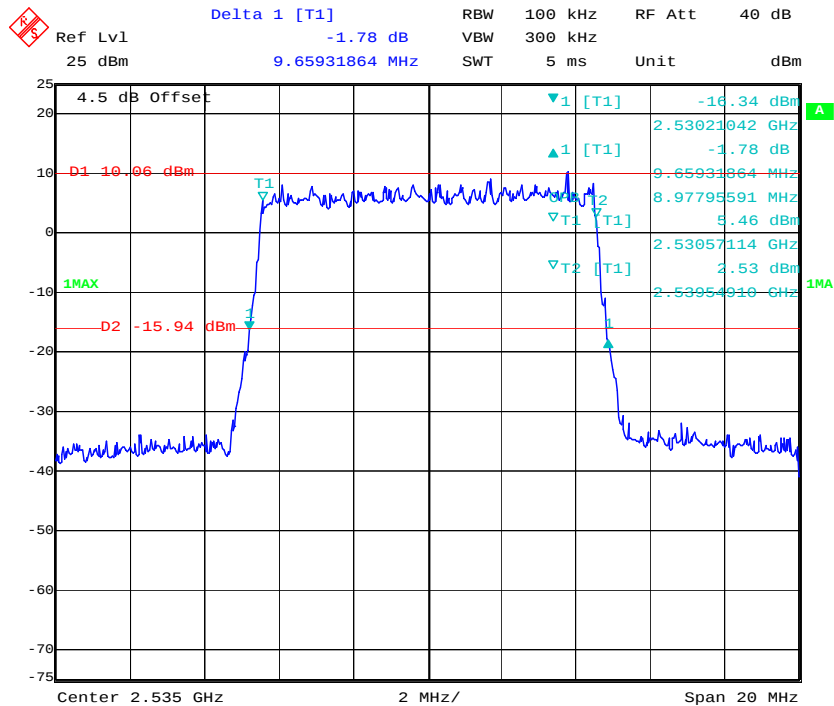
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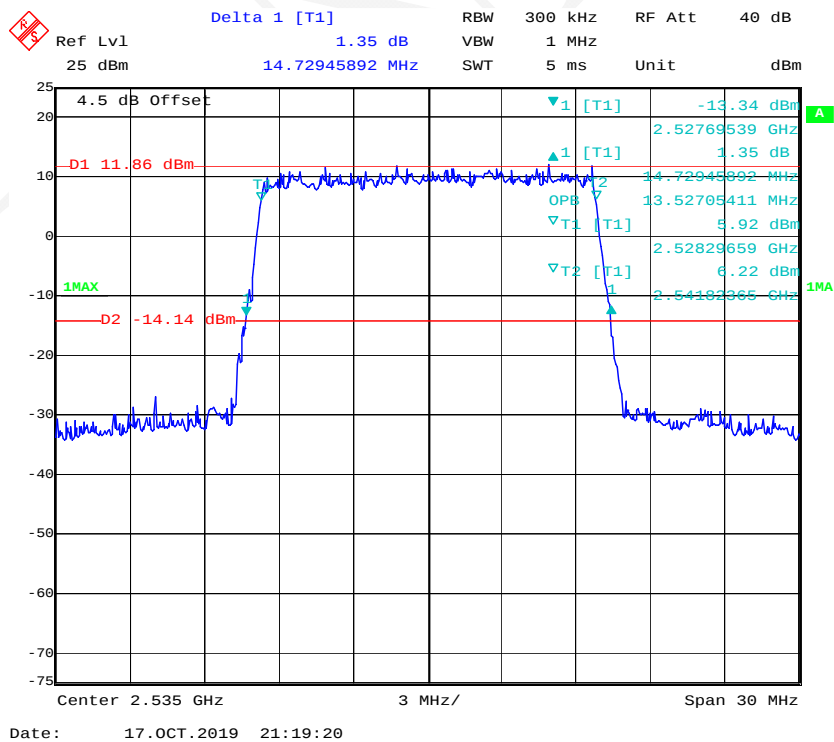
16QAM_5 MHz



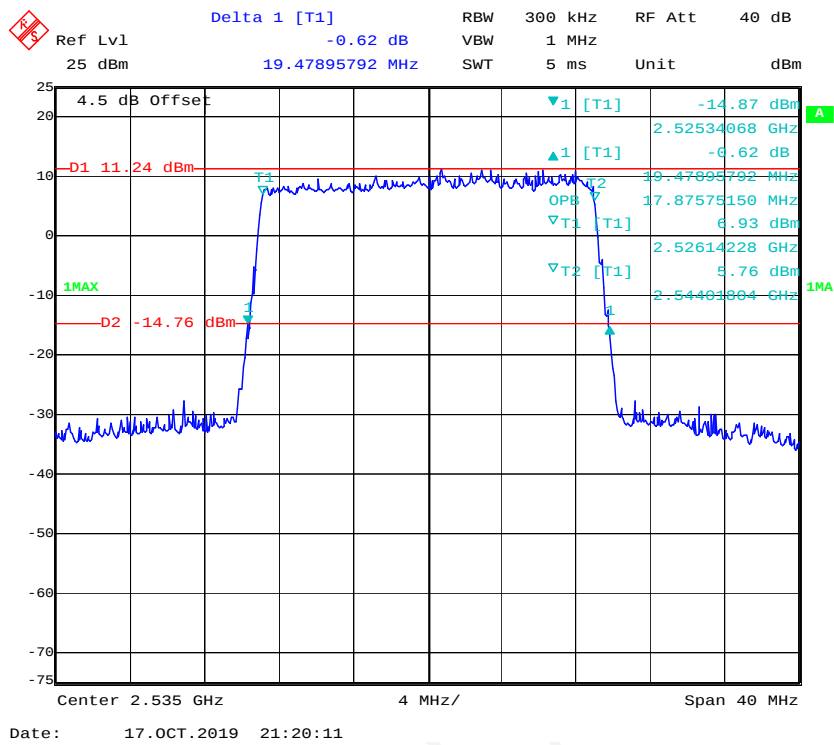
16QAM_10 MHz



16QAM_15 MHz

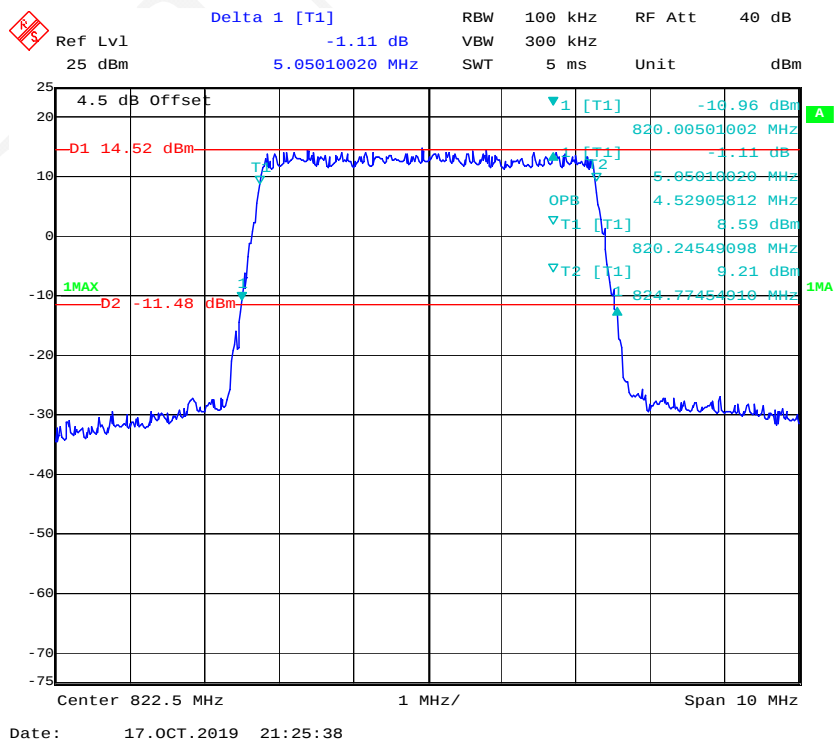


16QAM_20 MHz

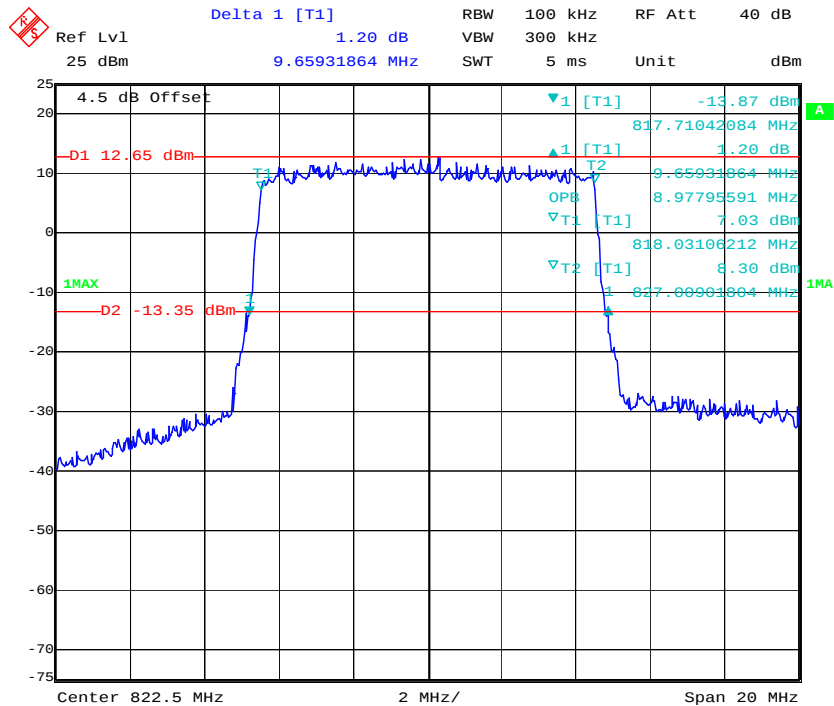


LTE Band 18:

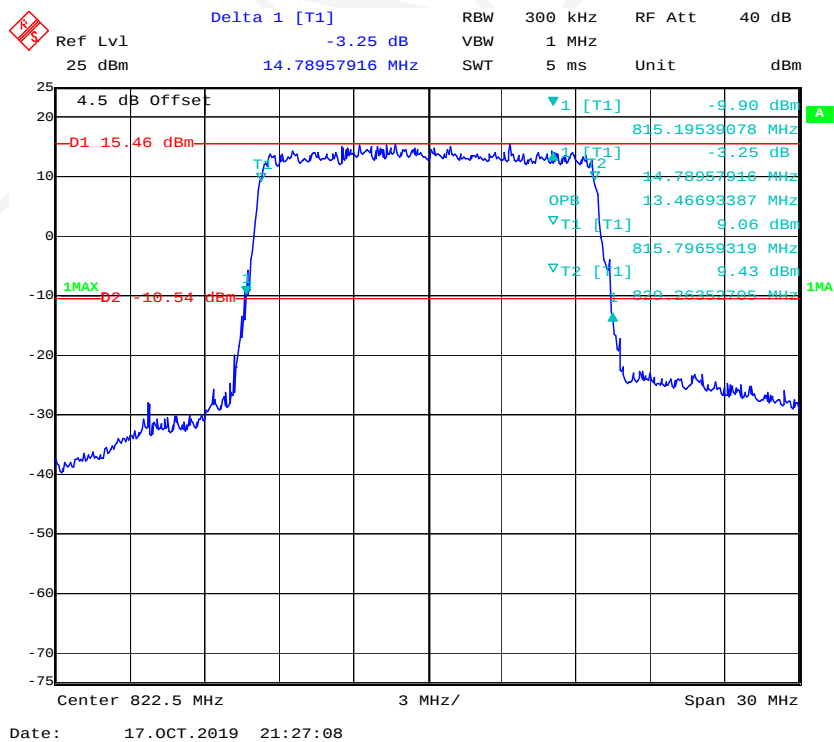
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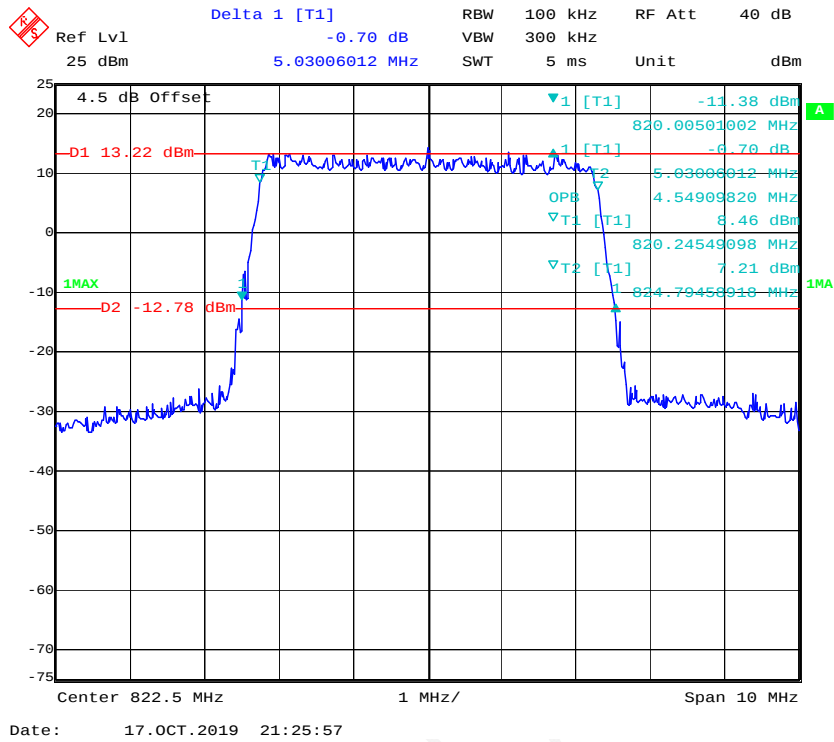
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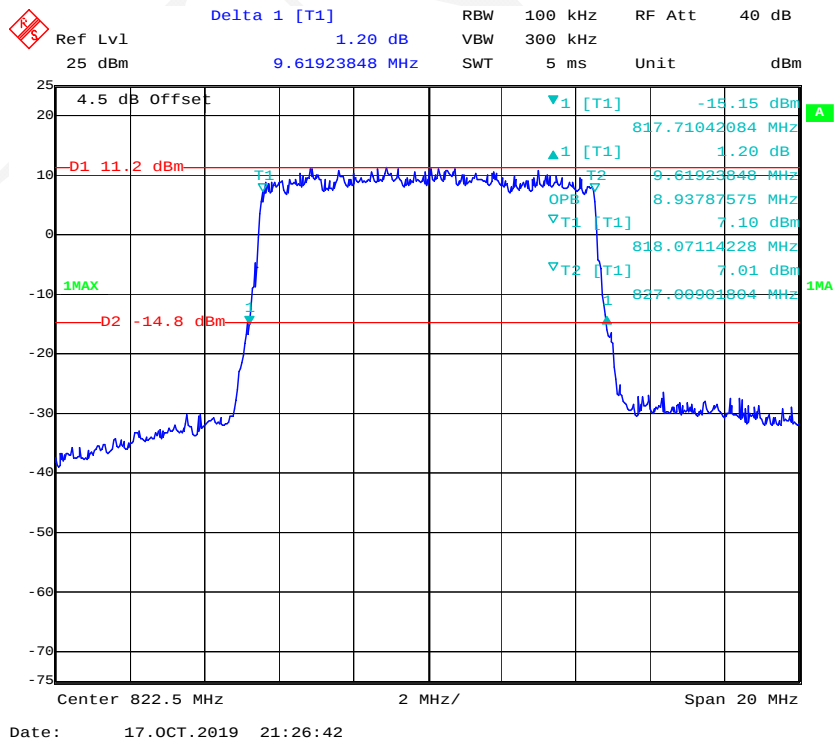
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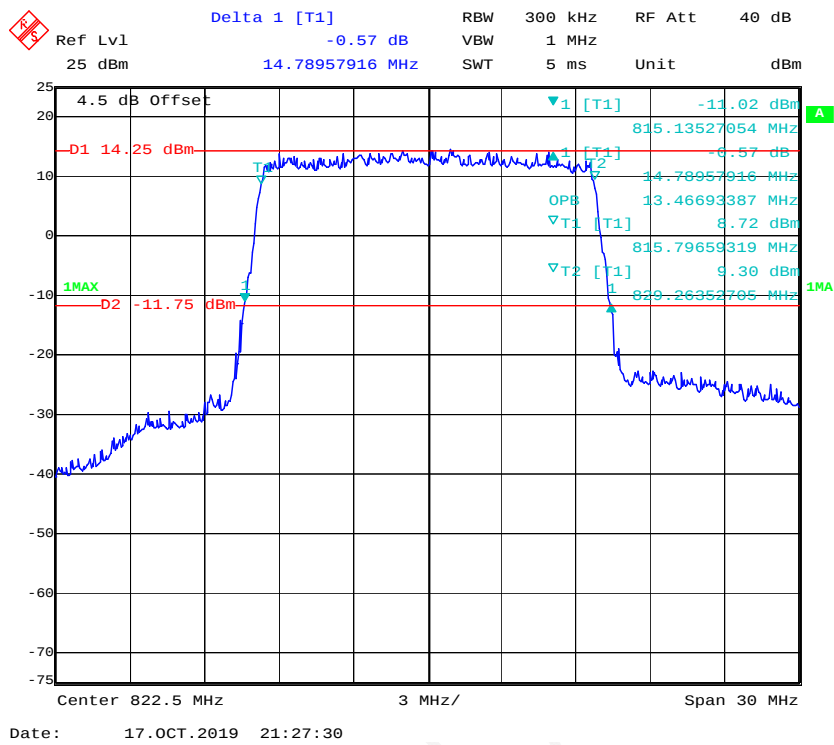
16QAM_5 MHz



16QAM_10 MHz

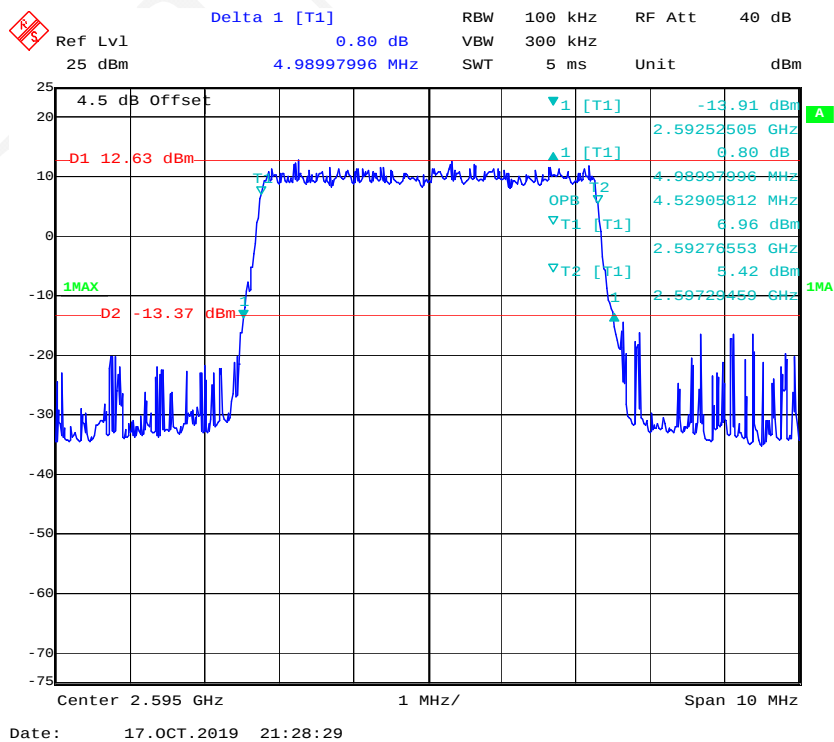


16QAM_15 MHz

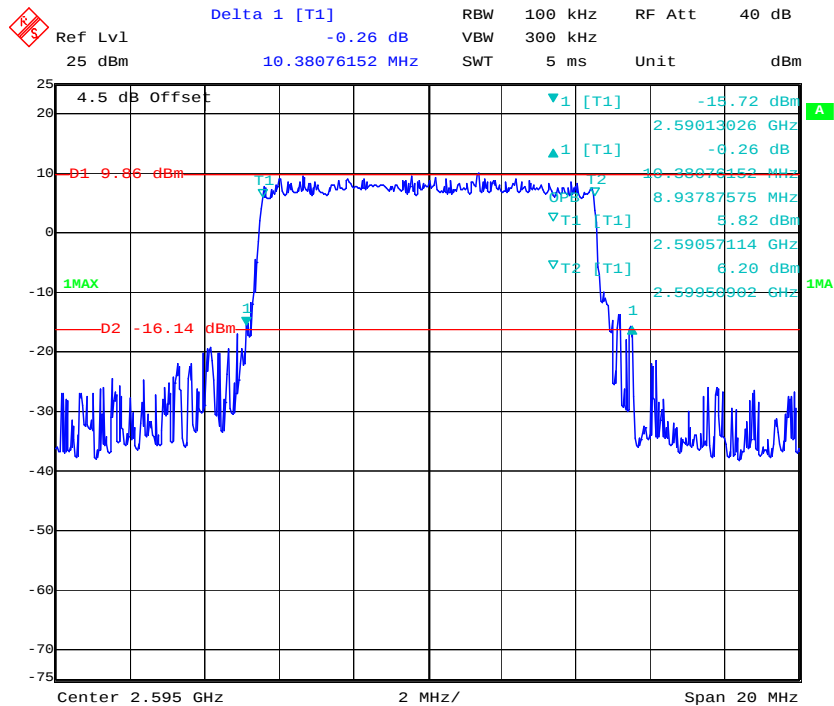


LTE Band 38:

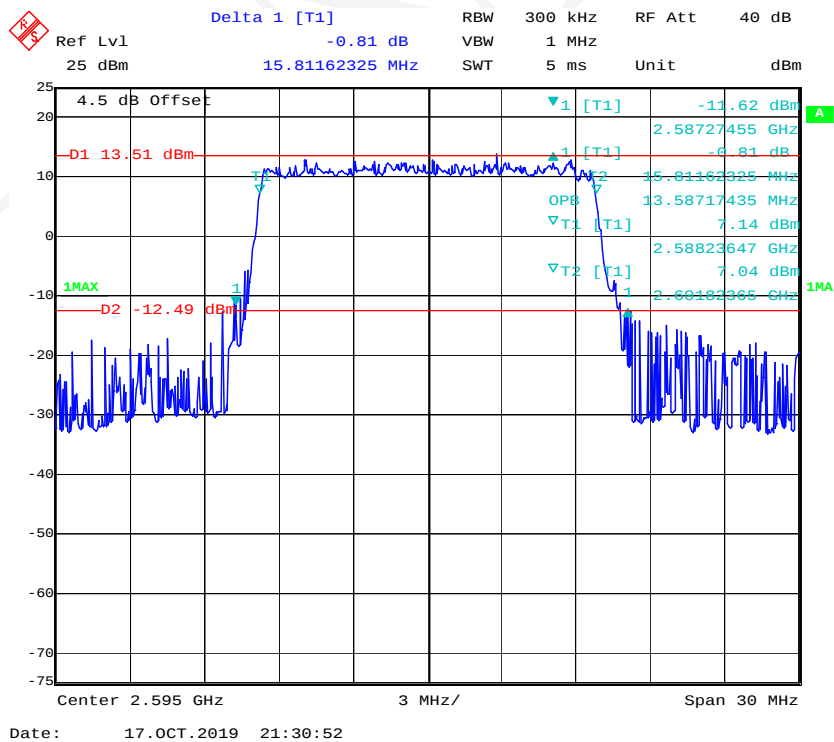
QPSK_5 MHz



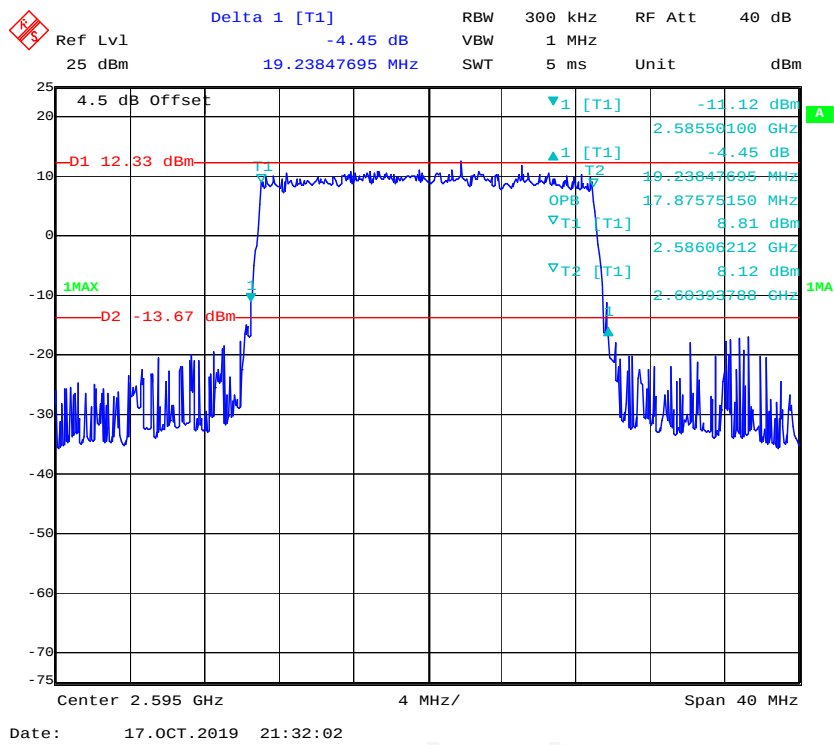
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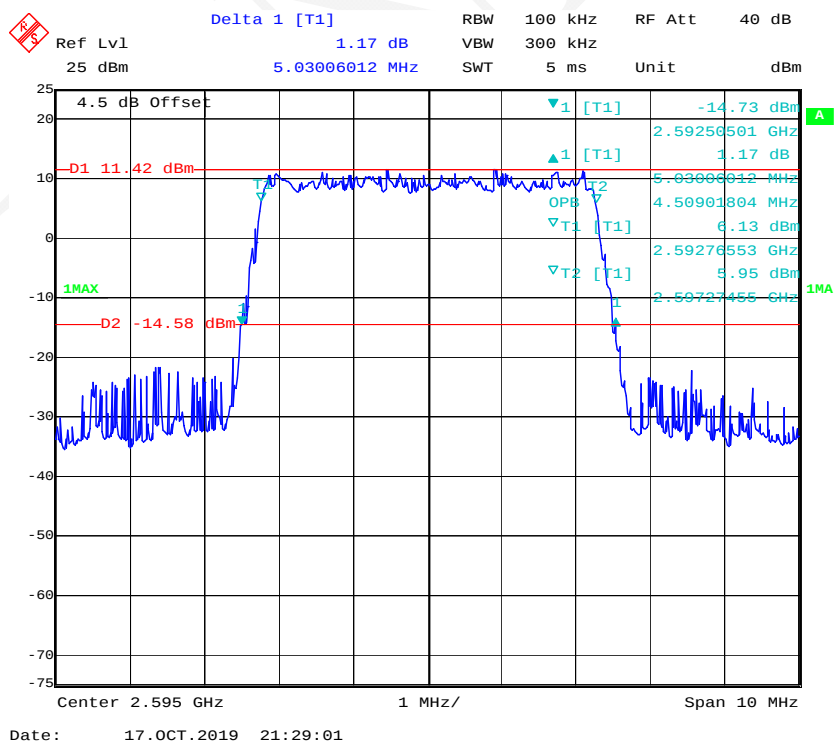
QPSK_15 MHz



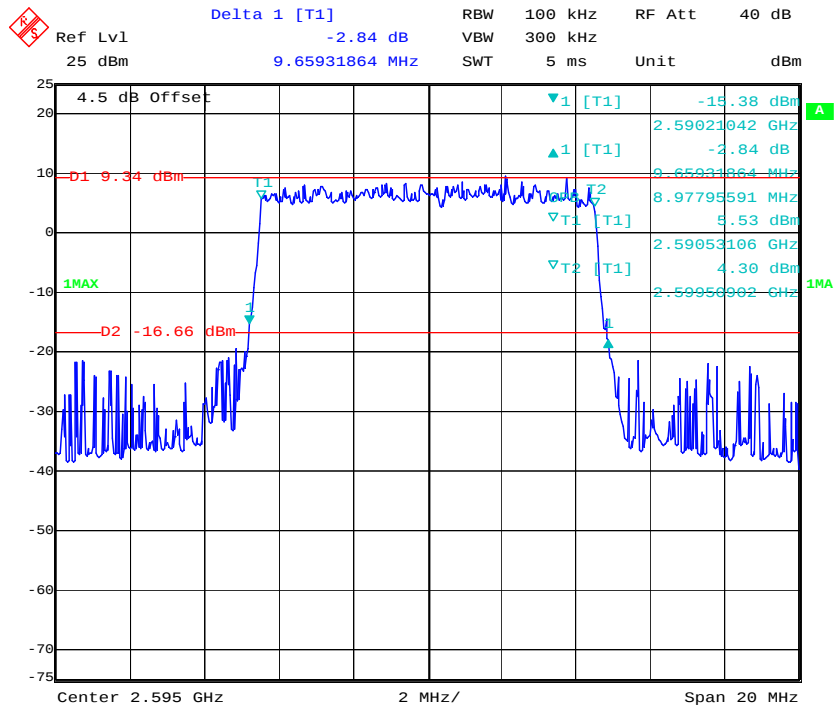
QPSK_20 MHz



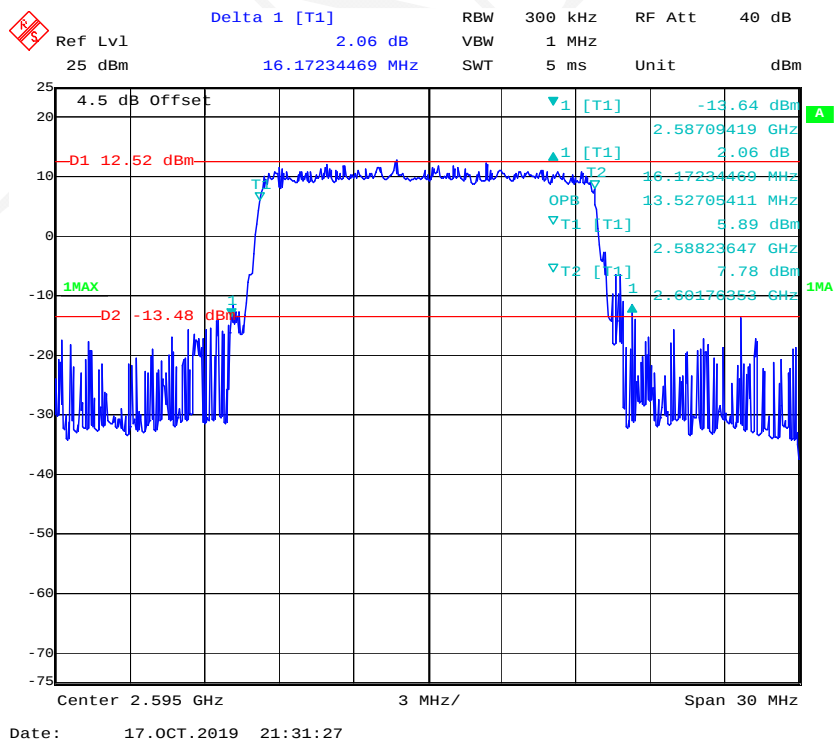
16QAM_5 MHz



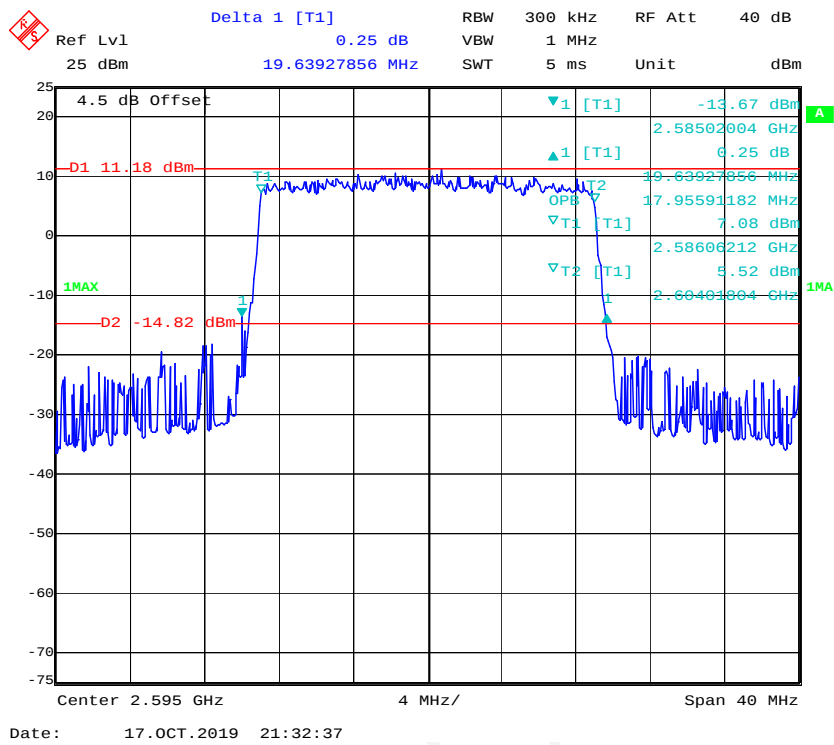
16QAM_10 MHz



16QAM_15 MHz

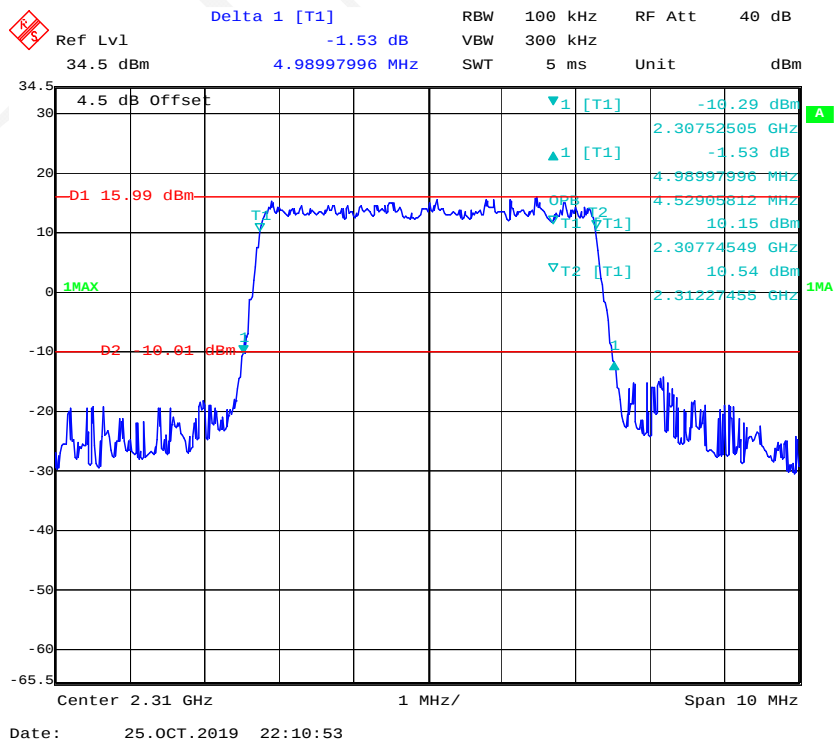


16QAM_20 MHz

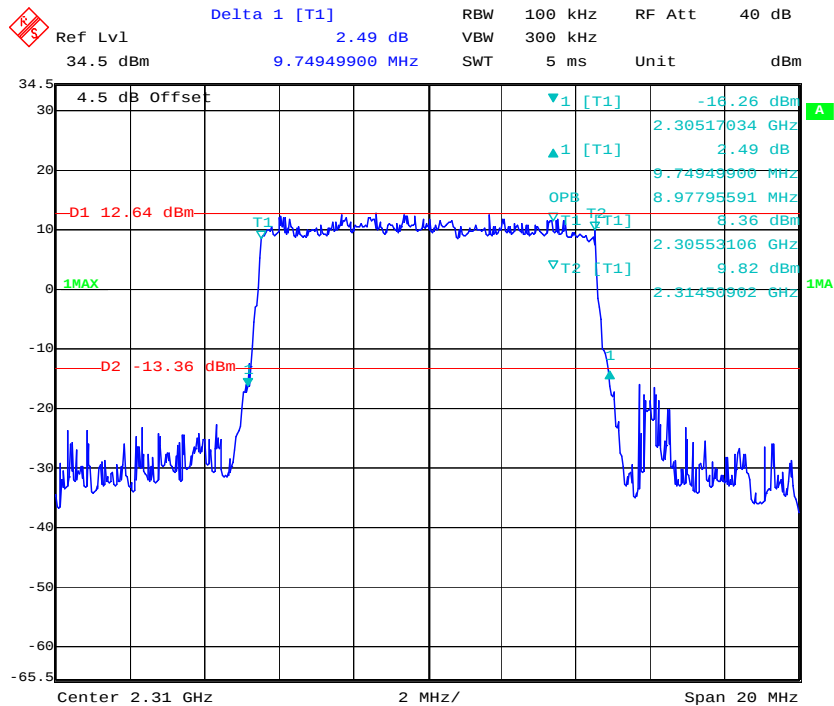


LTE Band 40:
Lower:

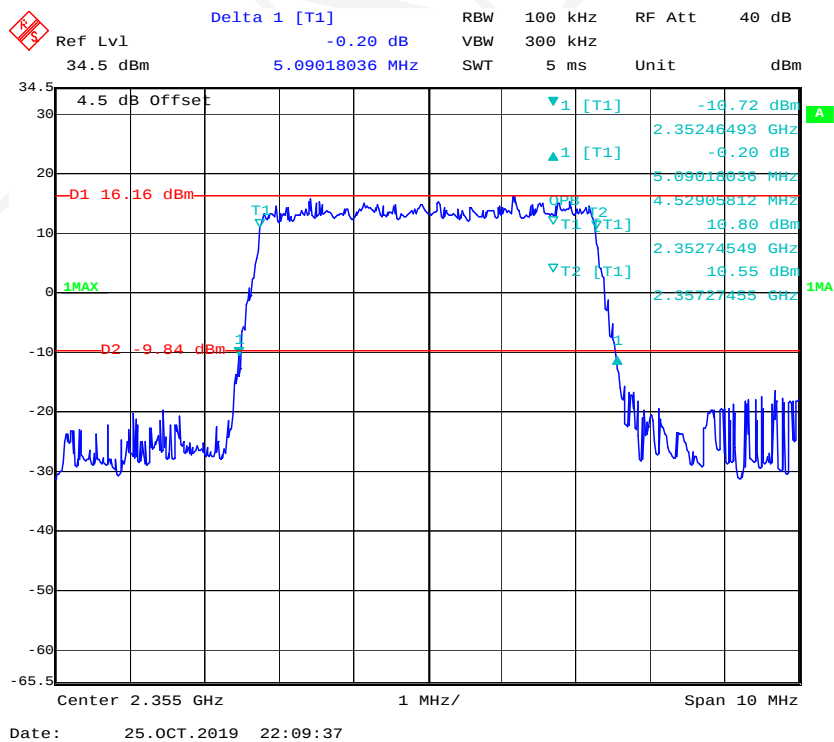
QPSK_5 MHz



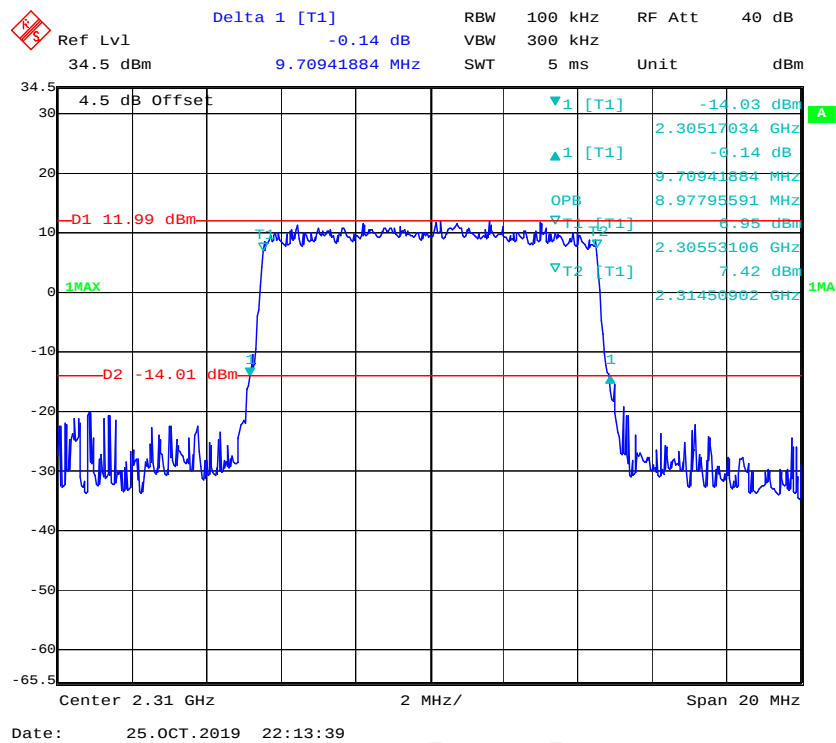
QPSK_10 MHz



16QAM_5 MHz

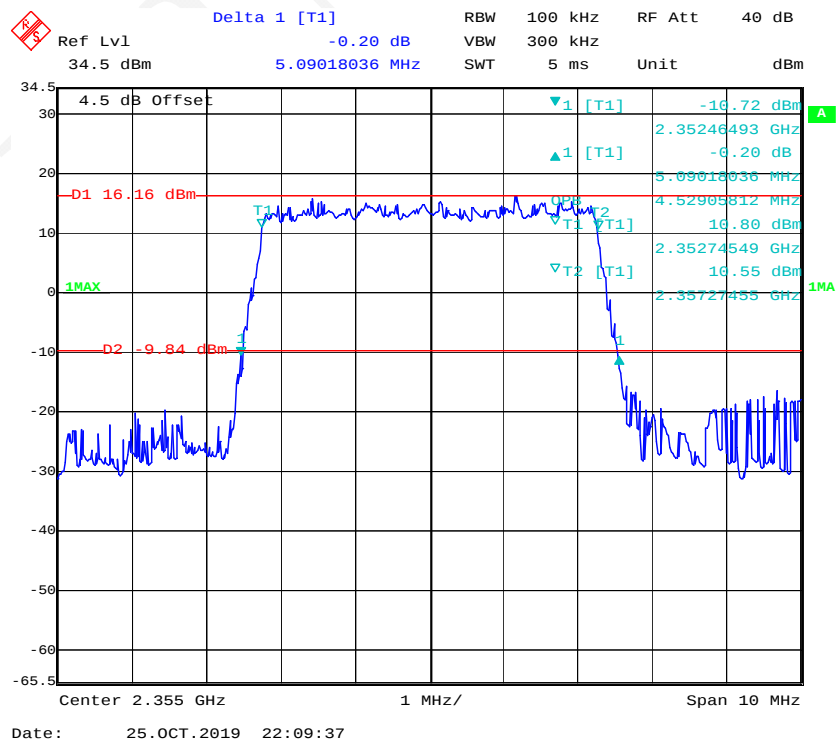


16QAM_10 MHz

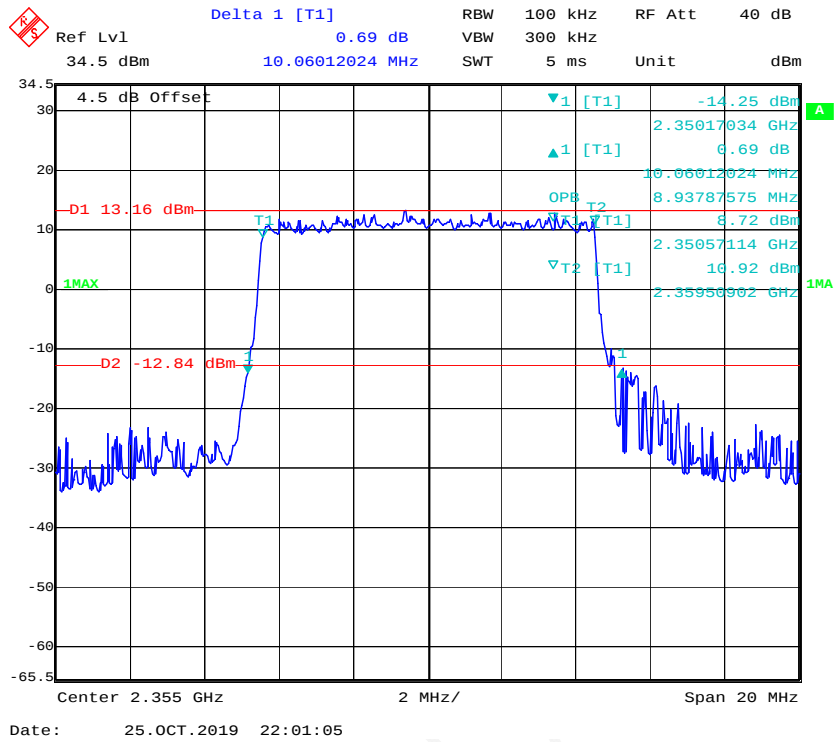


Upper:

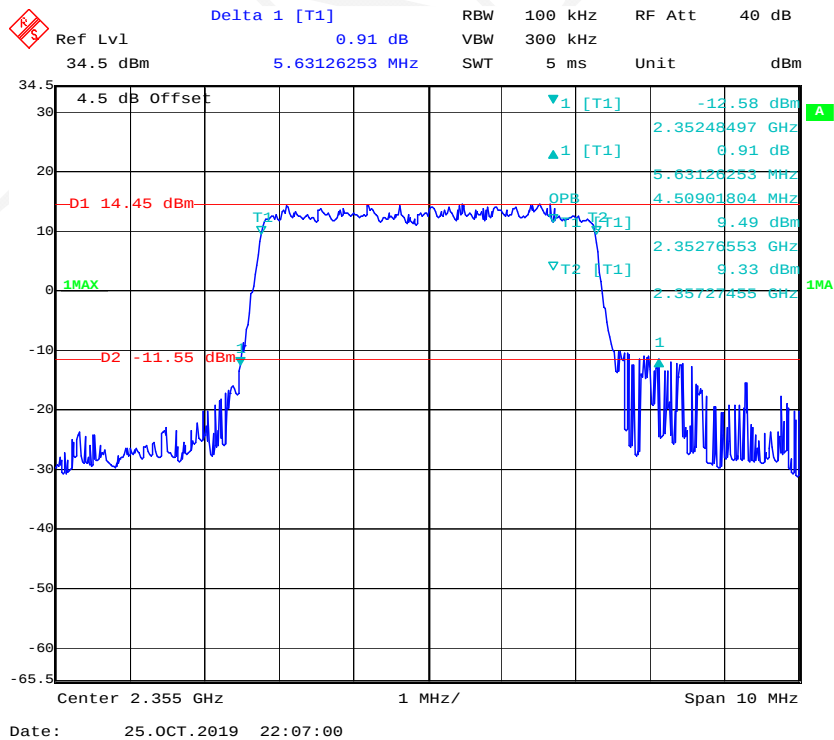
QPSK_5 MHz



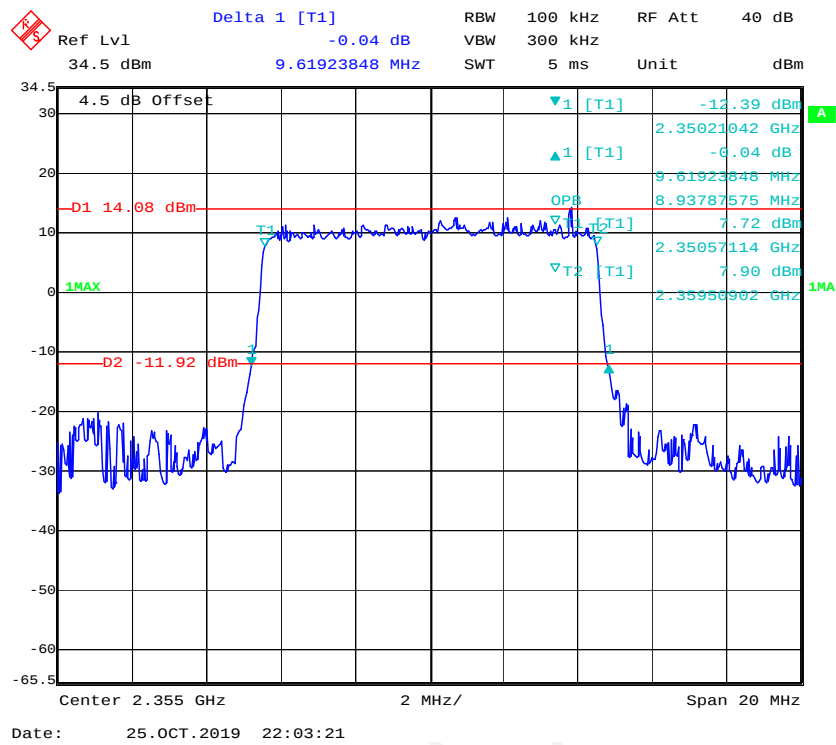
QPSK_10 MHz



16QAM_5 MHz

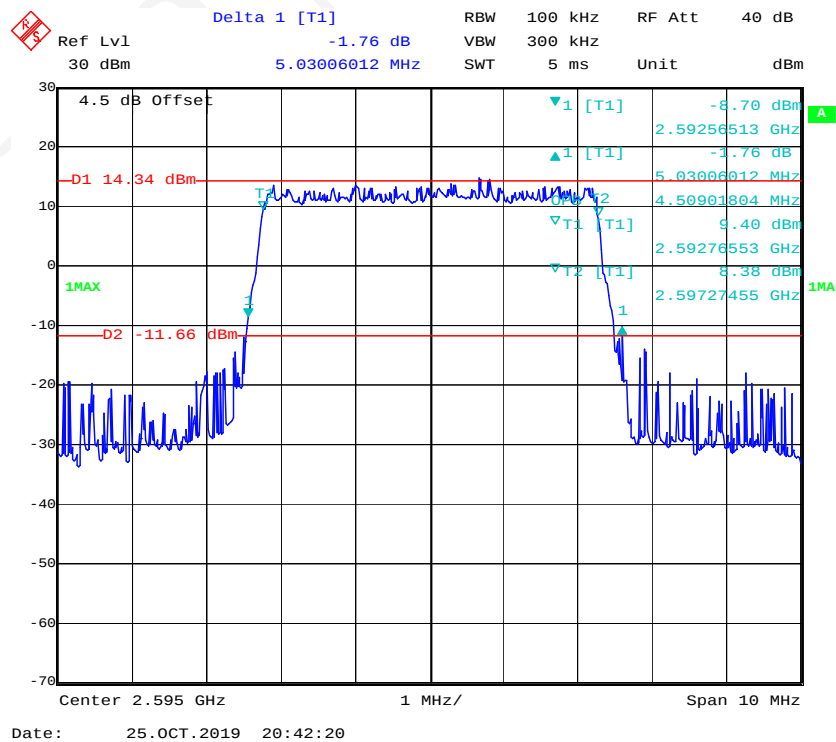


16QAM_10 MHz

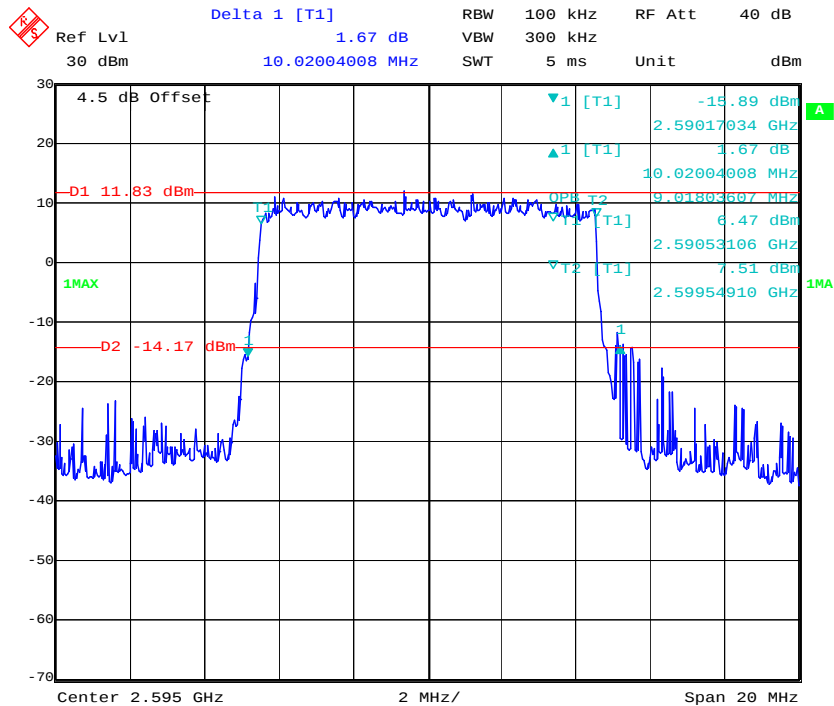


LTE Band 41:

