

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Wireless Adaptor with built-in amplifier
Model No.	:	CITATION AMP
Trade Mark	:	harman/kardon
FCC ID	:	APIHKCTAMP
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

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Test Report Declare

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Model No	:	CITATION AMP
Trade Mark	:	harman/kardon
Manufacturer	:	Harman International Industries, Inc.
Address	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Test Standard Used: FCC Rules and Regulations Part 15 Subpart E.

Test procedure used: ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-R20041019-1E15		
Date of Receipt:	May 21, 2020	Date of Test:	May 21, 2020 ~ Jul. 21, 2020

Prepared By:

Sam Li

Sam Li/Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jul. 21, 2020	

1. Summary of Test Results

The EUT have been tested according to the applicable standards as referenced below.

Description of Test Item	Standard	Results
6/26 dB Bandwidth and 99% Bandwidth	FCC 15.407 (e)	PASS
Maximum Conducted Output Power	FCC 15.407 (a)	PASS
Power Spectral Density	FCC 15.407 (a)	PASS
Frequency Stability Measurement	FCC 15.407 (g)	PASS
Spurious Emissions	FCC 15.407 (b) FCC 15.209	PASS
Band Edge Compliance	FCC 15.407 (b) FCC 15.209 FCC 15.205	PASS
Power Line Conducted Emission	FCC 15.207	PASS
Antenna requirement	FCC 15.203	PASS
Dynamic Frequency Selection	FCC 15.407 (h)	PASS

2. General Test Information

2.1. Description of EUT

EUT* Name	: Wireless Adaptor with built-in amplifier
Model Number	: CITATION AMP
EUT function description	: Please reference user manual of this device
Power supply	: AC 100-240V~, 50/60Hz, 125W
Radio Technology	: IEEE 802.11a/n/ac
Operation frequency	: IEEE 802.11a: 5180 MHz - 5240 MHz, 5260 MHz - 5320 MHz, 5500 MHz - 5700 MHz, 5745 MHz - 5825 MHz IEEE 802.11n HT20: 5180 MHz - 5240 MHz, 5260 MHz - 5320 MHz, 5500 MHz - 5700 MHz, 5745 MHz - 5825 MHz IEEE 802.11n HT40: 5190 MHz - 5230 MHz, 5270 MHz - 5310 MHz, 5510 MHz - 5670 MHz, 5755 MHz - 5795 MHz IEEE 802.11ac HT20: 5180 MHz - 5240 MHz, 5260 MHz - 5320 MHz, 5500 MHz - 5700 MHz, 5745 MHz - 5825 MHz IEEE 802.11ac HT40: 5190 MHz - 5230 MHz, 5270 MHz - 5310 MHz, 5510 MHz - 5670 MHz, 5755 MHz - 5795 MHz IEEE 802.11ac HT80: 5210 MHz, 5290 MHz, 5530 MHz, 5610 MHz, 5775 MHz
Modulation	: IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	: IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: 14.4, 28.9, 43.3, 57.8, 86.7, 115.6, 130.0, 144.4 Mbps IEEE 802.11n HT40: 30, 60, 90, 120, 180, 240, 270, 300 Mbps IEEE 802.11ac HT20: 14.4, 28.8, 43.4, 57.8, 86.6, 115.6, 130, 144.4, 173.4 Mbps IEEE 802.11ac HT40: 30, 60, 90, 120, 180, 240, 270, 300, 360, 400 Mbps IEEE 802.11ac HT80: 65, 130, 195, 260, 390, 520, 585, 650, 780, 866.6 Mbps
Antenna Type	: Antenna 1: Dedicated FPCB antenna, maximum PK gain: 3.38 dBi Antenna 2: Dedicated FPCB antenna, maximum PK gain: 3.3 dBi
Serial number	: GG0906-EK0000162

Note: EUT is the ab. of equipment under test.

Antenna information			
	Ant1 gain	Ant2 gain	MIMO
IEEE 802.11a	3.38	3.3	/
IEEE 802.11n HT20	3.38	3.3	6.35
IEEE 802.11n HT40	3.38	3.3	6.35
IEEE 802.11ac VHT20	3.38	3.3	6.35
IEEE 802.11ac VHT40	3.38	3.3	6.35
IEEE 802.11ac VHT80	3.38	3.3	6.35

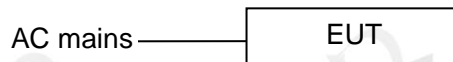
2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
AC cable	N/A	N/A	N/A	Length: 1.80 m, unshielded
Remote control	harman/kardon	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
Notebook	Lenovo Beijing Co. Ltd.	ThinkPad	FCC/CE	TP00015A
Wireless LAN Access Point	HUAWEI	AP6050	21500829352SC5000371	FCC ID: QISAP6050DN6150DN

2.4. Block diagram of EUT configuration for test



The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

Tested mode, channel, and data rate information				
Mode	Setting Tx Power	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
IEEE 802.11a	/	6	Low: CH36	5180
	/	6	Middle: CH40	5200
	/	6	High: CH48	5240
	/	6	Low: CH52	5260
	/	6	Middle: CH56	5280
	/	6	High: CH64	5320
	/	6	Low: CH100	5500
	/	6	Middle: CH116	5580
	/	6	High: CH140	5700
	/	6	Low: CH149	5745
	/	6	Middle: CH157	5785
IEEE 802.11n HT20	/	MCS8	Low: CH36	5180
	/	MCS8	Middle: CH40	5200
	/	MCS8	High: CH48	5240
	/	MCS8	Low: CH52	5260
	/	MCS8	Middle: CH56	5280
	/	MCS8	High: CH64	5320
	/	MCS8	Low: CH100	5500
	/	MCS8	Middle: CH116	5580
	/	MCS8	High: CH140	5700
	/	MCS8	Low: CH149	5745
	/	MCS8	Middle: CH157	5785
IEEE 802.11n HT40	/	MCS8	Low: CH38	5190
	/	MCS8	Middle: CH46	5230
	/	MCS8	High: CH54	5270
	/	MCS8	Low: CH62	5310
	/	MCS8	Middle: CH102	5510
	/	MCS8	High: CH110	5550
	/	MCS8	Low: CH134	5670
	/	MCS8	Middle: CH151	5755
IEEE 802.11ac HT20	/	MCS8	Low: CH36	5180
	/	MCS8	Middle: CH40	5200
	/	MCS8	High: CH48	5240
	/	MCS8	Low: CH52	5260
	/	MCS8	Middle: CH56	5280
	/	MCS8	High: CH64	5320
	/	MCS8	Low: CH100	5500
	/	MCS8	Middle: CH116	5580
	/	MCS8	High: CH140	5700
	/	MCS8	Low: CH149	5745
	/	MCS8	Middle: CH157	5785
/	MCS8	High: CH165	5825	

IEEE 802.11ac HT40	/	MCS8	Low: CH38	5190
	/	MCS8	Middle: CH46	5230
	/	MCS8	High: CH54	5270
	/	MCS8	Low: CH62	5310
	/	MCS8	Middle: CH102	5510
	/	MCS8	High: CH110	5550
	/	MCS8	Low: CH134	5670
	/	MCS8	Middle: CH151	5755
IEEE 802.11ac HT80	/	MCS8	CH42	5210
	/	MCS8	CH58	5290
	/	MCS8	CH106	5530
	/	MCS8	CH122	5610
	/	MCS8	CH155	5775

Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.

2.5. Deviations of test standard

No Deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25 °C
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Addr.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation No. 3870.01

FCC Designation Number: CN1182; Test Firm Registration Number: 540522

Industry Canada site registration number: 10288A-1

2.8. Measurement uncertainty

Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum Analyzer)	0.86 dB (10 MHz \leq f < 3.6 GHz); 1.38 dB (3.6 GHz \leq f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz \leq f < 3.6 GHz); 1.38 dB (3.6 GHz \leq f < 8 GHz)
Frequencies Stability	6.7 x 10 ⁻⁸ (Antenna couple method) 5.5 x 10 ⁻⁸ (Conducted method)
Conducted Spurious Emissions	0.86 dB (10 MHz \leq f < 3.6 GHz); 1.40 dB (3.6 GHz \leq f < 8 GHz) 1.66 dB (8 GHz \leq f < 22 GHz)
Uncertainty for Radio Frequency (RBW < 20 kHz)	3x10 ⁻⁸
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission Test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V) 4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission Test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz) 4.40 dB (6 GHz - 18 GHz) 3.54 dB (18 GHz - 26 GHz) 4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power Line Conduction Emission Test	3.32 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

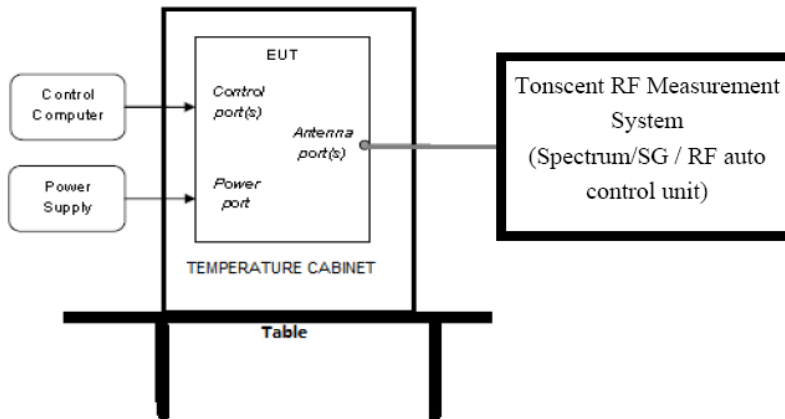
3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (Tonscend RF Measurement System)					
Spectrum analyzer	R&S	FSU26	200071	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	N9020D	MY49100362	Sep. 29, 2019	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jul. 01, 2020	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 29, 2019	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jul. 01, 2020	1 Year
Power Sensor	Agilent	U2021XA	MY55150010	Jul. 01, 2020	1 Year
Power Sensor	Agilent	U2021XA	MY55150011	Jul. 01, 2020	1 Year
DC Power Source	MATRIS	MPS-3005L-3	D813058W	Jul. 01, 2020	1 Year
RF Cable	Micable	C10-01-01-1	100309	Sep. 29, 2019	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Oct. 21, 2019	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
Radiation 1#chamber					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 15, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 29, 2019	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 29, 2019	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 29, 2019	1 Year
MI Cable	HUBSER	C10-01-01-1 M	1091629	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Radiation 2#chamber					
EMI Test Receiver	R&S	ESCI	101364	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-994	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 21, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year

Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	N/A	14+1.5m	06270619	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Power Line Conducted Emissions Test					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
LISN 1	R&S	ENV216	101109	Sep. 29, 2019	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 29, 2019	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 29, 2019	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 26 dB Bandwidth, 6 dB Bandwidth and 99% Bandwidth

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5150 - 5250
	26 dB Bandwidth	5250 - 5350
	26 dB Bandwidth	5470 - 5725
	Minimum 500 kHz 6 dB Bandwidth	5725 - 5850

4.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth: RBW=100 kHz For 26 dB Bandwidth: approximately 1% of the emission bandwidth.
VBW	For 6 dB Bandwidth: VBW=300 kHz For 26 dB Bandwidth: >3 RBW
Trace	Max hold
Sweep	Auto couple

(2) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB and 6 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

99% Bandwidth:

Test Mode	Antenna	Channel	OCB [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	17.80	5171.080	5188.880	---	PASS
	Ant2	5180	17.72	5171.120	5188.840	---	PASS
	Ant1	5200	17.76	5191.080	5208.840	---	PASS
	Ant2	5200	17.88	5190.960	5208.840	---	PASS
	Ant1	5240	17.92	5231.040	5248.960	---	PASS
	Ant2	5240	17.88	5231.080	5248.960	---	PASS
	Ant1	5260	17.76	5251.120	5268.880	---	PASS
	Ant2	5260	17.92	5251.000	5268.920	---	PASS
	Ant1	5280	17.80	5271.080	5288.880	---	PASS
	Ant2	5280	17.96	5270.920	5288.880	---	PASS
	Ant1	5320	17.76	5311.120	5328.880	---	PASS
	Ant2	5320	17.88	5311.040	5328.920	---	PASS
	Ant1	5500	17.72	5491.120	5508.840	---	PASS
	Ant2	5500	17.76	5491.040	5508.800	---	PASS
	Ant1	5580	17.76	5571.000	5588.760	---	PASS
	Ant2	5580	17.80	5571.000	5588.800	---	PASS
	Ant1	5700	17.80	5691.040	5708.840	---	PASS
	Ant2	5700	17.84	5691.040	5708.880	---	PASS
	Ant1	5745	17.72	5736.280	5754.000	---	PASS
	Ant2	5745	17.76	5736.240	5754.000	---	PASS
Ant1	5785	17.68	5776.160	5793.840	---	PASS	
Ant2	5785	17.72	5776.120	5793.840	---	PASS	
Ant1	5825	17.72	5816.120	5833.840	---	PASS	
Ant2	5825	17.72	5816.080	5833.800	---	PASS	
11N20 MIMO	Ant1	5180	17.92	5171.000	5188.920	---	PASS
	Ant2	5180	18.24	5170.880	5189.120	---	PASS
	Ant1	5200	18.84	5190.520	5209.360	---	PASS
	Ant2	5200	18.28	5190.840	5209.120	---	PASS
	Ant1	5240	18.84	5230.600	5249.440	---	PASS
	Ant2	5240	18.56	5230.720	5249.280	---	PASS
	Ant1	5260	18.76	5250.640	5269.400	---	PASS
	Ant2	5260	18.32	5250.840	5269.160	---	PASS
	Ant1	5280	18.76	5270.600	5289.360	---	PASS
	Ant2	5280	18.24	5270.880	5289.120	---	PASS
	Ant1	5320	18.68	5310.640	5329.320	---	PASS
	Ant2	5320	18.28	5310.880	5329.160	---	PASS
	Ant1	5500	18.68	5490.640	5509.320	---	PASS
	Ant2	5500	18.24	5490.840	5509.080	---	PASS
	Ant1	5580	18.68	5570.560	5589.240	---	PASS
	Ant2	5580	18.32	5570.760	5589.080	---	PASS
	Ant1	5700	18.68	5690.600	5709.280	---	PASS
	Ant2	5700	18.32	5690.840	5709.160	---	PASS
	Ant1	5745	18.72	5735.760	5754.480	---	PASS
	Ant2	5745	18.28	5735.960	5754.240	---	PASS
Ant1	5785	18.64	5775.680	5794.320	---	PASS	
Ant2	5785	18.36	5775.800	5794.160	---	PASS	

	Ant1	5825	18.64	5815.640	5834.280	---	PASS	
	Ant2	5825	18.20	5815.880	5834.080	---	PASS	
11N40 MIMO	Ant1	5190	36.80	5171.600	5208.400	---	PASS	
	Ant2	5190	36.56	5171.680	5208.240	---	PASS	
	Ant1	5230	37.04	5211.440	5248.480	---	PASS	
	Ant2	5230	36.96	5211.440	5248.400	---	PASS	
	Ant1	5270	36.80	5251.600	5288.400	---	PASS	
	Ant2	5270	36.64	5251.680	5288.320	---	PASS	
	Ant1	5310	36.80	5291.600	5328.400	---	PASS	
	Ant2	5310	36.72	5291.680	5328.400	---	PASS	
	Ant1	5510	36.64	5491.600	5528.240	---	PASS	
	Ant2	5510	36.64	5491.520	5528.160	---	PASS	
	Ant1	5550	36.88	5531.600	5568.480	---	PASS	
	Ant2	5550	36.72	5531.680	5568.400	---	PASS	
	Ant1	5670	36.96	5651.520	5688.480	---	PASS	
	Ant2	5670	36.88	5651.520	5688.400	---	PASS	
	Ant1	5755	36.96	5736.680	5773.640	---	PASS	
	Ant2	5755	36.96	5736.680	5773.640	---	PASS	
	Ant1	5795	36.88	5776.600	5813.480	---	PASS	
	Ant2	5795	36.72	5776.600	5813.320	---	PASS	
	11AC20 MIMO	Ant1	5180	18.48	5170.760	5189.240	---	PASS
		Ant2	5180	18.52	5170.720	5189.240	---	PASS
Ant1		5200	18.48	5190.760	5209.240	---	PASS	
Ant2		5200	18.56	5190.680	5209.240	---	PASS	
Ant1		5240	18.60	5230.720	5249.320	---	PASS	
Ant2		5240	18.64	5230.680	5249.320	---	PASS	
Ant1		5260	18.56	5250.760	5269.320	---	PASS	
Ant2		5260	18.64	5250.680	5269.320	---	PASS	
Ant1		5280	18.52	5270.760	5289.280	---	PASS	
Ant2		5280	18.64	5270.640	5289.280	---	PASS	
Ant1		5320	18.52	5310.760	5329.280	---	PASS	
Ant2		5320	18.56	5310.720	5329.280	---	PASS	
Ant1		5500	18.48	5490.760	5509.240	---	PASS	
Ant2		5500	18.56	5490.680	5509.240	---	PASS	
Ant1		5580	18.48	5570.720	5589.200	---	PASS	
Ant2		5580	18.60	5570.640	5589.240	---	PASS	
Ant1		5700	18.56	5690.720	5709.280	---	PASS	
Ant2		5700	18.60	5690.680	5709.280	---	PASS	
Ant1		5745	18.48	5735.880	5754.360	---	PASS	
Ant2		5745	18.56	5735.800	5754.360	---	PASS	
Ant1	5785	18.52	5775.760	5794.280	---	PASS		
Ant2	5785	18.64	5775.680	5794.320	---	PASS		
Ant1	5825	18.52	5815.760	5834.280	---	PASS		
Ant2	5825	18.52	5815.680	5834.200	---	PASS		
11AC40 MIMO	Ant1	5190	36.96	5171.520	5208.480	---	PASS	
	Ant2	5190	36.88	5171.520	5208.400	---	PASS	
	Ant1	5230	37.12	5211.360	5248.480	---	PASS	
	Ant2	5230	37.28	5211.280	5248.560	---	PASS	
	Ant1	5270	37.04	5251.440	5288.480	---	PASS	
Ant2	5270	36.96	5251.520	5288.480	---	PASS		
Ant1	5310	37.04	5291.440	5328.480	---	PASS		

	Ant2	5310	37.04	5291.600	5328.640	---	PASS
	Ant1	5510	36.96	5491.440	5528.400	---	PASS
	Ant2	5510	36.88	5491.440	5528.320	---	PASS
	Ant1	5550	37.12	5531.440	5568.560	---	PASS
	Ant2	5550	37.04	5531.520	5568.560	---	PASS
	Ant1	5670	37.12	5651.360	5688.480	---	PASS
	Ant2	5670	37.04	5651.440	5688.480	---	PASS
	Ant1	5755	37.12	5736.600	5773.720	---	PASS
	Ant2	5755	37.20	5736.600	5773.800	---	PASS
	Ant1	5795	37.12	5776.440	5813.560	---	PASS
11AC80 MIMO	Ant2	5795	37.12	5776.440	5813.560	---	PASS
	Ant1	5210	76.48	5171.600	5248.080	---	PASS
	Ant2	5210	76.64	5171.600	5248.240	---	PASS
	Ant1	5290	76.48	5251.760	5328.240	---	PASS
	Ant2	5290	76.80	5251.600	5328.400	---	PASS
	Ant1	5530	76.80	5491.600	5568.400	---	PASS
	Ant2	5530	76.80	5491.440	5568.240	---	PASS
	Ant1	5610	76.96	5571.440	5648.400	---	PASS
	Ant2	5610	77.28	5571.440	5648.720	---	PASS
	Ant1	5775	76.16	5737.080	5813.240	---	PASS
Ant2	5775	76.32	5736.920	5813.240	---	PASS	

26 dB EBW:

Test Mode	Antenna	Channel	26 dB EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5180	21.360	5169.320	5190.680	---	PASS
	Ant2	5180	21.240	5169.320	5190.560	---	PASS
	Ant1	5200	21.200	5189.400	5210.600	---	PASS
	Ant2	5200	21.360	5189.320	5210.680	---	PASS
	Ant1	5240	21.320	5229.320	5250.640	---	PASS
	Ant2	5240	21.400	5229.280	5250.680	---	PASS
	Ant1	5260	21.160	5249.480	5270.640	---	PASS
	Ant2	5260	21.400	5249.280	5270.680	---	PASS
	Ant1	5280	21.040	5269.480	5290.520	---	PASS
	Ant2	5280	23.240	5267.440	5290.680	---	PASS
	Ant1	5320	21.400	5309.320	5330.720	---	PASS
	Ant2	5320	21.560	5309.160	5330.720	---	PASS
	Ant1	5500	21.360	5489.320	5510.680	---	PASS
	Ant2	5500	21.320	5489.320	5510.640	---	PASS
	Ant1	5580	21.280	5569.280	5590.560	---	PASS
	Ant2	5580	21.320	5569.280	5590.600	---	PASS
	Ant1	5700	21.360	5689.320	5710.680	---	PASS
	Ant2	5700	21.360	5689.320	5710.680	---	PASS
	Ant1	5745	21.120	5734.560	5755.680	---	PASS
	Ant2	5745	21.160	5734.520	5755.680	---	PASS
Ant1	5785	21.160	5774.440	5795.600	---	PASS	
Ant2	5785	21.280	5774.360	5795.640	---	PASS	
Ant1	5825	21.360	5814.320	5835.680	---	PASS	
Ant2	5825	21.440	5814.280	5835.720	---	PASS	
11N20 MIMO	Ant1	5180	21.640	5169.080	5190.720	---	PASS
	Ant2	5180	21.640	5169.080	5190.720	---	PASS

11N40 MIMO	Ant1	5200	21.560	5189.200	5210.760	---	PASS	
	Ant2	5200	21.520	5189.240	5210.760	---	PASS	
	Ant1	5240	21.840	5229.040	5250.880	---	PASS	
	Ant2	5240	24.320	5226.520	5250.840	---	PASS	
	Ant1	5260	22.160	5248.840	5271.000	---	PASS	
	Ant2	5260	21.800	5249.040	5270.840	---	PASS	
	Ant1	5280	21.760	5268.920	5290.680	---	PASS	
	Ant2	5280	21.760	5269.000	5290.760	---	PASS	
	Ant1	5320	21.600	5309.120	5330.720	---	PASS	
	Ant2	5320	21.600	5309.080	5330.680	---	PASS	
	Ant1	5500	21.680	5489.240	5510.920	---	PASS	
	Ant2	5500	21.600	5489.120	5510.720	---	PASS	
	Ant1	5580	21.600	5569.160	5590.760	---	PASS	
	Ant2	5580	21.520	5569.160	5590.680	---	PASS	
	Ant1	5700	21.600	5689.160	5710.760	---	PASS	
	Ant2	5700	21.640	5689.200	5710.840	---	PASS	
	Ant1	5745	21.600	5734.240	5755.840	---	PASS	
	Ant2	5745	21.800	5734.080	5755.880	---	PASS	
	Ant1	5785	21.560	5774.200	5795.760	---	PASS	
	Ant2	5785	23.280	5772.680	5795.960	---	PASS	
	Ant1	5825	21.760	5814.160	5835.920	---	PASS	
	Ant2	5825	21.600	5814.120	5835.720	---	PASS	
	11AC20 MIMO	Ant1	5190	40.240	5169.920	5210.160	---	PASS
		Ant2	5190	39.680	5170.160	5209.840	---	PASS
Ant1		5230	40.640	5209.680	5250.320	---	PASS	
Ant2		5230	41.520	5208.480	5250.000	---	PASS	
Ant1		5270	40.400	5249.760	5290.160	---	PASS	
Ant2		5270	40.080	5249.840	5289.920	---	PASS	
Ant1		5310	40.640	5289.760	5330.400	---	PASS	
Ant2		5310	39.840	5290.160	5330.000	---	PASS	
Ant1		5510	40.320	5489.680	5530.000	---	PASS	
Ant2		5510	39.600	5490.080	5529.680	---	PASS	
Ant1		5550	40.640	5529.840	5570.480	---	PASS	
Ant2		5550	40.000	5530.000	5570.000	---	PASS	
Ant1		5670	40.320	5649.840	5690.160	---	PASS	
Ant2		5670	44.480	5645.520	5690.000	---	PASS	
Ant1		5755	40.960	5735.000	5775.960	---	PASS	
Ant2		5755	40.080	5735.000	5775.080	---	PASS	
Ant1		5795	40.400	5774.920	5815.320	---	PASS	
Ant2		5795	39.760	5775.000	5814.760	---	PASS	
11AC20 MIMO		Ant1	5180	21.480	5169.280	5190.760	---	PASS
		Ant2	5180	21.760	5169.080	5190.840	---	PASS
	Ant1	5200	21.520	5189.160	5210.680	---	PASS	
	Ant2	5200	21.720	5189.000	5210.720	---	PASS	
	Ant1	5240	21.480	5229.280	5250.760	---	PASS	
	Ant2	5240	21.560	5229.200	5250.760	---	PASS	
	Ant1	5260	21.480	5249.240	5270.720	---	PASS	
	Ant2	5260	21.560	5249.120	5270.680	---	PASS	
	Ant1	5280	21.520	5269.280	5290.800	---	PASS	
Ant2	5280	21.600	5269.040	5290.640	---	PASS		
Ant1	5320	21.600	5309.320	5330.920	---	PASS		

	Ant2	5320	21.720	5309.080	5330.800	---	PASS
	Ant1	5500	21.520	5489.280	5510.800	---	PASS
	Ant2	5500	21.440	5489.200	5510.640	---	PASS
	Ant1	5580	21.440	5569.240	5590.680	---	PASS
	Ant2	5580	21.640	5569.040	5590.680	---	PASS
	Ant1	5700	21.600	5689.240	5710.840	---	PASS
	Ant2	5700	21.640	5689.120	5710.760	---	PASS
	Ant1	5745	21.400	5734.360	5755.760	---	PASS
	Ant2	5745	21.480	5734.360	5755.840	---	PASS
	Ant1	5785	21.640	5774.280	5795.920	---	PASS
	Ant2	5785	21.680	5774.080	5795.760	---	PASS
	Ant1	5825	21.560	5814.280	5835.840	---	PASS
	Ant2	5825	21.520	5814.160	5835.680	---	PASS
11AC40 MIMO	Ant1	5190	40.320	5169.840	5210.160	---	PASS
	Ant2	5190	40.320	5169.920	5210.240	---	PASS
	Ant1	5230	40.960	5209.360	5250.320	---	PASS
	Ant2	5230	44.560	5205.600	5250.160	---	PASS
	Ant1	5270	40.560	5249.600	5290.160	---	PASS
	Ant2	5270	40.160	5249.840	5290.000	---	PASS
	Ant1	5310	40.880	5289.600	5330.480	---	PASS
	Ant2	5310	40.240	5290.080	5330.320	---	PASS
	Ant1	5510	40.240	5489.840	5530.080	---	PASS
	Ant2	5510	40.240	5489.680	5529.920	---	PASS
	Ant1	5550	40.480	5529.680	5570.160	---	PASS
	Ant2	5550	40.560	5529.840	5570.400	---	PASS
	Ant1	5670	40.560	5649.600	5690.160	---	PASS
	Ant2	5670	43.760	5646.640	5690.400	---	PASS
	Ant1	5755	40.560	5734.760	5775.320	---	PASS
	Ant2	5755	58.720	5734.200	5792.920	---	PASS
	Ant1	5795	40.560	5774.600	5815.160	---	PASS
	Ant2	5795	40.400	5774.920	5815.320	---	PASS
11AC80 MIMO	Ant1	5210	81.920	5168.880	5250.800	---	PASS
	Ant2	5210	82.880	5168.400	5251.280	---	PASS
	Ant1	5290	83.840	5247.280	5331.120	---	PASS
	Ant2	5290	83.840	5247.760	5331.600	---	PASS
	Ant1	5530	84.800	5486.320	5571.120	---	PASS
	Ant2	5530	84.960	5486.480	5571.440	---	PASS
	Ant1	5610	93.760	5557.360	5651.120	---	PASS
	Ant2	5610	102.880	5553.040	5655.920	---	PASS
	Ant1	5775	81.440	5734.360	5815.800	---	PASS
Ant2	5775	81.600	5734.200	5815.800	---	PASS	

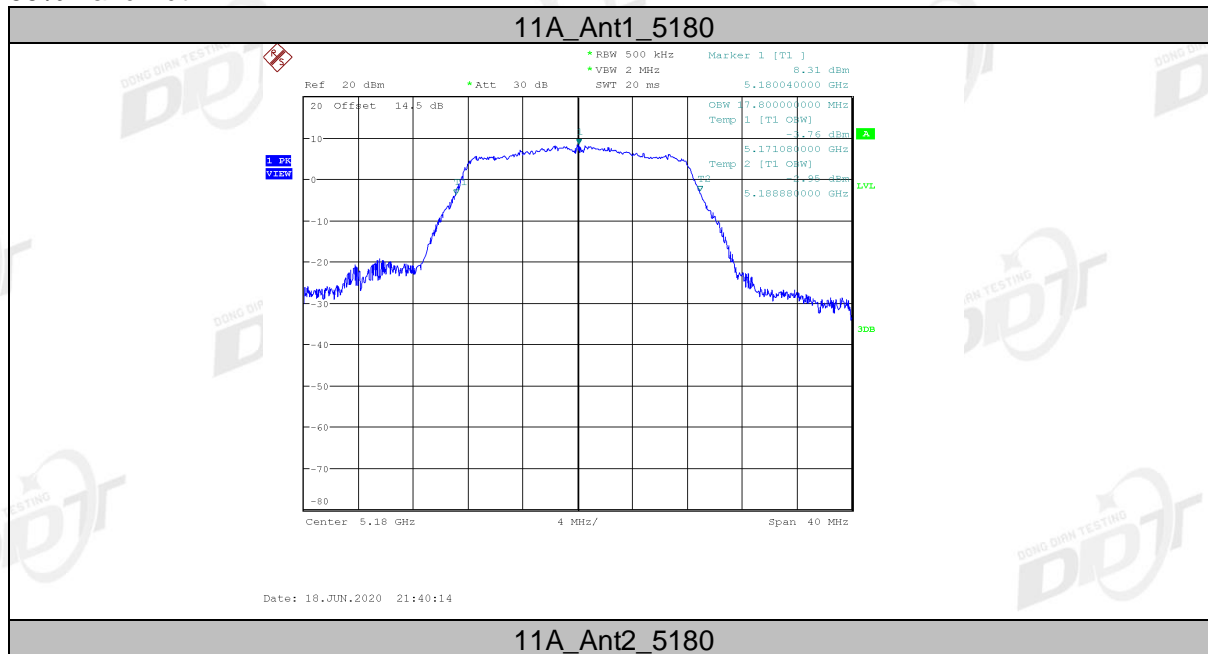
6 db EBW:

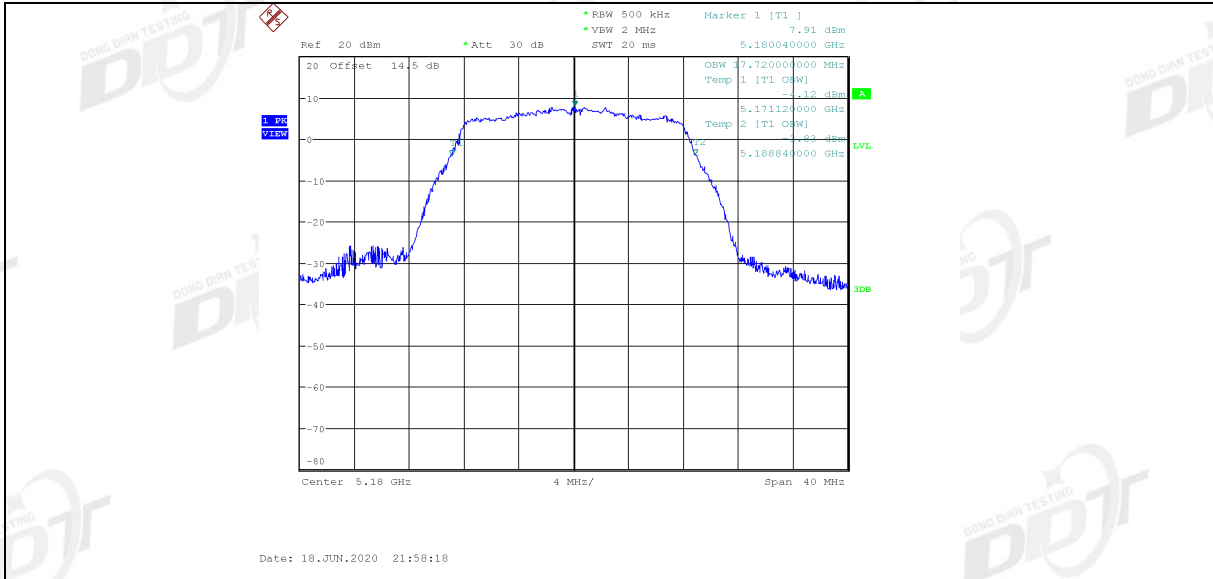
Test Mode	Antenna	Channel	6 dB EBW [MHz]	FL [MHz]	FH [MHz]	Limit [MHz]	Verdict
11A	Ant1	5745	16.160	5737.080	5753.240	0.5	PASS
	Ant2	5745	16.400	5736.840	5753.240	0.5	PASS
	Ant1	5785	16.440	5776.800	5793.240	0.5	PASS
	Ant2	5785	16.400	5776.800	5793.200	0.5	PASS
	Ant1	5825	16.440	5816.800	5833.240	0.5	PASS
	Ant2	5825	16.400	5816.800	5833.200	0.5	PASS

11N20 MIMO	Ant1	5745	16.600	5737.240	5753.840	0.5	PASS
	Ant2	5745	17.400	5736.440	5753.840	0.5	PASS
	Ant1	5785	17.640	5776.200	5793.840	0.5	PASS
	Ant2	5785	17.640	5776.200	5793.840	0.5	PASS
	Ant1	5825	17.640	5816.200	5833.840	0.5	PASS
11N40 MIMO	Ant2	5825	17.680	5816.160	5833.840	0.5	PASS
	Ant1	5755	35.920	5737.320	5773.240	0.5	PASS
	Ant2	5755	36.080	5737.160	5773.240	0.5	PASS
	Ant1	5795	36.160	5776.760	5812.920	0.5	PASS
11AC20 MIMO	Ant2	5795	36.480	5776.760	5813.240	0.5	PASS
	Ant1	5745	17.760	5736.160	5753.920	0.5	PASS
	Ant2	5745	17.720	5736.200	5753.920	0.5	PASS
	Ant1	5785	17.800	5776.120	5793.920	0.5	PASS
	Ant2	5785	17.800	5776.080	5793.880	0.5	PASS
	Ant1	5825	17.800	5816.120	5833.920	0.5	PASS
11AC40 MIMO	Ant2	5825	17.760	5816.120	5833.880	0.5	PASS
	Ant1	5755	36.560	5736.760	5773.320	0.5	PASS
	Ant2	5755	36.560	5736.760	5773.320	0.5	PASS
	Ant1	5795	36.640	5776.680	5813.320	0.5	PASS
11AC80 MIMO	Ant2	5795	36.560	5776.680	5813.240	0.5	PASS
	Ant1	5775	76.160	5737.240	5813.400	0.5	PASS
11AC80 MIMO	Ant2	5775	75.520	5737.240	5812.760	0.5	PASS

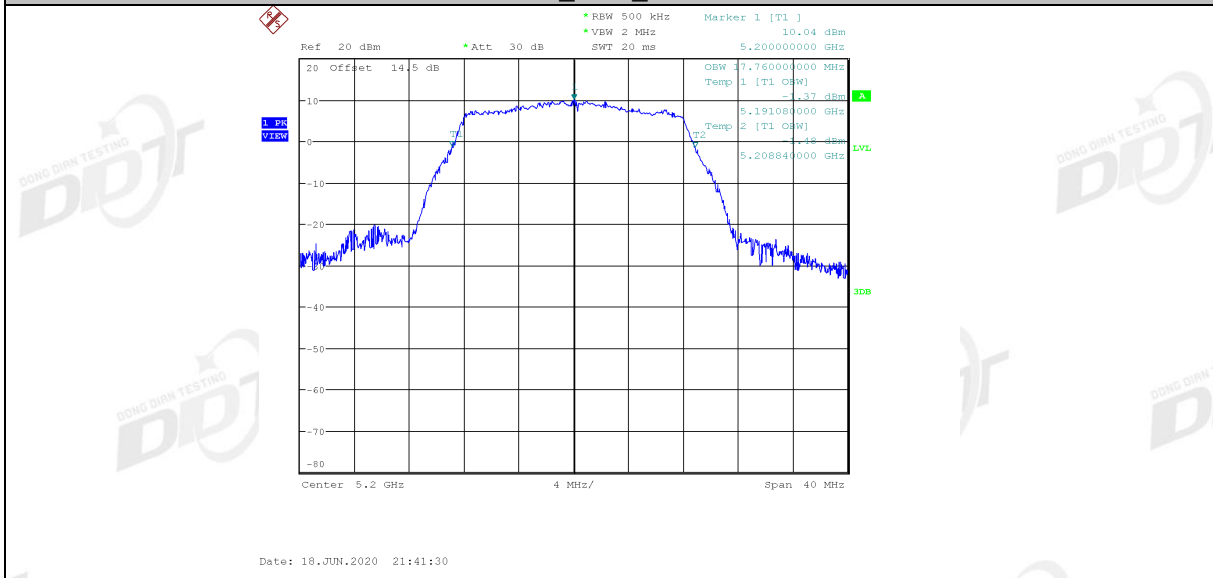
4.5. Original test data

99% Bandwidth:

