RF Test Report

Applicant	:	unitech electronics co., ltd.
Product Type	:	Rugged Handheld Computer
Trade Name	:	unitech
Model Number	:	EA630
Applicable Standard	:	FCC 47 CFR PART 22H FCC 47 CFR PART 24E ANSI C63.26 2015
Received Date	:	May 11, 2020
Test Period	:	May 18 ~ May 23, 2020
Issued Date	:	Ju1. 01, 2020

Issued by

A Test Lab Techno Corp.
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Taoyuan City 33465, Taiwan (R.O.C.)
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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:
1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
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3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Revisions	Revised By
00	Jun. 16, 2020	Initial Issue	Nina Lin
01	Ju1. 01, 2020	Update Test Results (P.5/P.26~P.28)	Snow Wang

Verification of Compliance

Issued Date: Ju1. 01, 2020

Applicant	:	unitech electronics co., ltd.
Product Type	:	Rugged Handheld Computer
Trade Name	:	unitech
Model Number	:	EA630
FCC ID	:	HLEEA630BTNFL
EUT Rated Voltage	:	DC 5 V, 2.5 A / DC 9 V, 2 A
Test Voltage	:	DC 3.6 V / DC 3.8 V / DC 4.35 V
Applicable Standard	:	FCC 47 CFR PART 22H FCC 47 CFR PART 24E ANSI C63.26 2015
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 http://www.atl-lab.com.tw/e-index.htm

A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Fly Lu

(Manager) (Fly Lu)

TABLE OF CONTENTS

1 General Information 5
1.1. EUT Description 5
1.2. Mode of Operation 6
1.3. EUT Test Step 6
1.4. Configuration of Test System Details 7
1.5. Test Instruments 8
1.6. Test Site Environment 9
1.7. Summary of Test Result 9
1.8. Measurement Uncertainty 10
2 Measurement Procedure 11
2.1. RF Output Power Test 11
2.2. Effective Radiated Power / Equivalent Isotropic Radiated Power Test 12
2.3. Emission Bandwidth & Occupied Bandwidth Test 15
2.4. Band Edge Test 16
2.5. Conducted Spurious Emission Test 17
2.6. Field Strength of Spurious Radiation Test 19
2.7. Frequency Stability (Temperature & Voltage Variation) Test 22
3 Test Results 23
Appendix A: RF Output Power 24
Appendix B: Effective Radiated Power / Equivalent Isotropic Radiated Power 26
Appendix C: Peak-to-Average Ratio 27
Appendix D: Emission Bandwidth & Occupied Bandwidth 29
Appendix E: Band Edge 48
Appendix F: Conducted Spurious Emission 60
Appendix G: Field Strength of Spurious Radiation 150
Appendix H: Frequency Stability (Temperature & Voltage Variation) 156

1 General Information

1.1. EUT Description

Applicant	unitech electronics co., ltd. 5F., No.136, Lane 235, Pao-Chiao Rd., Hsin-Tien Dist, New Taipei City, Taiwan			
Manufacturer	unitech electronics co., ltd. 5F., No.136, Lane 235, Pao-Chiao Rd., Hsin-Tien Dist, New Taipei City, Taiwan			
Product	Rugged Handheld Computer			
Trade Name	unitech			
Model Number	EA630			
IMEI No.	IMEI1: 355239110051120, IMEI2: 355239115204005			
FCC ID	HLEEA630BTNFL			
Mode	Band	UL Frequency (MHz)	DL Frequency (MHz)	Modulation
GSM/GPRS/EGPRS	850	824.2 ~ 848.8	869.2 ~ 893.8	GMSK/8PSK
	1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8	GMSK/8PSK
Antenna information	Type	Max. Gain (dBi)		
	PIFA Antenan	GSM/GPRS/EGPRS 850	-2.6	
		GSM/GPRS/EGPRS 1900	0.4	
Operate Temp. Range	-10 ~ +50 ℃			

Frequency Band	Max. RF Output Power (W)	E.R.P. / E.I.R.P. (W)	
GSM 850	1.849	0.67	(E.R.P.)
GSM 1900	1.138	1.37	(E.I.R.P.)

Frequency Band	Occupied Bandwidth (MHz)	Emission Designator
GSM 850	0.24679	247KGXW
GSM 1900	0.25321	253KGXW

1.2. Mode of Operation.

ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: GSM 850 Link Mode
Mode 2: GSM 1900 Link Mode
Mode 3: GPRS 850 Link Mode
Mode 4: GPRS 1900 Link Mode
Mode 5: EGPRS 850 Link Mode
Mode 6: EGPRS 1900 Link Mode

Note: Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

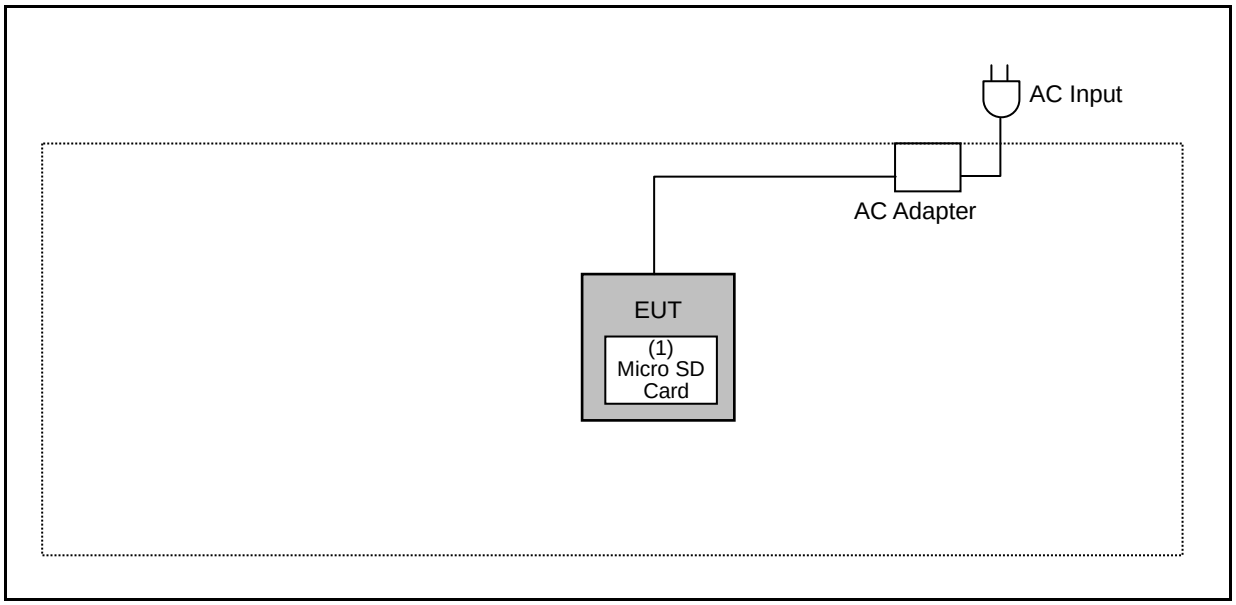
By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

1.3. EUT Test Step

1	Setup the EUT shown on “Configuration of Test System Details”.
2	Turn on the power of all equipment.

Measurement Software			
No.	Description	Software	Version
1	Radiated Emission	EZ EMC	1.1.4.4

1.4. Configuration of Test System Details



Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Micro SD Card	Transcend	9153BA 8G 07DS1	---	---

1.5. Test Instruments

For Conducted
Test Period: May 18, 2020
Testing Engineer: Eric Ouyang

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Temperature & Humidity Chamber	TAICHY	MHU-225LA	980729	03/31/2020	1 year
Power Supply	KEITHLEY	2303	4045290	02/11/2020	1 year
Divider	Warison	WDIV-2I0.5-26.5S20	WR222AM2B2	11/08/2019	1 year
FSU26 SPECTRUM ANALYZER	R&S	FSU26	201118	01/15/2020	1 year
Universal Radio Communication Tester	R&S	CMU200	112387	03/15/2020	1 year

For Radiated Emissions
Test Period: May 22 ~ May 23, 2020
Testing Engineer: Bradley Liao

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Wireless Communications	Agilent	E5515C	MY47511156	09/09/2019	1 year
Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	01/13/2020	1 year
Pre Amplifier (1~26.5 GHz)	Agilent	8449B	3008A02237	10/18/2019	1 year
Pre Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/15/2020	1 year
Broadband Antenna	Schwarzbeck	VULB9168	416	10/23/2019	1 year
Horn Antenna (1~18 GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA9120D	9120D-550	08/22/2019	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	03/27/2020	1 year
RF Cable	EMCI	EMC104-N-N-6000	TE01-1	02/20/2020	1 year
Microwave Cable	EMCI	EMC104-SM-SM-13000	170814	10/29/2019	1 year
Microwave Cable	EMCI	EMC102-KM-KM-14000	151001	02/20/2020	1 year

Note: N.C.R. = No Calibration Request.

1.6. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75
Barometric pressure (mbar)	860-1060	990-1005

Test Setting Condition		
L.V.	Low Voltage	DC 3.6 V
N.V.	Normal Voltage	DC 3.8 V
H.V.	High Voltage	DC 4.35 V
L.T.	Low Temperature	-10 ℃
N.T.	Normal Temperature	+25 ℃
H.T.	High Temperature	+50 ℃

1.7. Summary of Test Result

FCC Rule	Description	Result
§2.1046	Conducted Output Power	Pass
§22.913(a)(5)	Effective Radiated Power	Pass
§24.232(c)	Equivalent Isotropic Radiated Power	Pass
§2.1049 §22.917(b) §24.238(b)	Emission Bandwidth & Occupied Bandwidth	Pass
§2.1051 §22.917(a) §24.238(a)	Band Edge Measurement	Pass
§2.1051 §22.917(a) §24.238(a)	Conducted Spurious Emission	Pass
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Pass
§2.1055 §22.355 §24.235	Frequency Stability for Temperature & Voltage	Pass

1.8. Measurement Uncertainty

Parameter	Uncertainty
RF Output Power	0.69 dB
Effective Radiated Power / Equivalent Isotropic Radiated Power	5.7 dB
Emission Bandwidth & Occupied Bandwidth	4.96 %
Band Edge	0.69 dB
Conducted Spurious Emission	0.69 dB
Field Strength of Spurious Radiation	5.7 dB
Frequency Stability (Temperature & Voltage Variation)	$-1.56 \times 10^{-7} \times fc$ / $+1.72 \times 10^{-7} \times fc$ Hz

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

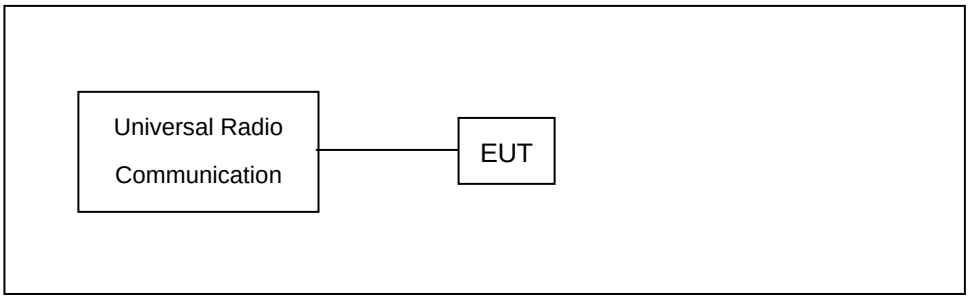
2 Measurement Procedure

2.1. RF Output Power Test

■ Limit

N/A

■ Test Setup



■ Test Procedure

a. The EUT was set up for the maximum power with with simulator.

b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

2.2. Effective Radiated Power / Equivalent Isotropic Radiated Power Test

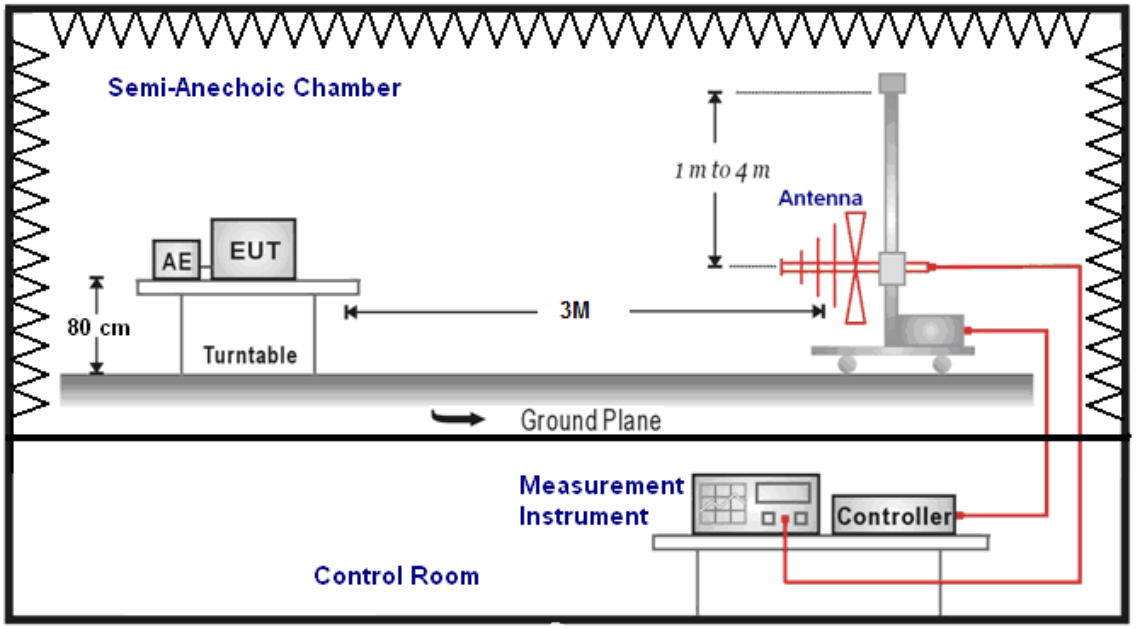
■ Limit

For FCC Part 22.913(a)(5): The E.R.P. of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

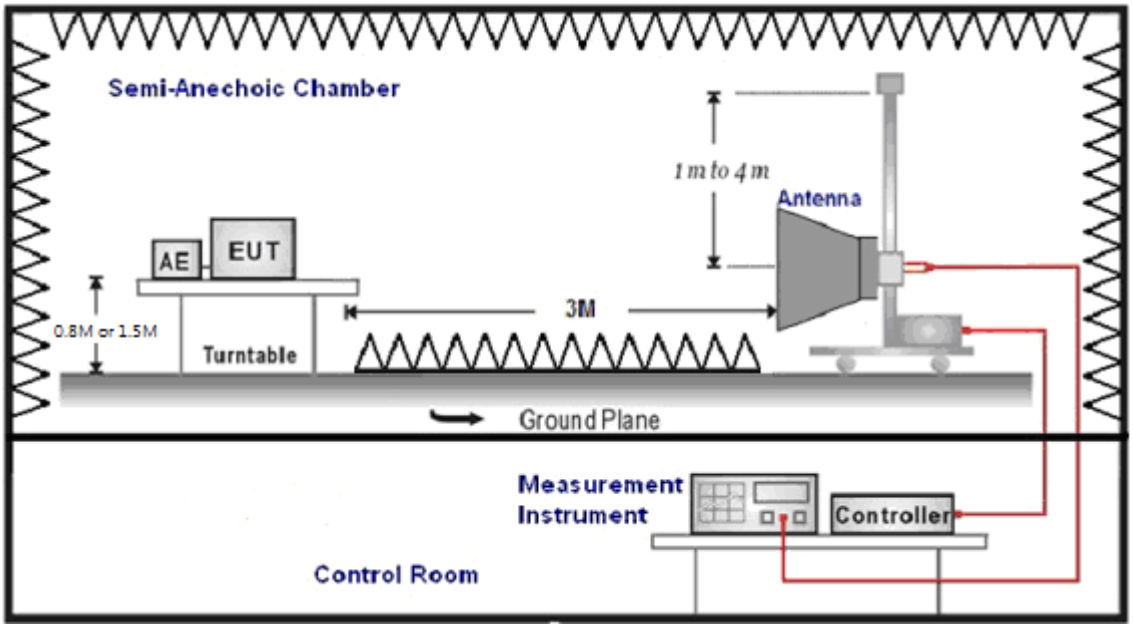
For FCC Part 24.232(c): The E.I.R.P. of Mobile and portable stations test transmitters must not exceed 2 Watts.

■ Setup

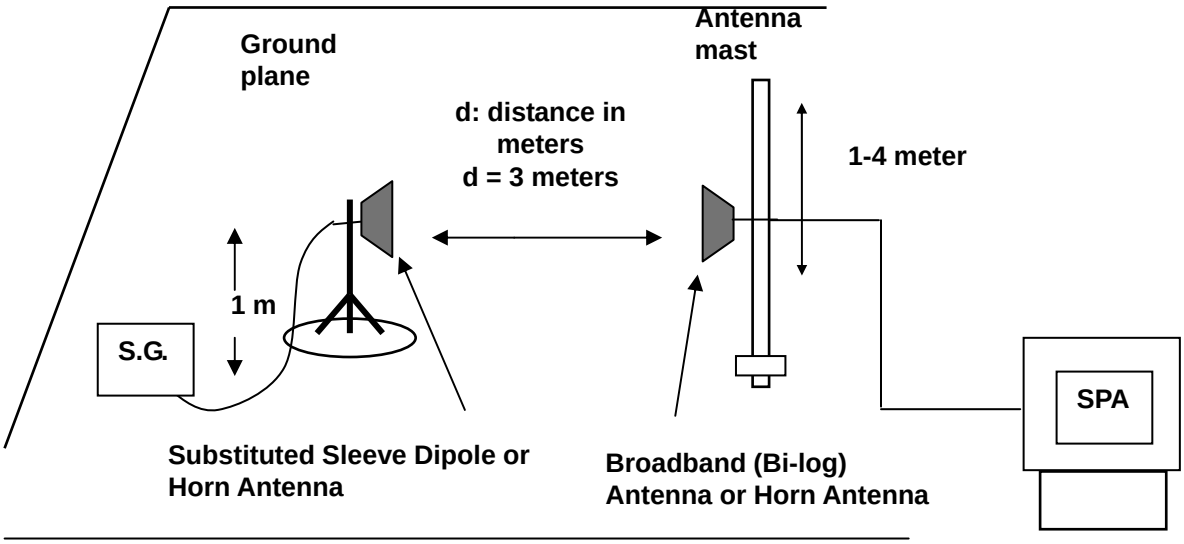
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

For FCC

a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).

a. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G.

c. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn

d. E.R.P. = E.I.R.P.- 2.15 dB

Note: 1. Below 1 GHz Substituted Method Test：Sleeve dipole antenna to Bi-Log Antenna

2. Above 1 GHz Substituted Method Test：Horn antenna to Horn Antenna

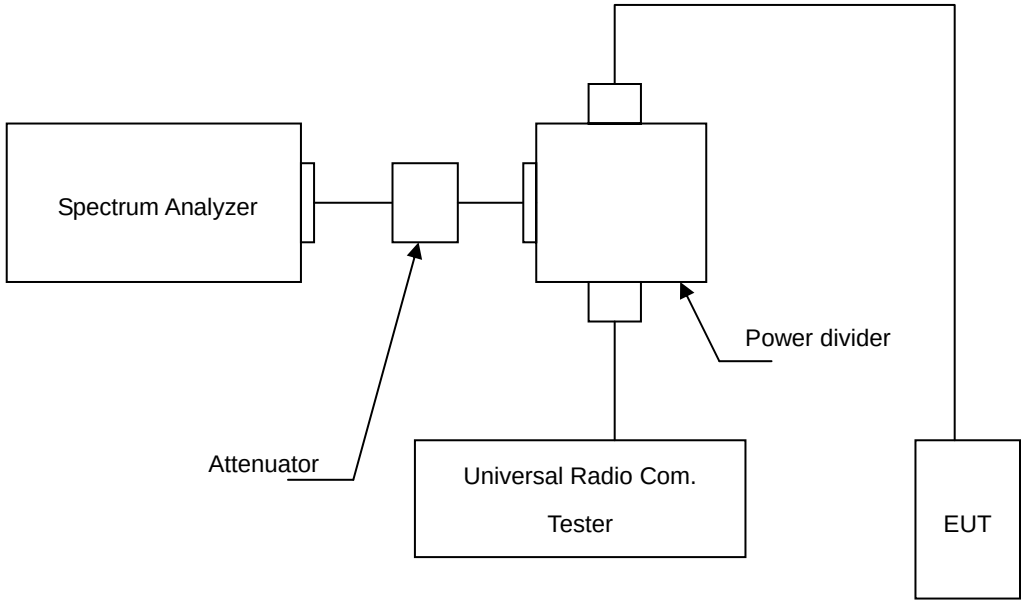
2.3. Emission Bandwidth & Occupied Bandwidth Test

■ **Limit**

The Occupied Bandwidth Limit:

N/A.

■ **Setup**



■ **Test Procedure**

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The occupied bandwidth of middle channel for the highest and lowest RF powers was measured.

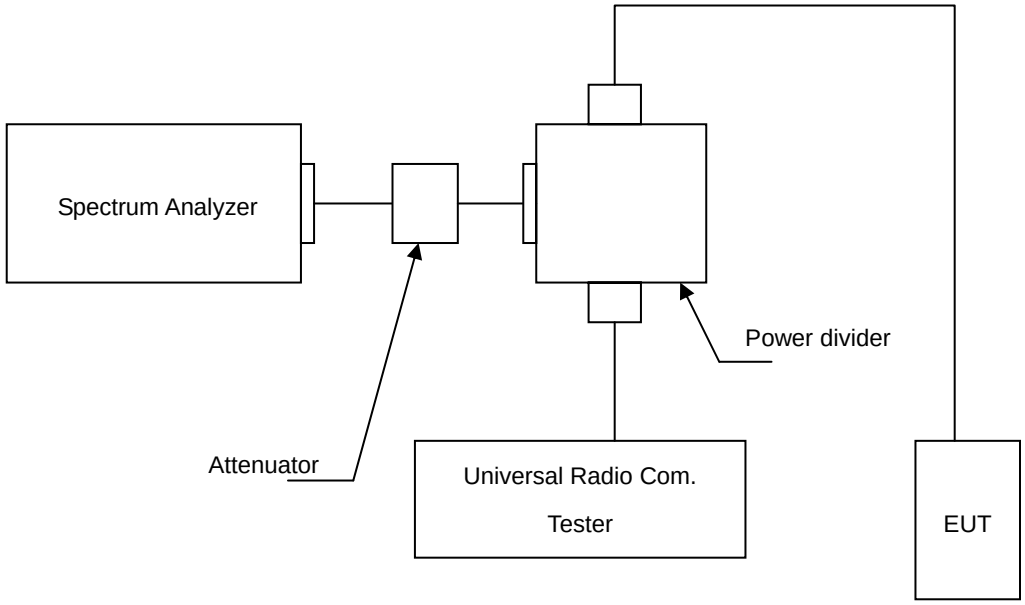
2.4. Band Edge Test

■ Limit

The Band Edge Limit:

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

■ Setup



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The band edge of low and high channels for the highest RF powers within the transmitting frequency band were measured.

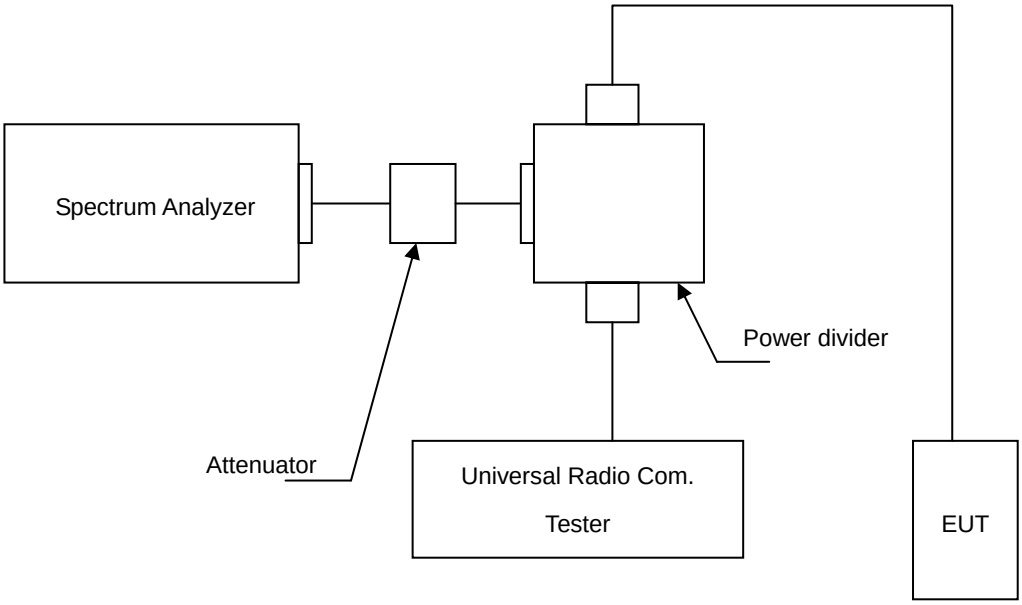
2.5. Conducted Spurious Emission Test

■ Limit

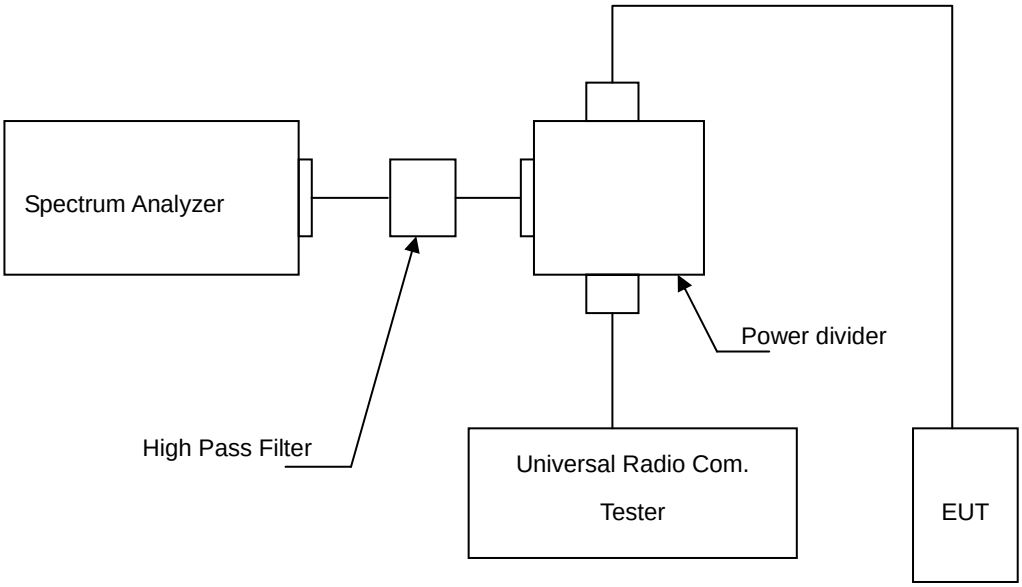
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

■ Setup

Below 2.8 GHz



Above 2.8 GHz



■ Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via Power Divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

2.6. Field Strength of Spurious Radiation Test

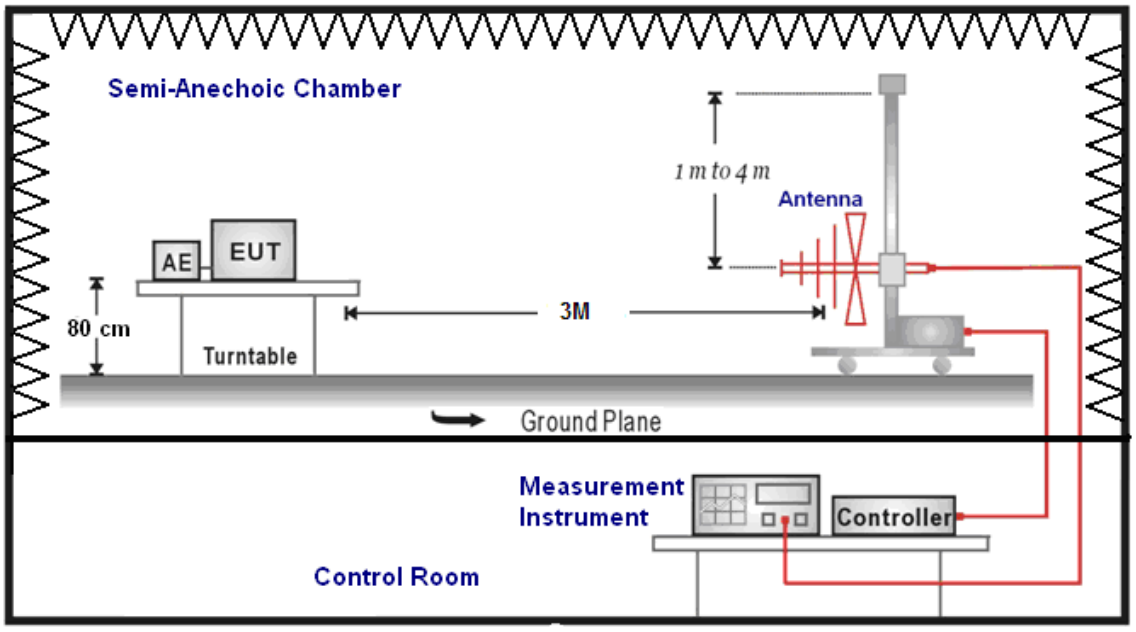
■ Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

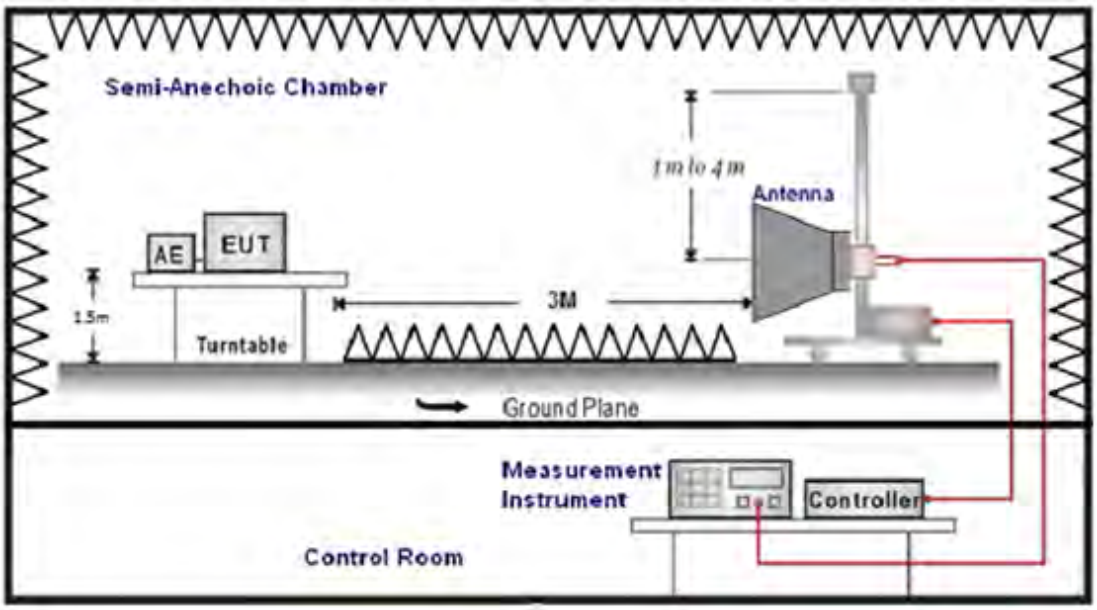
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

■ Setup

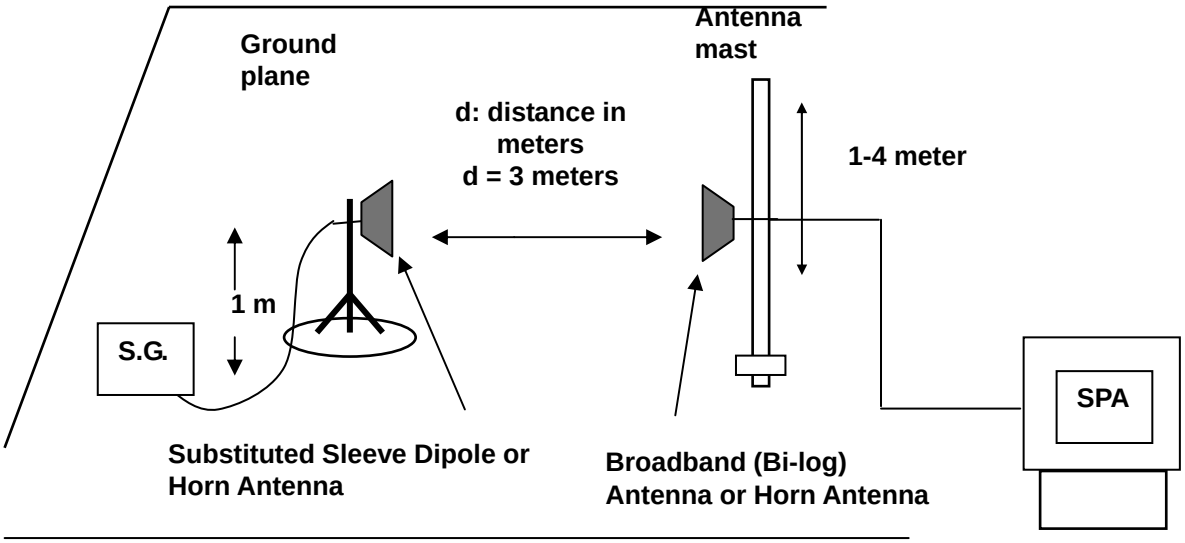
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

For FCC

a. The EUT was set up for the maximum power with wwan link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).

e. E.I.R.P power measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G.

c. E.I.R.P. = Output power level of S.G - TX cable loss + Antenna gain of substitution horn

d. E.R.P. = E.I.R.P.- 2.15 dB

e. Measurement range 9 kHz - 10 th Harmonic

Note: 1. Below 1 GHz Substituted Method Test：Sleeve dipole antenna to Bi-Log Antenna

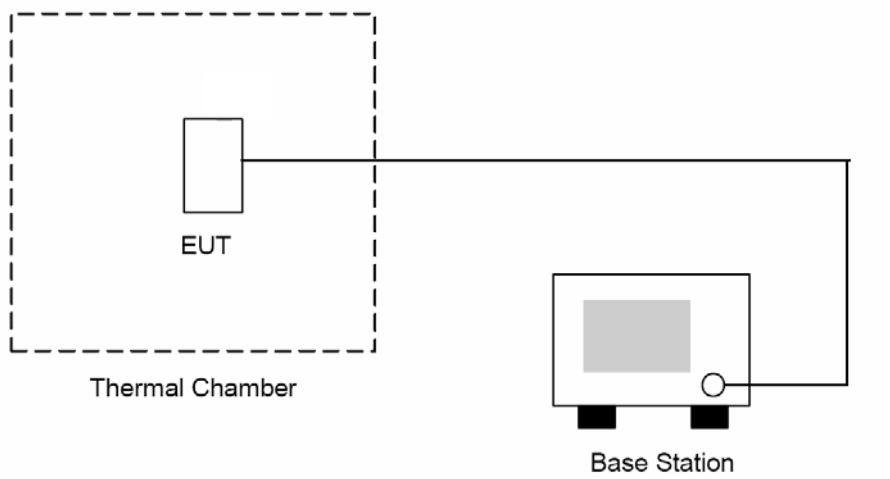
2. Above 1 GHz Substituted Method Test：Horn antenna to Horn Antenna

2.7. Frequency Stability (Temperature & Voltage Variation) Test

■ Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025 % (±2.5 ppm) of the center frequency.

■ Setup



■ Test Procedure

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to -30 ℃ and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was note within one minute.
3. With power OFF, the temperature was raised in 10 ℃ steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The EUT was placed in a temperature chamber at 25±5 ℃ and connected as the following section.
5. The power supply voltage to the EUT was varied from BEP to 115 % of the nominal value measured at the input to the EUT.
6. The temperature tests were performed for the worst case.
7. Test data was recorded.

3 Test Results

Test Mode	Test Modes description
GSM/TM1	GSM system,GSM,GMSK modulation
GSM/TM2	GSM system,GPRS,GMSK modulation
GSM/TM3	GSM system,EDGE,8PSK modulation

Appendix A: RF Output Power

Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
GSM850	GSM/TM1	LCH	32.67	33.04	PASS
		MCH	32.63	32.92	PASS
		HCH	32.54	32.88	PASS
	GSM/TM2-Slot1	LCH	32.47	32.75	PASS
		MCH	32.45	32.68	PASS
		HCH	32.34	32.62	PASS
	GSM/TM2-Slot2	LCH	32.31	32.62	PASS
		MCH	32.29	32.62	PASS
		HCH	32.17	32.48	PASS
	GSM/TM2-Slot3	LCH	32.12	32.43	PASS
		MCH	32.07	32.49	PASS
		HCH	32.00	32.37	PASS
	GSM/TM2-Slot4	LCH	31.91	32.21	PASS
		MCH	31.85	32.09	PASS
		HCH	31.77	32.08	PASS
	GSM/TM3-Slot1	LCH	25.92	29.21	PASS
		MCH	25.94	29.13	PASS
		HCH	25.97	29.16	PASS
	GSM/TM3-Slot2	LCH	25.70	28.95	PASS
		MCH	25.74	28.97	PASS
		HCH	25.75	28.93	PASS
	GSM/TM3-Slot3	LCH	25.44	28.79	PASS
		MCH	25.51	28.82	PASS
		HCH	25.55	28.85	PASS
	GSM/TM3-Slot4	LCH	25.22	28.37	PASS
		MCH	25.25	28.39	PASS
		HCH	25.27	28.58	PASS

Note: The peak power testing result was used peak detector.

Test Band	Test Mode	Test Channel	Average Measured (dbm)	Peak Measured (dbm)	Verdict
GSM1900	GSM/TM1	LCH	30.56	30.97	PASS
		MCH	30.49	30.71	PASS
		HCH	30.33	30.75	PASS
	GSM/TM2-Slot1	LCH	30.37	30.78	PASS
		MCH	30.30	30.68	PASS
		HCH	30.14	30.47	PASS
	GSM/TM2-Slot2	LCH	30.16	30.51	PASS
		MCH	30.09	30.40	PASS
		HCH	29.93	30.20	PASS
	GSM/TM2-Slot3	LCH	29.98	30.32	PASS
		MCH	29.91	30.21	PASS
		HCH	29.75	30.14	PASS
	GSM/TM2-Slot4	LCH	29.79	30.10	PASS
		MCH	29.72	30.00	PASS
		HCH	29.56	29.81	PASS
	GSM/TM3-Slot1	LCH	25.84	29.03	PASS
		MCH	25.70	28.99	PASS
		HCH	25.59	28.76	PASS
	GSM/TM3-Slot2	LCH	25.63	28.80	PASS
		MCH	25.48	28.79	PASS
		HCH	25.36	28.58	PASS
	GSM/TM3-Slot3	LCH	25.37	28.68	PASS
		MCH	25.24	28.54	PASS
		HCH	25.12	28.37	PASS
	GSM/TM3-Slot4	LCH	25.14	28.27	PASS
		MCH	25.01	28.25	PASS
		HCH	24.89	28.08	PASS

Note: The peak power testing result was used peak detector.

Appendix B: Effective Radiated Power / Equivalent Isotropic Radiated Power

Test Item	E.R.P / E.I.R.P.						
Bands	Modulation Type	Frequency (MHz)	Peak Conducted power (dBm)	Antenna Gain (dBi)	E.R.P		Limit
					(dBm)	(W)	
GSM 850	GMSK	824.2	33.04	-2.60	28.29	0.67	< 7W
		836.6	32.92	-2.60	28.17	0.66	< 7W
		848.8	32.88	-2.60	28.13	0.65	< 7W

Test Item	E.R.P / E.I.R.P.						
Bands	Modulation Type	Frequency (MHz)	Peak Conducted power (dBm)	Antenna Gain (dBi)	E.I.R.P		Limit
					(dBm)	(W)	
GSM 1900	GMSK	1850.2	30.97	0.40	31.37	1.37	< 2W
		1880.0	30.71	0.40	31.11	1.29	< 2W
		1909.8	30.75	0.40	31.15	1.30	< 2W

Note : ERP = Peak Conducted power + Antenna Gain - 2.15, EIRP = Peak Conducted power + Antenna Gain

Appendix C: Peak-to-Average Ratio

Test Band	Test Mode	Test Channel	Average Measured (dbm)	Limit (dbm)	Verdict
GSM850	GSM/TM1	LCH	0.37	13	PASS
		MCH	0.29	13	PASS
		HCH	0.34	13	PASS
	GSM/TM2 -Slot1	LCH	0.28	13	PASS
		MCH	0.23	13	PASS
		HCH	0.28	13	PASS
	GSM/TM2 -Slot2	LCH	0.31	13	PASS
		MCH	0.33	13	PASS
		HCH	0.31	13	PASS
	GSM/TM2 -Slot3	LCH	0.31	13	PASS
		MCH	0.42	13	PASS
		HCH	0.37	13	PASS
	GSM/TM2 -Slot4	LCH	0.30	13	PASS
		MCH	0.24	13	PASS
		HCH	0.31	13	PASS
	GSM/TM3 -Slot1	LCH	3.29	13	PASS
		MCH	3.19	13	PASS
		HCH	3.19	13	PASS
	GSM/TM3 -Slot2	LCH	3.25	13	PASS
		MCH	3.23	13	PASS
		HCH	3.18	13	PASS
	GSM/TM3 -Slot3	LCH	3.35	13	PASS
		MCH	3.31	13	PASS
		HCH	3.30	13	PASS
	GSM/TM3 -Slot4	LCH	3.15	13	PASS
		MCH	3.14	13	PASS
		HCH	3.31	13	PASS

Test Band	Test Mode	Test Channel	Average Measured (dbm)	Limit (dbm)	Verdict
GSM1900	GSM/TM1	LCH	0.41	13	PASS
		MCH	0.22	13	PASS
		HCH	0.42	13	PASS
	GSM/TM2 -Slot1	LCH	0.41	13	PASS
		MCH	0.38	13	PASS
		HCH	0.33	13	PASS
	GSM/TM2 -Slot2	LCH	0.35	13	PASS
		MCH	0.31	13	PASS
		HCH	0.27	13	PASS
	GSM/TM2 -Slot3	LCH	0.34	13	PASS
		MCH	0.30	13	PASS
		HCH	0.39	13	PASS
	GSM/TM2 -Slot4	LCH	0.31	13	PASS
		MCH	0.28	13	PASS
		HCH	0.25	13	PASS
	GSM/TM3 -Slot1	LCH	3.19	13	PASS
		MCH	3.29	13	PASS
		HCH	3.17	13	PASS
	GSM/TM3 -Slot2	LCH	3.17	13	PASS
		MCH	3.31	13	PASS
		HCH	3.22	13	PASS
	GSM/TM3 -Slot3	LCH	3.31	13	PASS
		MCH	3.30	13	PASS
		HCH	3.25	13	PASS
	GSM/TM3 -Slot4	LCH	3.13	13	PASS
		MCH	3.24	13	PASS
		HCH	3.19	13	PASS

Appendix D: Emission Bandwidth & Occupied Bandwidth

Test Band	Test Mode	Test Channel	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Verdict
GSM850	GSM/TM1	LCH	241.99	283.65	PASS
		MCH	245.19	310.90	PASS
		HCH	245.19	306.09	PASS
	GSM/TM2	LCH	238.78	298.08	PASS
		MCH	245.19	315.71	PASS
		HCH	245.19	320.51	PASS
	GSM/TM3	LCH	246.79	304.49	PASS
		MCH	245.19	299.68	PASS
		HCH	243.59	298.08	PASS

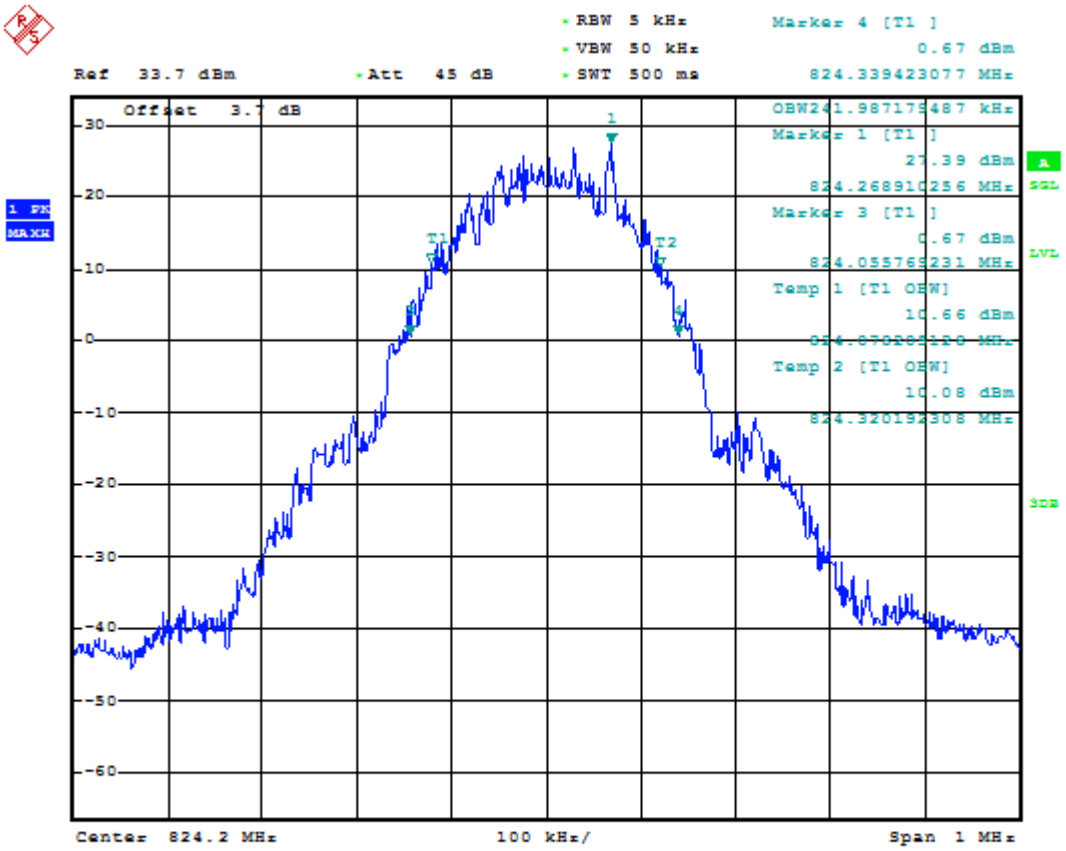
Test Band	Test Mode	Test Channel	Occupied Bandwidth (kHz)	Emission Bandwidth (kHz)	Verdict
GSM1900	GSM/TM1	LCH	248.40	309.29	PASS
		MCH	246.79	314.10	PASS
		HCH	250.00	301.28	PASS
	GSM/TM2	LCH	246.79	317.31	PASS
		MCH	246.79	309.29	PASS
		HCH	248.40	304.49	PASS
	GSM/TM3	LCH	253.21	309.29	PASS
		MCH	248.40	304.49	PASS
		HCH	250.00	299.68	PASS