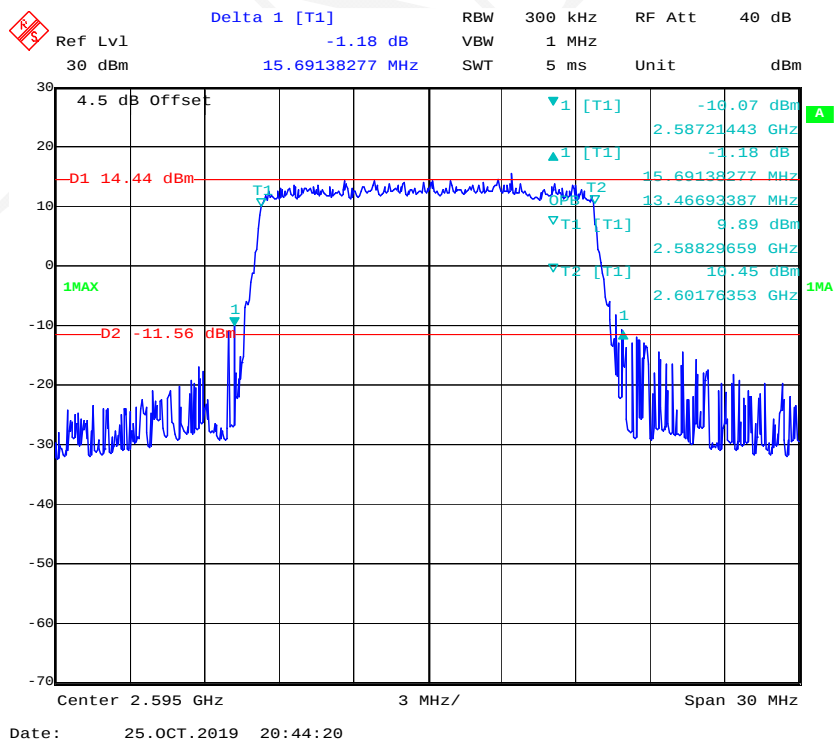
QPSK_5 MHz



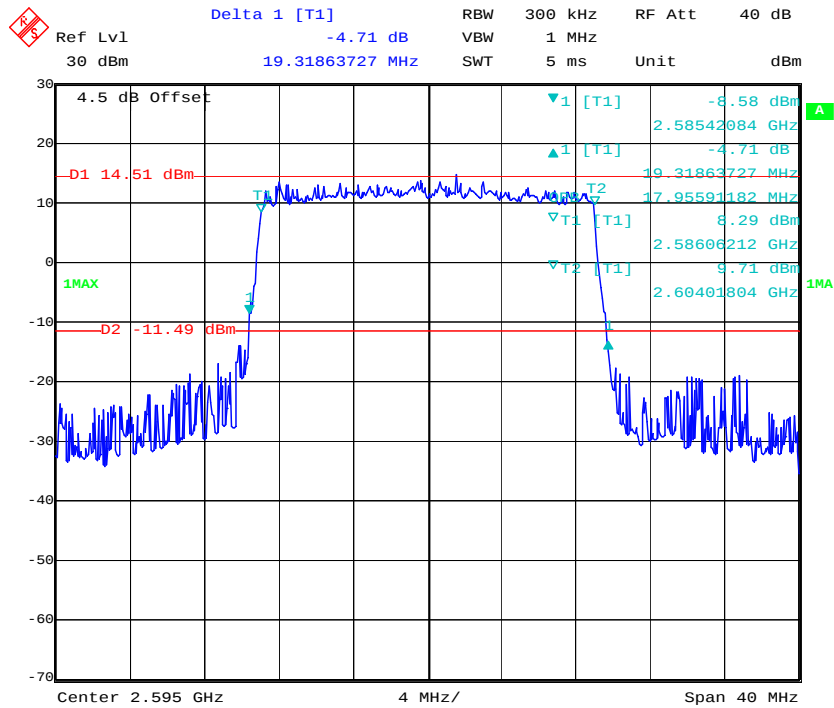
QPSK_10 MHz



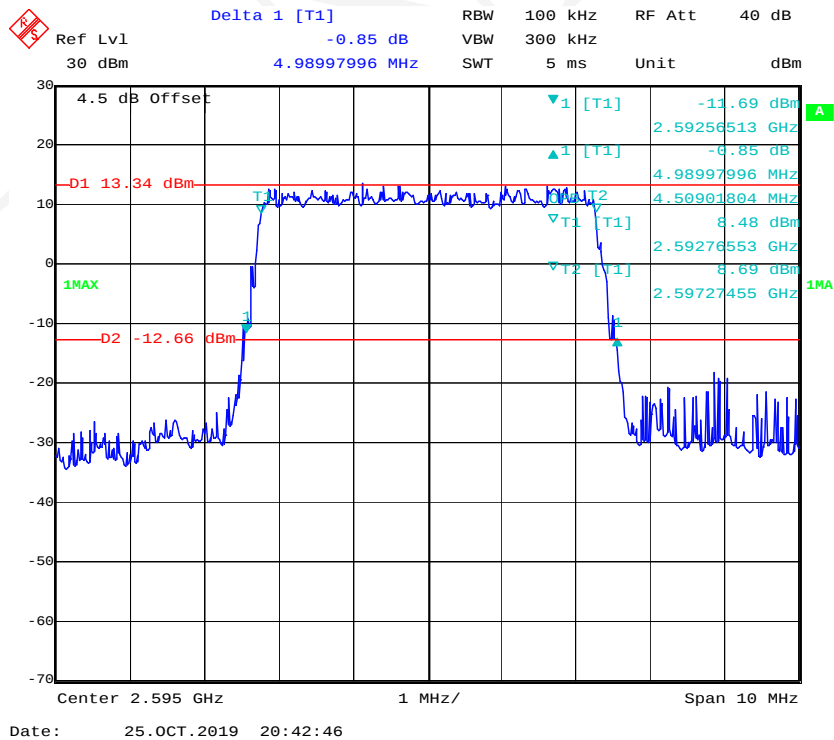
QPSK_15 MHz



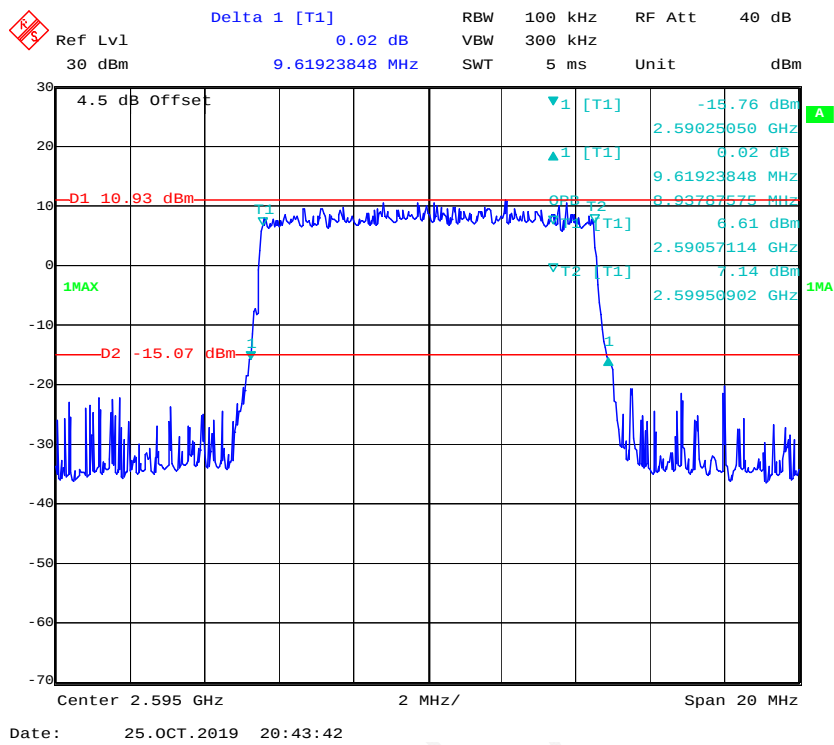
QPSK_20 MHz



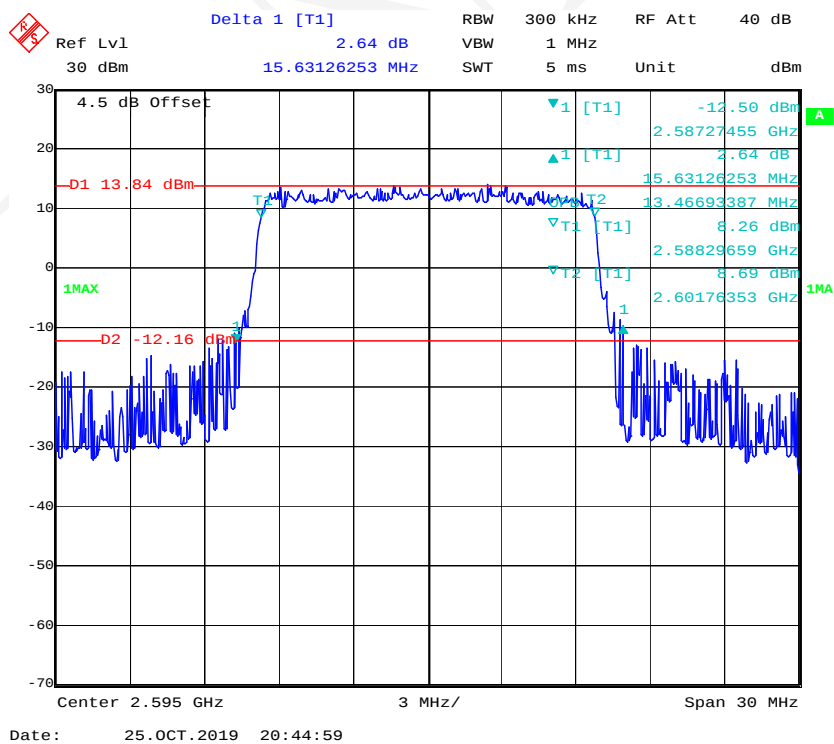
16QAM_5 MHz



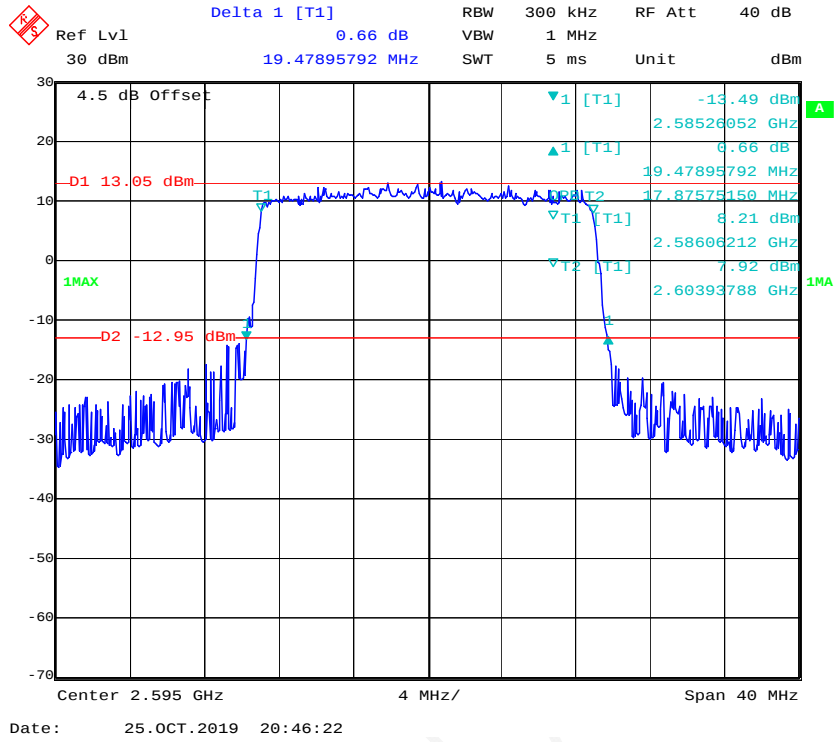
16QAM_10 MHz



16QAM_15 MHz



16QAM_20 MHz



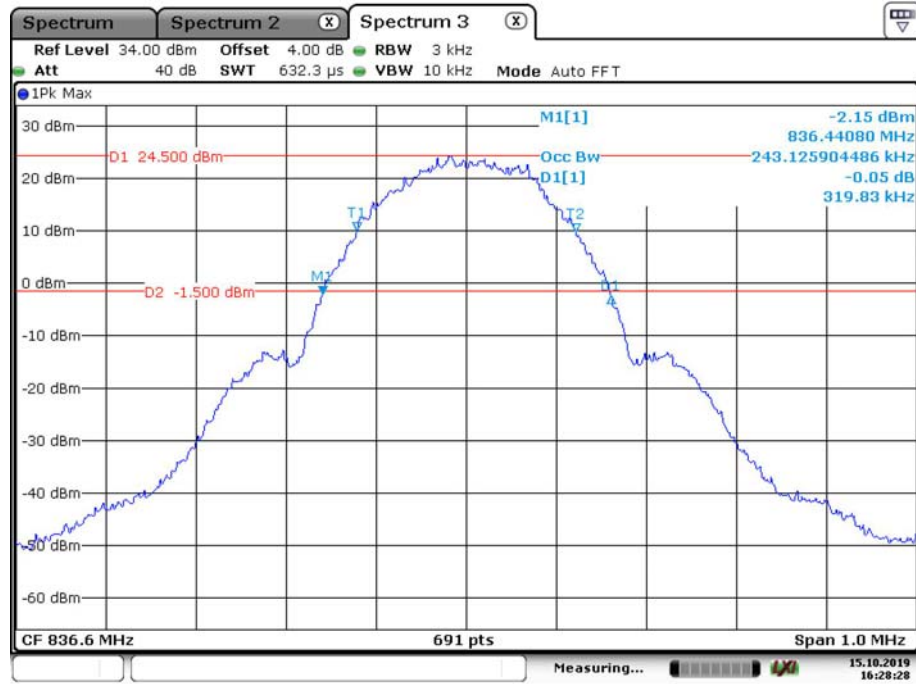
Module 1:

Band	Test Channel	Mode	99% Occupied Bandwidth (MHz)	26 dB Occupied Bandwidth (MHz)
Cellular	Middle	GPRS	0.243	0.320
		EGPRS	0.249	0.320
PCS		GPRS	0.243	0.317
		EGPRS	0.253	0.323
WCDMA Band 2		Rel 99	4.124	4.747
		HSDPA	4.139	4.747
		HSUPA	4.139	4.732

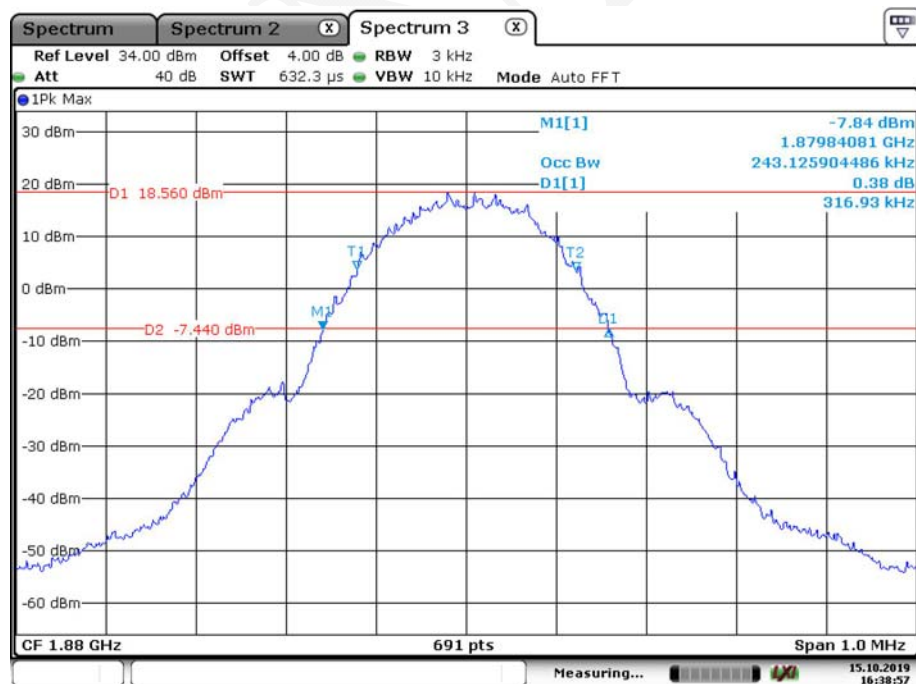
Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 2	1.4 MHz	QPSK	1.100	1.281
		16QAM	1.100	1.299
	3 MHz	QPSK	2.693	2.958
		16QAM	2.693	2.958
	5 MHz	QPSK	4.529	5.050
		16QAM	4.529	4.970
	10 MHz	QPSK	8.978	9.739
		16QAM	8.938	9.659
	15 MHz	QPSK	13.527	14.790
		16QAM	13.467	14.790
LTE Band 4	1.4 MHz	QPSK	1.100	1.311
		16QAM	1.100	1.305
	3 MHz	QPSK	2.693	2.958
		16QAM	2.693	2.934
	5 MHz	QPSK	4.529	5.050
		16QAM	4.509	4.990
	10 MHz	QPSK	9.018	9.699
		16QAM	8.938	9.699
	15 MHz	QPSK	13.467	14.790
		16QAM	13.467	14.850
LTE Band 5	1.4 MHz	QPSK	1.094	1.293
		16QAM	1.106	1.311
	3 MHz	QPSK	2.693	2.934
		16QAM	2.693	2.946
	5 MHz	QPSK	4.549	4.990
		16QAM	4.529	4.990
	10 MHz	QPSK	8.978	9.699
		16QAM	8.938	9.739

Band	Bandwidth	Modulation	99% occupied bandwidth (MHz)	26 dB bandwidth (MHz)
LTE Band 7	5 MHz	QPSK	4.509	5.030
		16QAM	4.529	5.070
	10 MHz	QPSK	9.018	9.699
		16QAM	8.938	9.619
	15 MHz	QPSK	13.527	14.669
		16QAM	13.527	14.850
LTE Band 12	1.4 MHz	QPSK	1.106	1.281
		16QAM	1.094	1.311
	3 MHz	QPSK	2.681	2.922
		16QAM	2.681	2.958
	5 MHz	QPSK	4.549	5.010
		16QAM	4.549	5.010
LTE Band 17	10 MHz	QPSK	8.978	9.820
		16QAM	8.978	9.659
	5 MHz	QPSK	4.529	4.970
		16QAM	4.489	4.990
	10 MHz	QPSK	8.938	9.579
		16QAM	8.938	9.619
LTE Band 18	5 MHz	QPSK	4.529	4.990
		16QAM	4.529	5.090
	10 MHz	QPSK	8.938	9.659
		16QAM	8.938	9.739
	15 MHz	QPSK	13.467	14.970
		16QAM	13.467	14.850
LTE Band 38	5 MHz	QPSK	4.509	4.990
		16QAM	4.529	4.990
	10 MHz	QPSK	8.938	10.341
		16QAM	8.938	9.539
	15 MHz	QPSK	13.527	16.232
		16QAM	13.587	16.232
LTE Band 40	20 MHz	QPSK	17.876	19.319
		16QAM	17.876	19.800
	5 MHz	QPSK	4.529	5.170
		16QAM	4.529	5.070
	10 MHz	QPSK	8.938	9.860
		16QAM	8.938	9.659
LTE Band 41	5 MHz	QPSK	4.529	5.090
		16QAM	4.529	5.311
	10 MHz	QPSK	8.978	10.271
		16QAM	8.978	9.669
	15 MHz	QPSK	13.467	16.172
		16QAM	13.527	16.293
LTE Band 41	20 MHz	QPSK	17.956	19.319
		16QAM	17.956	20.040

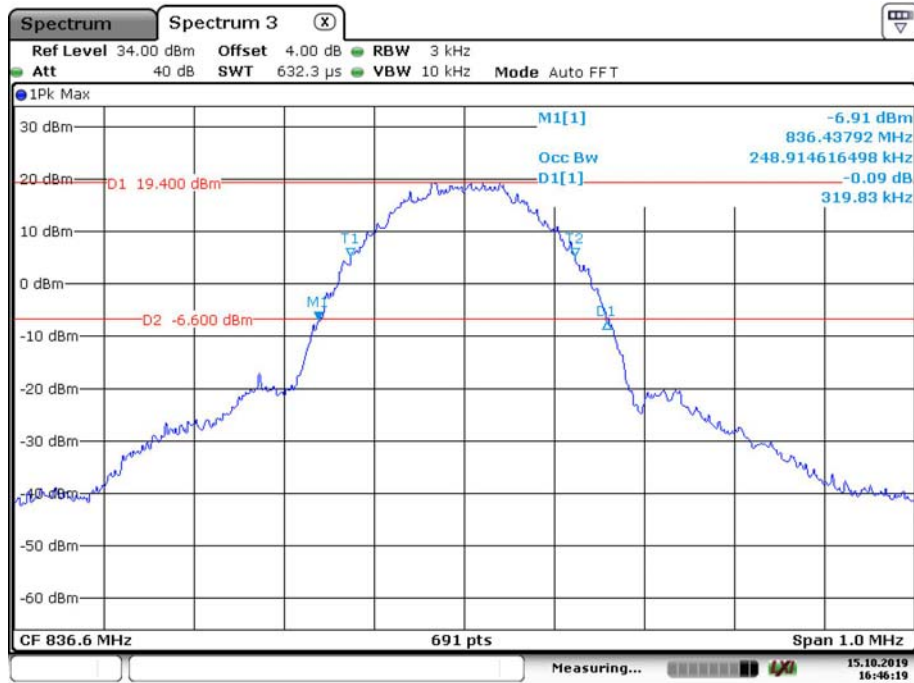
GPRS Cellular 850



GPRS PCS 1900

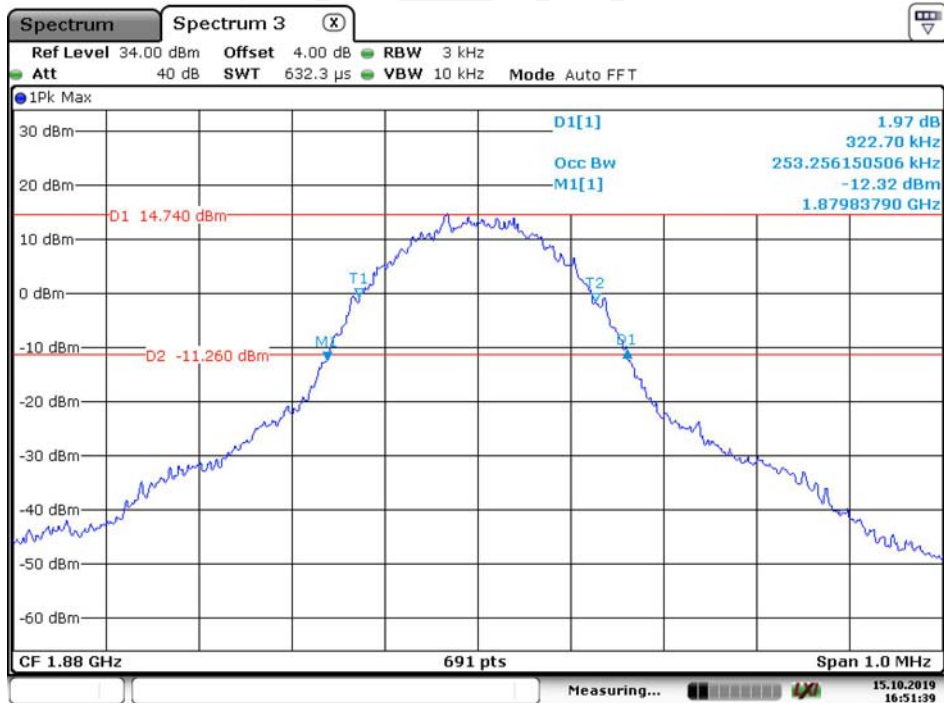


EDGE Cellular 850



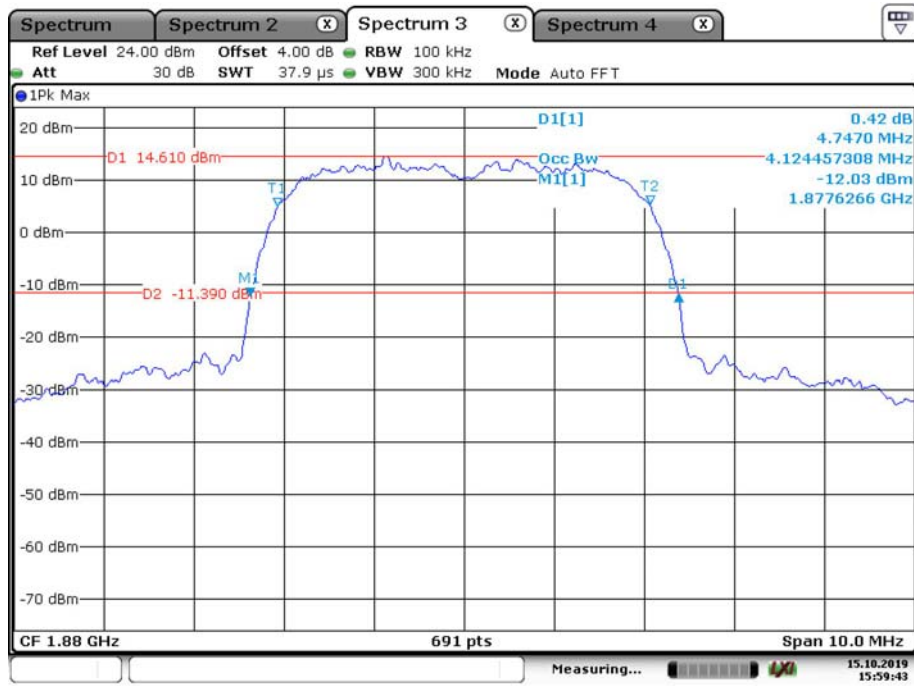
Date: 15.OCT.2019 16:46:19

EDGE PCS 1900



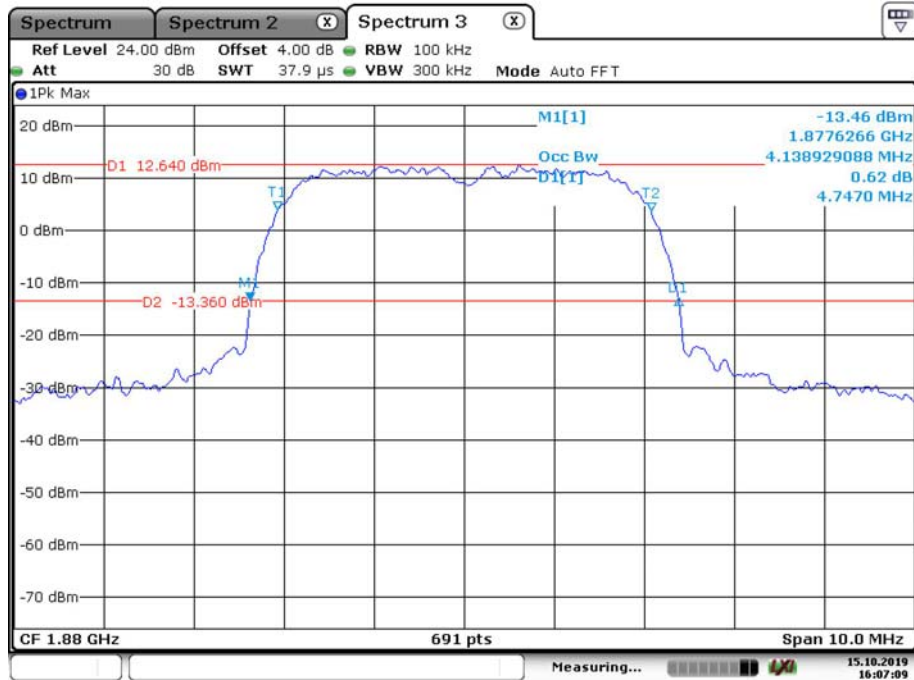
Date: 15.OCT.2019 16:51:39

WCDMA Band 2 Rel 99



Date: 15.OCT.2019 15:59:43

WCDMA Band 2 HSDPA



Date: 15.OCT.2019 16:07:09

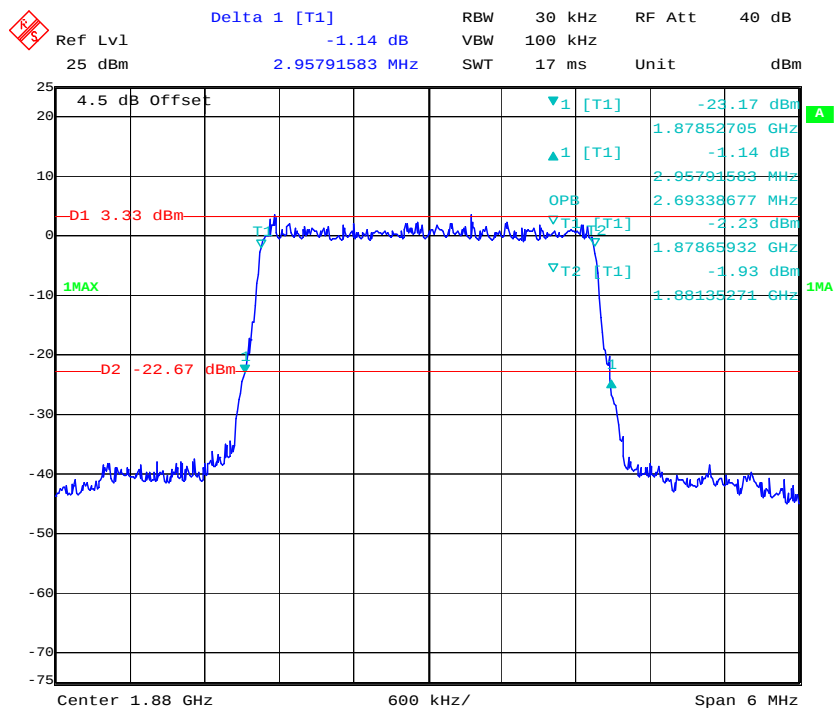
The screenshot displays a spectrum analyzer interface with the following details:

- Top Panel:**
 - Buttons: Spectrum, Spectrum 2, Spectrum 3.
 - Parameters: Ref Level 24.00 dBm, Offset 4.00 dB, RBW 100 kHz, Att 30 dB, SWT 37.9 μ s, VBW 300 kHz, Mode Auto FFT.
- Main Plot:**
 - Y-axis: Power in dBm, ranging from -70 to 20.
 - X-axis: Frequency in GHz, ranging from 1.87 to 1.89.
 - Signal: A blue trace showing a signal with a peak around 1.889 GHz.
 - Measurements:
 - D1[1]: 0.62 dB, 4.7320 MHz, 4.138929088 MHz, -14.57 dBm, 1.8776266 GHz.
 - Occ Bw: 0.62 dB, 4.7320 MHz, 4.138929088 MHz, -14.57 dBm, 1.8776266 GHz.
 - D1: 12.110 dBm.
 - D2: -13.890 dBm.
 - M1: -13.890 dBm.
 - T1: -13.890 dBm.
 - T2: -13.890 dBm.
- Bottom Panel:**
 - CF 1.88 GHz, 691 pts, Span 10.0 MHz.
 - Measuring... (Progress bar and status icons).
 - Date: 15.OCT.2019 16:14:15.

