

Annex 1: Measurement diagrams 21-1-0042601T08a-A1

Number of pages:	66	Date of Report:	2022-Jun-30
Testing company:	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	WITTE-Velbert GmbH & Co.KG
Product:	BTLE enabled secure vehicle access box		
Model:	flinkey CAN		
FCC ID:	V2TFC80	IC:	7575A-FC80
Testing has been carried out in accordance with:	Title 47 CFR, Chapter I FCC Regulations, Subchapter A Part 15, Subpart C: §15.225 ISED Regulations RSS-Gen, Issue 5 + Amendment 2 RSS-210, Issue 10 Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".each section under "Test method and limit".		

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1 Measurement diagrams

1.1 H-Field strength

Worst case position was determined to be the standing position. Following measurements were performed in worst case position only.

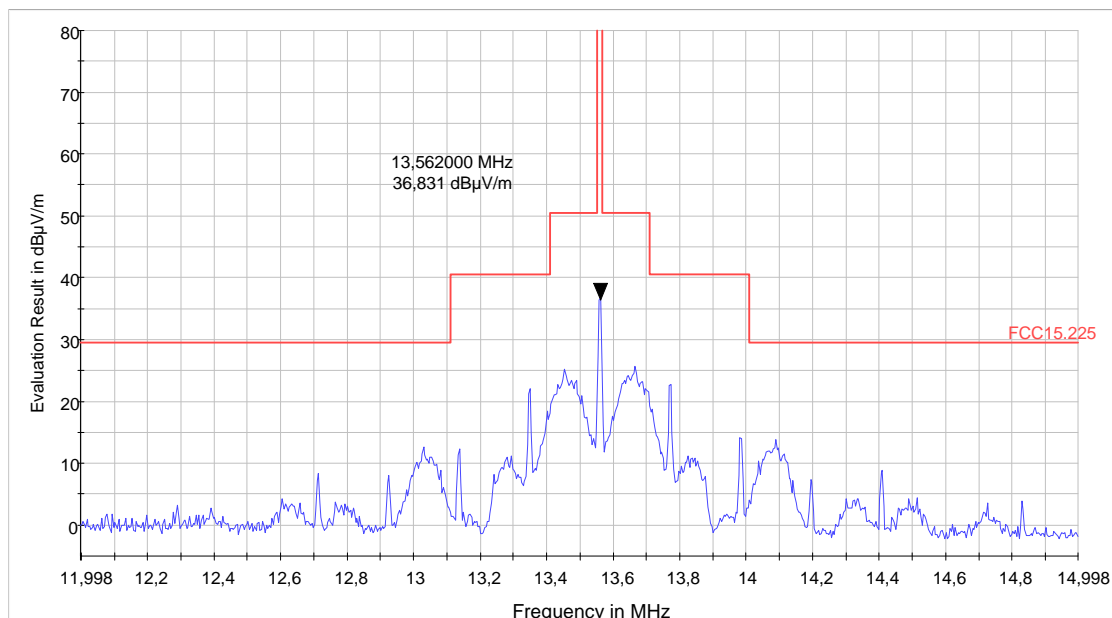
2.02_H-Field_standing

Common Information

Test Description:	Magnetic Field Strength Measurement related to 30 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Environmental Conditions::	Humidity : 50%rH; Temperature: 18°C
Used Filter:	bypass
Test Standard:	FCC 15.225; RSS-Gen: Issue 5
Operator:	TFra/SSanthakum
Operating Mode:	NFC TX TX mod. PRBS
Verdict:	Passed

EUT Information

PMT number:	21-1-00426S28_C01
Manufacturer:	WITTE-Velbert GmbH & Co.KG
Power Supply:	12 V DC
Comments:	EUT laying, with Keyfob, PRBS testmode, door closed



1.2 Radiated spurious emissions < 30MHz

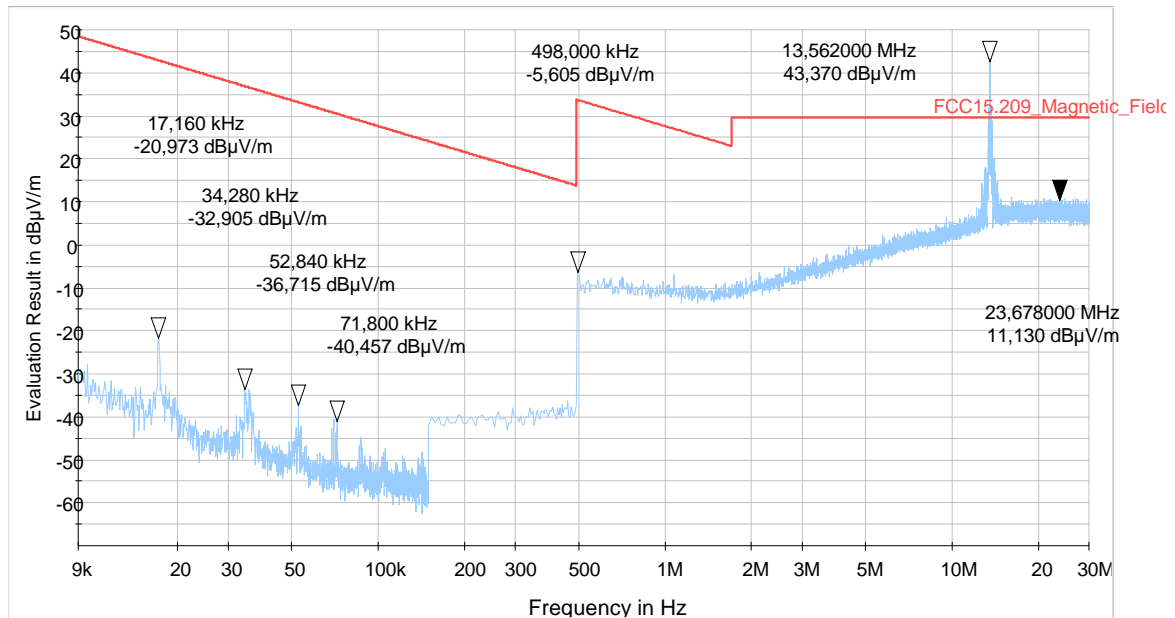
2.03_RSE_standing

Common Information

Test Description:	Magnetic Field Strength Measurement related to 30 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Environmental Conditions::	Humidity : 50%rH; Temperature: 18°C
Used Filter:	bypass
Test Standard:	FCC 15.225; RSS-Gen: Issue 5
Operator:	TFra/SSanthakum
Operating Mode:	NFC TX TX mod. PRBS
Verdict:	Passed

EUT Information

PMT number:	21-1-00426S28_C01
Manufacturer:	WITTE-Velbert GmbH & Co.KG
Power Supply:	12 V DC
Comments:	EUT standing, with Keyfob, PRBS testmode, door closed



Remark: carrier at 13.56 MHz not relevant for the measurement

1.3 Radiated spurious emissions > 30MHz

3.01_RSE_standing

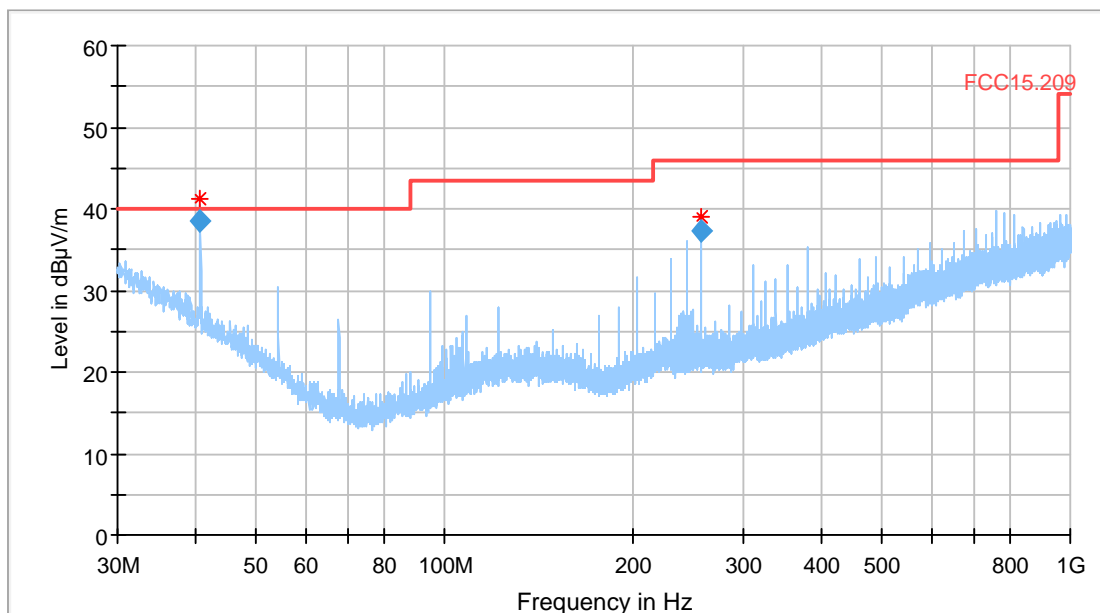
Common Information

Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.205&15.209 & RSS Gen. Issue 5
 Antenna polarisation: horizontal/vertical
 Environmental Conditions: Humidity : 51%rH; Temperature: 21°C
 Operator Name: LKnopp
 Operating Mode: NFC TX TX mod. PRBS
 Comment: Channel nominal
 Verdict: Passed

EUT Information

PMT number: 21-1-00426S28_C01
 Manufacturer: WITTE-Velbert GmbH & Co.KG
 Power Supply: 12 V DC
 Comments: EUT standing, with Keyfob, PRBS testmode, door closed

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamplifier (dB)	Trd Corr. (dB/m)
40.679000	38.42	40.00	1.58	120.000	130.0	V	0.0	19.8	0.0	0.5	19.3
257.645000	37.34	46.00	8.66	120.000	207.0	V	287.0	14.9	0.0	1.4	13.5

3.02_RSE_lying

Common Information

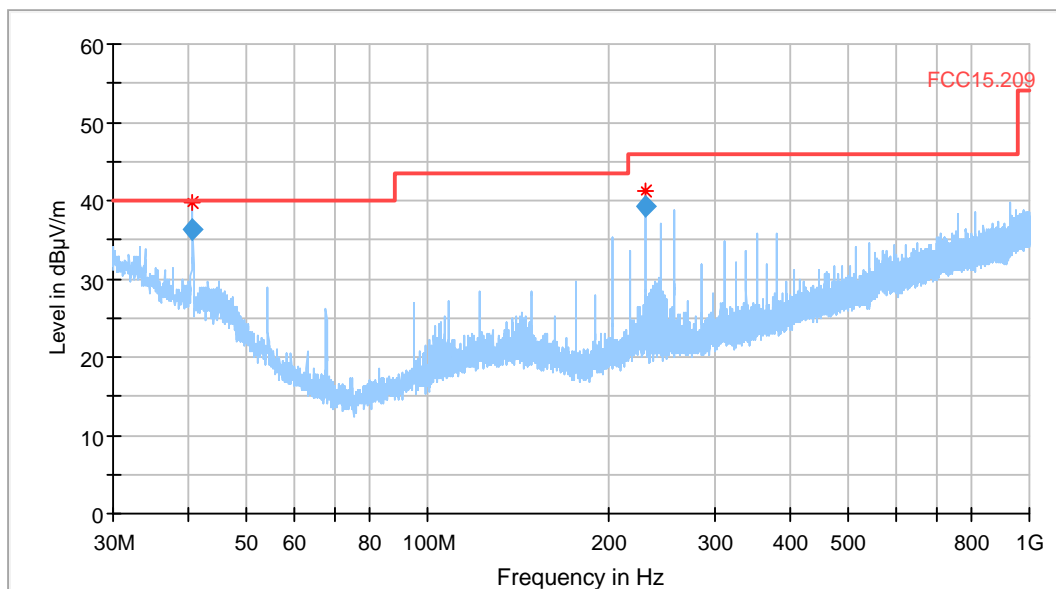
Test Description: Radiated field strength emission in 3m distance
 Test Site: CETECOM GmbH Essen
 Test Standard: FCC 15.205&15.209 & RSS Gen. Issue 5
 Antenna polarisation: horizontal/vertical
 Environmental Conditions: Humidity : 51%rH; Temperature: 21°C
 Operator Name: LKnopp
 Operating Mode: NFC TX TX mod. PRBS
 Comment: Channel nominal
 Verdict: Passed

EUT Information

PMT number: 21-1-00426S28_C01
 Manufacturer: WITTE-Velbert GmbH & Co.KG
 Power Supply: 12 V DC
 Comments: EUT standing, with Keyfob, PRBS testmode, door closed

Full Spectrum

Full Spectrum



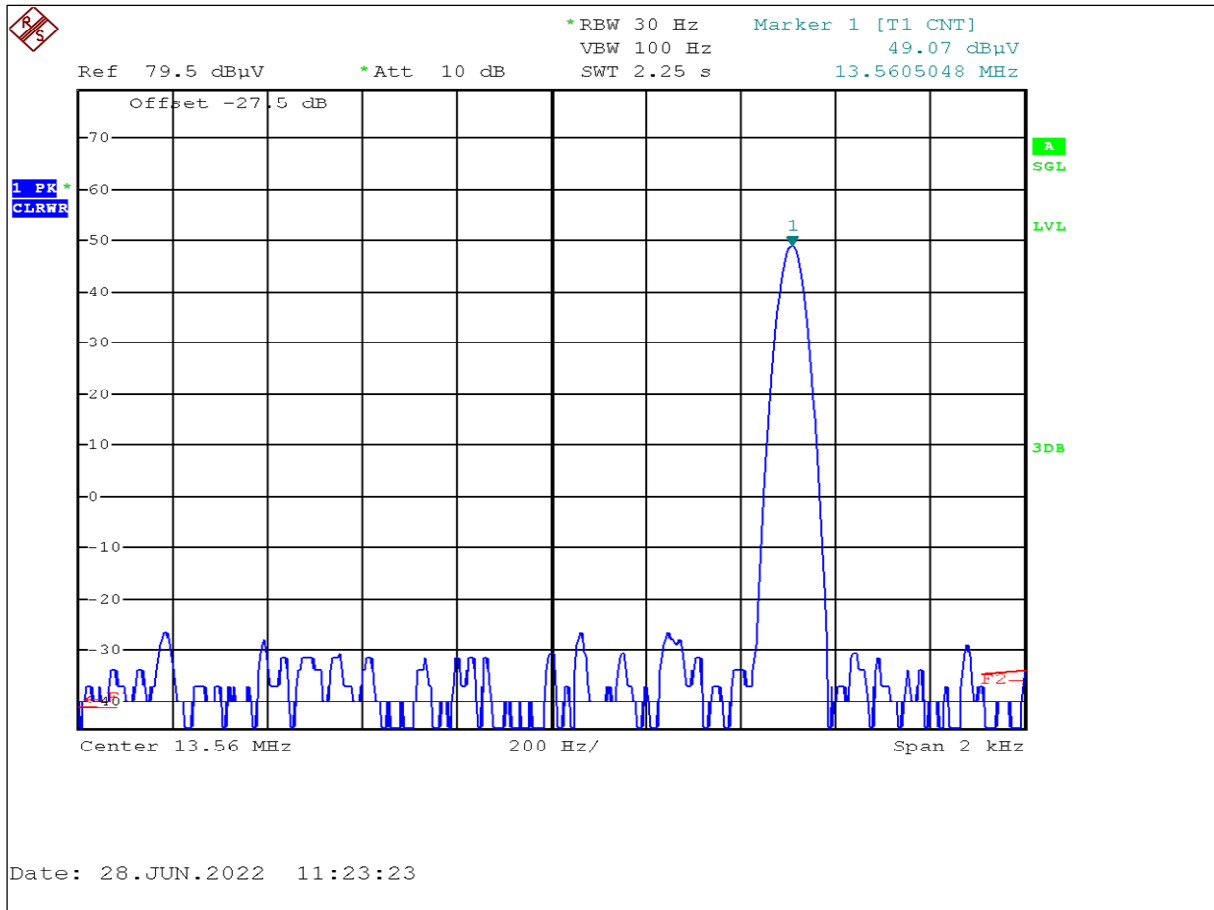
Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Sig Path (dB)	Preamplifier (dB)	Trd Corr. (dB/m)
40.679000	36.31	40.00	3.69	120.000	126.0	V	78.0	19.8	0.0	0.5	19.3
230.525000	39.17	46.00	6.83	120.000	130.0	H	274.0	14.3	0.0	1.4	12.9