1 For GSM

1.1 Test Band=GSM850

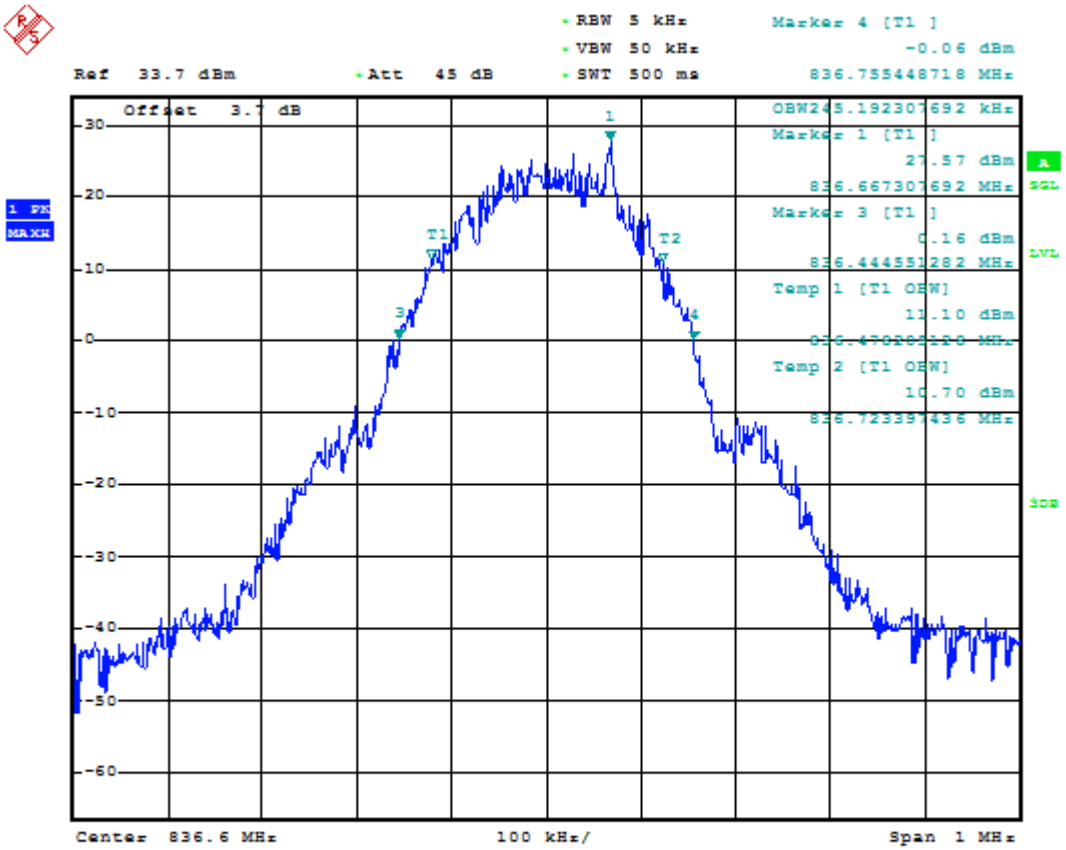
1.1.1 Test Mode=GSM/TM1

1.1.1.1 Test Channel=LCH



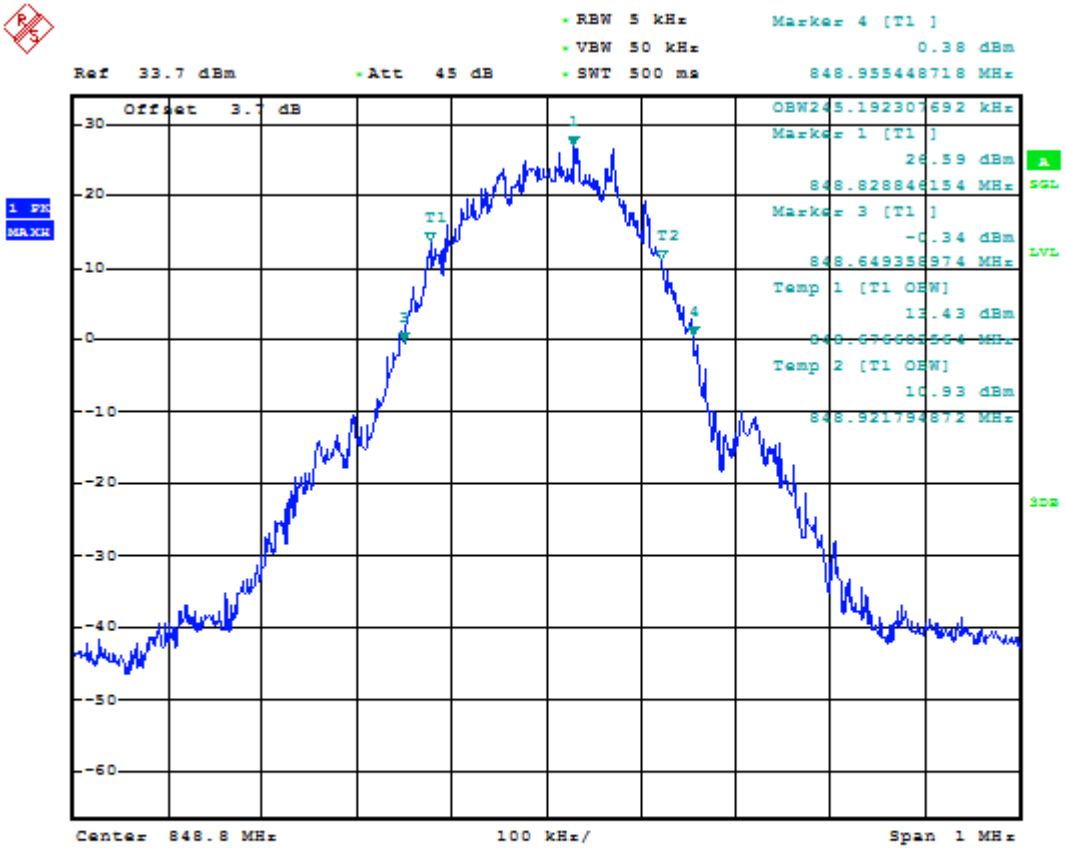
Date: 14.JUN.2020 00:36:19

1.1.1.2 Test Channel=MCH



Date: 14.JUN.2020 00:36:44

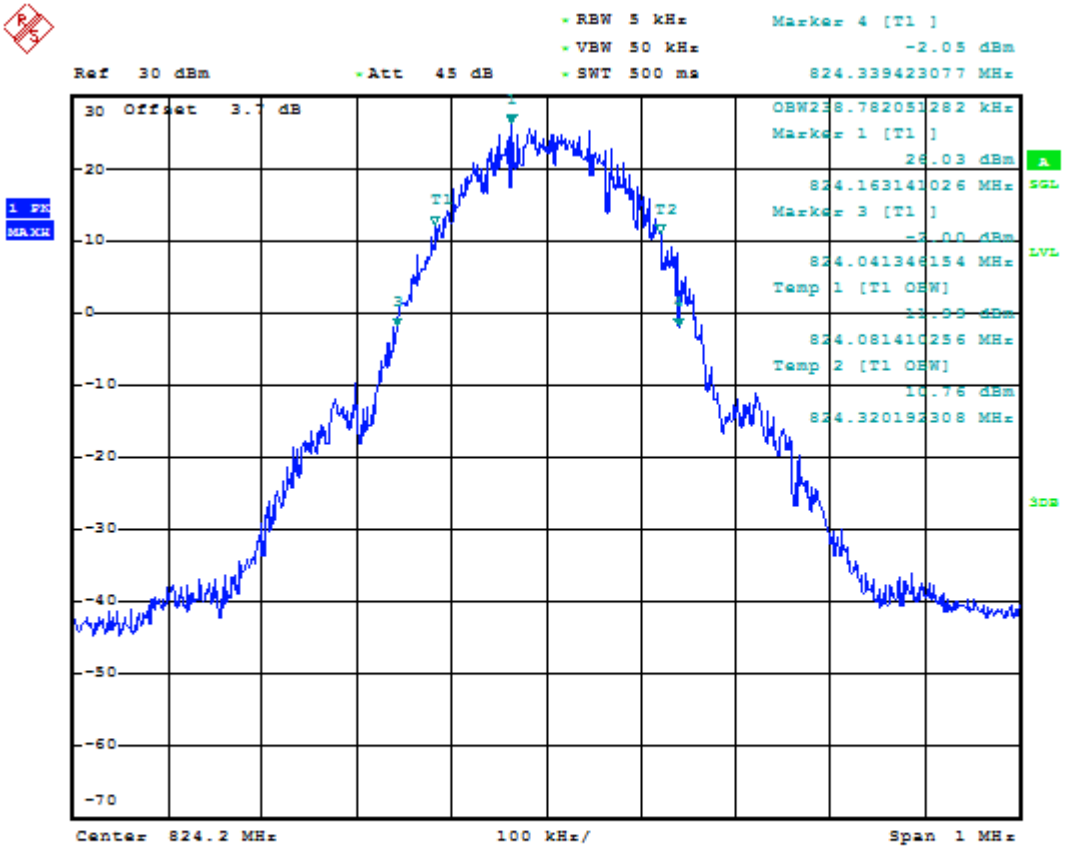
1.1.1.3 Test Channel=HCH



Date: 14.JUN.2020 00:37:09

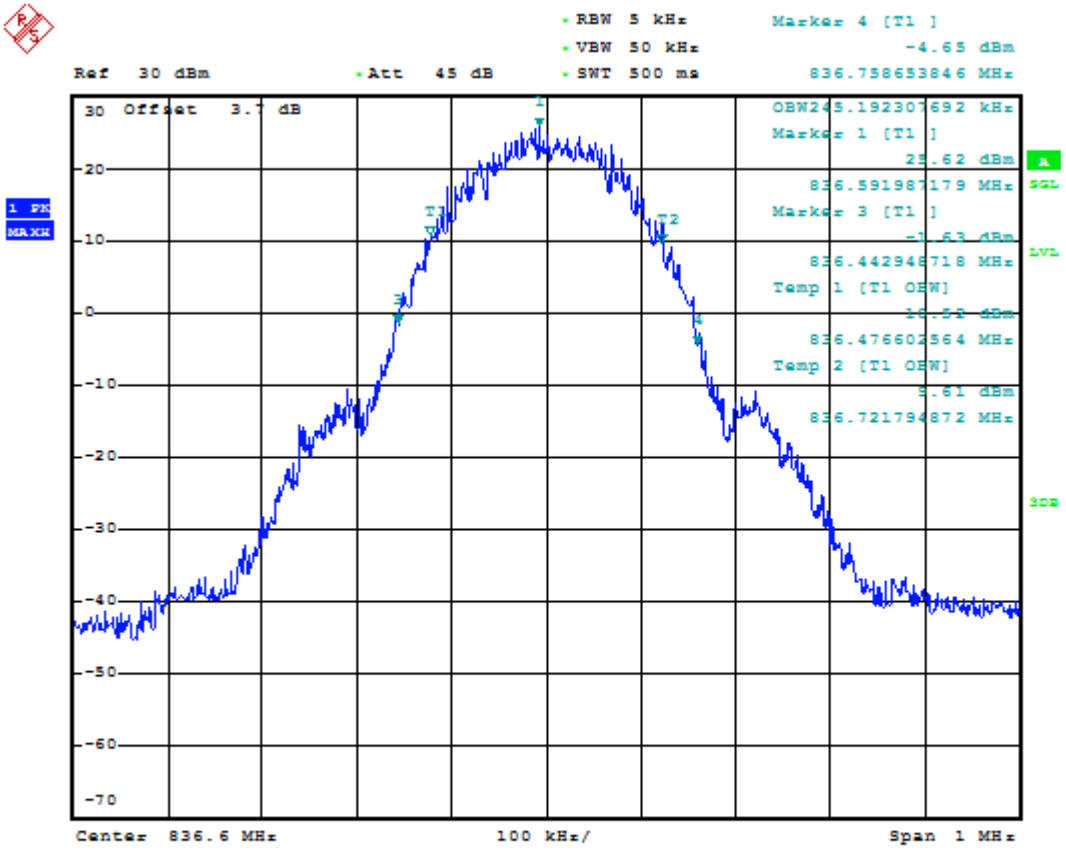
1.1.2 Test Mode=GSM/TM2

1.1.2.1 Test Channel=LCH



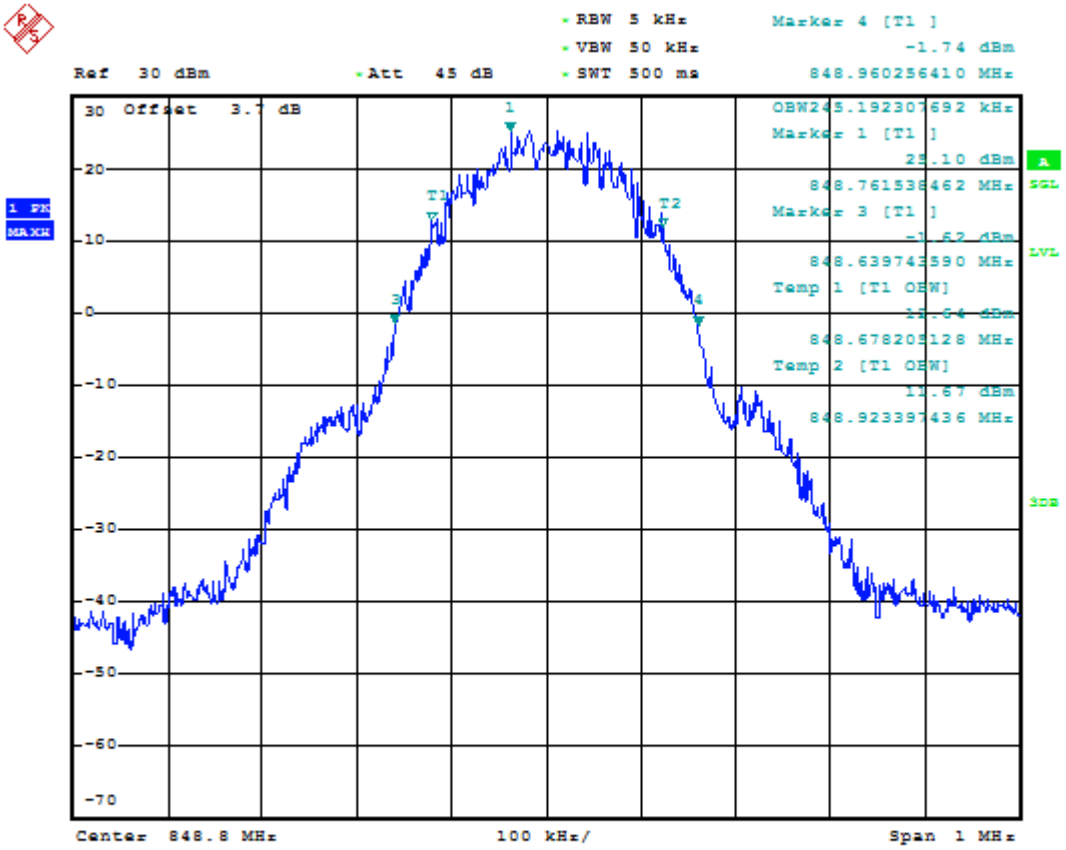
Date: 14.JUN.2020 00:55:29

1.1.2.2 Test Channel=MCH



Date: 14.JUN.2020 00:55:57

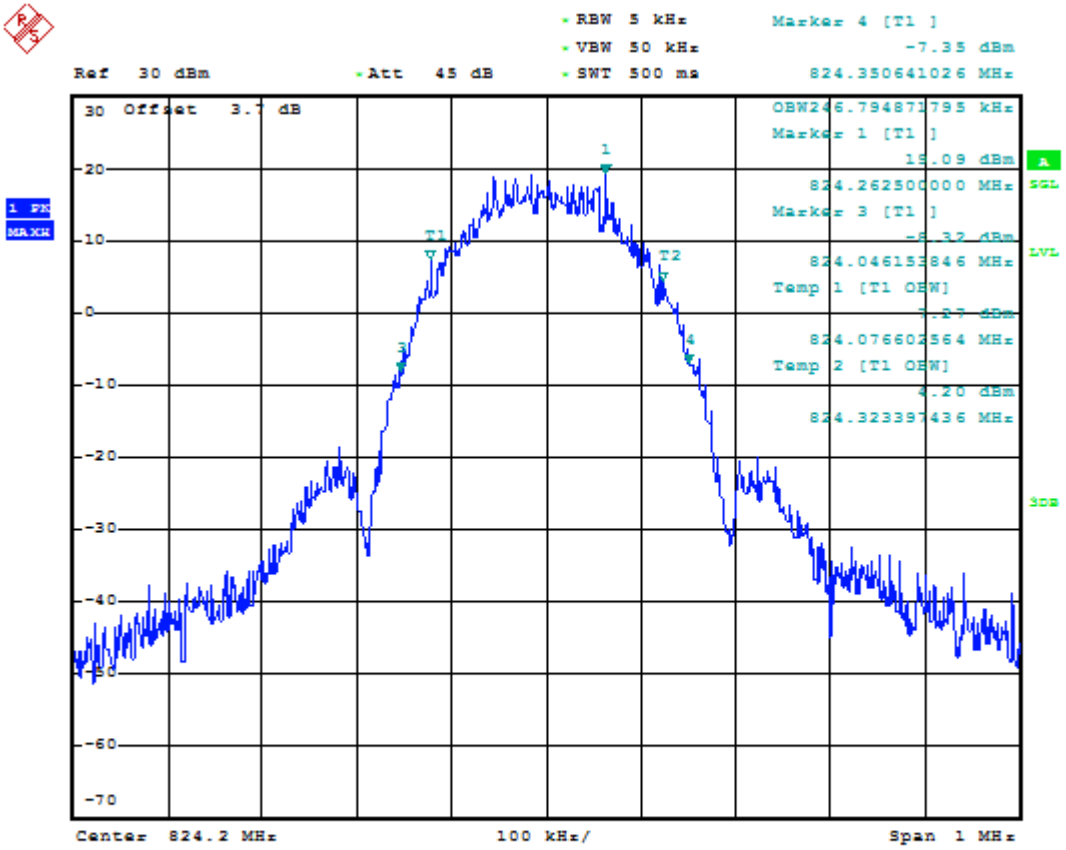
1.1.2.3 Test Channel=HCH



Date: 14.JUN.2020 00:56:25

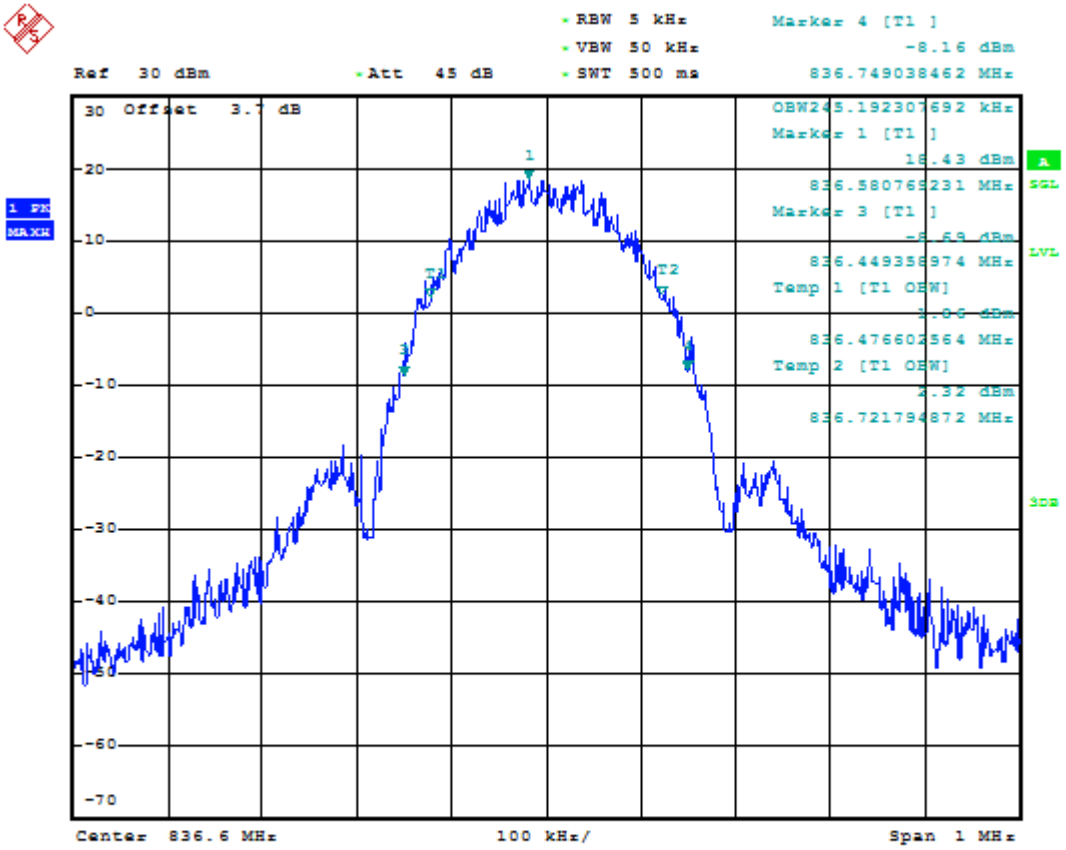
1.1.3 Test Mode=GSM/TM3

1.1.3.1 Test Channel=LCH



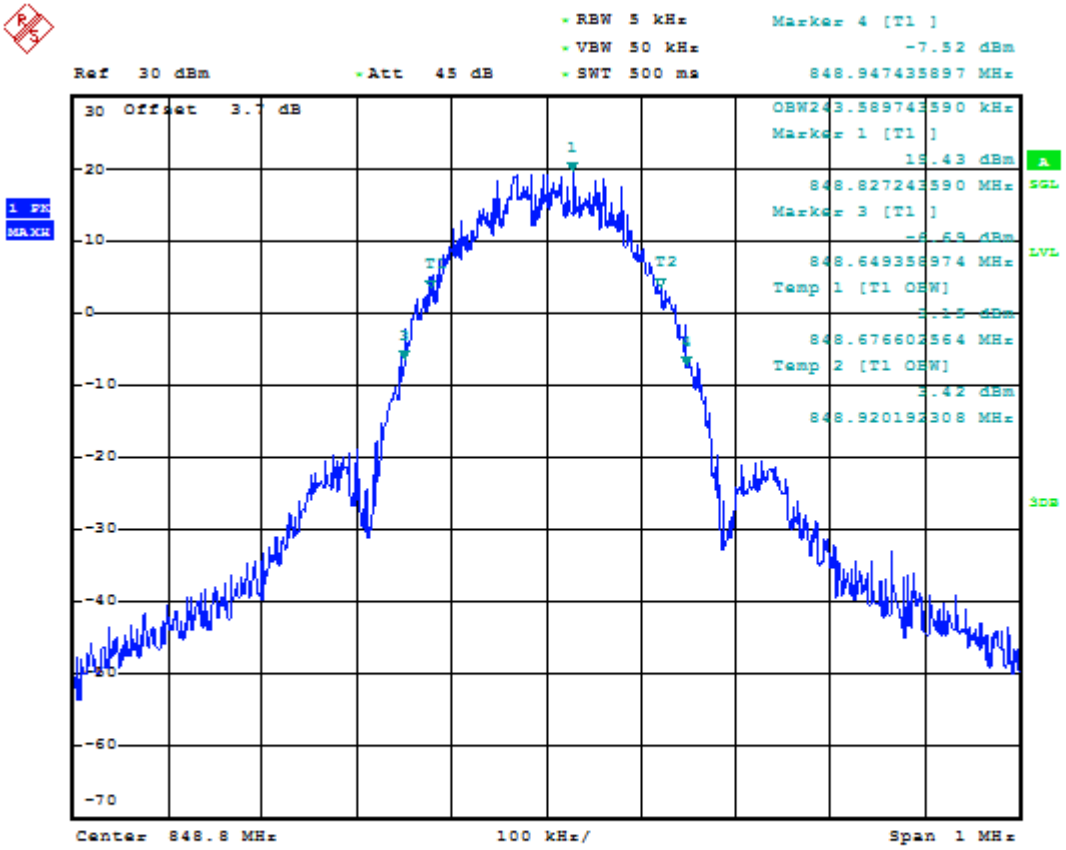
Date: 14.JUN.2020 01:15:57

1.1.3.2 Test Channel=MCH



Date: 14.JUN.2020 01:16:26

1.1.3.3 Test Channel=HCH

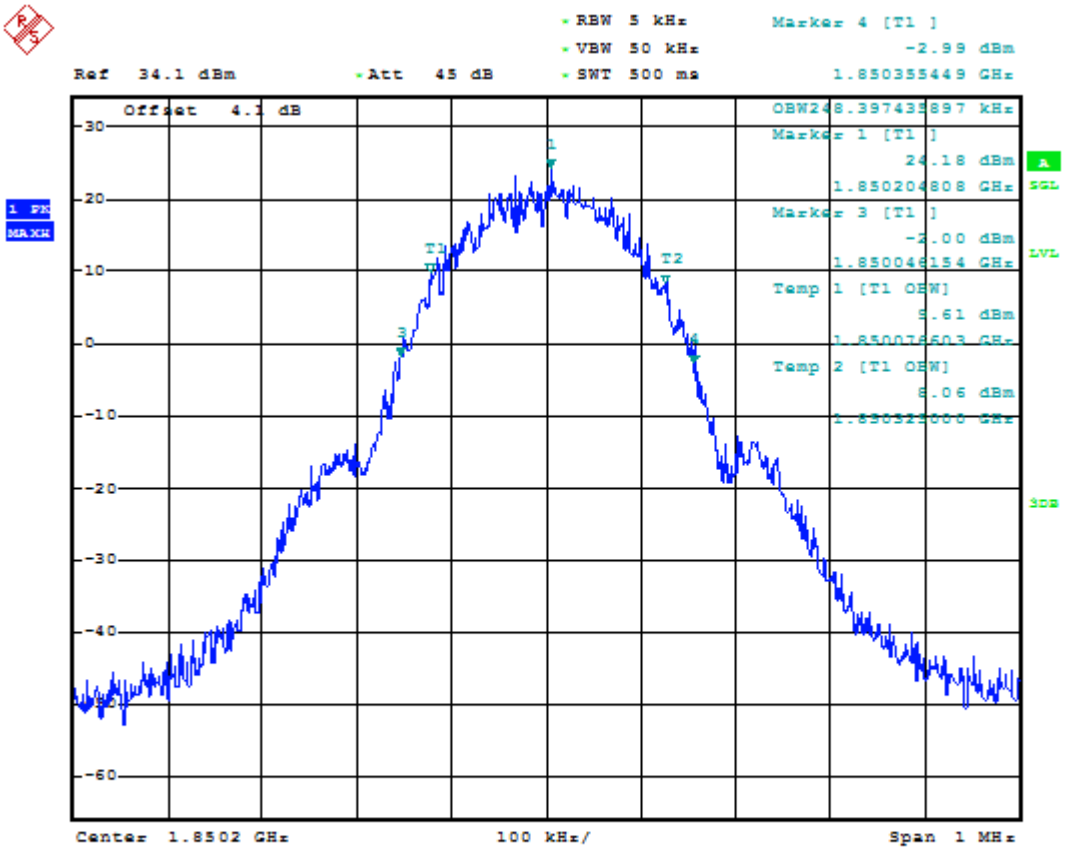


Date: 14.JUN.2020 01:16:56

1.2 Test Band=GSM1900

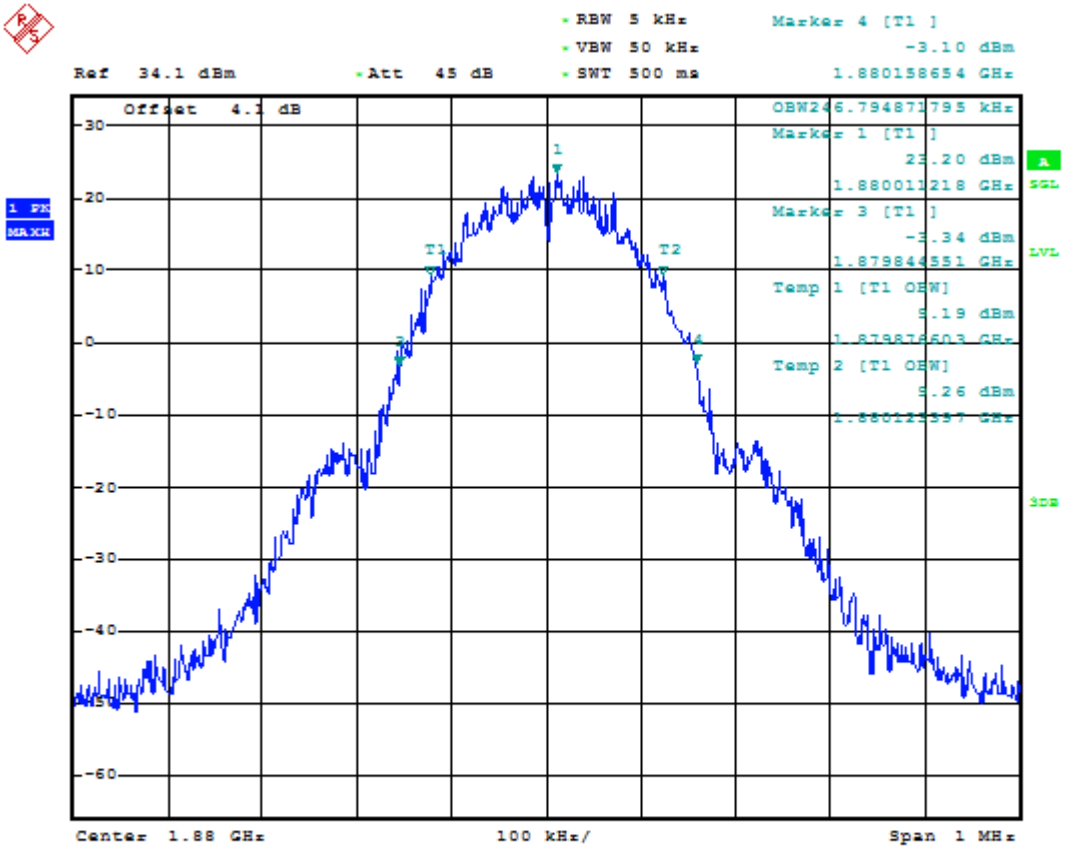
1.2.1 Test Mode=GSM/TM1

1.2.1.1 Test Channel=LCH



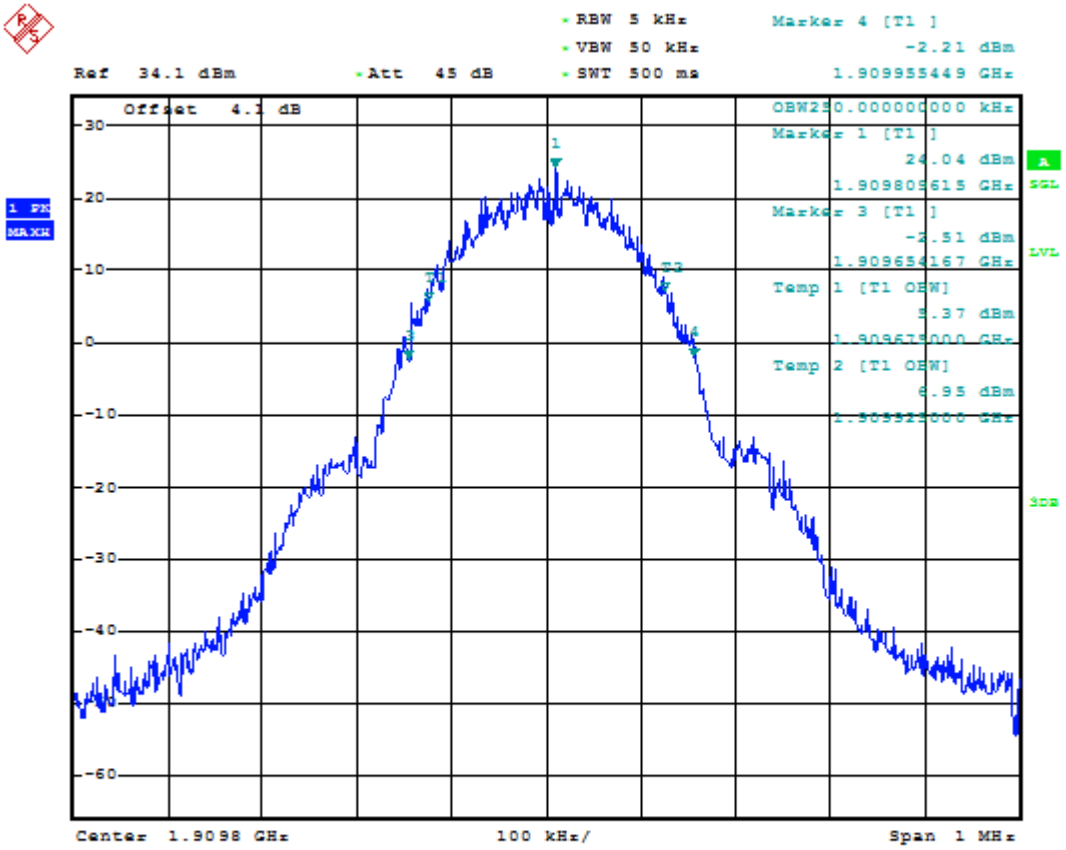
Date: 14.JUN.2020 01:34:03

1.2.1.2 Test Channel=MCH



Date: 14.JUN.2020 01:34:28

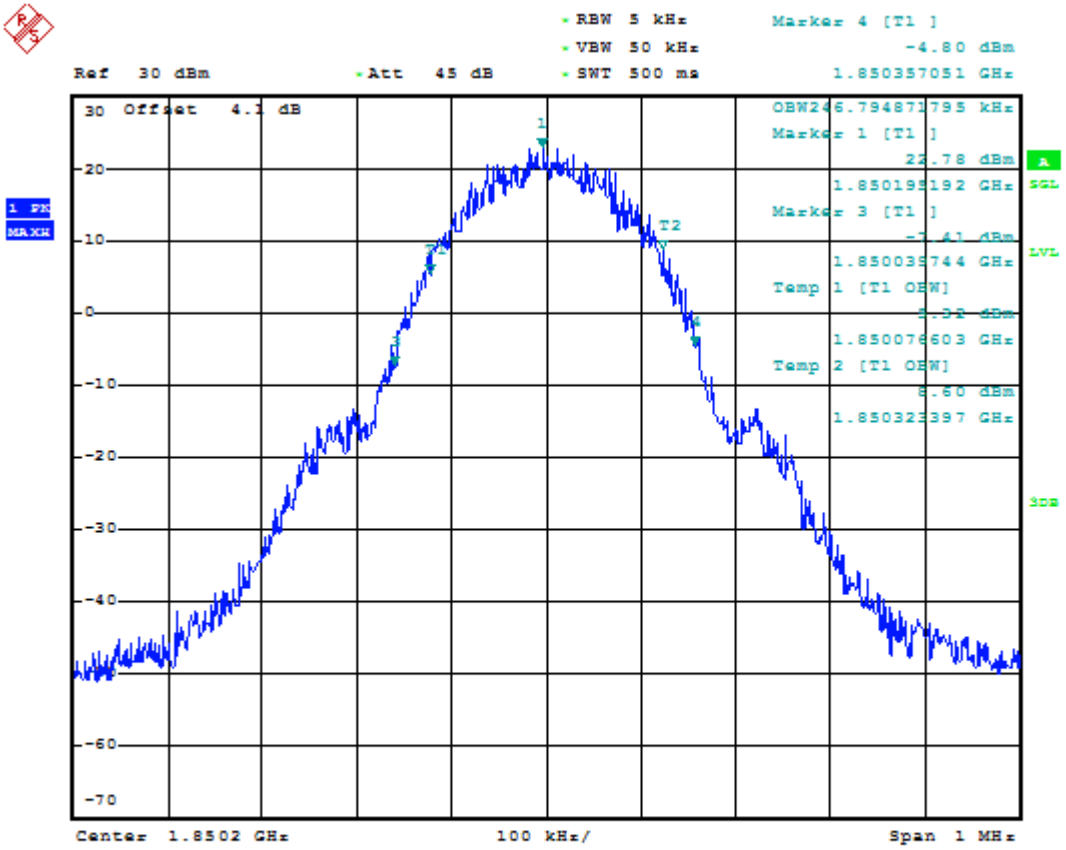
1.2.1.3 Test Channel=HCH



Date: 14.JUN.2020 01:34:53

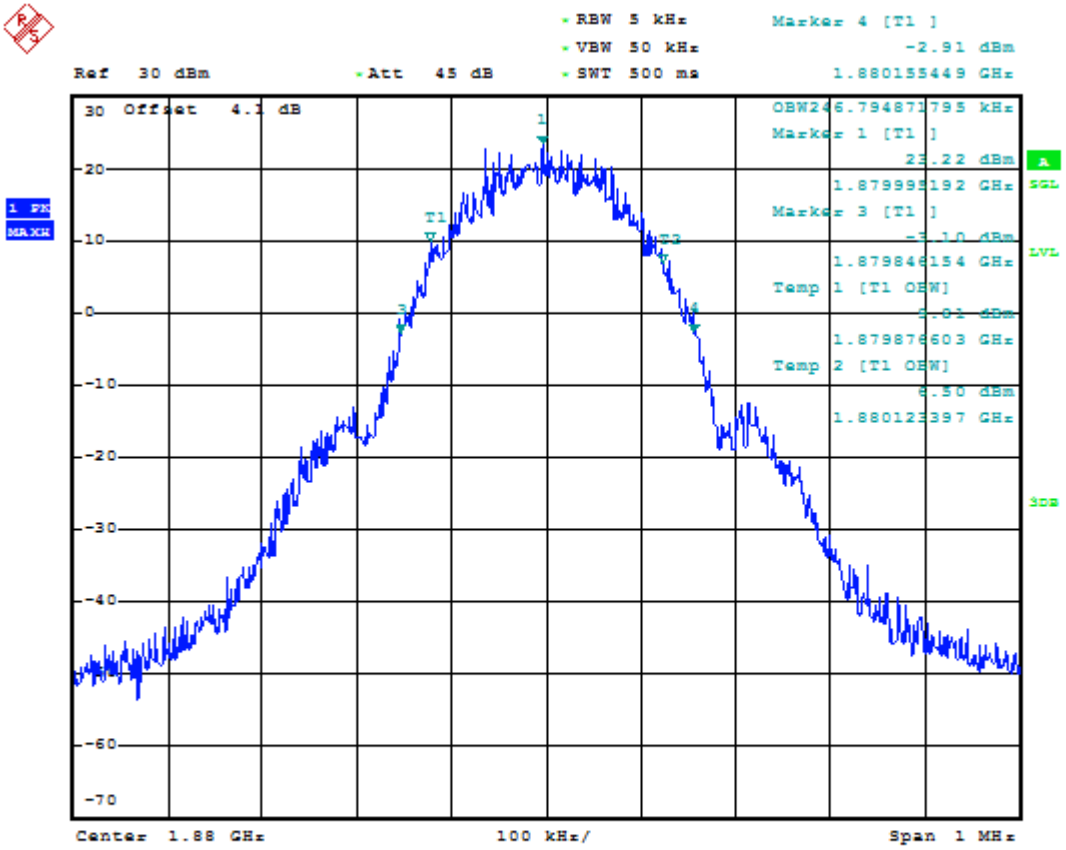
1.3 Test Mode=GSM/TM2

1.3.1.1 Test Channel=LCH



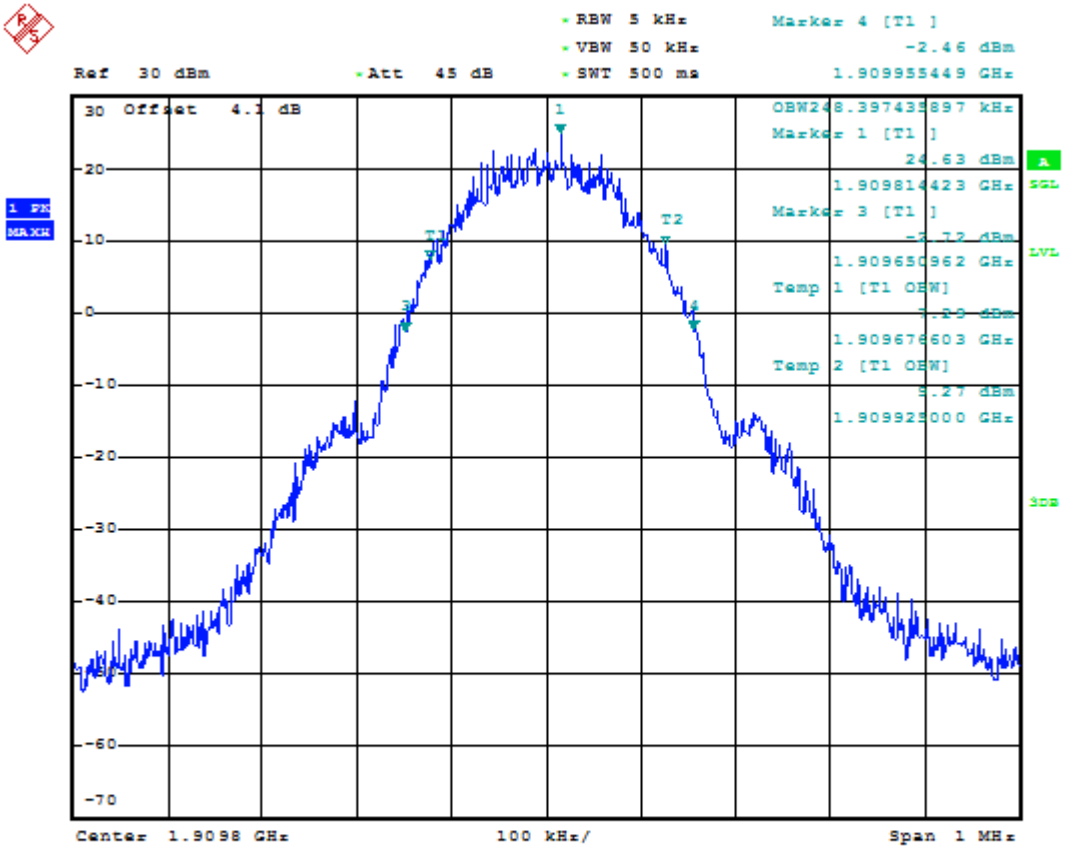
Date: 14.JUN.2020 01:51:07

1.3.1.2 Test Channel=MCH



Date: 14.JUN.2020 01:51:35

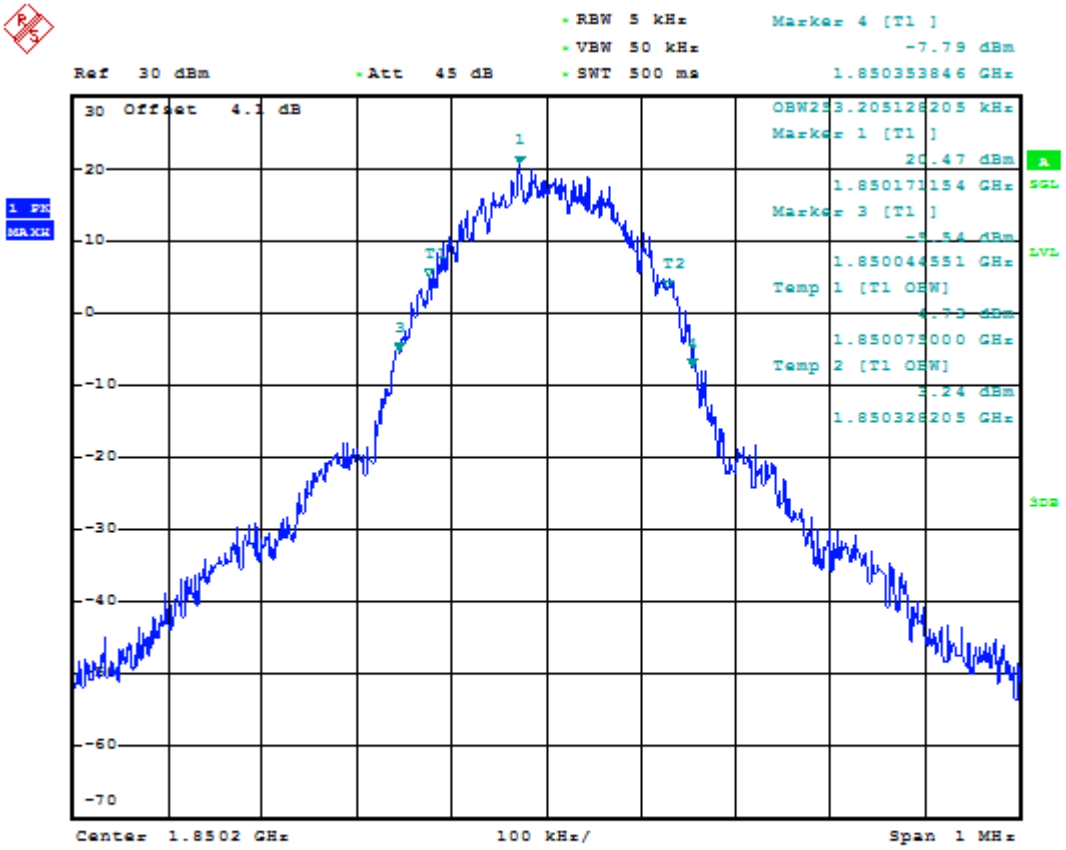