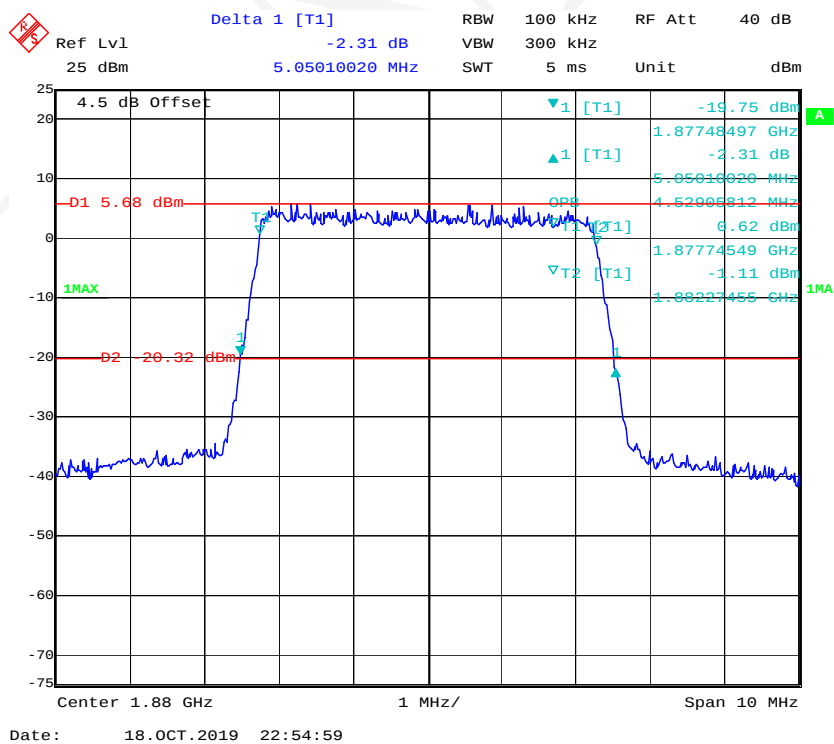
QPSK_1.4 MHz



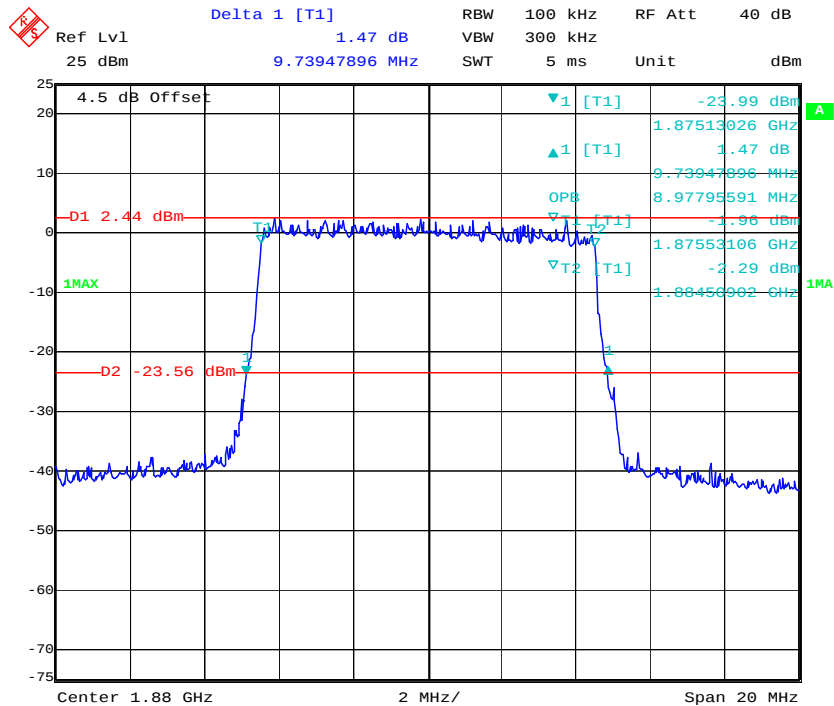
QPSK_3 MHz



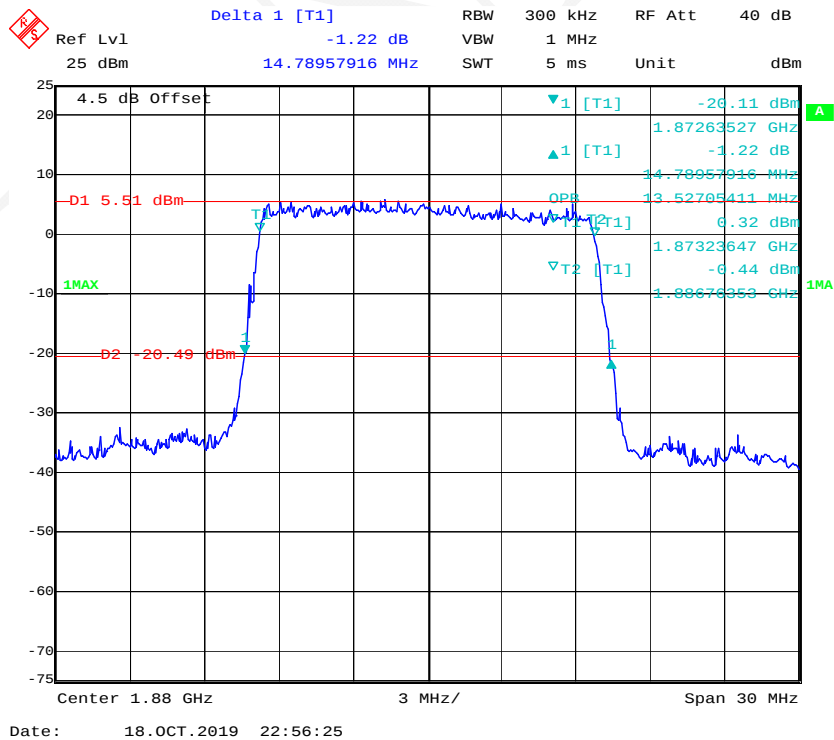
QPSK_5 MHz



QPSK_10 MHz



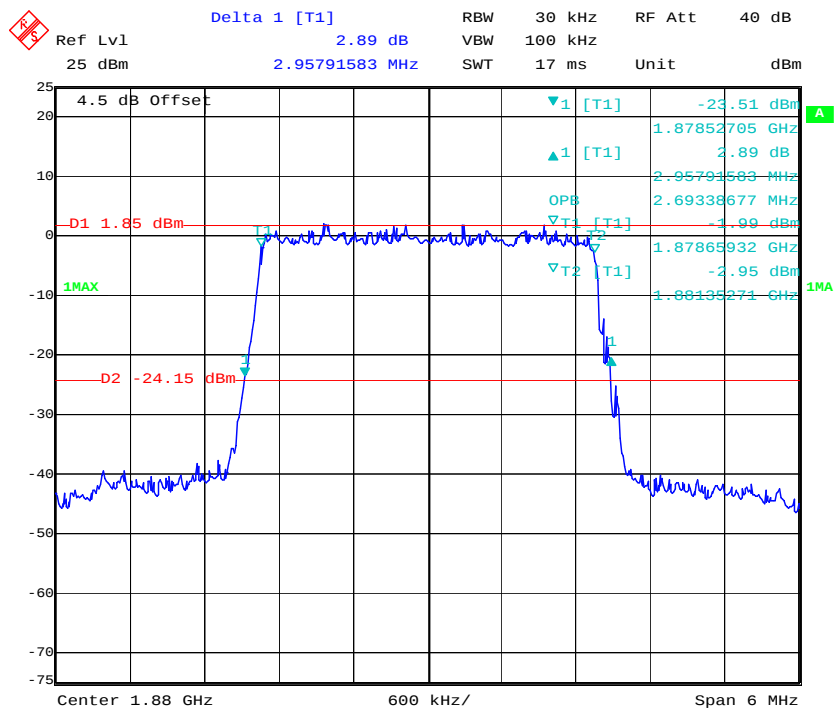
QPSK_15 MHz



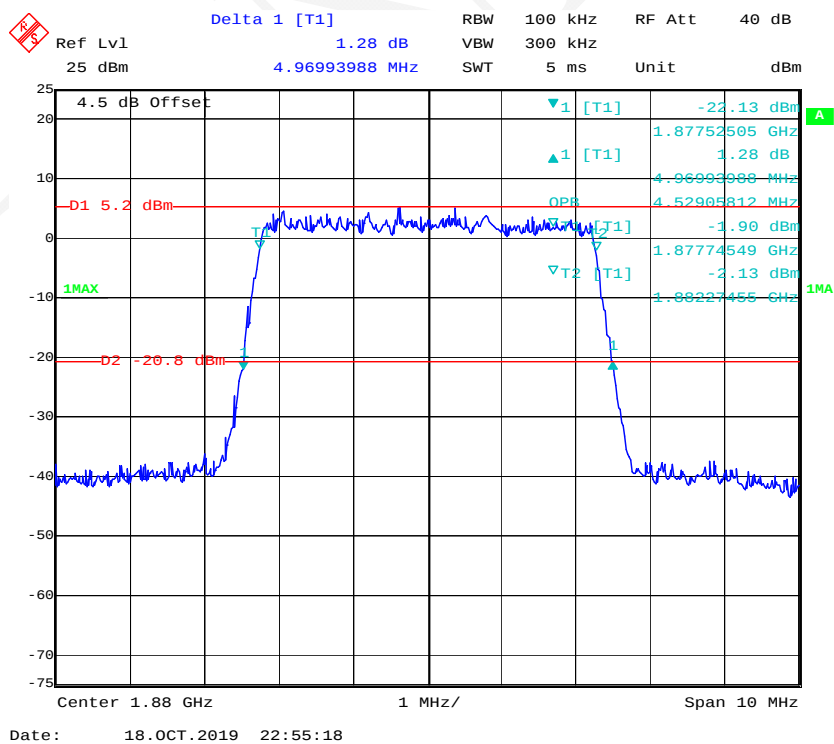
Date: 18.OCT.2019 22:57:11

Date: 18.OCT.2019 22:53:45

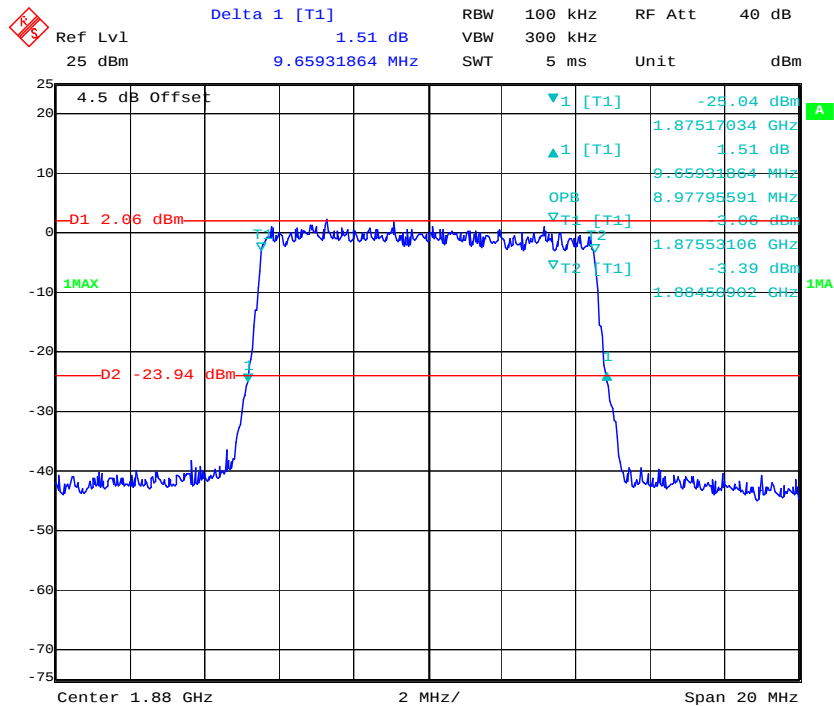
16QAM_3 MHz



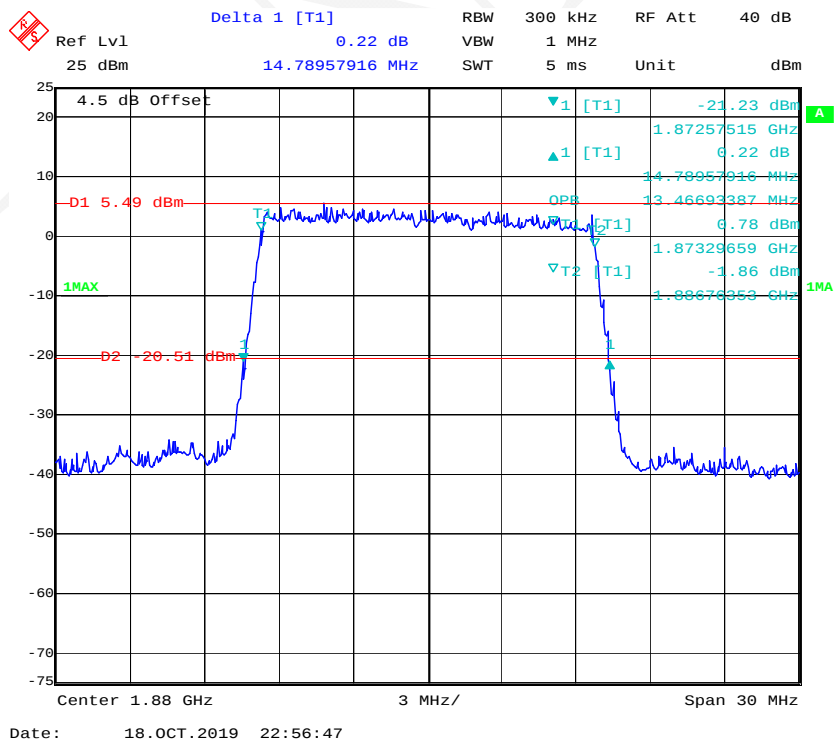
16QAM_5 MHz



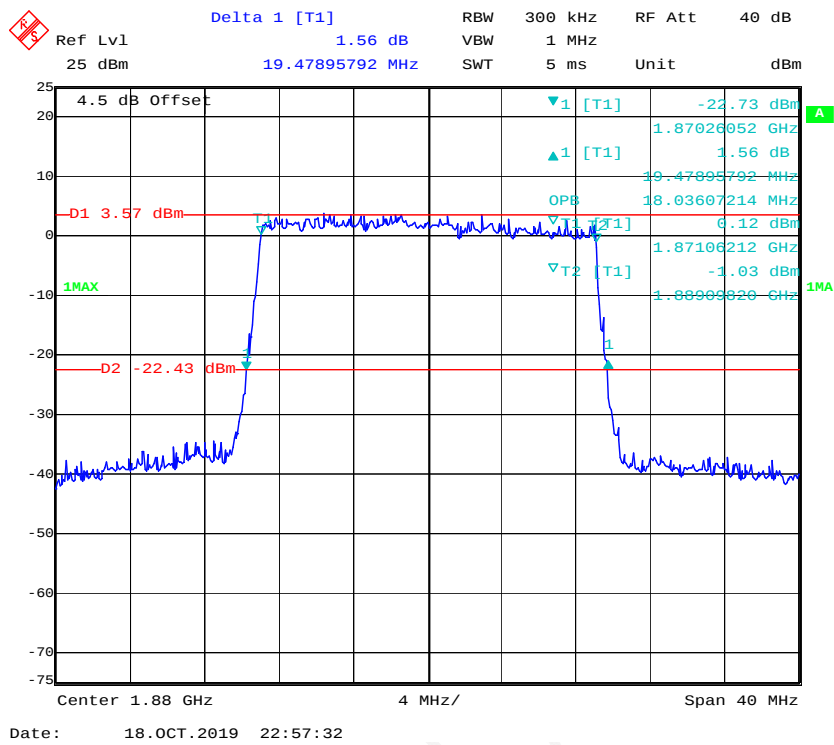
16QAM_10 MHz



16QAM_15 MHz

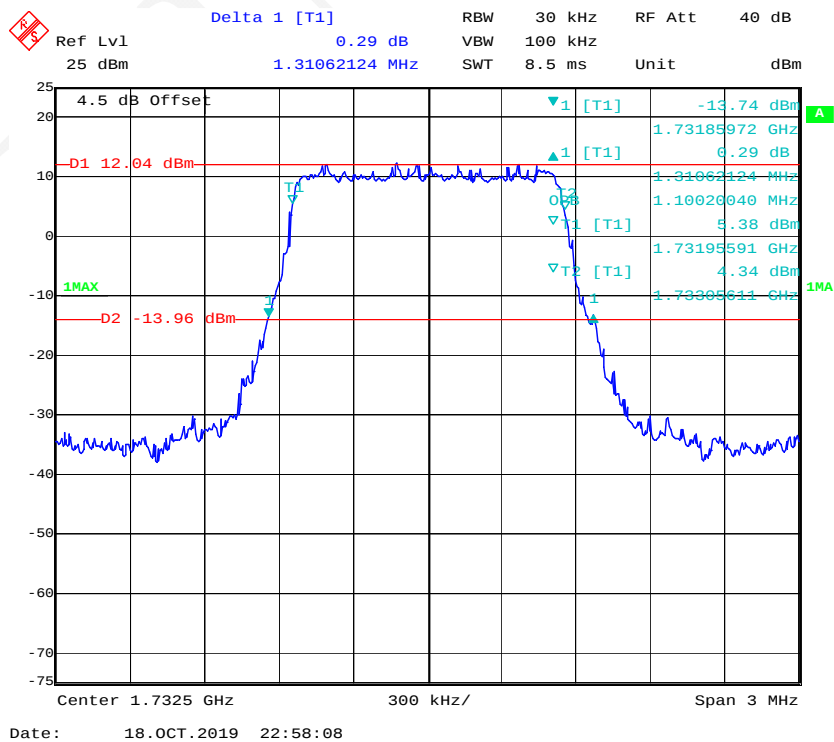


16QAM_20 MHz

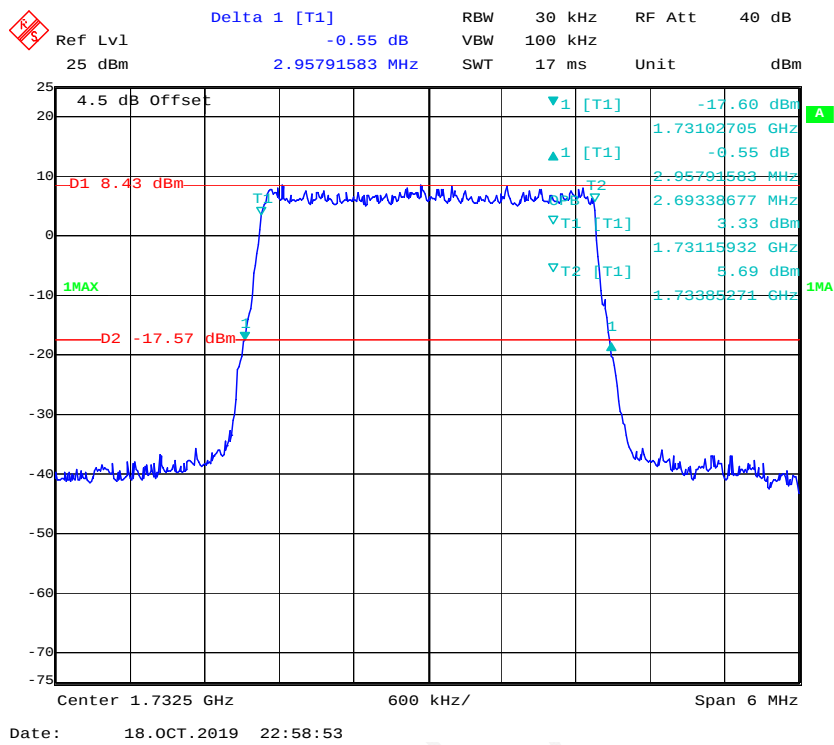


LTE Band 4

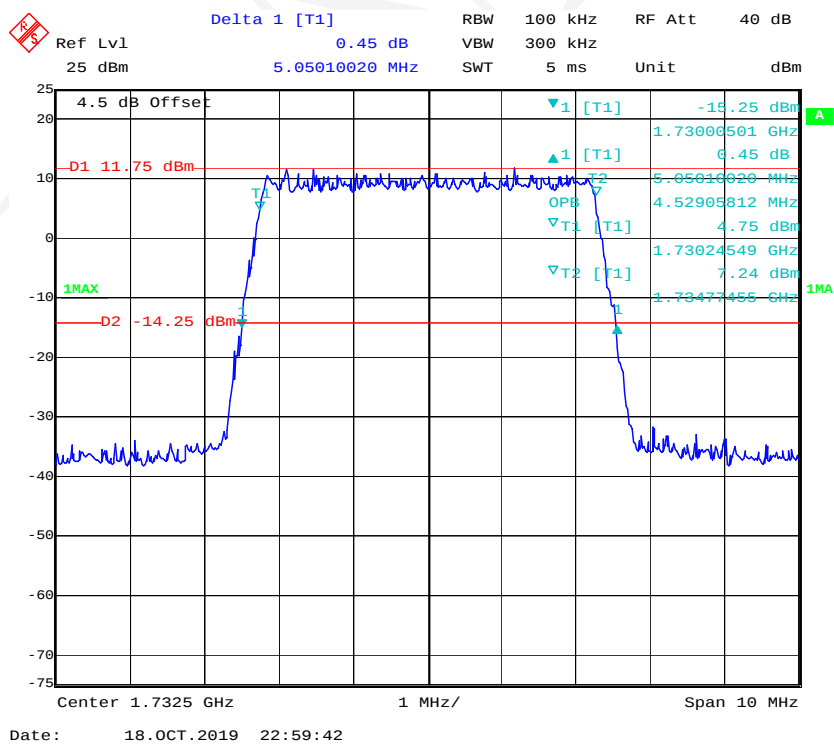
QPSK_1.4 MHz



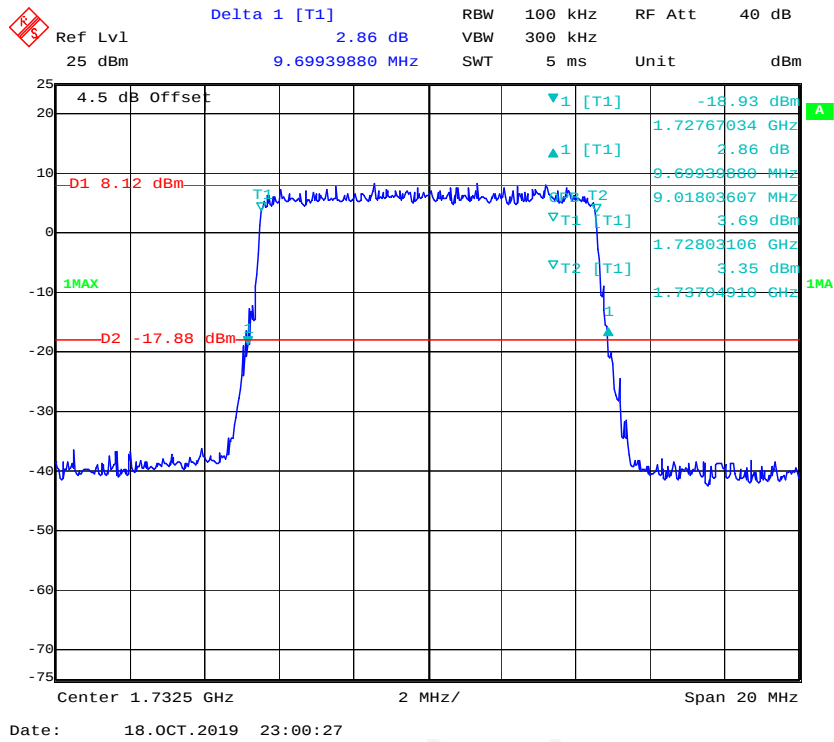
QPSK_3 MHz



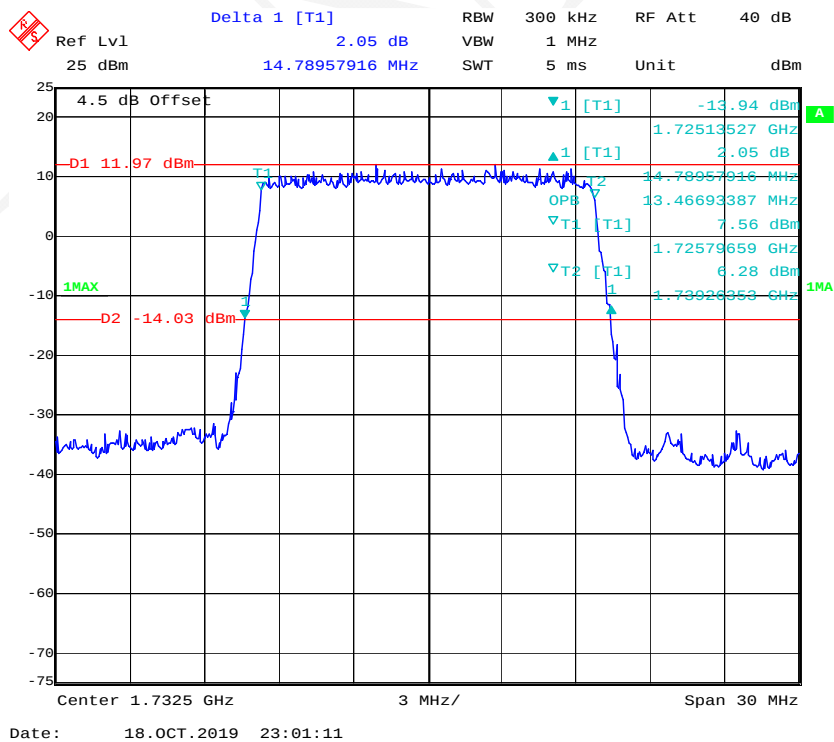
QPSK_5 MHz



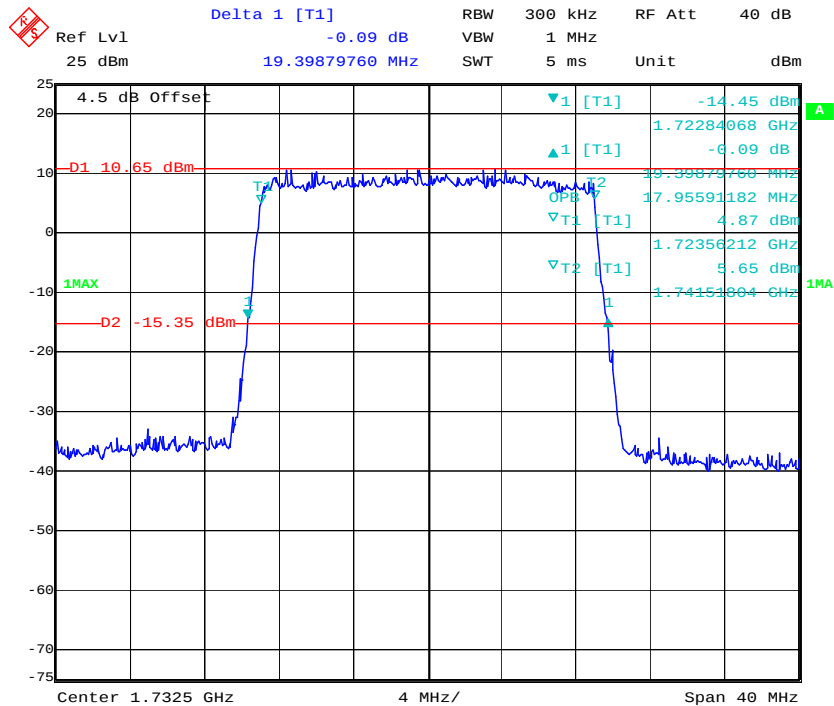
QPSK_10 MHz



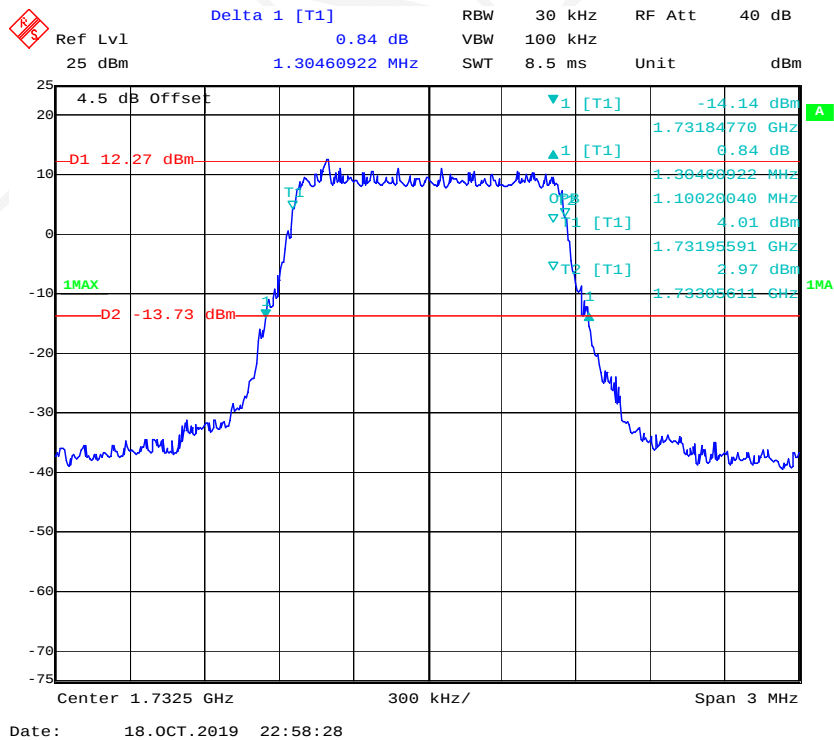
QPSK_15 MHz



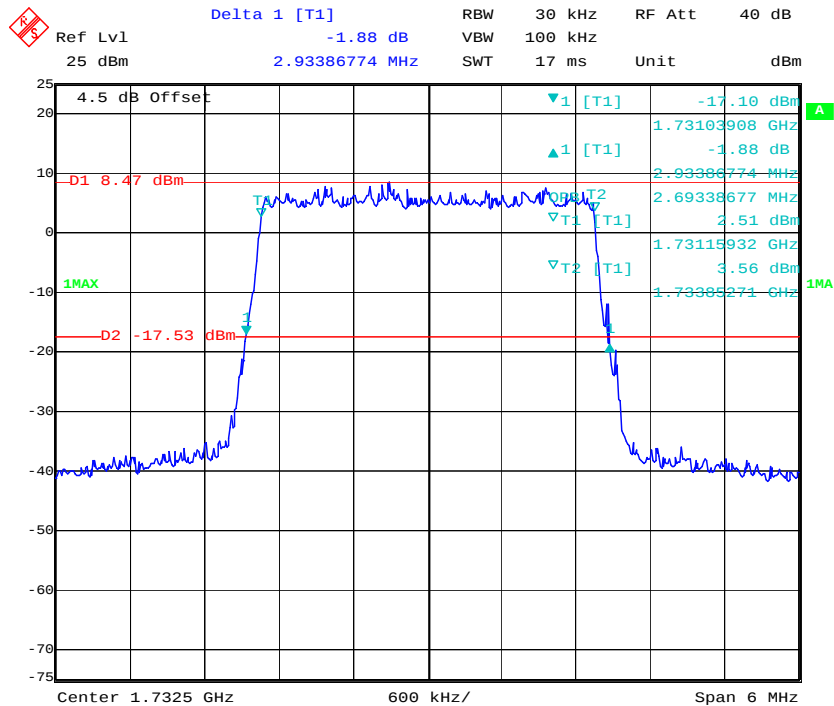
QPSK_20 MHz



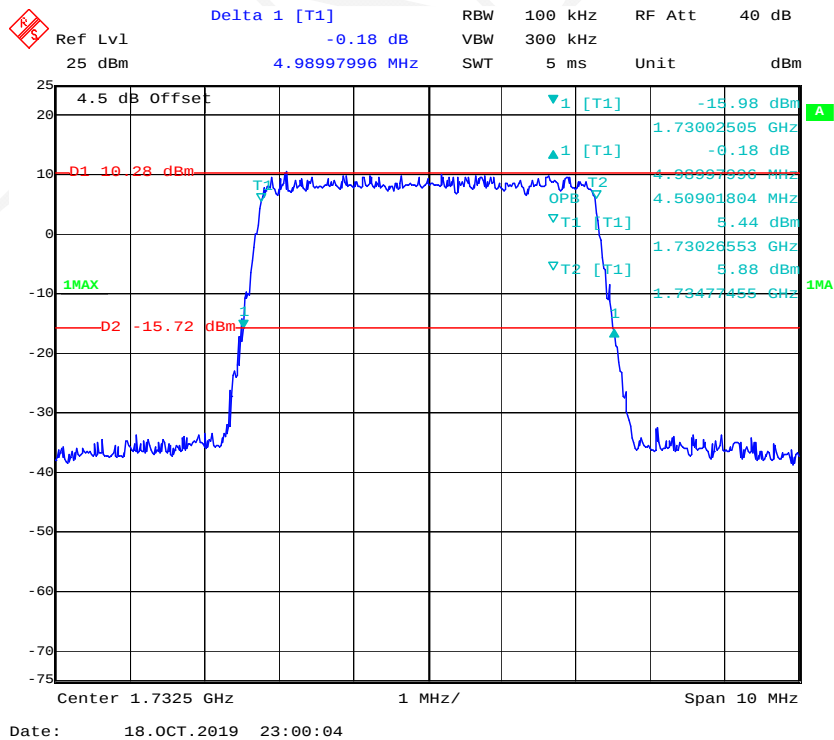
16QAM_1.4 MHz



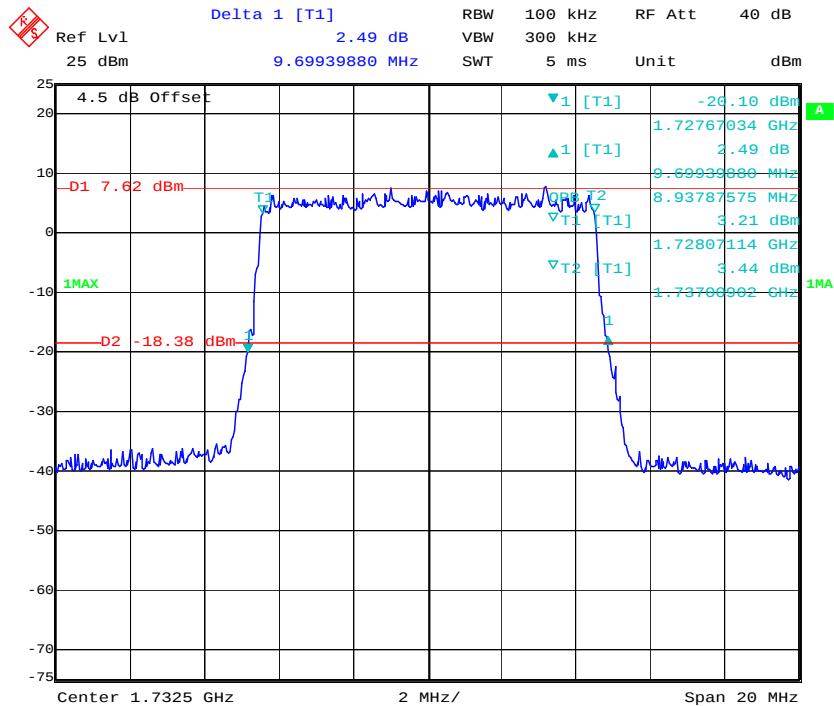
16QAM_3 MHz



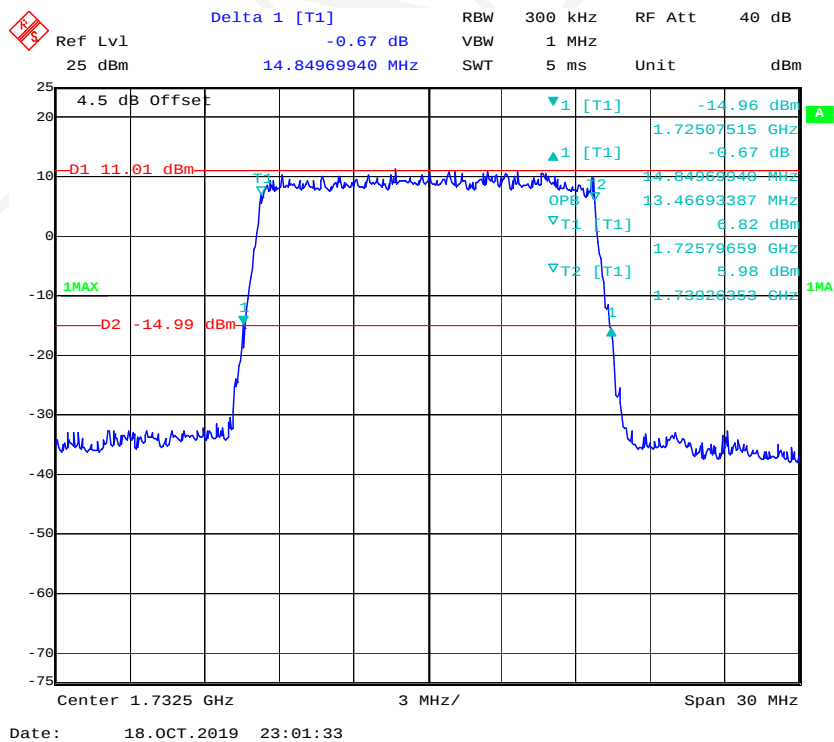
16QAM_5 MHz



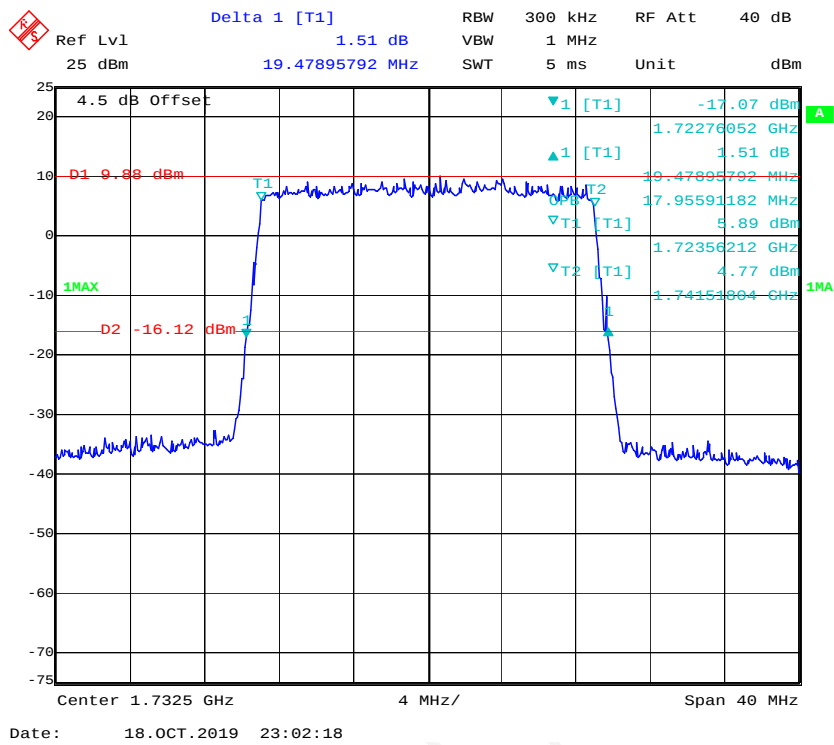
16QAM_10 MHz



16QAM_15 MHz

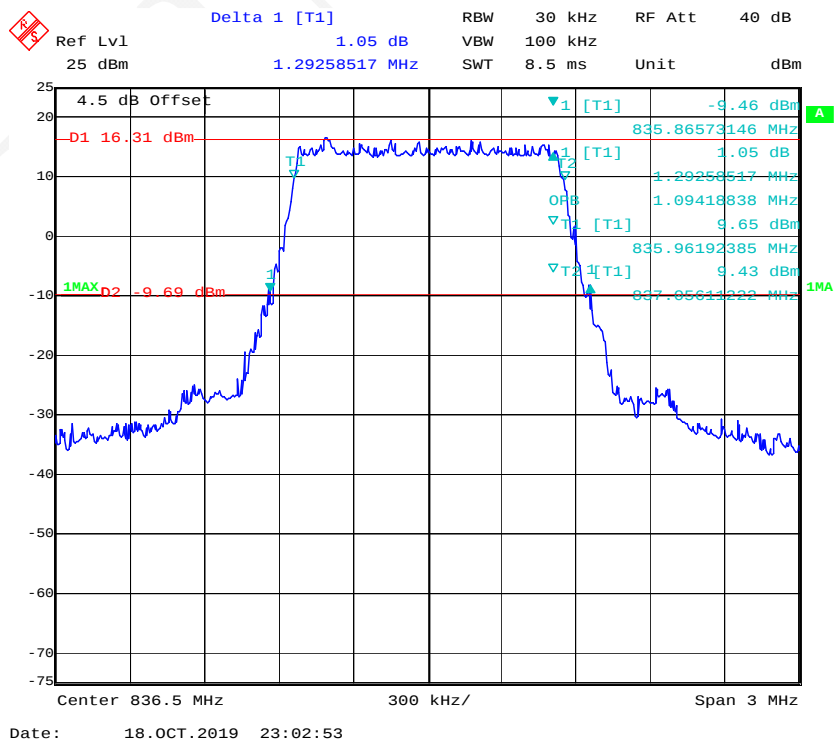


16QAM_20 MHz

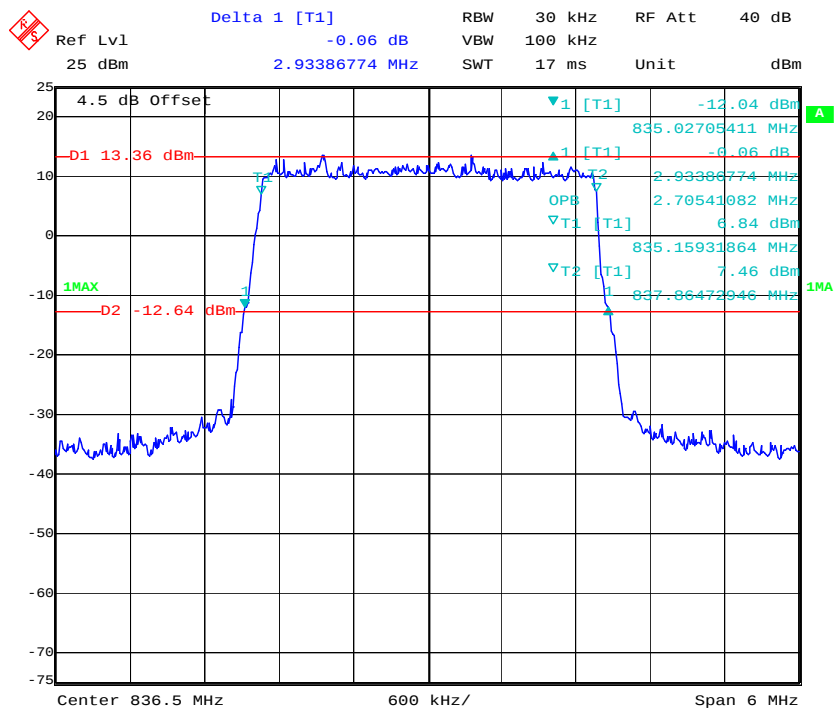


LTE Band 5:

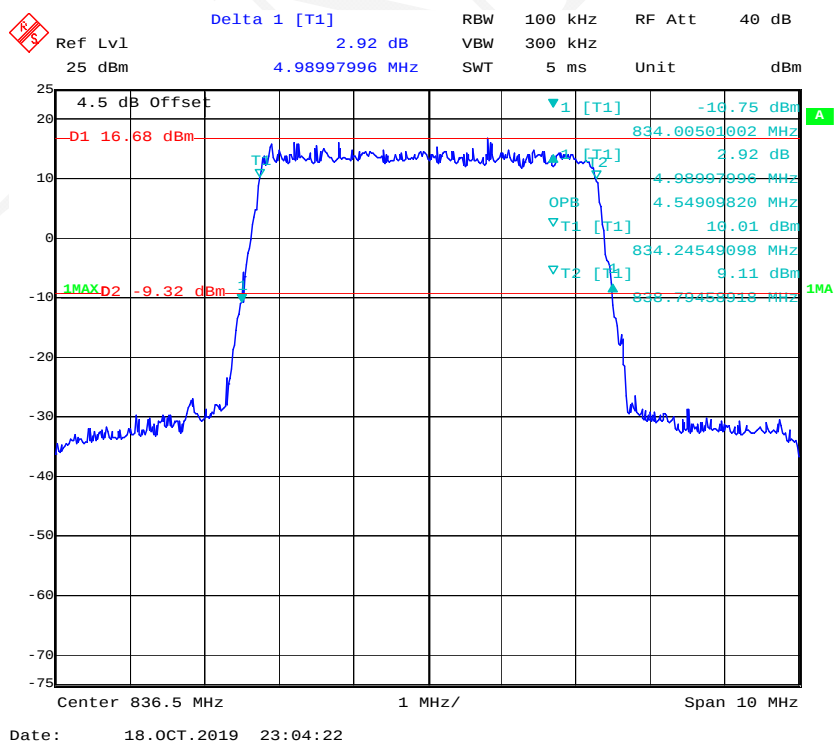
QPSK_1.4 MHz



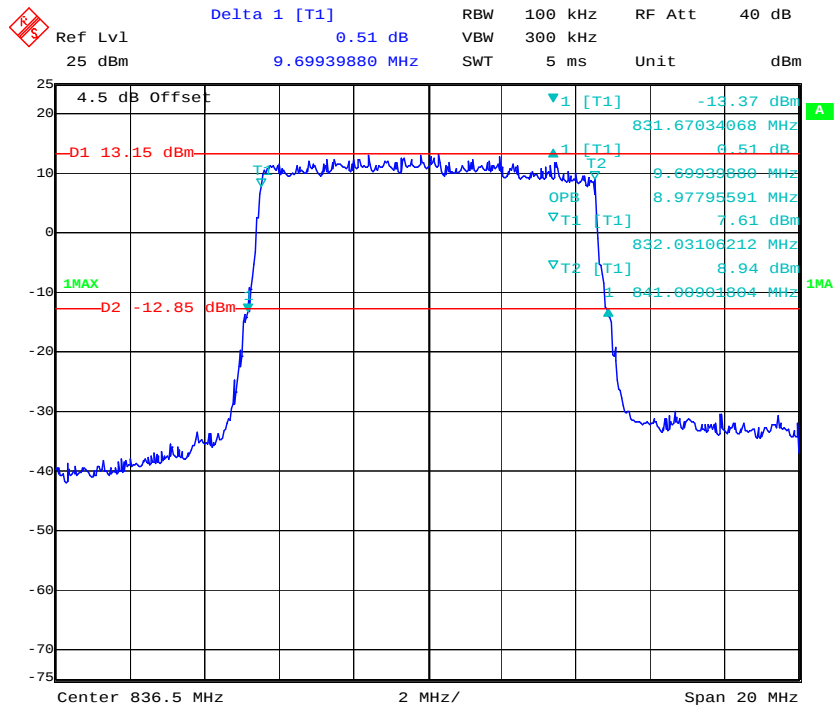
QPSK_3 MHz



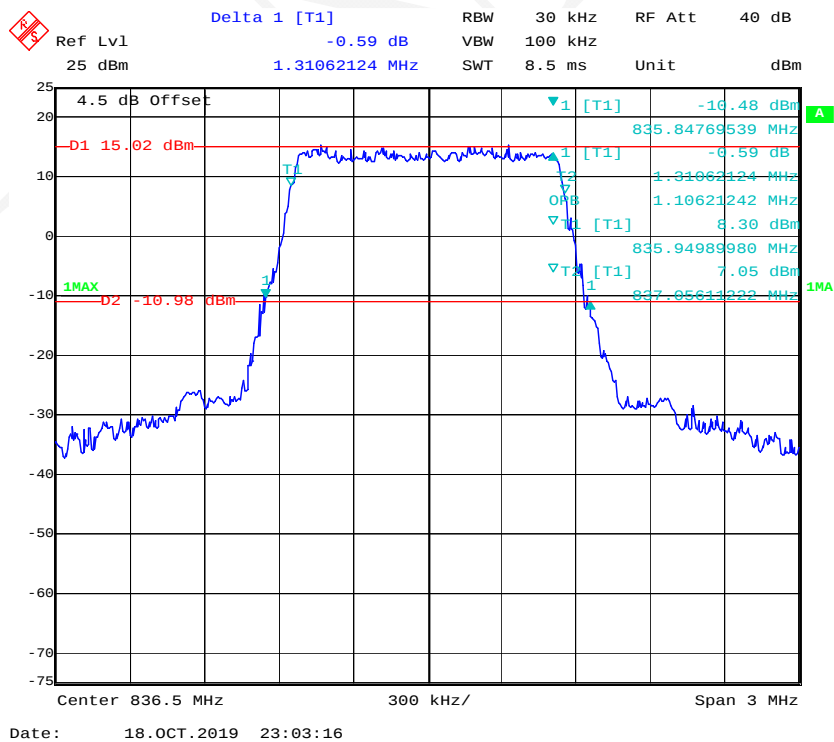
QPSK_5 MHz



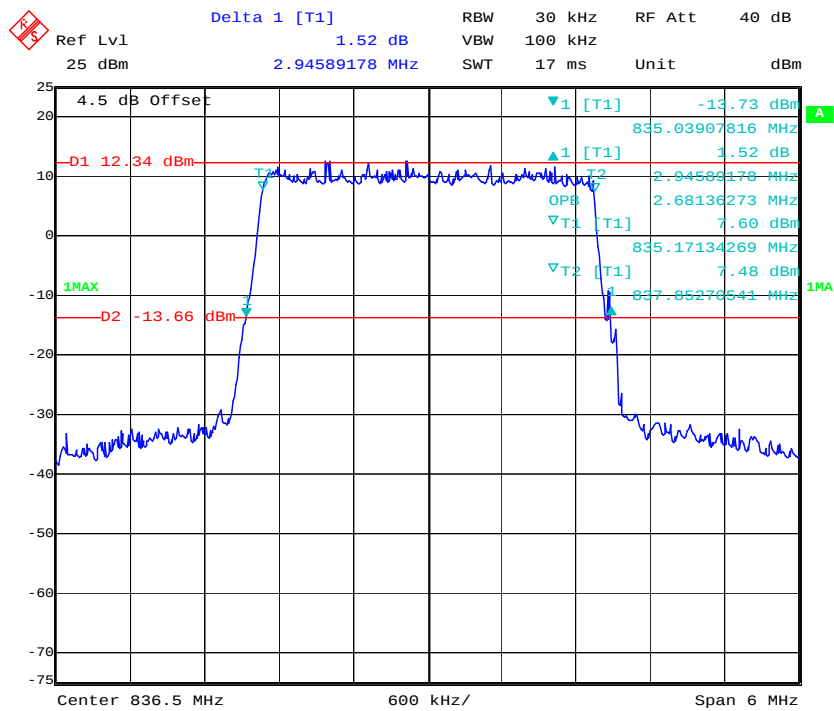
QPSK_10 MHz



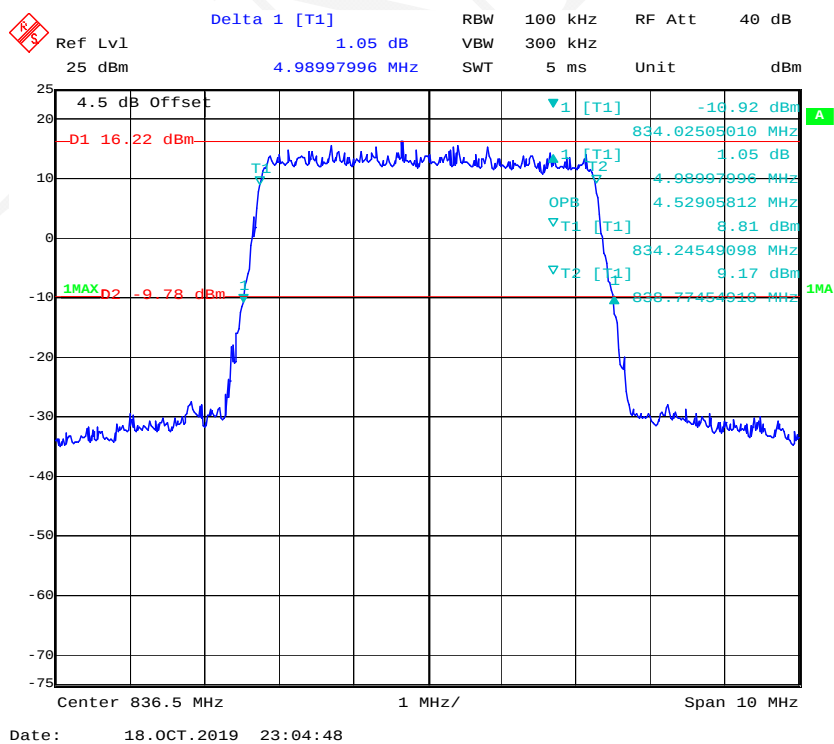
16QAM_1.4 MHz



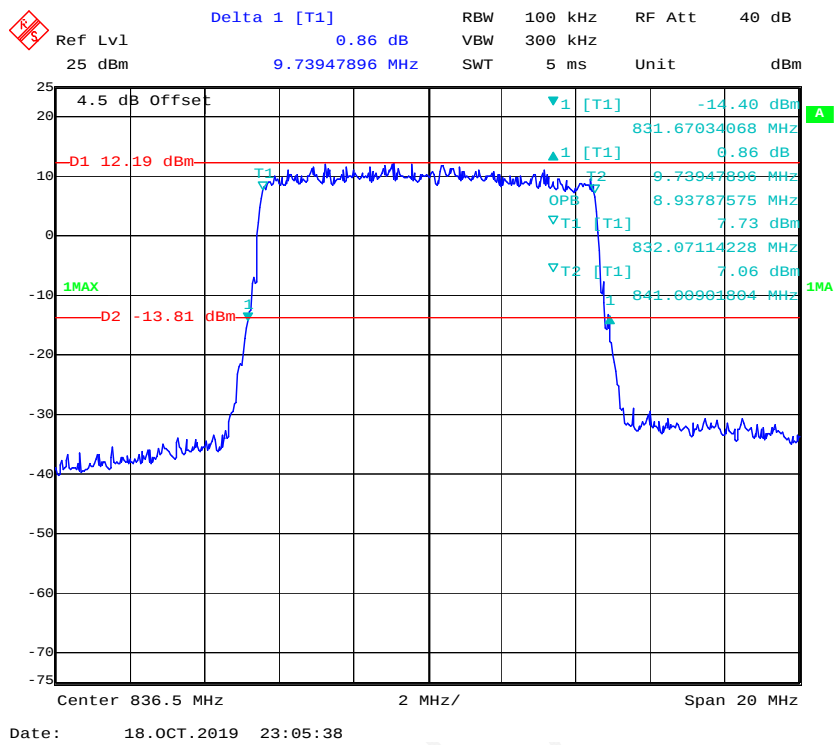
16QAM_3 MHz



16QAM_5 MHz

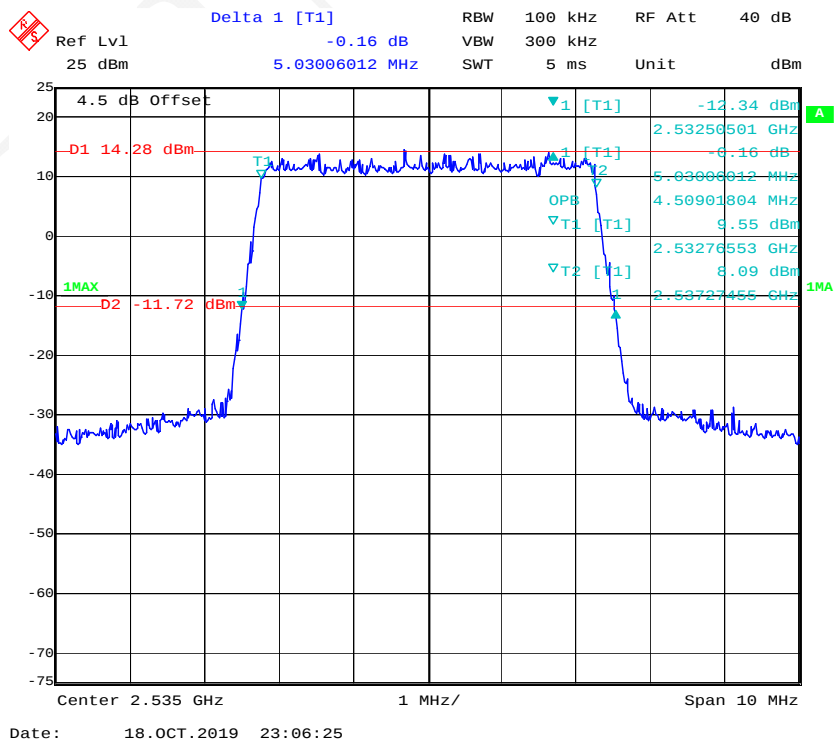


16QAM_10 MHz

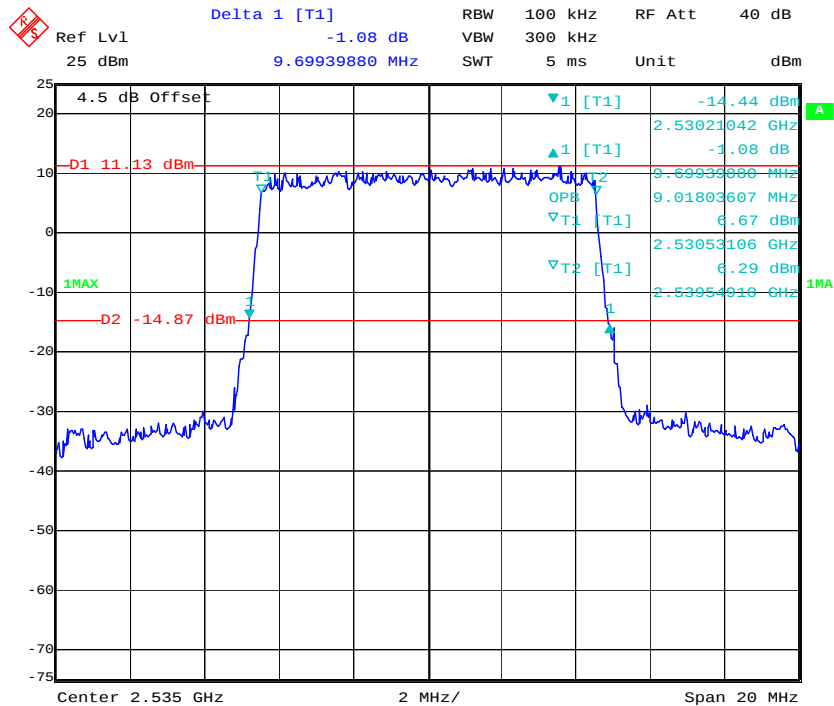


LTE Band 7:

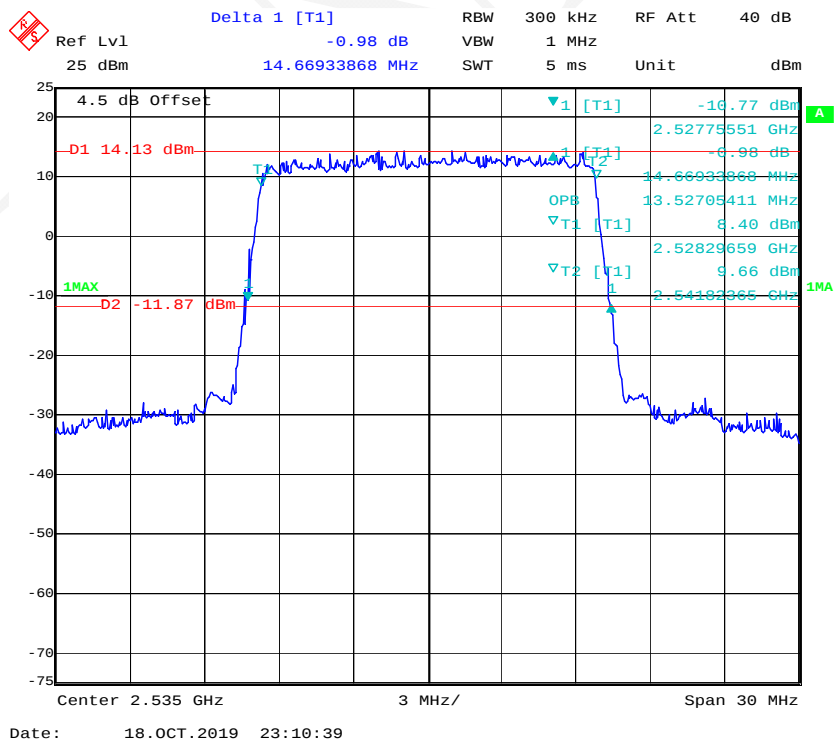
QPSK_5 MHz



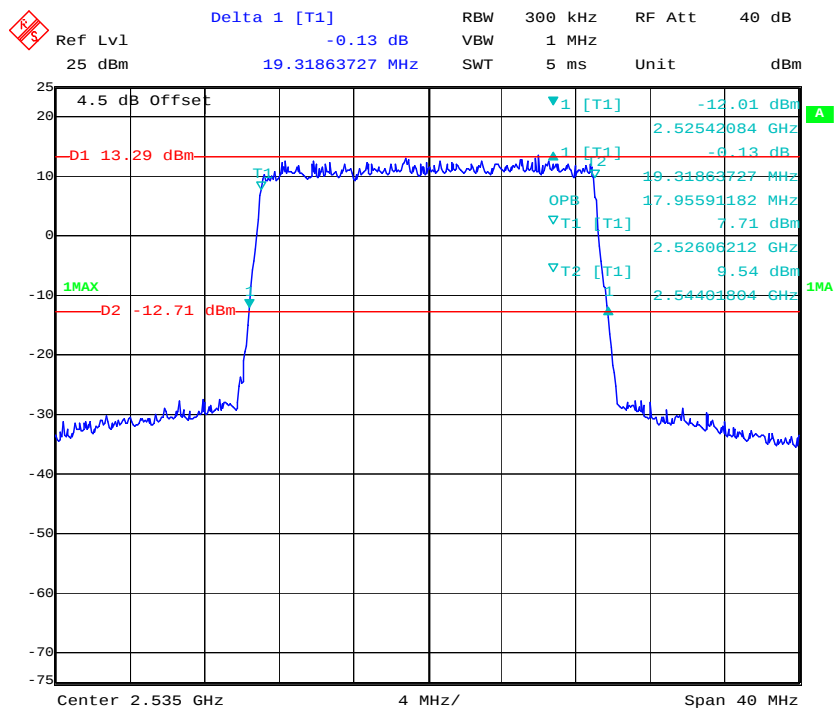
QPSK_10 MHz



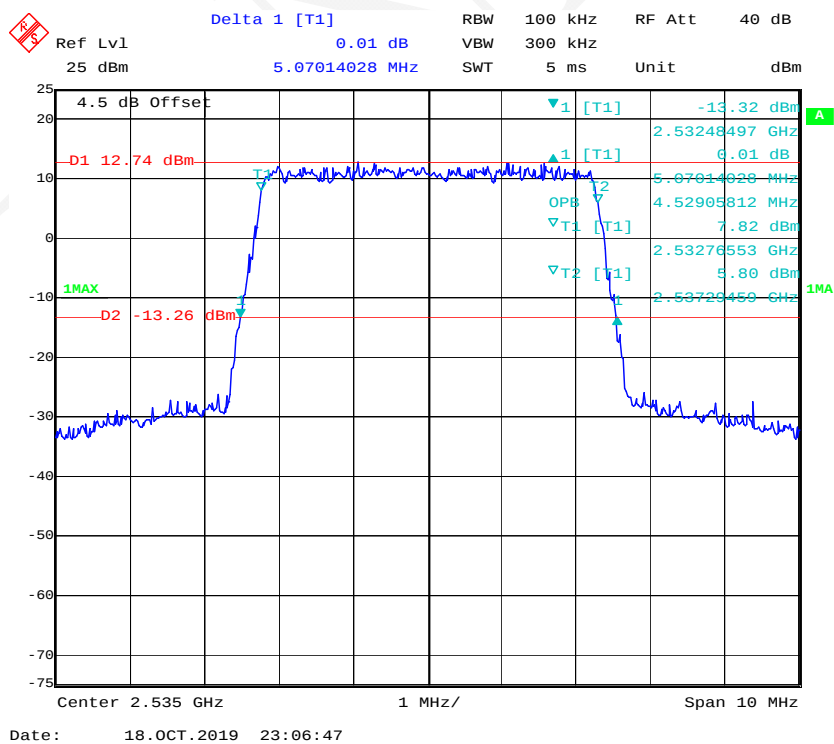
QPSK_15 MHz



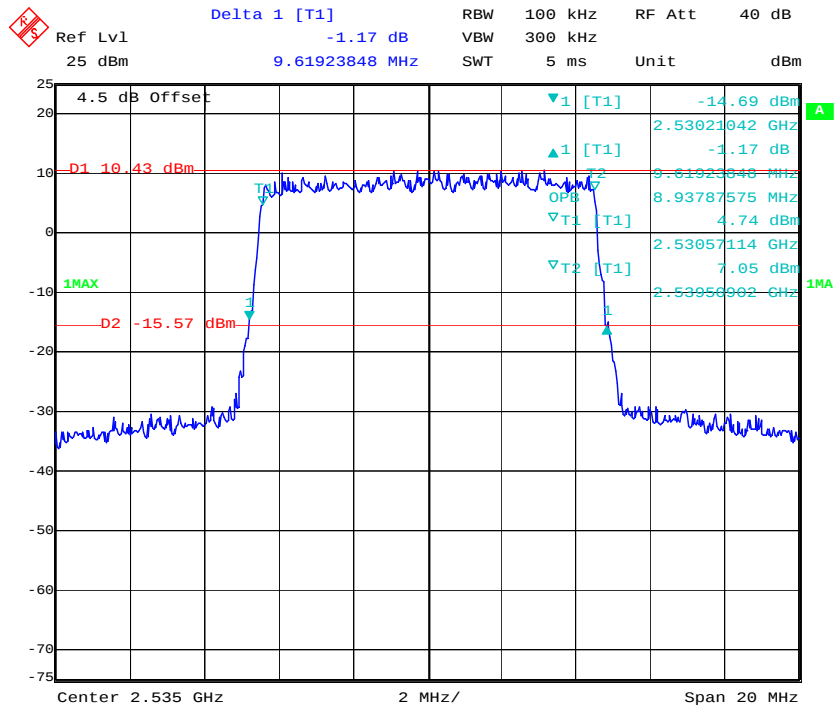
QPSK_20 MHz



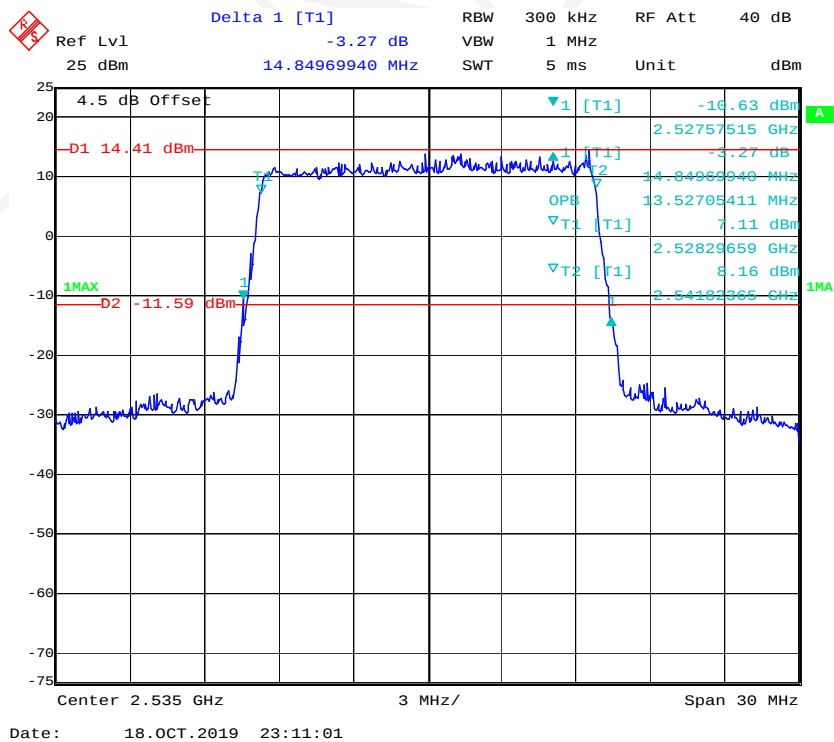
16QAM_5 MHz



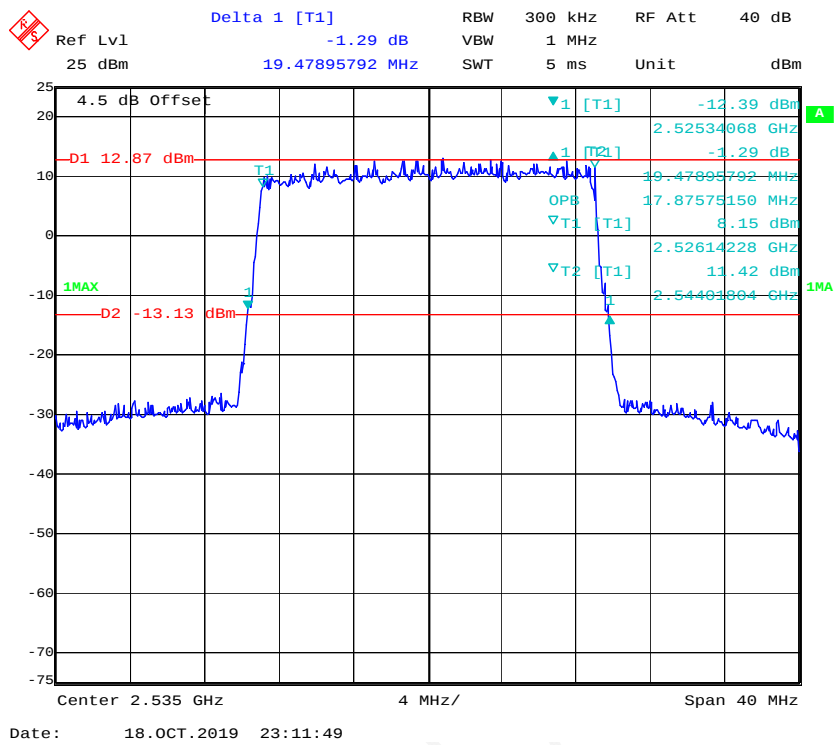
16QAM_10 MHz



16QAM_15 MHz

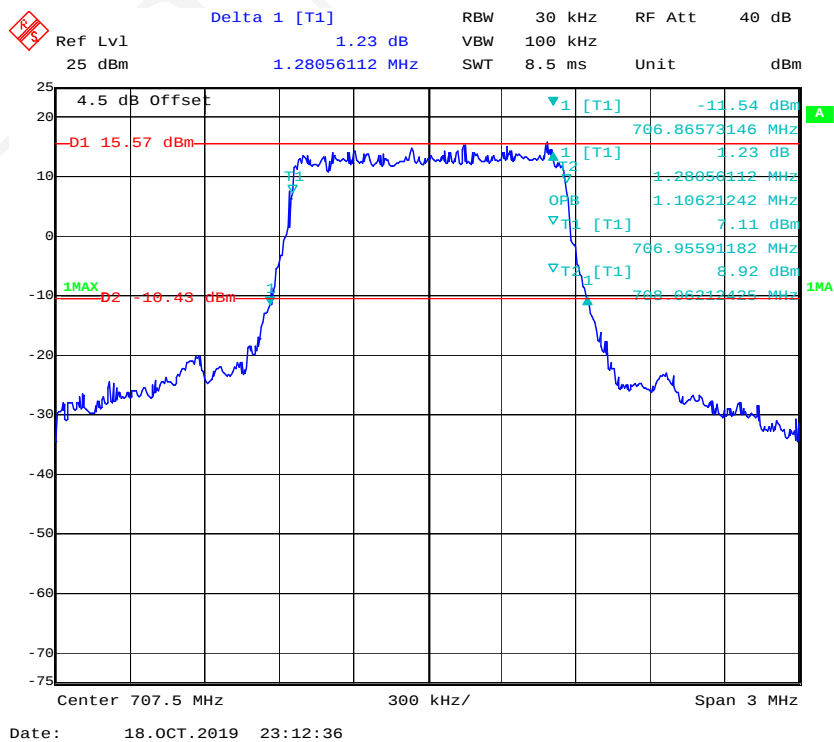


16QAM_20 MHz

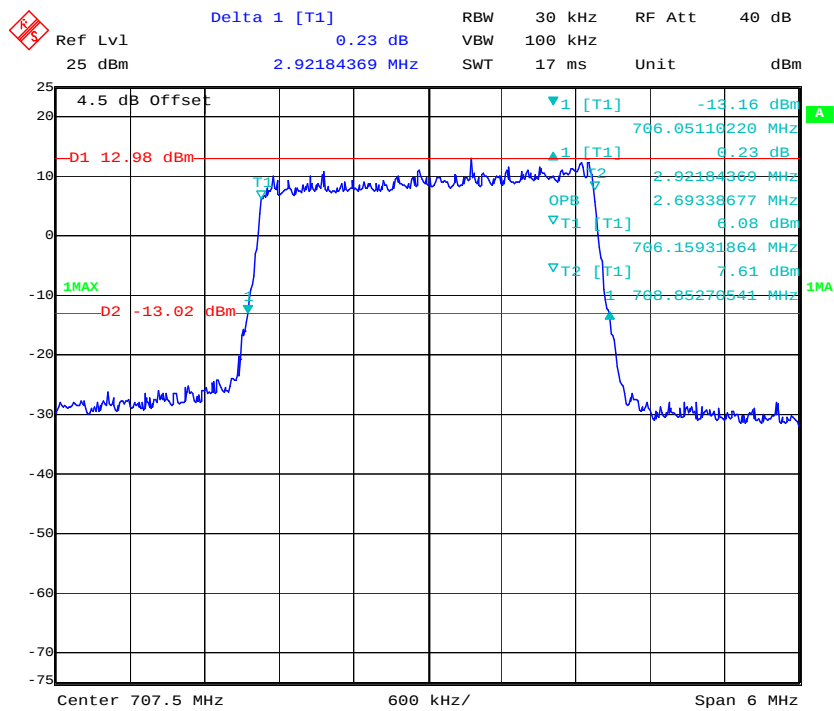


LTE Band 12:

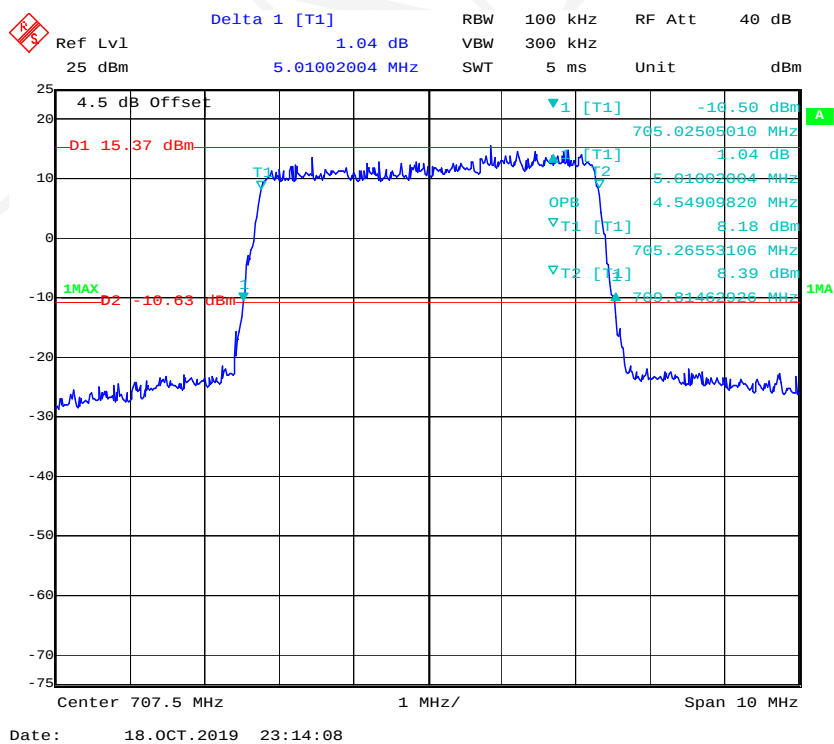
QPSK_1.4 MHz



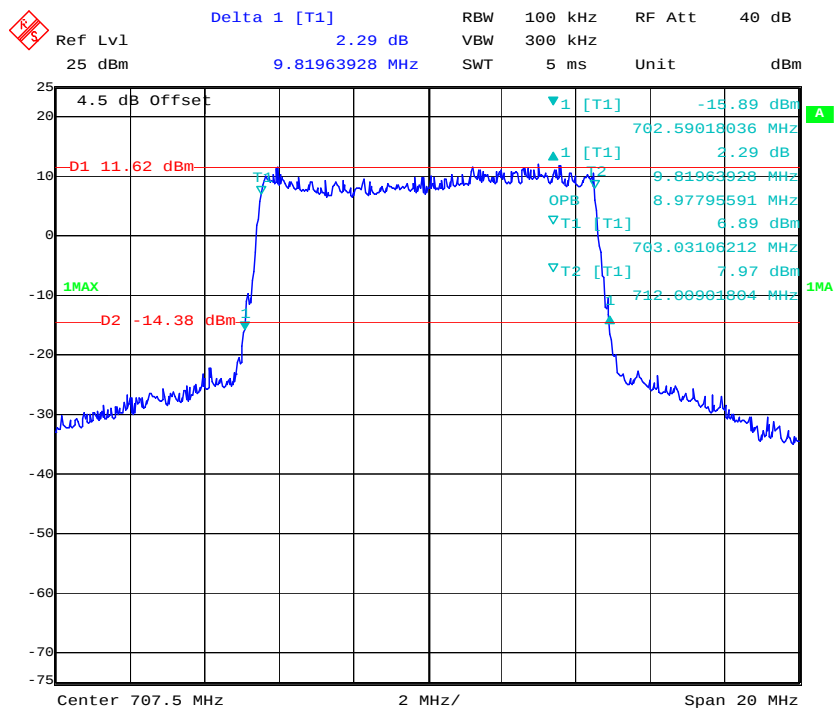
QPSK_3 MHz



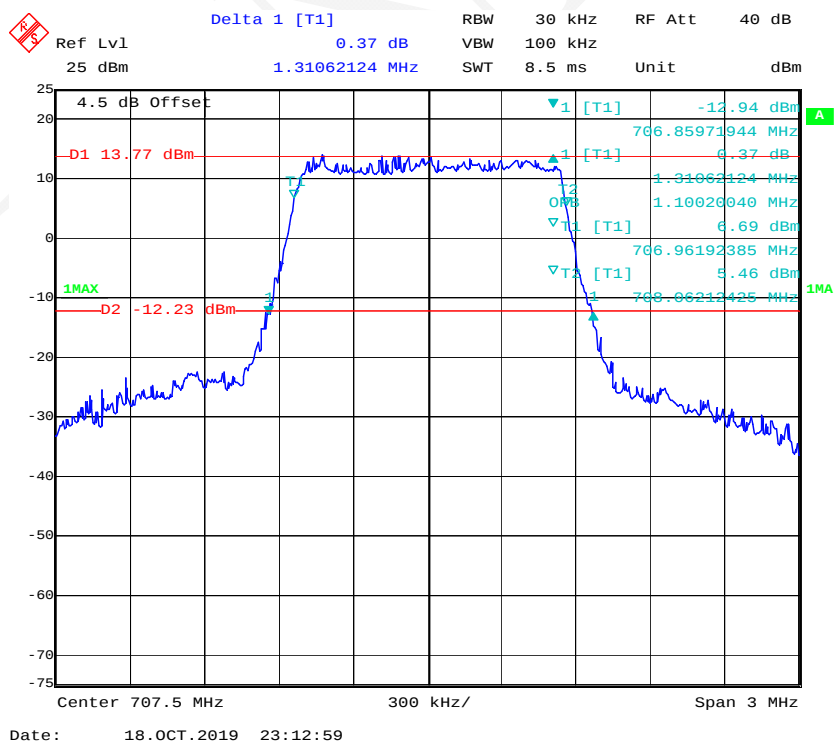
QPSK_5 MHz



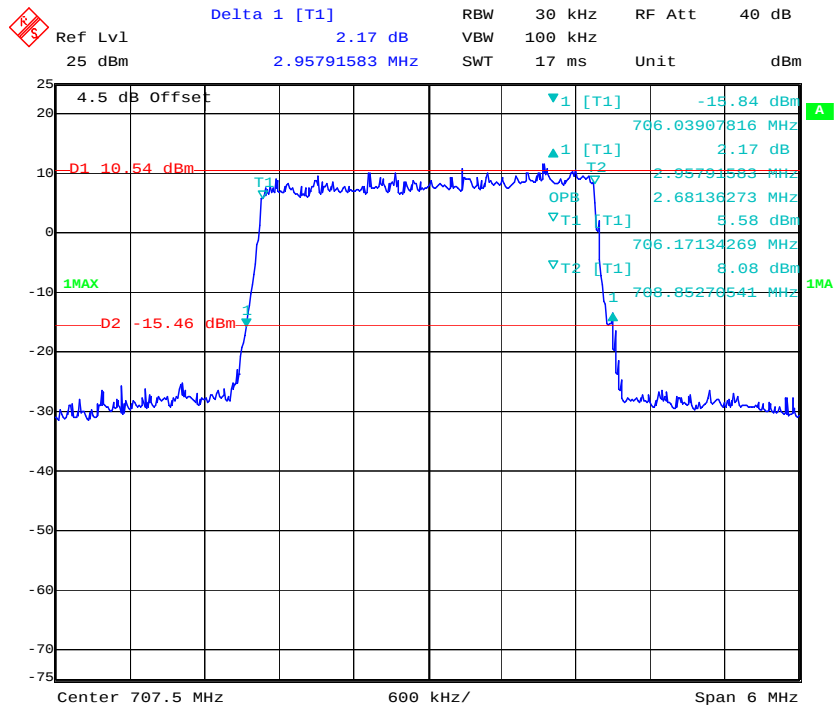
QPSK_10 MHz



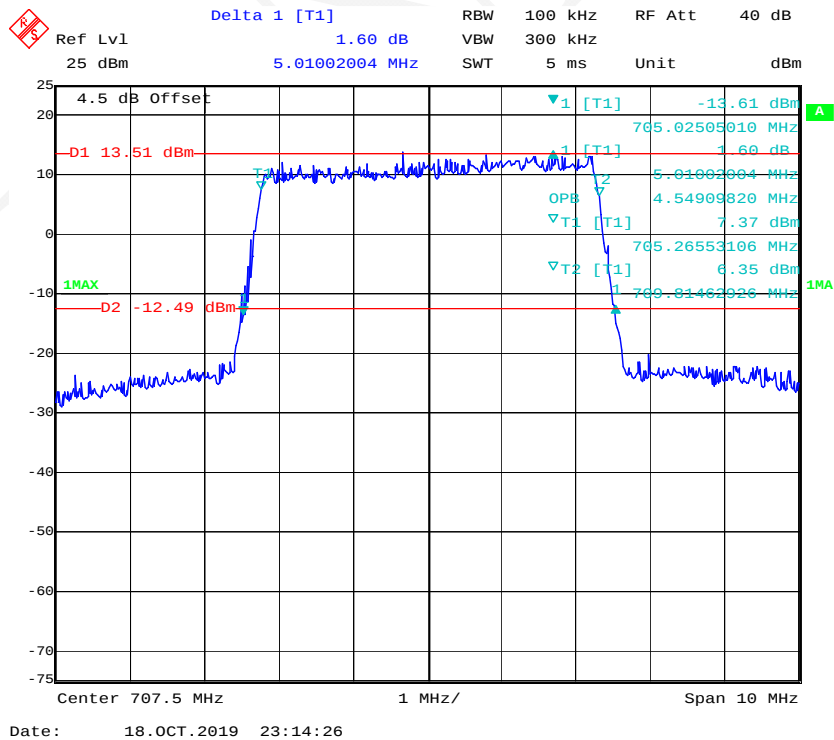
16QAM_1.4 MHz



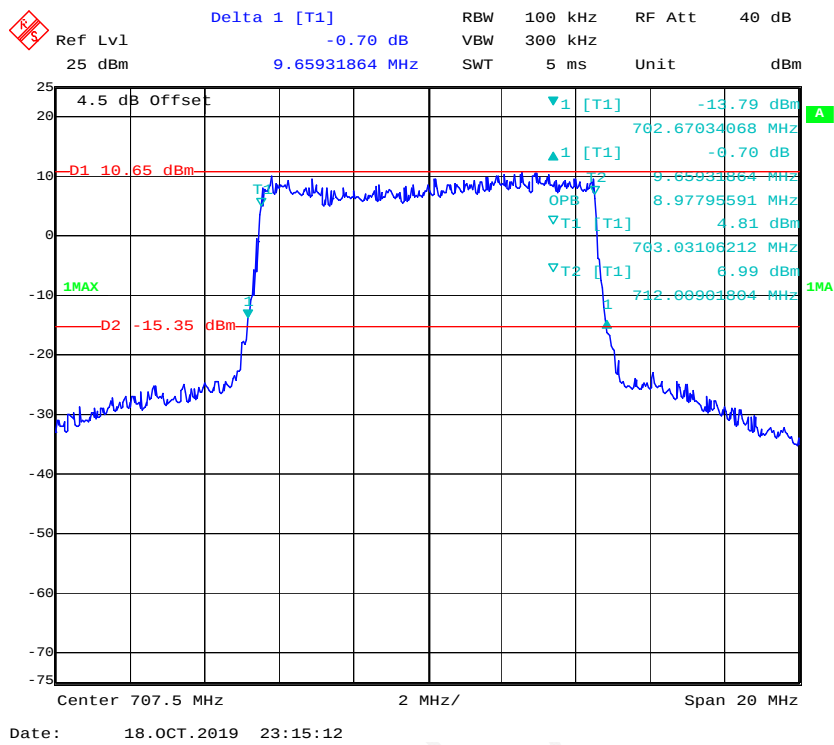
16QAM_3 MHz



16QAM_5 MHz

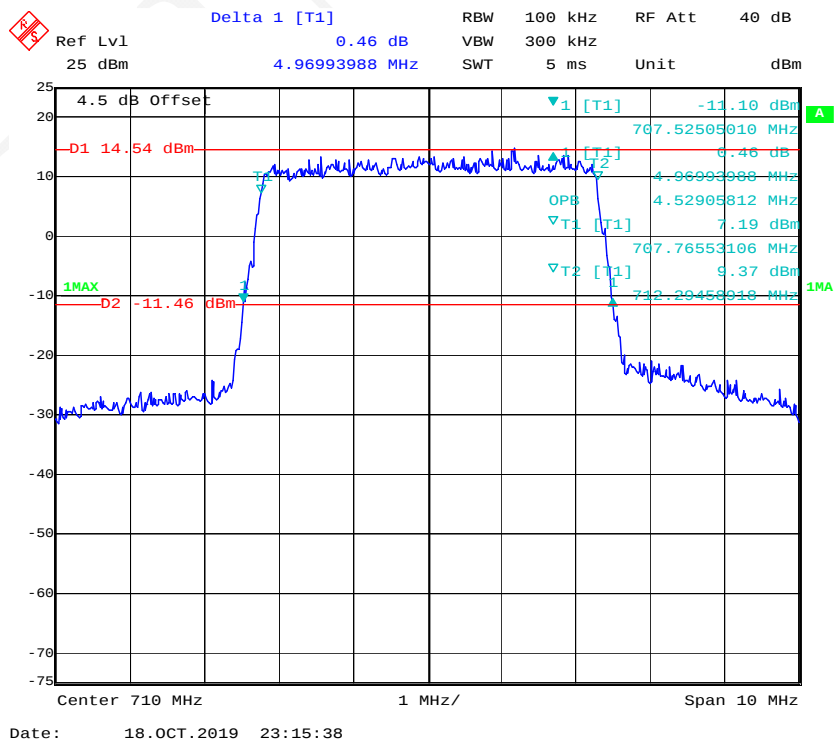


16QAM_10 MHz



LTE Band 17:

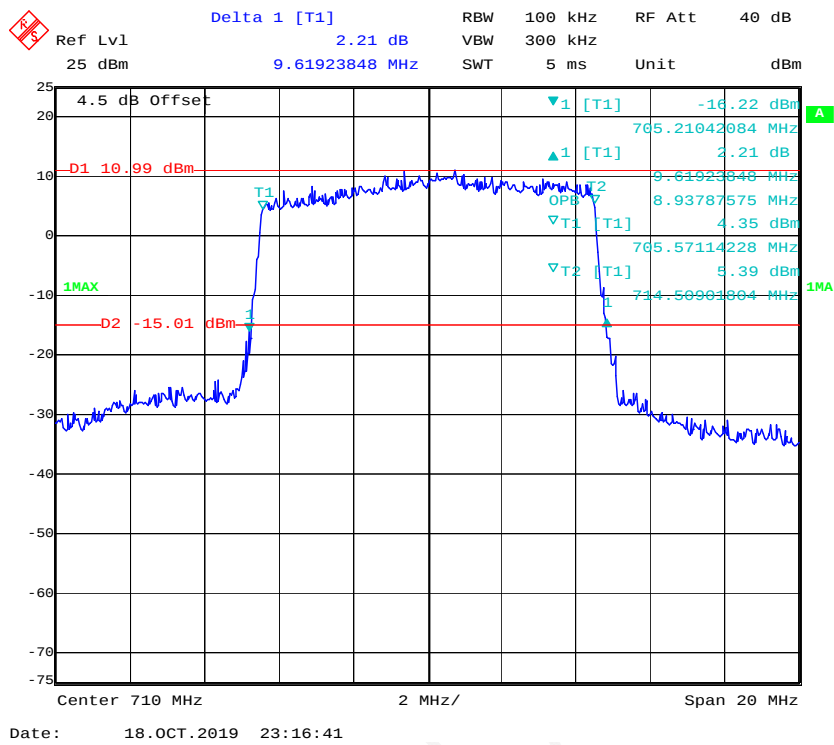
QPSK_5 MHz



Date: 18.OCT.2019 23:16:21

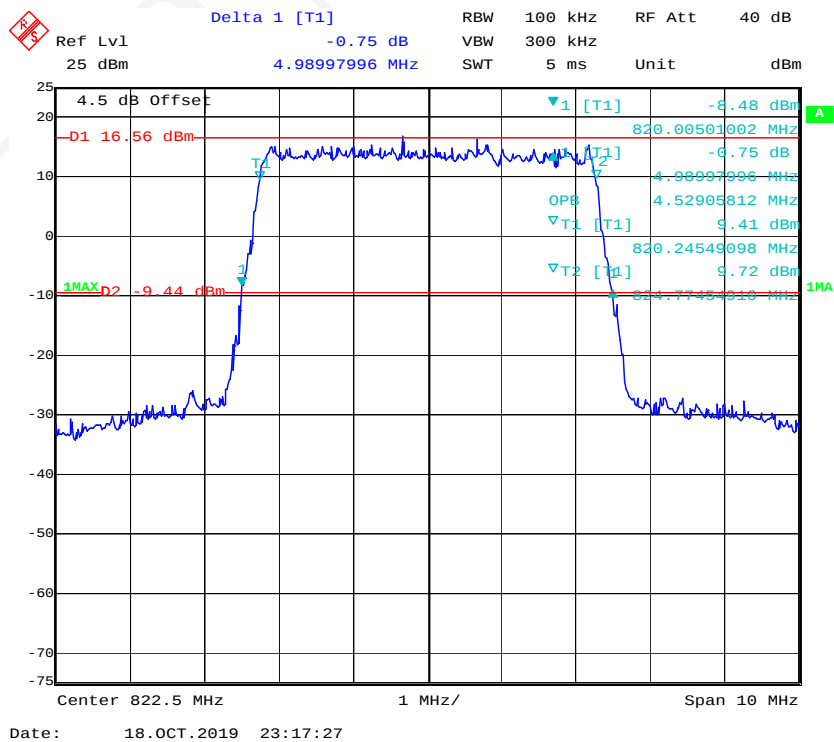
Date: 18.OCT.2019 23:15:57

16QAM_10 MHz

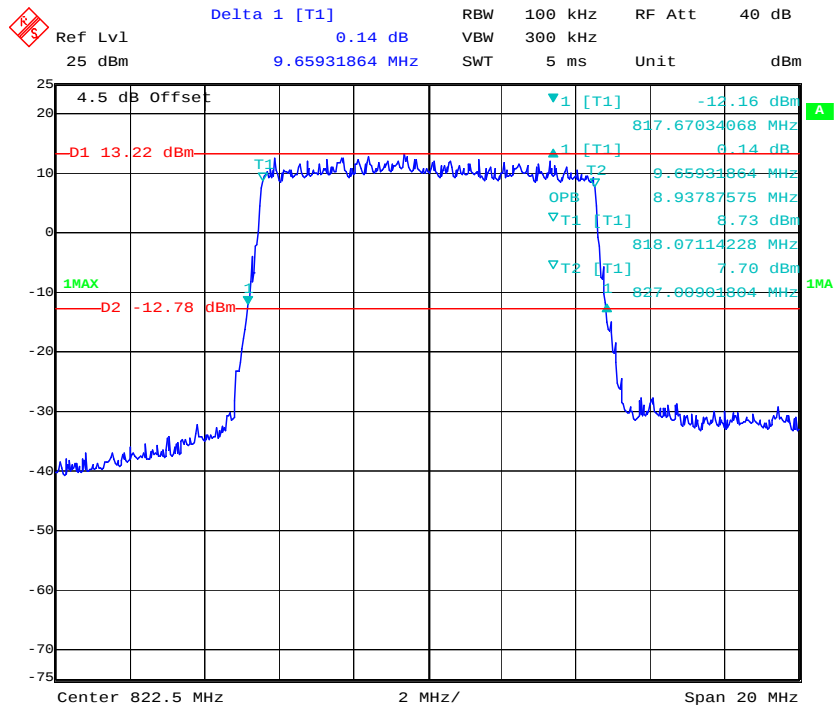


LTE Band 18:

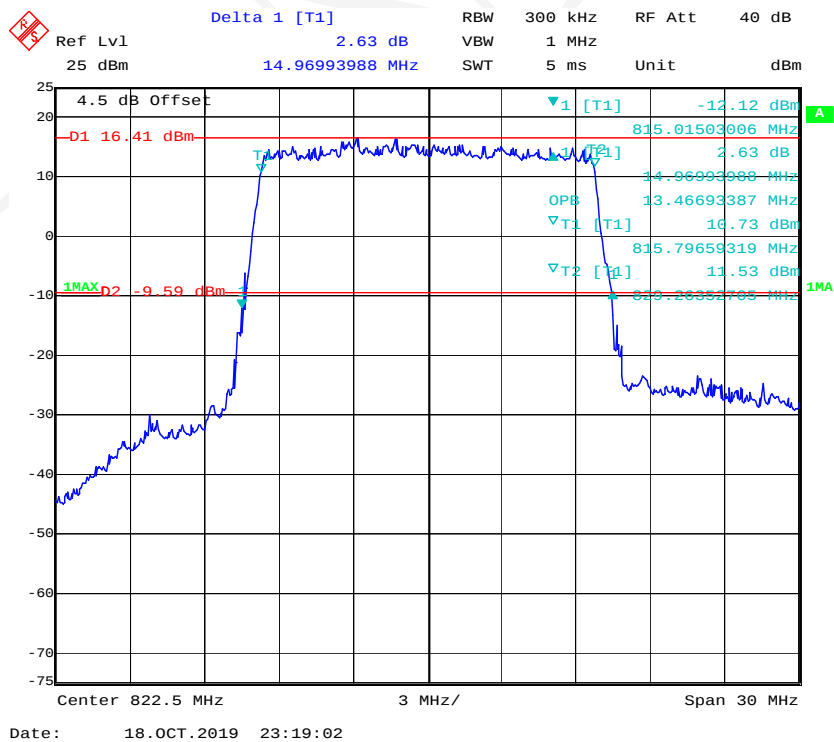
QPSK_5 MHz



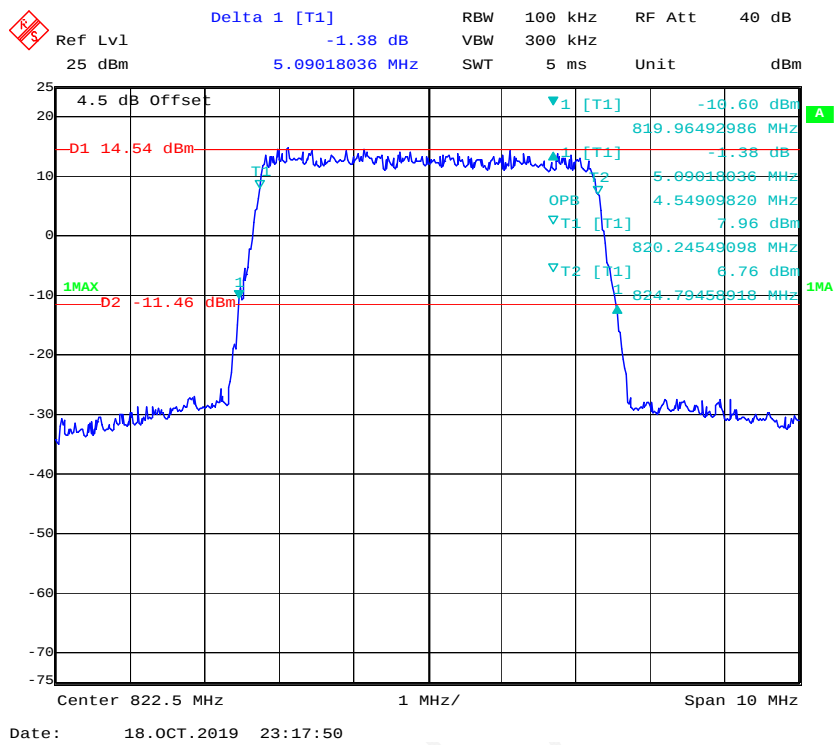
QPSK_10 MHz



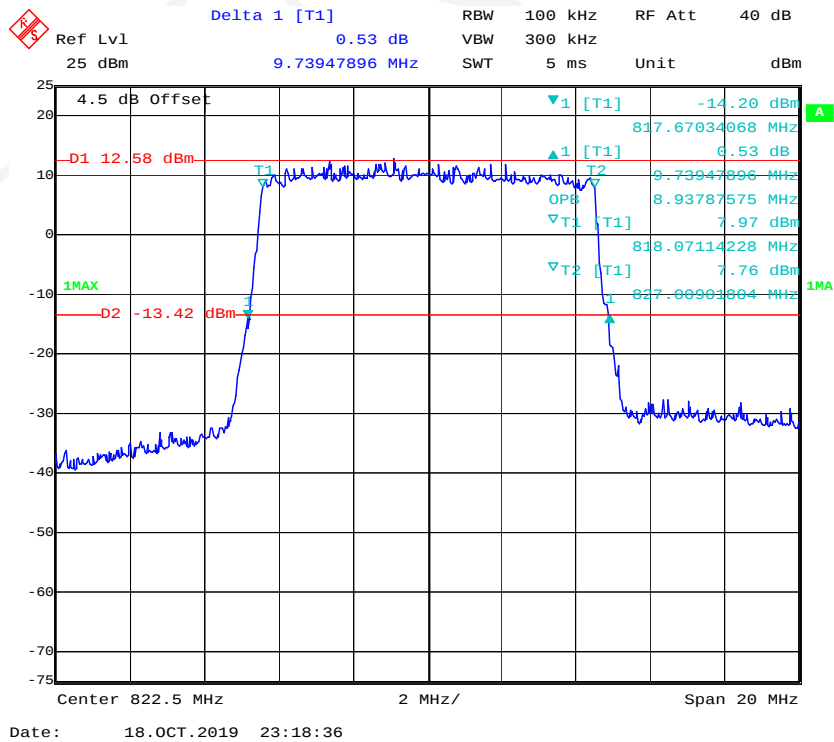
QPSK_15 MHz



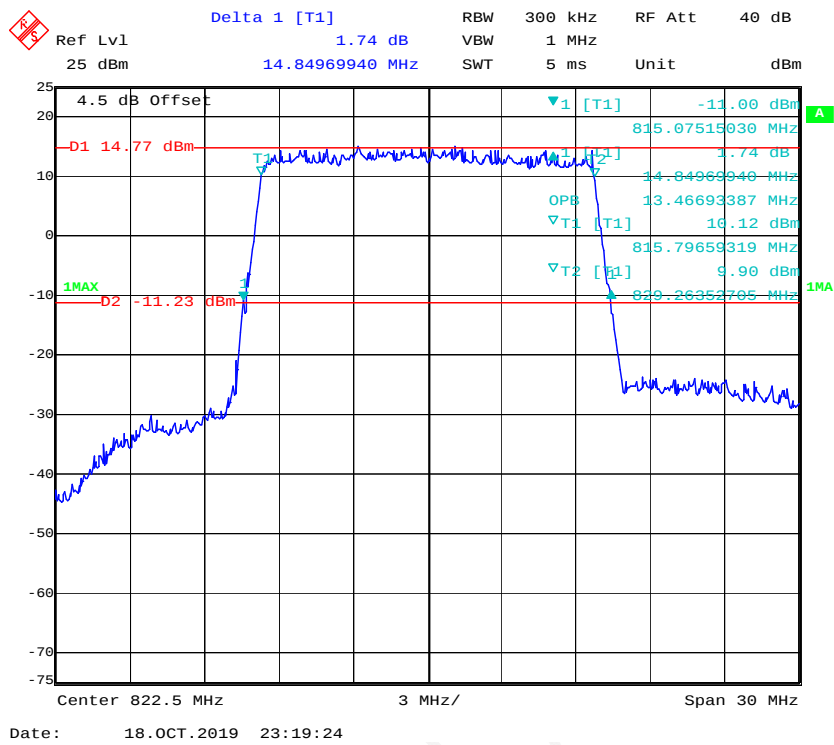
16QAM_5 MHz



16QAM_10 MHz

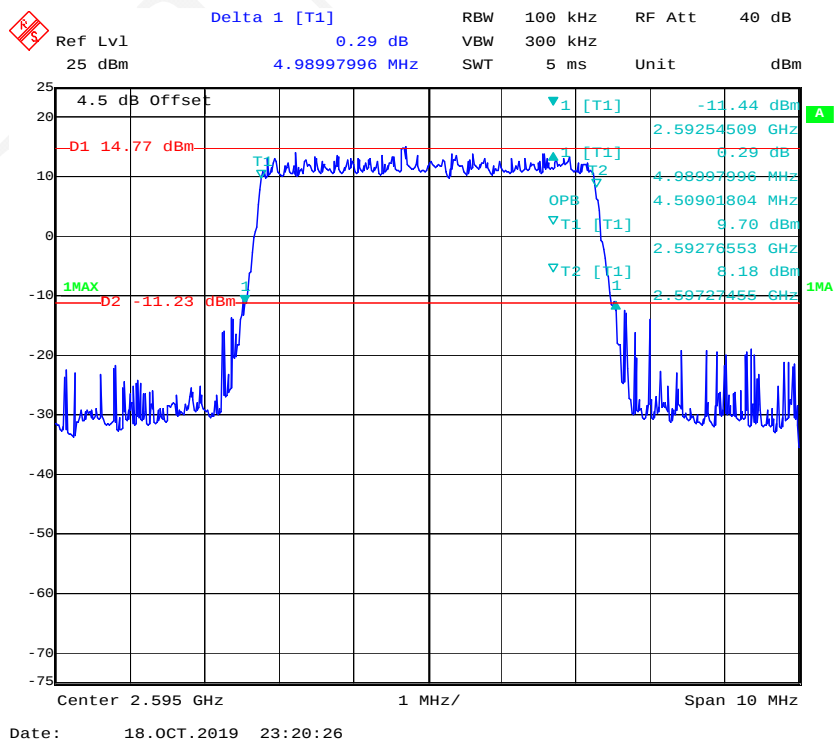


16QAM_15 MHz

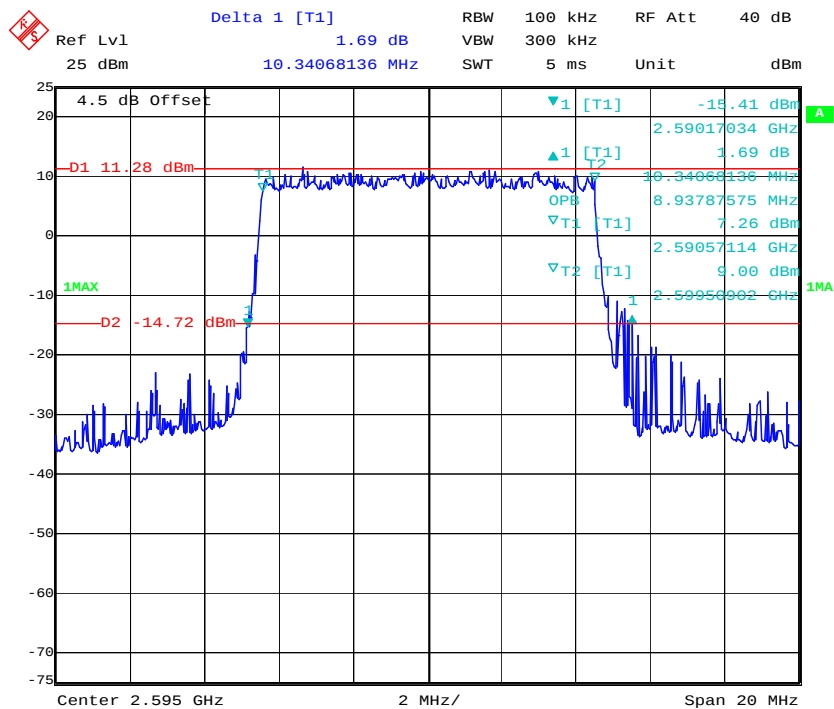


LTE Band 38:

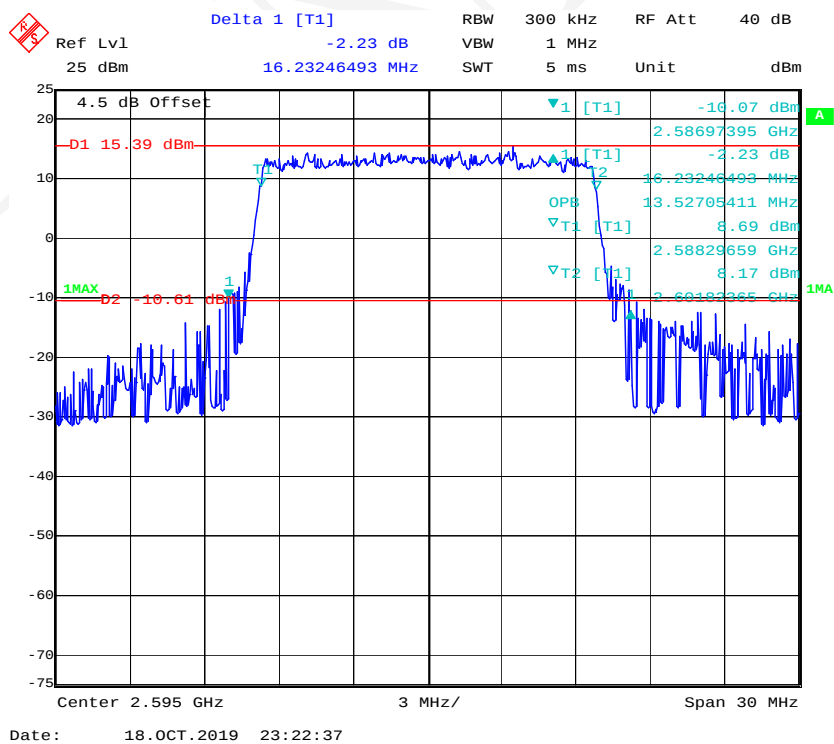
QPSK_5 MHz



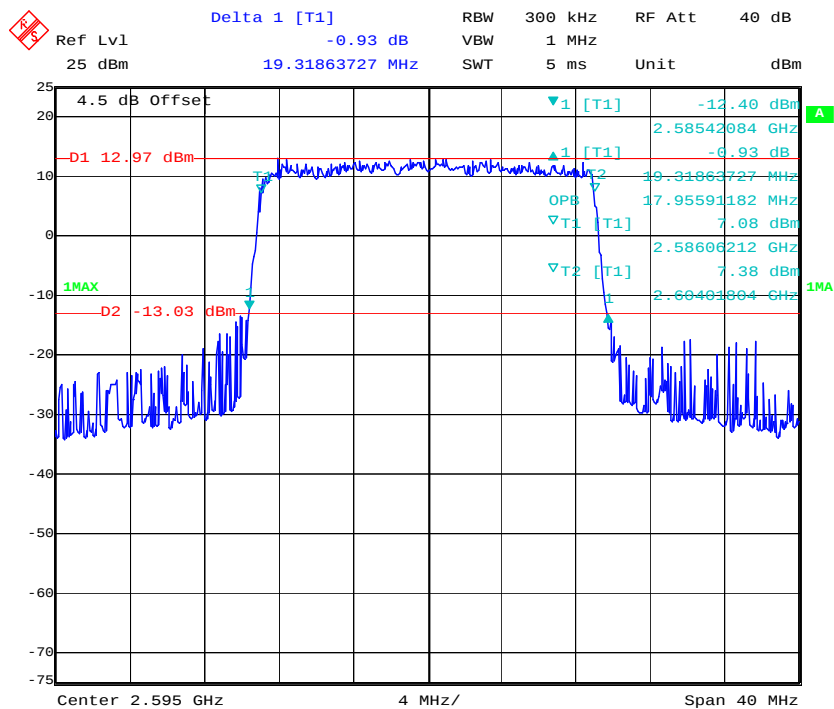
QPSK_10 MHz



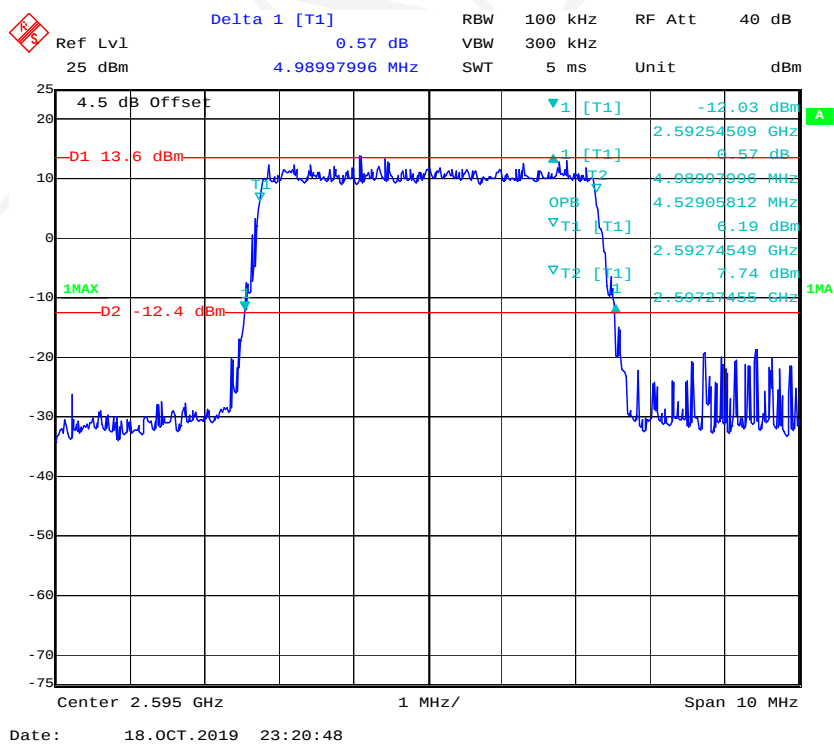
QPSK_15 MHz



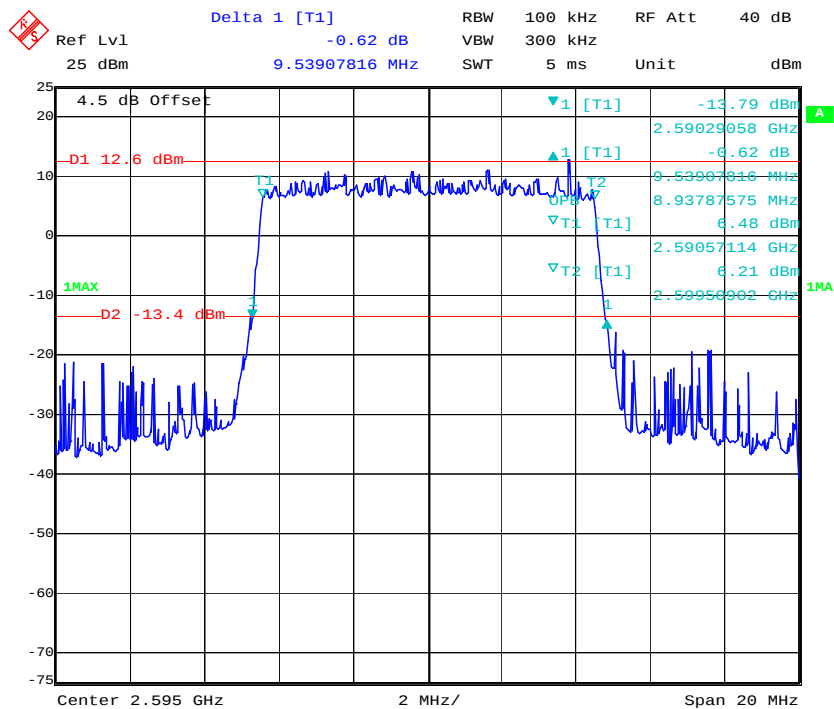
QPSK_20 MHz



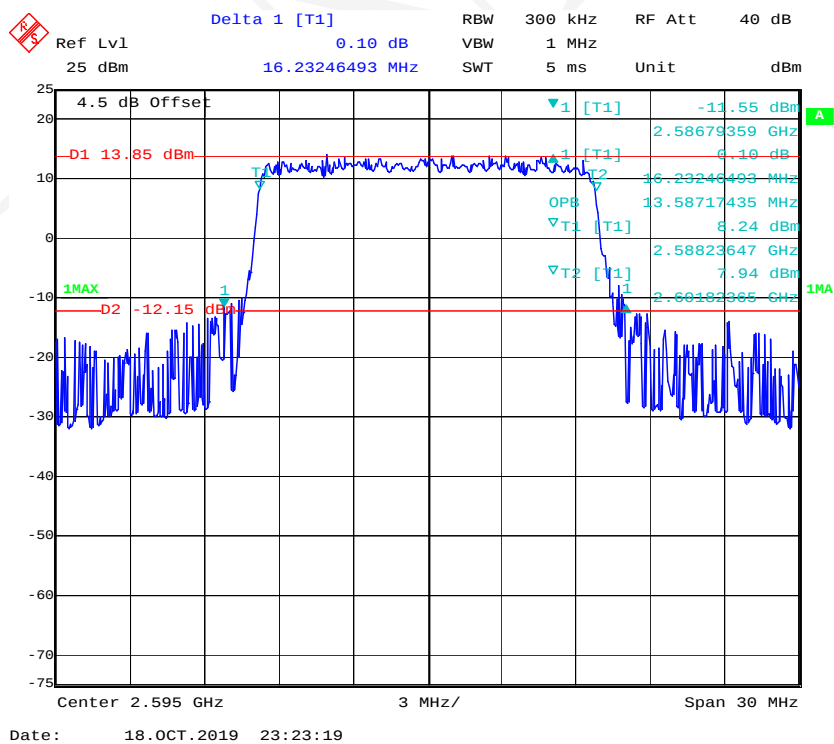
16QAM_5 MHz



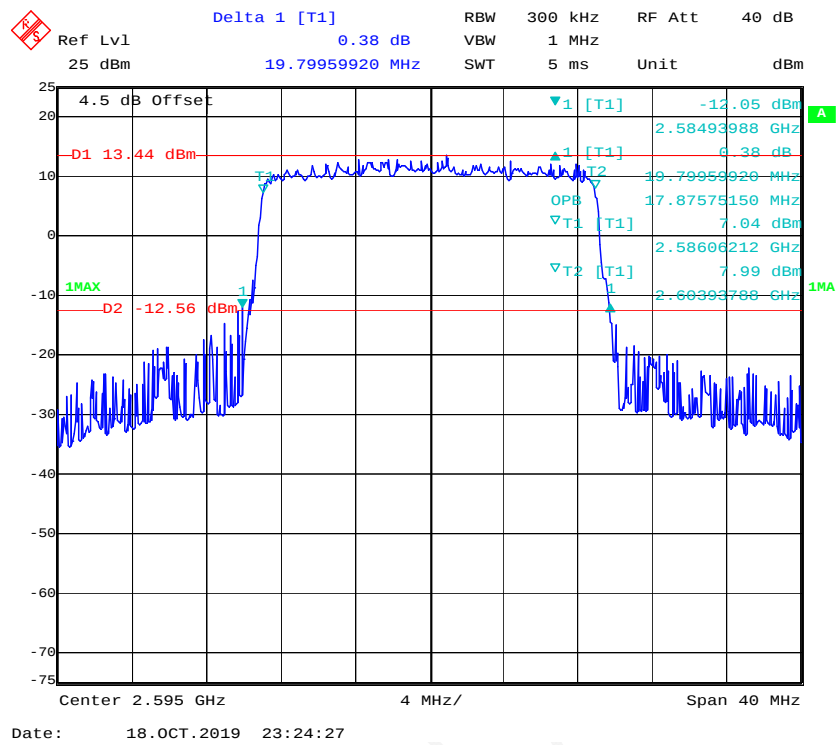
16QAM_10 MHz



16QAM_15 MHz

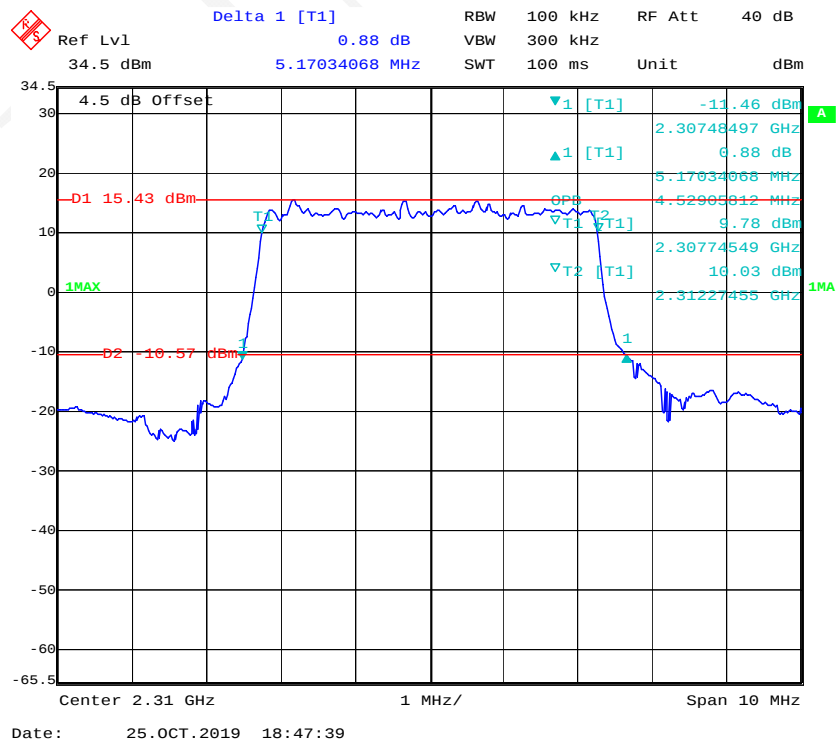


16QAM_20 MHz

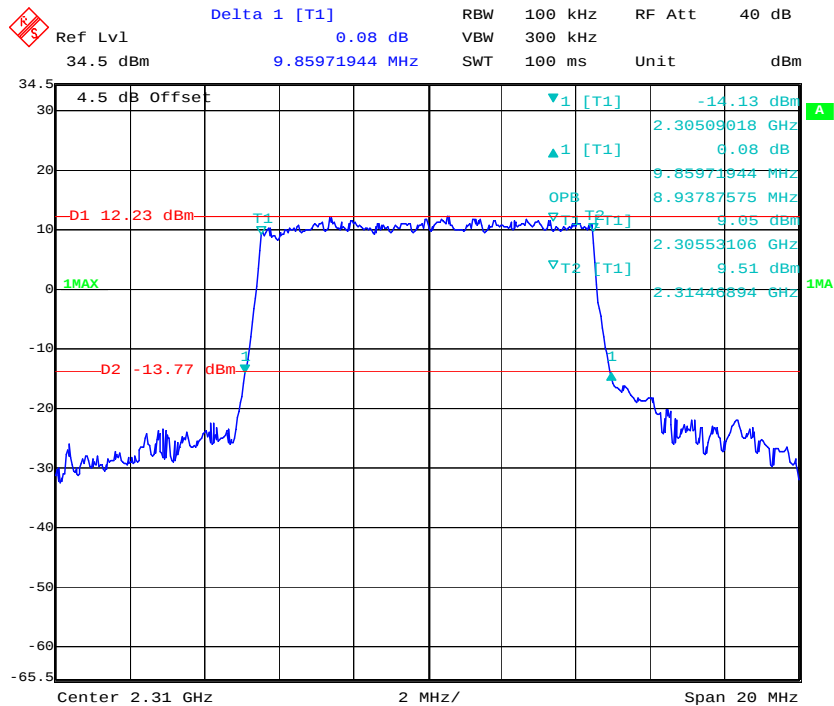


LTE Band 40:
Lower:

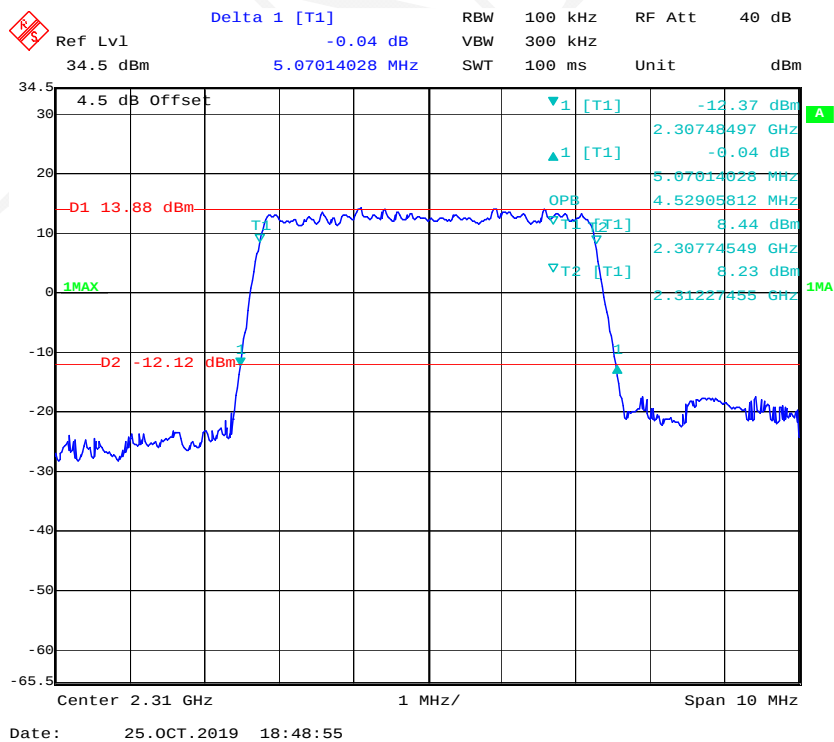
QPSK_5 MHz



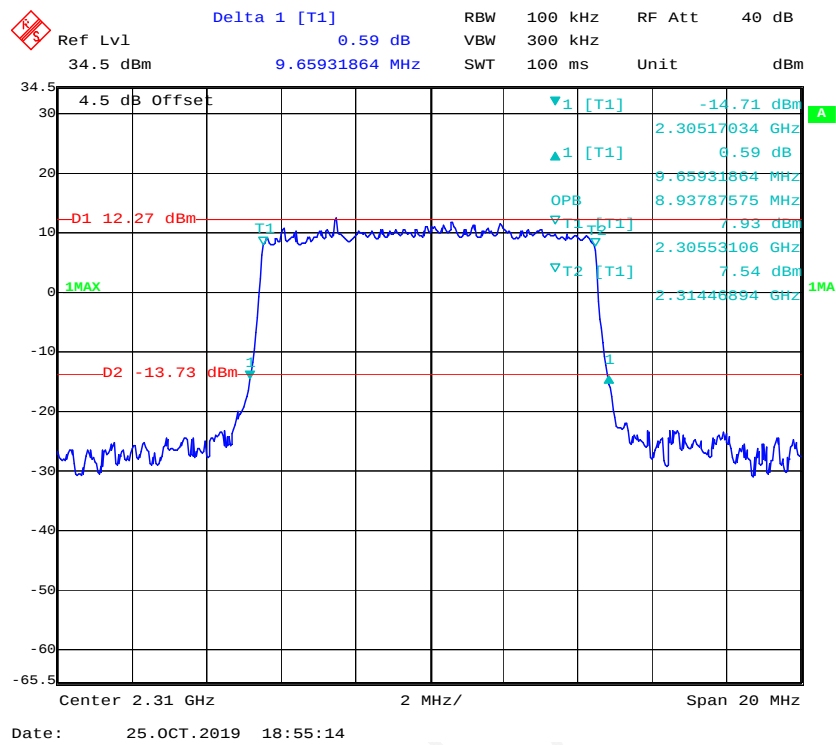
QPSK_10 MHz



16QAM_5 MHz

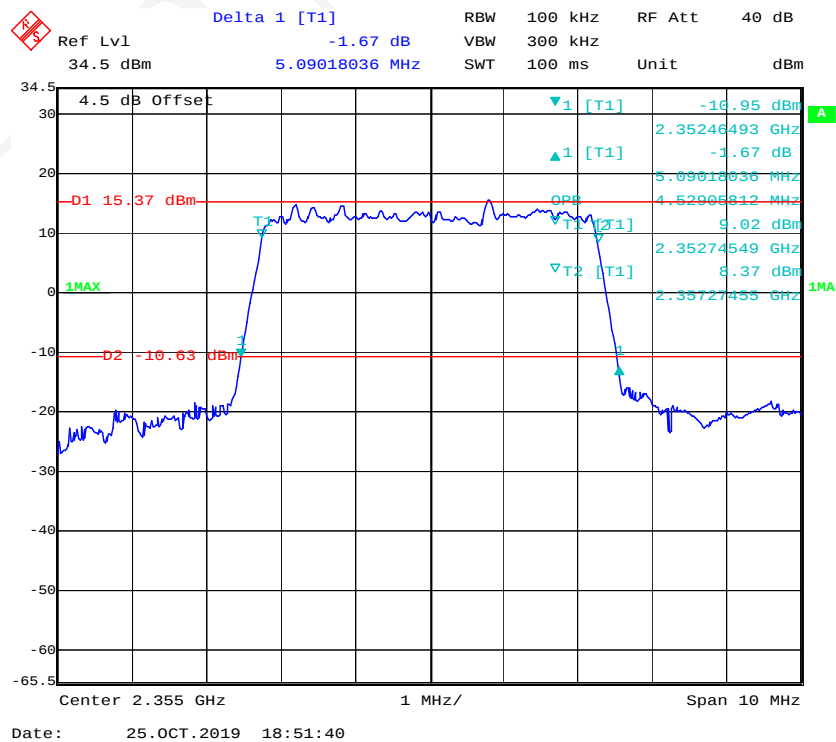


16QAM_10 MHz

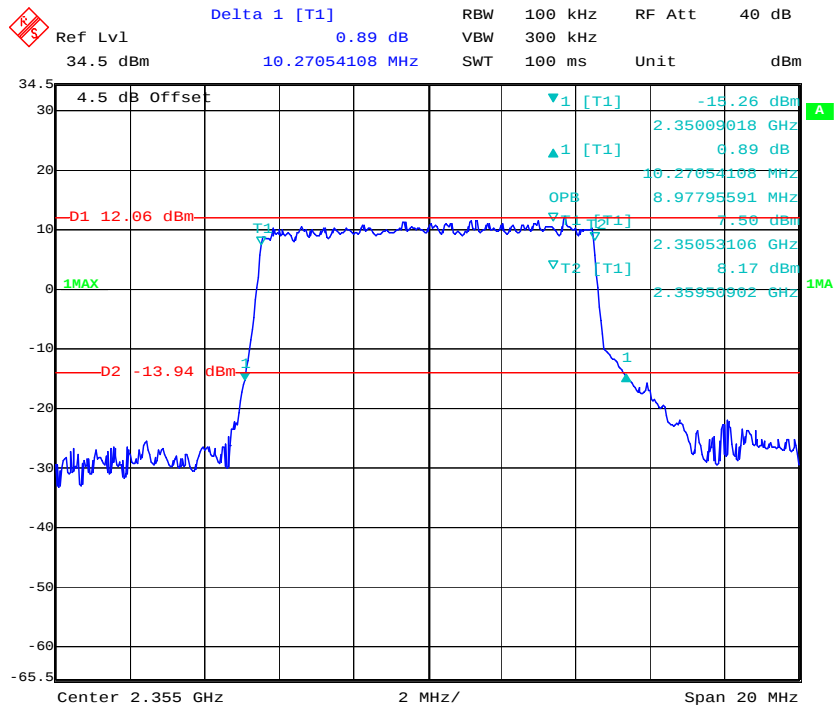


Upper:

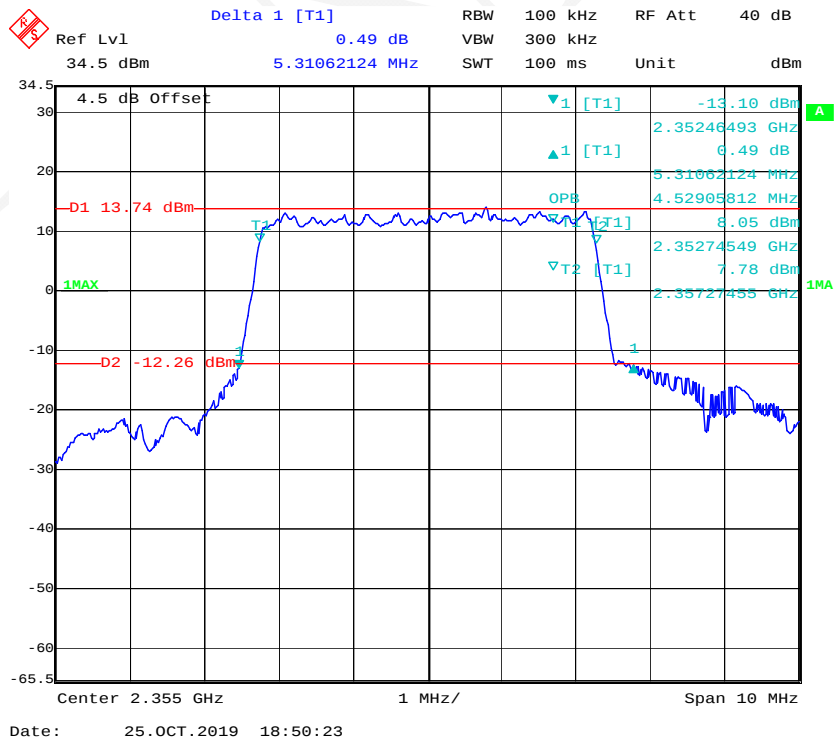
QPSK_5 MHz



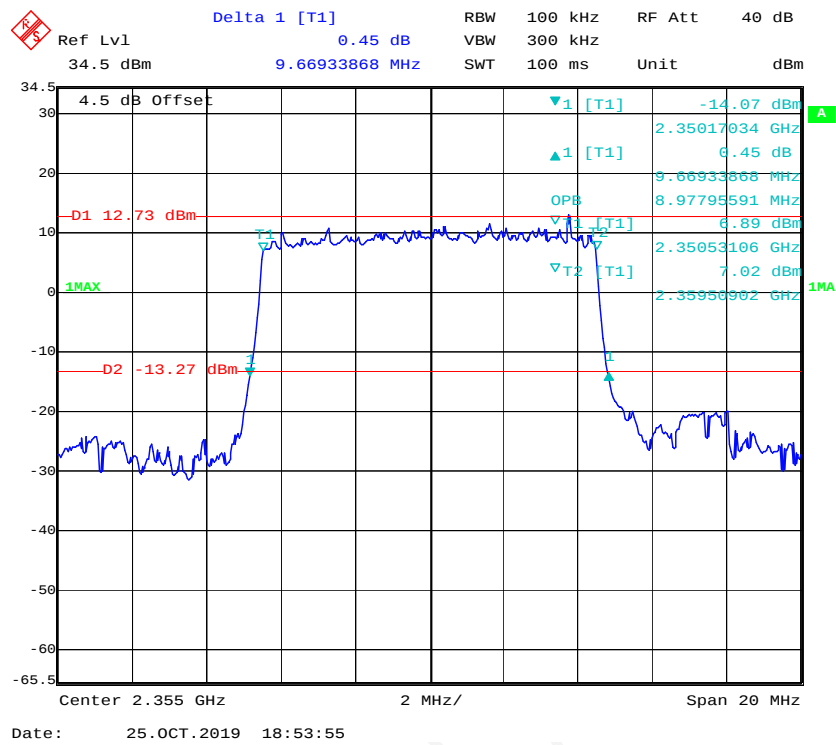
QPSK_10 MHz



16QAM_5 MHz

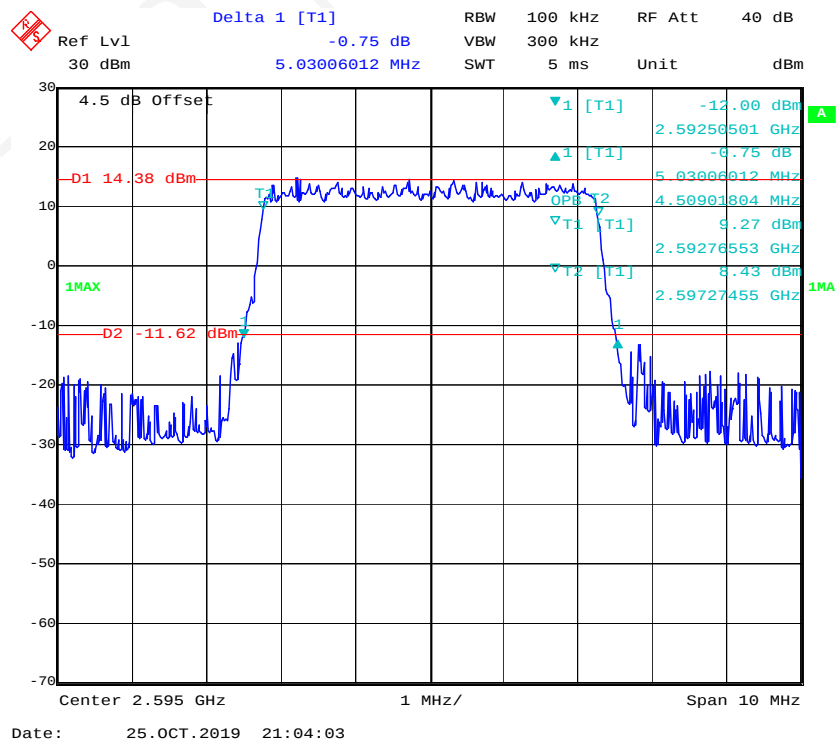


16QAM_10 MHz

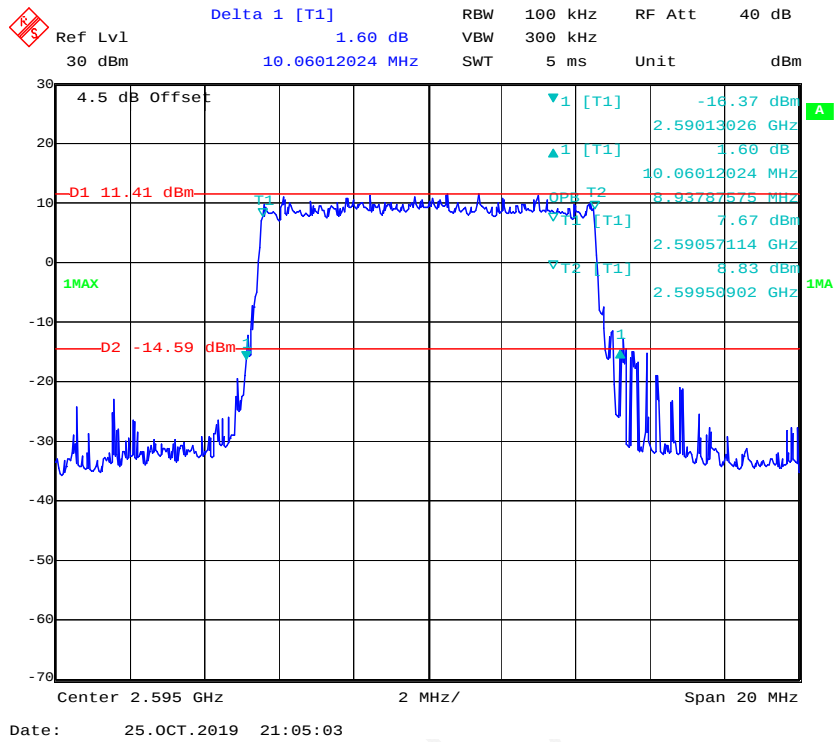


LTE Band 41:

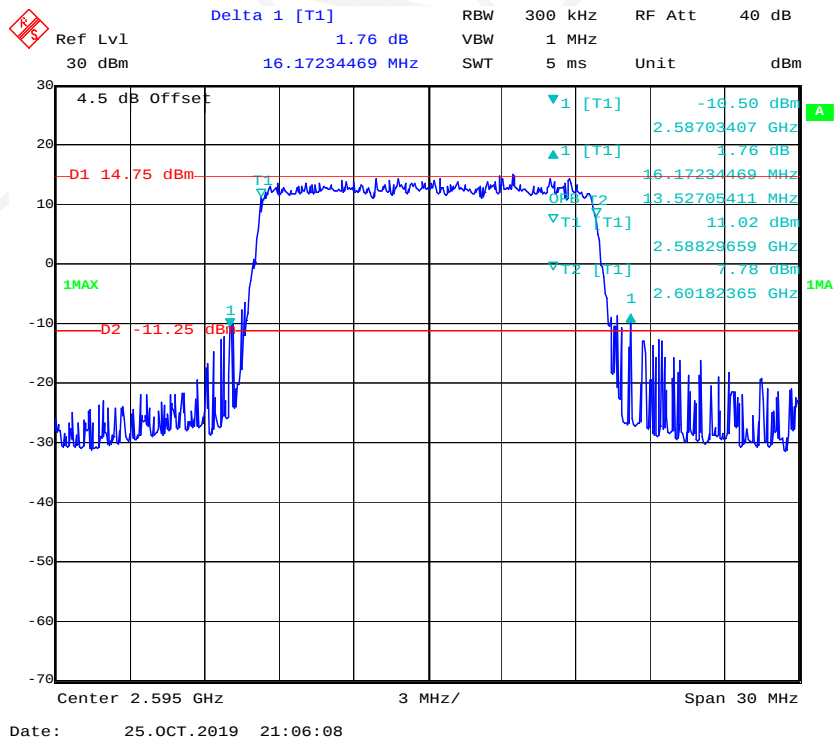
QPSK_5 MHz



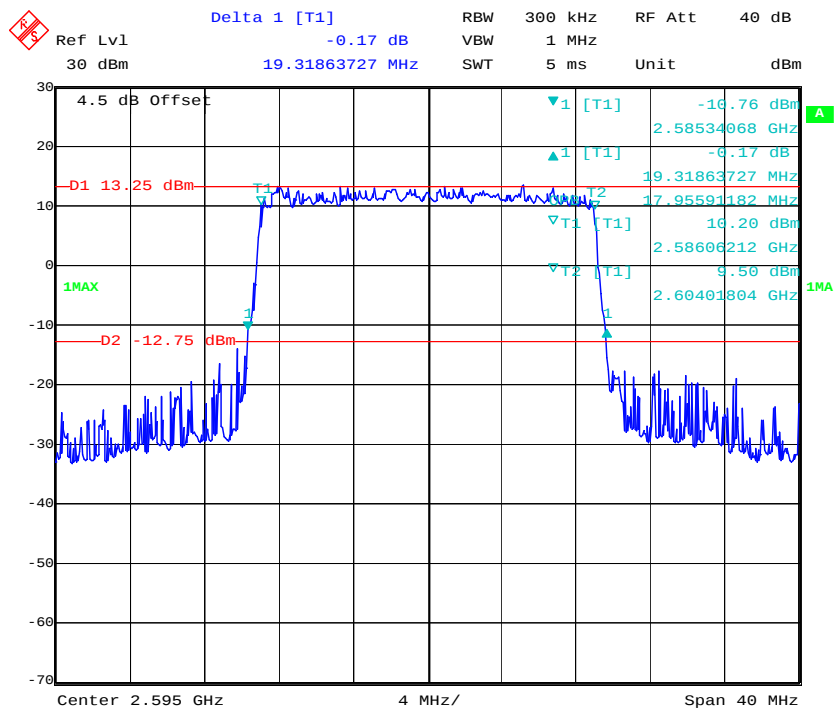
QPSK_10 MHz



QPSK_15 MHz

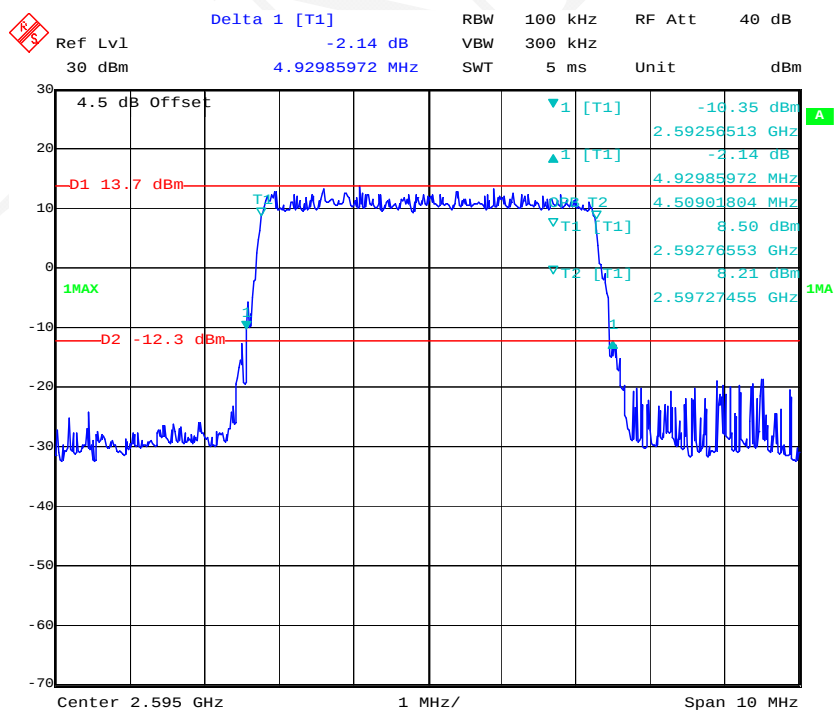


QPSK_20 MHz



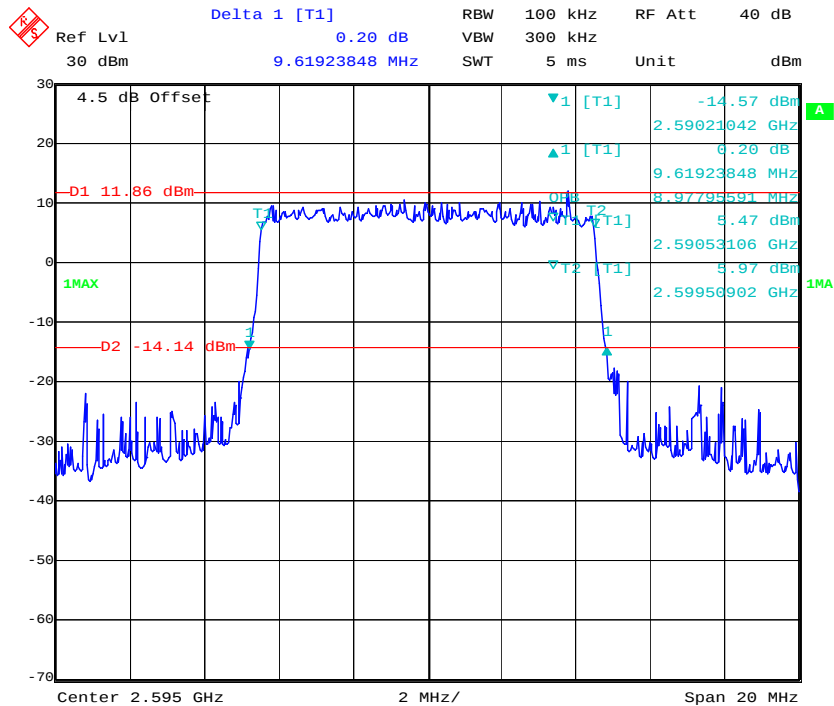
Date: 25.OCT.2019 21:07:25

16QAM_5 MHz

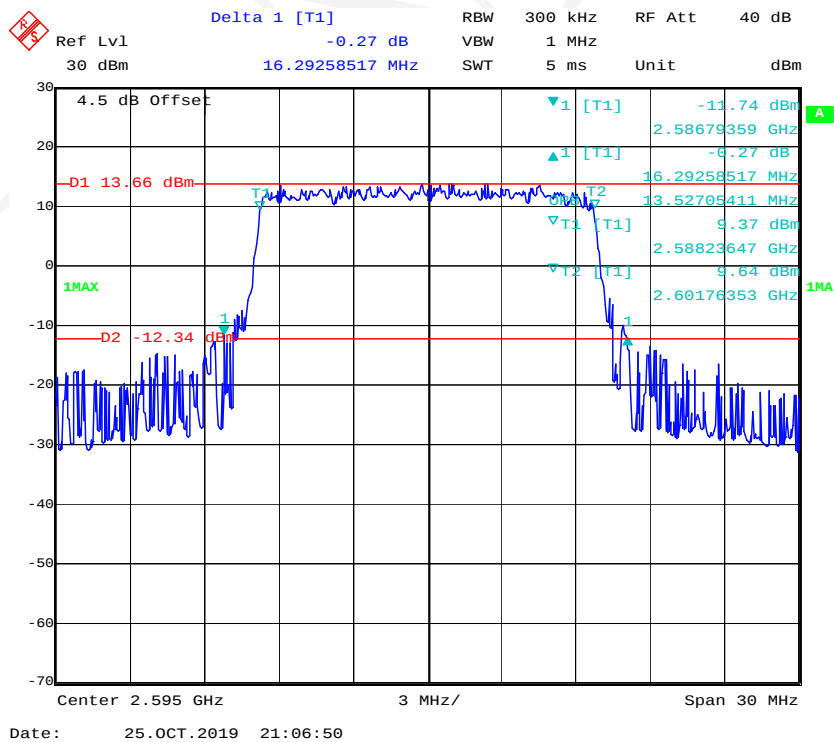


Date: 25.OCT.2019 21:04:29

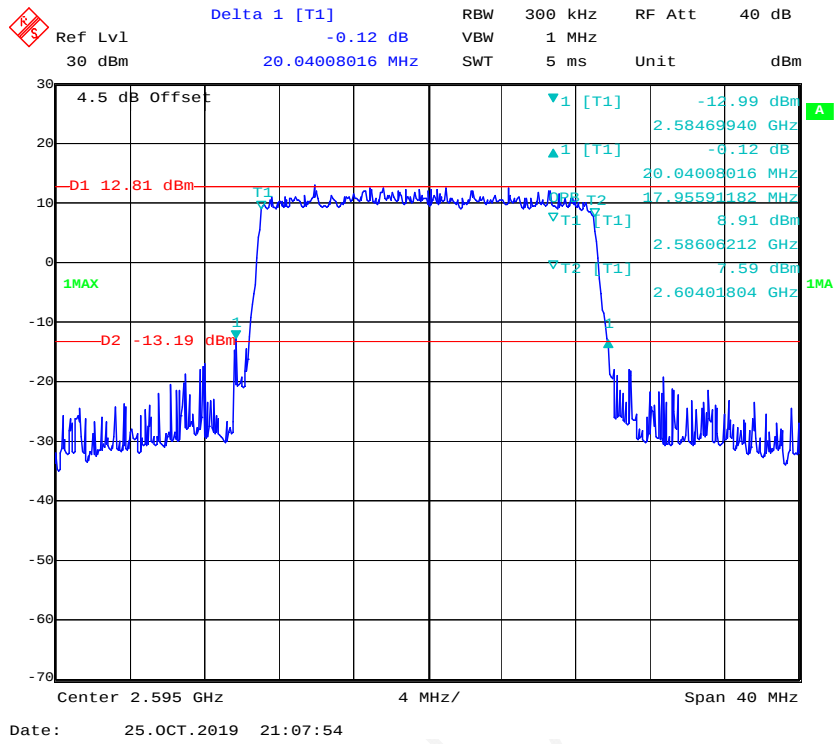
16QAM_10 MHz



16QAM_15 MHz



16QAM_20 MHz



FCC §2.1051, §22.917(a) & §24.238(a) & §27.53, §90.691- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

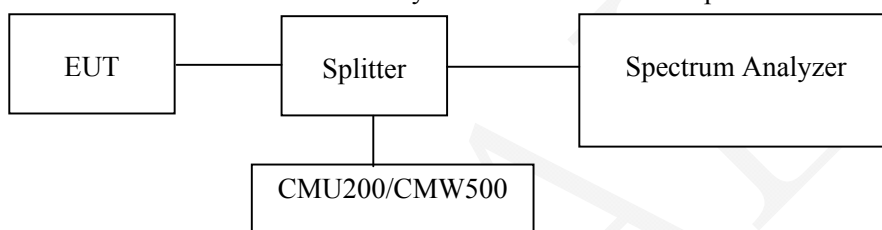
Applicable Standard

FCC §2.1051, §22.917(a) , §24.238(a) and §27.53, §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. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSV40	101474	2019-01-09	2020-01-09
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2019-08-03	2020-08-03
Sinoscite	Band-stop filter	BSF824-862MS-1438-001	1438001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1710-1785MN-0383-003	0383003	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF1850-1910MS-0935V2	0935V2	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2500-2750MS-1439-001	1437001	2019-06-16	2020-06-16
Sinoscite	Band-stop filter	BSF2300-2400MS-0777-003	0777003	2019-06-16	2020-06-16
R&S	Spectrum Analyzer	FSP 38	100478	2018-12-10	2019-12-10
yzjingcheng	Coaxial Cable	KTRFBU-141-50	41010013	Each time	/
Unknown	Coaxial Cable	C-SJ00-0010	C0010/03	Each time	/
E-Microwave	Two-way Splitter	ODP-1-6-2S	OE0120142	Each time	/

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

Test Data**Environmental Conditions**

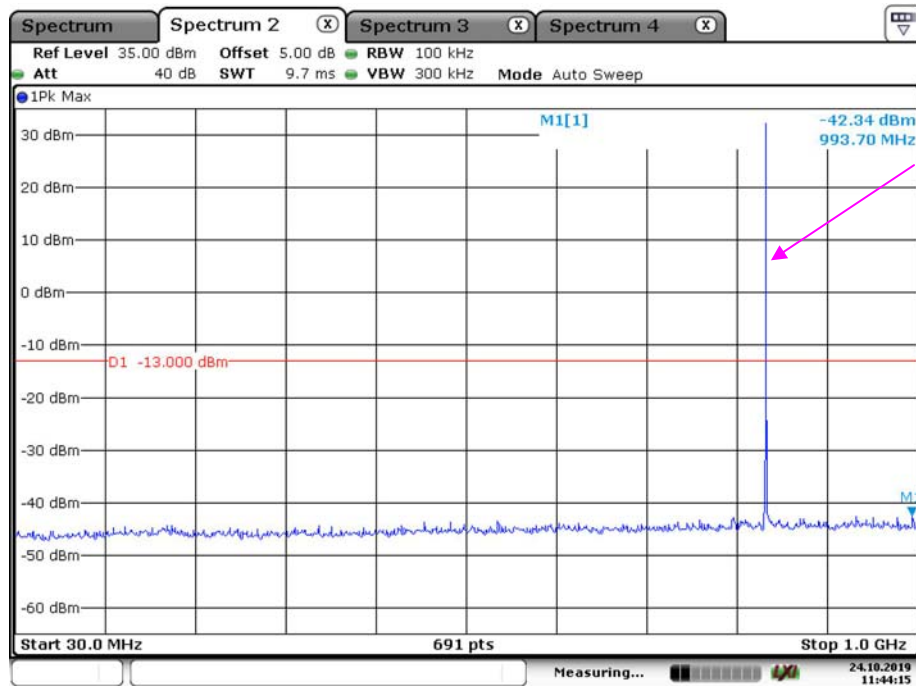
Temperature:	26.3~28.2 °C
Relative Humidity:	47~56%
ATM Pressure:	100.2~101.9kPa
Tester:	Blake Yang, Lily Xie
Test Date:	2019-10-15~2019-10-25

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

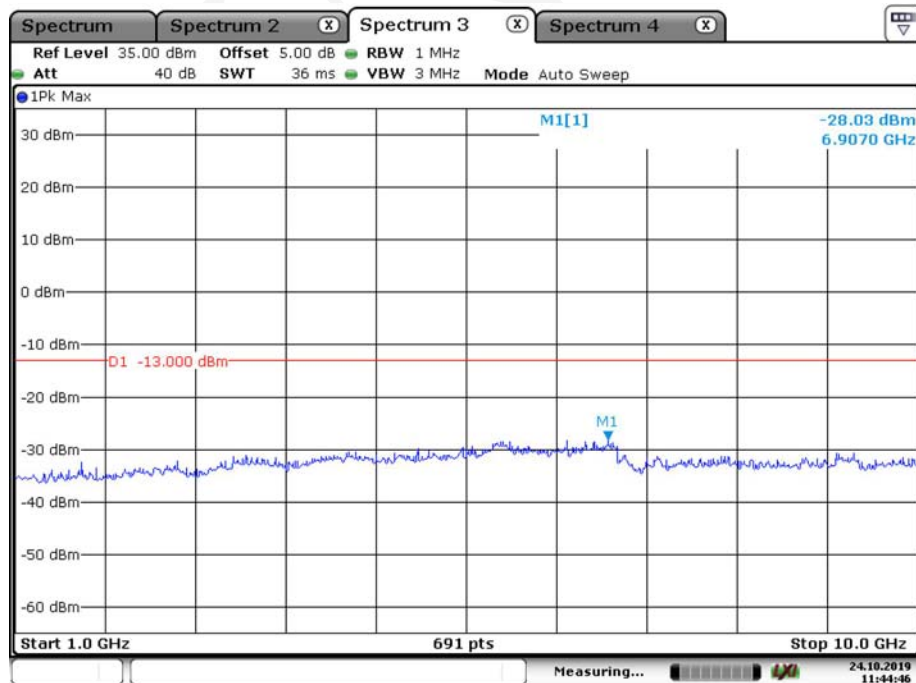
FINAL

Module 2:

GPRS850 Middle Channel

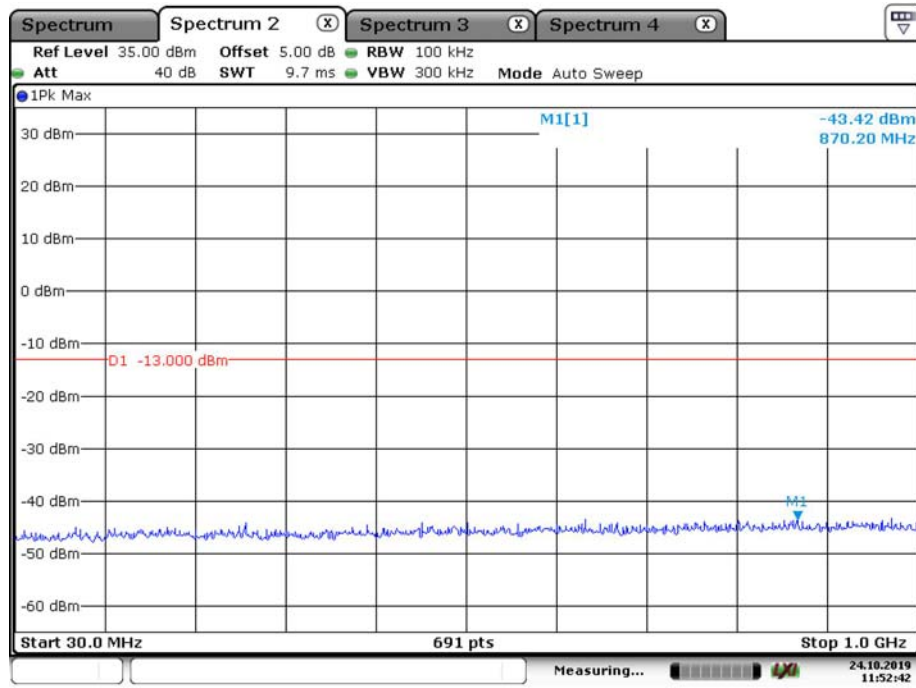


Fundamental



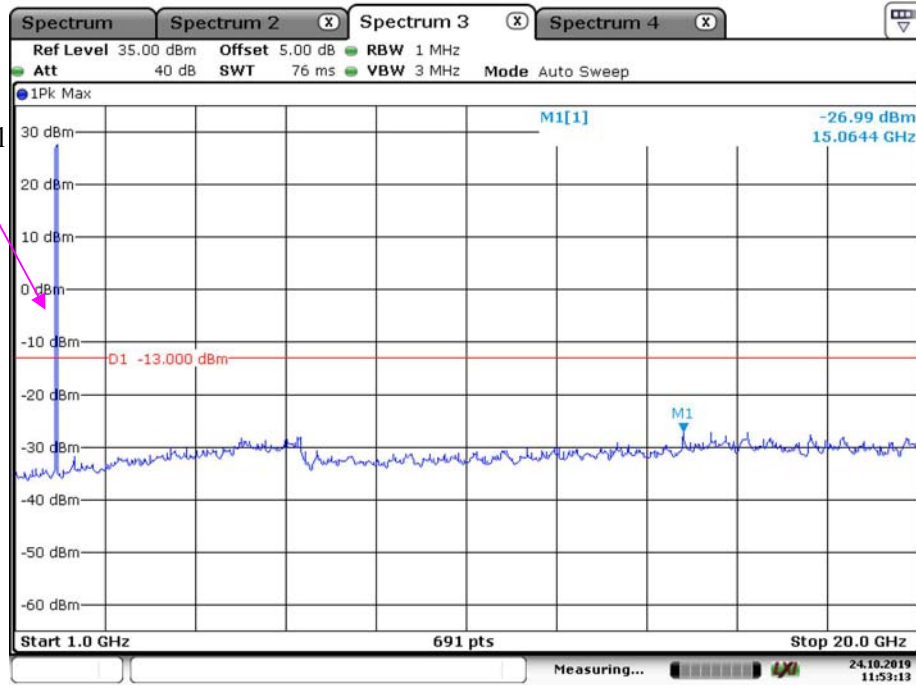
Date: 24.OCT.2019 11:44:46

GPRS 1900 Middle Channel



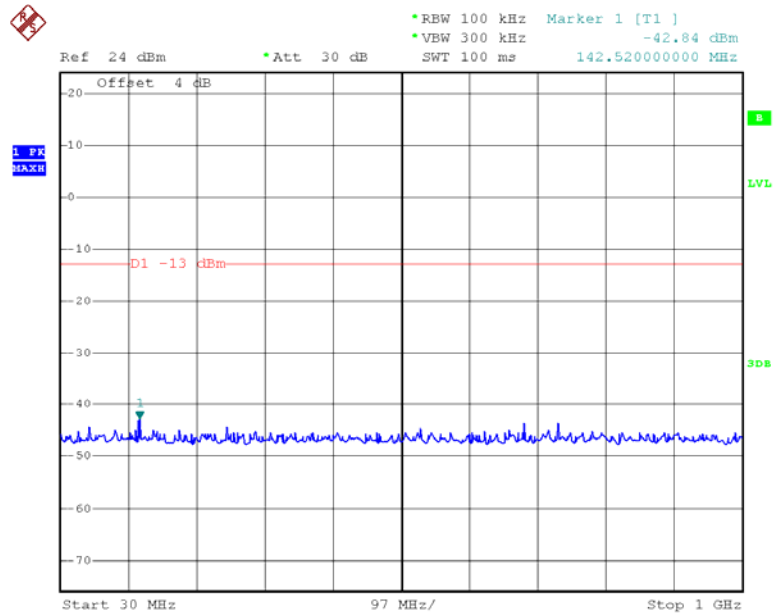
Date: 24.OCT.2019 11:52:42

Fundamental



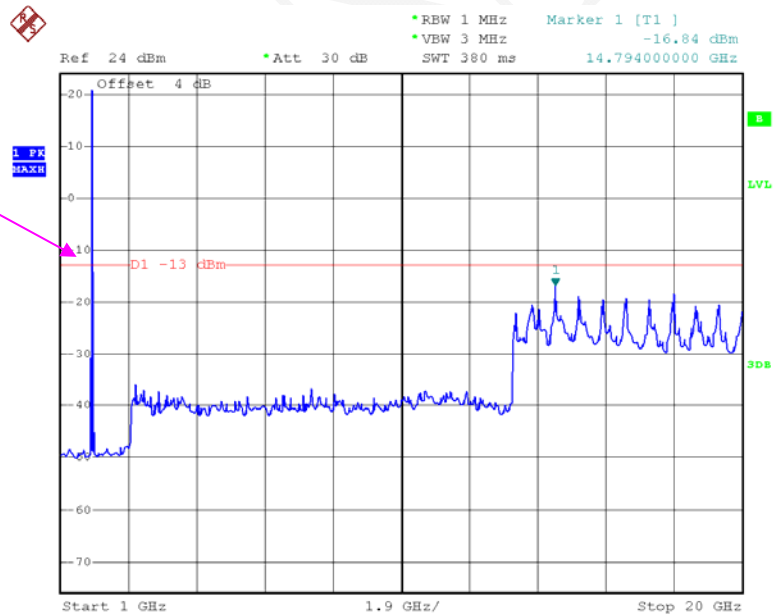
Date: 24.OCT.2019 11:53:13

WCDMA Band 2 Rel 99 Middle Channel



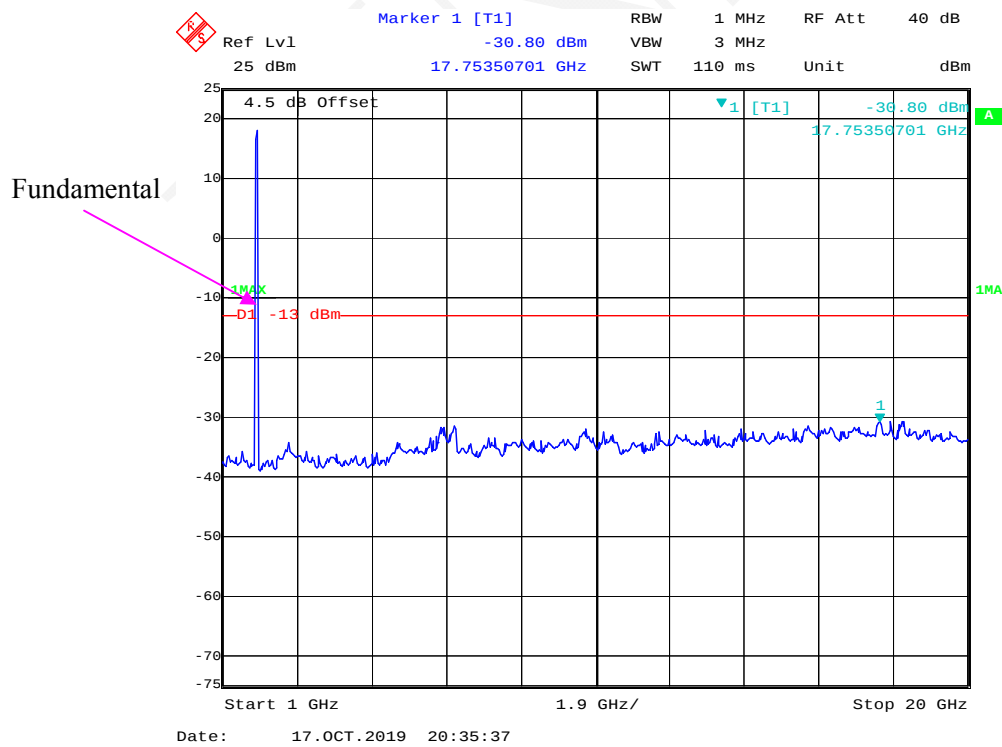
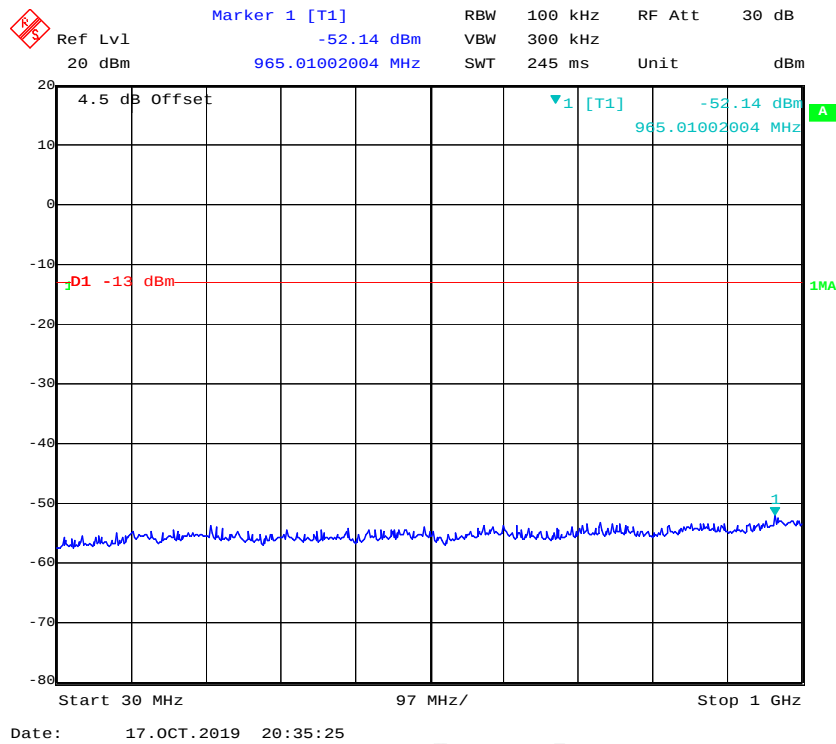
Date: 21.DEC.2019 09:20:17

Fundamental

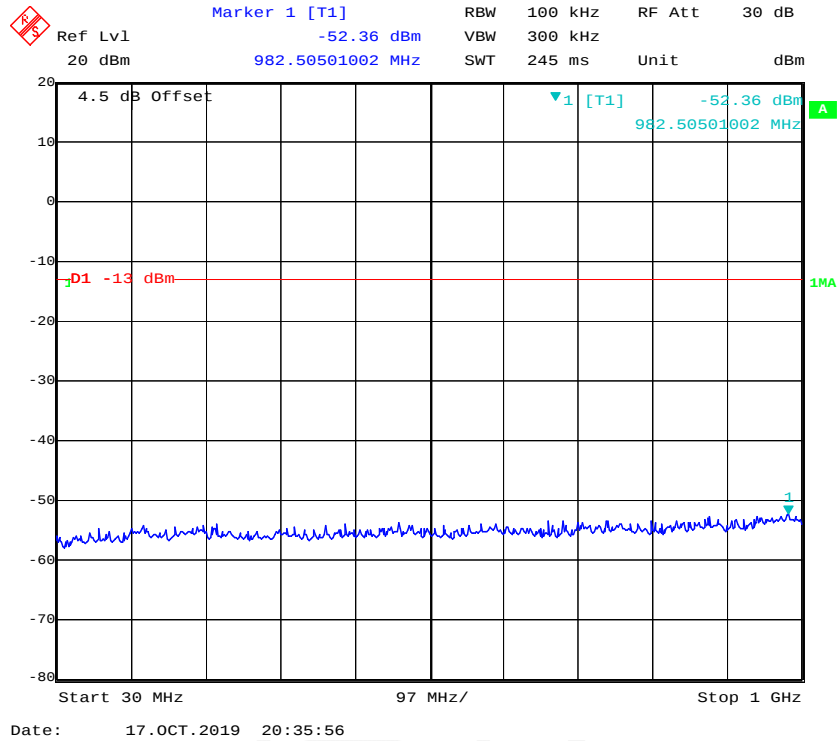


Date: 21.DEC.2019 09:20:56

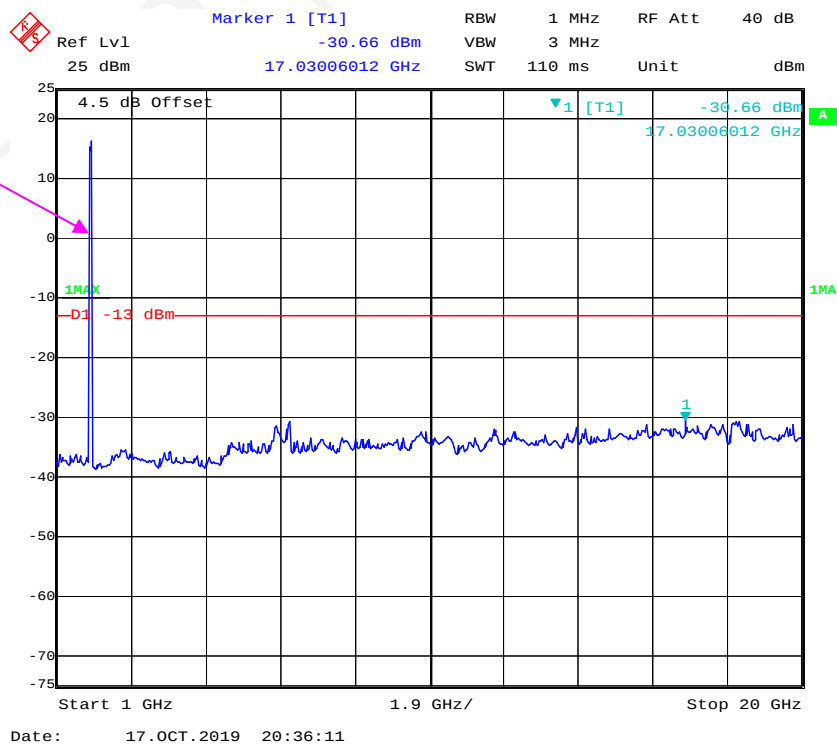
LTE Band 2, QPSK 1.4 MHz Middle Channel



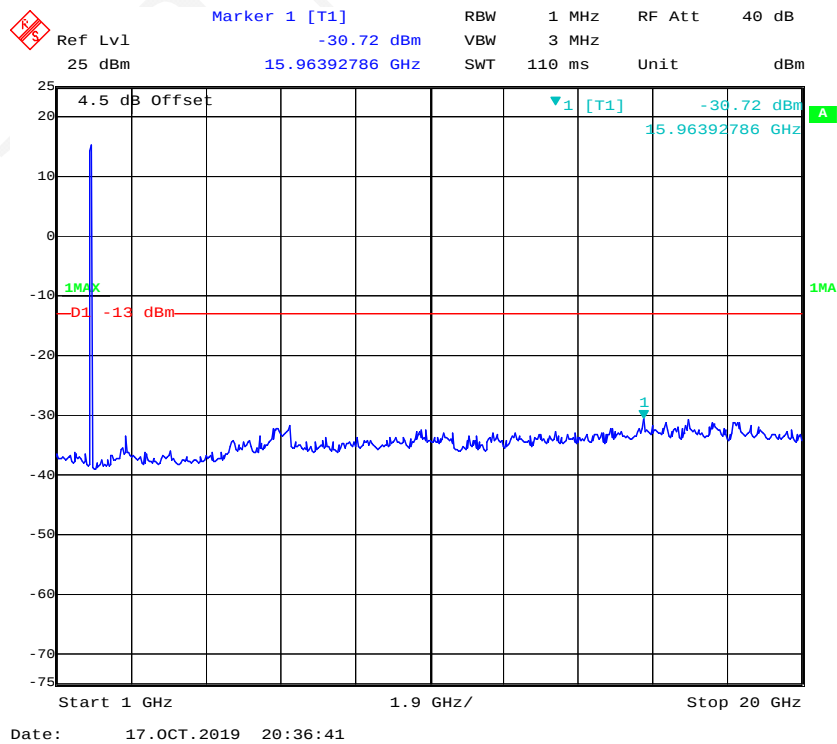
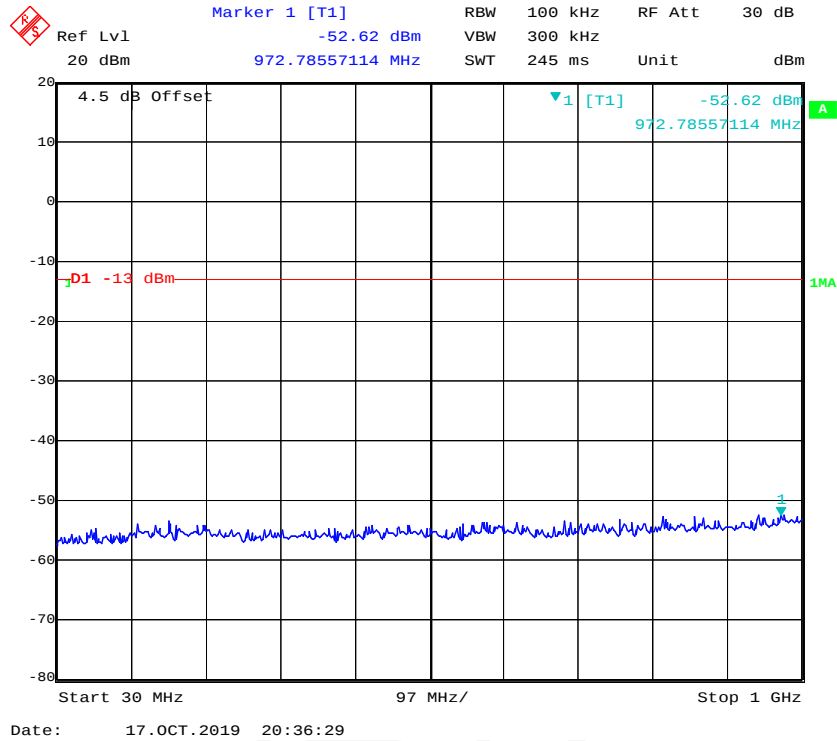
LTE Band 2, QPSK 3 MHz Middle Channel



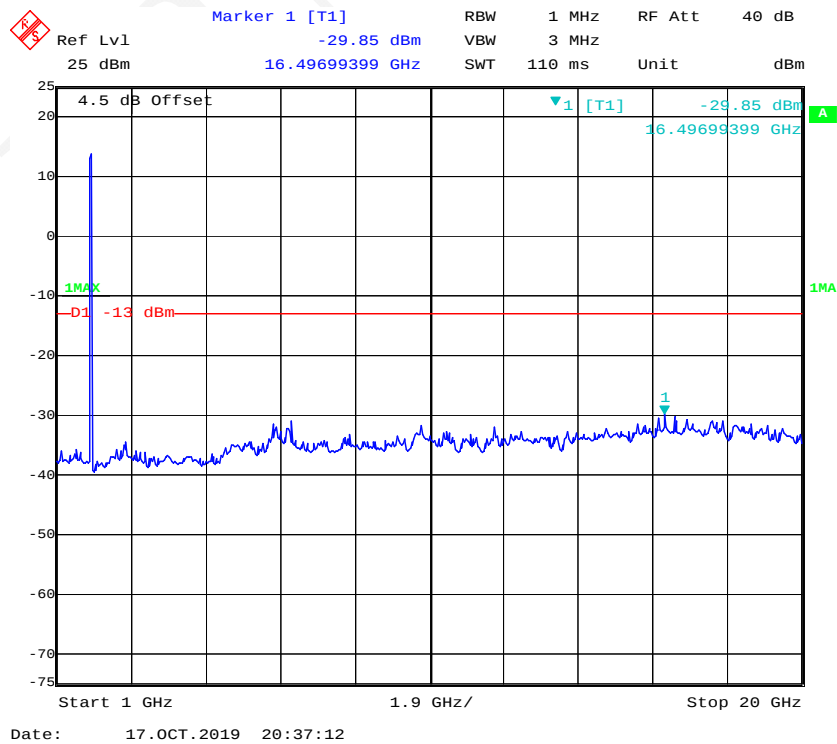
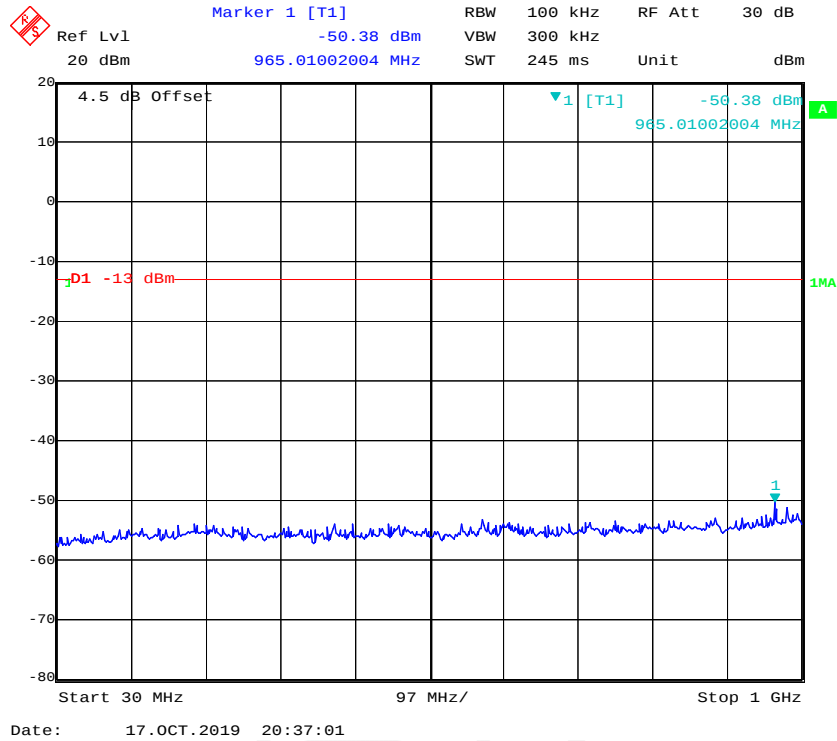
Fundamental