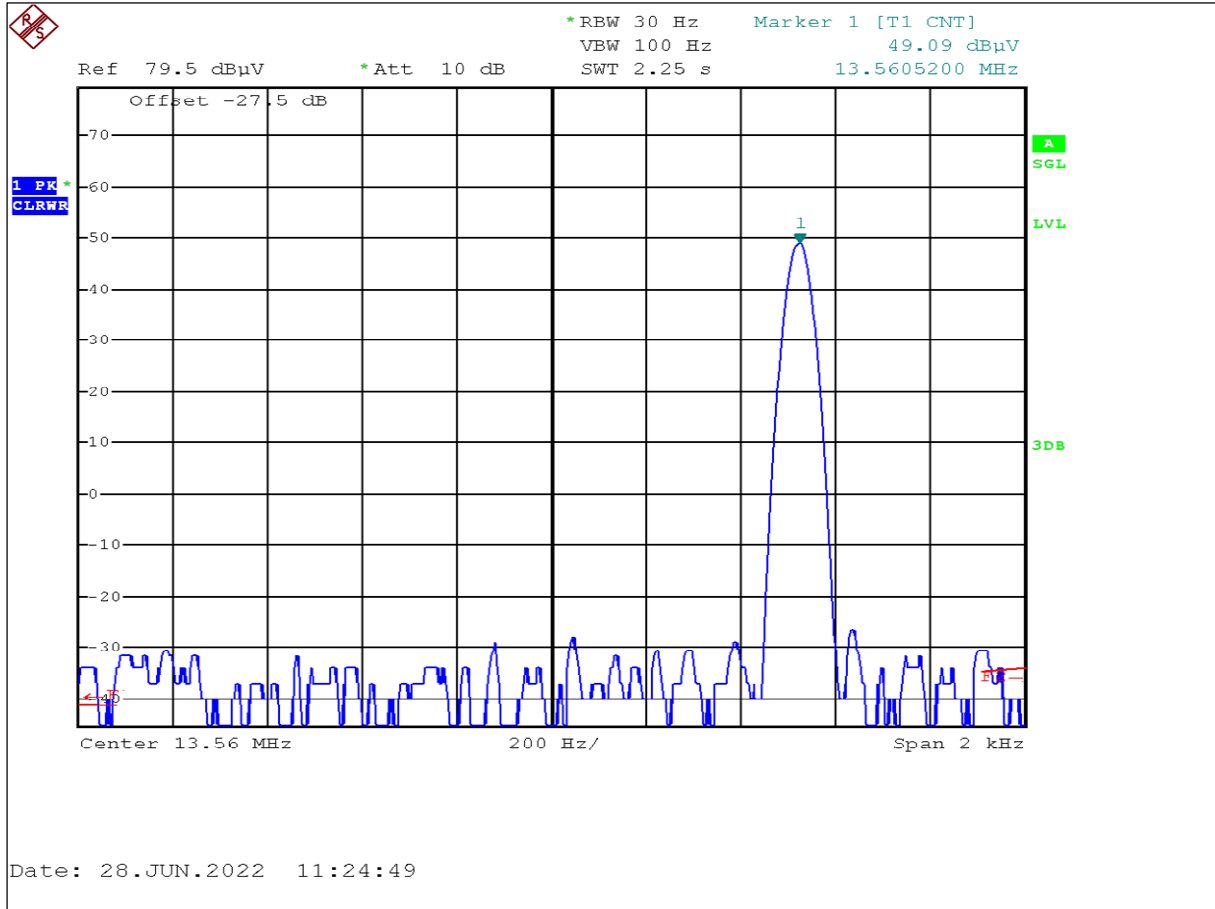
1.4 Frequency stability

1.4.1 Temperature variation

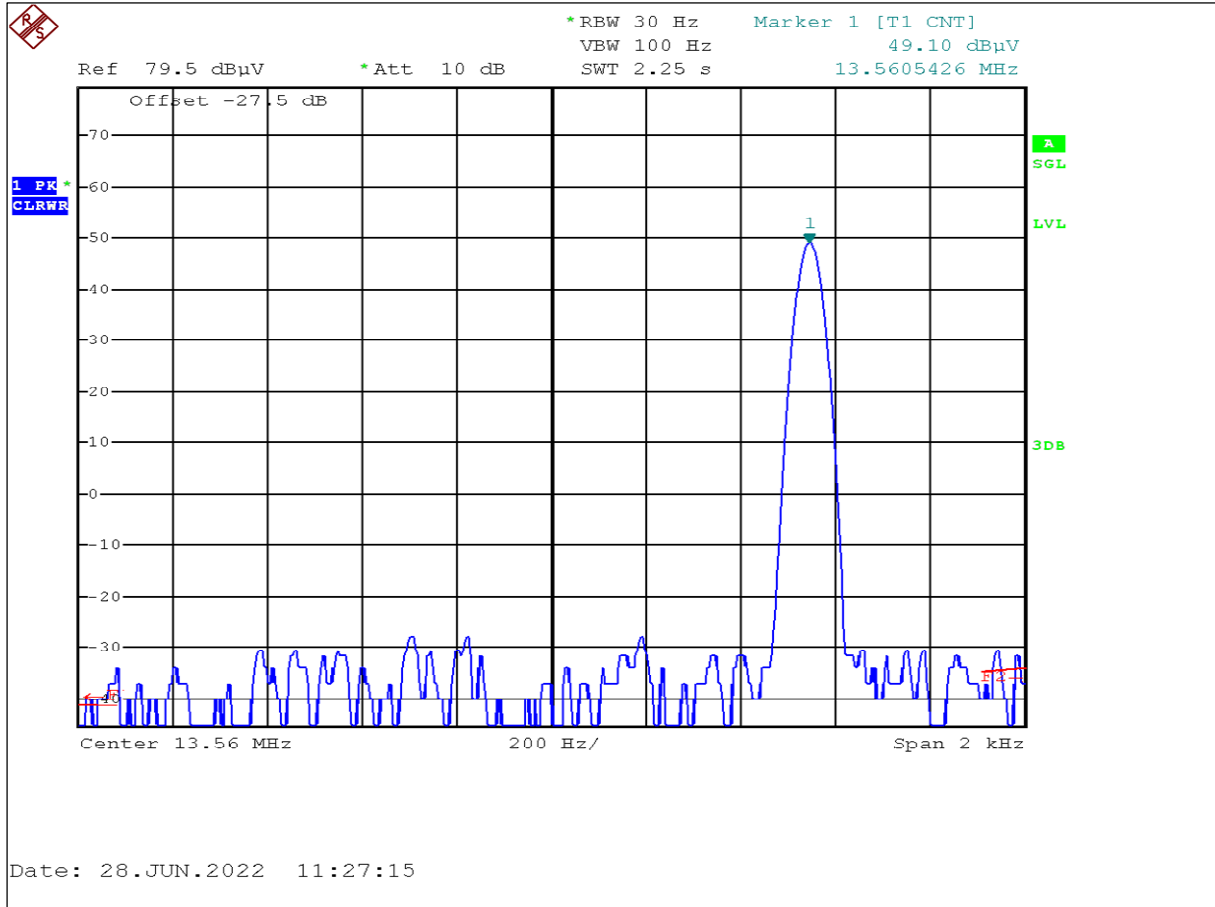
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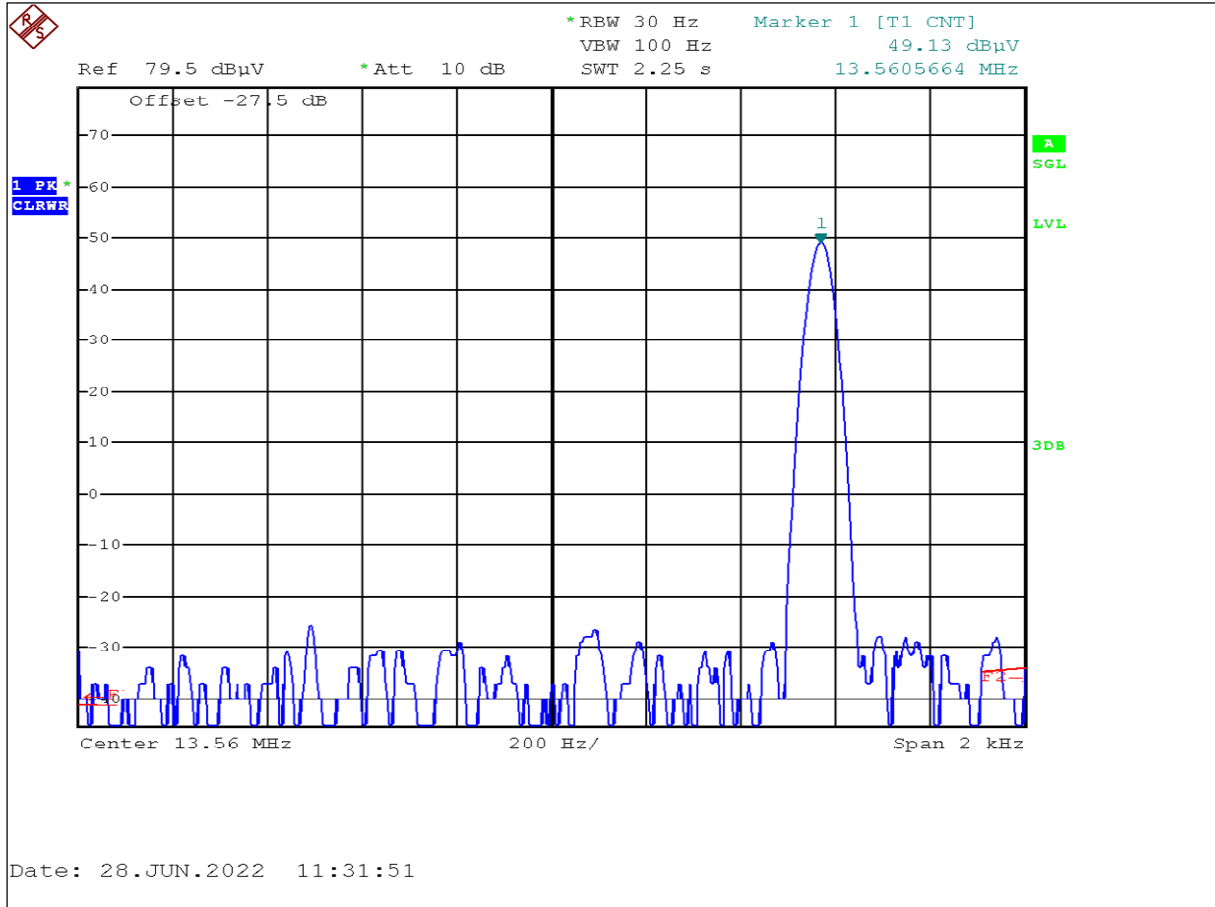
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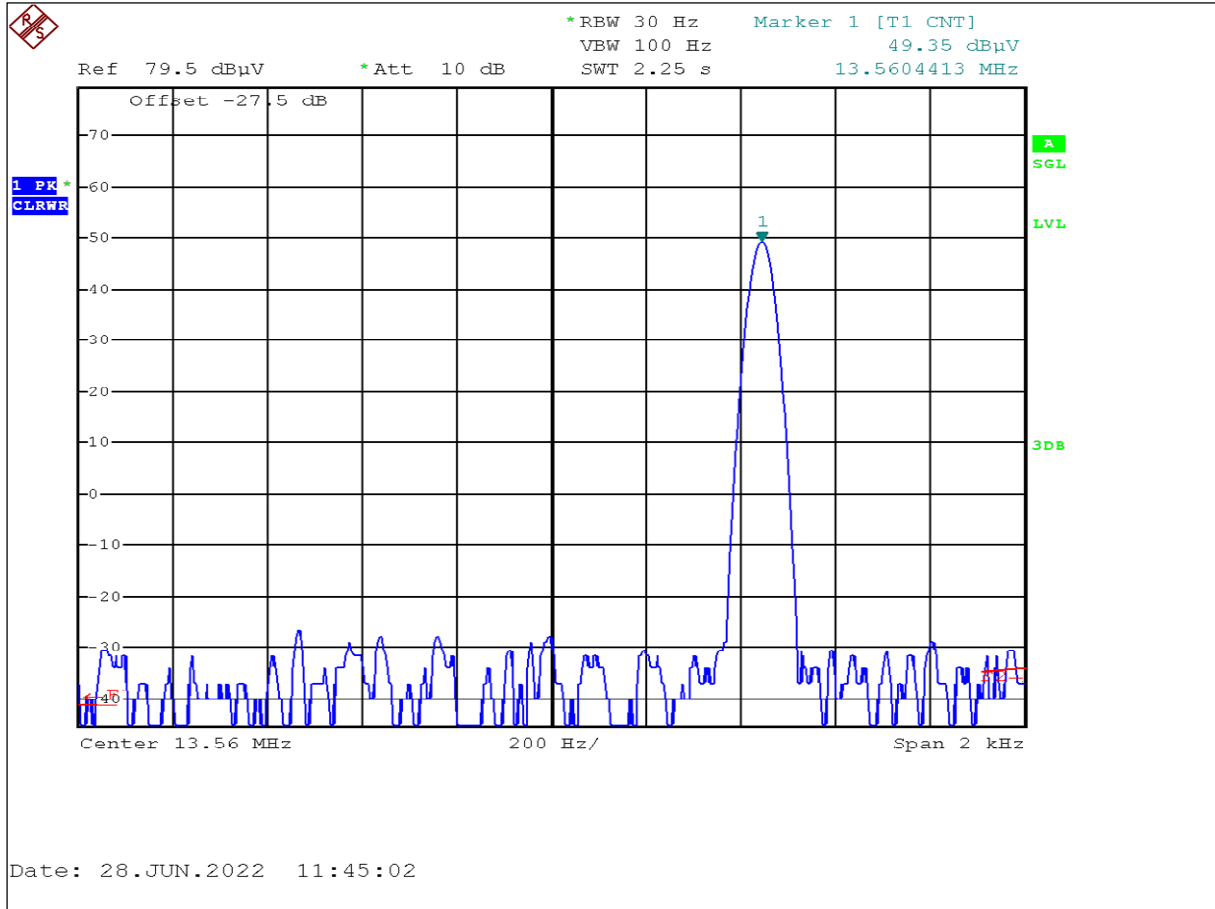
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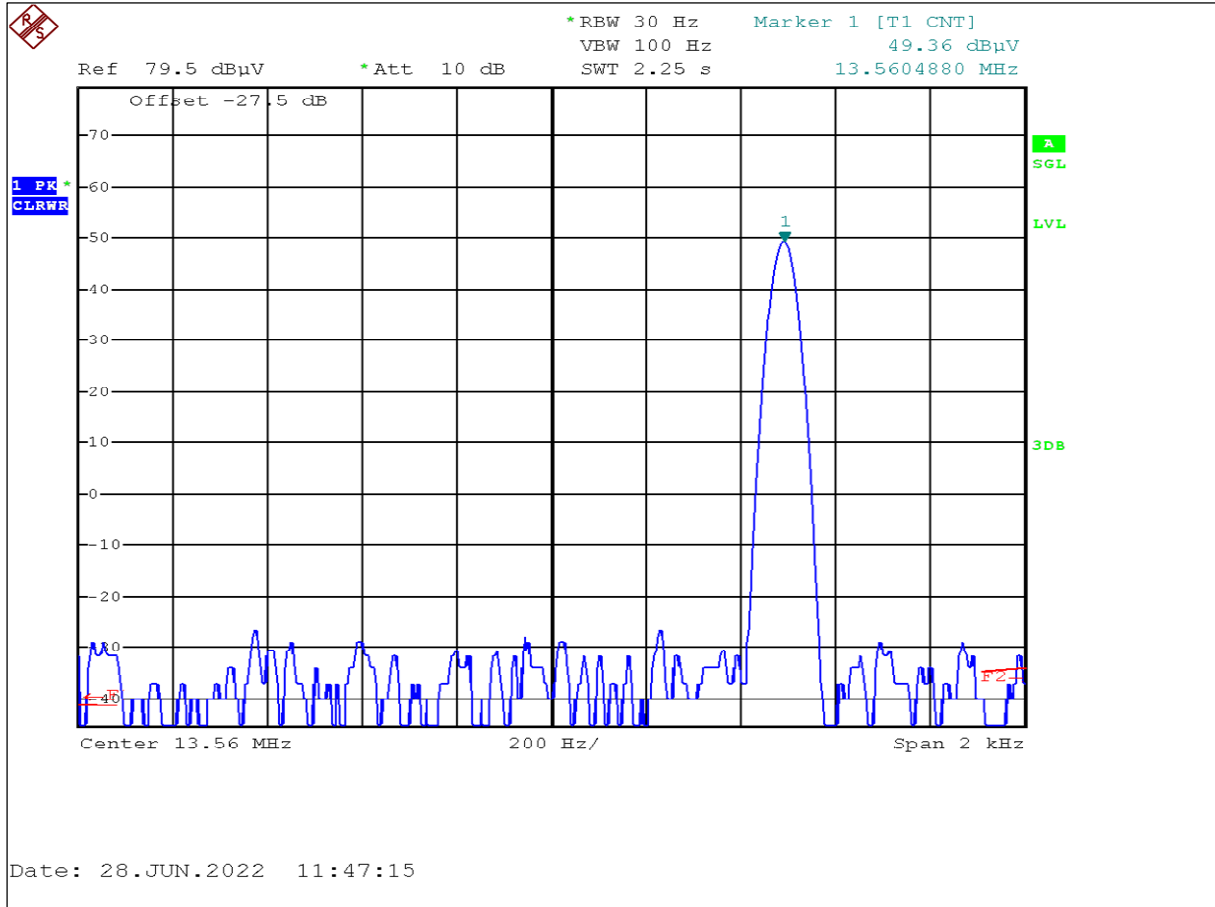
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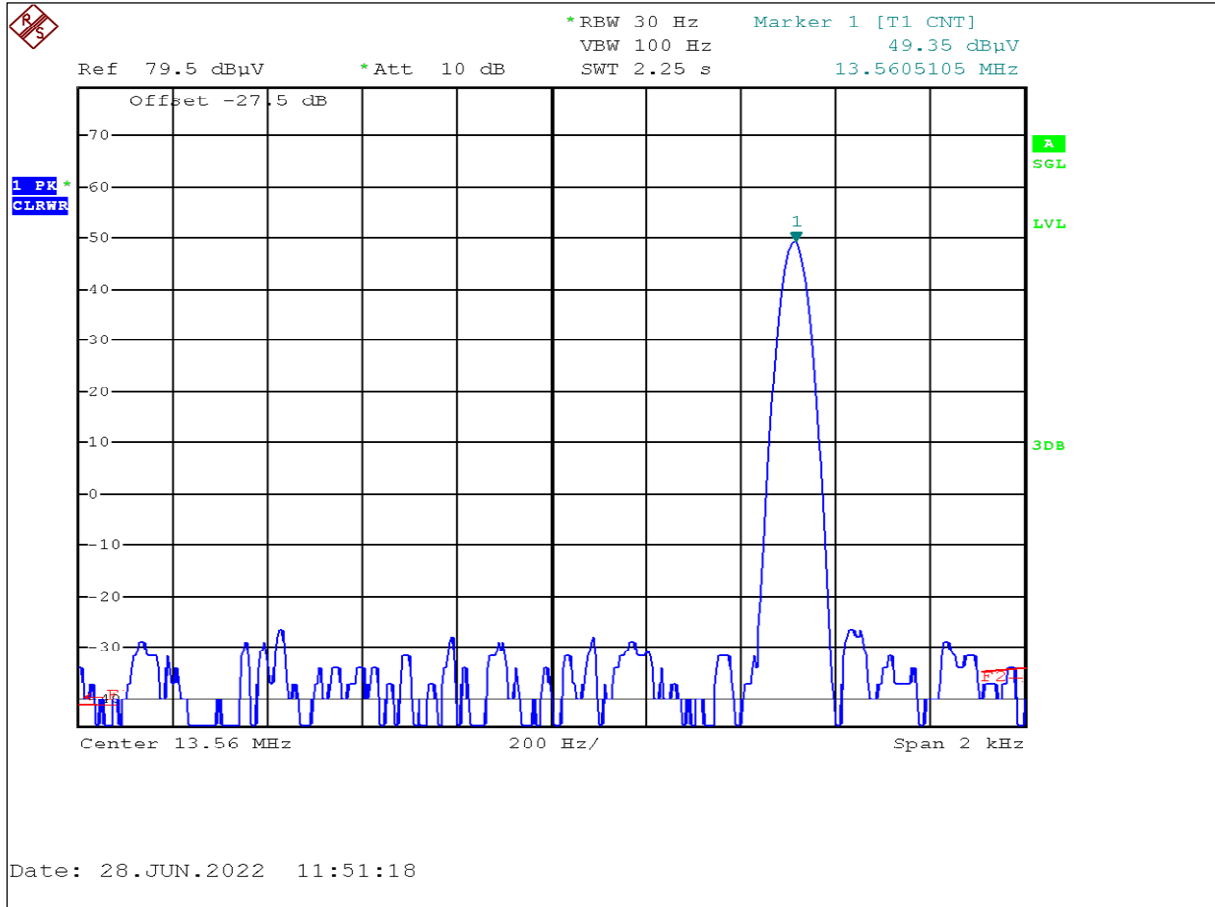
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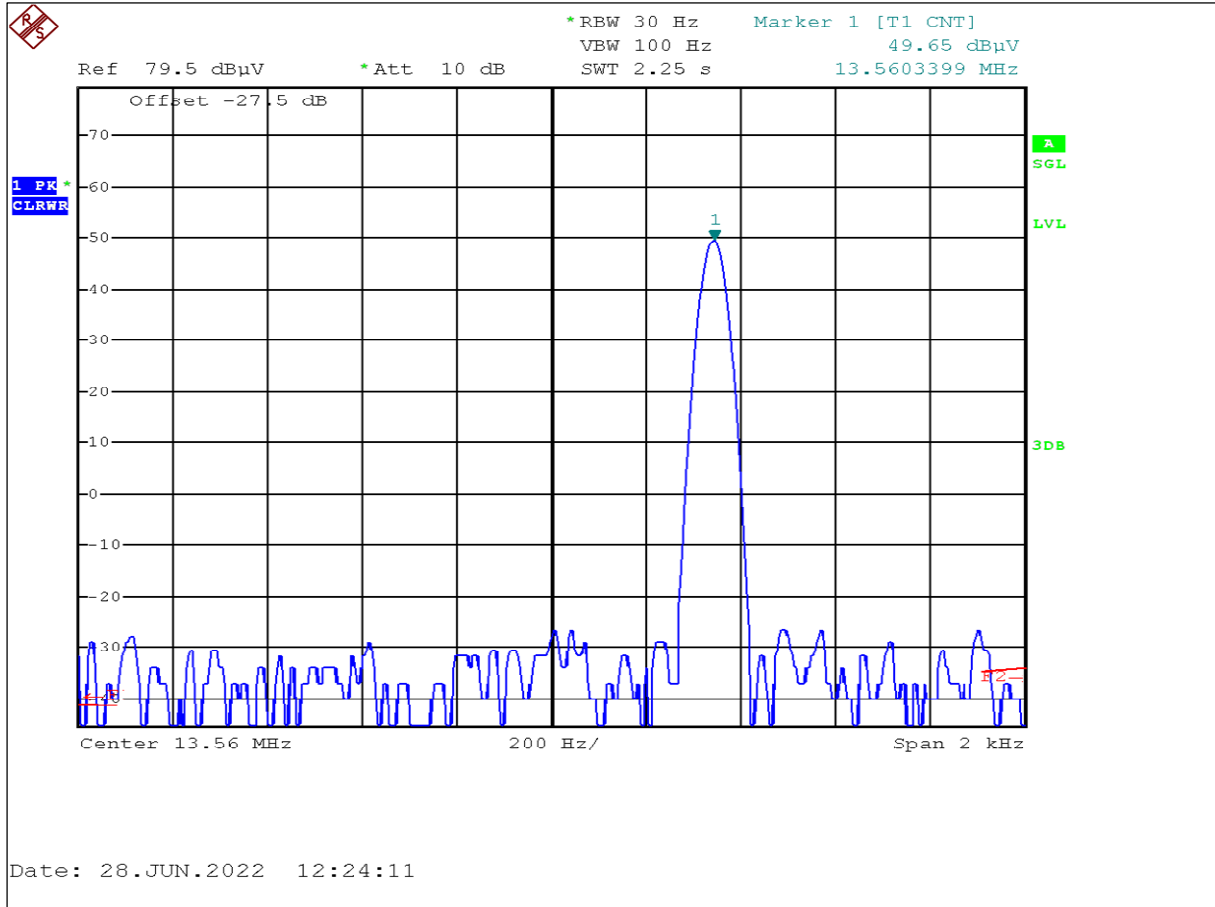
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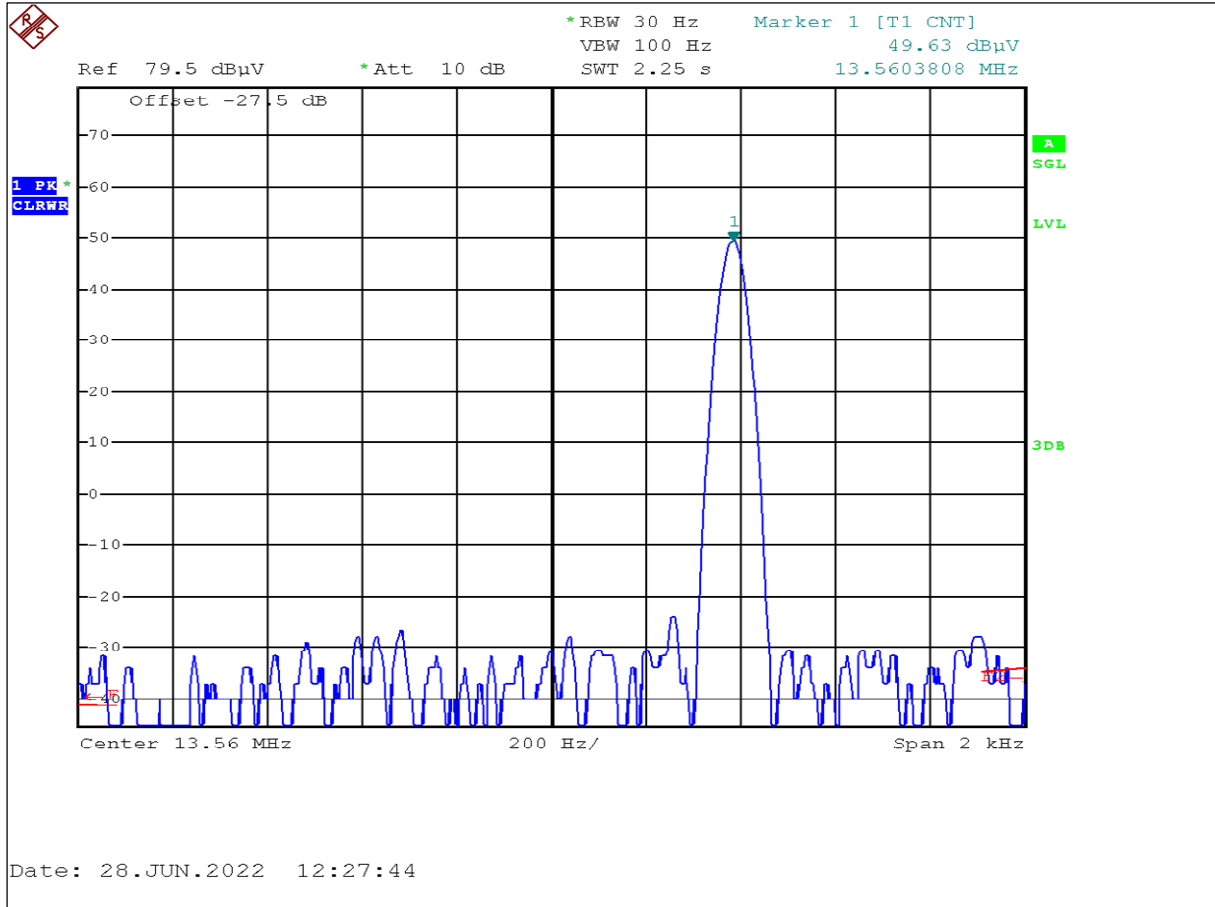
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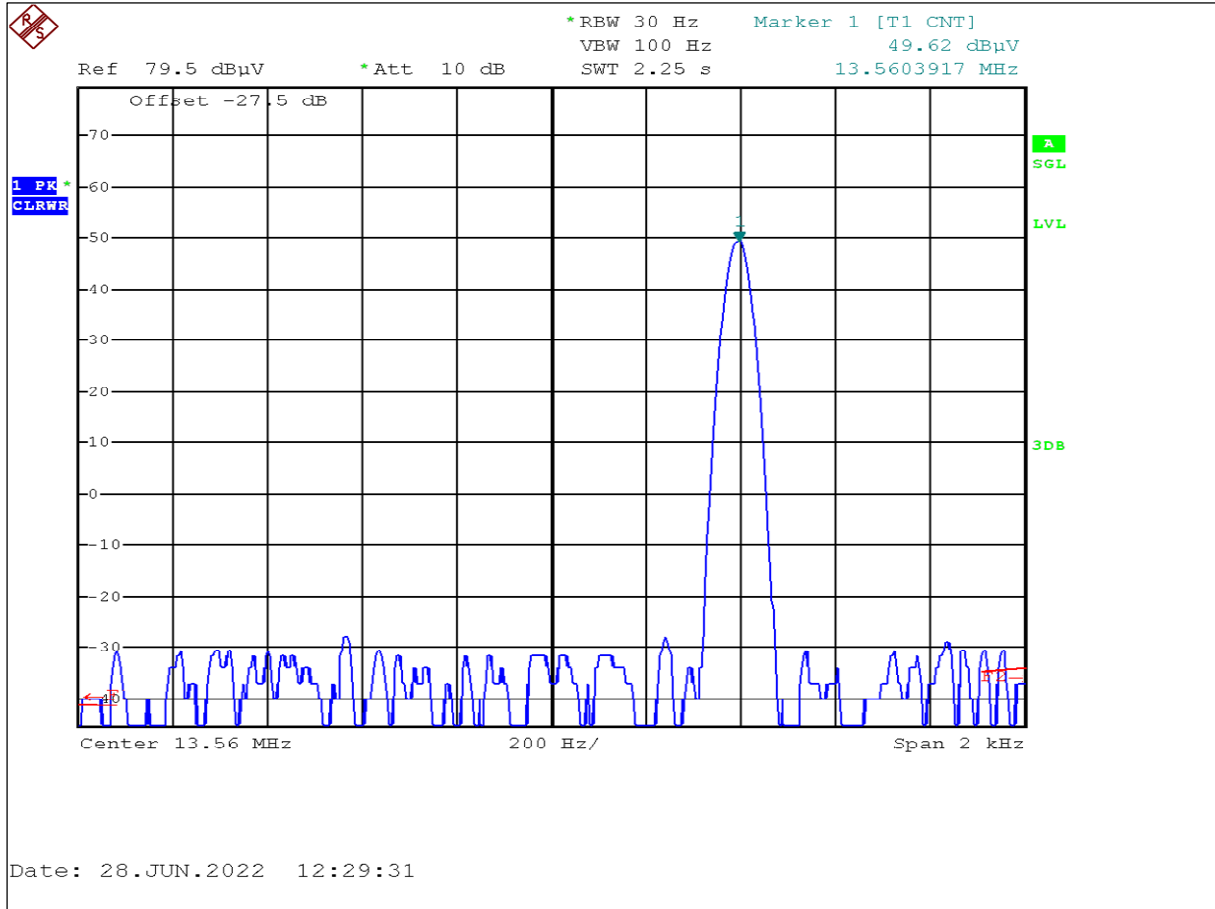