1.3.1.3 Test Channel=HCH



Date: 14.JUN.2020 01:52:03

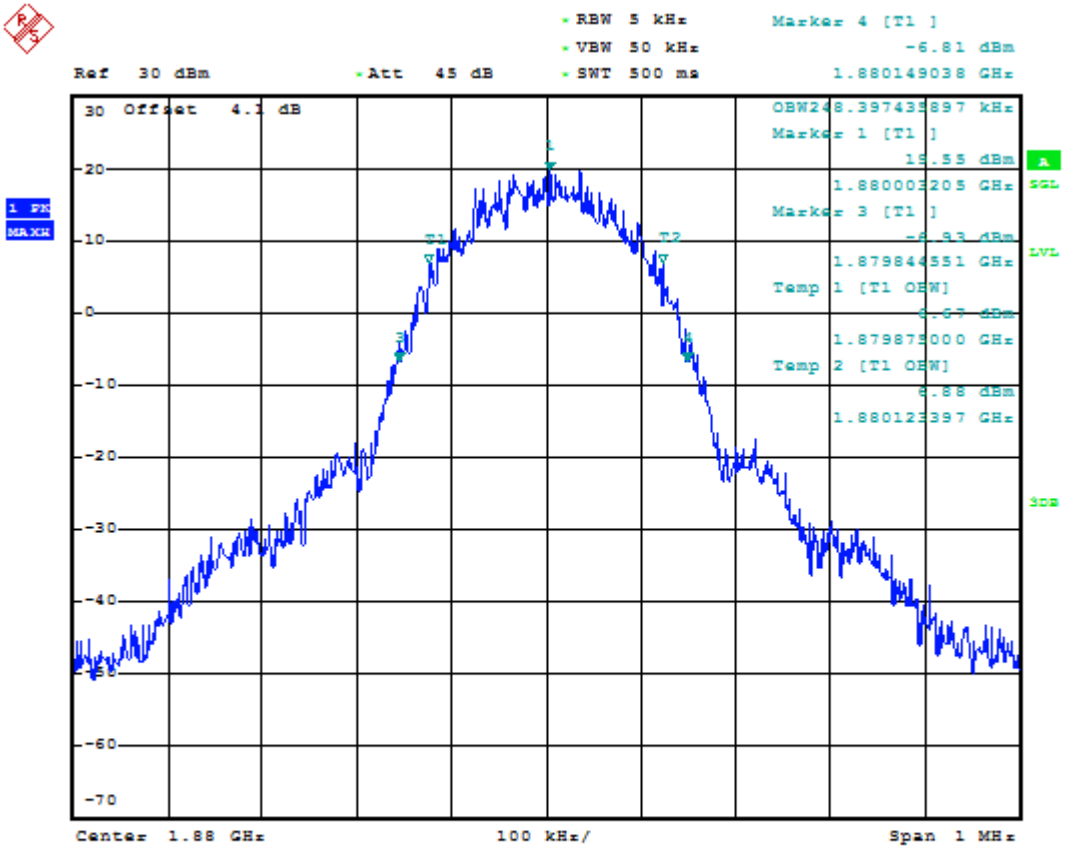
1.4 Test Mode=GSM/TM3

1.4.1.1 Test Channel=LCH



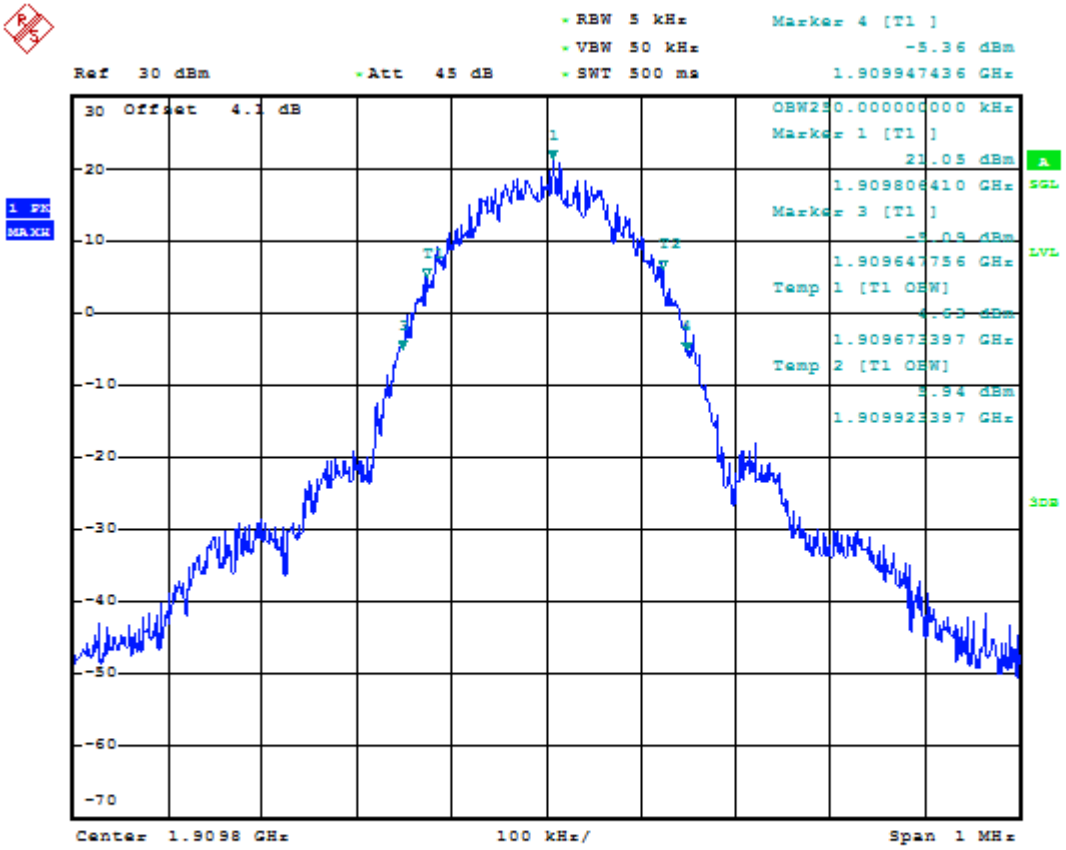
Date: 14.JUN.2020 02:07:53

1.4.1.2 Test Channel=MCH



Date: 14.JUN.2020 02:08:22

1.4.1.3 Test Channel=HCH



Date: 14.JUN.2020 02:08:52

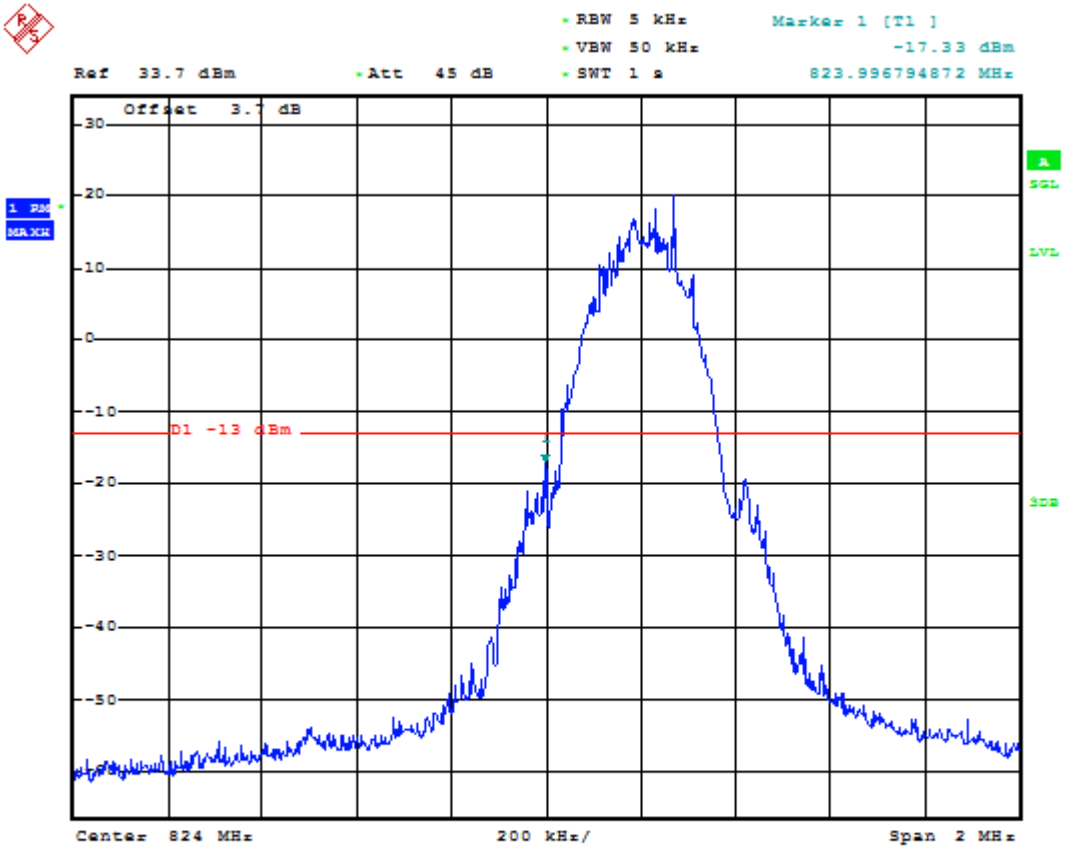
Appendix E: Band Edge

1 For GSM

1.1 Test Band=GSM850

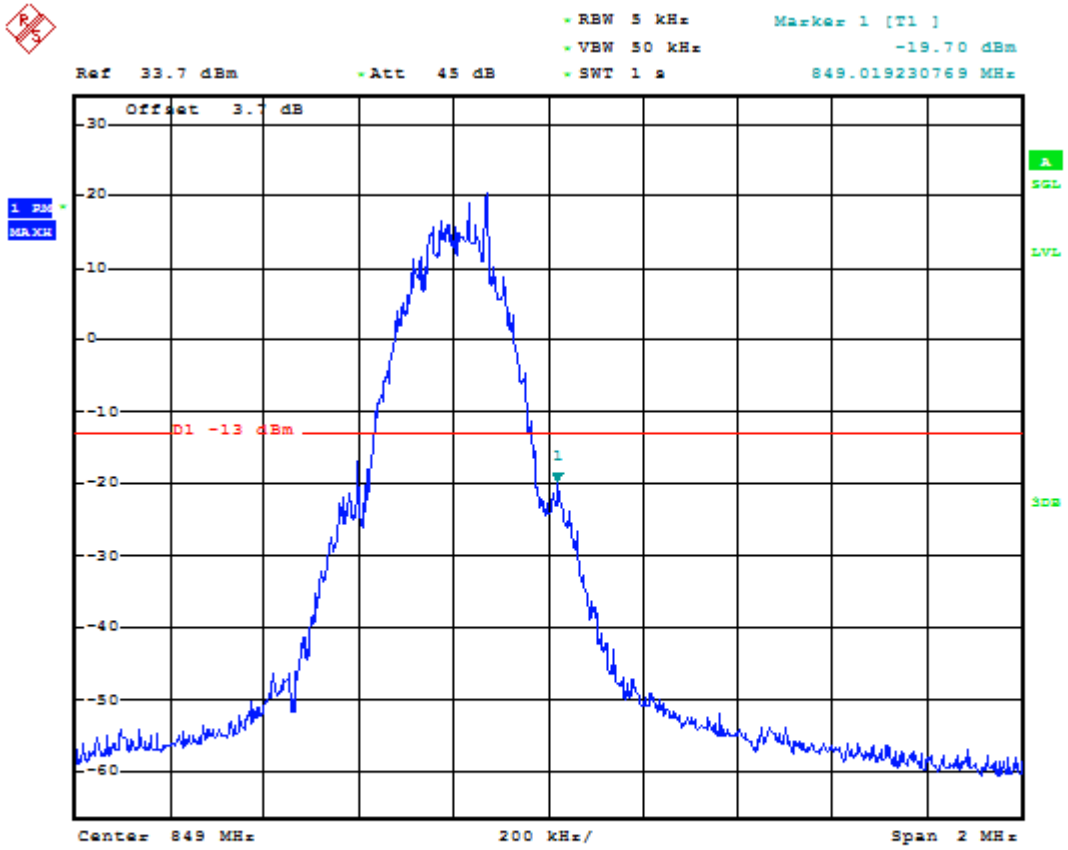
1.1.1 Test Mode=GSM/TM1

1.1.1.1 Test Channel=LCH



Date: 14.JUN.2020 00:37:49

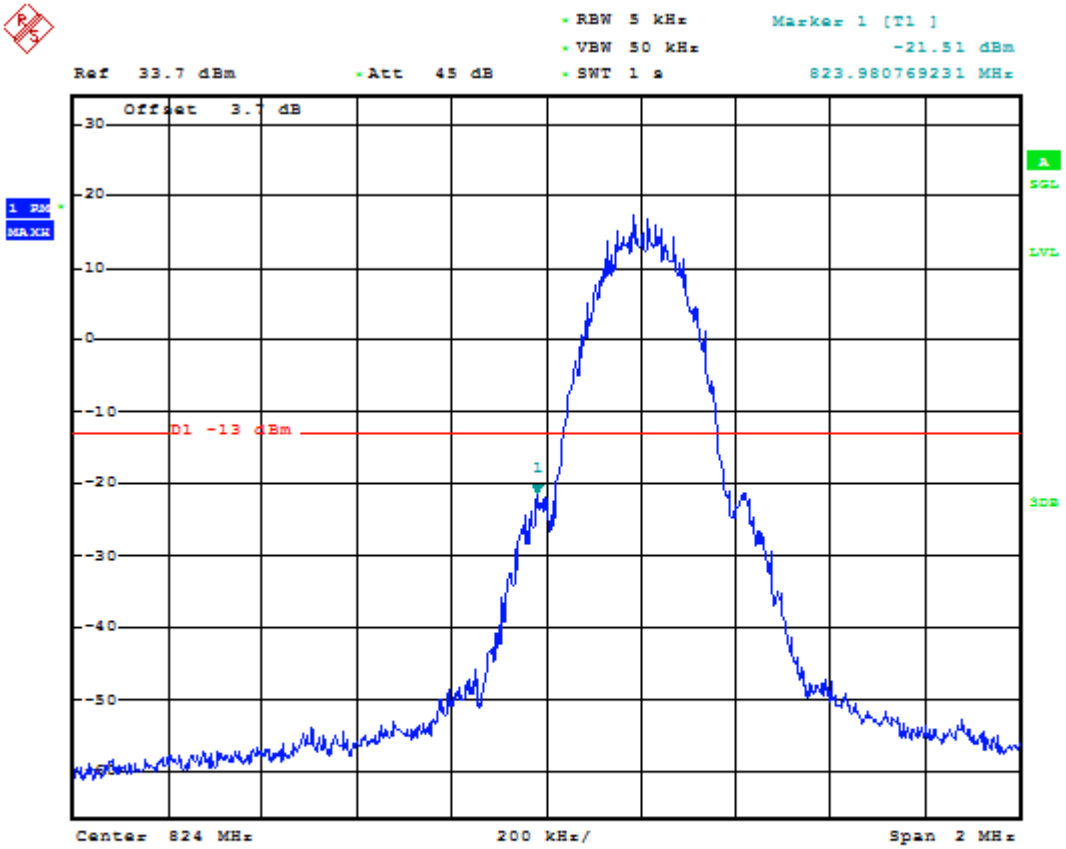
1.1.1.2 Test Channel=HCH



Date: 14.JUN.2020 00:38:21

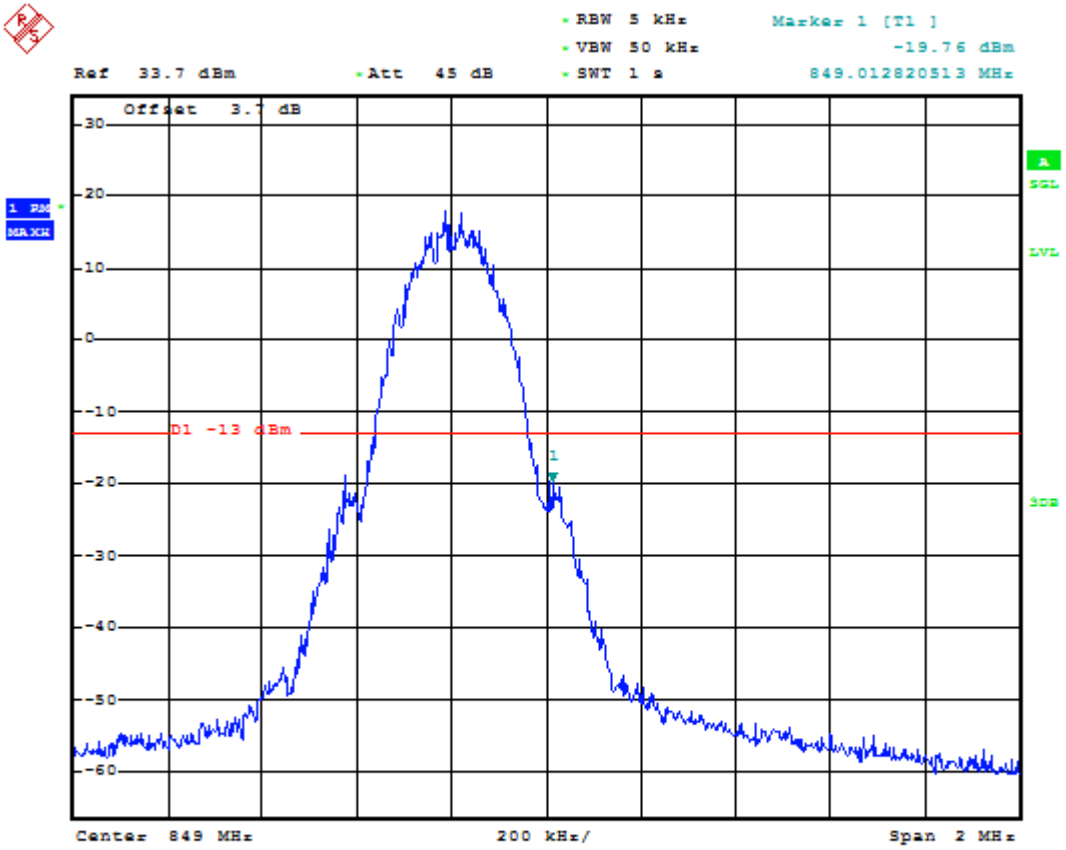
1.1.2 Test Mode=GSM/TM2

1.1.2.1 Test Channel=LCH



Date: 14.JUN.2020 00:57:08

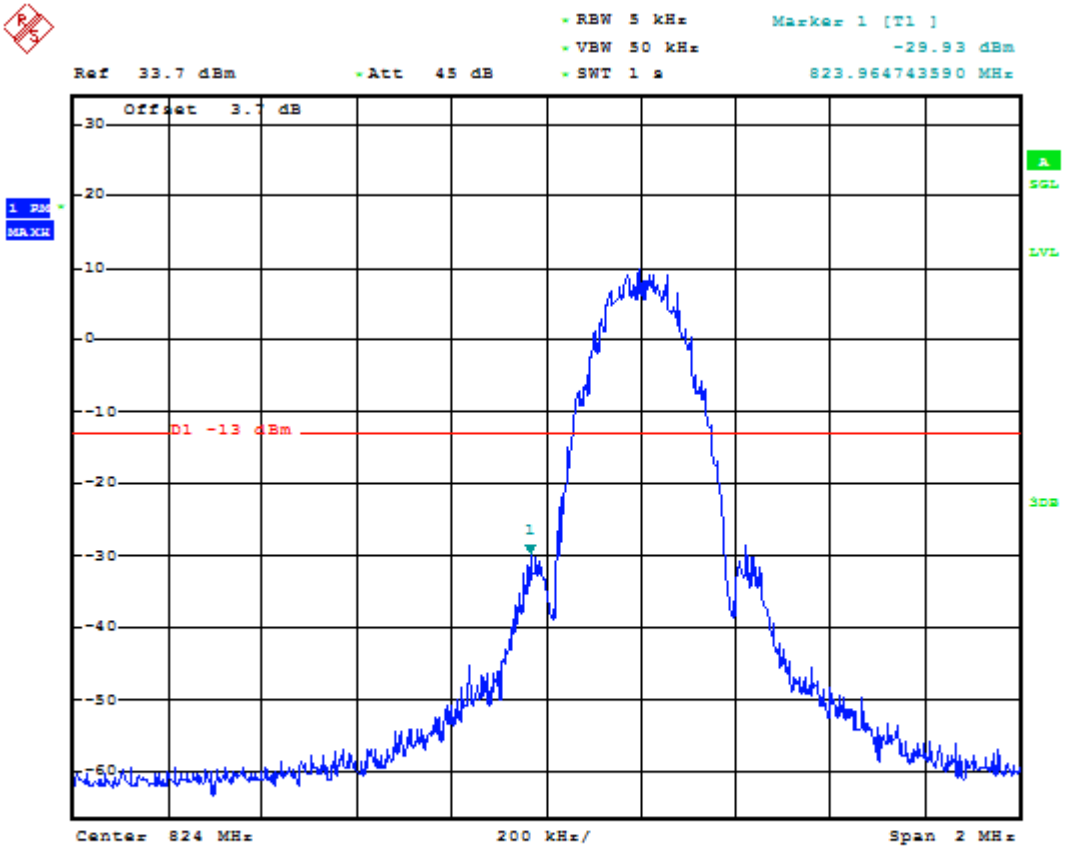
1.1.2.2 Test Channel=HCH



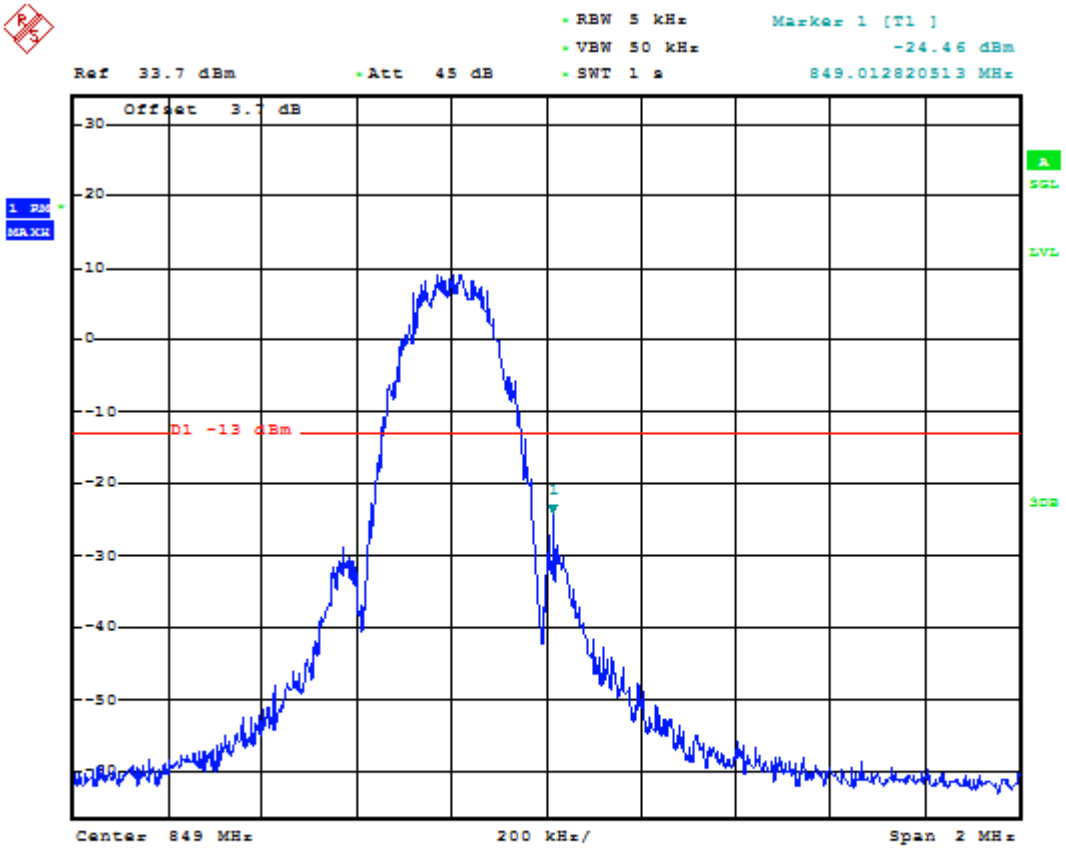
Date: 14.JUN.2020 00:57:44

1.1.3 Test Mode=GSM/TM3

1.1.3.1 Test Channel=LCH



1.1.3.2 Test Channel=HCH

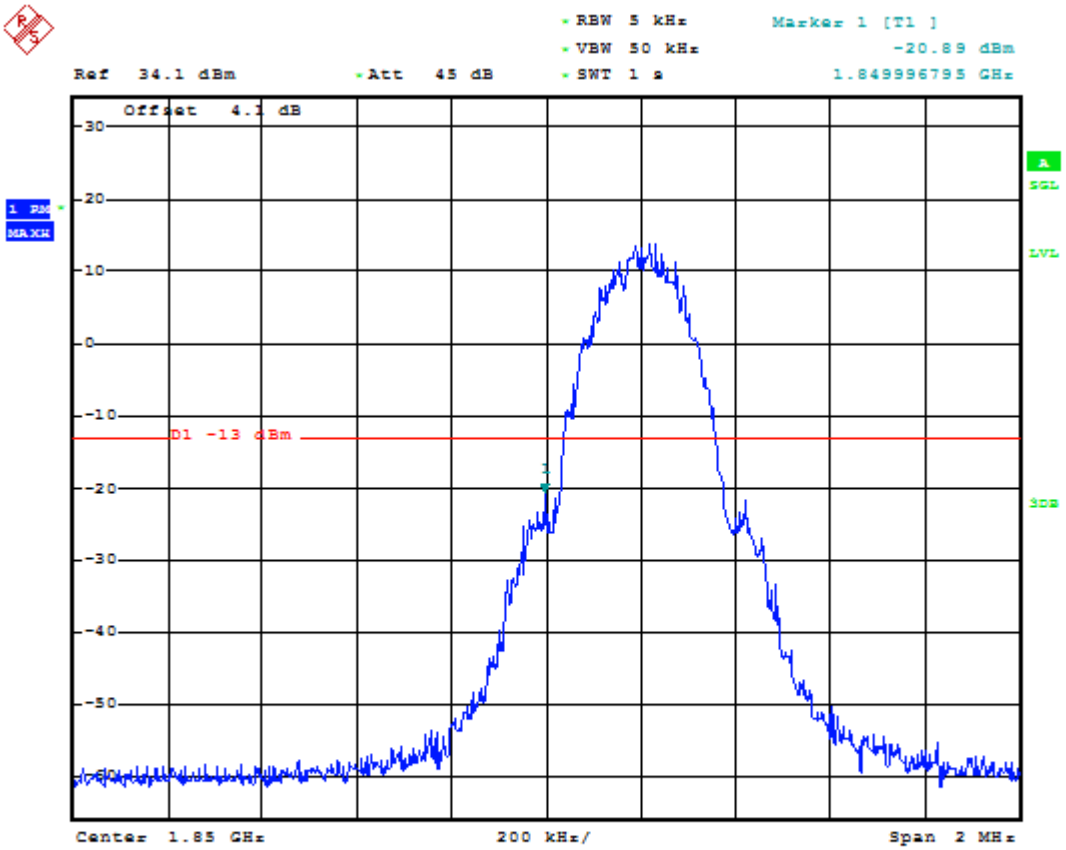


Date: 14.JUN.2020 01:18:15

1.2 Test Band=GSM1900

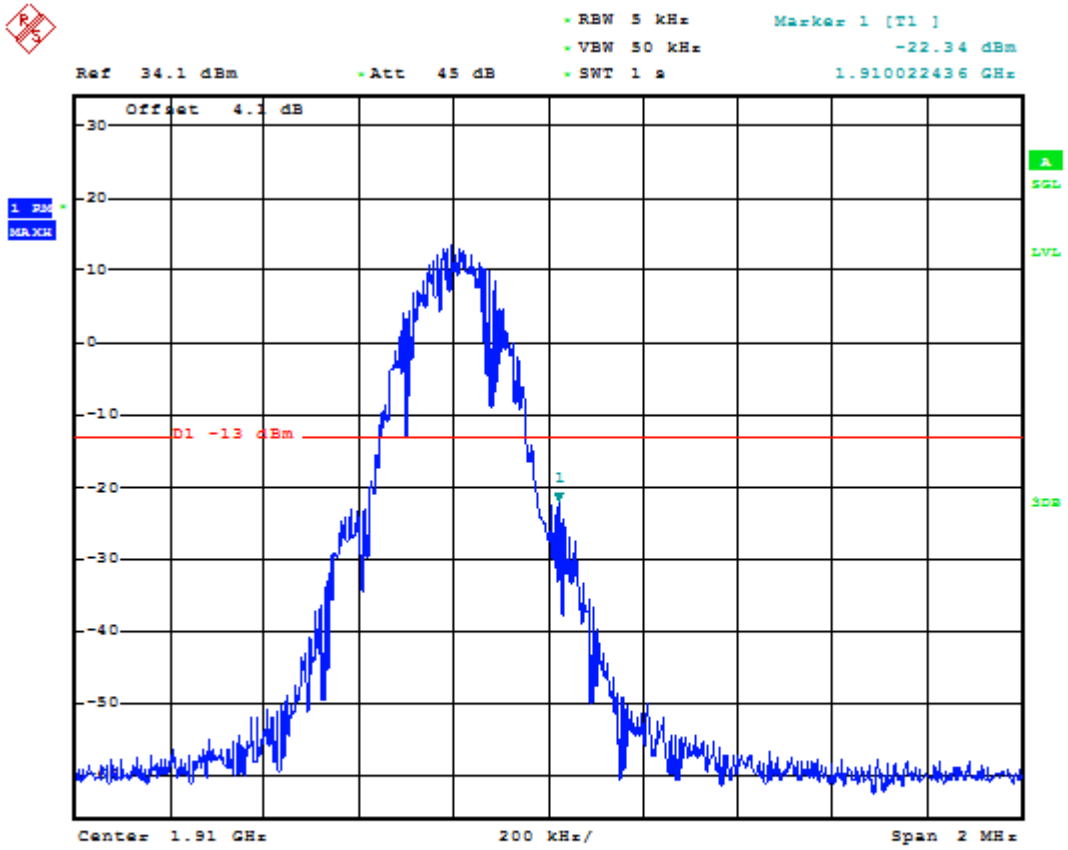
1.2.1 Test Mode=GSM/TM1

1.2.1.1 Test Channel=LCH



Date: 14.JUN.2020 01:35:33

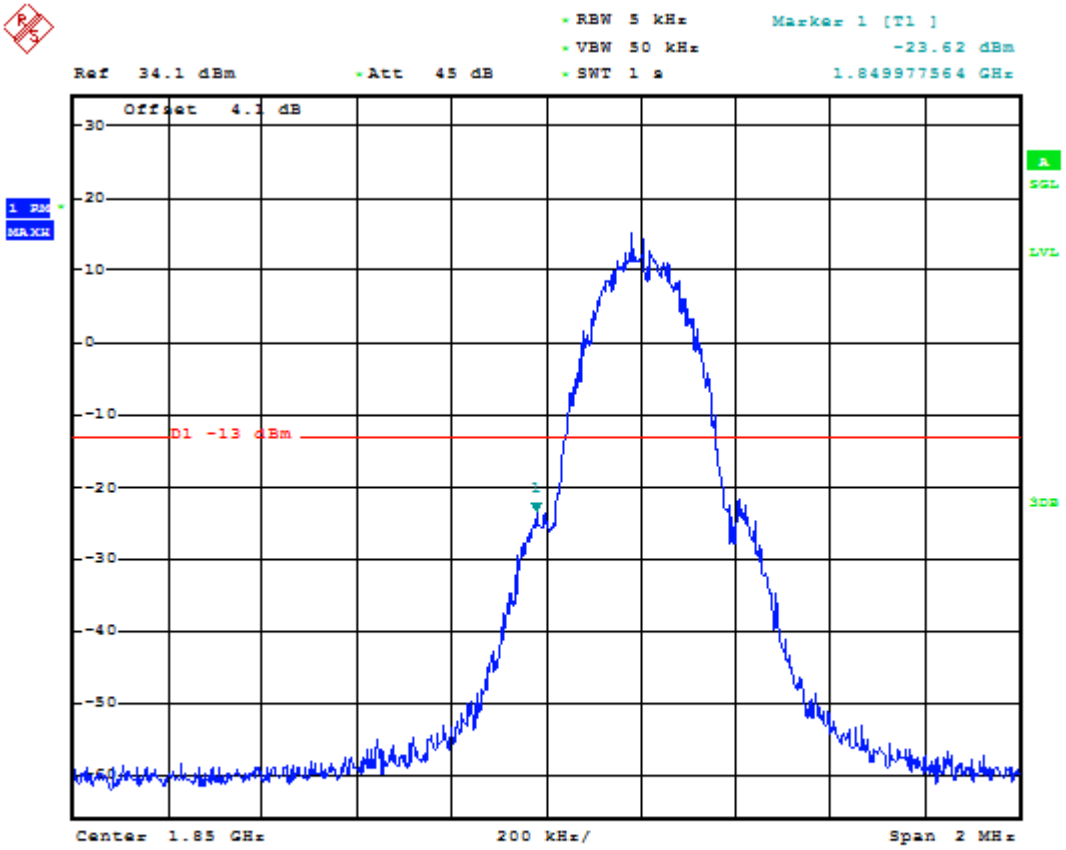
1.2.1.2 Test Channel=HCH



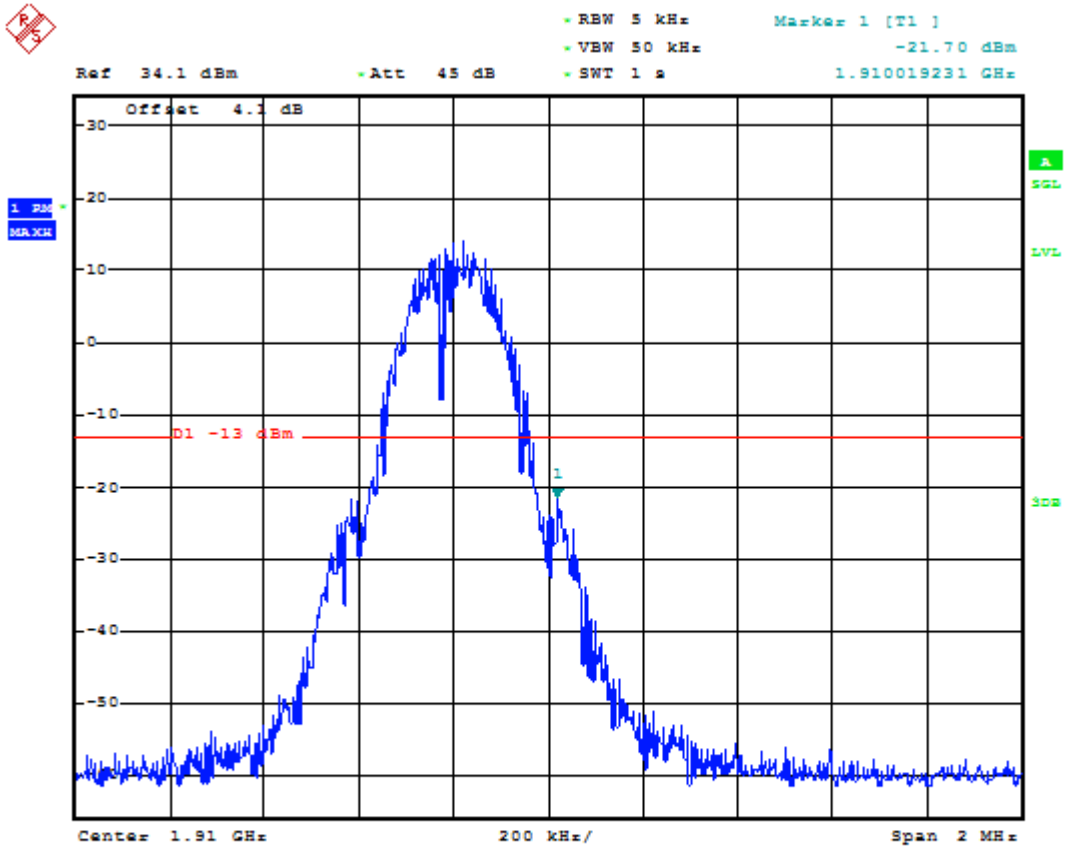
Date: 14.JUN.2020 01:36:05

1.2.2 Test Mode=GSM/TM2

1.2.2.1 Test Channel=LCH

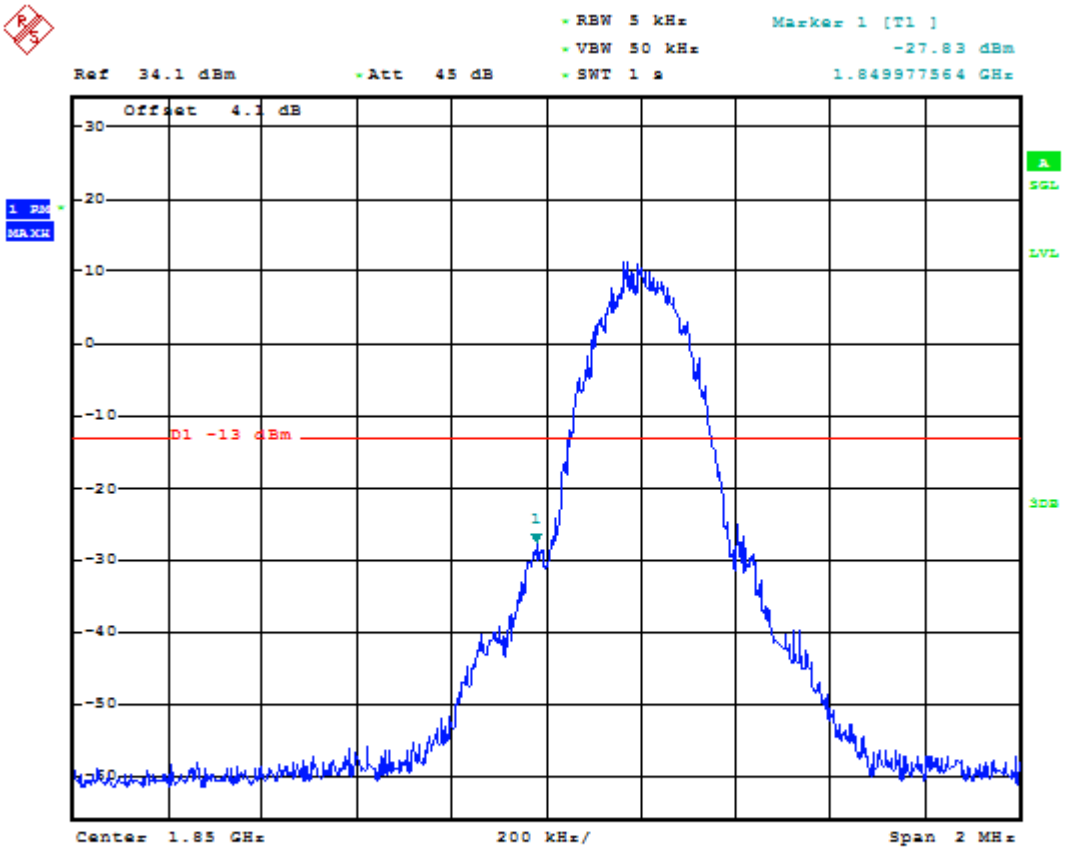


1.2.2.2 Test Channel=HCH



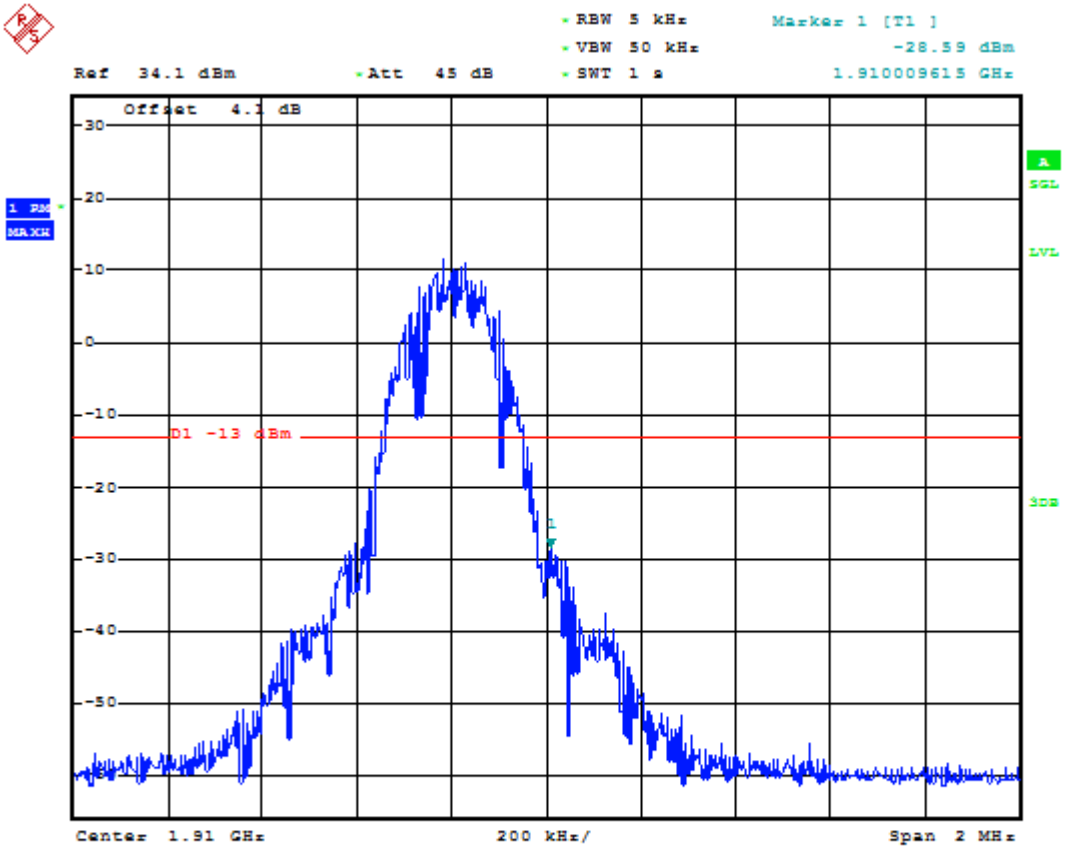
1.2.3 Test Mode=GSM/TM3

1.2.3.1 Test Channel=LCH