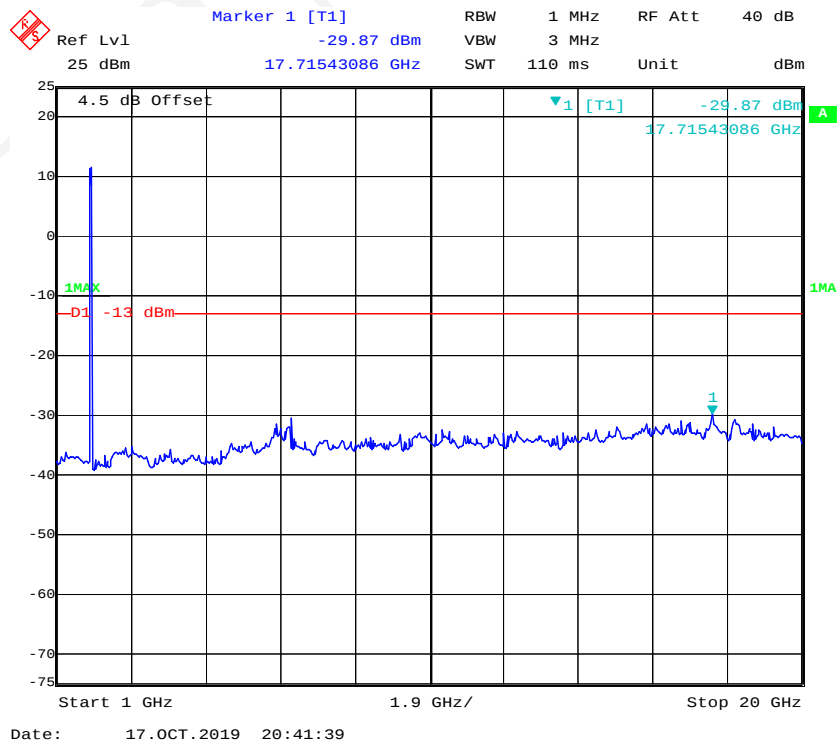
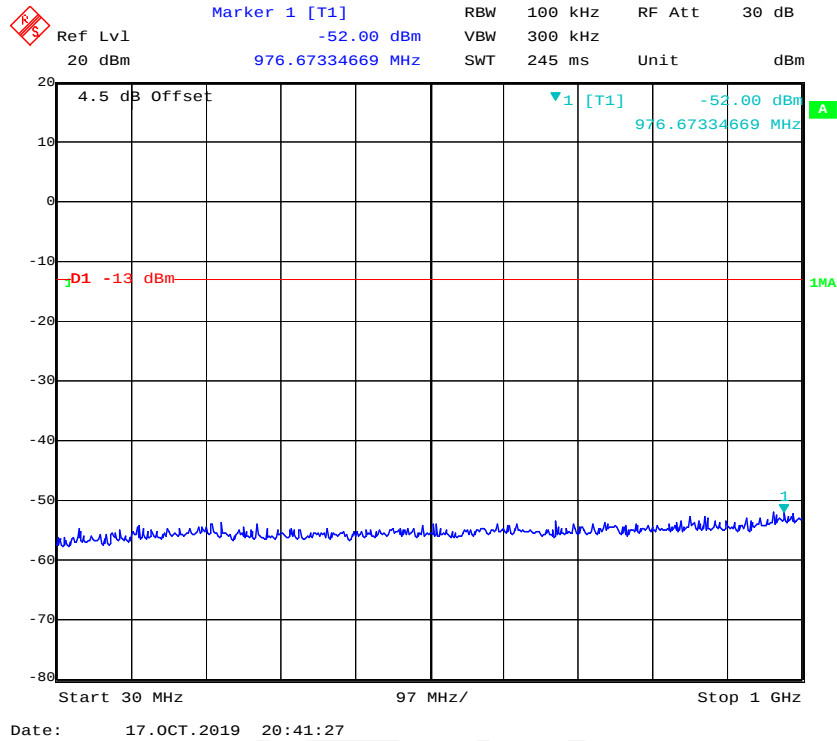
LTE Band 2, QPSK 5 MHz Middle Channel



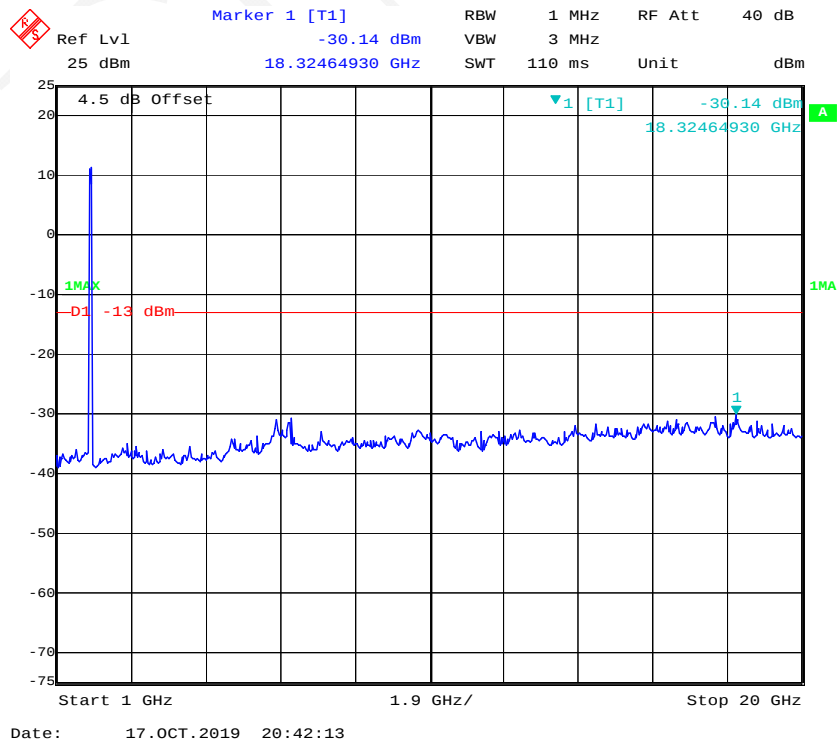
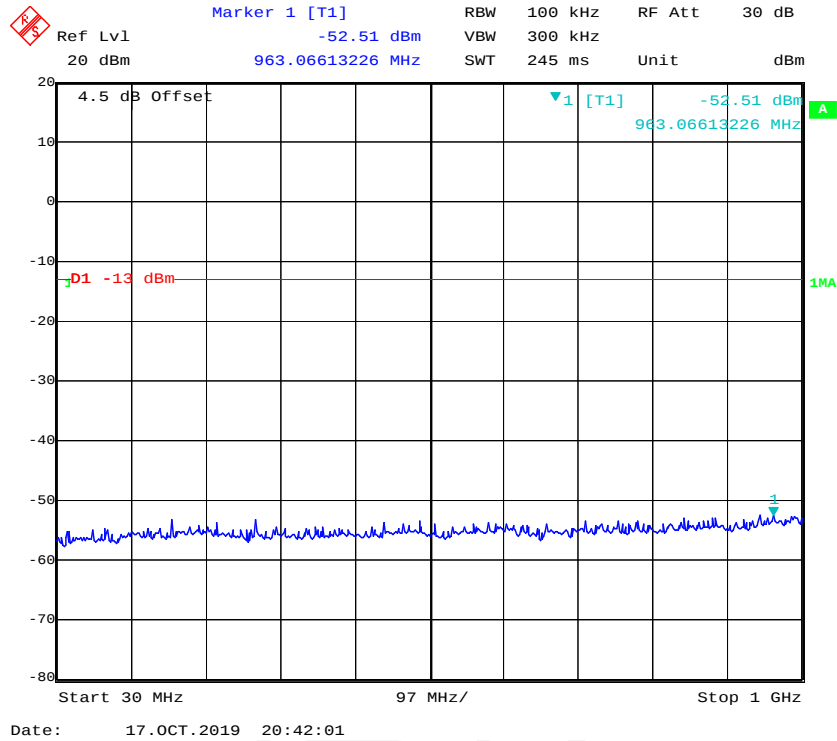
LTE Band 2, QPSK 10 MHz Middle Channel



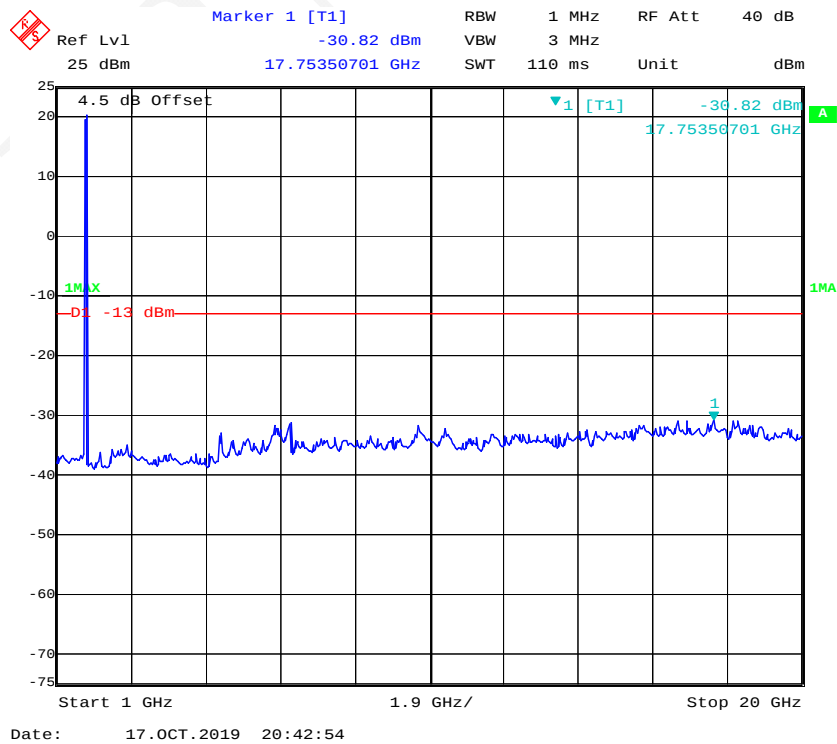
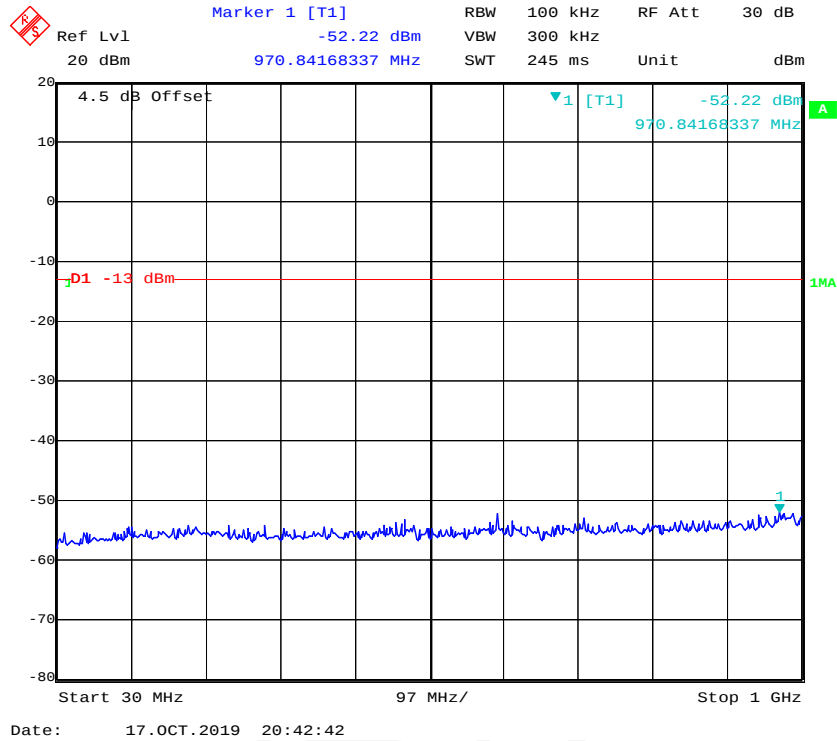
LTE Band 2, QPSK 15 MHz Middle Channel



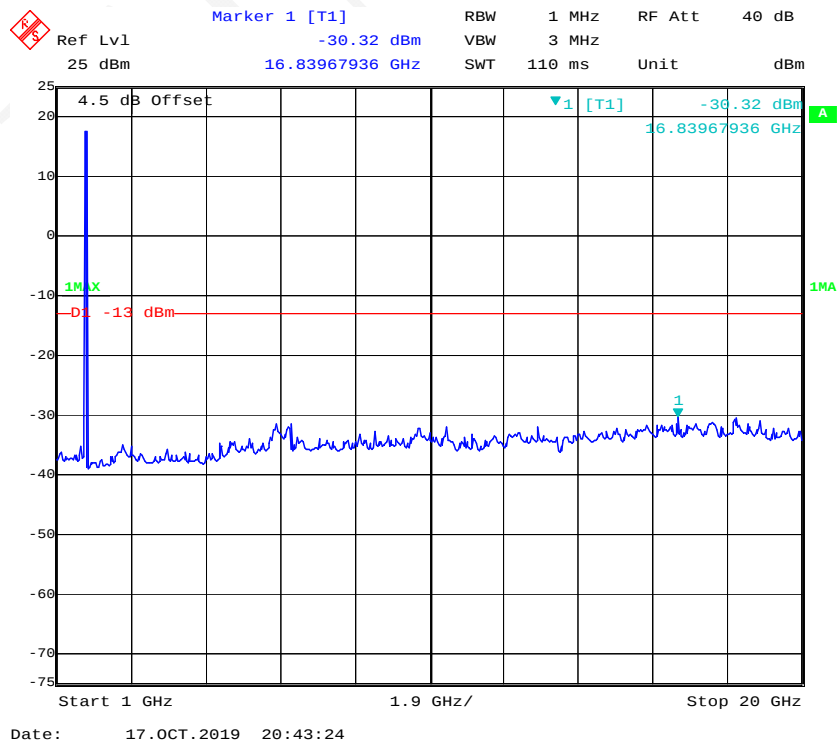
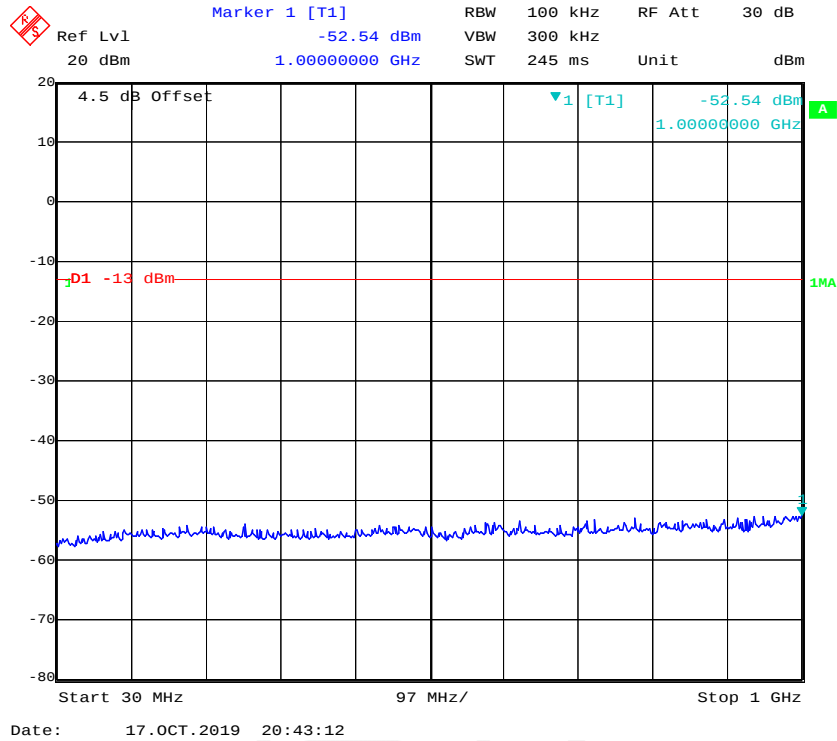
LTE Band 2, QPSK 20 MHz Middle Channel



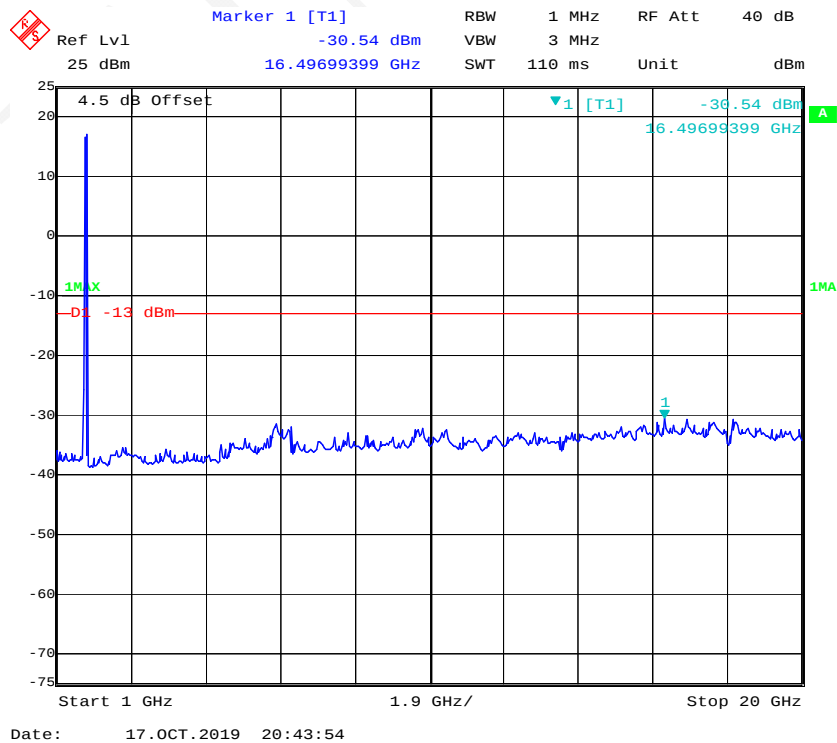
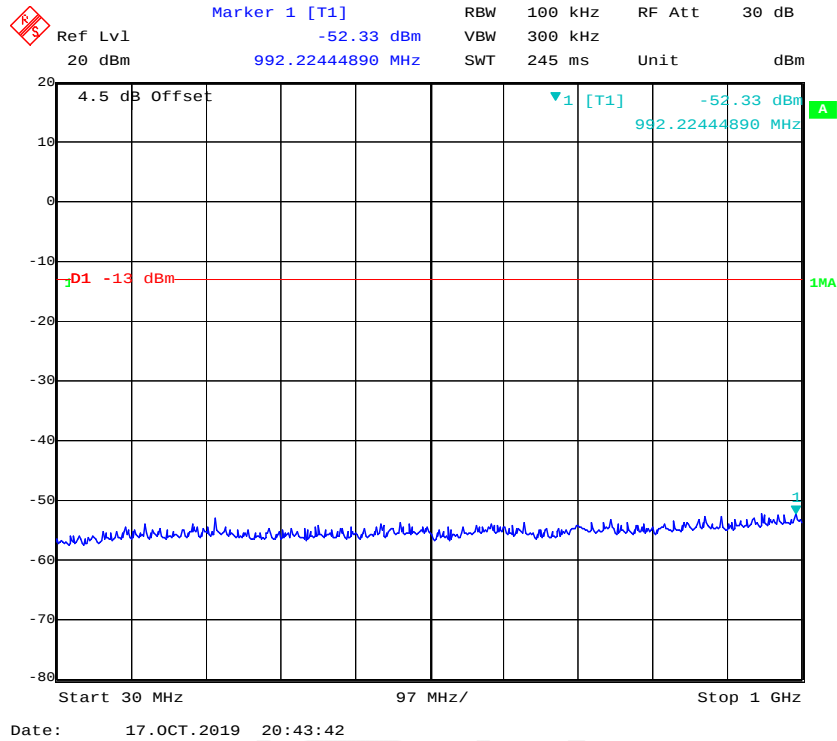
LTE Band 4, QPSK 1.4 MHz Middle Channel



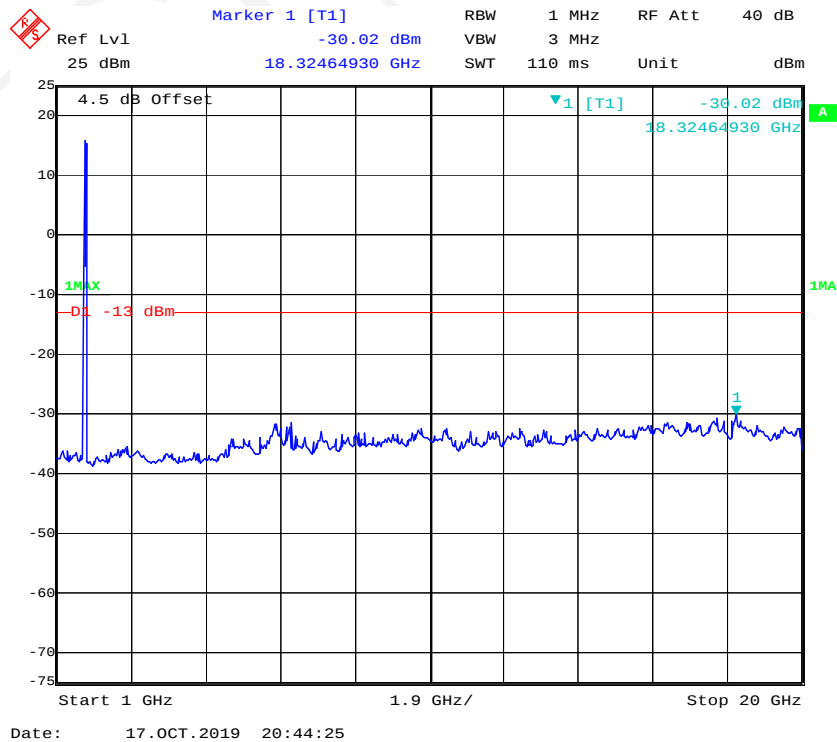
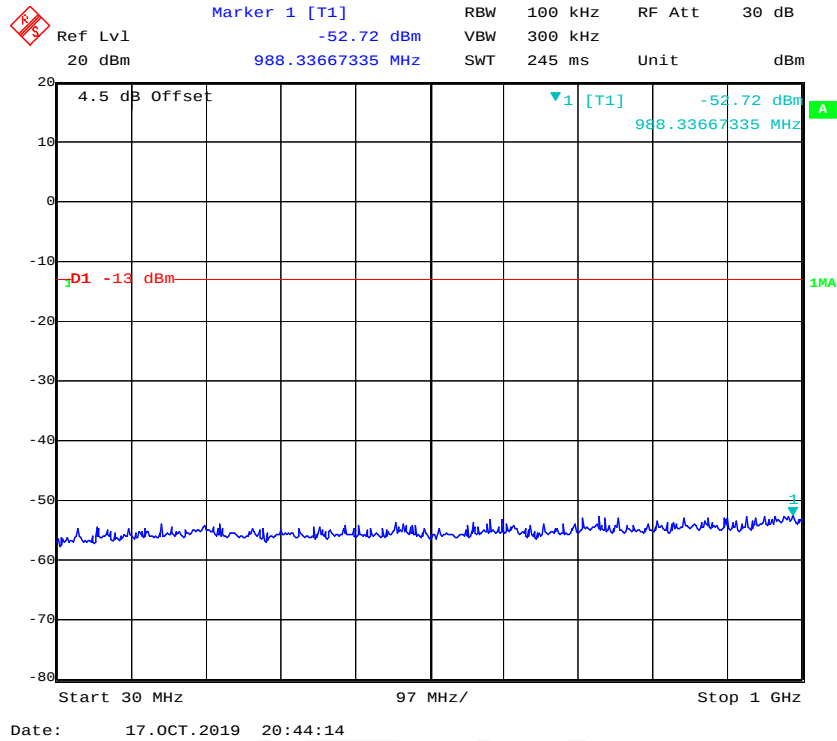
LTE Band 4, QPSK 3 MHz Middle Channel



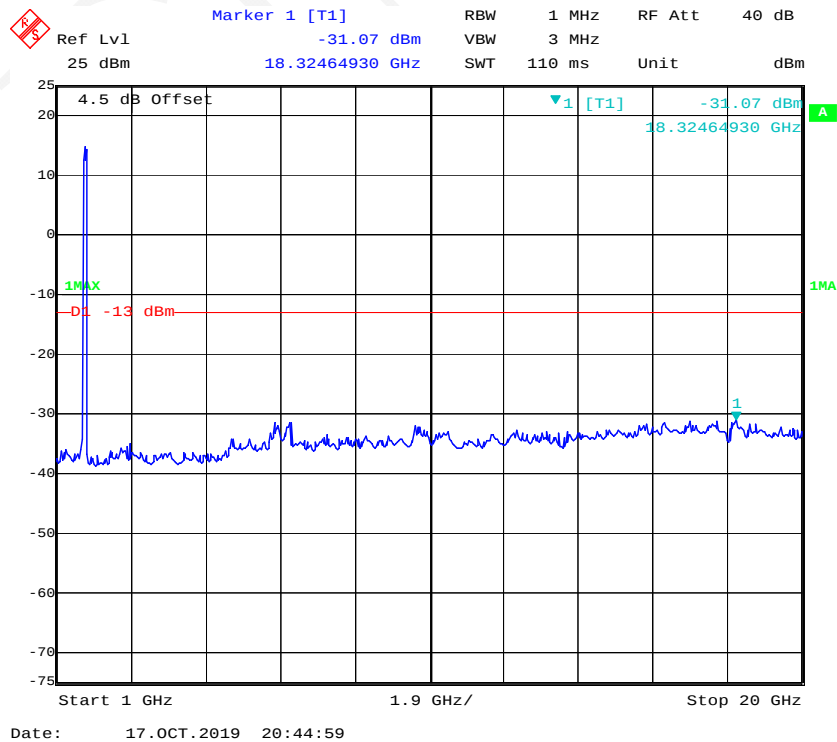
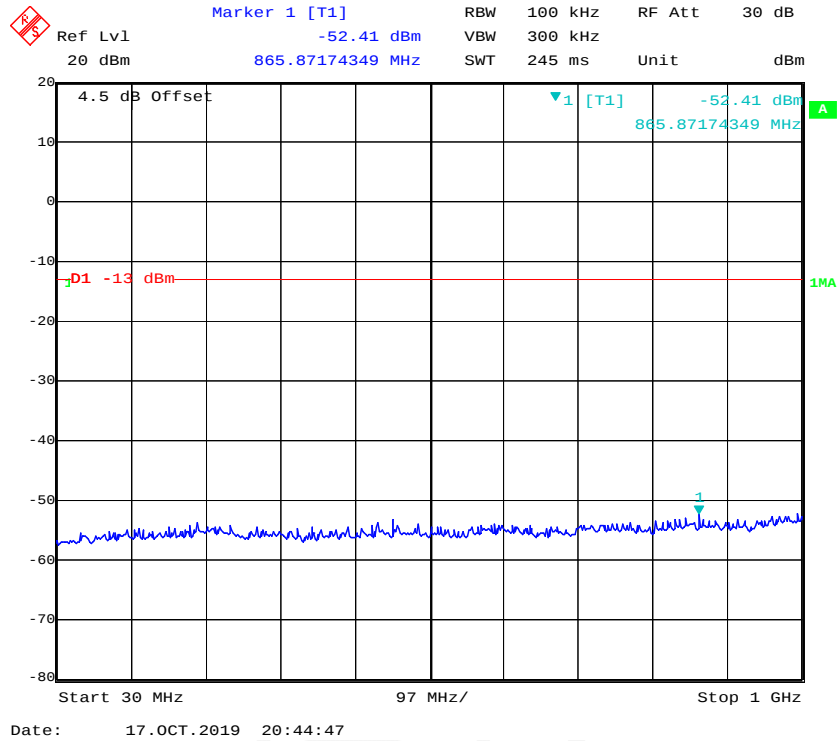
LTE Band 4, QPSK 5 MHz Middle Channel



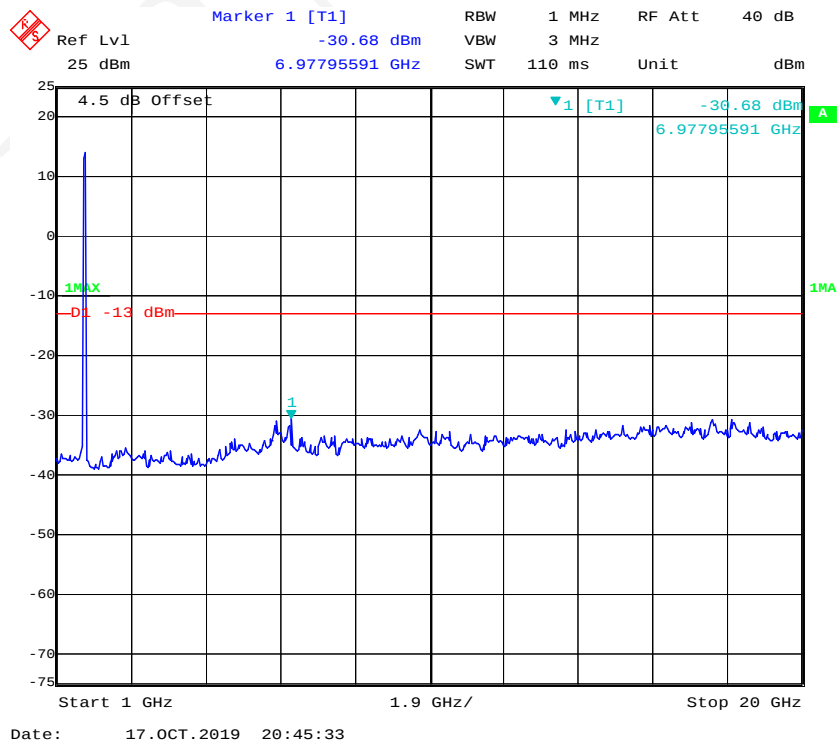
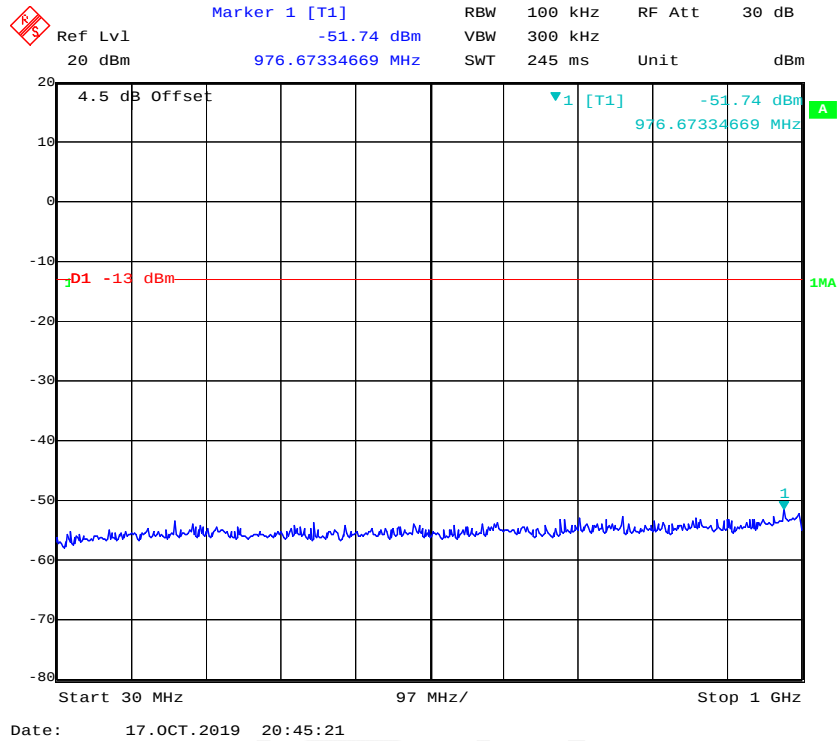
LTE Band 4, QPSK 10 MHz Middle Channel



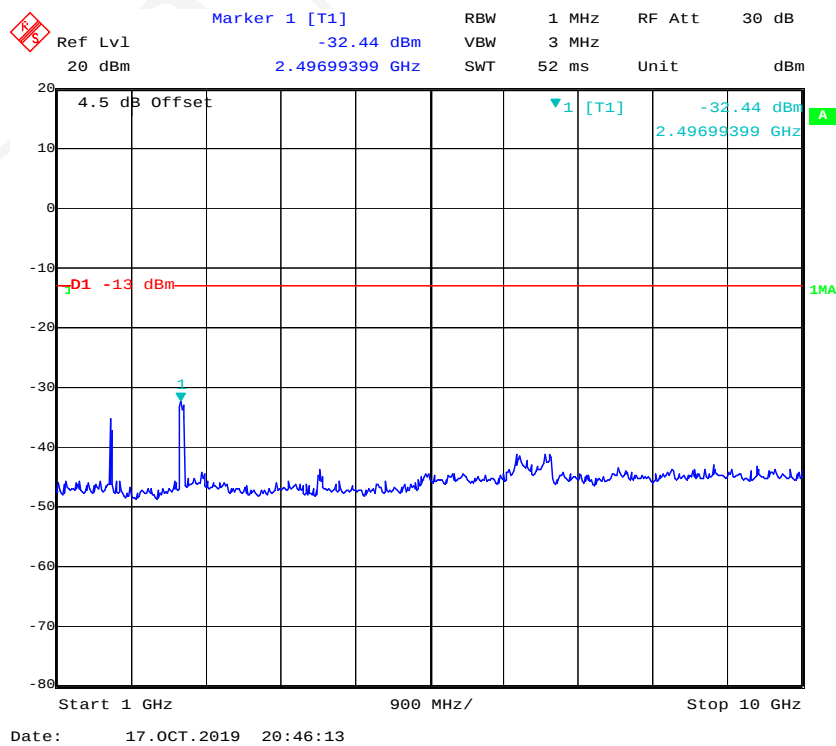
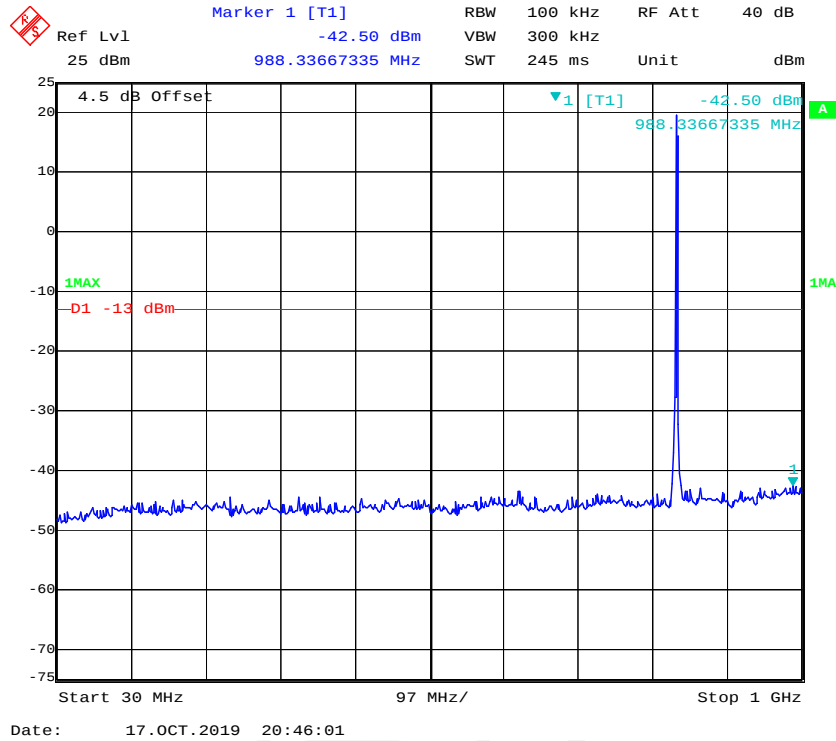
LTE Band 4, QPSK 15 MHz Middle Channel



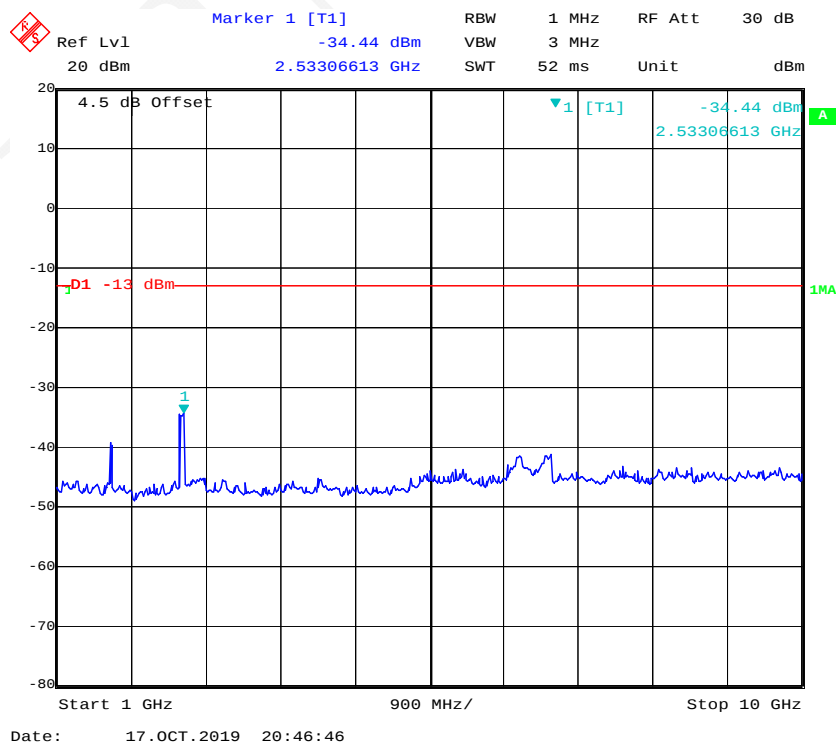
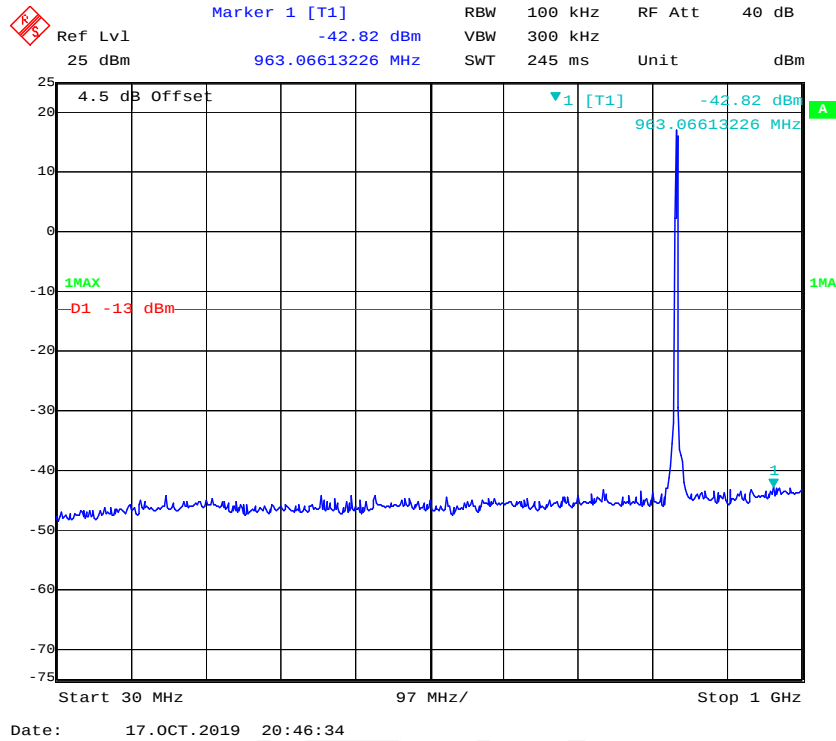
B LTE Band 4, QPSK 20 MHz Middle Channel



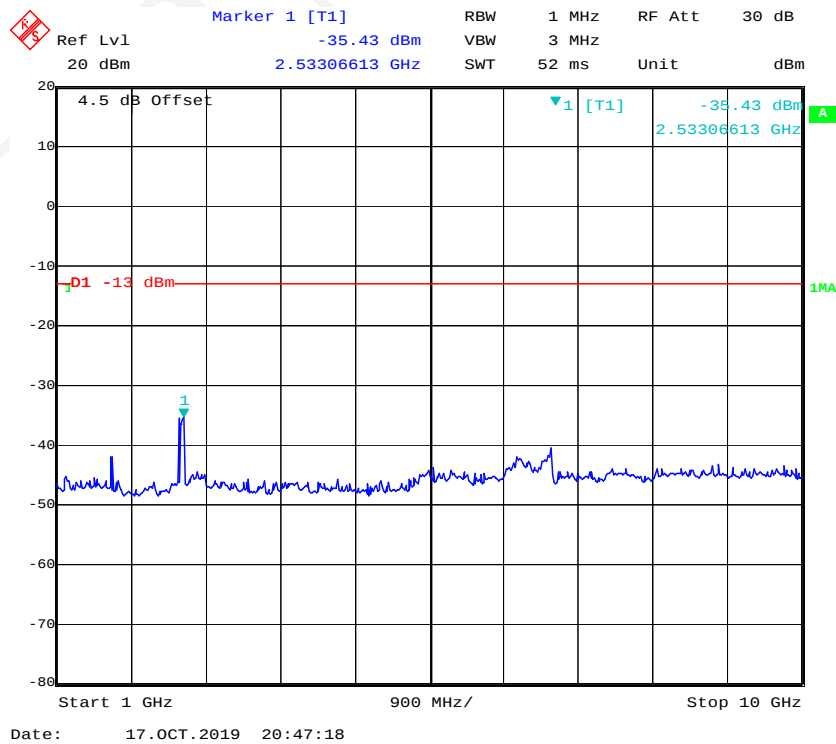
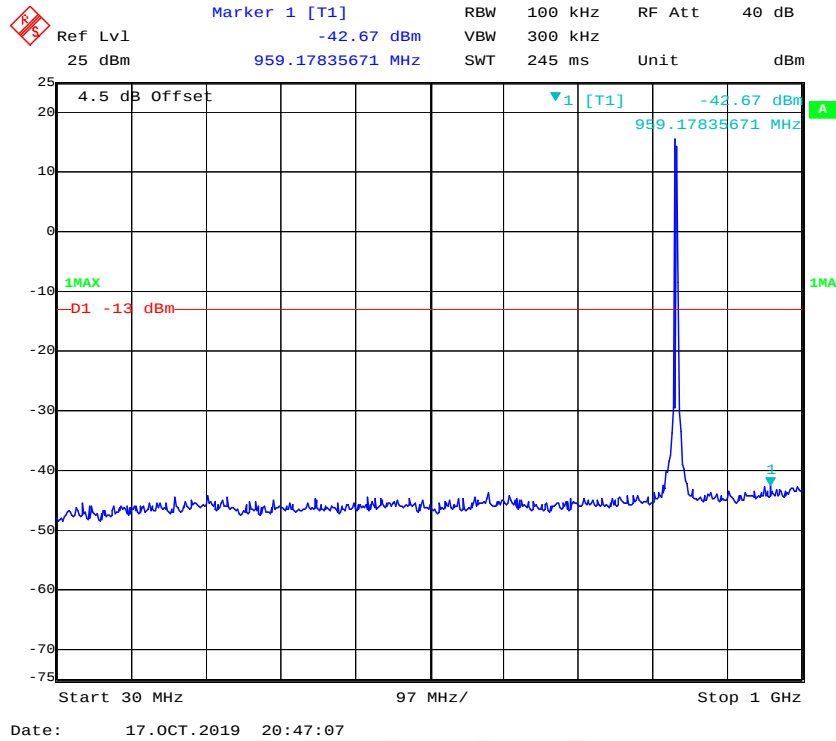
LTE Band 5, QPSK 1.4 MHz Middle Channel



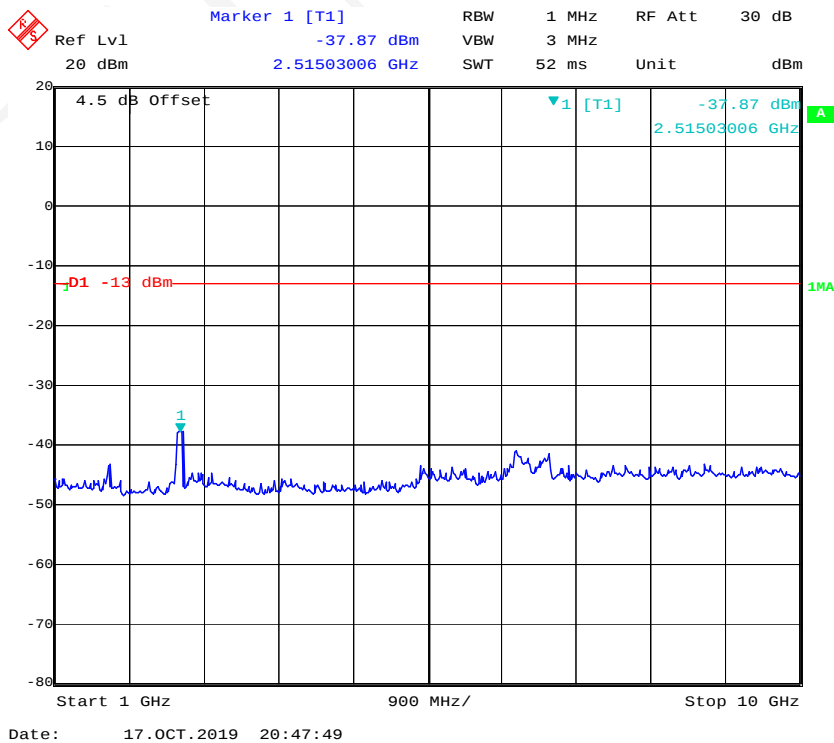
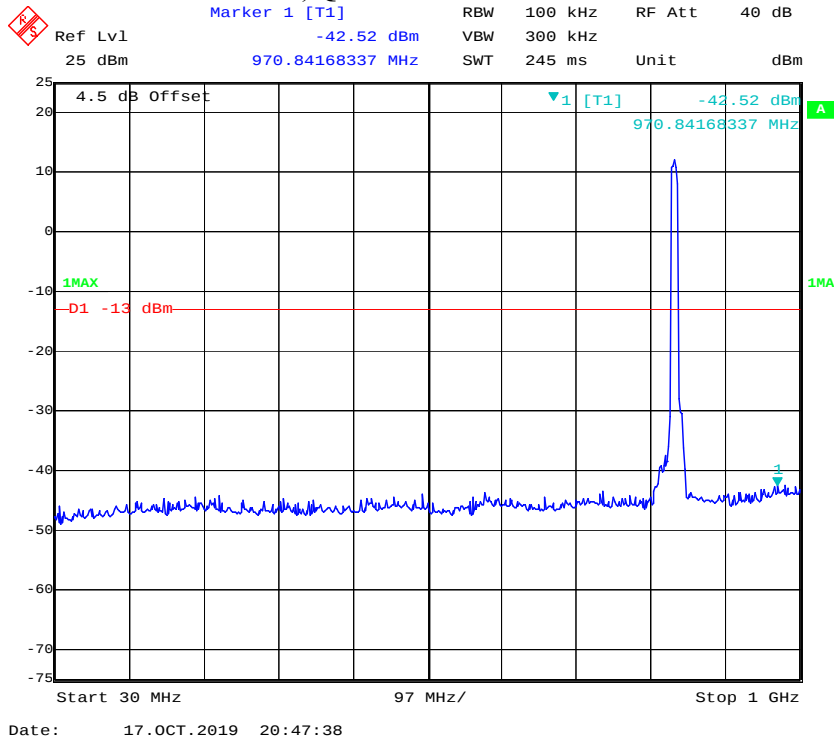
LTE Band 5, QPSK 3 MHz Middle Channel



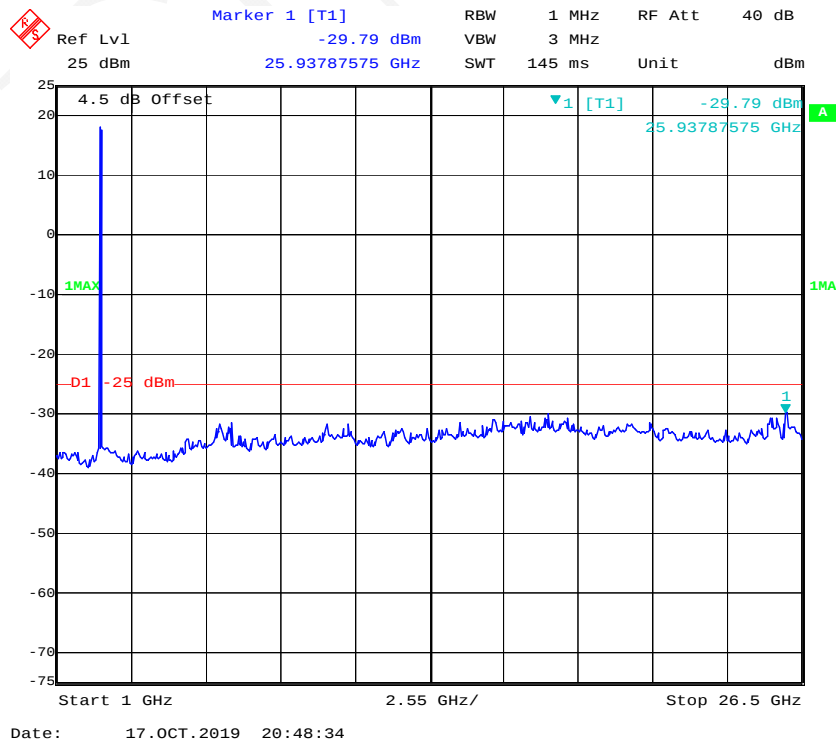
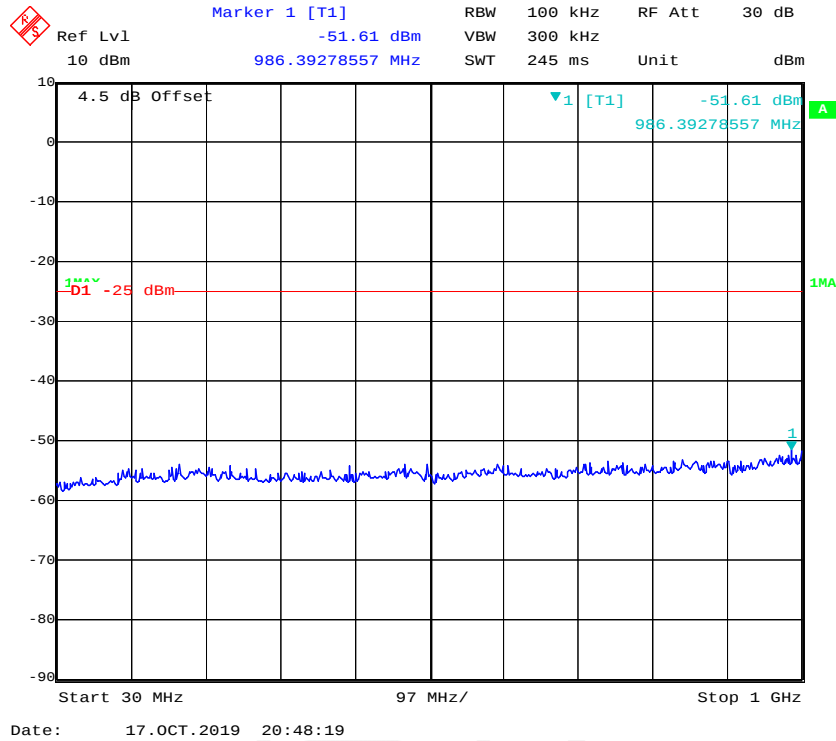
LTE Band 5, QPSK 5 MHz Middle Channel



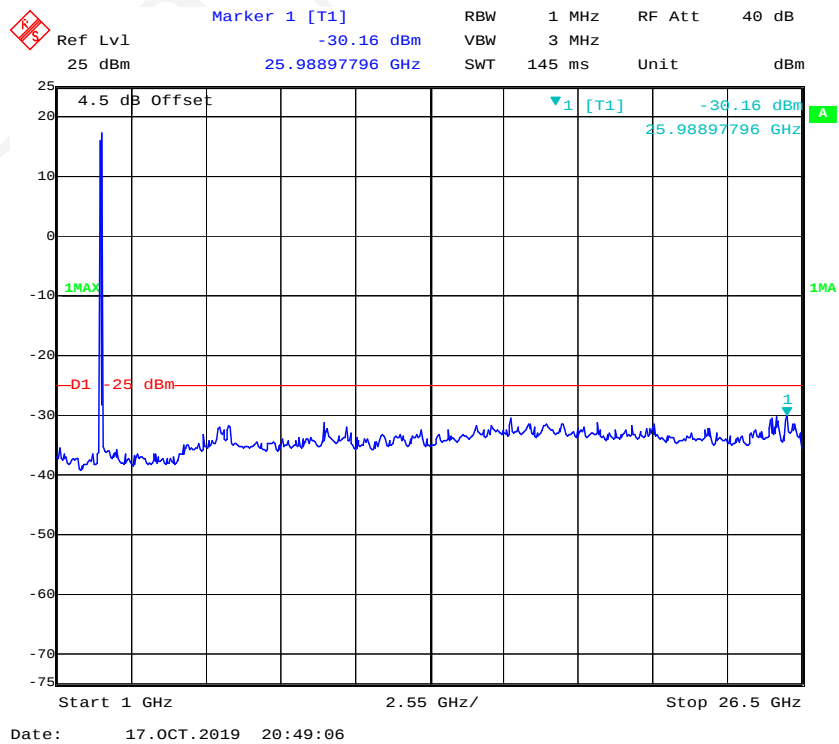
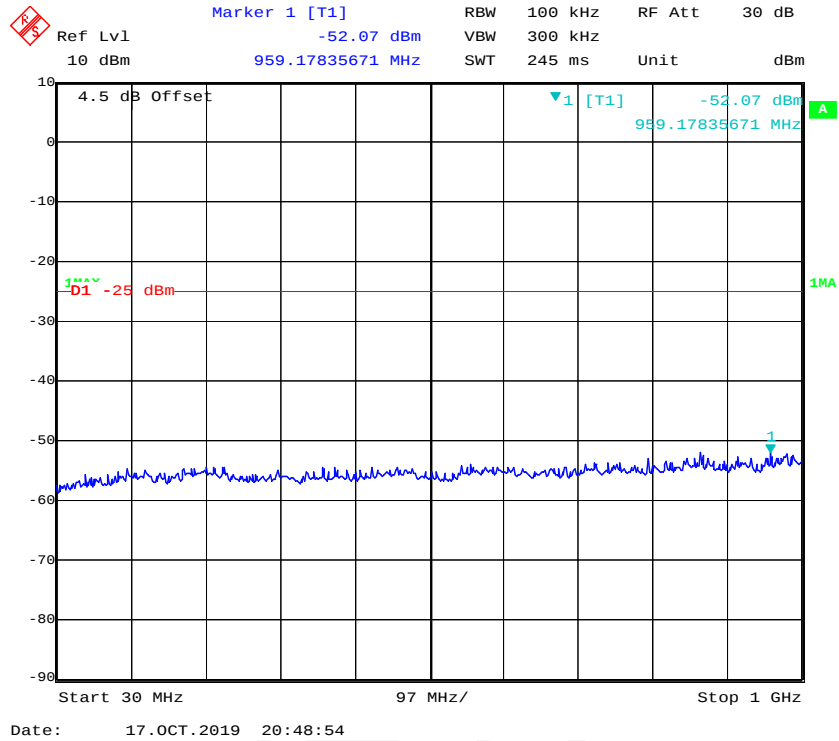
LTE Band 5, QPSK 10 MHz Middle Channel