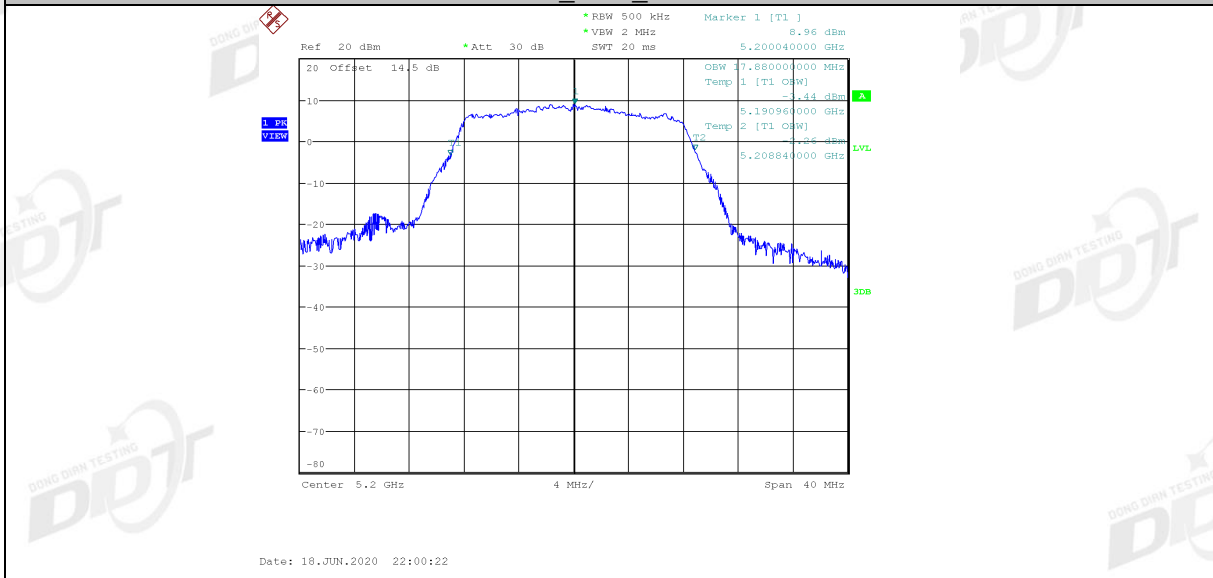




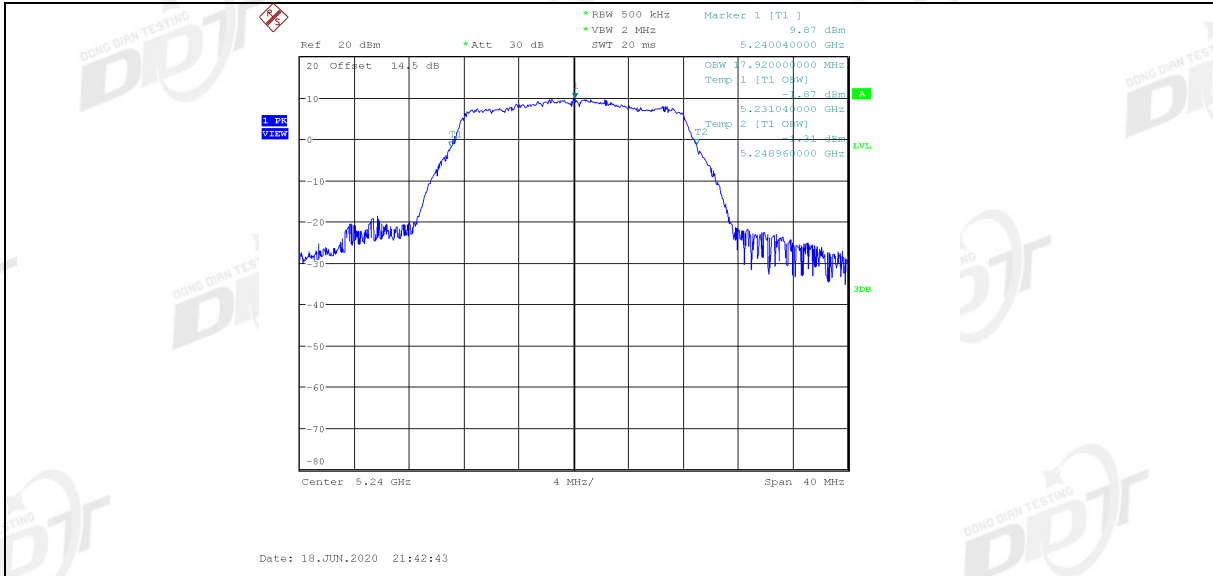
11A_Ant1_5200



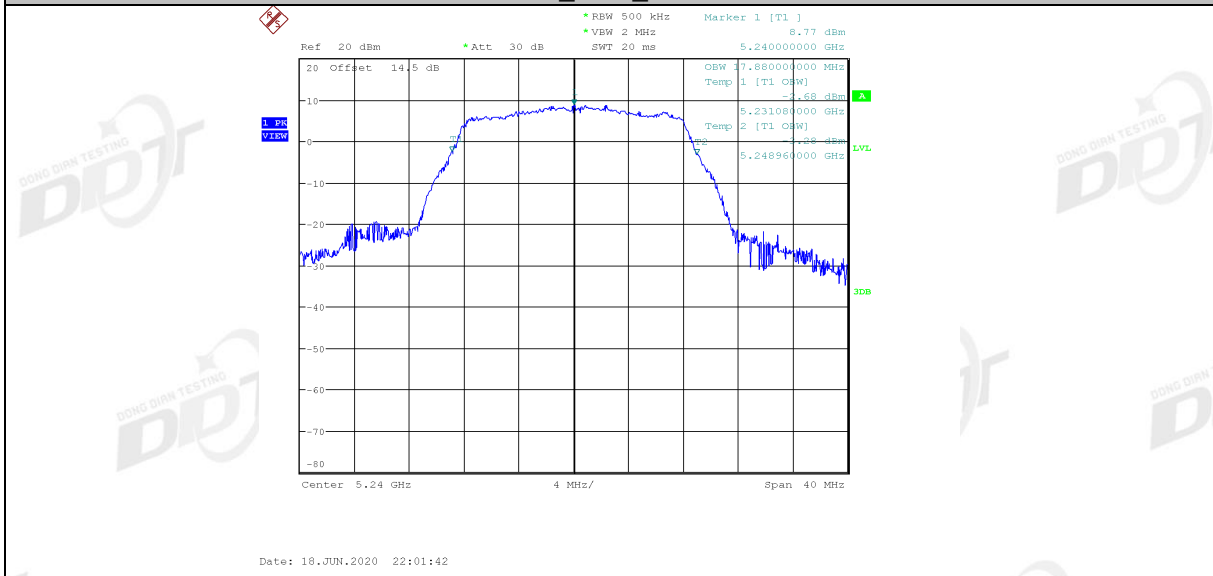
11A_Ant2_5200



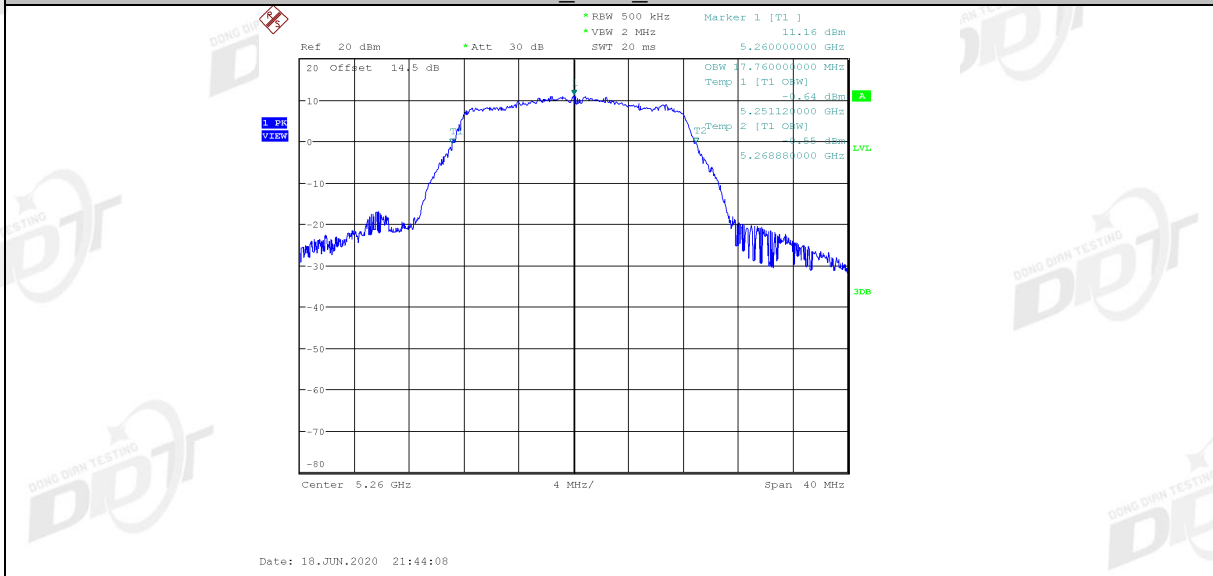
11A_Ant1_5240



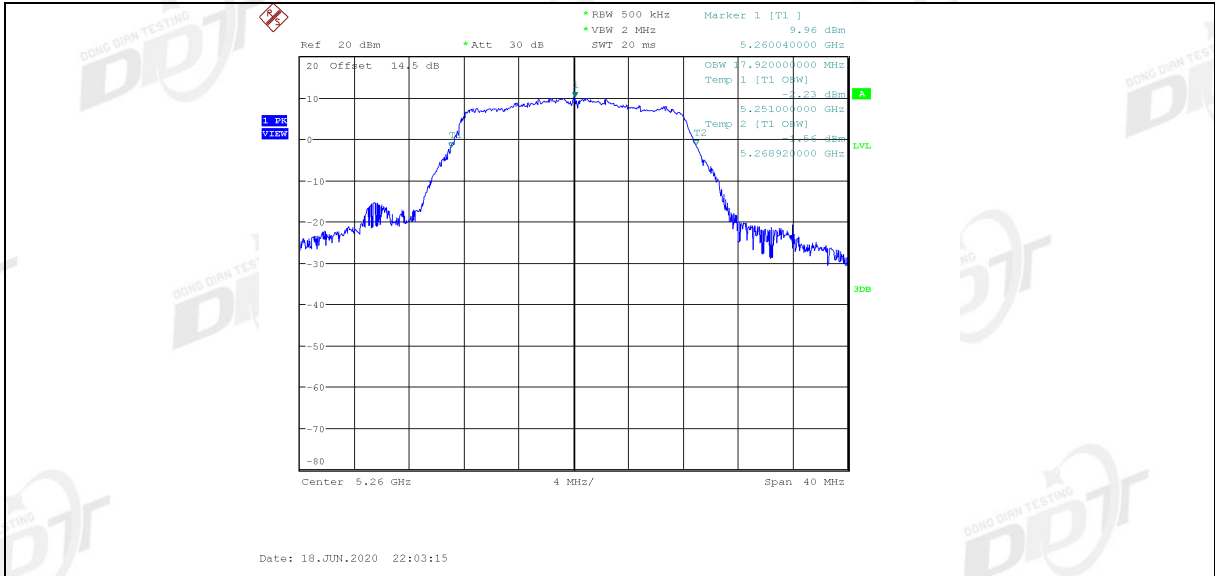
11A_Ant2_5240



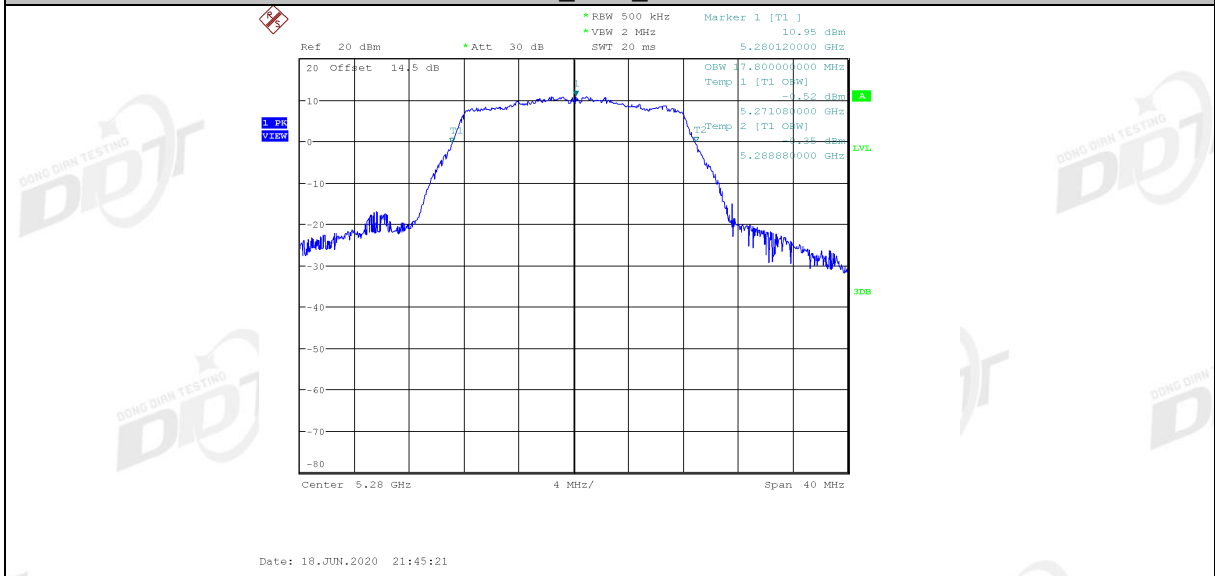
11A_Ant1_5260



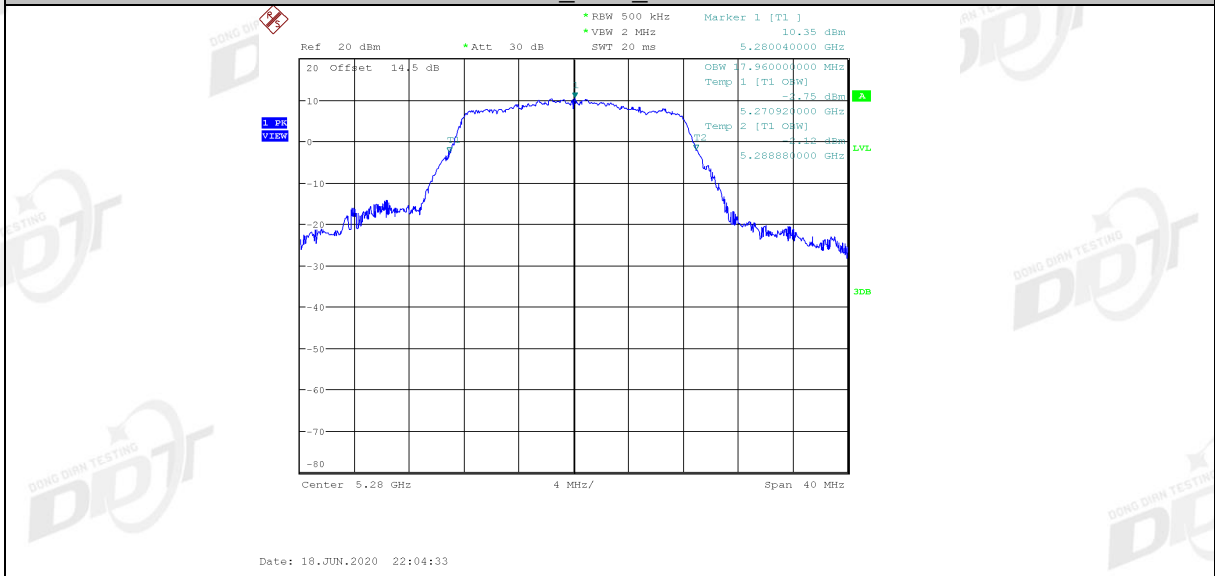
11A_Ant2_5260



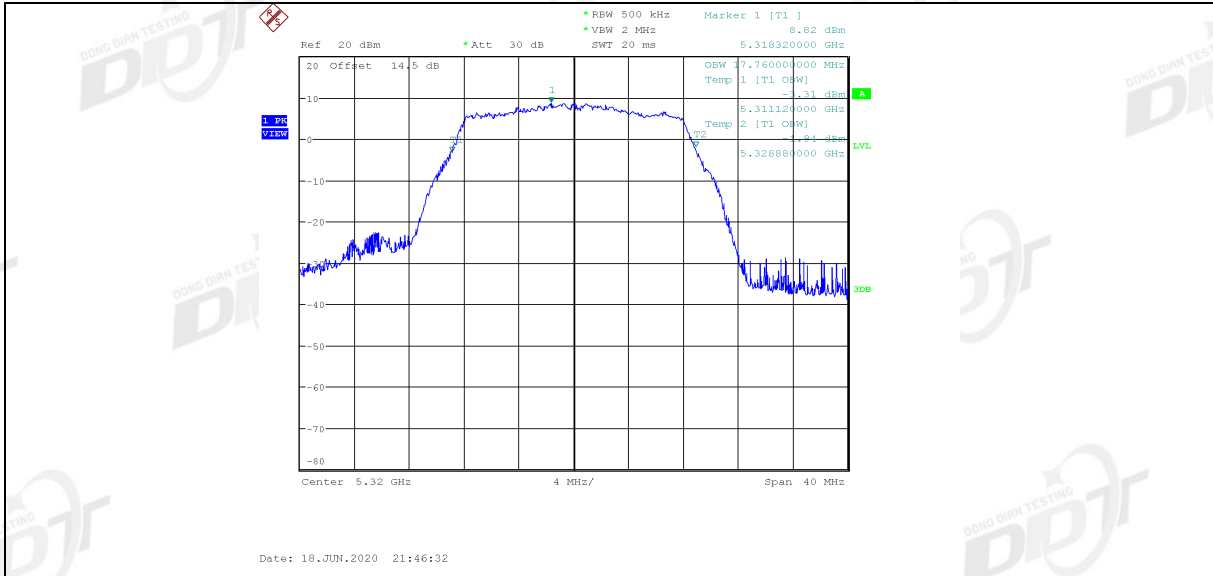
11A_Ant1_5280



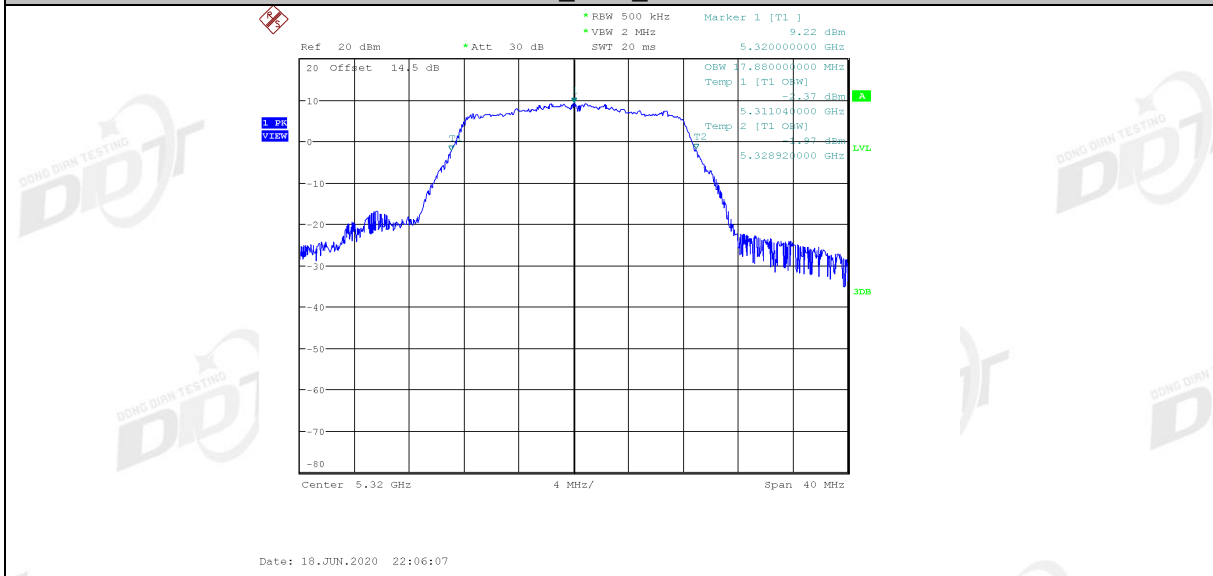
11A_Ant2_5280



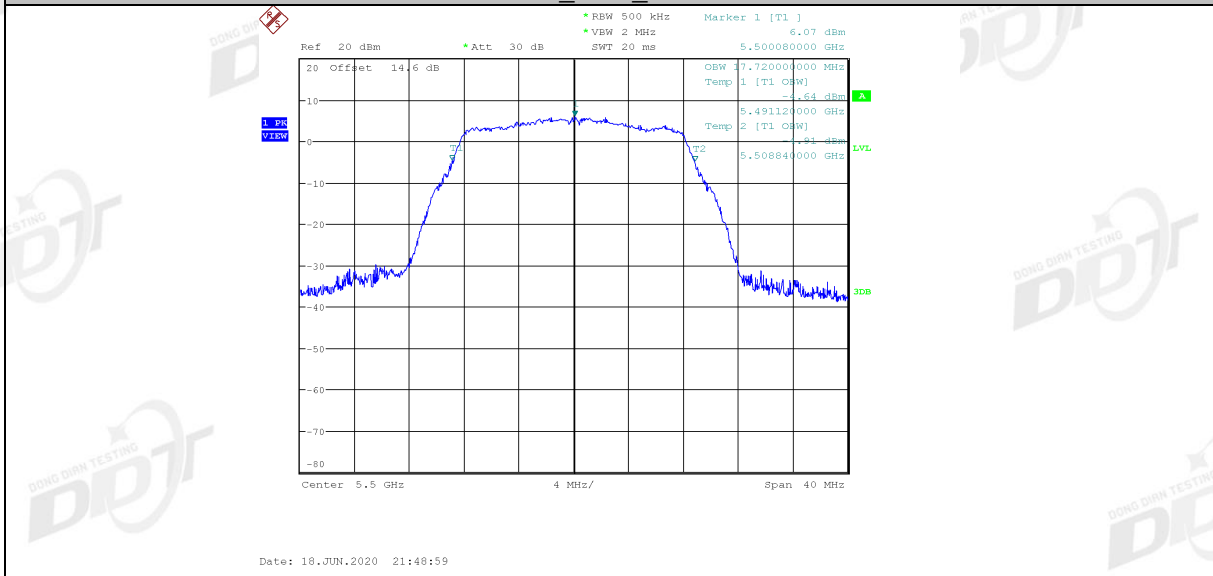
11A_Ant1_5320



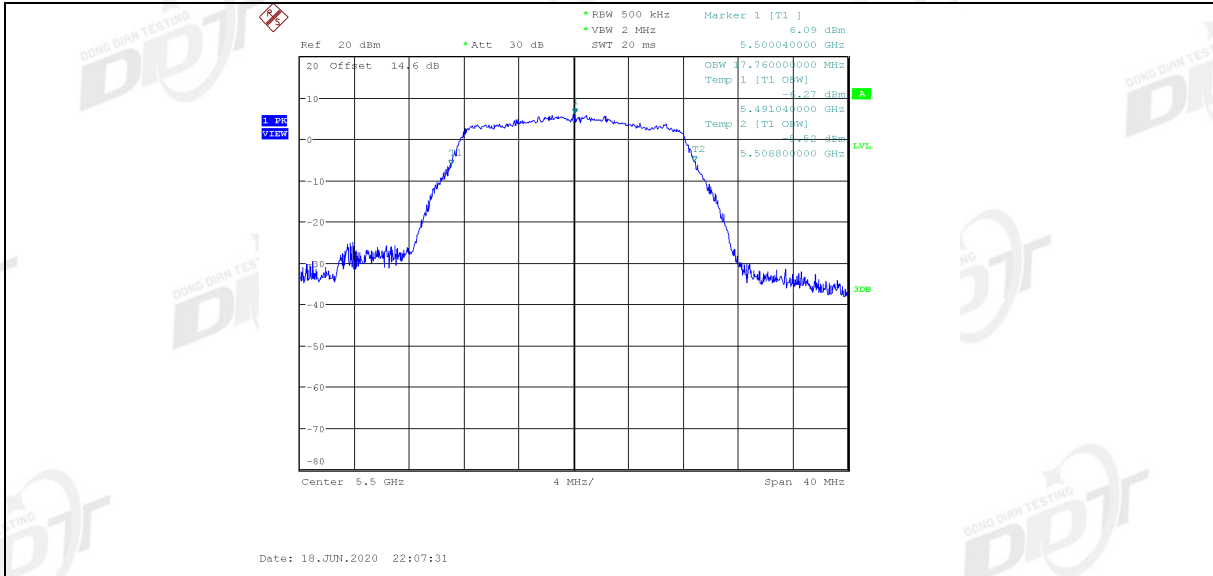
11A_Ant2_5320



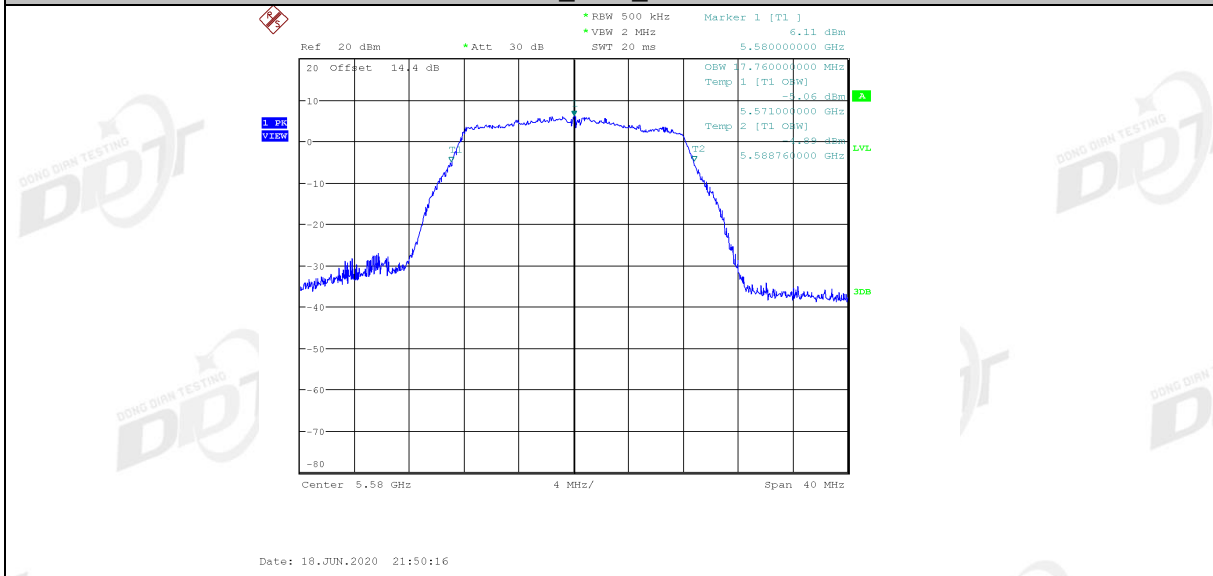
11A_Ant1_5500



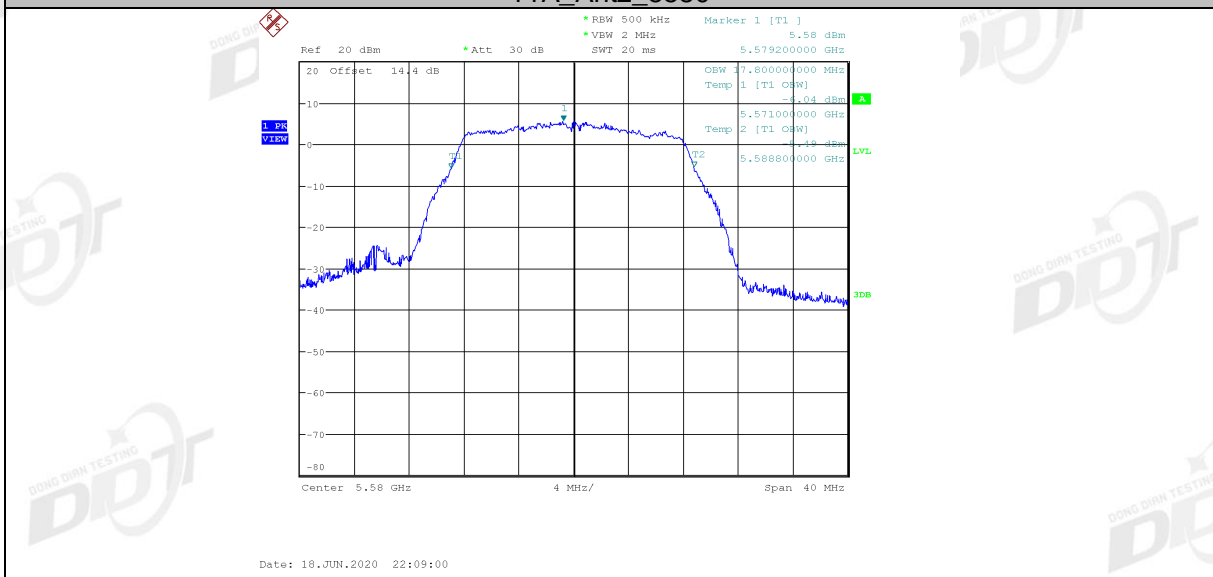
11A_Ant2_5500



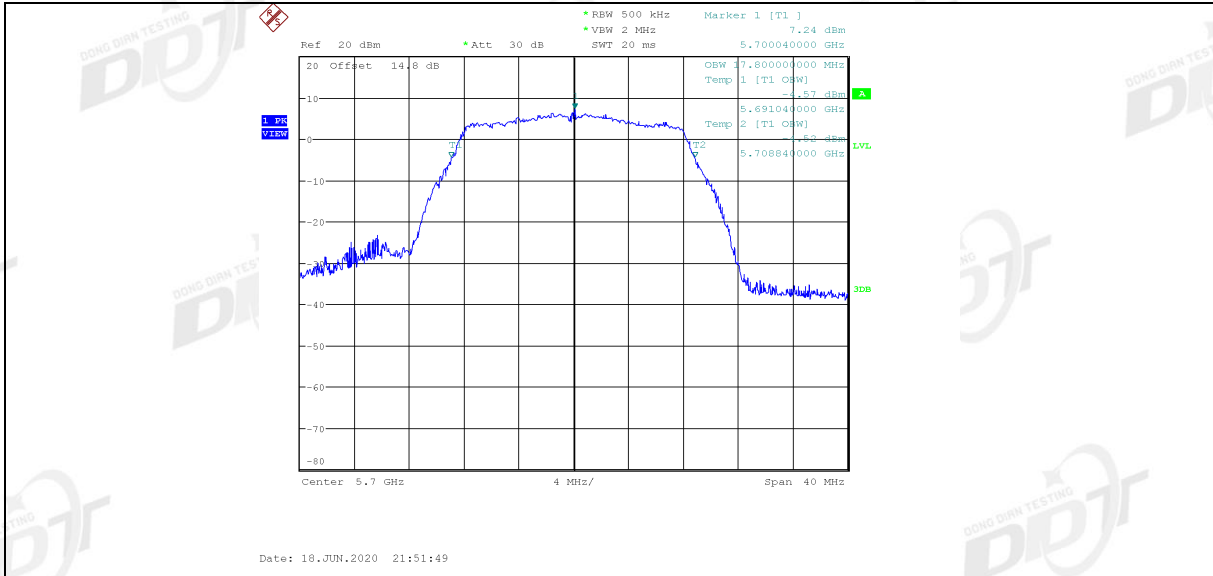
11A_Ant1_5580



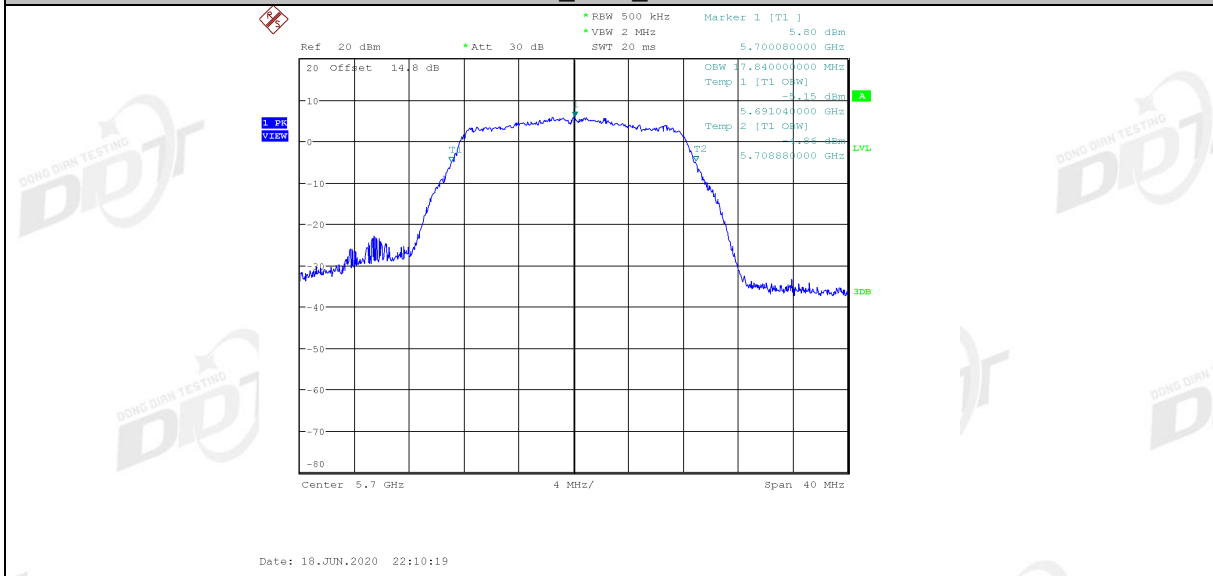
11A_Ant2_5580



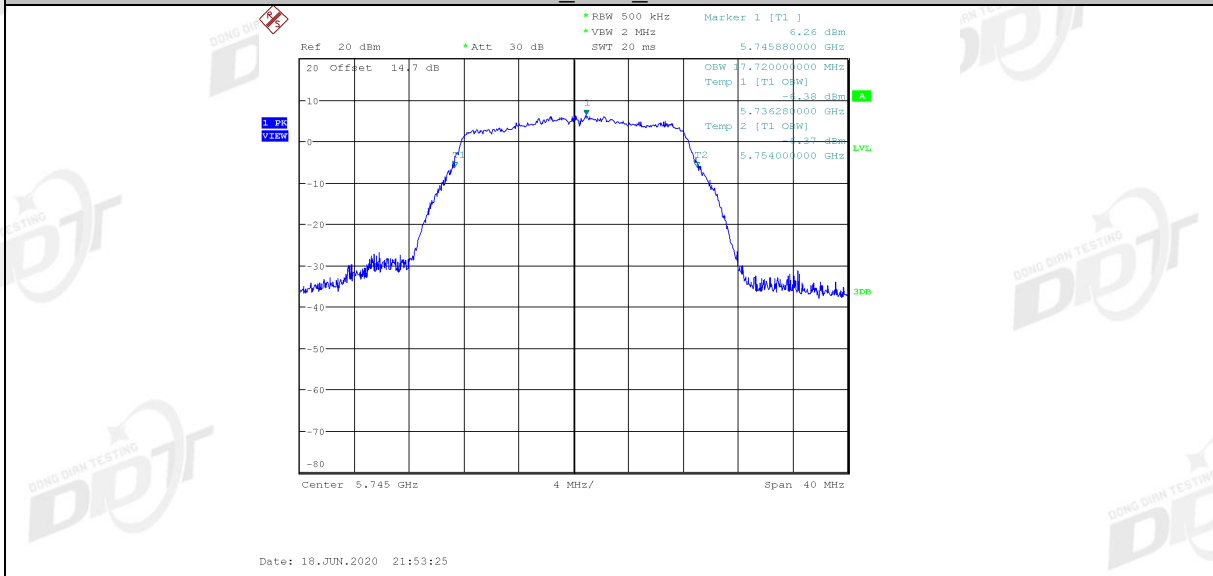
11A_Ant1_5700



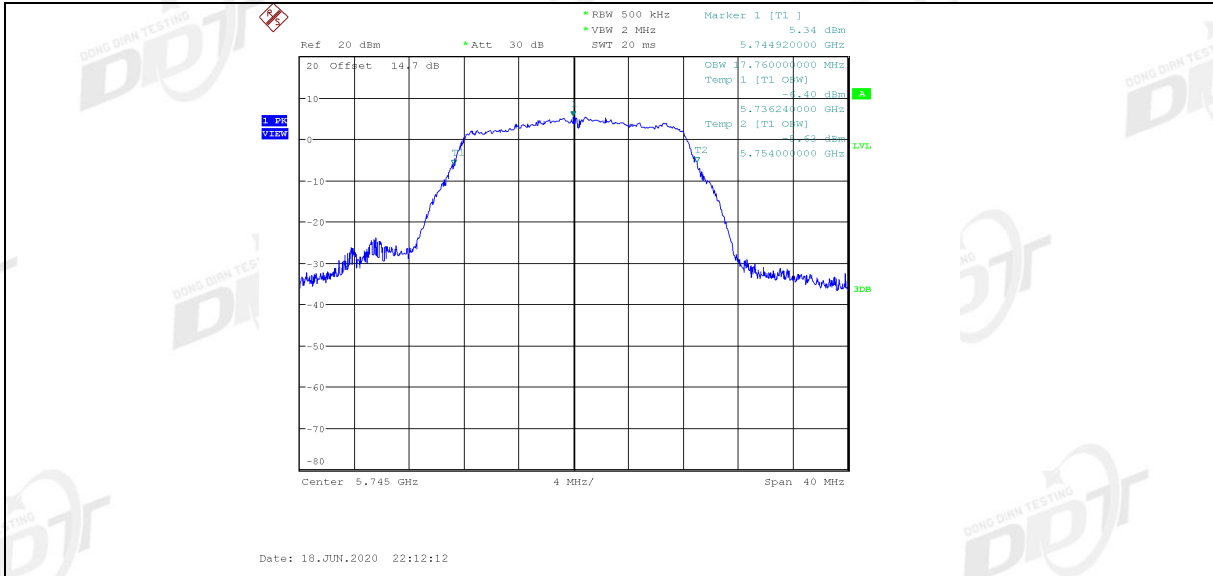
11A_Ant2_5700



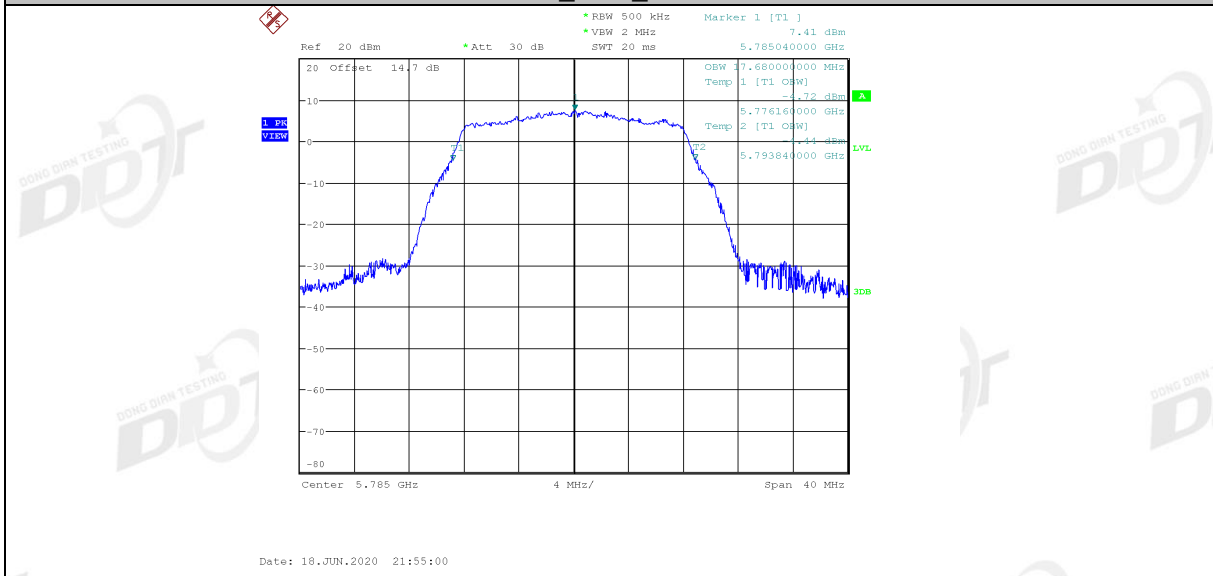
11A_Ant1_5745



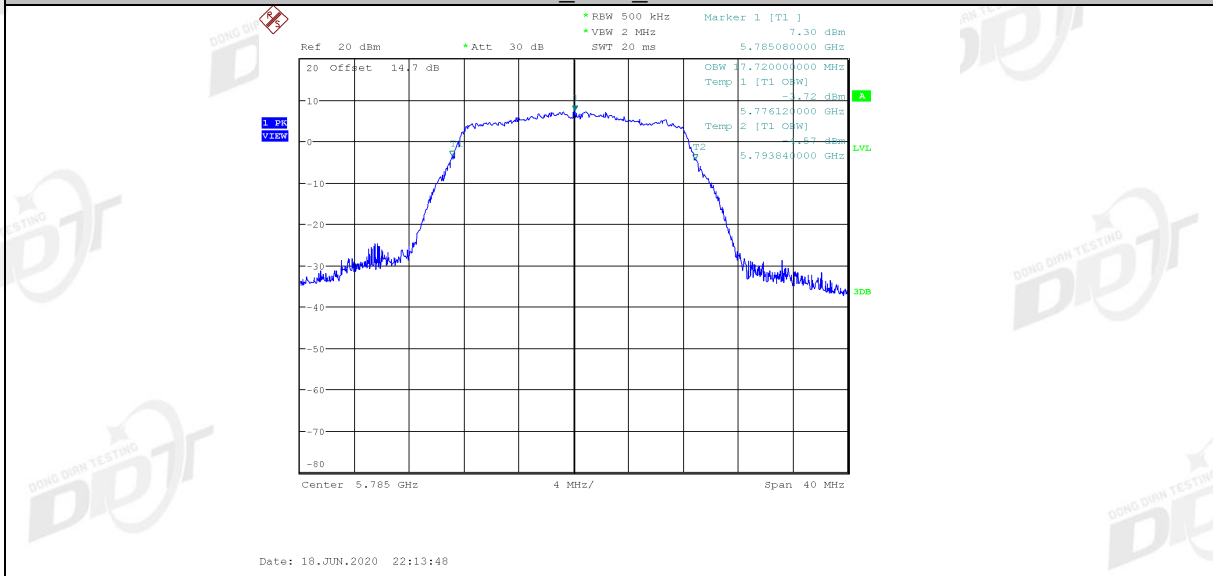
11A_Ant2_5745



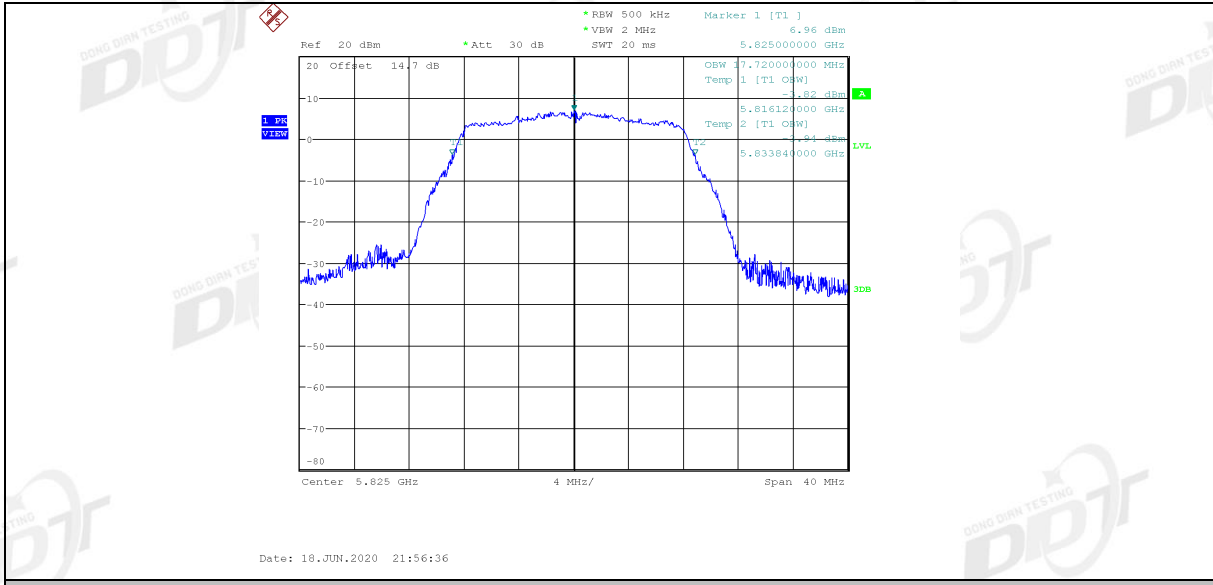
11A_Ant1_5785



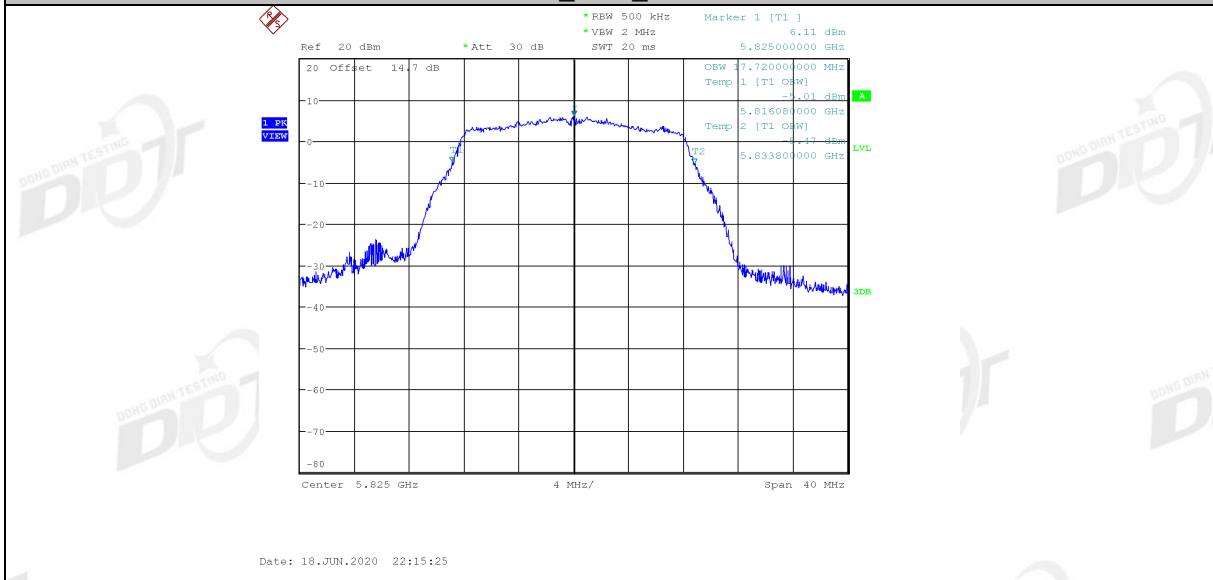
11A_Ant2_5785



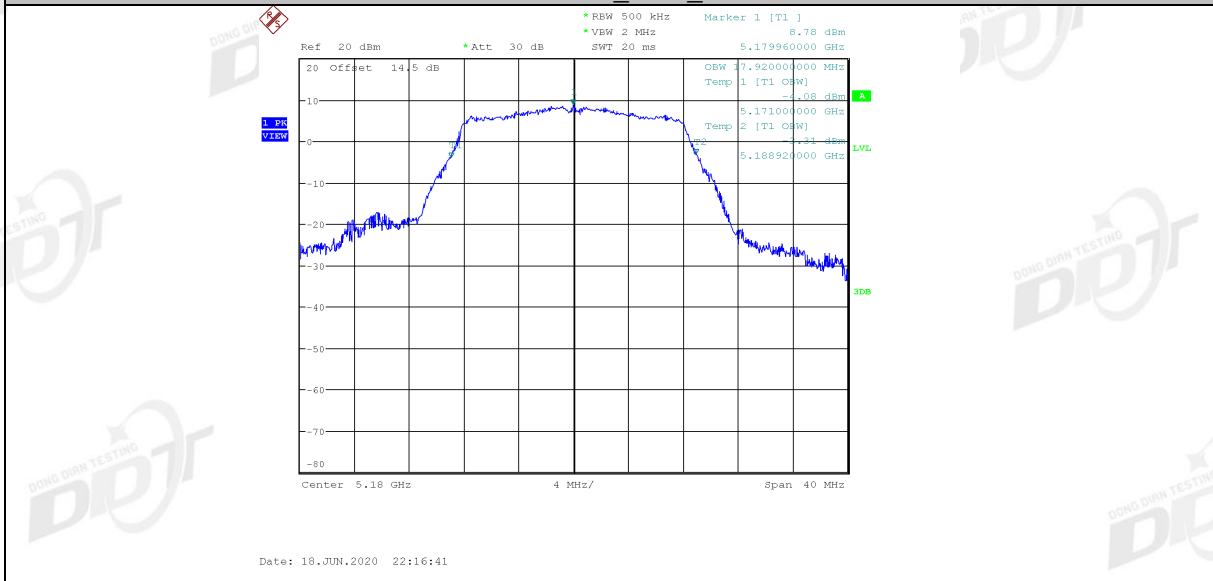
11A_Ant1_5825



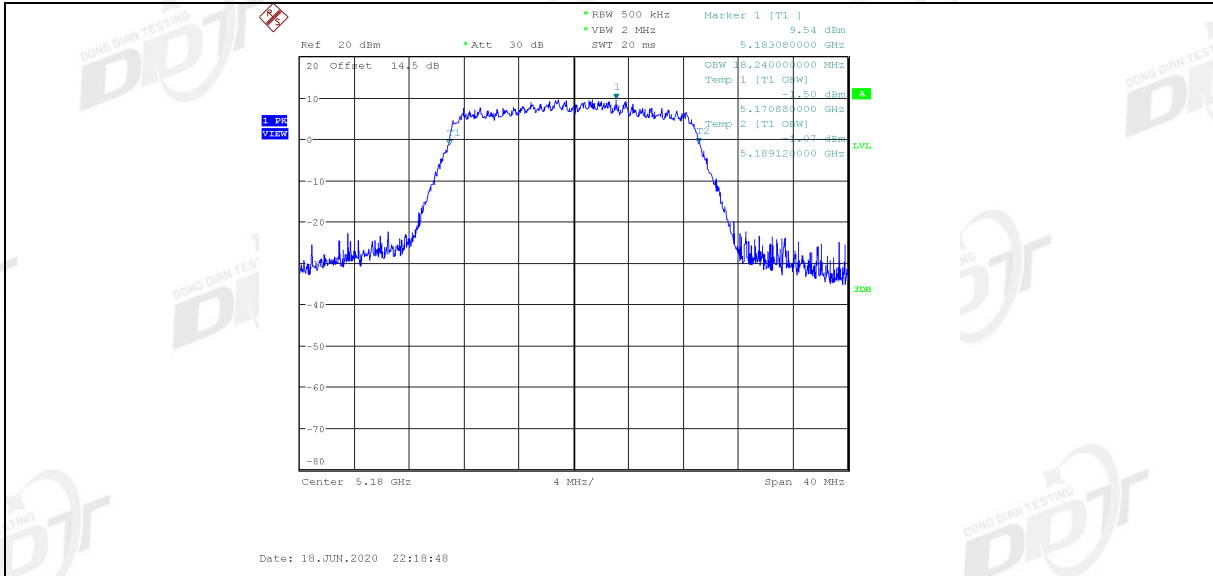
11A_Ant2_5825



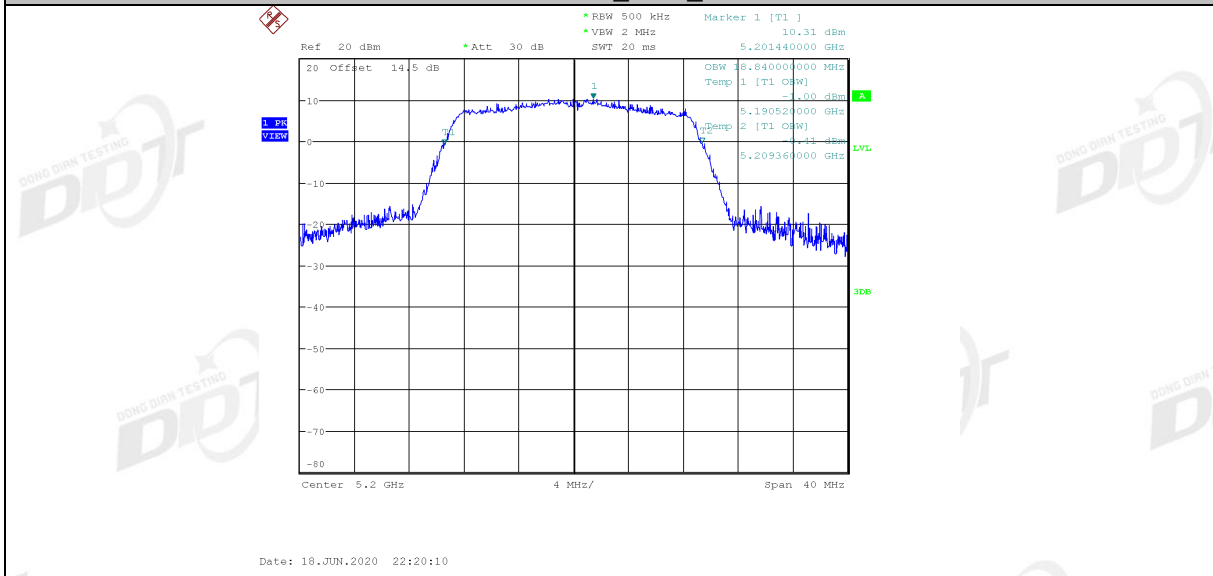
11N20MIMO_Ant1_5180



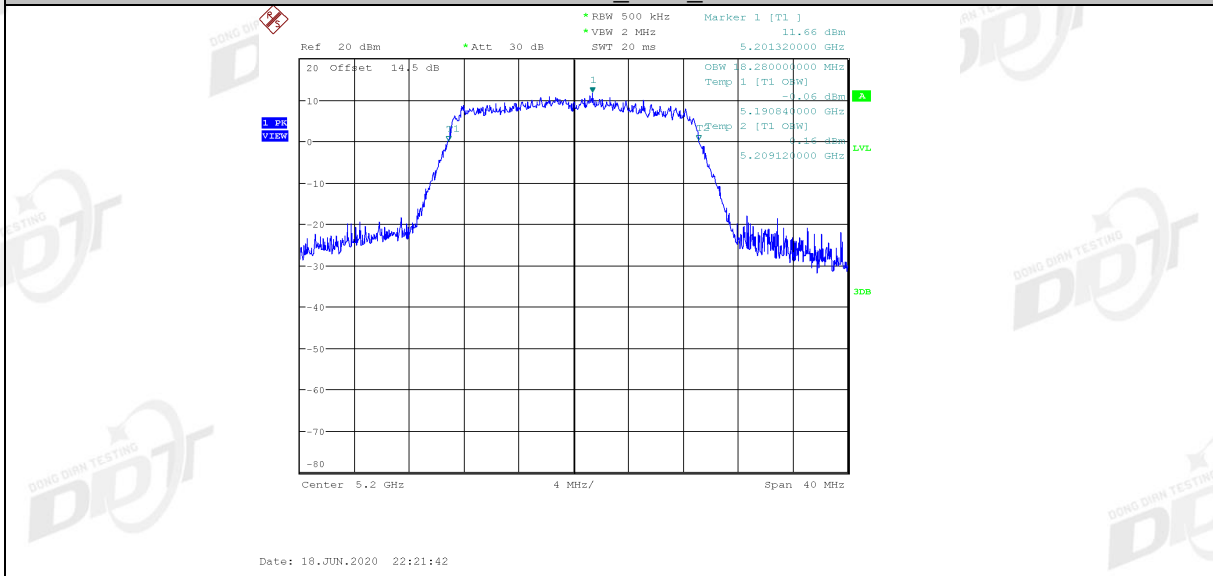
11N20MIMO_Ant2_5180



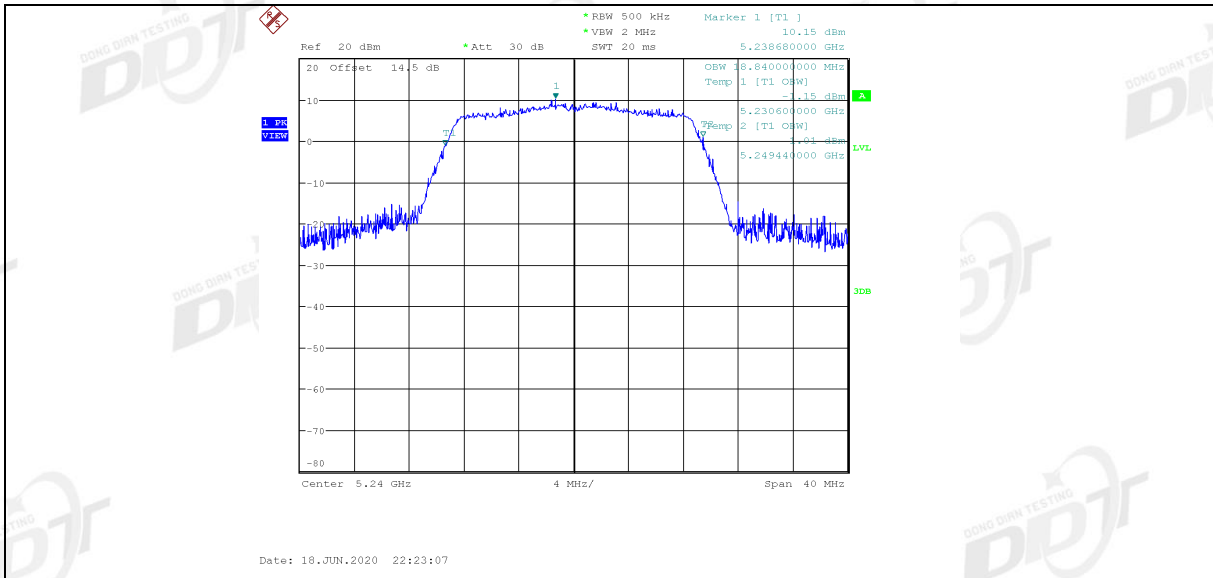
11N20MIMO_Ant1_5200



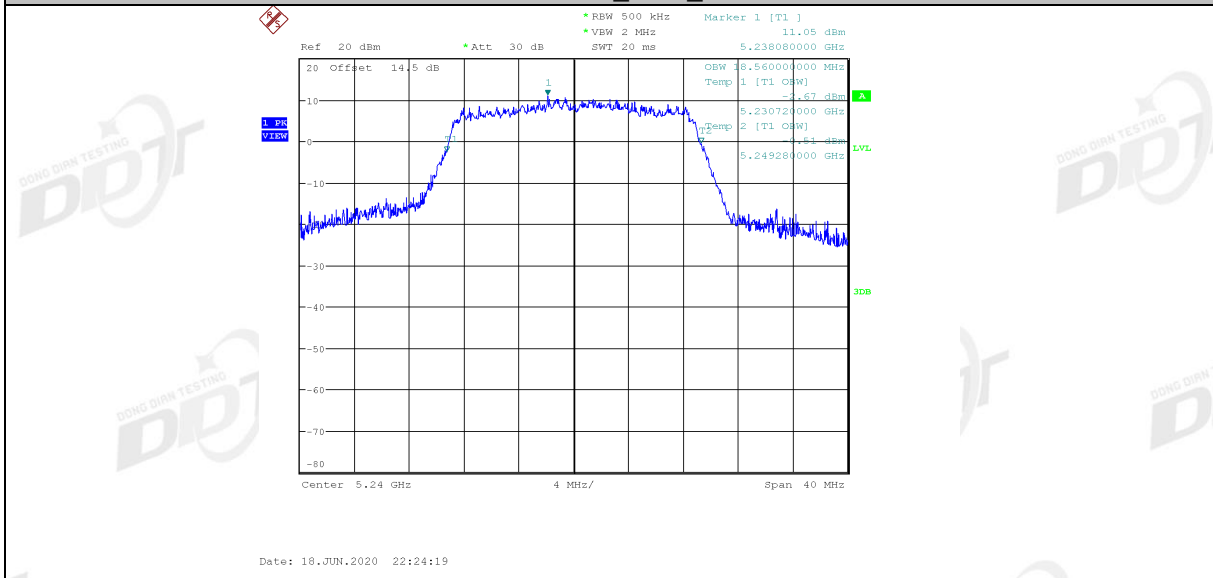
11N20MIMO_Ant2_5200



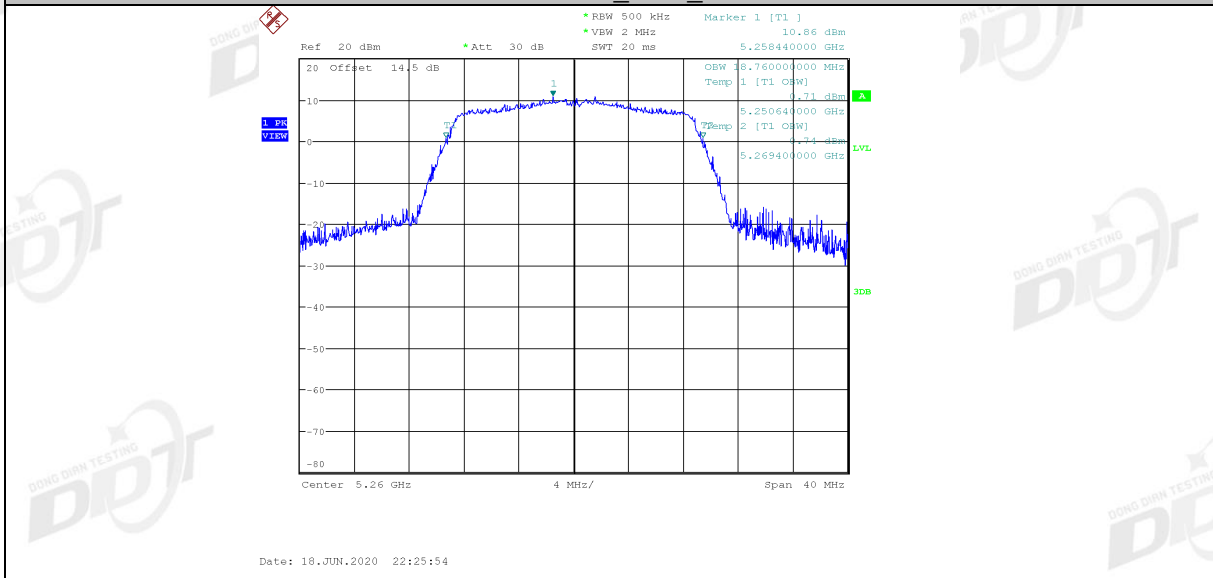
11N20MIMO_Ant1_5240



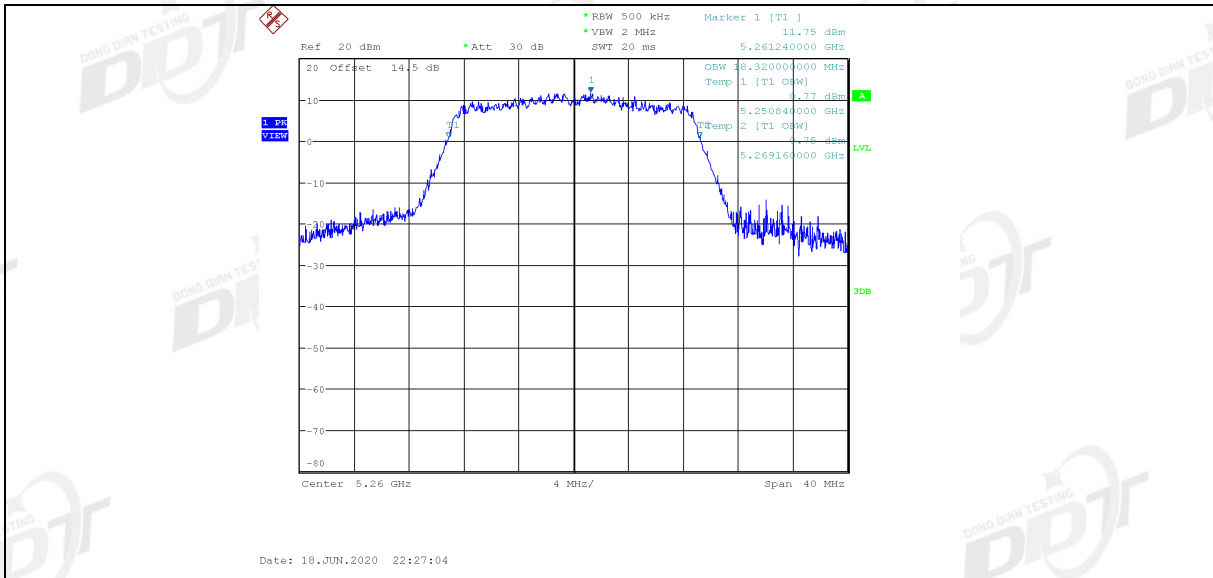
11N20MIMO_Ant2_5240



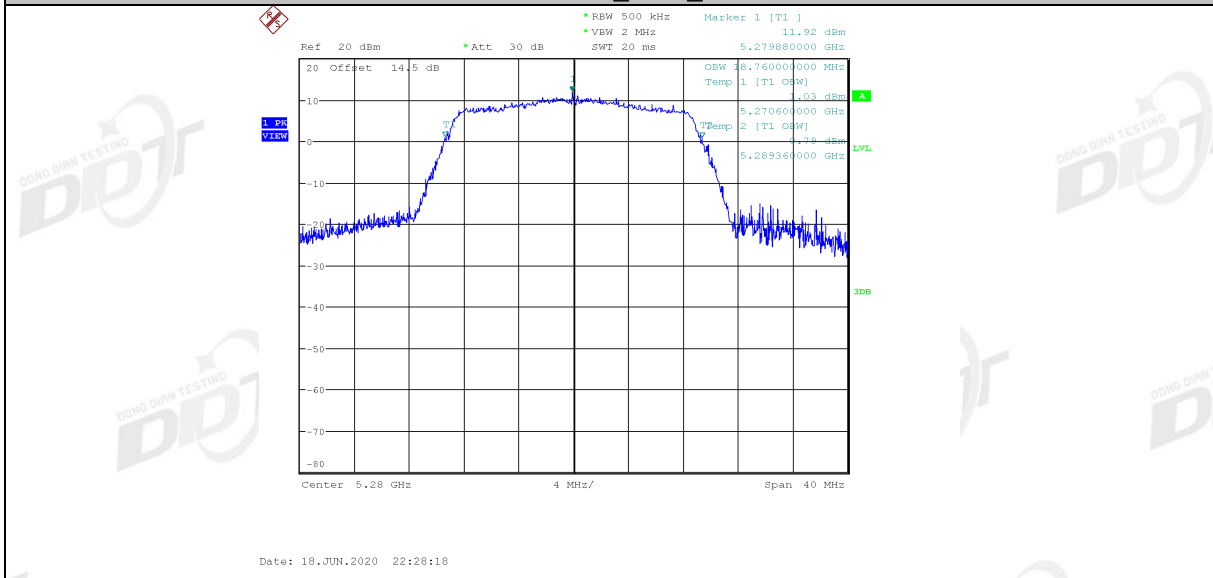
11N20MIMO_Ant1_5260



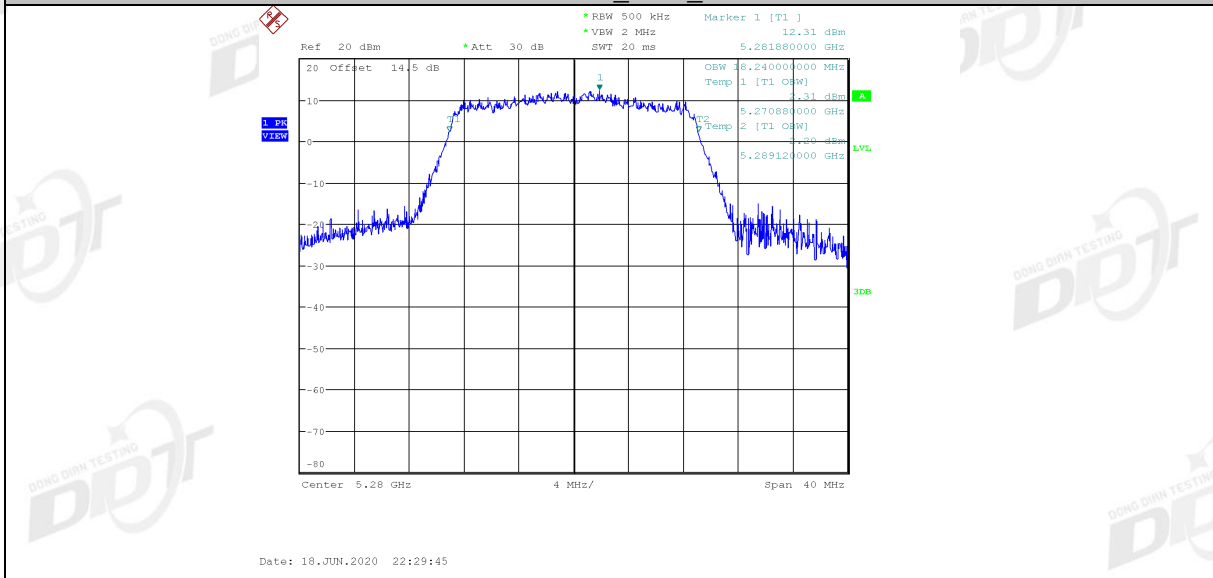
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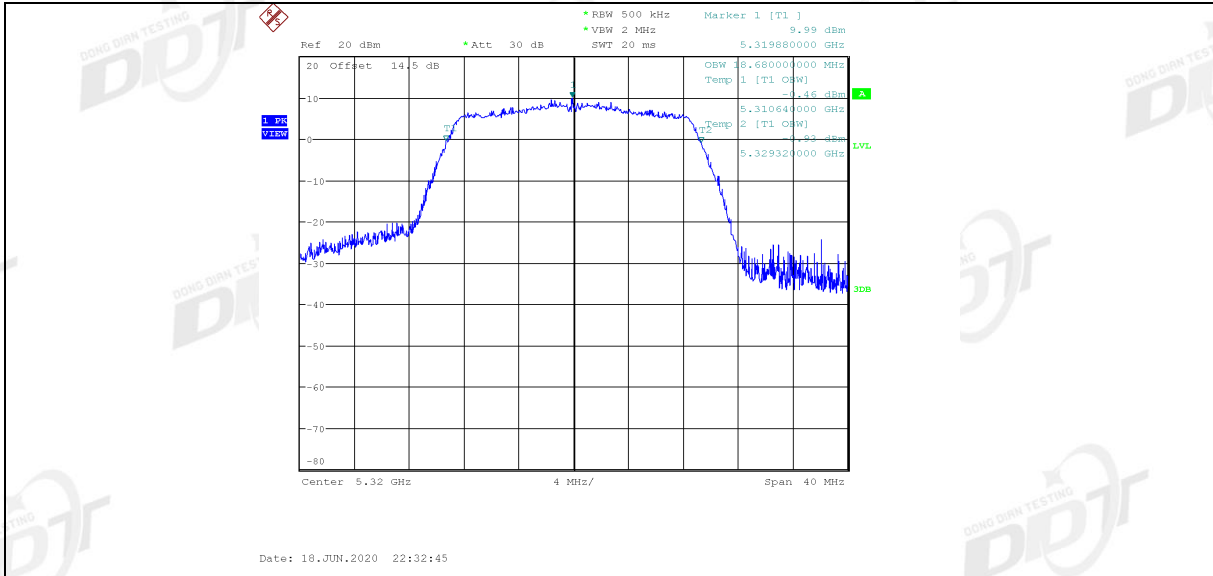
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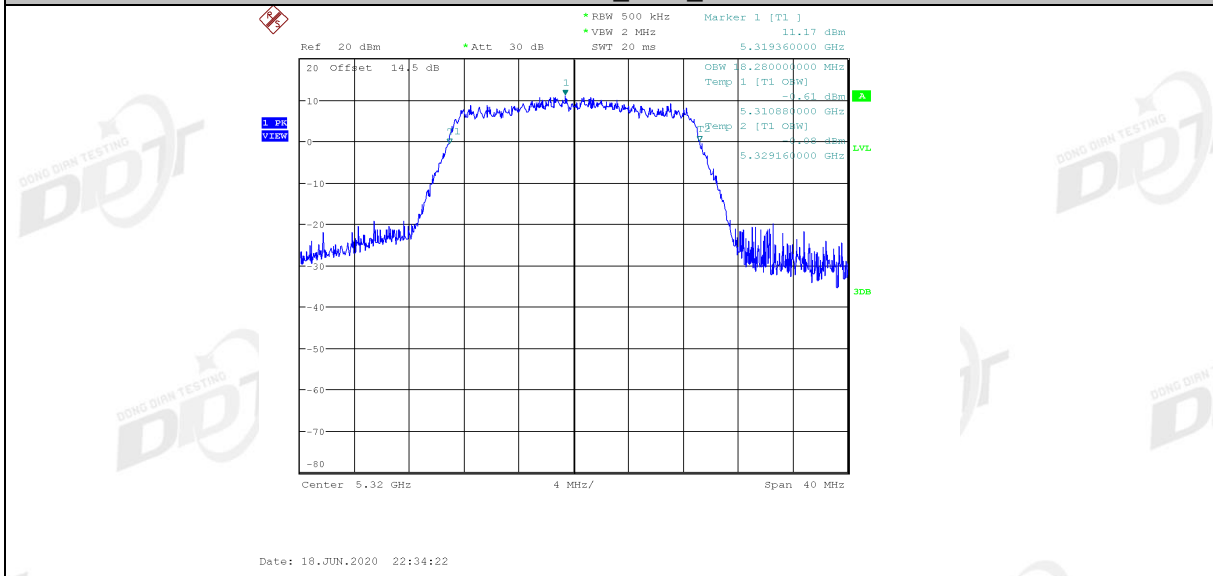
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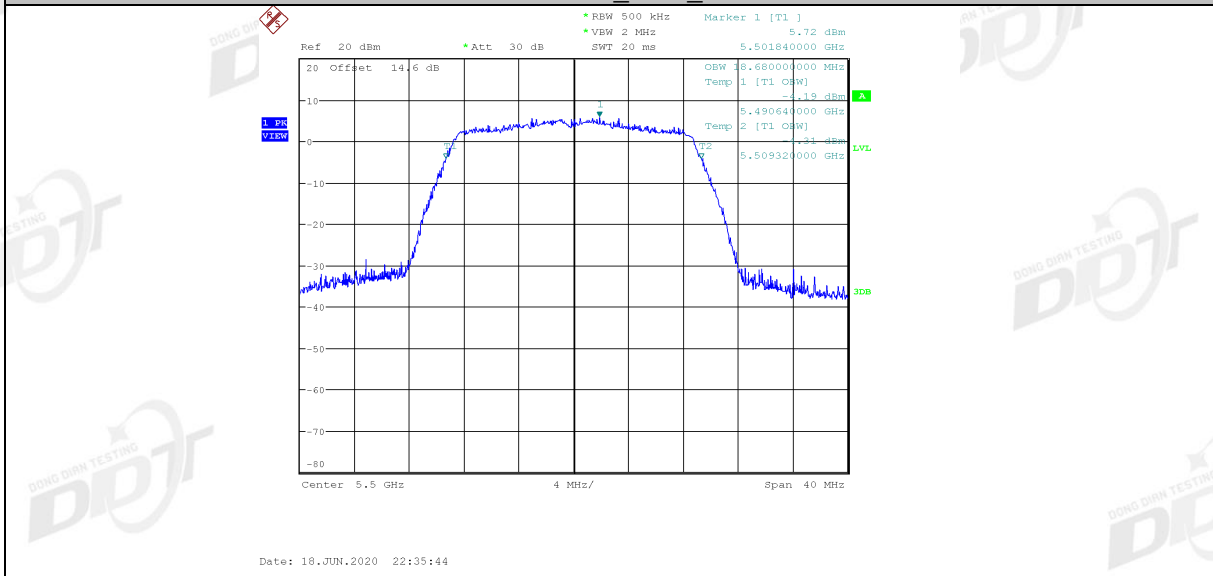
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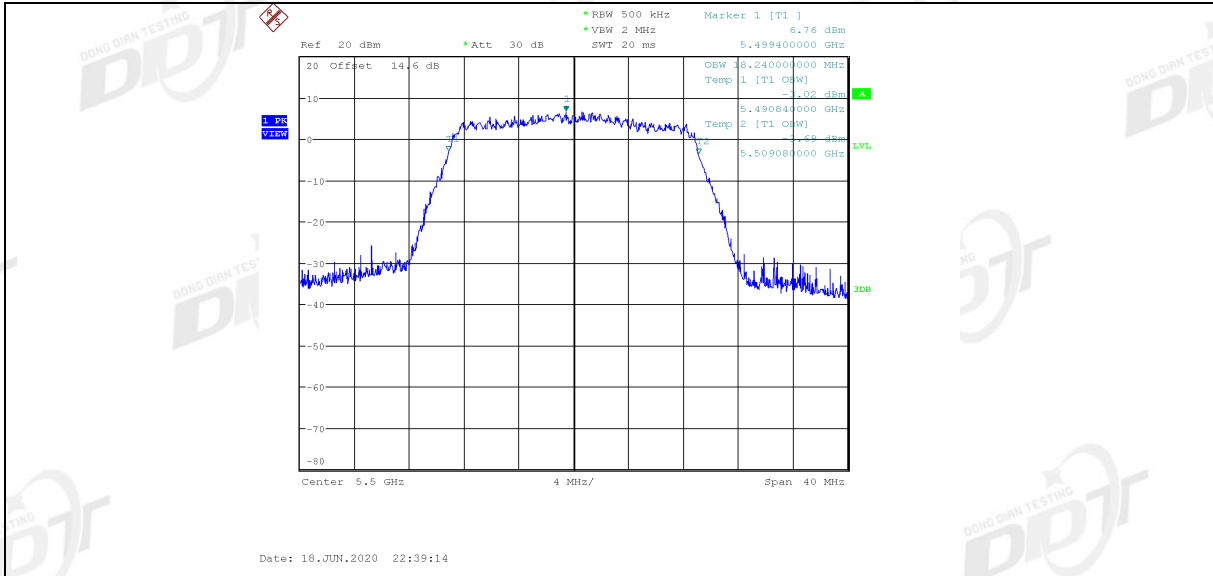
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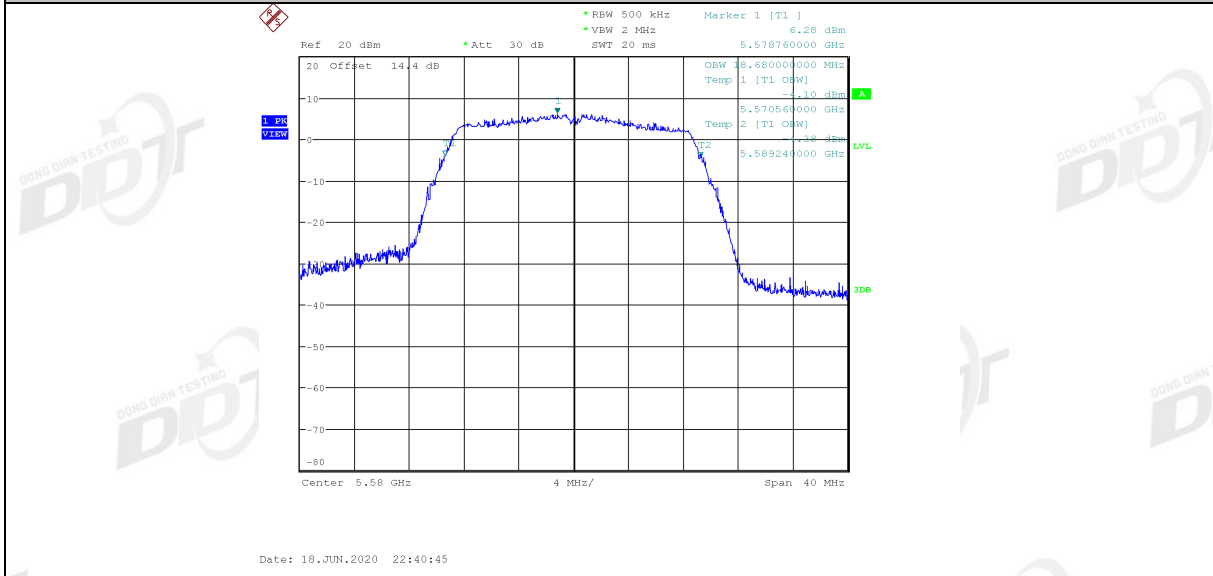
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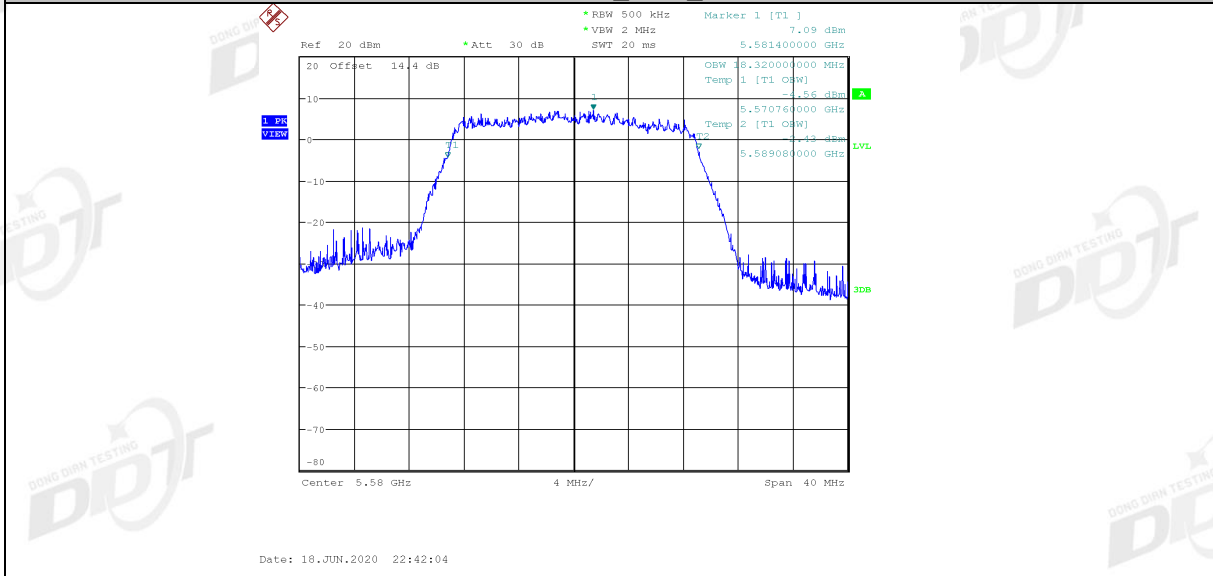
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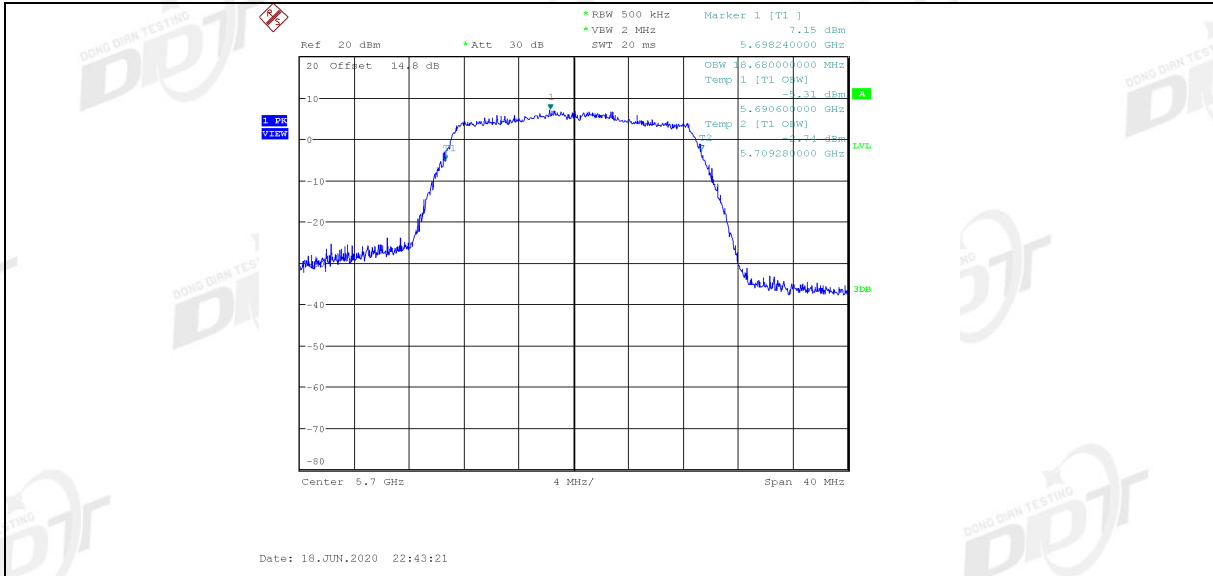
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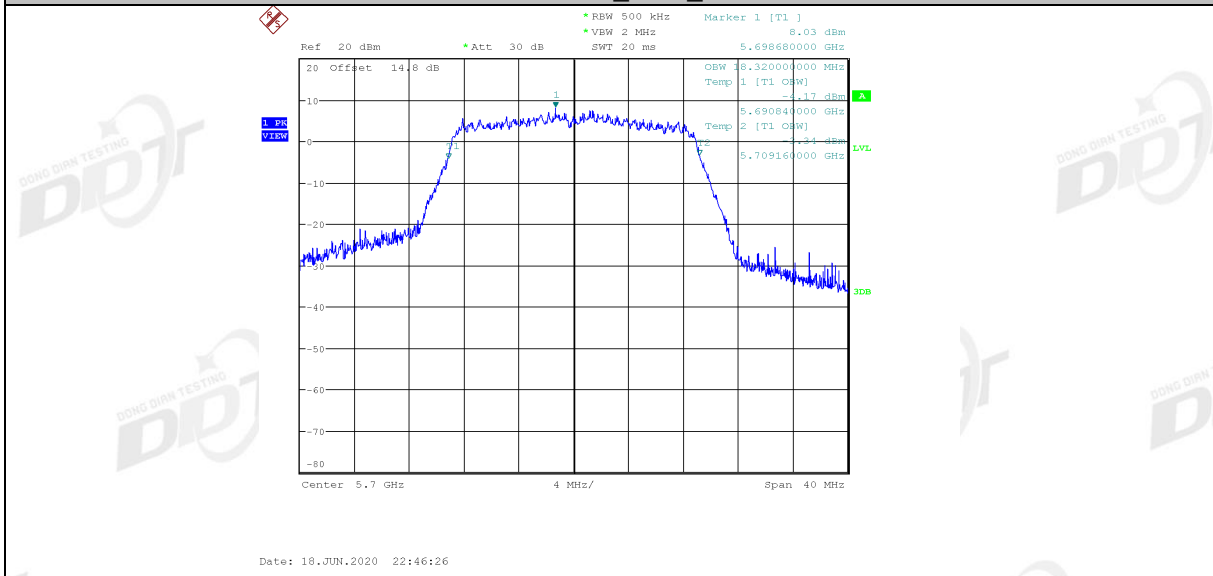
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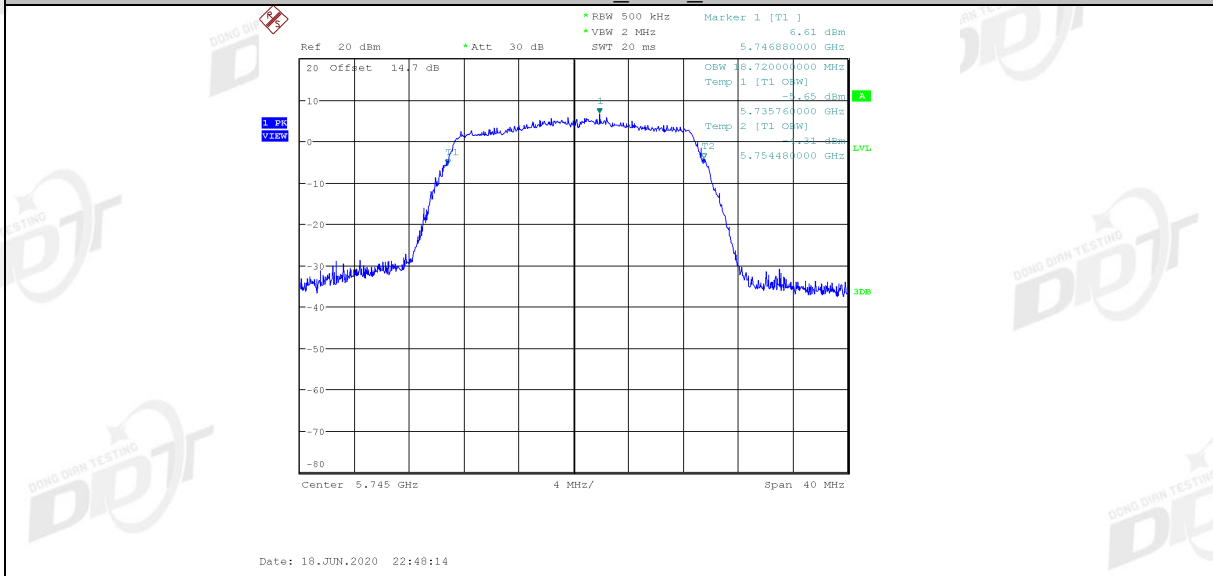
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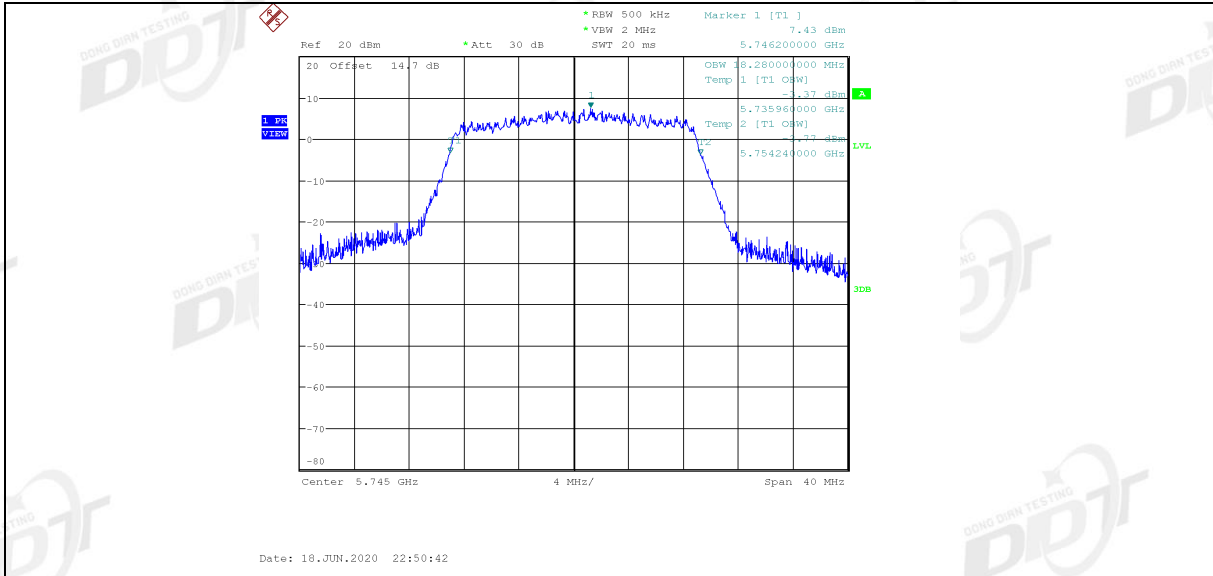
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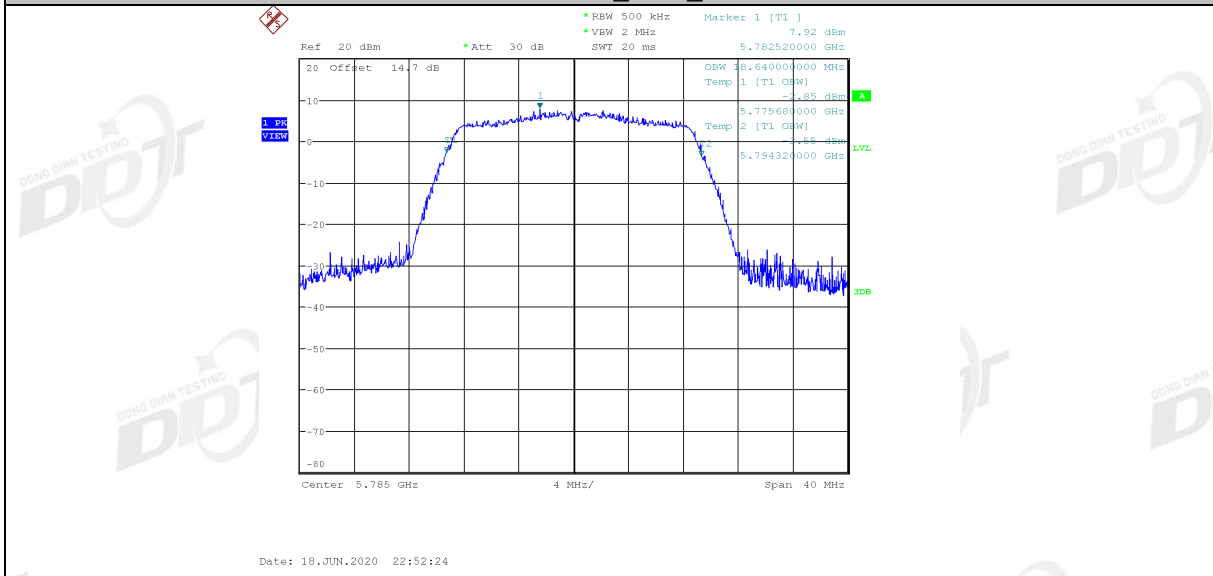
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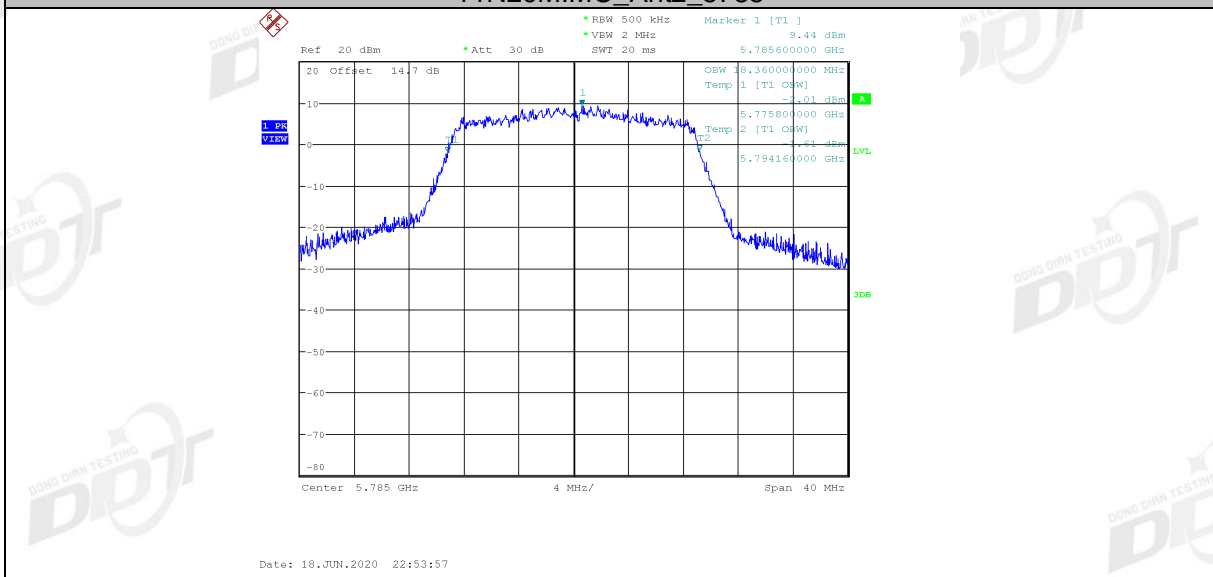
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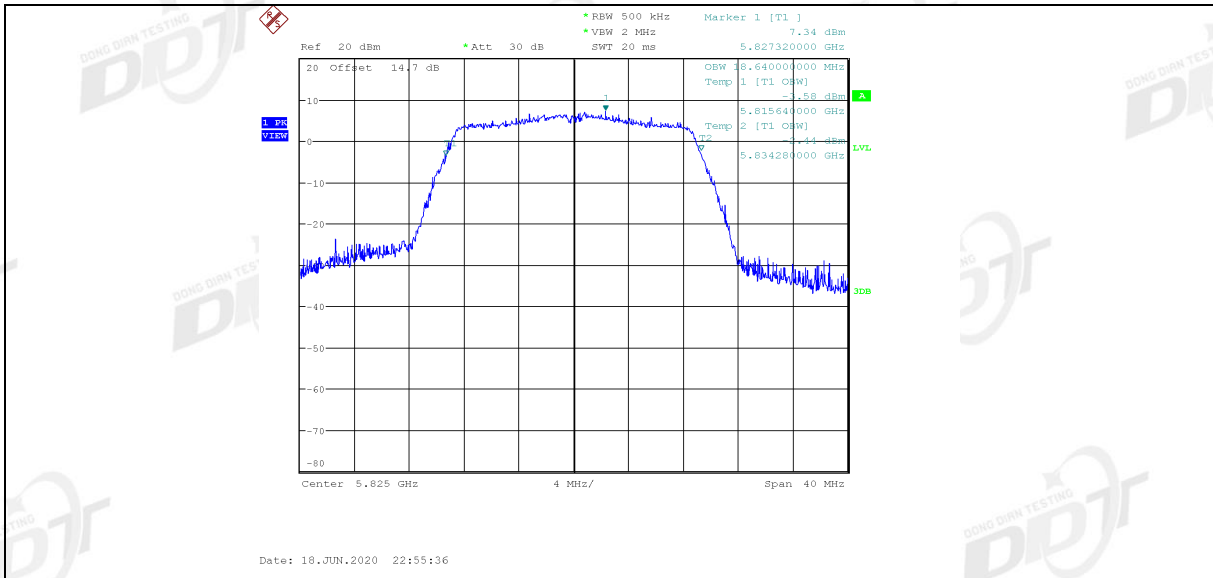
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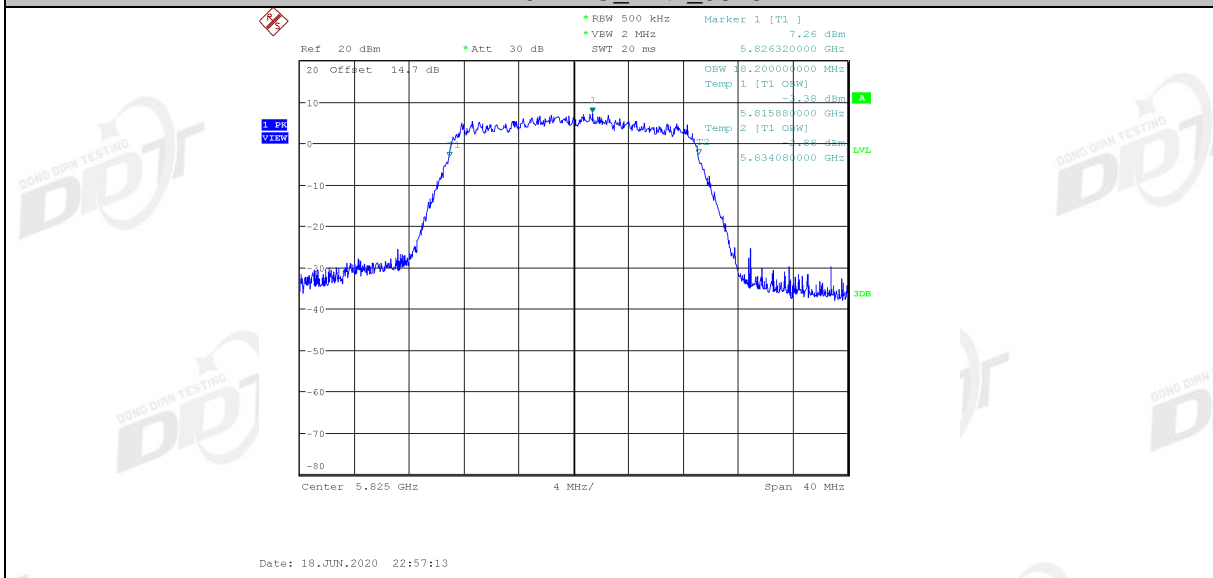
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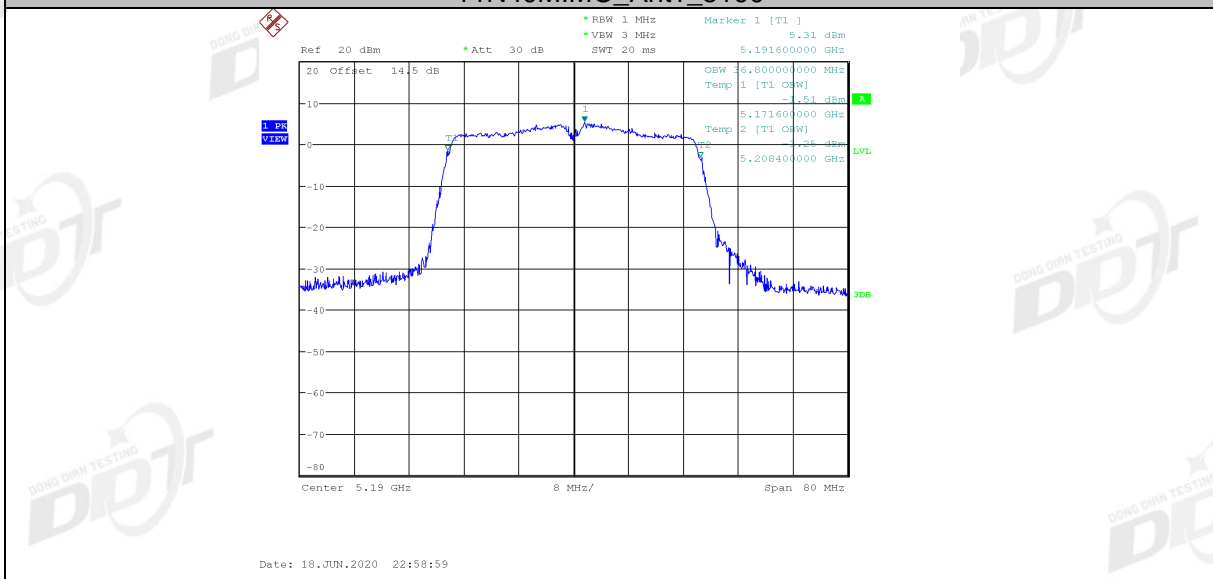
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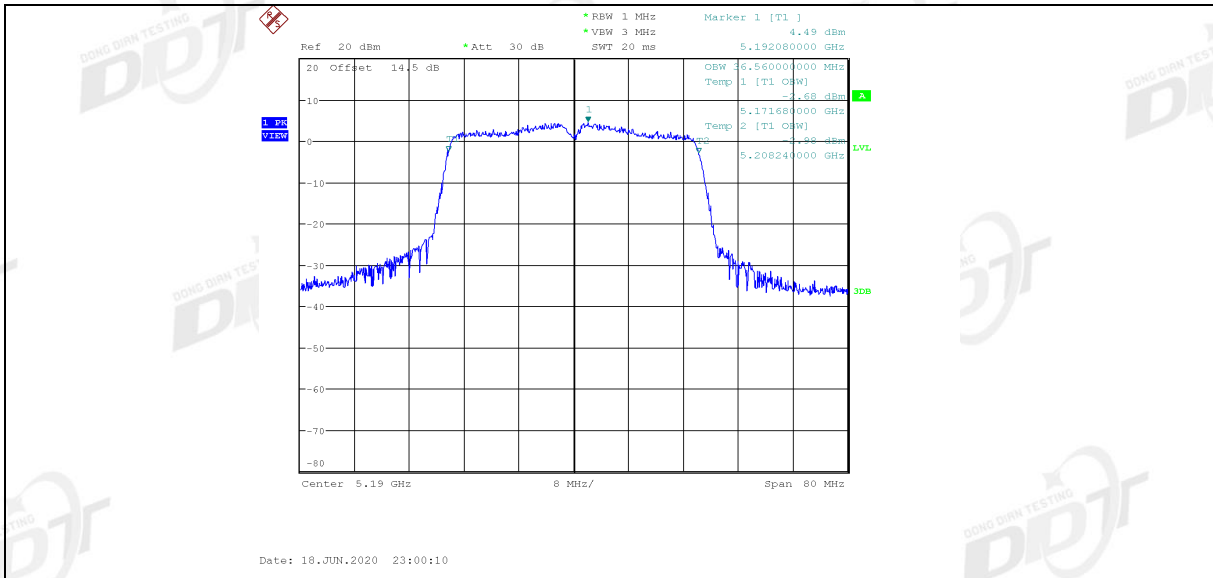