Date: 14.JUN.2020 02:09:35

1.2.3.2 Test Channel=HCH



Date: 14.JUN.2020 02:10:11

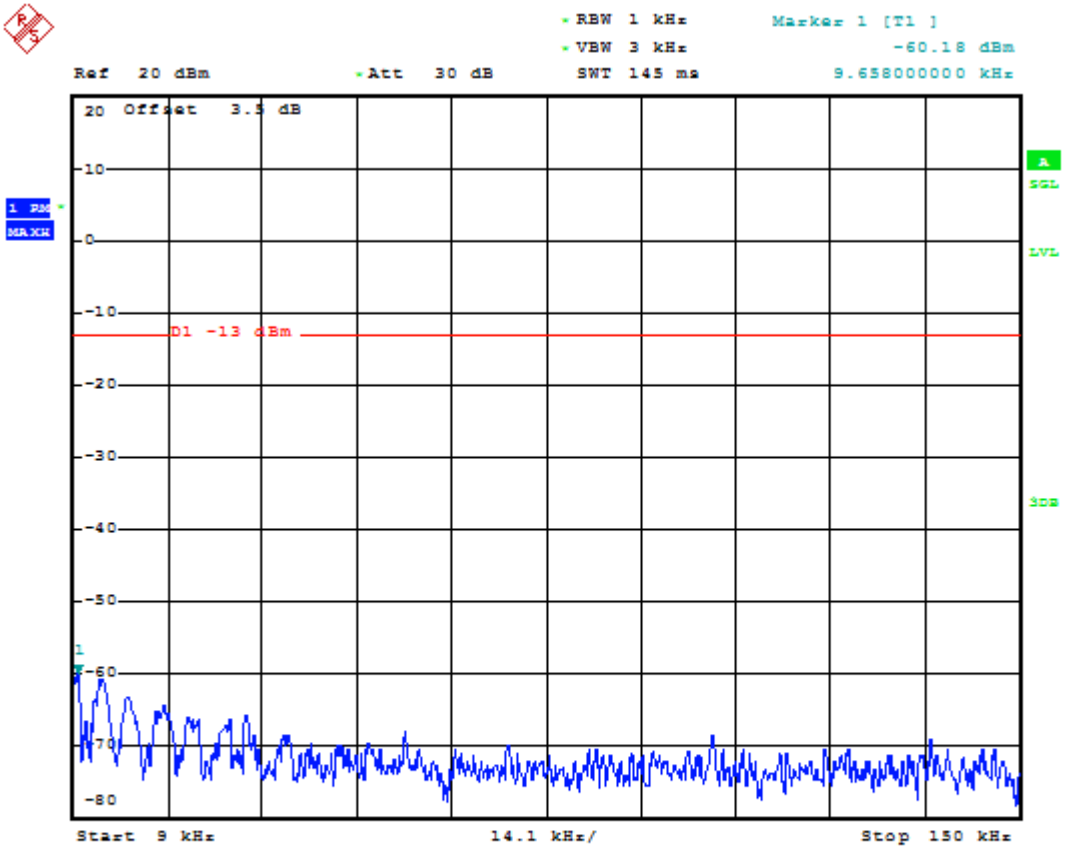
Appendix F: Conducted Spurious Emission

1 For GSM

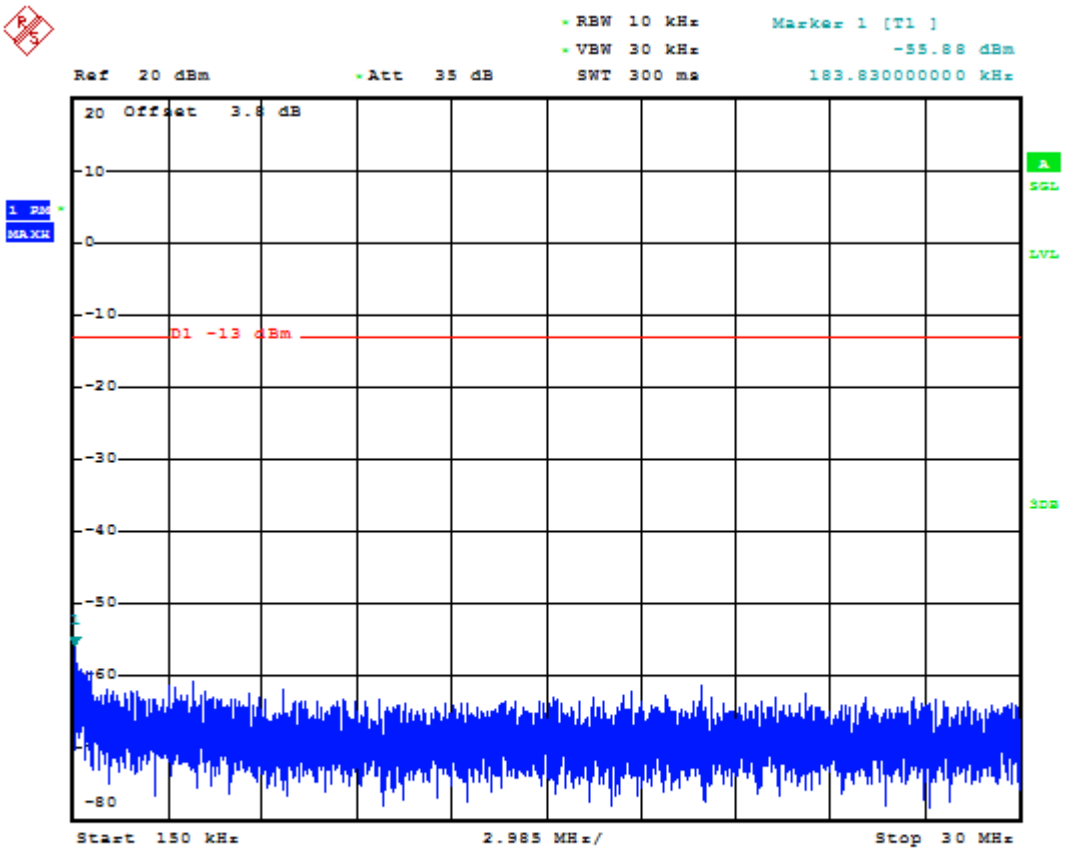
1.1 Test Band=GSM850

1.1.1 Test Mode=GSM/TM1

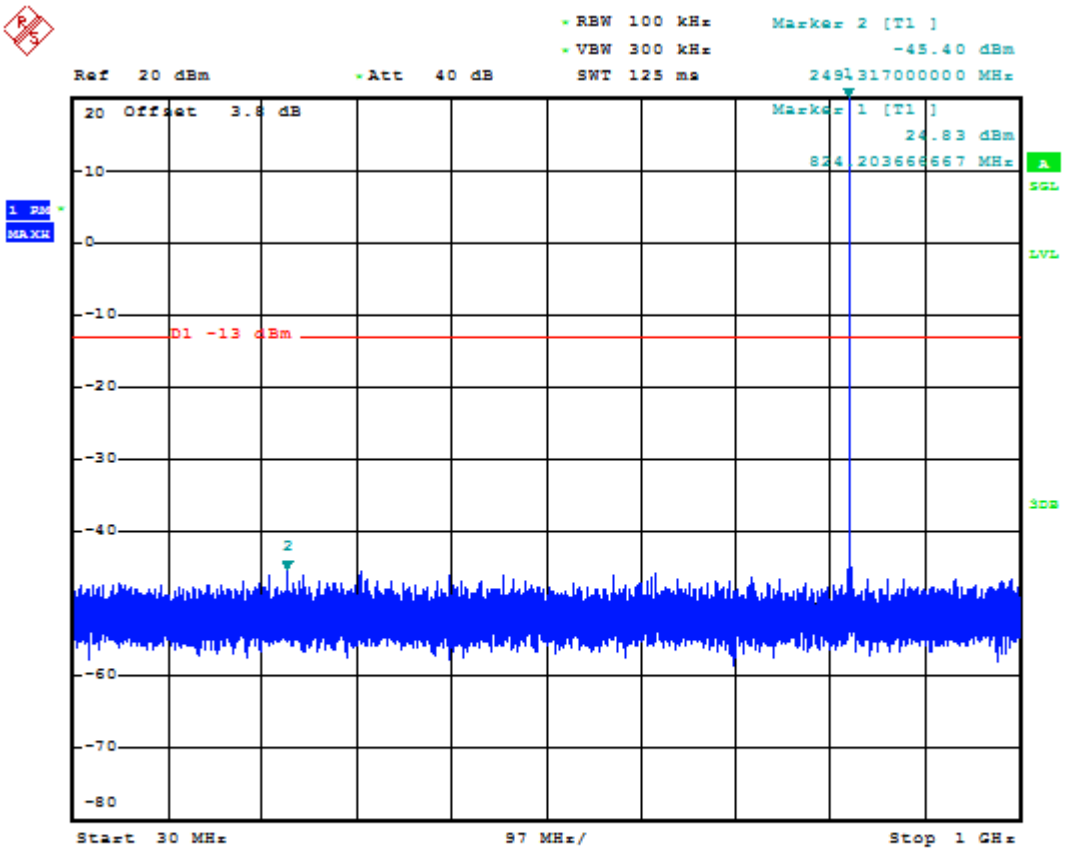
1.1.1.1 Test Channel=LCH



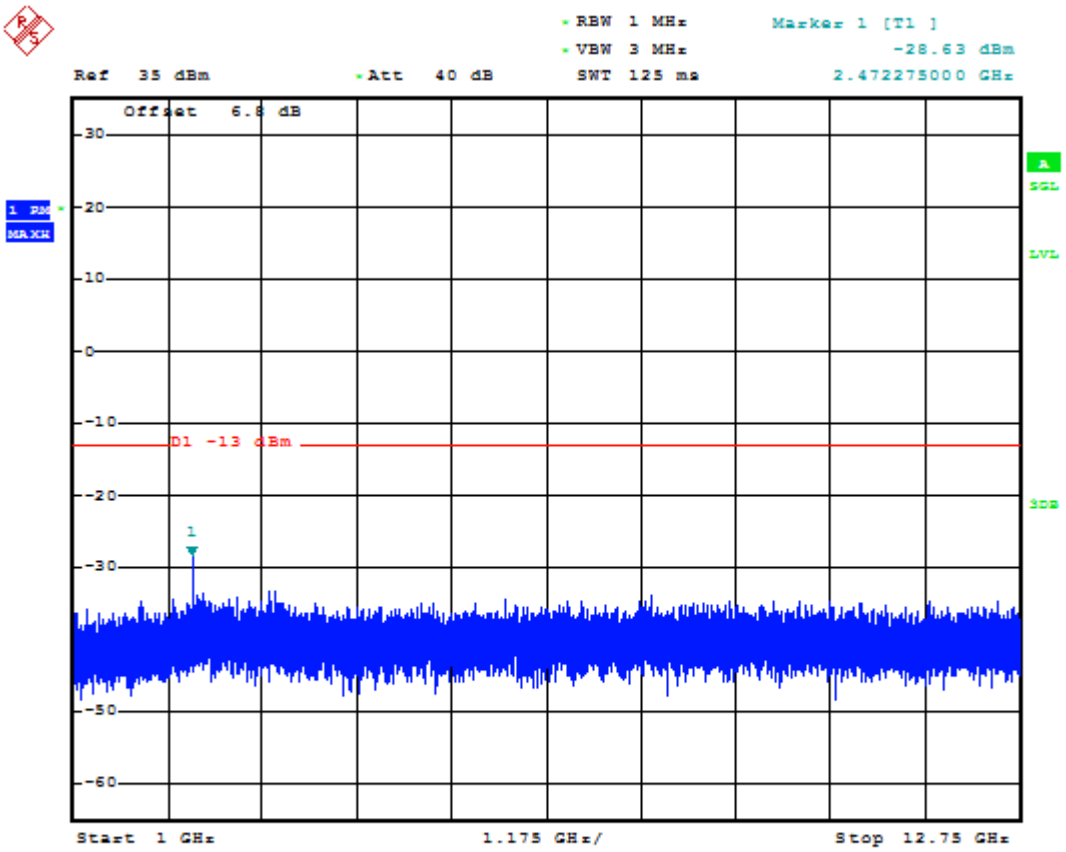
Date: 14.JUN.2020 00:44:49



Date: 14.JUN.2020 00:45:08

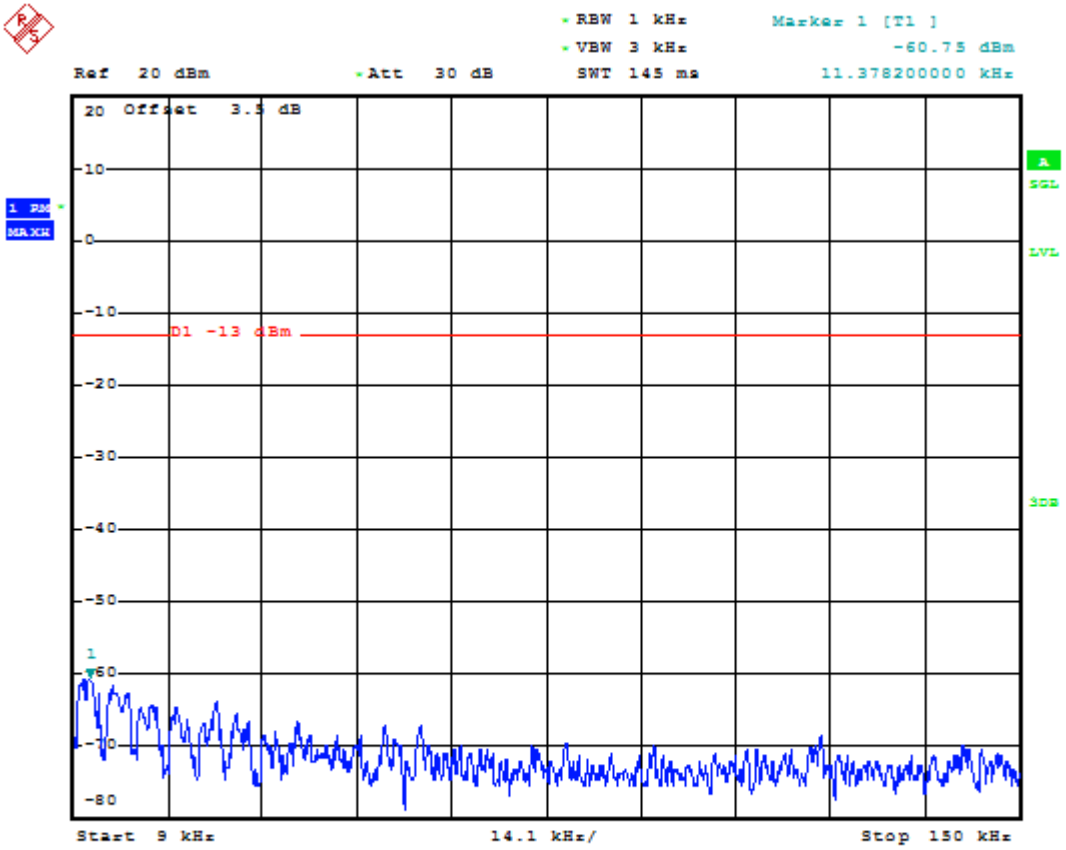


Date: 14.JUN.2020 00:45:19

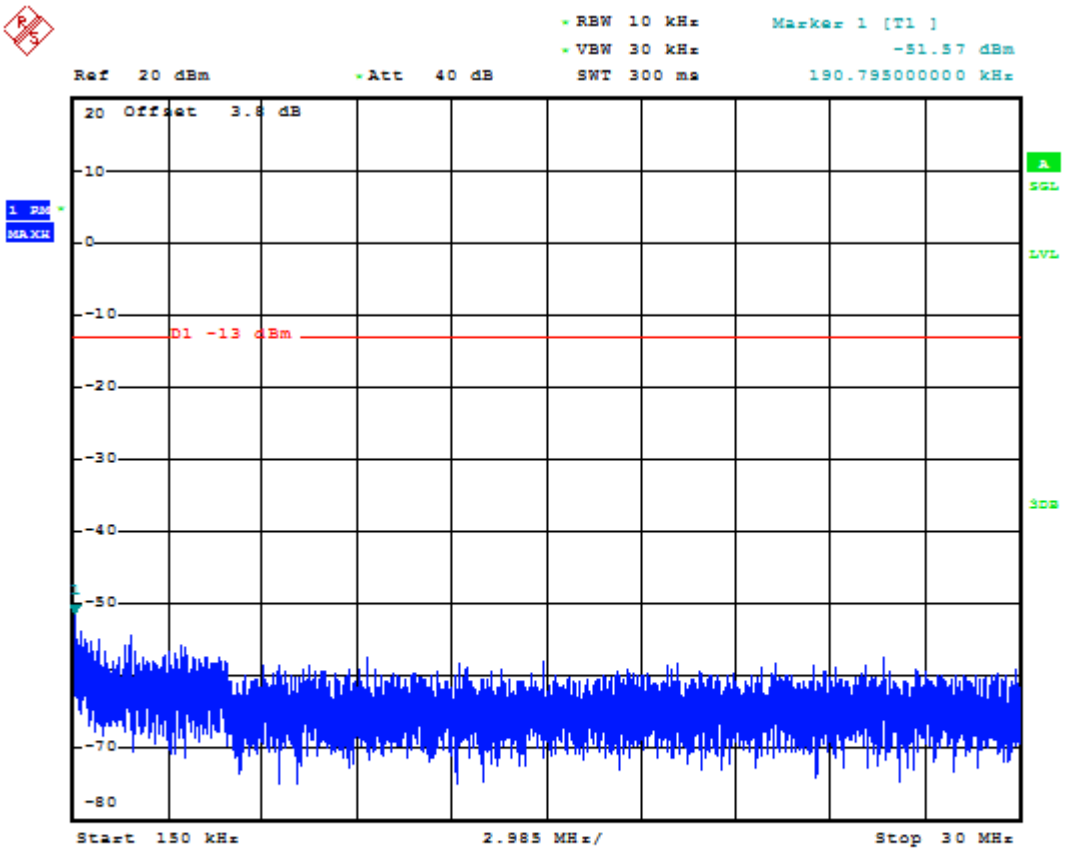


Date: 14.JUN.2020 00:45:29

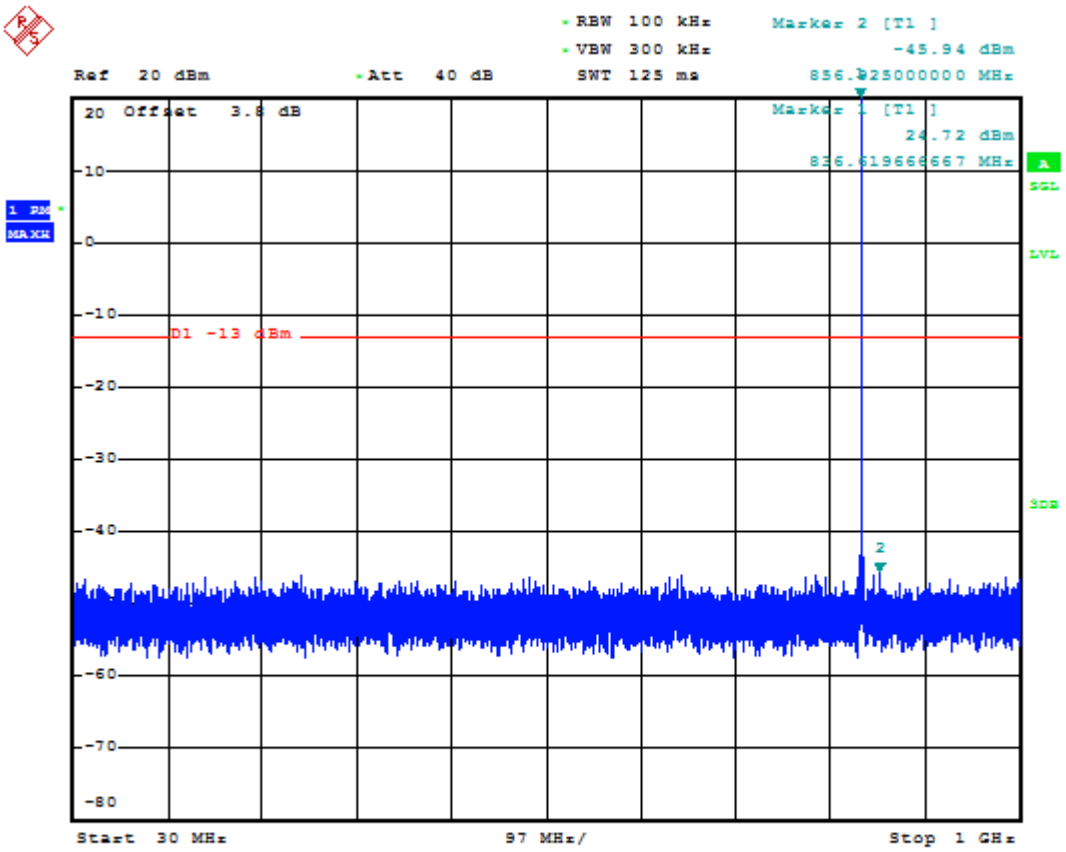
1.1.1.2 Test Channel=MCH



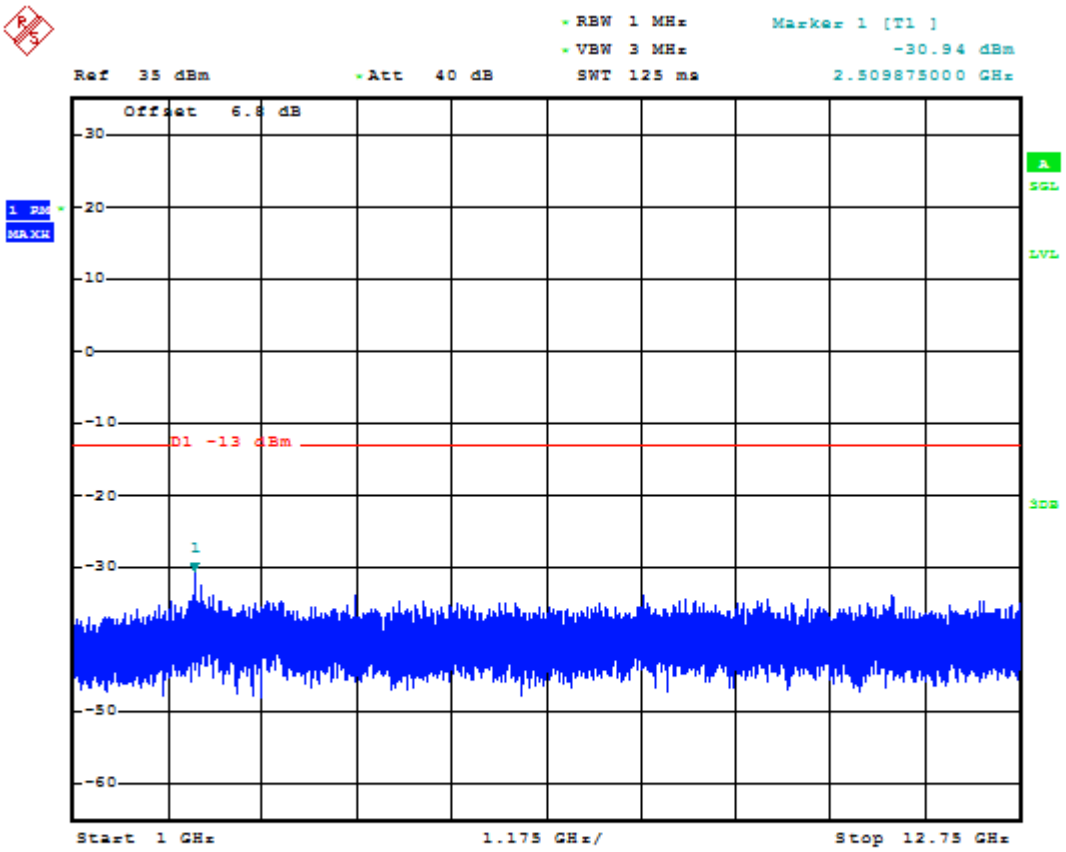
Date: 14.JUN.2020 00:45:46



Date: 14.JUN.2020 00:46:12

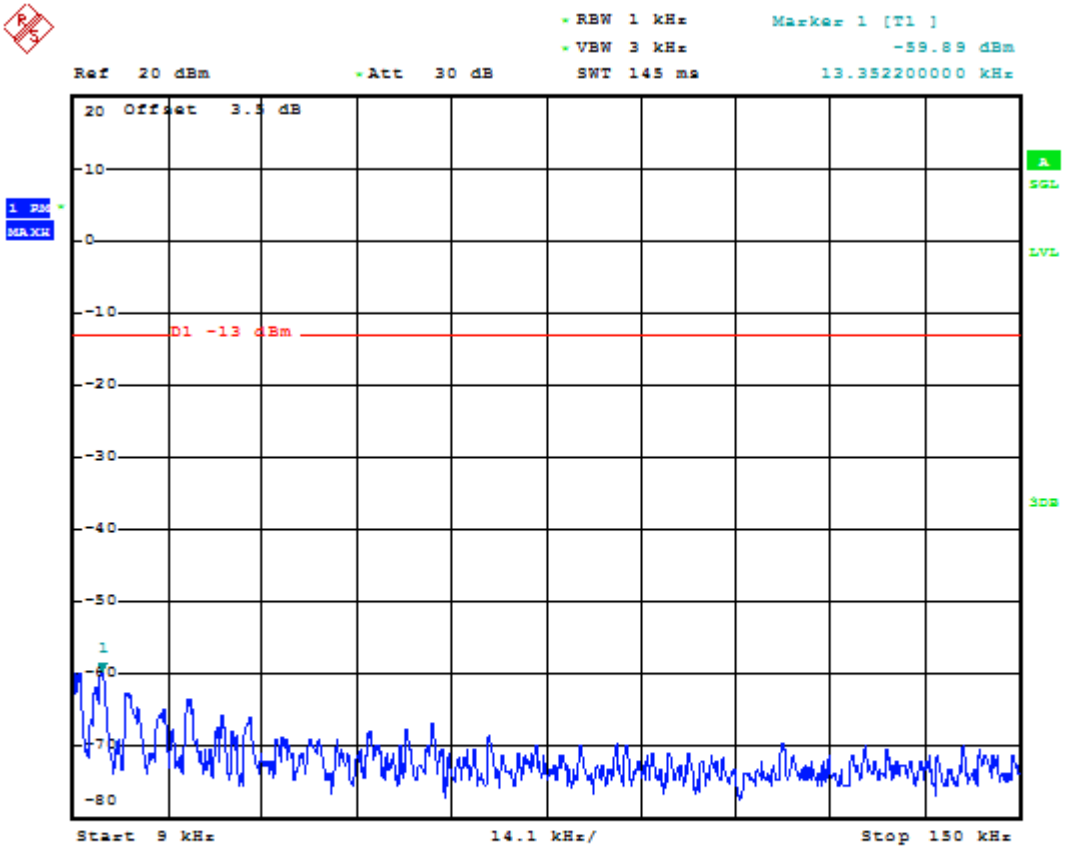


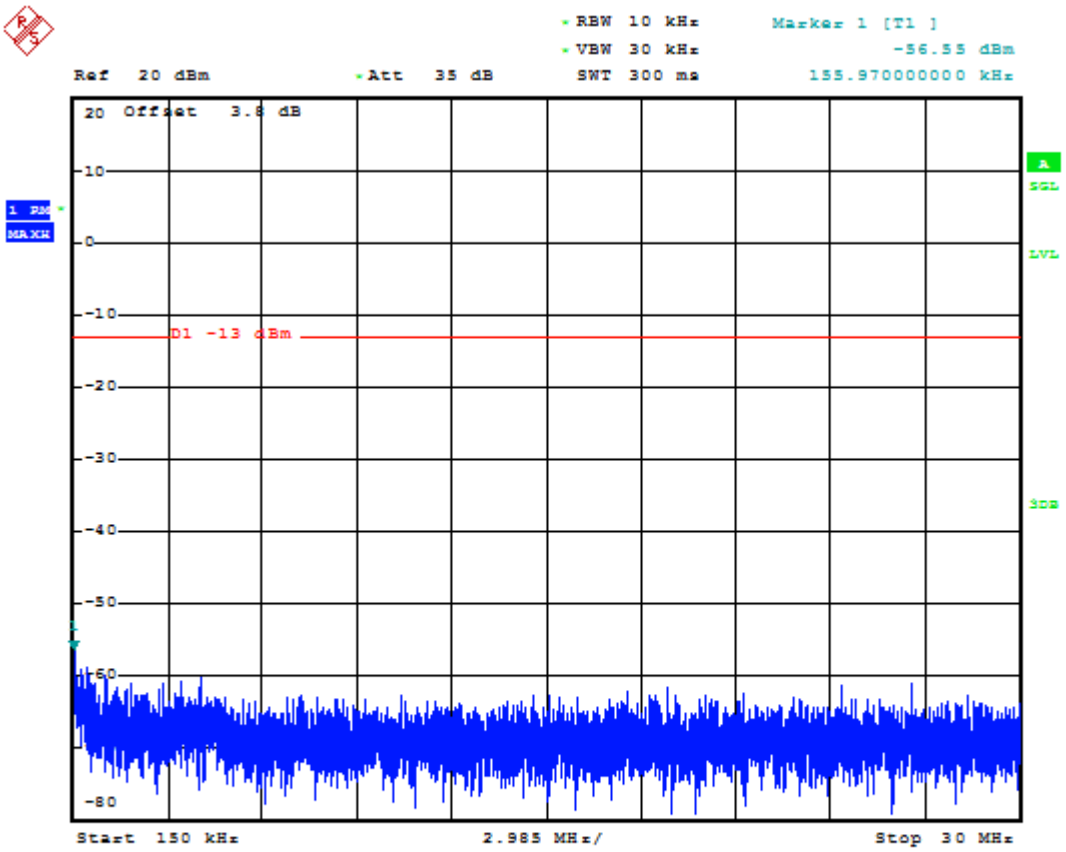
Date: 14.JUN.2020 00:46:23



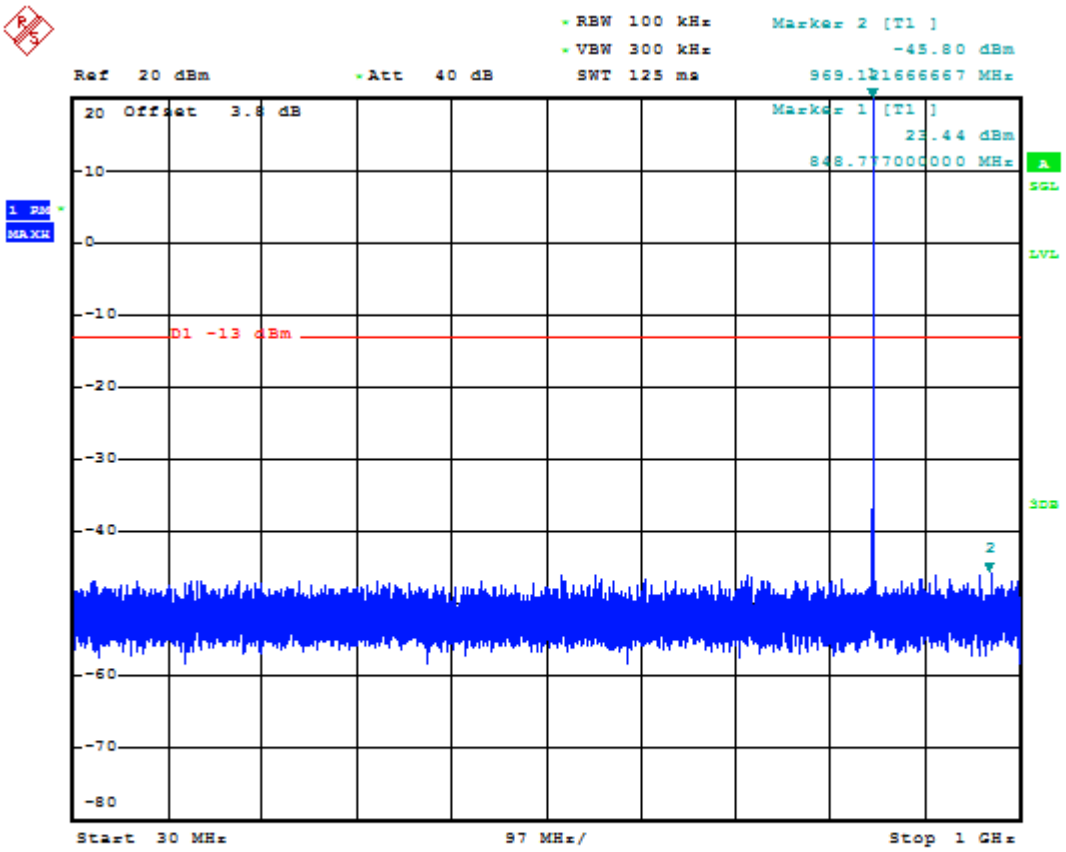
Date: 14.JUN.2020 00:46:34

1.1.1.3 Test Channel=HCH

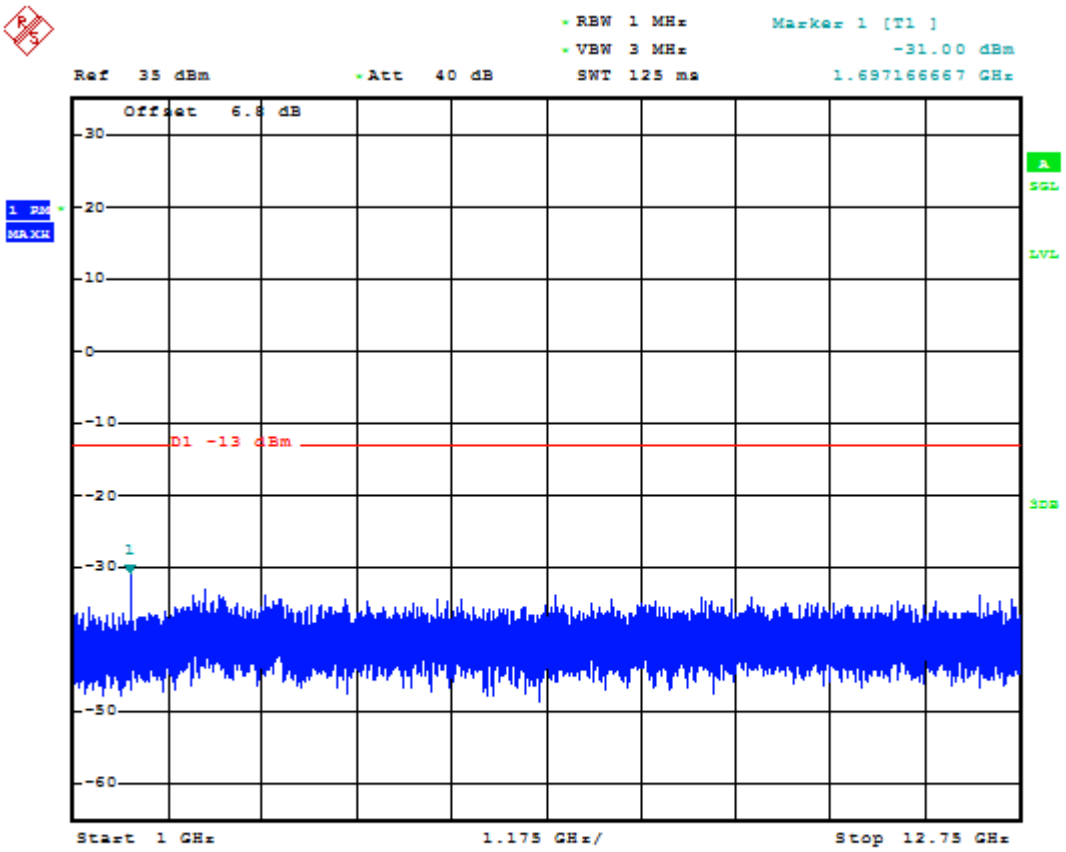




Date: 14.JUN.2020 00:47:09



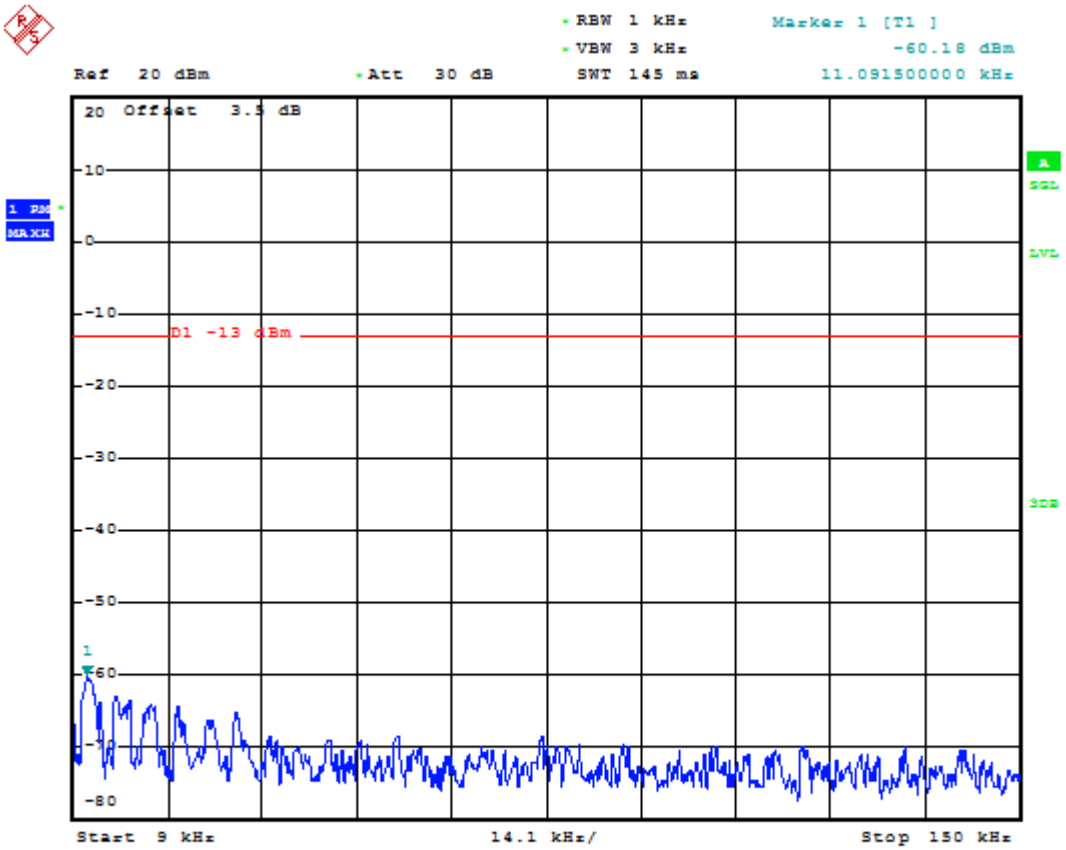
Date: 14.JUN.2020 00:47:20



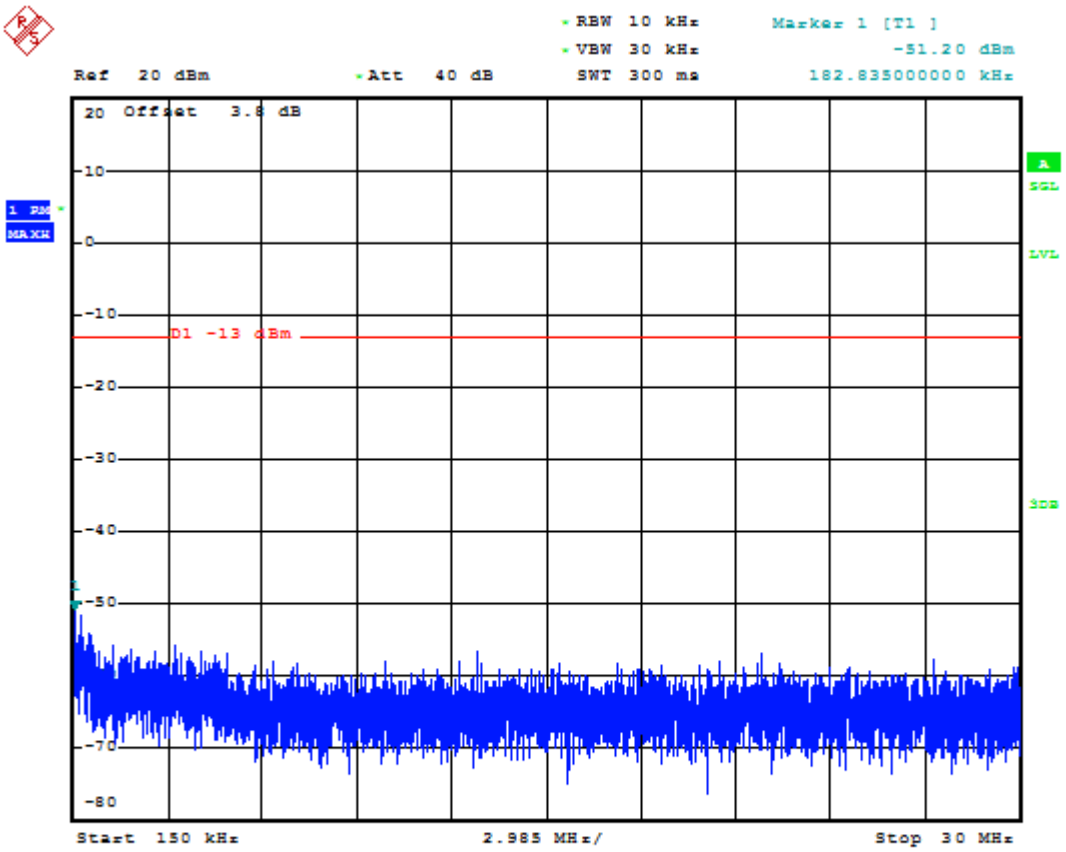
Date: 14.JUN.2020 00:47:30

1.1.2 Test Mode=GSM/TM2

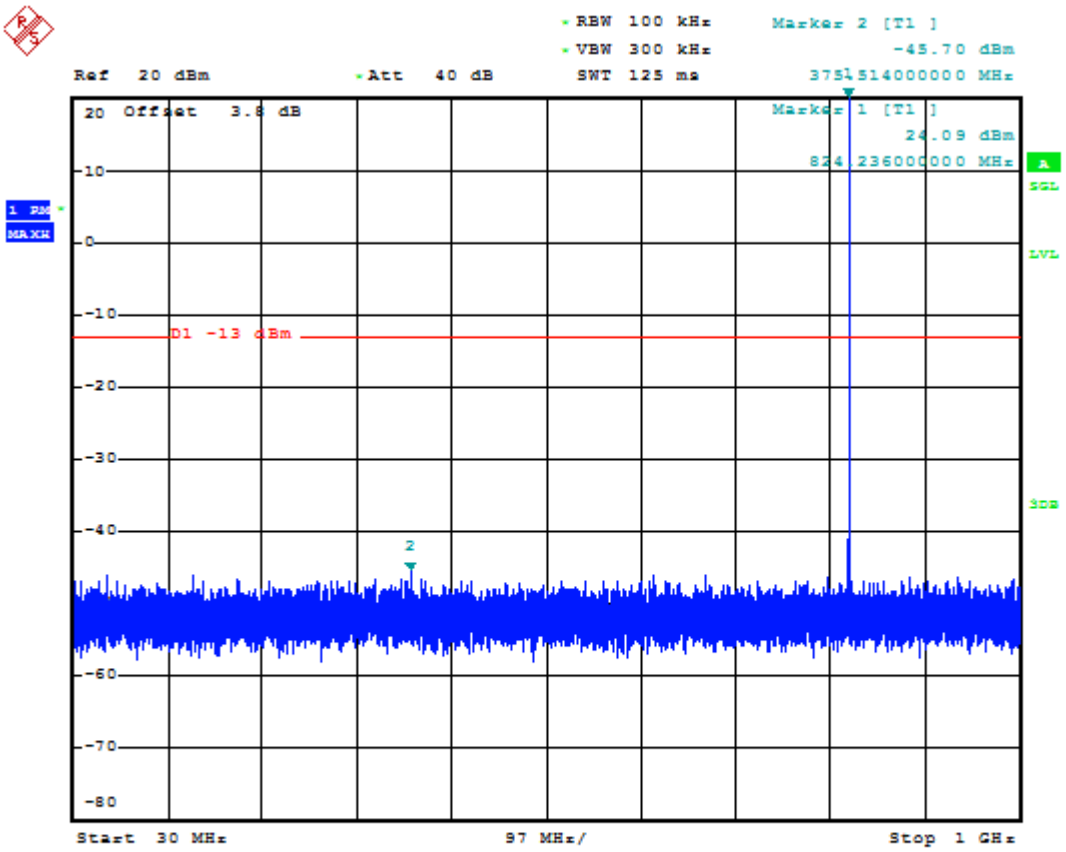
1.1.2.1 Test Channel=LCH



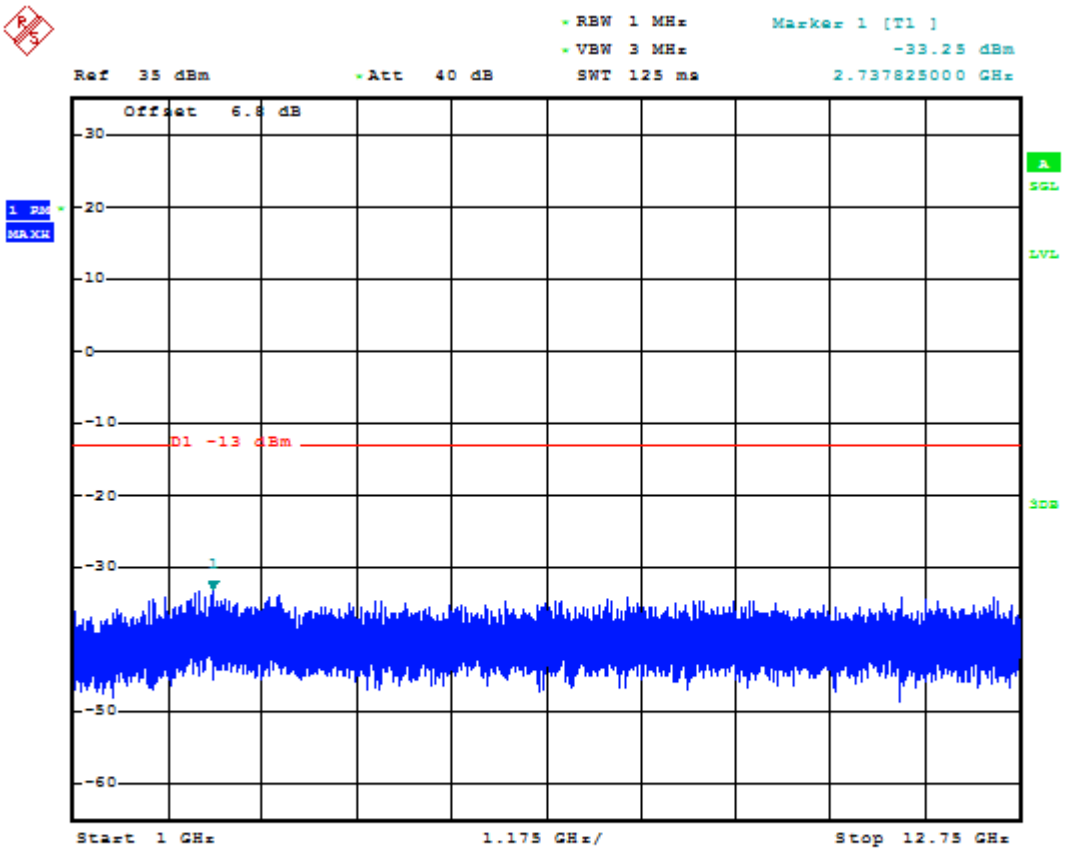
Date: 14.JUN.2020 00:58:11



Date: 14.JUN.2020 00:58:35

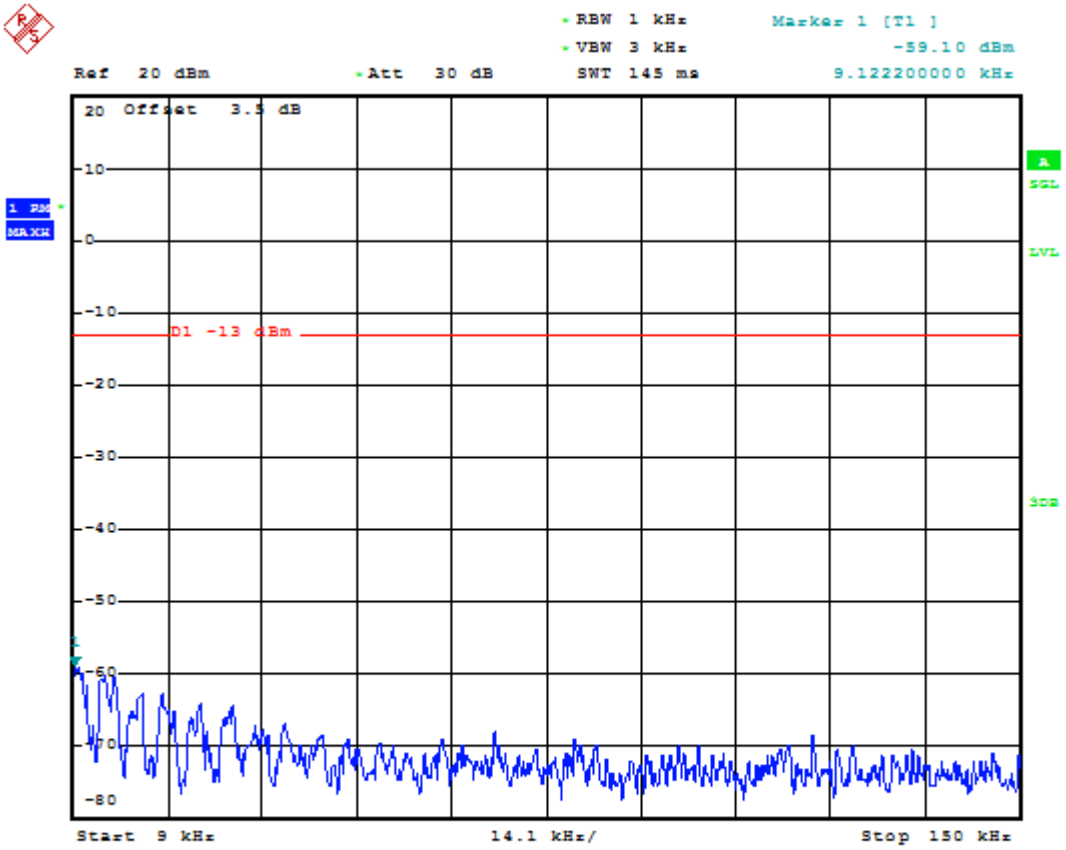


Date: 14.JUN.2020 00:58:46

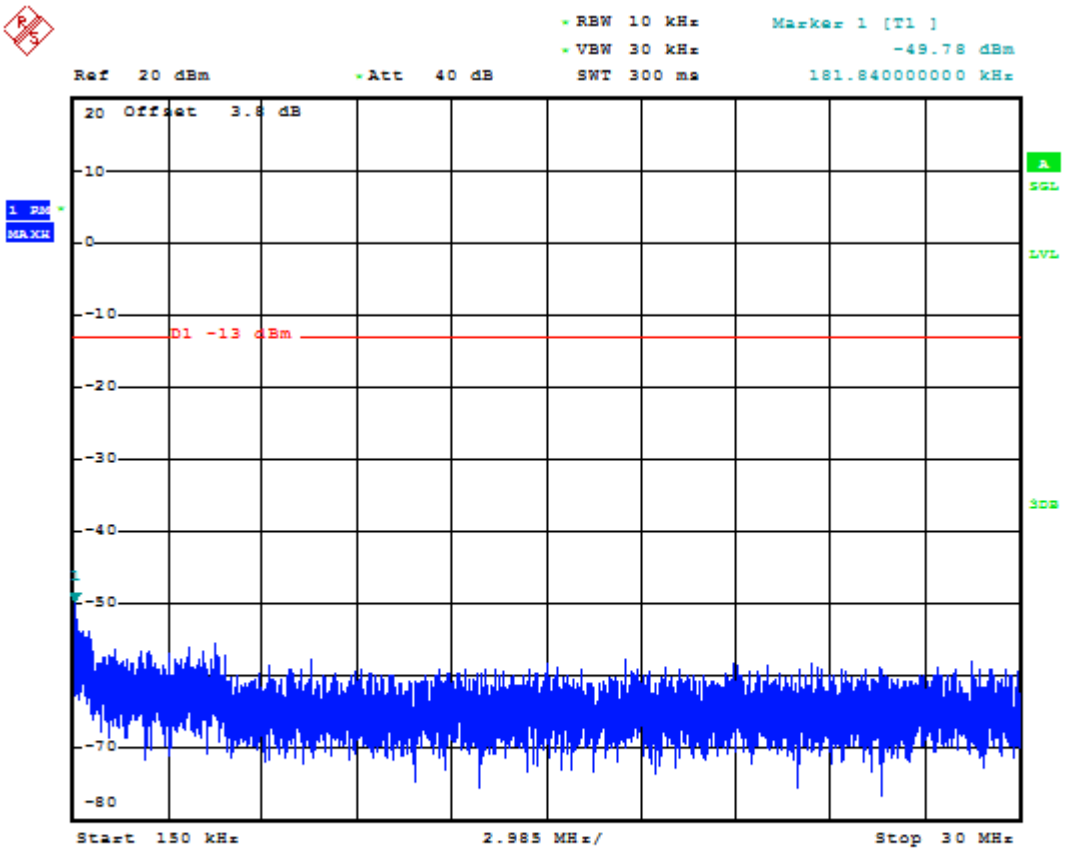


Date: 14.JUN.2020 00:58:55

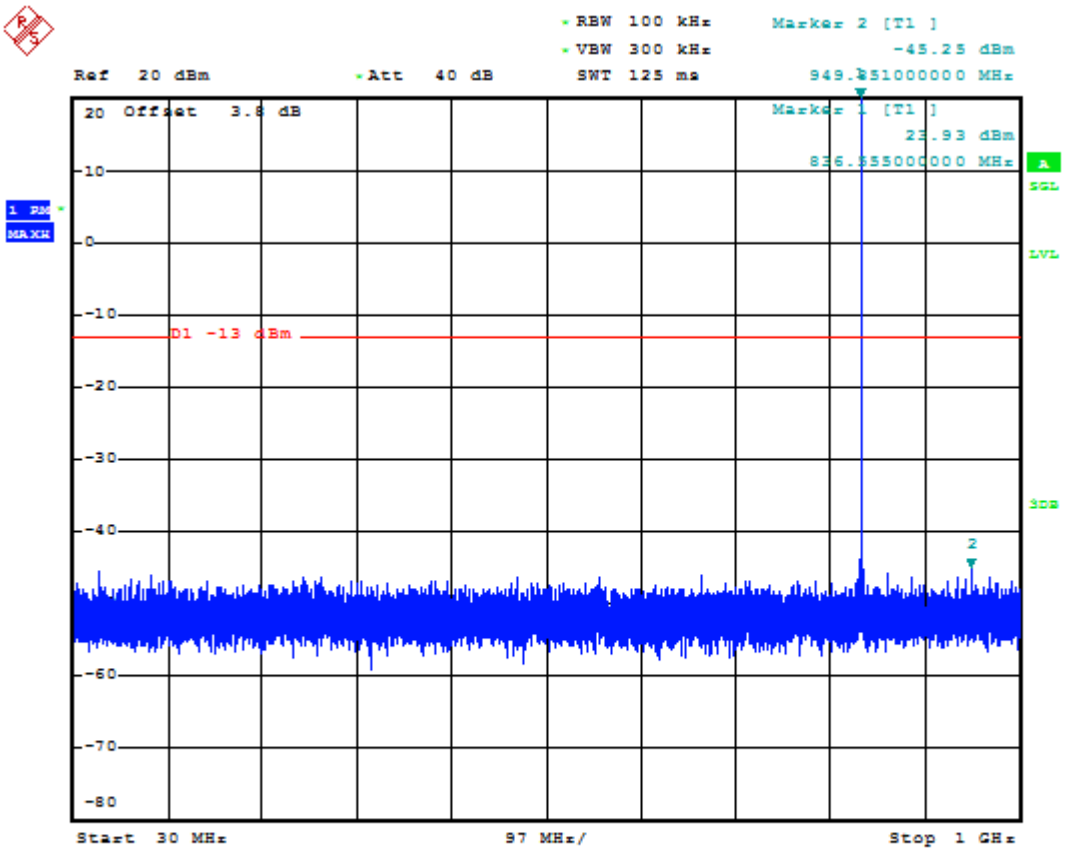