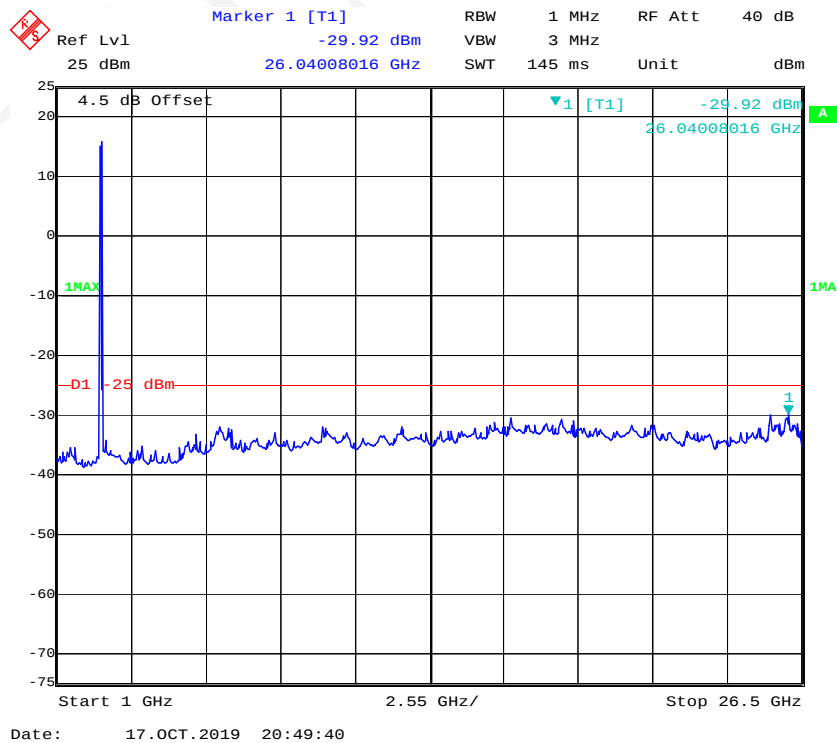
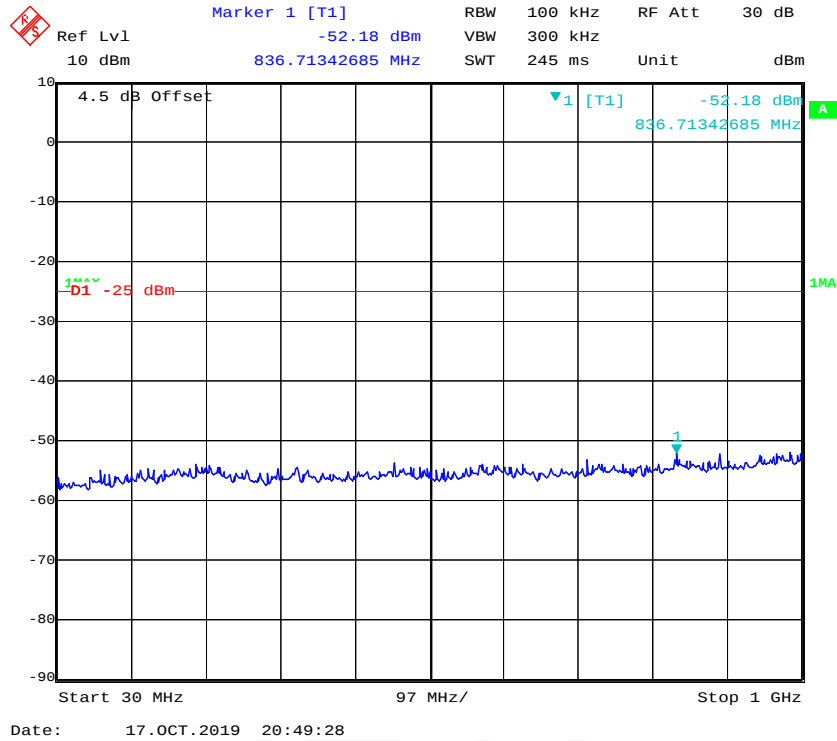
LTE Band 7, QPSK 5 MHz Middle Channel



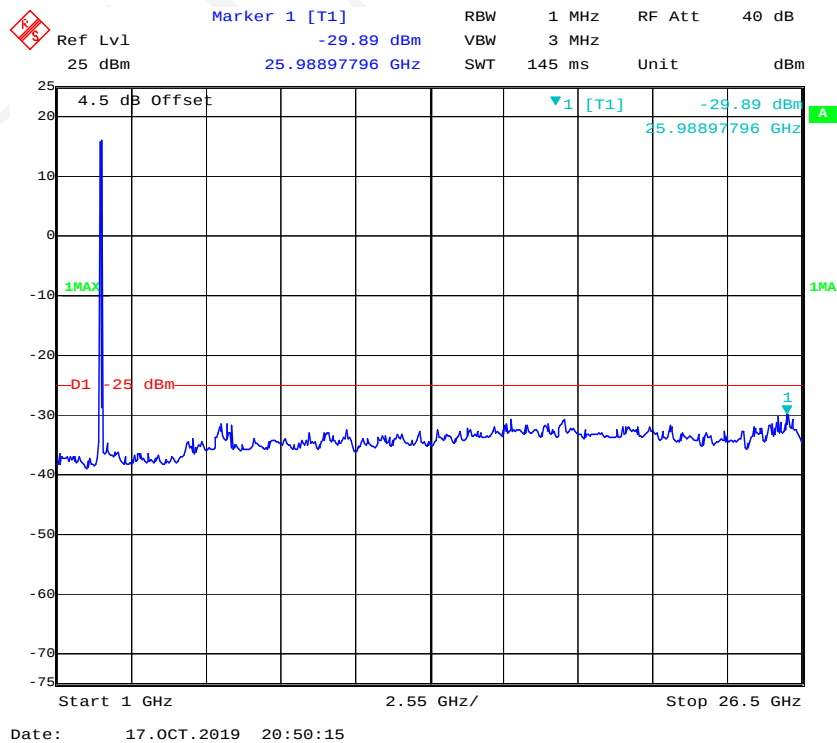
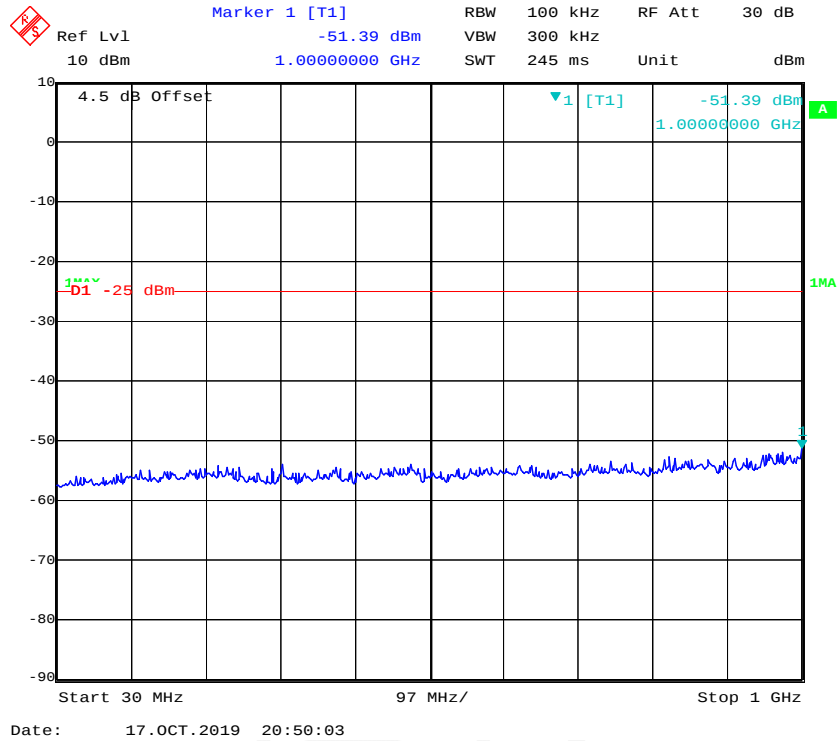
LTE Band 7, QPSK 10 MHz Middle Channel



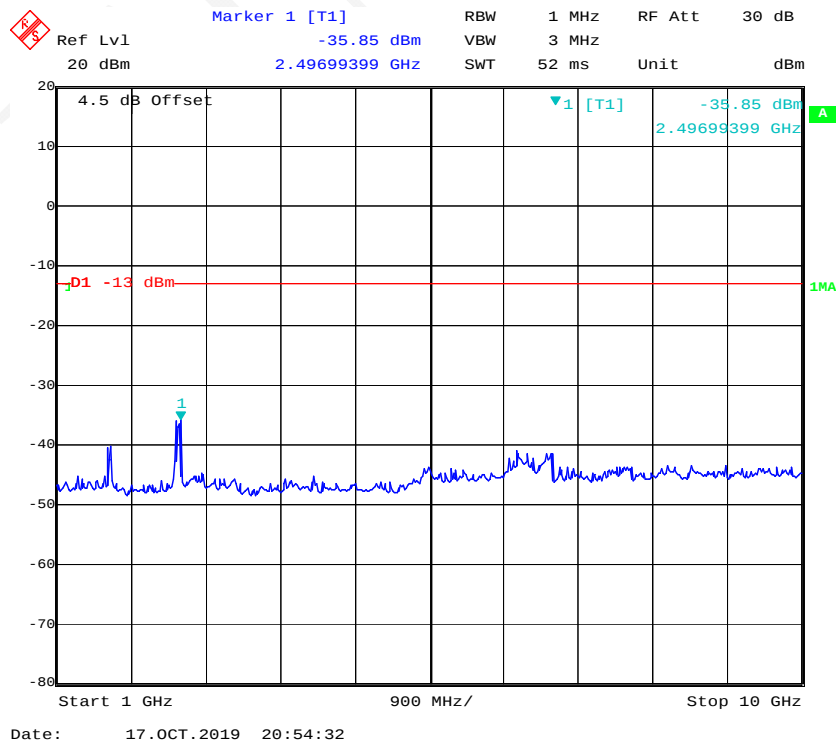
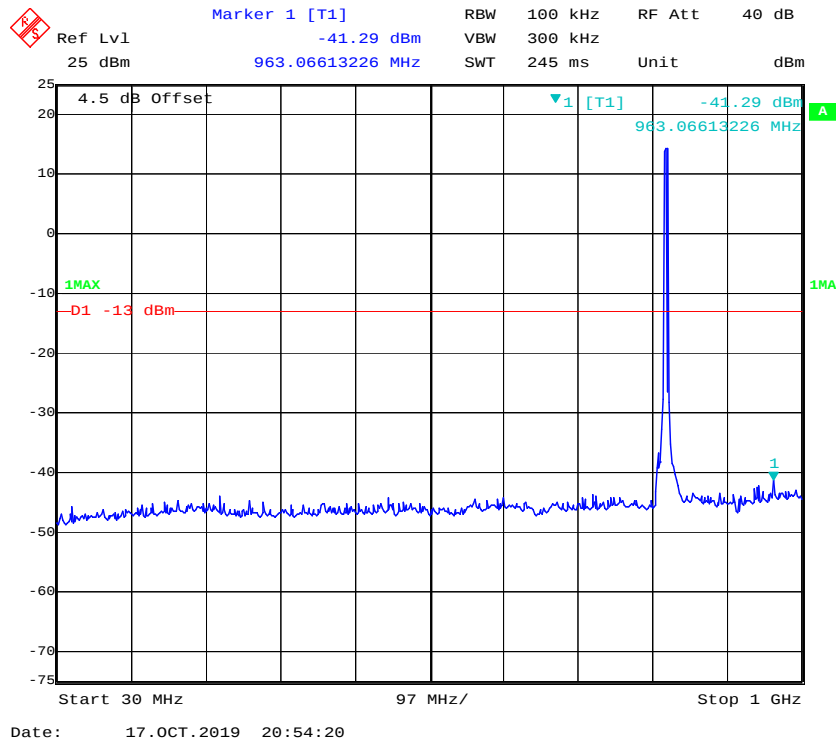
LTE Band 7, QPSK 15 MHz Middle Channel



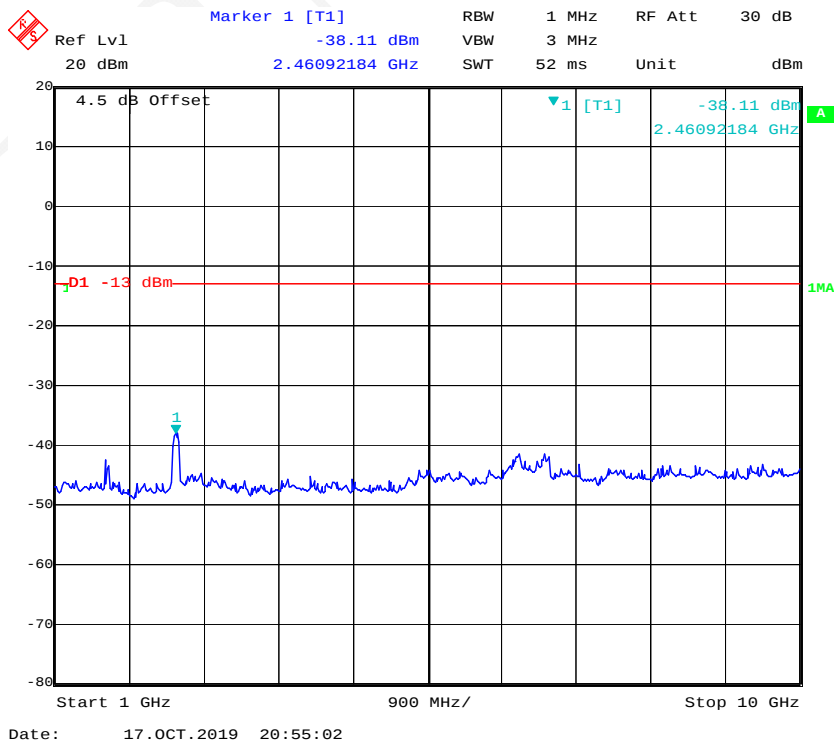
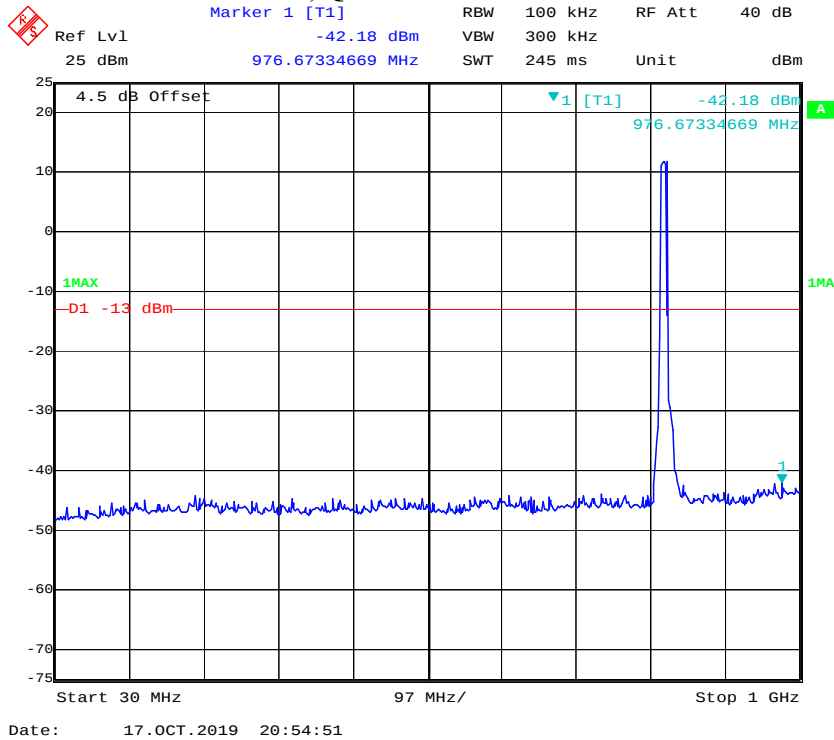
LTE Band 7, QPSK 20 MHz Middle Channel



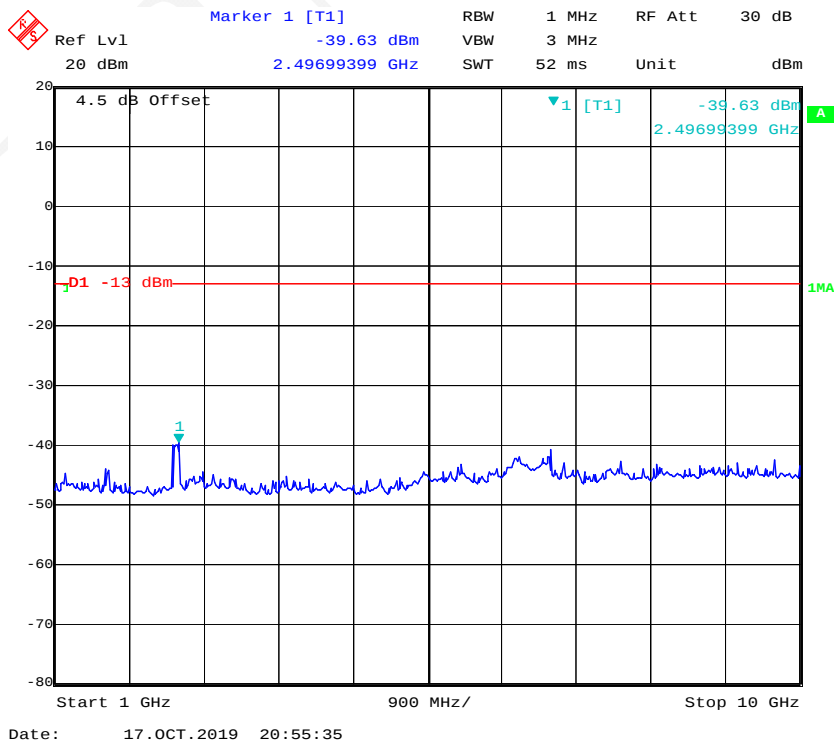
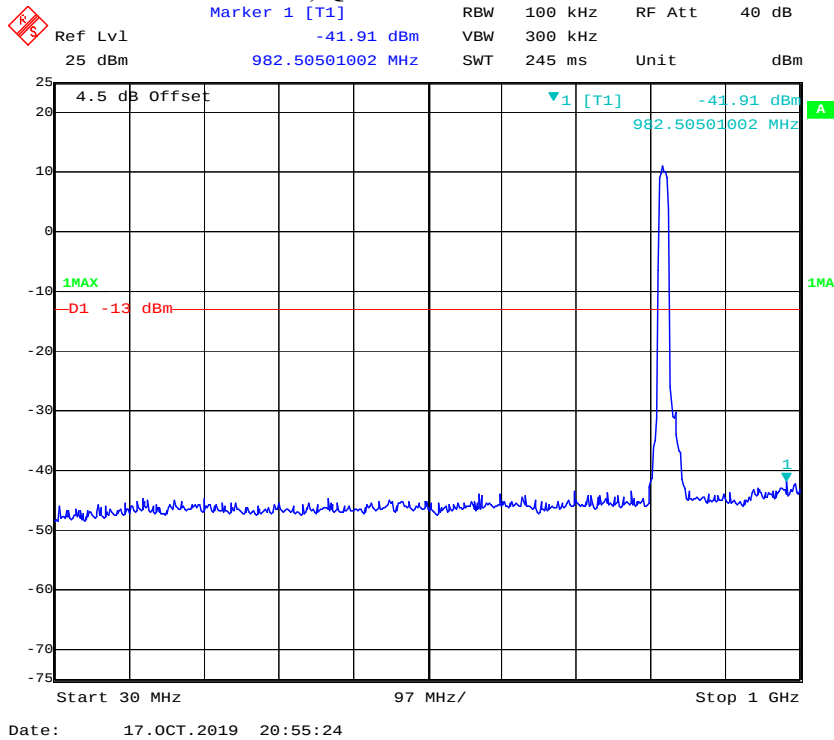
LTE Band 18, QPSK 5 MHz Middle Channel



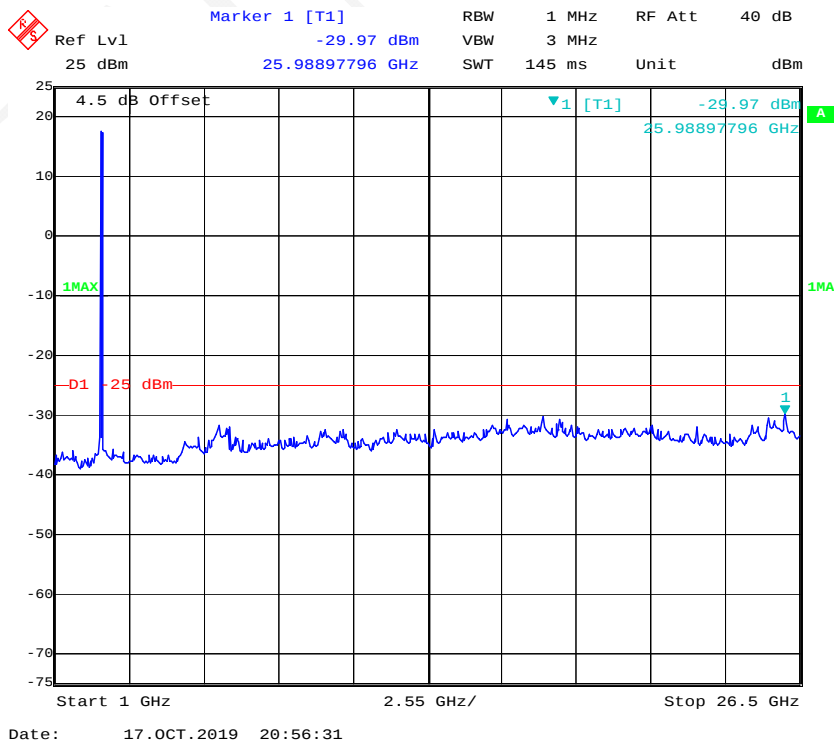
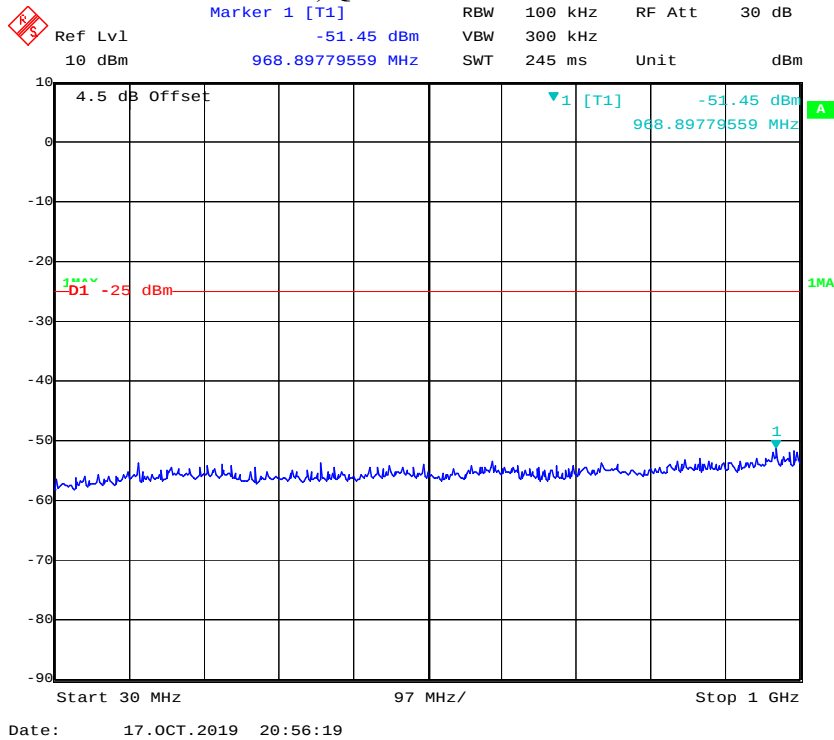
LTE Band 18, QPSK 10 MHz Middle Channel



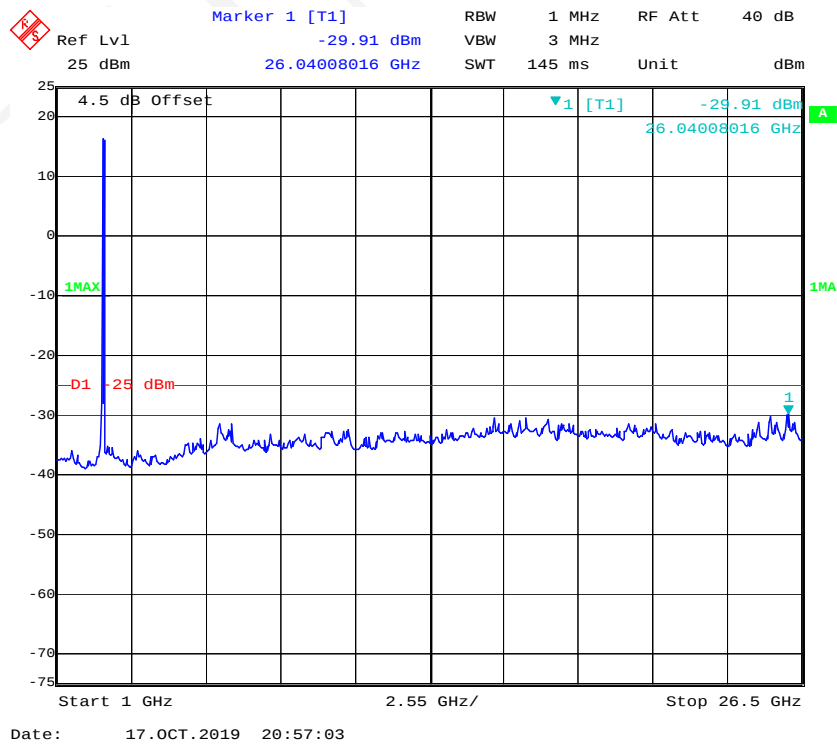
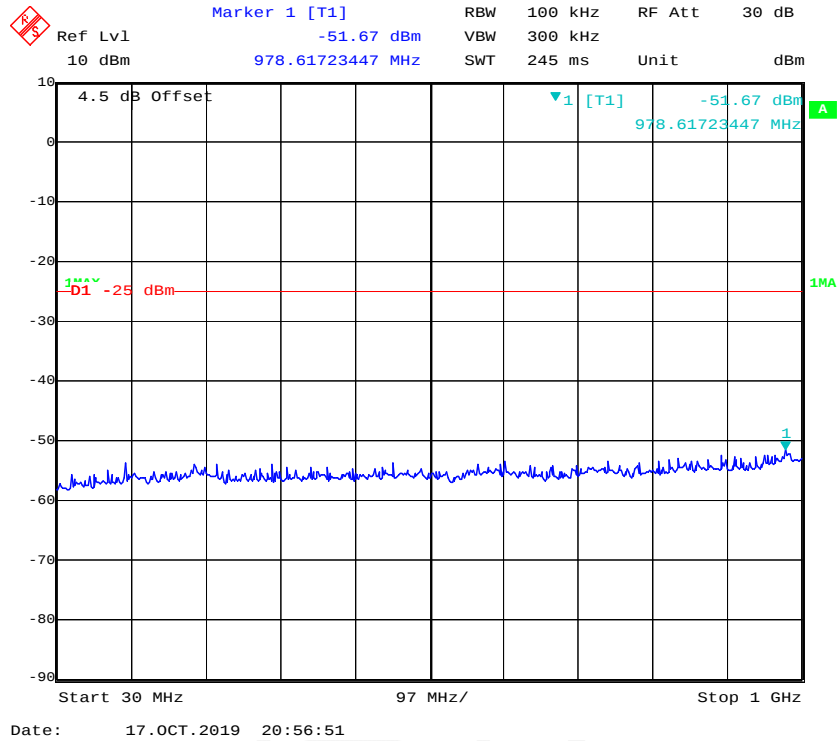
LTE Band 18, QPSK 15 MHz Middle Channel



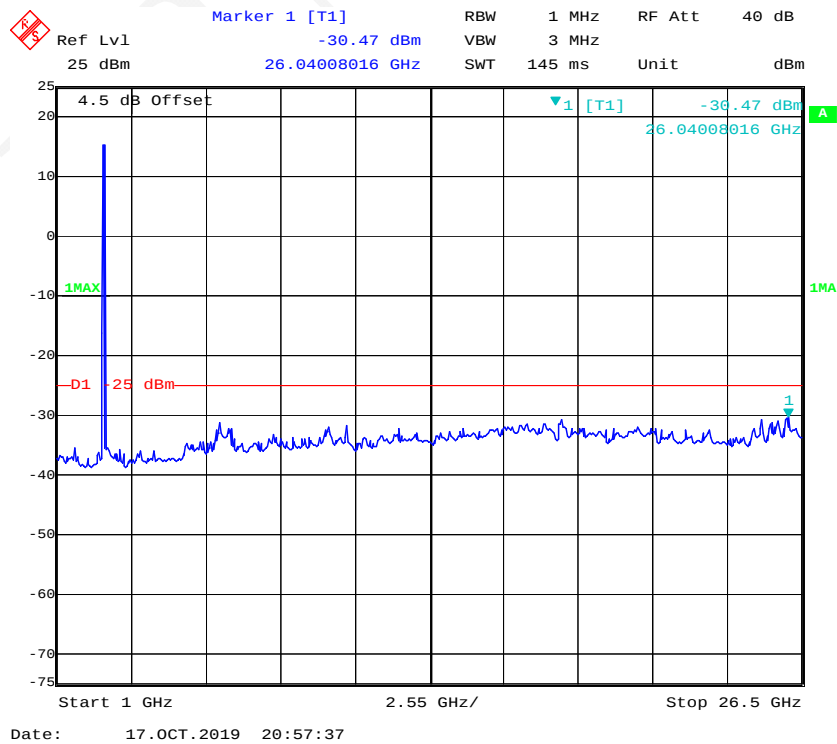
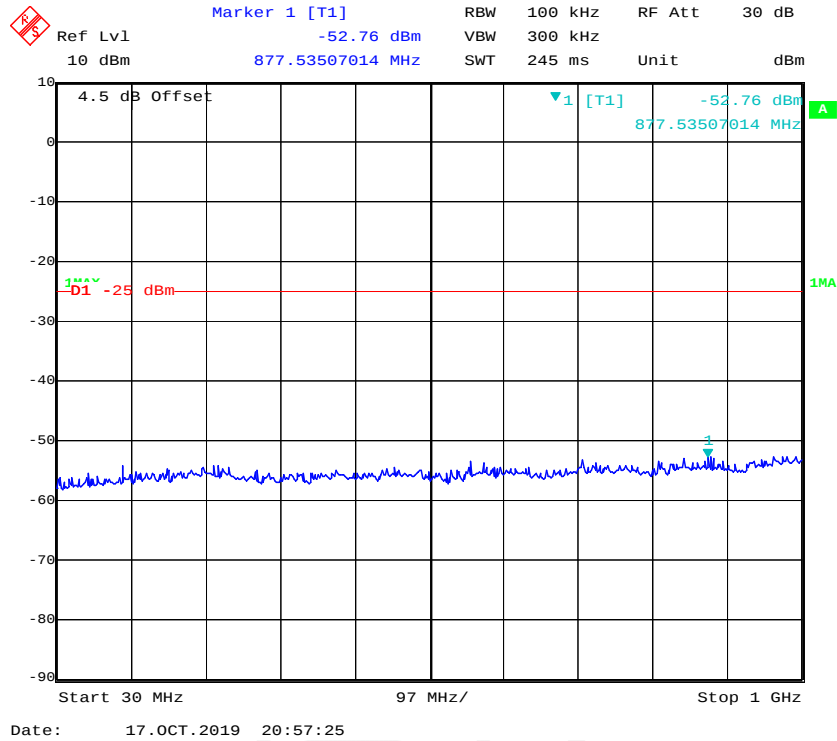
LTE Band 38, QPSK 5 MHz Middle Channel



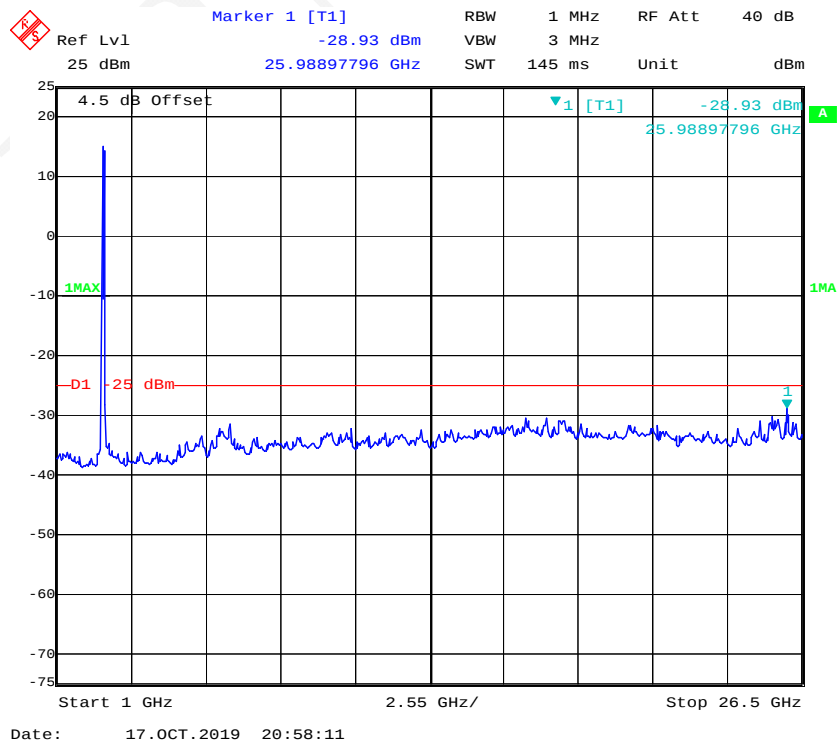
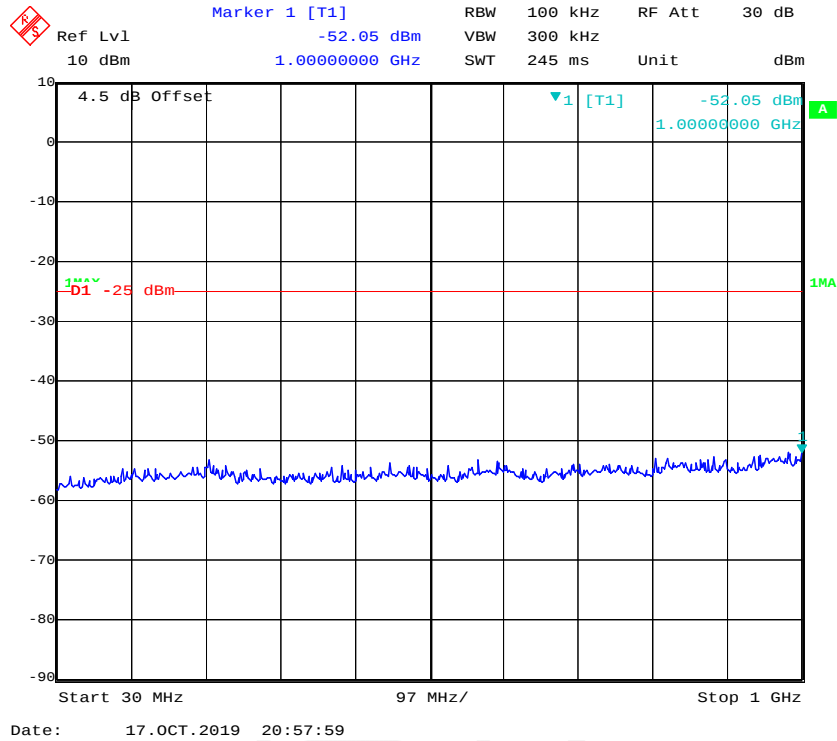
LTE Band 38, QPSK 10 MHz Middle Channel



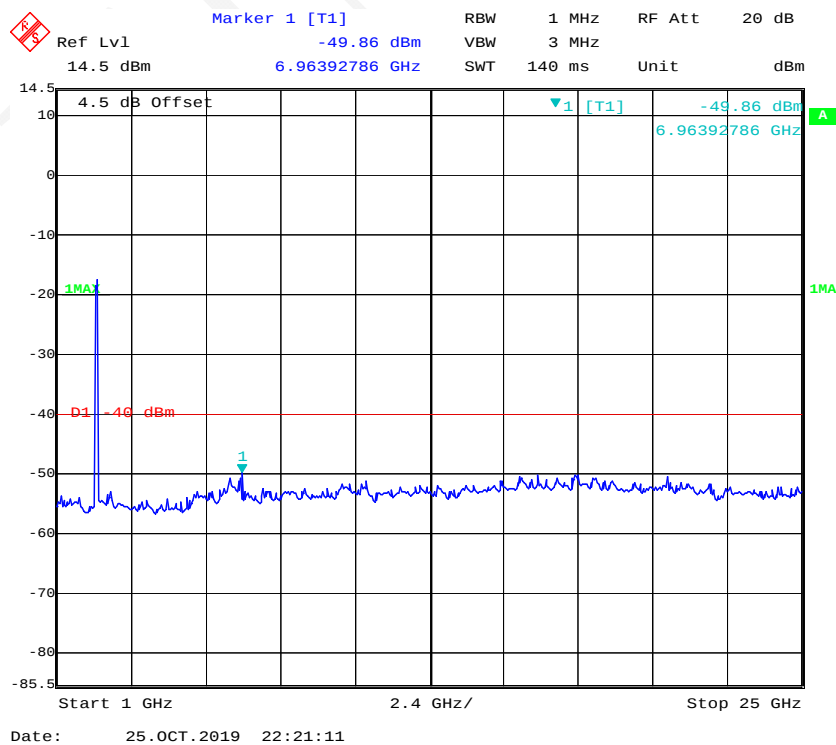
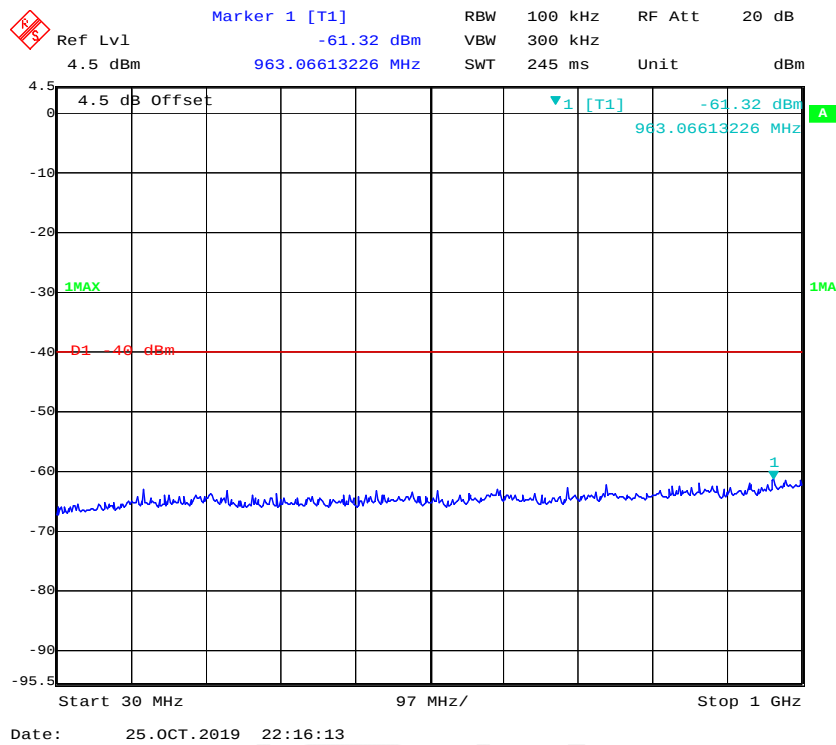
LTE Band 38, QPSK 15 MHz Middle Channel



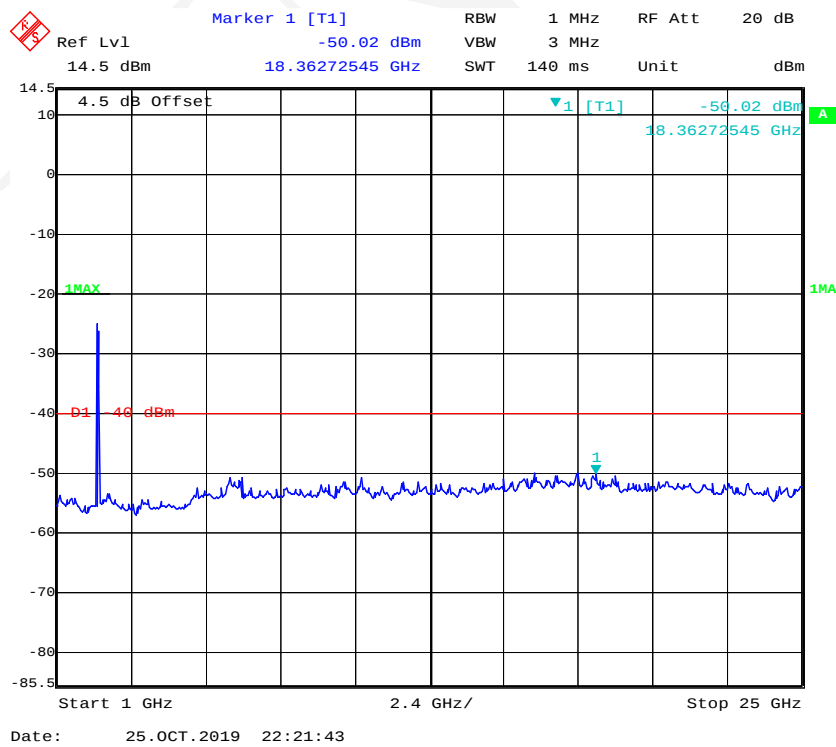
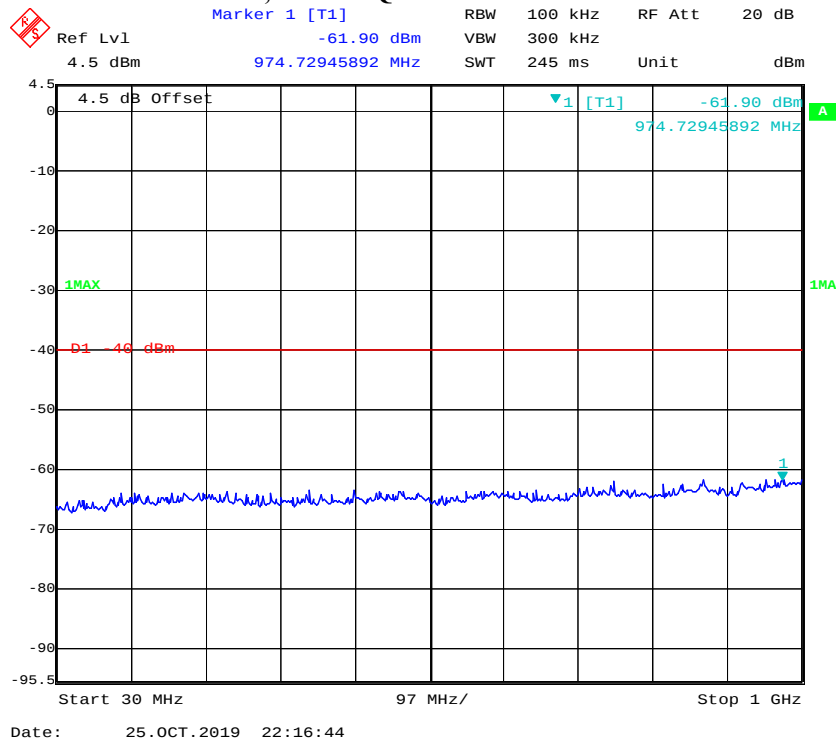
LTE Band 38, QPSK 20 MHz Middle Channel



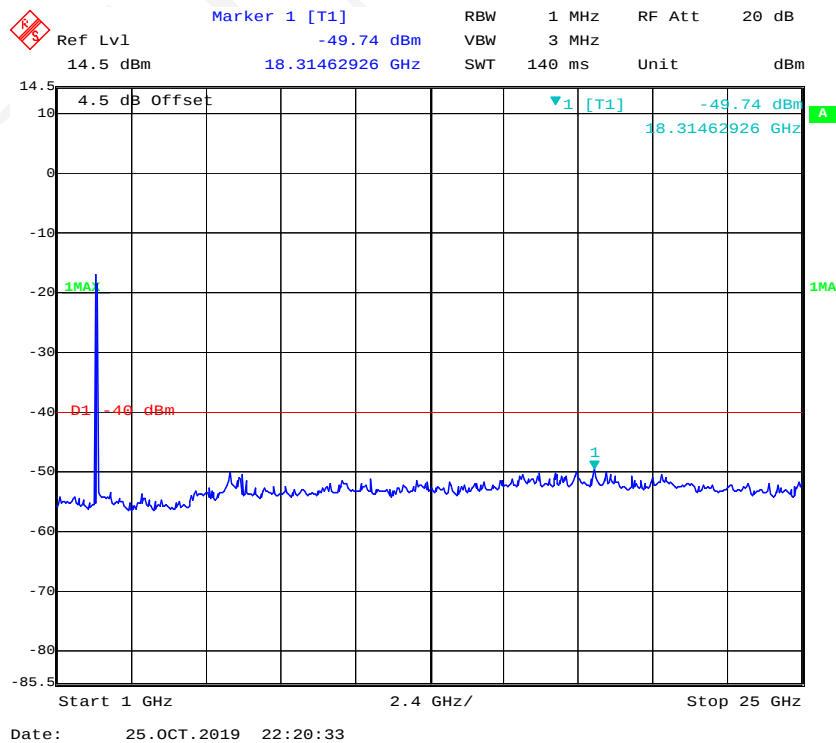
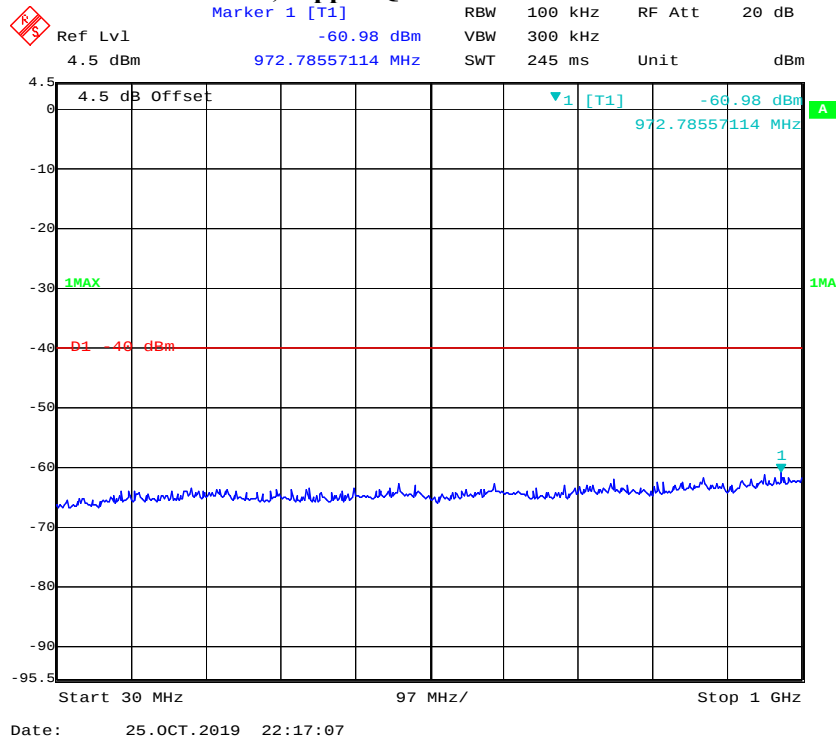
LTE Band 40, Lower QPSK 5 MHz Middle Channel



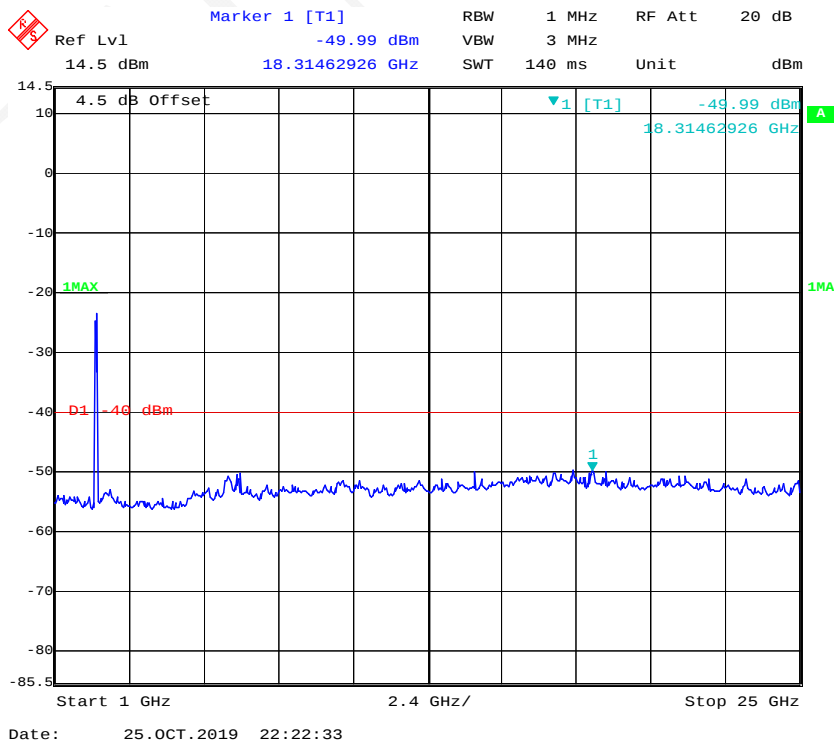
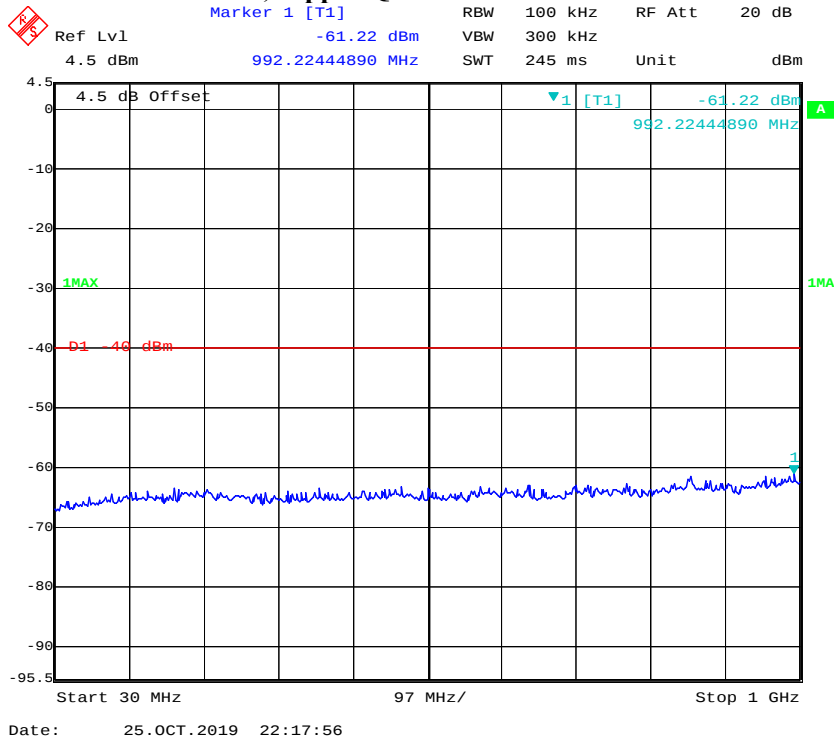
LTE Band 40, Lower QPSK 10 MHz Middle Channel