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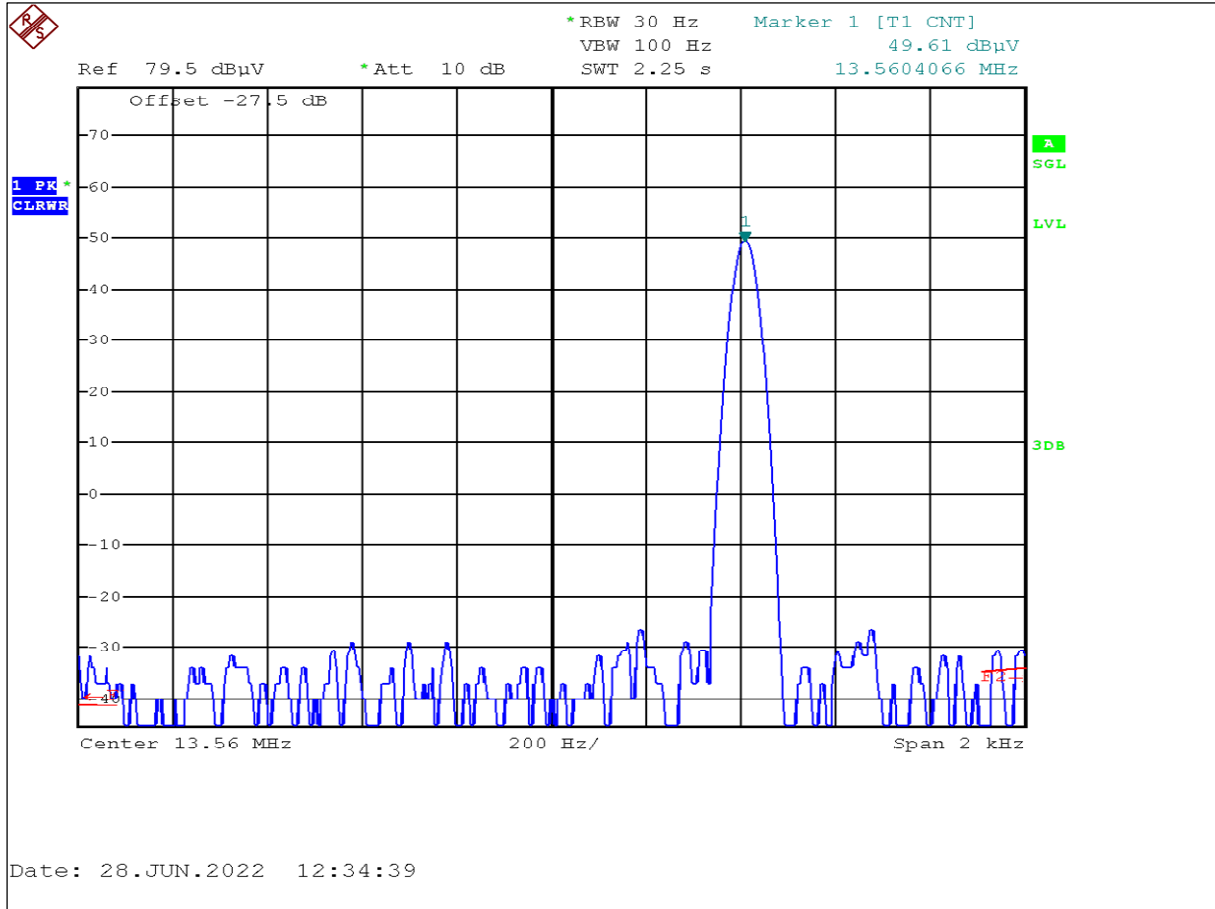
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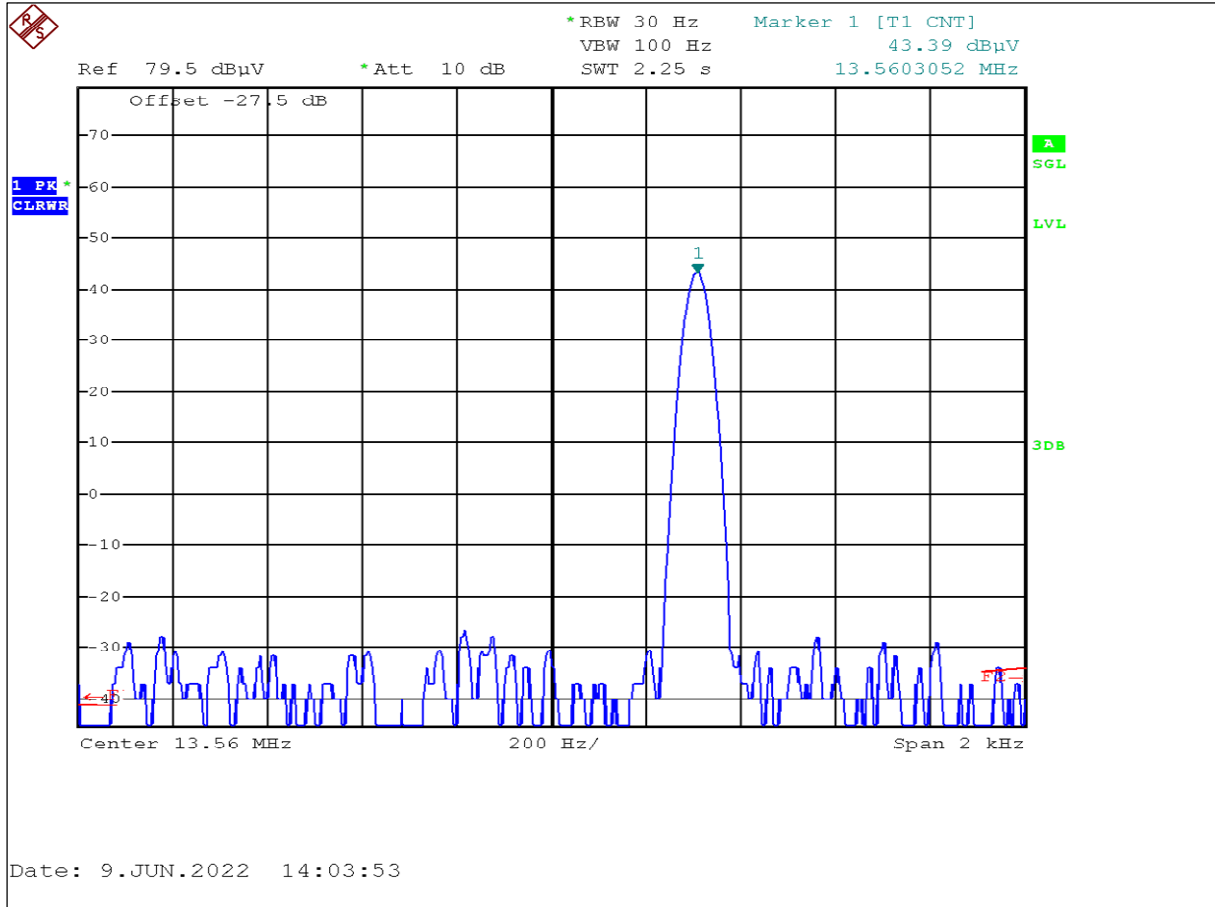
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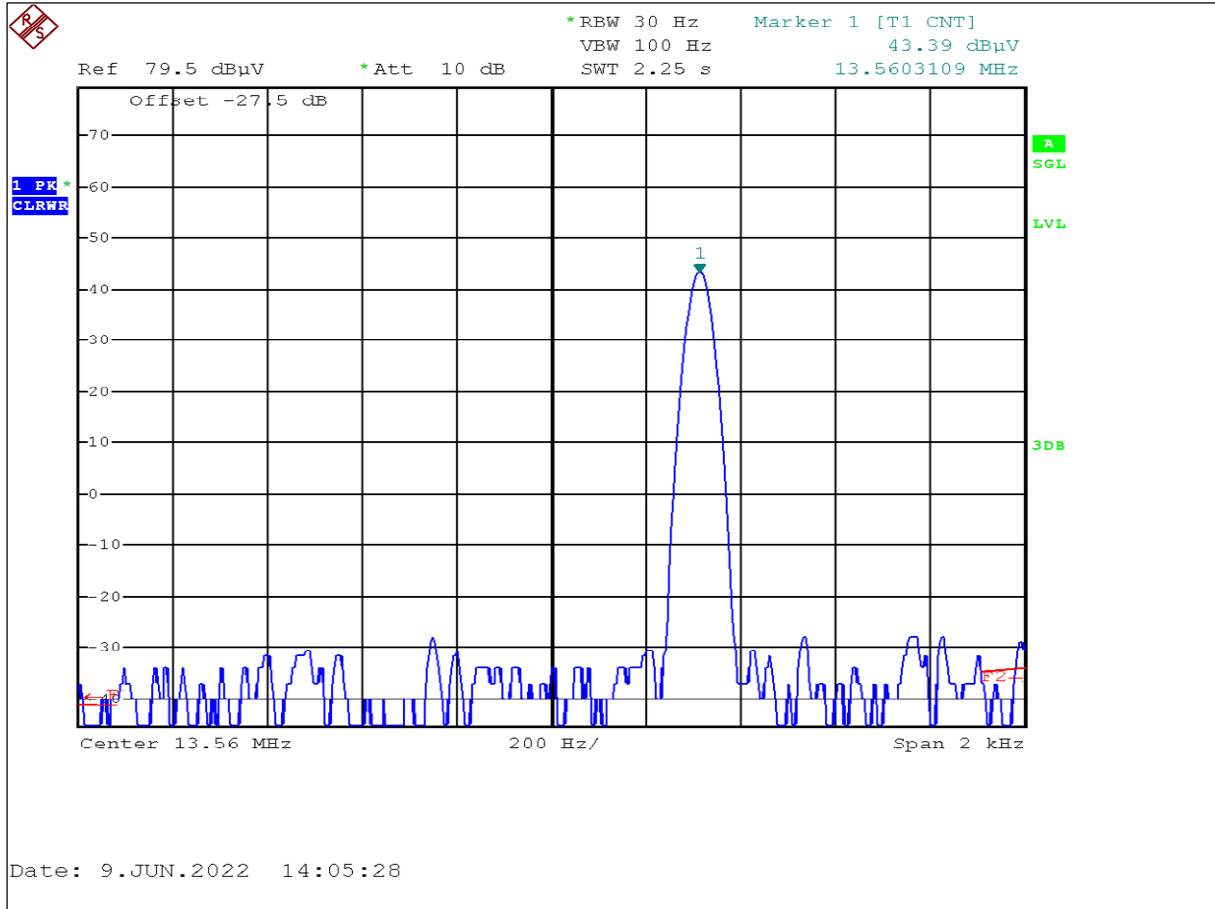
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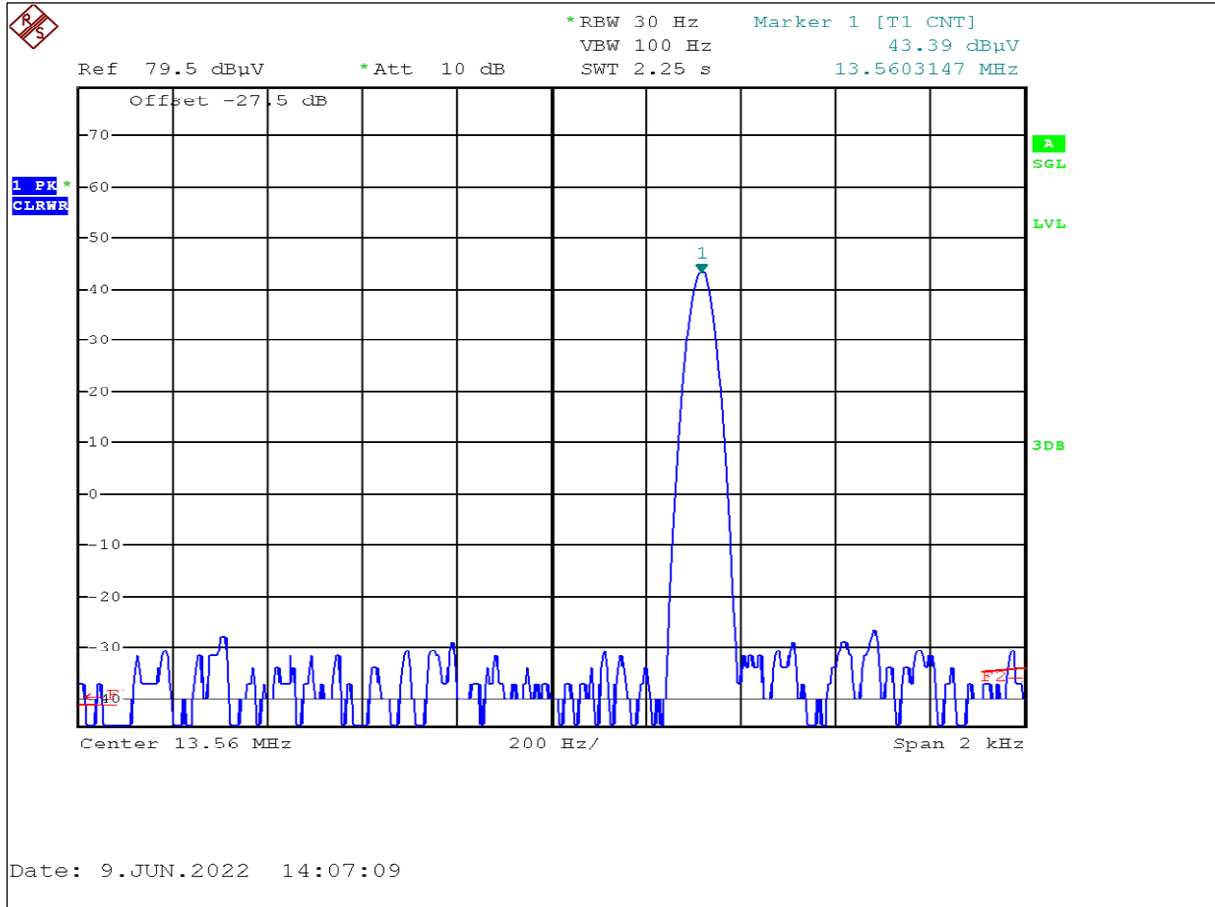
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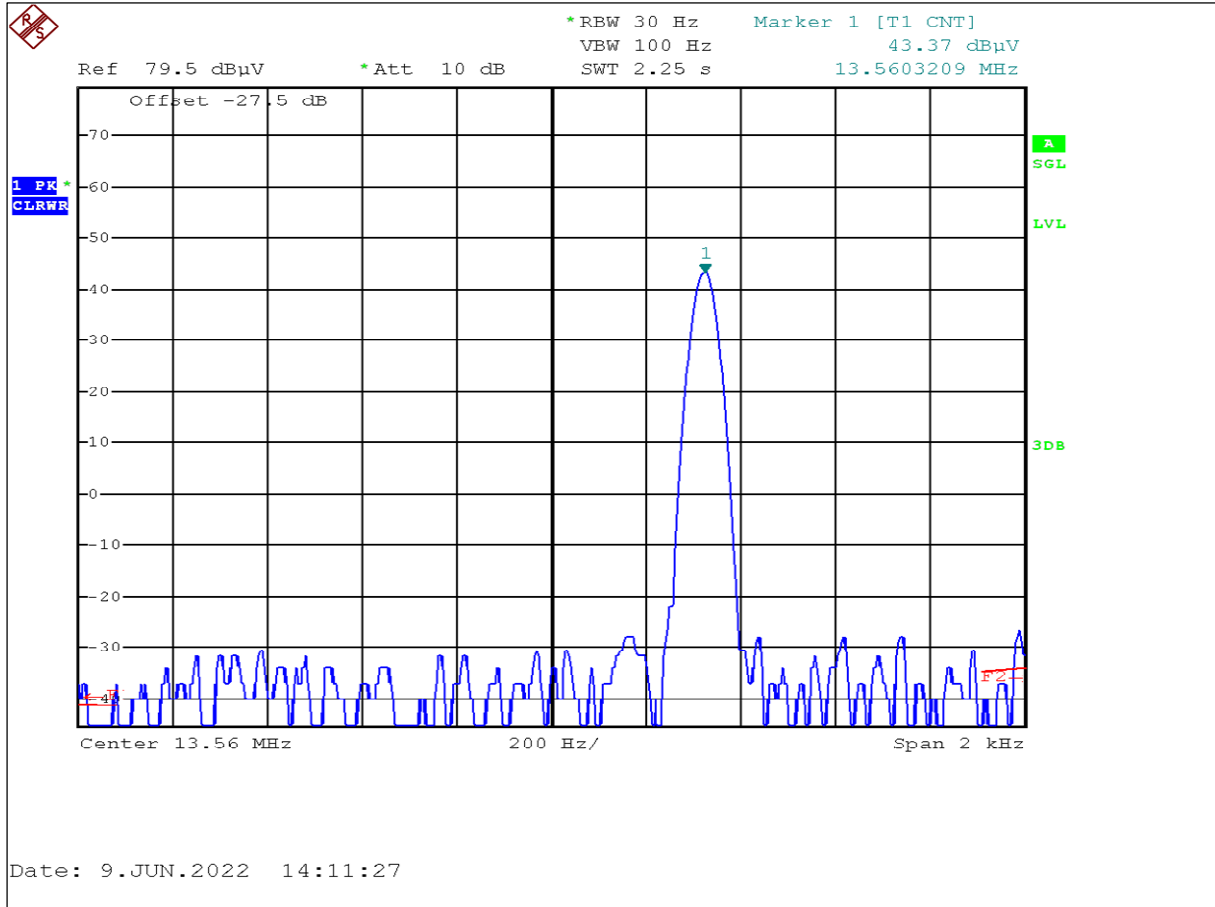
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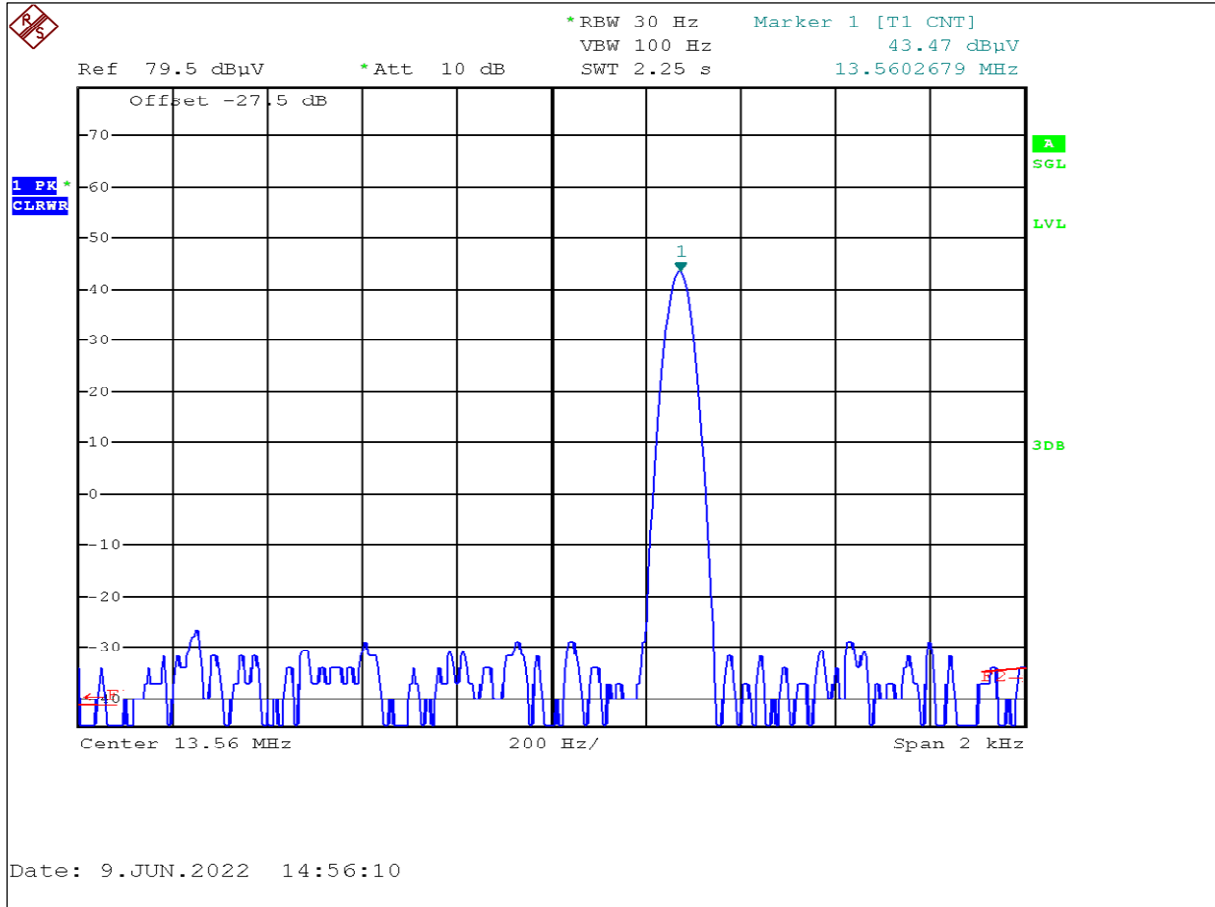
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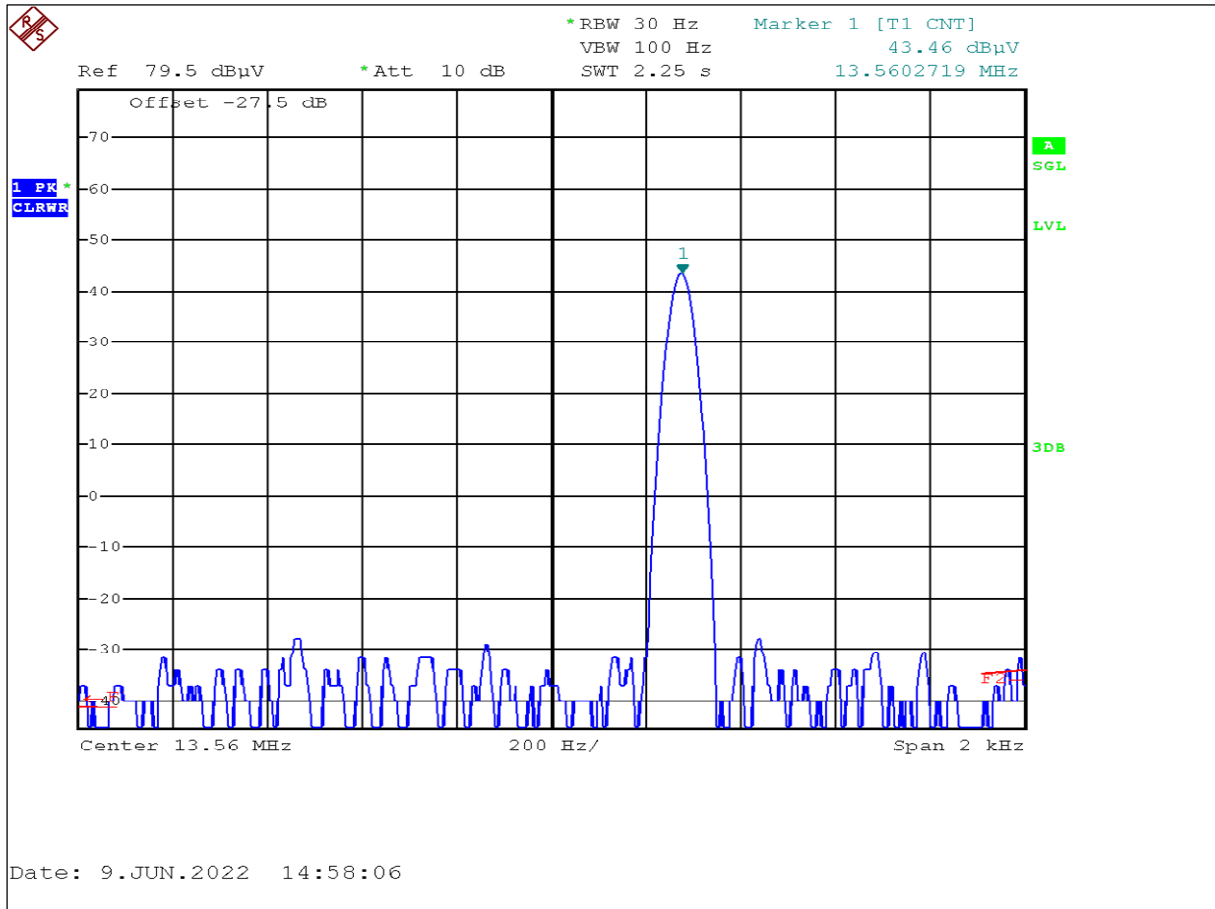
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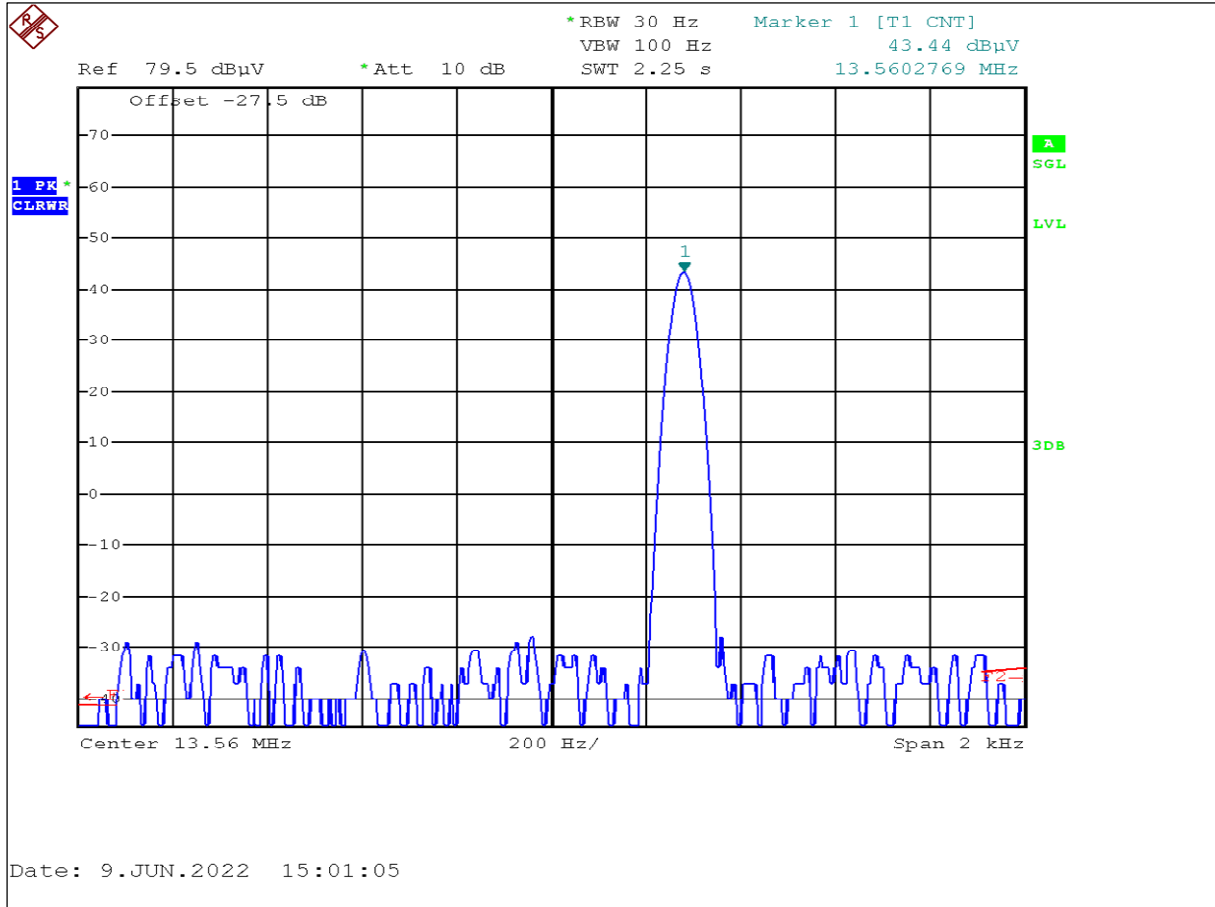