1.1.2.2 Test Channel=MCH



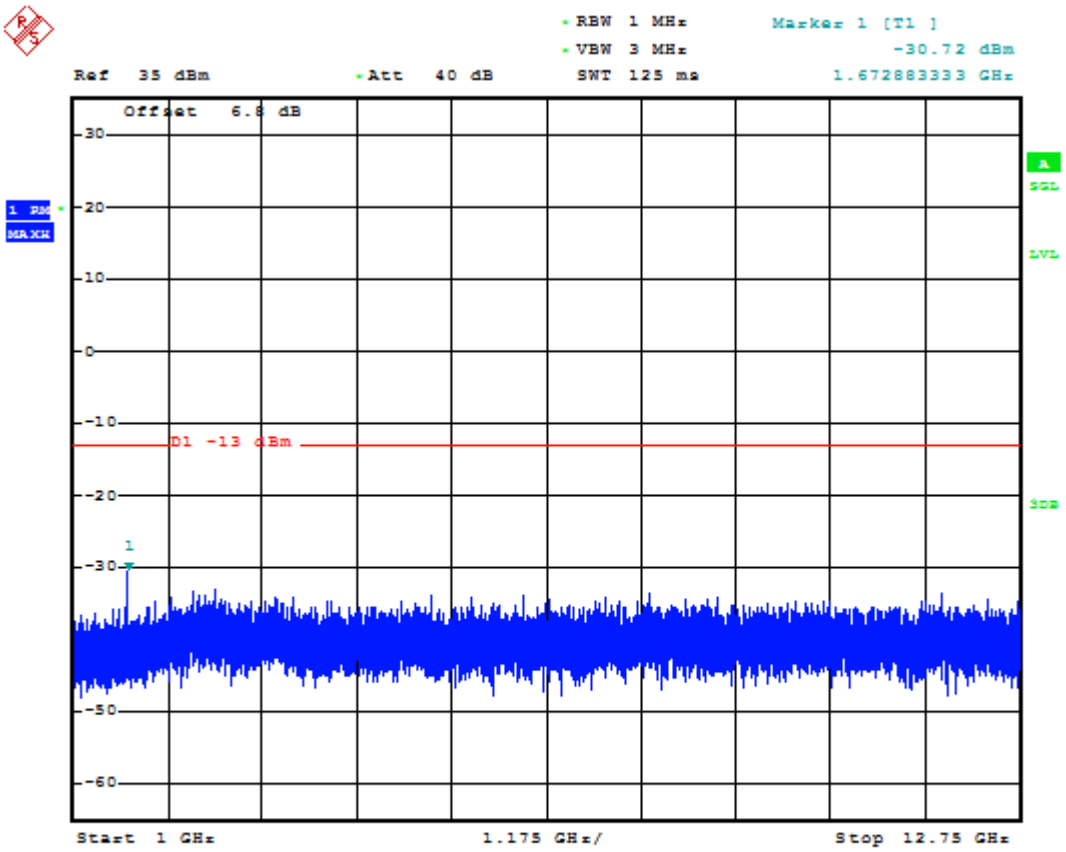
Date: 14.JUN.2020 00:59:12



Date: 14.JUN.2020 00:59:37

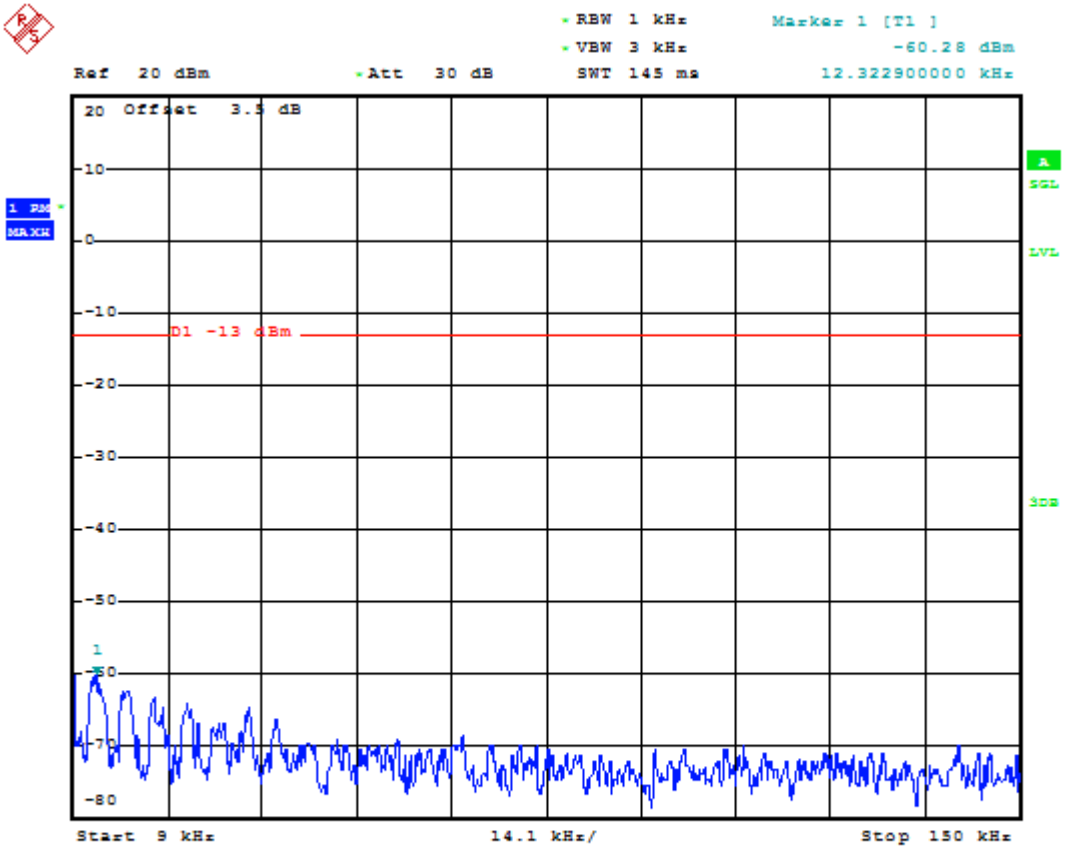


Date: 14.JUN.2020 00:59:47

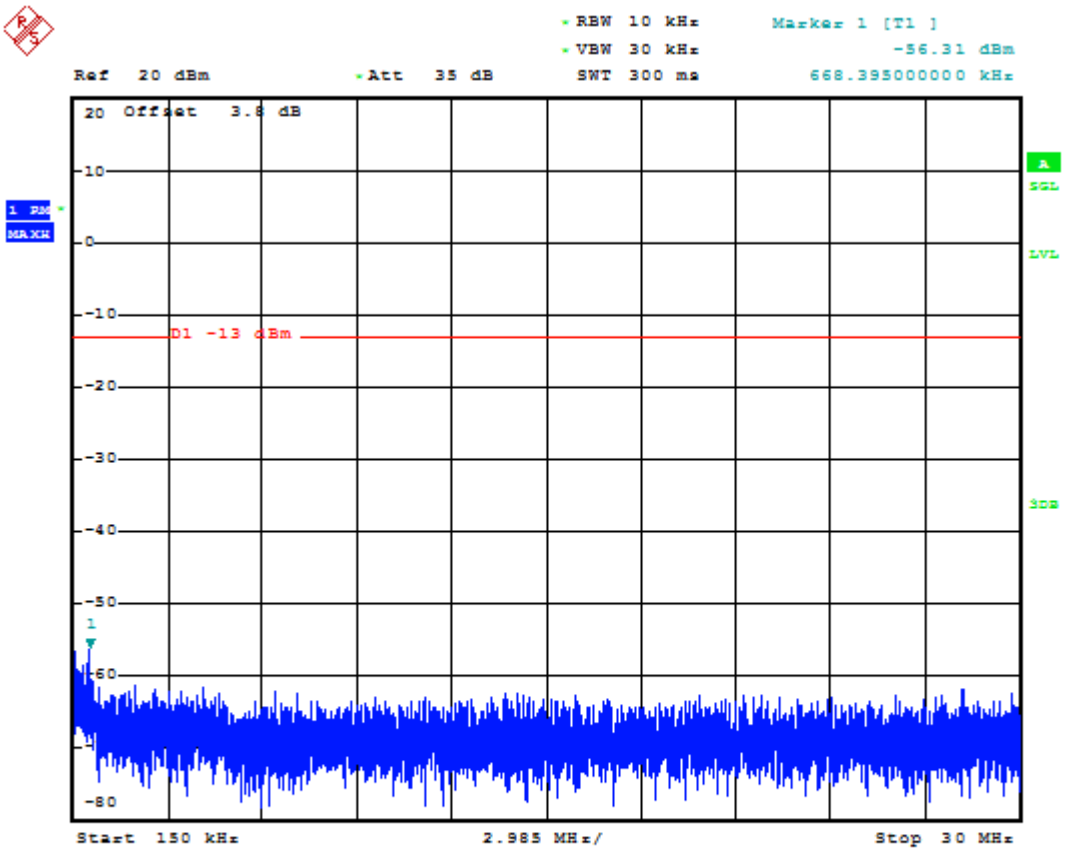


Date: 14.JUN.2020 00:59:56

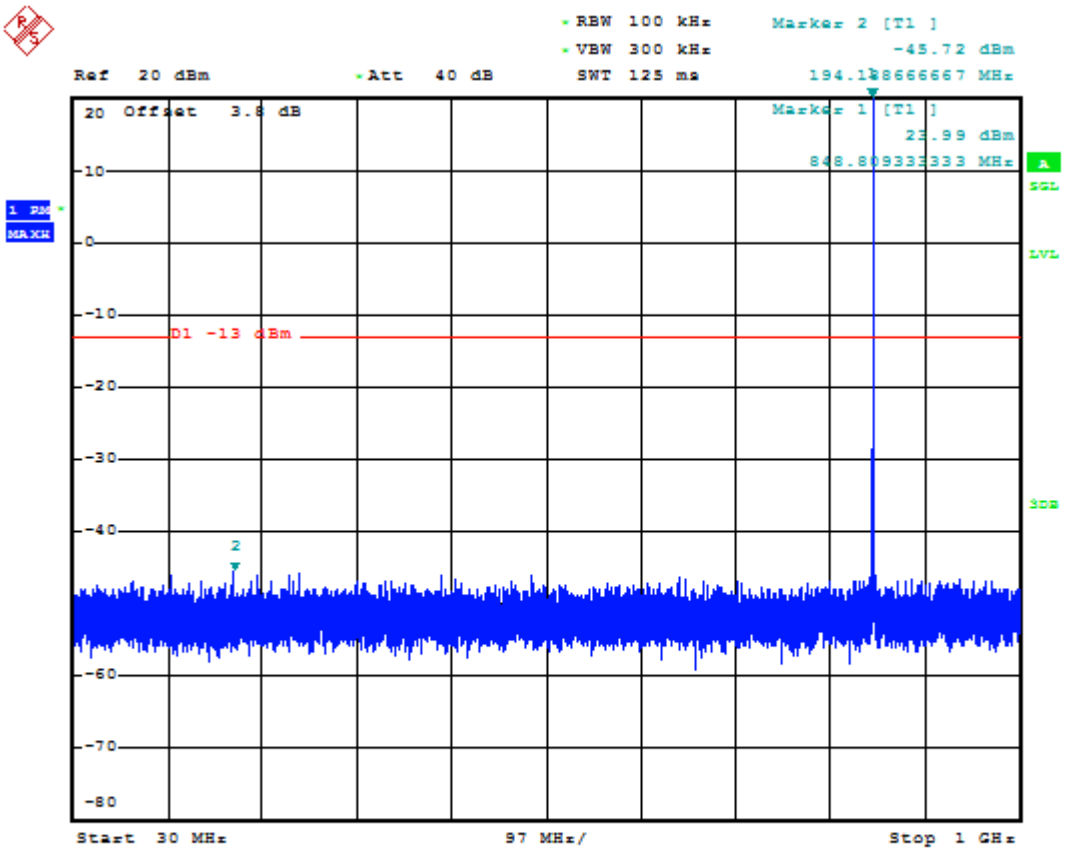
1.1.2.3 Test Channel=HCH



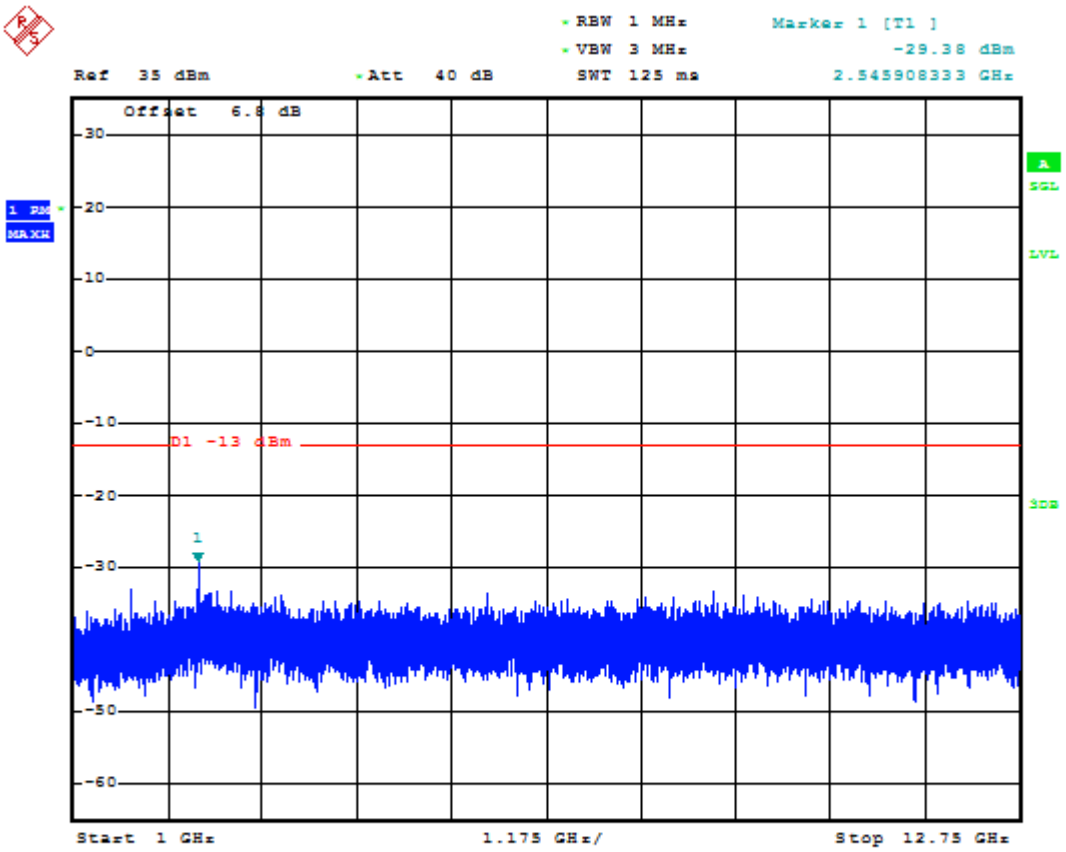
Date: 14.JUN.2020 01:00:13



Date: 14.JUN.2020 01:00:30



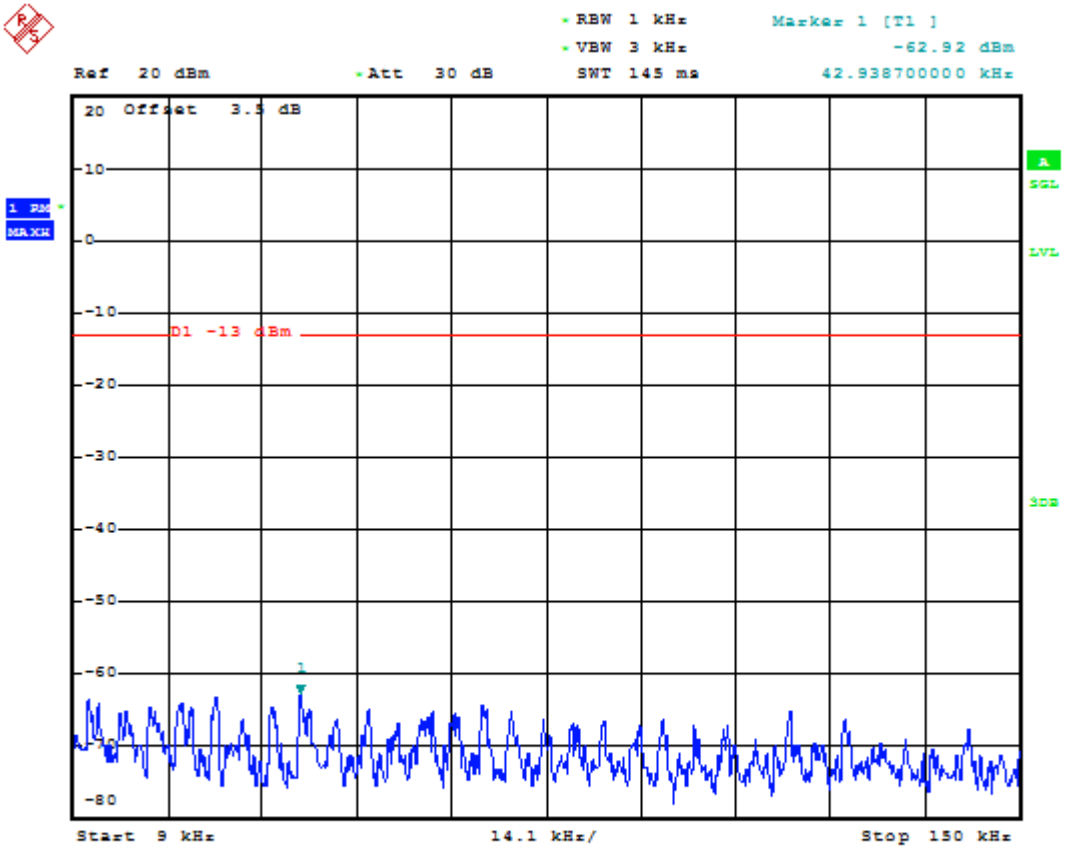
Date: 14.JUN.2020 01:00:40



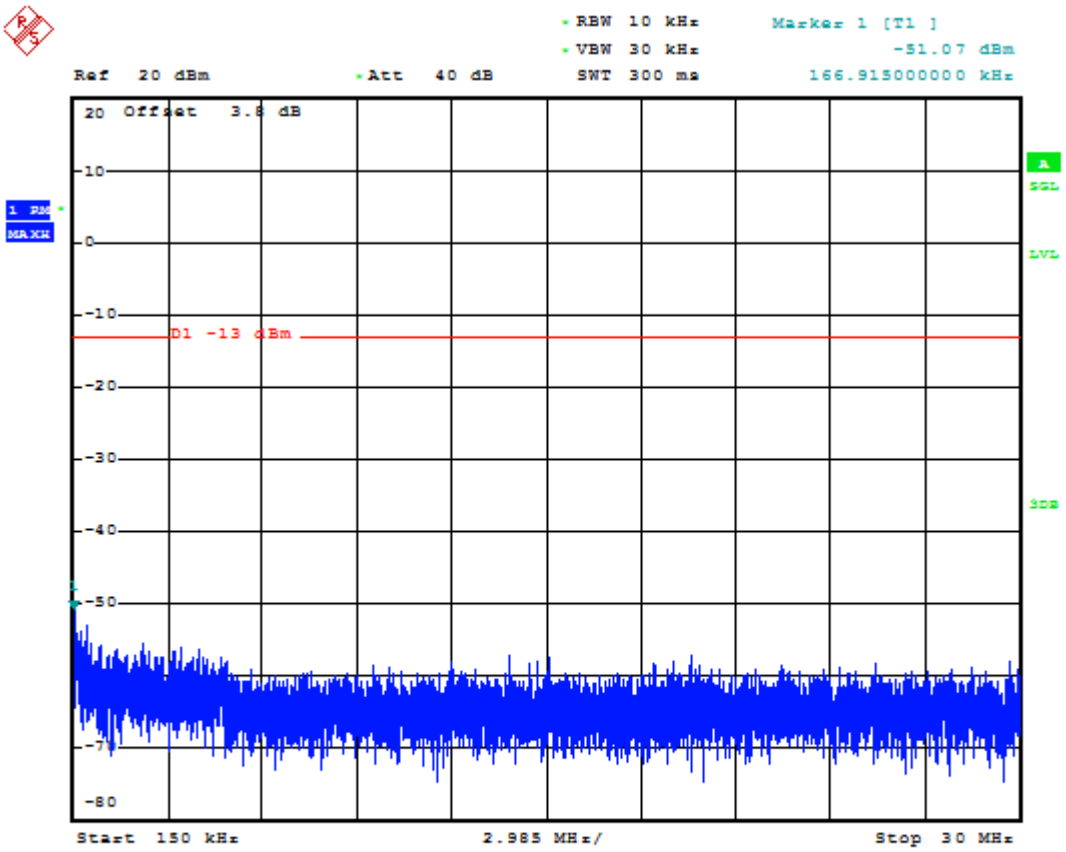
Date: 14.JUN.2020 01:00:49

1.1.3 Test Mode=GSM/TM3

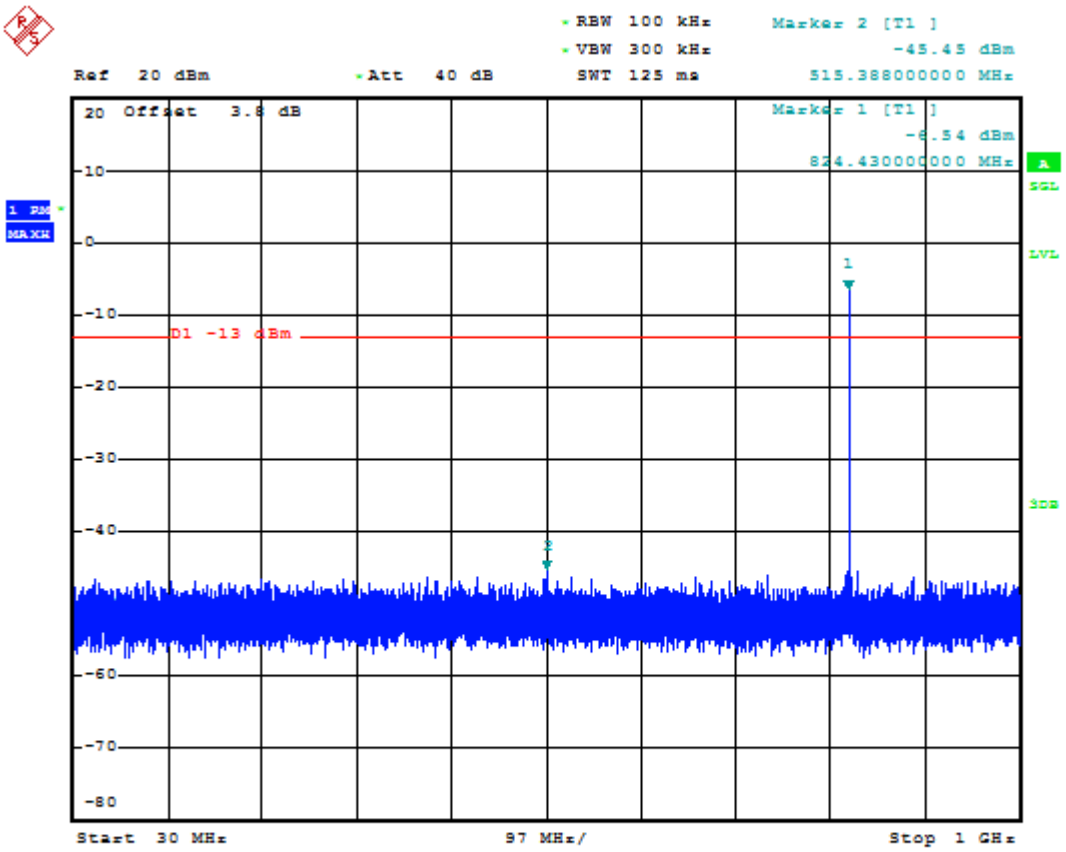
1.1.3.1 Test Channel=LCH



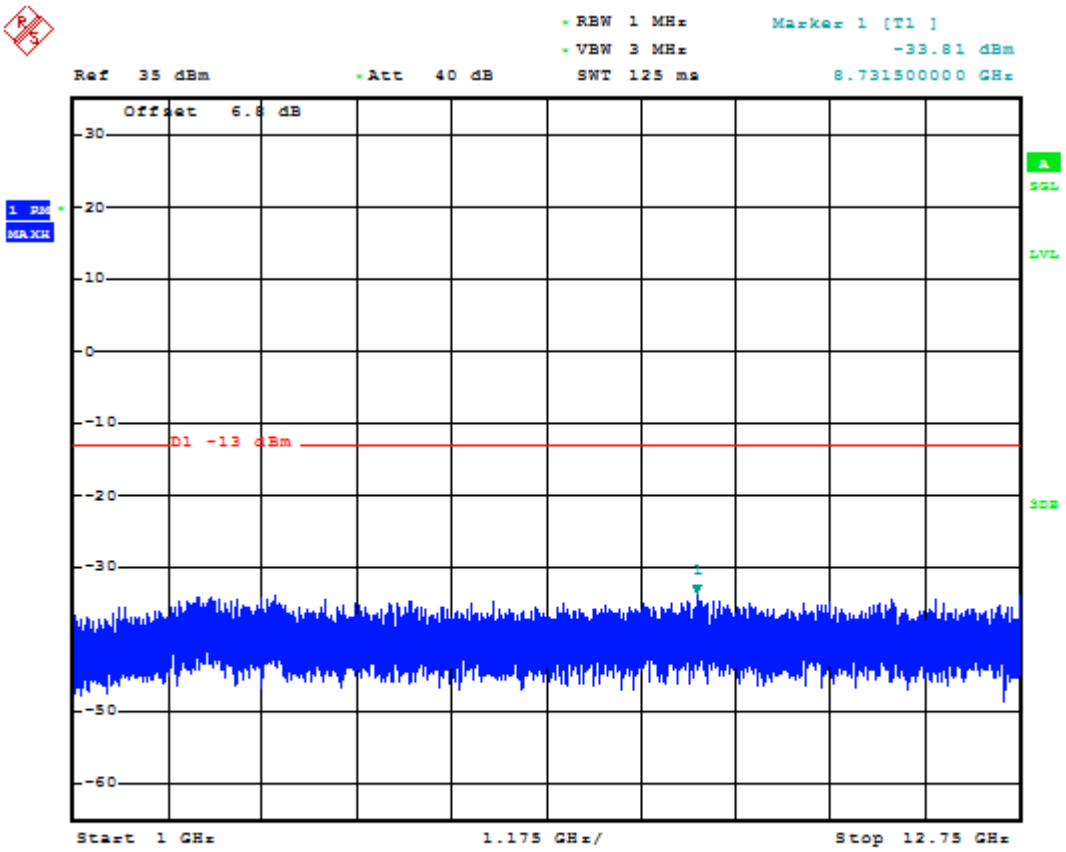
Date: 14.JUN.2020 01:18:42



Date: 14.JUN.2020 01:19:08

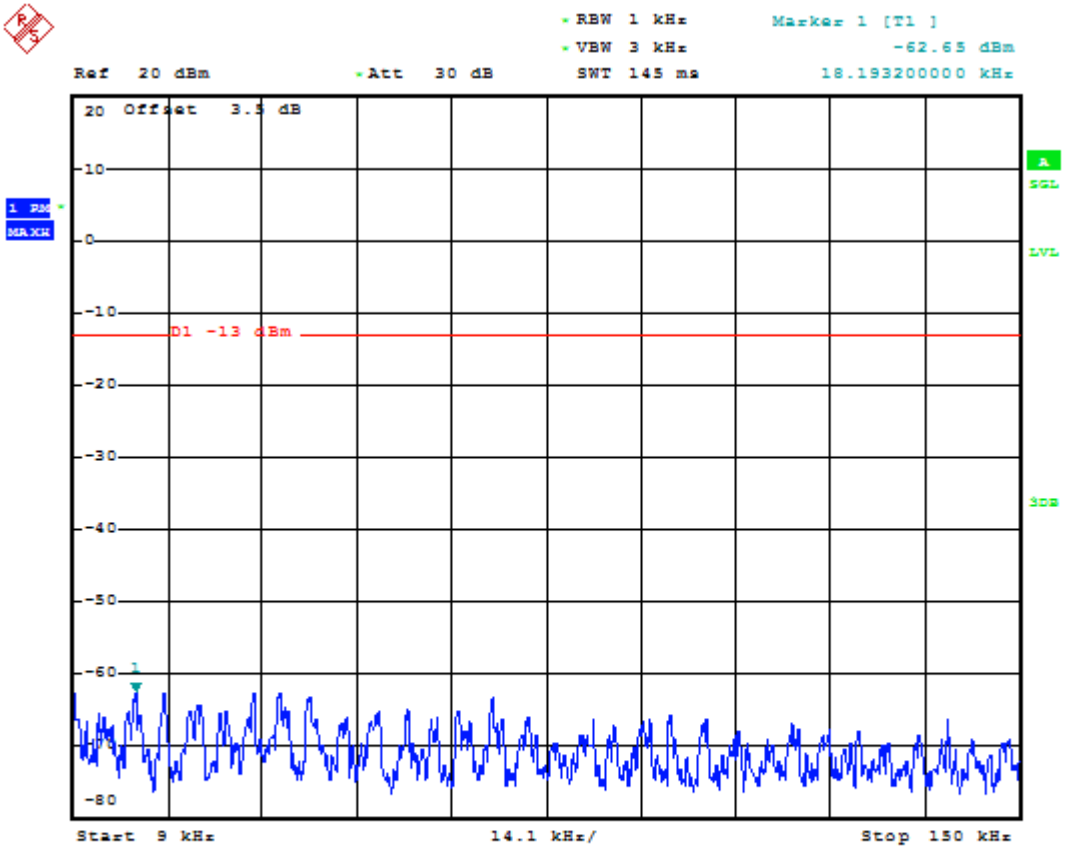


Date: 14.JUN.2020 01:19:18

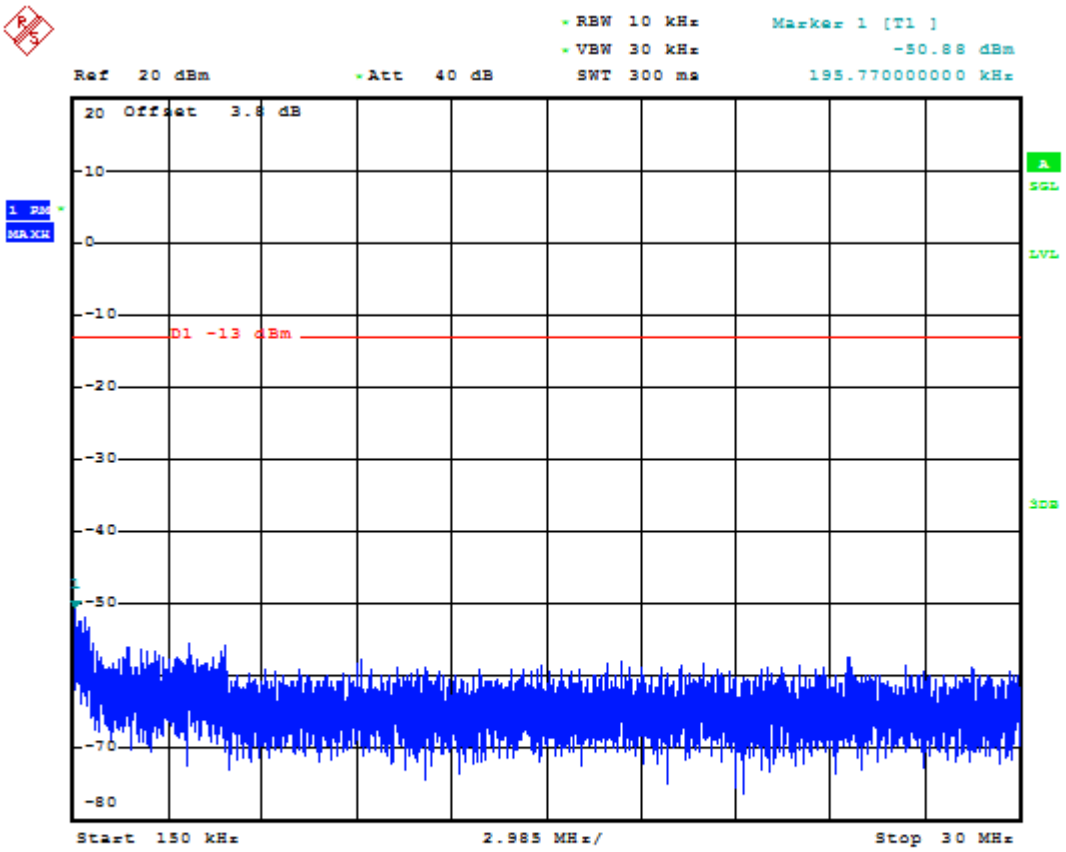


Date: 14.JUN.2020 01:19:28

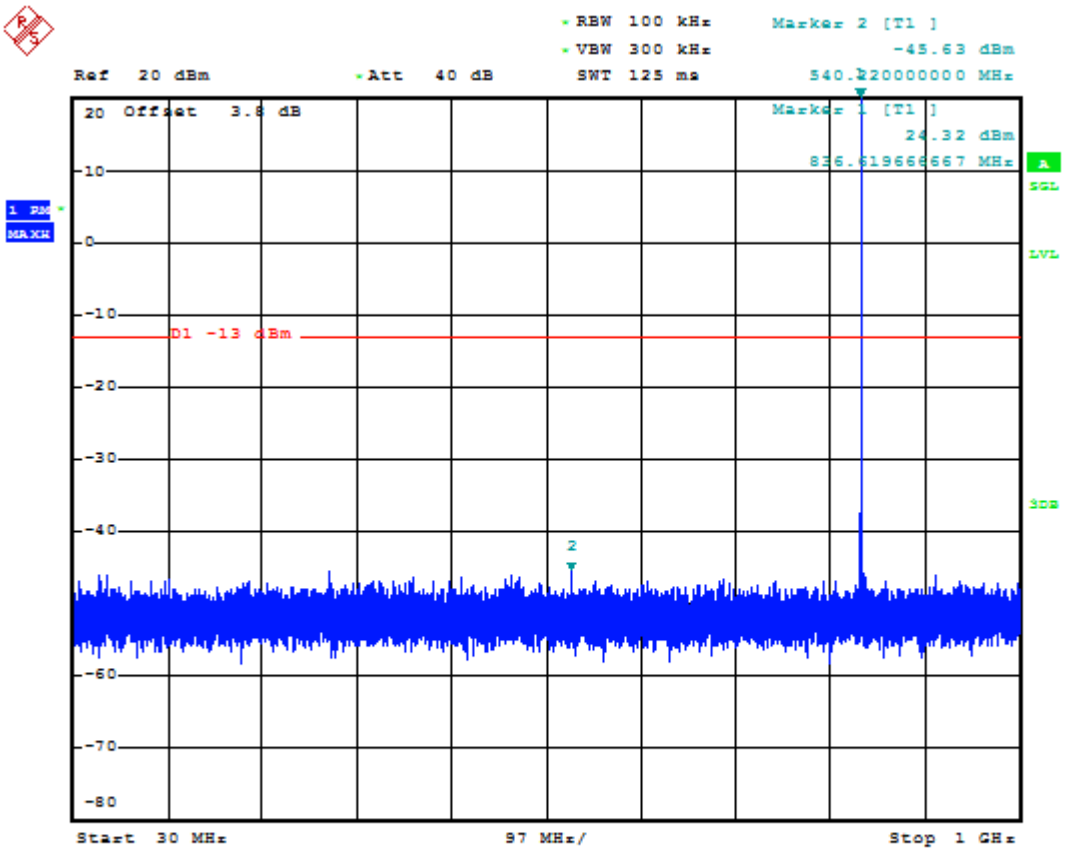
1.1.3.2 Test Channel=MCH



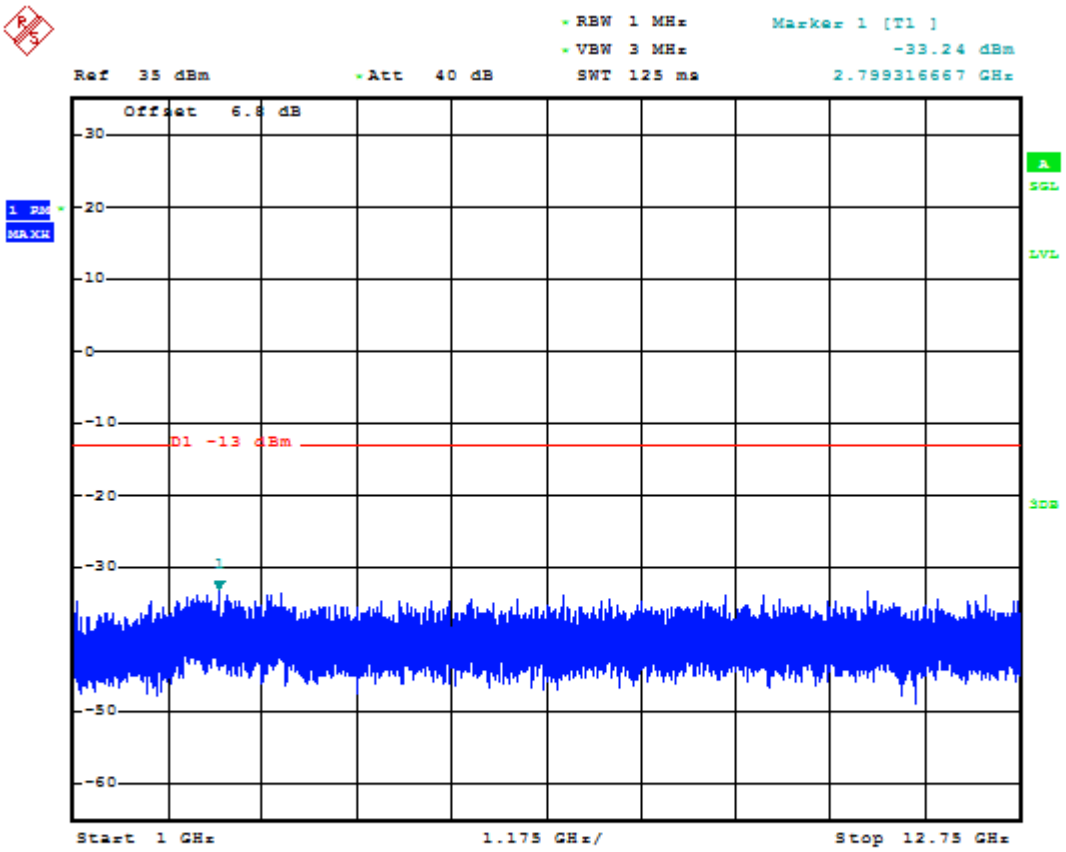
Date: 14.JUN.2020 01:19:45



Date: 14.JUN.2020 01:20:11

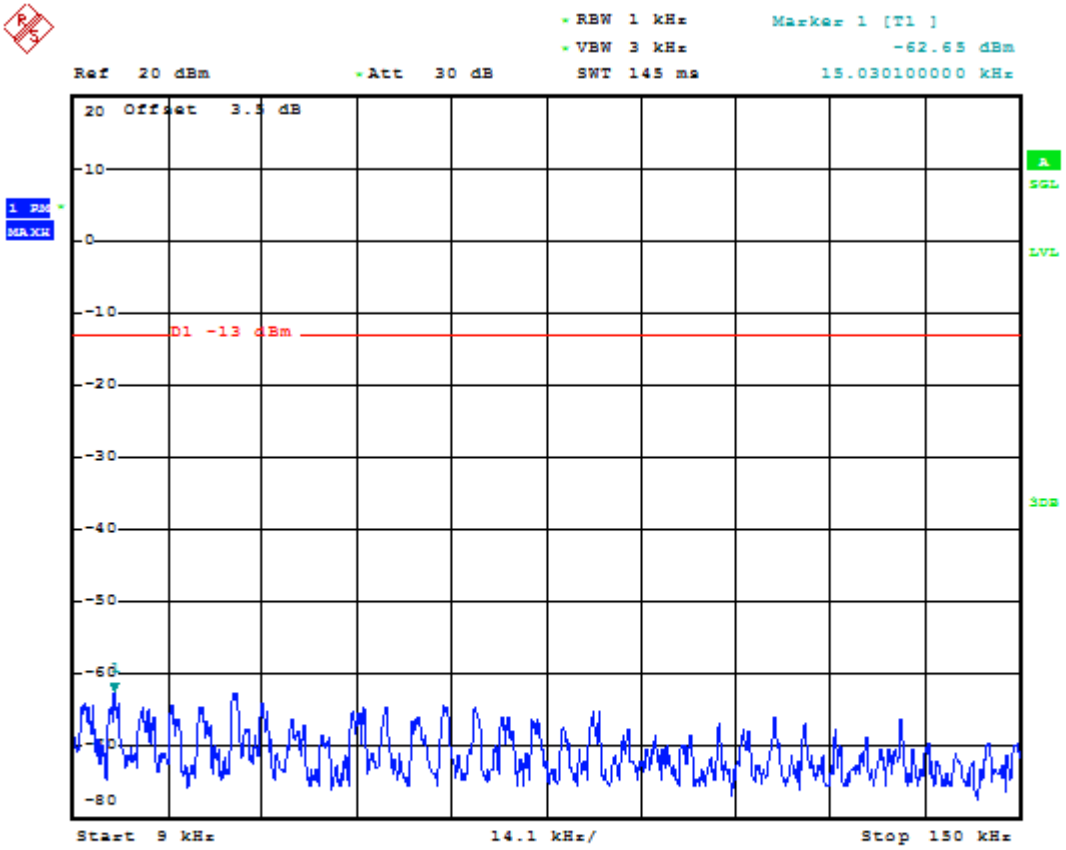


Date: 14.JUN.2020 01:20:22

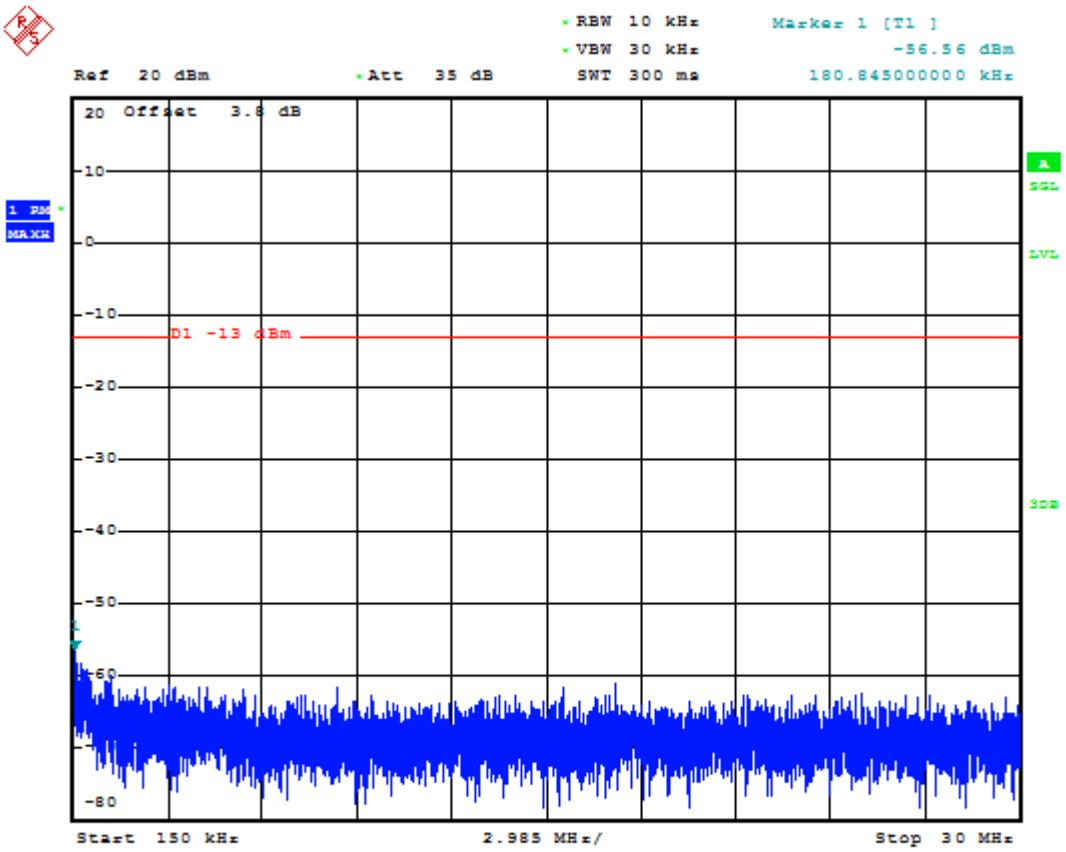


Date: 14.JUN.2020 01:20:31

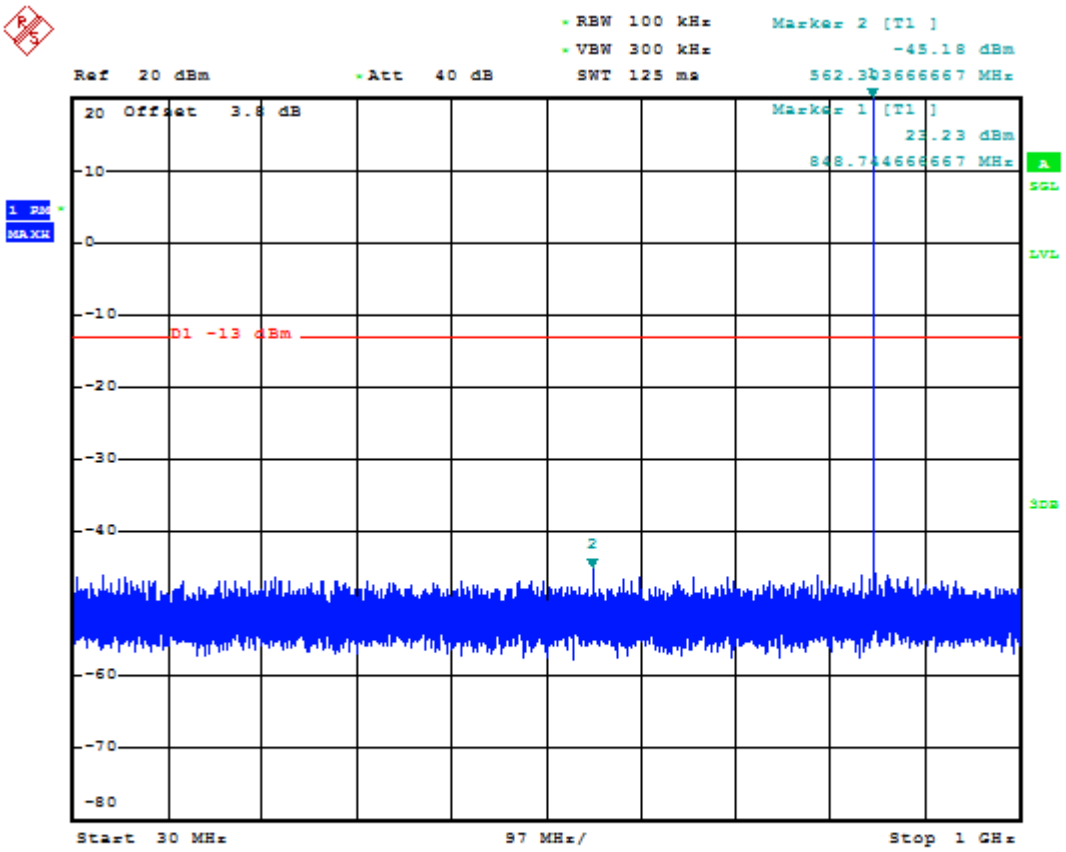
1.1.3.3 Test Channel=HCH



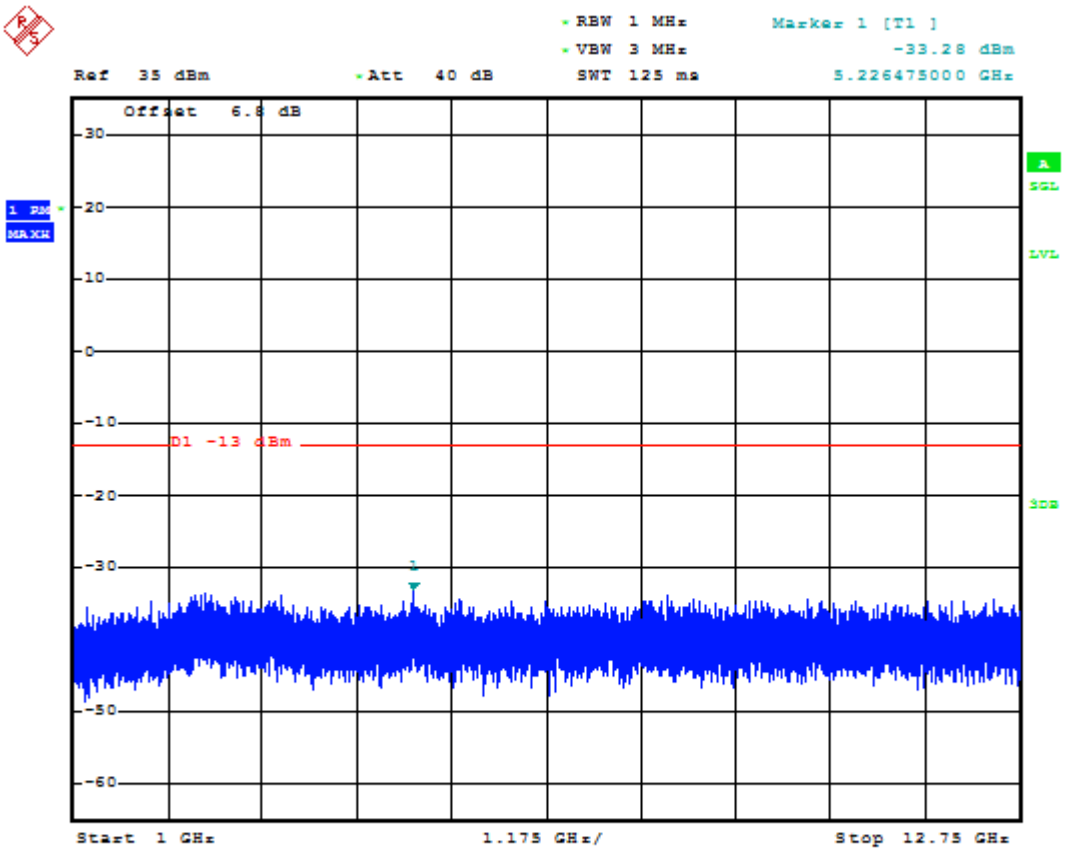
Date: 14.JUN.2020 01:20:49



Date: 14.JUN.2020 01:21:06



Date: 14.JUN.2020 01:21:17

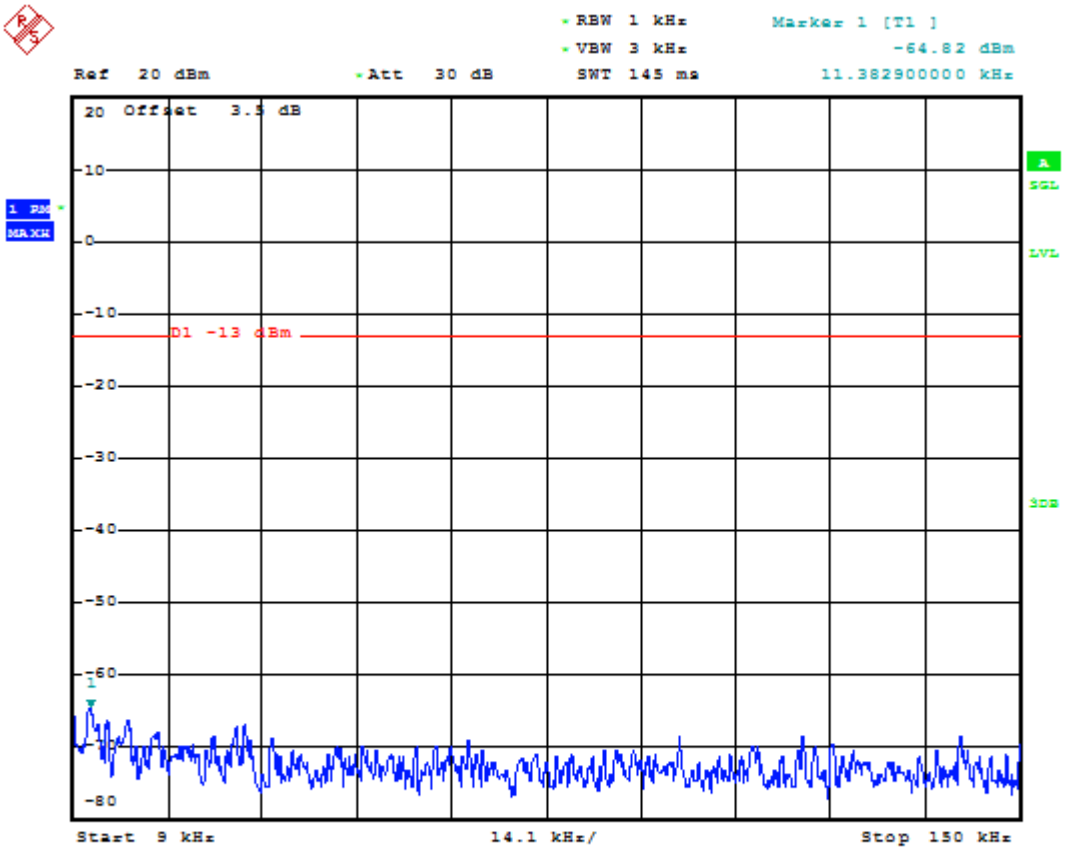


Date: 14.JUN.2020 01:21:26

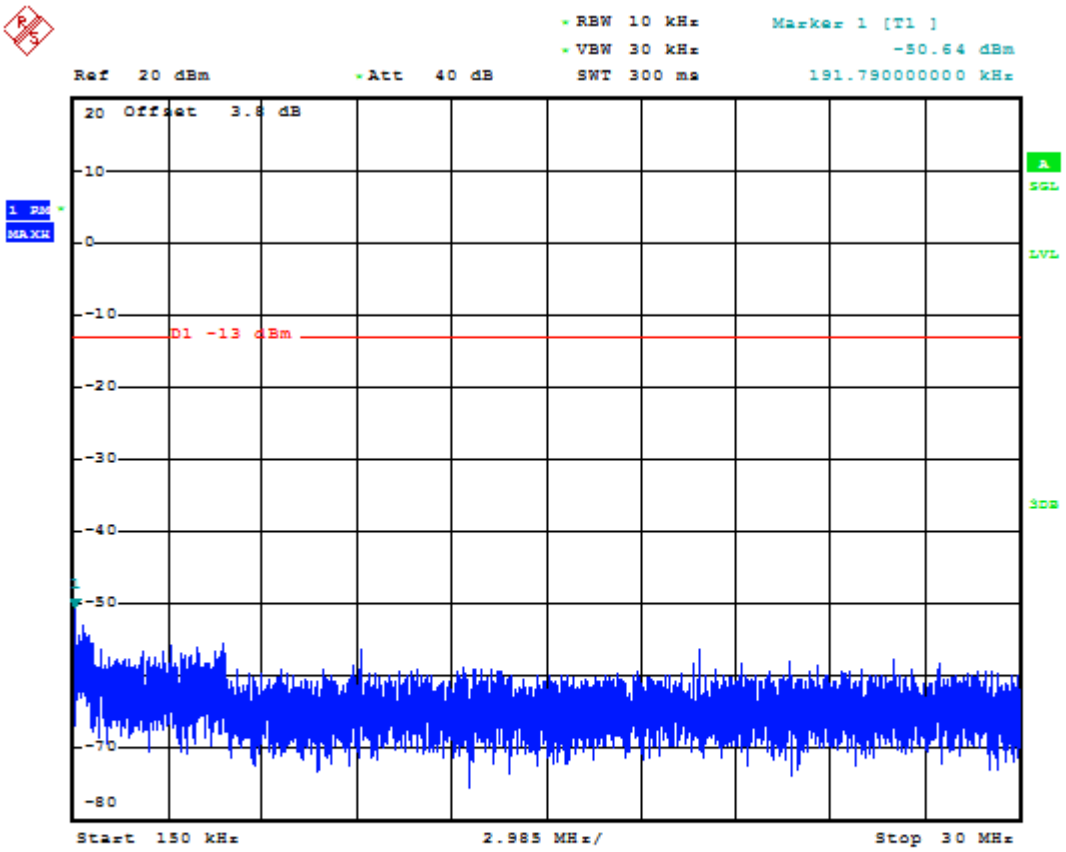
1.2 Test Band=GSM1900

1.2.1 Test Mode=GSM/TM1

