

5. RF EXPOSURE

5.1.Applicable Standard :

FCC §2.1091 §1.1037

5.2.Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines. According to §1.1310 and §2.1091 RF exposure is calculated. Limits for Maximum Permissible Exposure (MPE)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

5.3.Test Data:

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \text{EIRP} / 4\pi R^2$$

Where: S = power density

EIRP= equivalent isotropically radiated power=ERP+2.15dB

R = distance to the center of radiation of the antenna= [(ERP+2.15dB)/4πS]^{1/2}

According to §27.50 , the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 1640 Watts.

Frequency 2690MHz is between 1500MHz and 100,000MHz, and the Maximum S=1mW/cm²

R=4.55m.

This equipment should be installed and operated with minimum distance 4.55m between the radiator & your body.

5.4.Test Result: Pass

6. MODULATION CHARACTERISTIC

6.1.Applicable Standard :

FCC §2.1047

6.2.Test Equipment List and Details :

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Signal & Spectrum Analyzer	FSW26	SB12724/01	2018.06.06	2019.06.05
DTS	DTS 40dB Attenuator	DTS100-40-3-1	09112005	2018.07.19	2019.07.19
Radiall	RF Cable	1807188	---	---	---

***statement of traceability:** SMQ attests that all calibration has been performed per the A2LA requirements, traceable to NIM.

6.3.Test Procedure:

LTE digital mode is used by EUT.

6.4.Environmental Conditions :

Temperature:	22 °C
Relative Humidity:	51 %
ATM Pressure:	1020 mbar

6.5.Test Result: Pass

6.6.Test Mode: Transmitting LTE

6.7.Test Data:

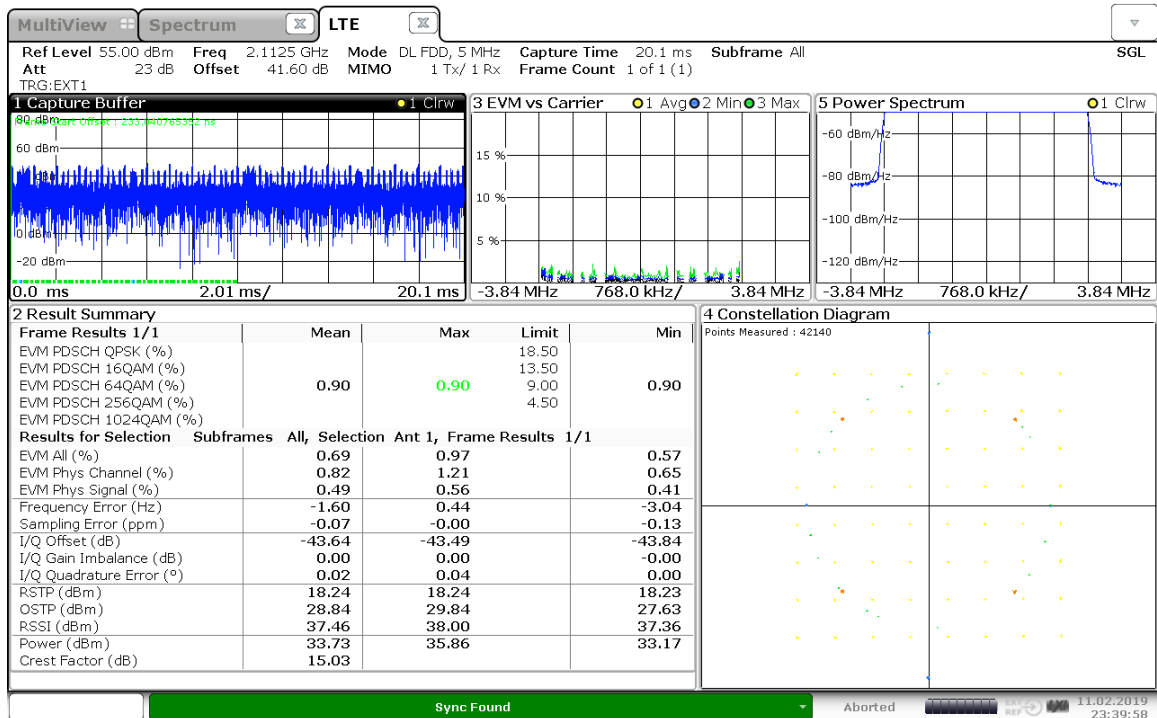
Dual Carrier:

Channel Bandwidth :5M+5M(2112.5MHz+2152.5MHz)

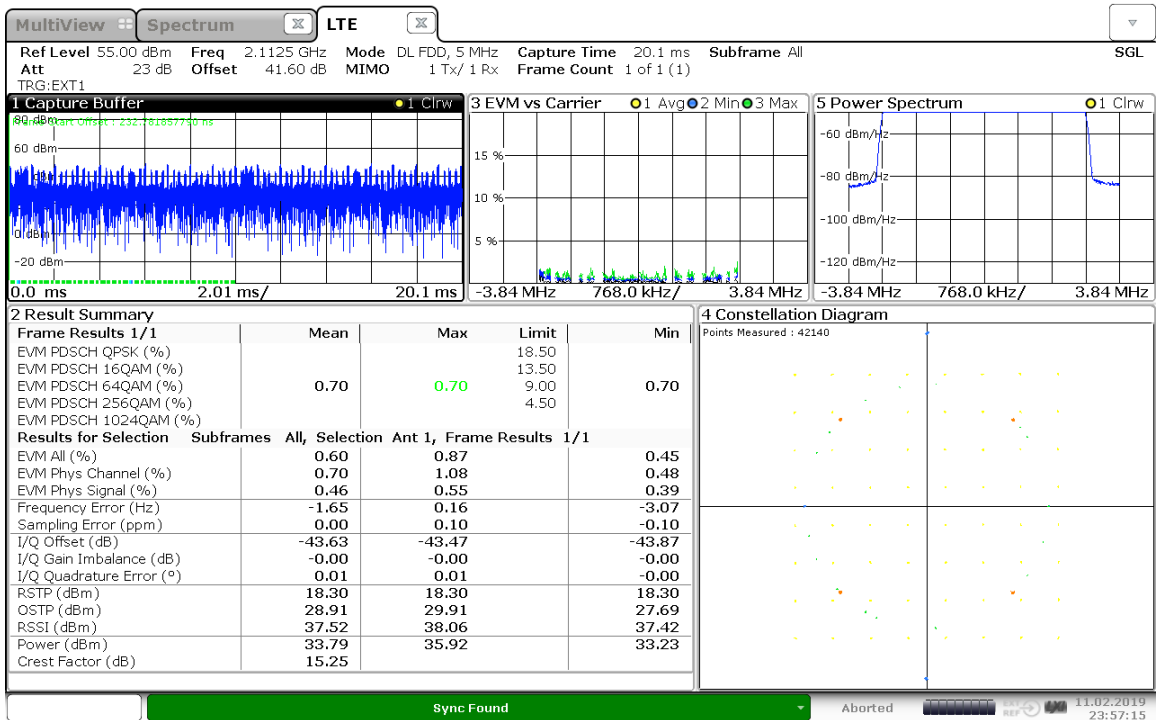
Frequency (MHz)	Test mode	Port	EVM(%)
2112.5	TM2.0	1	0.90
		2	0.70
		3	0.91
		4	0.85
	TM3.1	1	5.06
		2	5.02
		3	5.04
		4	5.04
	TM3.2	1	5.78

2152.5	TM3.3	2	5.76
		3	5.75
		4	5.75
	TM2.0	1	11.99
		2	11.97
		3	11.98
		4	11.94
	TM3.1	1	0.73
		2	0.83
		3	0.99
		4	0.83
	TM3.2	1	5.03
2		5.03	
3		5.07	
4		5.03	
TM3.3	1	5.75	
	2	5.77	
	3	5.76	
	4	5.75	
TM3.3	1	12.01	
	2	12.13	
	3	12.03	
	4	12.03	

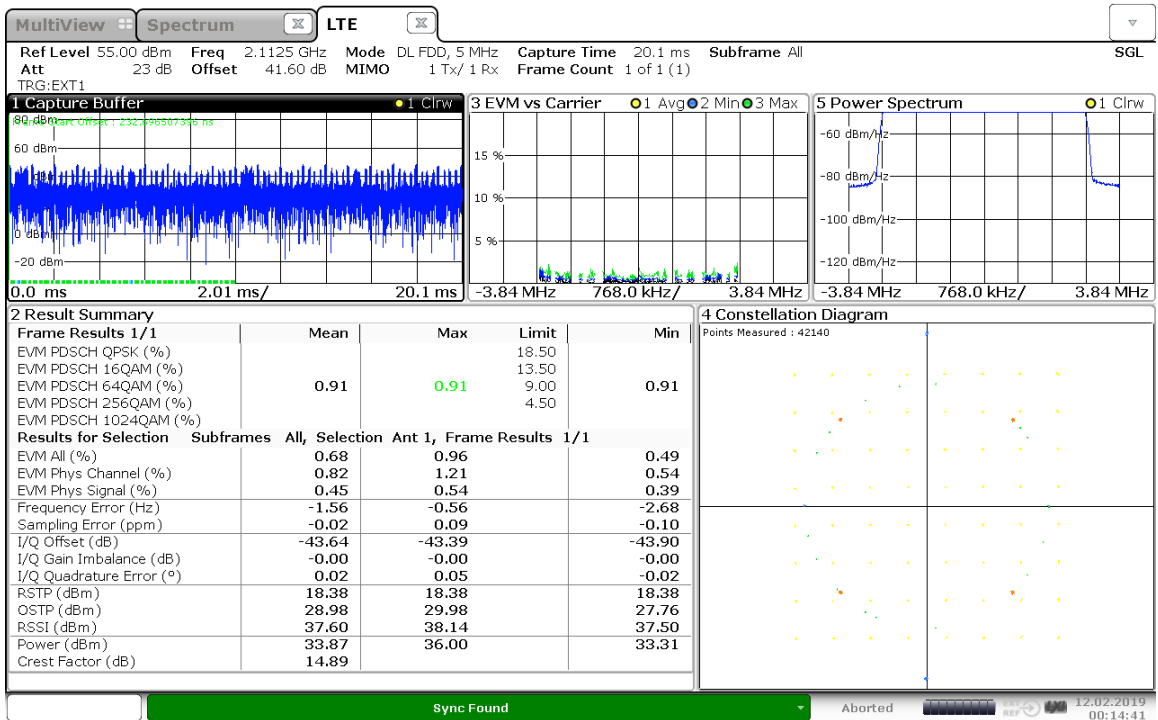
5M -2112.5MHz-TM2.0-Port 1 ~4:



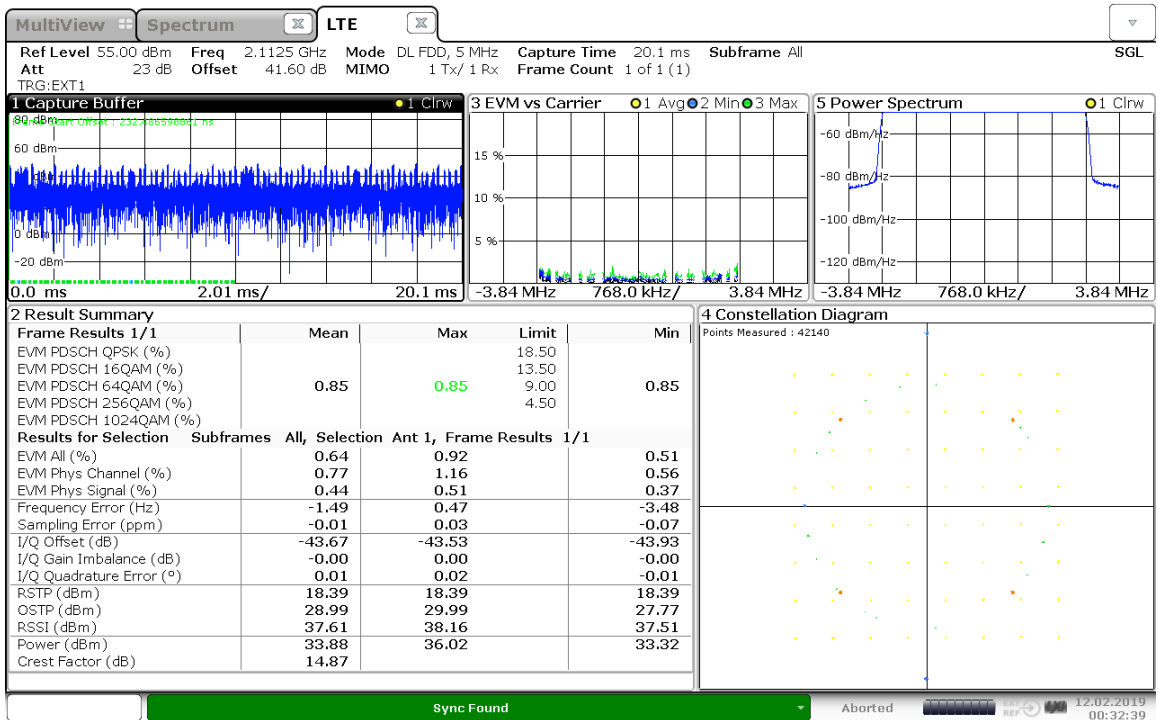
23:39:59 11.02.2019



23:57:16 11.02.2019

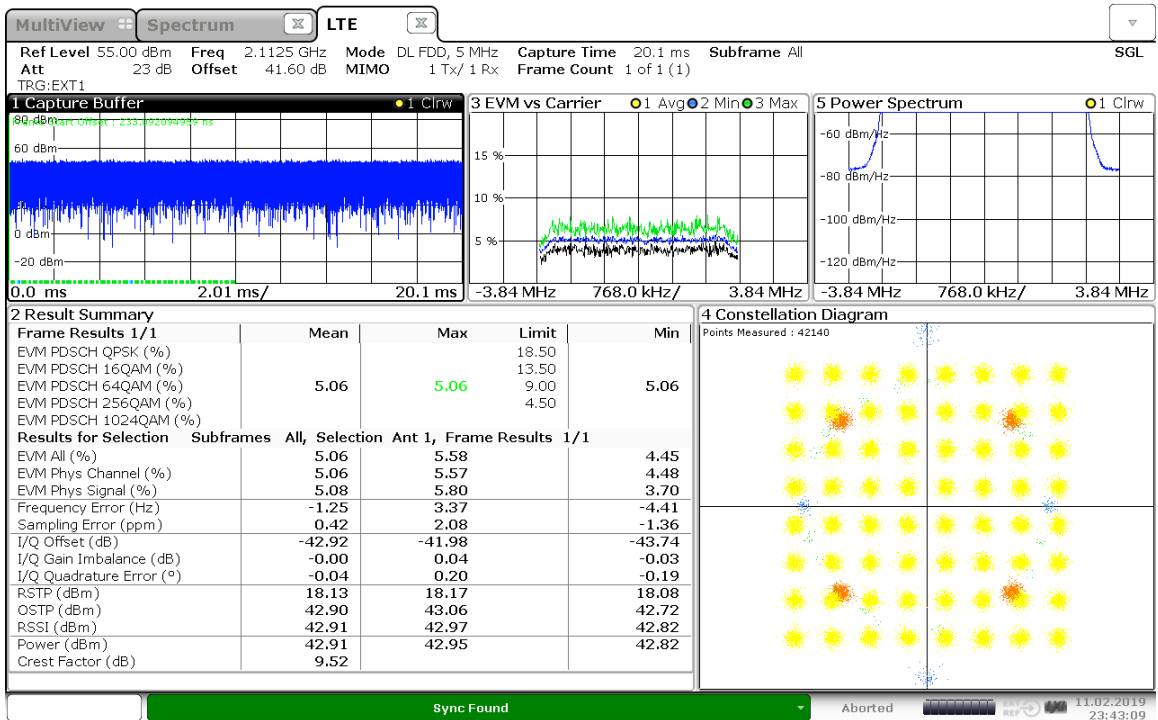


00:14:42 12.02.2019

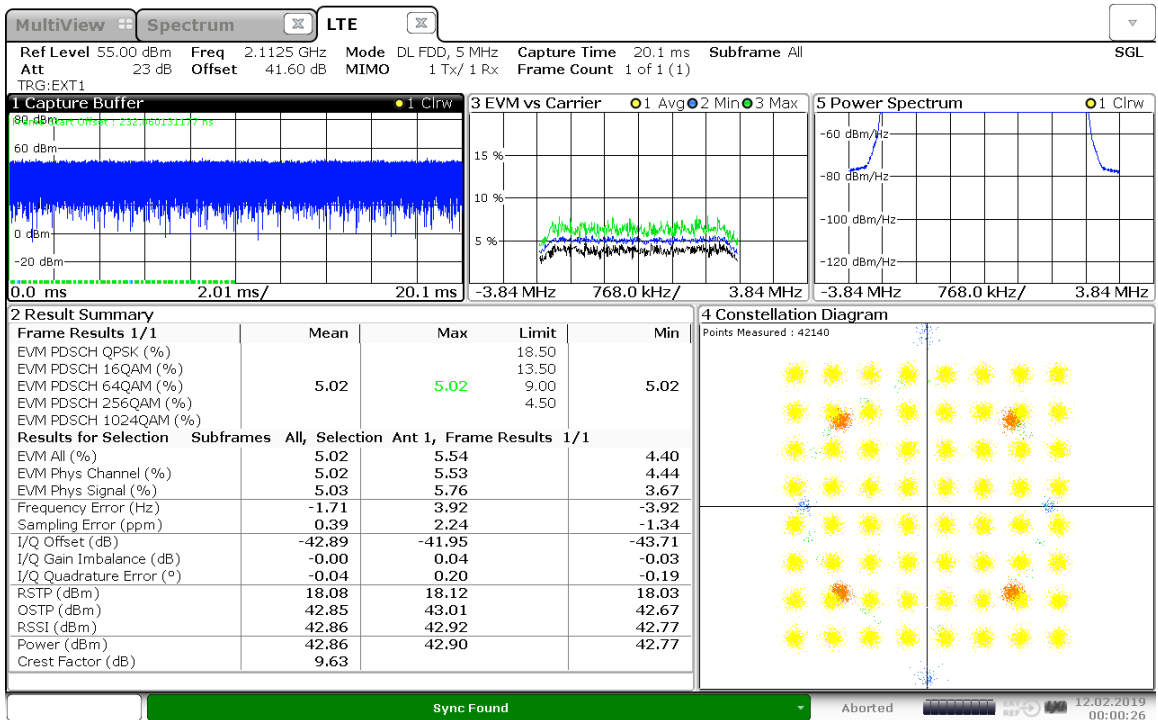


00:32:40 12.02.2019

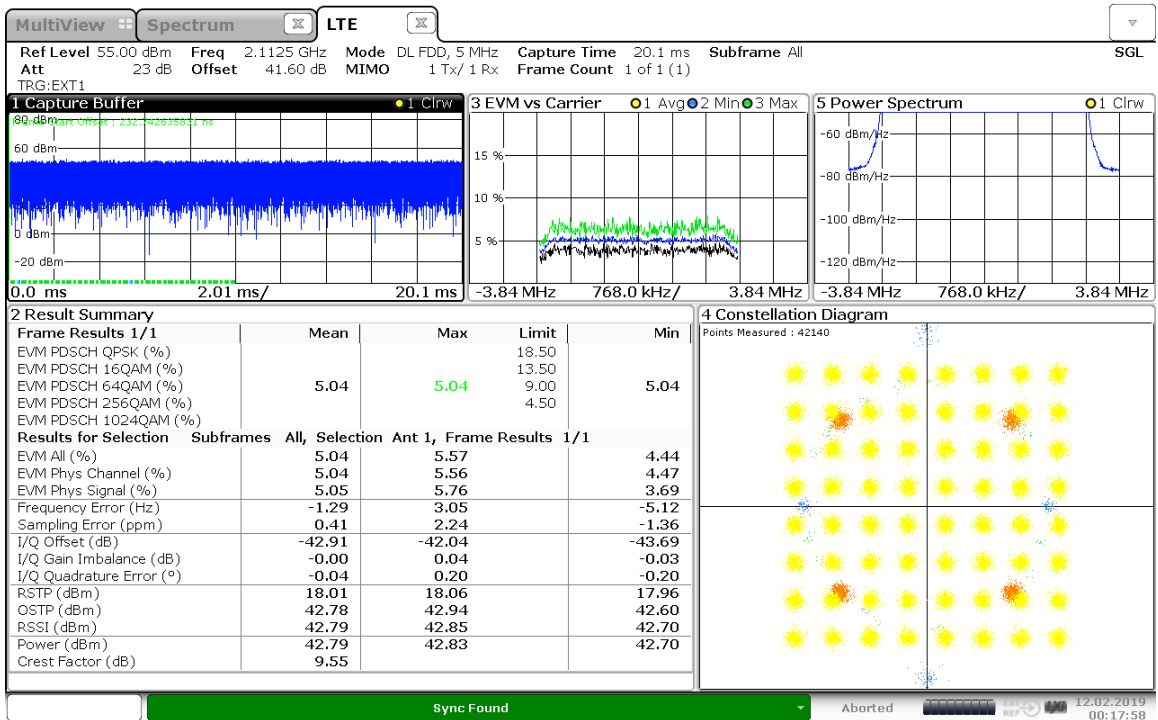
5M -2112.5MHz-TM3.1-Port 1 ~4:



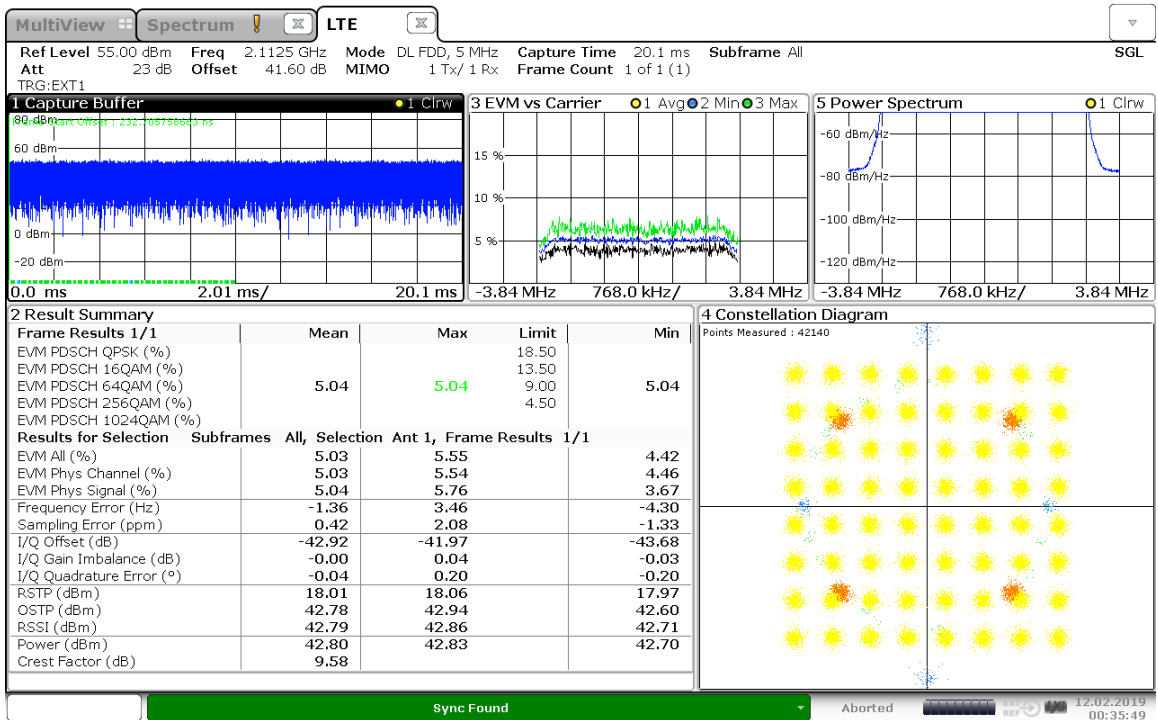
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00:00:26 12.02.2019