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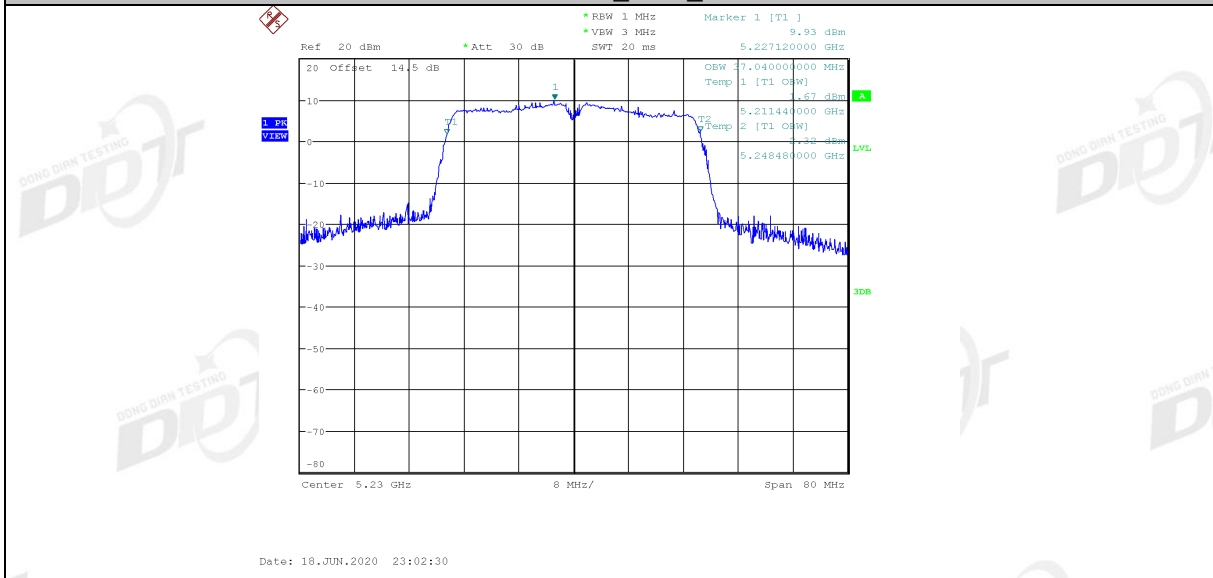
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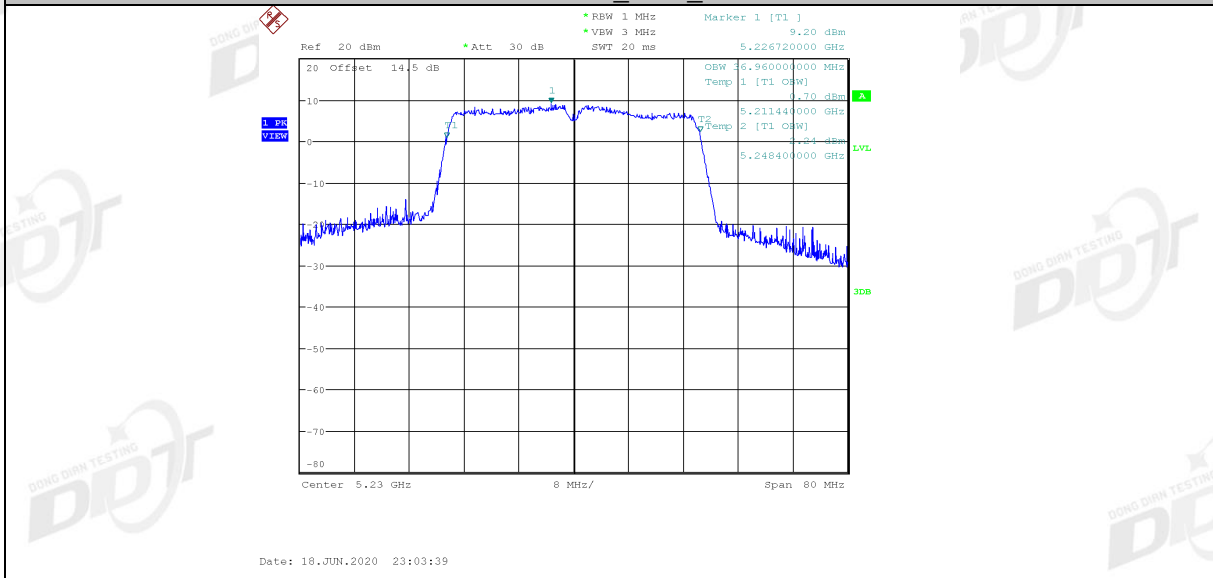
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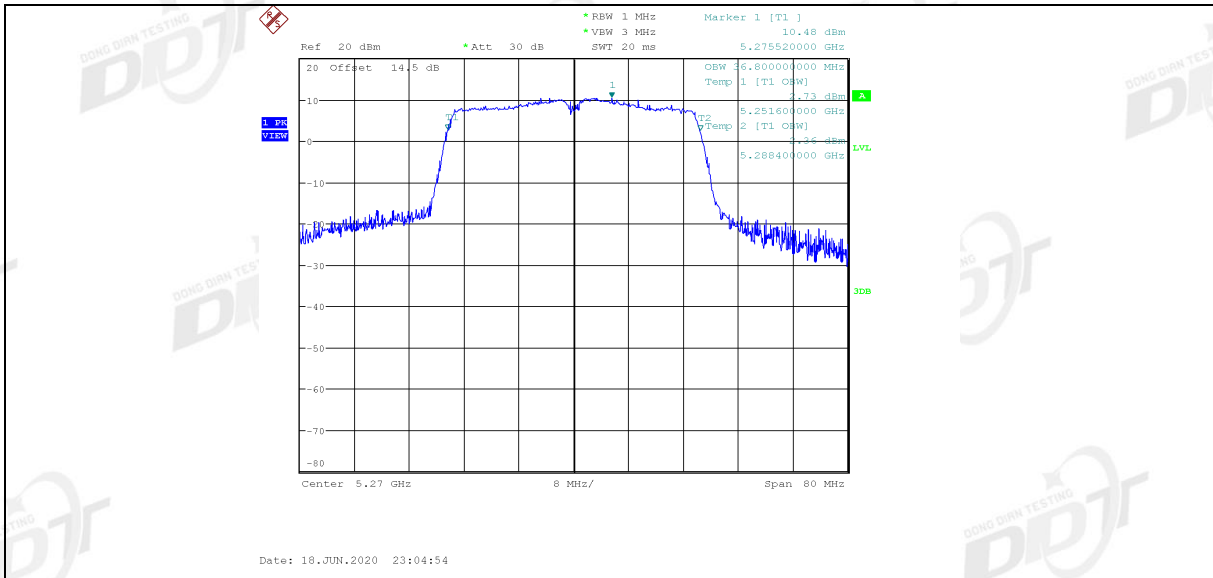
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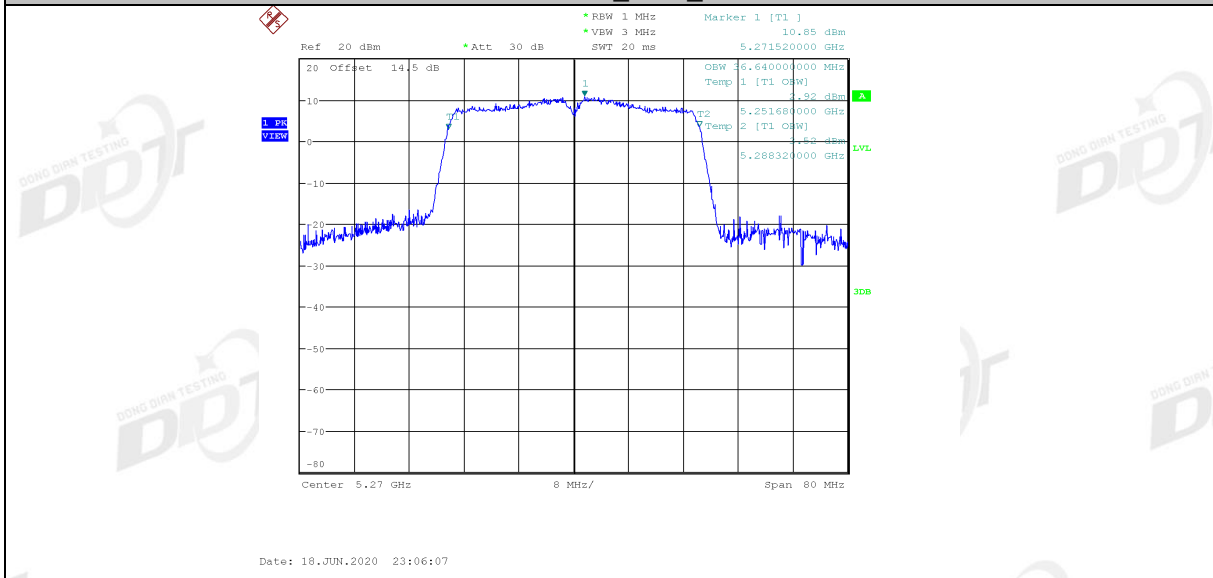
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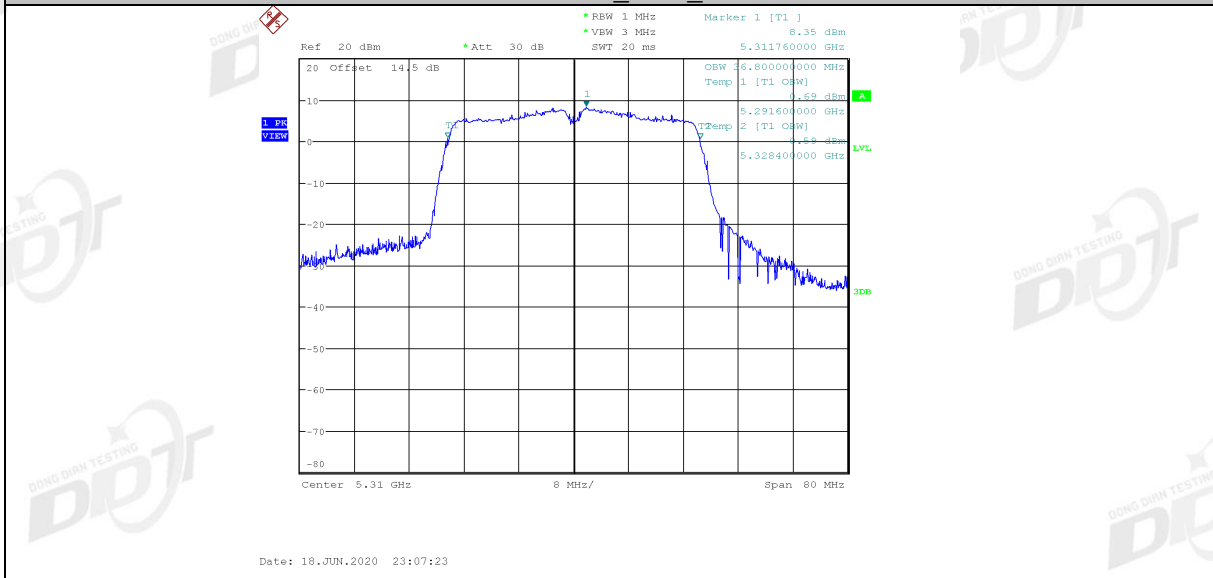
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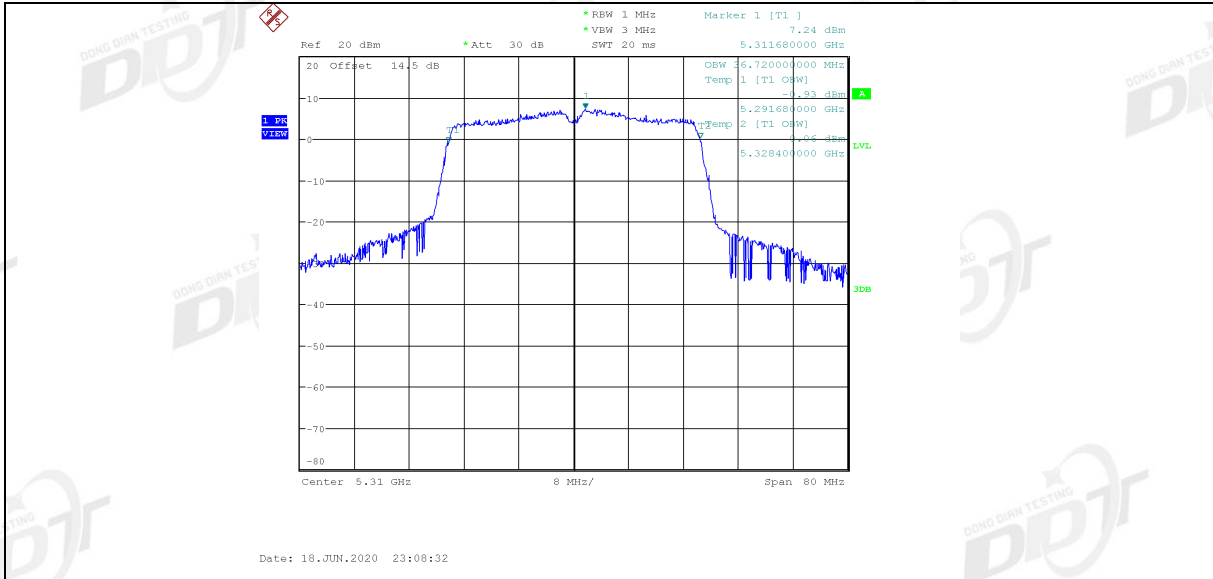
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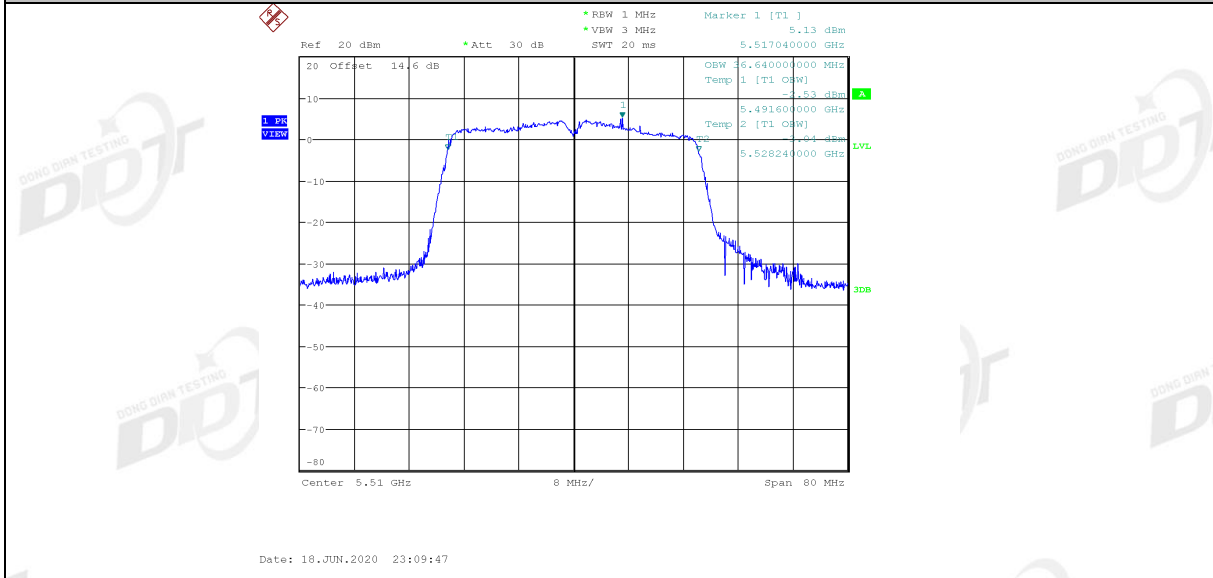
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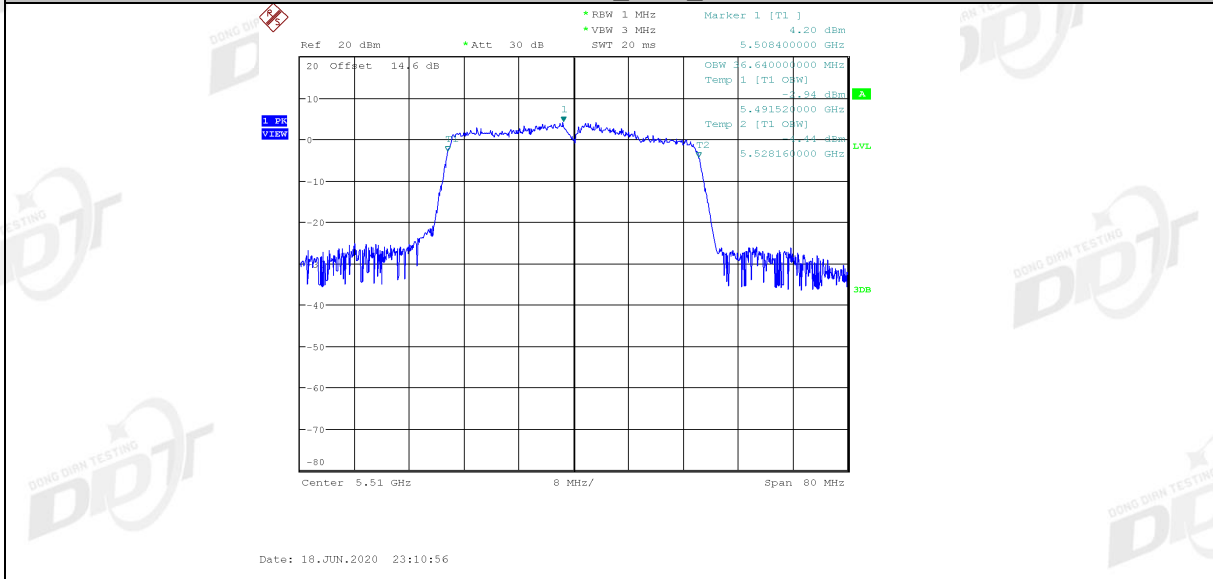
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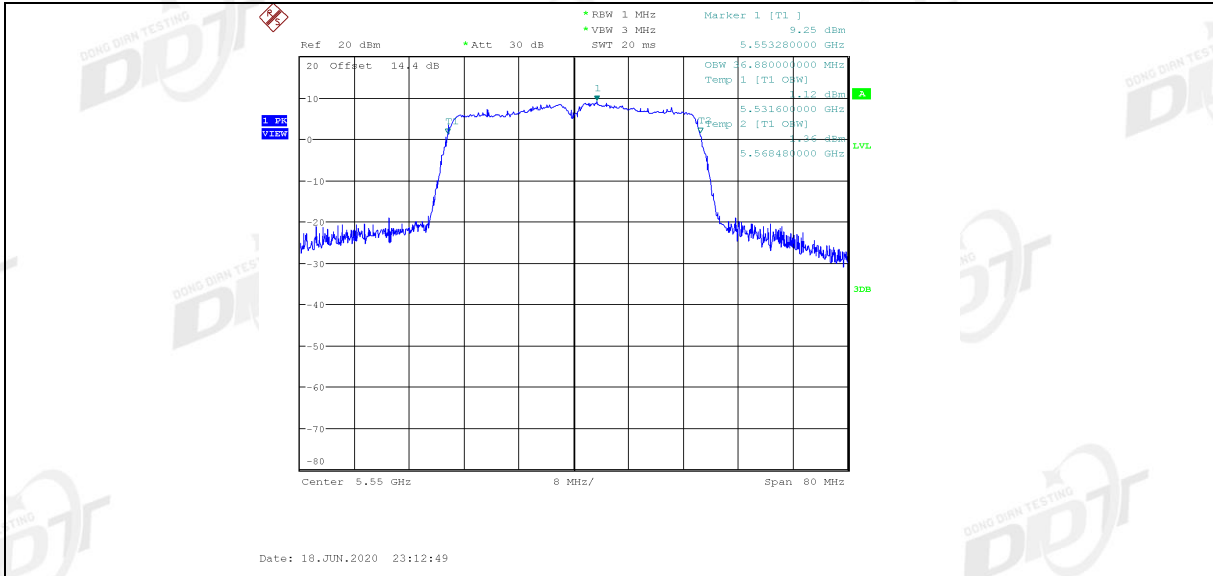
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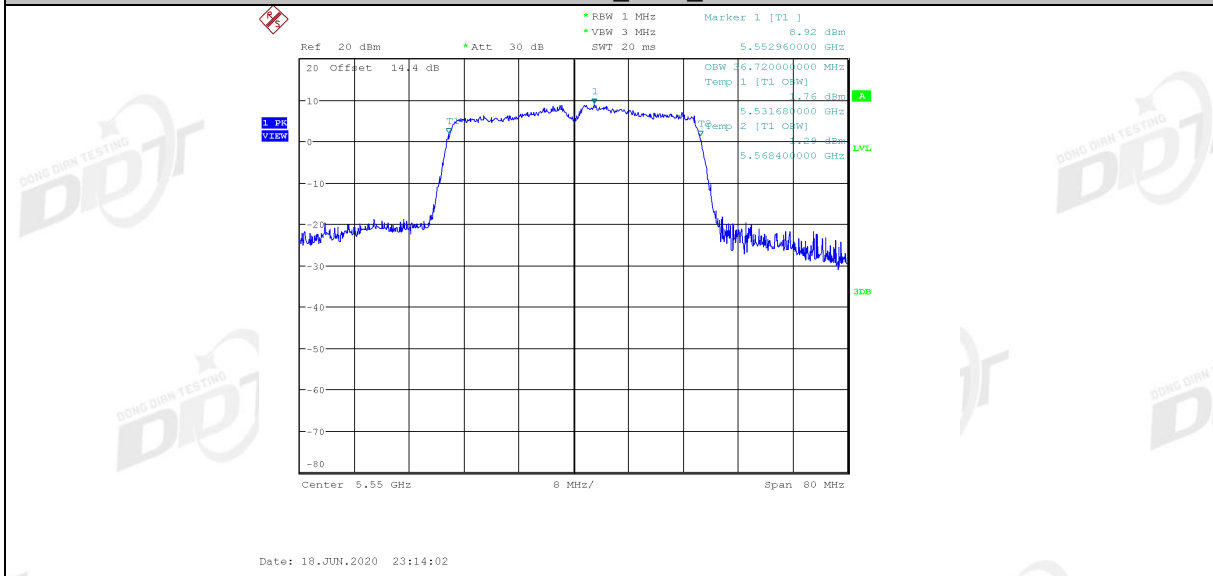
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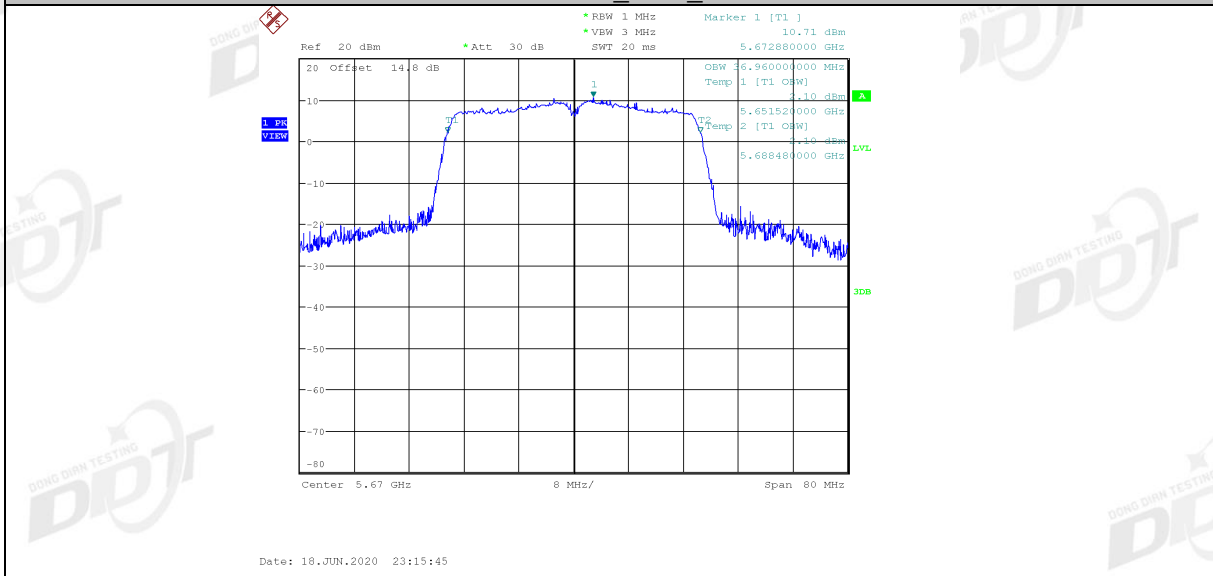
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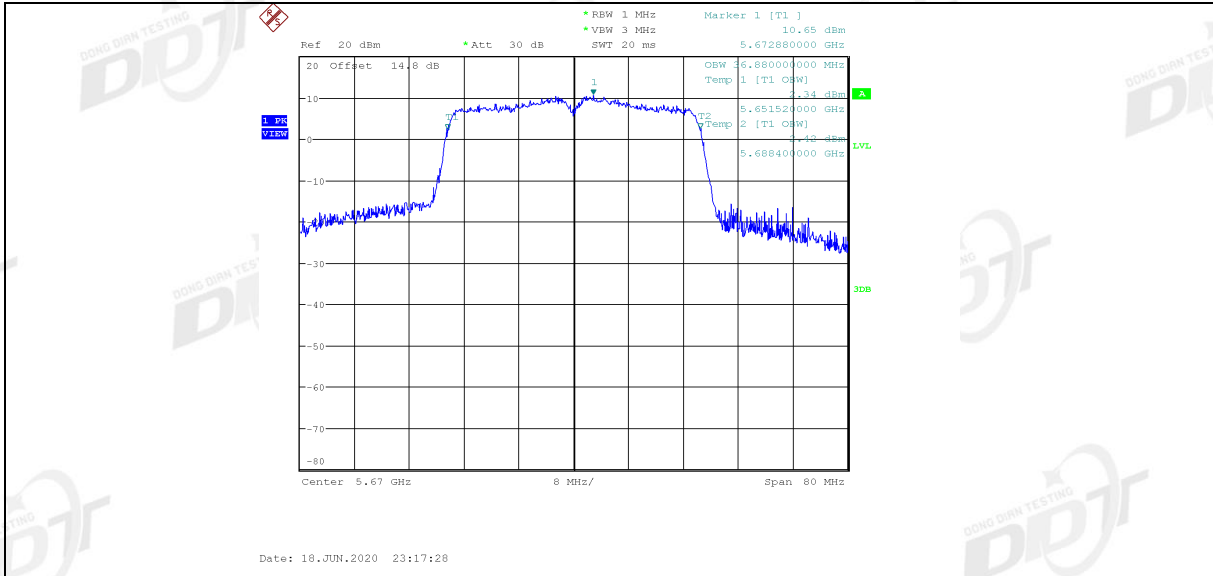
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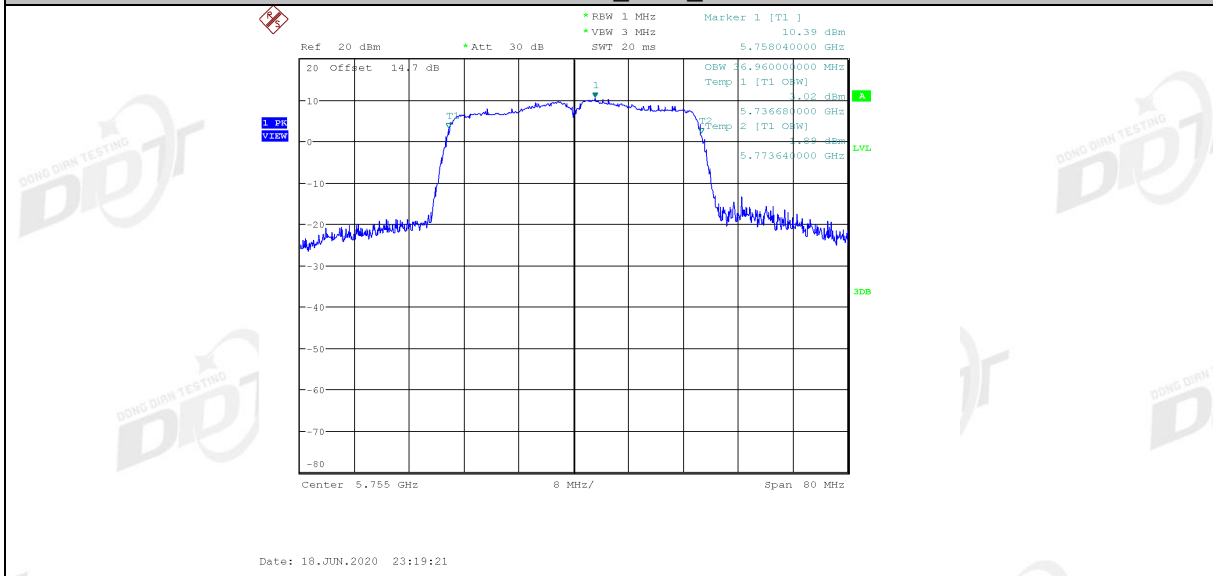
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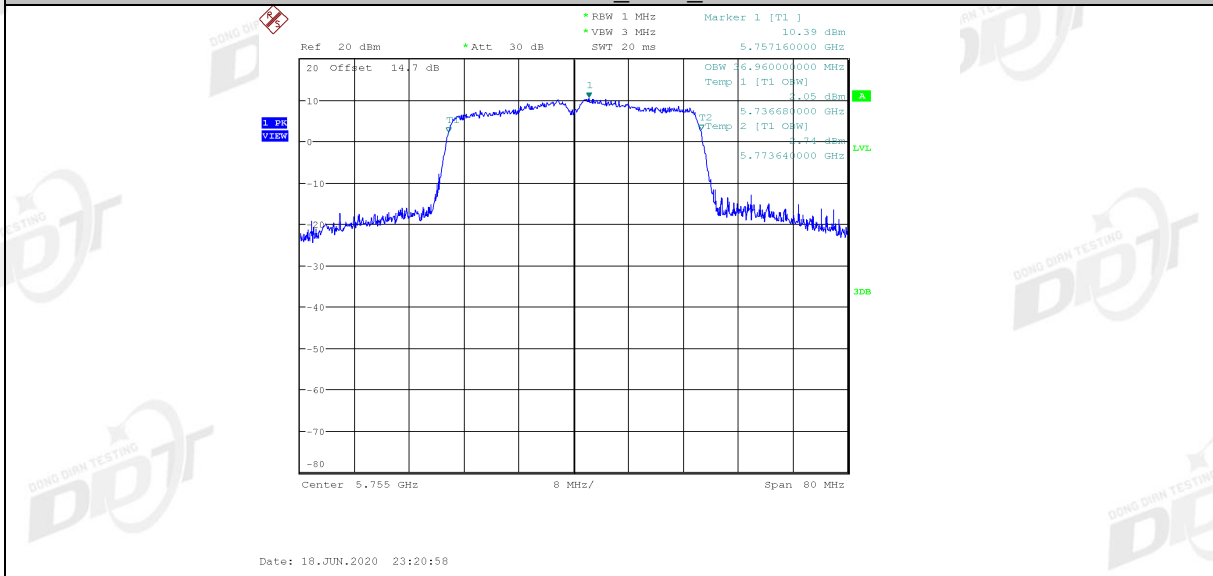
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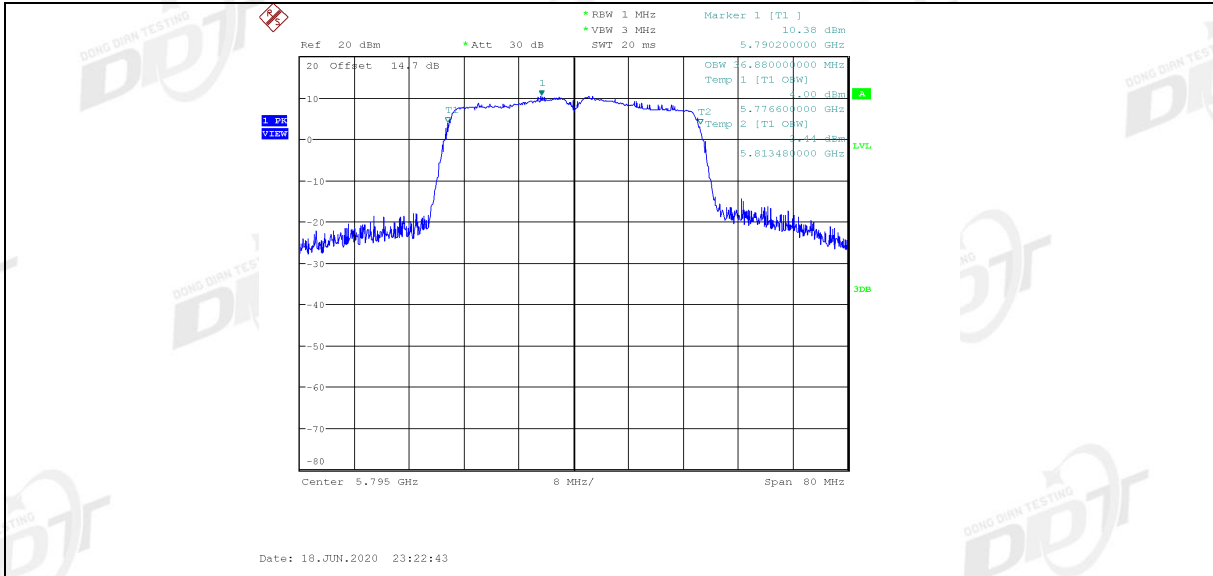
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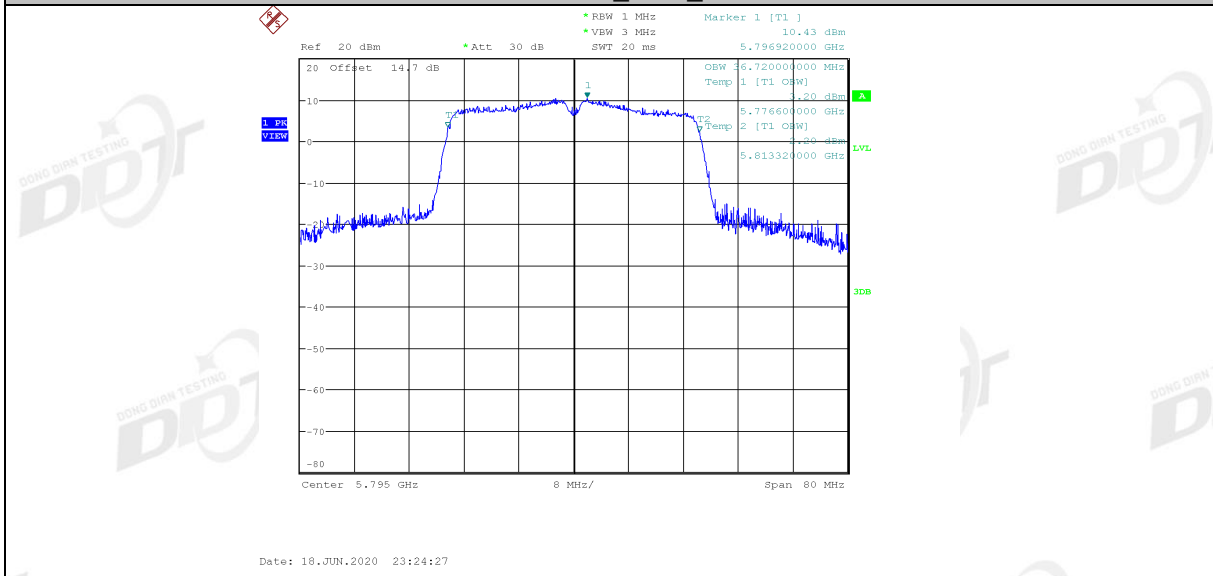
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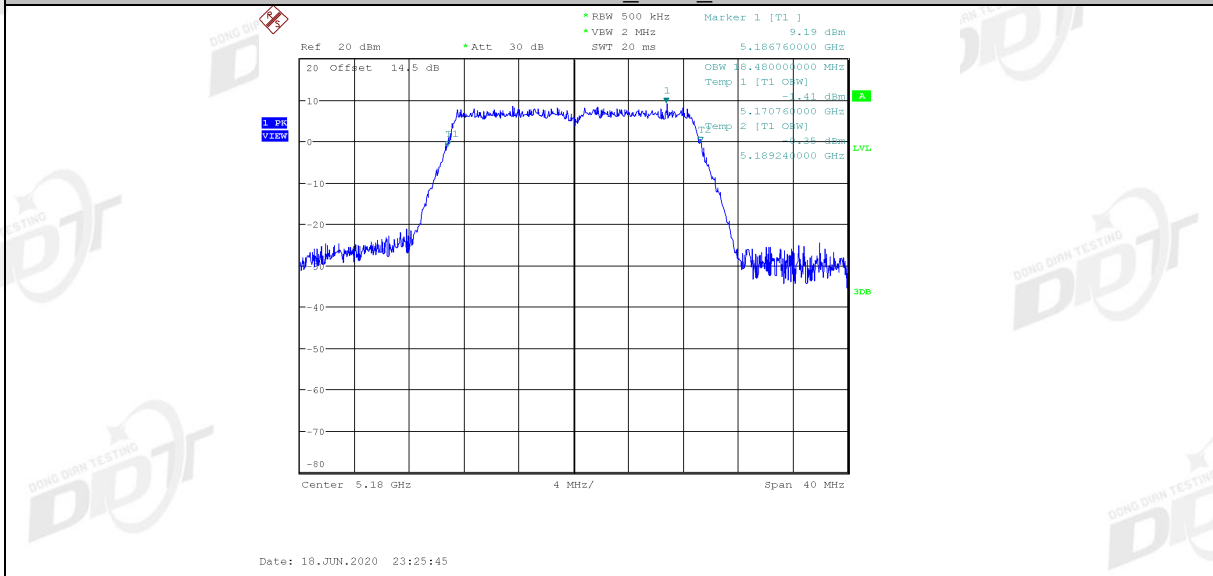
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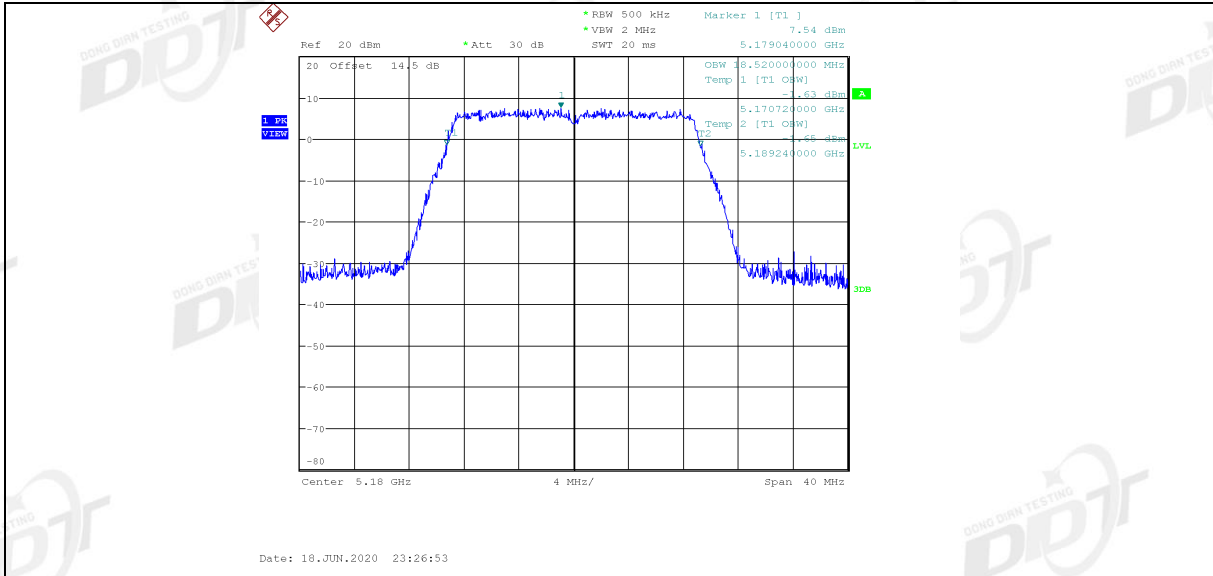
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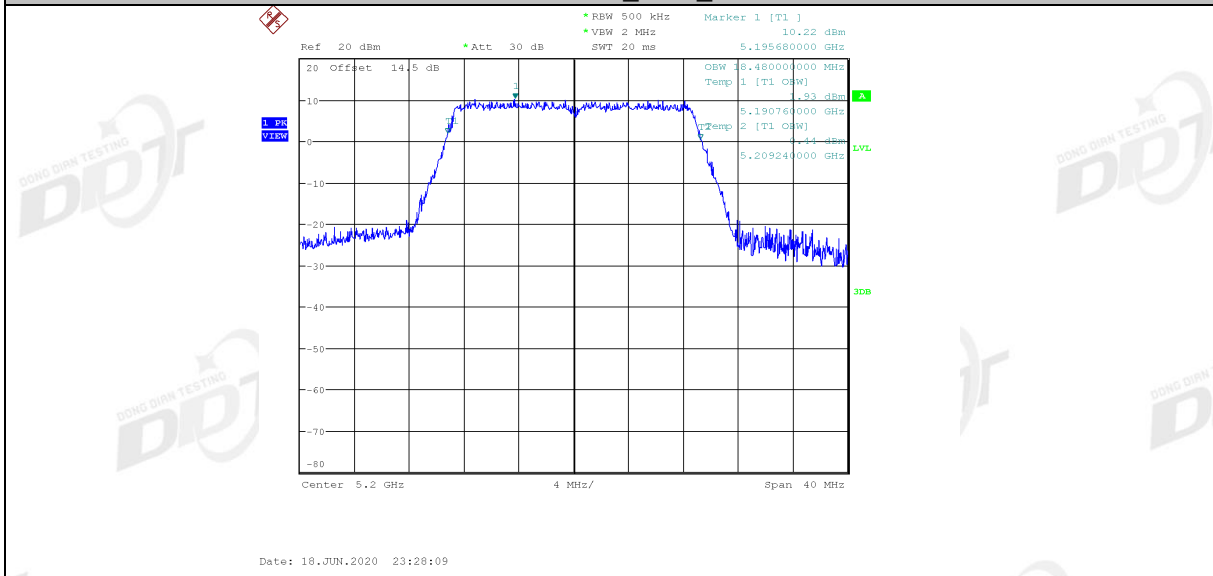
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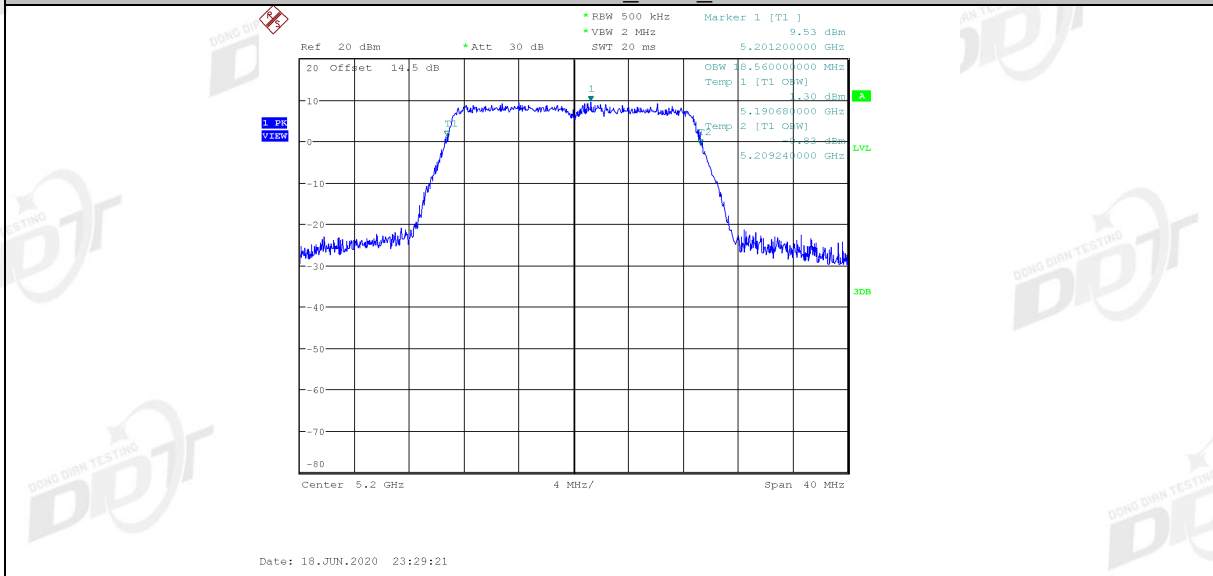
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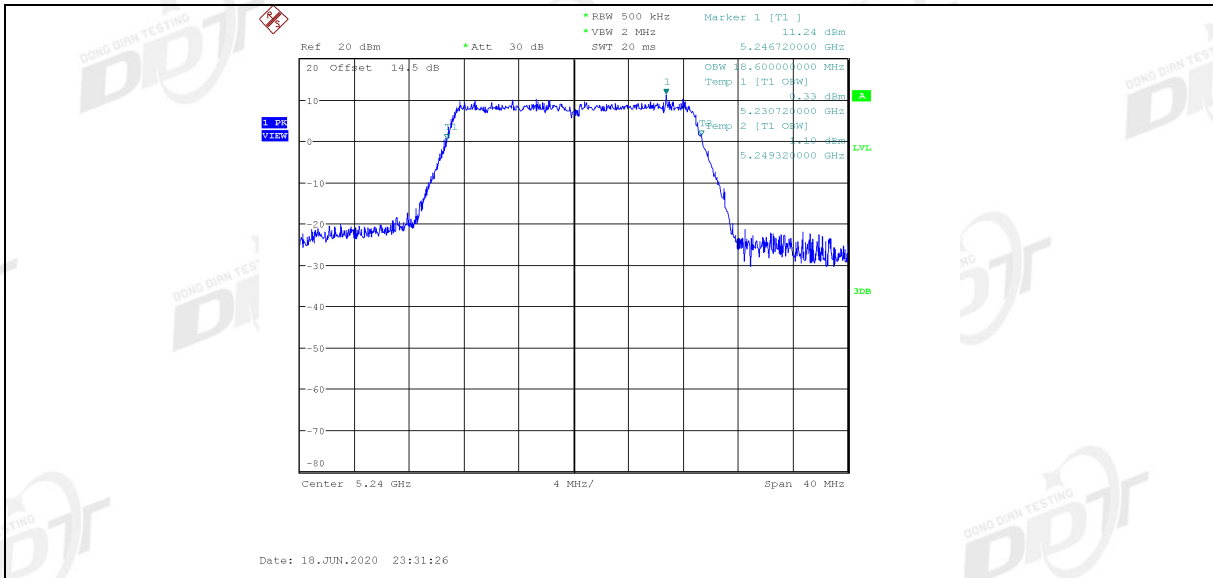
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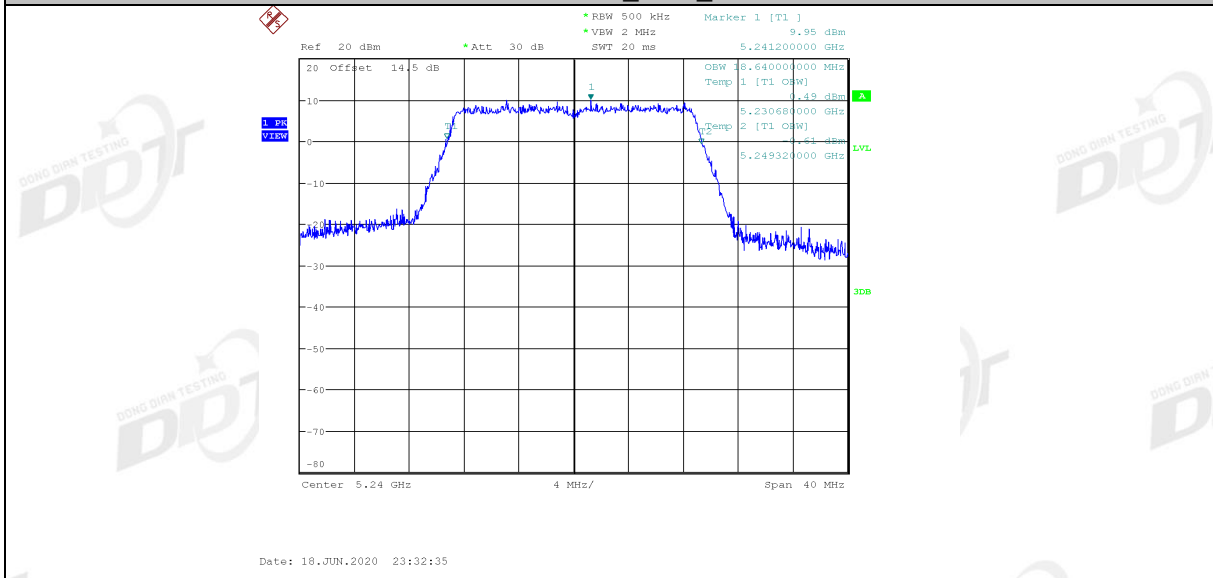
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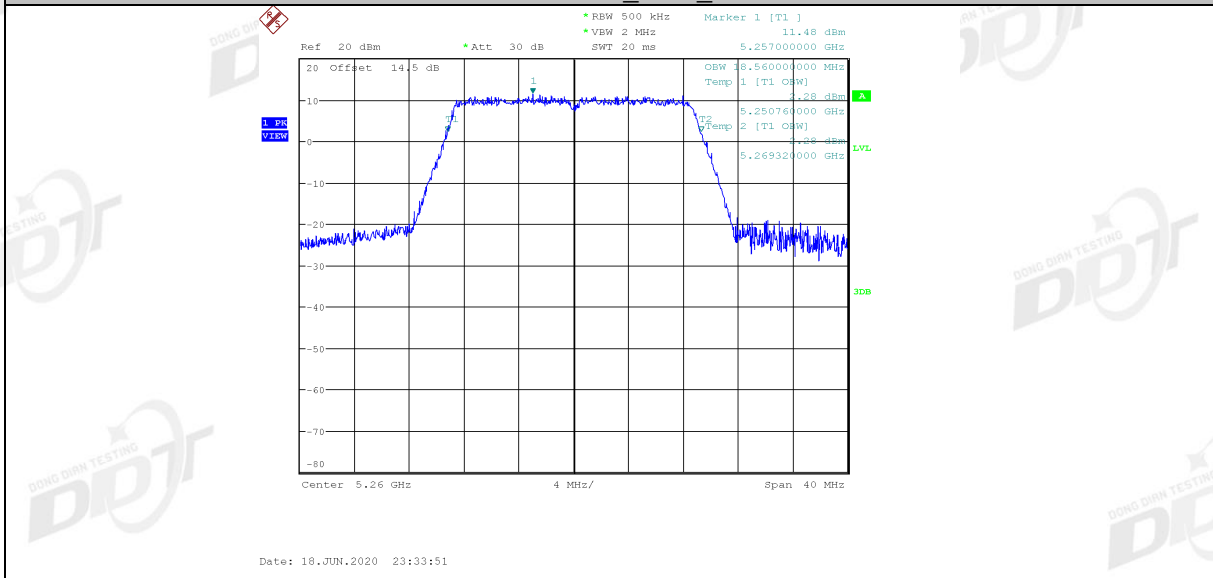
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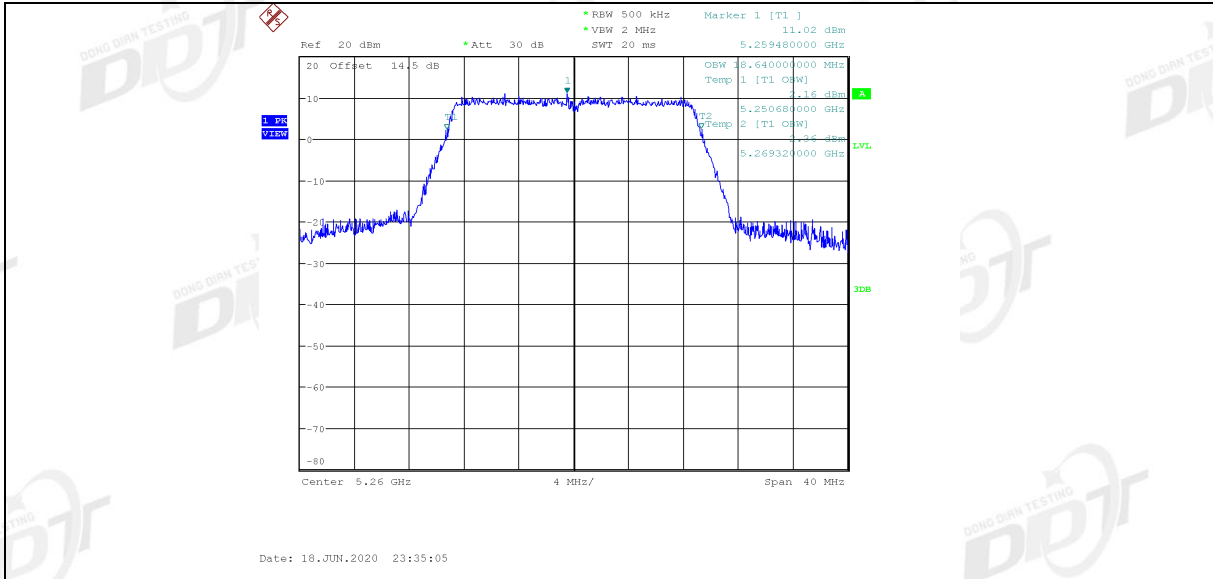
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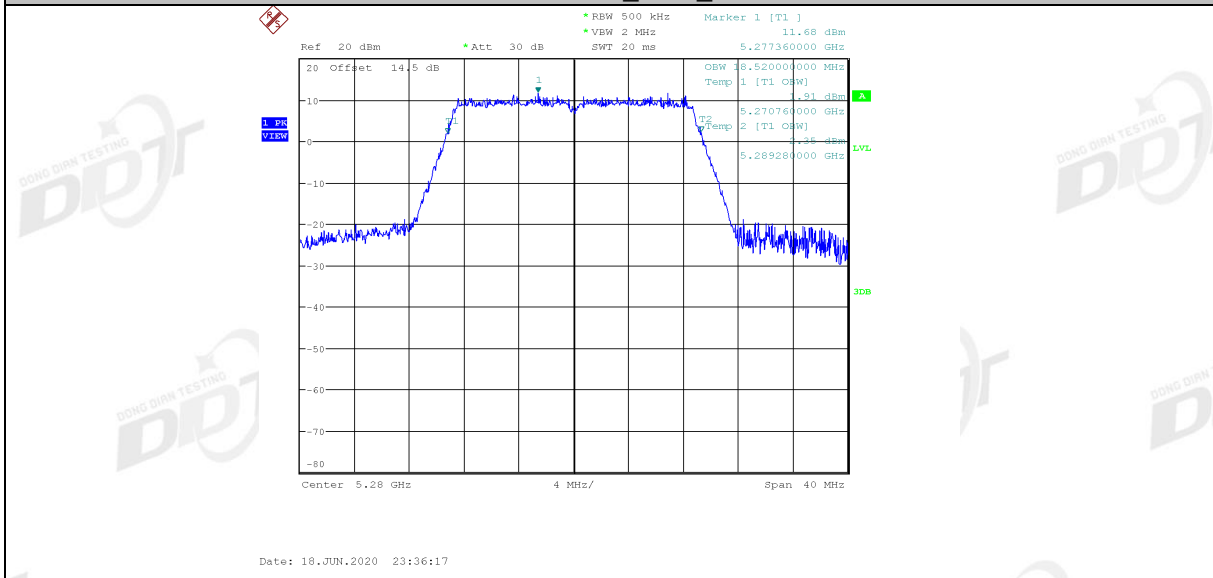
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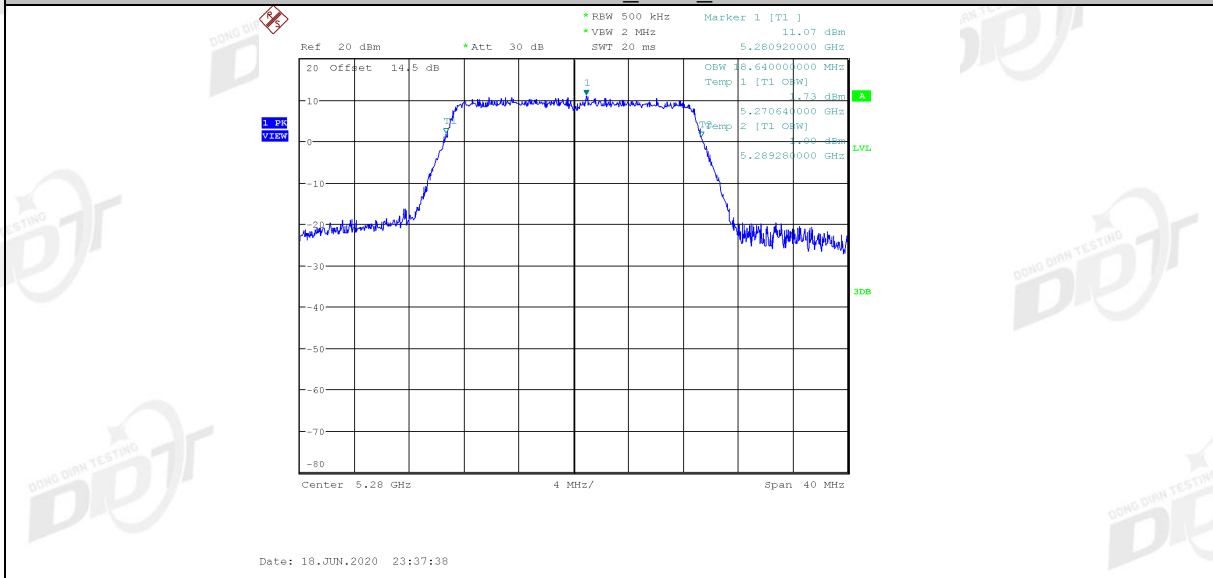
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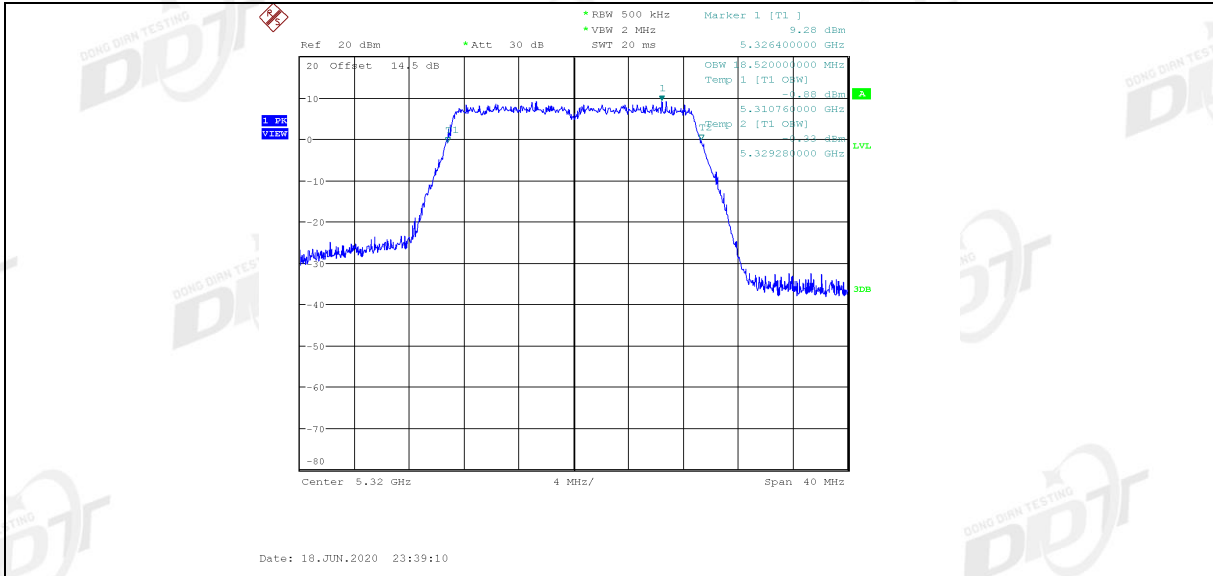
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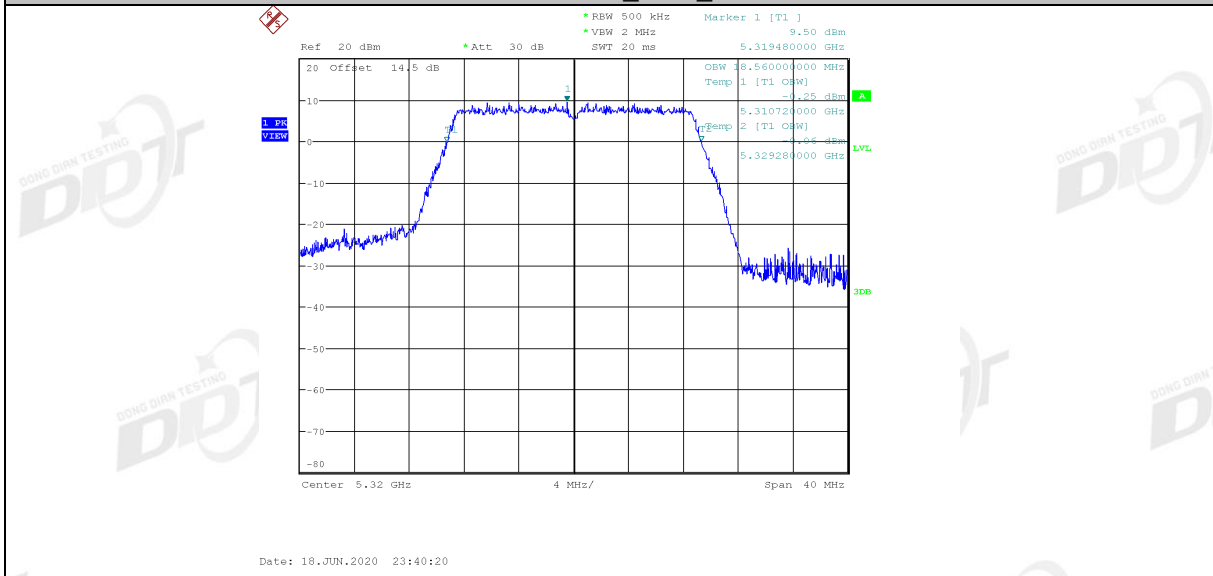
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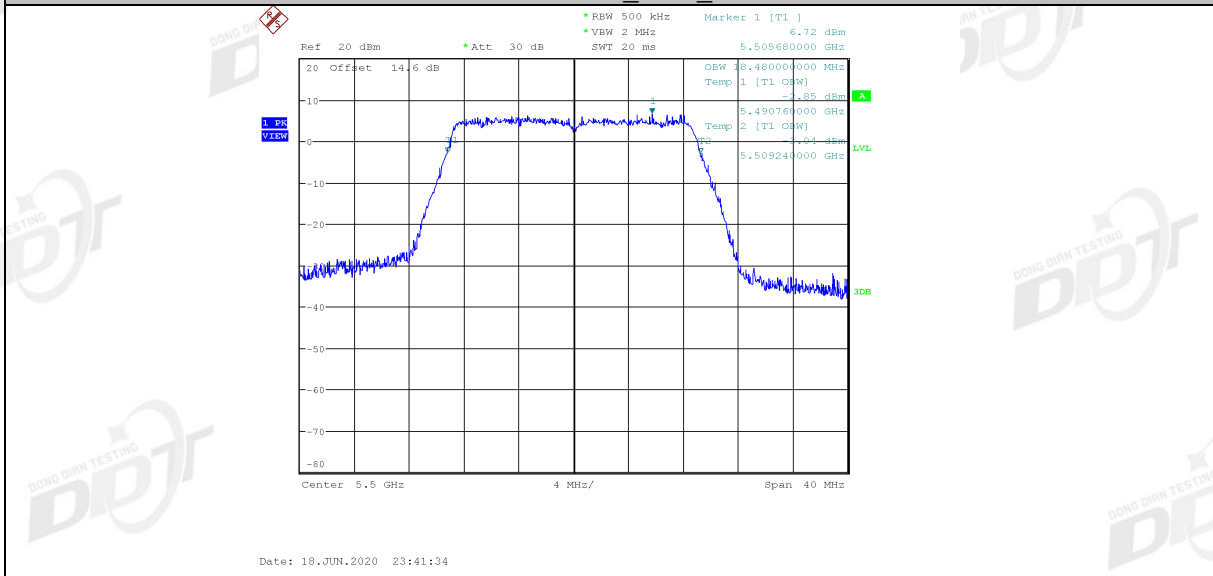
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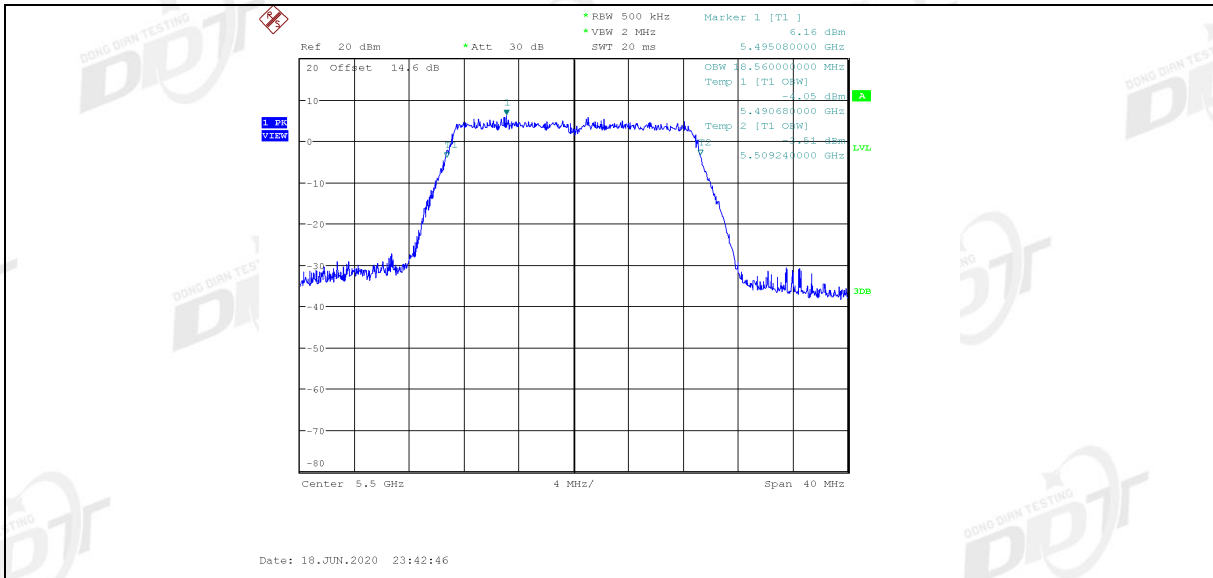
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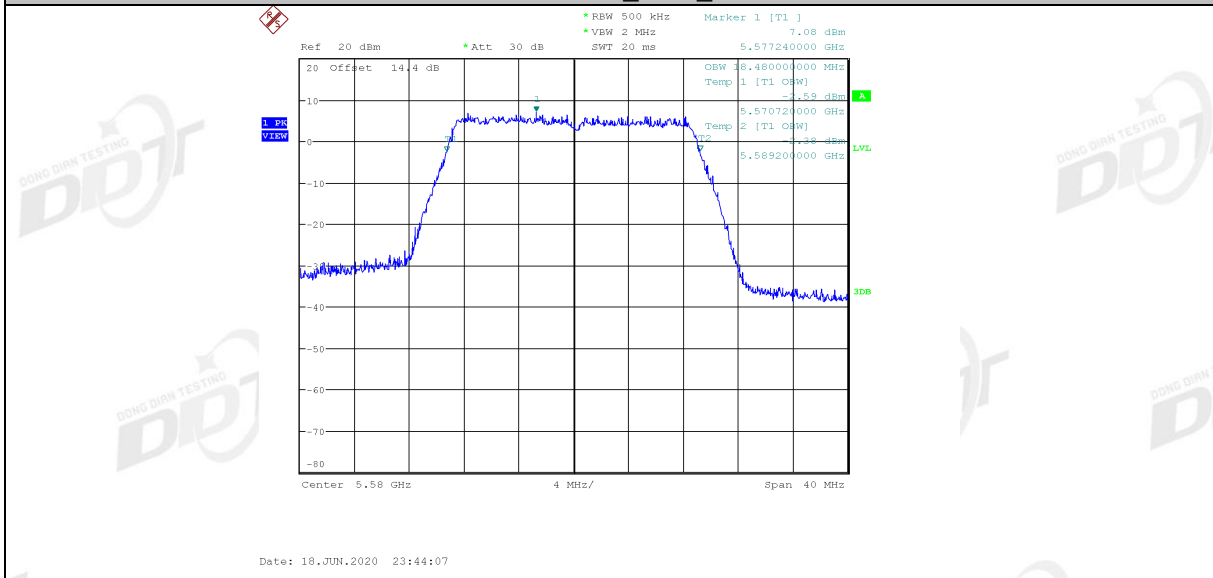
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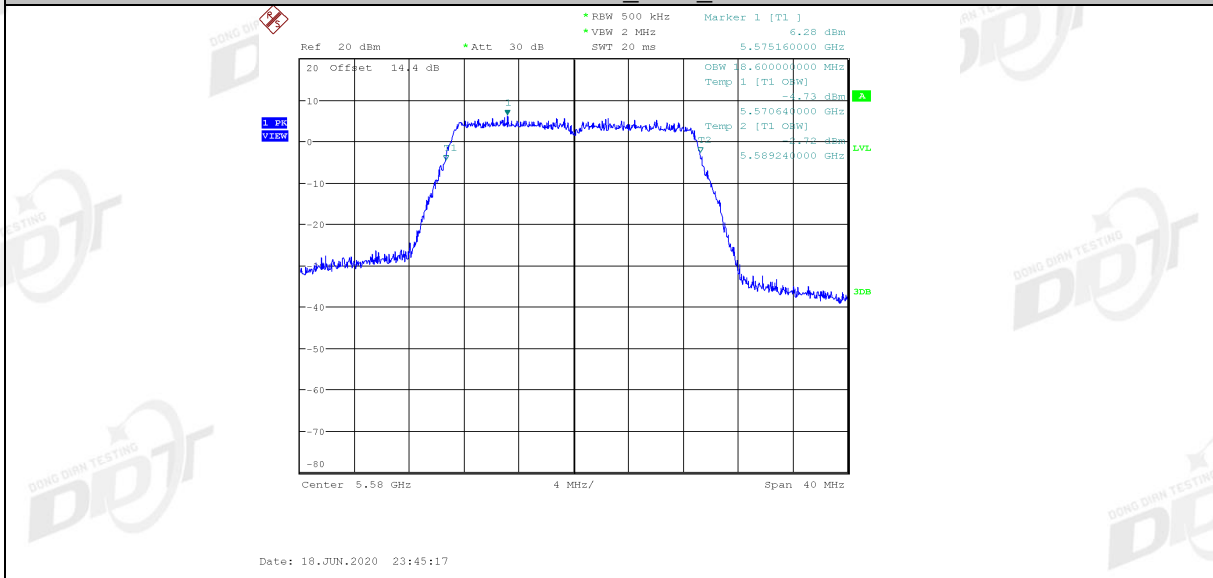
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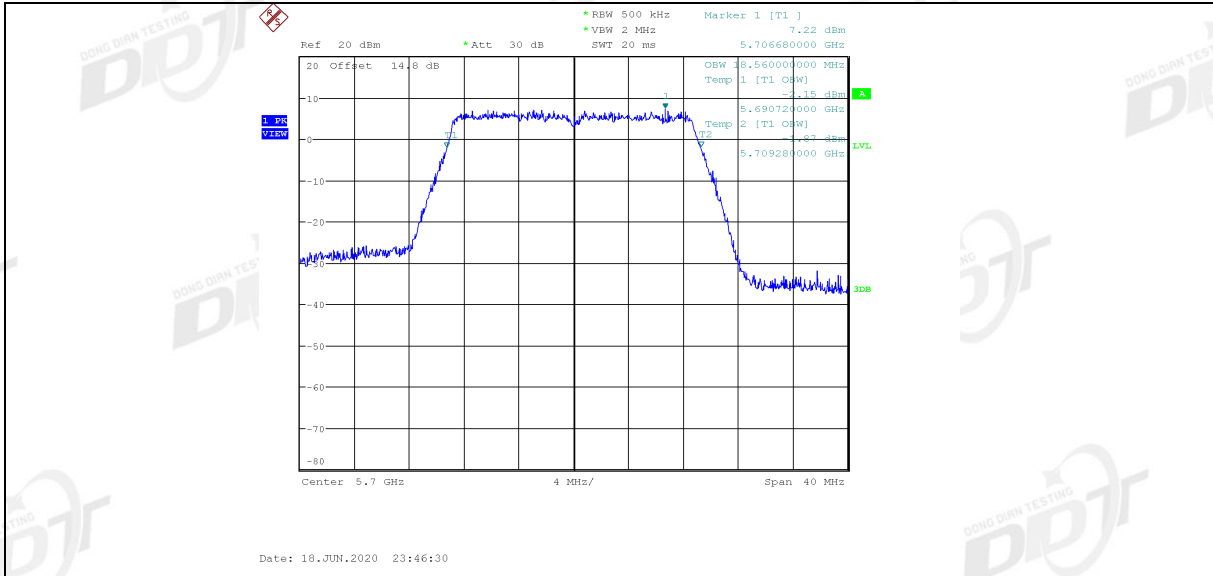
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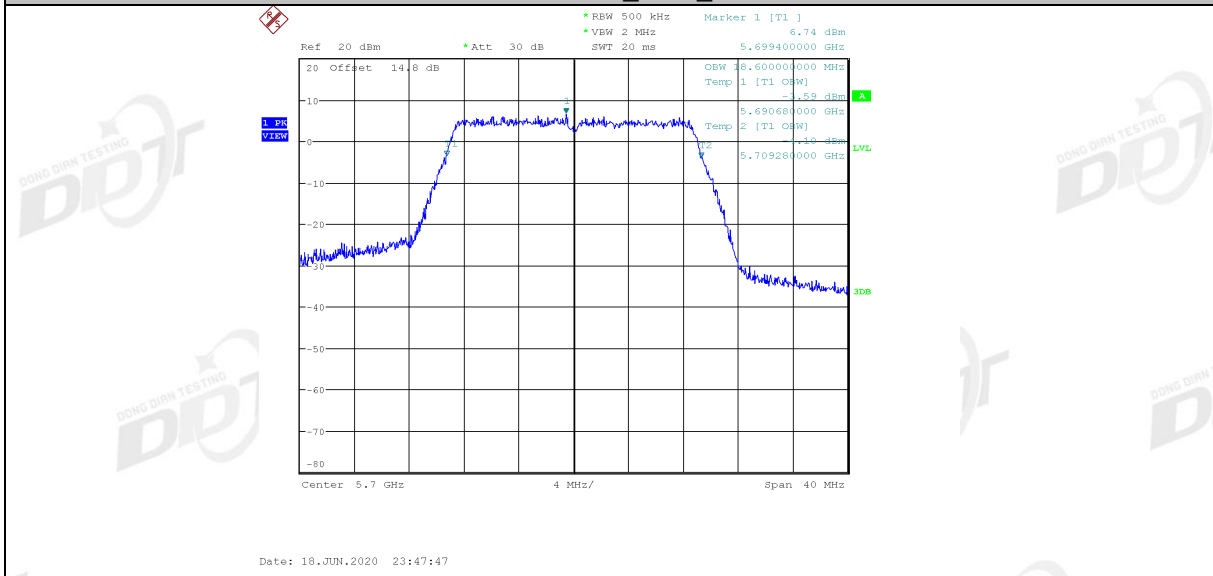
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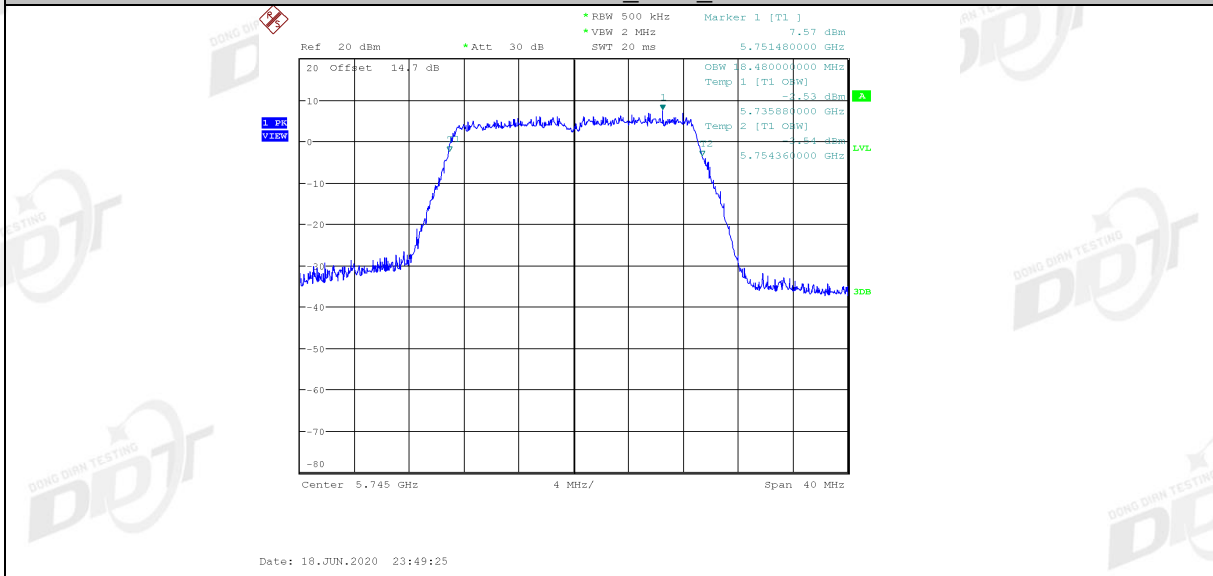
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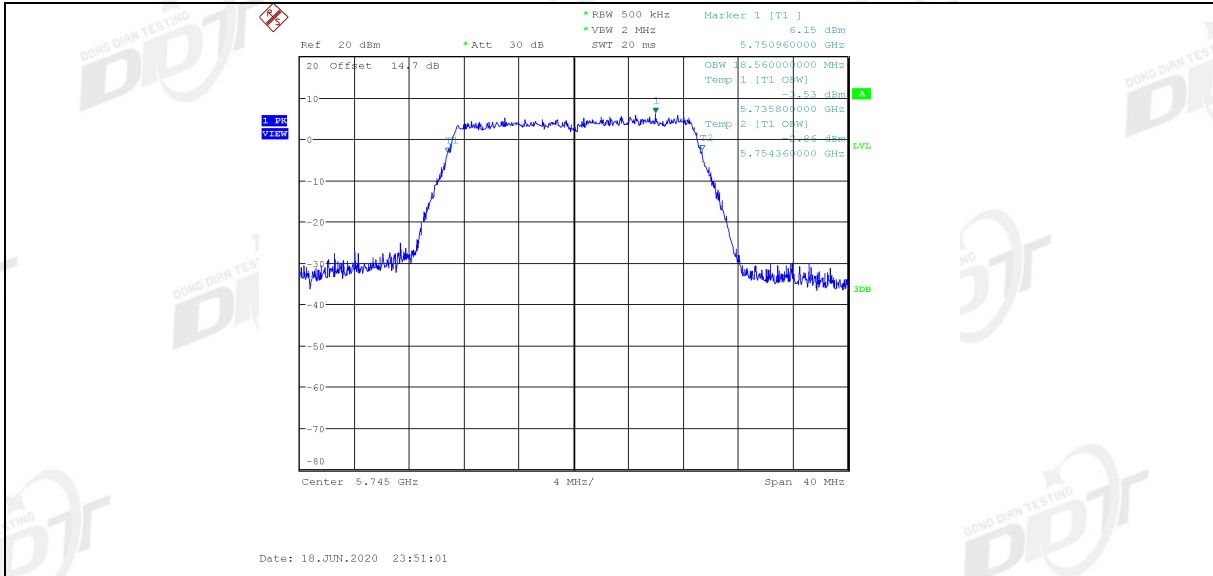