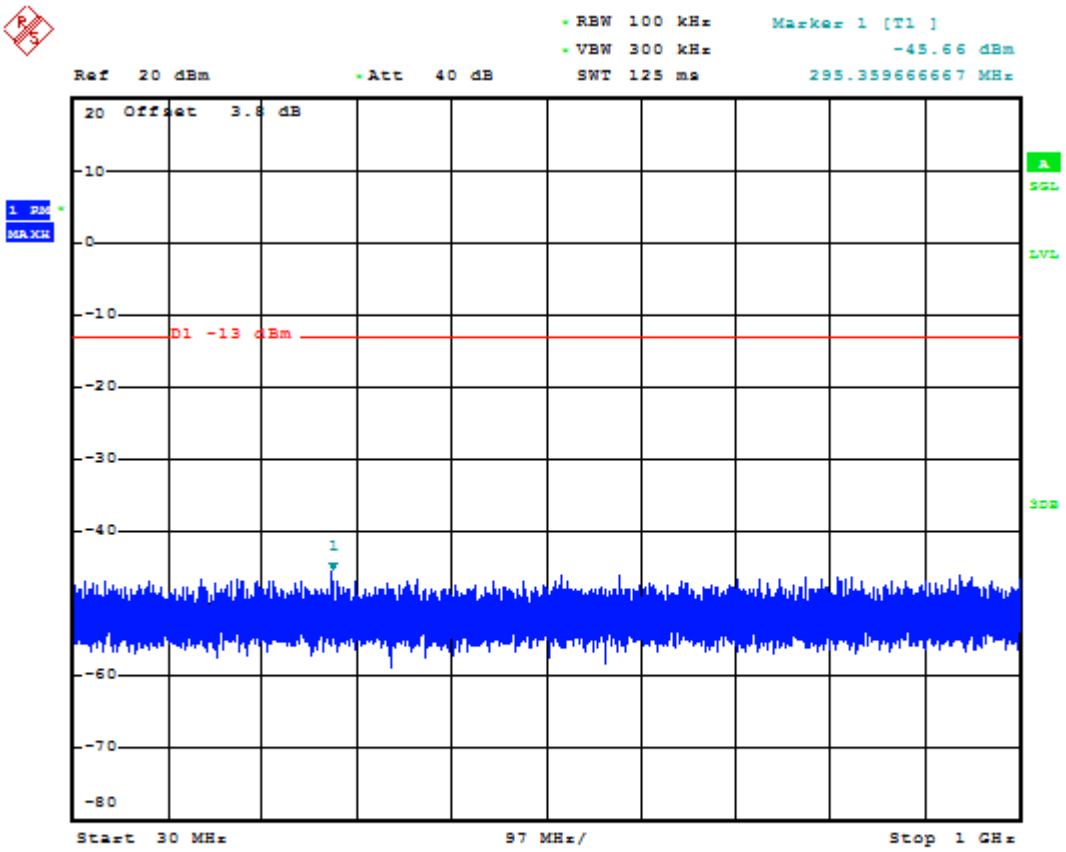
1.2.1.1 Test Channel=LCH



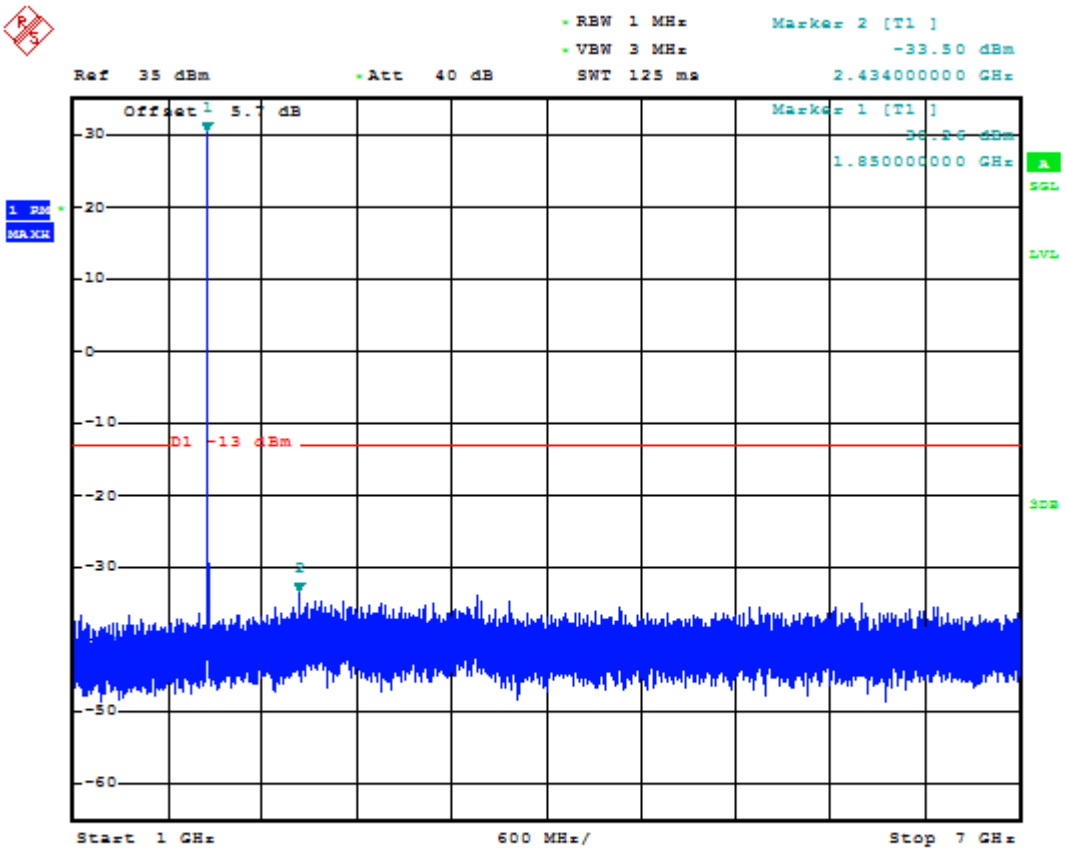
Date: 14.JUN.2020 01:36:30



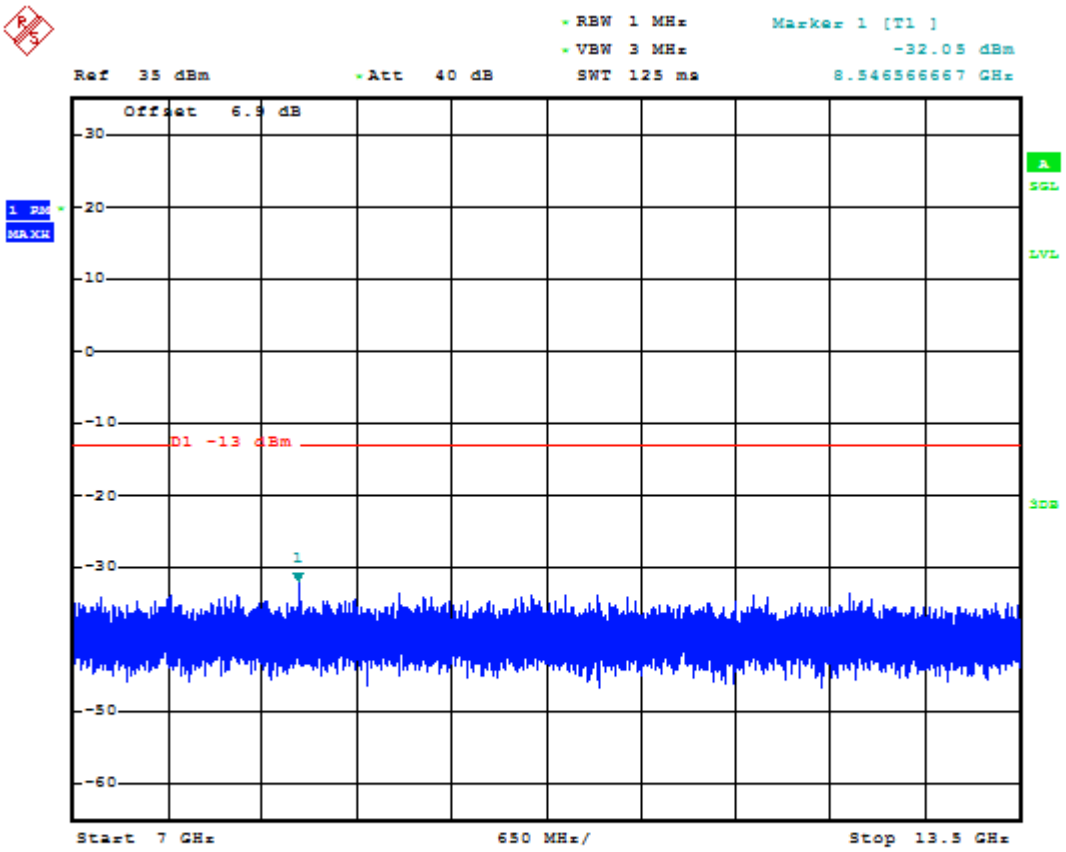
Date: 14.JUN.2020 01:36:57



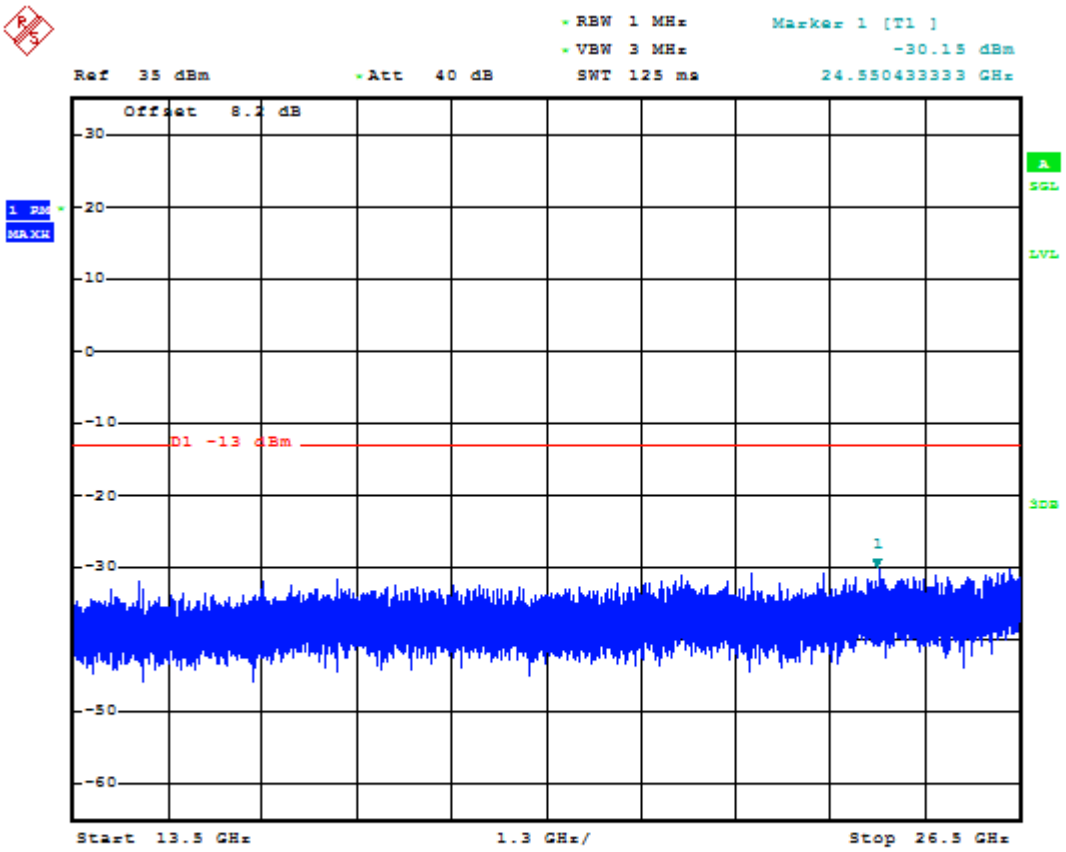
Date: 14.JUN.2020 01:37:07



Date: 14.JUN.2020 01:37:18

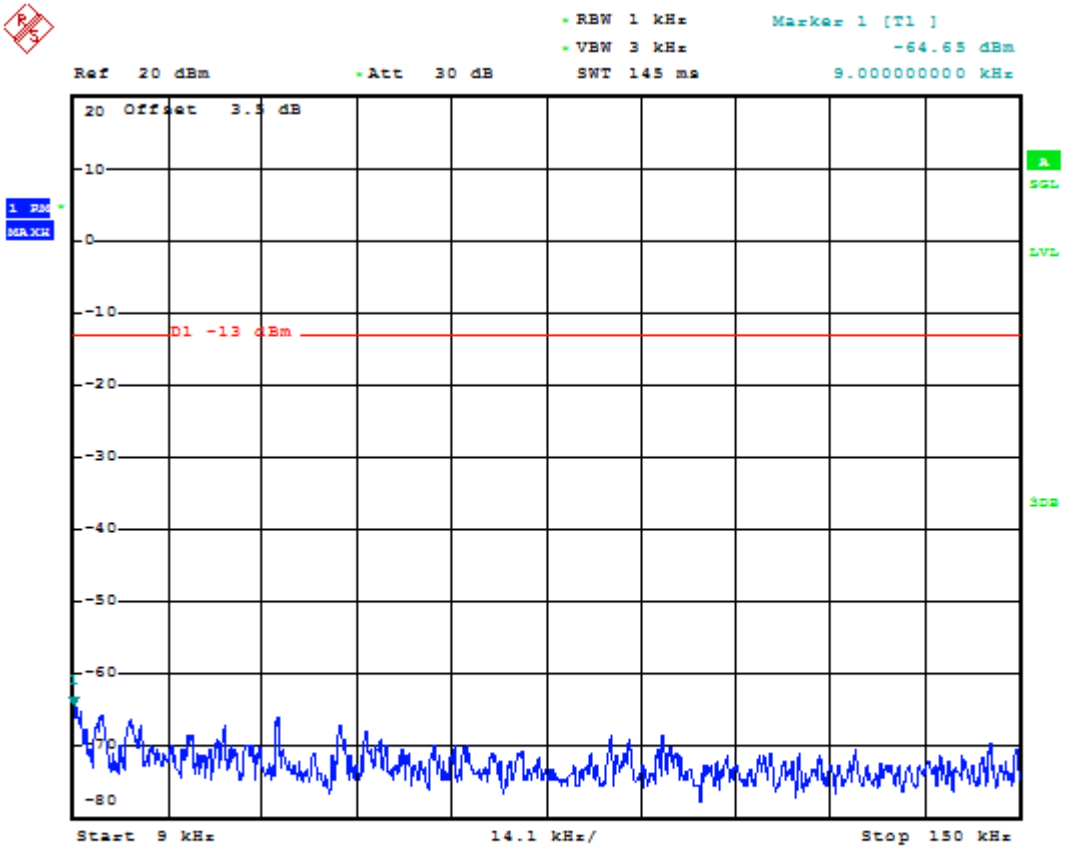


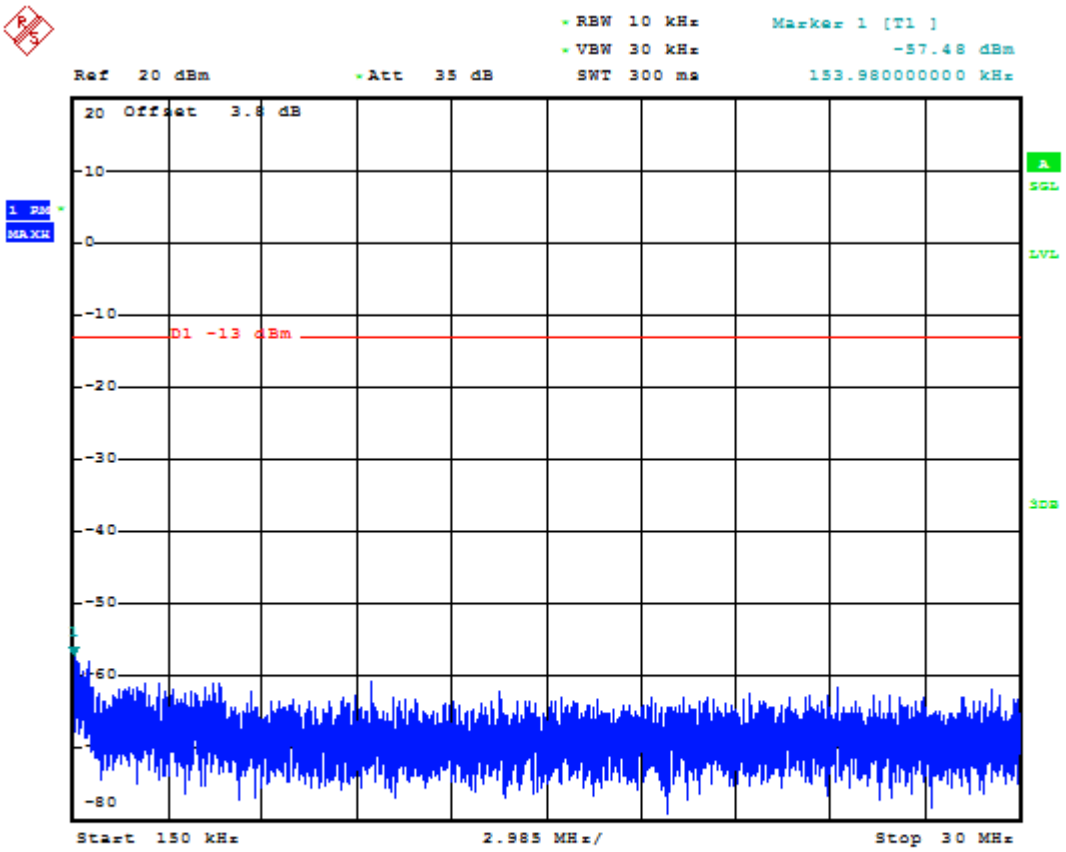
Date: 14.JUN.2020 01:37:28



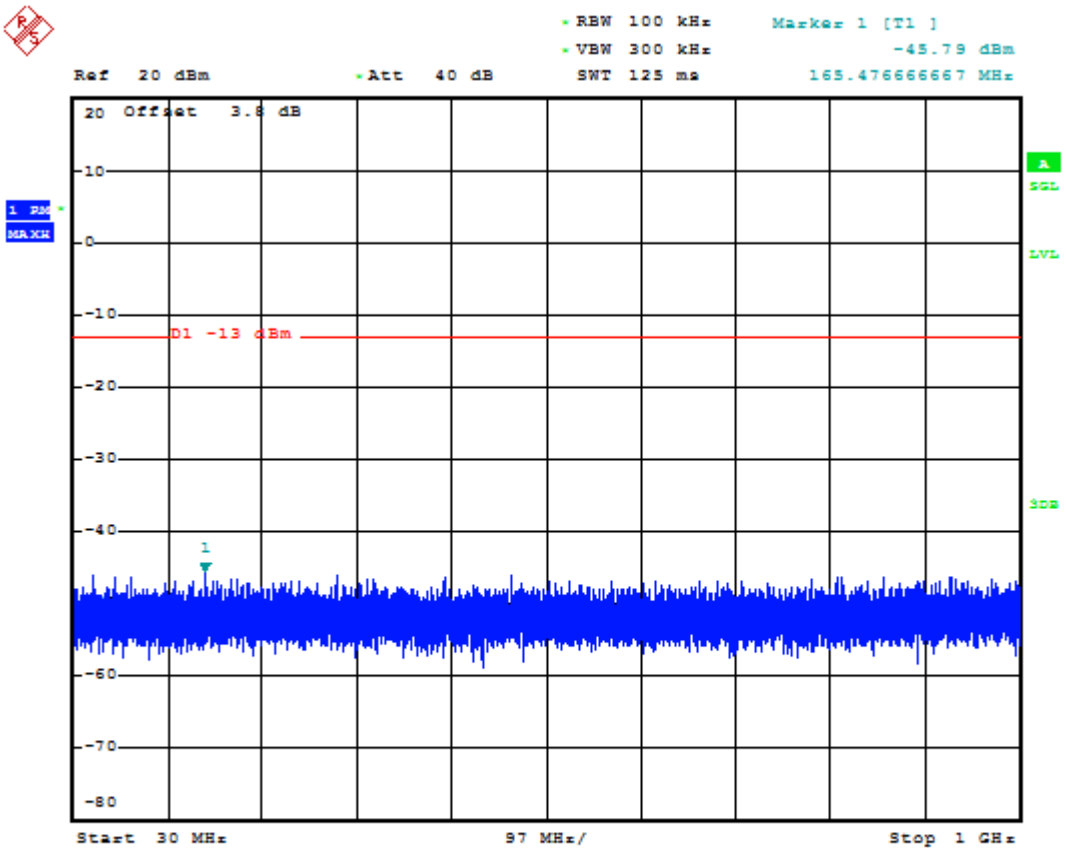
Date: 14.JUN.2020 01:37:38

1.2.1.2 Test Channel=MCH

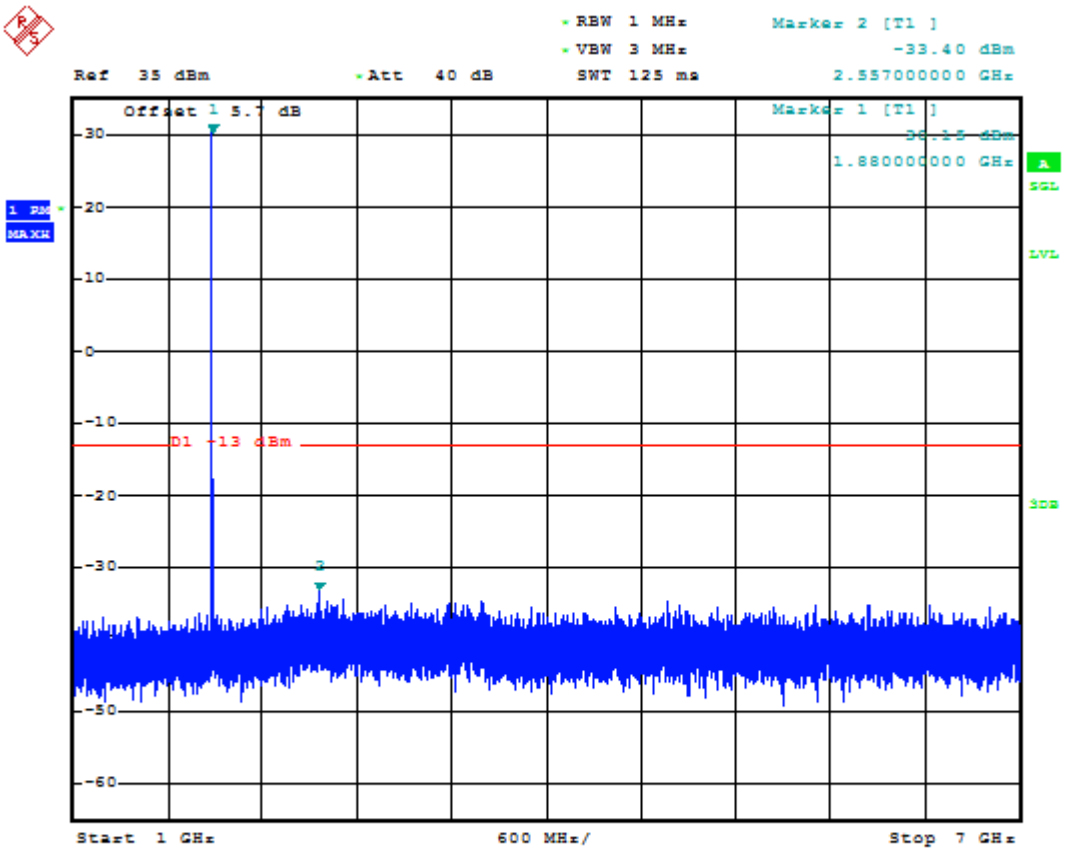




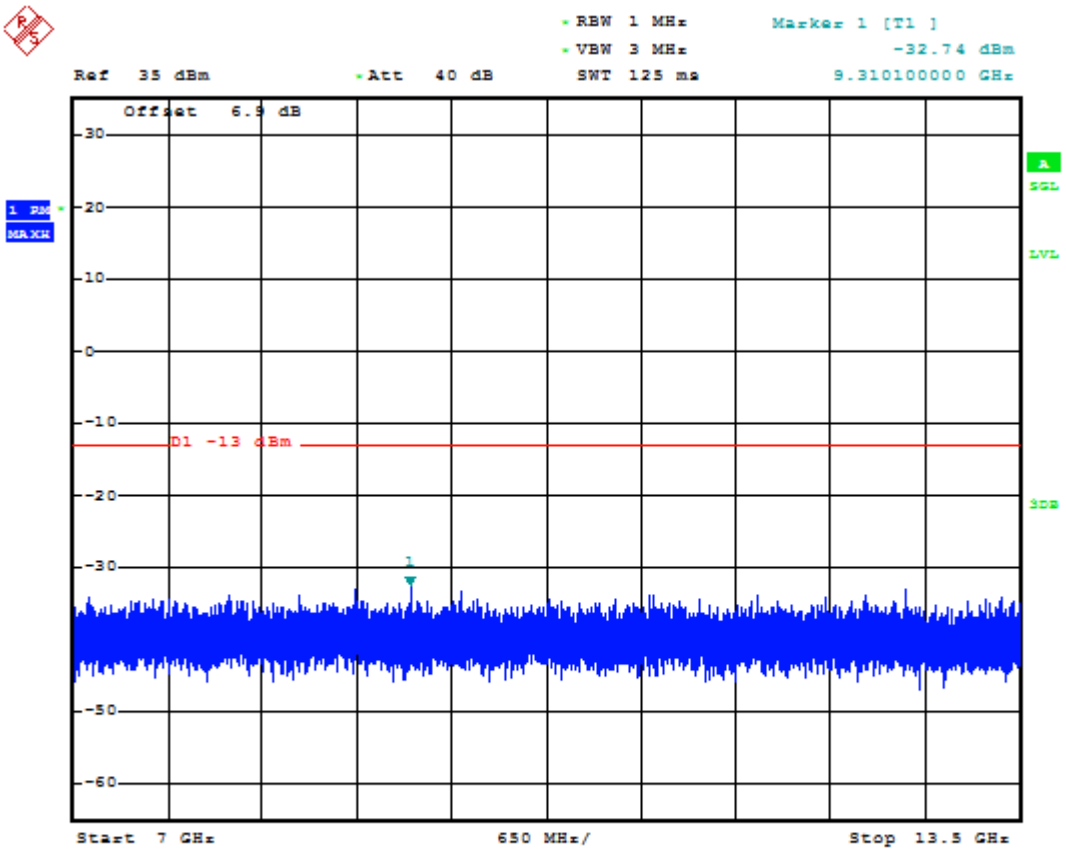
Date: 14.JUN.2020 01:38:13



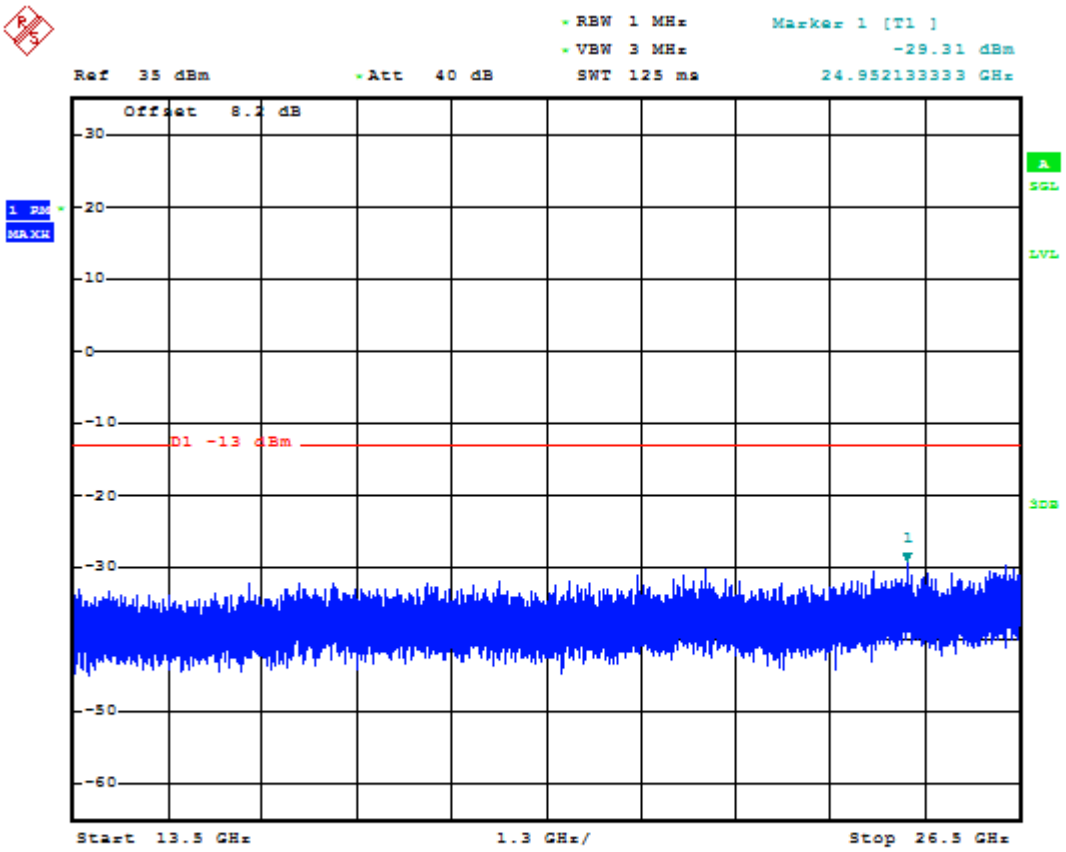
Date: 14.JUN.2020 01:38:24



Date: 14.JUN.2020 01:38:35

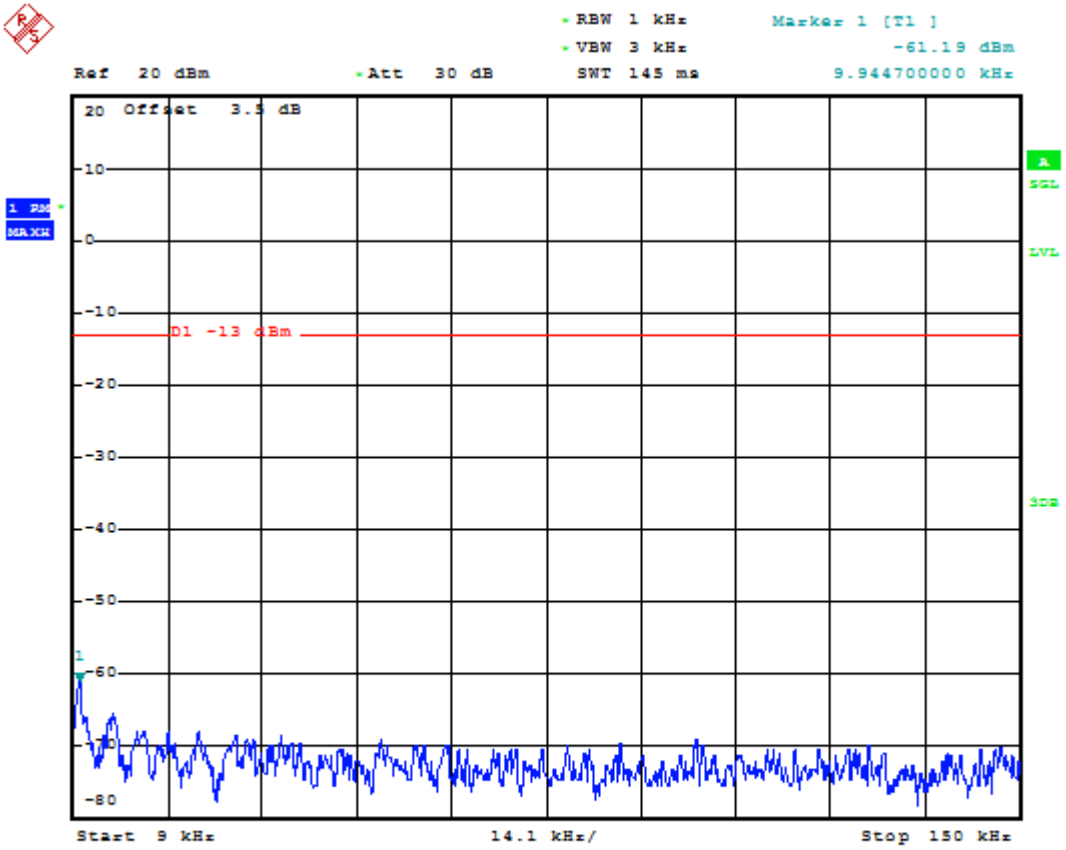


Date: 14.JUN.2020 01:38:45

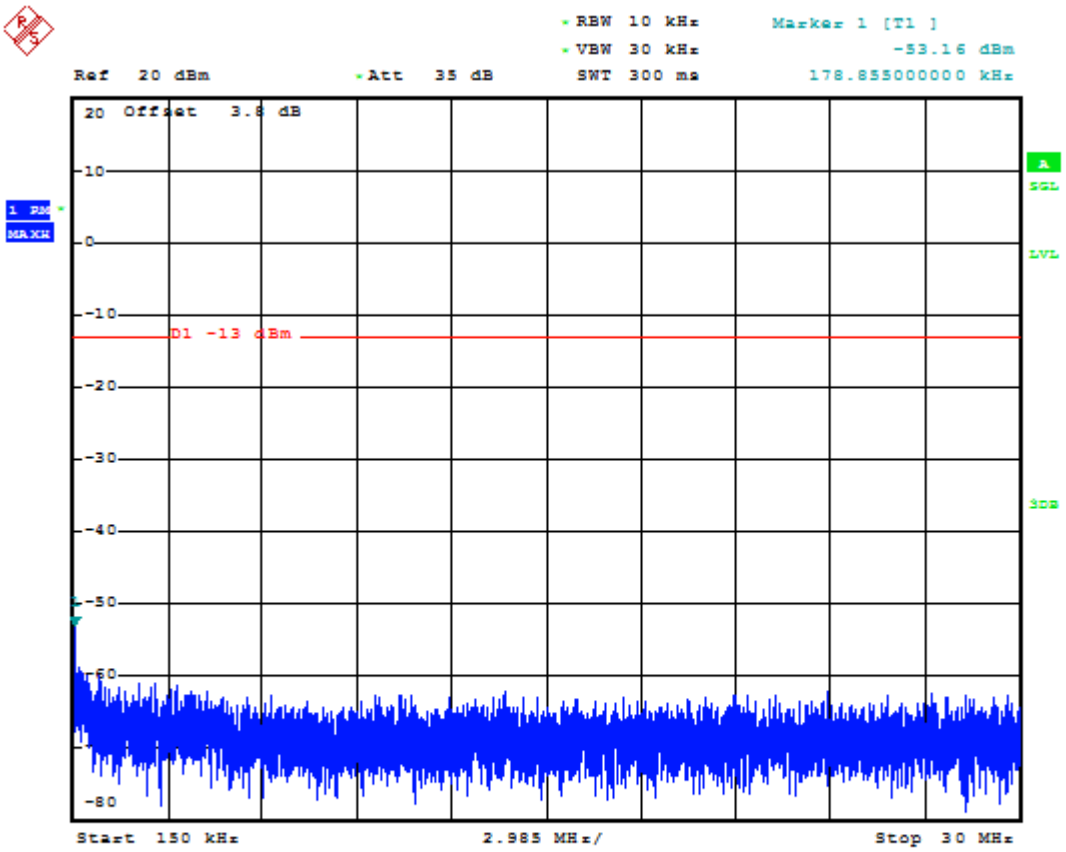


Date: 14.JUN.2020 01:38:55

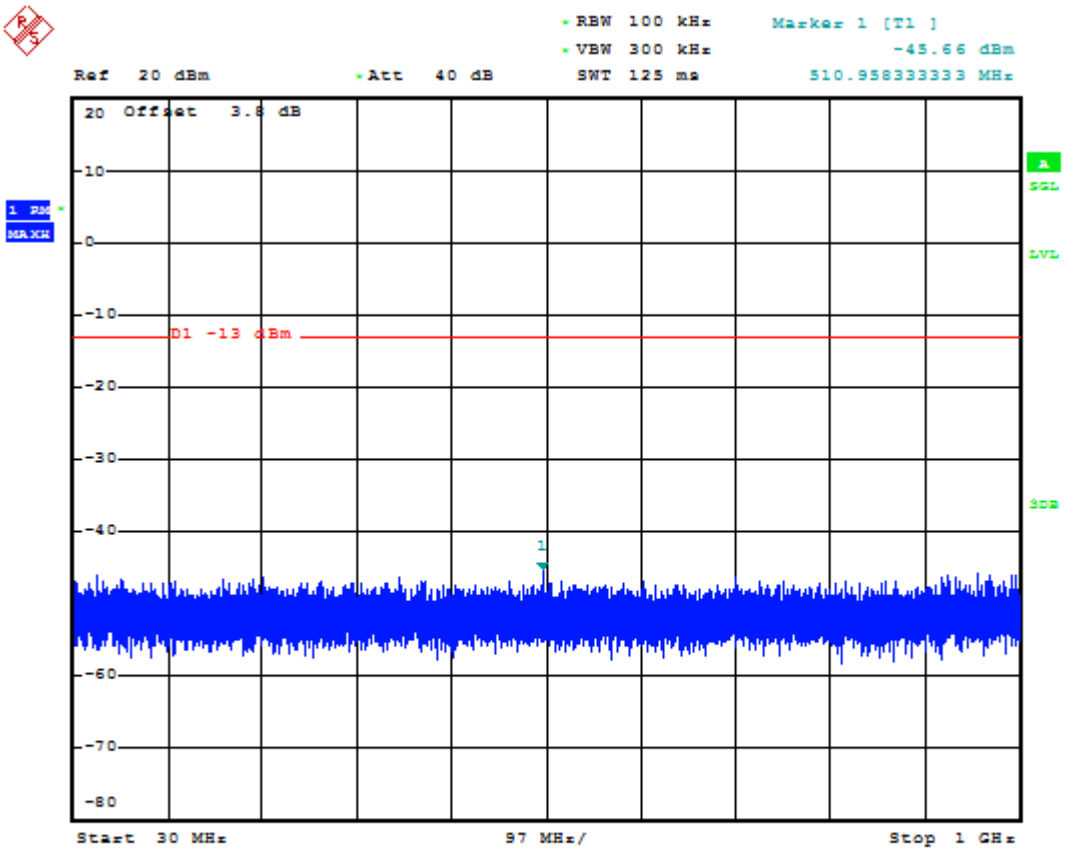
1.2.1.3 Test Channel=HCH



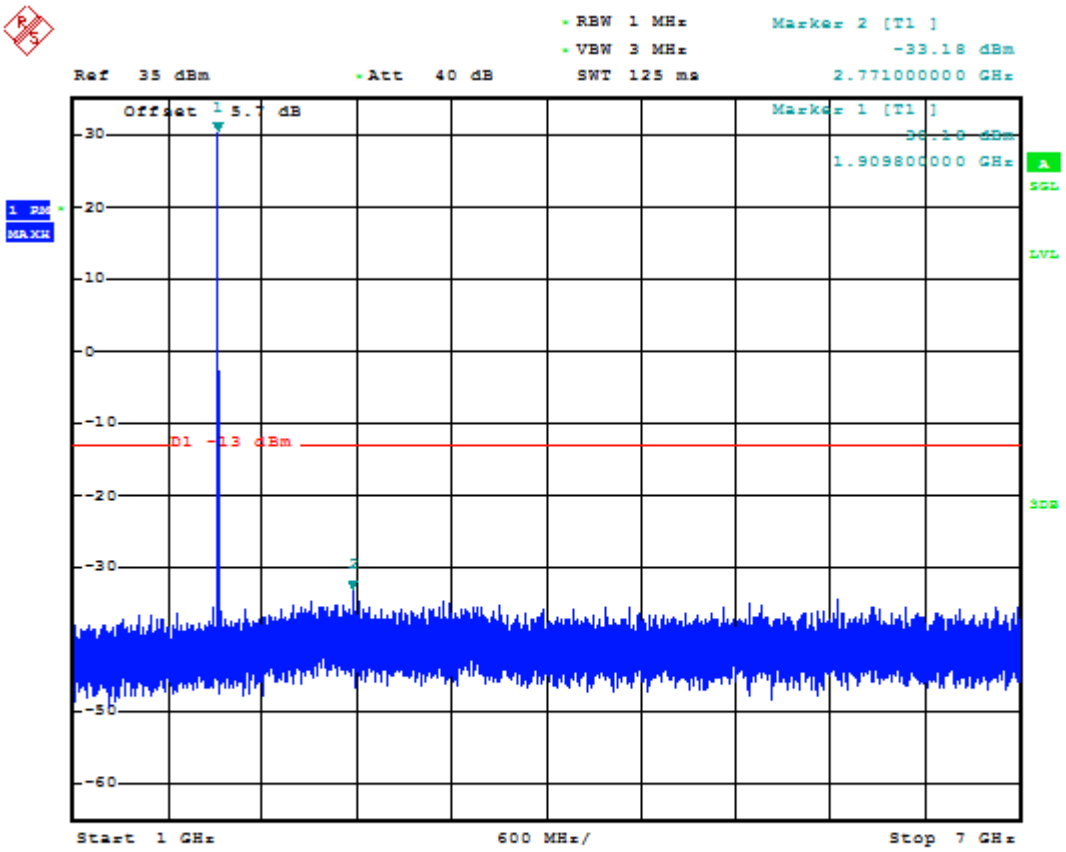
Date: 14.JUN.2020 01:39:12



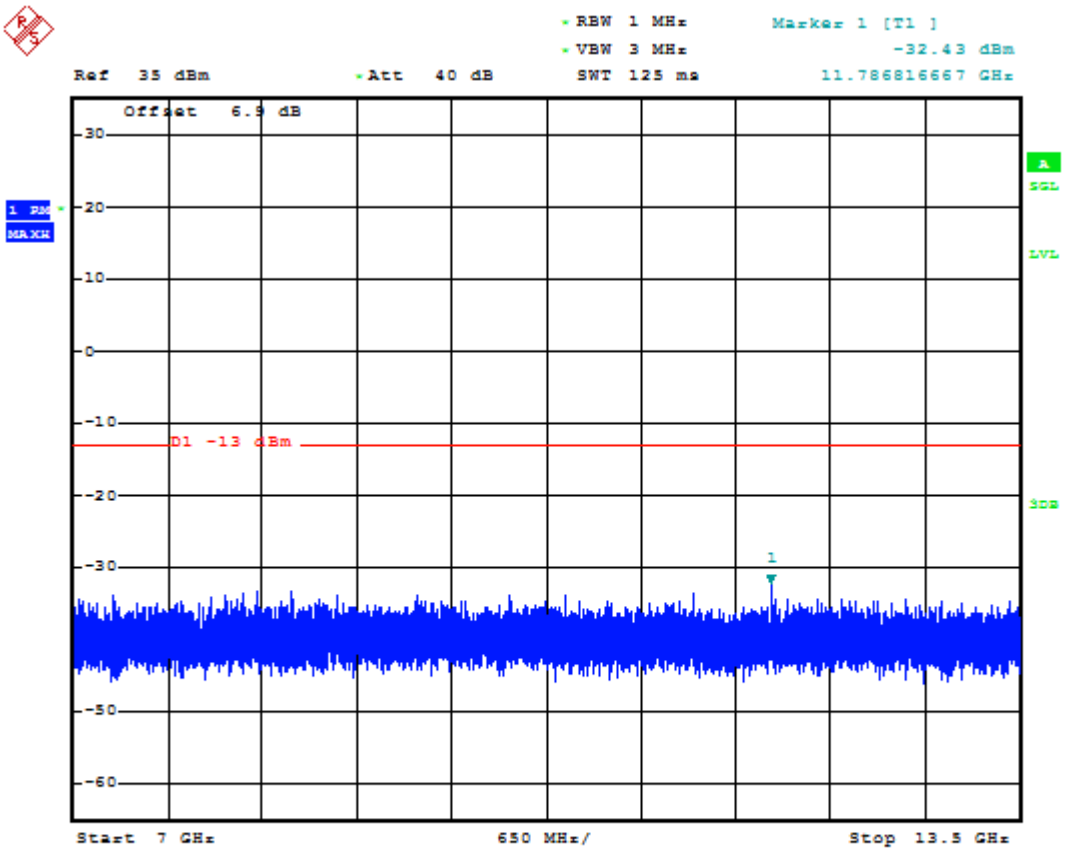
Date: 14.JUN.2020 01:39:30



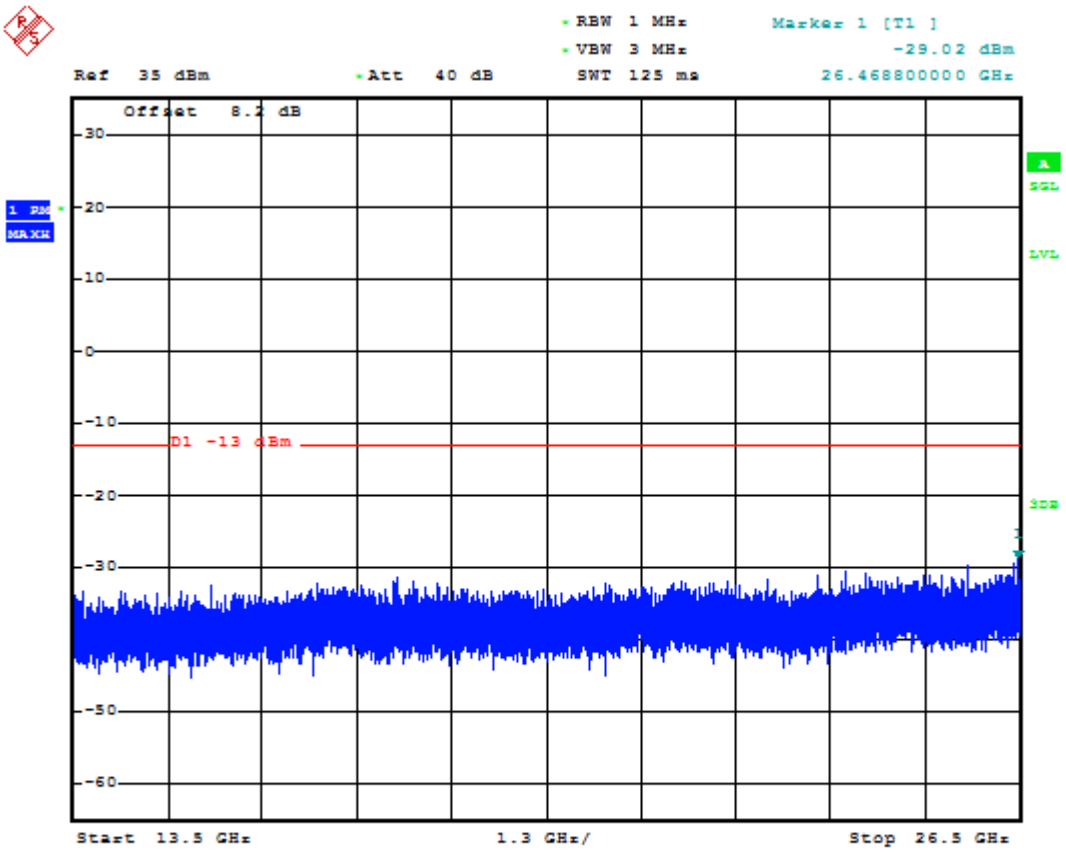
Date: 14.JUN.2020 01:39:40



Date: 14.JUN.2020 04:00:25



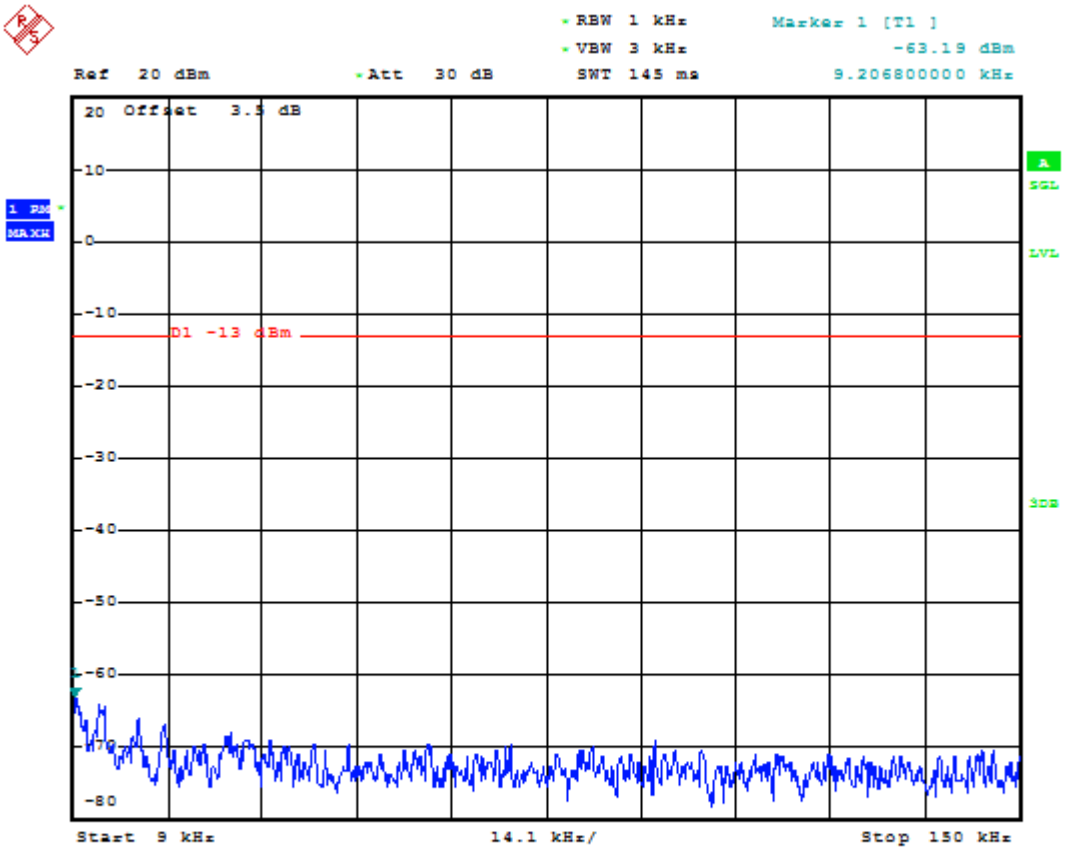
Date: 14.JUN.2020 01:40:01



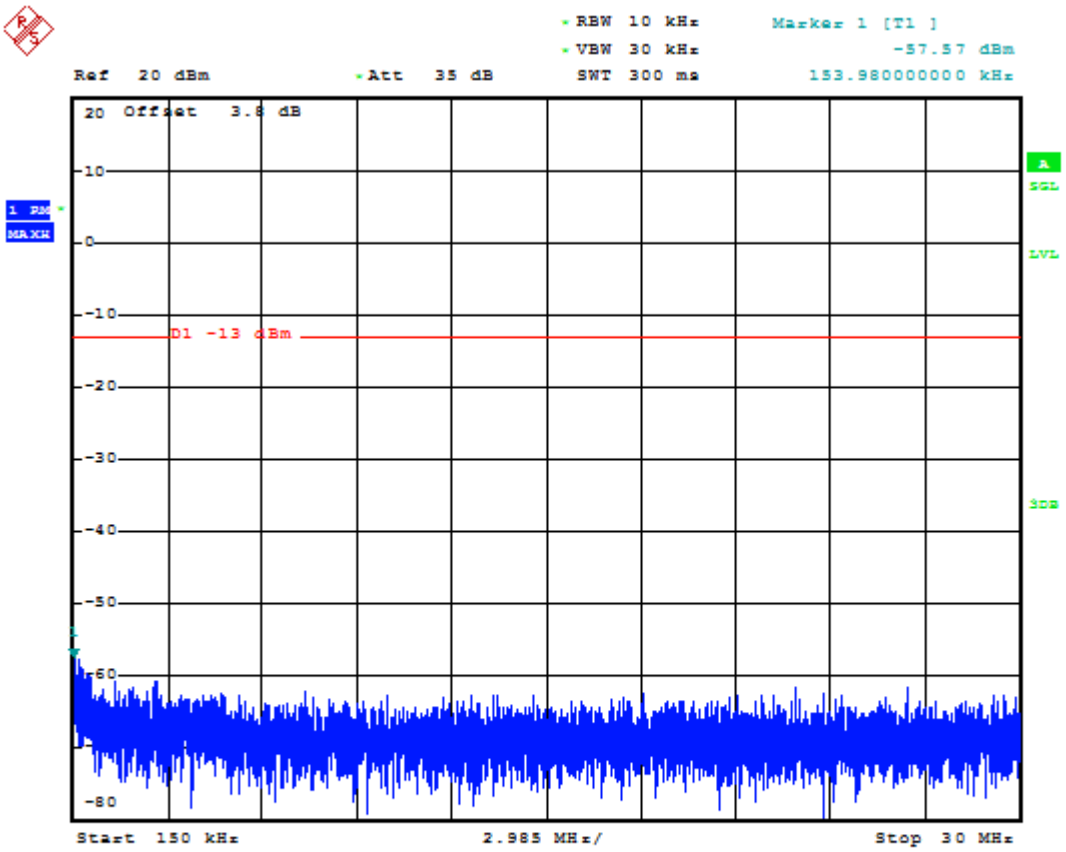
Date: 14.JUN.2020 01:40:11

1.2.2 Test Mode=GSM/TM2

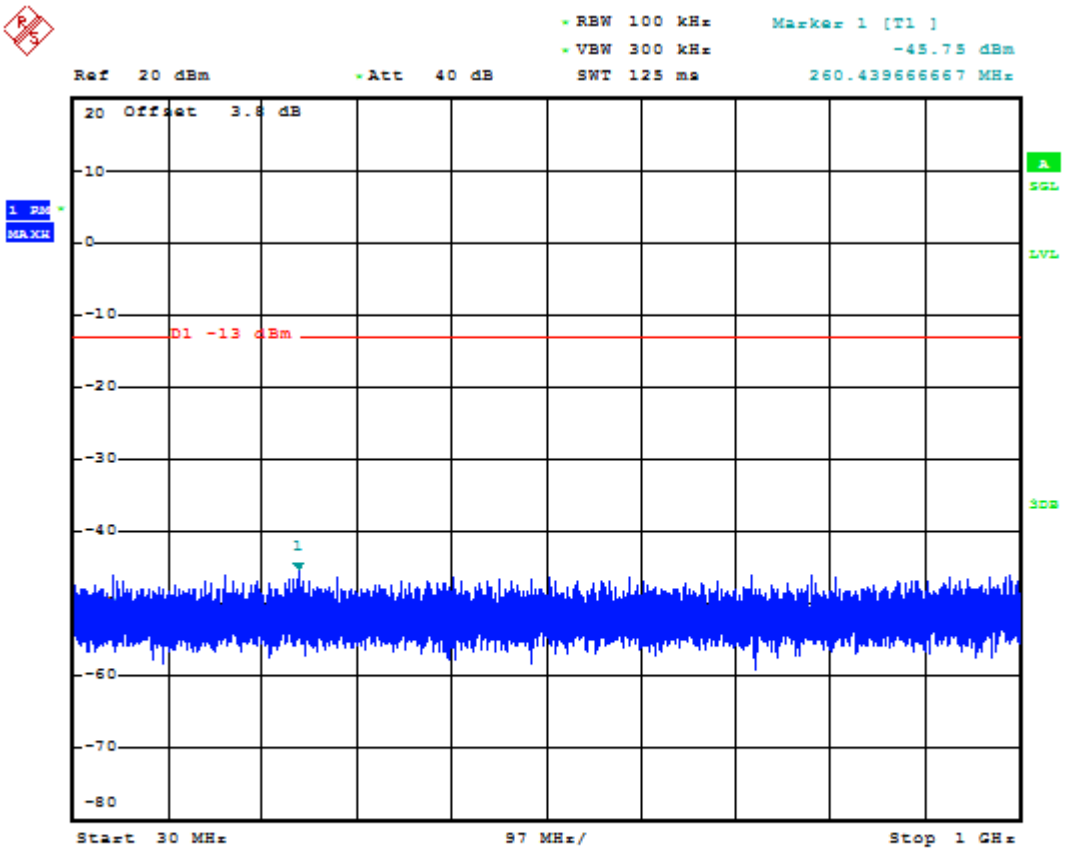
1.2.2.1 Test Channel=LCH



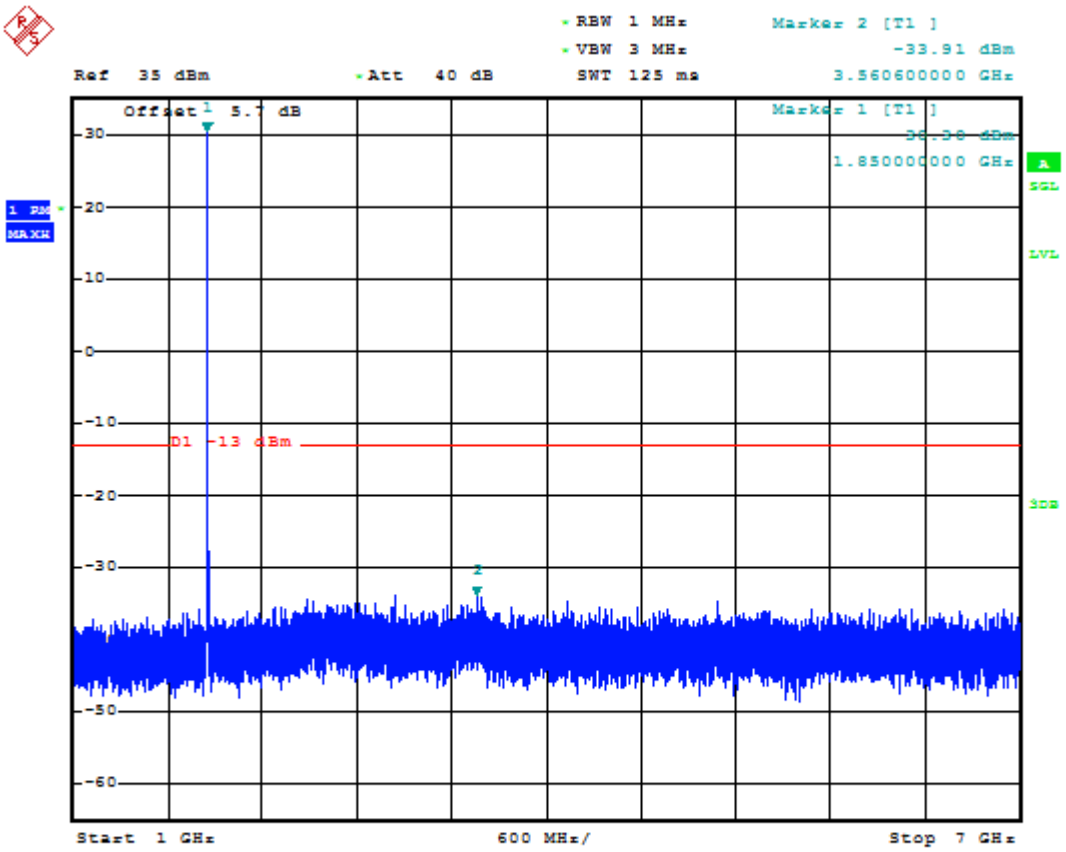
Date: 14.JUN.2020 01:53:49



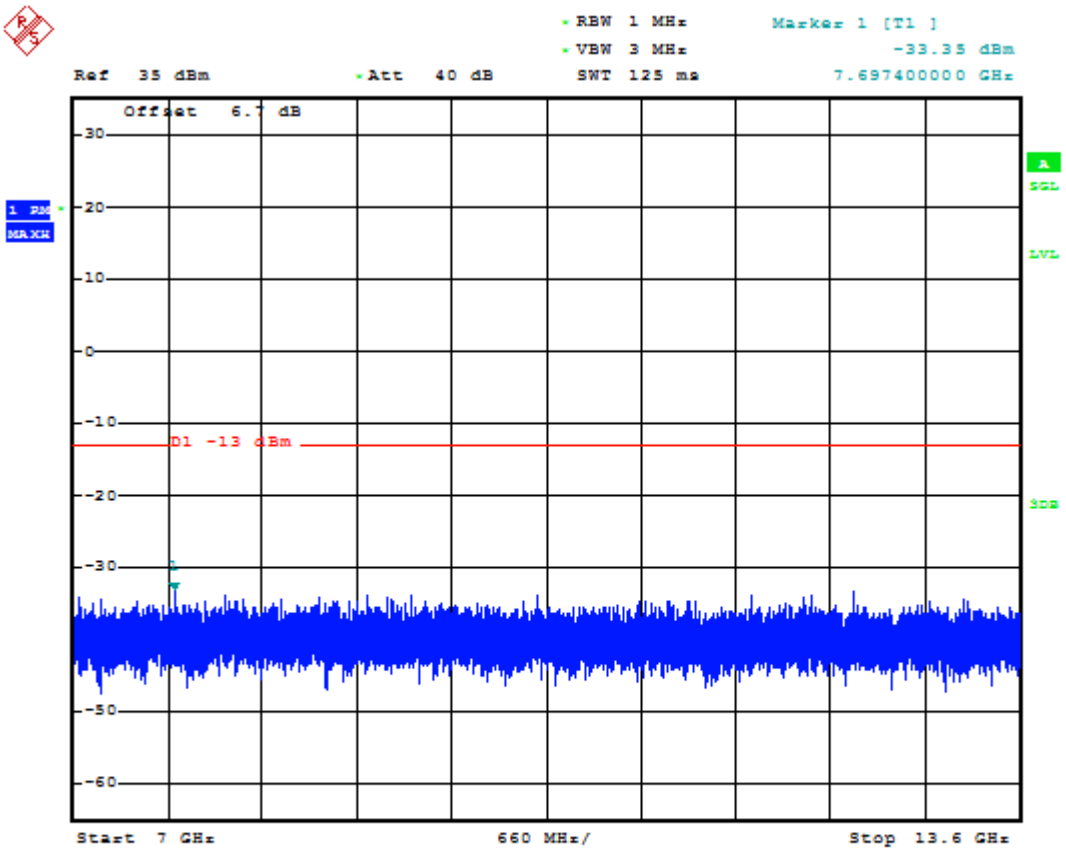
Date: 14.JUN.2020 01:54:05