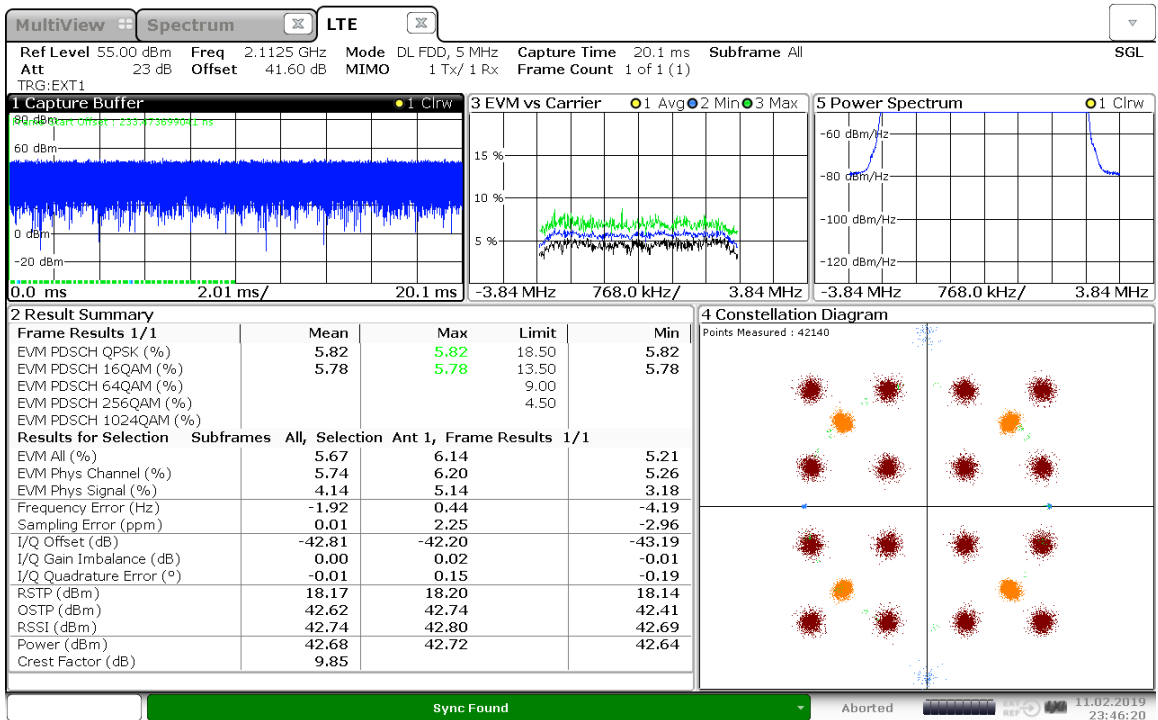


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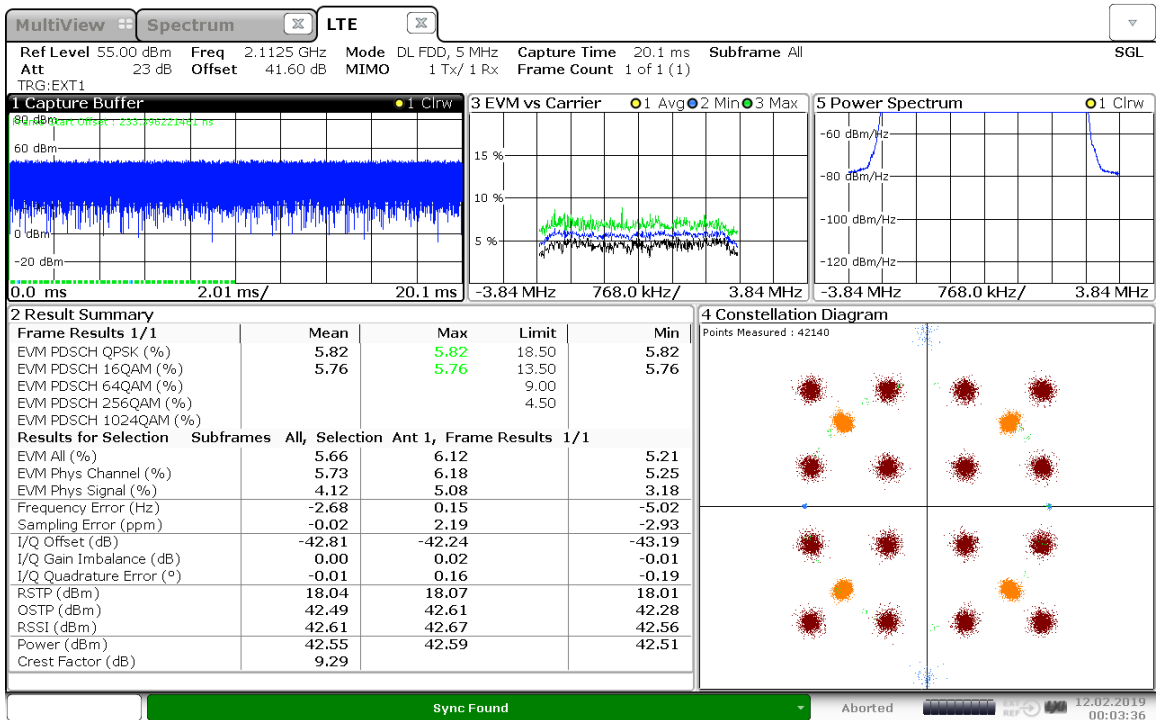


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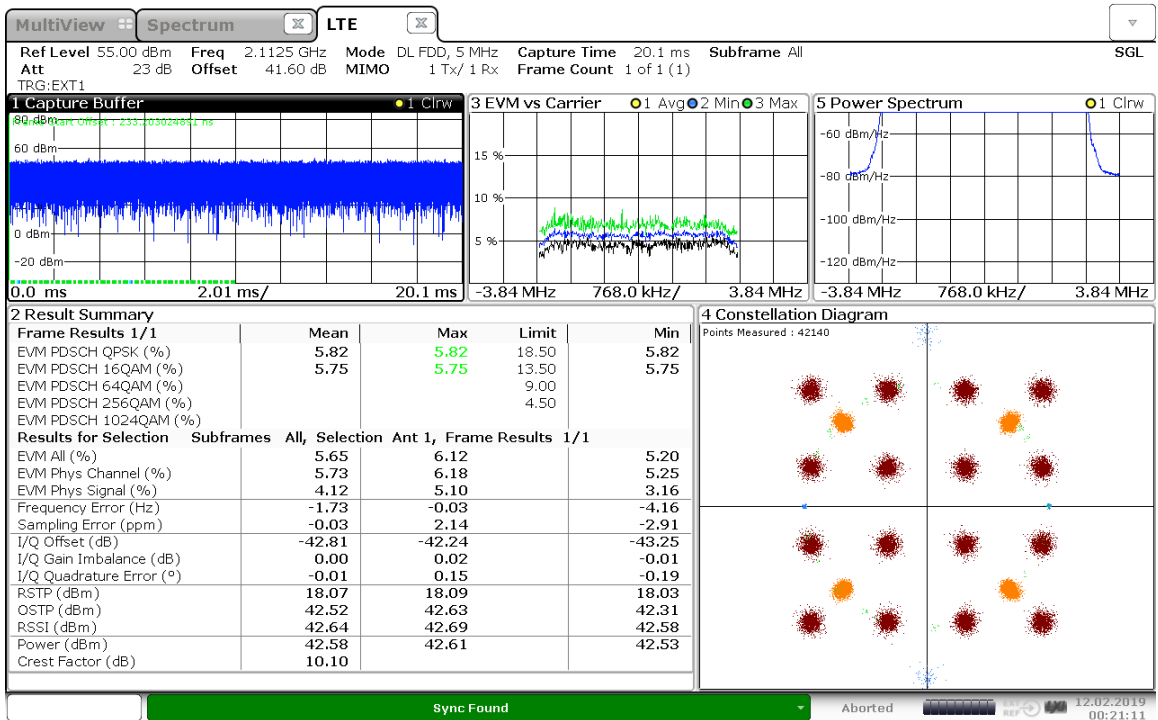
5M -2112.5MHz-TM3.2-Port 1 ~4:



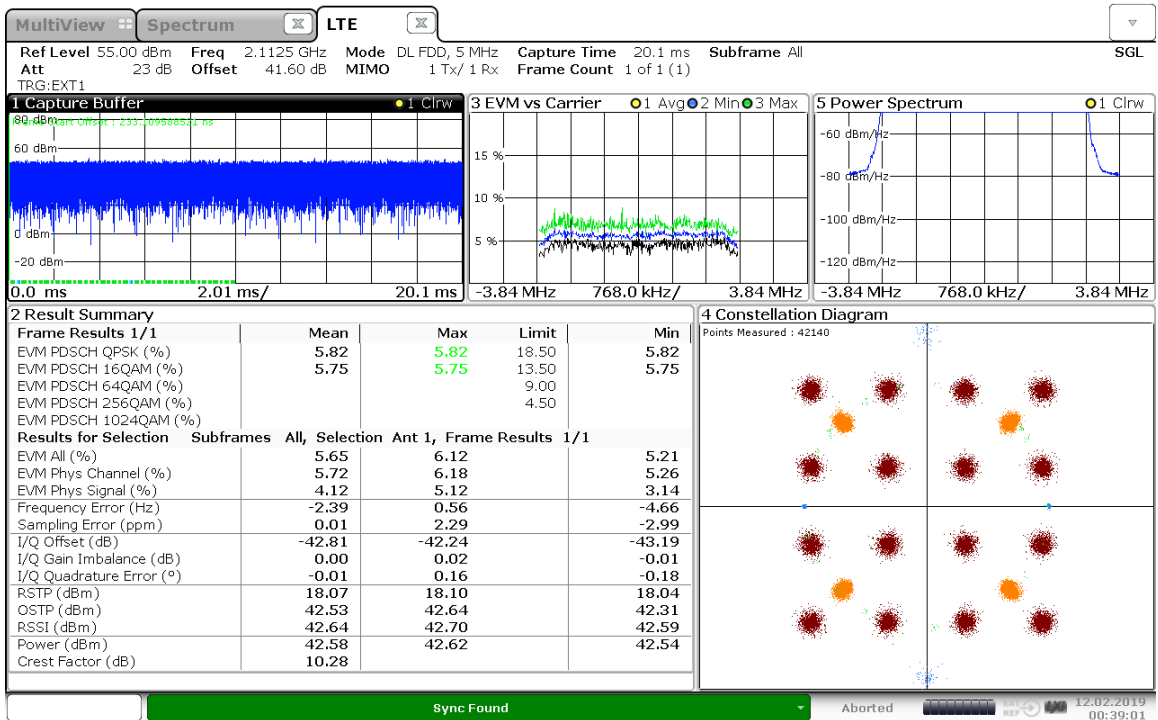
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00:03:37 12.02.2019

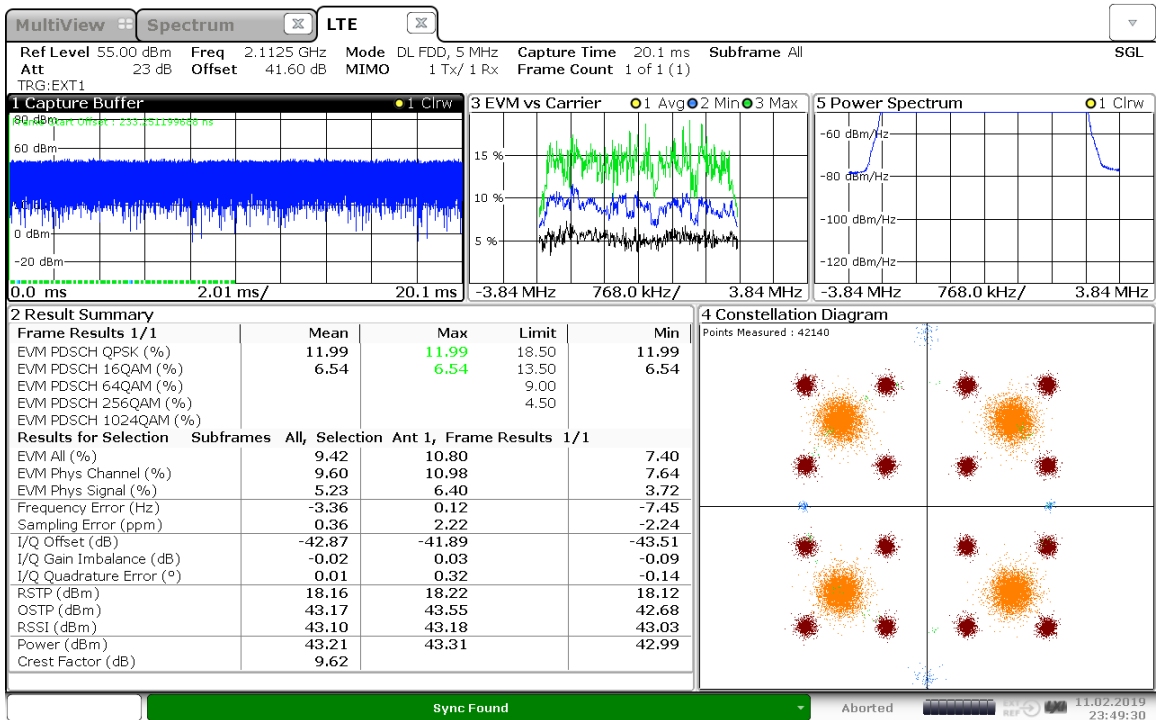


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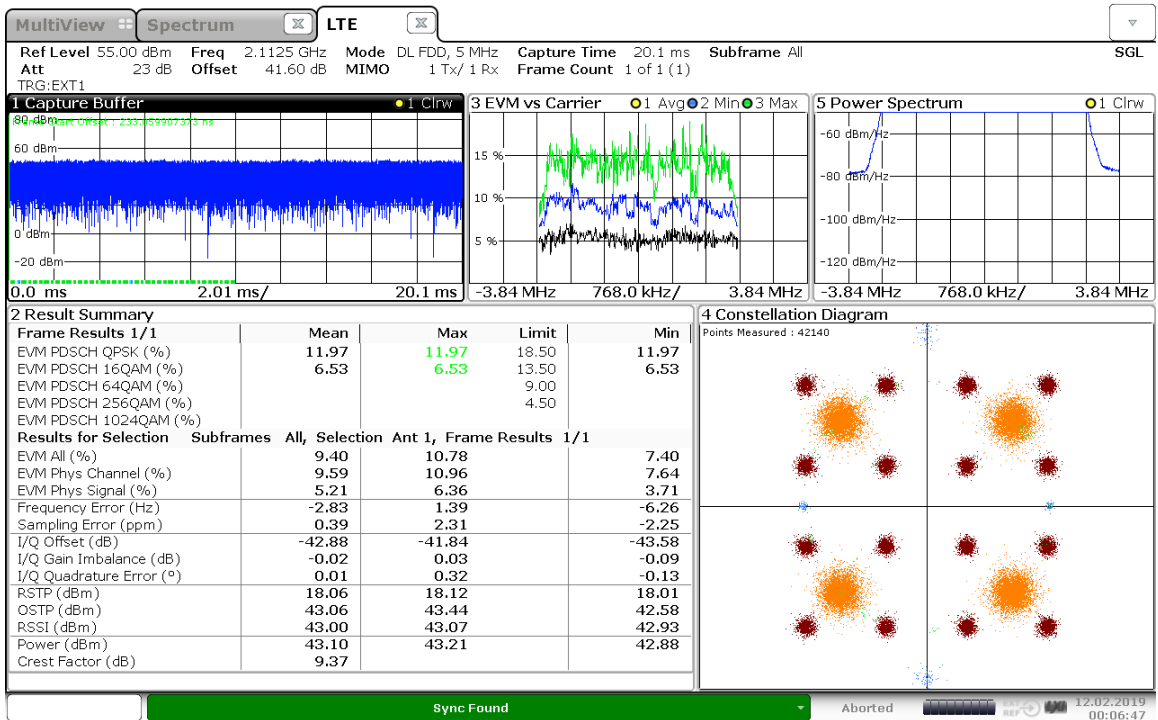


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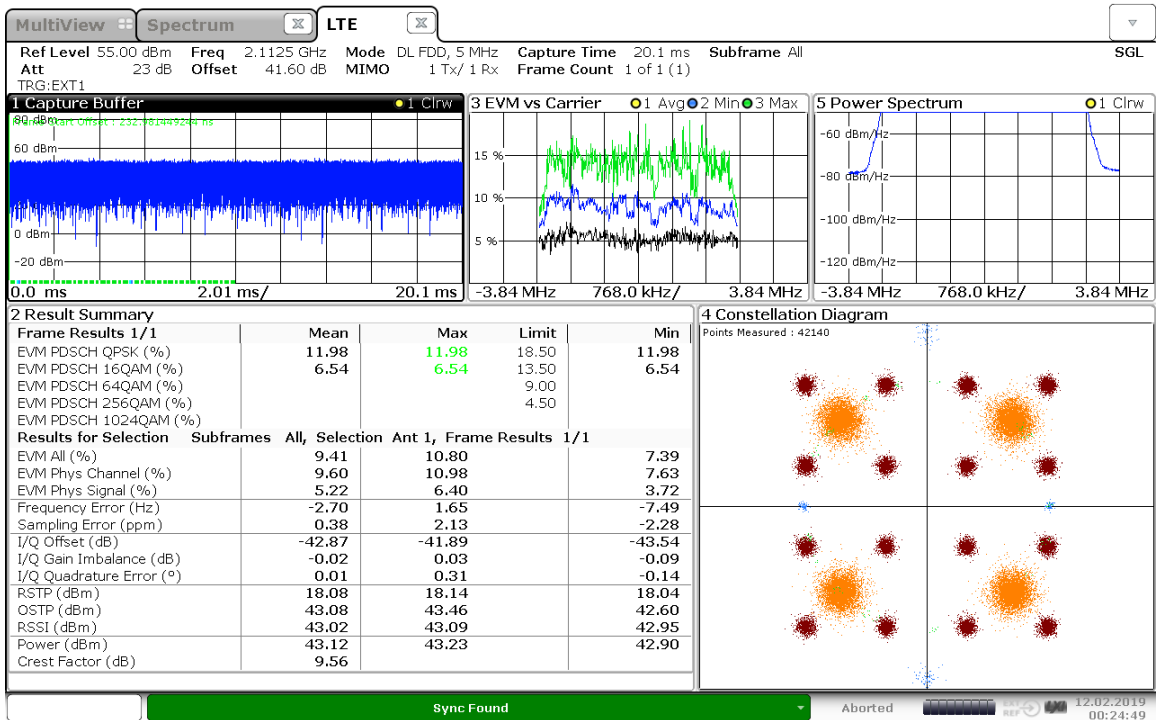
5M -2112.5MHz-TM3.3-Port 1 ~4:



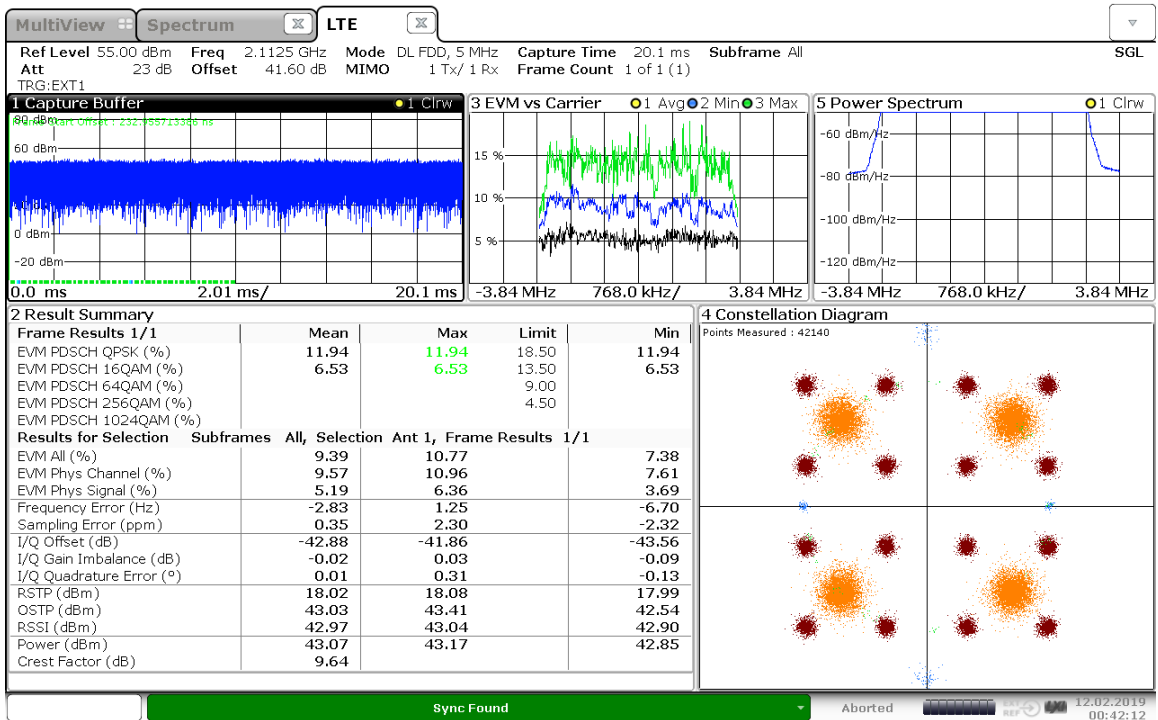
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00:06:47 12.02.2019