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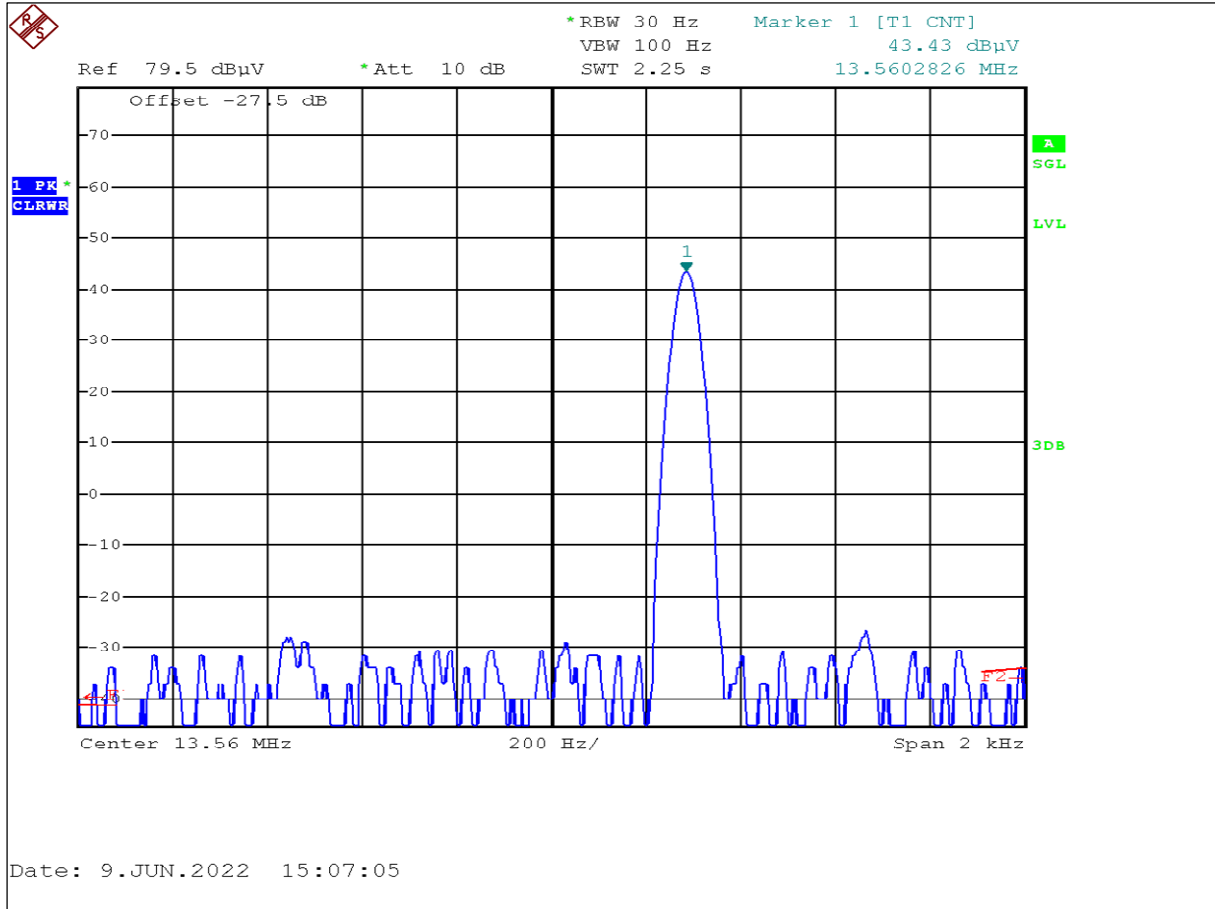
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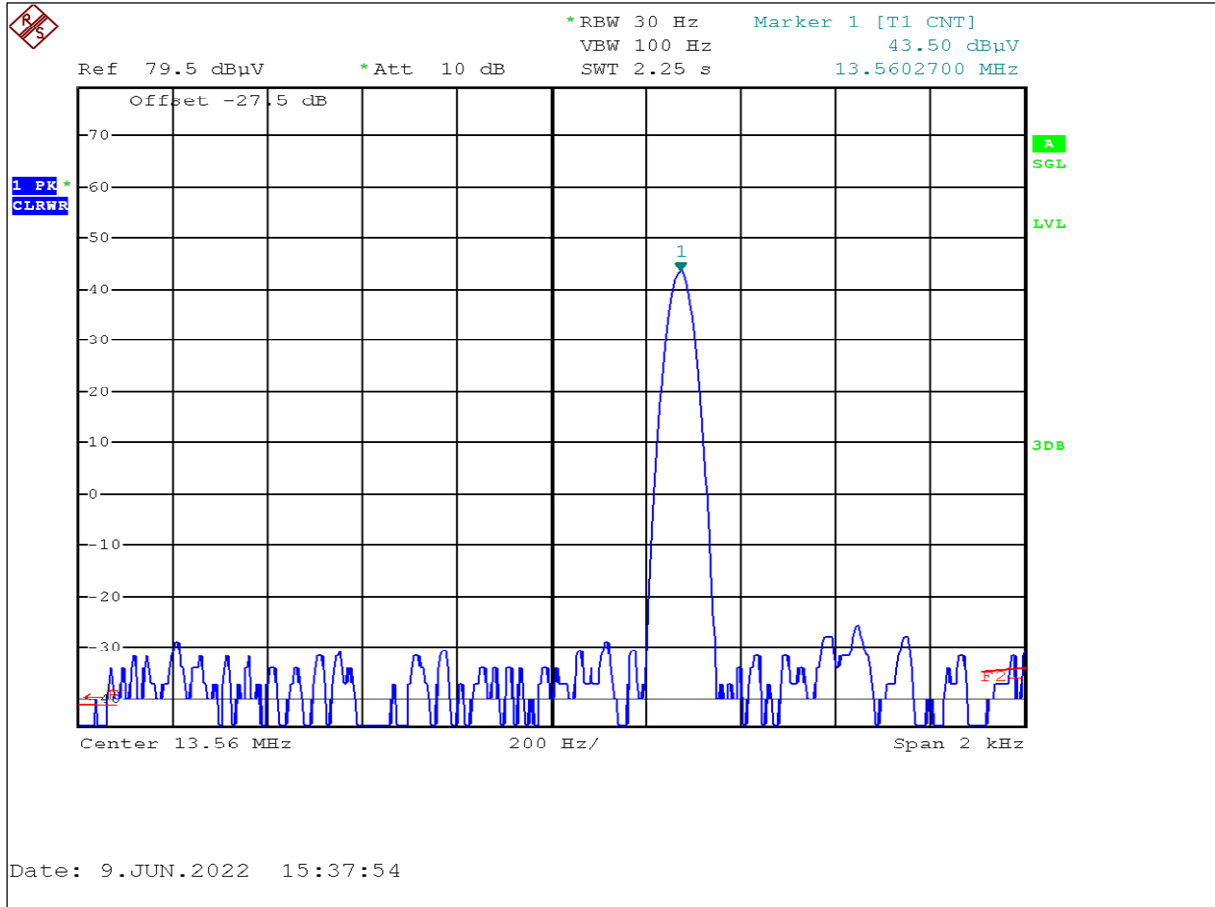
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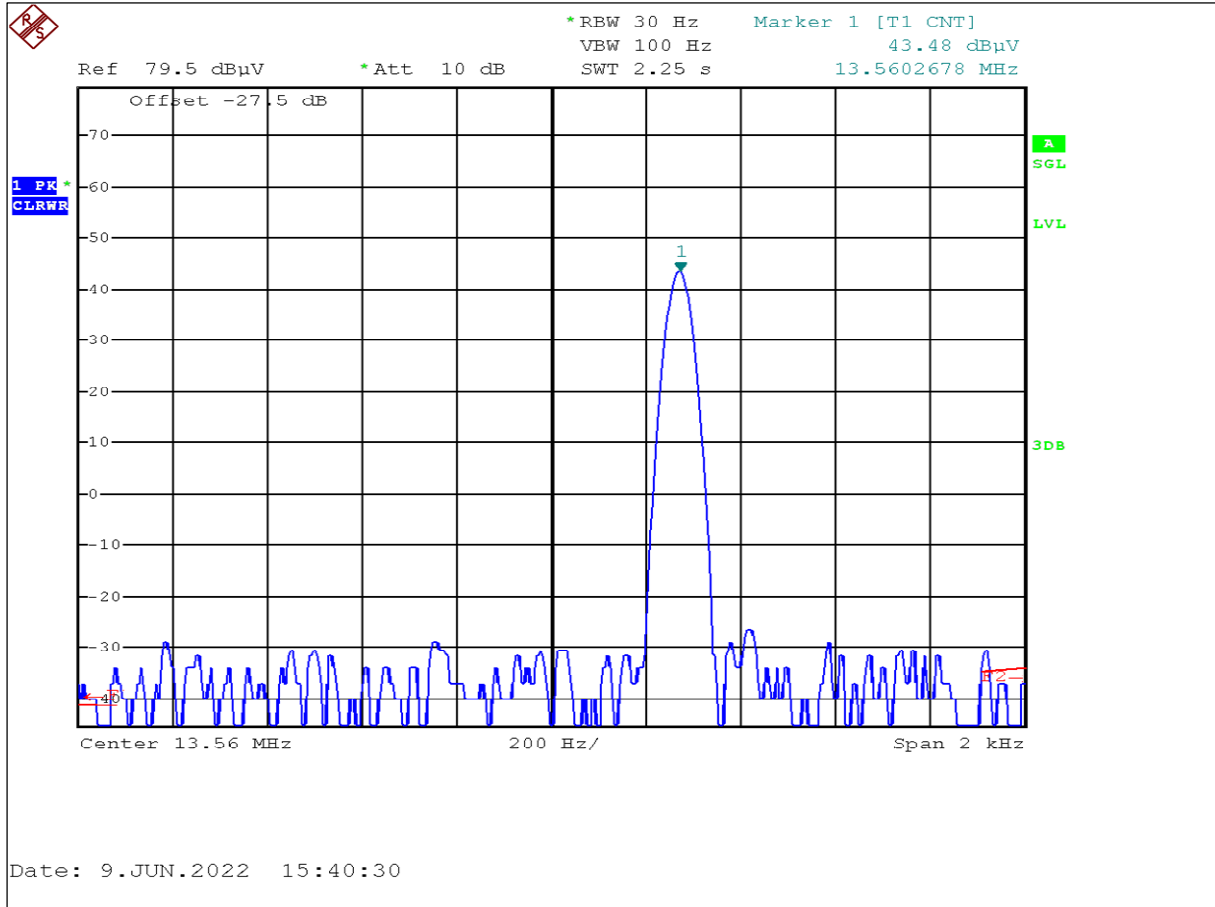
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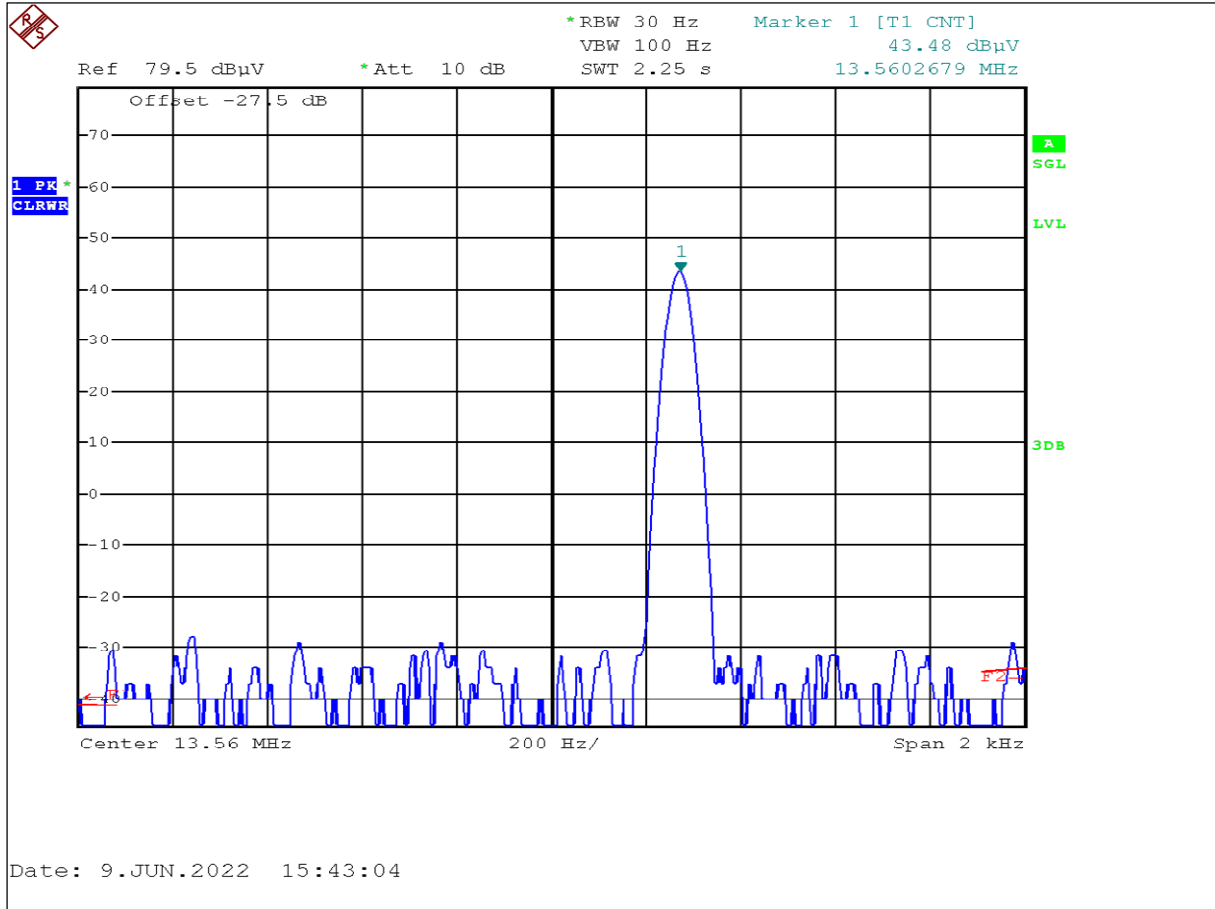
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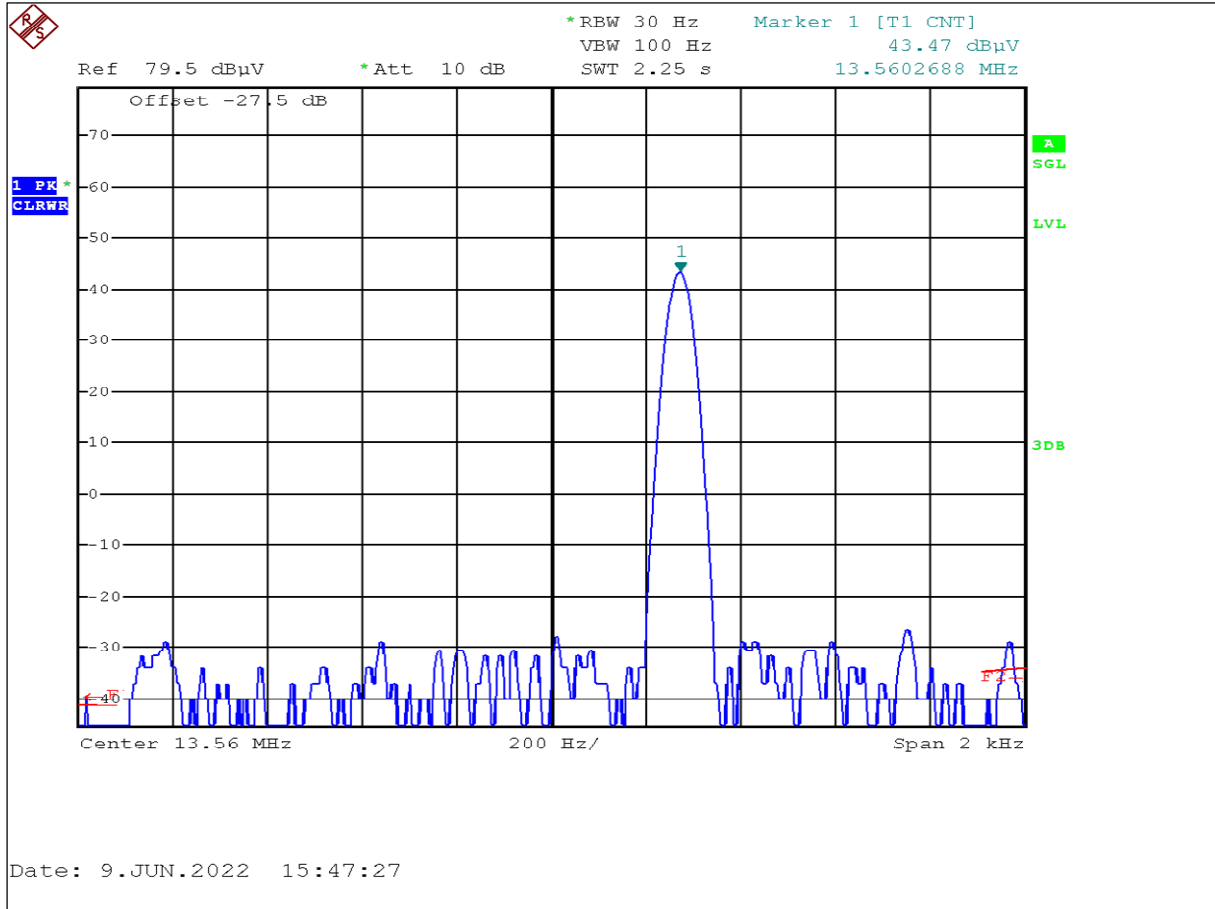
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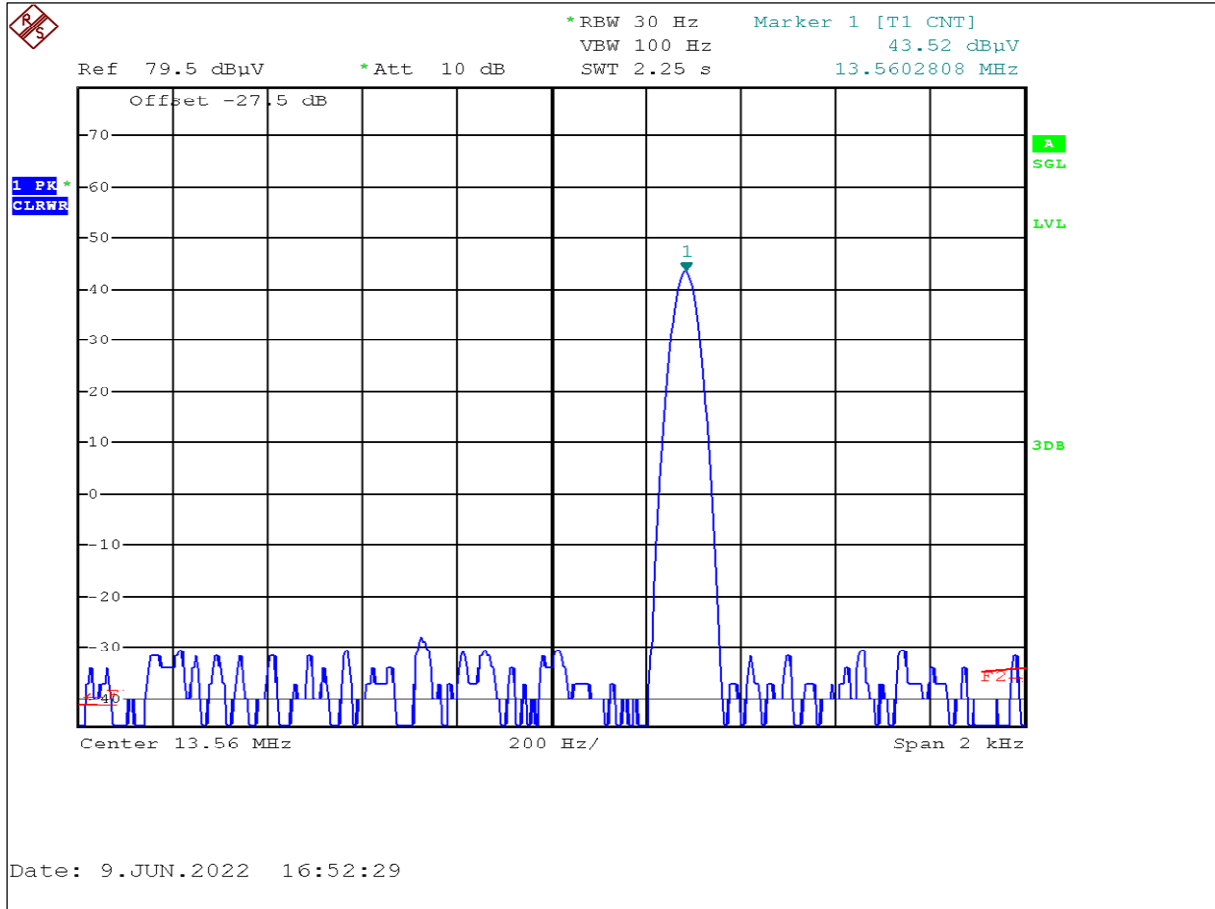
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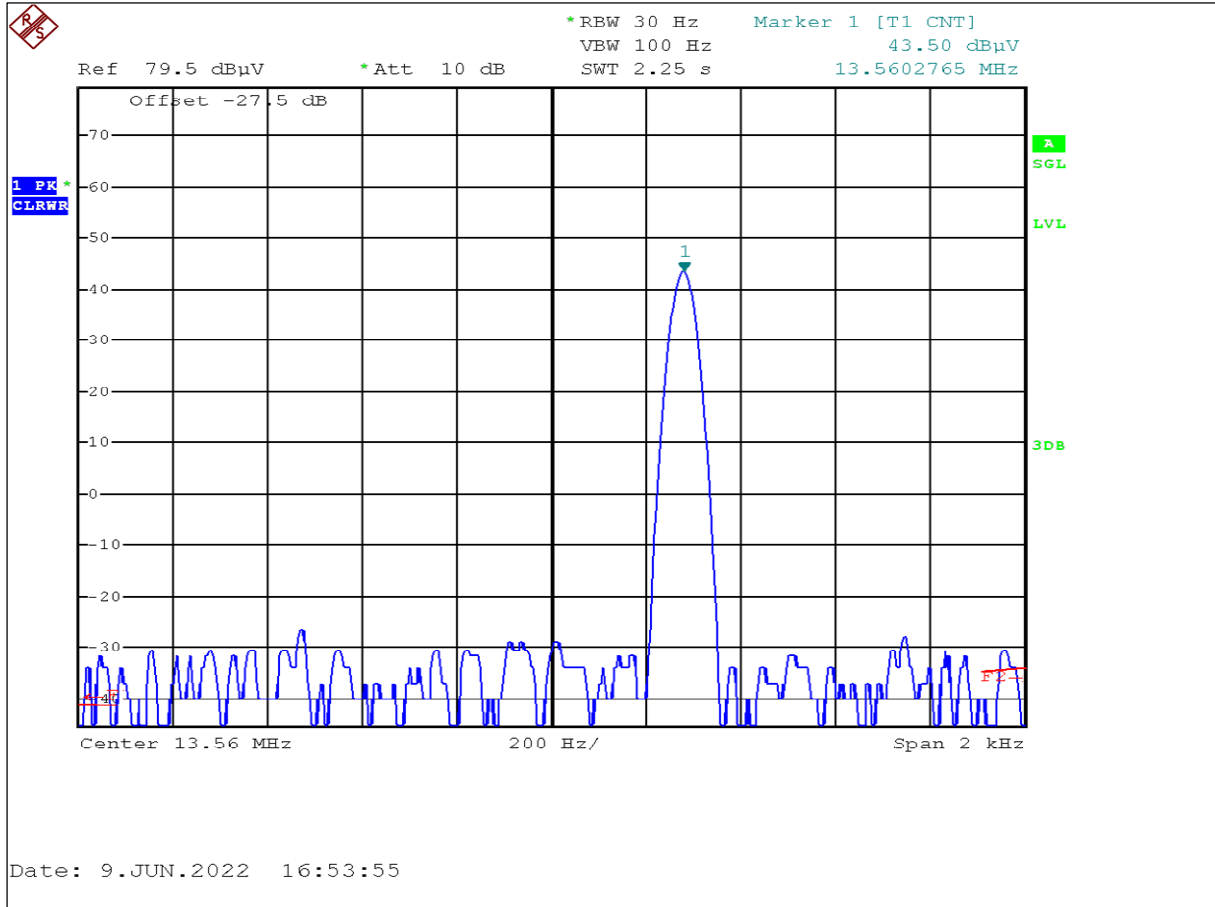
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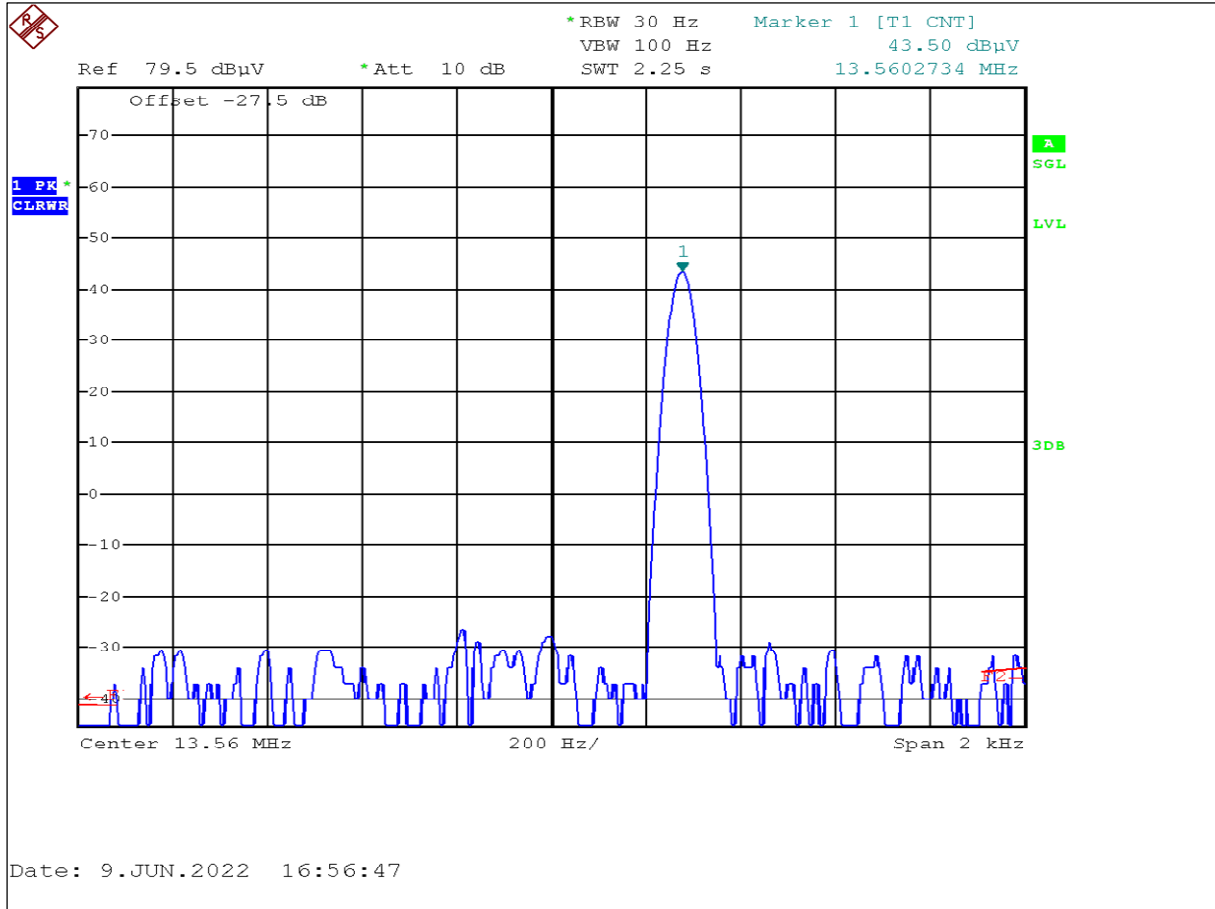