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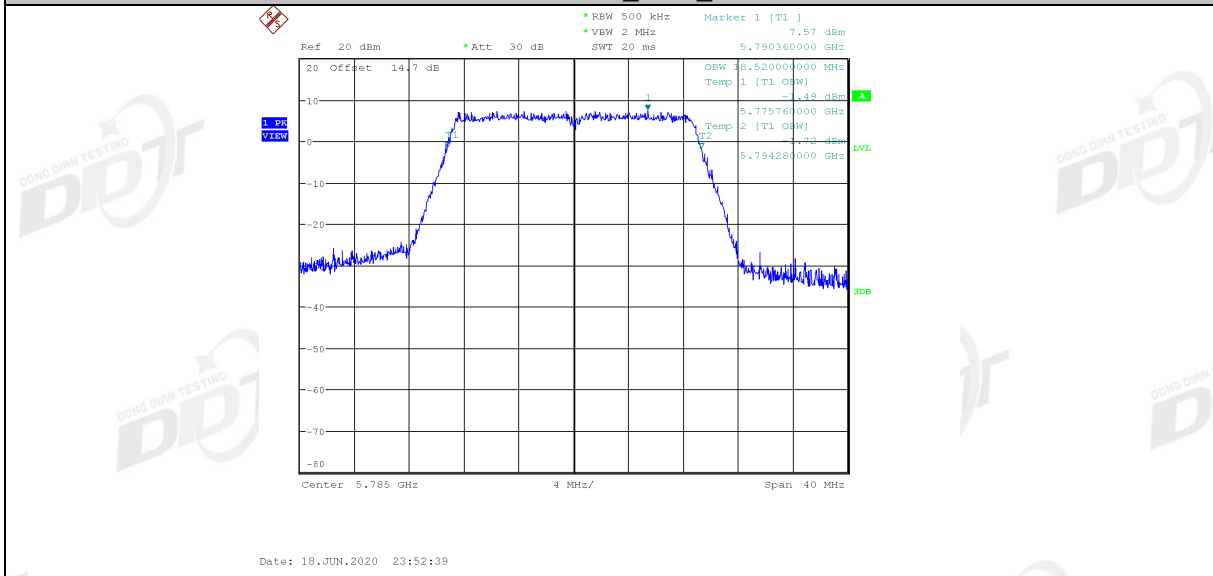
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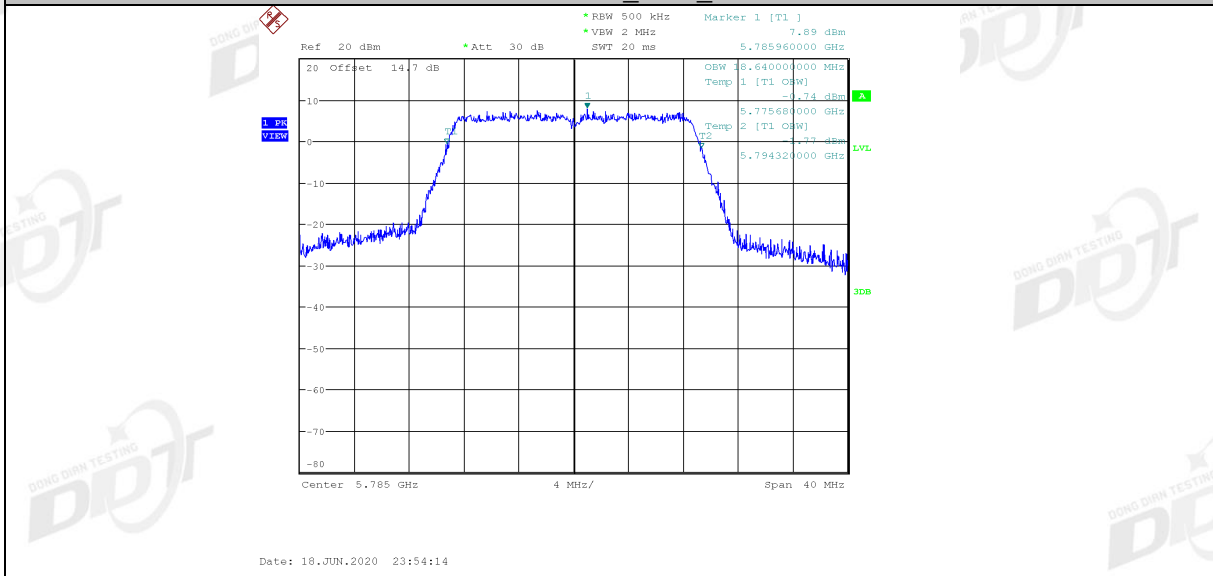
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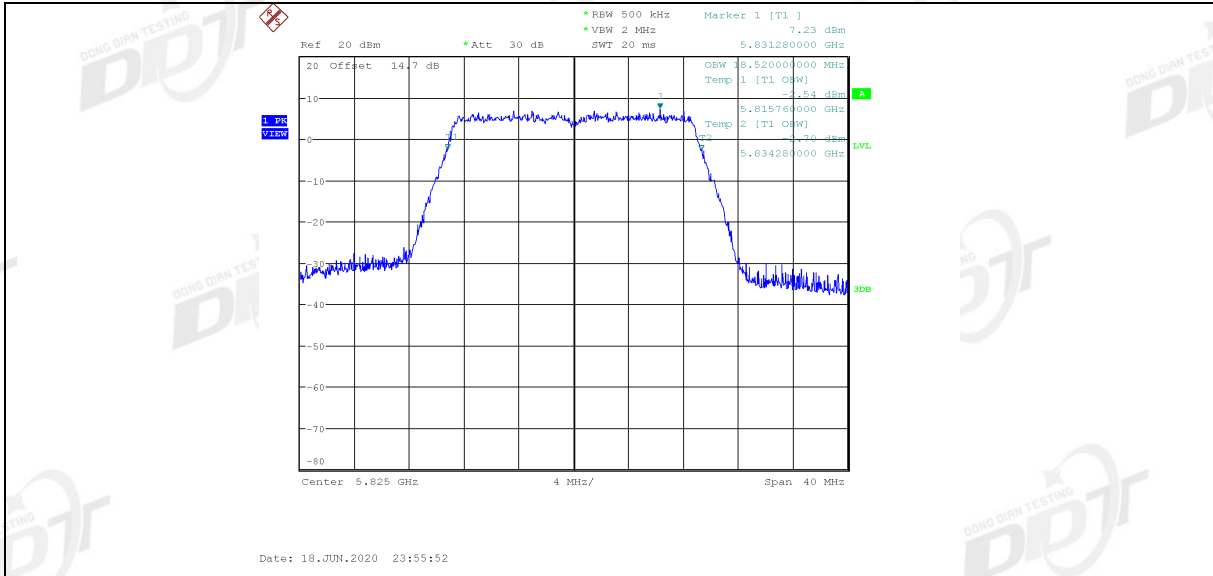
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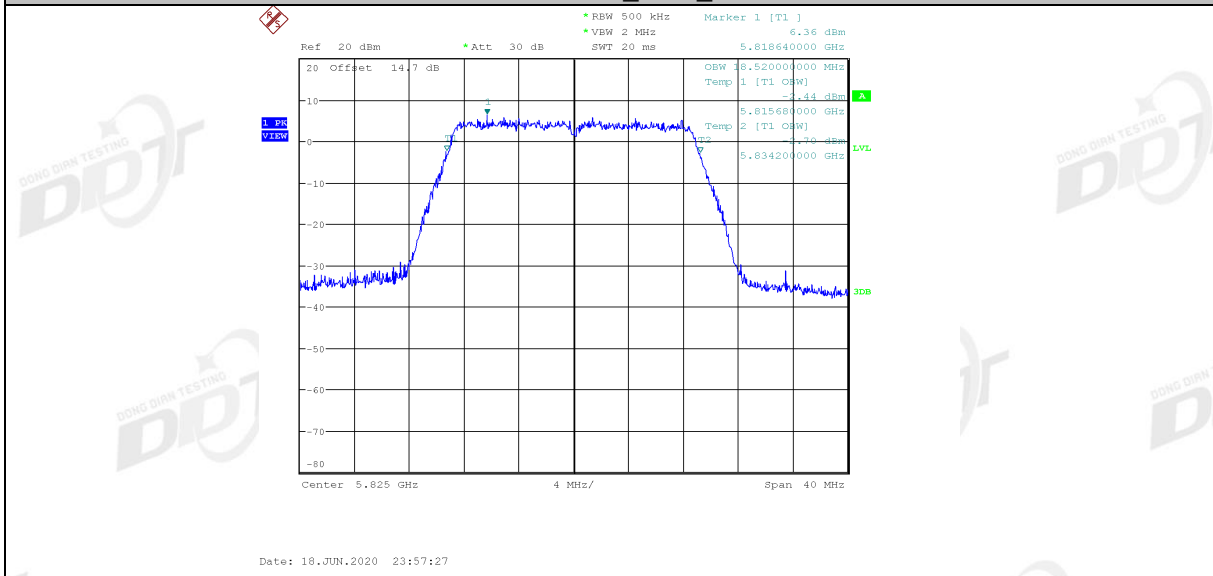
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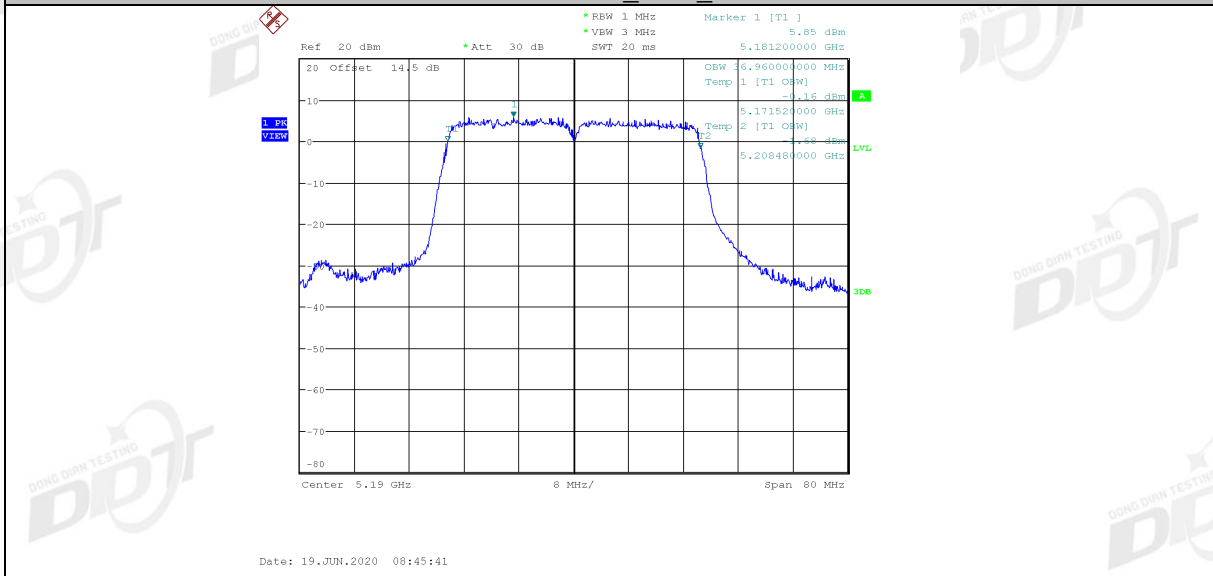
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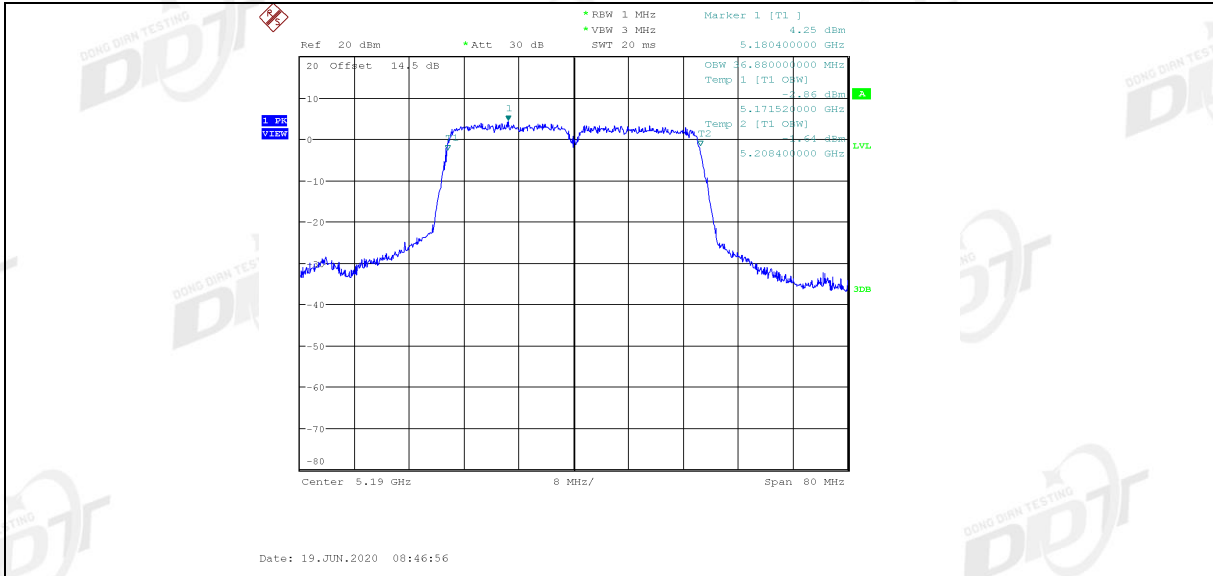
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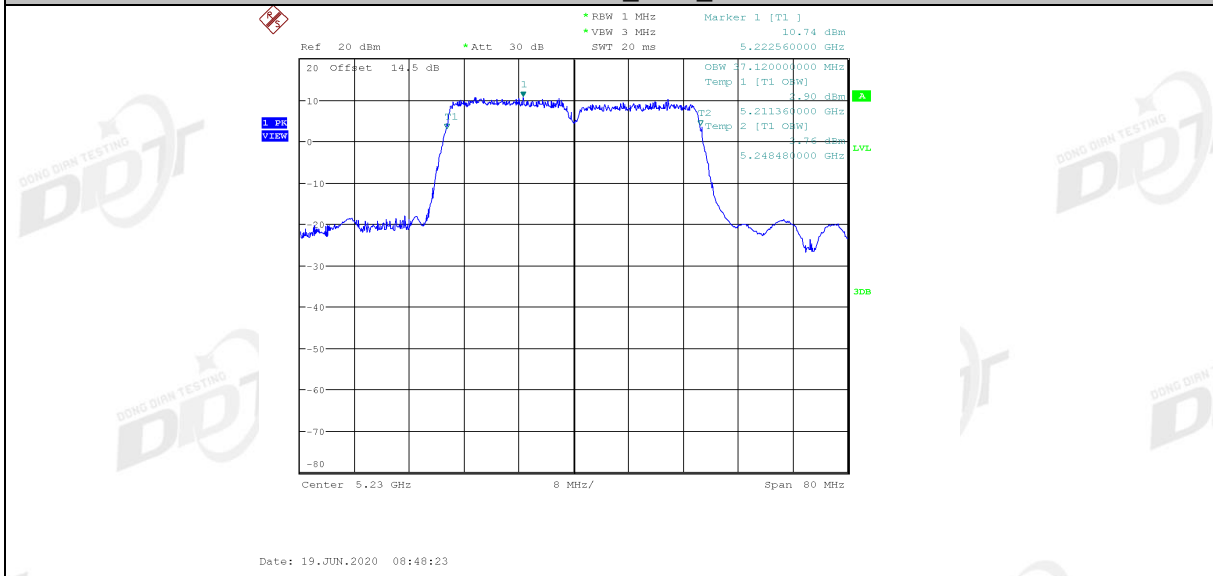
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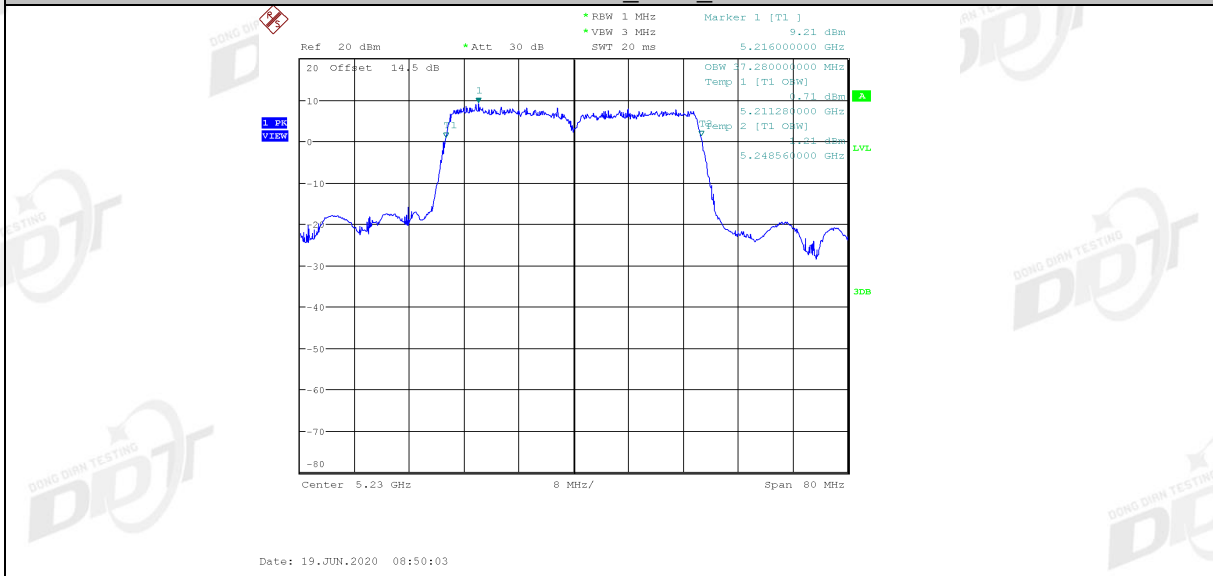
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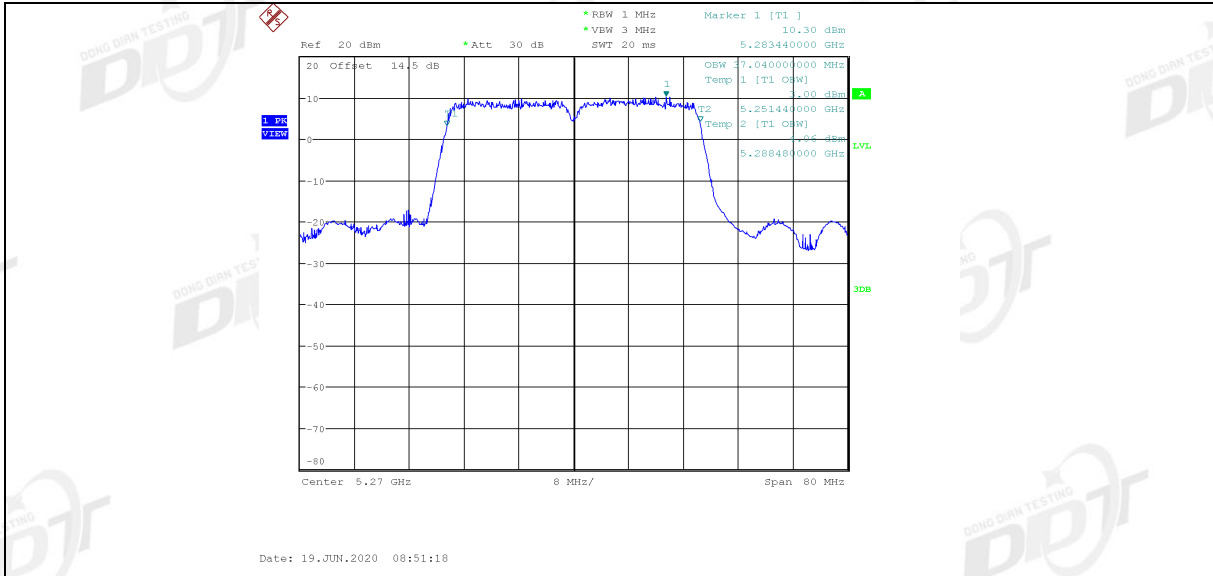
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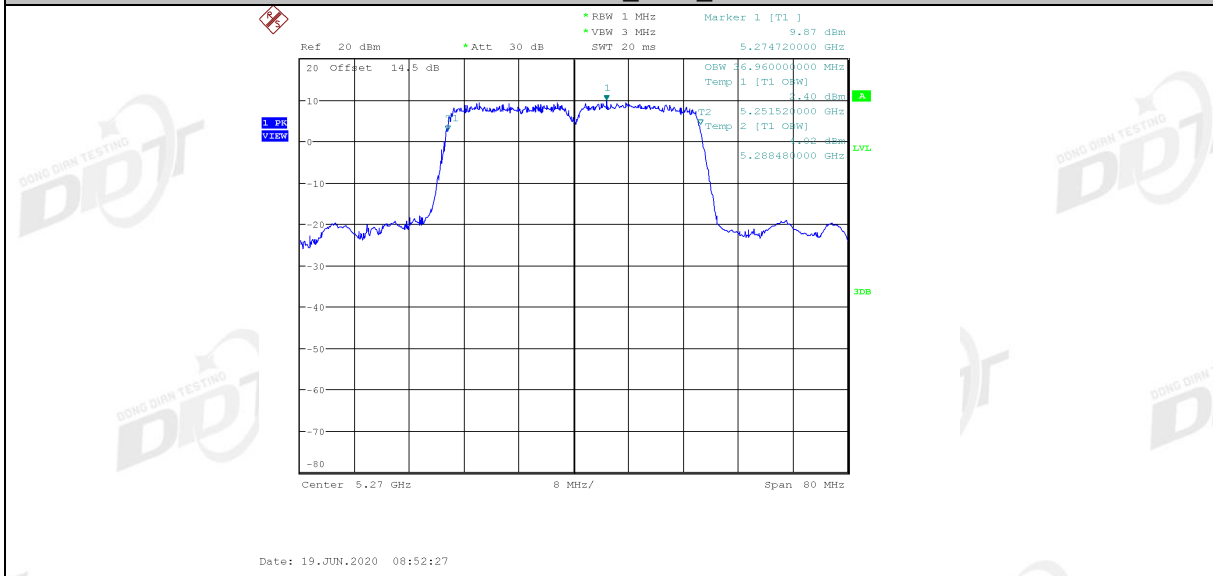
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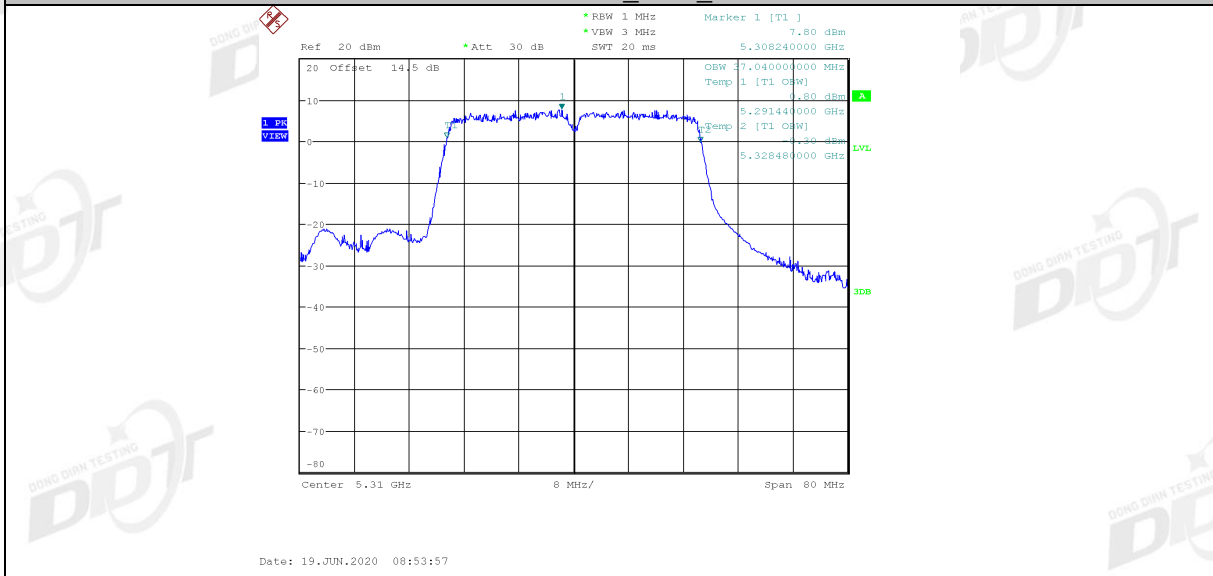
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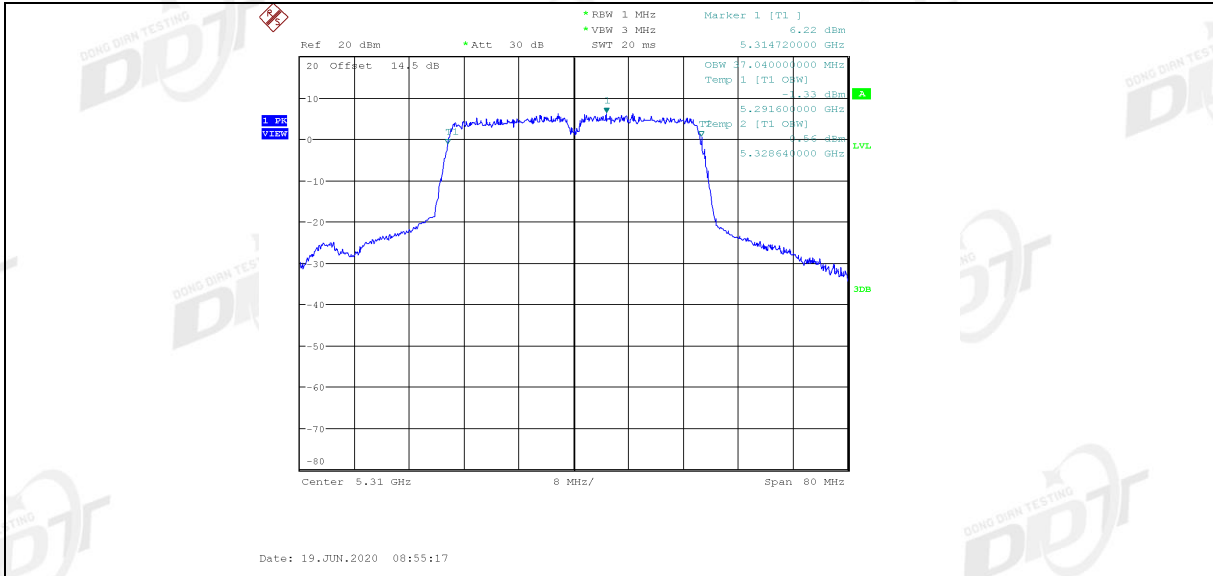
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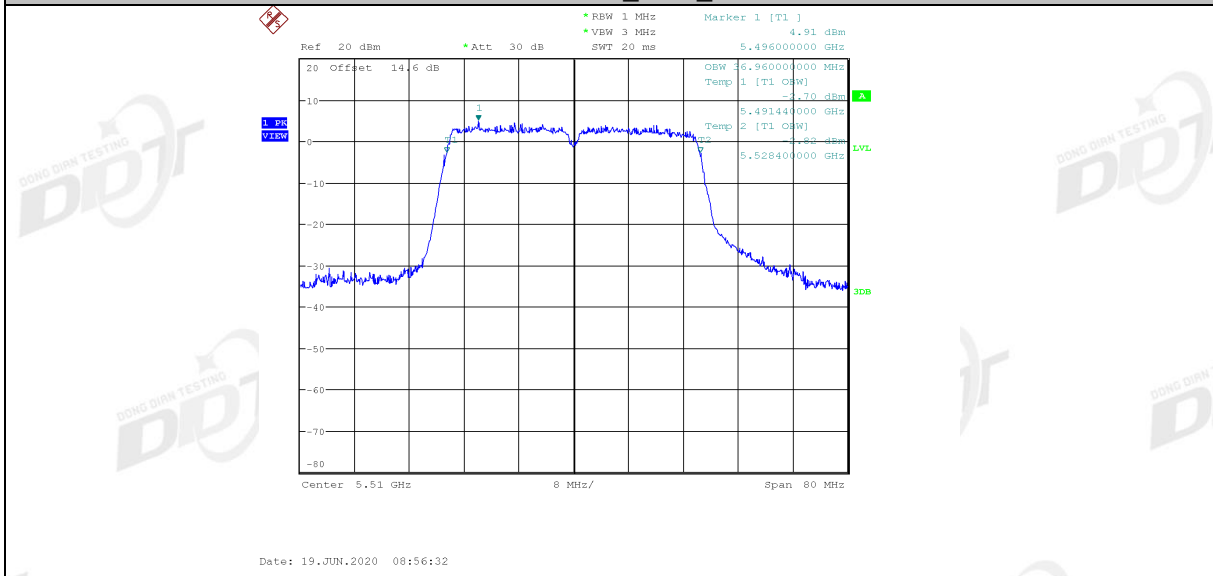
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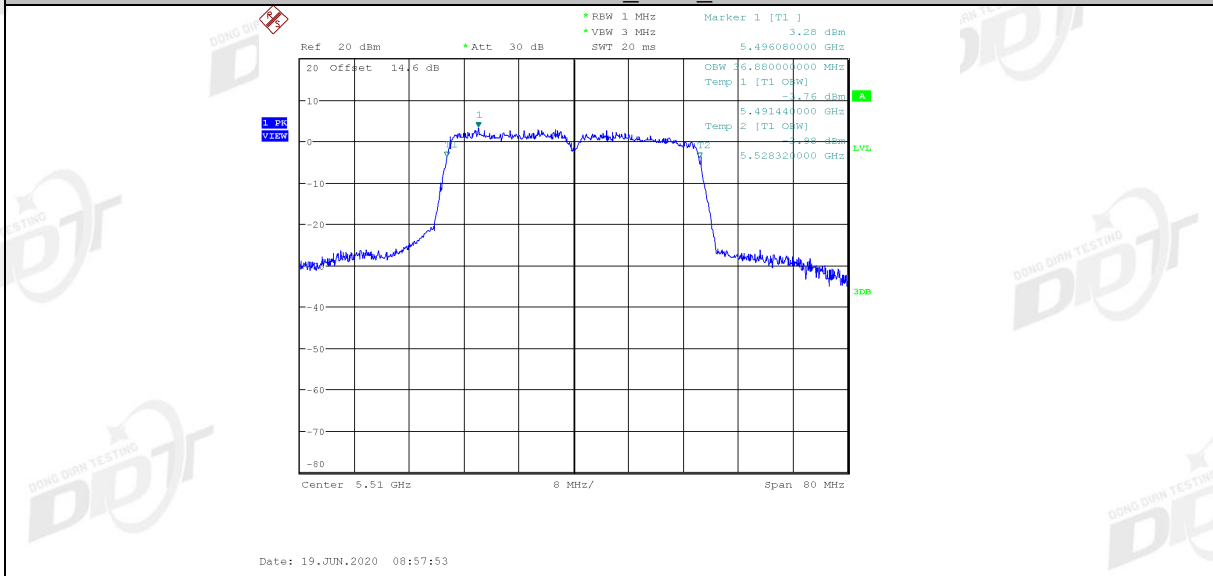
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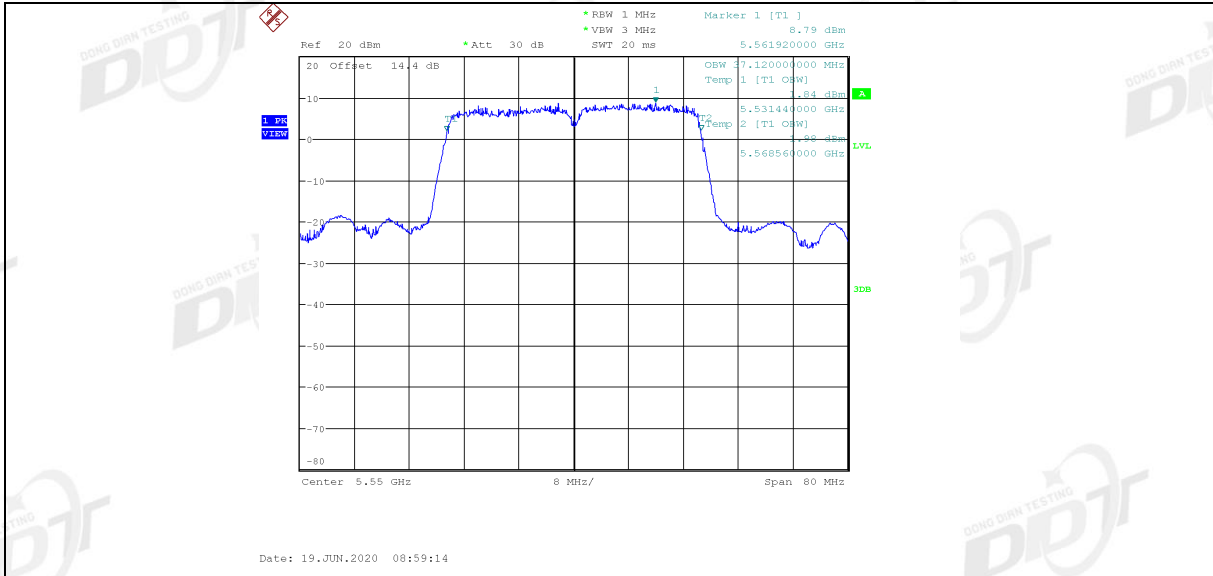
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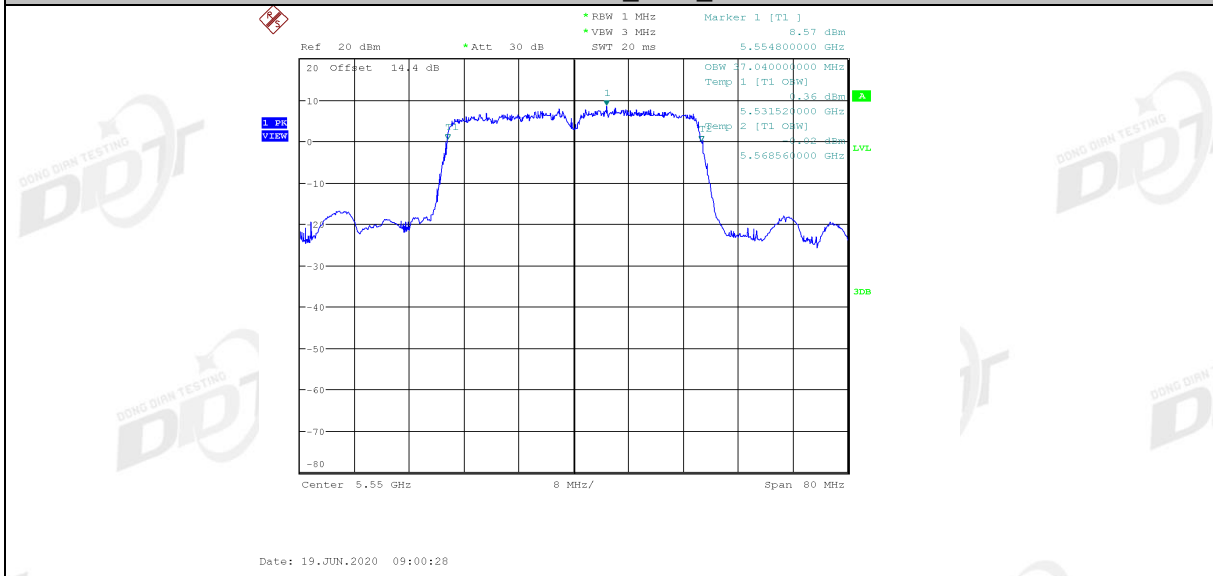
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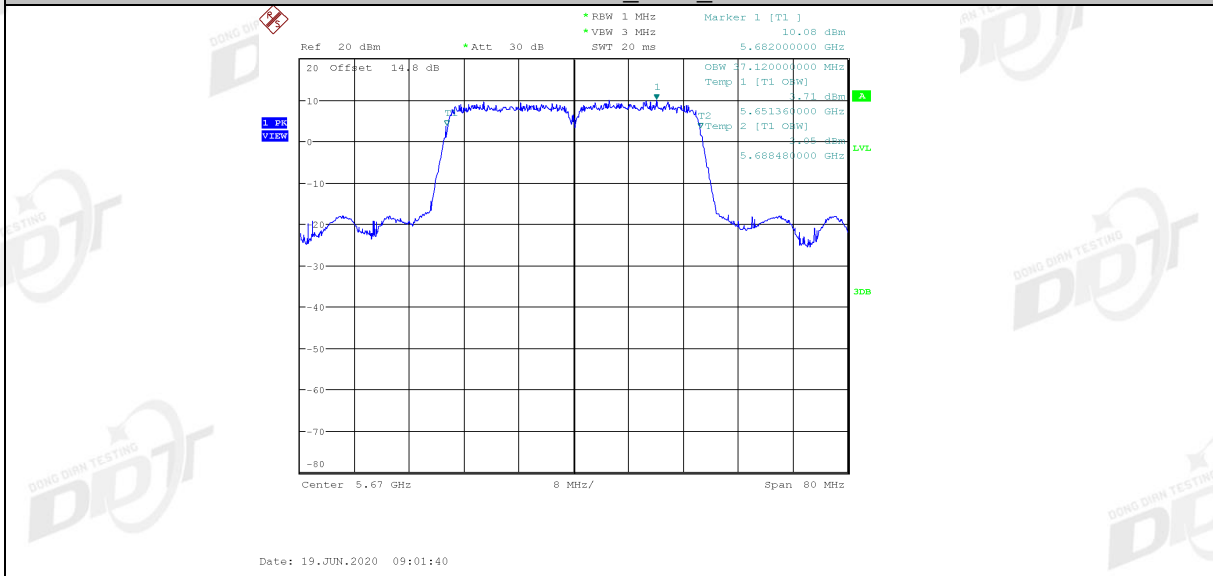
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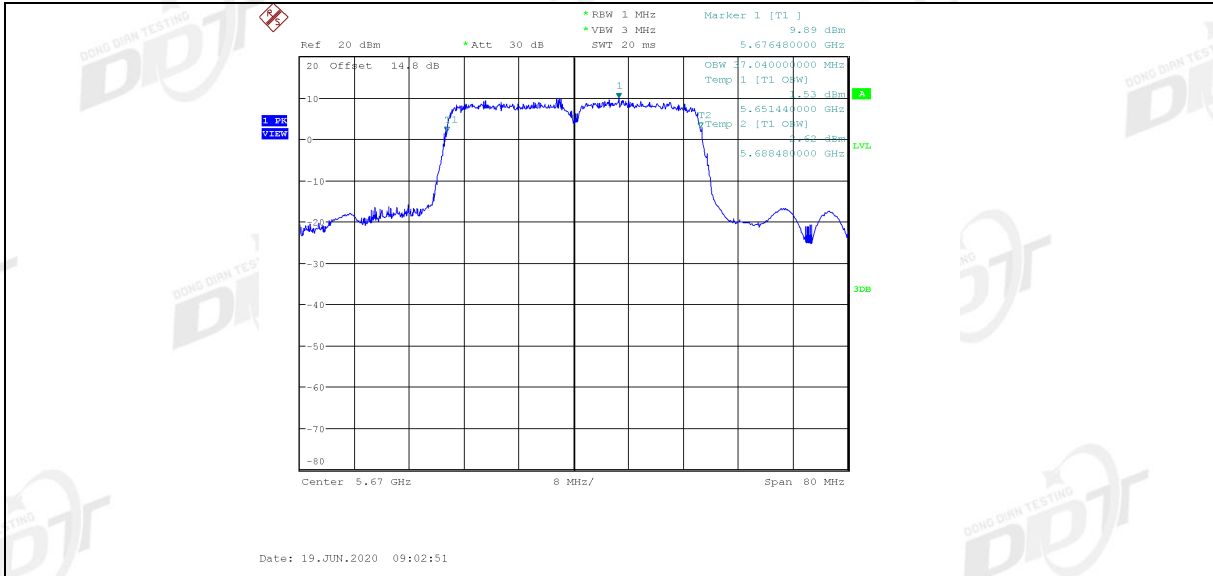
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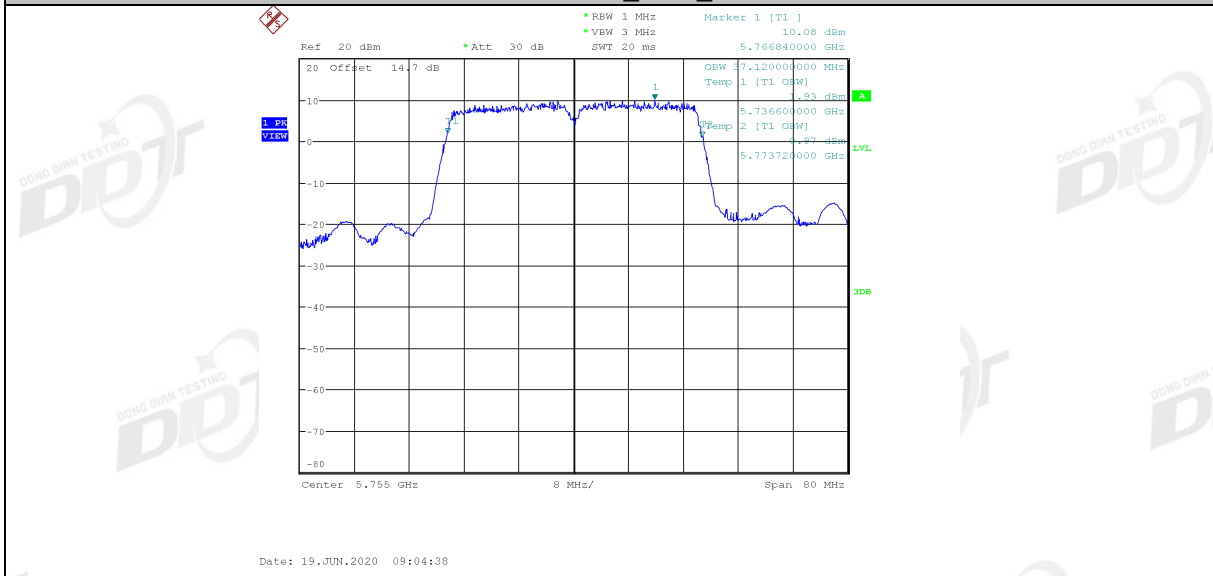
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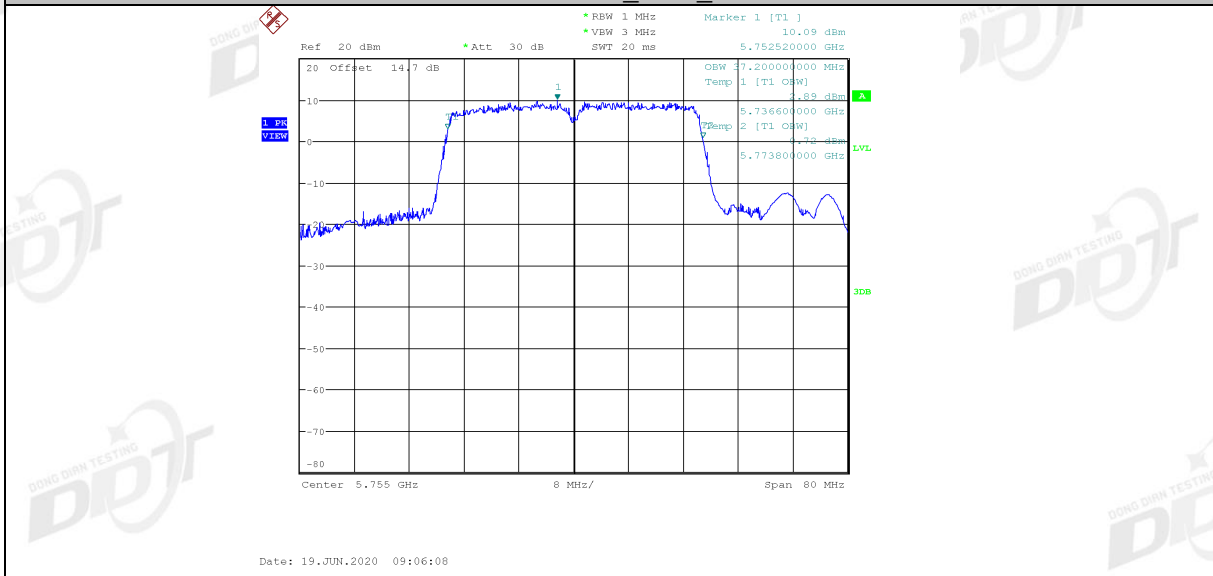
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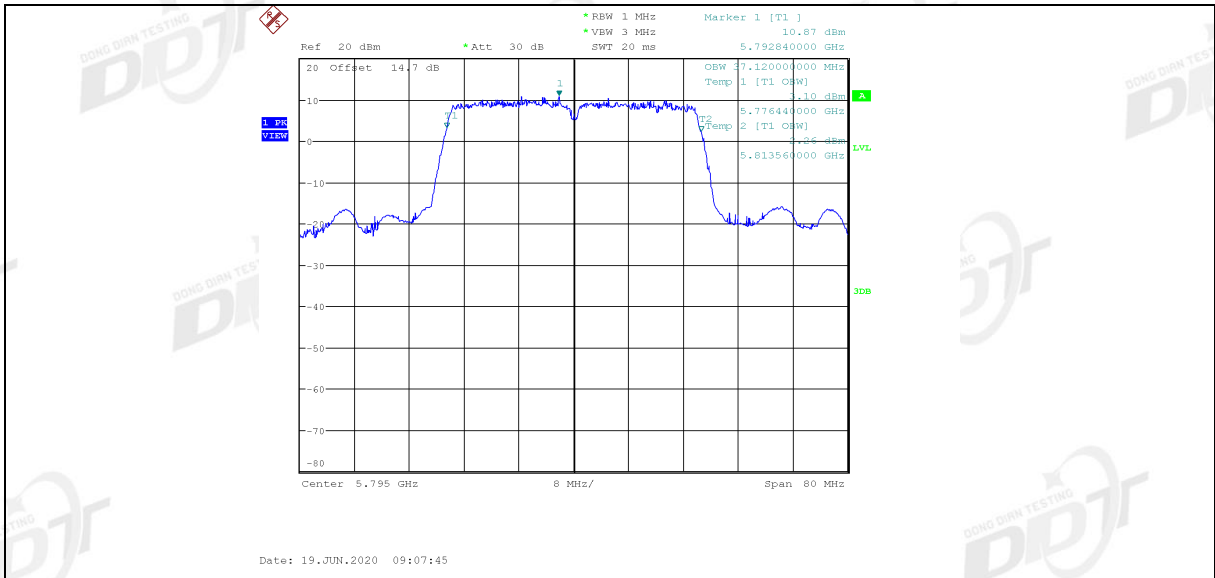
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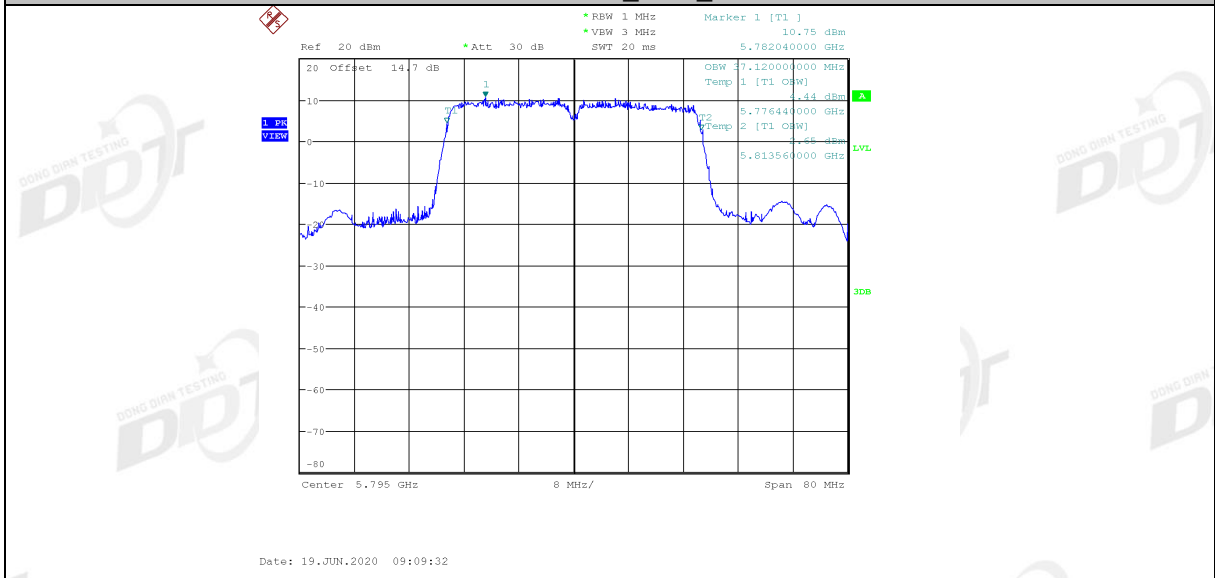
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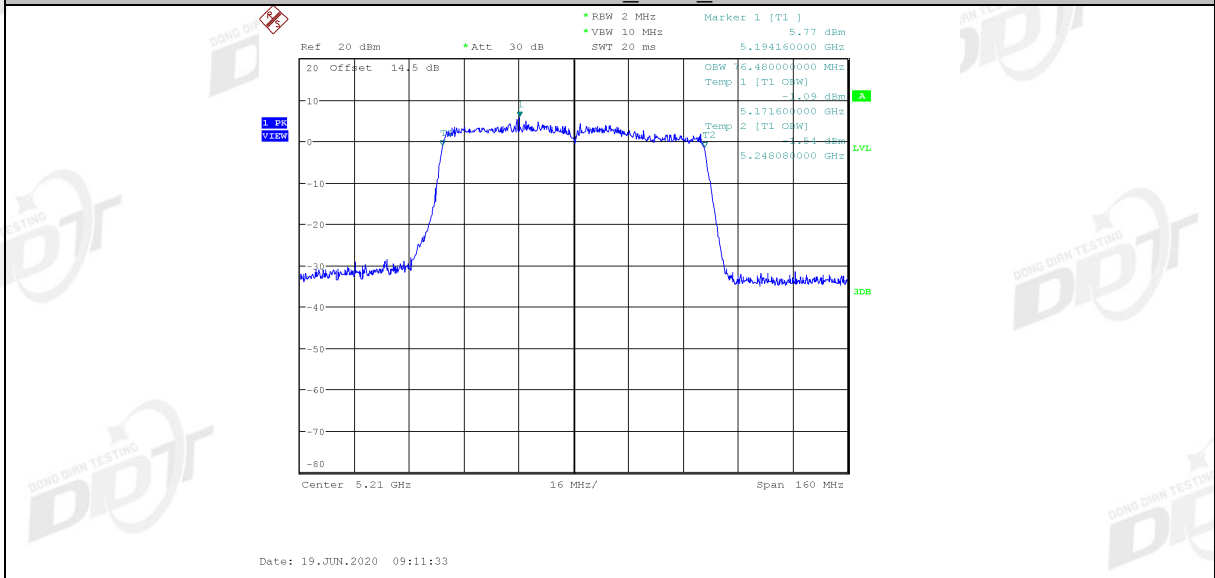
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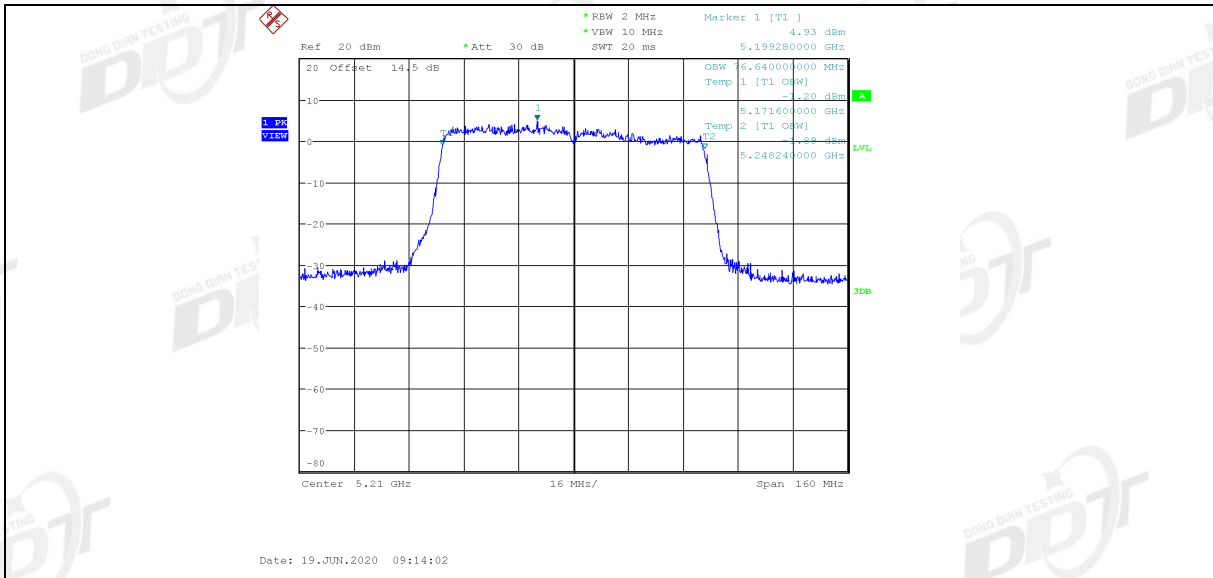
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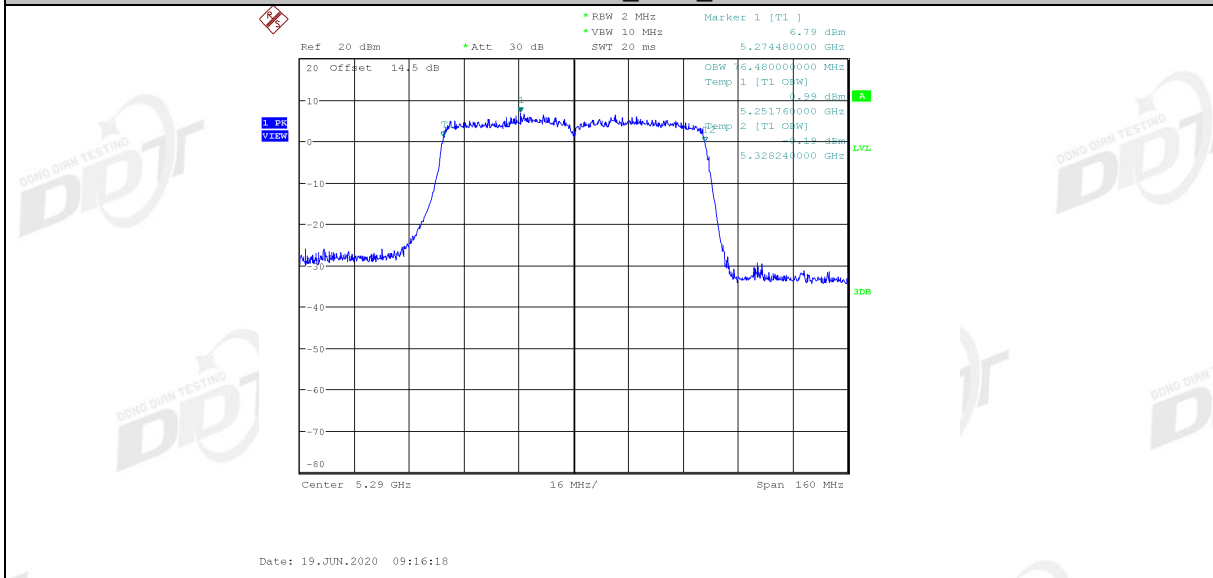
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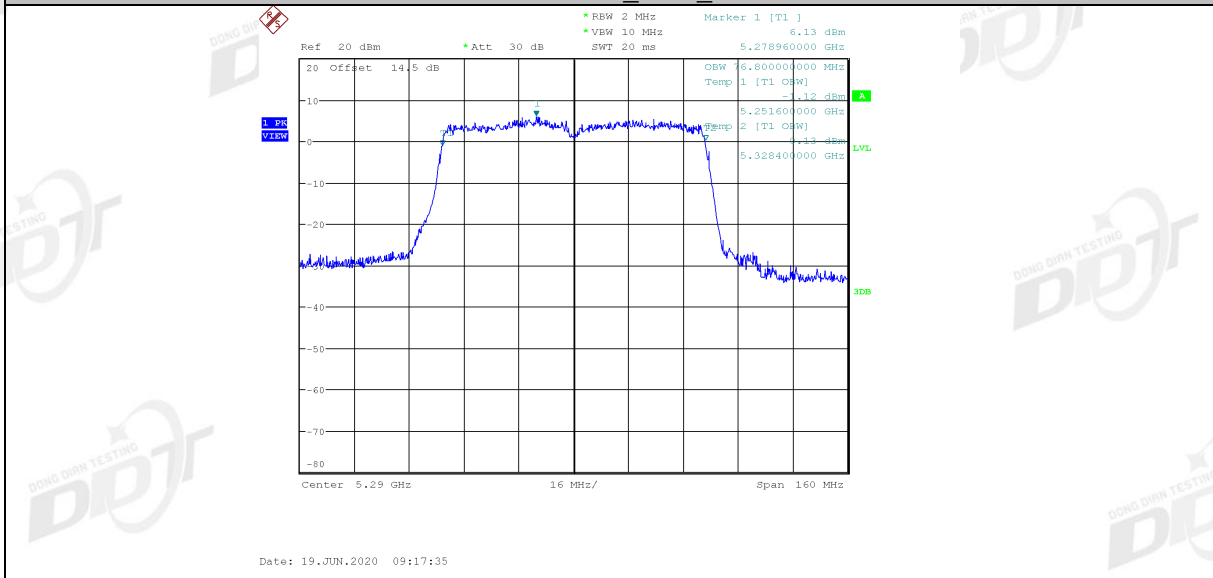
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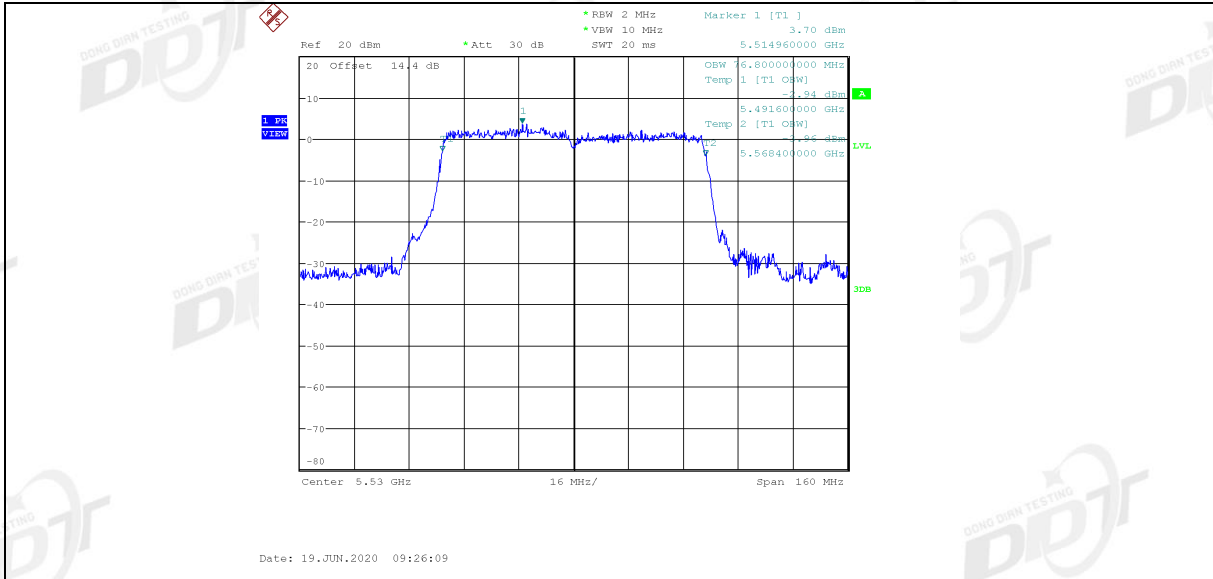
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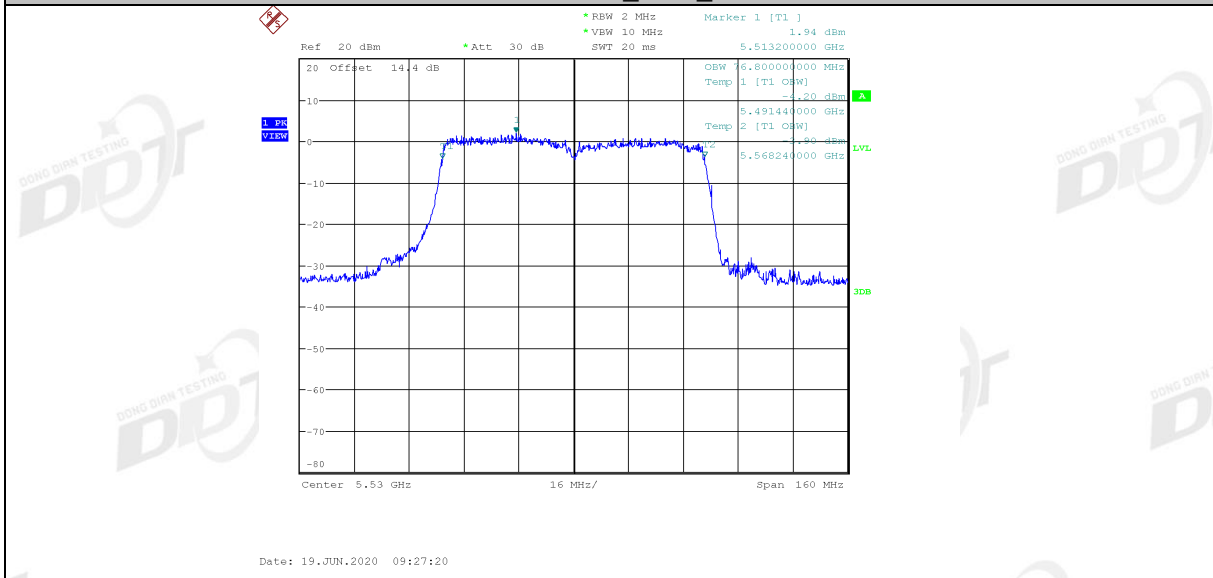
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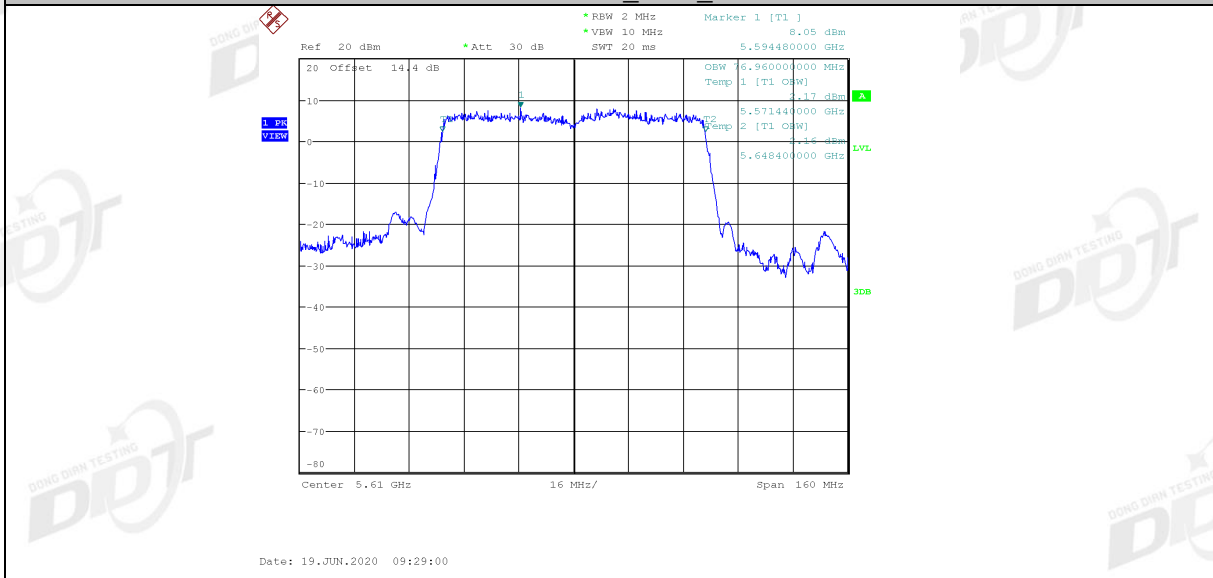
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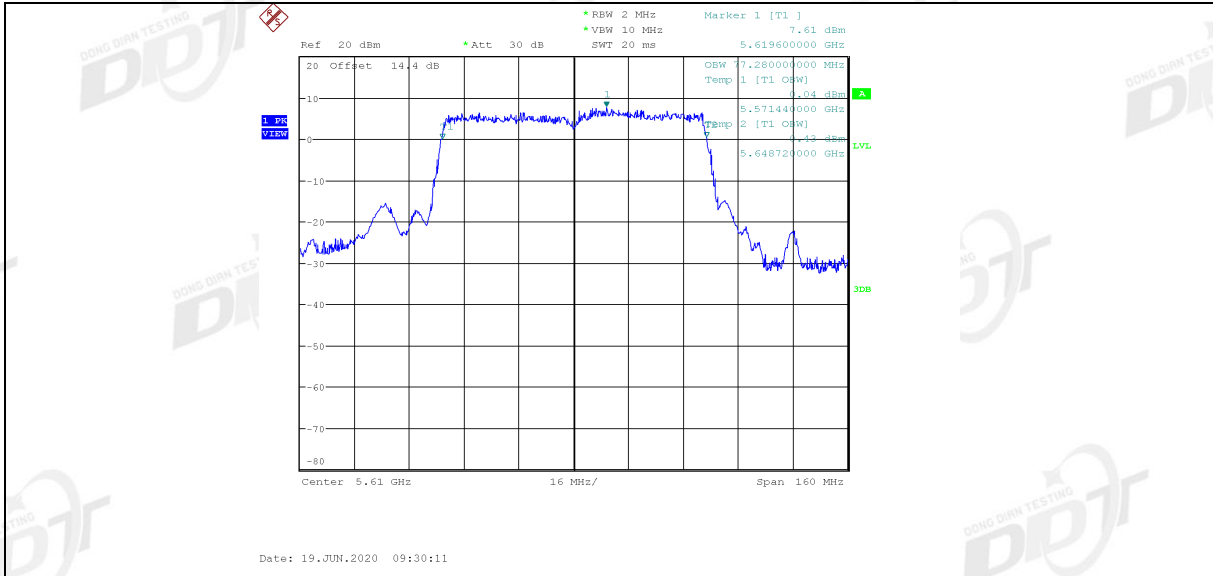
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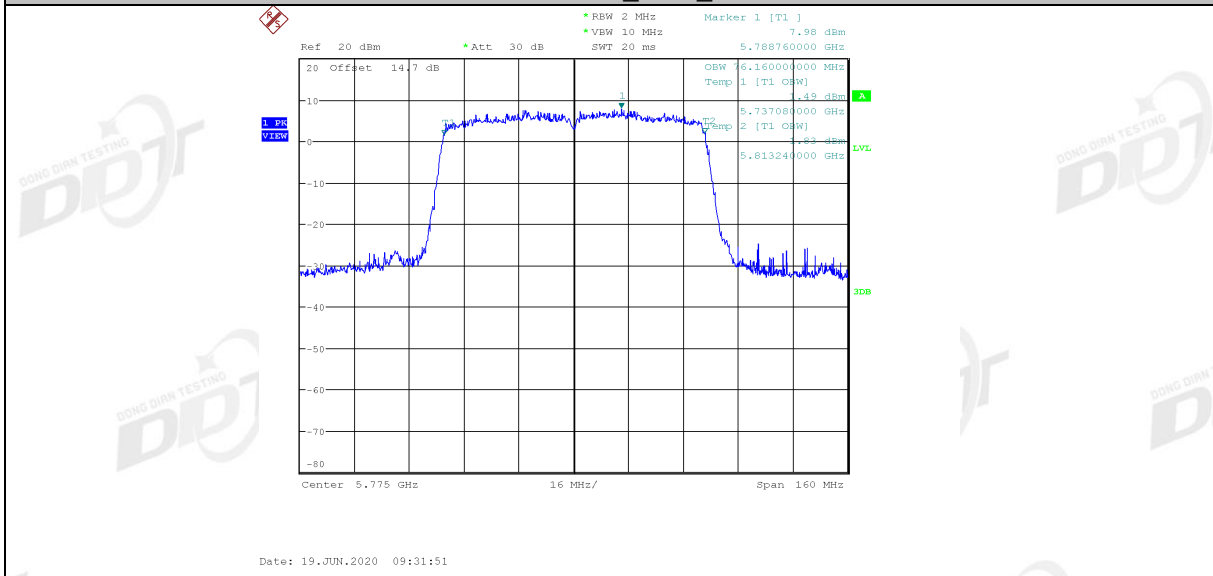
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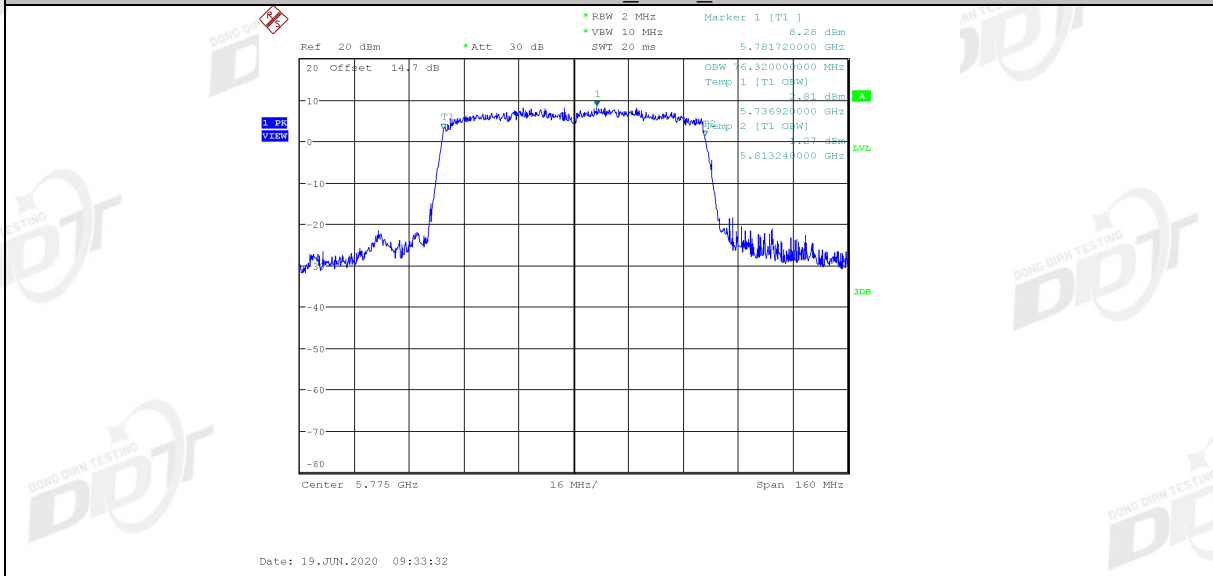
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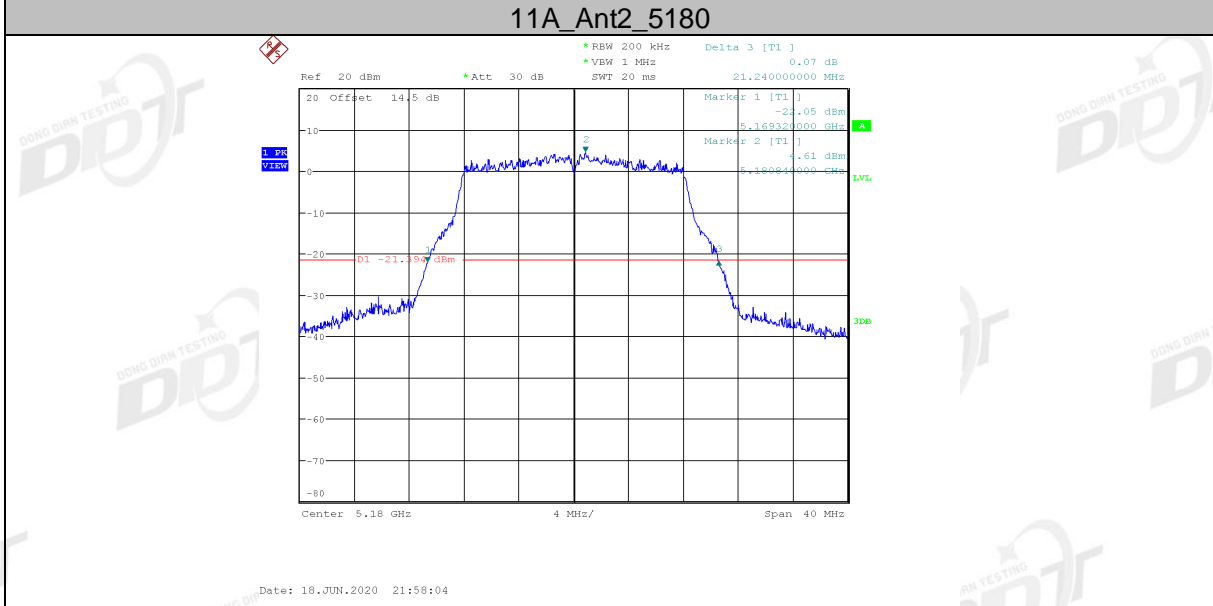
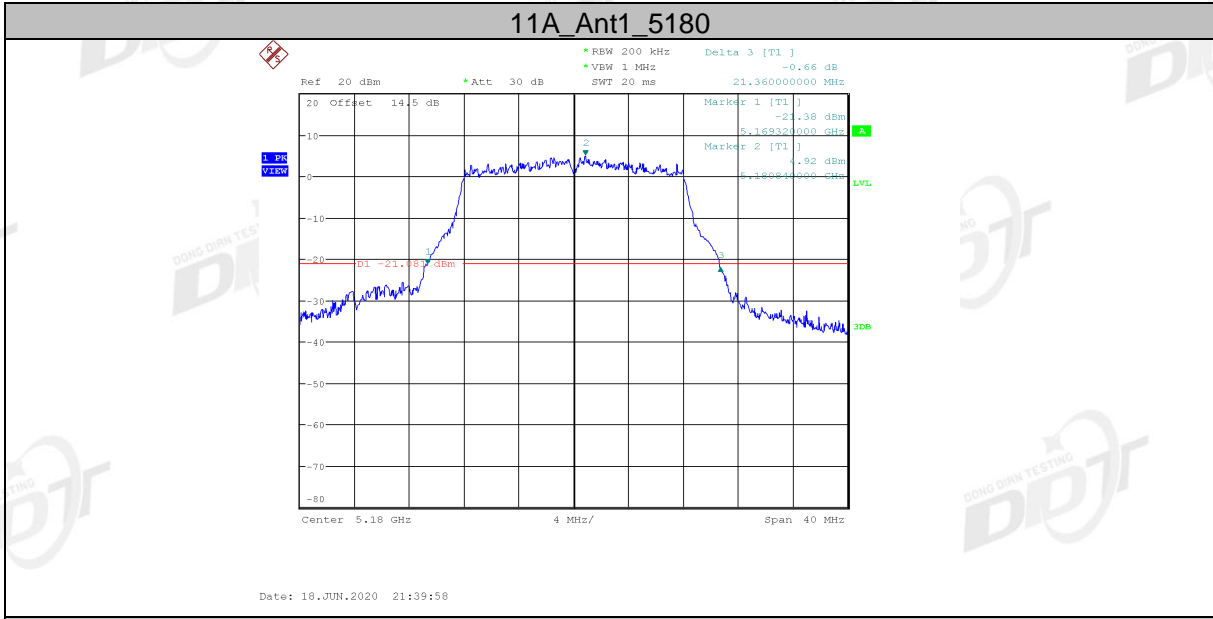
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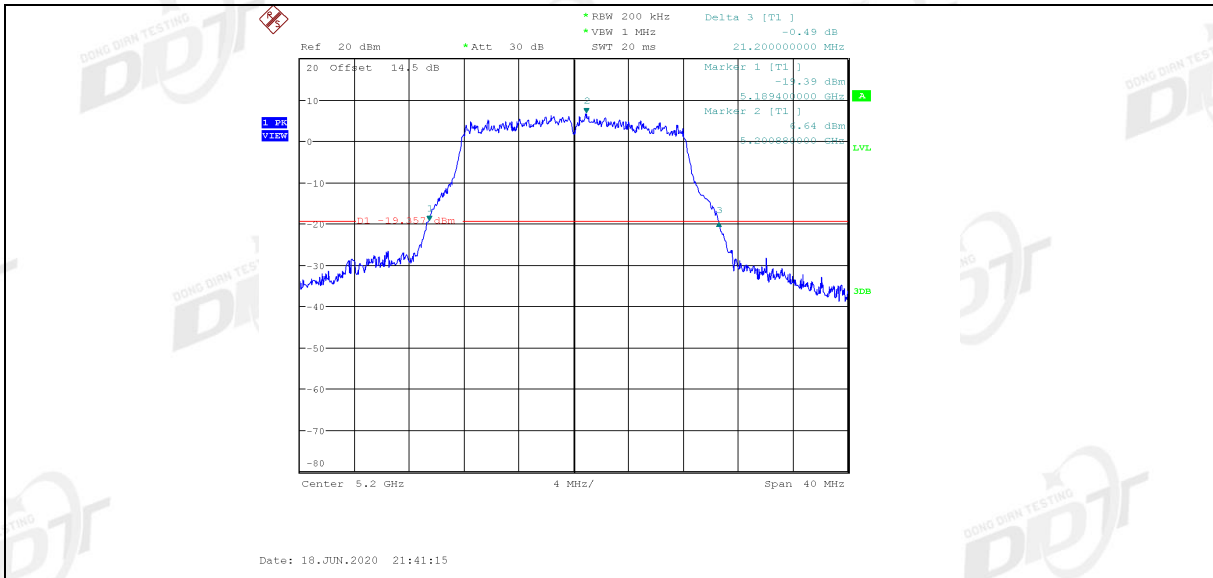
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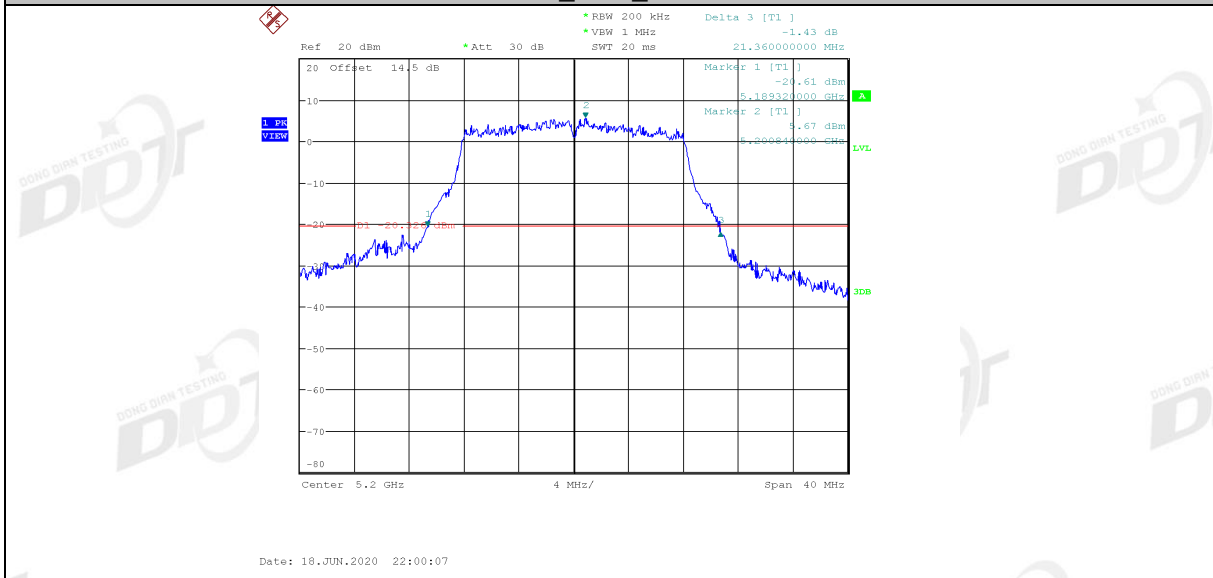
26 dB EBW:



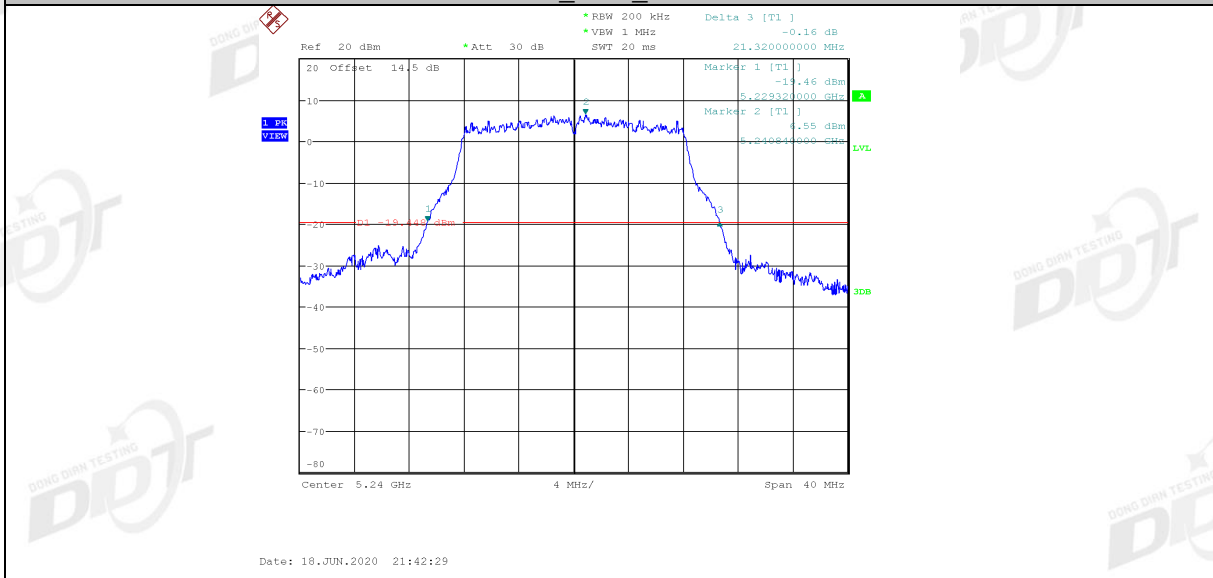
11A_Ant1_5200



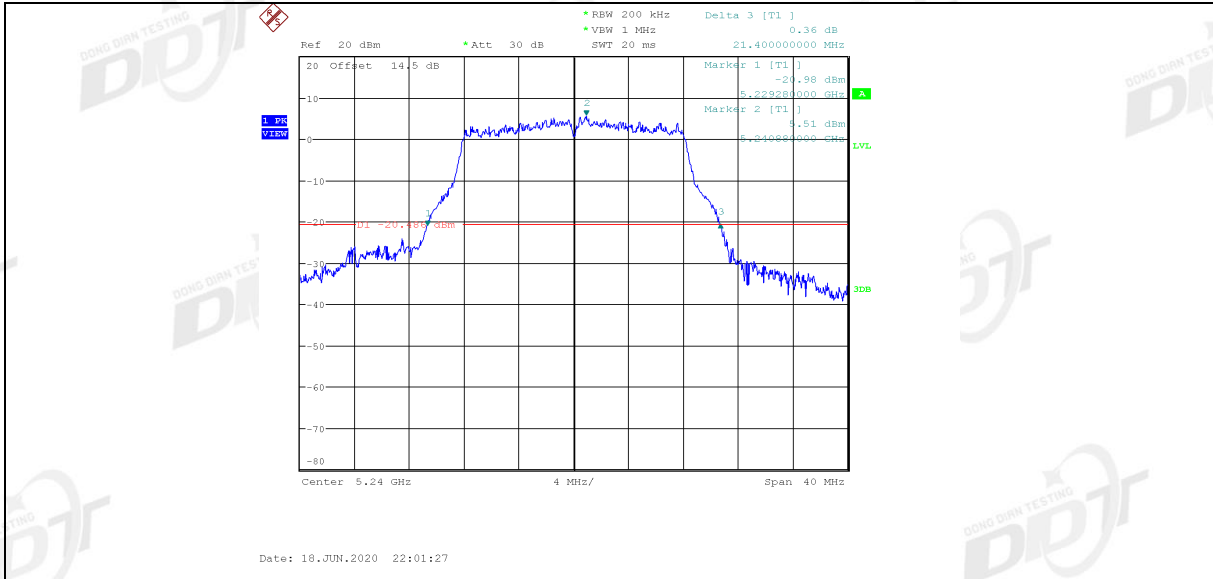
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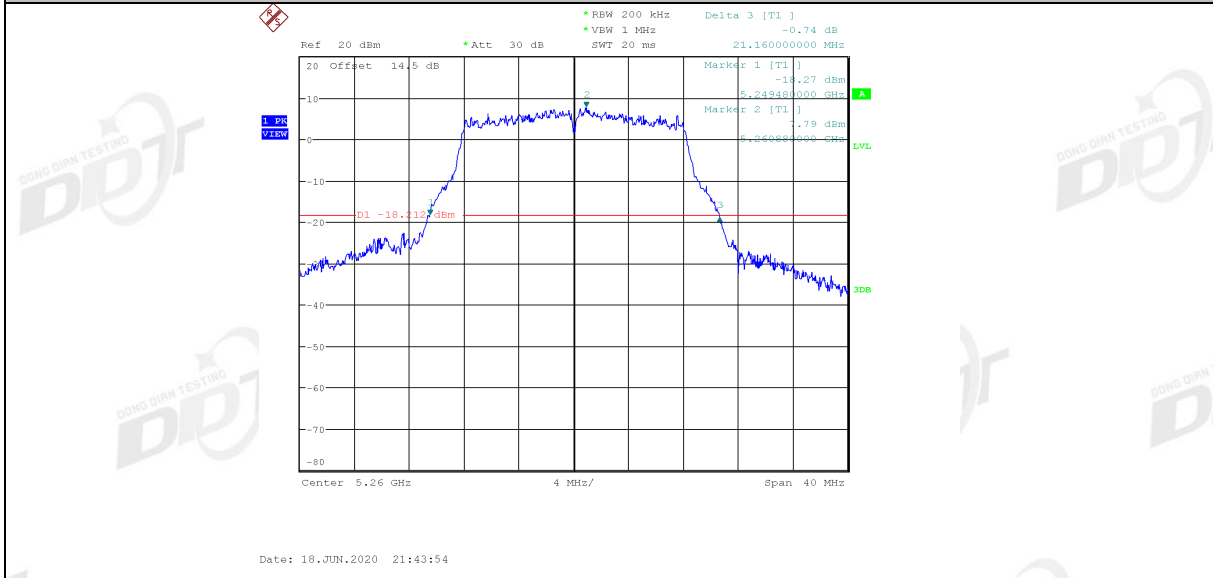
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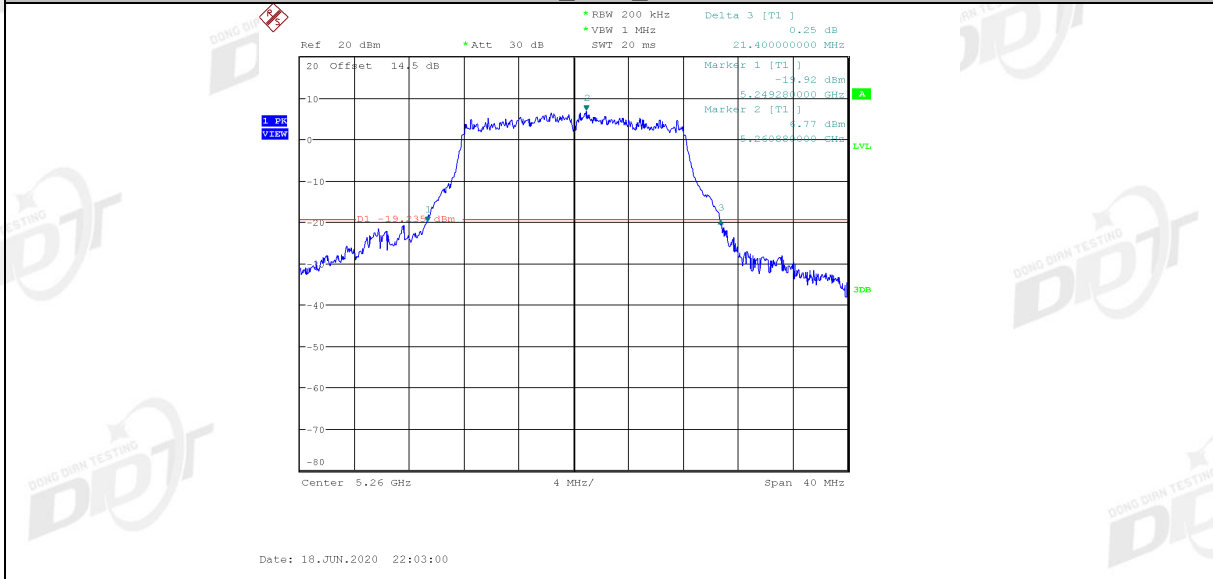
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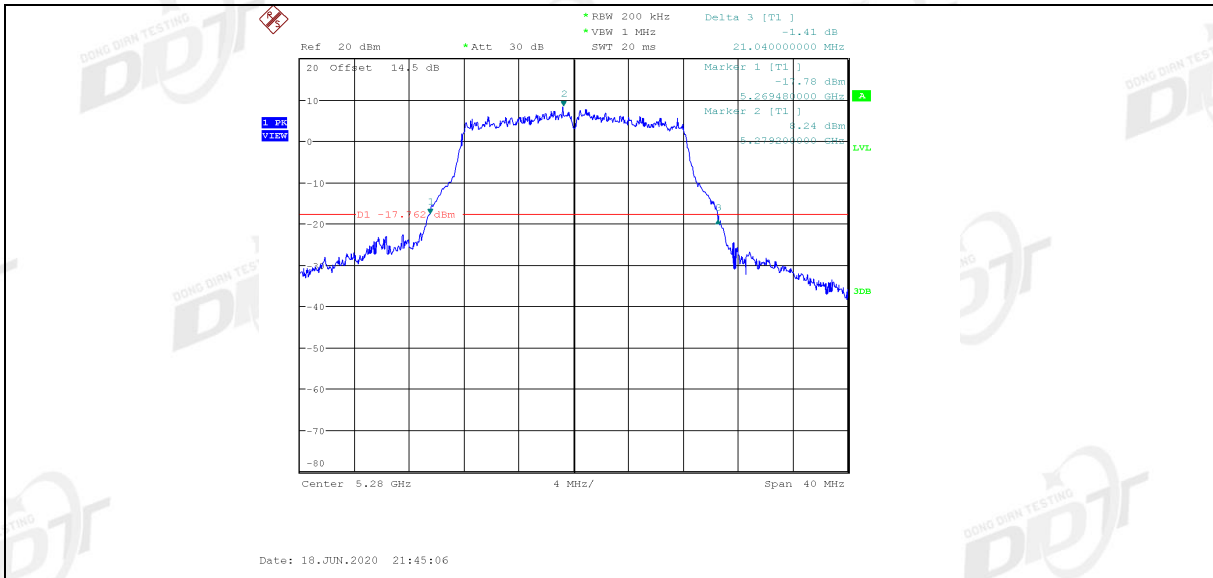
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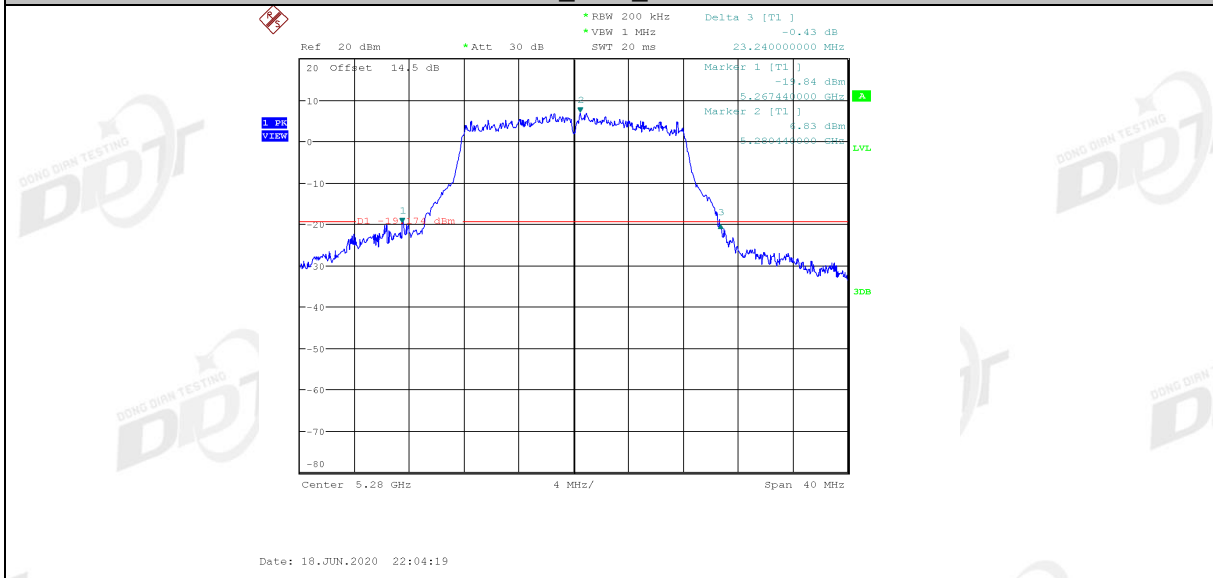
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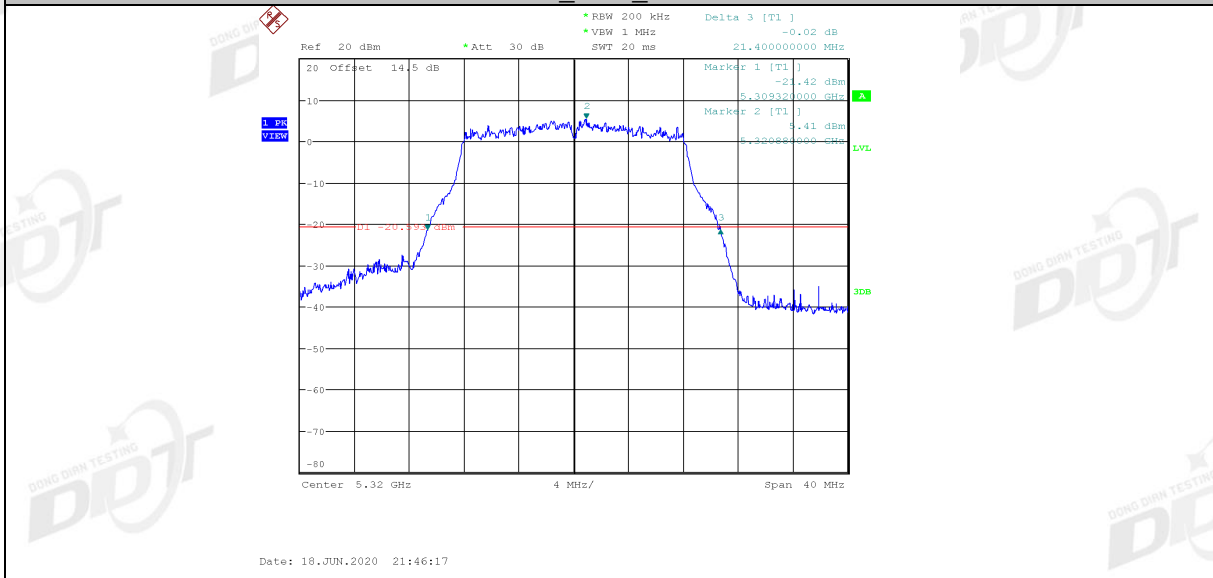
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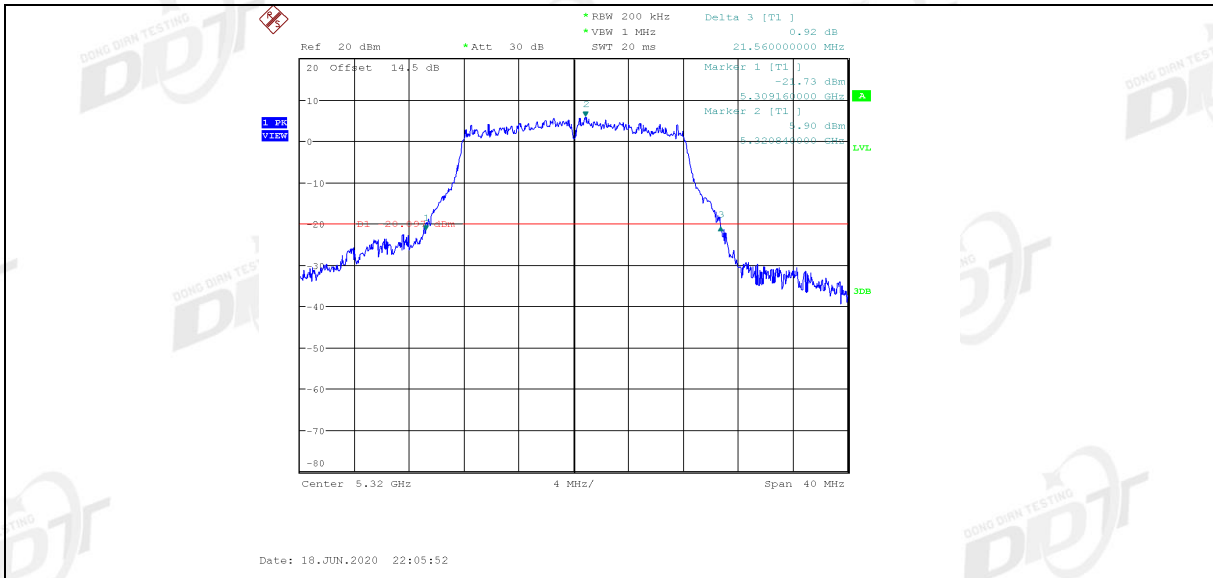
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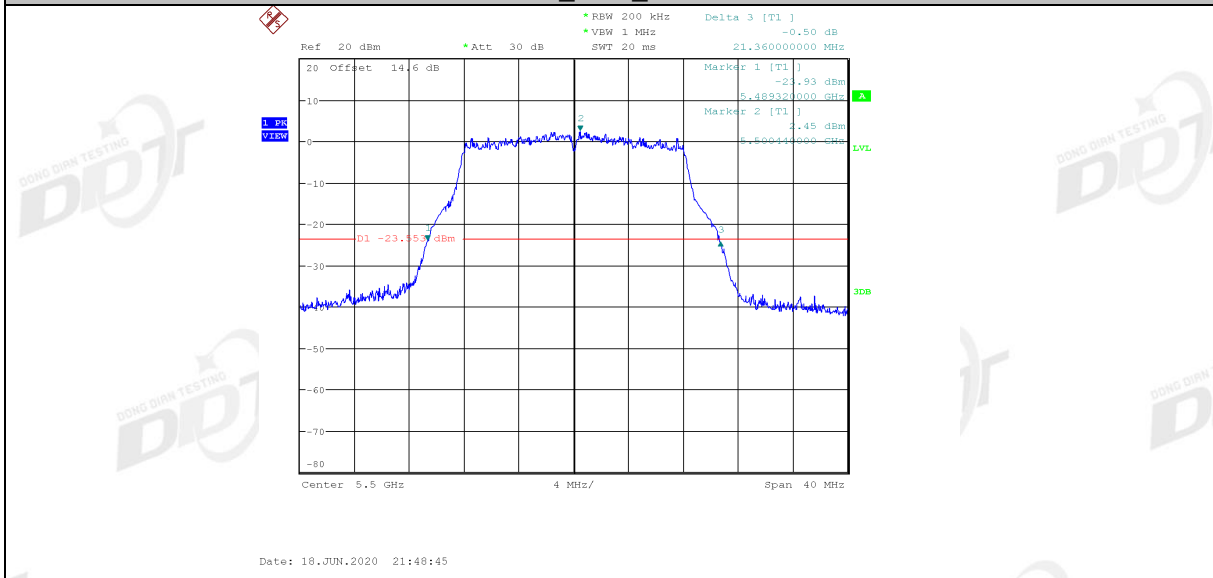
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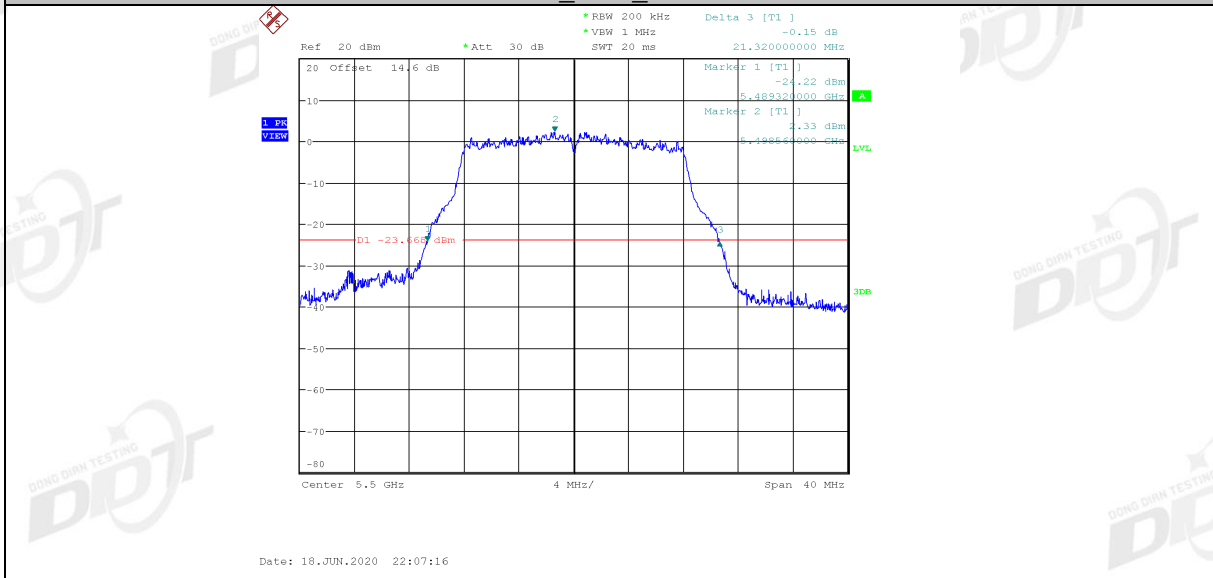
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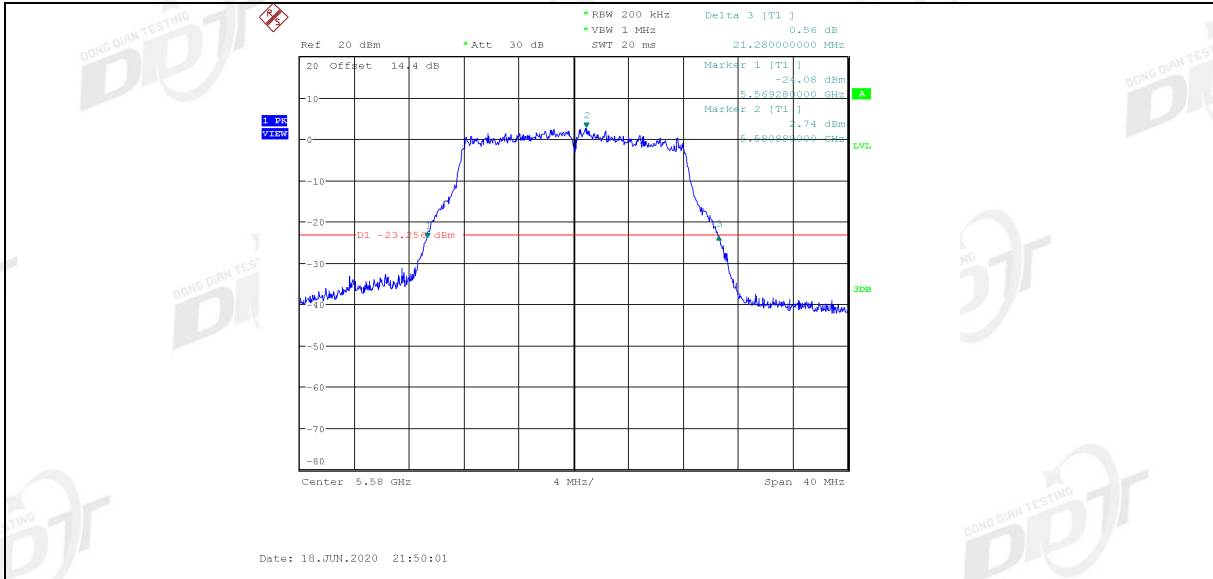
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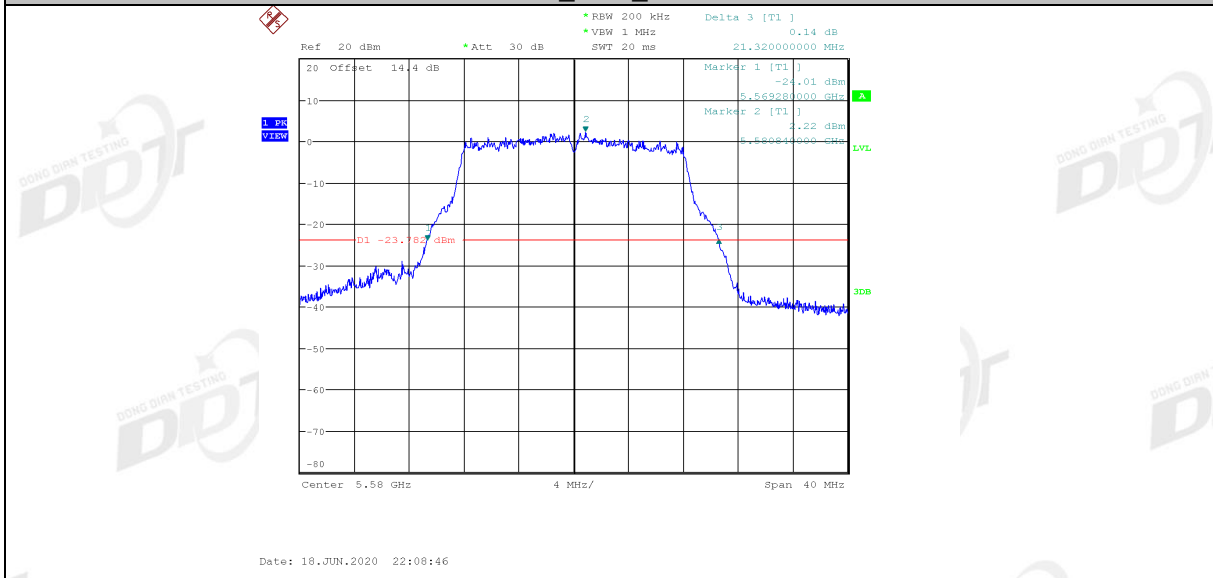
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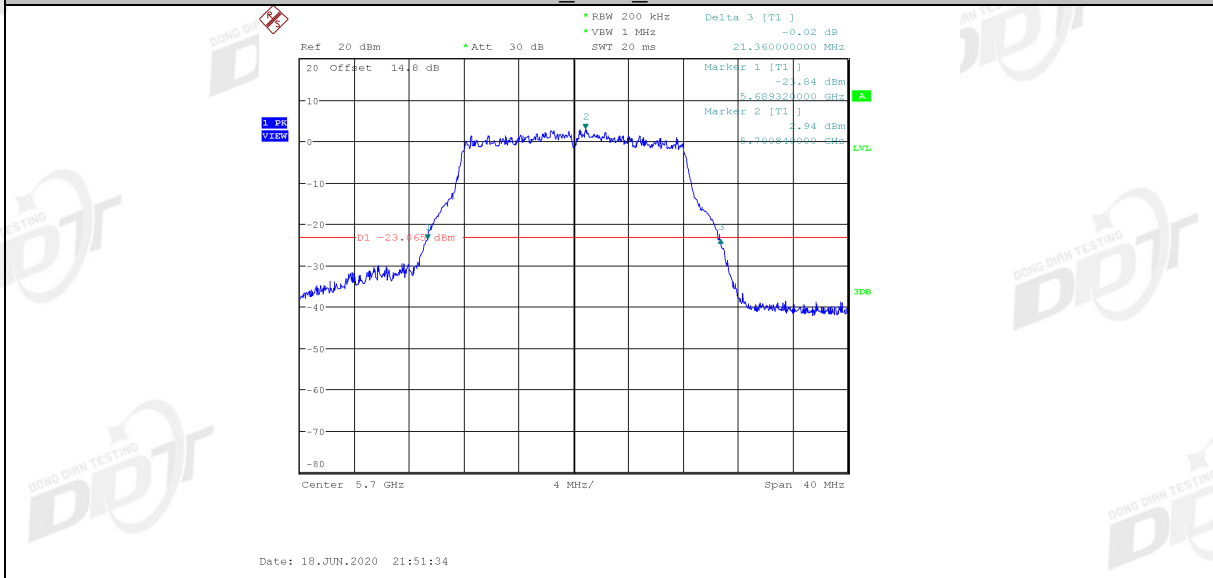
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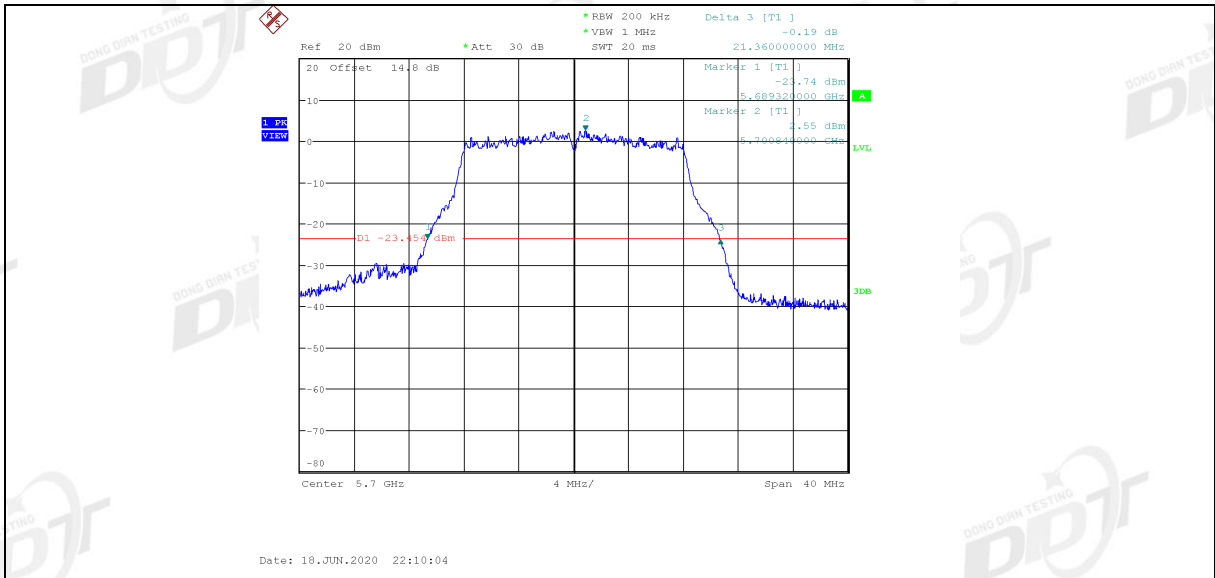
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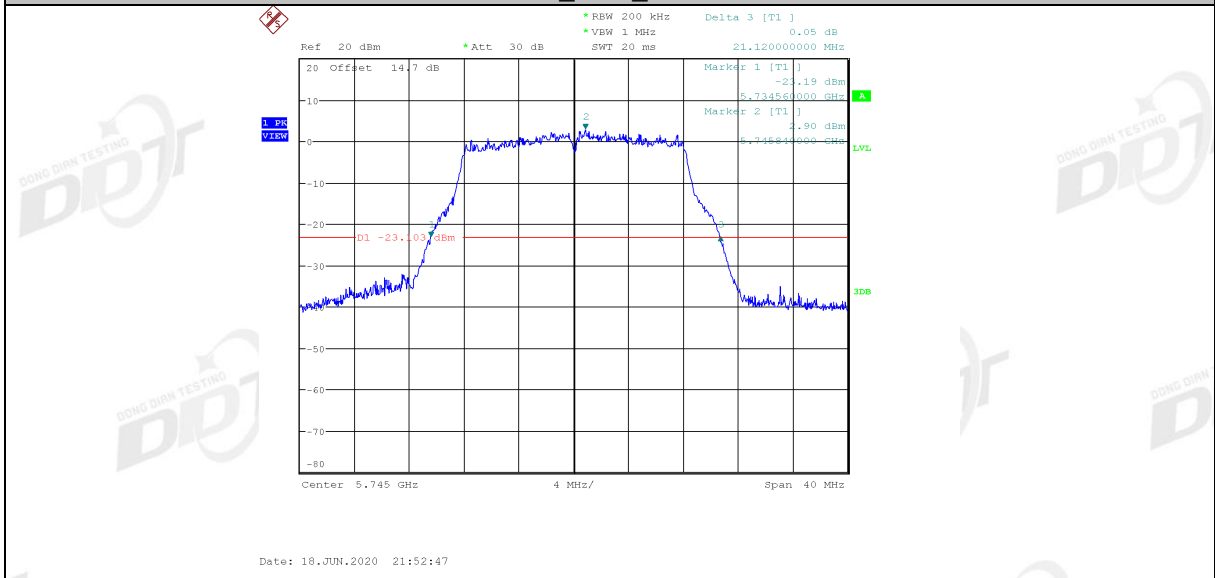
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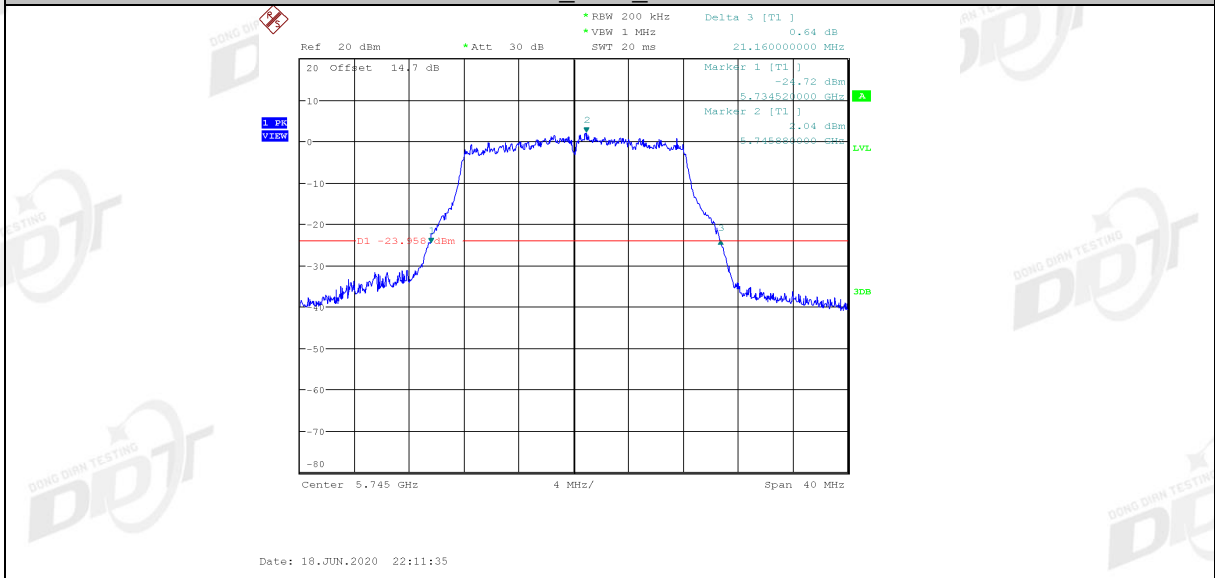
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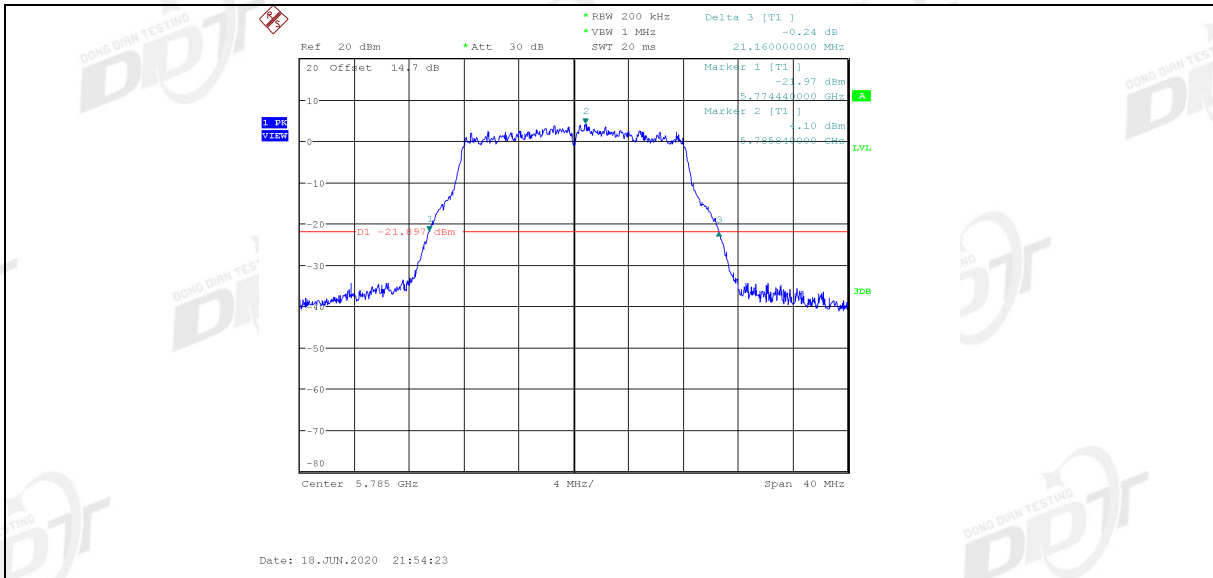
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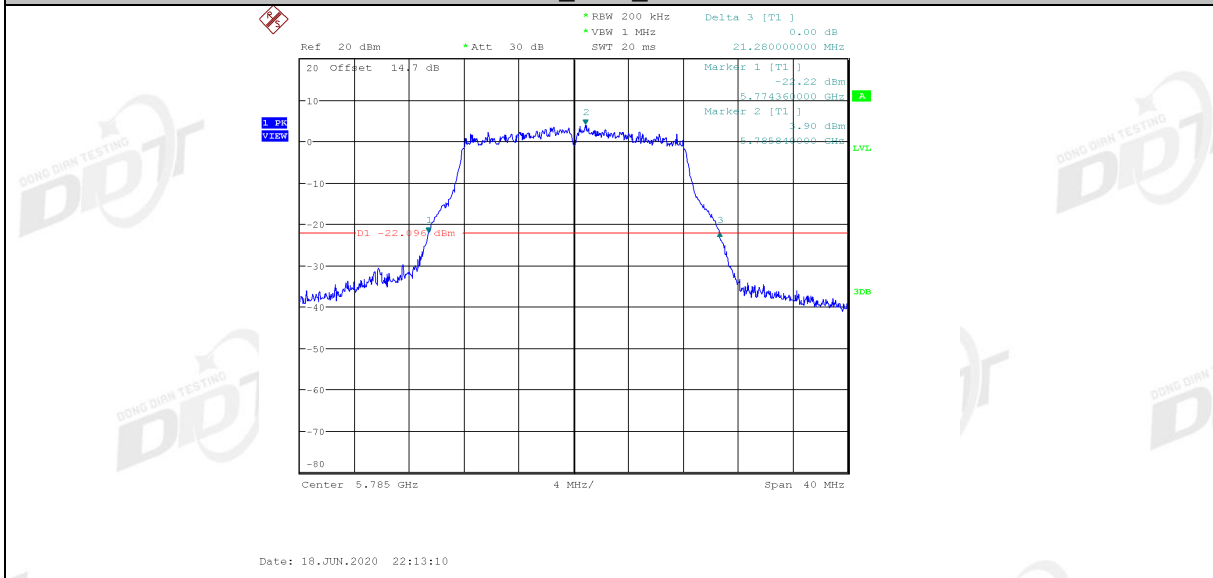
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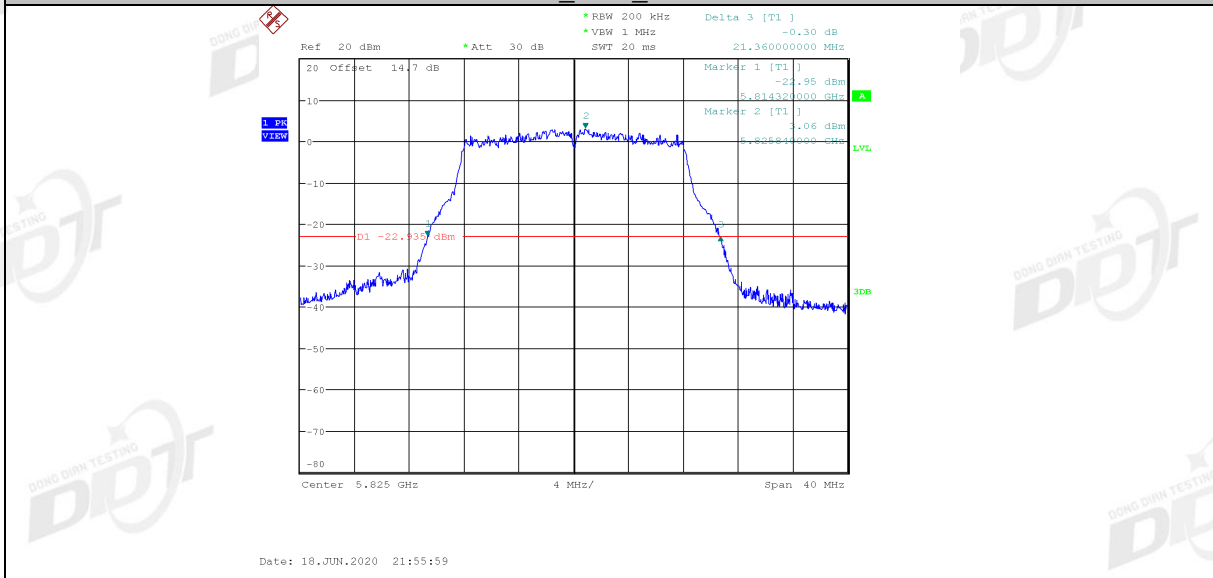
11A_Ant1_5785



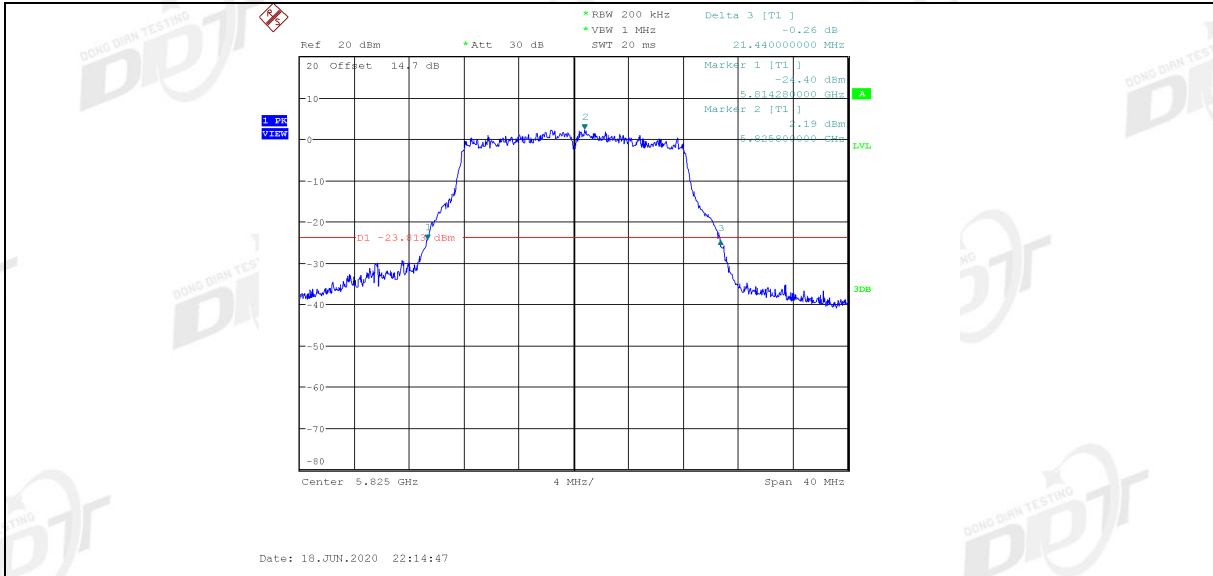
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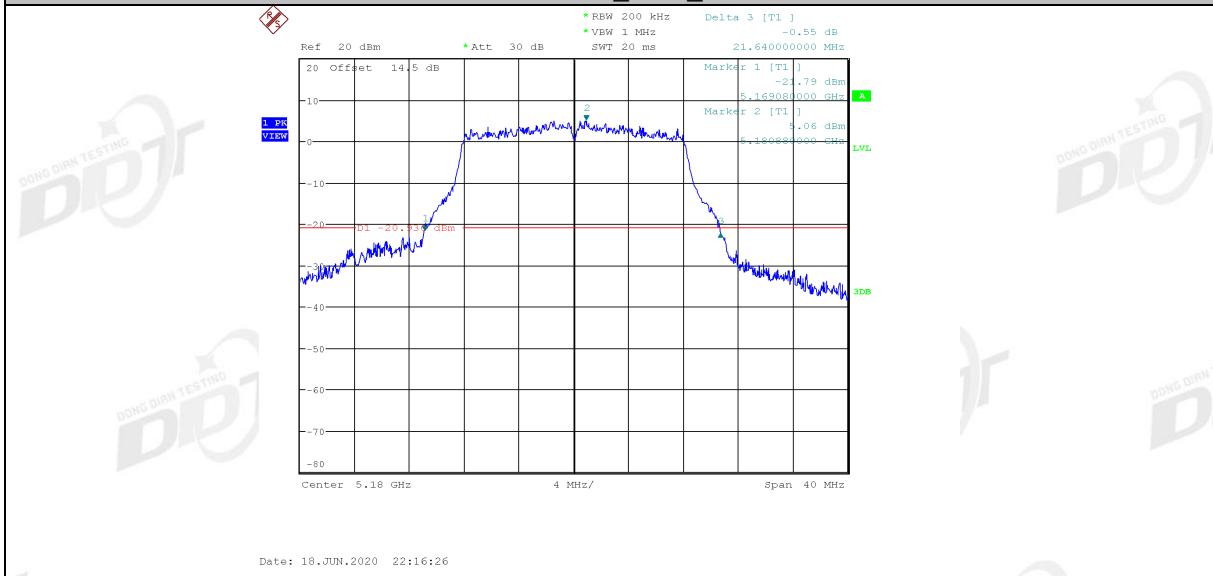
11A_Ant1_5825