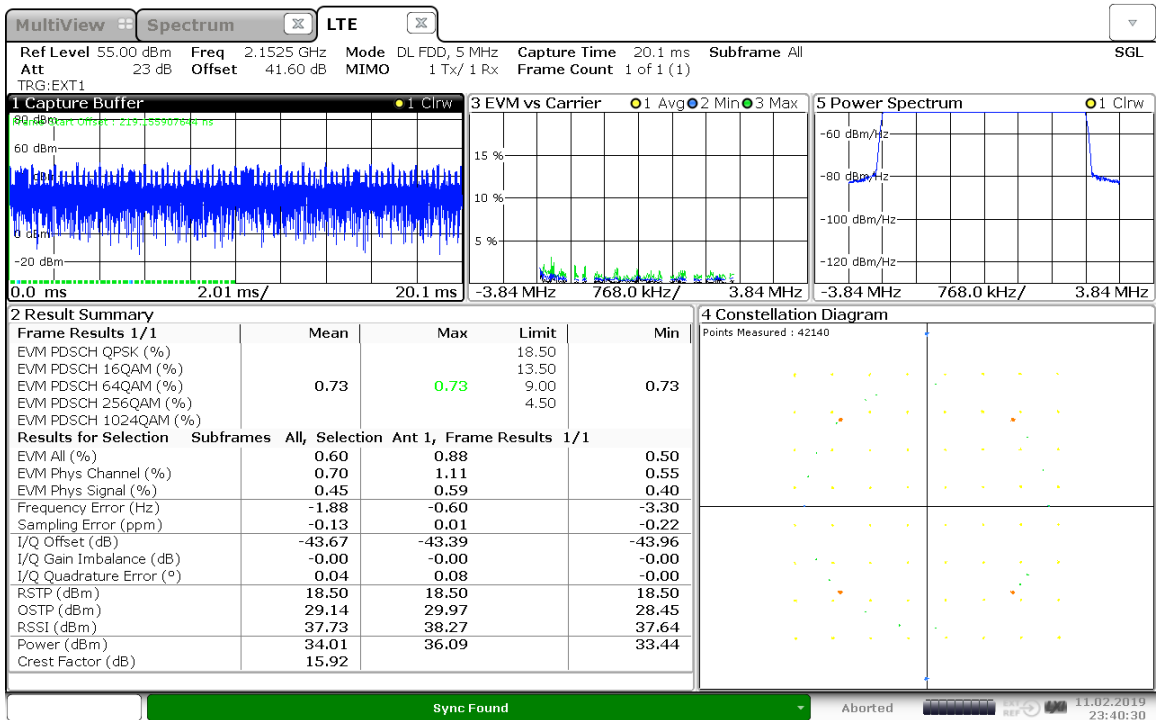


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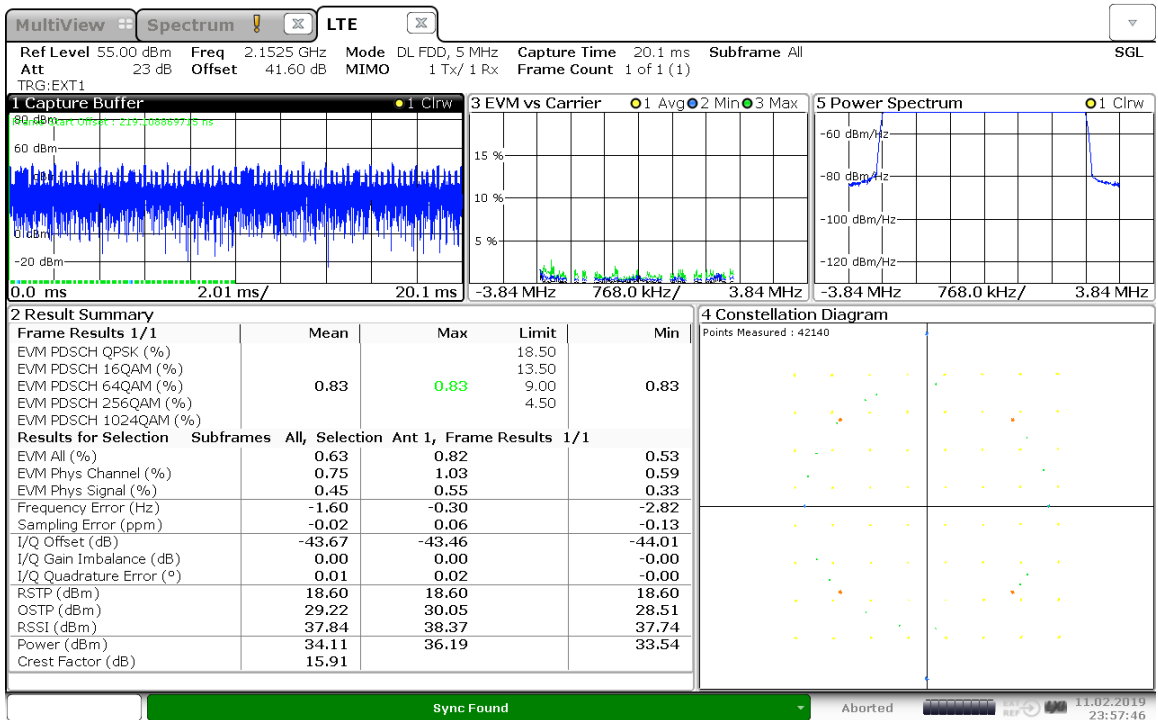


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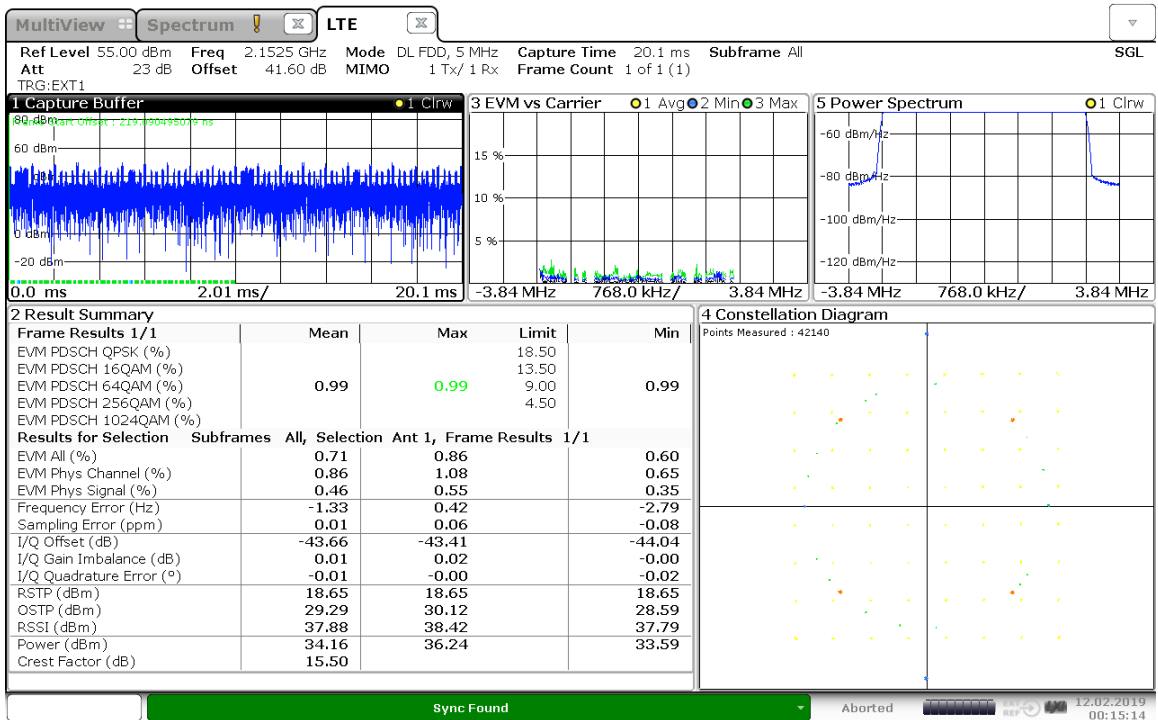
5M -2152.5MHz-TM2.0-Port 1 ~4:



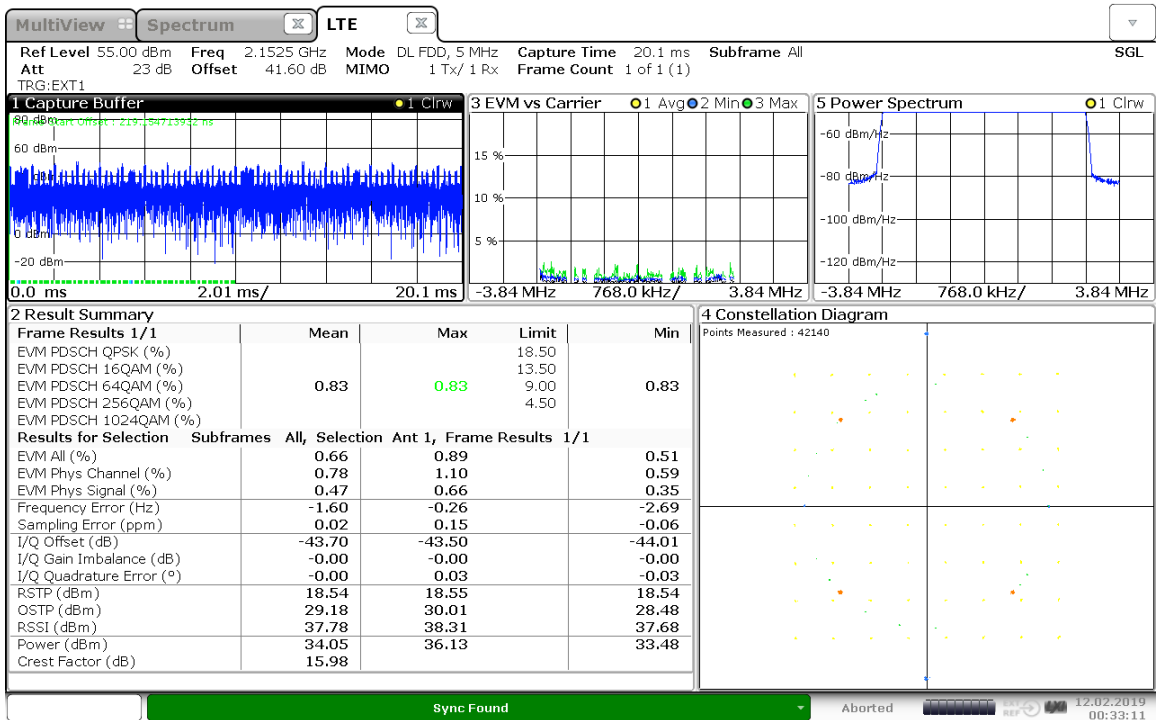
23:40:31 11.02.2019



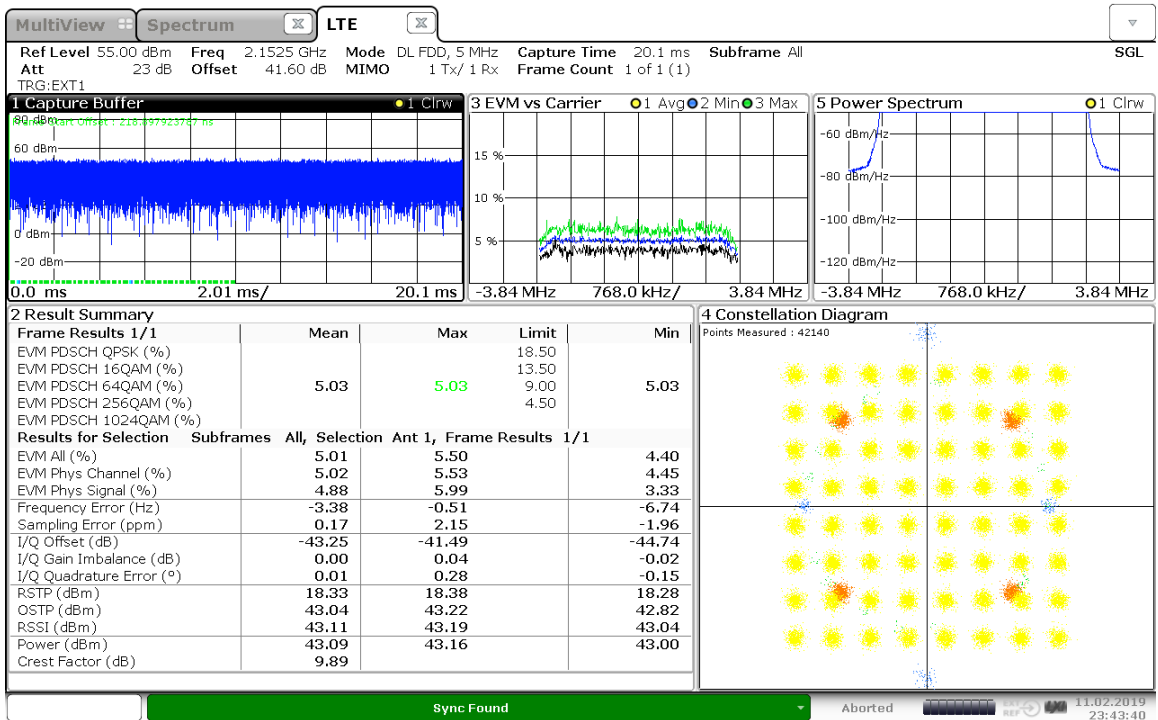
23:57:47 11.02.2019

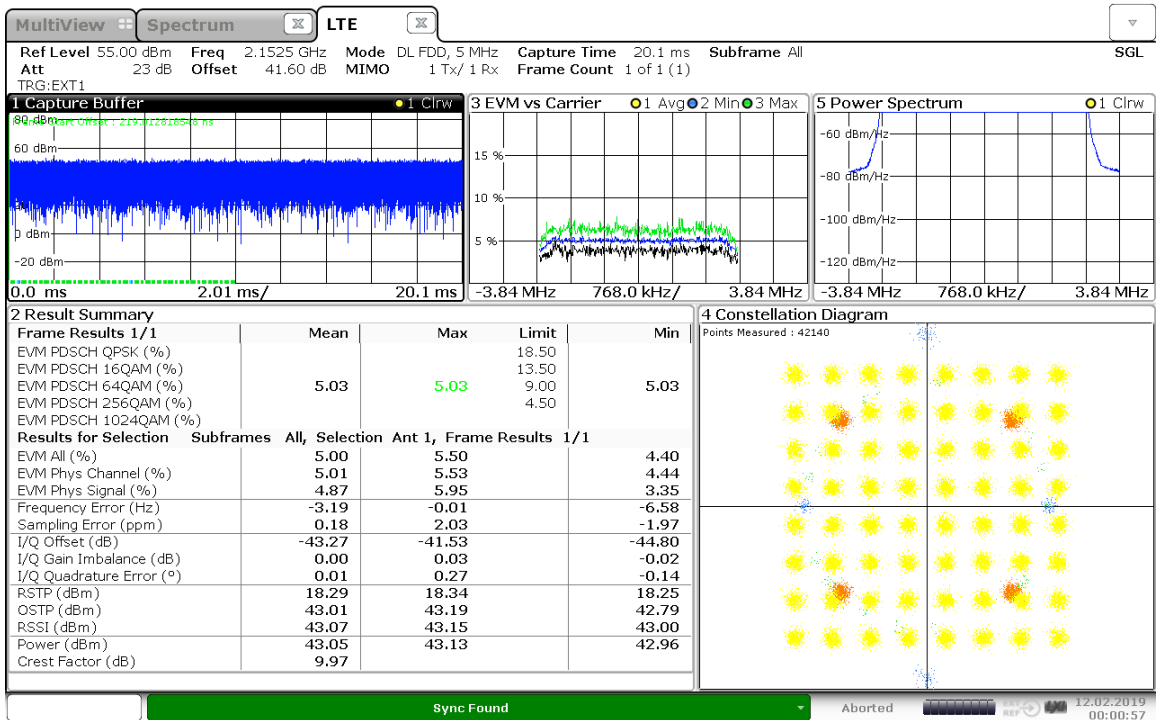


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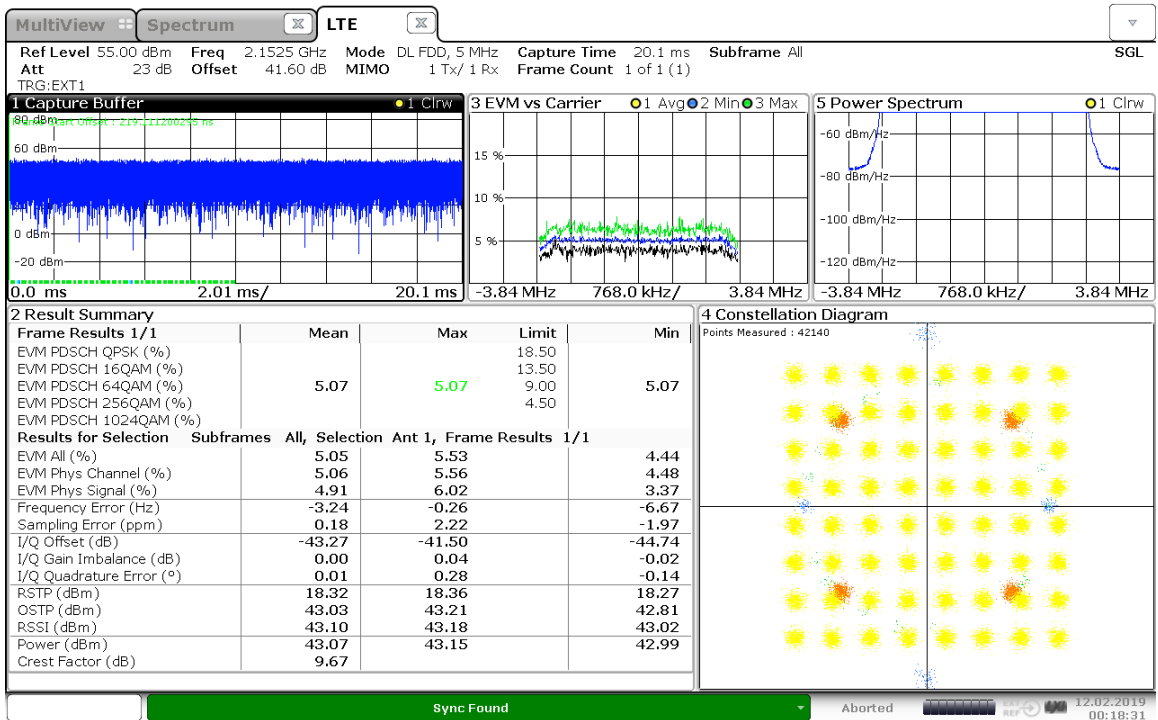


5M -2152.5MHz-TM3.1-Port 1 ~4:

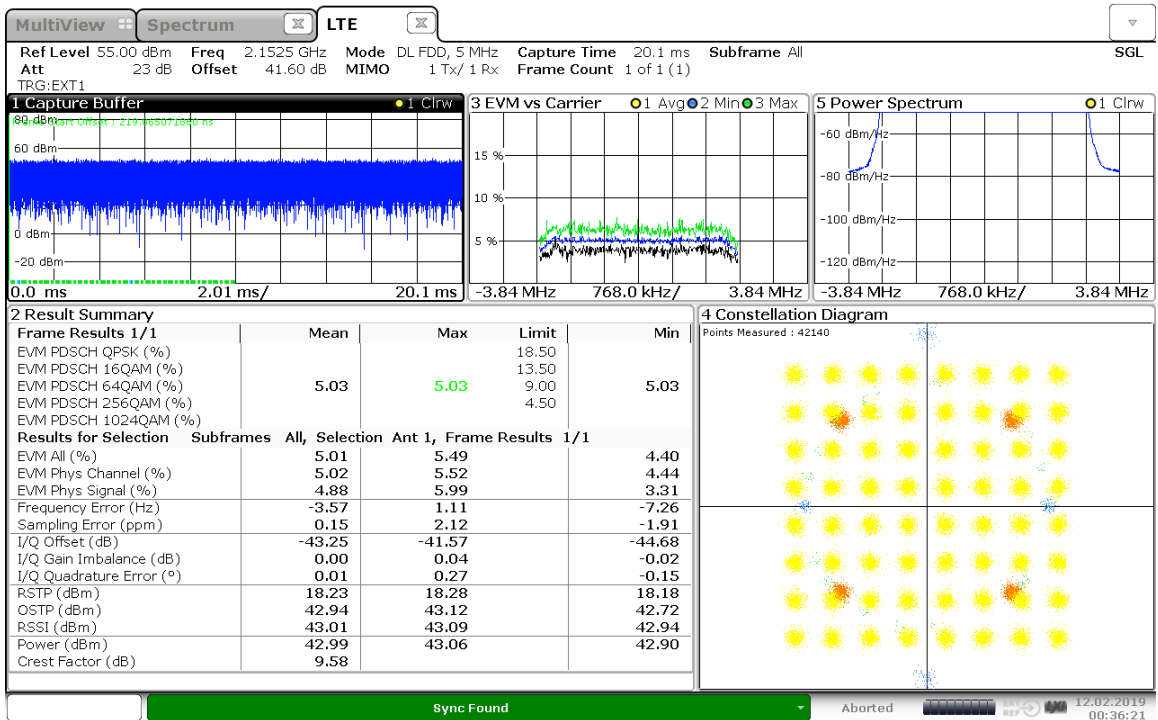




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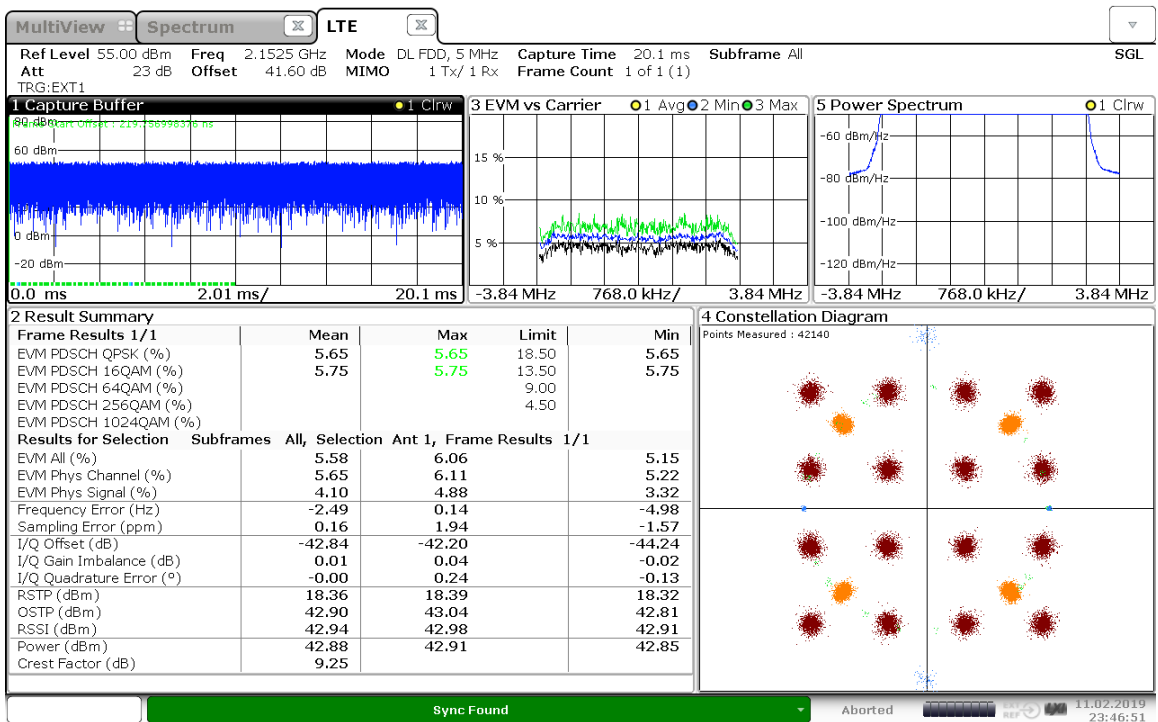


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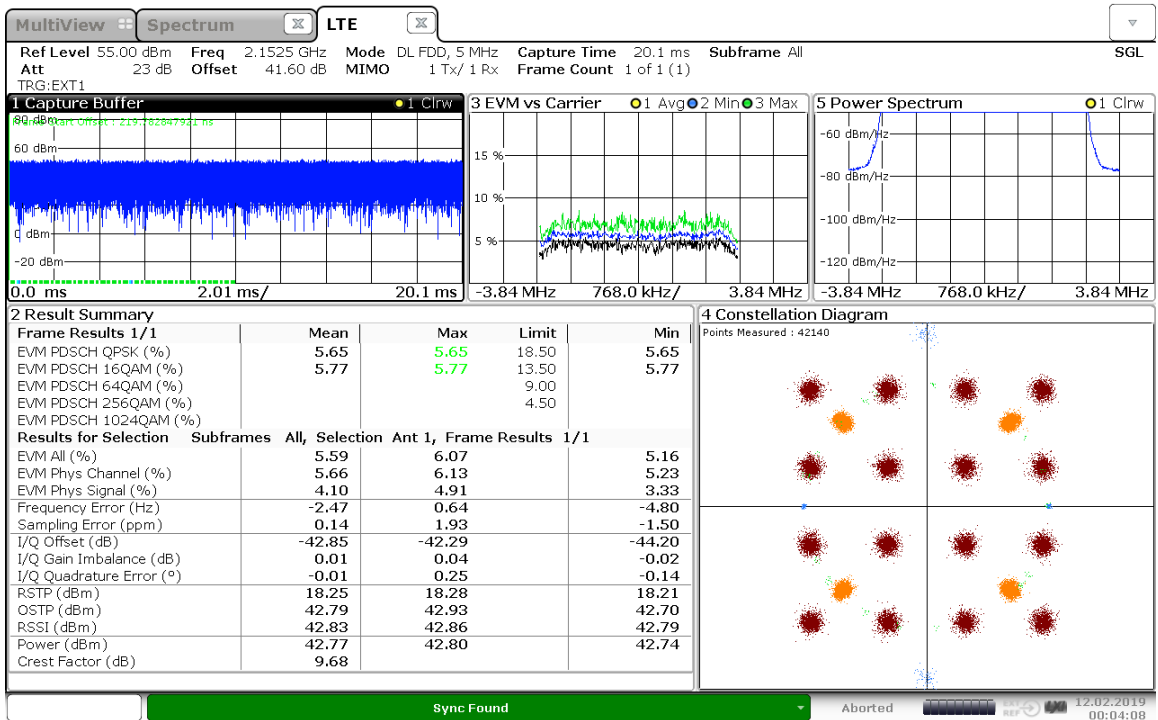