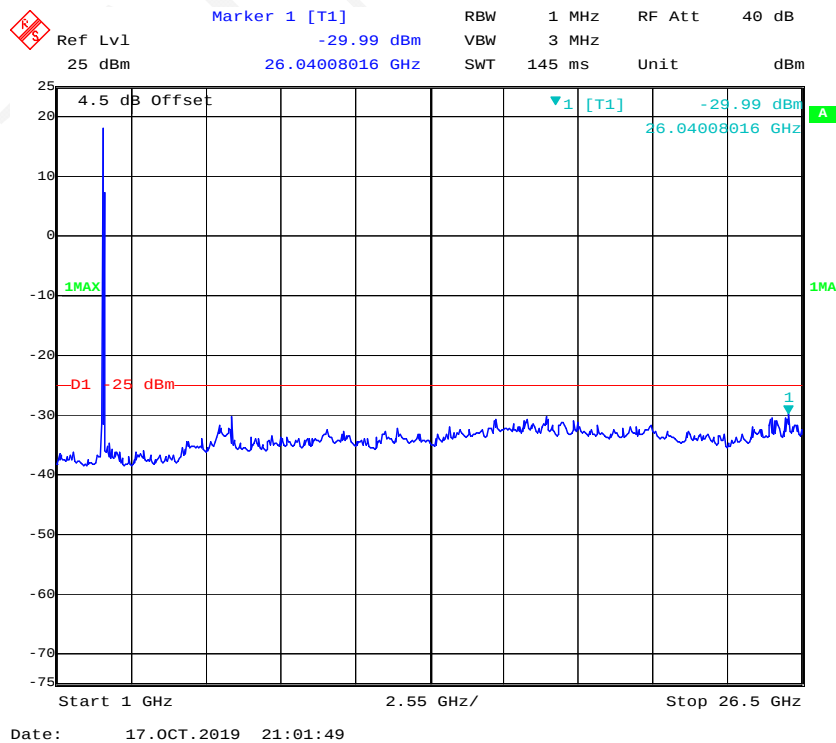
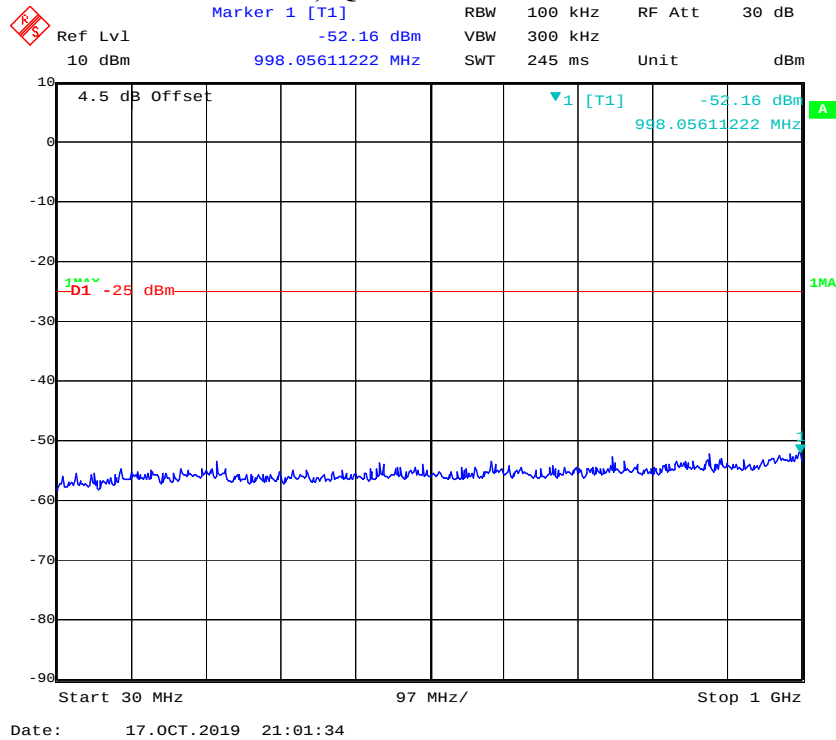
LTE Band 40, Upper QPSK 5 MHz Middle Channel



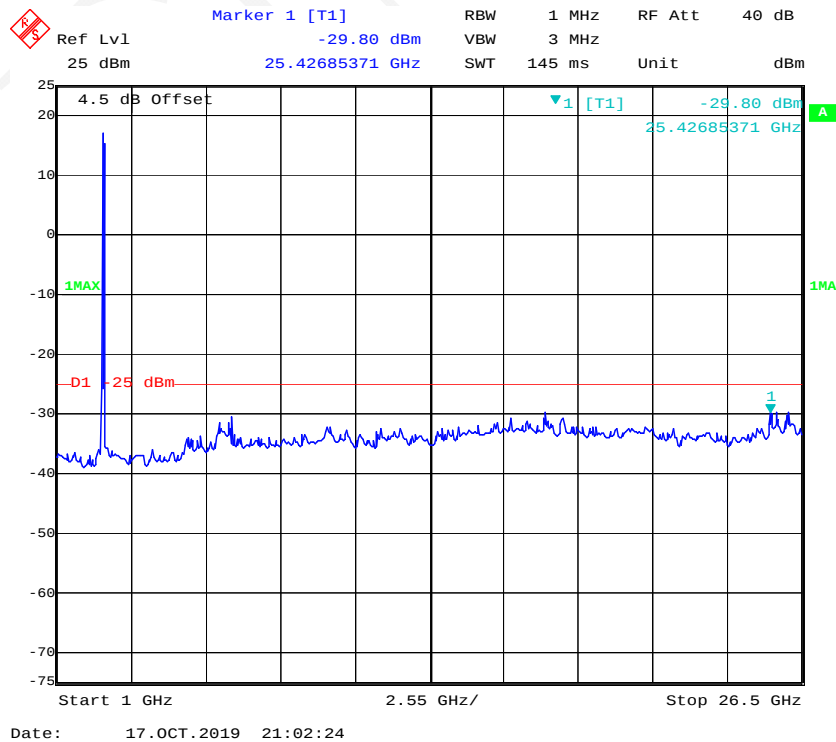
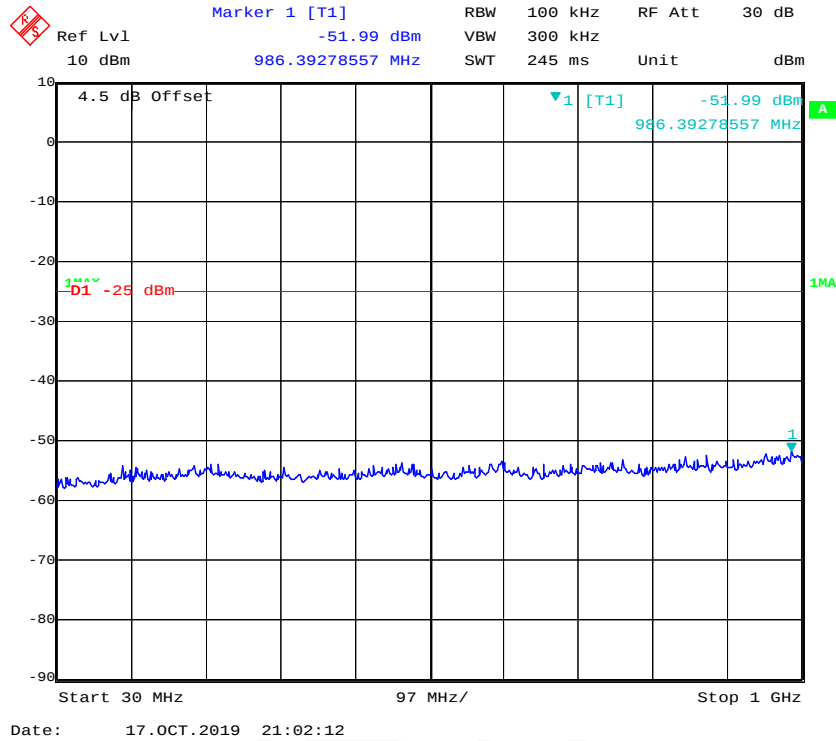
LTE Band 40, Upper QPSK 10 MHz Middle Channel



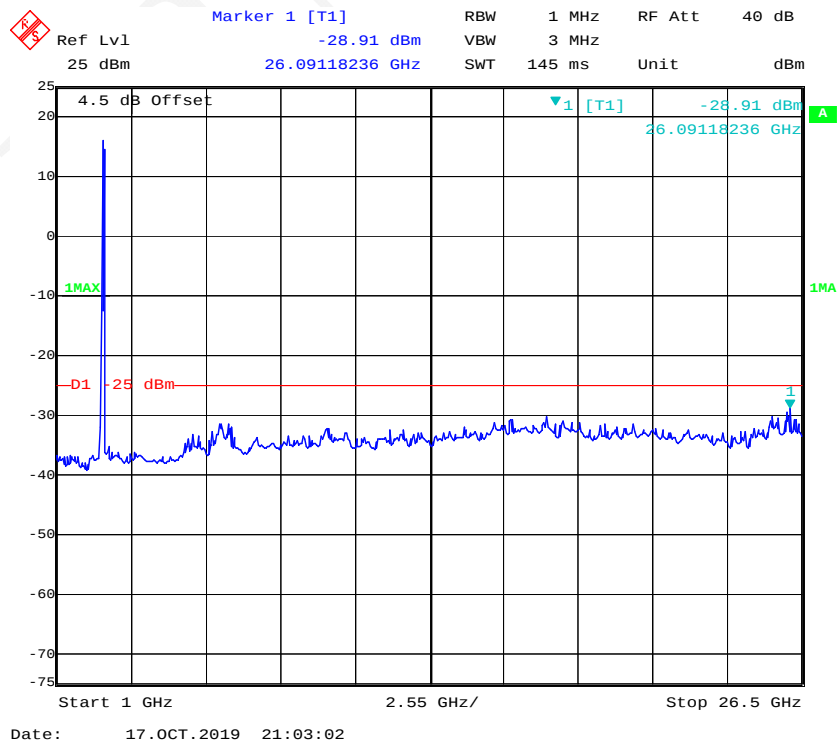
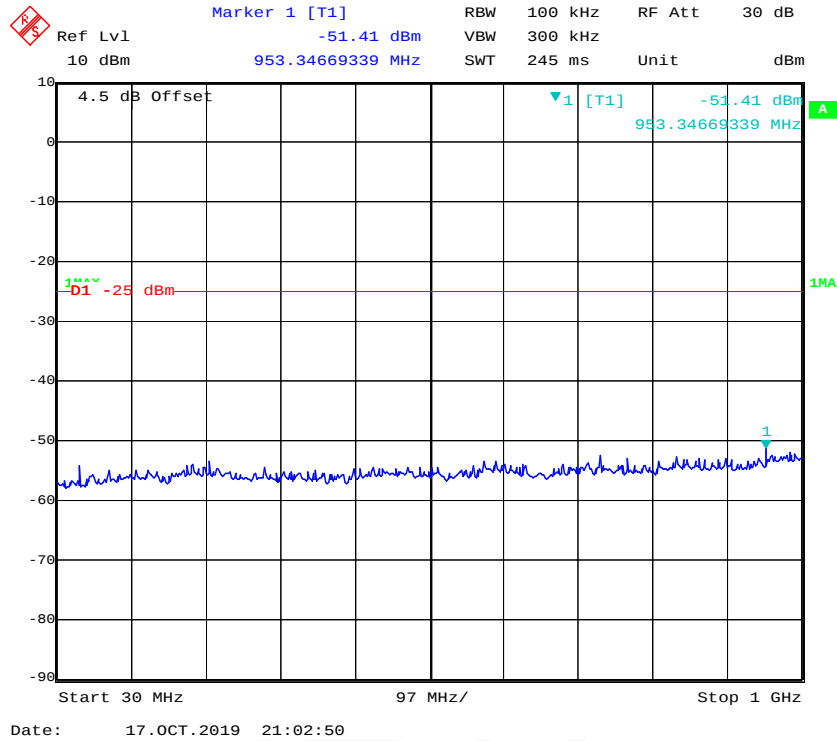
LTE Band 41, QPSK 5 MHz Middle Channel



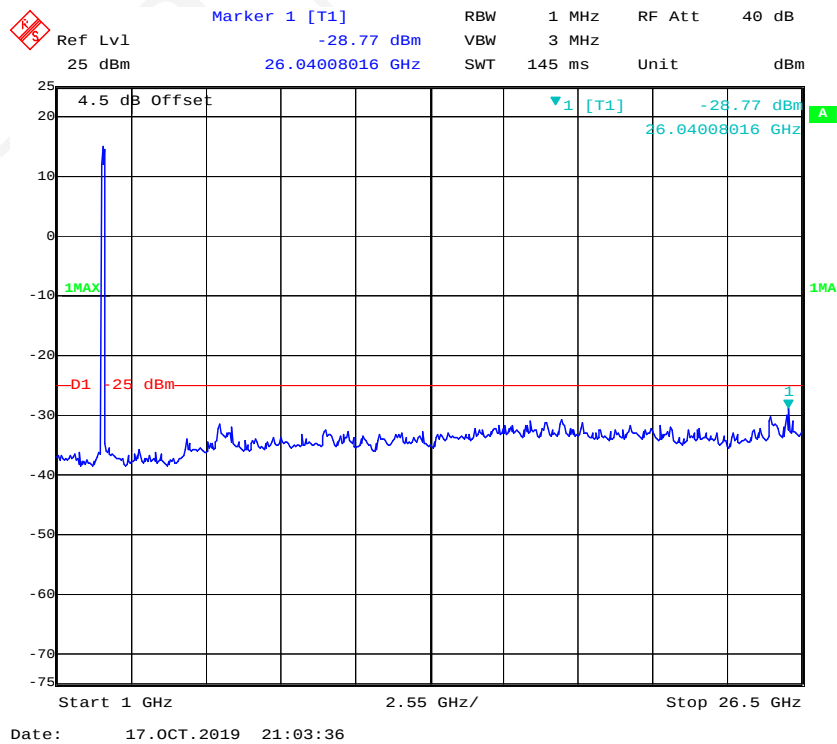
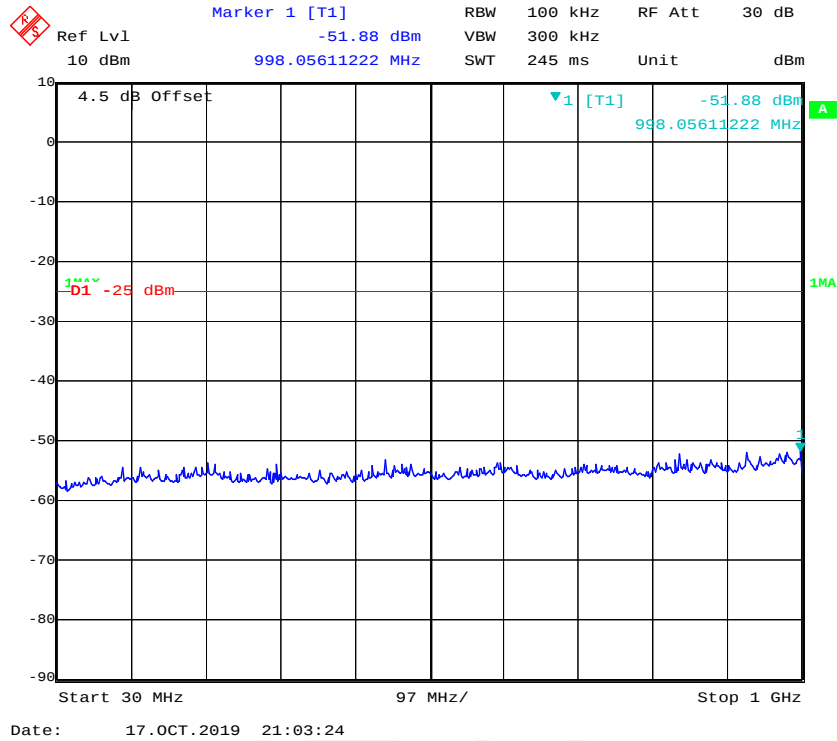
LTE Band 41, QPSK 10 MHz Middle Channel



LTE Band 41, QPSK 15 MHz Middle Channel

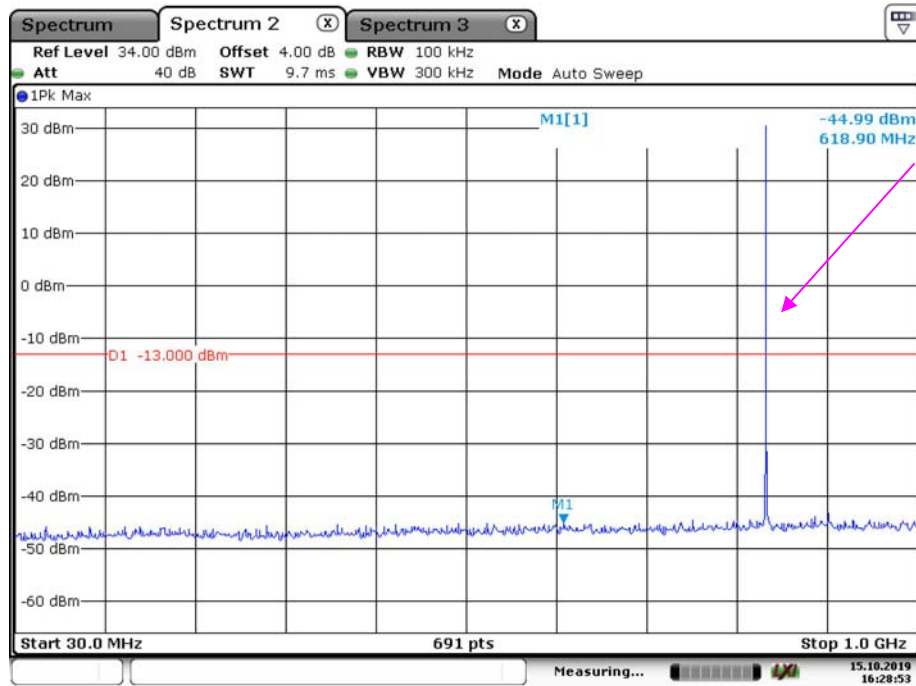


LTE Band 41, QPSK 20 MHz Middle Channel

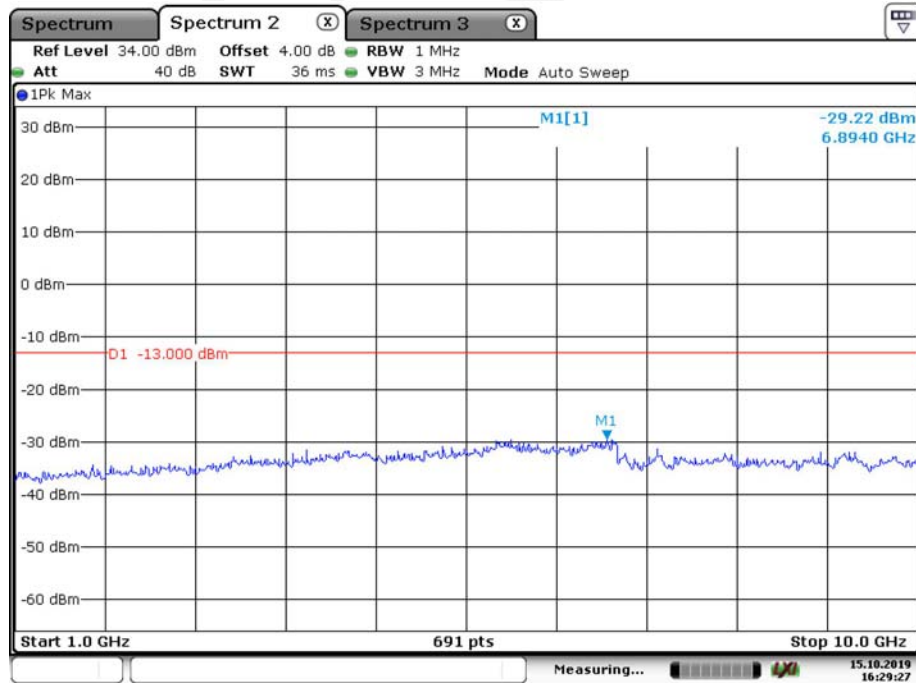


Module 1:

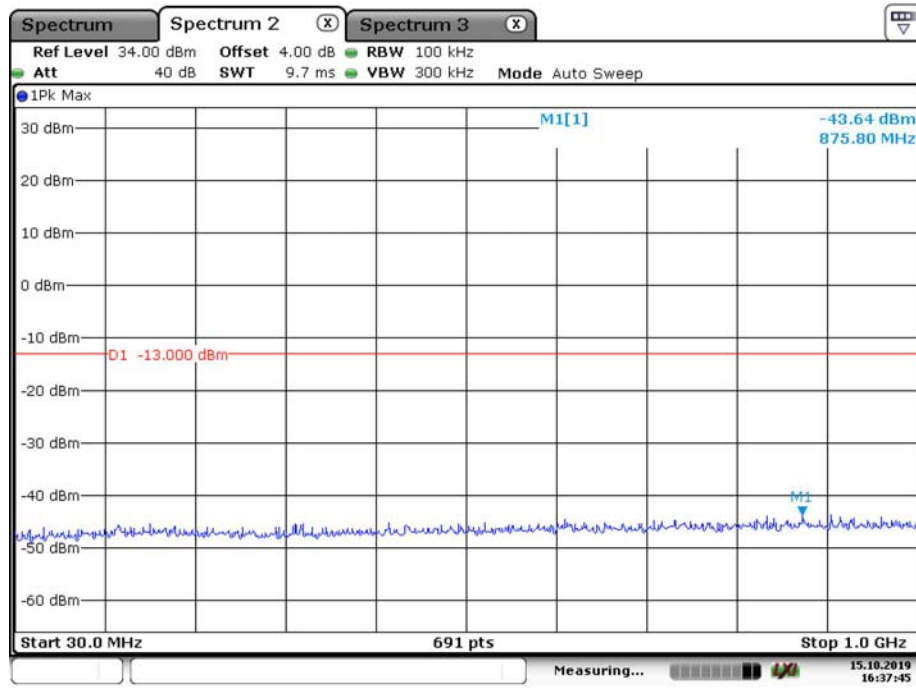
GPRS850 Middle Channel



Fundamental

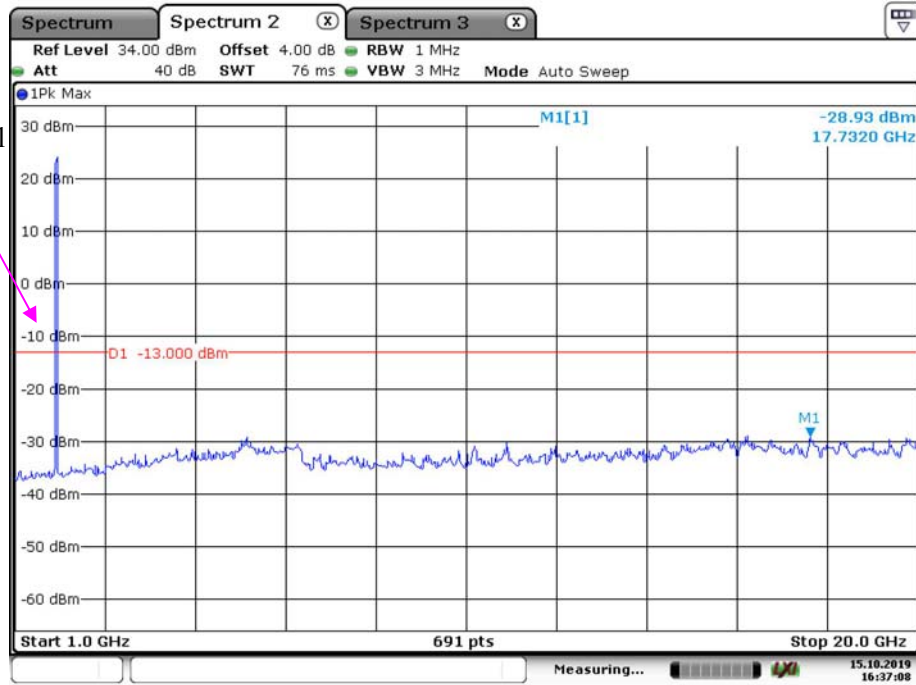


GPRS1900 Middle Channel



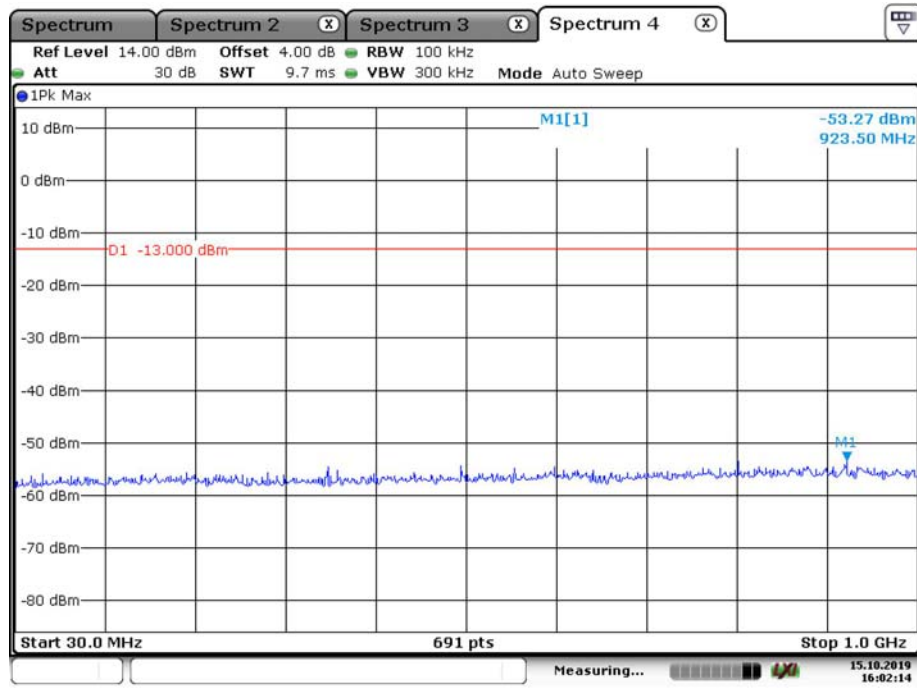
Date: 15.OCT.2019 16:37:45

Fundamental



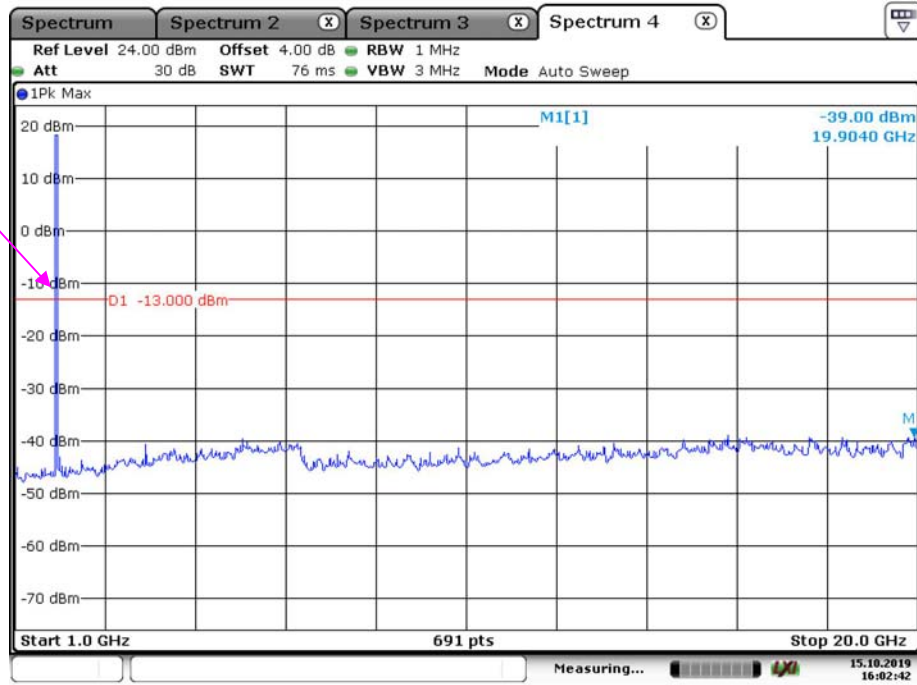
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WCDMA Band 2 Rel 99 Middle Channel



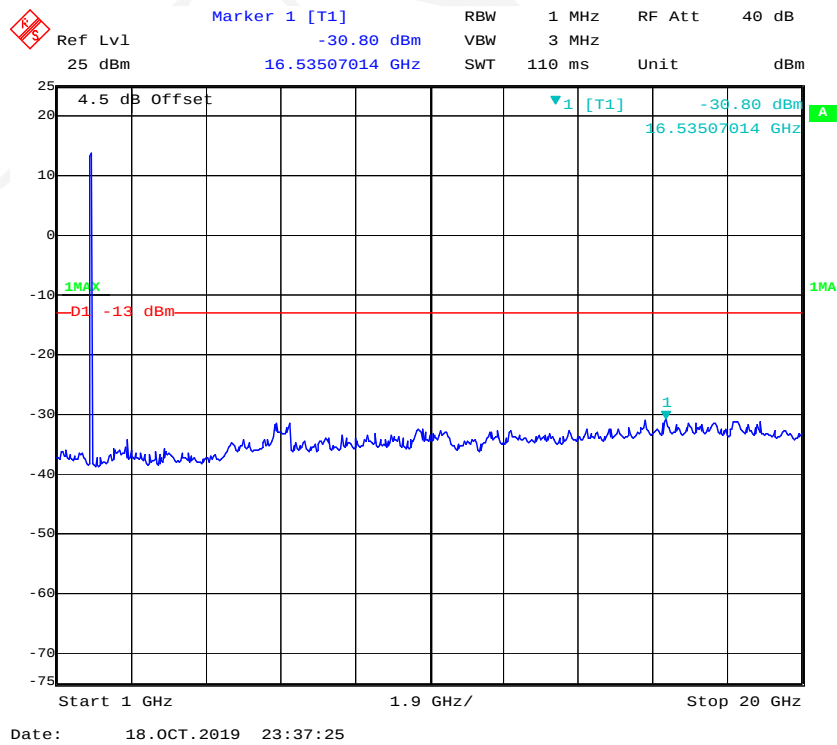
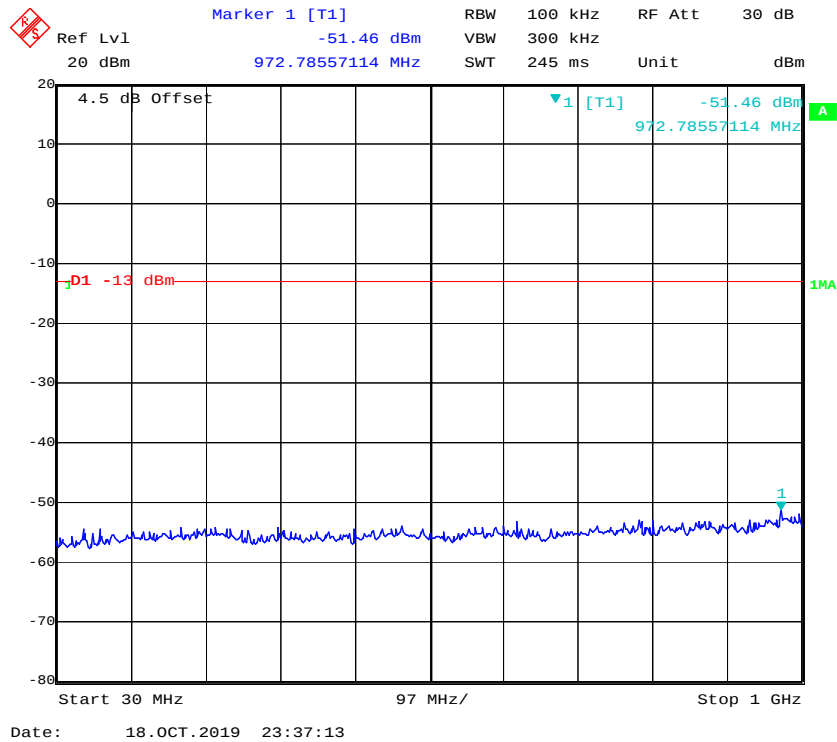
Date: 15.OCT.2019 16:02:14

Fundamental

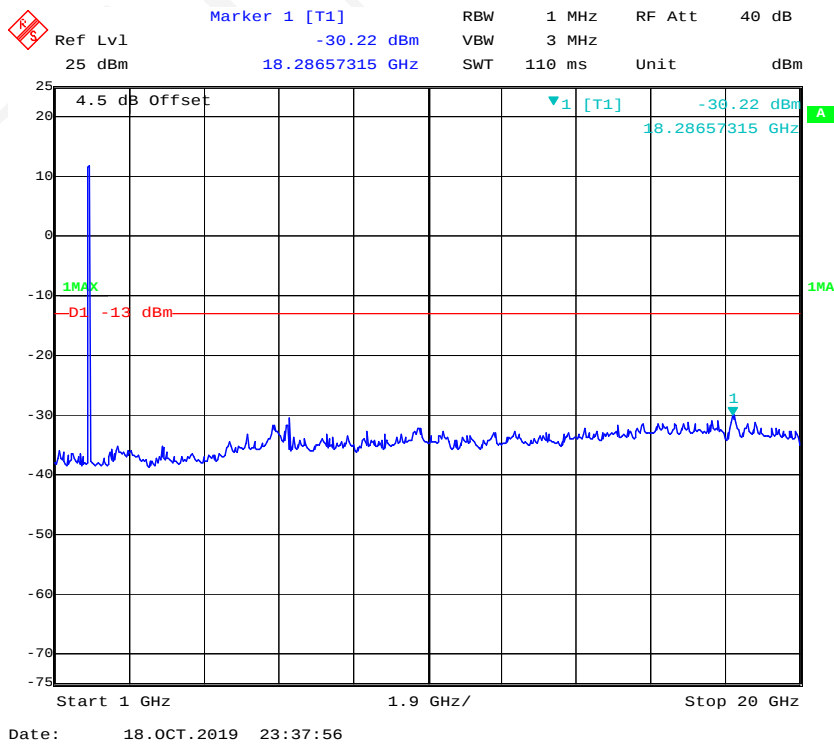
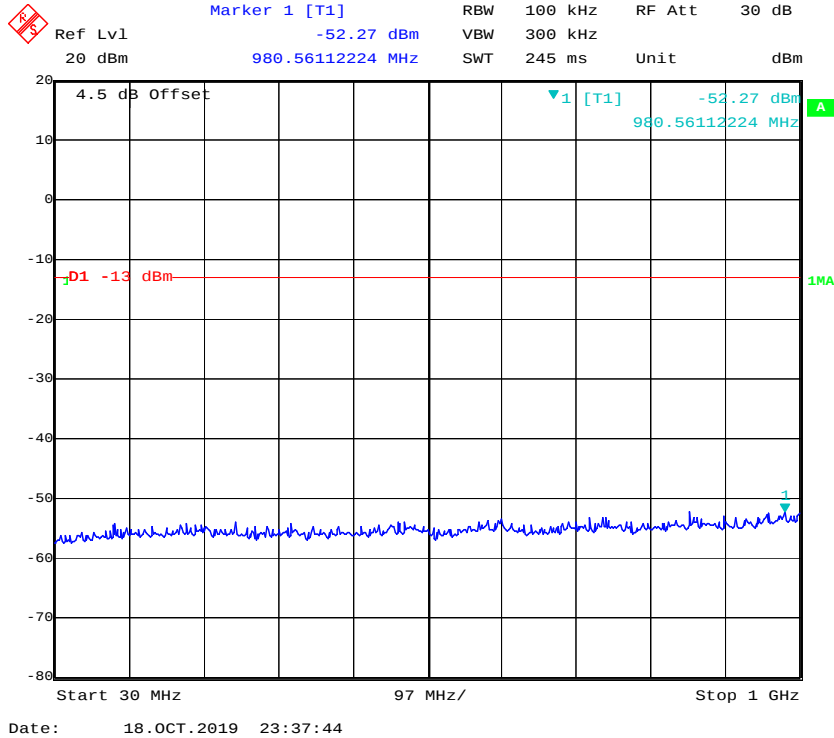


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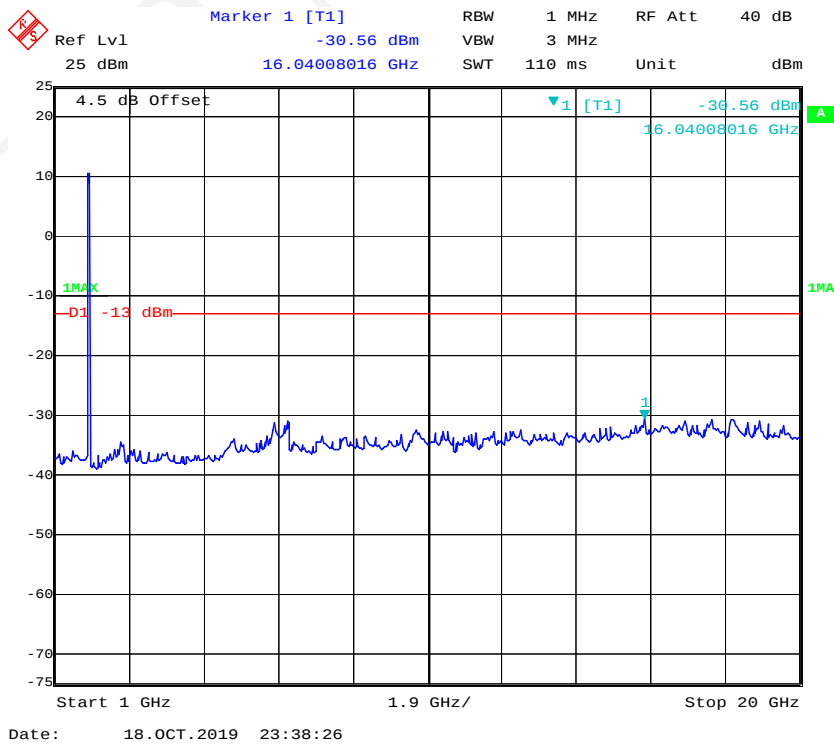
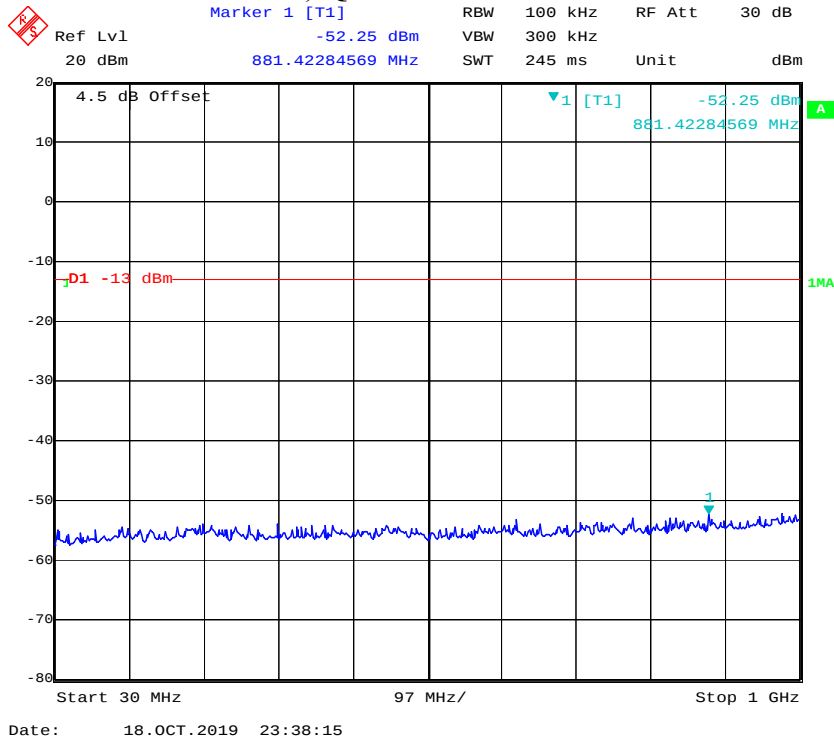
LTE Band 2, QPSK 1.4 MHz Middle Channel



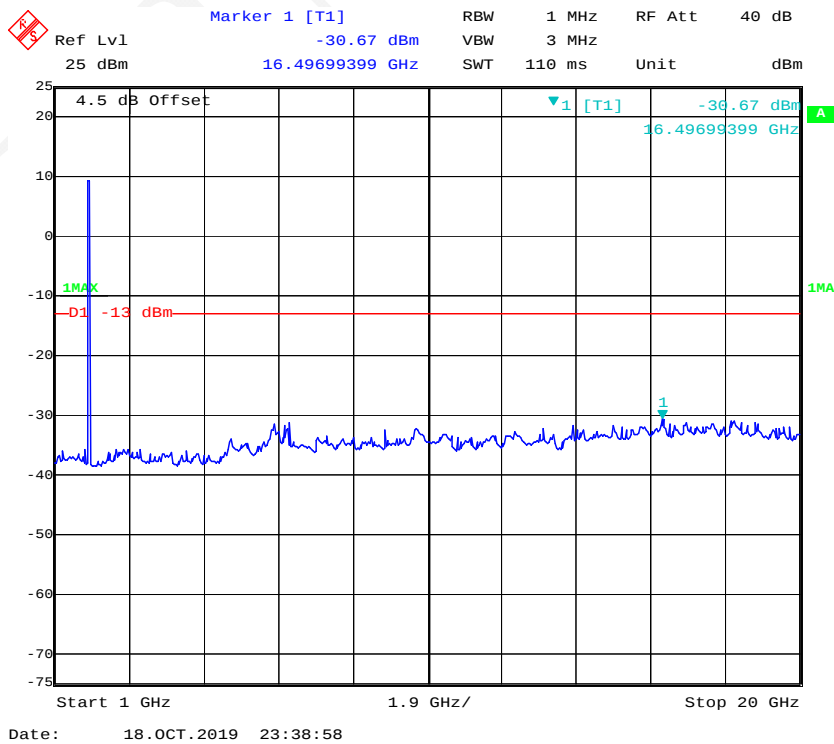
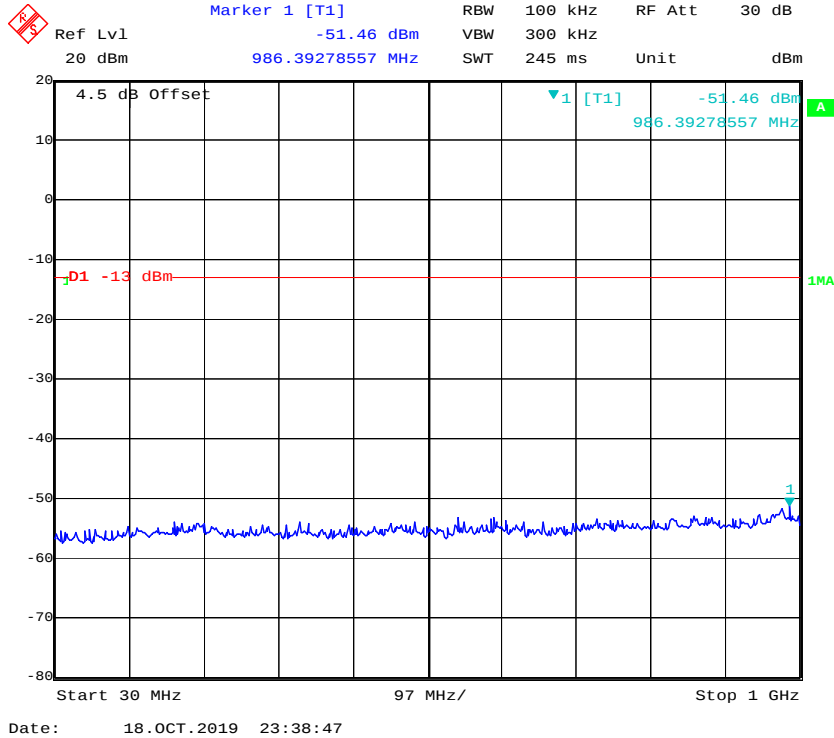
LTE Band 2, QPSK 3 MHz Middle Channel



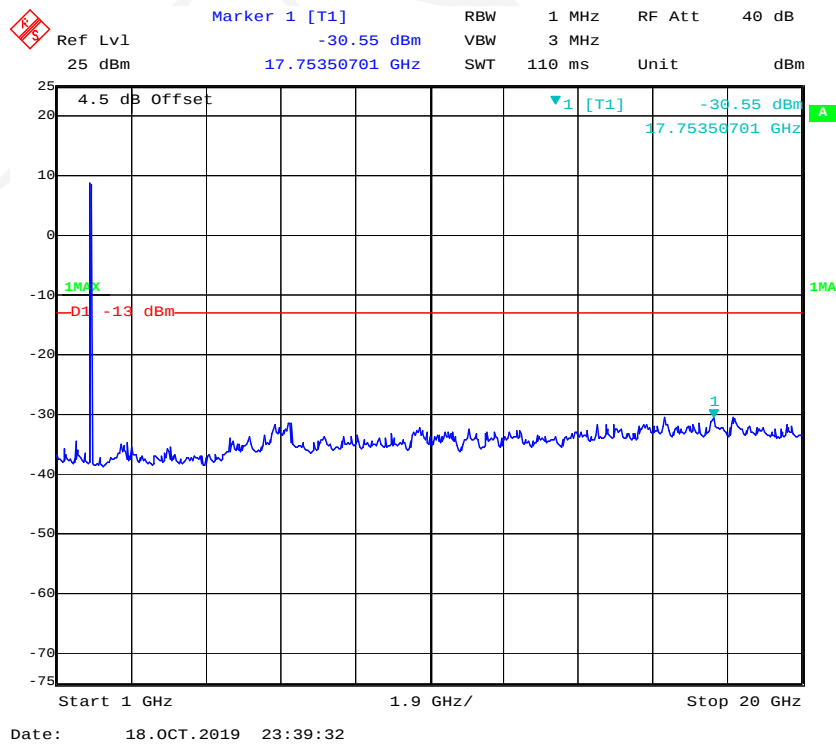
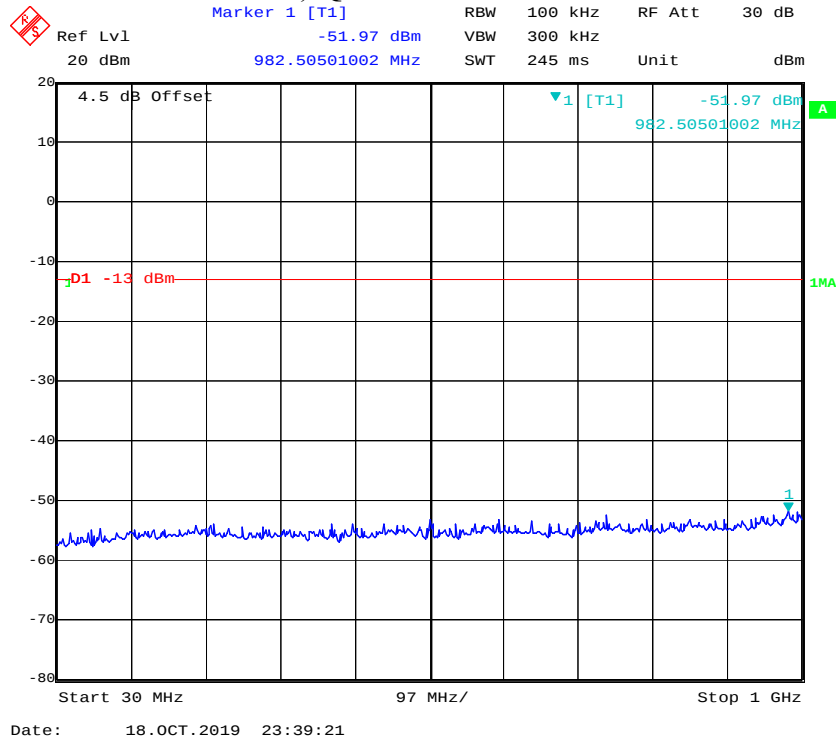
LTE Band 2, QPSK 5 MHz Middle Channel



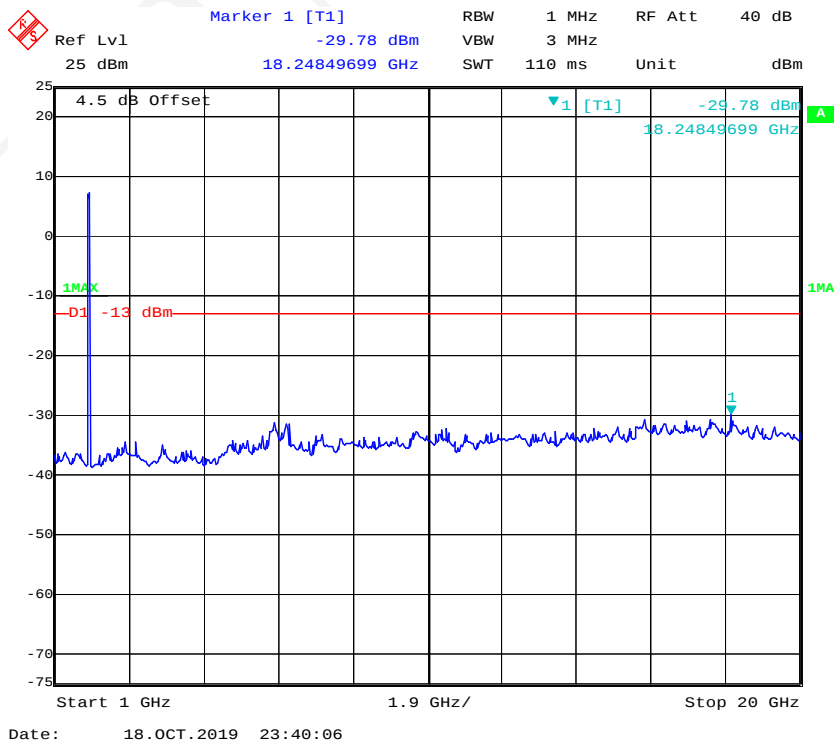
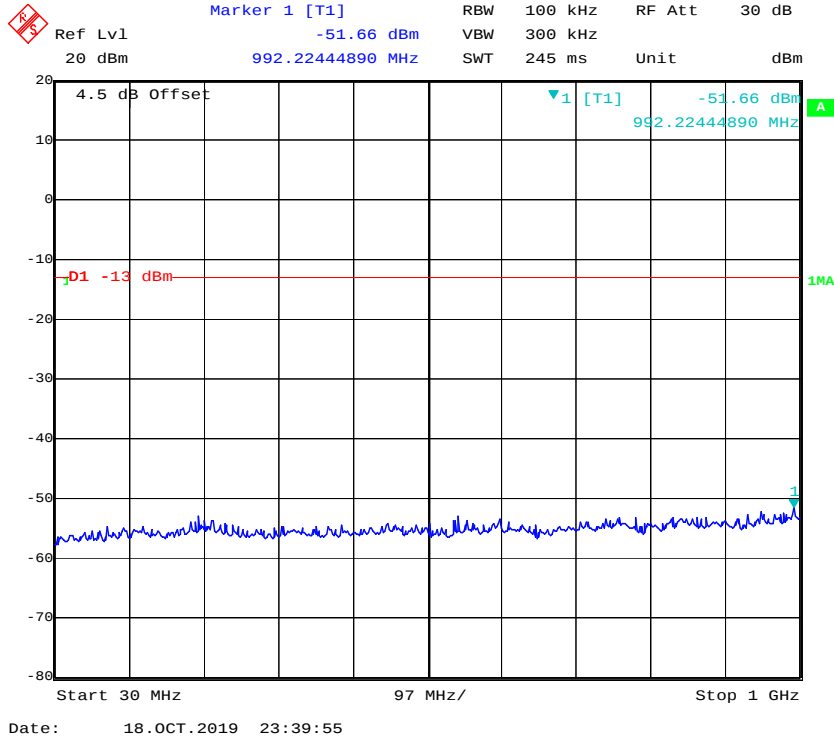
LTE Band 2, QPSK 10 MHz Middle Channel



LTE Band 2, QPSK 15 MHz Middle Channel



LTE Band 2, QPSK 20 MHz Middle Channel



LTE Band 4, QPSK 1.4 MHz Middle Channel