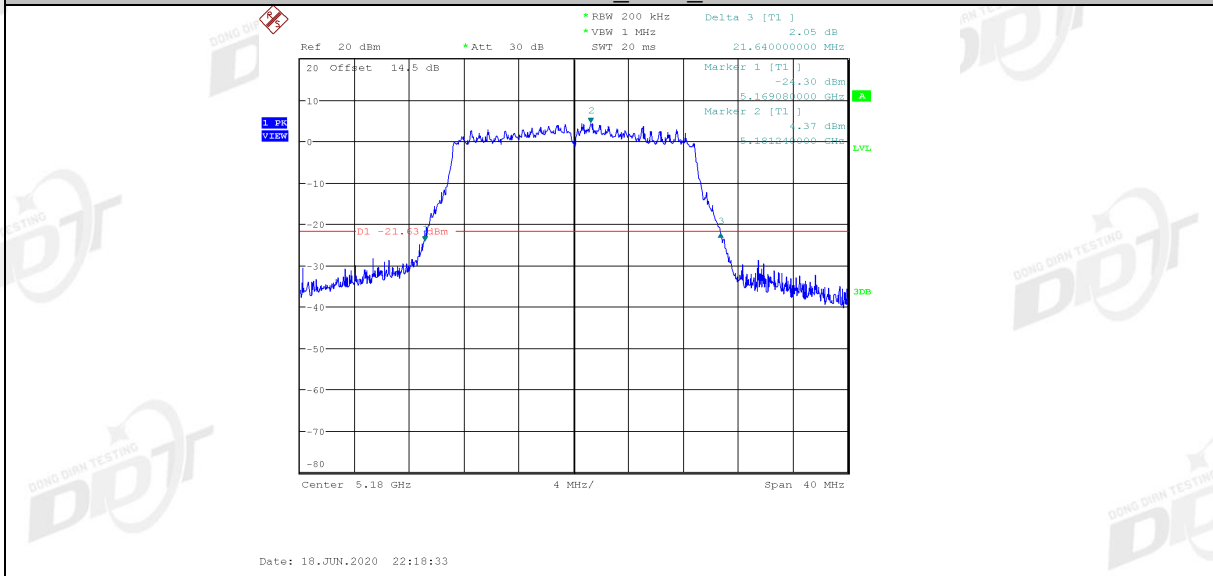
11A_Ant2_5825



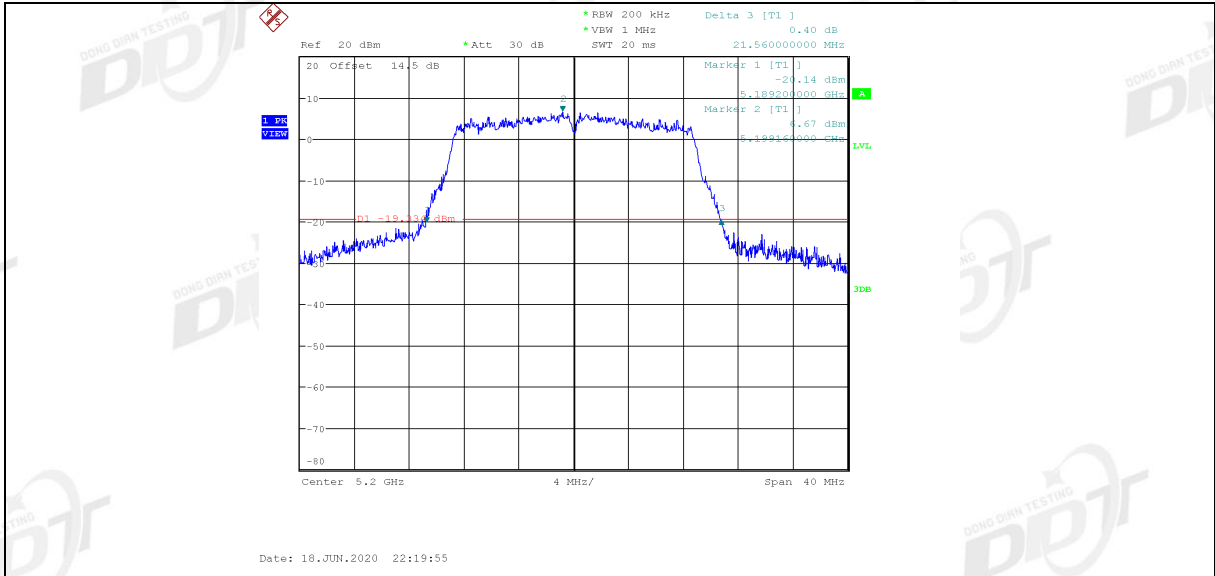
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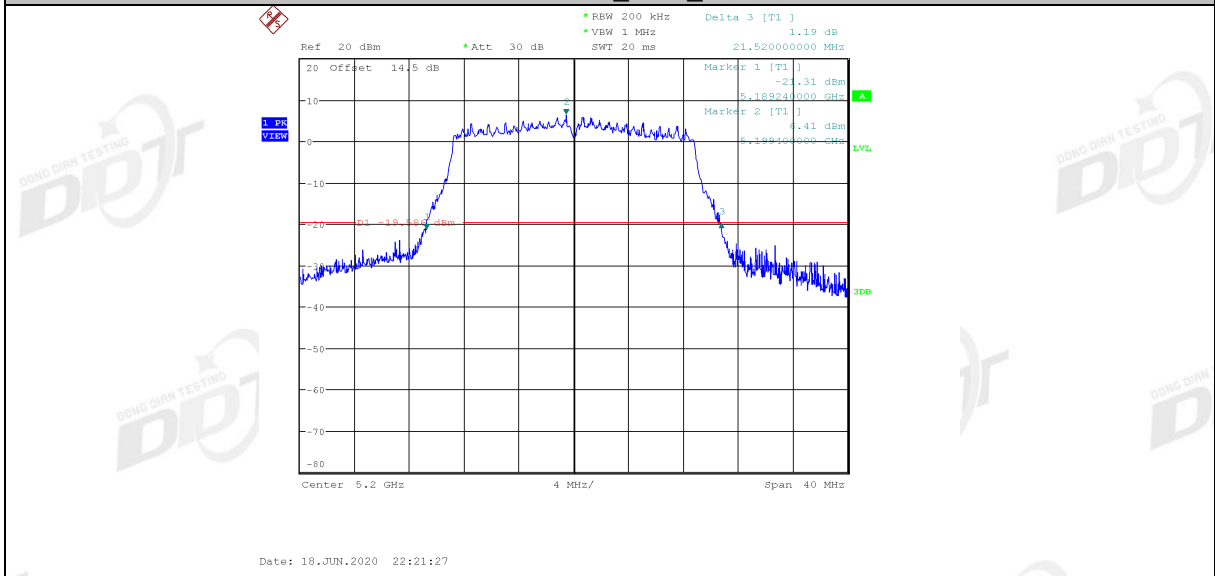
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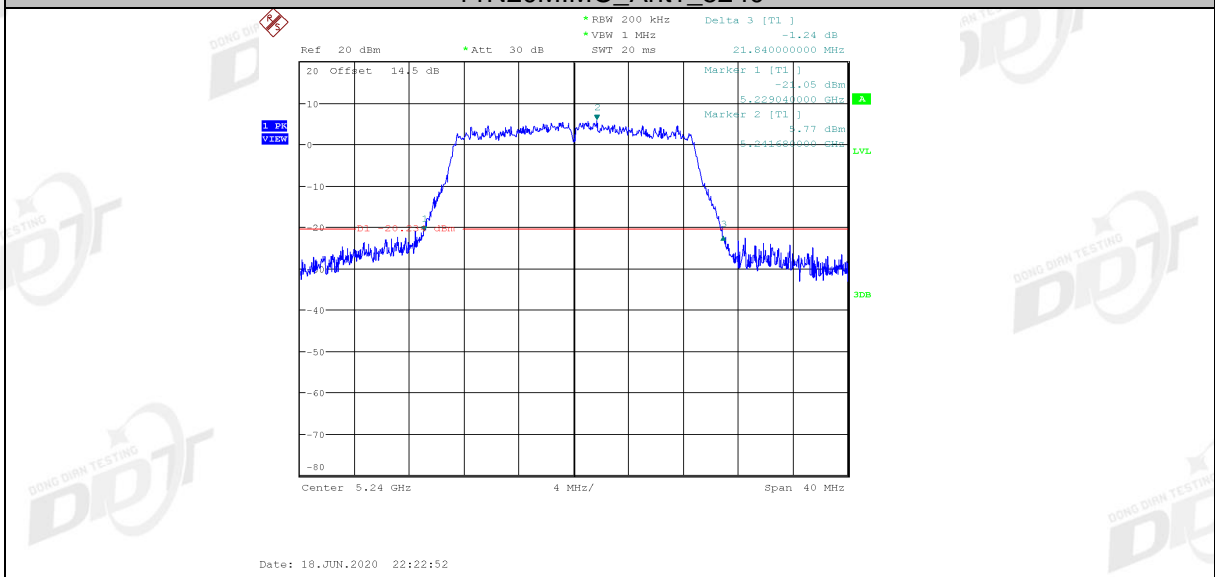
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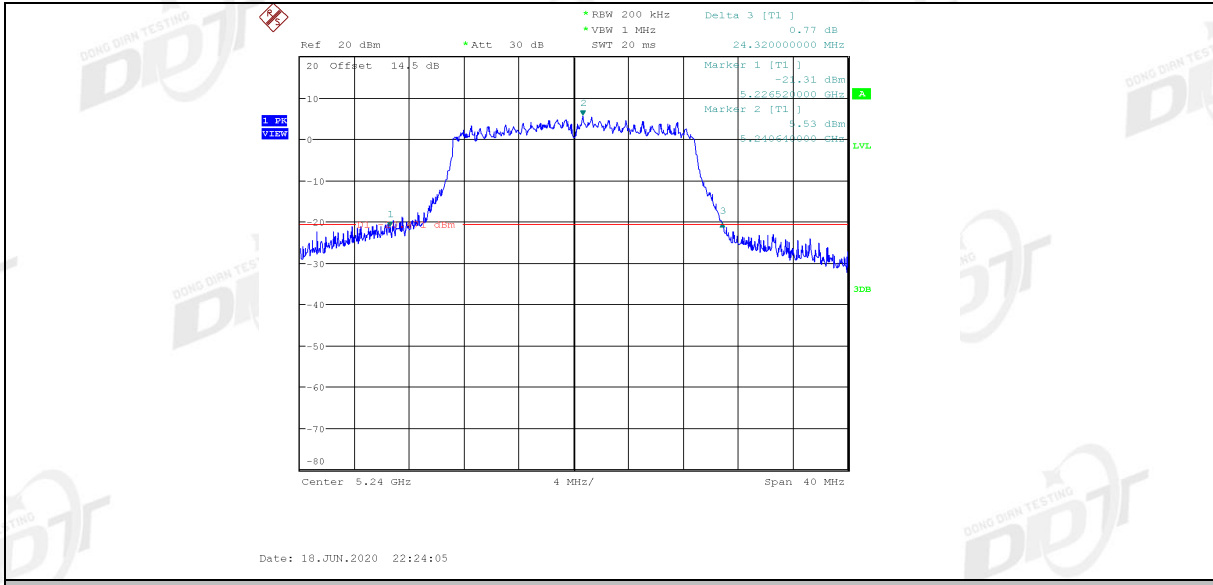
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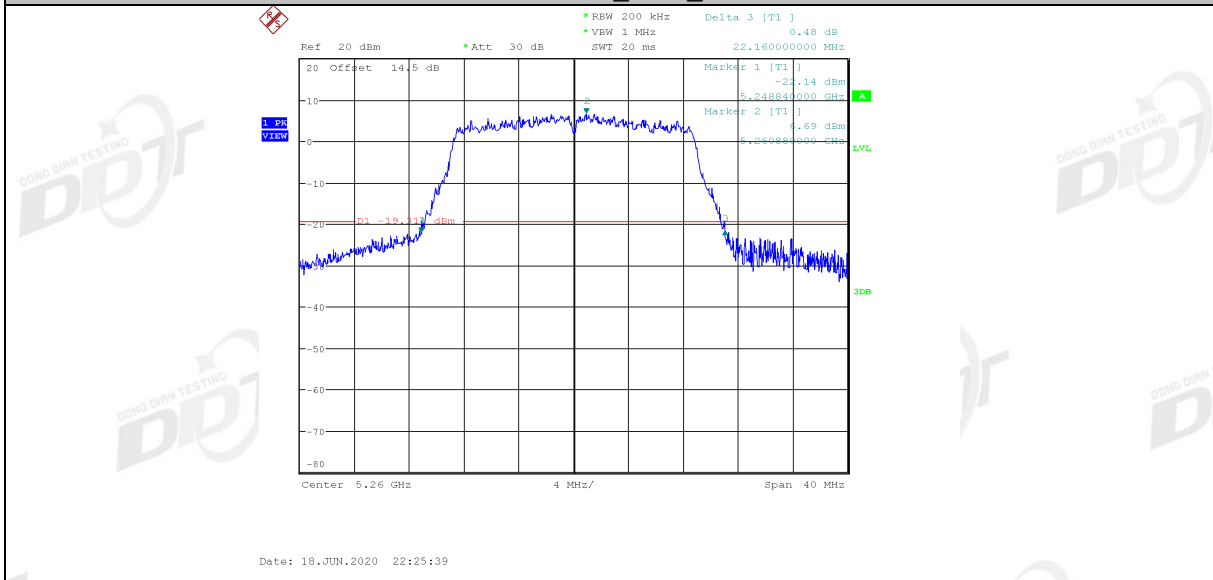
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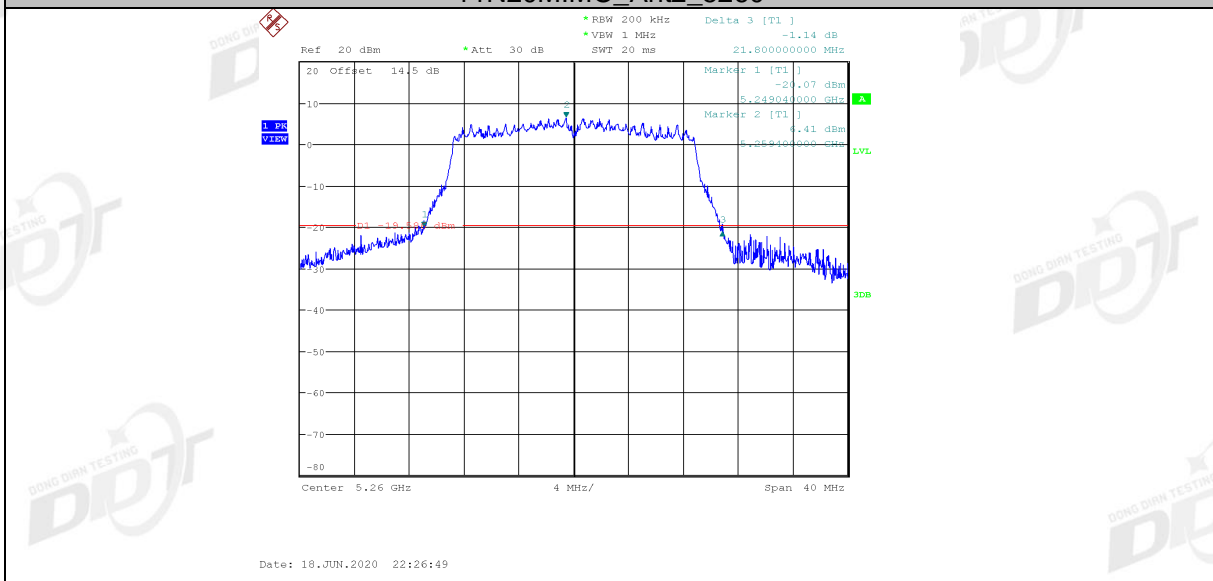
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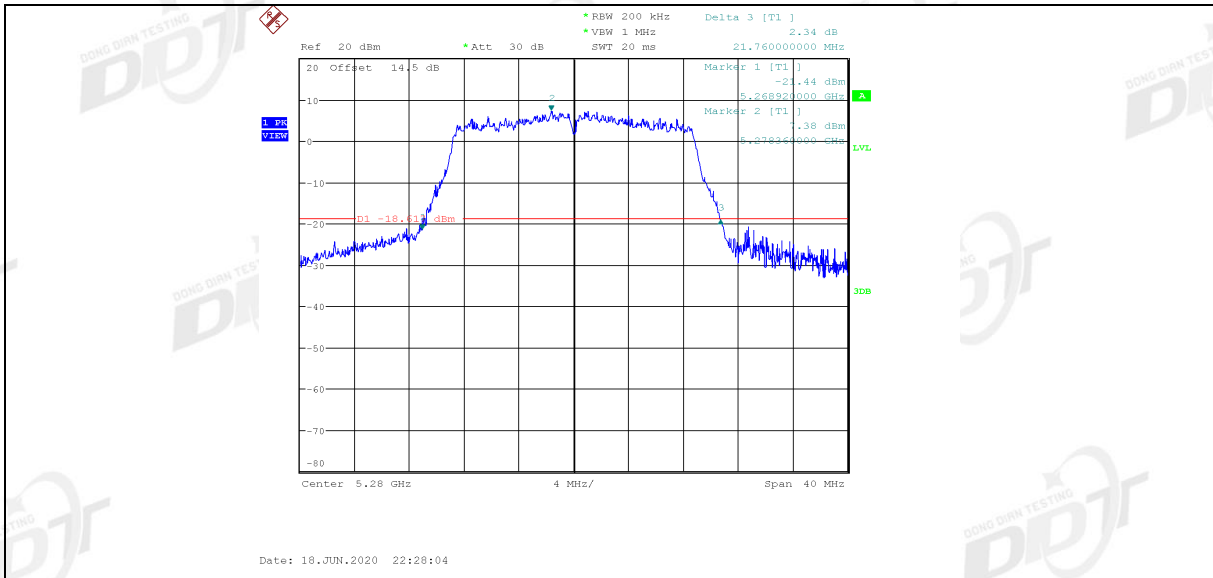
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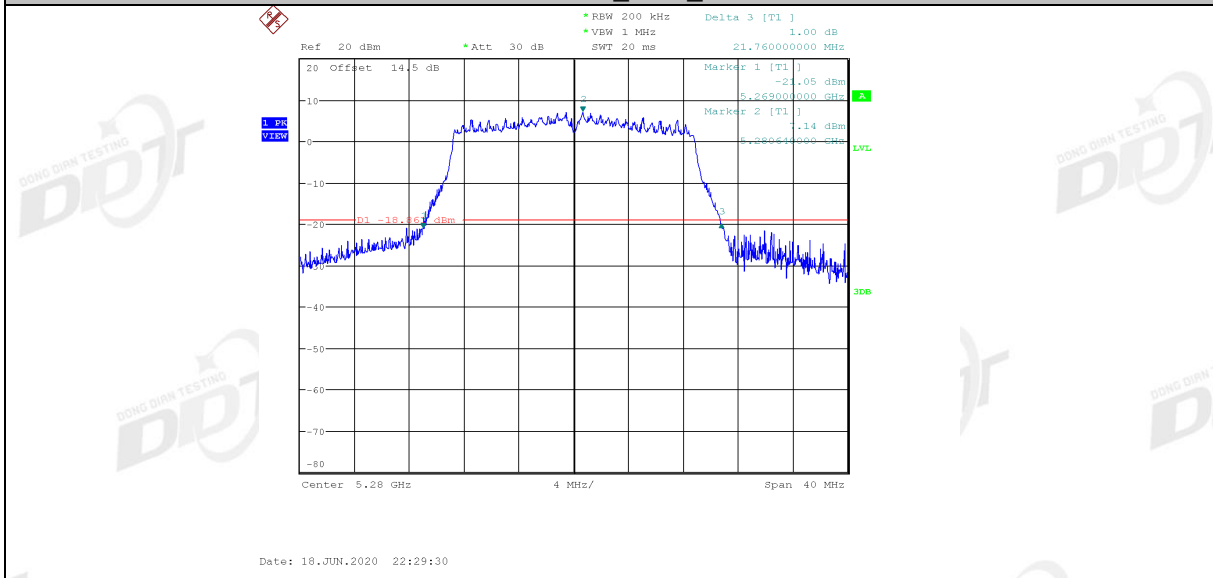
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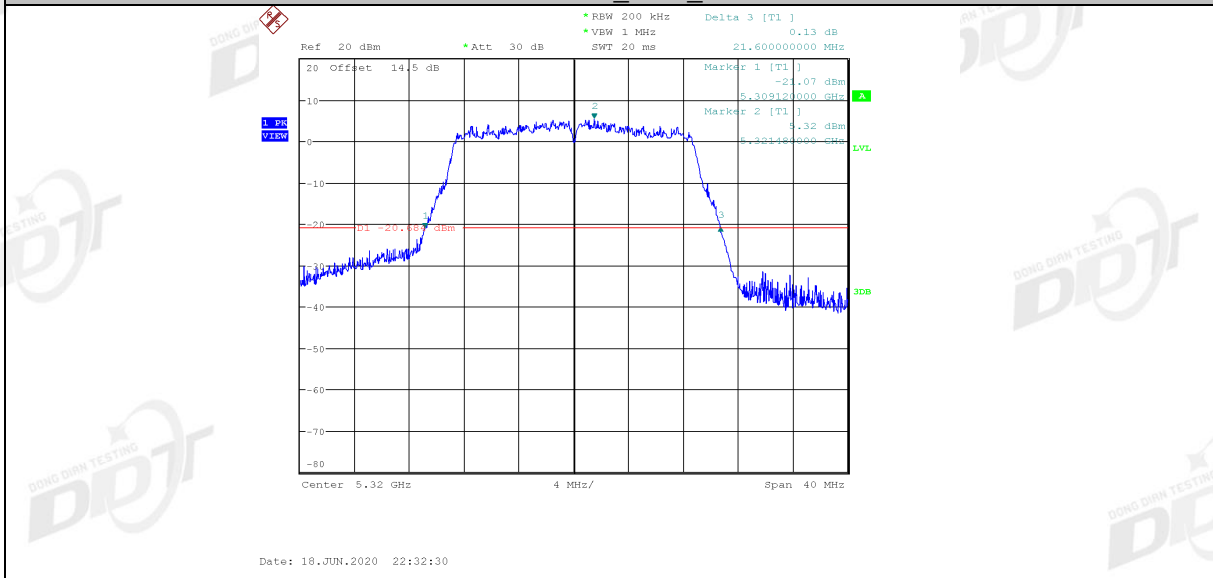
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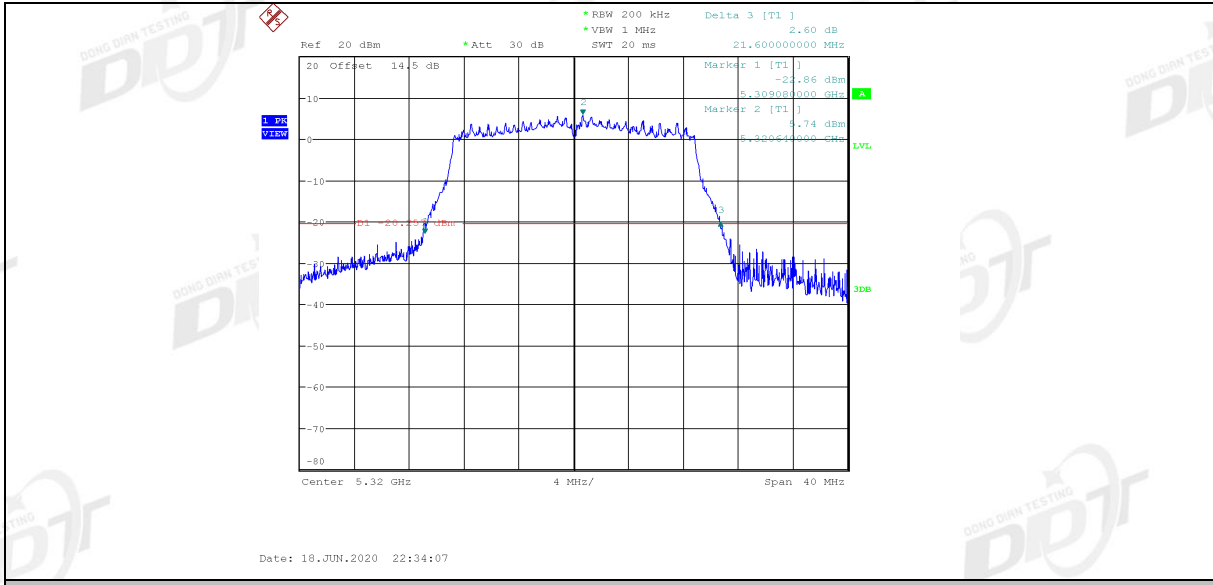
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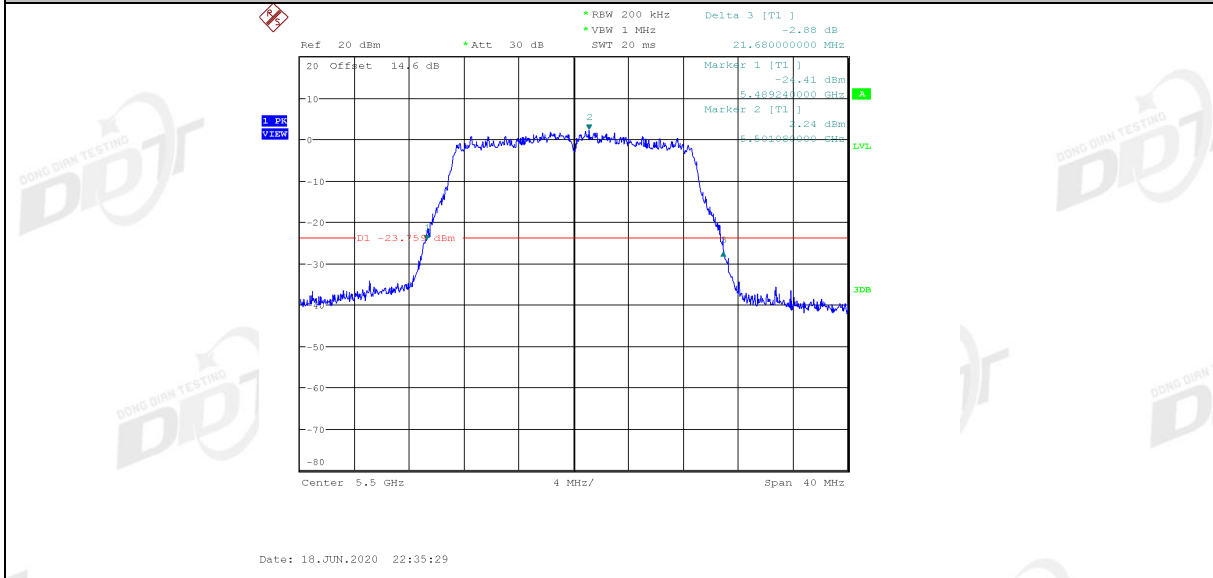
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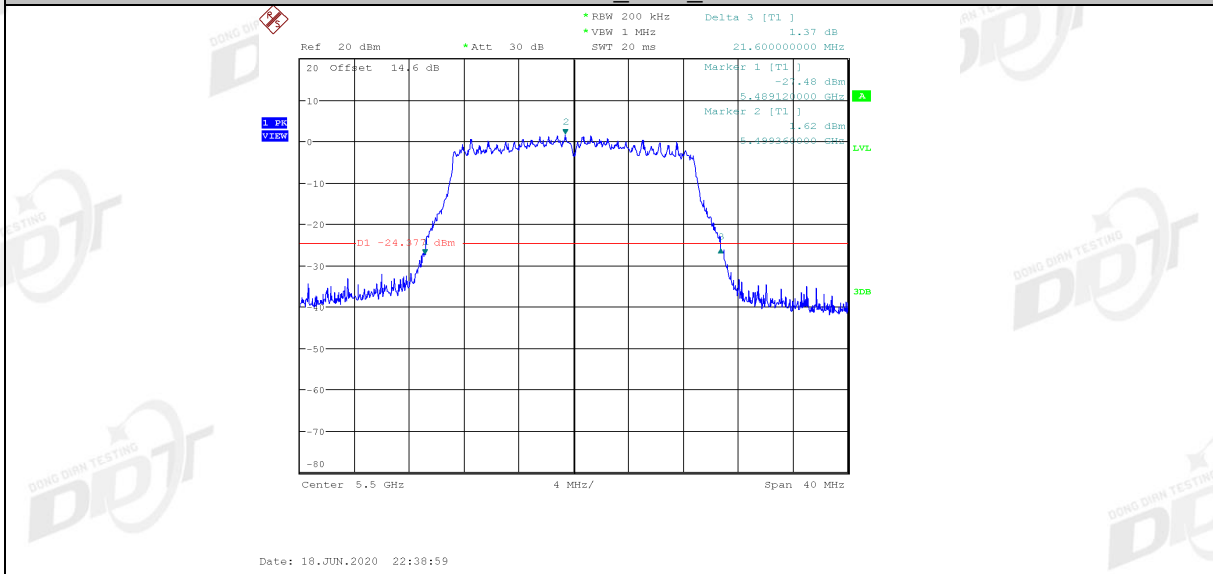
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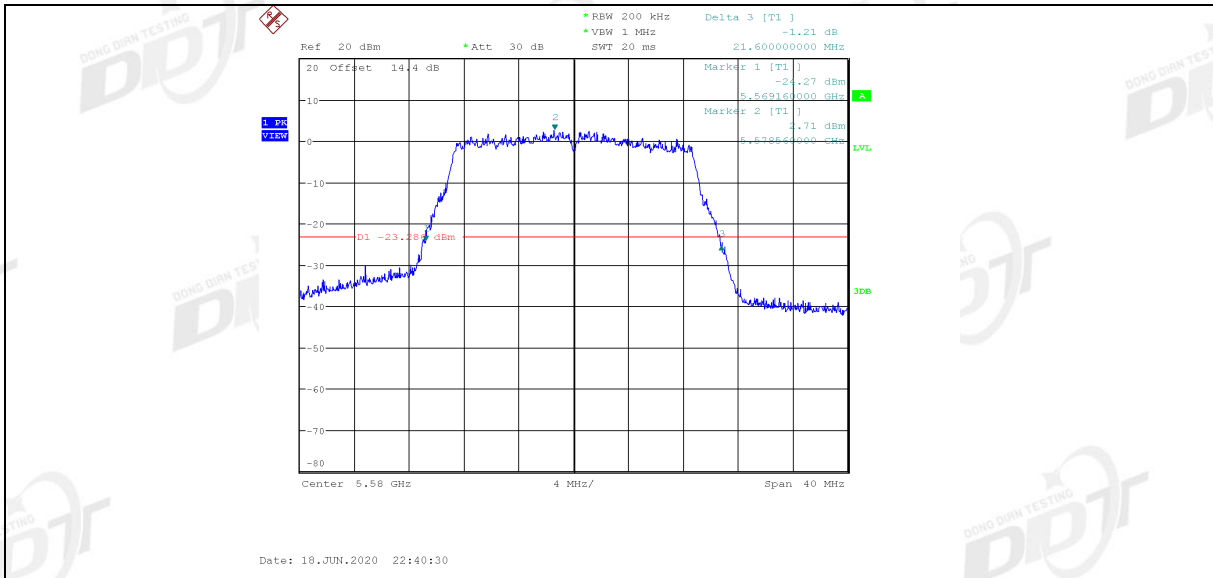
11N20MIMO_Ant1_5500



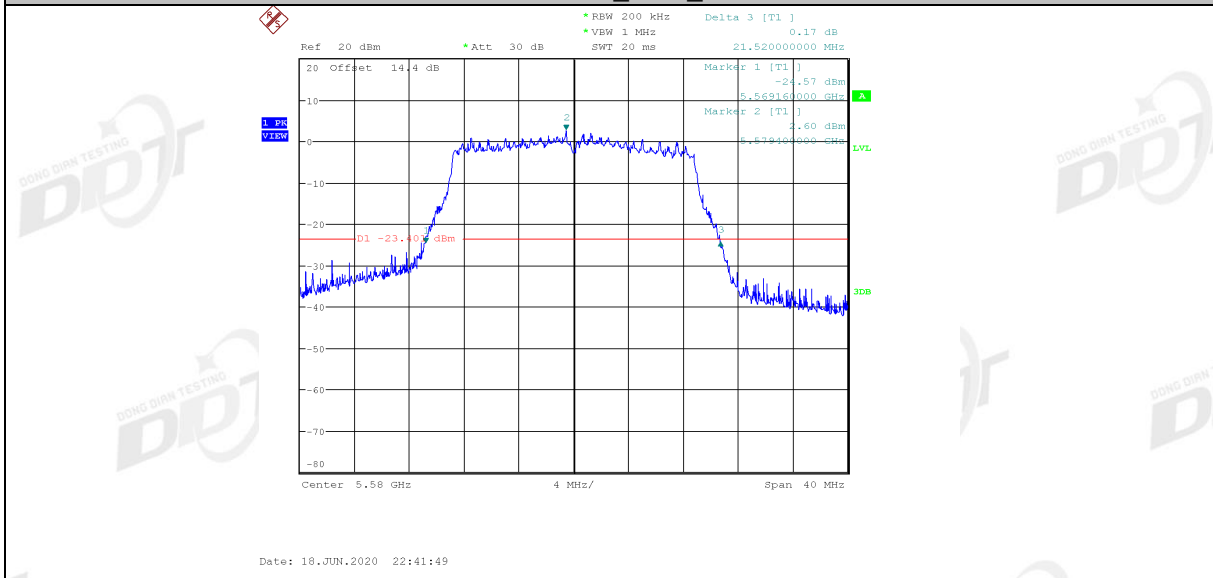
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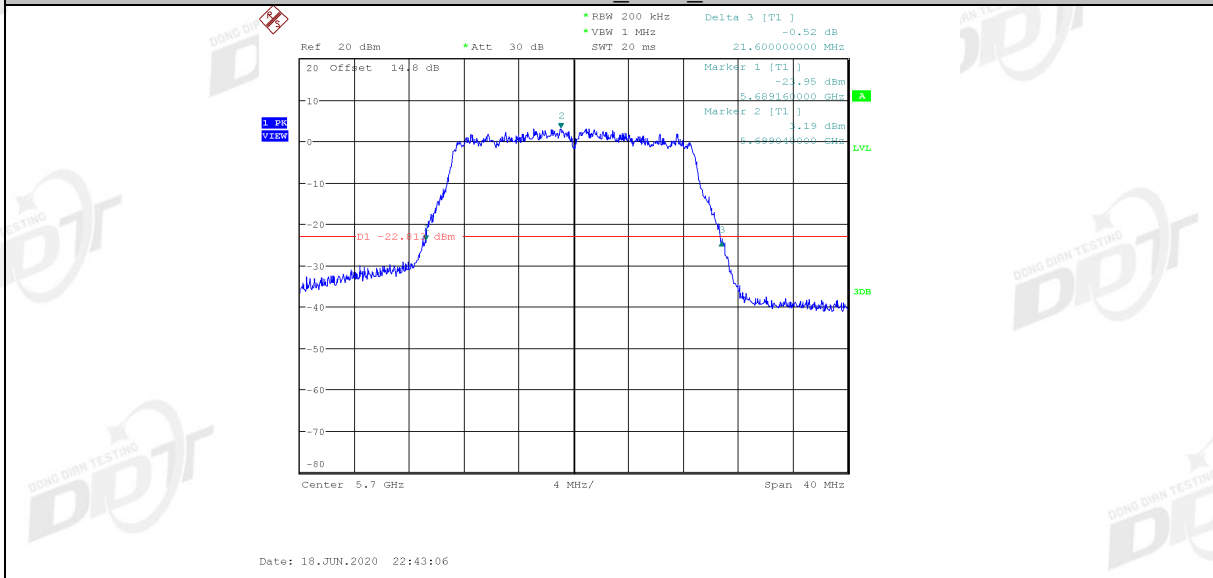
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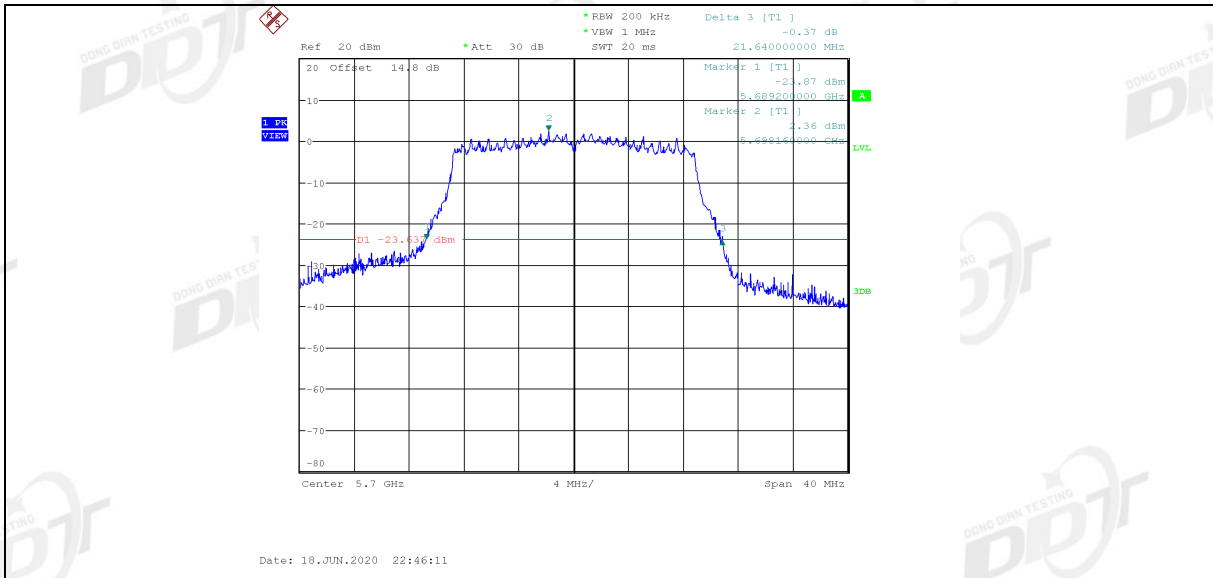
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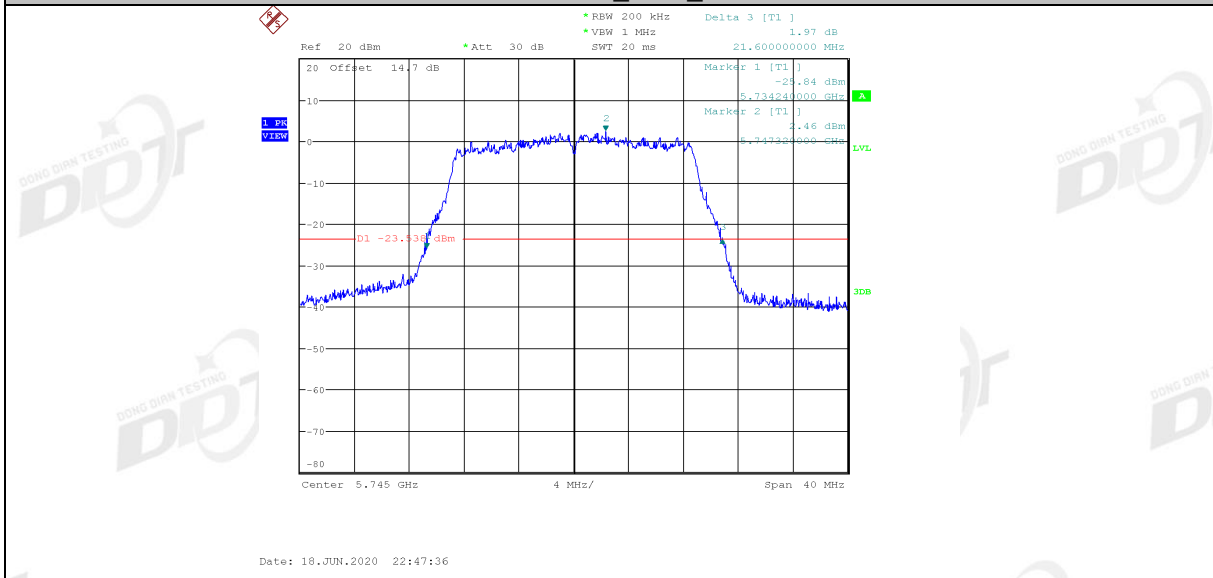
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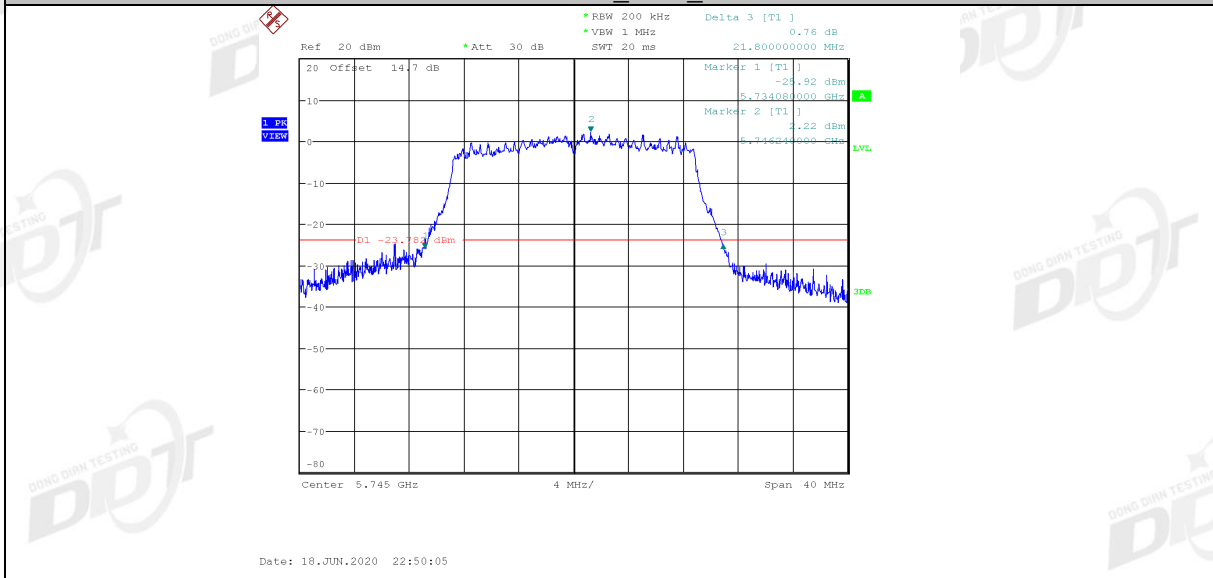
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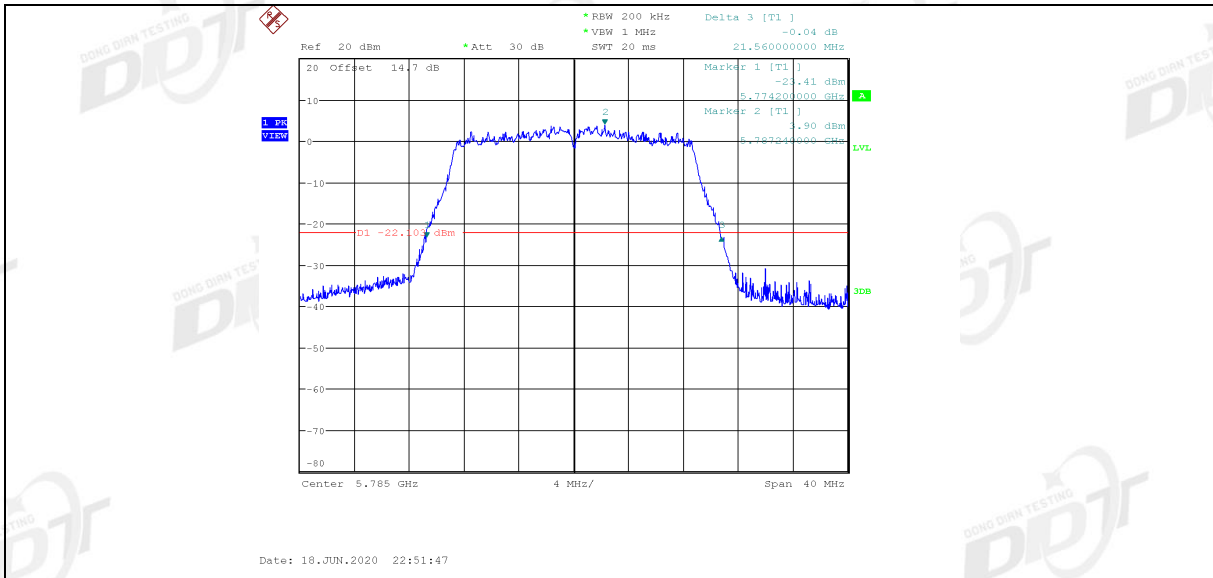
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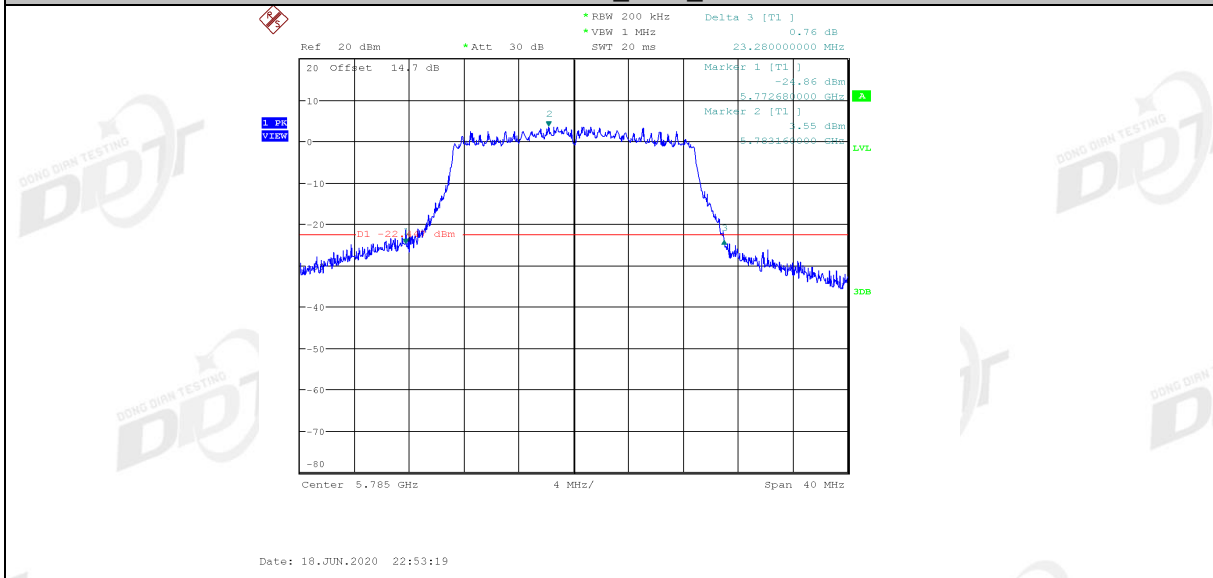
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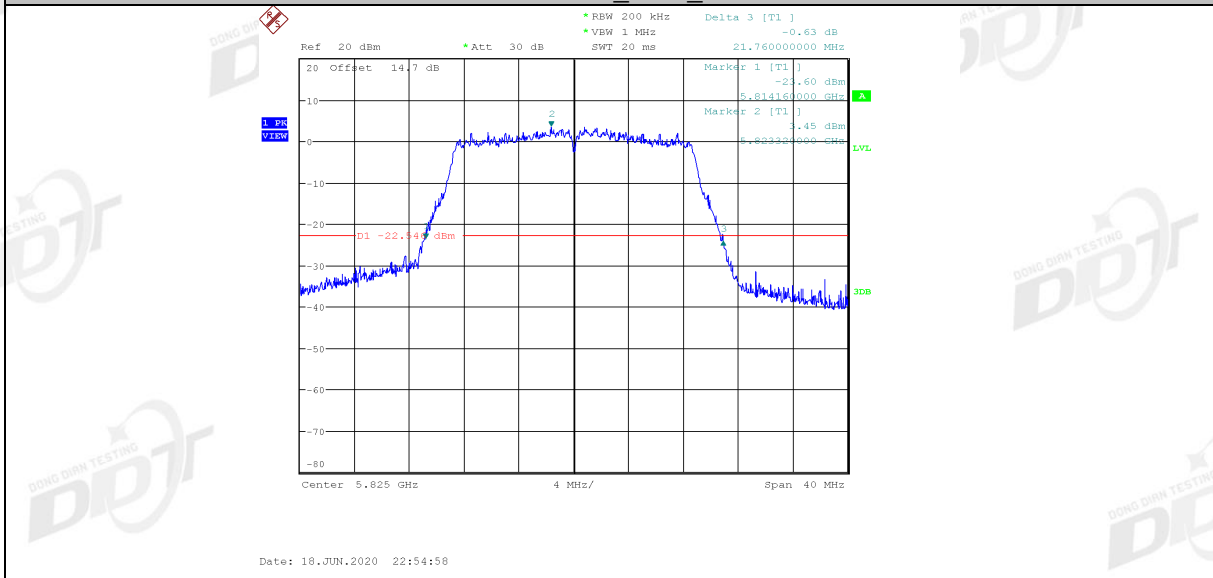
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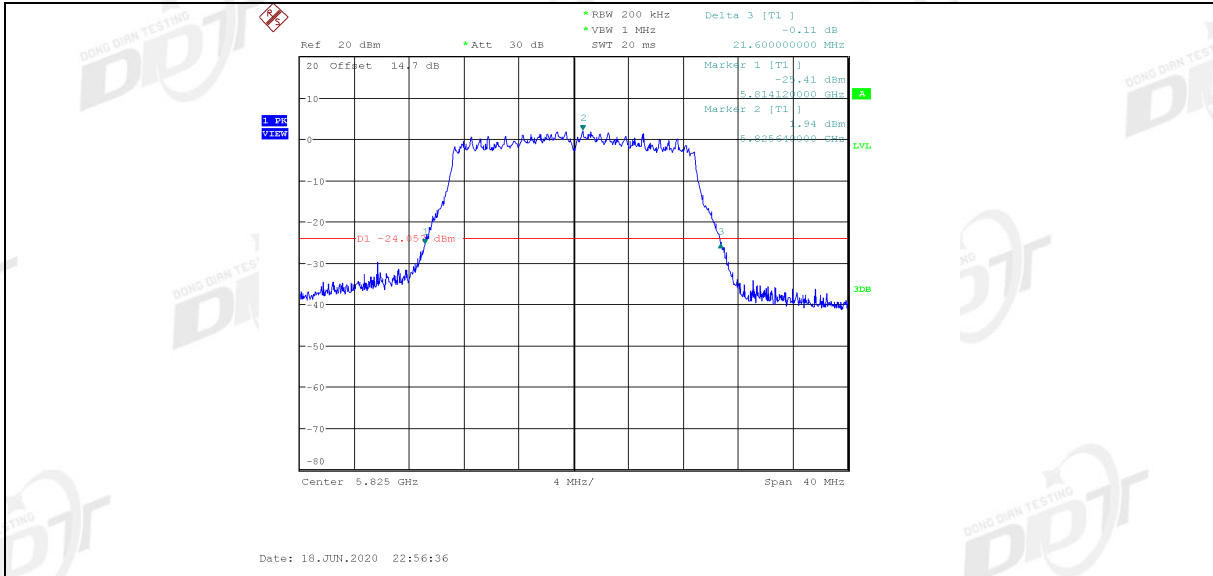
11N20MIMO_Ant2_5785



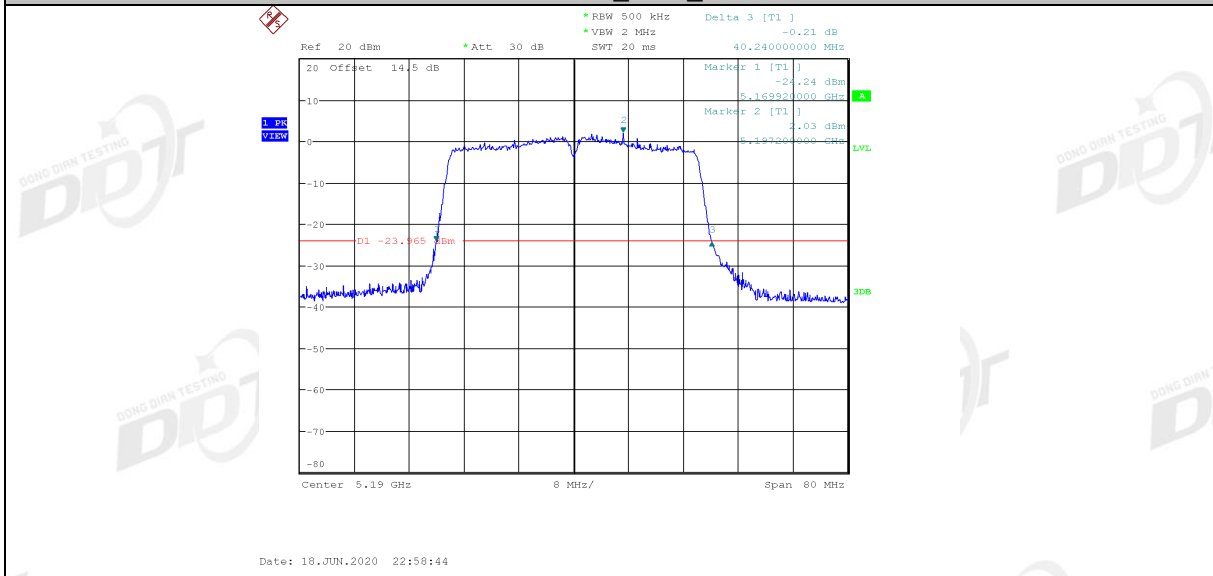
11N20MIMO_Ant1_5825



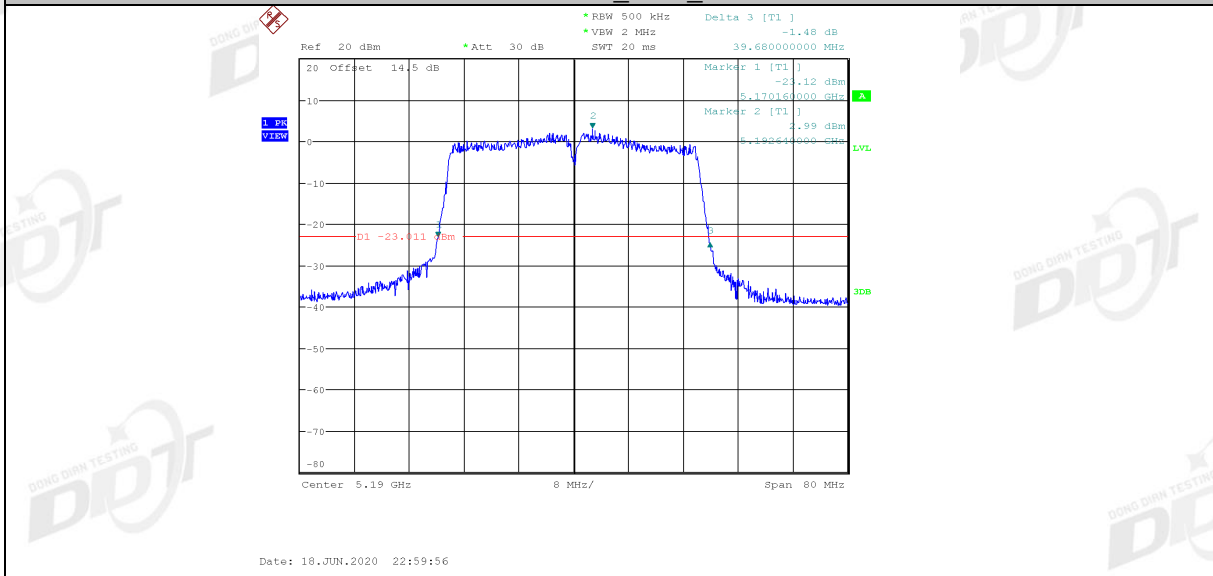
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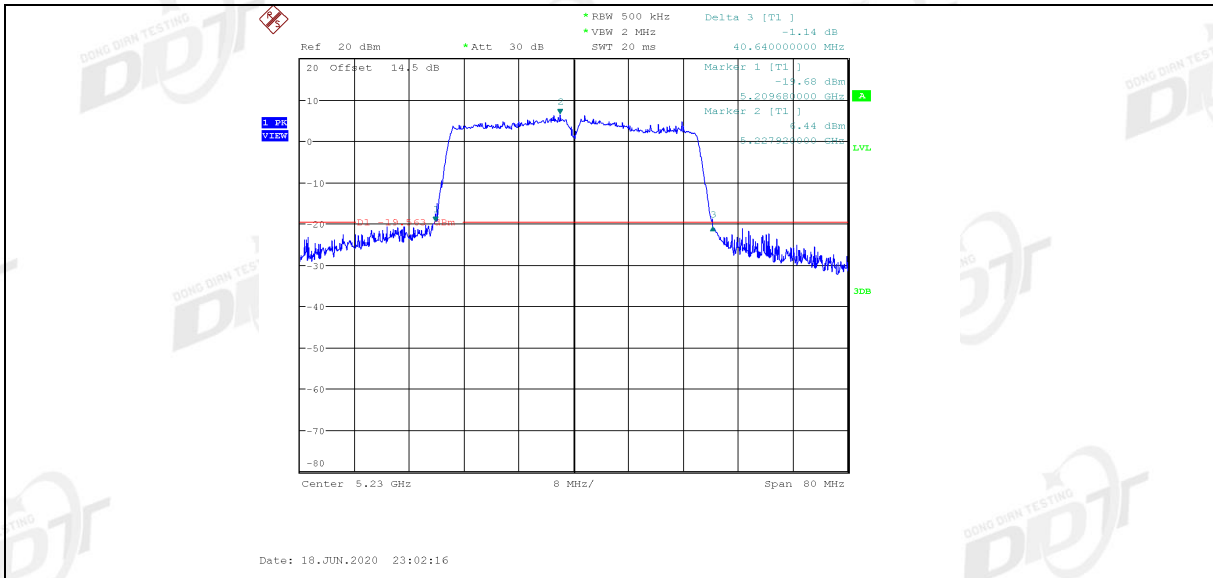
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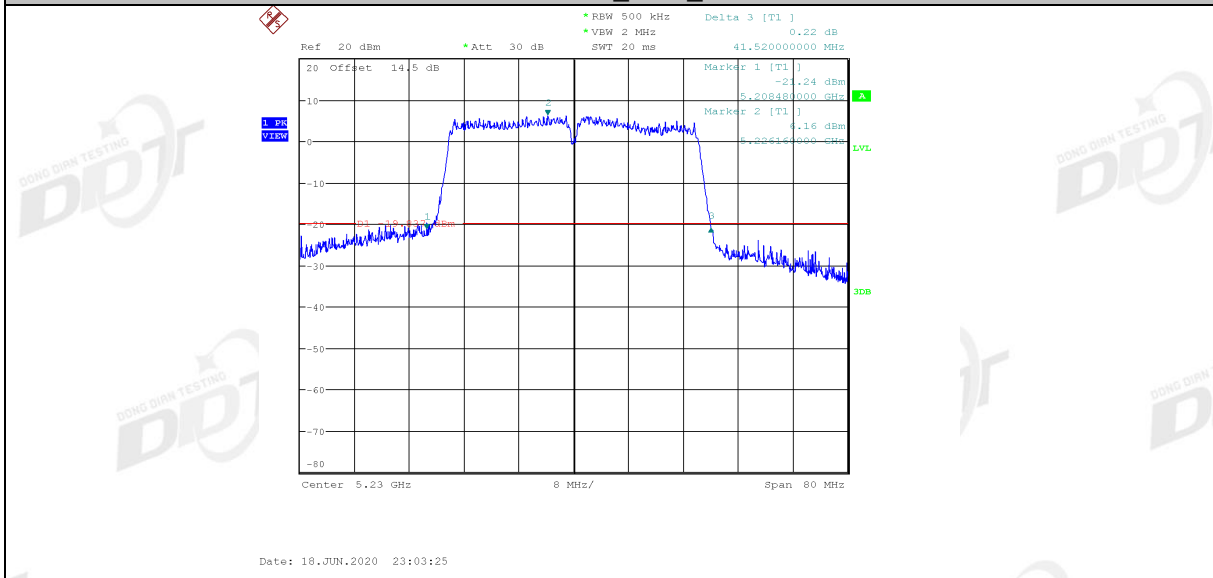
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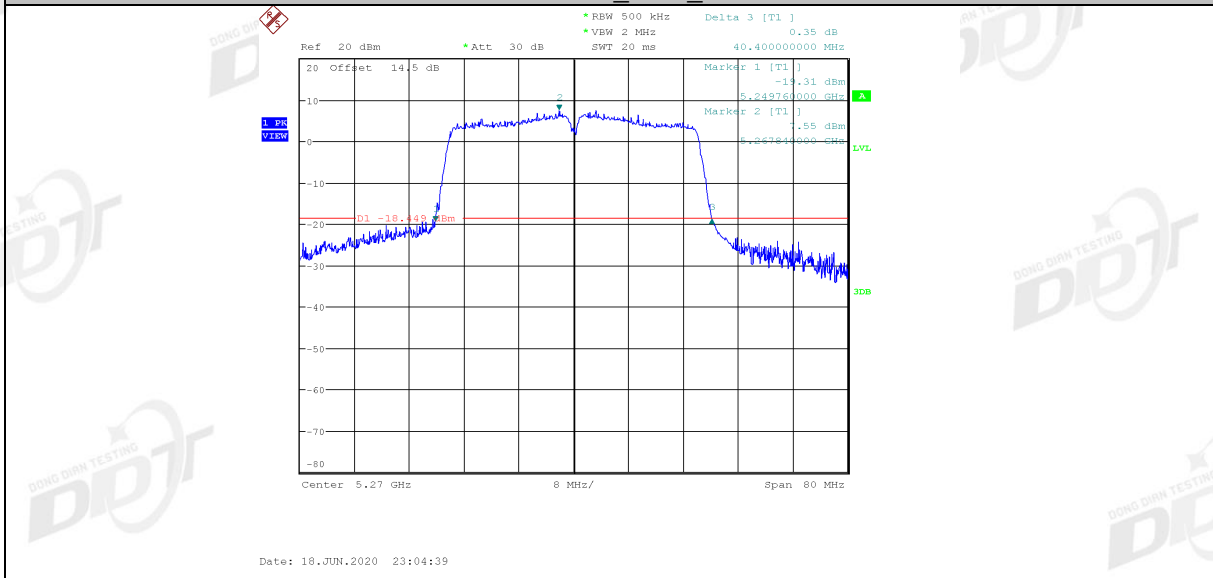
11N40MIMO_Ant1_5230