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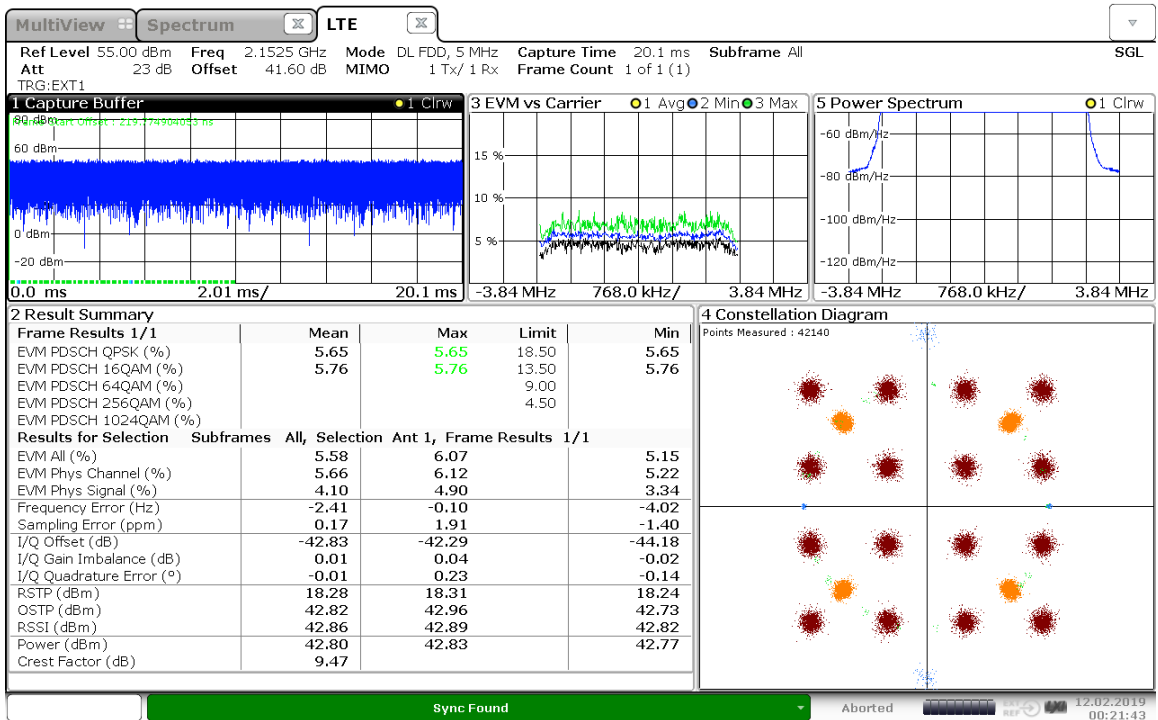
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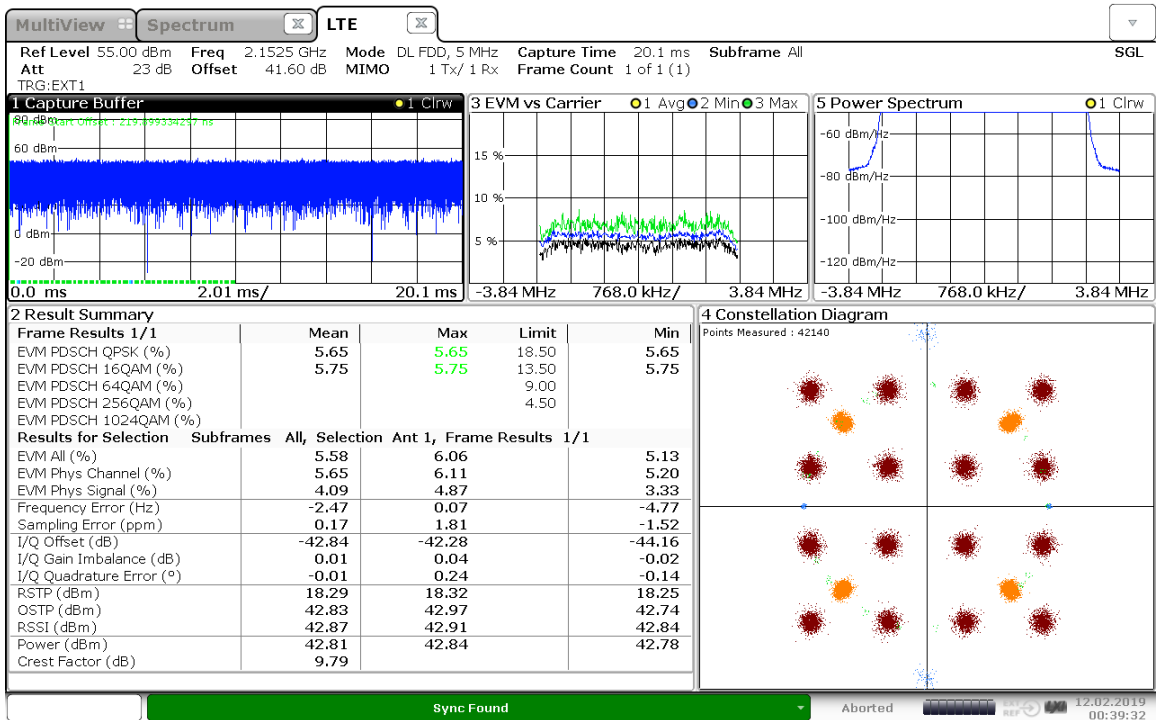
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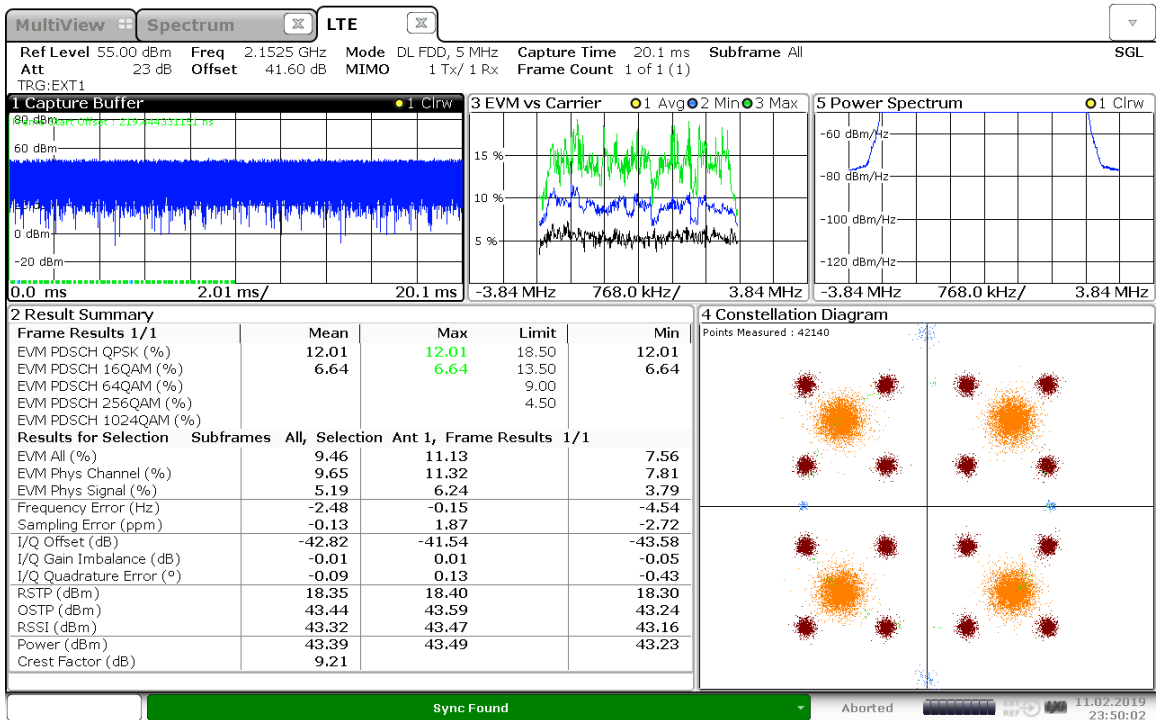
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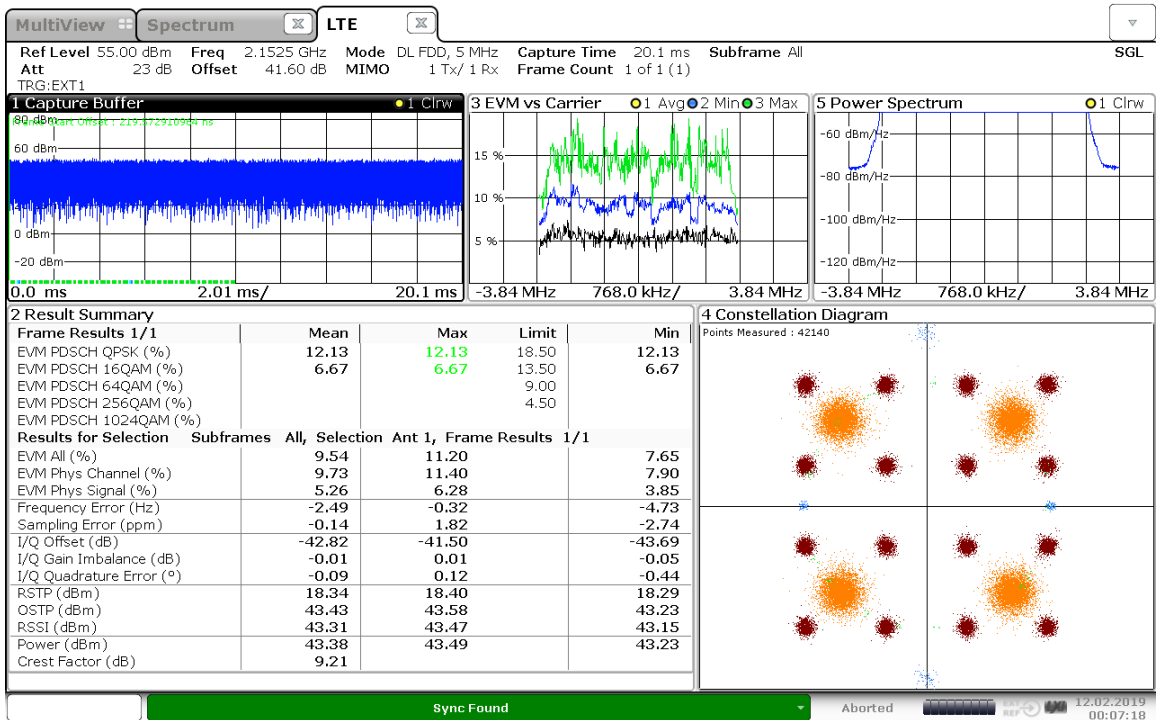


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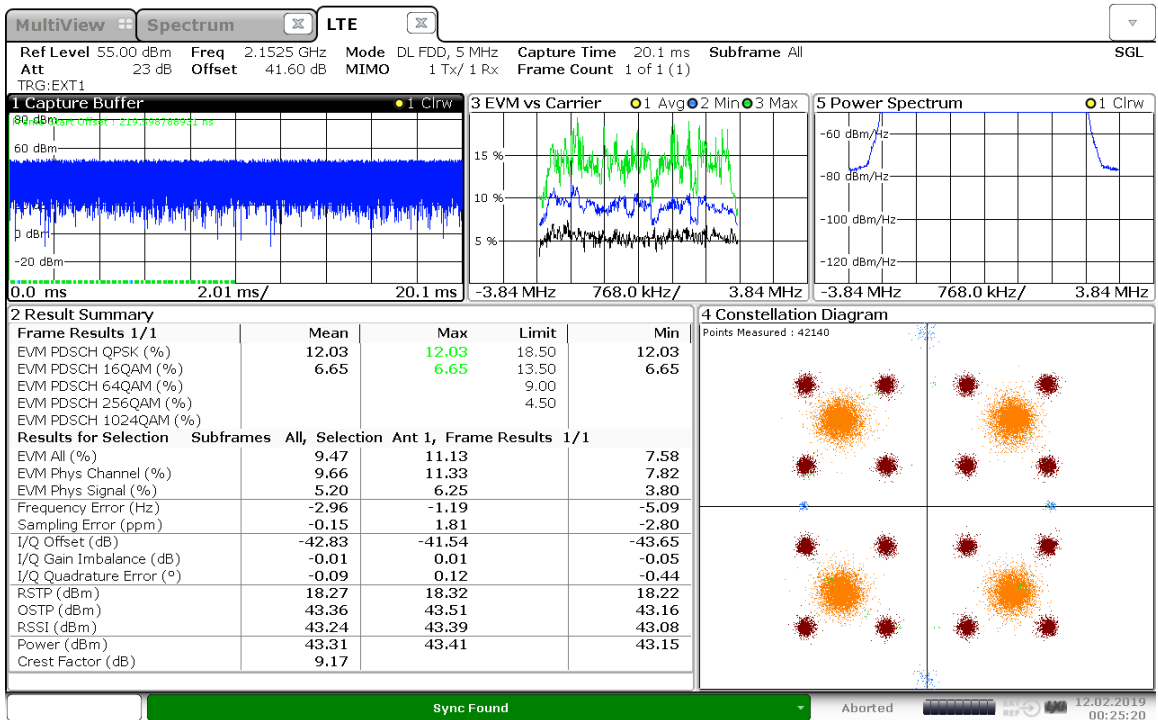


5M -2152.5MHz-TM3.3-Port 1 ~4:

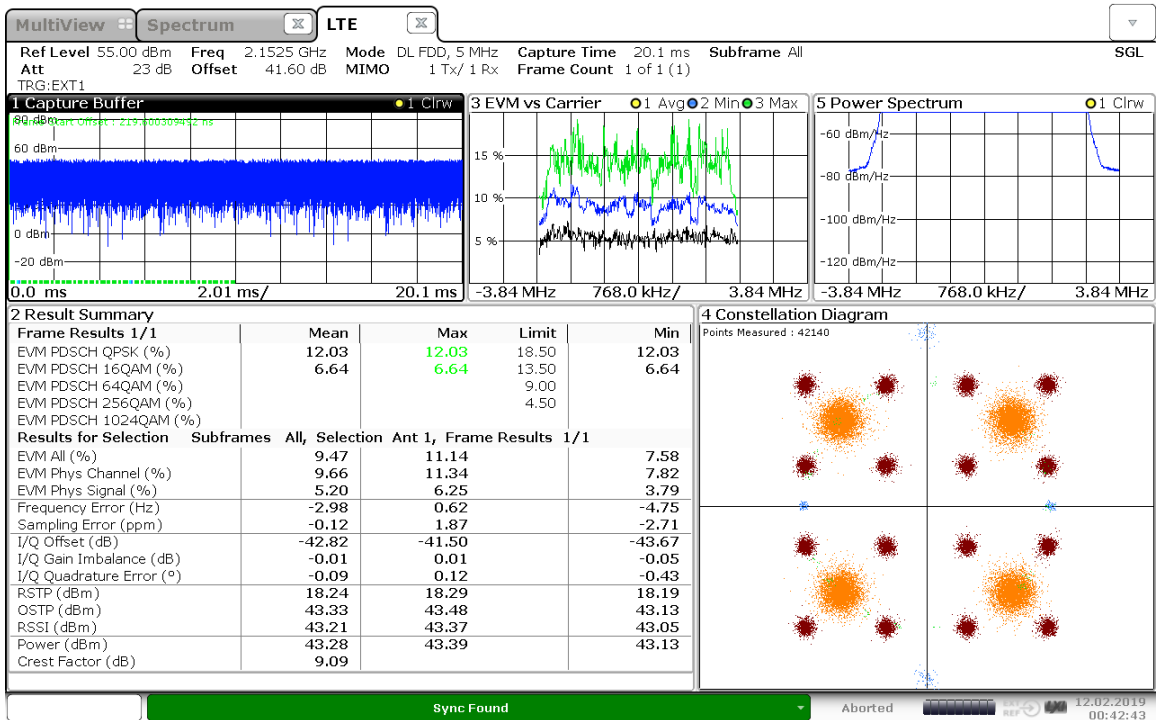




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00:25:21 12.02.2019

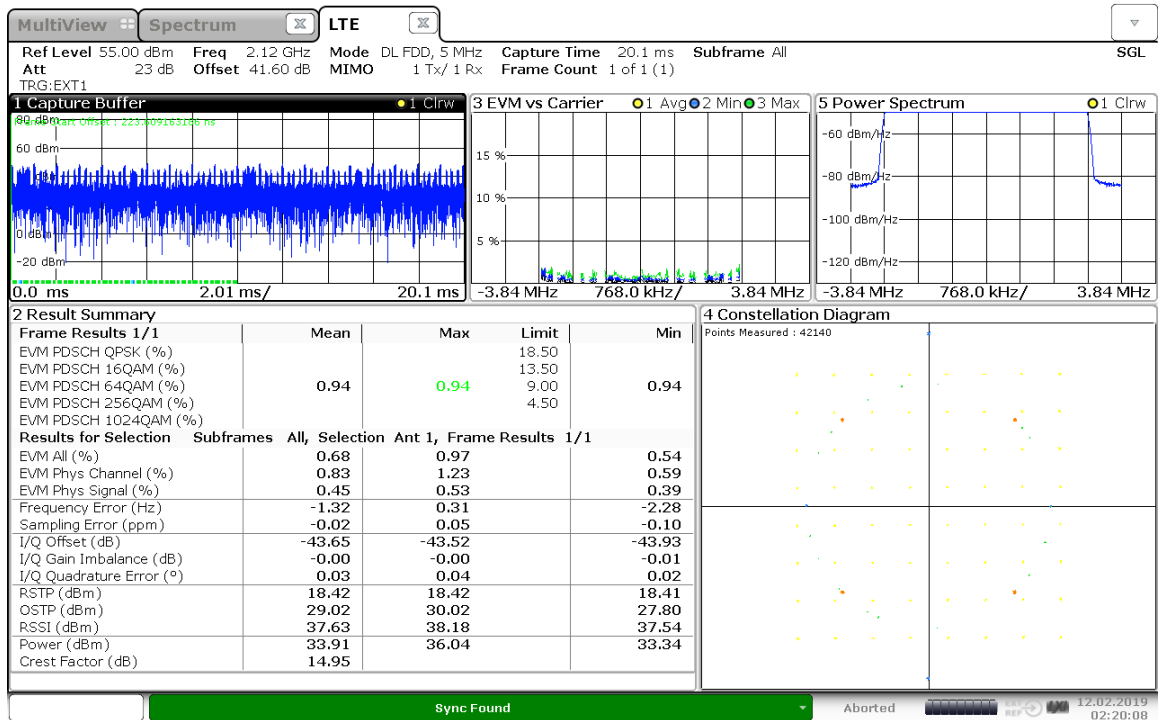


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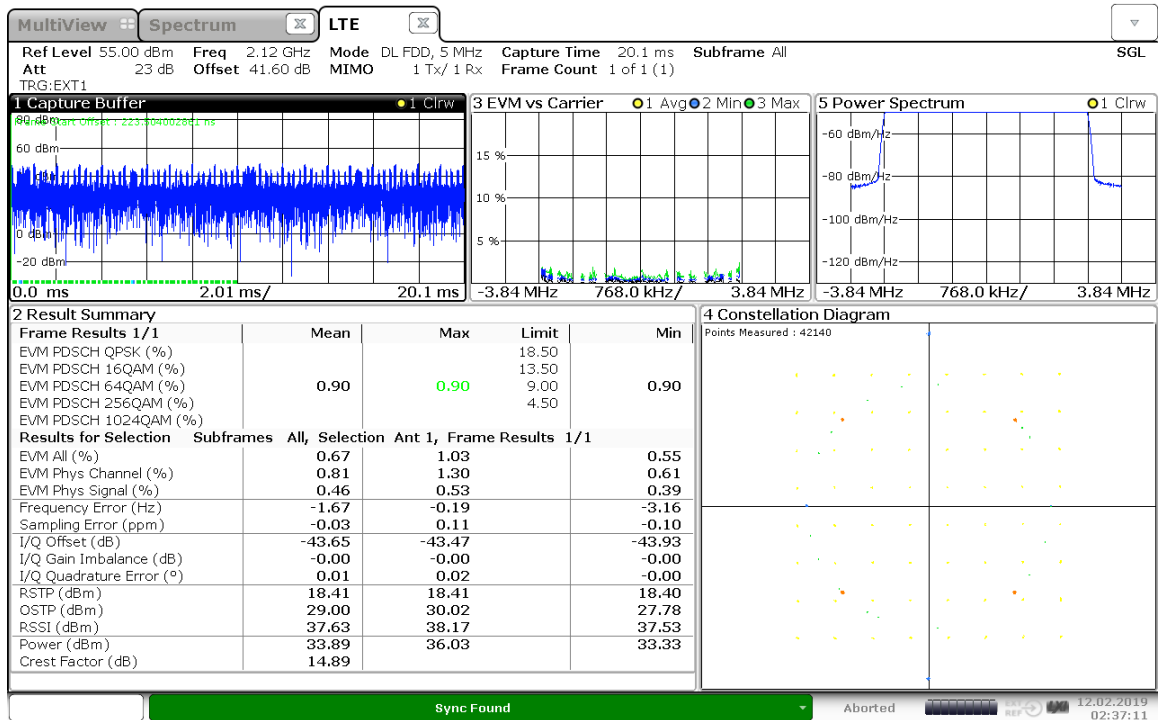
Channel Bandwidth :5M+5M(2120MHz+2160MHz)

Frequency (MHz)	Test mode	Port	EVM(%)
2120	TM2.0	1	0.94
		2	0.90
		3	2.42
		4	0.95
	TM3.1	1	5.03
		2	5.04
		3	5.06
		4	5.04
	TM3.2	1	5.76
		2	5.76
		3	5.78
		4	5.77
	TM3.3	1	12.01
		2	12.04
		3	11.93
		4	12.00
2160	TM2.0	1	0.96
		2	0.81
		3	0.63
		4	1.92
	TM3.1	1	5.08
		2	5.06
		3	5.03
		4	5.03
	TM3.2	1	5.76
		2	5.75
		3	5.76
		4	5.75
	TM3.3	1	12.03
		2	12.10
		3	12.02
		4	12.06

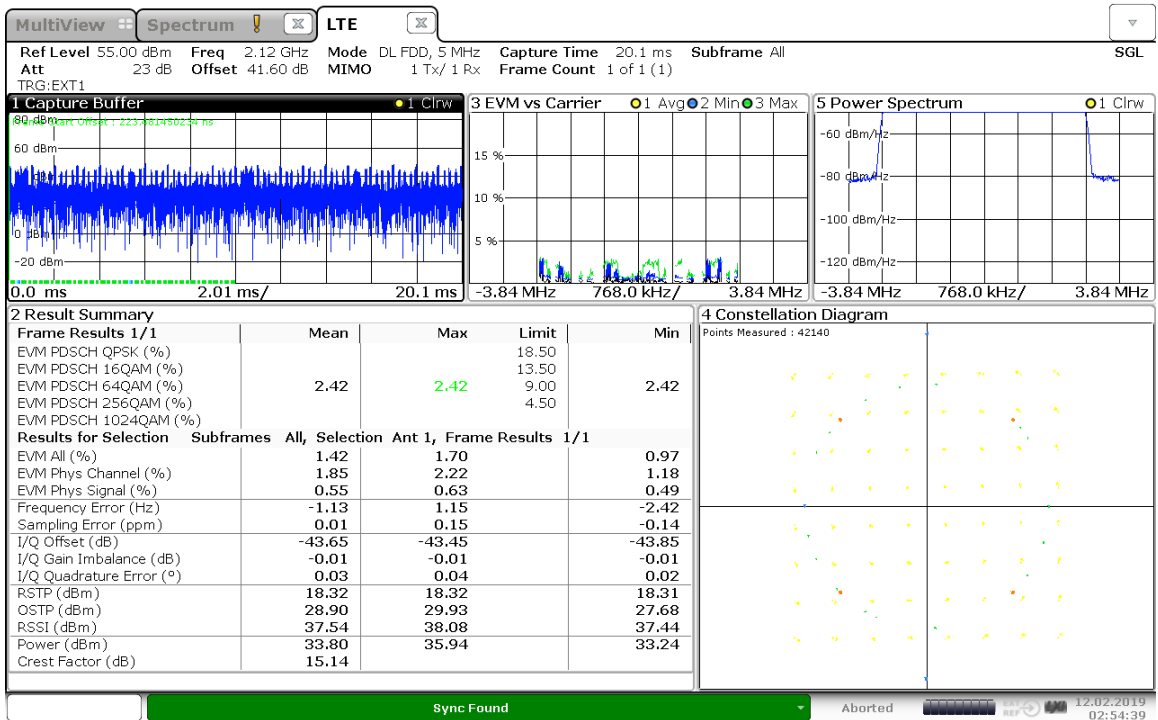
5M -2120MHz-TM2.0-Port 1 ~4:



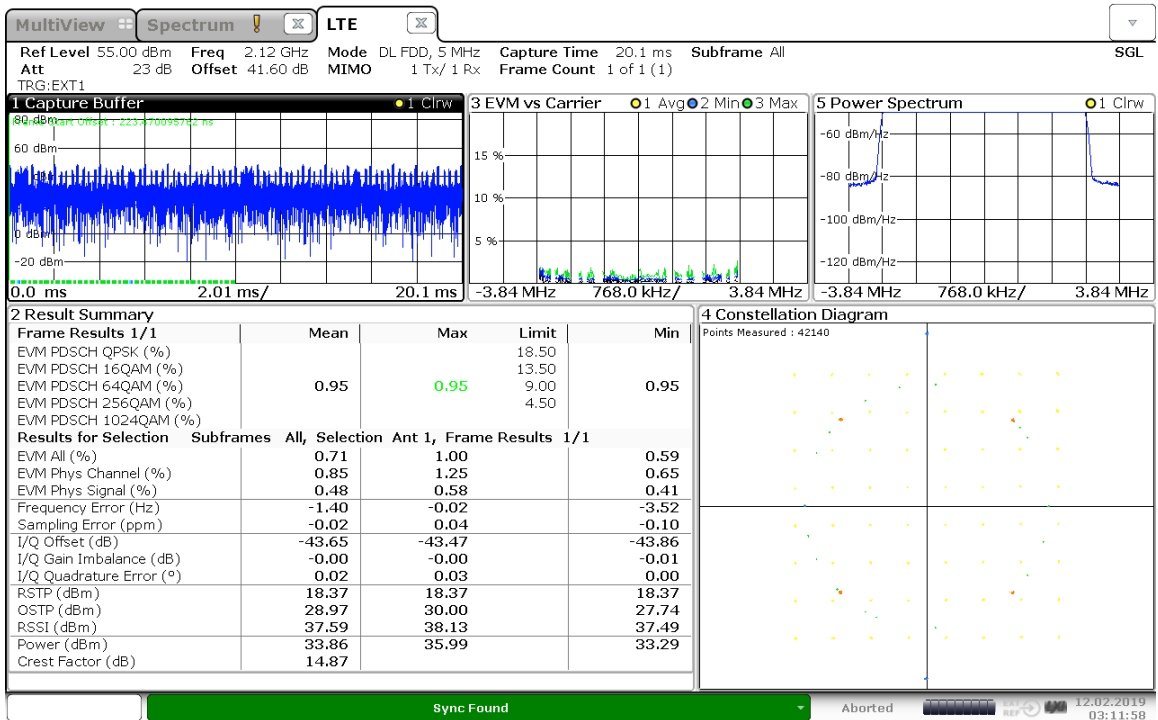
02:20:09 12.02.2019



02:37:12 12.02.2019

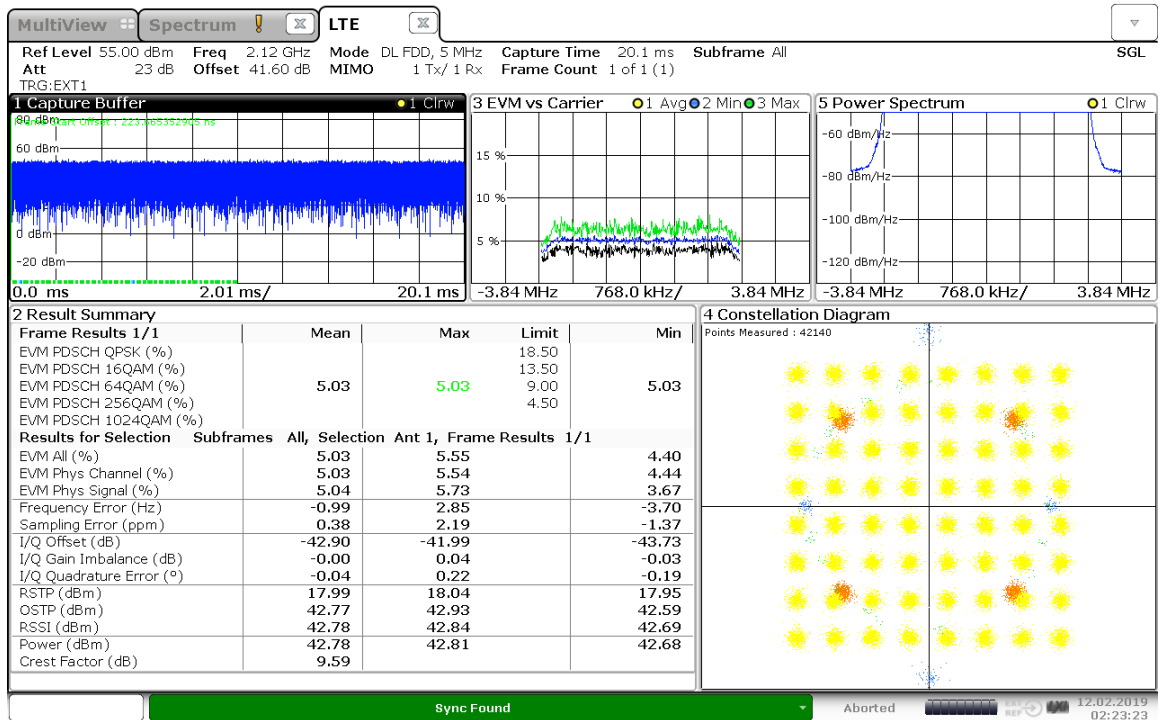


02:54:39 12.02.2019

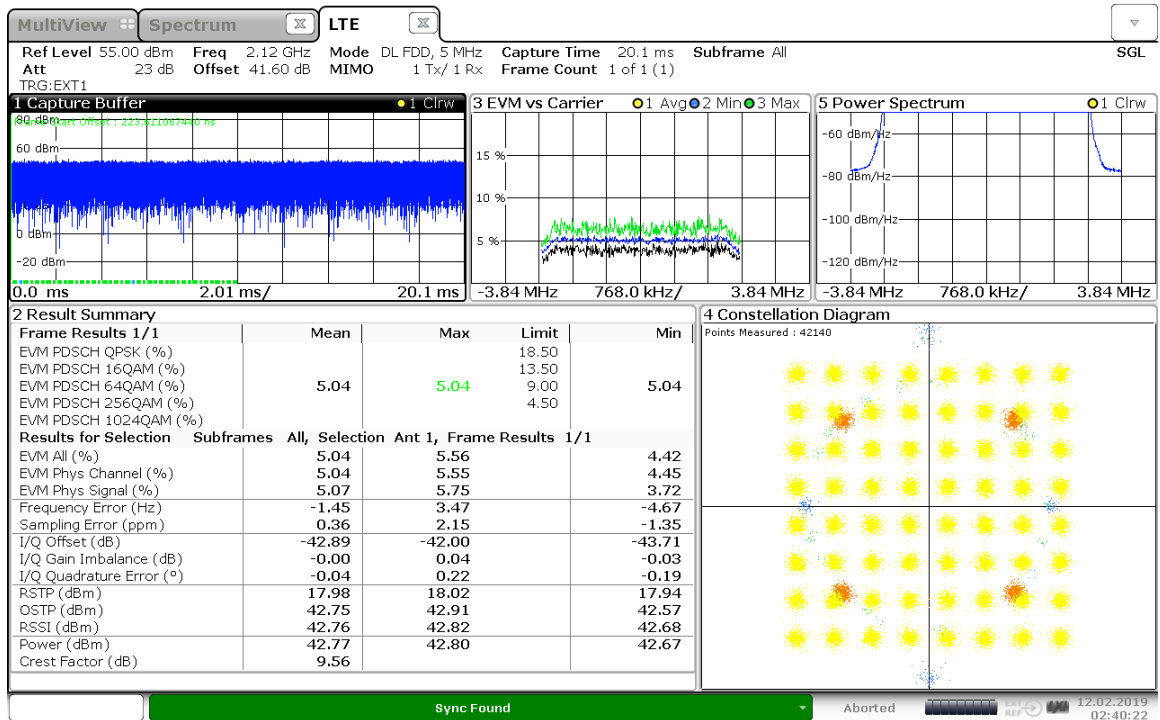


03:11:59 12.02.2019

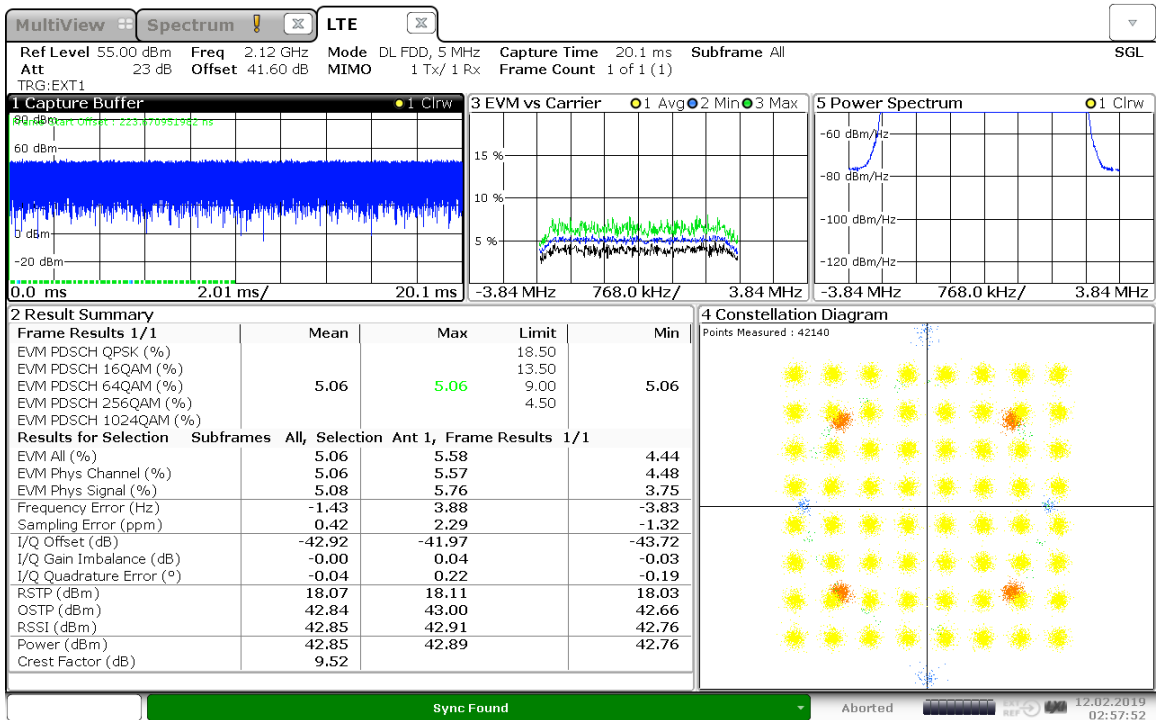
5M -2120MHz-TM3.1-Port 1 ~4:



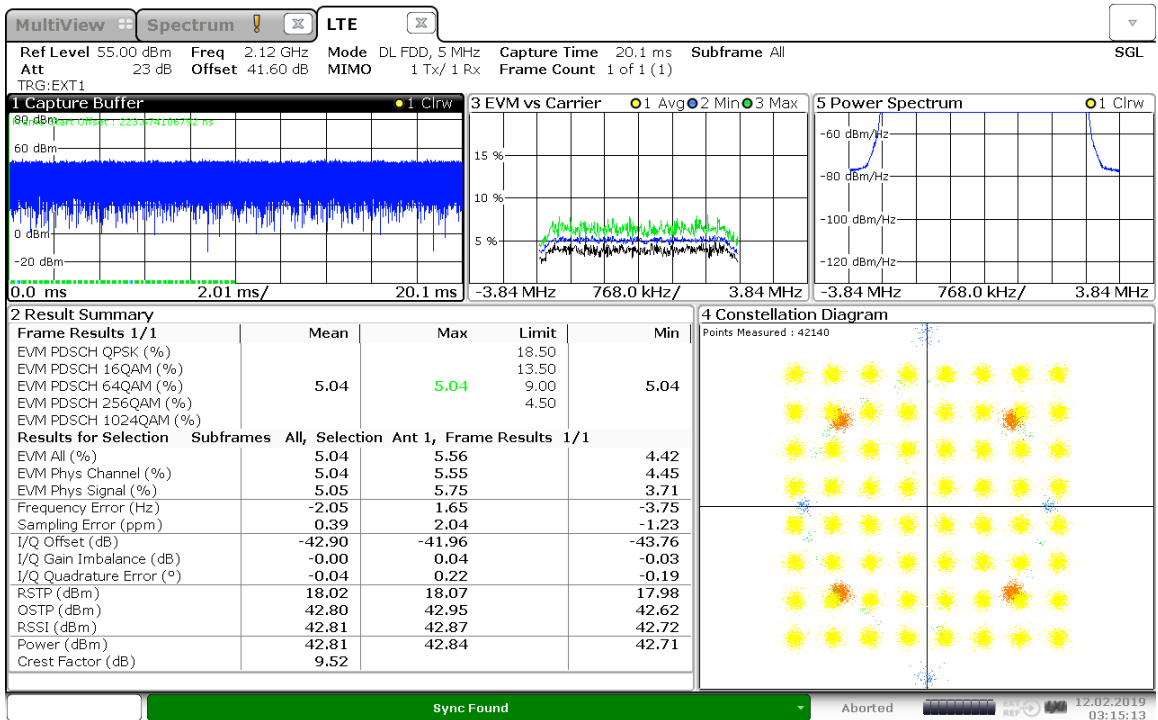
02:23:23 12.02.2019



02:40:22 12.02.2019

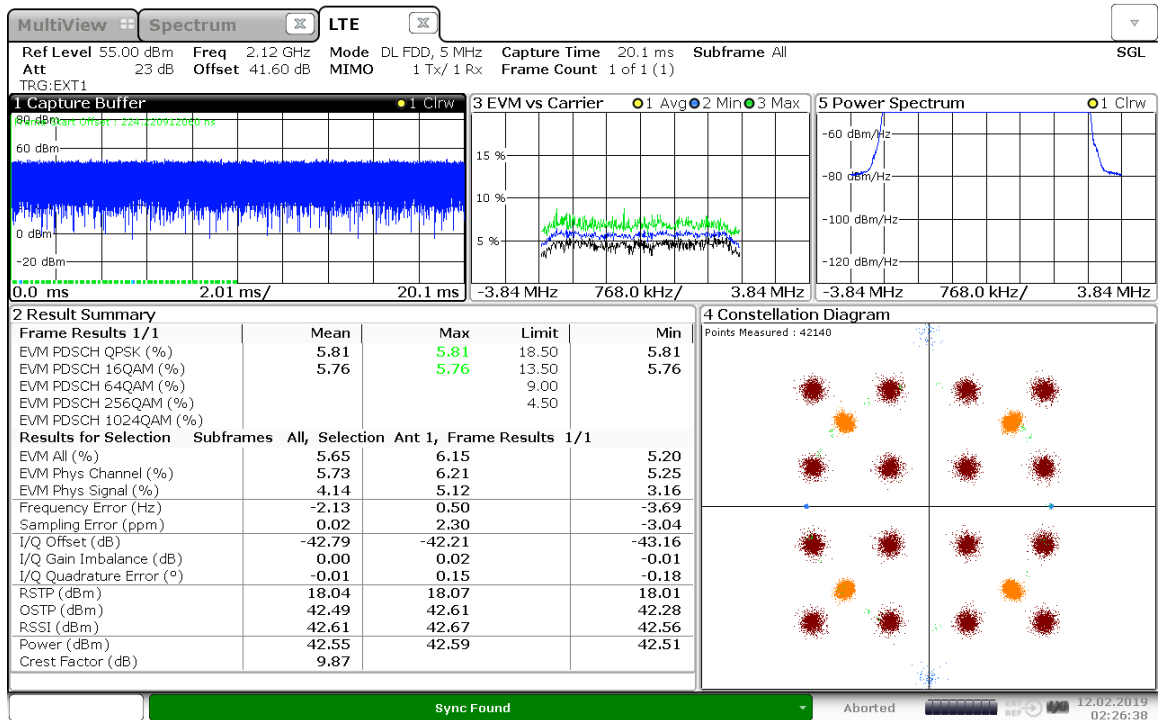


02:57:52 12.02.2019

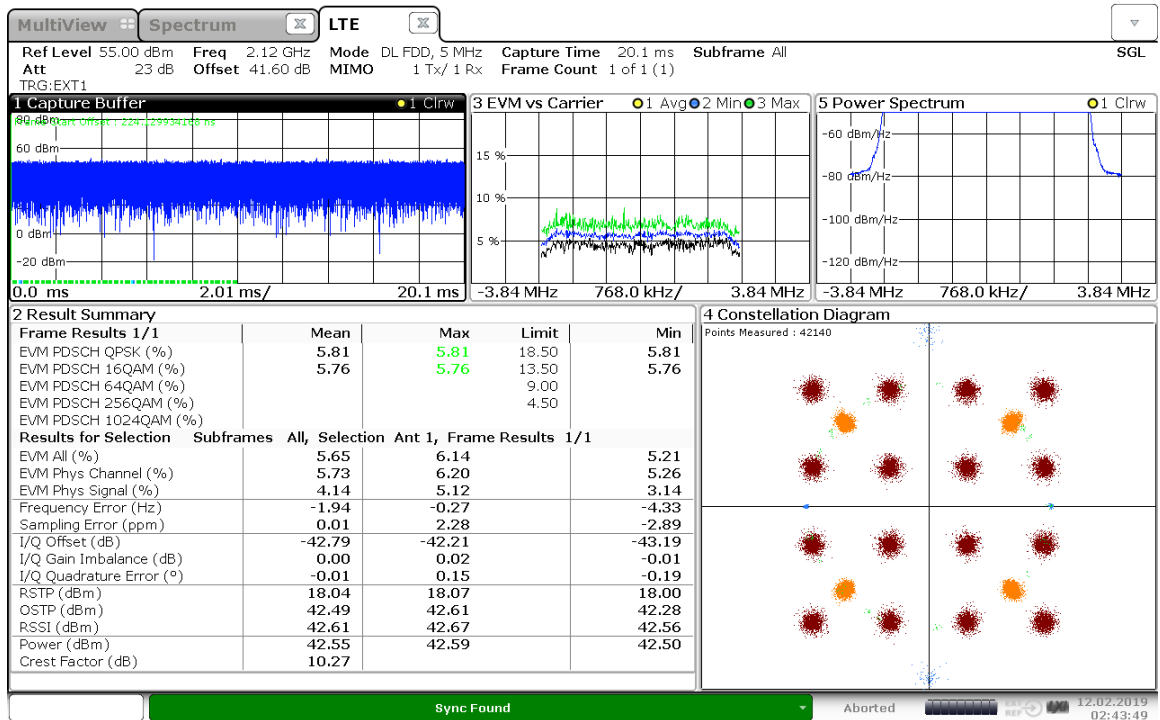


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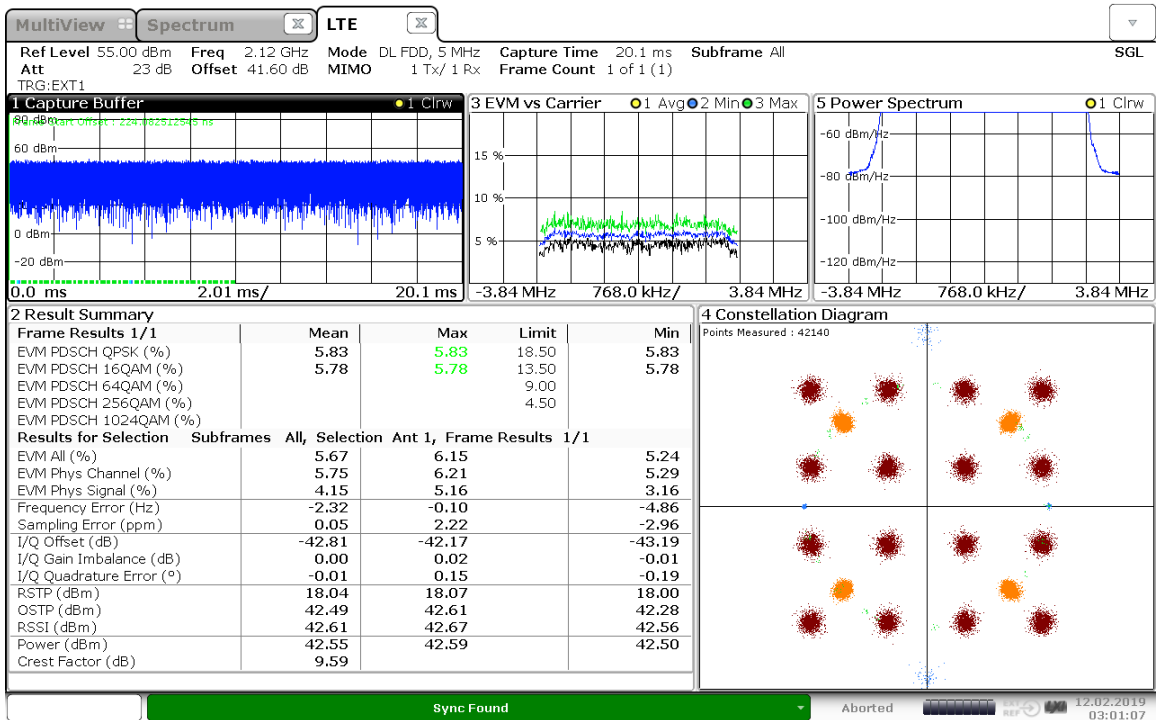
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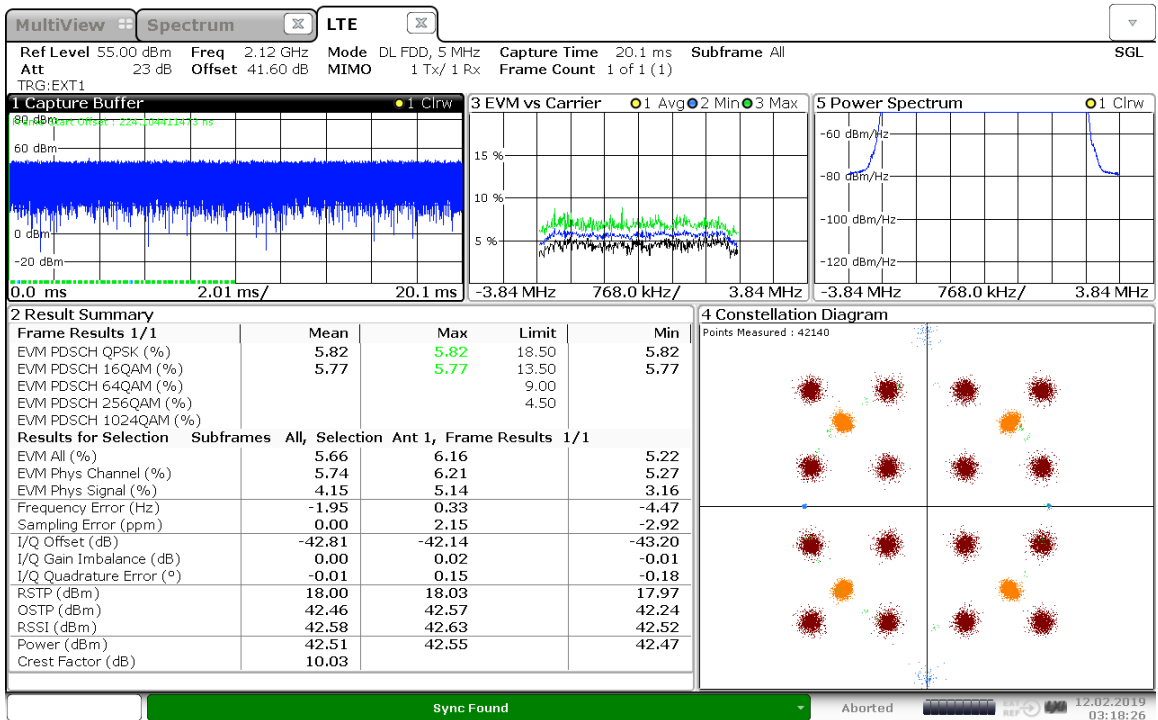
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02:43:49 12.02.2019