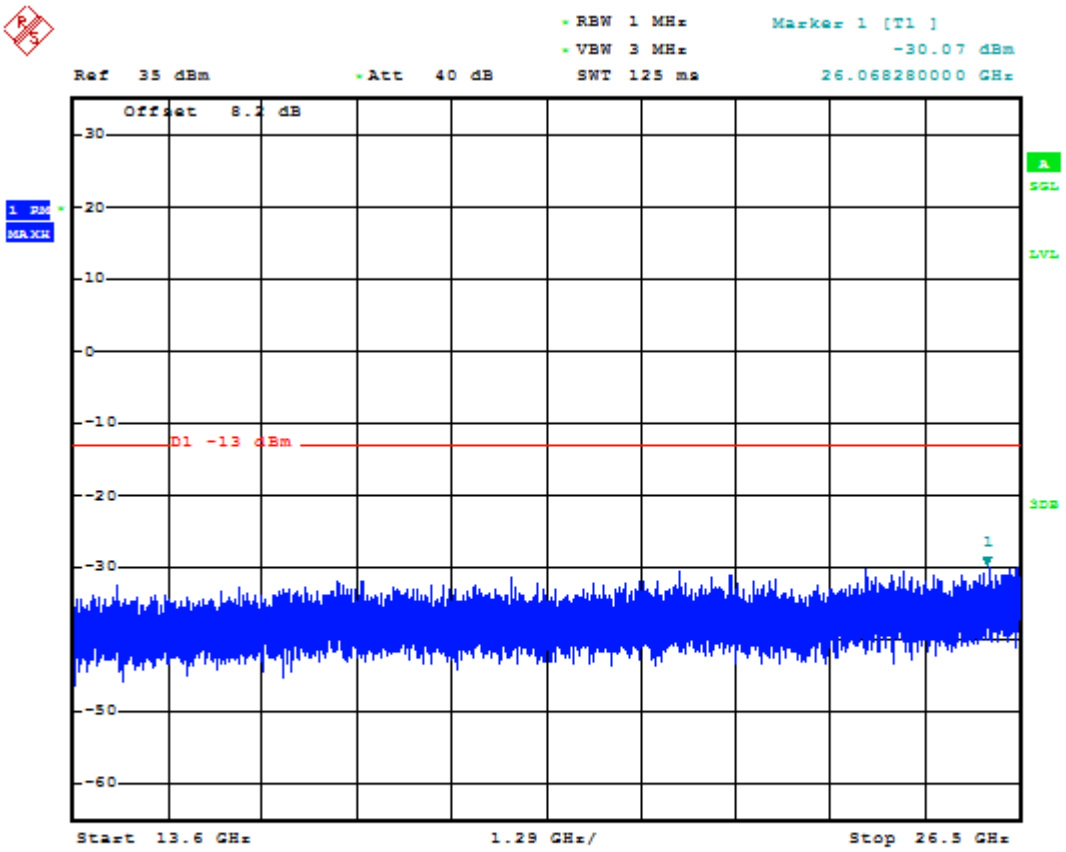
Date: 14.JUN.2020 01:54:14



Date: 14.JUN.2020 01:54:24

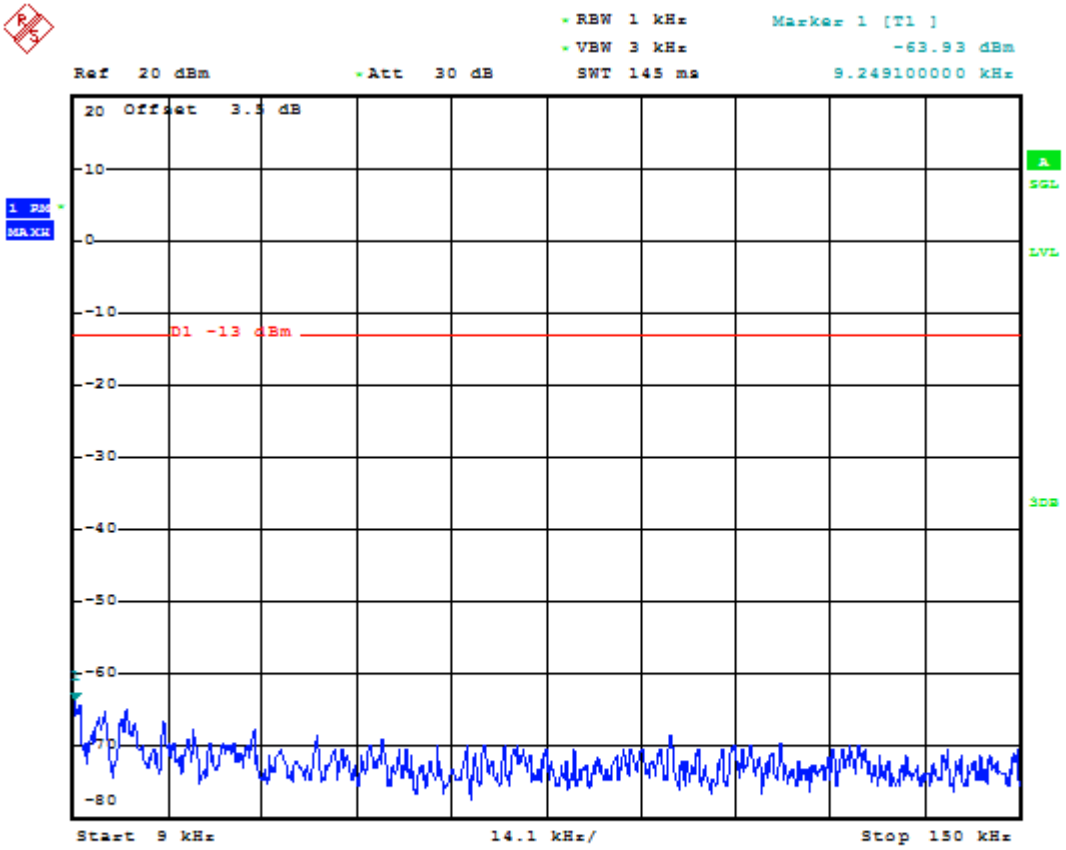


Date: 14.JUN.2020 01:54:33

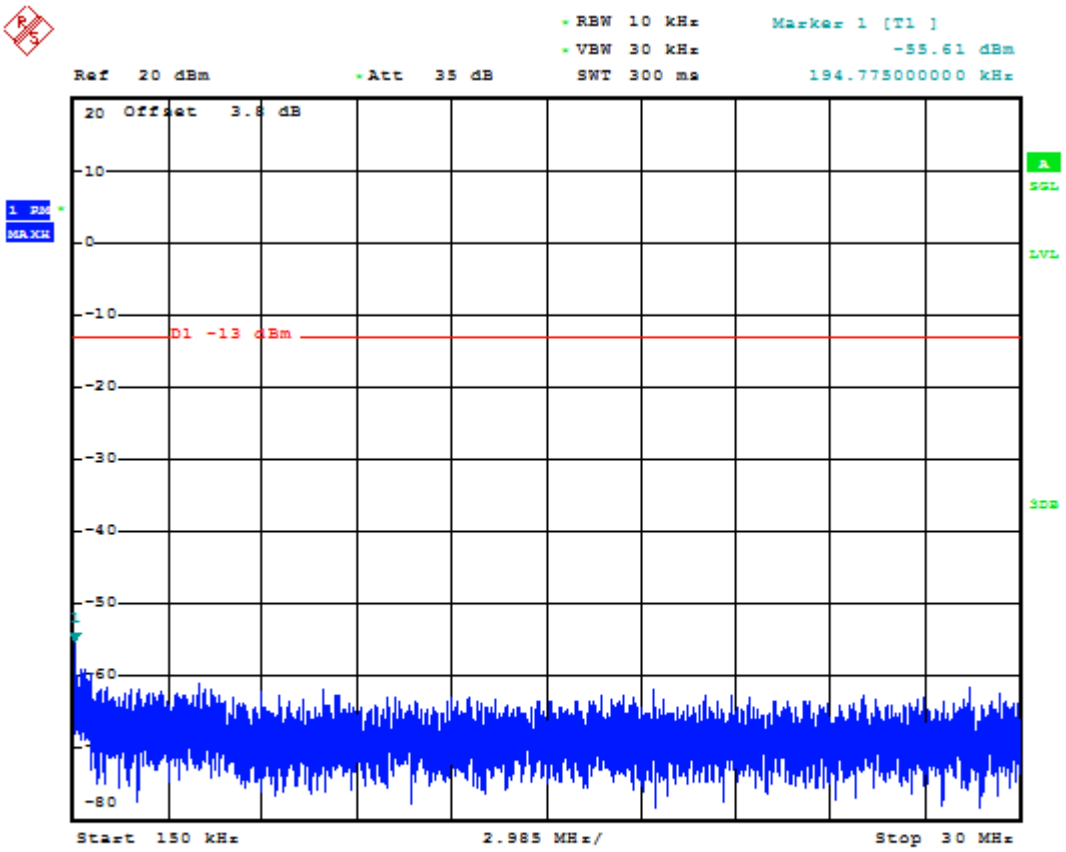


Date: 14.JUN.2020 01:54:42

1.2.2.2 Test Channel=MCH



Date: 14.JUN.2020 01:55:00



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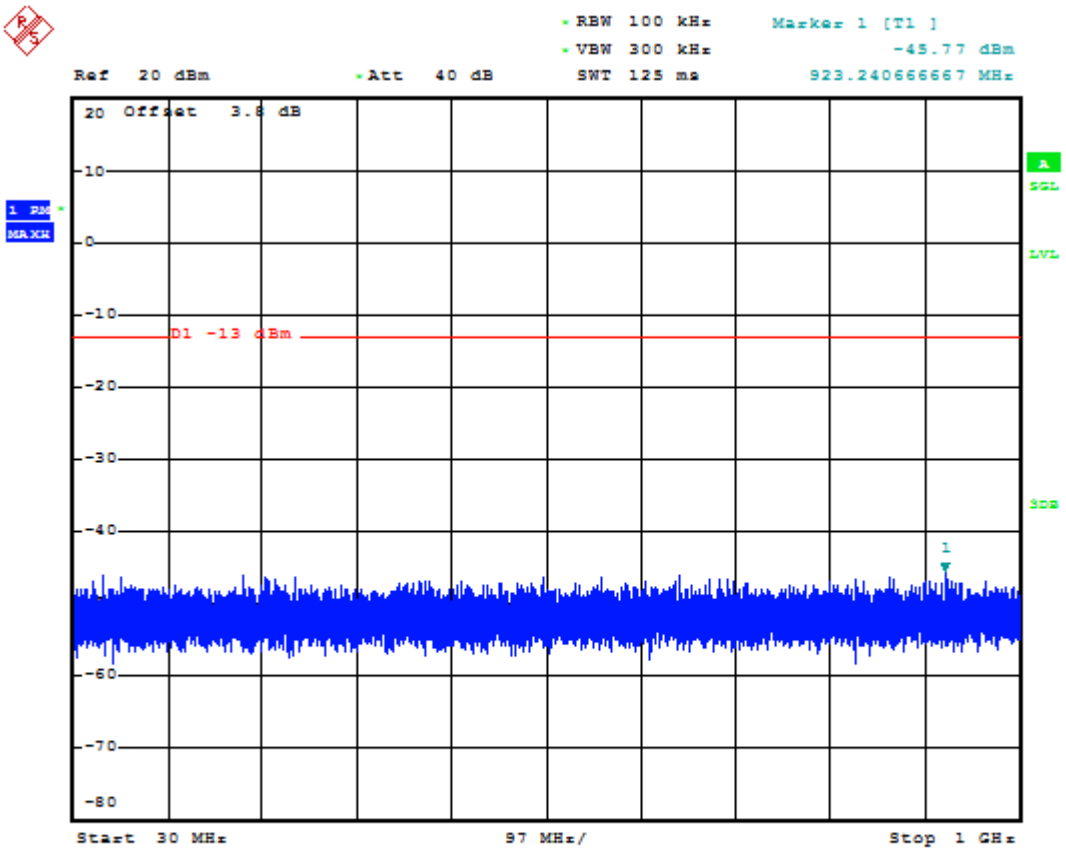

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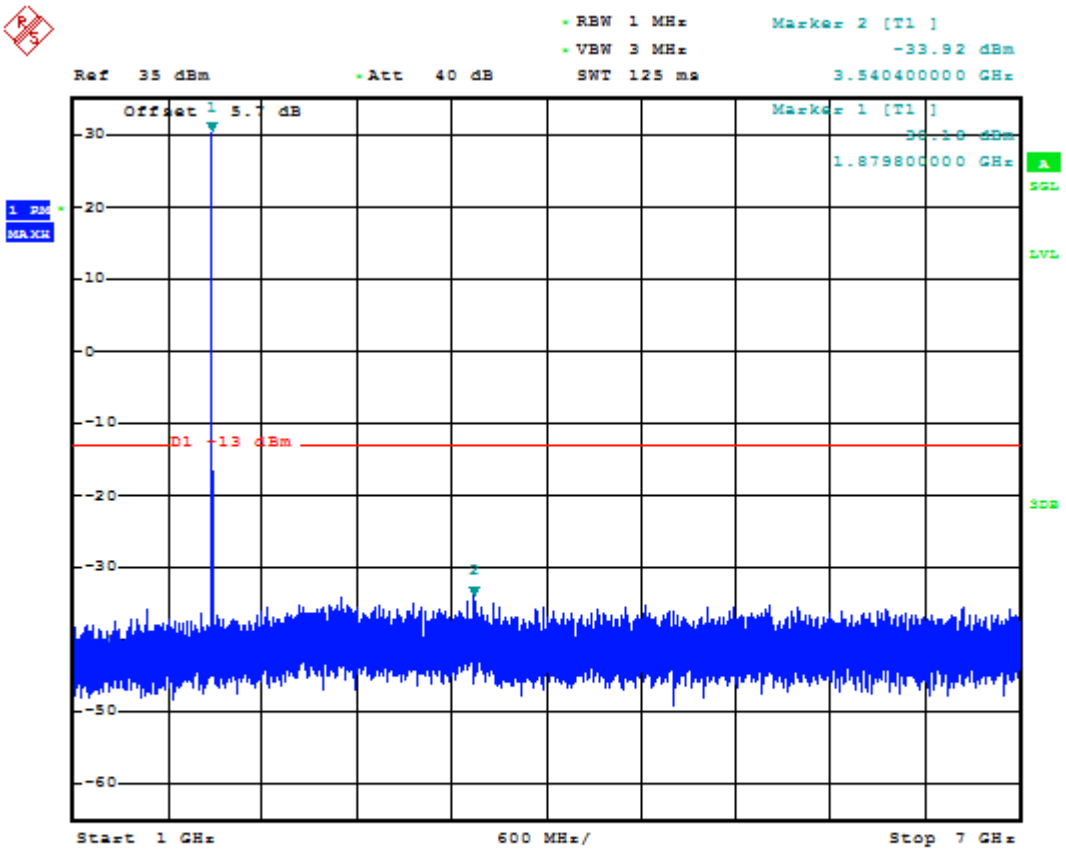

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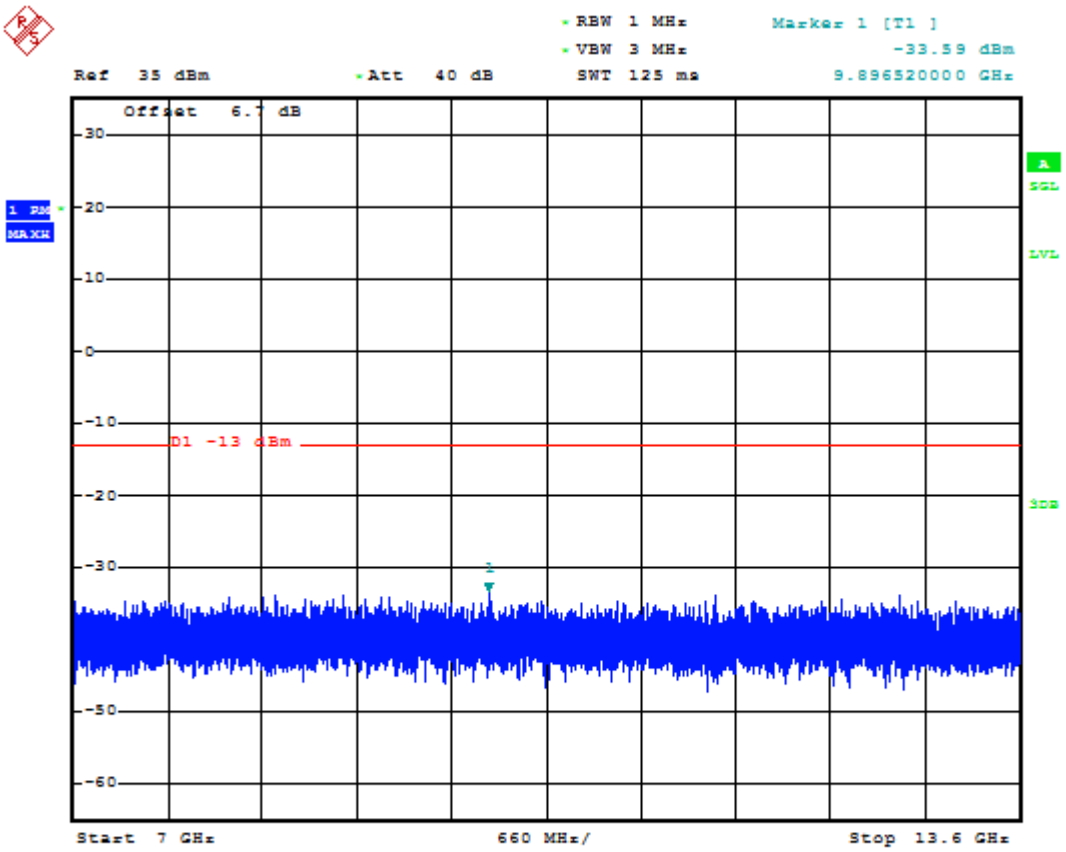
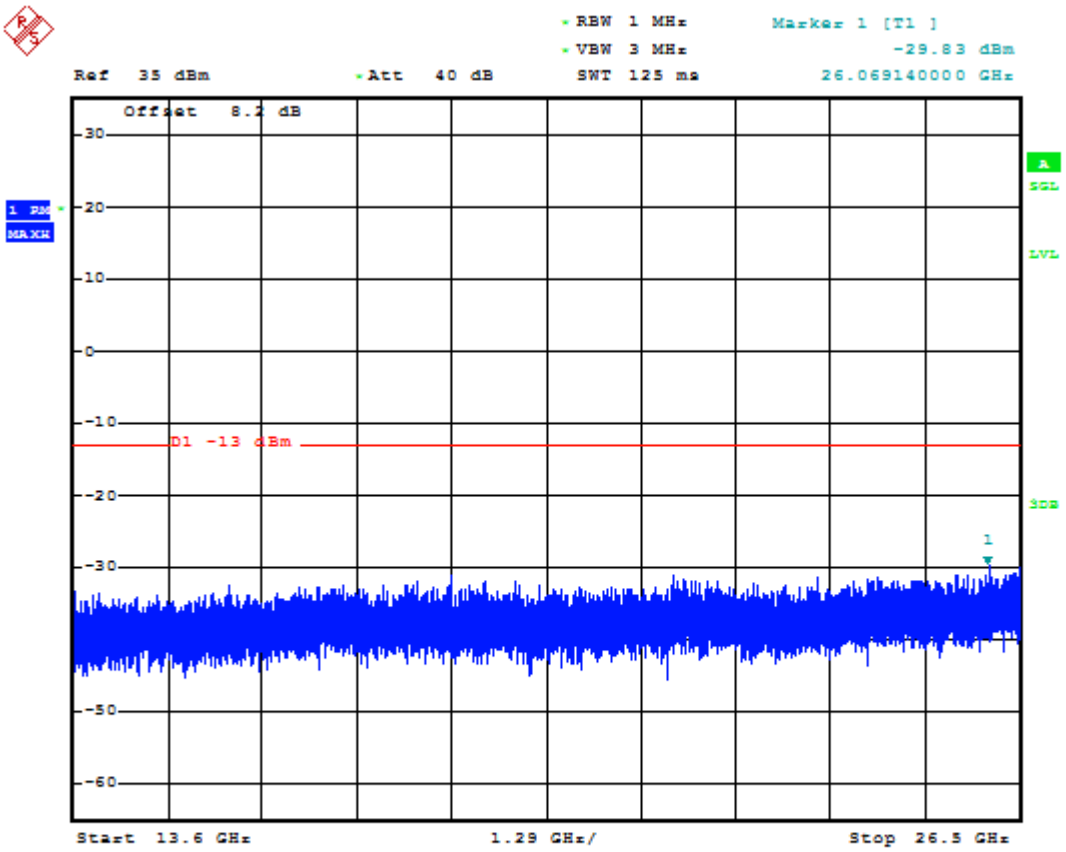
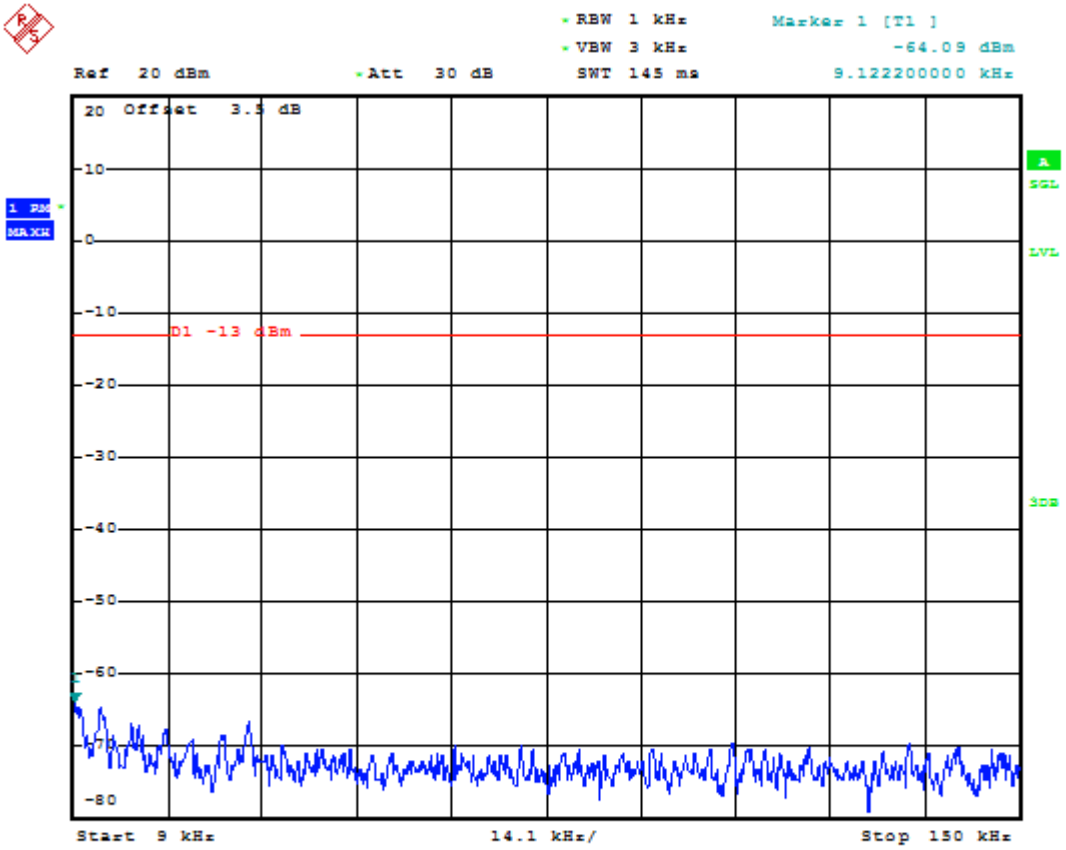


Date: 14.JUN.2020 01:55:44



Date: 14.JUN.2020 01:55:53

1.2.2.3 Test Channel=HCH



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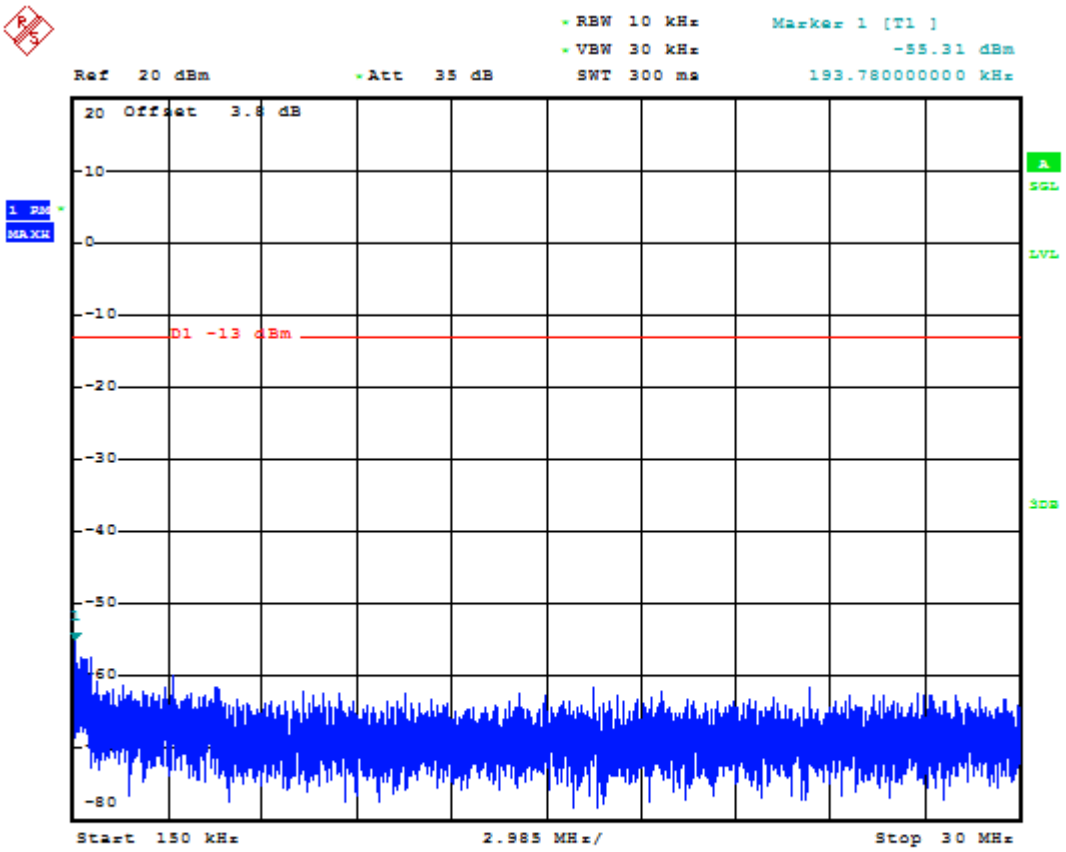

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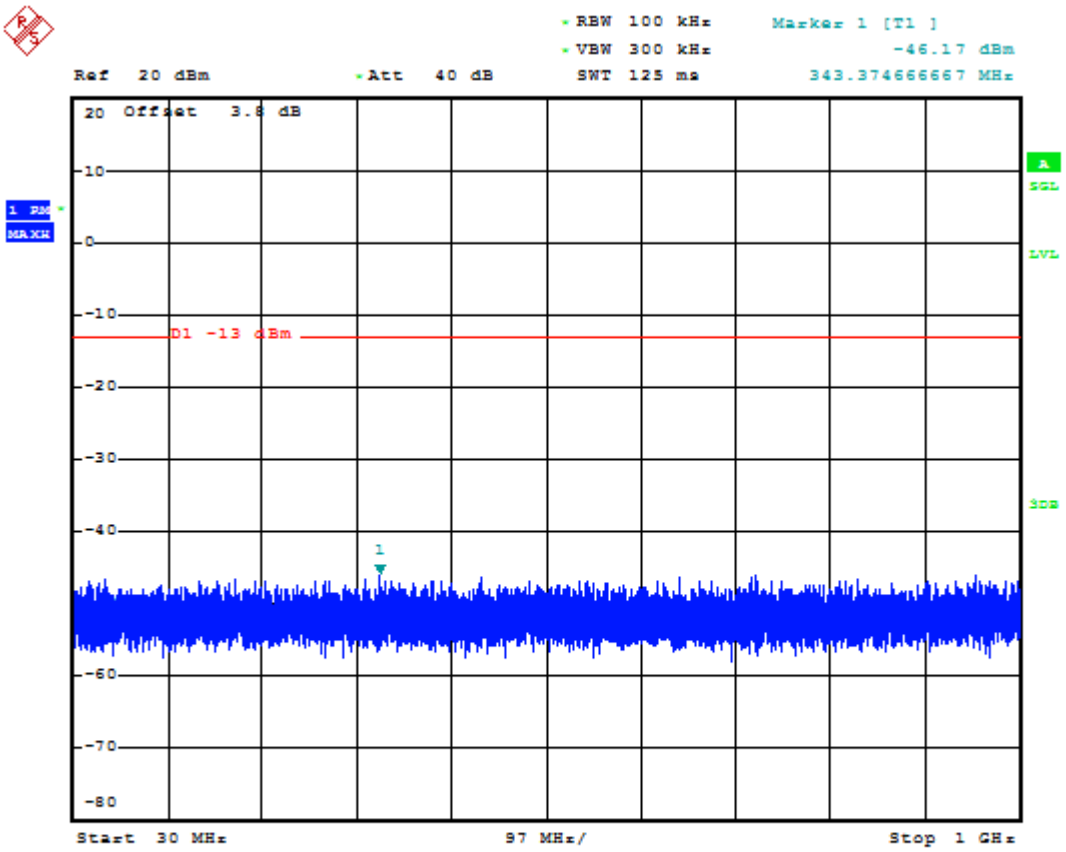
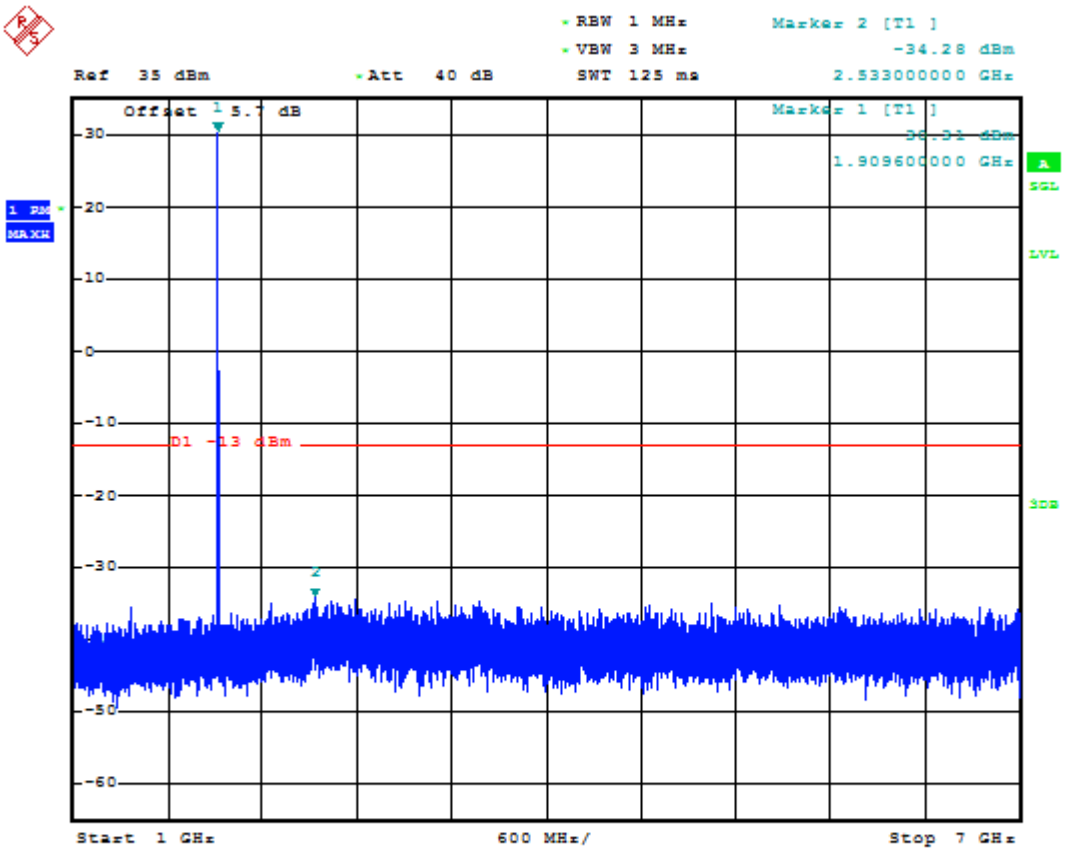
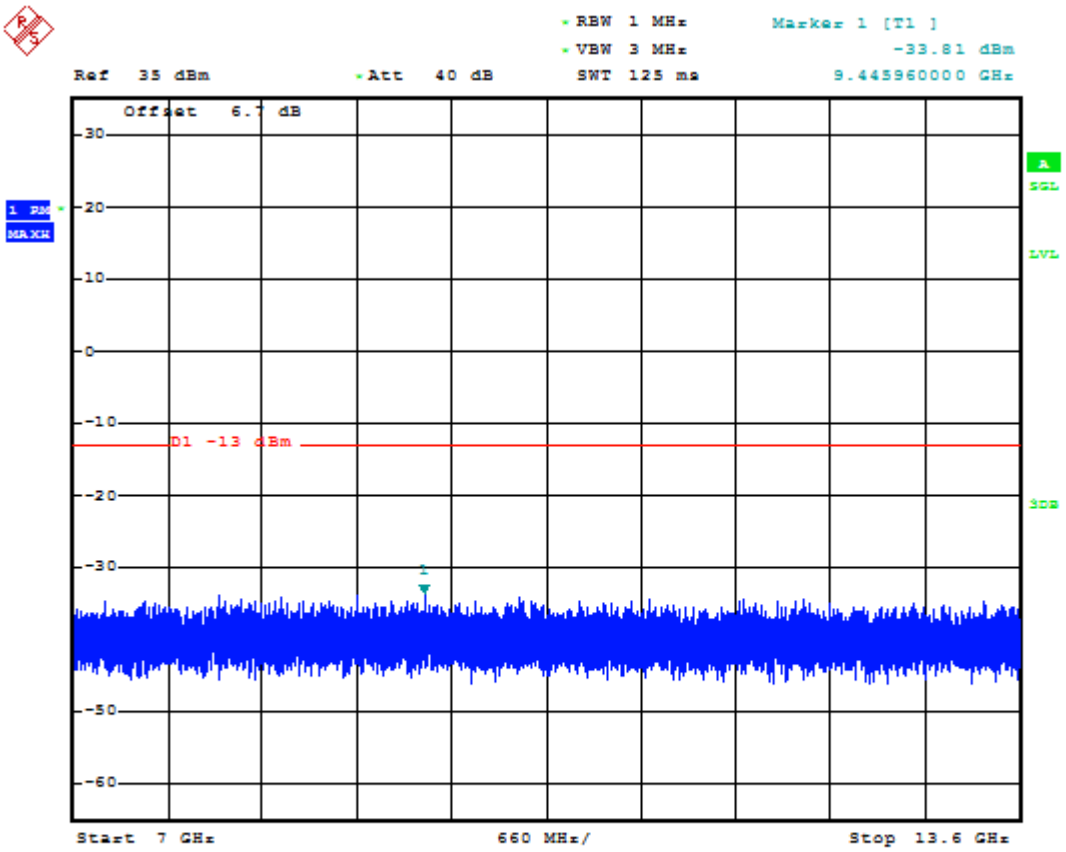


Date: 14.JUN.2020 01:56:36



Date: 14.JUN.2020 01:56:46



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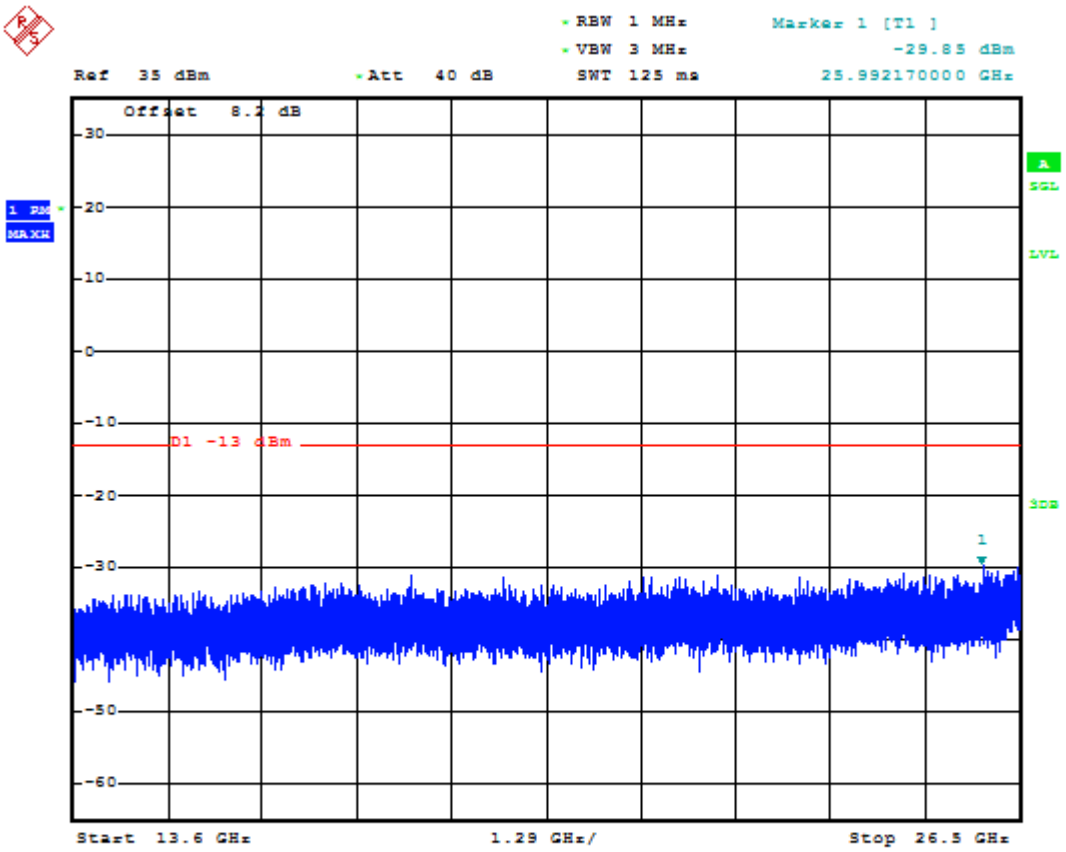
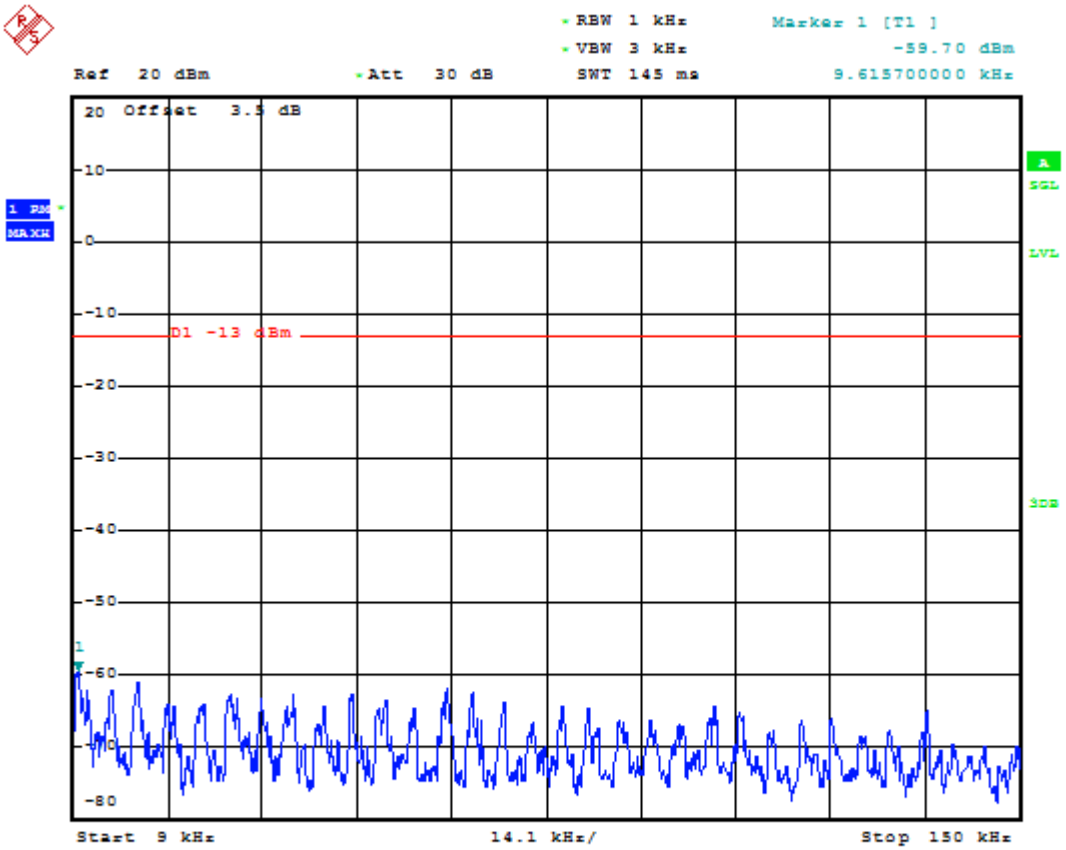


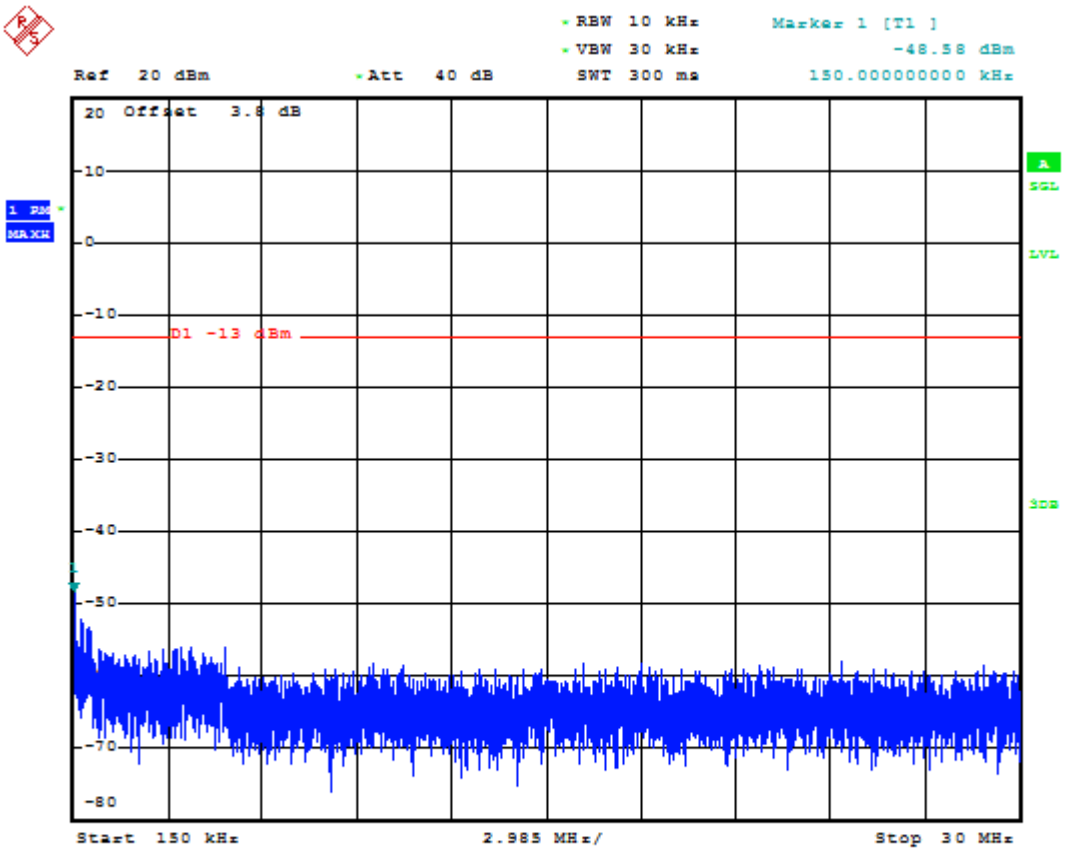
Date: 14.JUN.2020 01:57:04

1.2.3 Test Mode=GSM/TM3

1.2.3.1 Test Channel=LCH



Date: 14.JUN.2020 02:10:38



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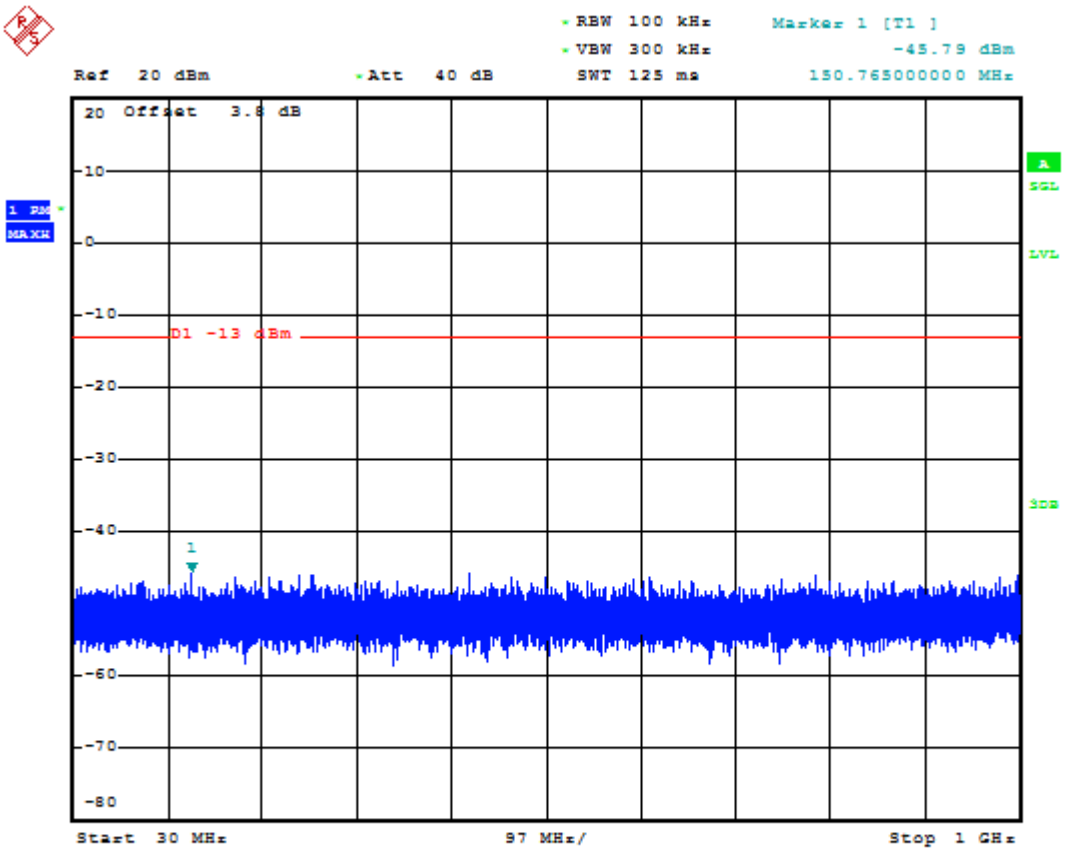
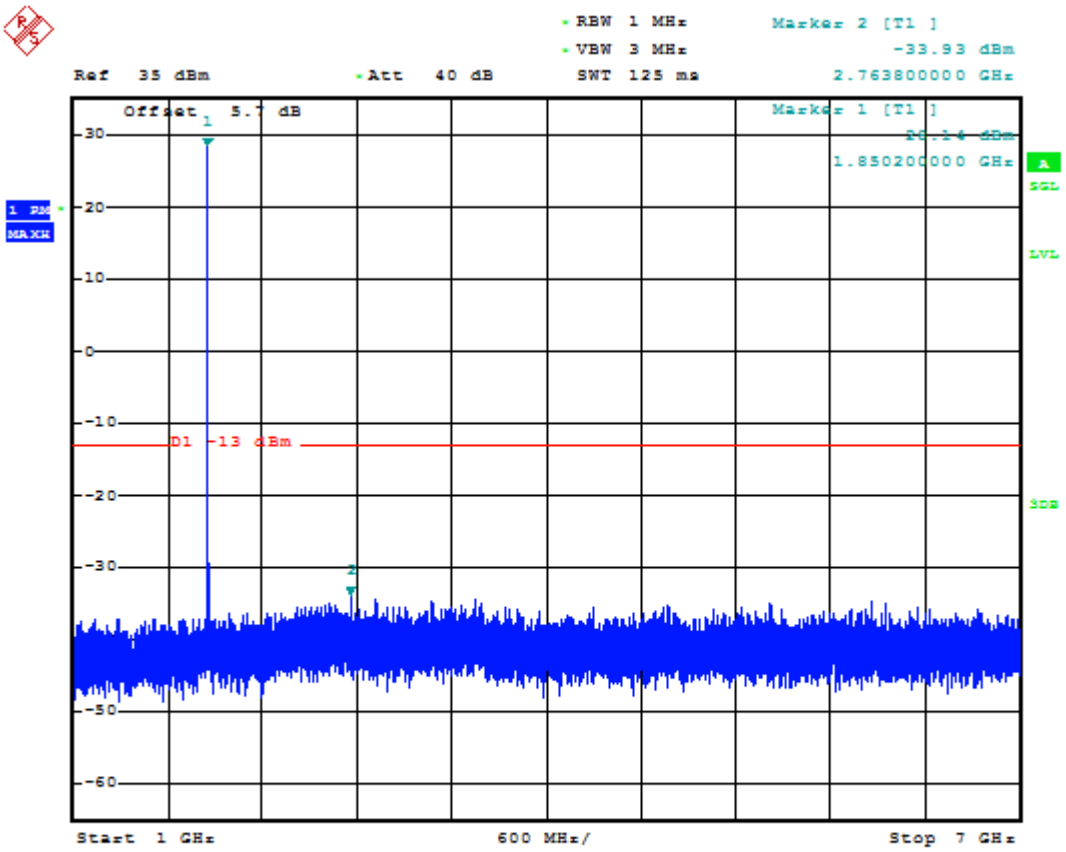
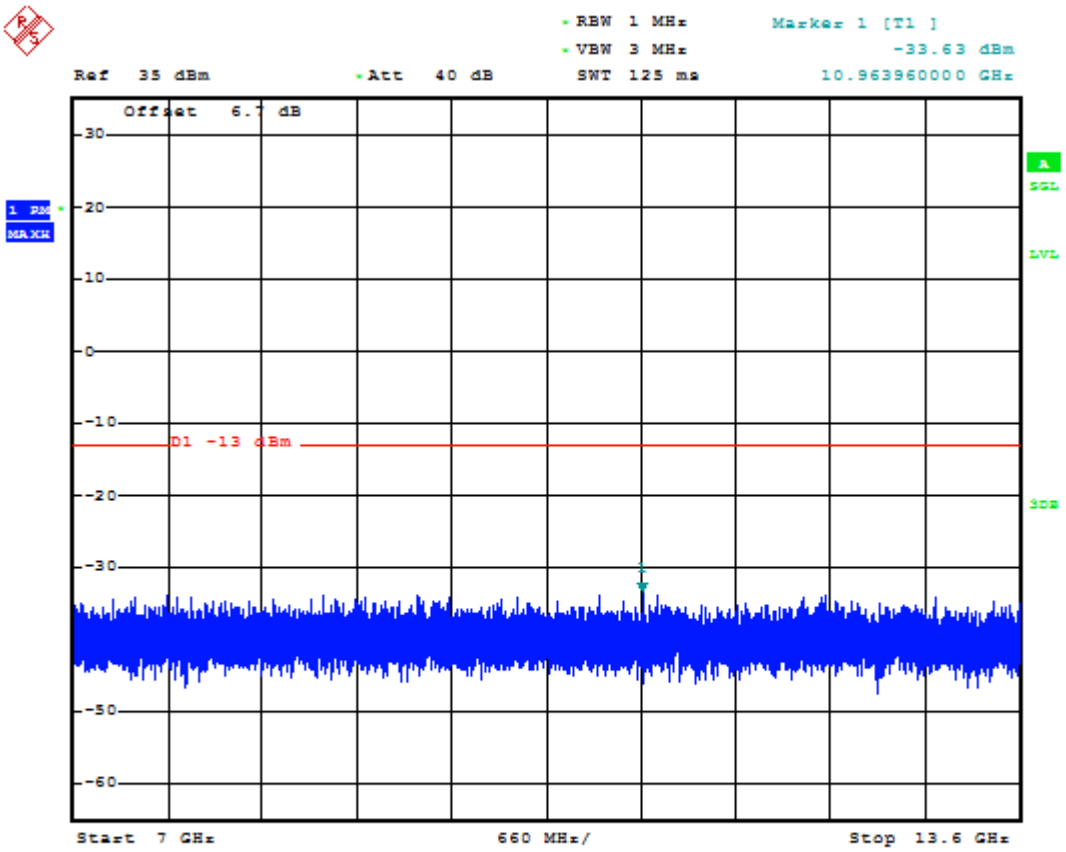