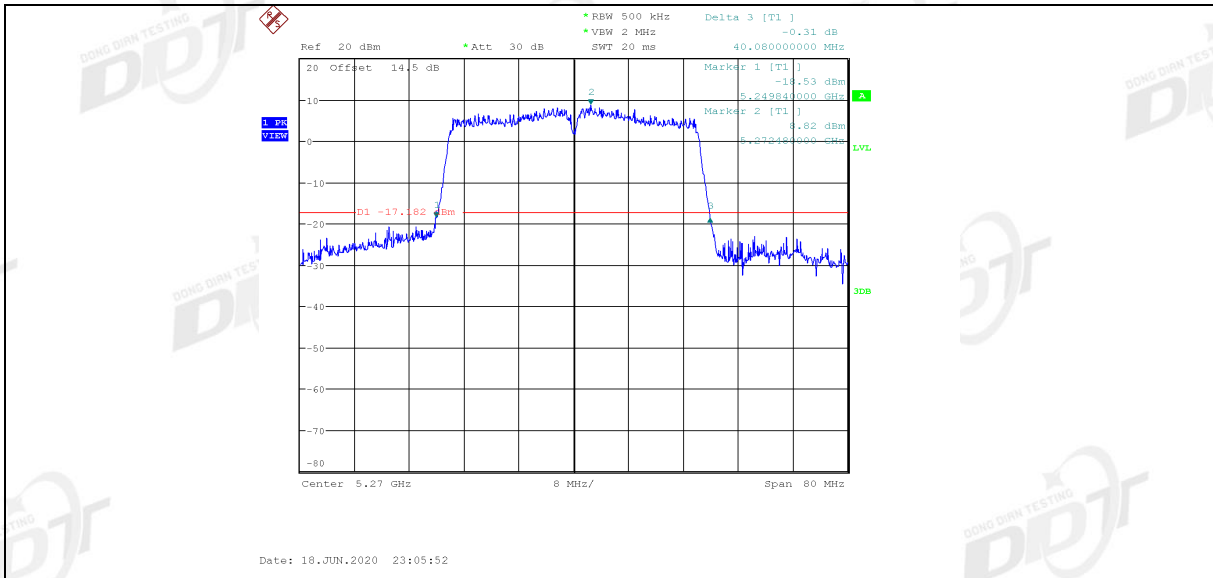
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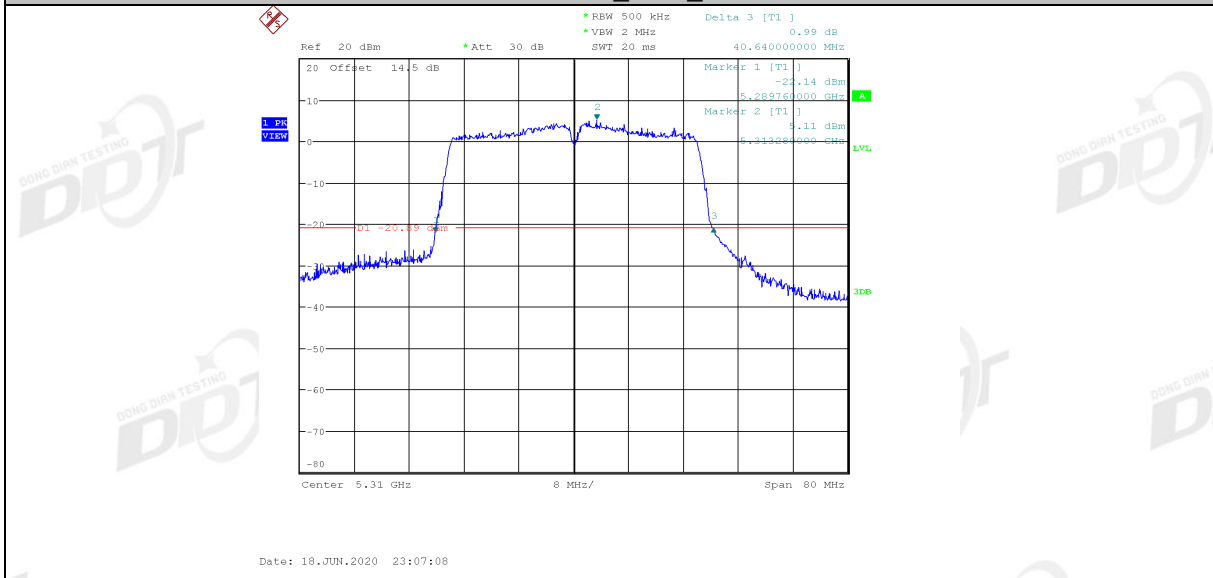
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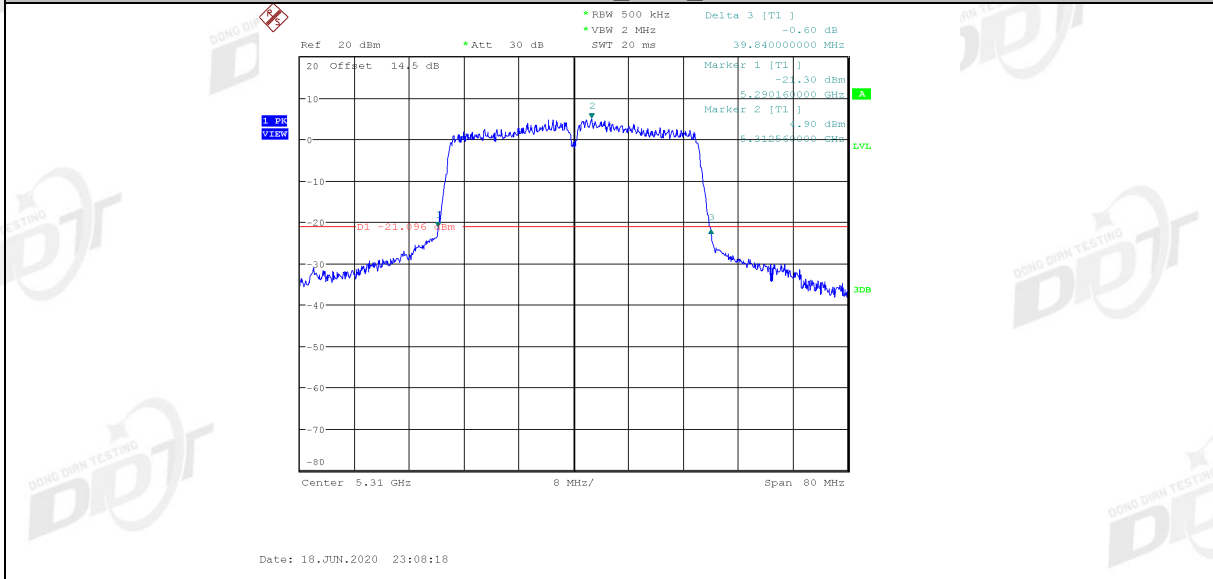
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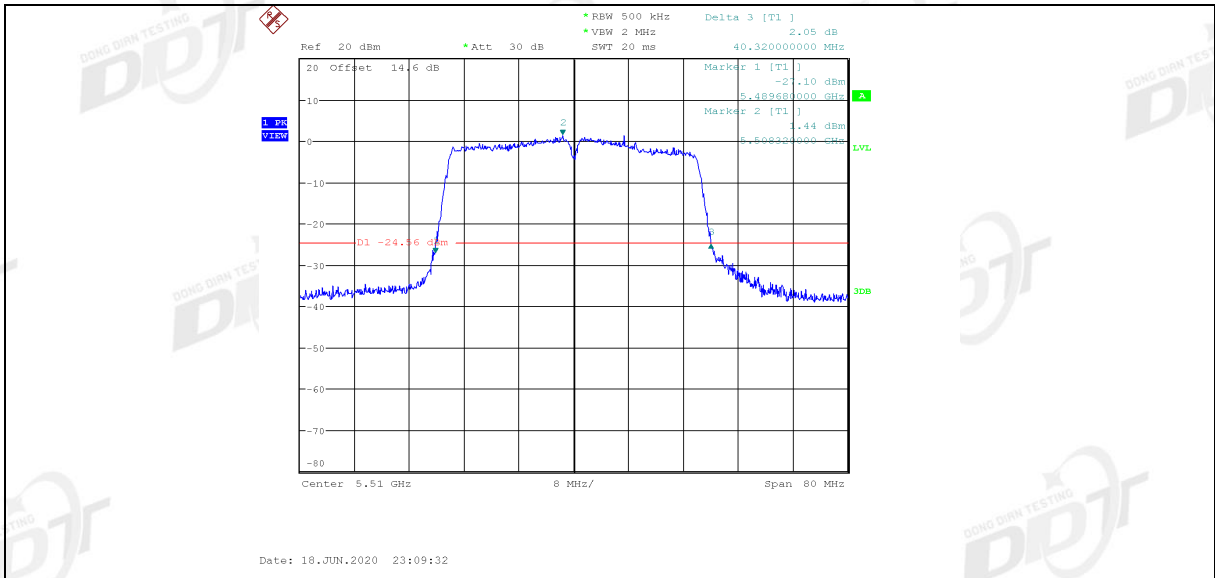
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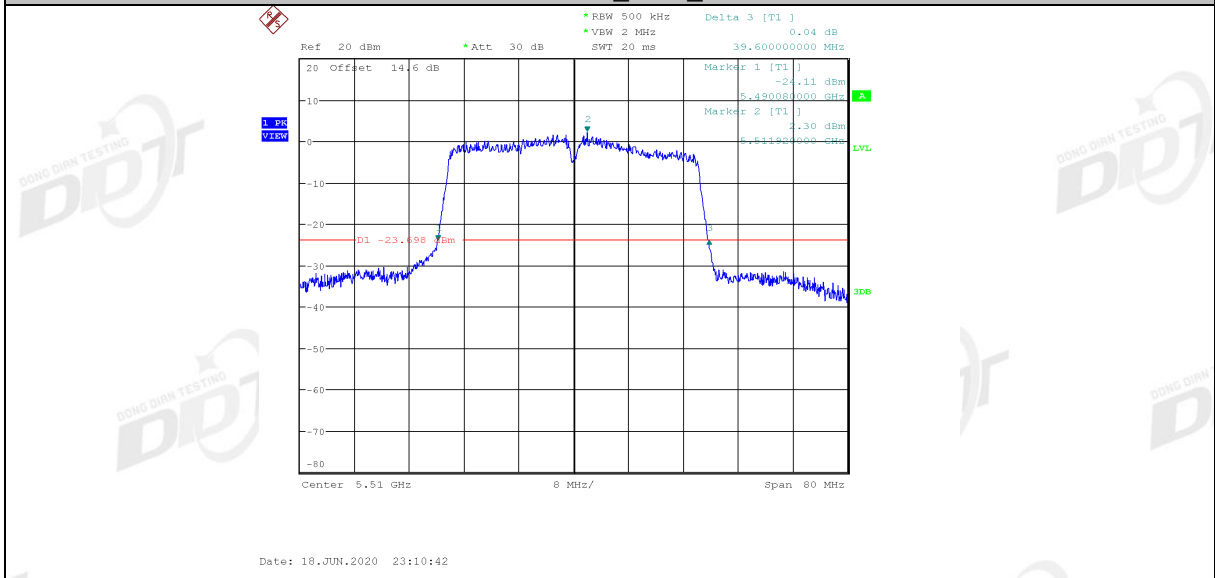
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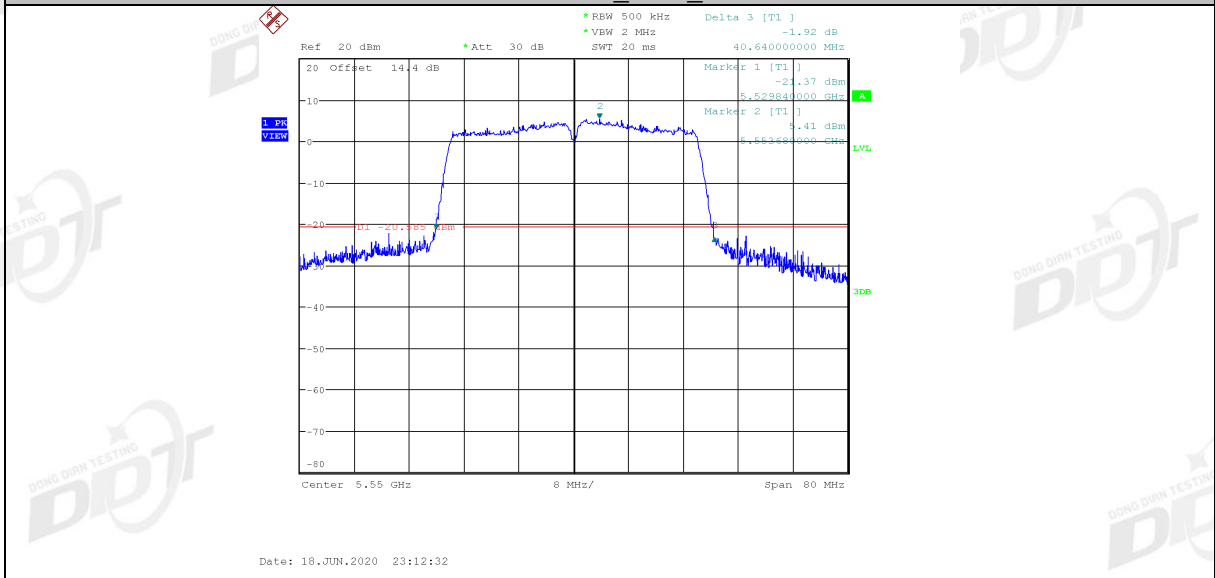
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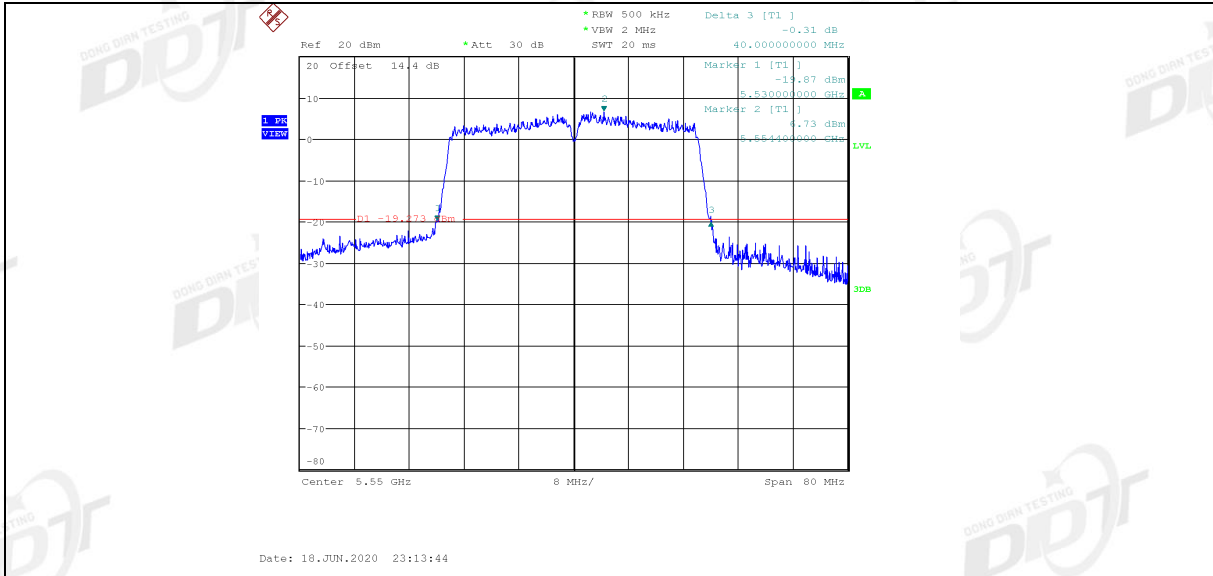
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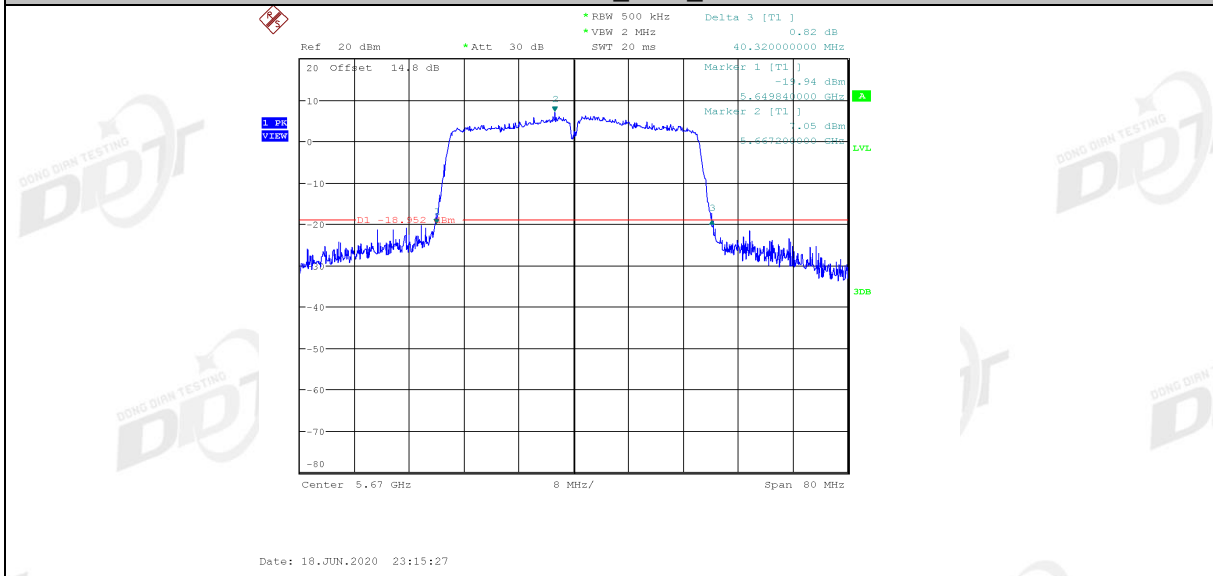
11N40MIMO_Ant1_5550



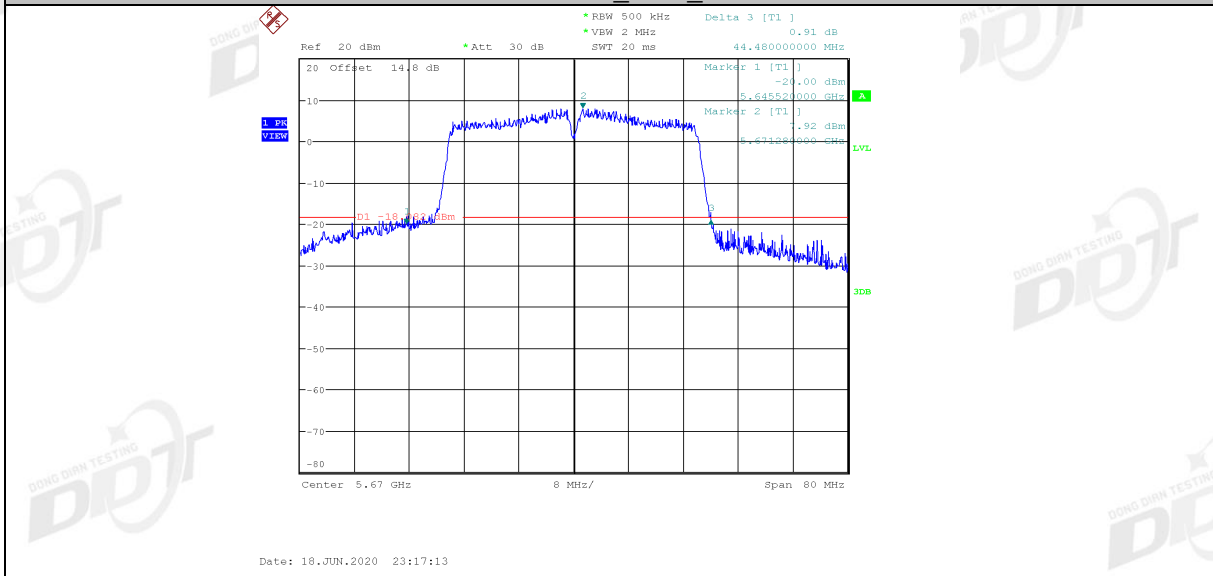
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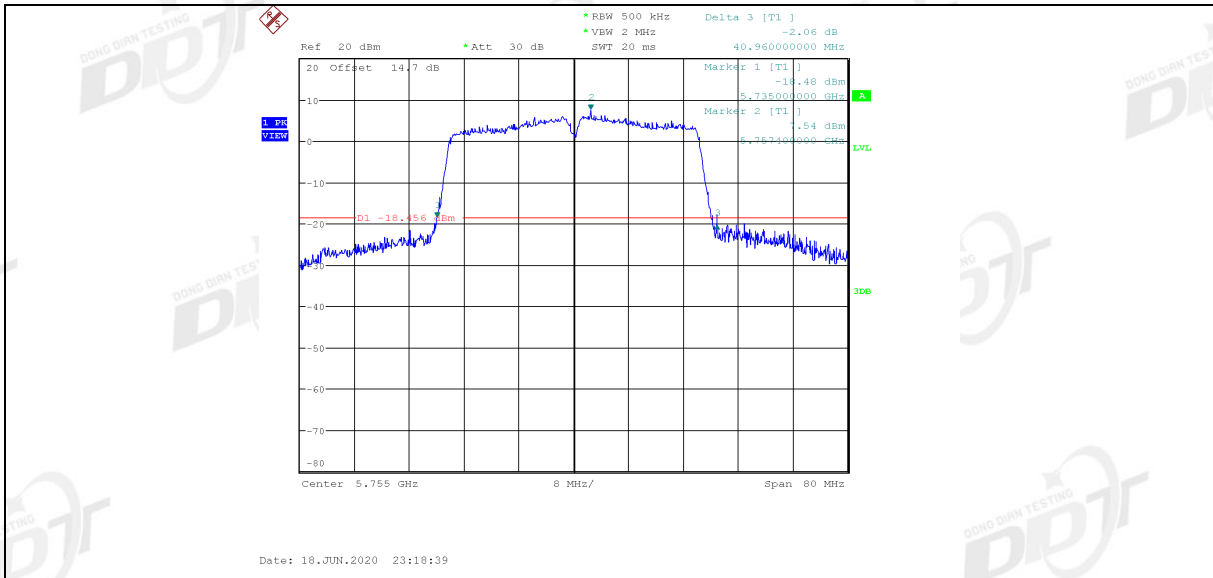
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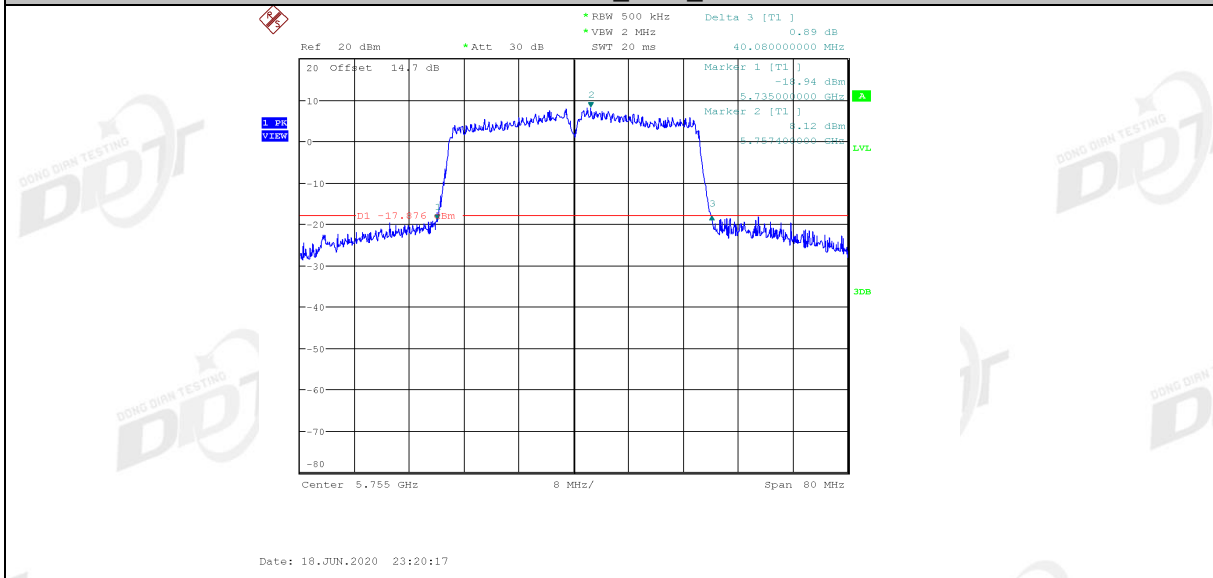
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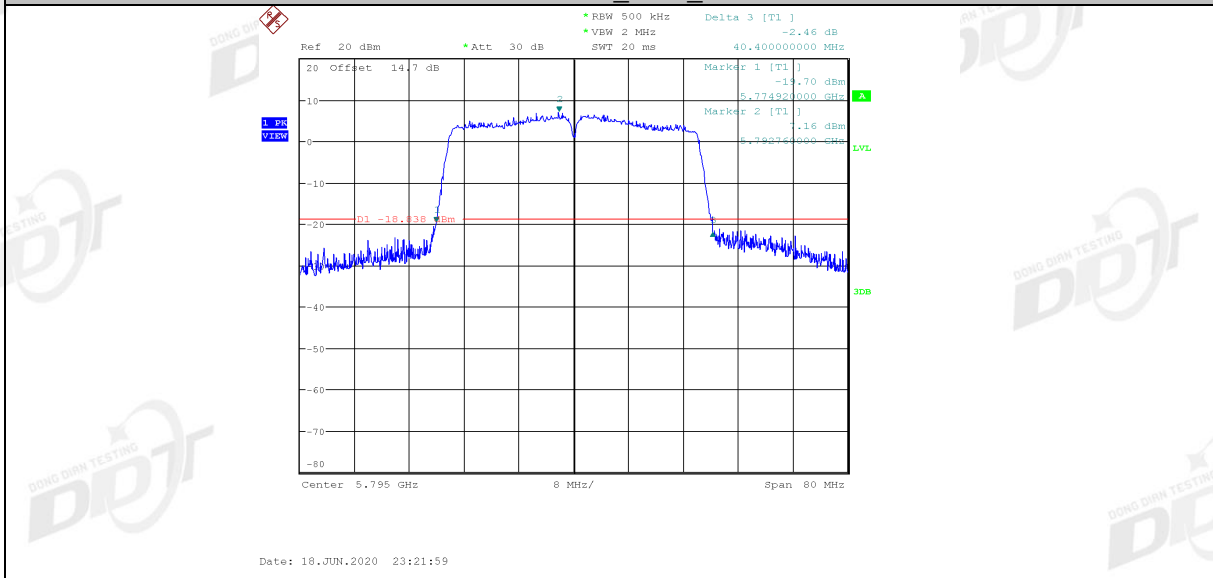
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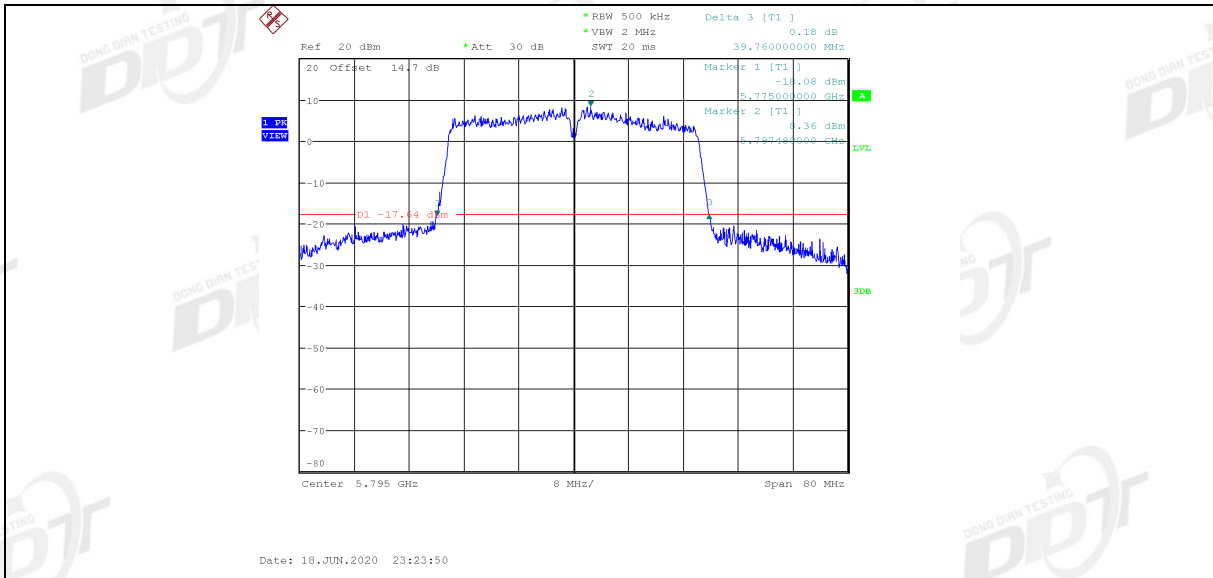
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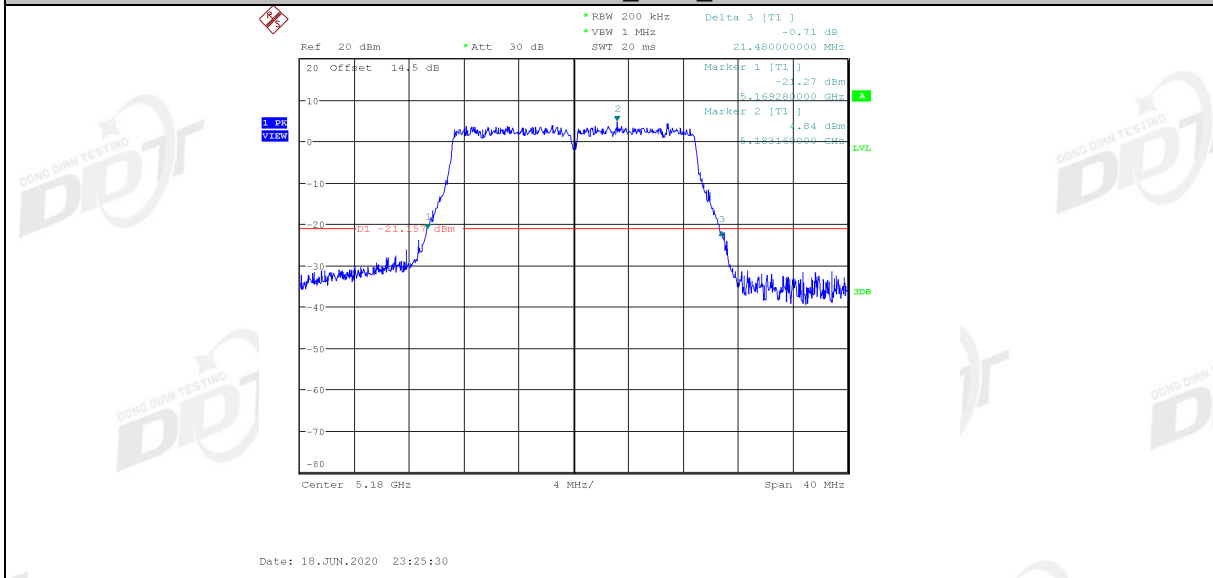
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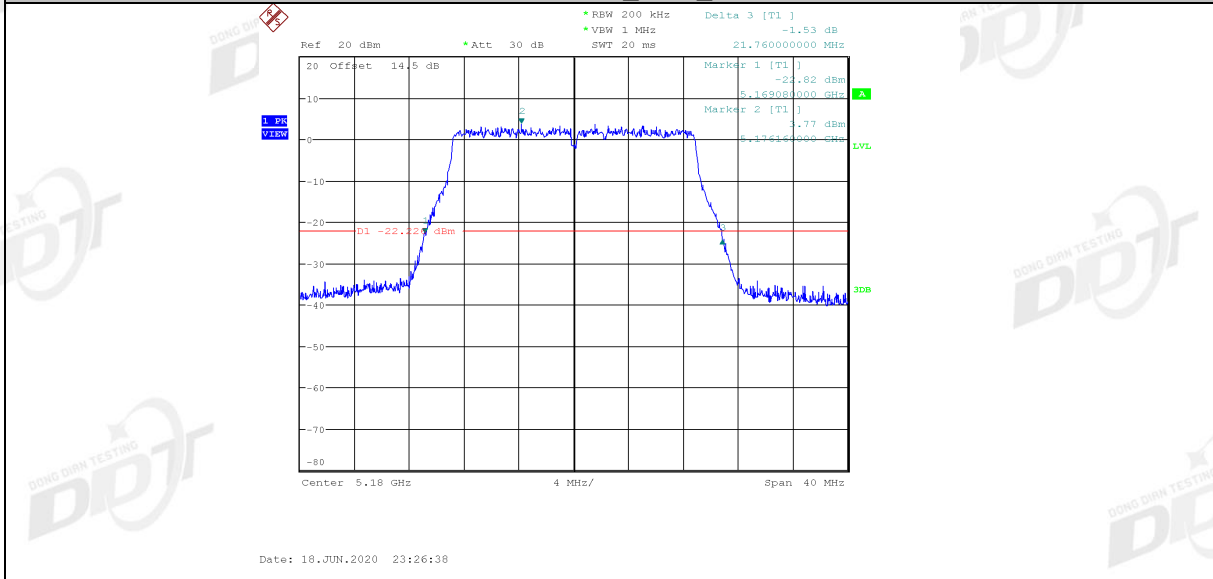
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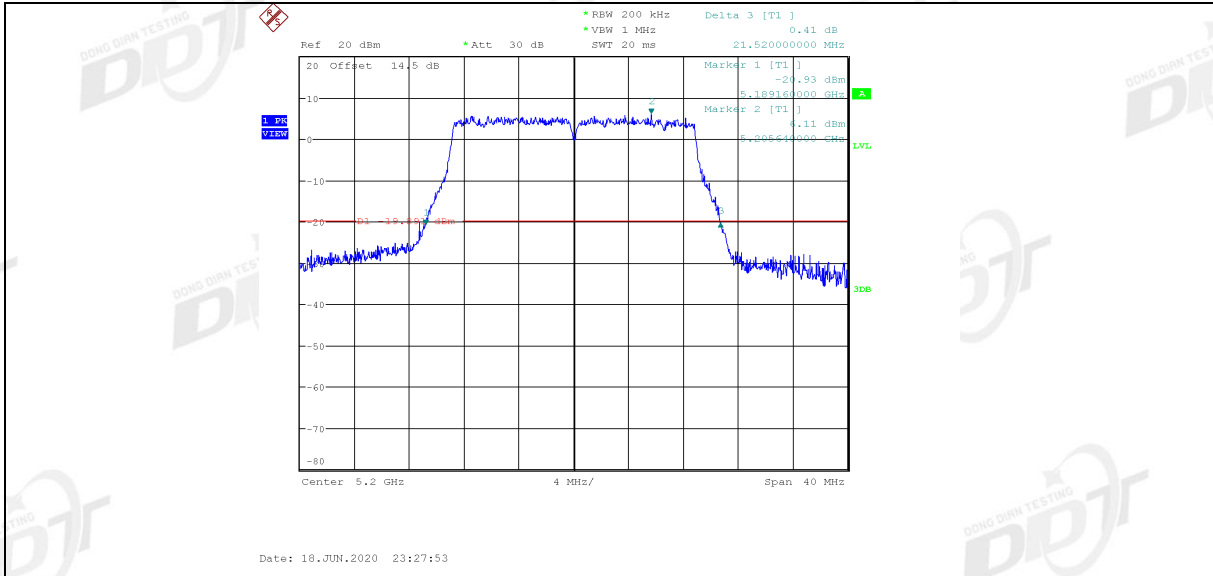
11AC20MIMO_Ant1_5180



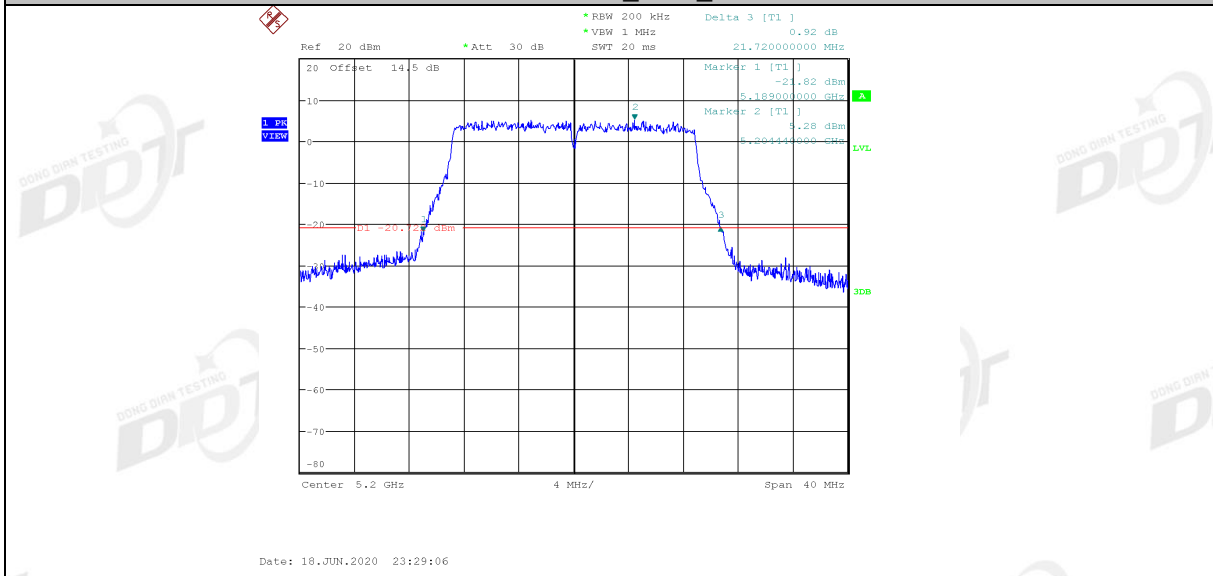
11AC20MIMO_Ant2_5180



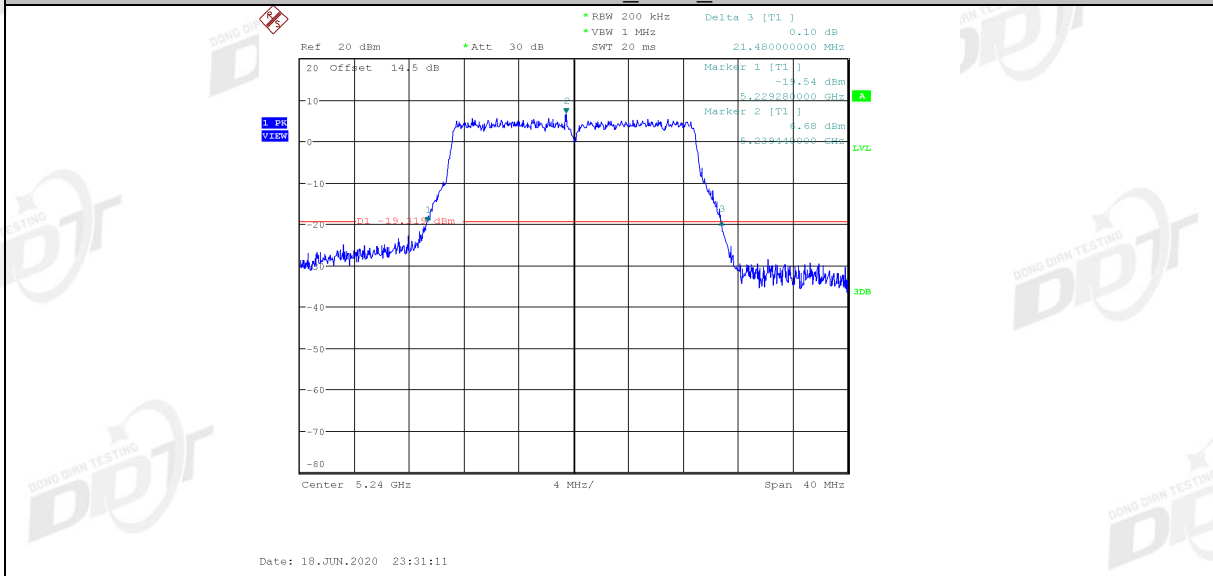
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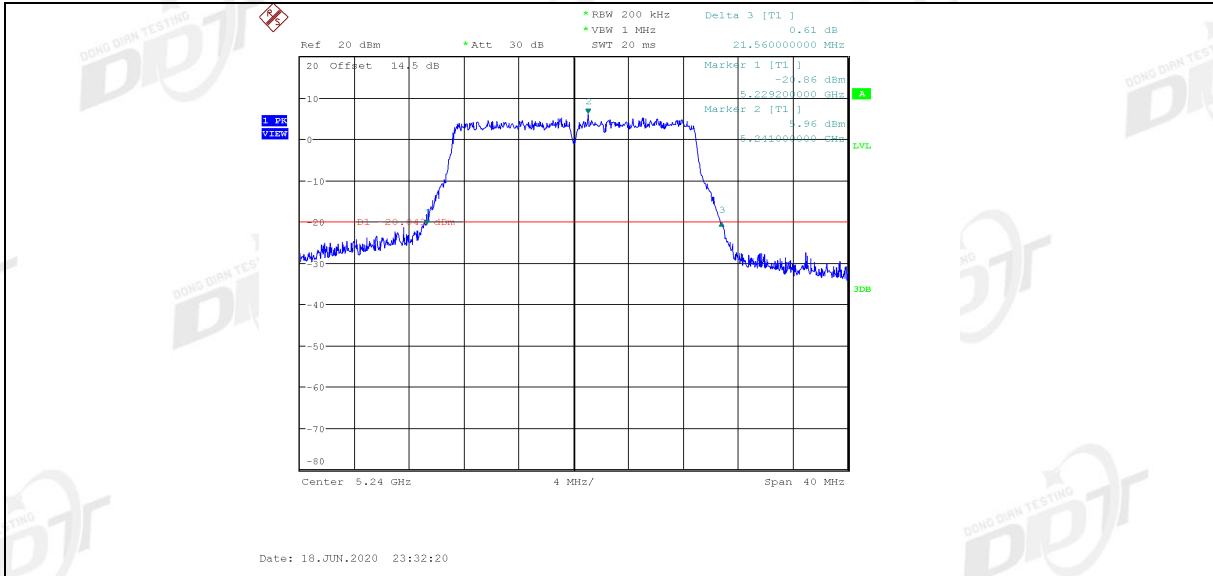
11AC20MIMO_Ant2_5200