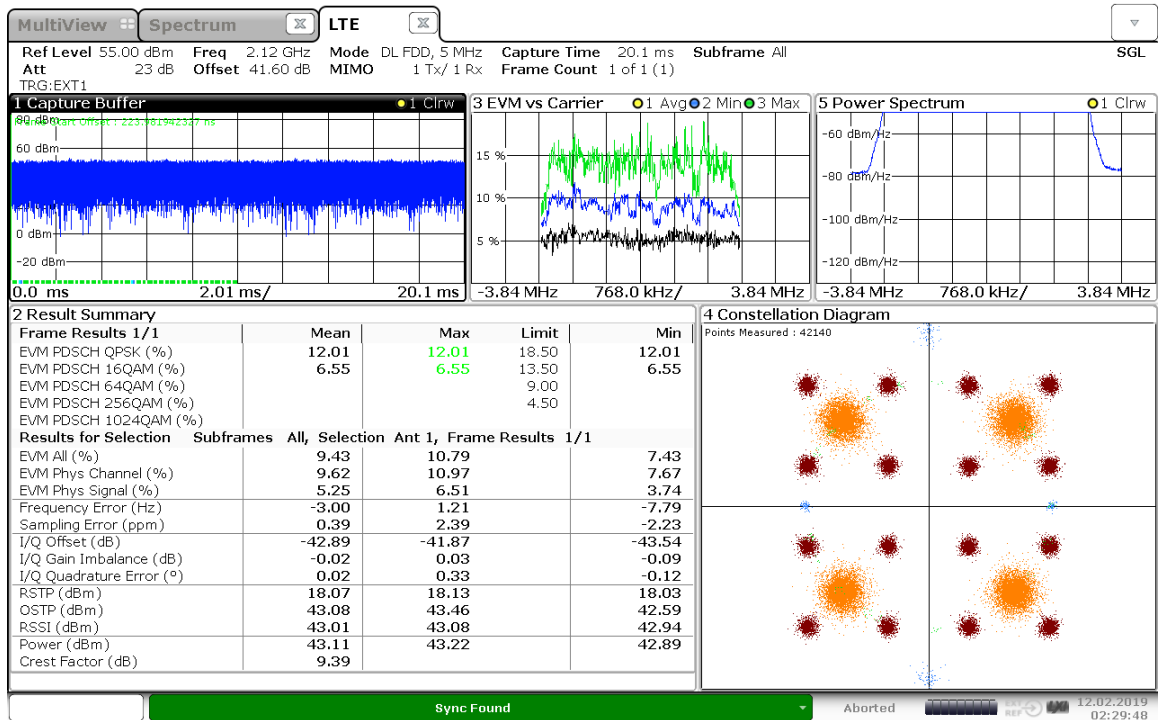


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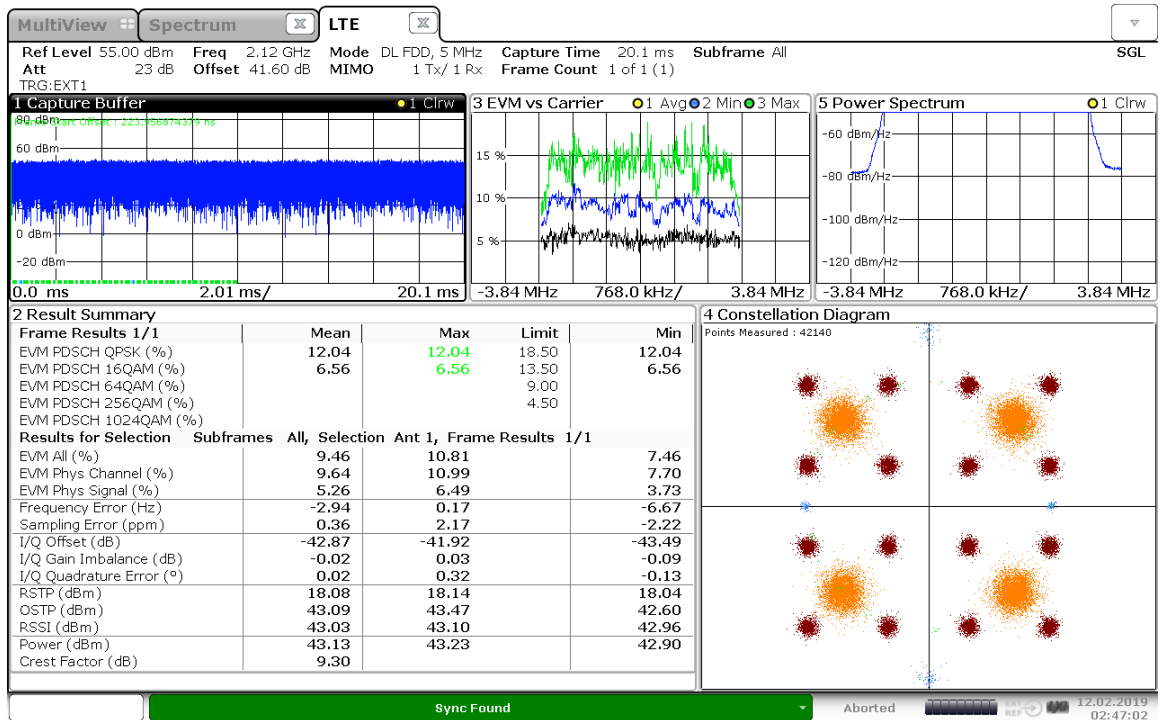


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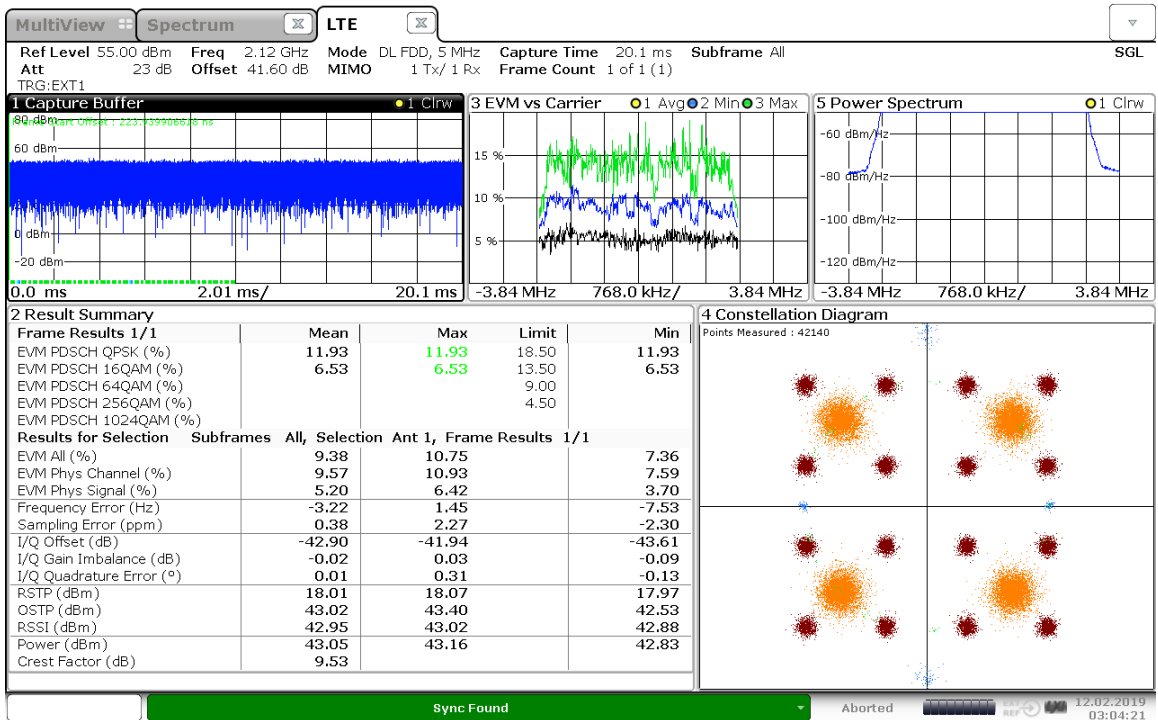
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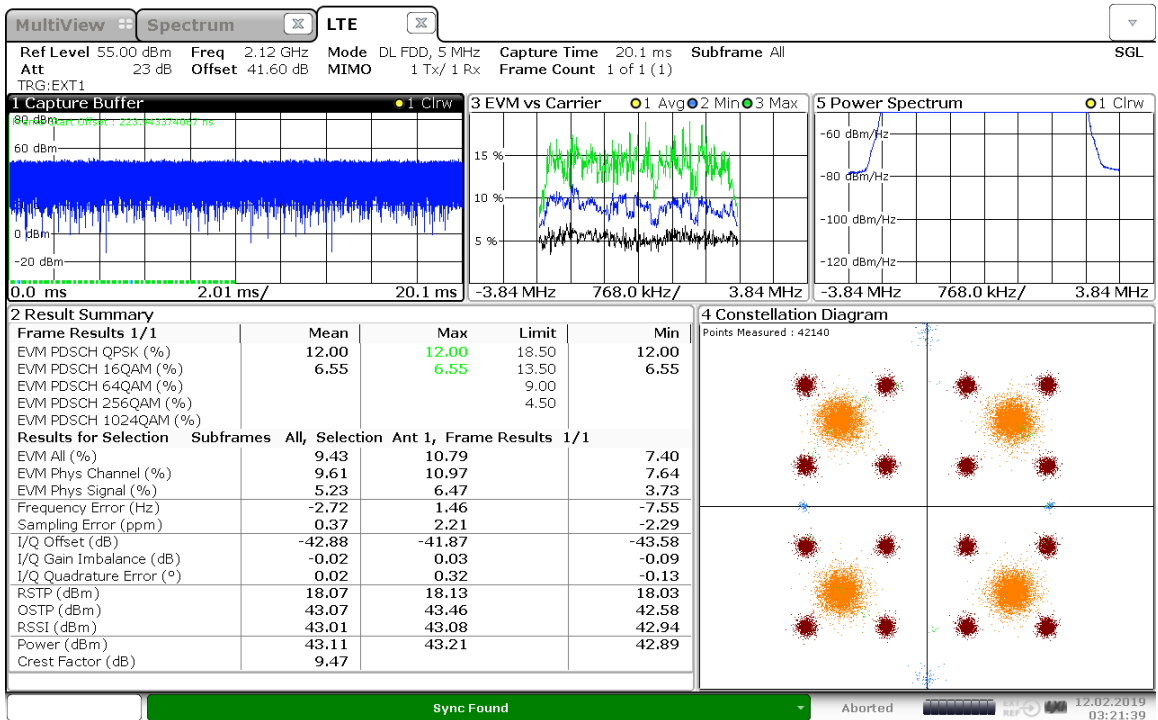
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02:47:03 12.02.2019

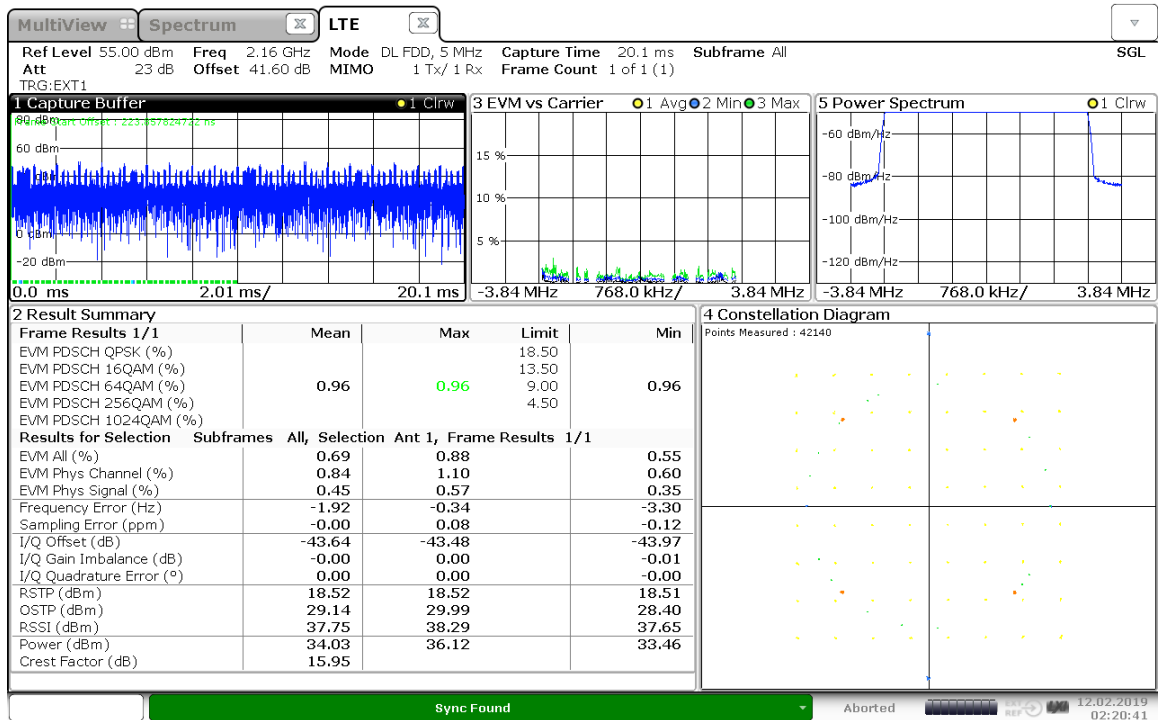


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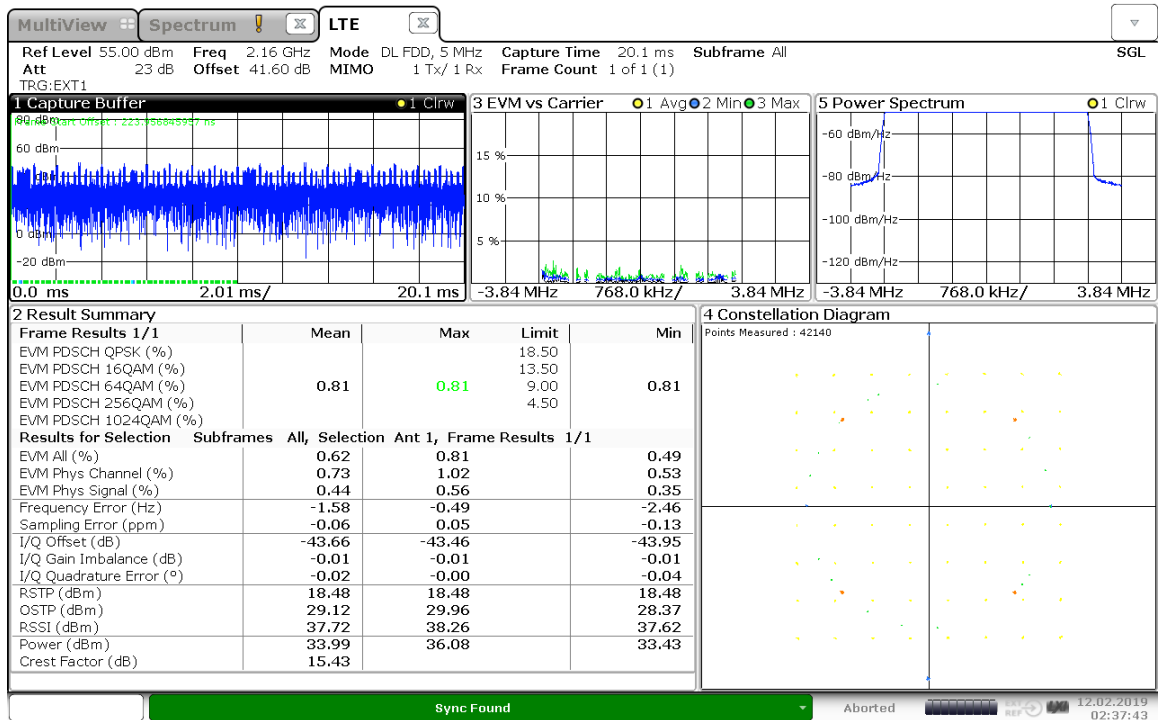


03:21:40 12.02.2019

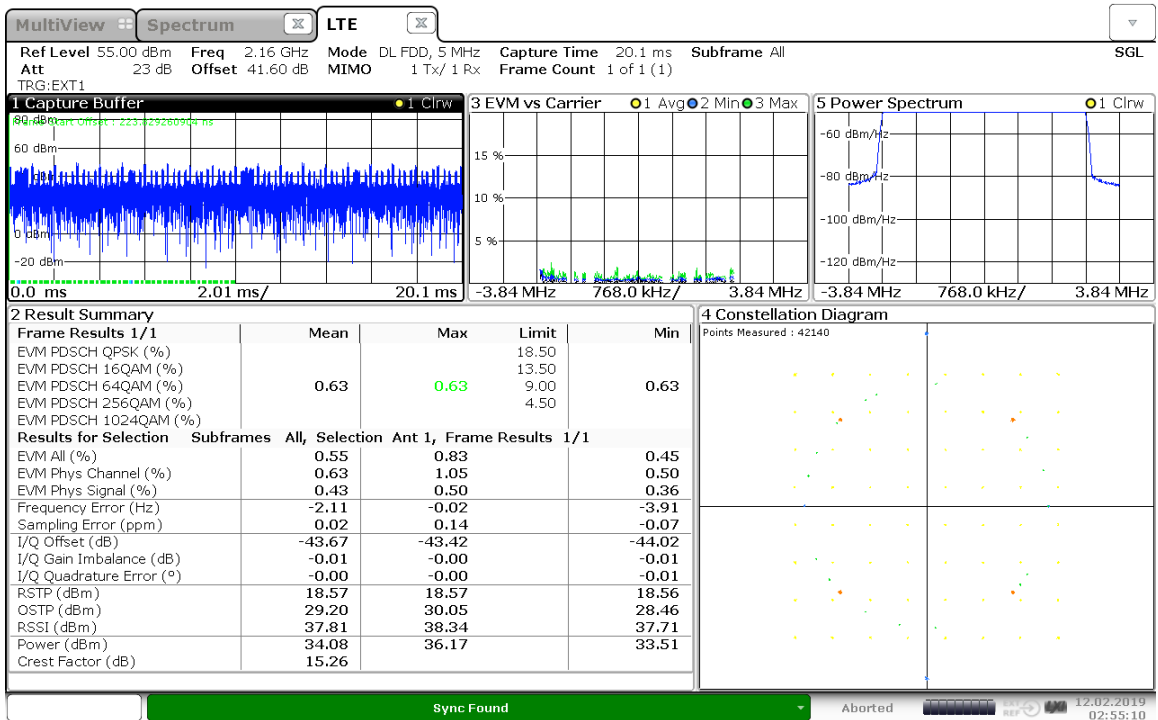
5M -2160MHz-TM2.0-Port 1 ~4:



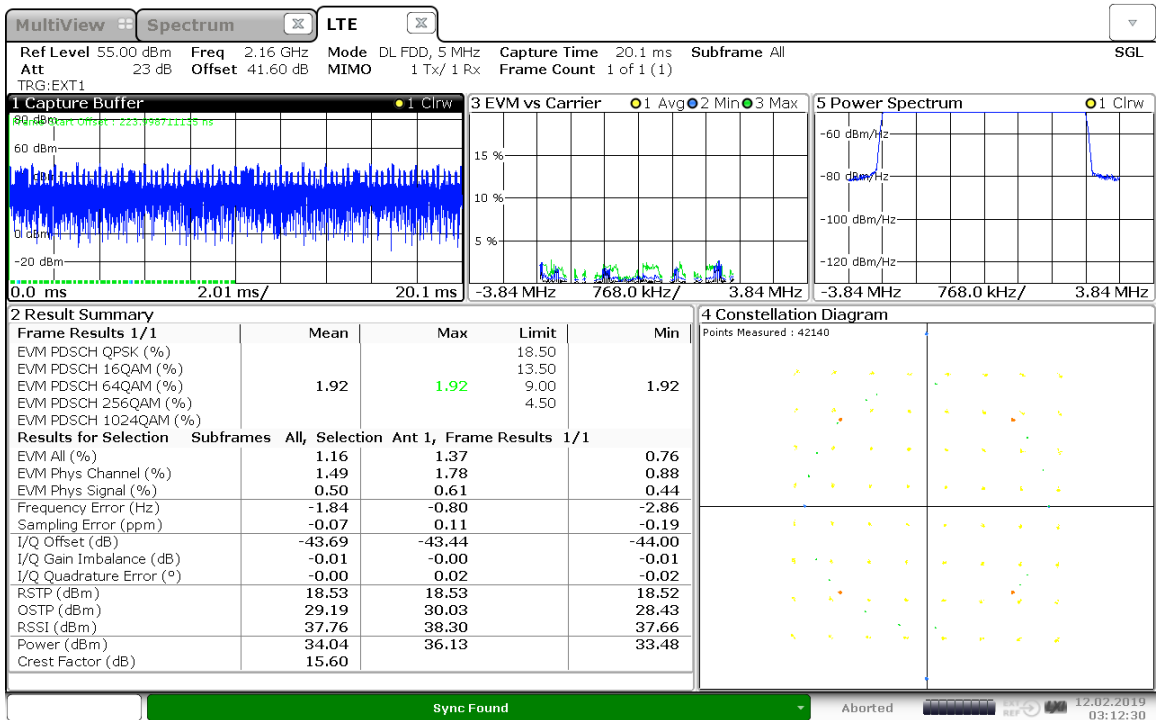
02:20:41 12.02.2019



02:37:43 12.02.2019

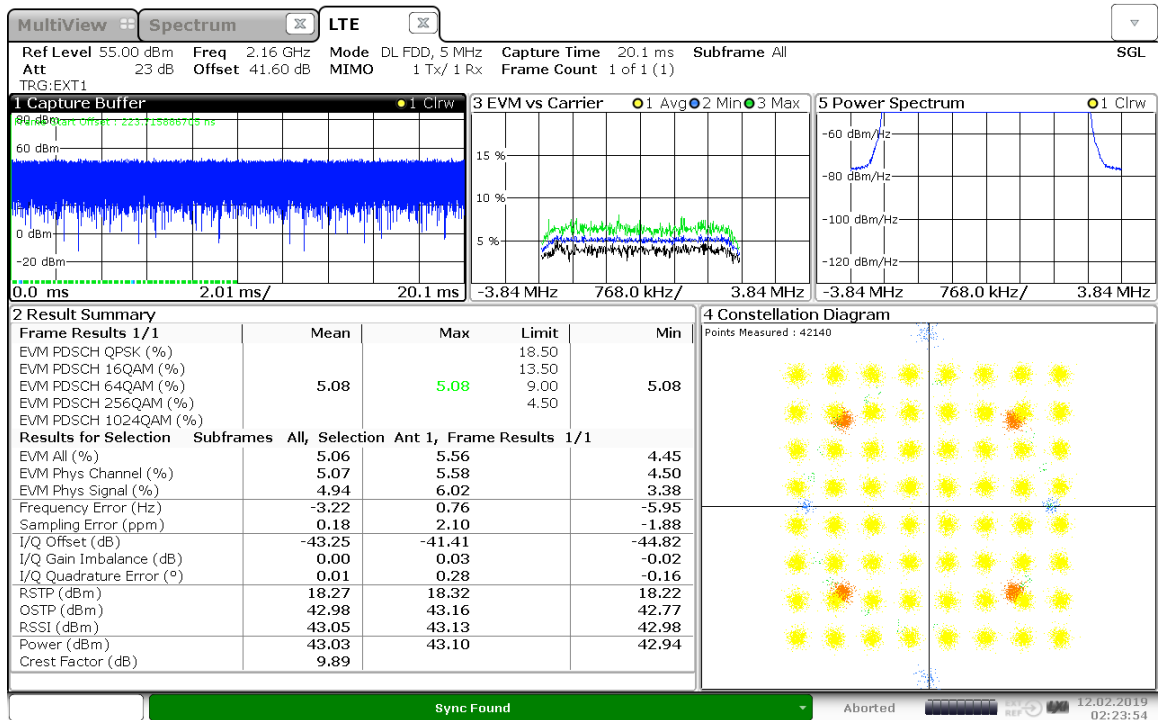


02:55:11 12.02.2019

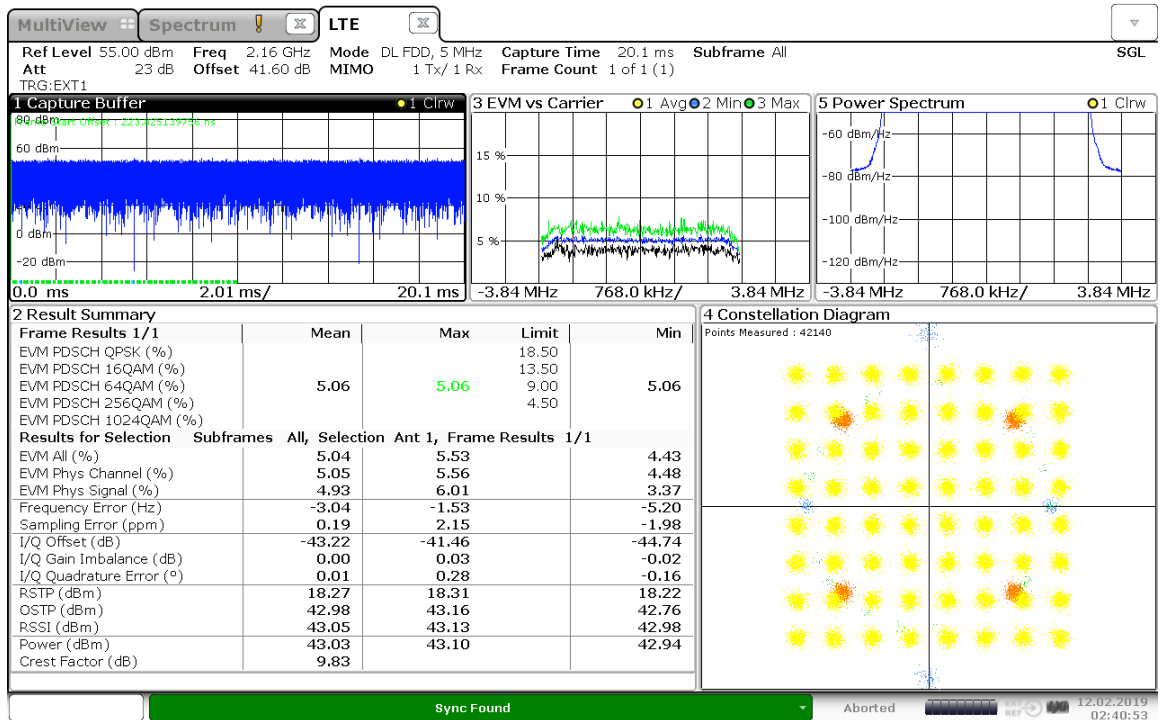


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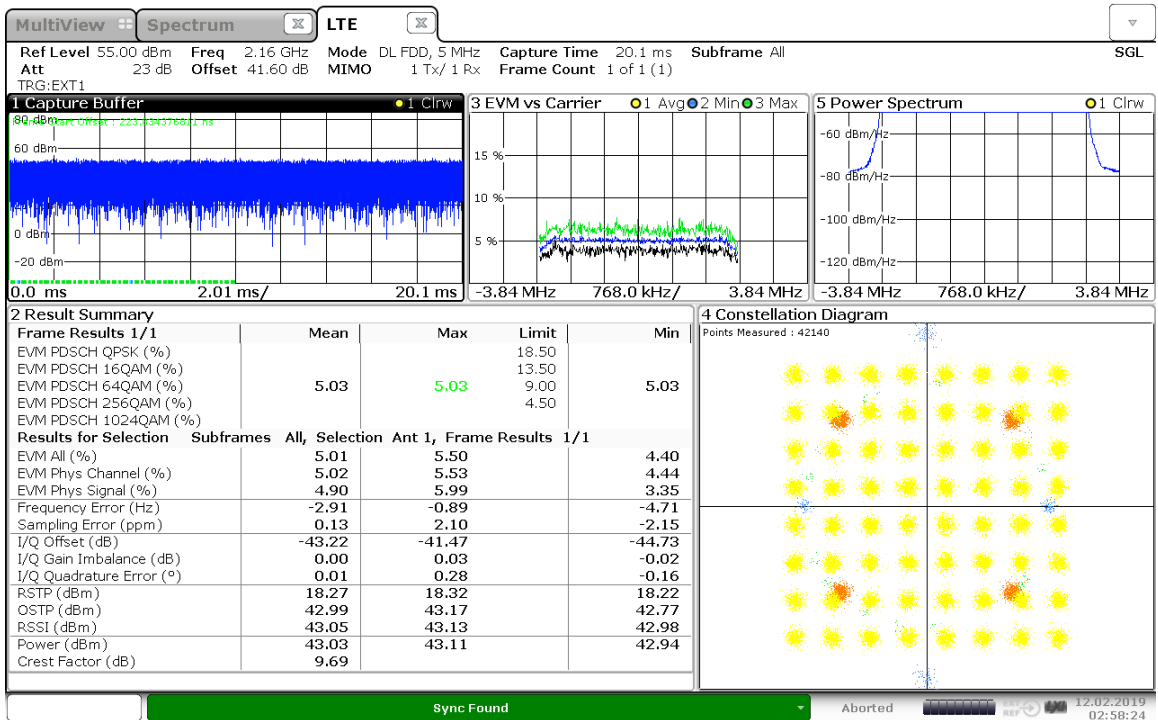
5M -2160MHz-TM3.1-Port 1 ~4:



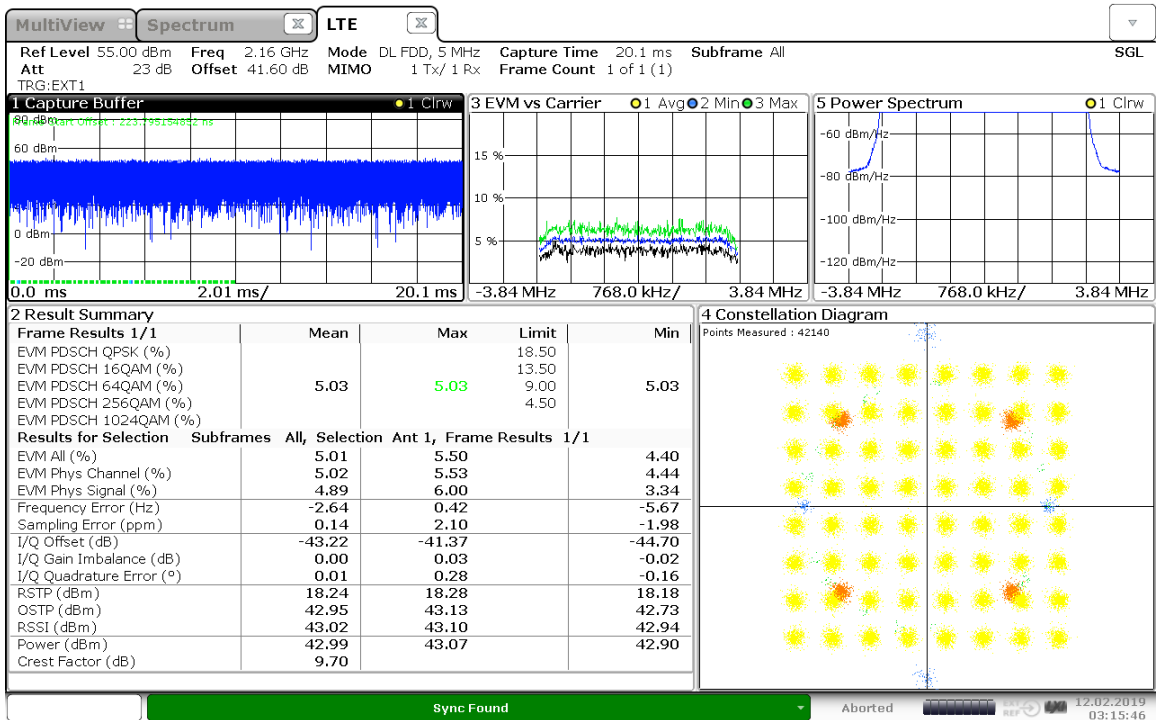
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02:40:54 12.02.2019

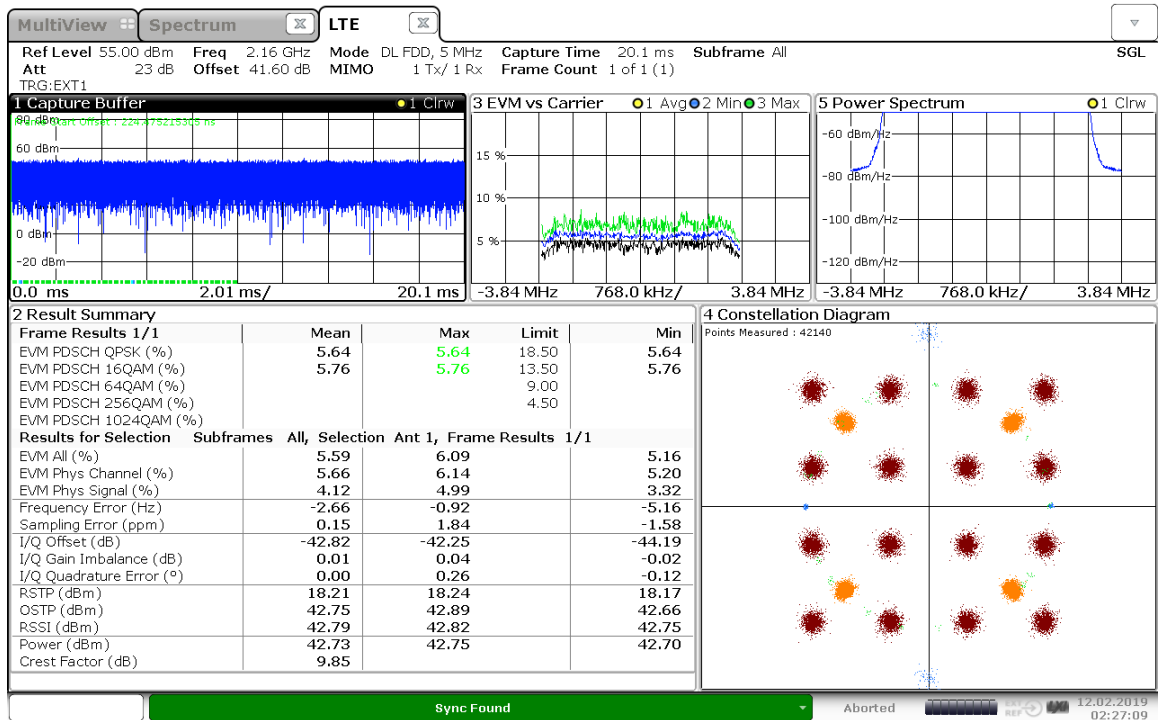


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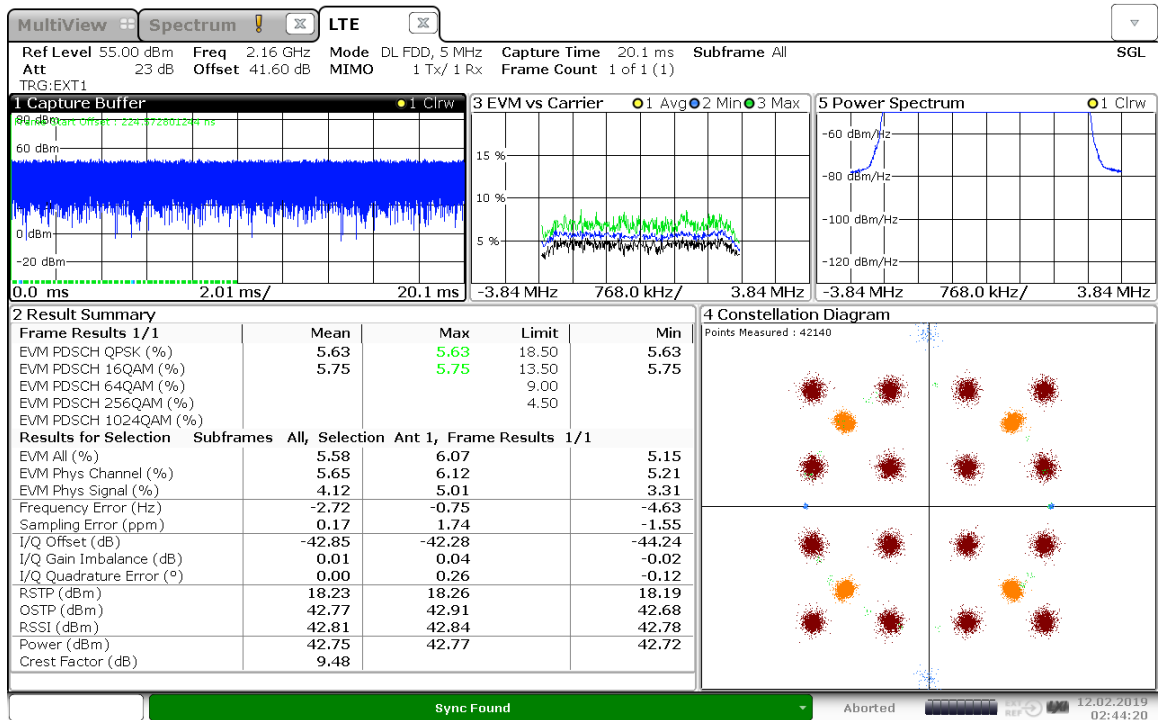


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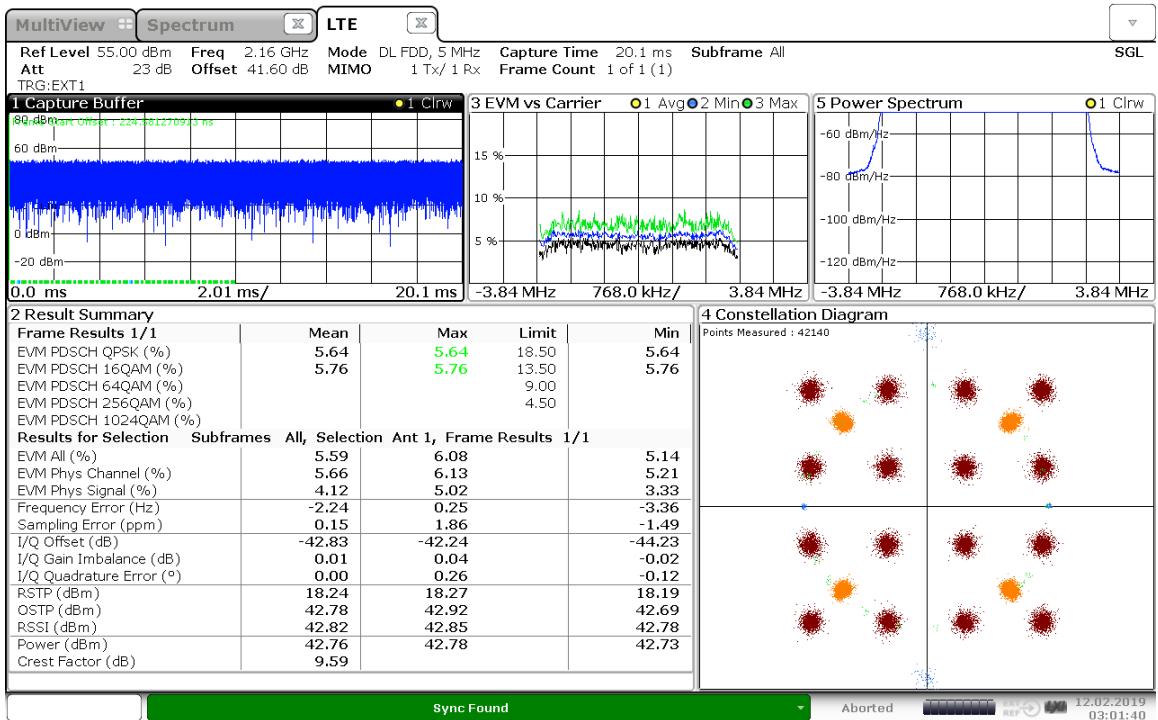
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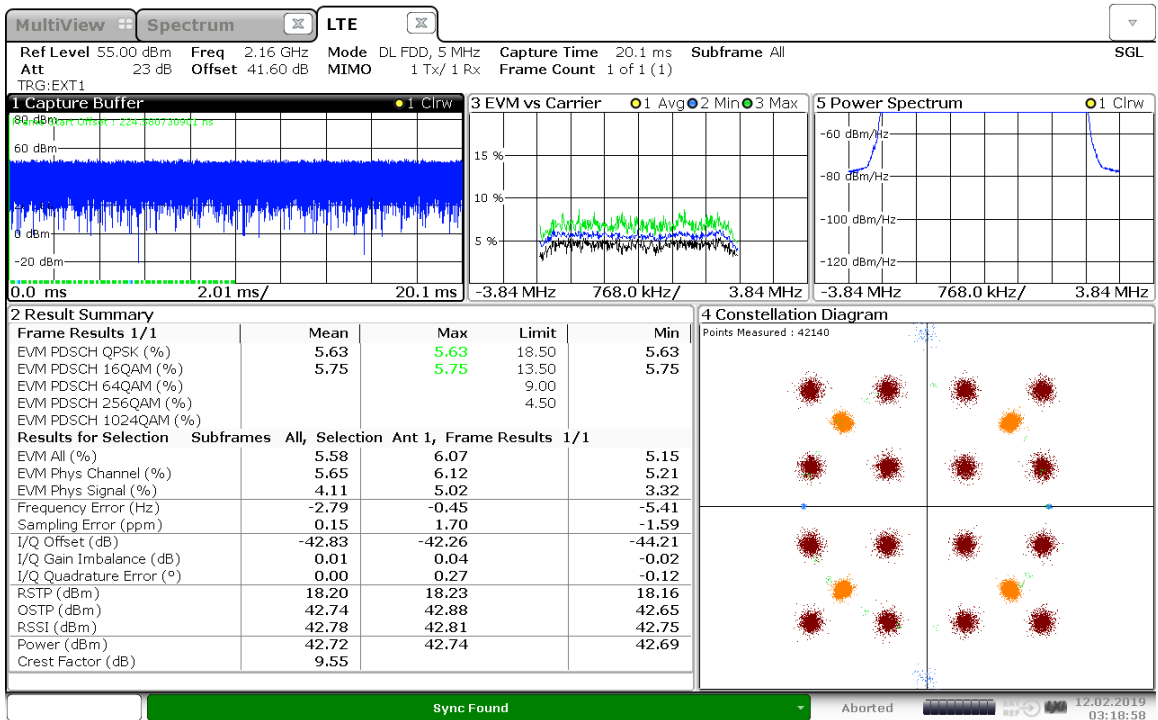
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02:44:21 12.02.2019

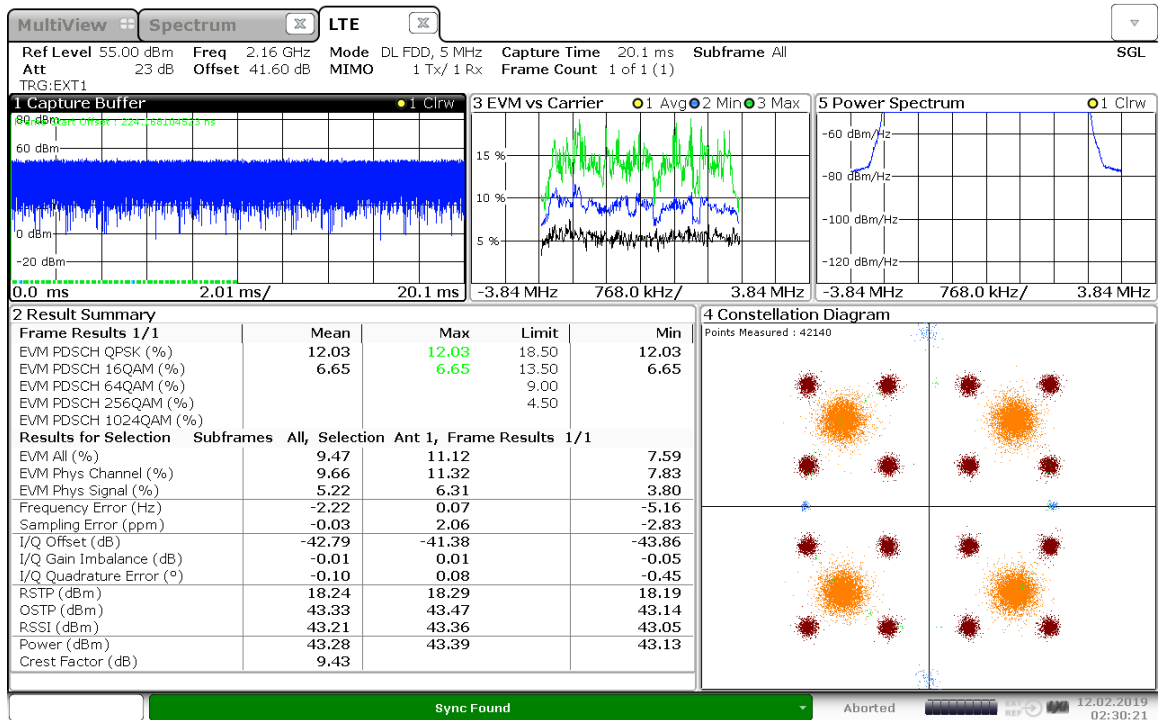


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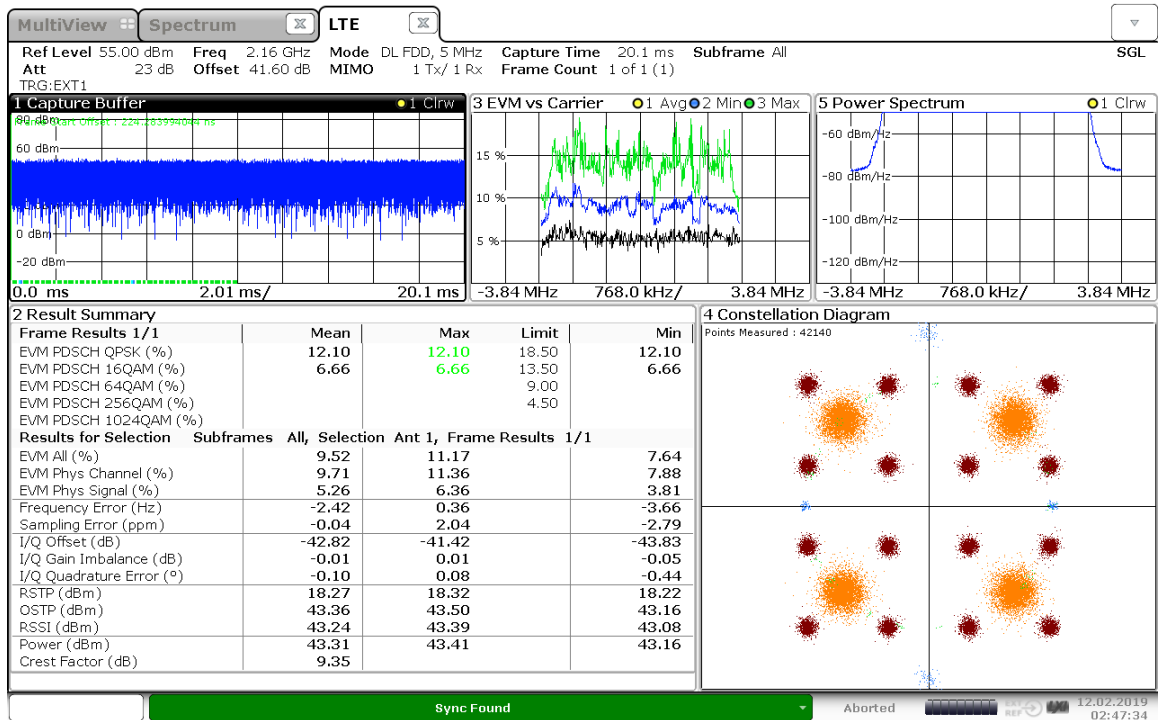