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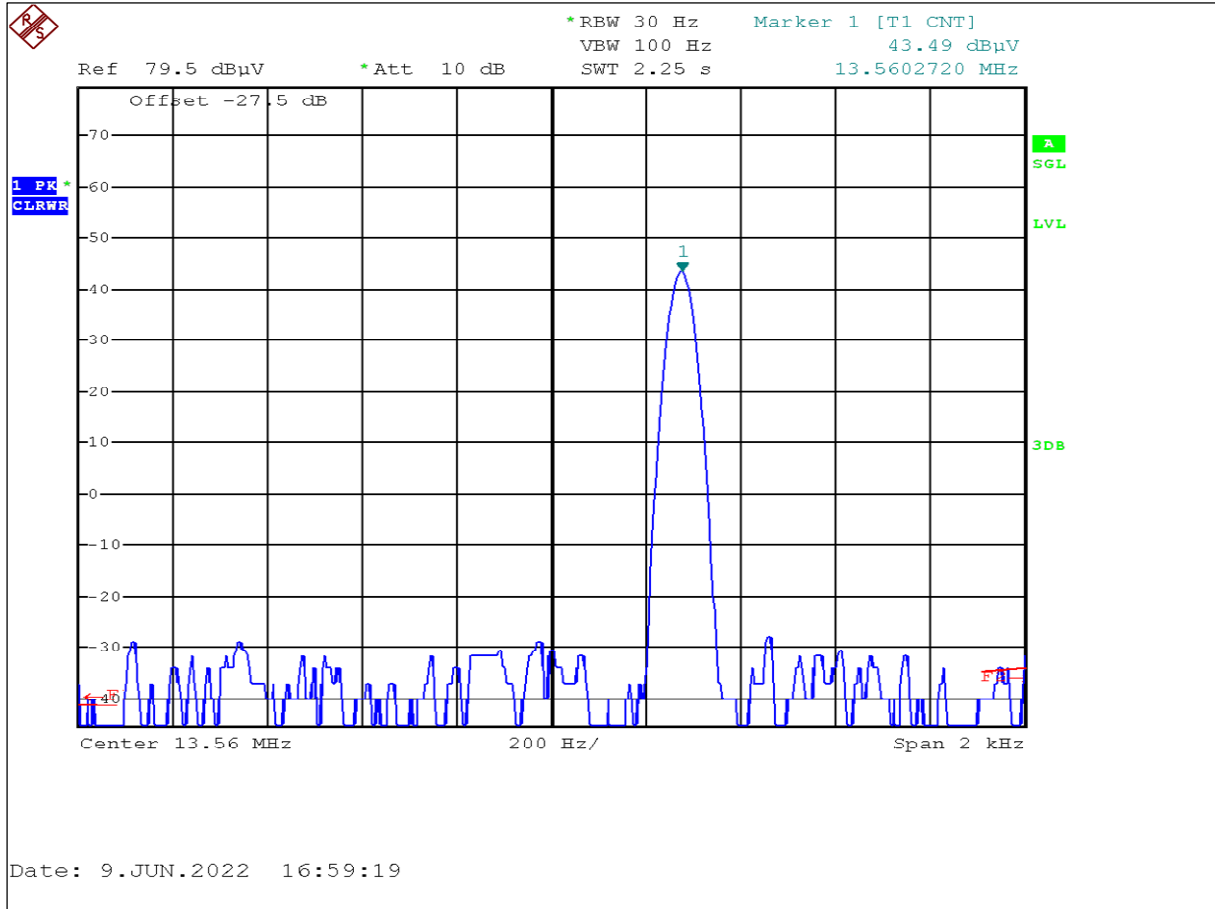
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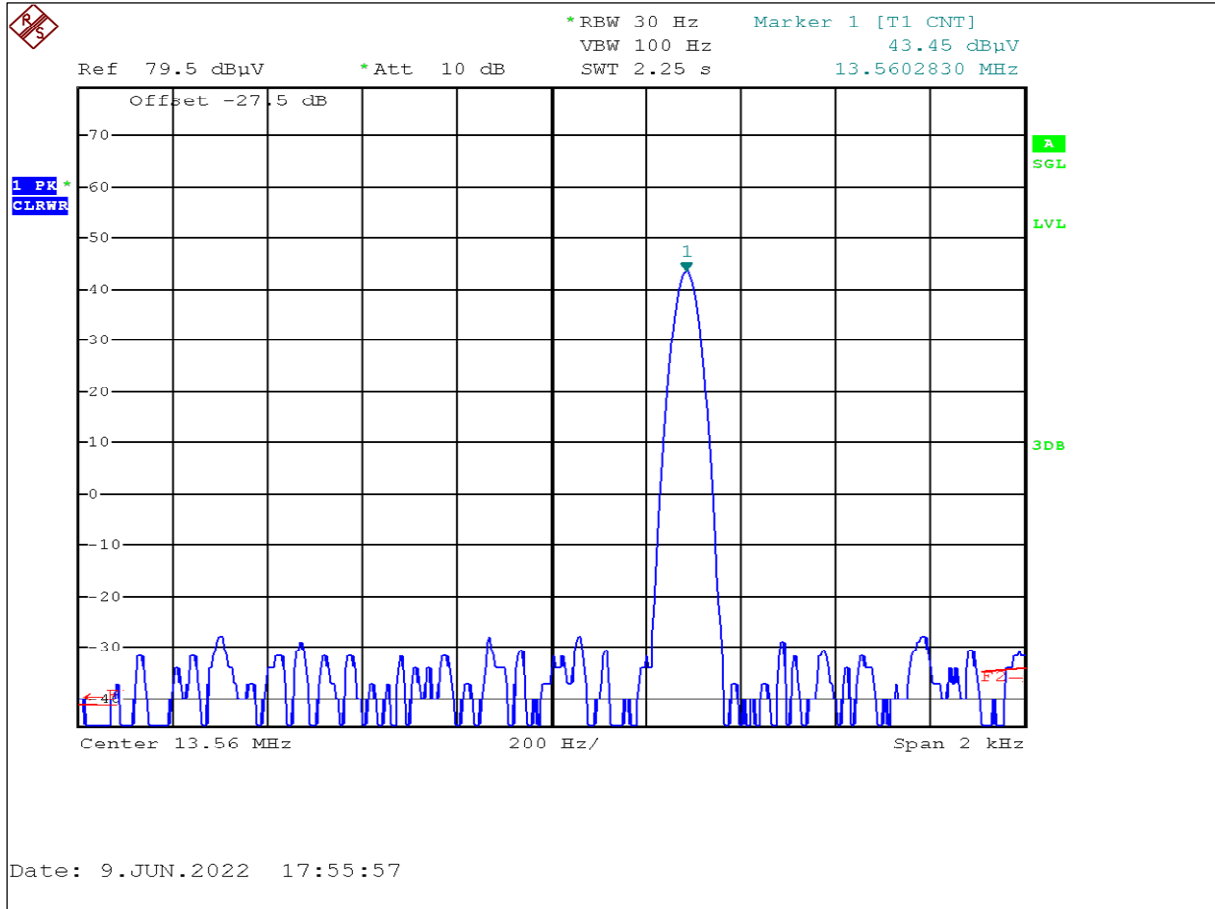
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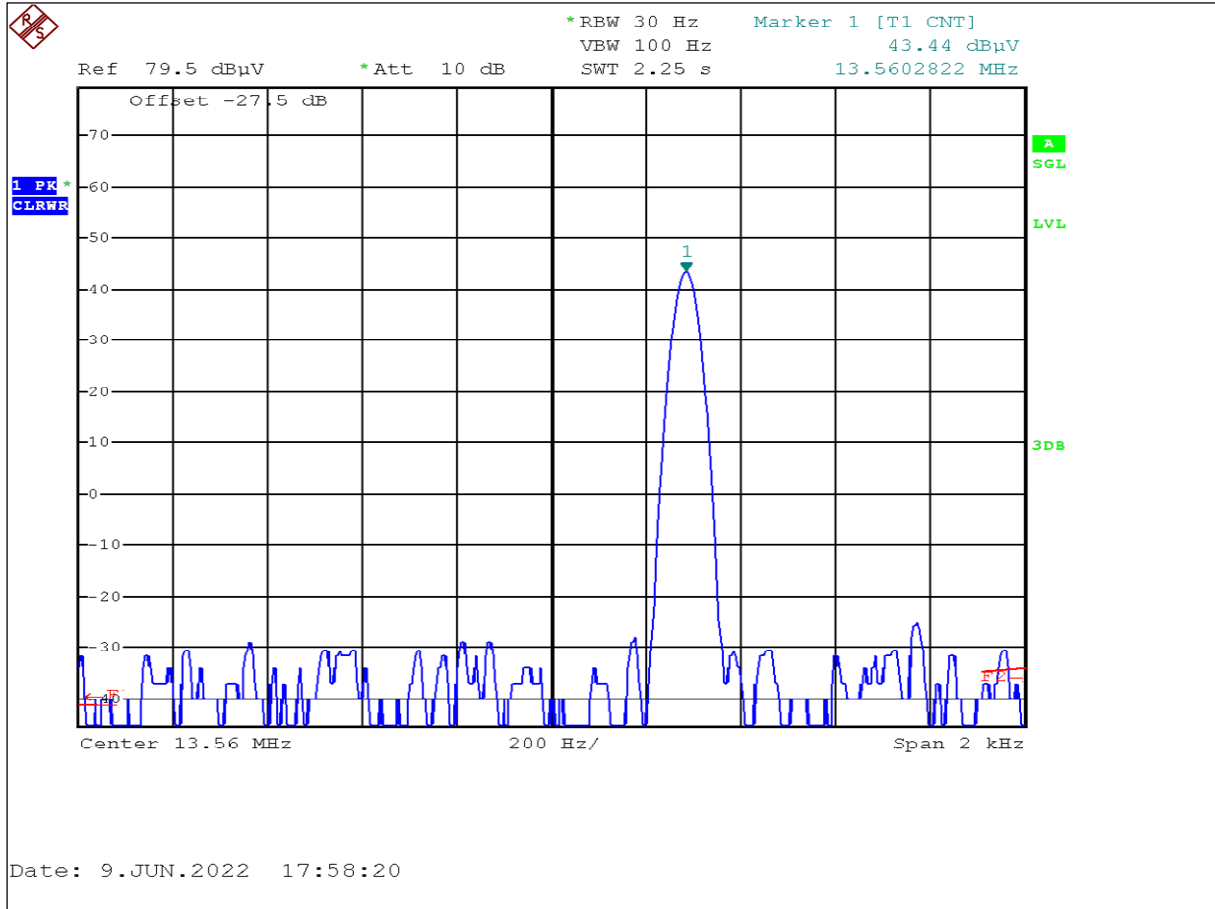
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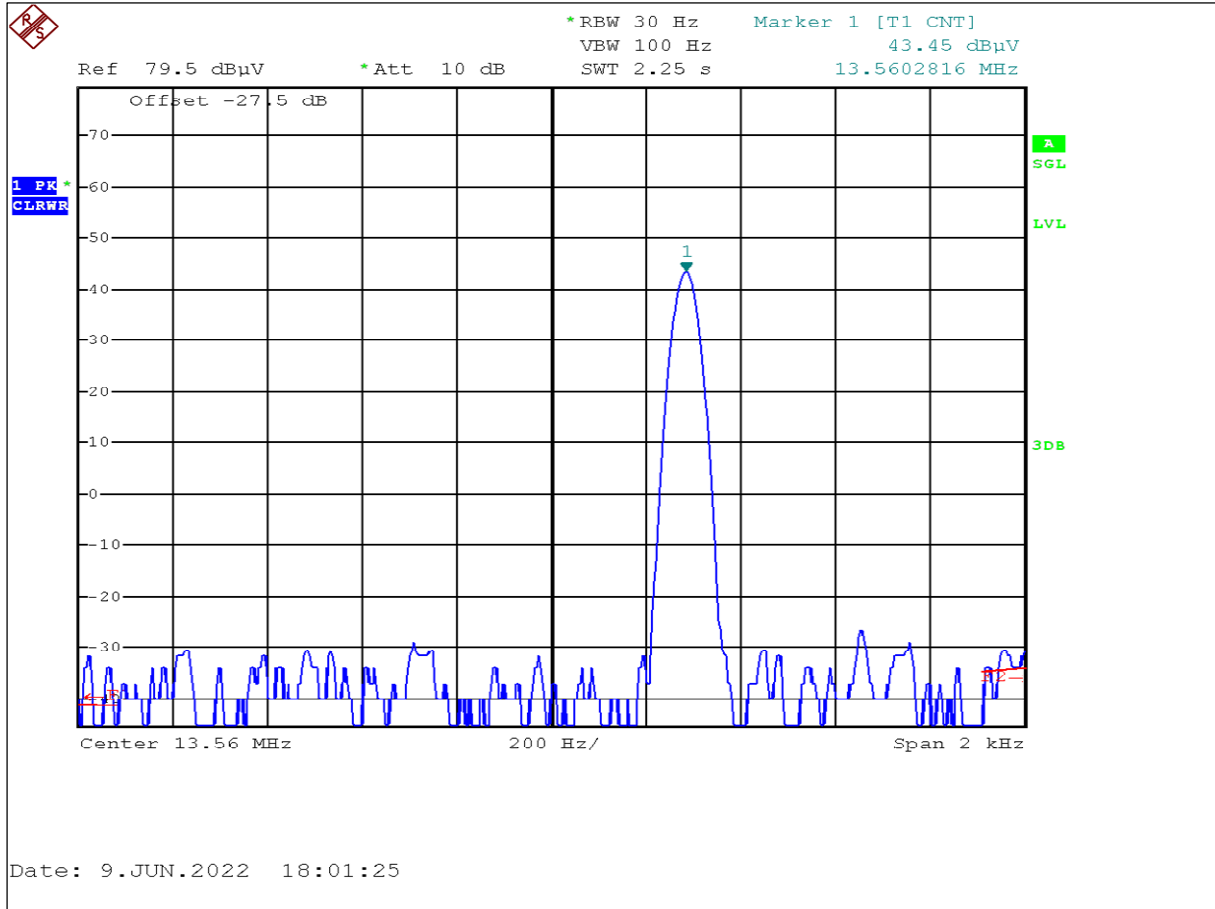
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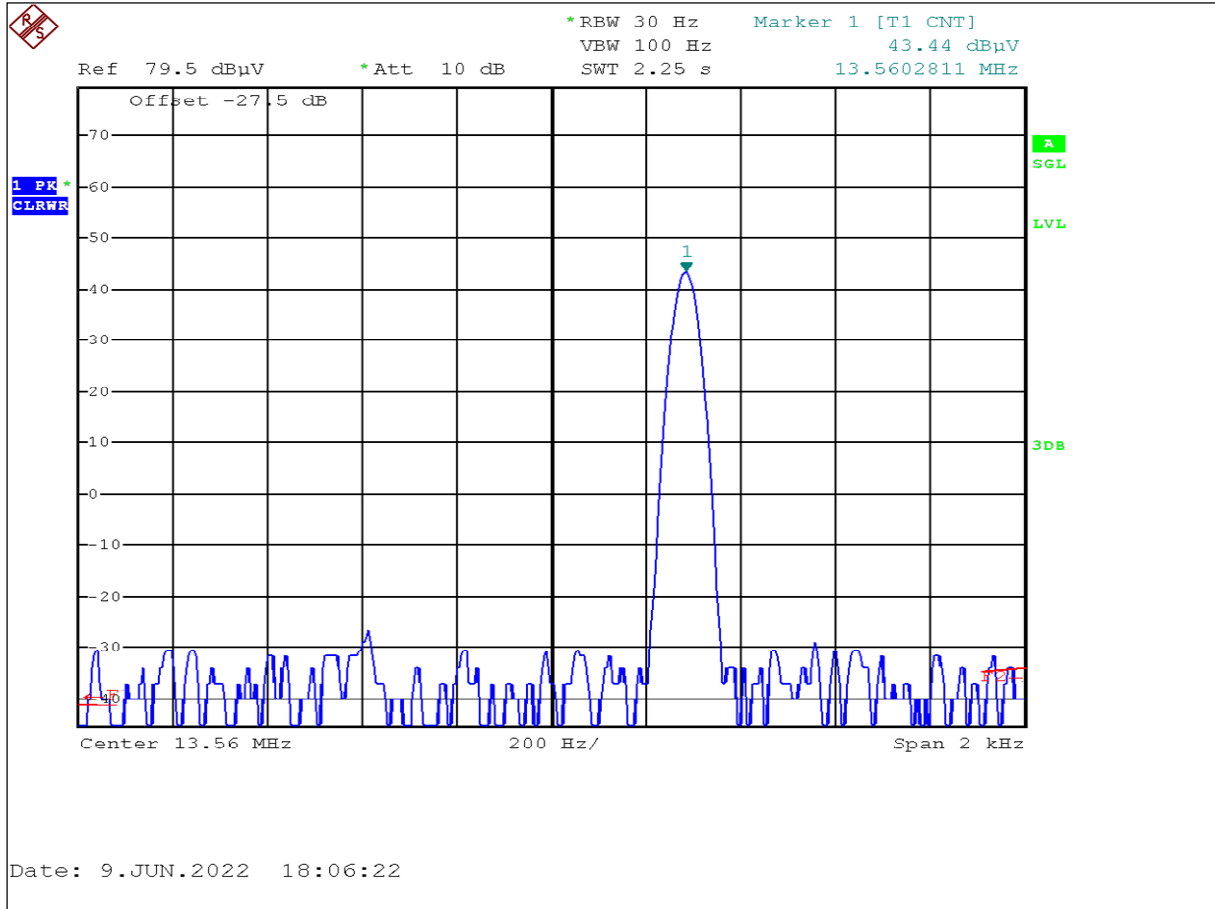
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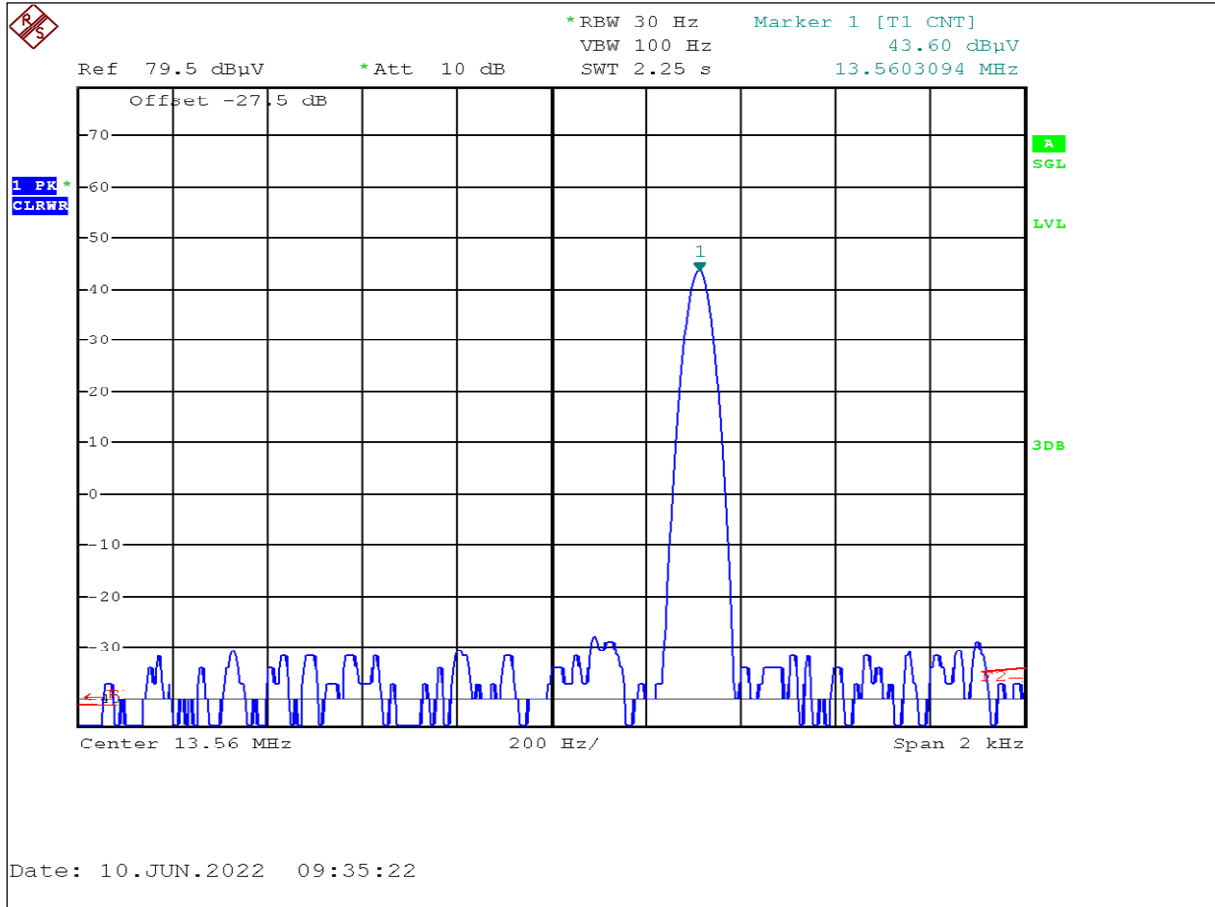
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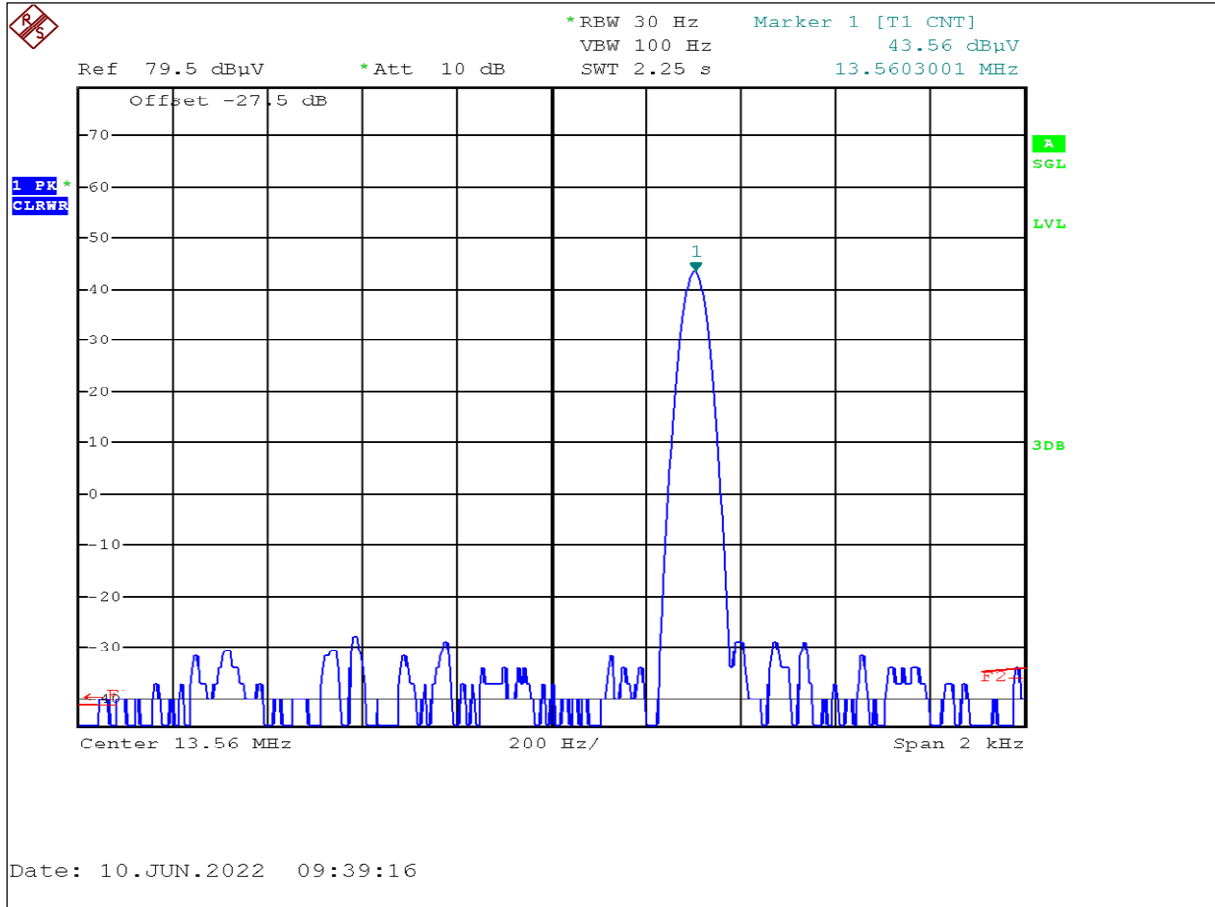
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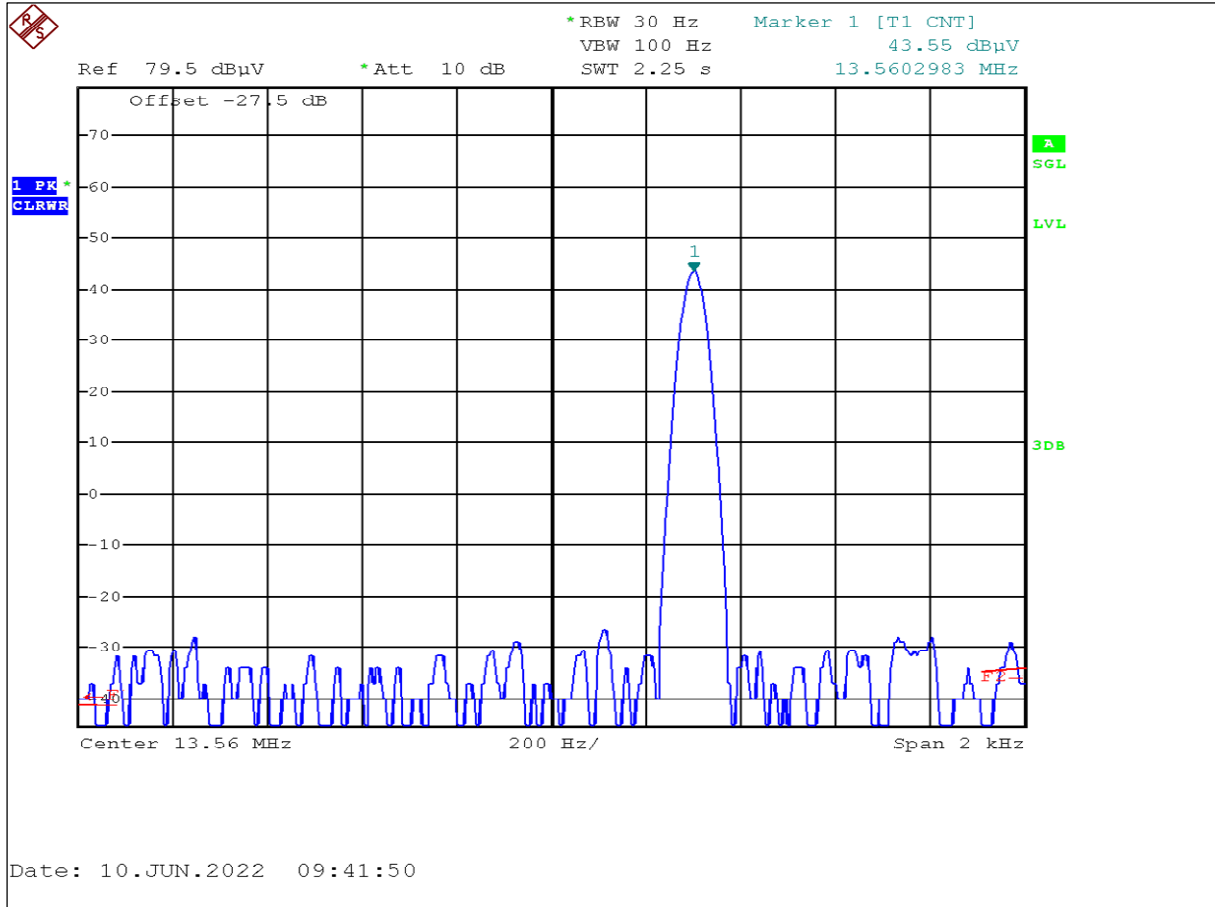
D09_01_T10_startup