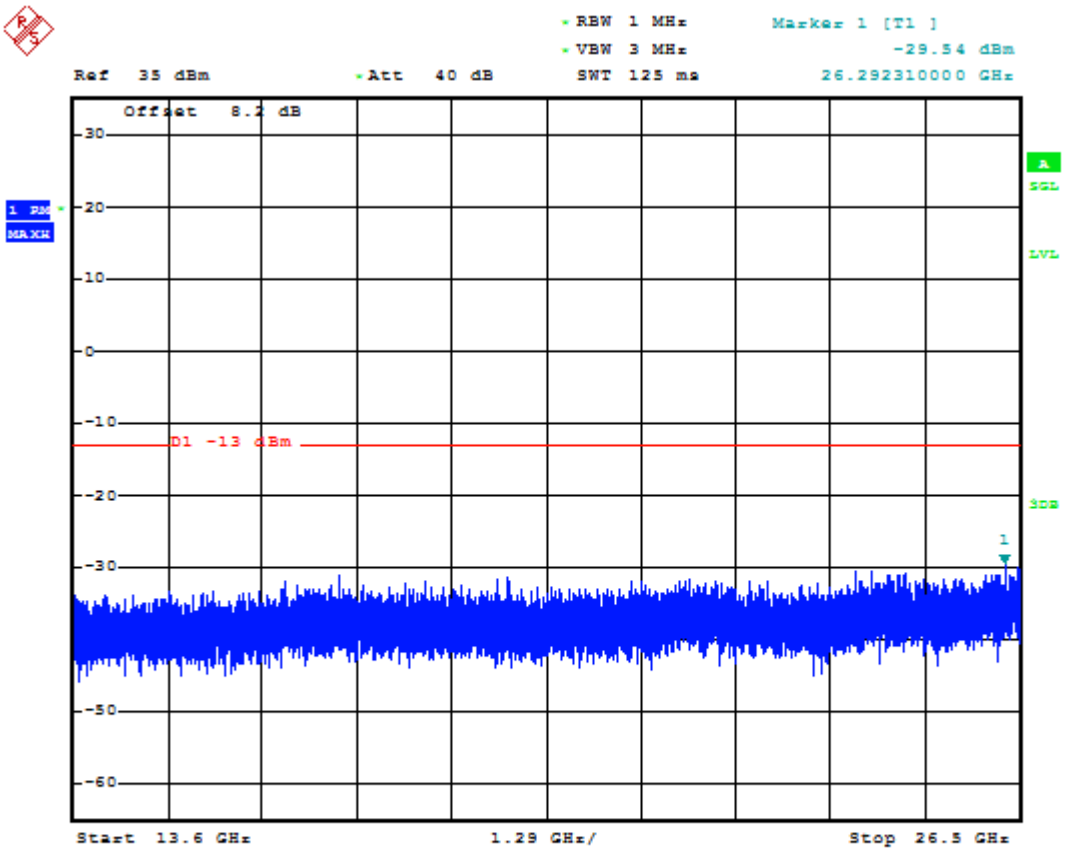
Date: 14.JUN.2020 02:11:13



Date: 14.JUN.2020 04:06:31



Date: 14.JUN.2020 02:11:33



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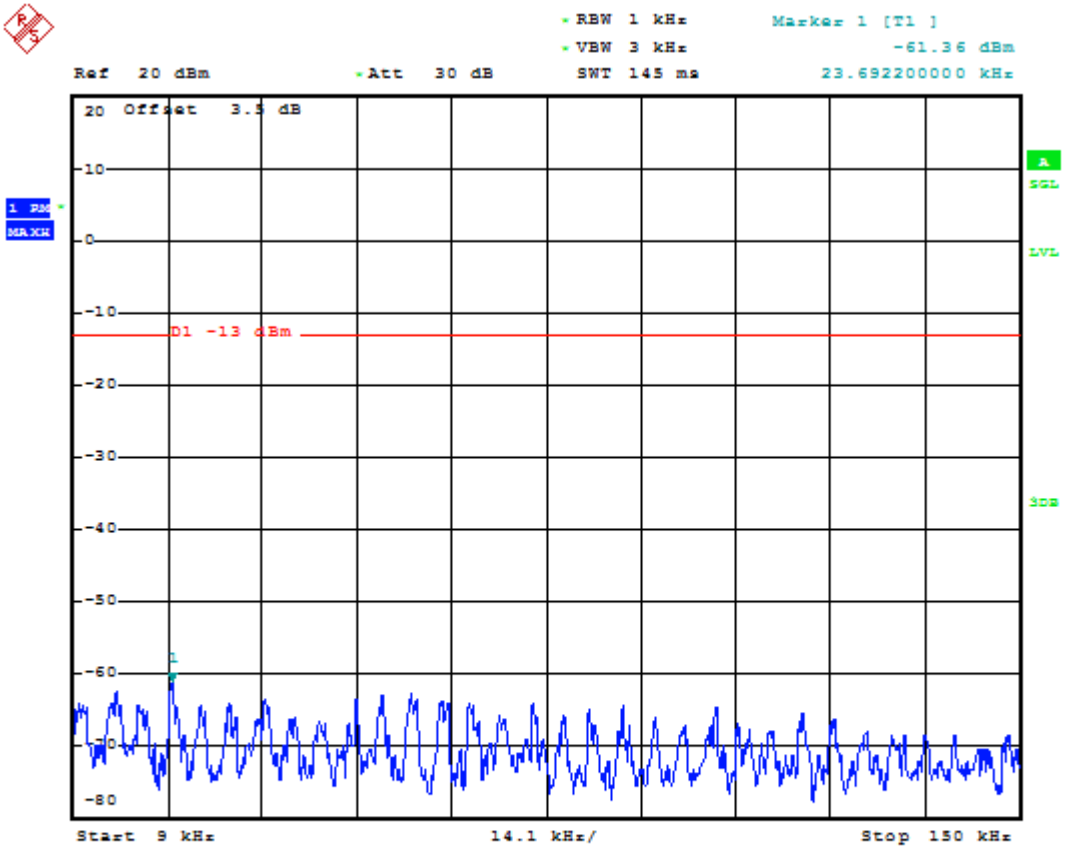
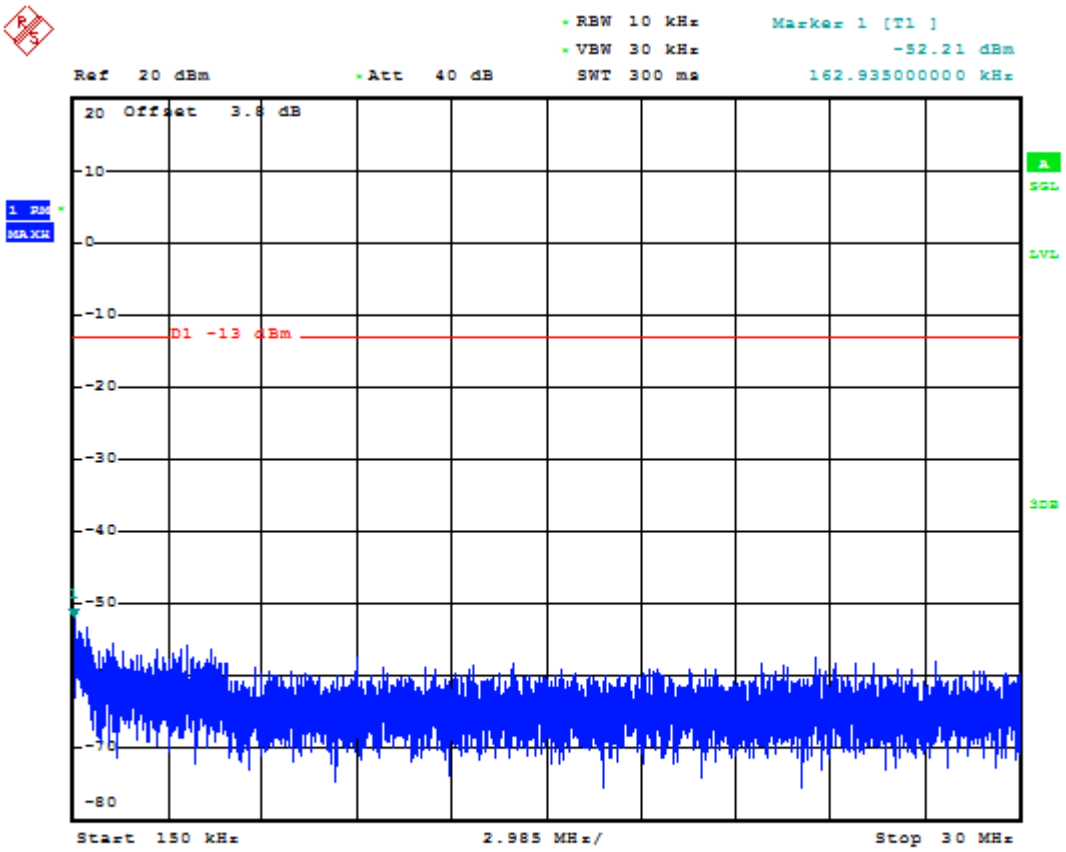
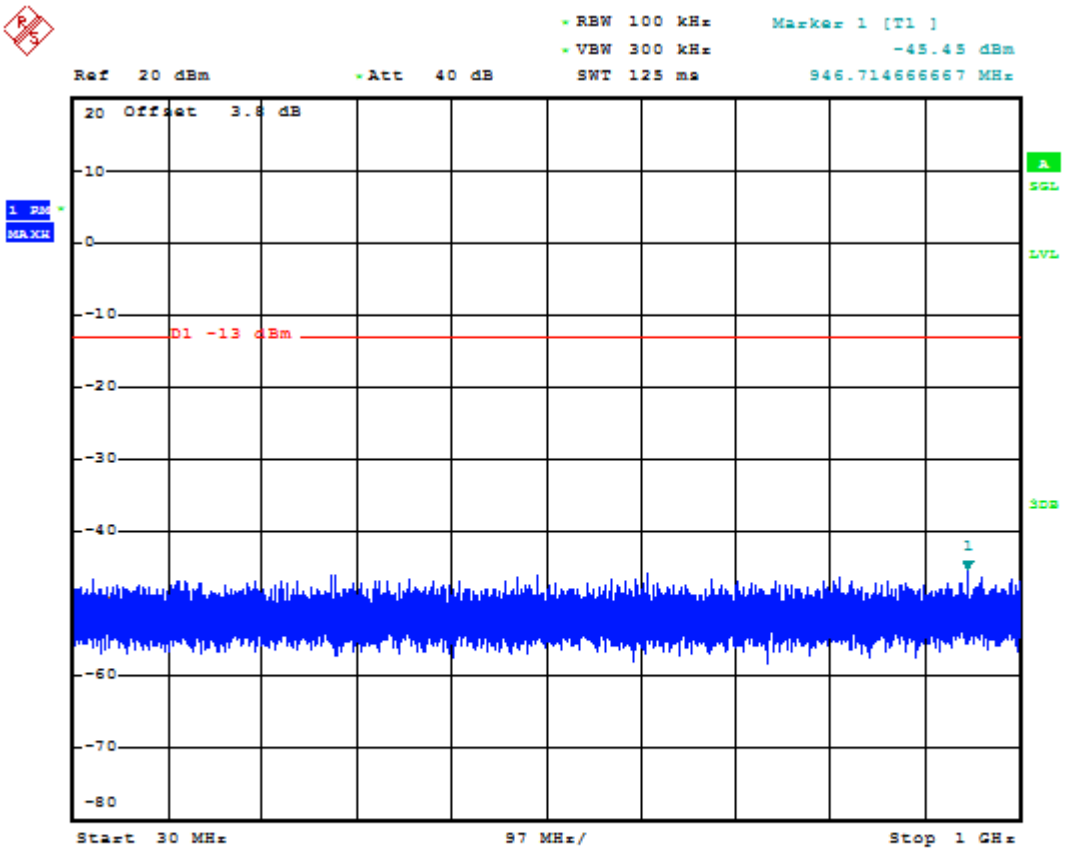
1.2.3.2 Test Channel=MCH



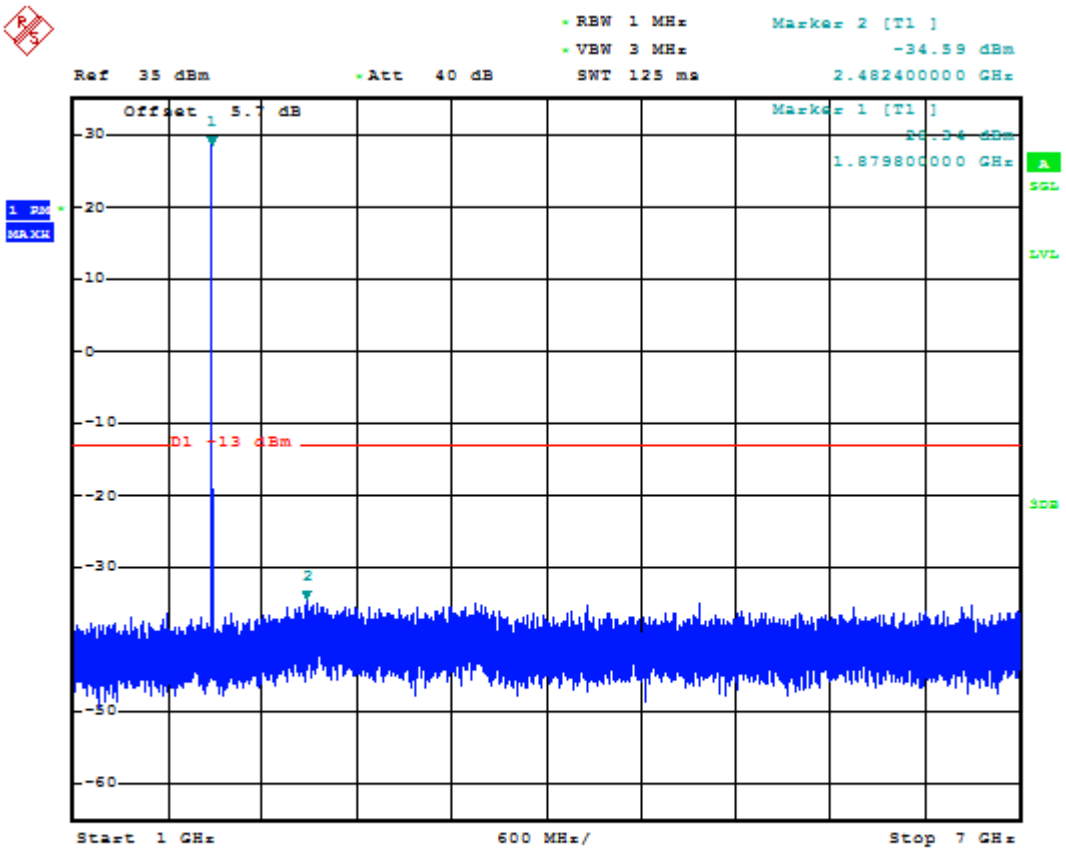
Date: 14.JUN.2020 02:12:01



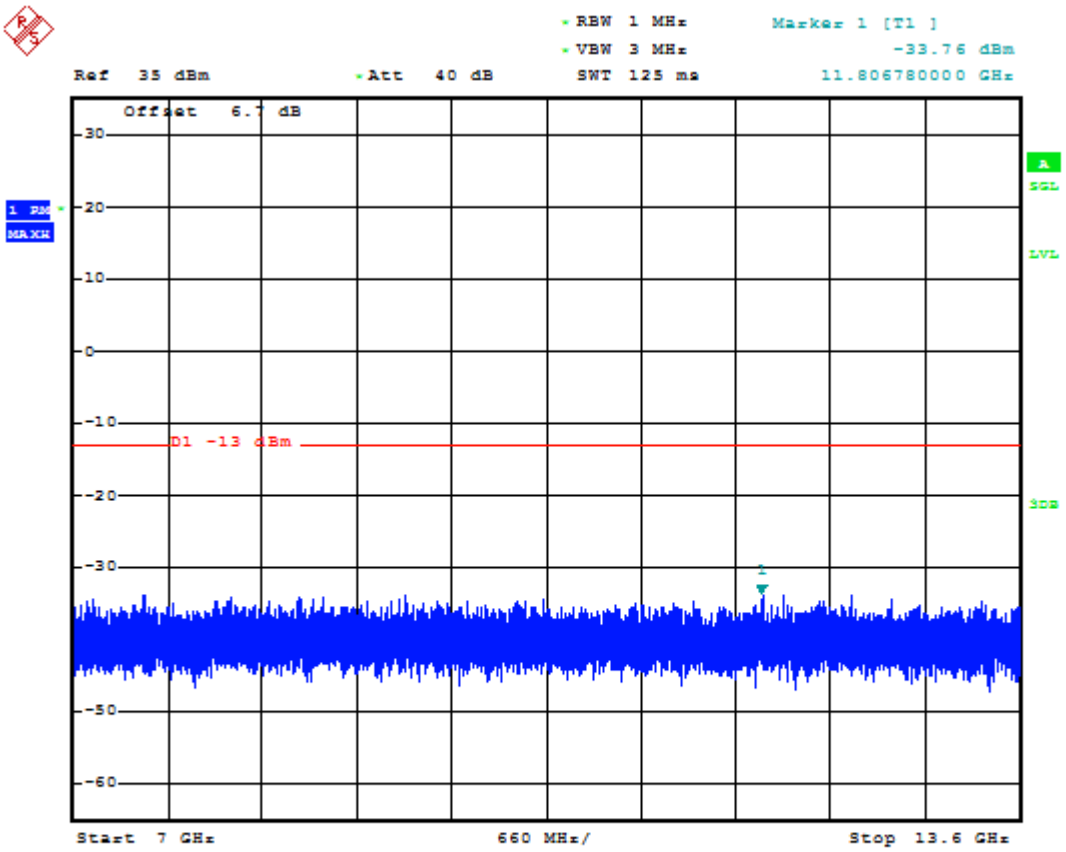
Date: 14.JUN.2020 02:12:26



Date: 14.JUN.2020 02:12:36



Date: 14.JUN.2020 02:12:46



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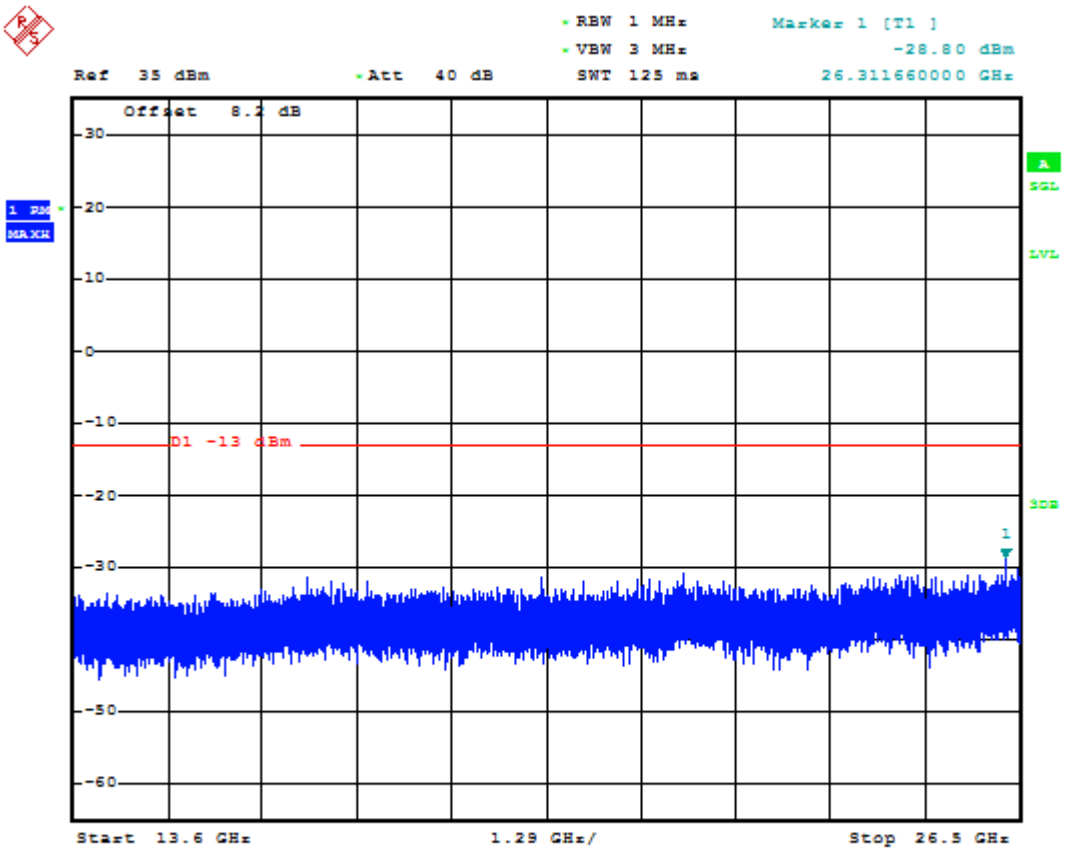
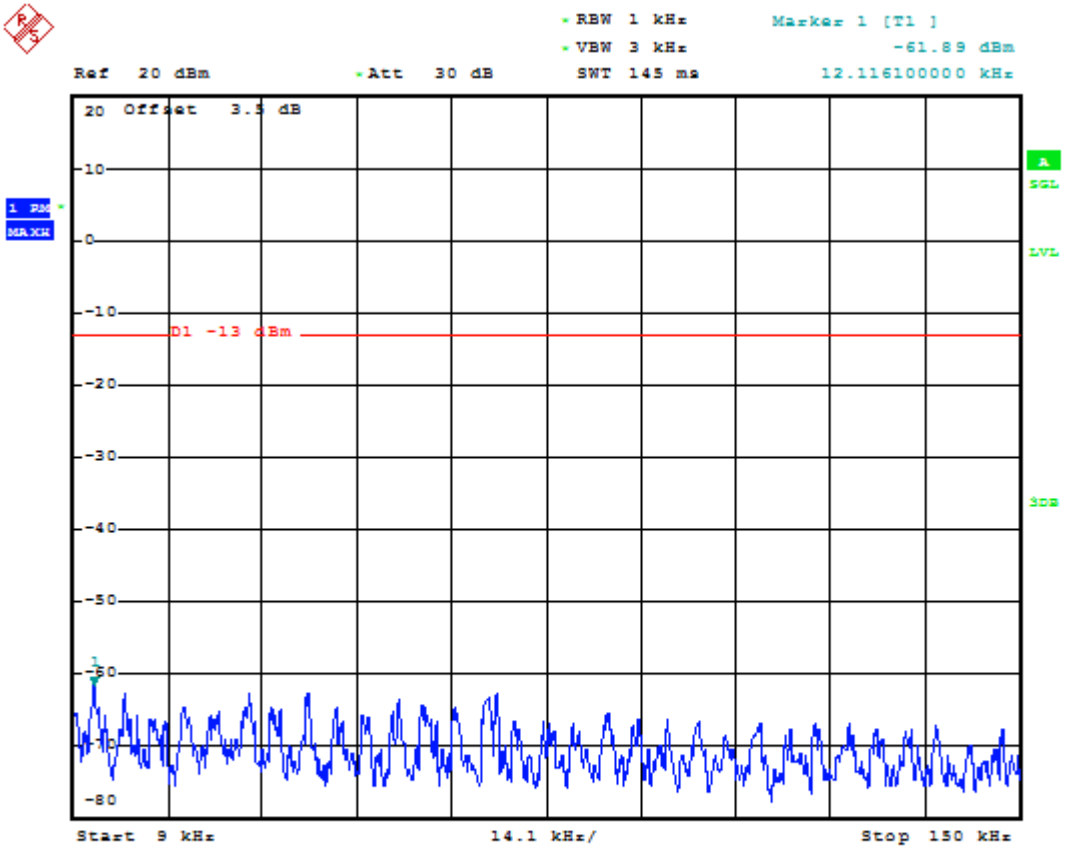
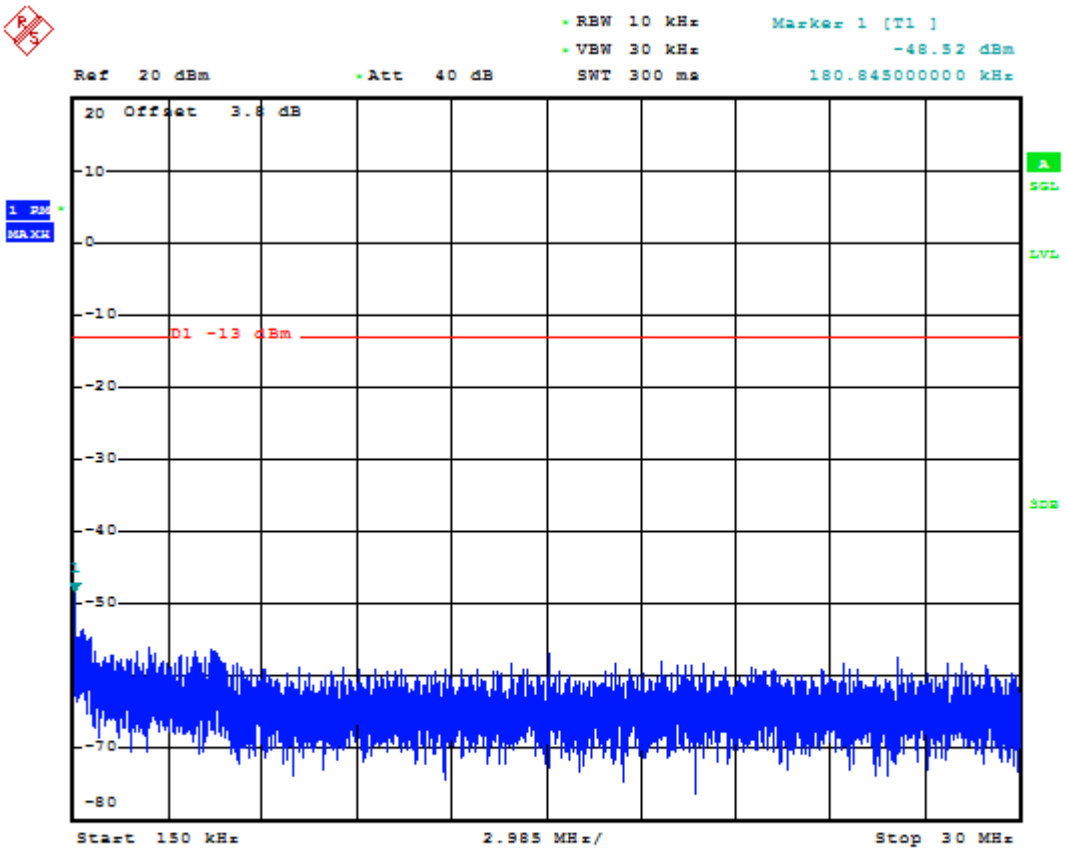


Date: 14.JUN.2020 02:13:05

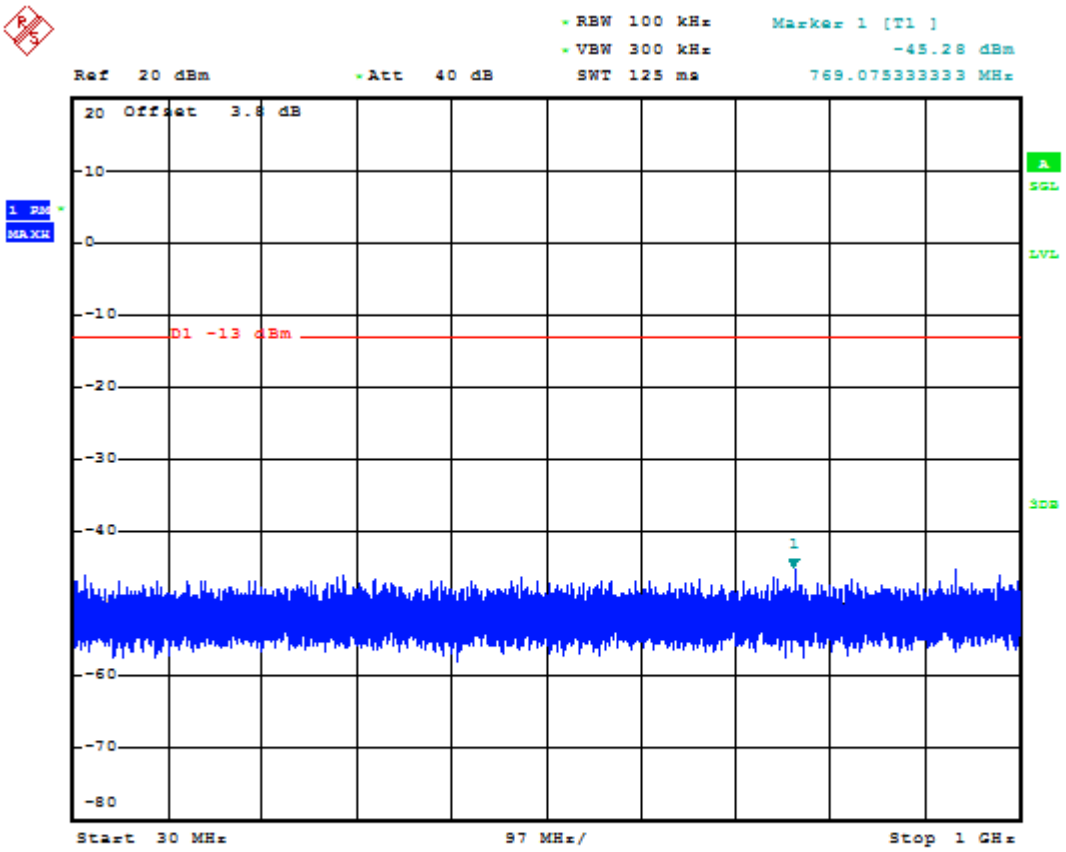
1.2.3.3 Test Channel=HCH



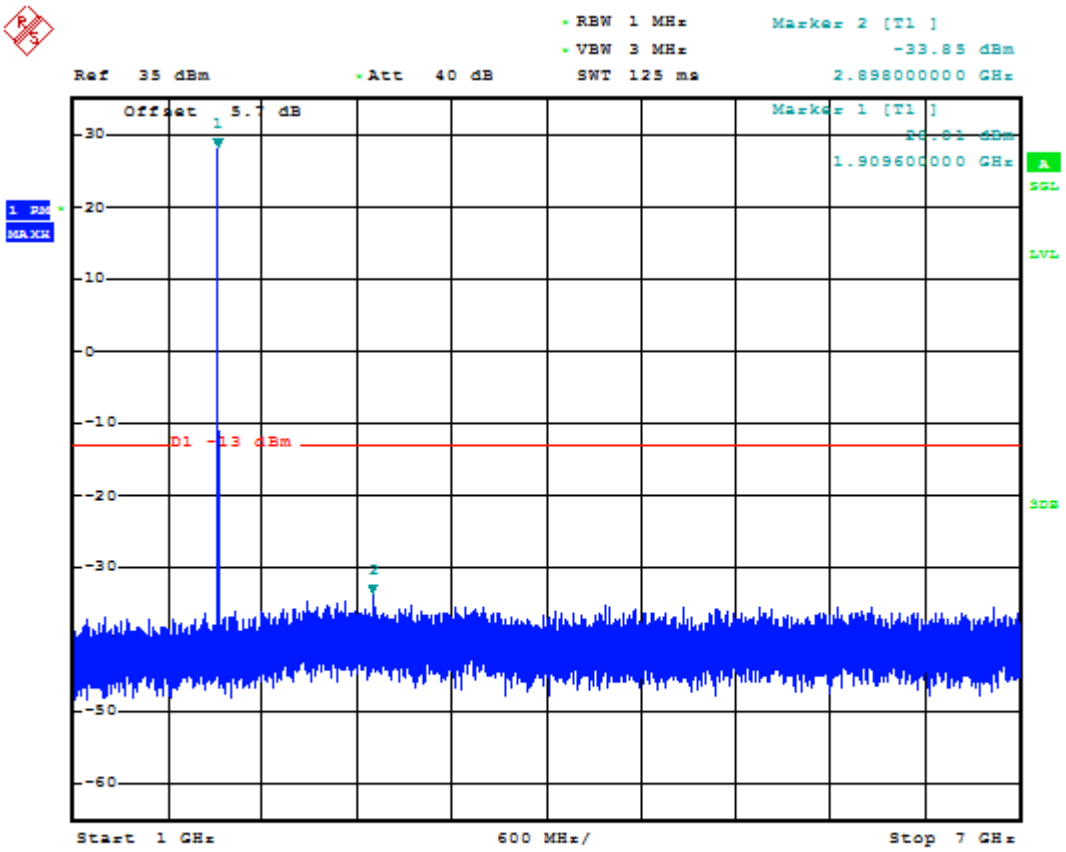
Date: 14.JUN.2020 02:13:23



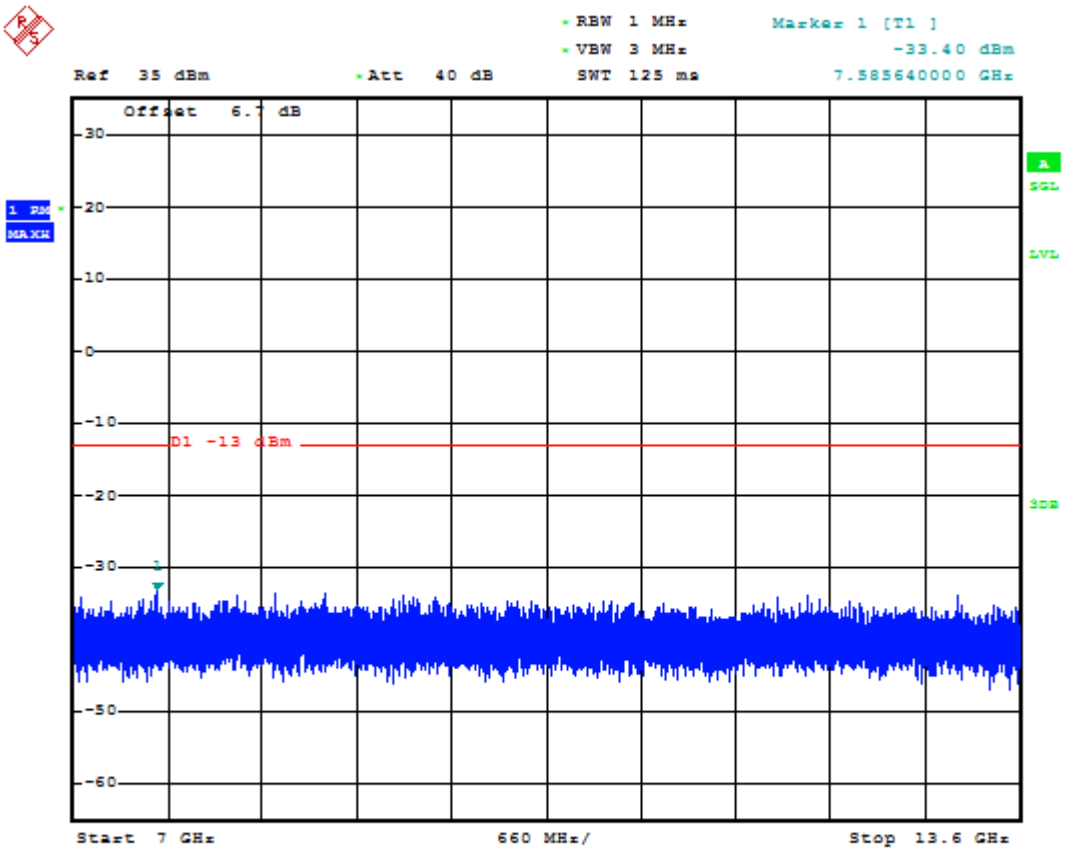
Date: 14.JUN.2020 02:13:49



Date: 14.JUN.2020 02:13:58



Date: 14.JUN.2020 04:09:07



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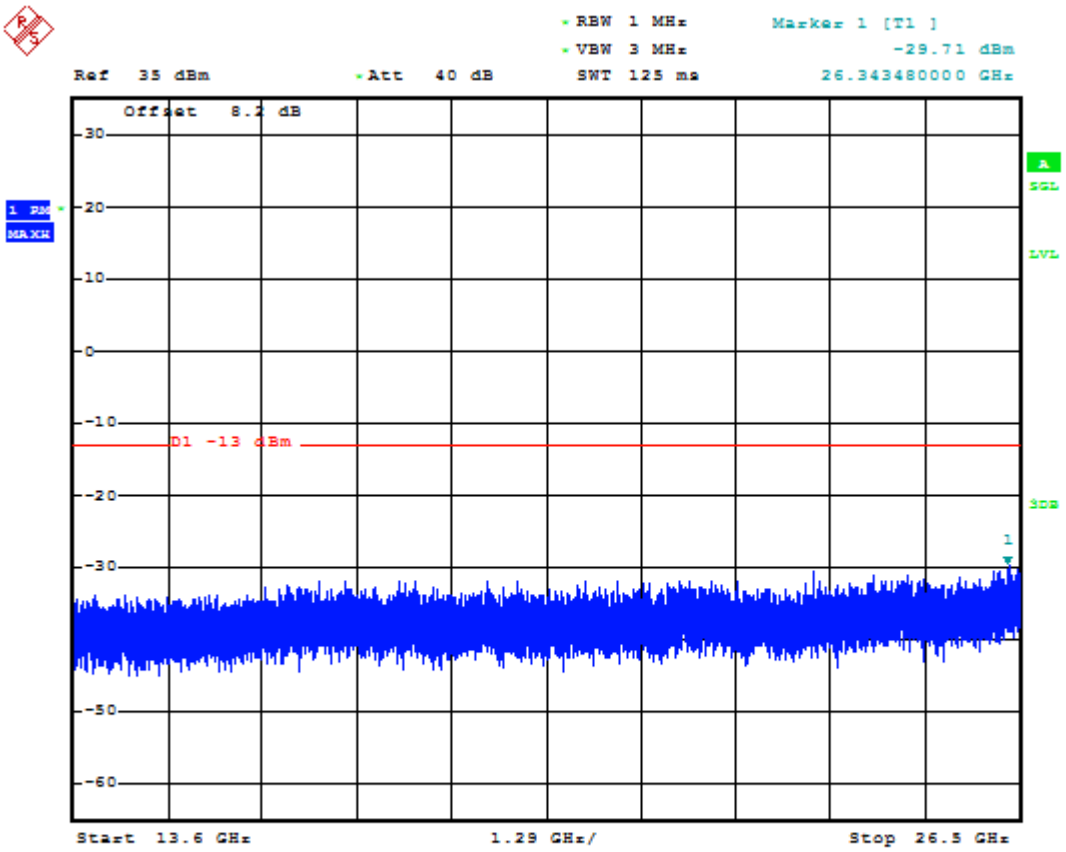

Date: 14.JUN.2020 02:14:26

Appendix G: Field Strength of Spurious Radiation

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	824.2 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_850_CH128		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1648.400	-51.37	7.69	-43.68	-13.00	-30.68	peak
2	2472.600	-48.61	11.34	-37.27	-13.00	-24.27	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	824.2 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_850_CH128		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1648.400	-45.94	7.69	-38.25	-13.00	-25.25	peak
2	2472.600	-50.48	11.34	-39.14	-13.00	-26.14	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	836.6 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_850_CH190		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1673.200	-54.20	7.78	-46.42	-13.00	-33.42	peak
2	2509.800	-48.88	11.51	-37.37	-13.00	-24.37	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	836.6 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_850_CH190		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1673.200	-54.50	7.78	-46.72	-13.00	-33.72	peak
2	2509.800	-51.39	11.51	-39.88	-13.00	-26.88	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	848.8 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_850_CH251		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1697.600	-53.52	7.85	-45.67	-13.00	-32.67	peak
2	2546.400	-51.88	11.63	-40.25	-13.00	-27.25	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	848.8 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_850_CH251		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1697.600	-50.49	7.85	-42.64	-13.00	-29.64	peak
2	2546.400	-53.61	11.63	-41.98	-13.00	-28.98	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1850.2 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_1900_CH512		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3700.400	-61.04	14.75	-46.29	-13.00	-33.29	peak
2	5550.600	-66.35	19.79	-46.56	-13.00	-33.56	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1850.2 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_1900_CH512		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3700.400	-65.82	14.75	-51.07	-13.00	-38.07	peak
2	5550.600	-69.22	19.79	-49.43	-13.00	-36.43	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1880 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_1900_CH661		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-60.59	14.96	-45.63	-13.00	-32.63	peak
2	5640.000	-69.00	19.98	-49.02	-13.00	-36.02	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1880 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_1900_CH661		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3760.000	-63.57	14.96	-48.61	-13.00	-35.61	peak
2	5640.000	-67.99	19.98	-48.01	-13.00	-35.01	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1909.8 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_1900_CH810		
Ant.Polar.:	Horizontal		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3819.600	-62.16	15.17	-46.99	-13.00	-33.99	peak
2	5729.400	-68.05	20.17	-47.88	-13.00	-34.88	peak

Standard:	FCC Part 22H / 24E	Test Distance:	3 m
Test item:	Harmonic	Power:	AC 120 V/60 Hz
Frequency:	1909.8 MHz	Temp.(℃)/Hum.(%RH):	26(℃)/60 %RH
Mode:	2 G_GSM_1900_CH810		
Ant.Polar.:	Vertical		

No.	Frequency (MHz)	Reading (dBm)	Correct Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	3819.600	-60.23	15.17	-45.06	-13.00	-32.06	peak
2	5729.400	-65.63	20.17	-45.46	-13.00	-32.46	peak

Appendix H: Frequency Stability (Temperature & Voltage Variation)

Frequency Error vs. Voltage:

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM1	LCH	TN	VL	-4.00	0.00	±2.5	PASS
			TN	VN	-5.81	-0.01	±2.5	PASS
			TN	VH	-1.10	0.00	±2.5	PASS
		MCH	TN	VL	7.10	0.01	±2.5	PASS
			TN	VN	4.07	0.00	±2.5	PASS
			TN	VH	8.59	0.01	±2.5	PASS
		HCH	TN	VL	-2.71	0.00	±2.5	PASS
			TN	VN	-4.20	0.00	±2.5	PASS
			TN	VH	1.36	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM2	LCH	TN	VL	5.62	0.01	±2.5	PASS
			TN	VN	6.13	0.01	±2.5	PASS
			TN	VH	4.33	0.01	±2.5	PASS
		MCH	TN	VL	3.87	0.00	±2.5	PASS
			TN	VN	2.65	0.00	±2.5	PASS
			TN	VH	5.10	0.01	±2.5	PASS
		HCH	TN	VL	5.17	0.01	±2.5	PASS
			TN	VN	2.91	0.00	±2.5	PASS
			TN	VH	4.13	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM3	LCH	TN	VL	11.01	0.01	±2.5	PASS
			TN	VN	11.62	0.01	±2.5	PASS
			TN	VH	10.23	0.01	±2.5	PASS
		MCH	TN	VL	10.11	0.01	±2.5	PASS
			TN	VN	9.91	0.01	±2.5	PASS
			TN	VH	10.62	0.01	±2.5	PASS
		HCH	TN	VL	10.36	0.01	±2.5	PASS
			TN	VN	12.59	0.01	±2.5	PASS
			TN	VH	11.82	0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM1	LCH	TN	VL	1.16	0.00	±2.5	PASS
			TN	VN	-0.06	0.00	±2.5	PASS
			TN	VH	-0.71	0.00	±2.5	PASS
		MCH	TN	VL	6.59	0.00	±2.5	PASS
			TN	VN	1.68	0.00	±2.5	PASS
			TN	VH	0.19	0.00	±2.5	PASS
		HCH	TN	VL	2.97	0.00	±2.5	PASS
			TN	VN	0.26	0.00	±2.5	PASS
			TN	VH	2.91	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM2	LCH	TN	VL	0.77	0.00	±2.5	PASS
			TN	VN	3.62	0.00	±2.5	PASS
			TN	VH	0.00	0.00	±2.5	PASS
		MCH	TN	VL	0.19	0.00	±2.5	PASS
			TN	VN	1.49	0.00	±2.5	PASS
			TN	VH	2.07	0.00	±2.5	PASS
		HCH	TN	VL	1.29	0.00	±2.5	PASS
			TN	VN	-0.06	0.00	±2.5	PASS
			TN	VH	2.78	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Temp.	Test Volt.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM3	LCH	TN	VL	4.88	0.00	±2.5	PASS
			TN	VN	7.43	0.00	±2.5	PASS
			TN	VH	5.17	0.00	±2.5	PASS
		MCH	TN	VL	3.23	0.00	±2.5	PASS
			TN	VN	4.07	0.00	±2.5	PASS
			TN	VH	3.00	0.00	±2.5	PASS
		HCH	TN	VL	3.65	0.00	±2.5	PASS
			TN	VN	4.20	0.00	±2.5	PASS
			TN	VH	3.84	0.00	±2.5	PASS

Frequency Error vs. Temperature:

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM1	LCH	VN	-30	-0.39	0.00	±2.5	PASS
			VN	-20	4.46	0.01	±2.5	PASS
			VN	-10	3.49	0.00	±2.5	PASS
			VN	0	7.17	0.01	±2.5	PASS
			VN	10	5.94	0.01	±2.5	PASS
			VN	20	3.55	0.00	±2.5	PASS
			VN	30	7.23	0.01	±2.5	PASS
			VN	40	5.68	0.01	±2.5	PASS
			VN	50	4.46	0.01	±2.5	PASS
GSM850	TM1	MCH	VN	-30	-9.62	-0.01	±2.5	PASS
			VN	-20	6.52	0.01	±2.5	PASS
			VN	-10	5.75	0.01	±2.5	PASS
			VN	0	6.39	0.01	±2.5	PASS
			VN	10	6.20	0.01	±2.5	PASS
			VN	20	-7.55	-0.01	±2.5	PASS
			VN	30	-5.81	-0.01	±2.5	PASS
			VN	40	-5.10	-0.01	±2.5	PASS
			VN	50	-3.87	0.00	±2.5	PASS
GSM850	TM1	HCH	VN	-30	2.07	0.00	±2.5	PASS
			VN	-20	-0.39	0.00	±2.5	PASS
			VN	-10	6.78	0.01	±2.5	PASS
			VN	0	3.87	0.00	±2.5	PASS
			VN	10	5.55	0.01	±2.5	PASS
			VN	20	6.20	0.01	±2.5	PASS
			VN	30	5.55	0.01	±2.5	PASS
			VN	40	6.07	0.01	±2.5	PASS
			VN	50	6.46	0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM2	LCH	VN	-30	4.39	0.01	±2.5	PASS
			VN	-20	4.58	0.01	±2.5	PASS
			VN	-10	4.84	0.01	±2.5	PASS
			VN	0	4.07	0.00	±2.5	PASS
			VN	10	5.04	0.01	±2.5	PASS
			VN	20	5.75	0.01	±2.5	PASS
			VN	30	3.03	0.00	±2.5	PASS
			VN	40	3.87	0.00	±2.5	PASS
			VN	50	7.04	0.01	±2.5	PASS
GSM850	TM2	MCH	VN	-30	3.10	0.00	±2.5	PASS
			VN	-20	6.20	0.01	±2.5	PASS
			VN	-10	7.04	0.01	±2.5	PASS
			VN	0	3.29	0.00	±2.5	PASS
			VN	10	6.46	0.01	±2.5	PASS
			VN	20	4.20	0.01	±2.5	PASS
			VN	30	4.58	0.01	±2.5	PASS
			VN	40	6.78	0.01	±2.5	PASS
			VN	50	3.87	0.00	±2.5	PASS
GSM850	TM2	HCH	VN	-30	4.46	0.01	±2.5	PASS
			VN	-20	5.75	0.01	±2.5	PASS
			VN	-10	4.71	0.01	±2.5	PASS
			VN	0	4.46	0.01	±2.5	PASS
			VN	10	2.78	0.00	±2.5	PASS
			VN	20	4.20	0.00	±2.5	PASS
			VN	30	4.65	0.01	±2.5	PASS
			VN	40	5.10	0.01	±2.5	PASS
			VN	50	5.68	0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM850	TM3	LCH	VN	-30	9.85	0.01	±2.5	PASS
			VN	-20	10.04	0.01	±2.5	PASS
			VN	-10	10.33	0.01	±2.5	PASS
			VN	0	10.11	0.01	±2.5	PASS
			VN	10	9.07	0.01	±2.5	PASS
			VN	20	8.43	0.01	±2.5	PASS
			VN	30	10.17	0.01	±2.5	PASS
			VN	40	8.91	0.01	±2.5	PASS
			VN	50	10.75	0.01	±2.5	PASS
GSM850	TM3	MCH	VN	-30	10.49	0.01	±2.5	PASS
			VN	-20	9.78	0.01	±2.5	PASS
			VN	-10	10.91	0.01	±2.5	PASS
			VN	0	11.27	0.01	±2.5	PASS
			VN	10	10.78	0.01	±2.5	PASS
			VN	20	11.69	0.01	±2.5	PASS
			VN	30	11.49	0.01	±2.5	PASS
			VN	40	10.69	0.01	±2.5	PASS
			VN	50	7.43	0.01	±2.5	PASS
GSM850	TM3	HCH	VN	-30	11.43	0.01	±2.5	PASS
			VN	-20	8.68	0.01	±2.5	PASS
			VN	-10	11.36	0.01	±2.5	PASS
			VN	0	10.69	0.01	±2.5	PASS
			VN	10	12.75	0.02	±2.5	PASS
			VN	20	9.17	0.01	±2.5	PASS
			VN	30	9.75	0.01	±2.5	PASS
			VN	40	9.52	0.01	±2.5	PASS
			VN	50	9.78	0.01	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM1	LCH	VN	-30	-0.39	0.00	±2.5	PASS
			VN	-20	-1.23	0.00	±2.5	PASS
			VN	-10	1.81	0.00	±2.5	PASS
			VN	0	0.52	0.00	±2.5	PASS
			VN	10	0.97	0.00	±2.5	PASS
			VN	20	-0.06	0.00	±2.5	PASS
			VN	30	0.32	0.00	±2.5	PASS
			VN	40	6.33	0.00	±2.5	PASS
			VN	50	4.78	0.00	±2.5	PASS
GSM1900	TM1	MCH	VN	-30	2.71	0.00	±2.5	PASS
			VN	-20	0.26	0.00	±2.5	PASS
			VN	-10	3.03	0.00	±2.5	PASS
			VN	0	3.68	0.00	±2.5	PASS
			VN	10	1.55	0.00	±2.5	PASS
			VN	20	3.16	0.00	±2.5	PASS
			VN	30	-0.39	0.00	±2.5	PASS
			VN	40	3.03	0.00	±2.5	PASS
			VN	50	2.07	0.00	±2.5	PASS
GSM1900	TM1	HCH	VN	-30	2.97	0.00	±2.5	PASS
			VN	-20	3.10	0.00	±2.5	PASS
			VN	-10	1.42	0.00	±2.5	PASS
			VN	0	1.61	0.00	±2.5	PASS
			VN	10	4.46	0.00	±2.5	PASS
			VN	20	2.13	0.00	±2.5	PASS
			VN	30	3.29	0.00	±2.5	PASS
			VN	40	0.97	0.00	±2.5	PASS
			VN	50	2.20	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM2	LCH	VN	-30	-1.16	0.00	±2.5	PASS
			VN	-20	2.71	0.00	±2.5	PASS
			VN	-10	-2.97	0.00	±2.5	PASS
			VN	0	3.68	0.00	±2.5	PASS
			VN	10	-3.49	0.00	±2.5	PASS
			VN	20	1.42	0.00	±2.5	PASS
			VN	30	1.16	0.00	±2.5	PASS
			VN	40	1.16	0.00	±2.5	PASS
			VN	50	0.71	0.00	±2.5	PASS
GSM1900	TM2	MCH	VN	-30	2.07	0.00	±2.5	PASS
			VN	-20	1.29	0.00	±2.5	PASS
			VN	-10	0.65	0.00	±2.5	PASS
			VN	0	0.58	0.00	±2.5	PASS
			VN	10	0.13	0.00	±2.5	PASS
			VN	20	-0.65	0.00	±2.5	PASS
			VN	30	-0.26	0.00	±2.5	PASS
			VN	40	0.19	0.00	±2.5	PASS
			VN	50	-0.06	0.00	±2.5	PASS
GSM1900	TM2	HCH	VN	-30	1.68	0.00	±2.5	PASS
			VN	-20	1.16	0.00	±2.5	PASS
			VN	-10	0.26	0.00	±2.5	PASS
			VN	0	-2.13	0.00	±2.5	PASS
			VN	10	-0.97	0.00	±2.5	PASS
			VN	20	-1.94	0.00	±2.5	PASS
			VN	30	-1.03	0.00	±2.5	PASS
			VN	40	3.49	0.00	±2.5	PASS
			VN	50	-1.23	0.00	±2.5	PASS

Test Band	Test Mode	Test Channel	Test Volt.	Test Temp.	Freq.Error (Hz)	Freq.vs.rated (ppm)	Limit (ppm)	Verdict
GSM1900	TM3	LCH	VN	-30	10.30	0.01	±2.5	PASS
			VN	-20	10.14	0.01	±2.5	PASS
			VN	-10	9.17	0.00	±2.5	PASS
			VN	0	9.14	0.00	±2.5	PASS
			VN	10	-0.42	0.00	±2.5	PASS
			VN	20	9.30	0.01	±2.5	PASS
			VN	30	-0.52	0.00	±2.5	PASS
			VN	40	8.75	0.00	±2.5	PASS
			VN	50	7.91	0.00	±2.5	PASS
GSM1900	TM3	MCH	VN	-30	4.97	0.00	±2.5	PASS
			VN	-20	4.97	0.00	±2.5	PASS
			VN	-10	5.84	0.00	±2.5	PASS
			VN	0	4.49	0.00	±2.5	PASS
			VN	10	-1.52	0.00	±2.5	PASS
			VN	20	4.91	0.00	±2.5	PASS
			VN	30	4.62	0.00	±2.5	PASS
			VN	40	3.94	0.00	±2.5	PASS
			VN	50	4.55	0.00	±2.5	PASS
GSM1900	TM3	HCH	VN	-30	4.91	0.00	±2.5	PASS
			VN	-20	4.46	0.00	±2.5	PASS
			VN	-10	4.29	0.00	±2.5	PASS
			VN	0	4.49	0.00	±2.5	PASS
			VN	10	3.23	0.00	±2.5	PASS
			VN	20	3.68	0.00	±2.5	PASS
			VN	30	3.94	0.00	±2.5	PASS
			VN	40	3.81	0.00	±2.5	PASS
			VN	50	4.10	0.00	±2.5	PASS

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