03:18:58 12.02.2019

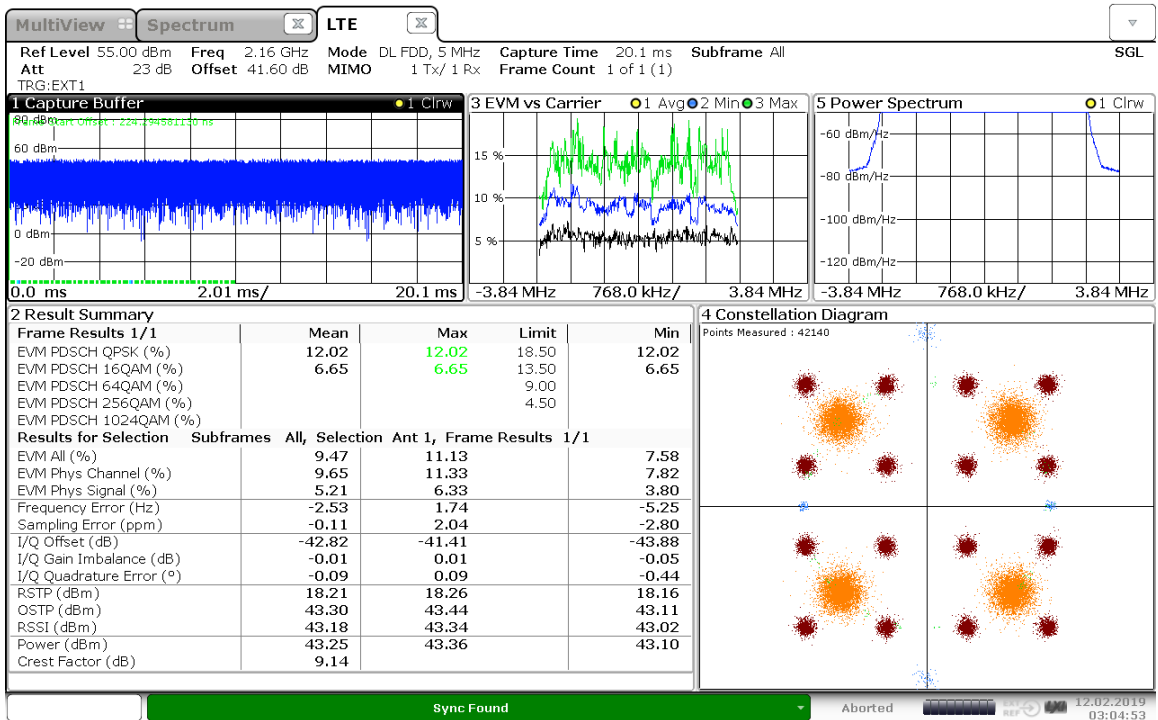
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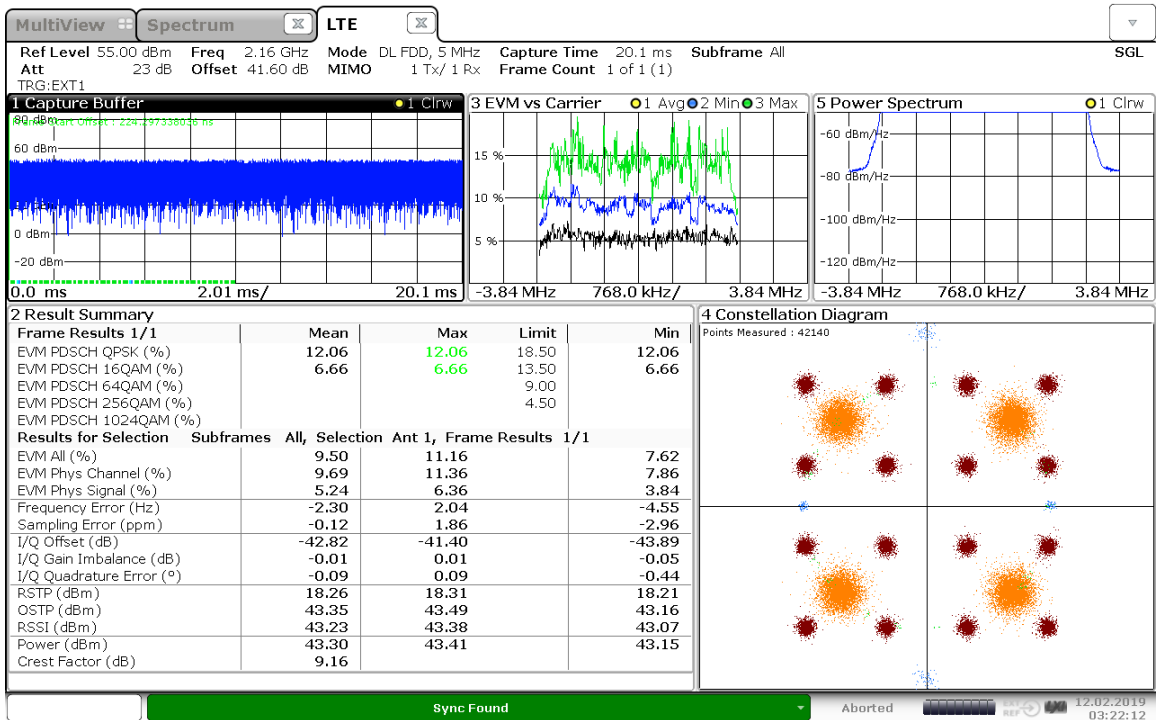
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02:47:35 12.02.2019



03:04:53 12.02.2019

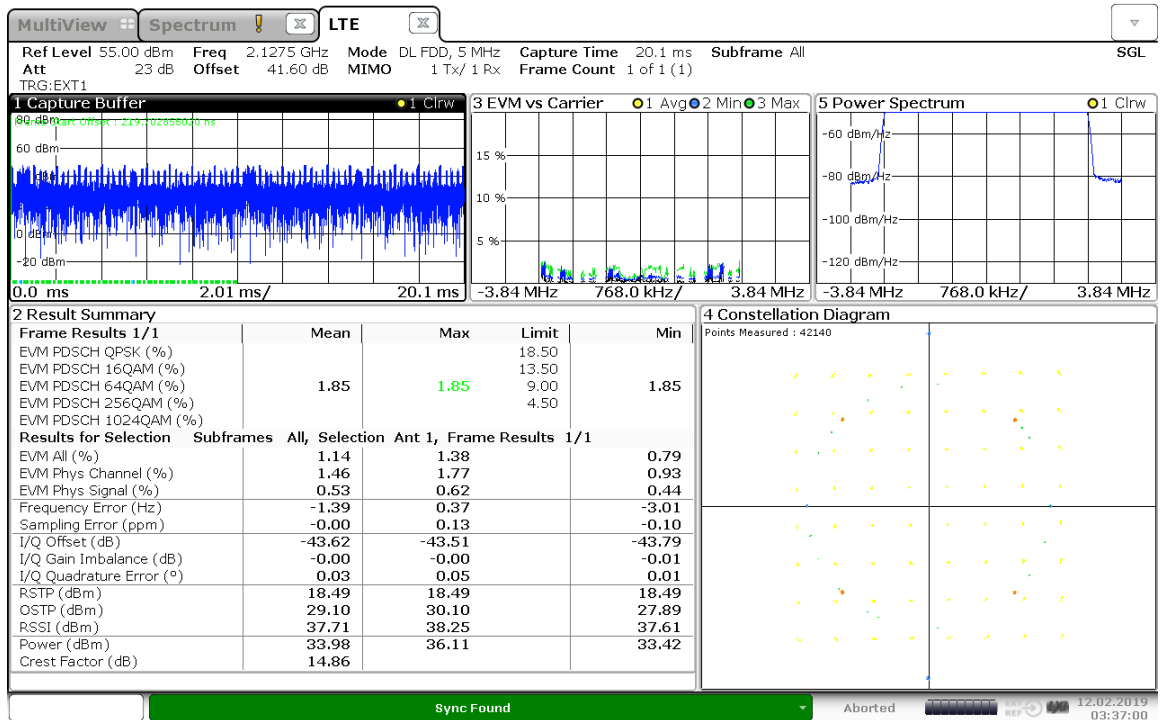


03:22:12 12.02.2019

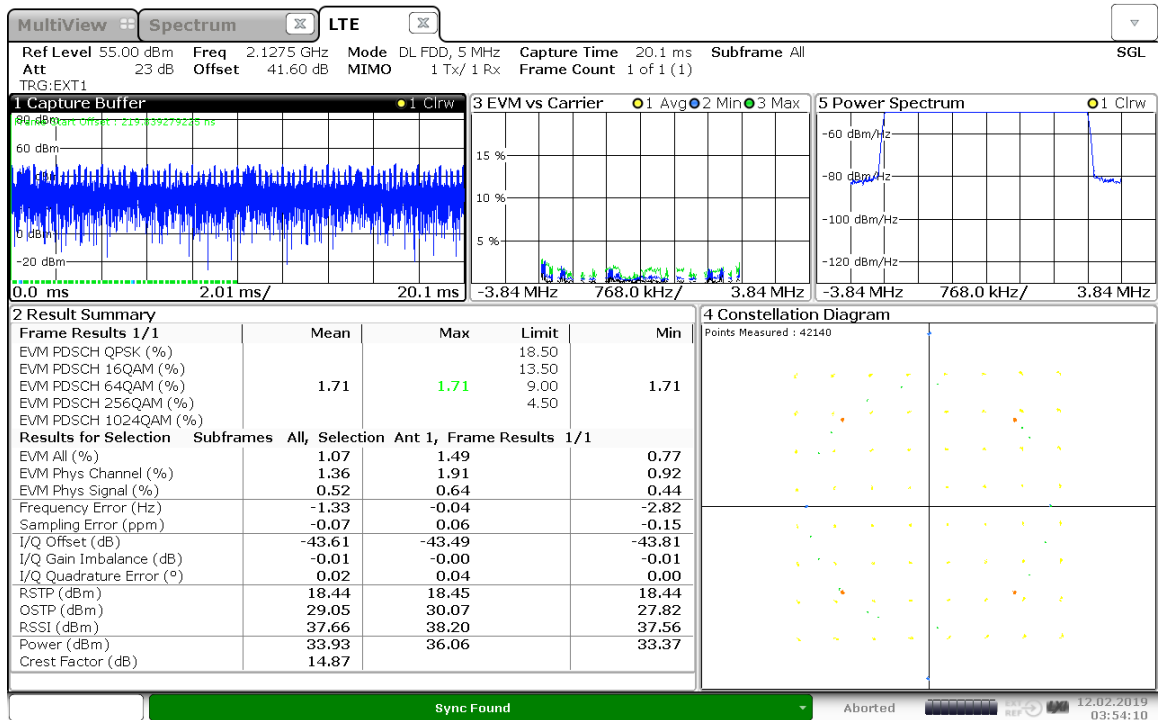
Channel Bandwidth :5M+5M(2127.5MHz+2167.5MHz)

Frequency (MHz)	Test mode	Port	EVM(%)
2127.5	TM2.0	1	1.85
		2	1.71
		3	1.87
		4	0.63
	TM3.1	1	5.04
		2	5.03
		3	5.05
		4	5.04
	TM3.2	1	5.76
		2	5.74
		3	5.74
		4	5.75
	TM3.3	1	11.99
		2	11.98
		3	11.98
		4	11.93
2167.5	TM2.0	1	1.50
		2	1.53
		3	1.49
		4	0.80
	TM3.1	1	5.08
		2	5.03
		3	5.02
		4	5.03
	TM3.2	1	5.79
		2	5.81
		3	5.77
		4	5.74
	TM3.3	1	12.04
		2	12.01
		3	12.01
		4	12.04

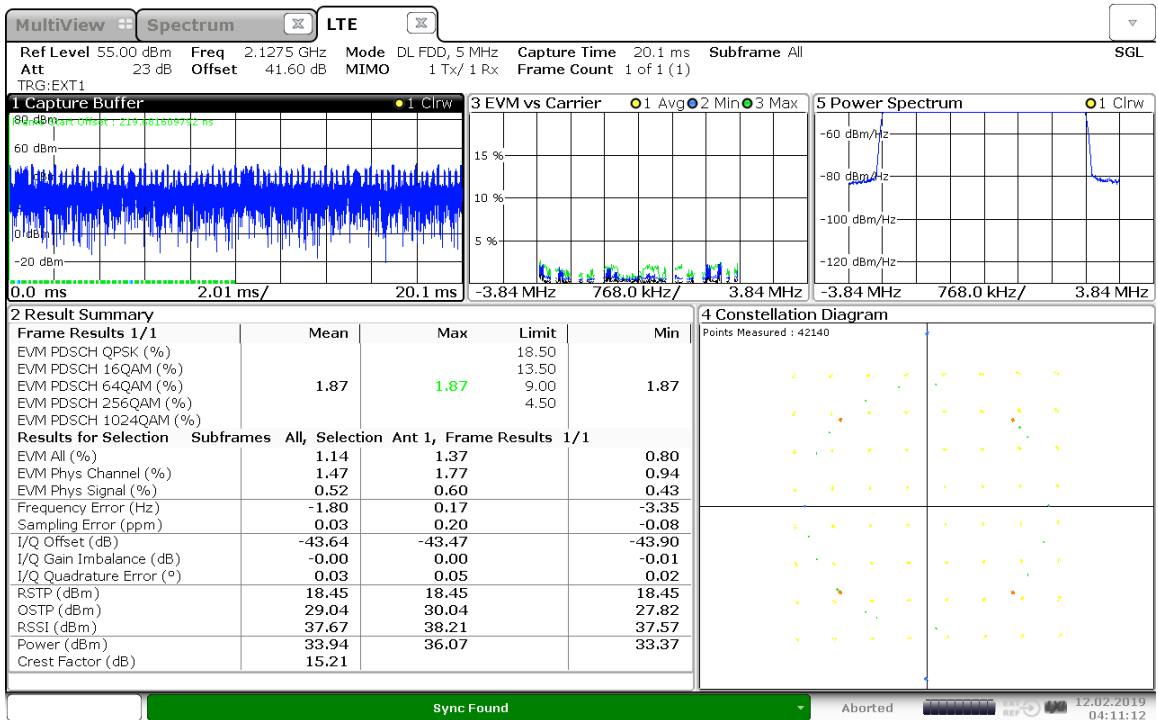
5M -2127.5MHz-TM2.0-Port 1 ~4:



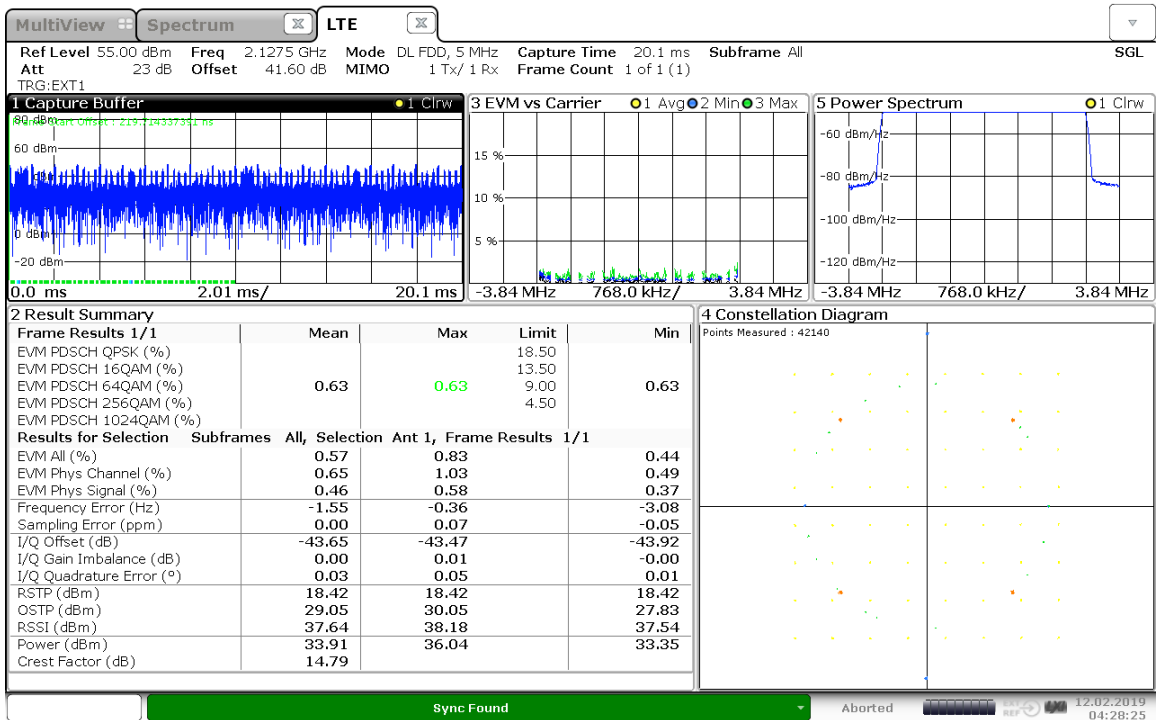
03:37:01 12.02.2019



03:54:11 12.02.2019

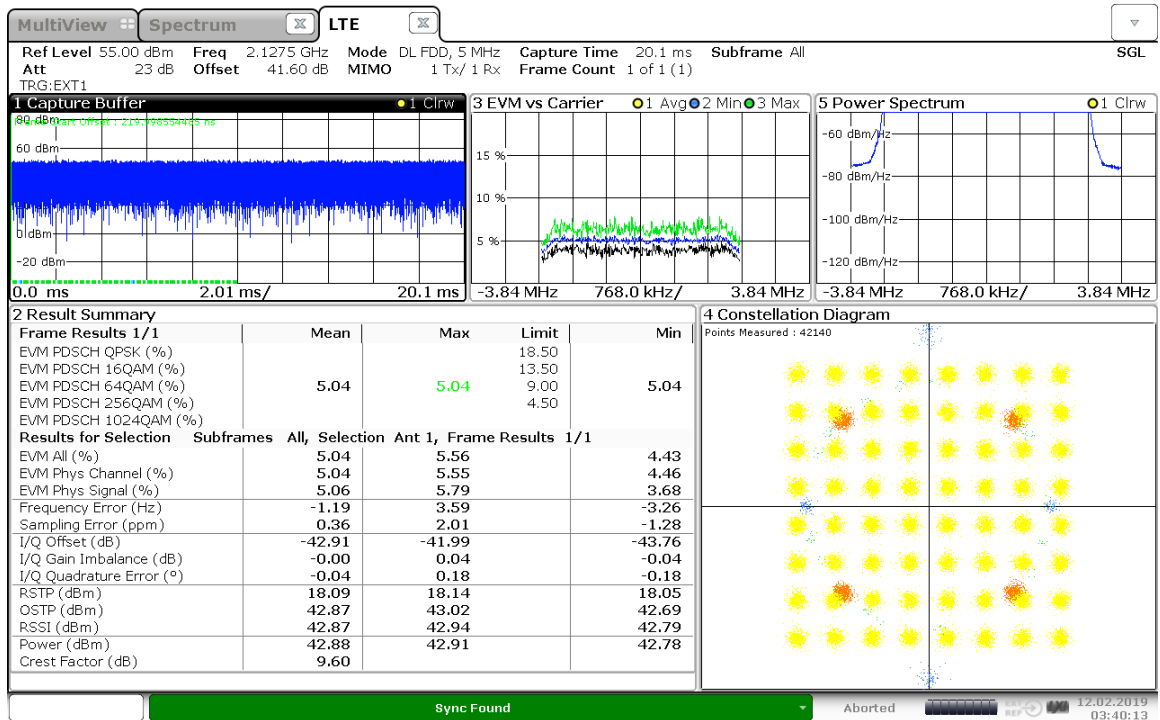


04:11:14 12.02.2019

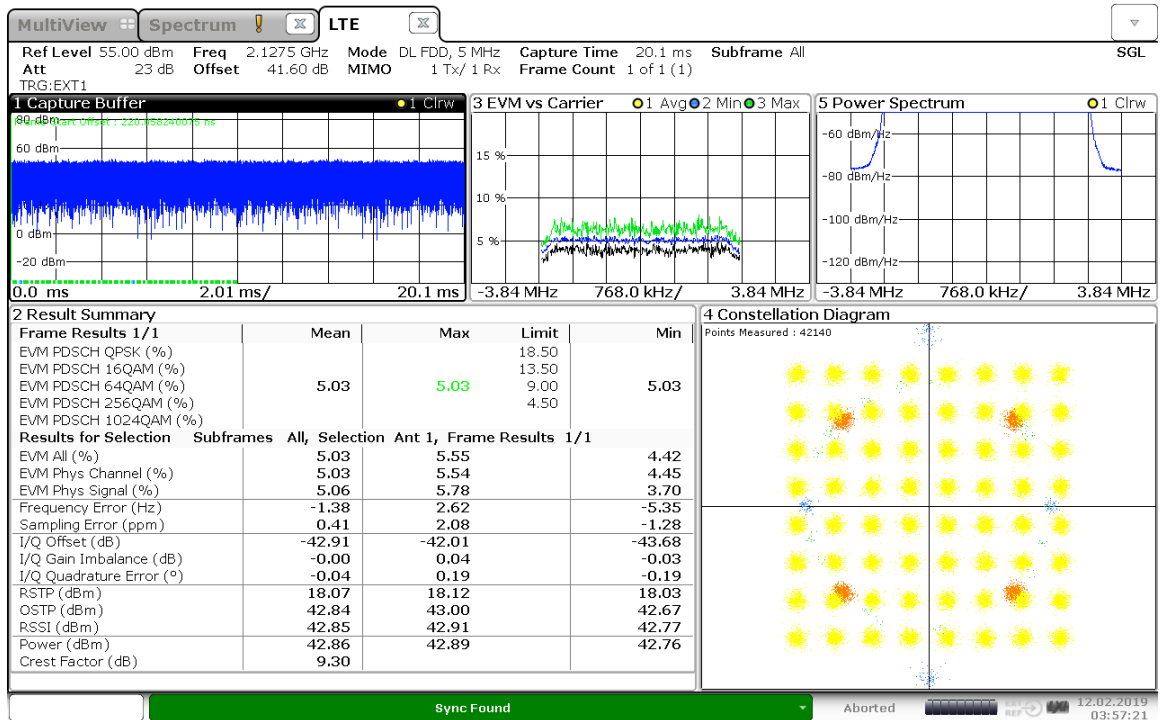


04:28:26 12.02.2019

5M -2127.5MHz-TM3.1-Port 1 ~4:



03:40:14 12.02.2019



03:57:21 12.02.2019