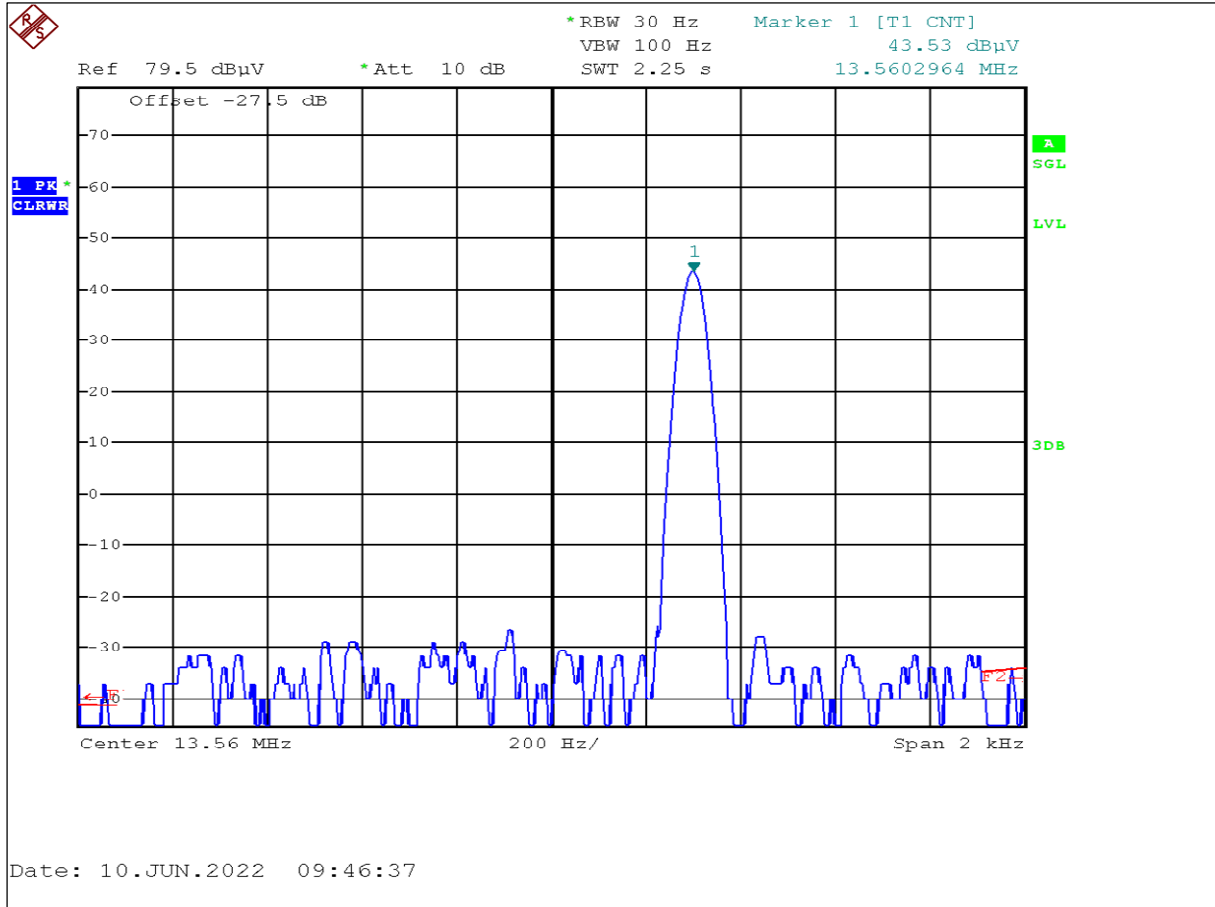
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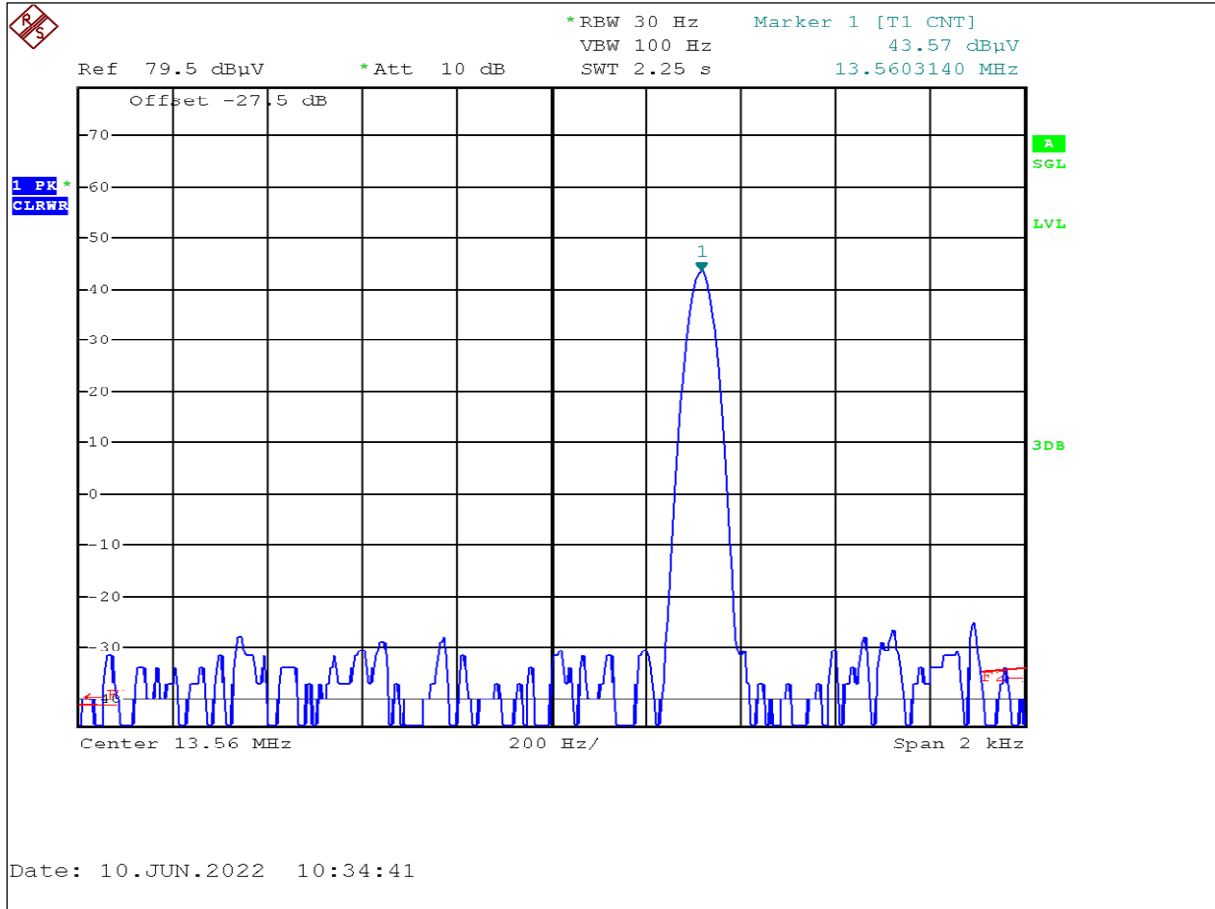
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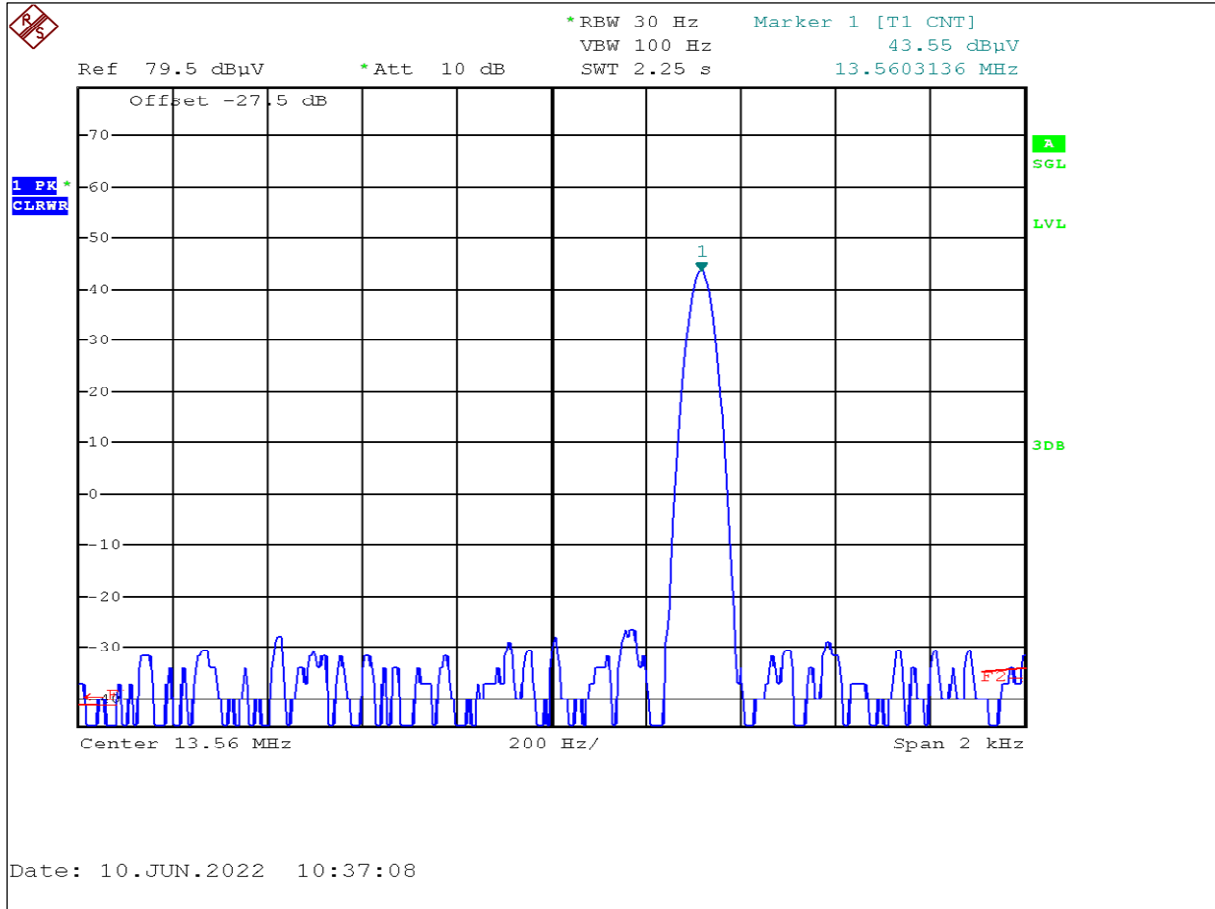
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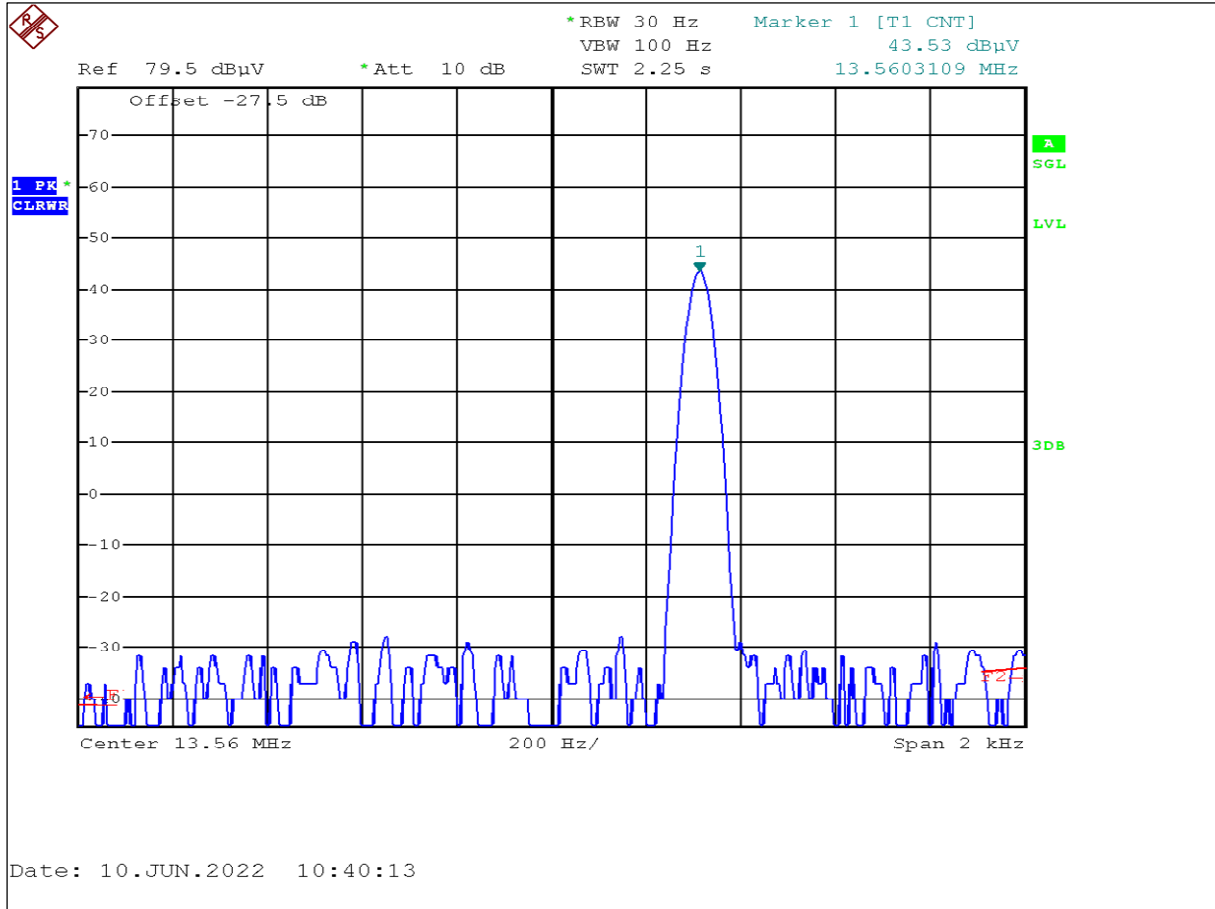
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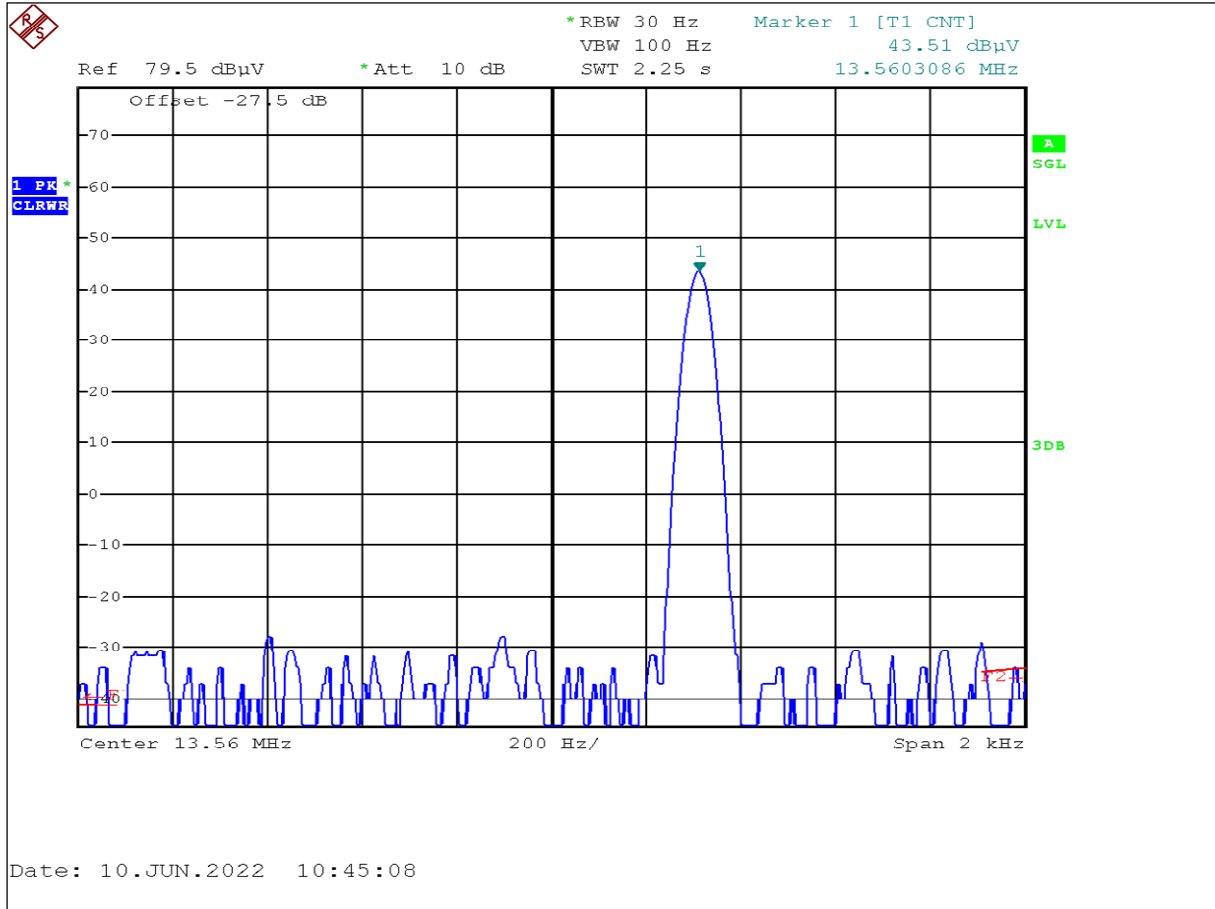
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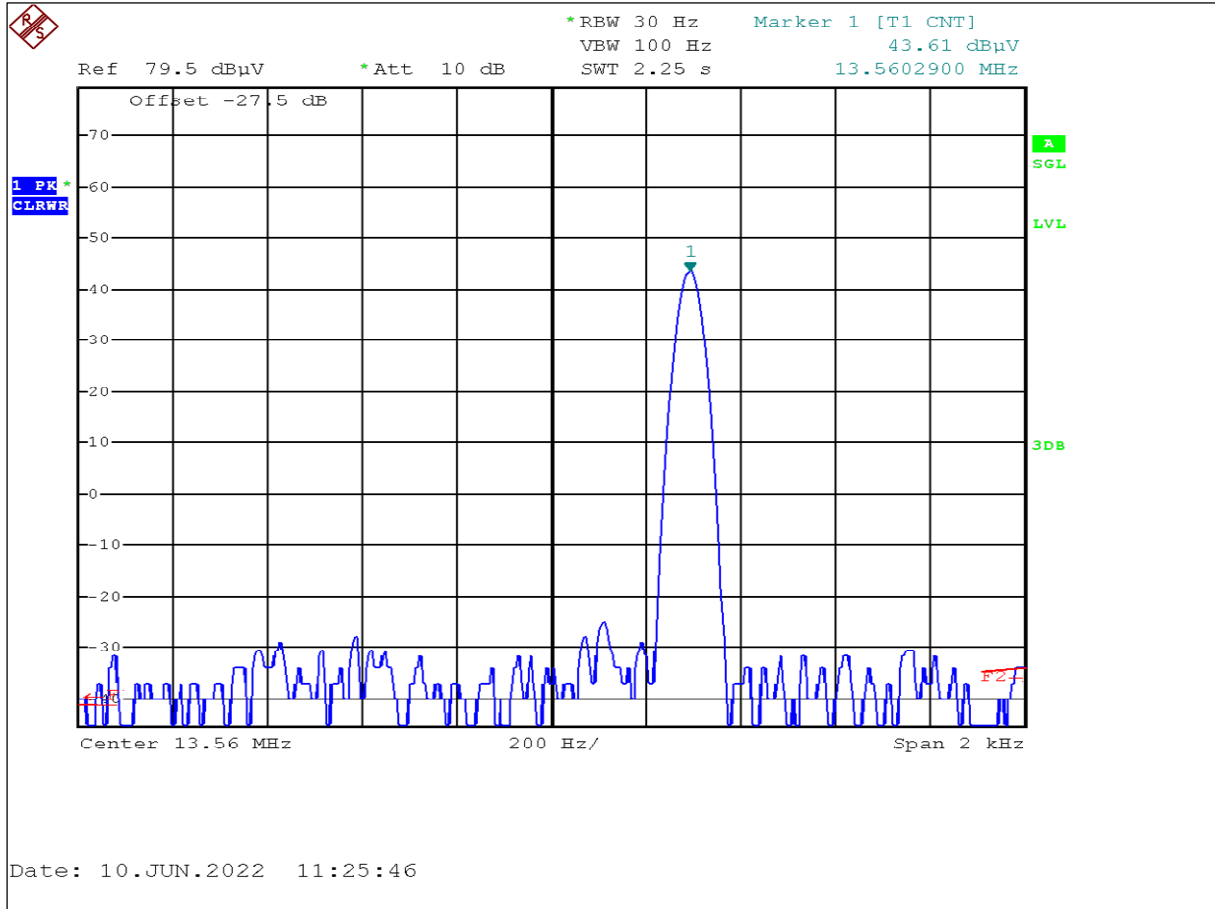
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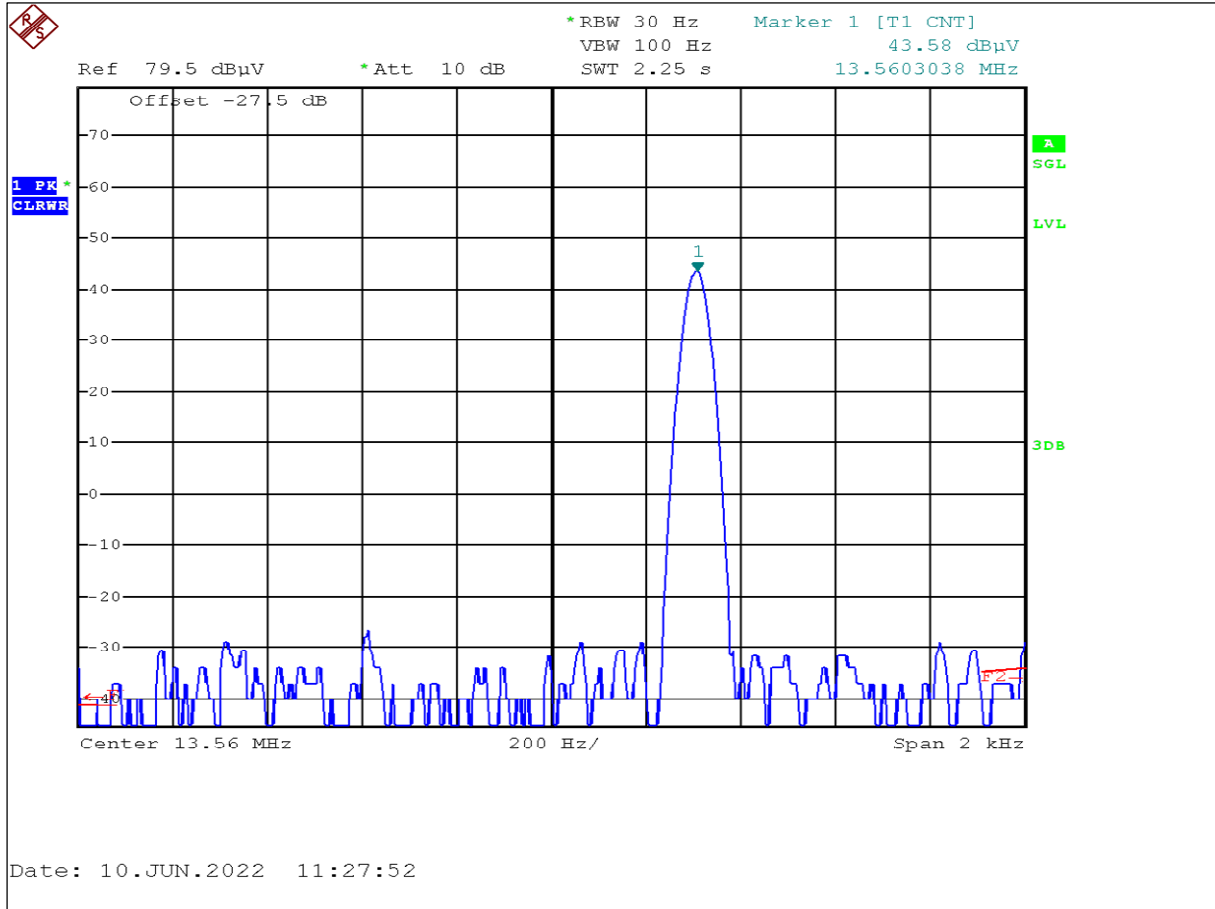
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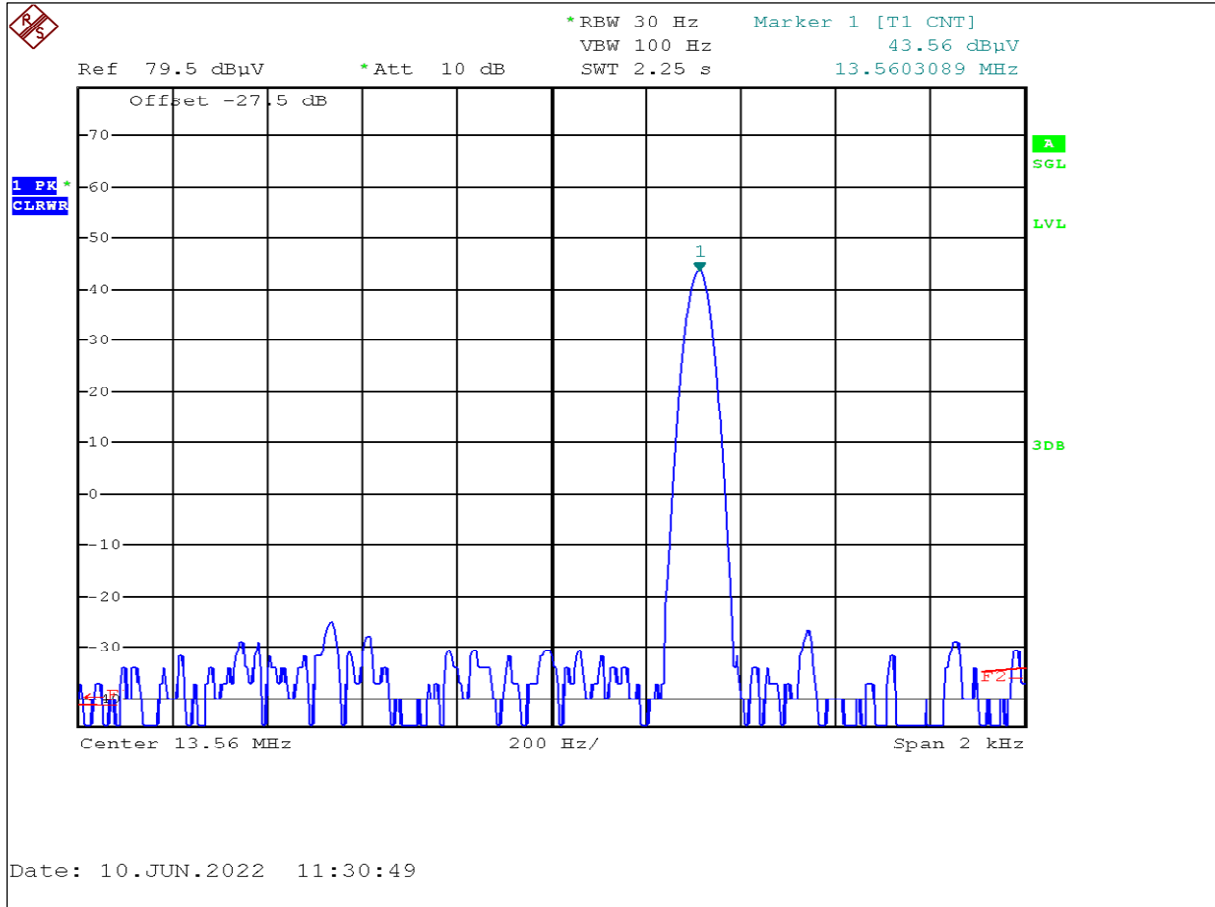
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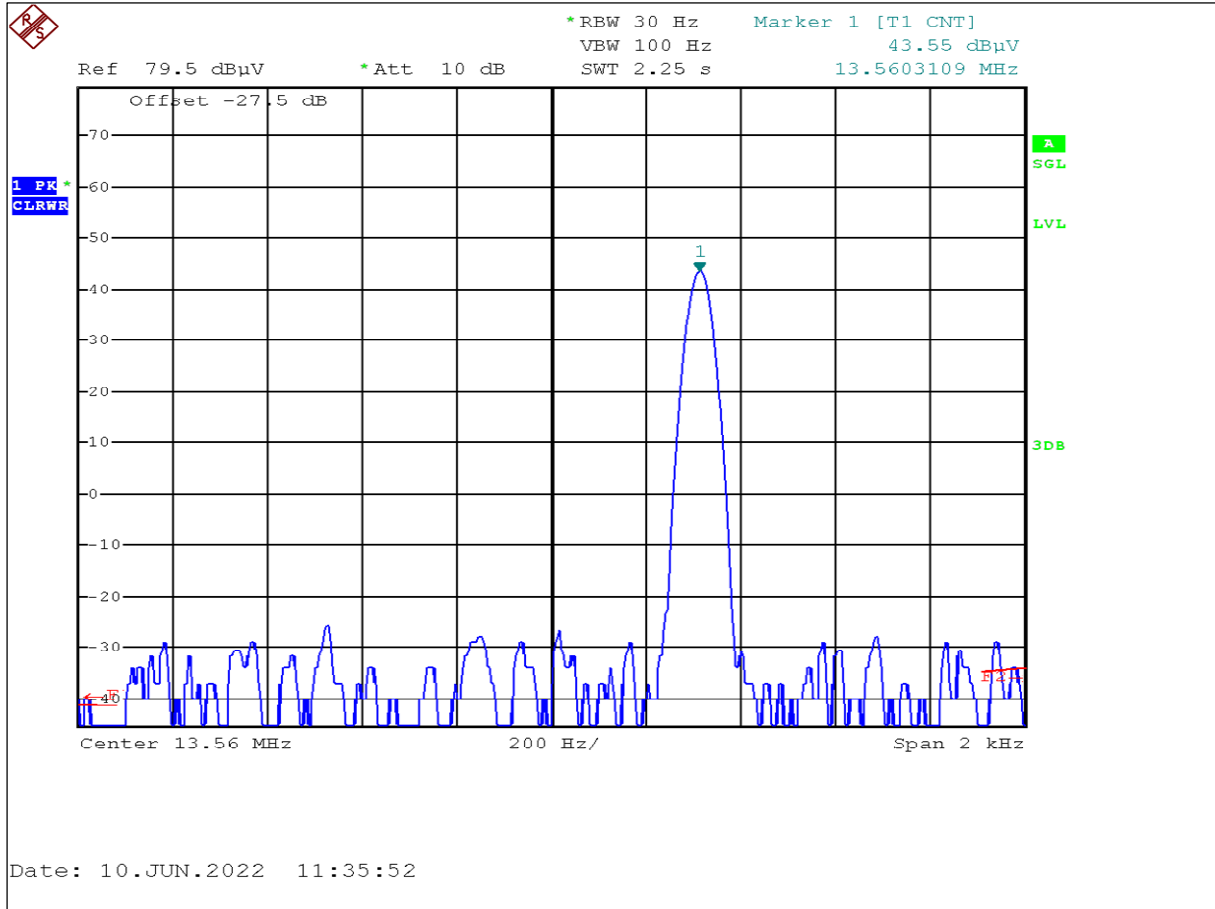
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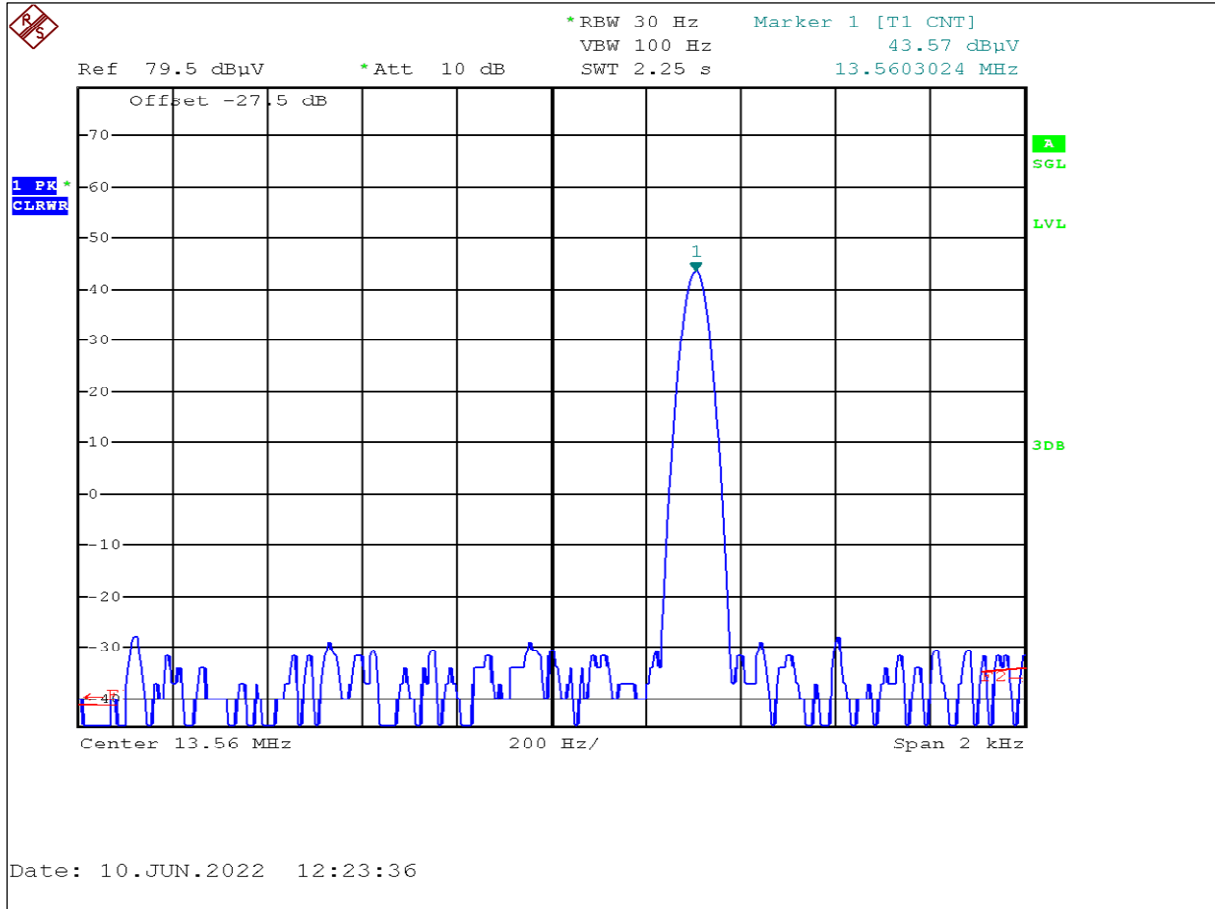
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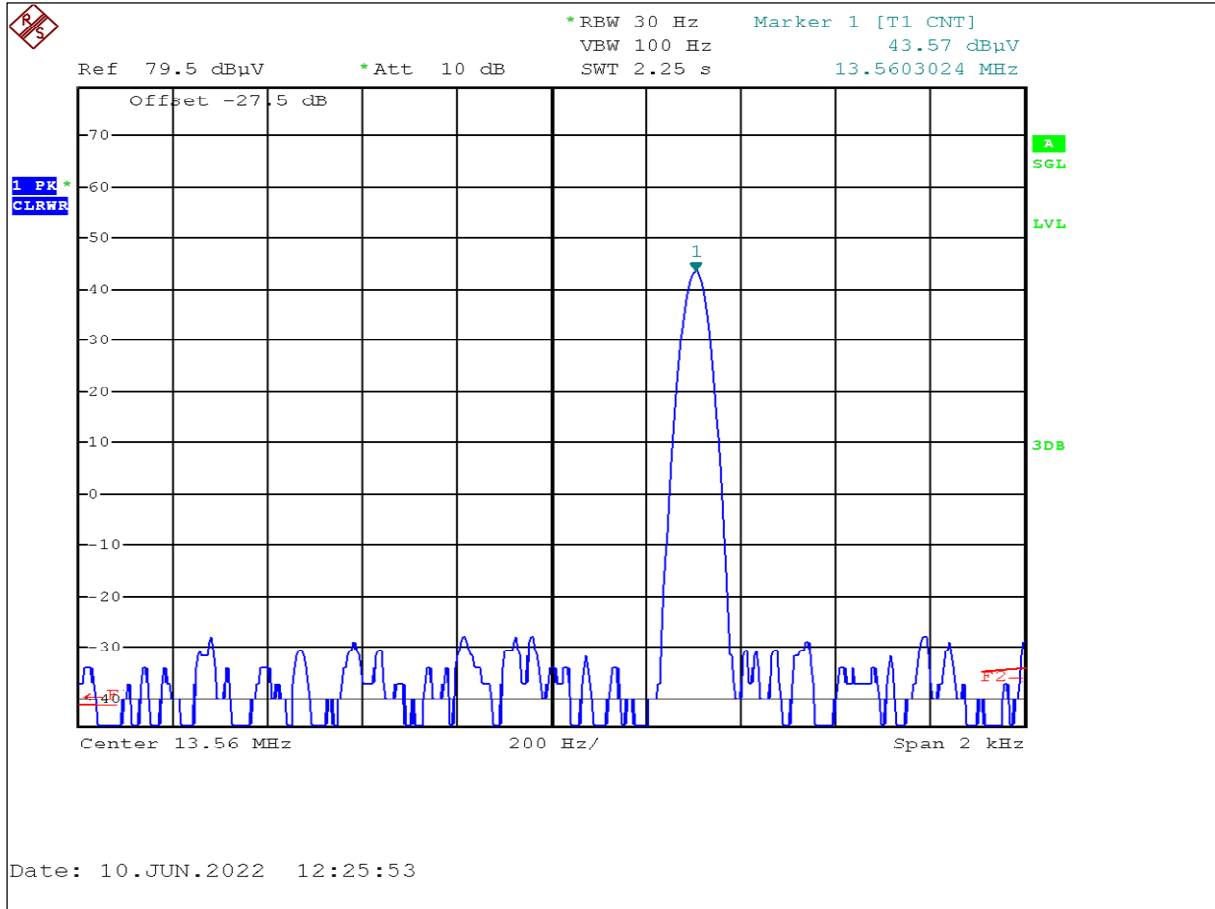
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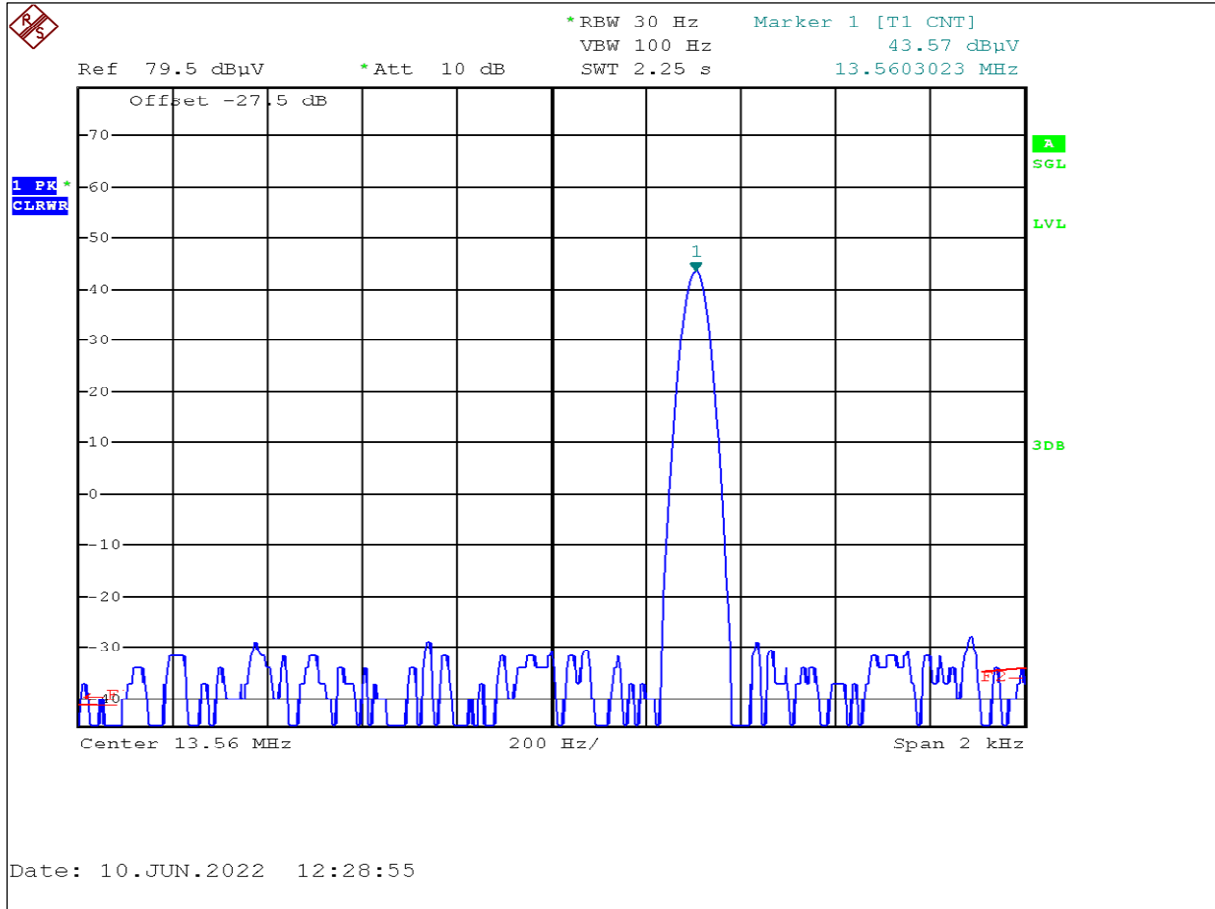
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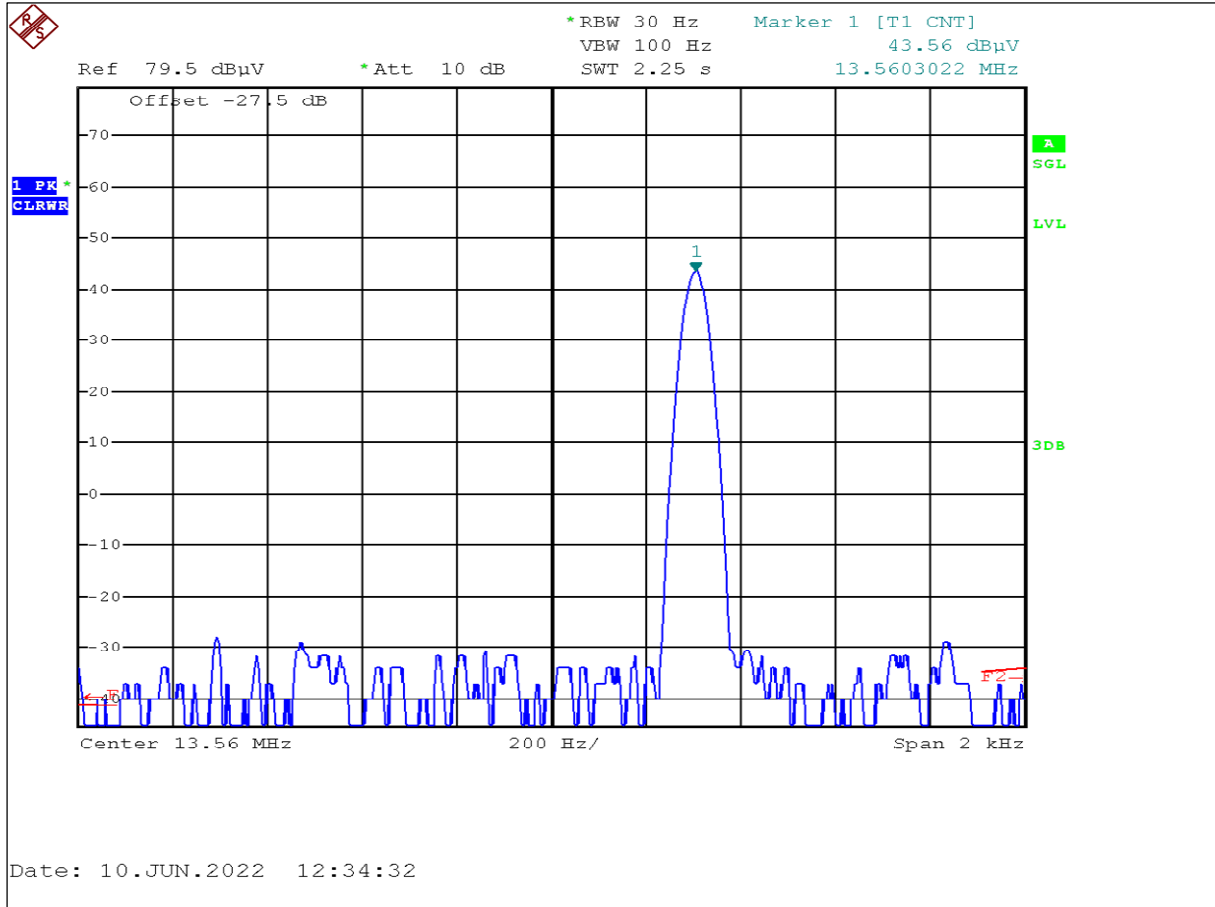
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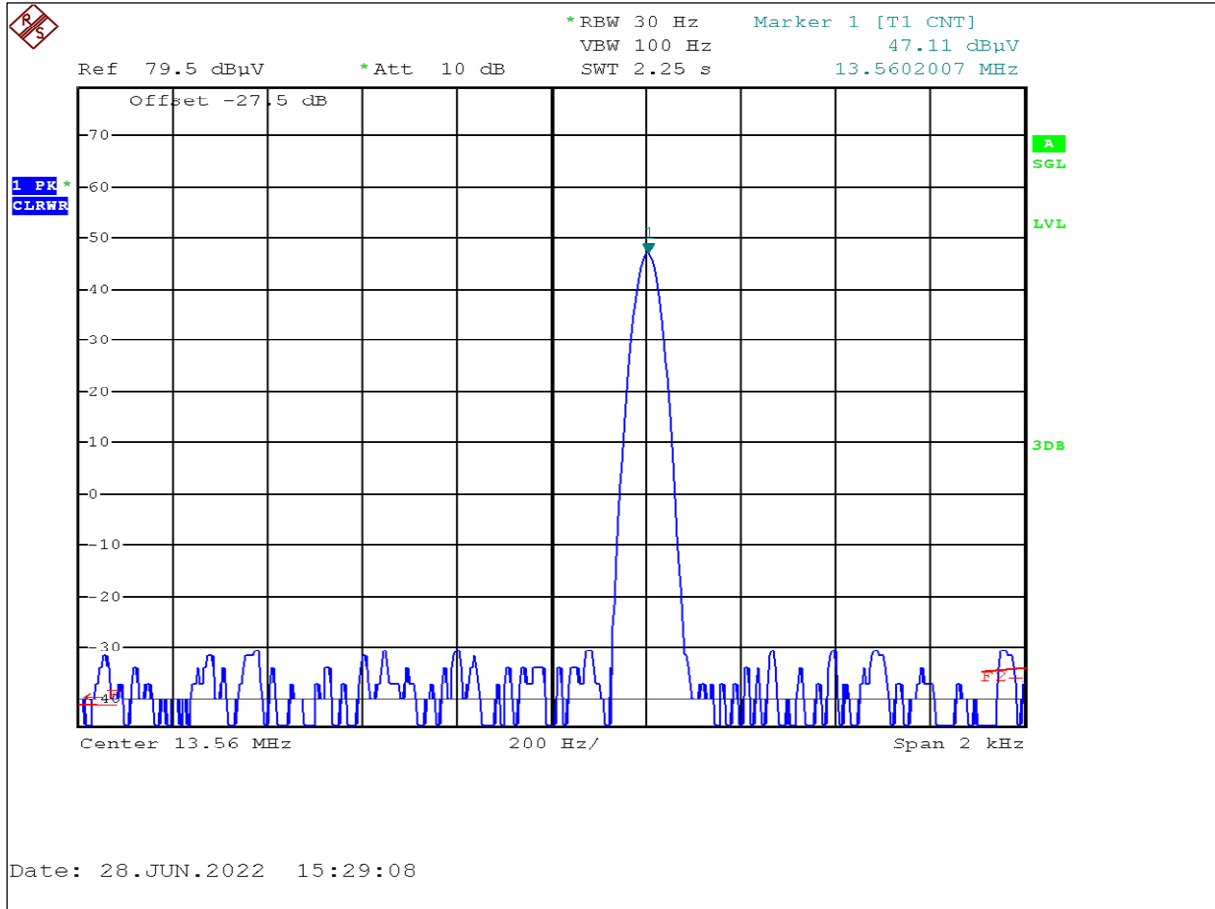
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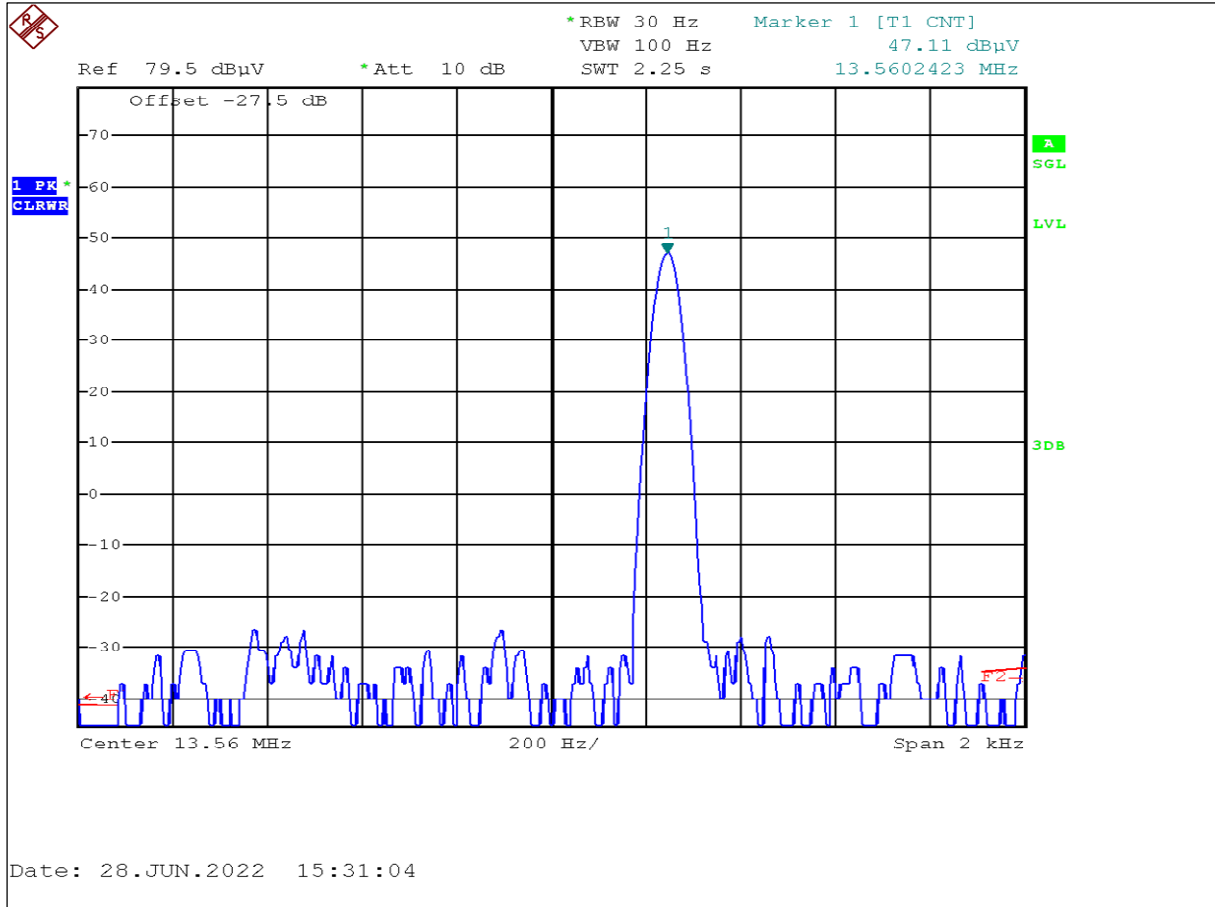
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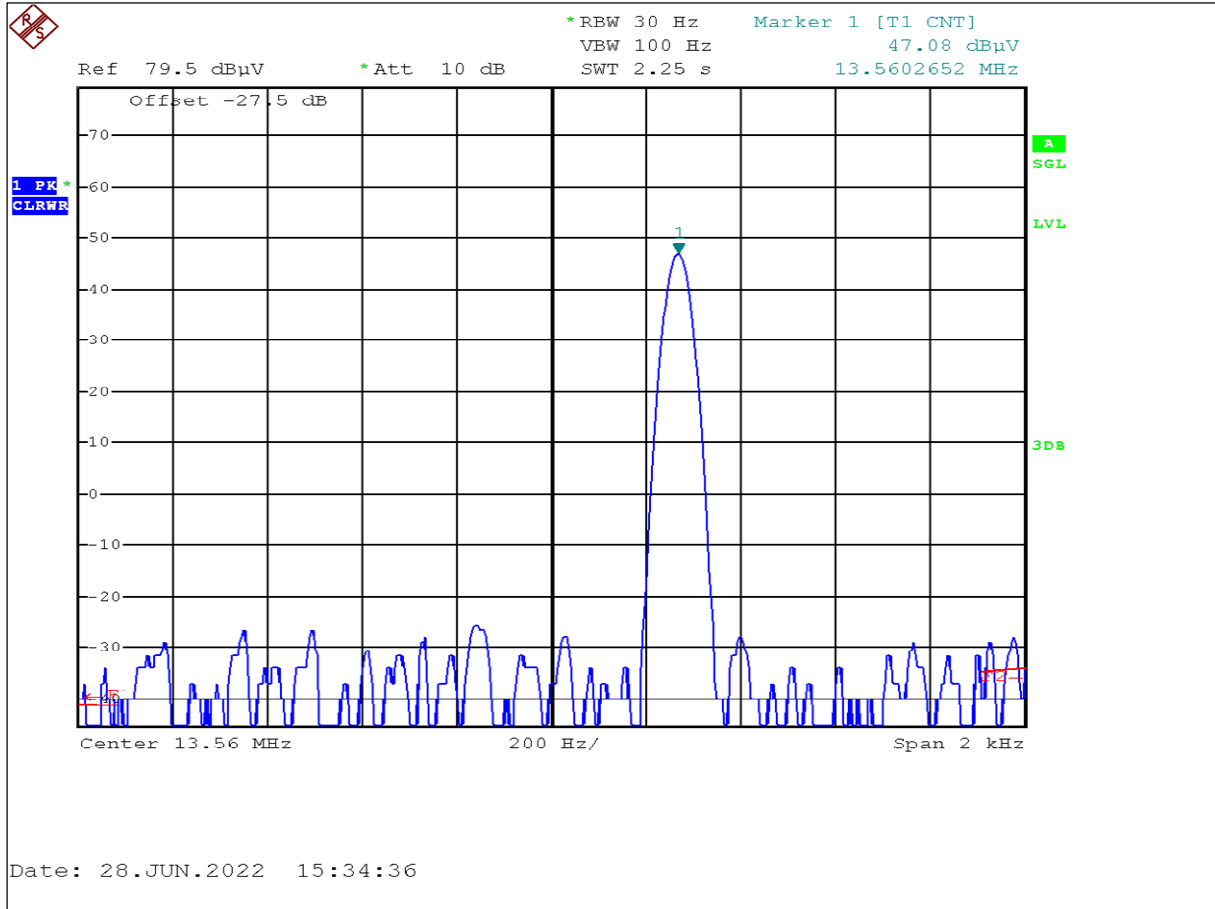
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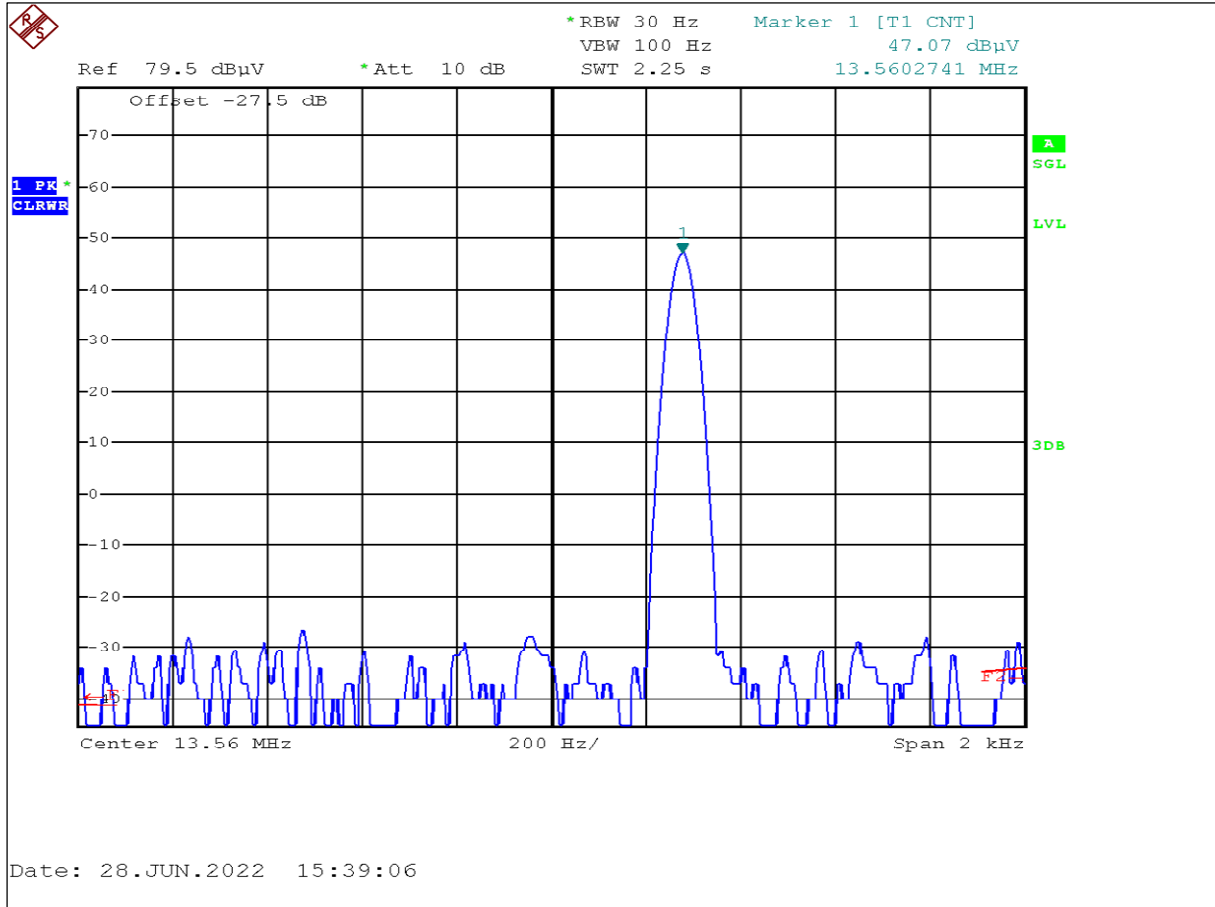
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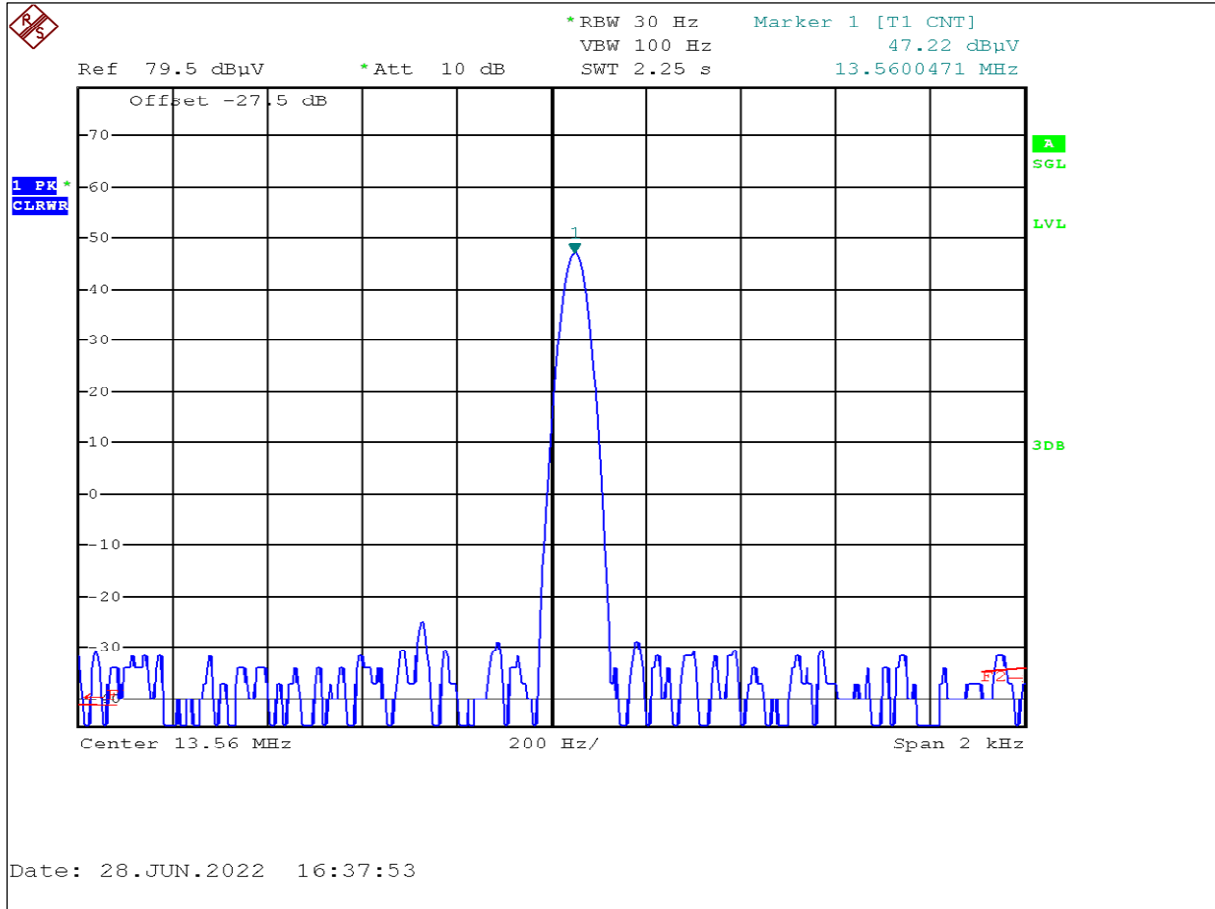
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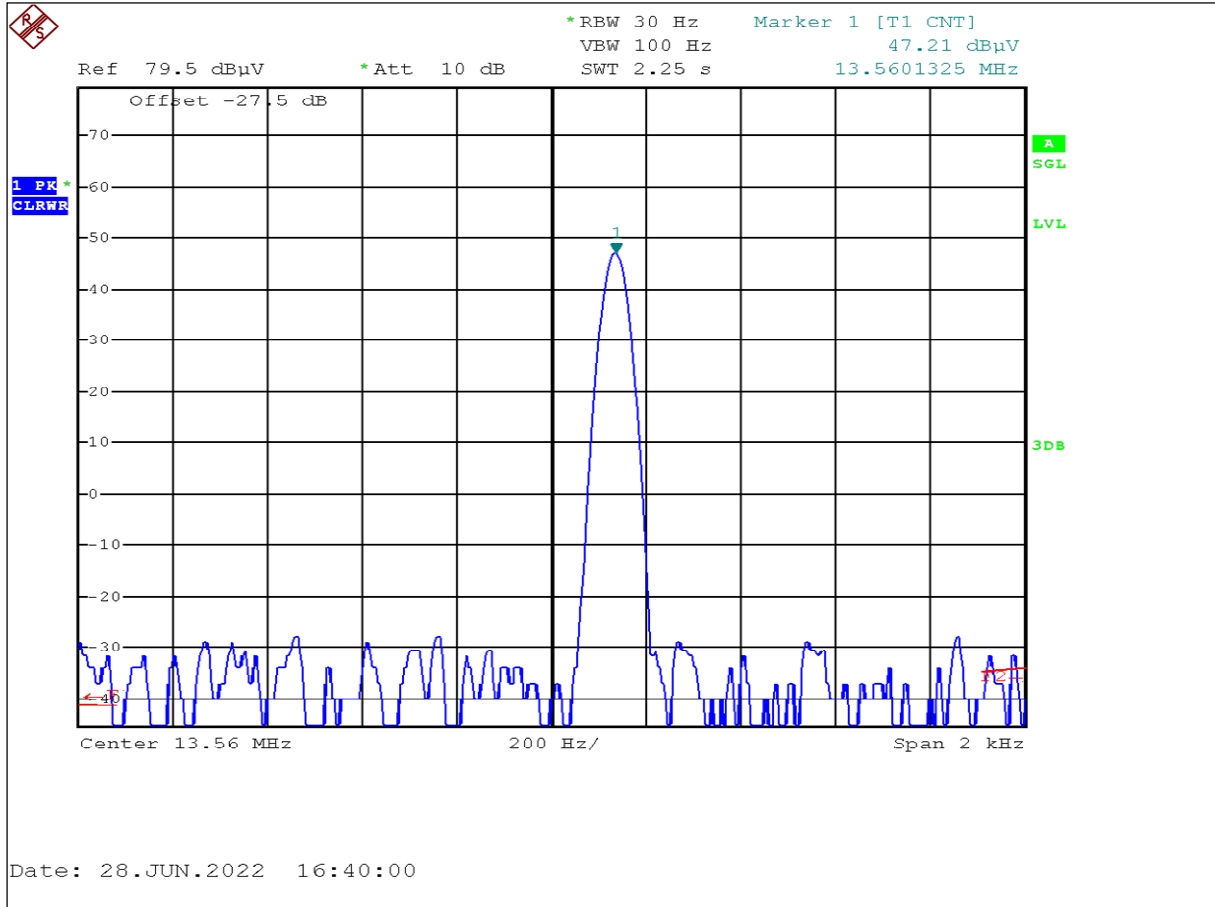
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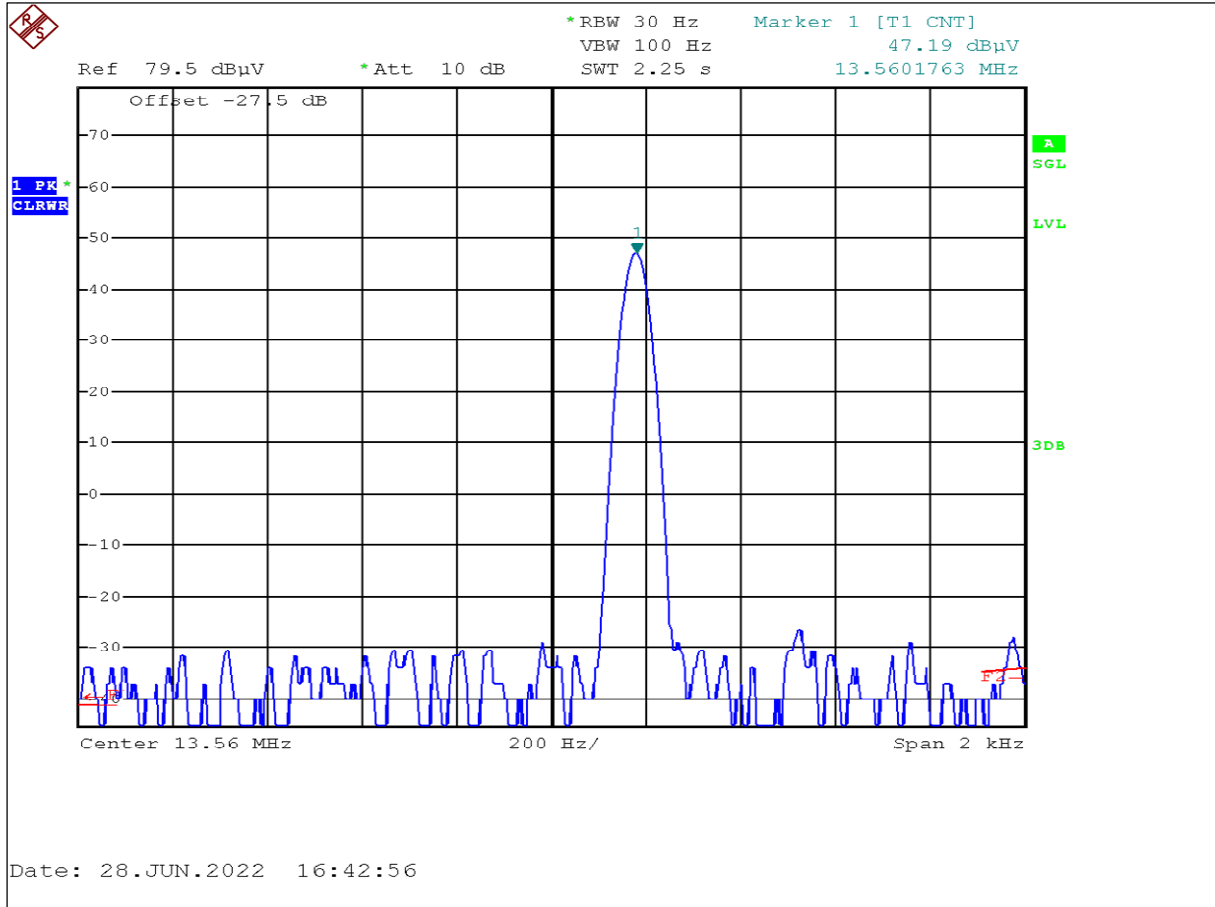
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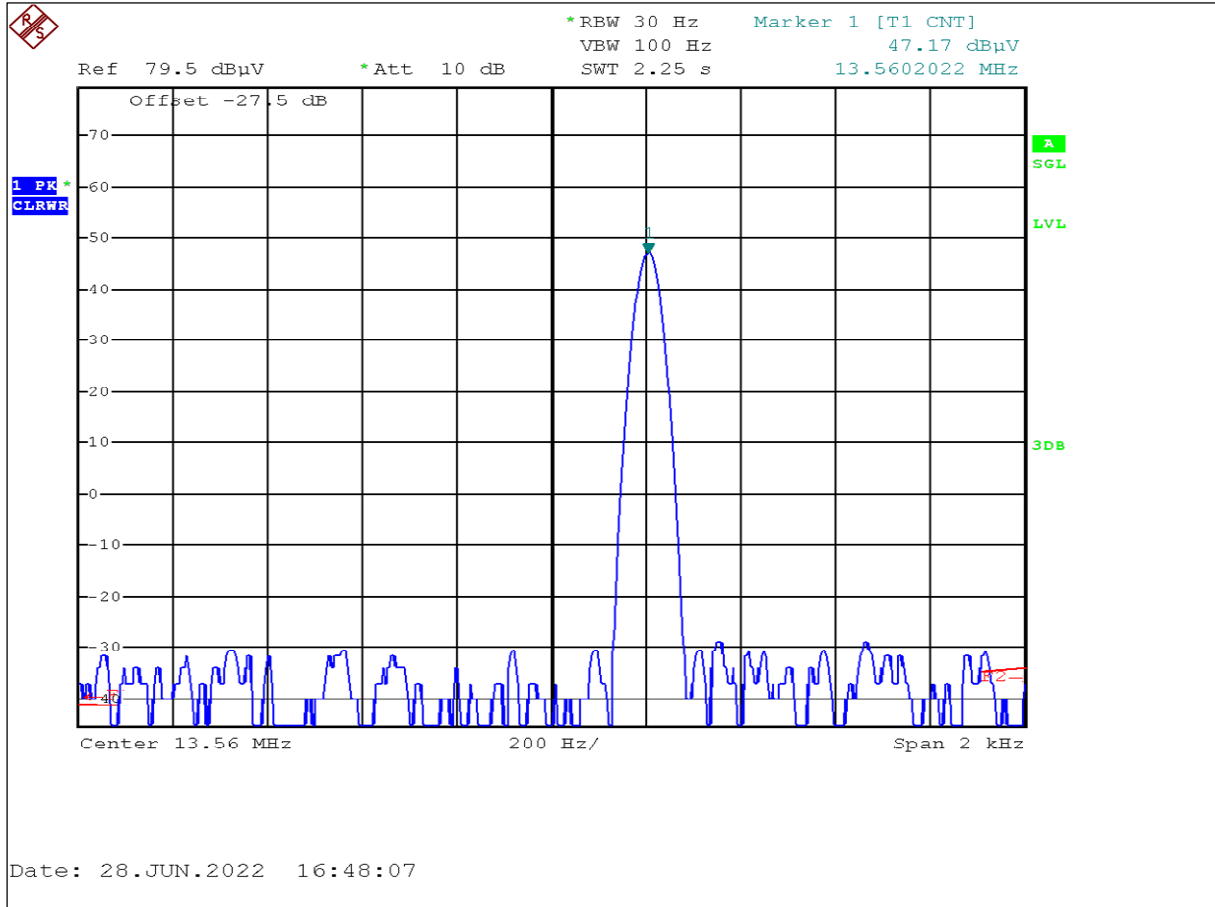
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D14_03_T-40_5min

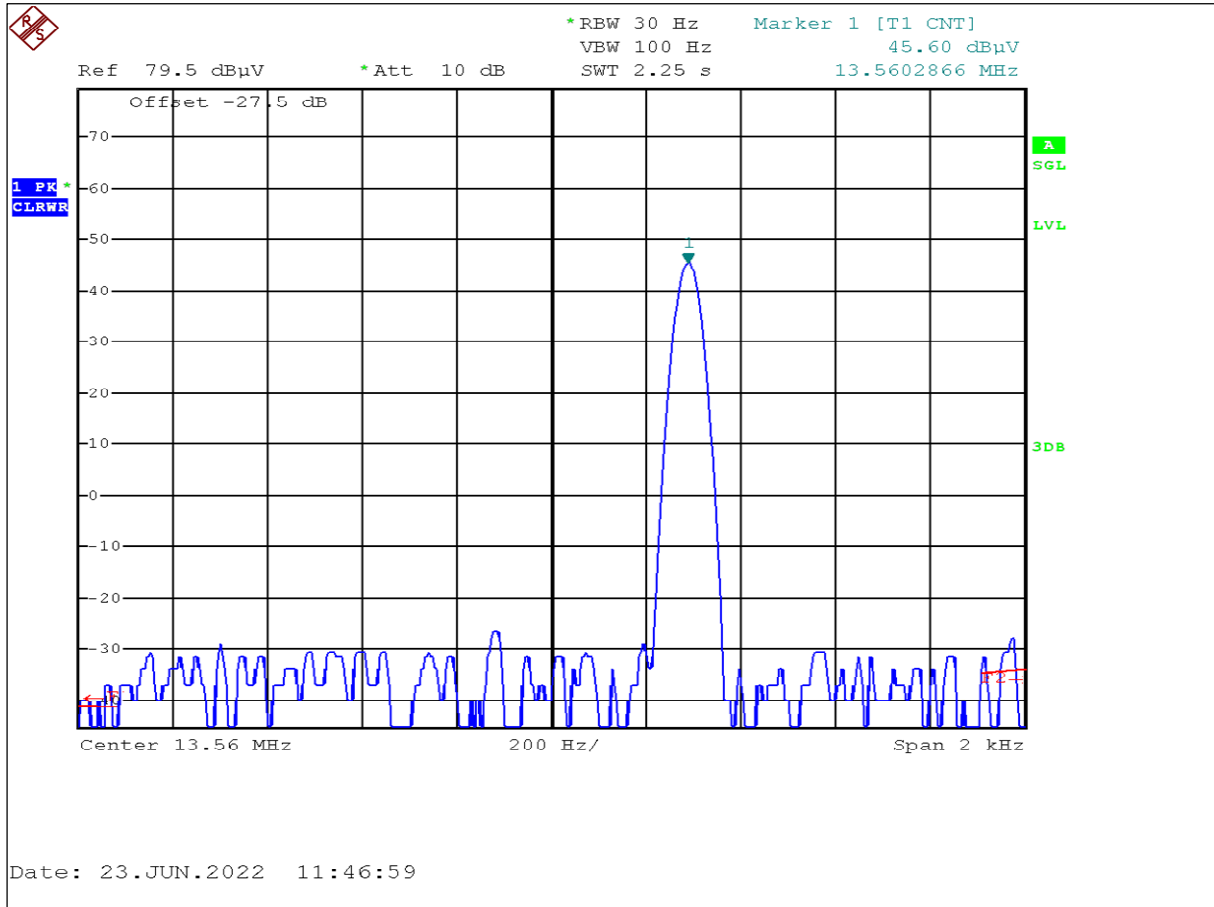


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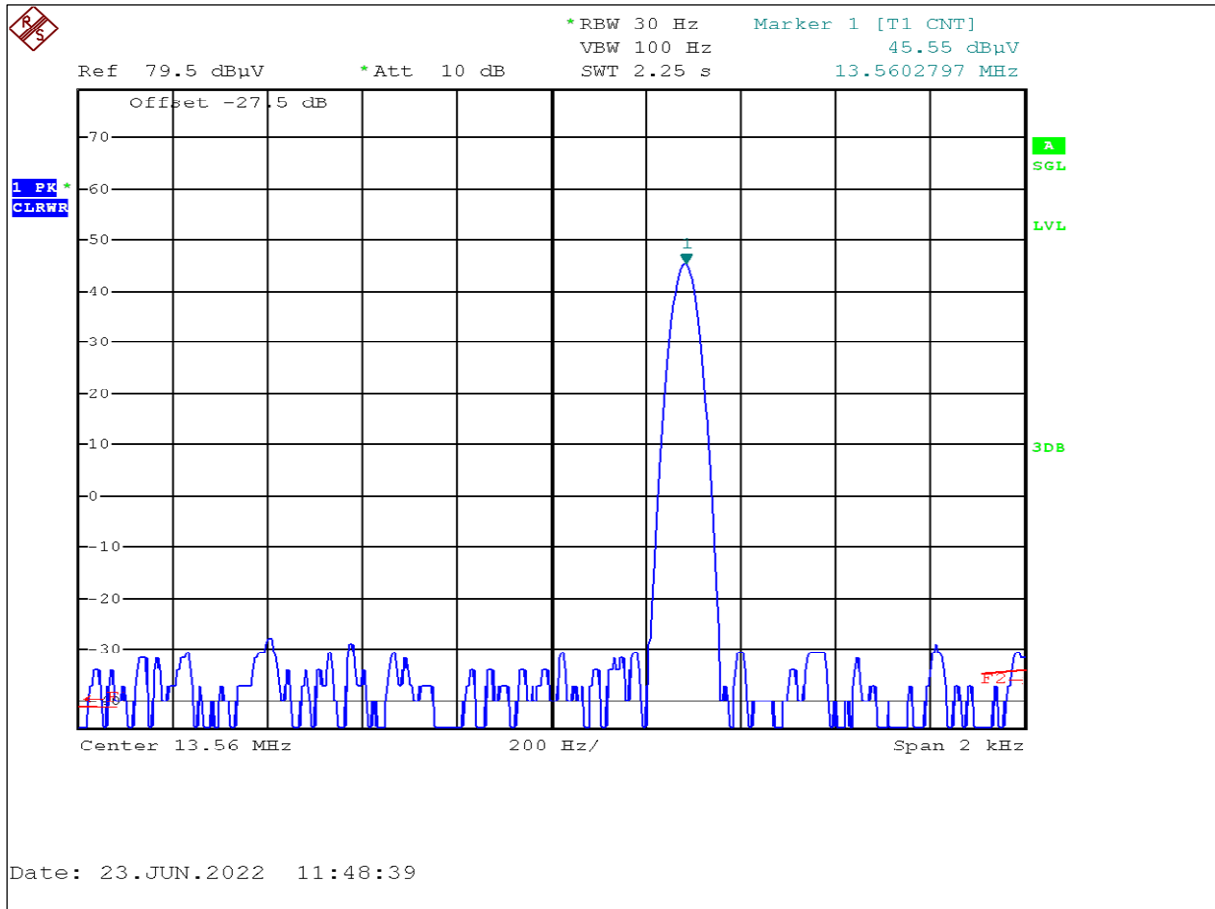


1.4.2 Voltage variation

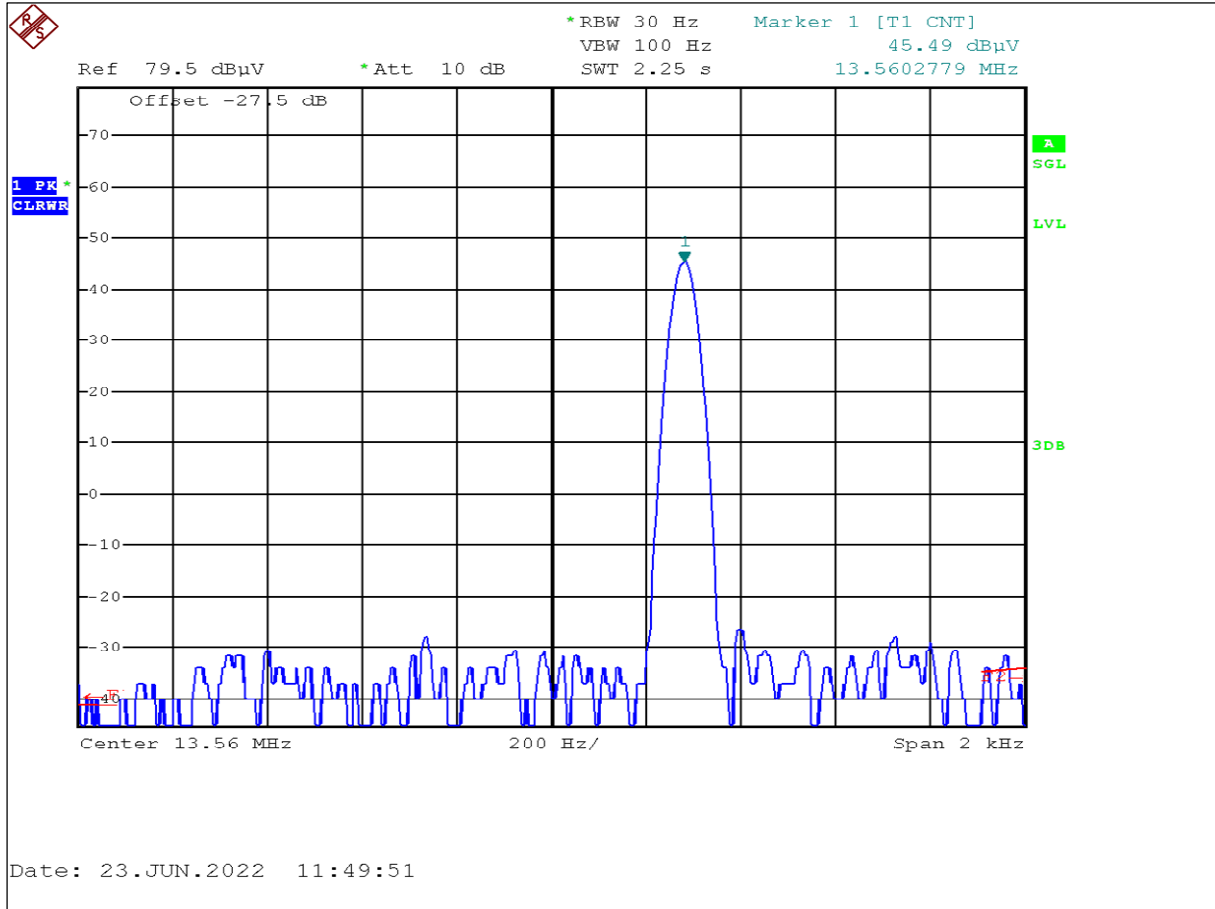
D15_01_Vnom



D15_02_Vlow_10.2V

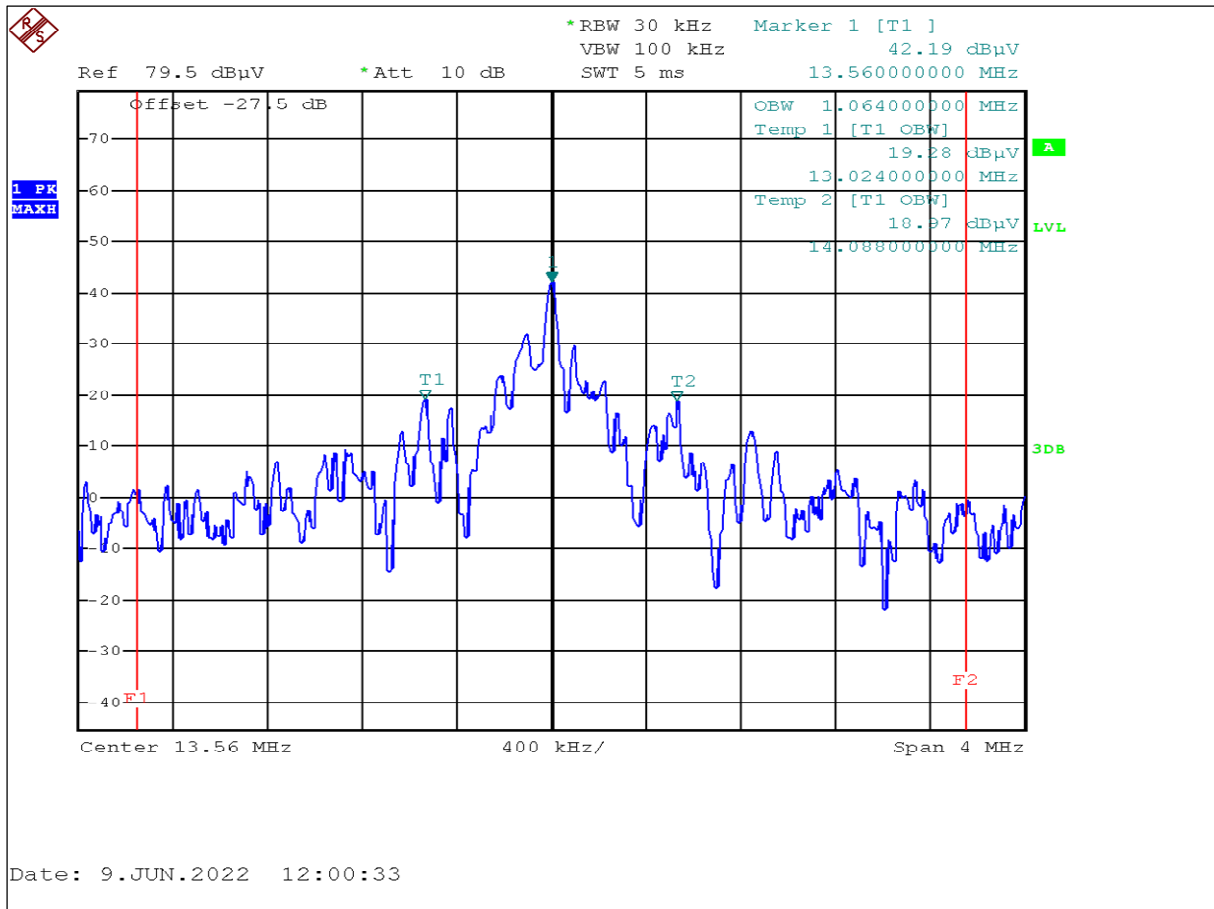


D15_03_Vhigh_13.8V



1.5 Occupied Channel Bandwidth 99%

D16_01_99%OBW



End Of Annex 1