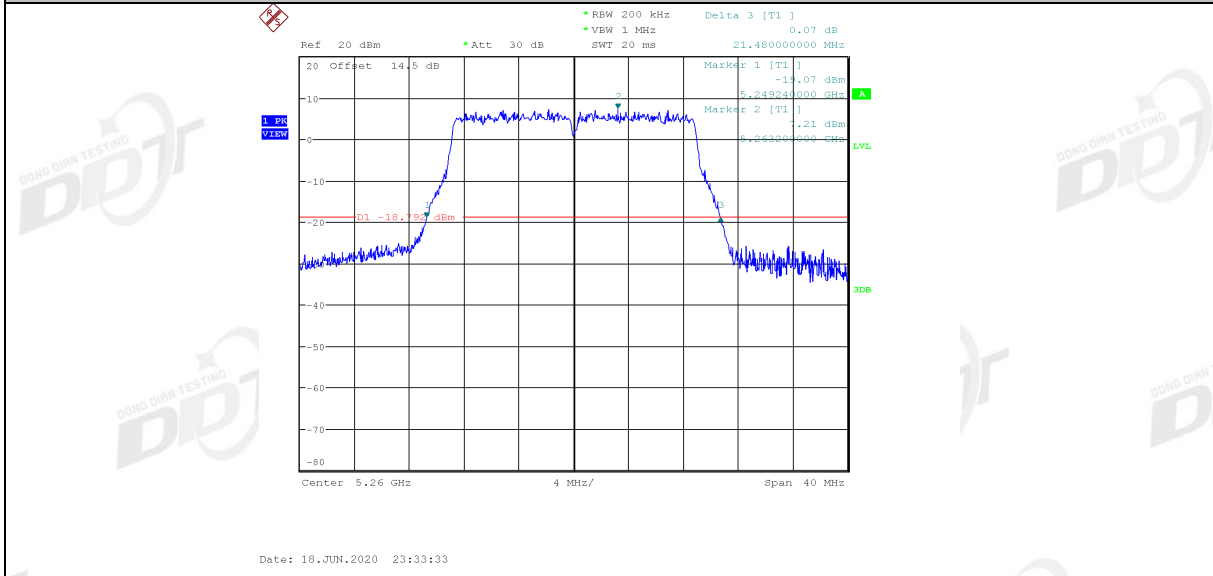
11AC20MIMO_Ant1_5240



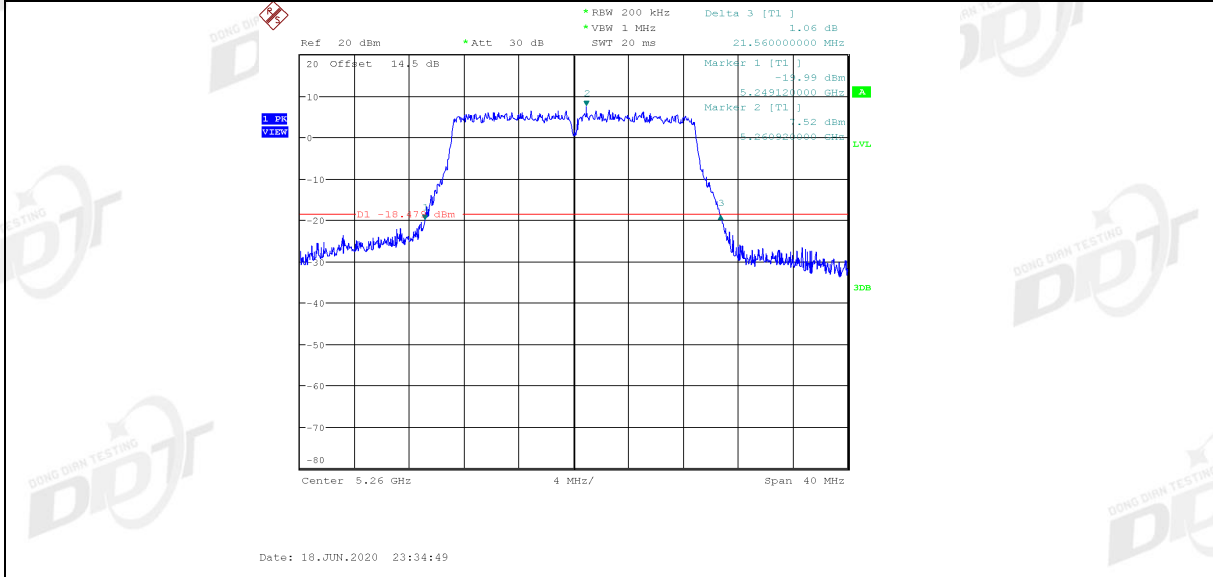
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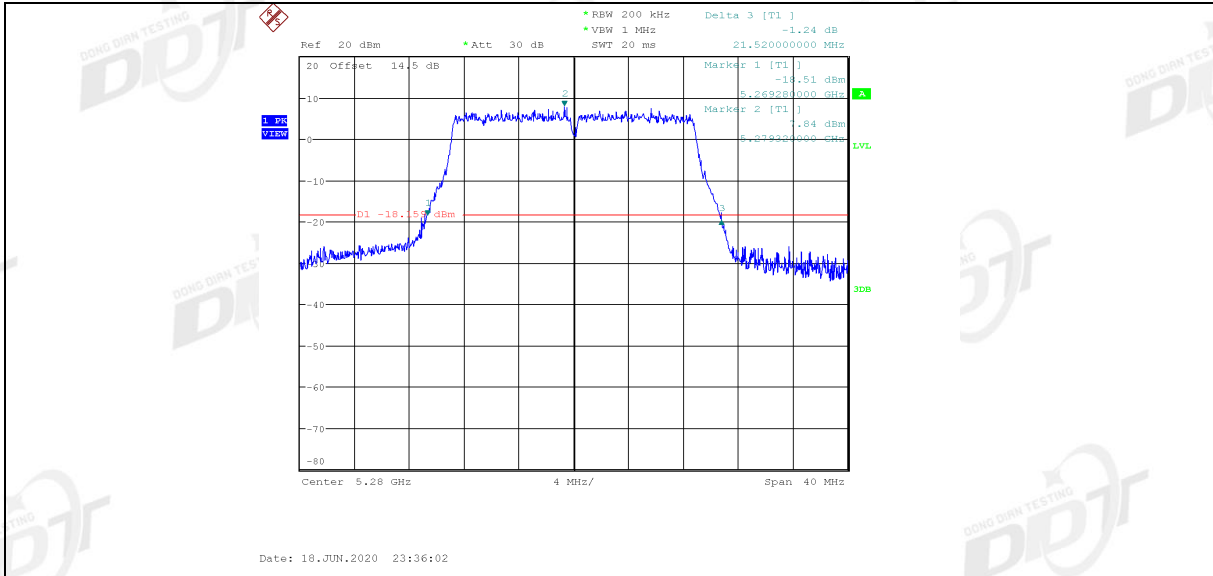
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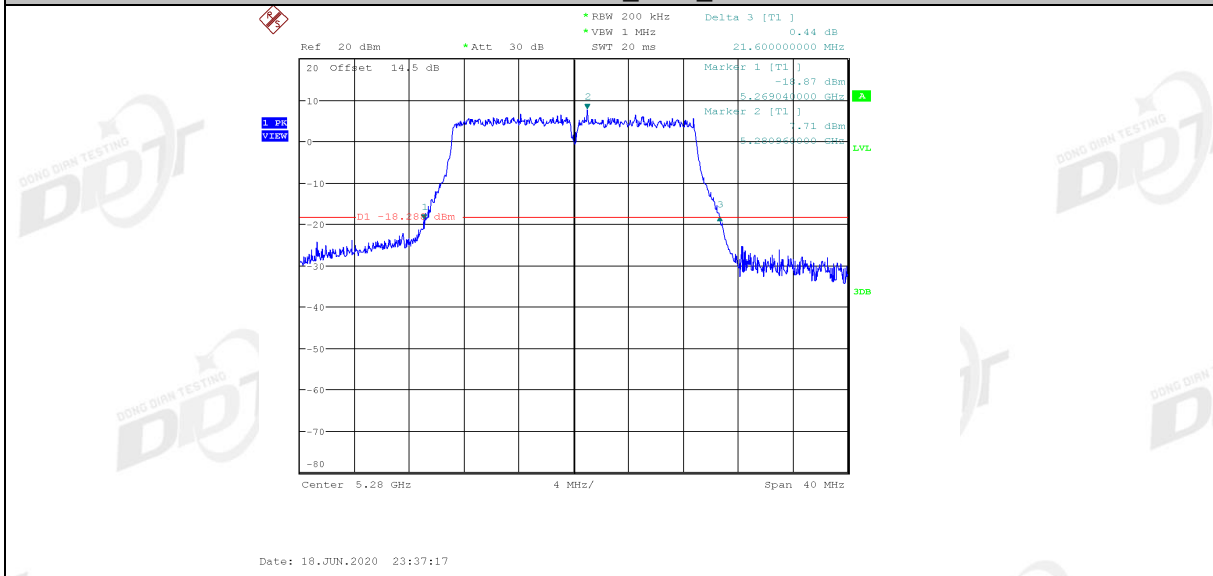
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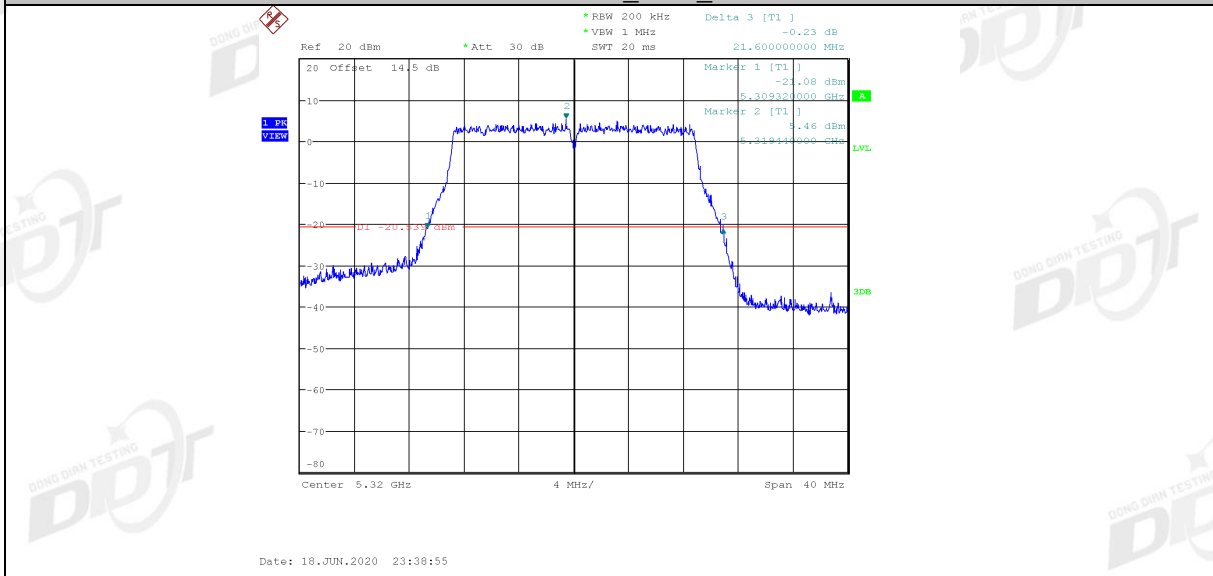
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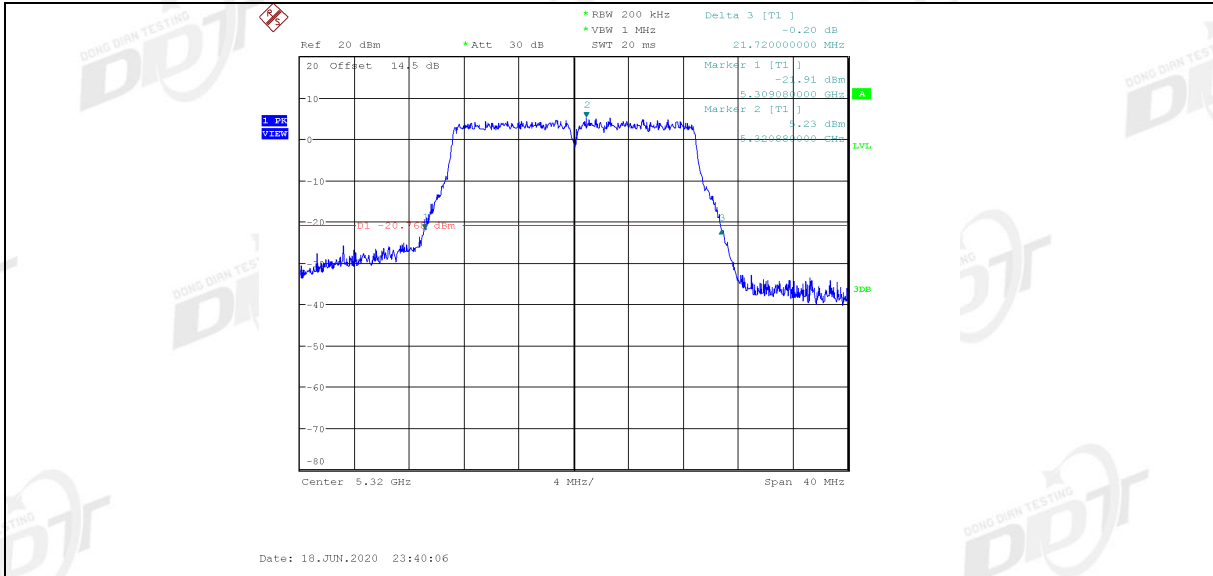
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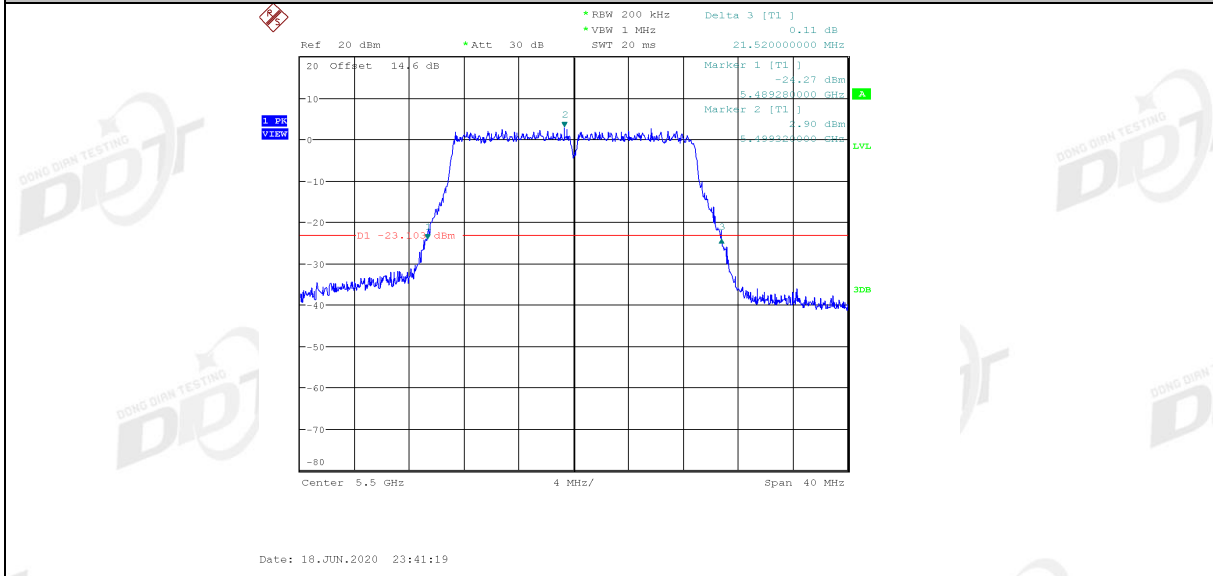
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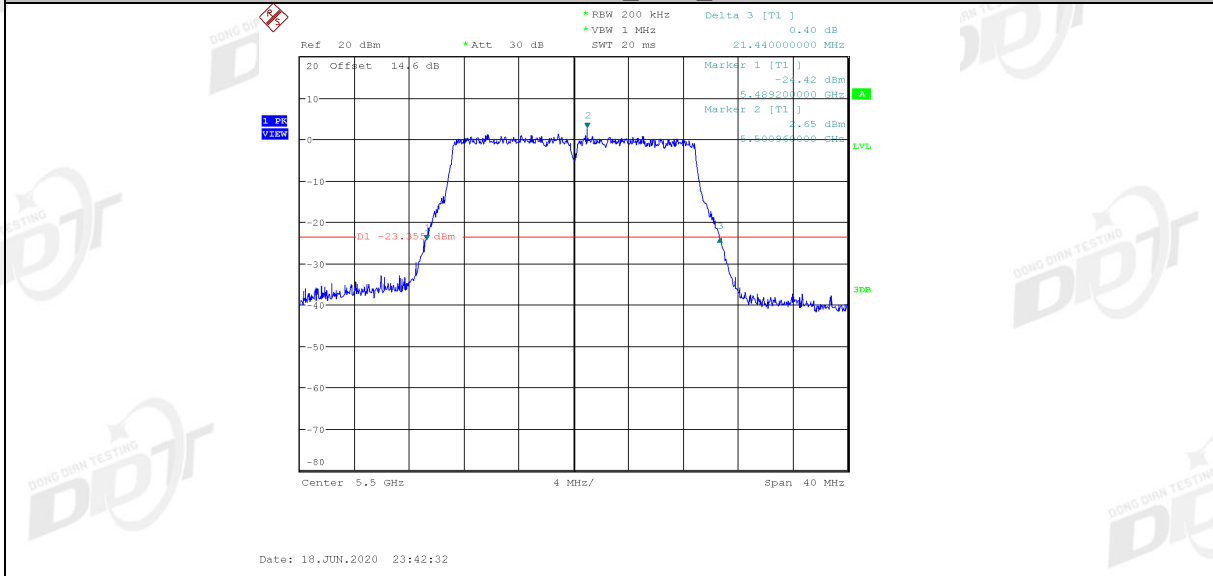
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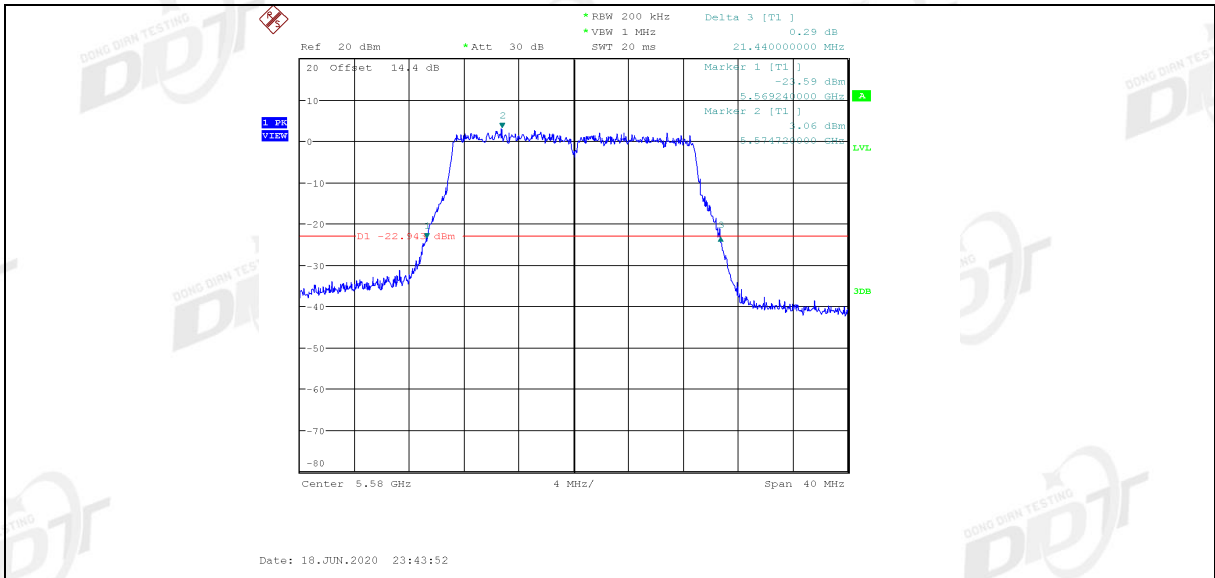
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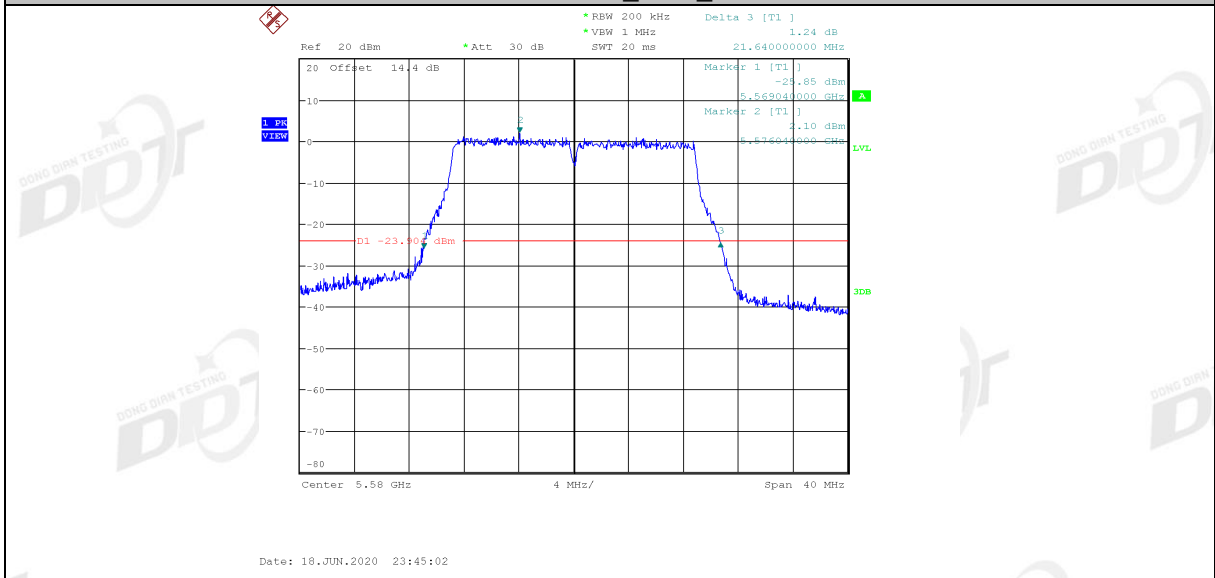
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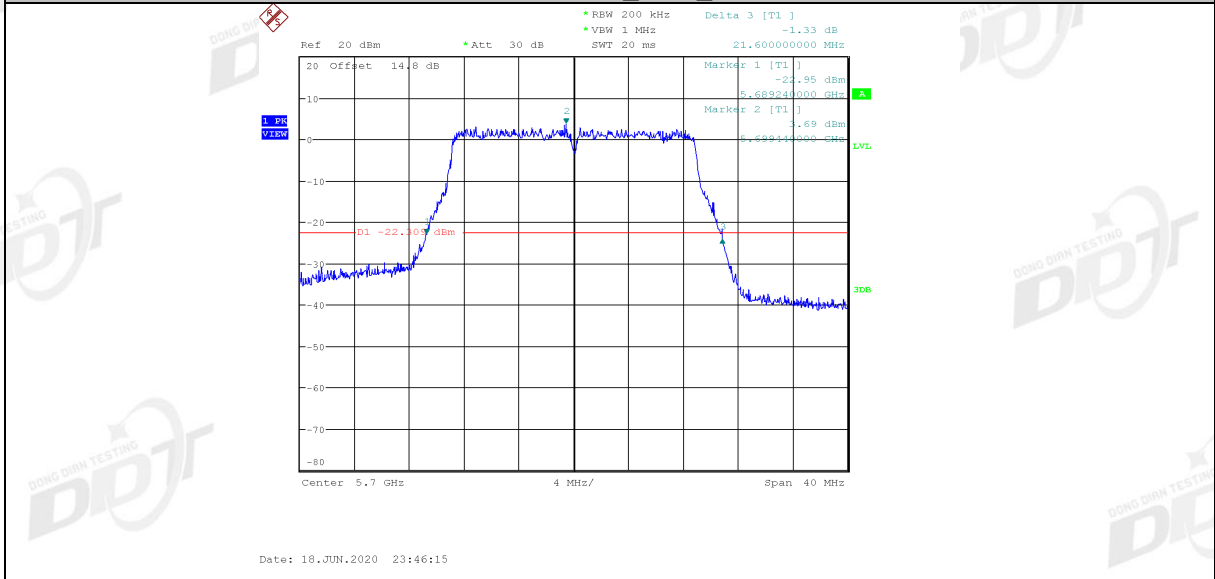
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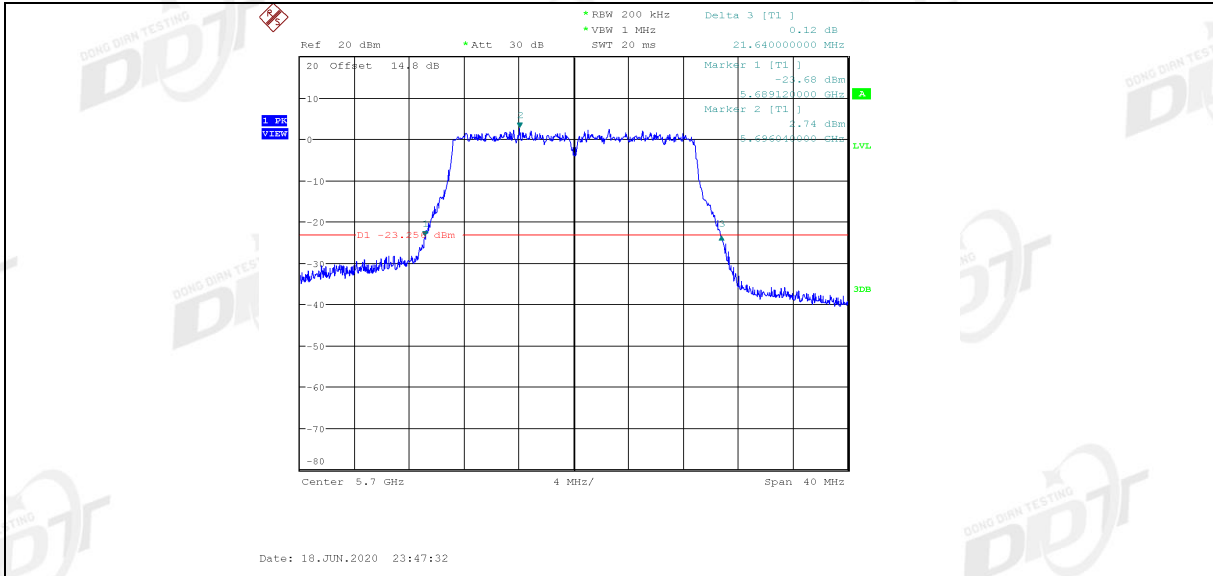
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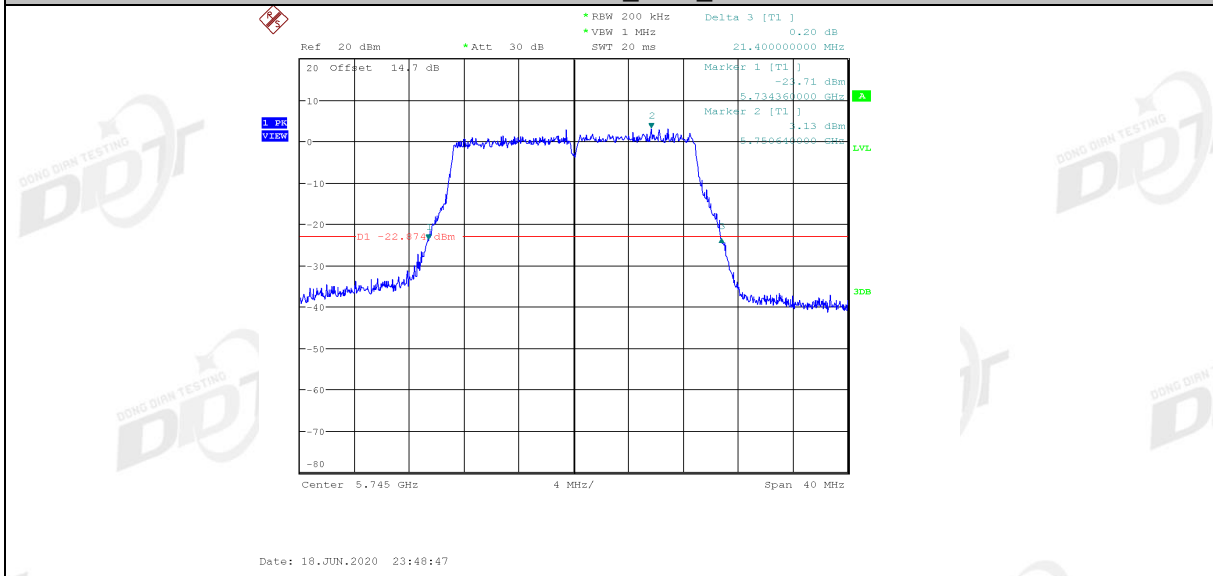
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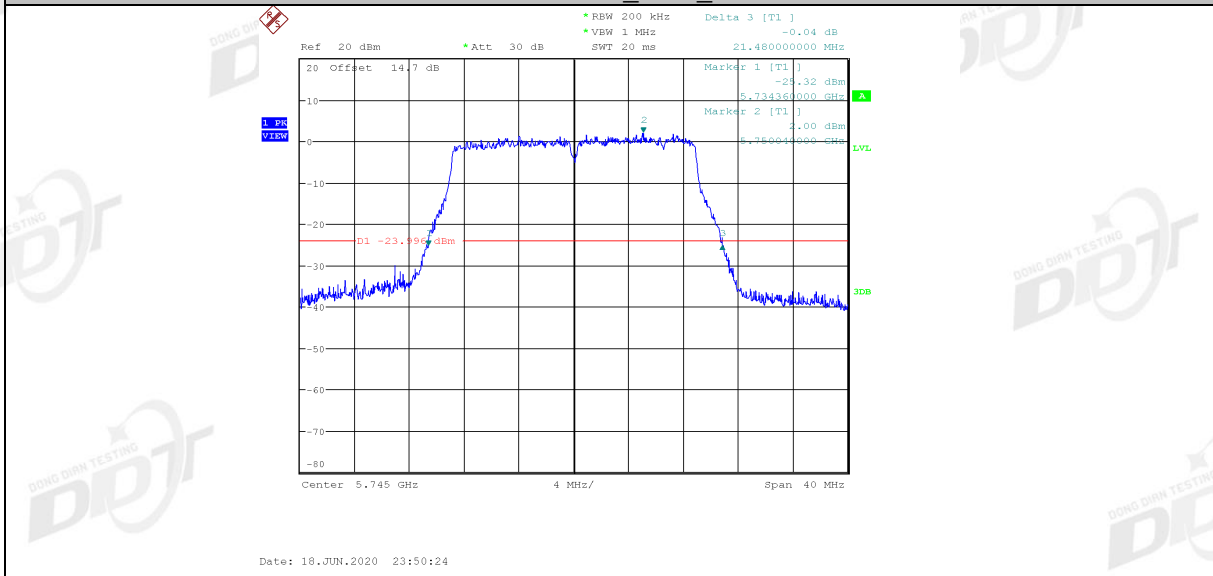
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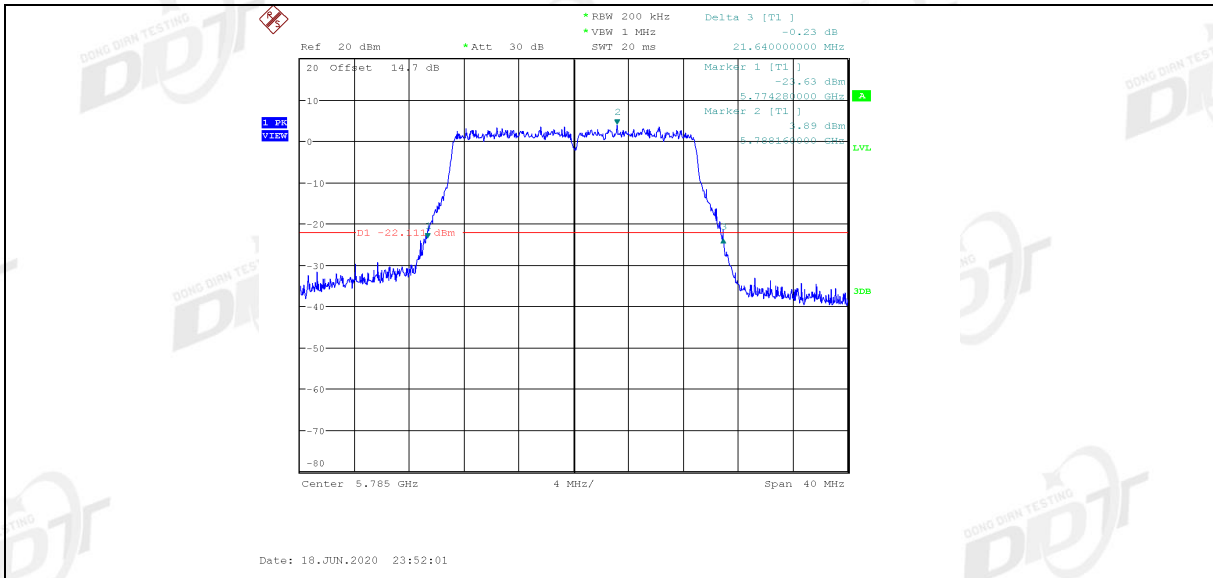
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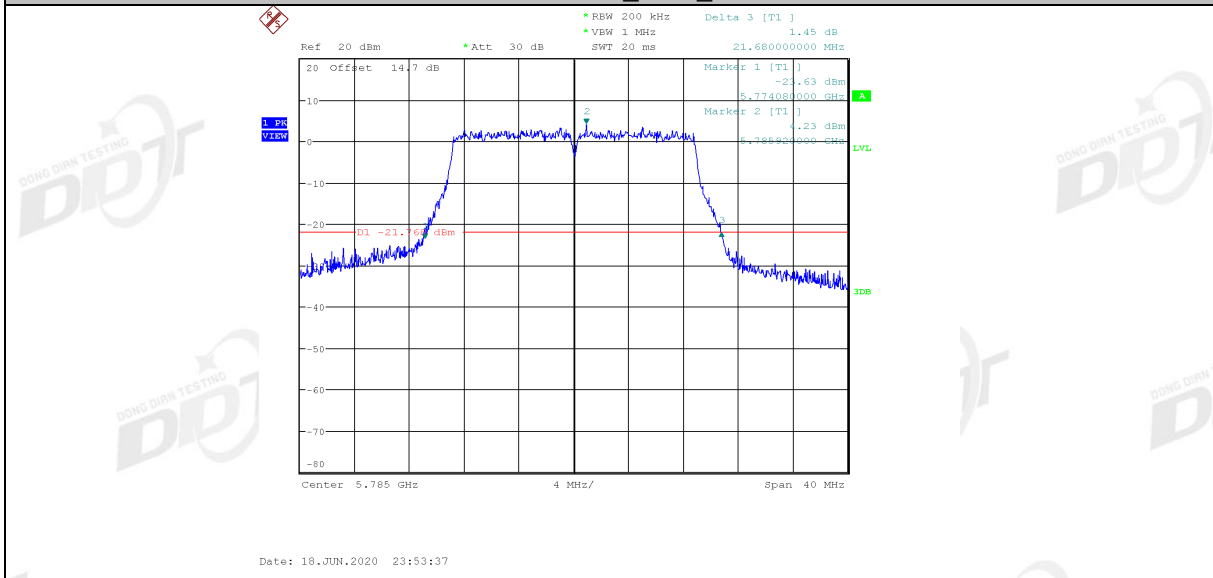
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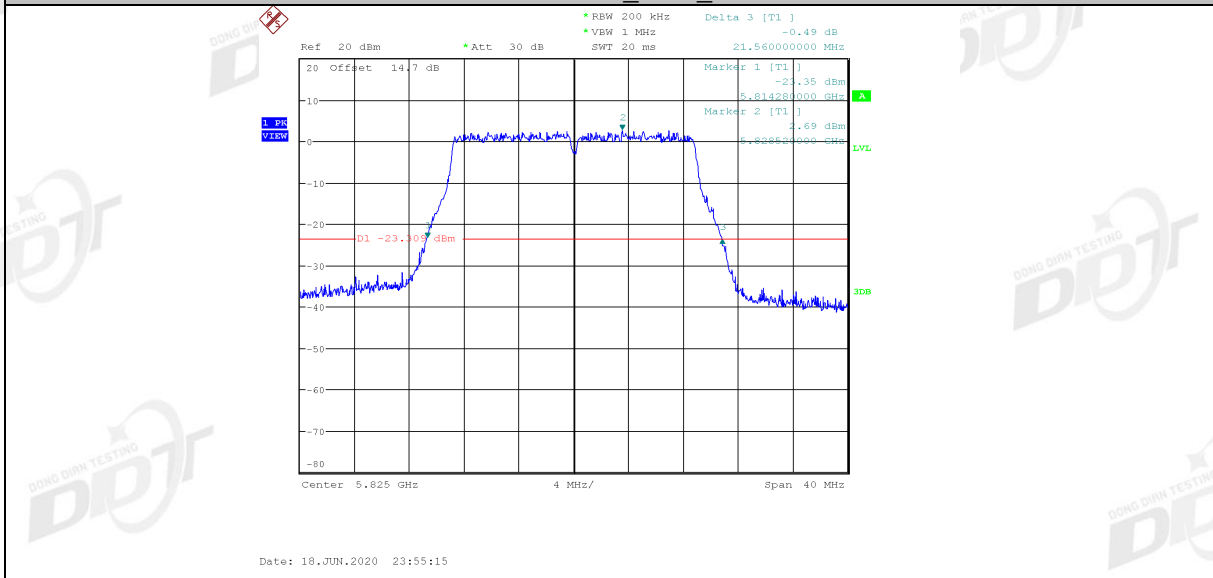
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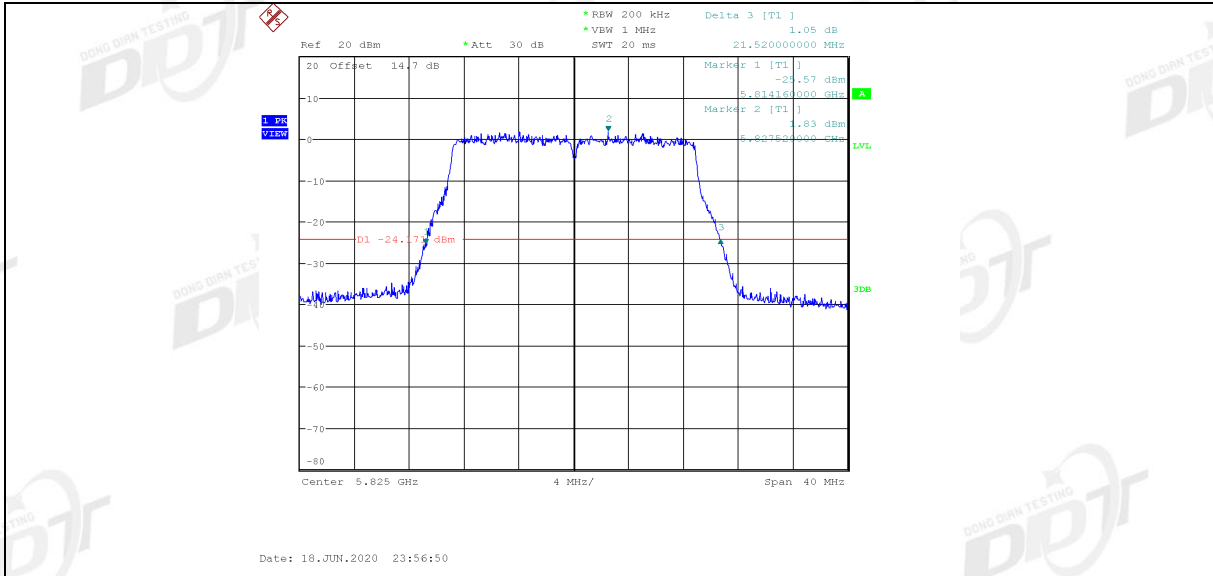
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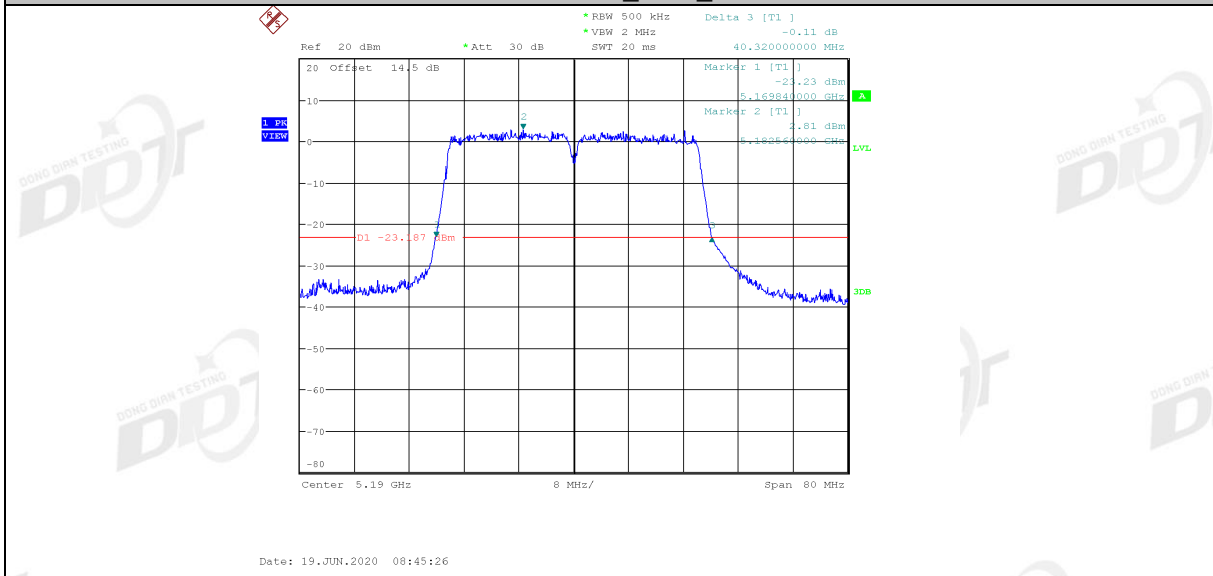
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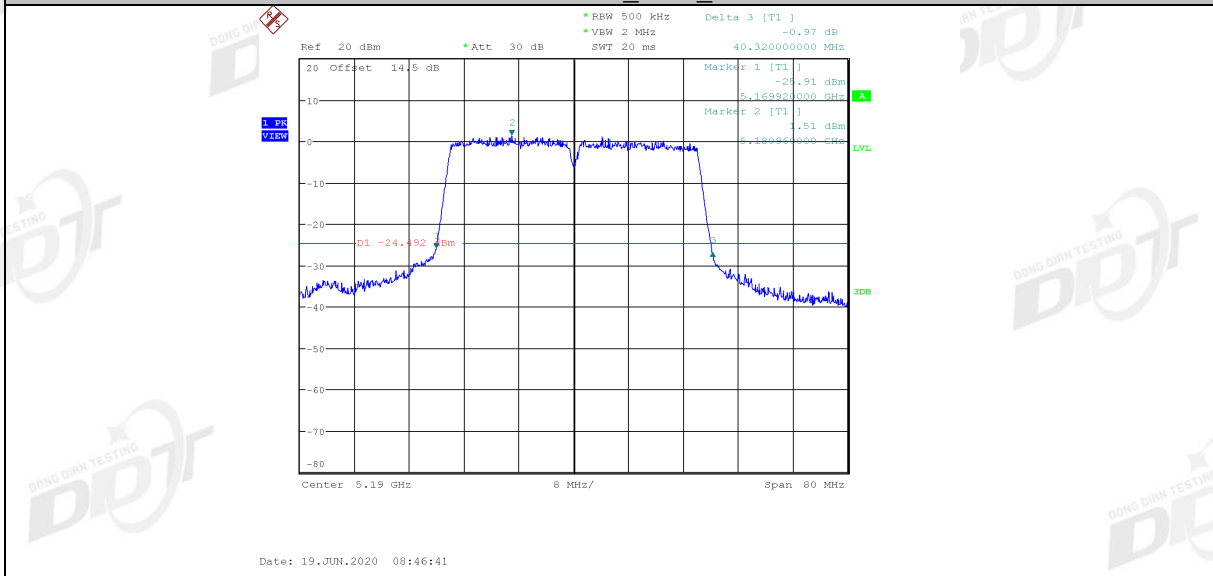
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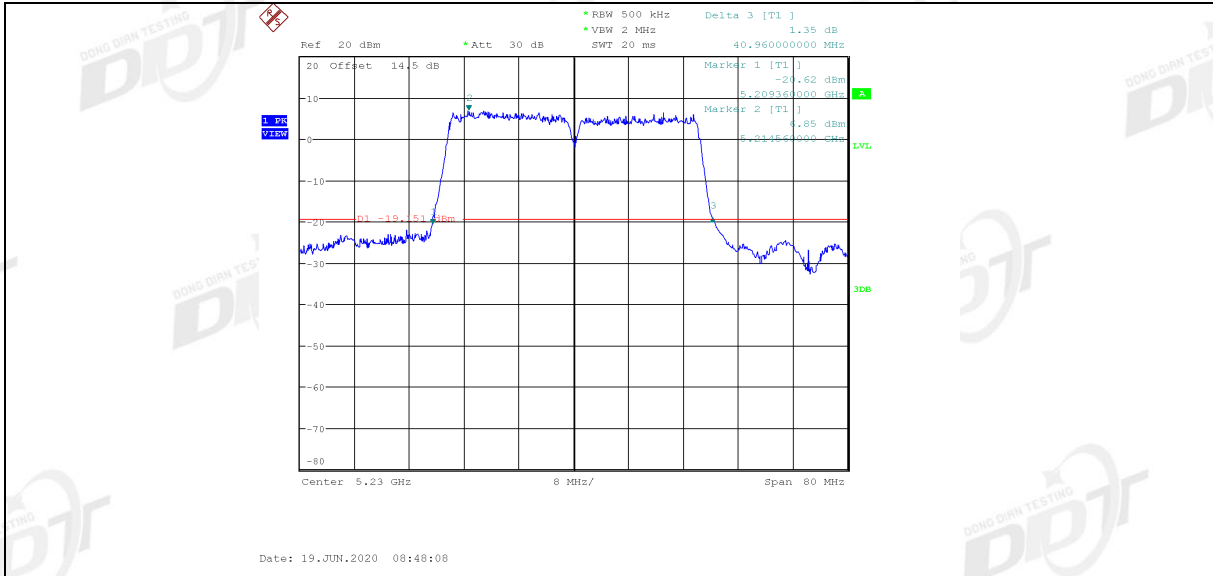
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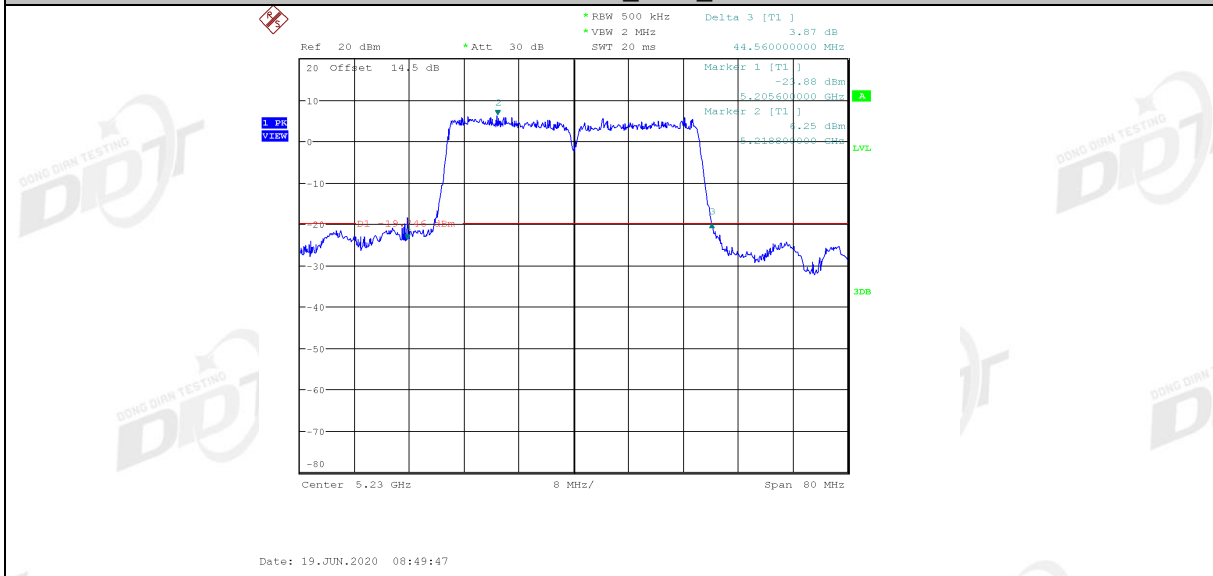
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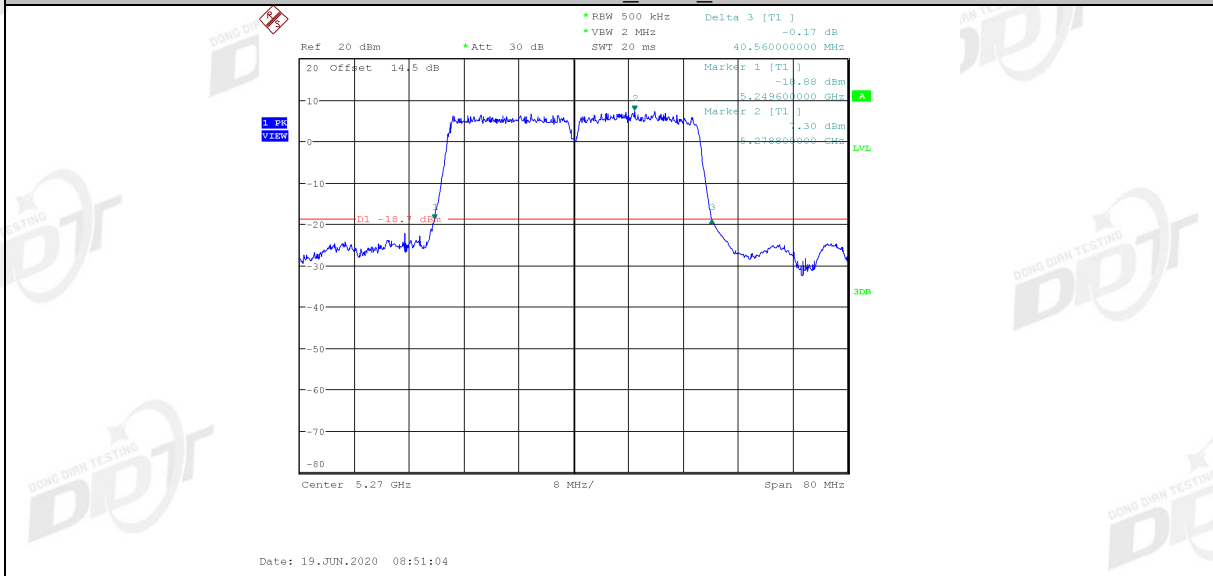
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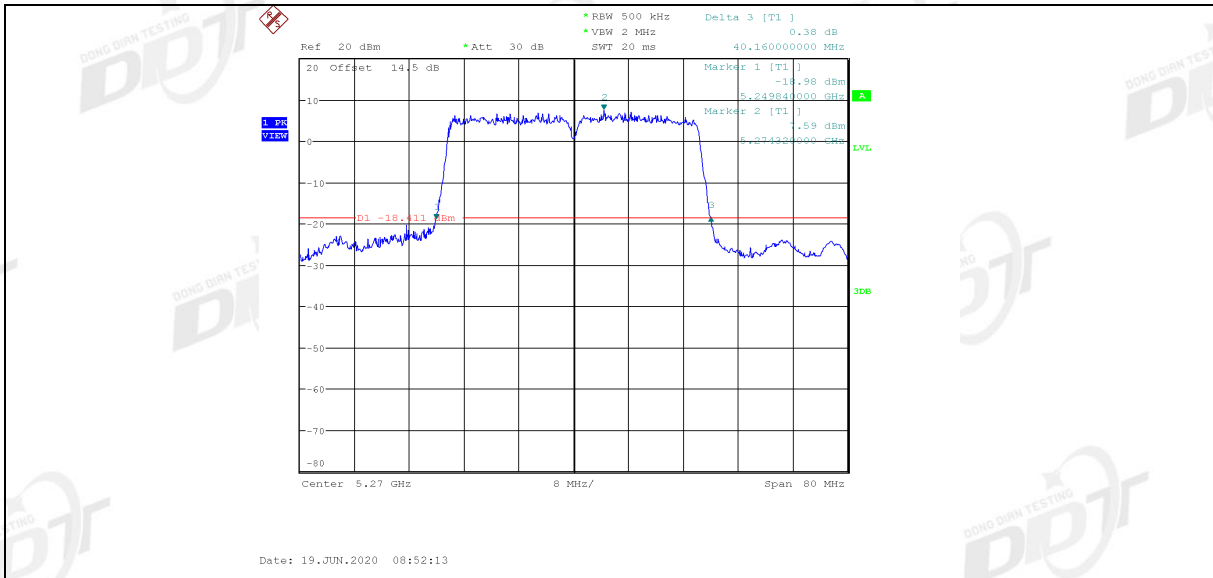
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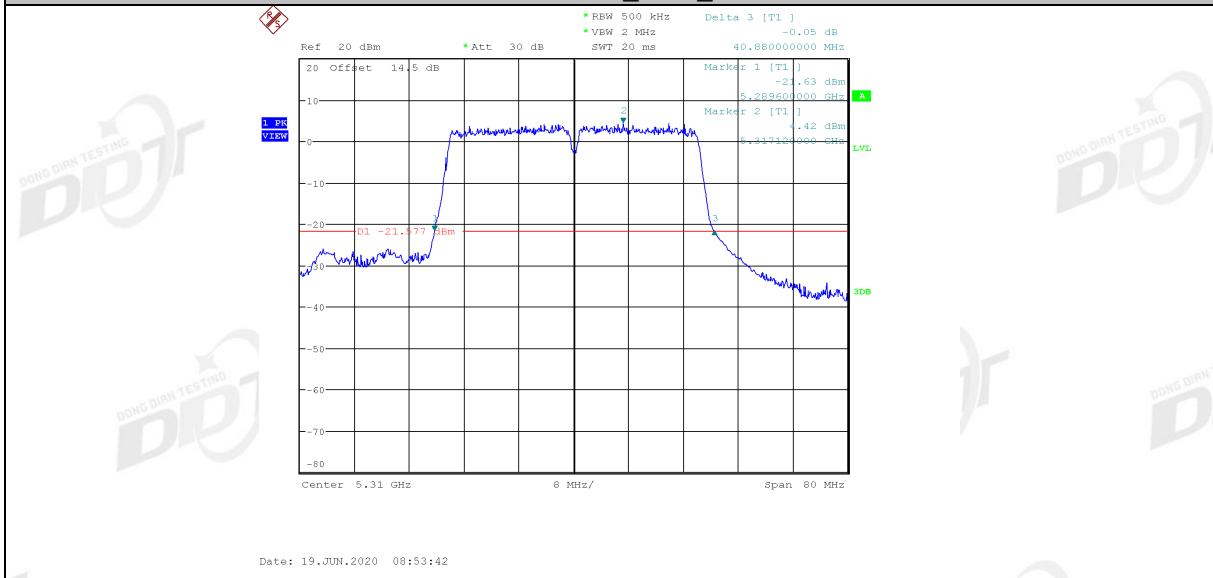
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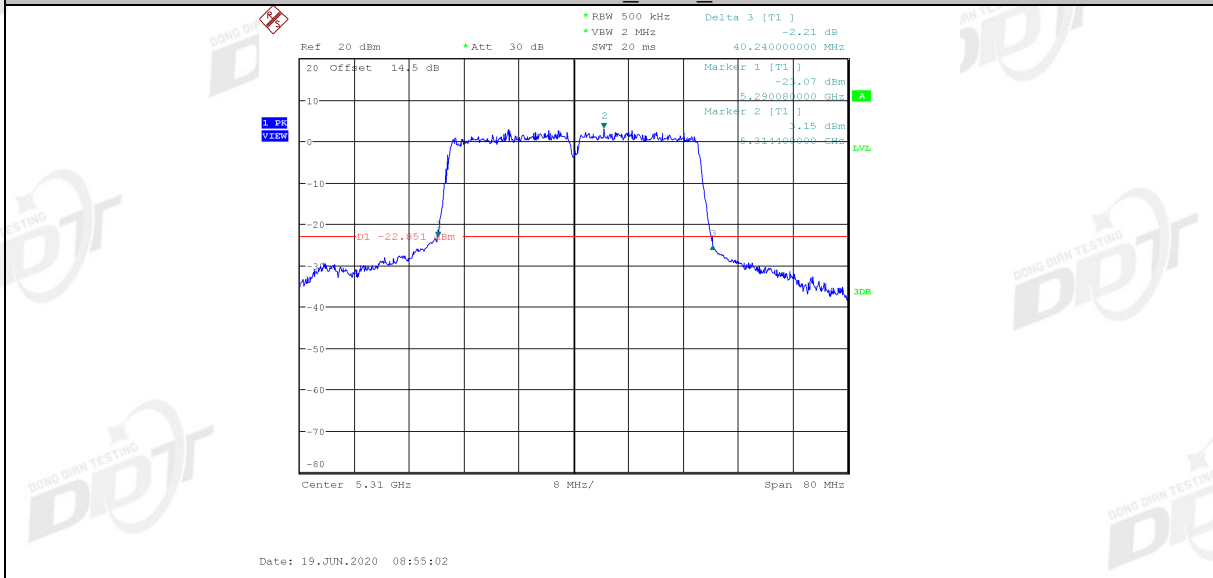
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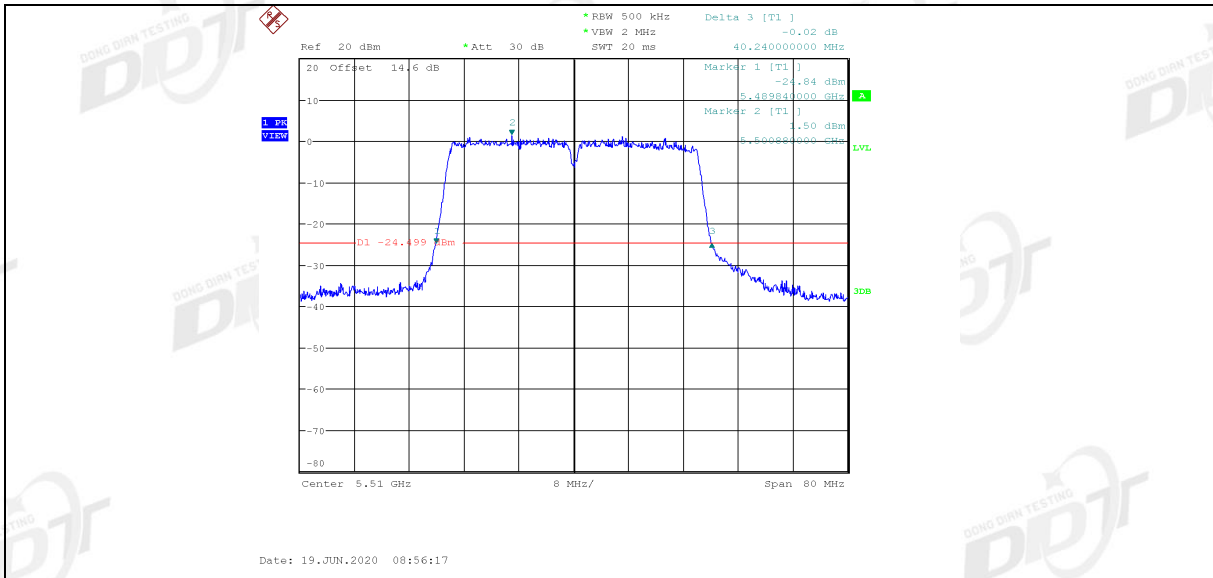
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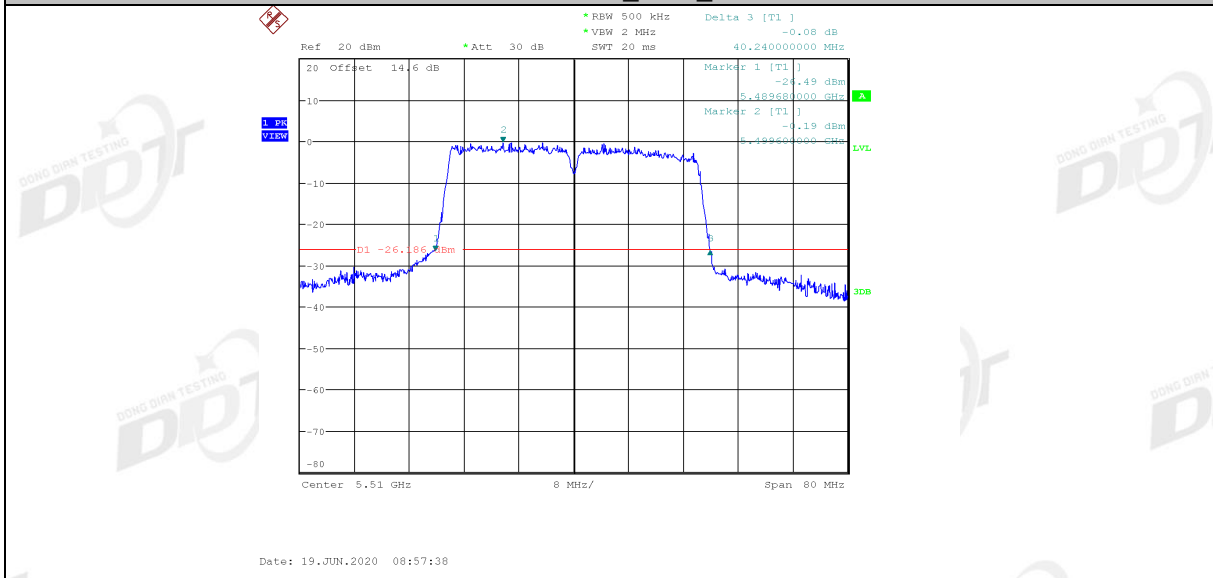
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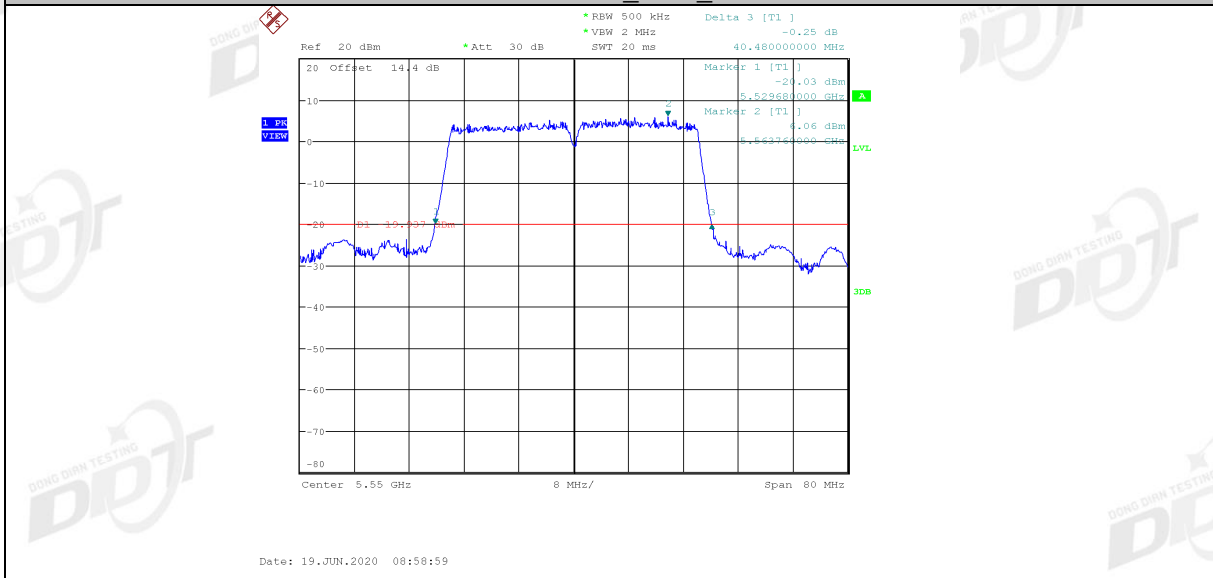
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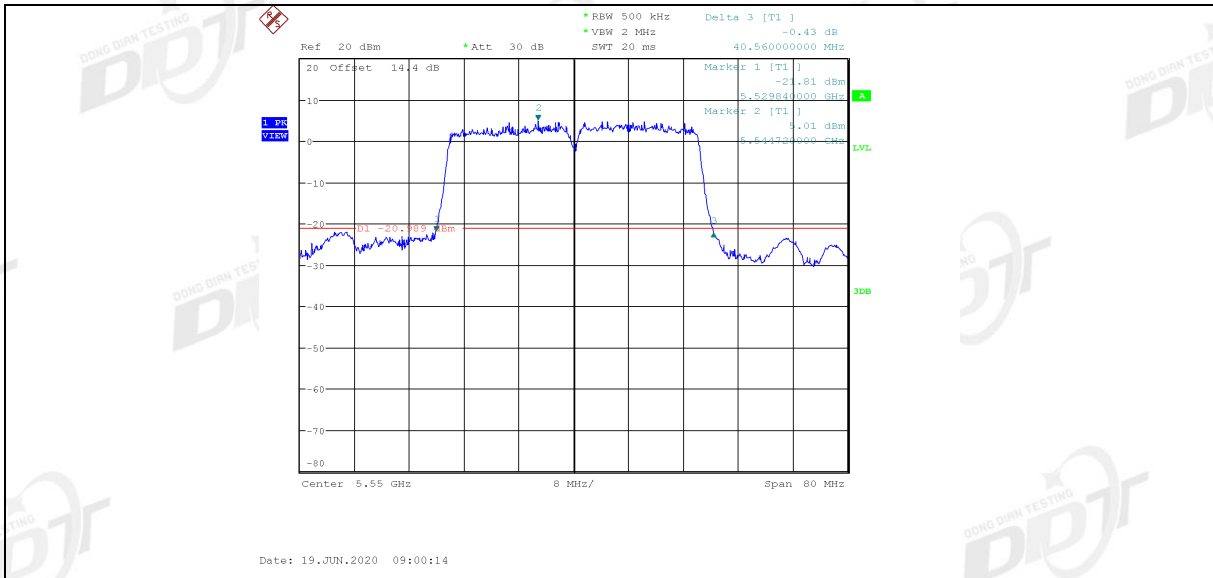
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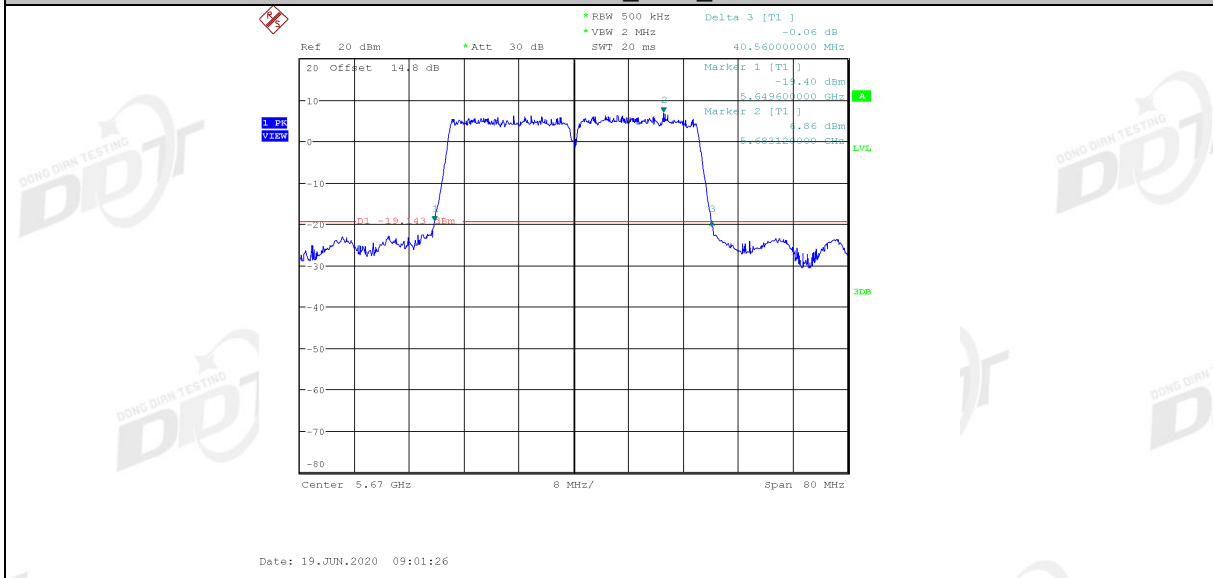
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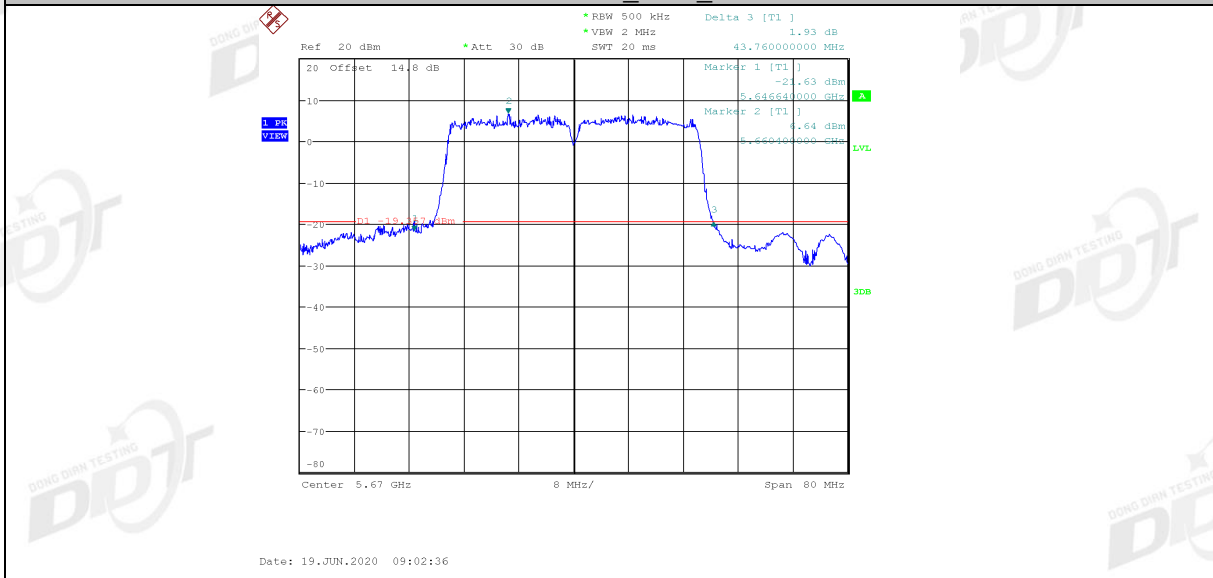
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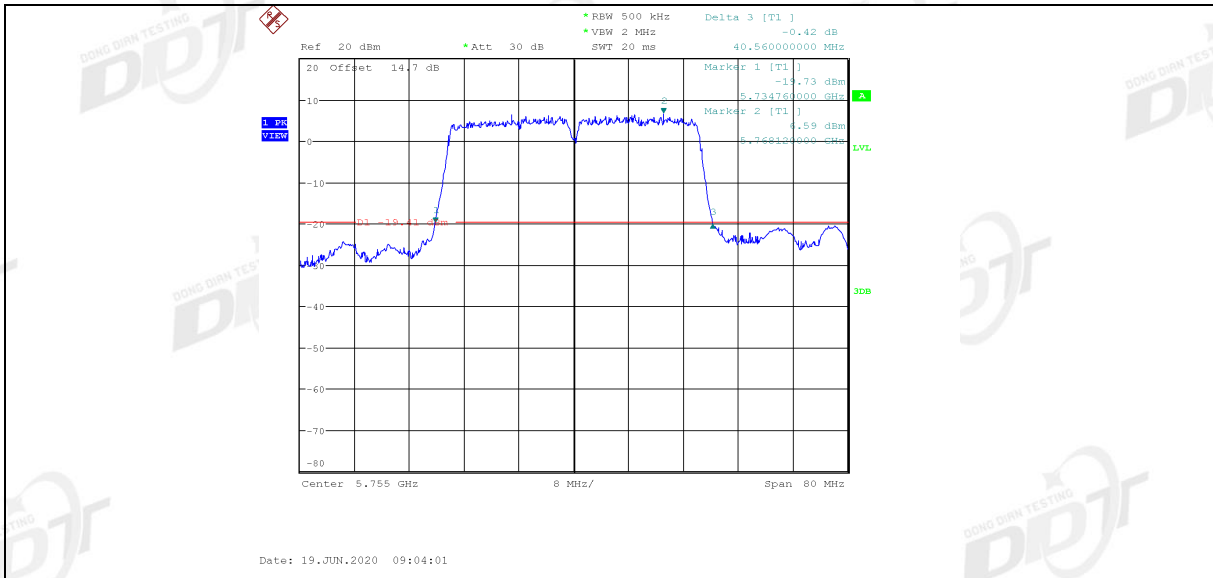
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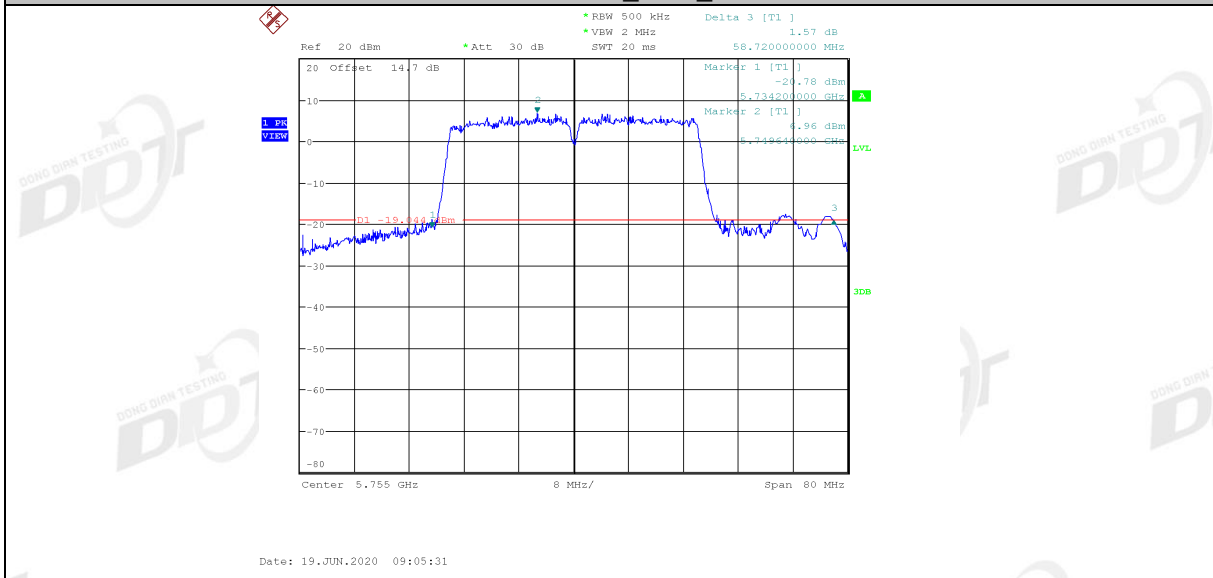
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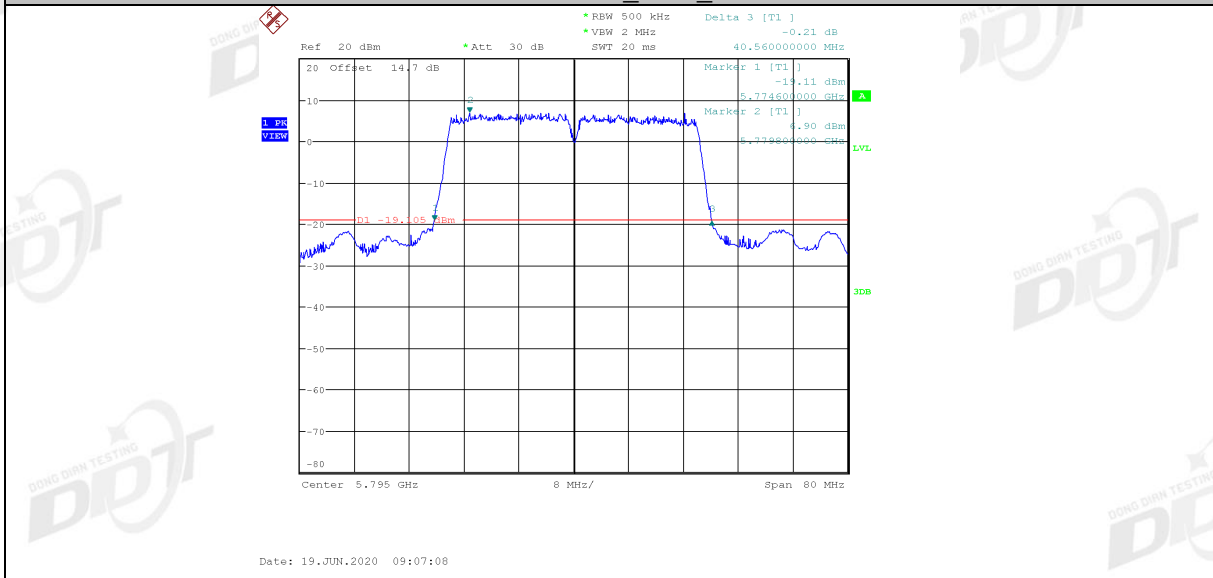
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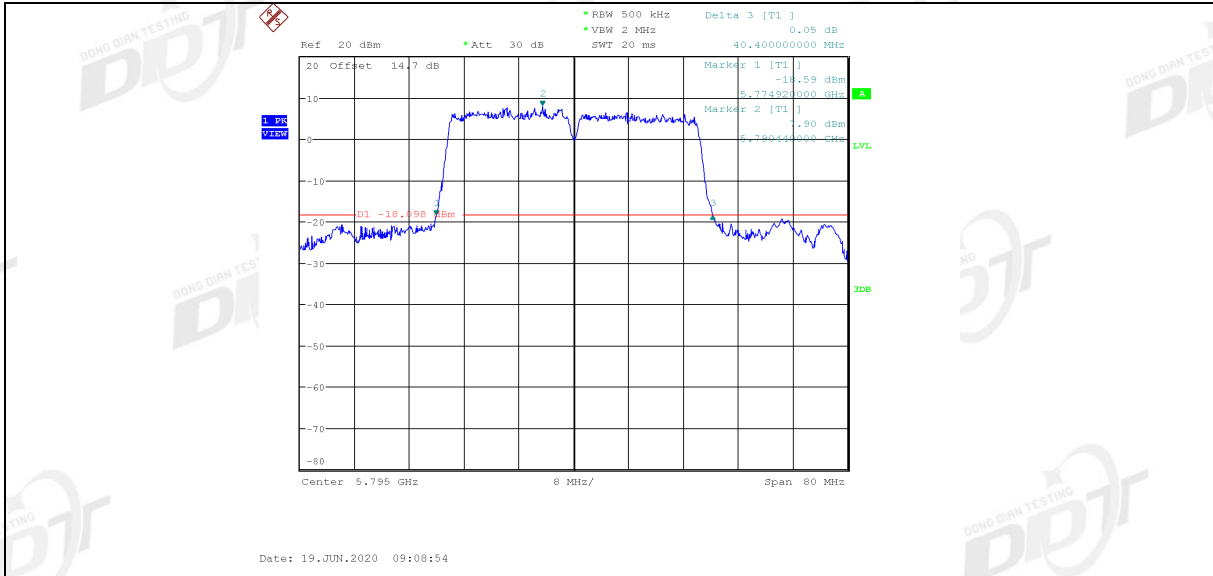
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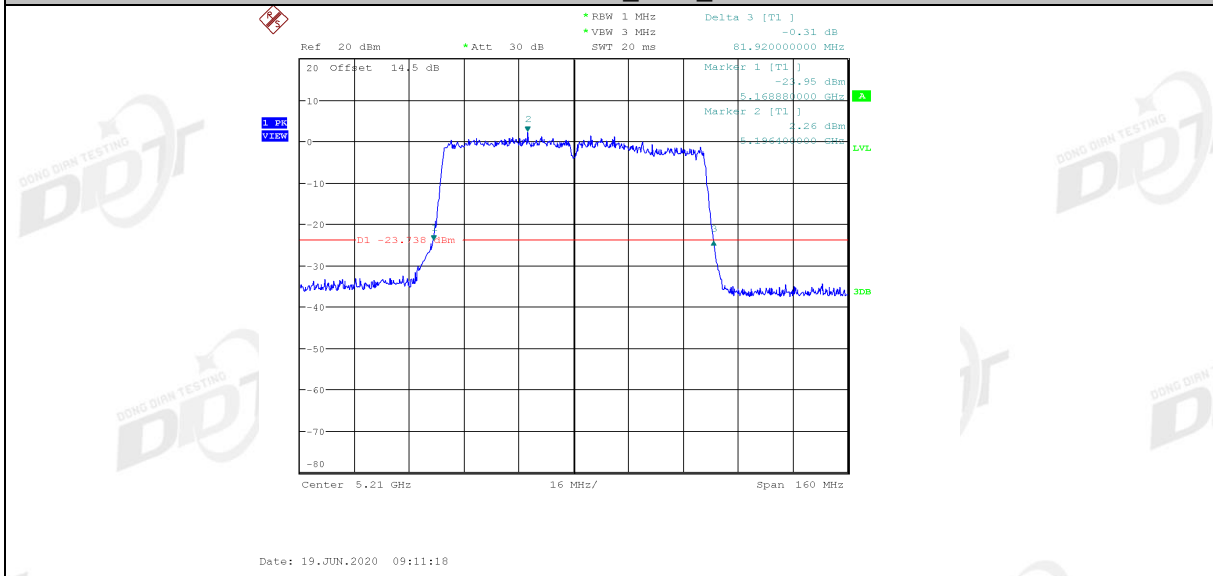
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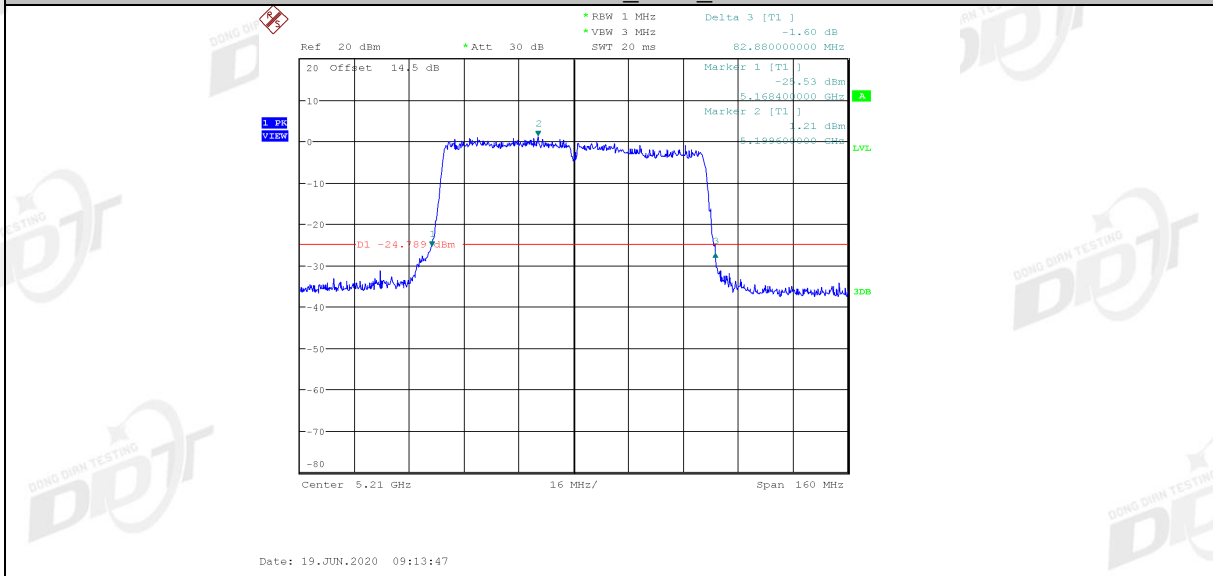
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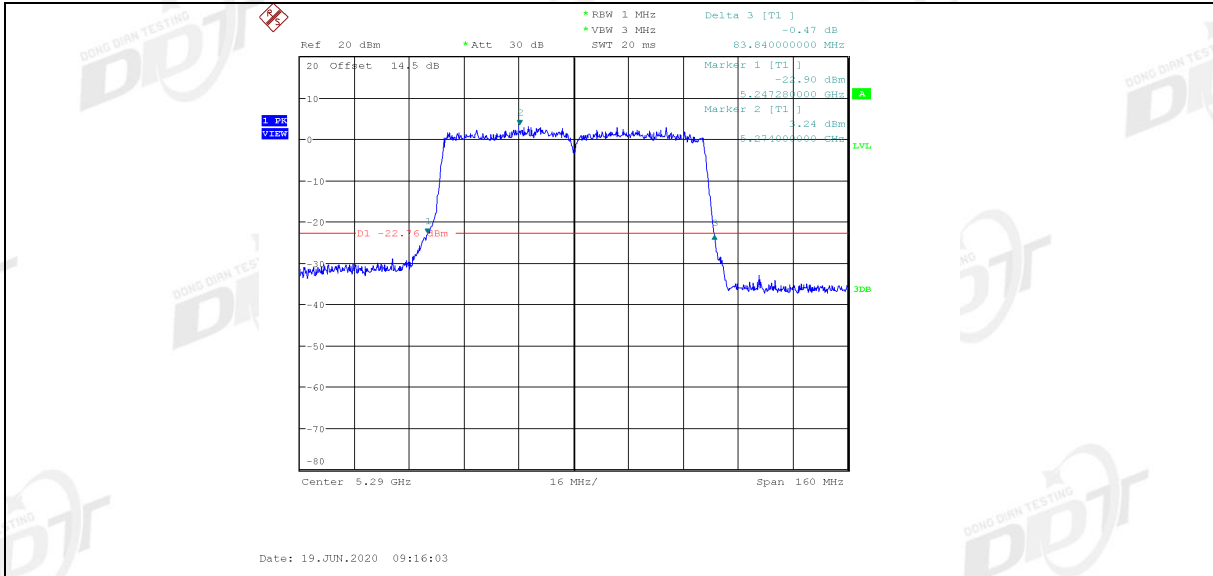
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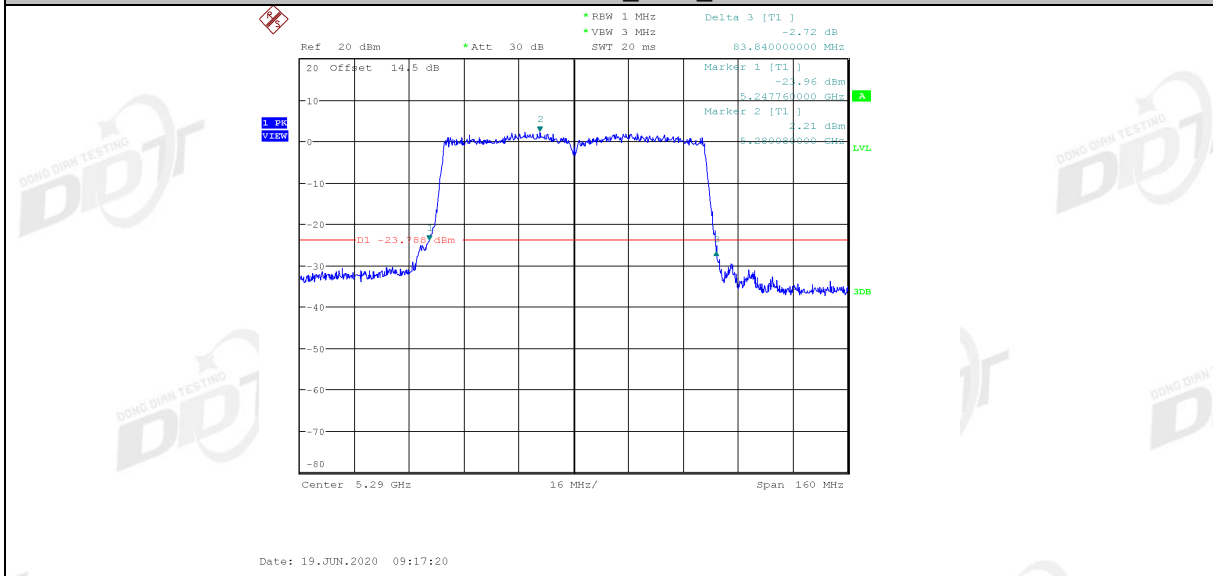
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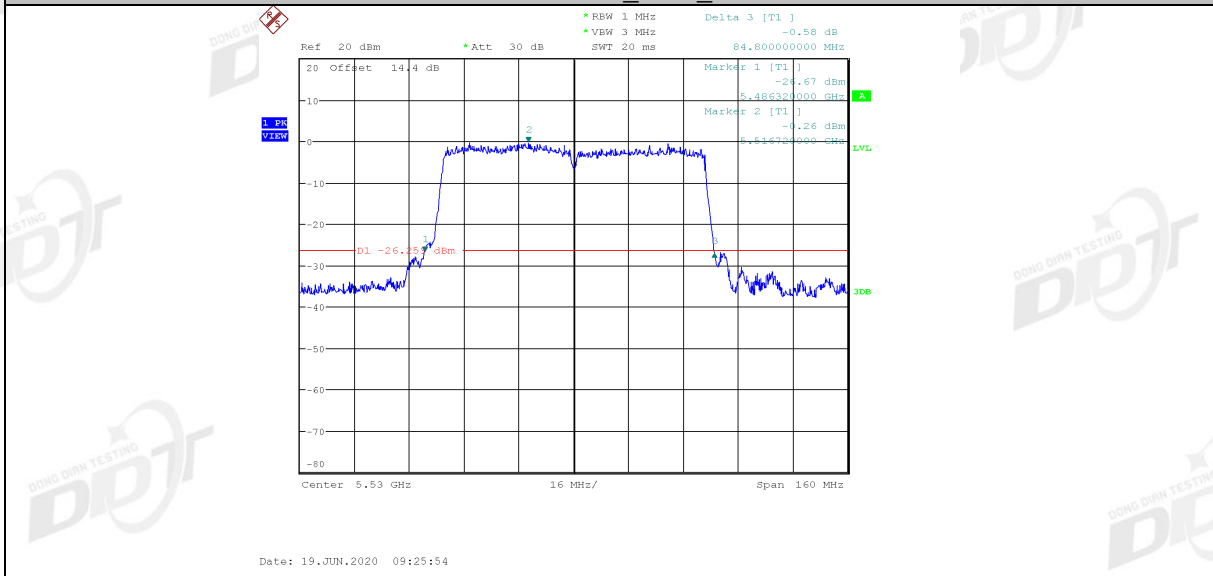
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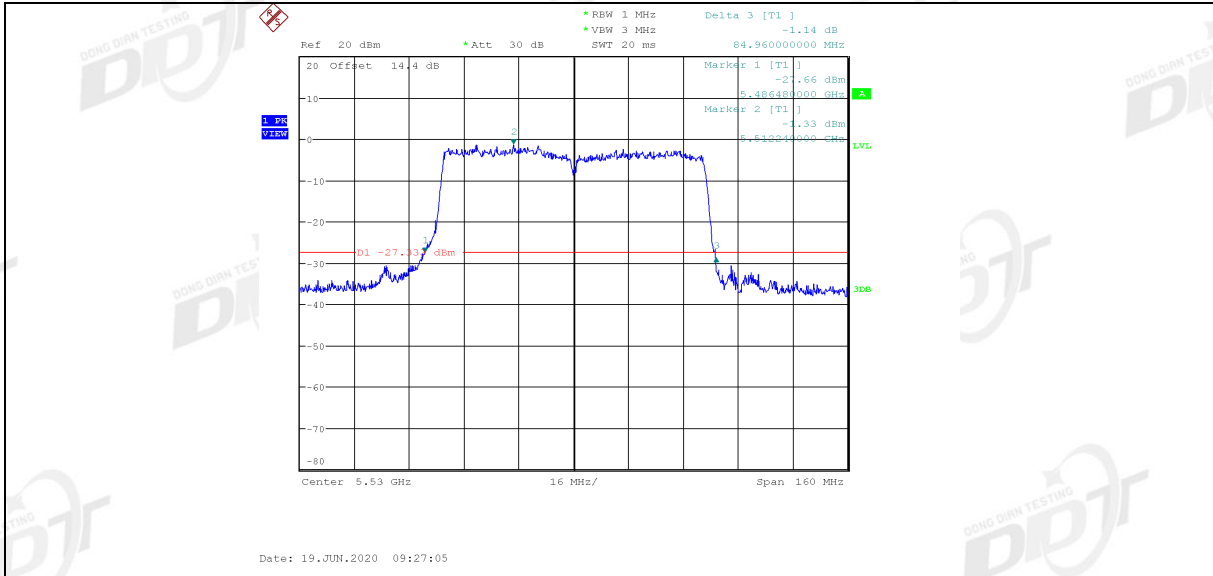
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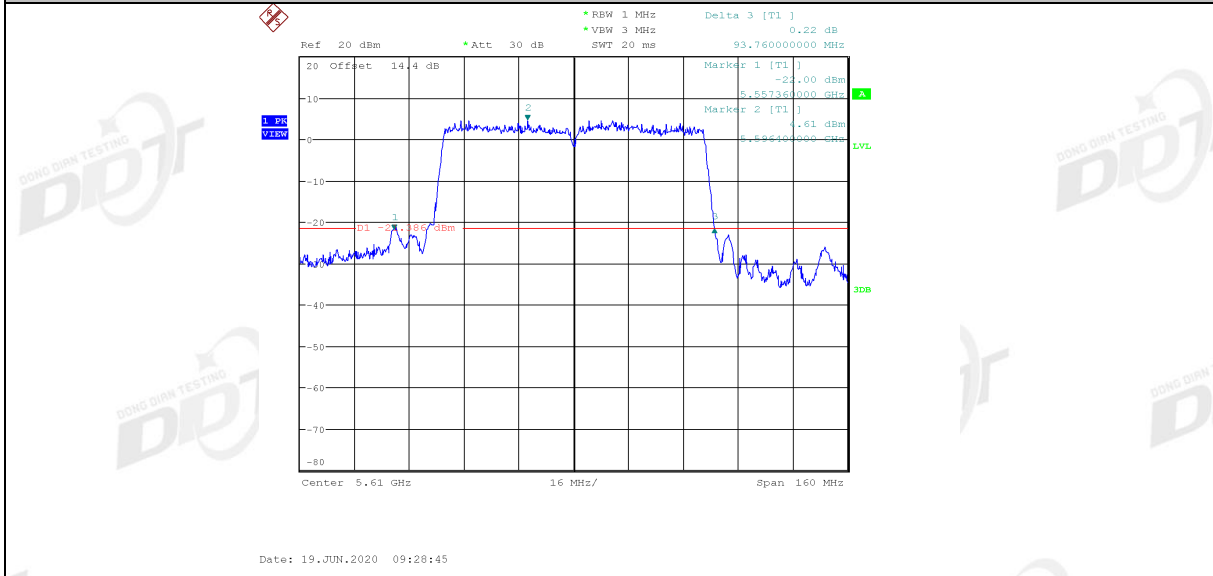
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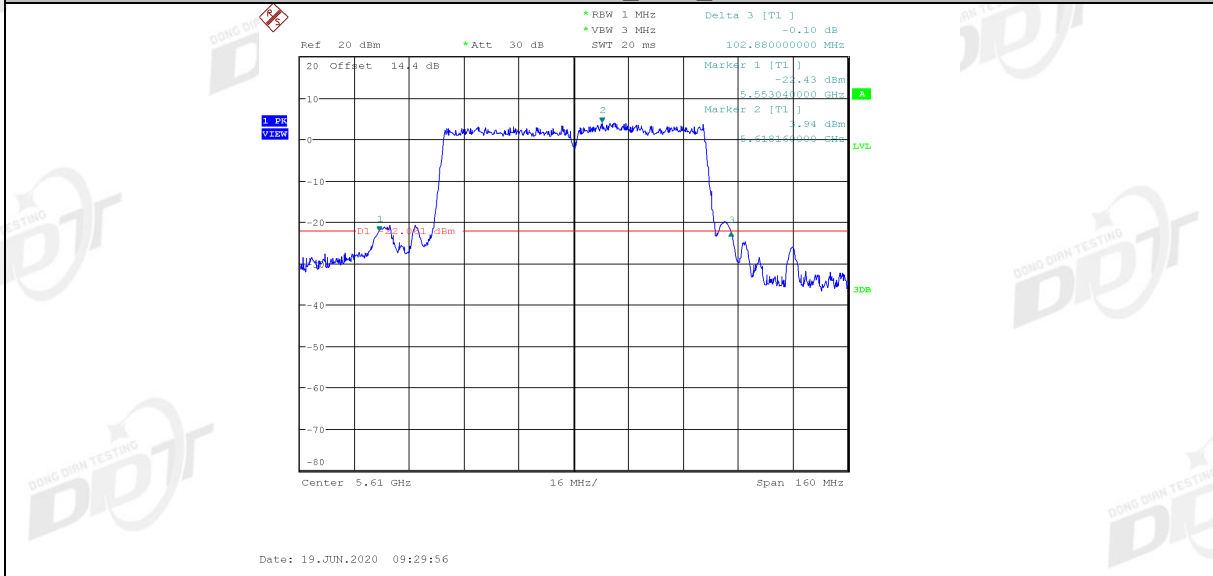
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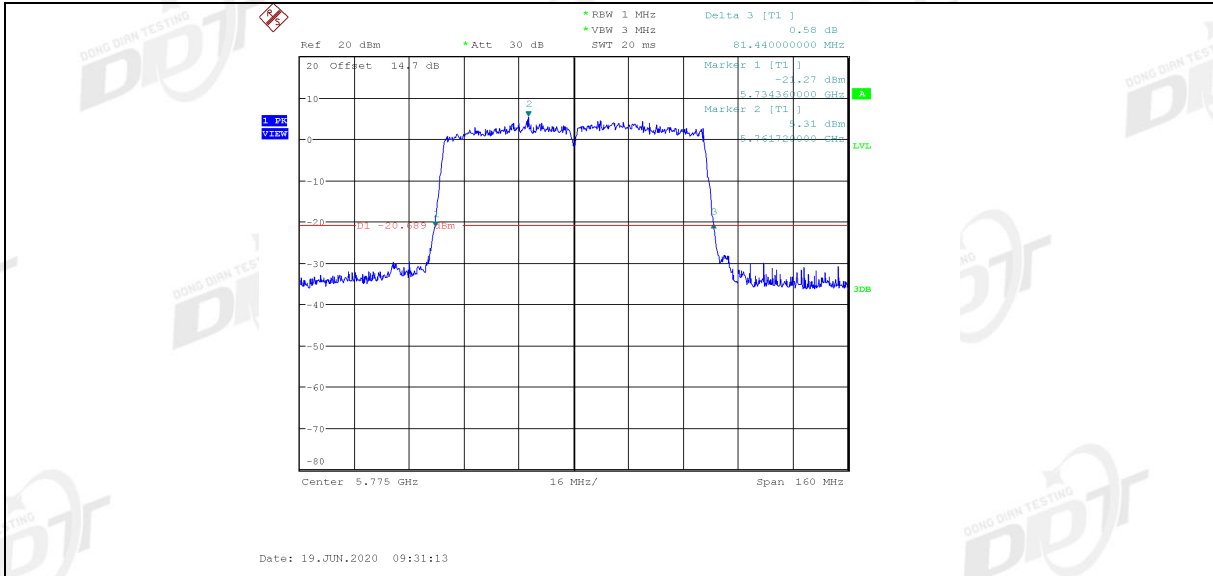
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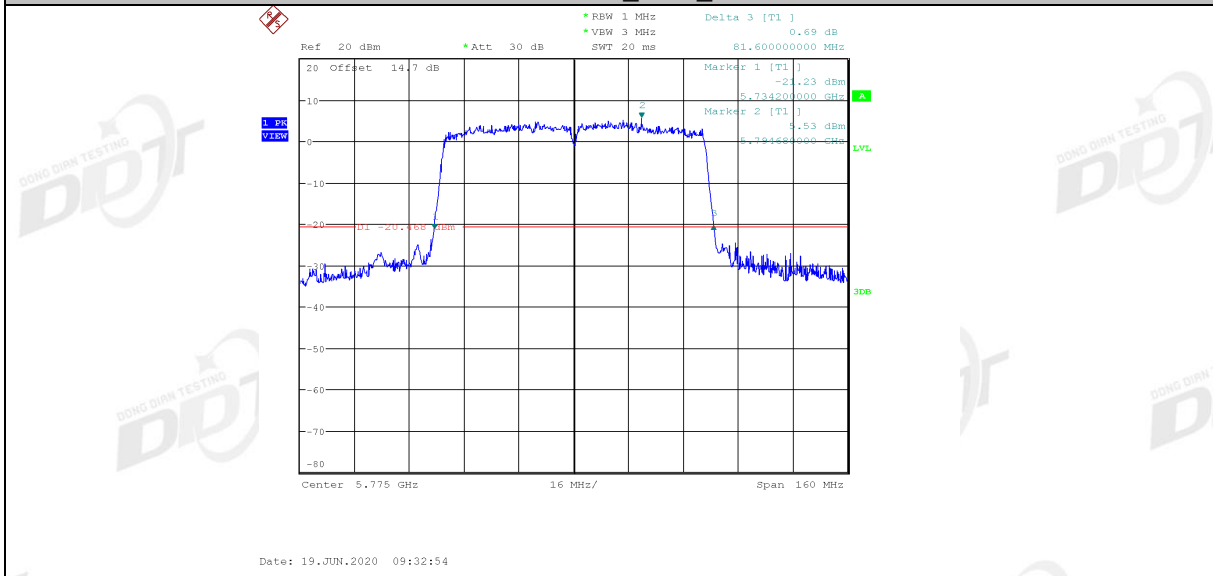
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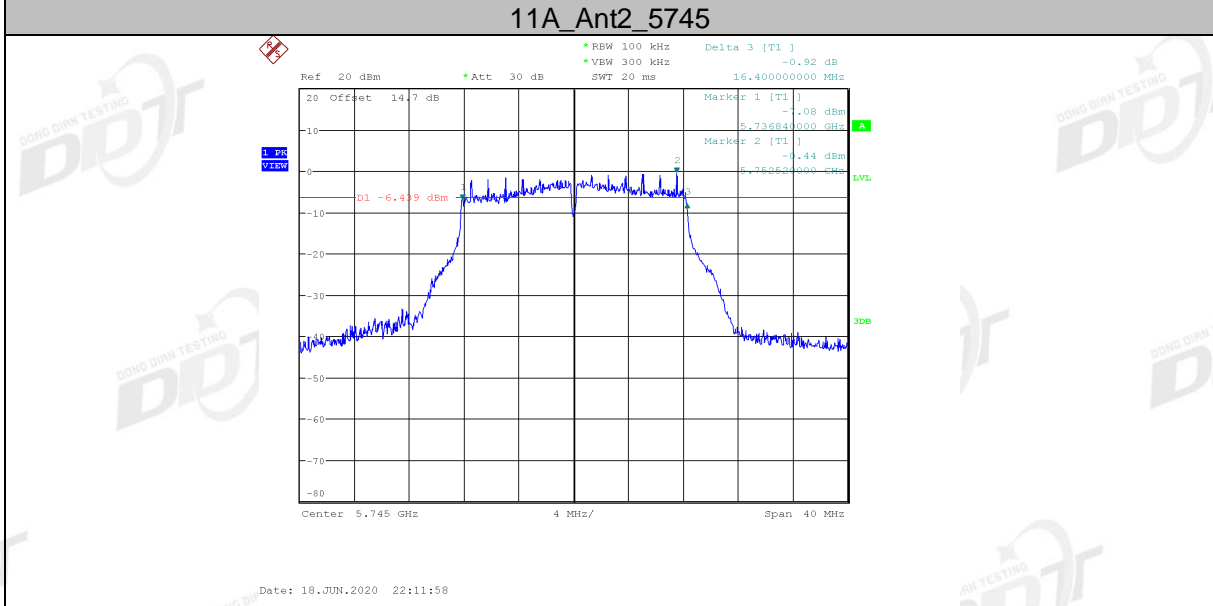
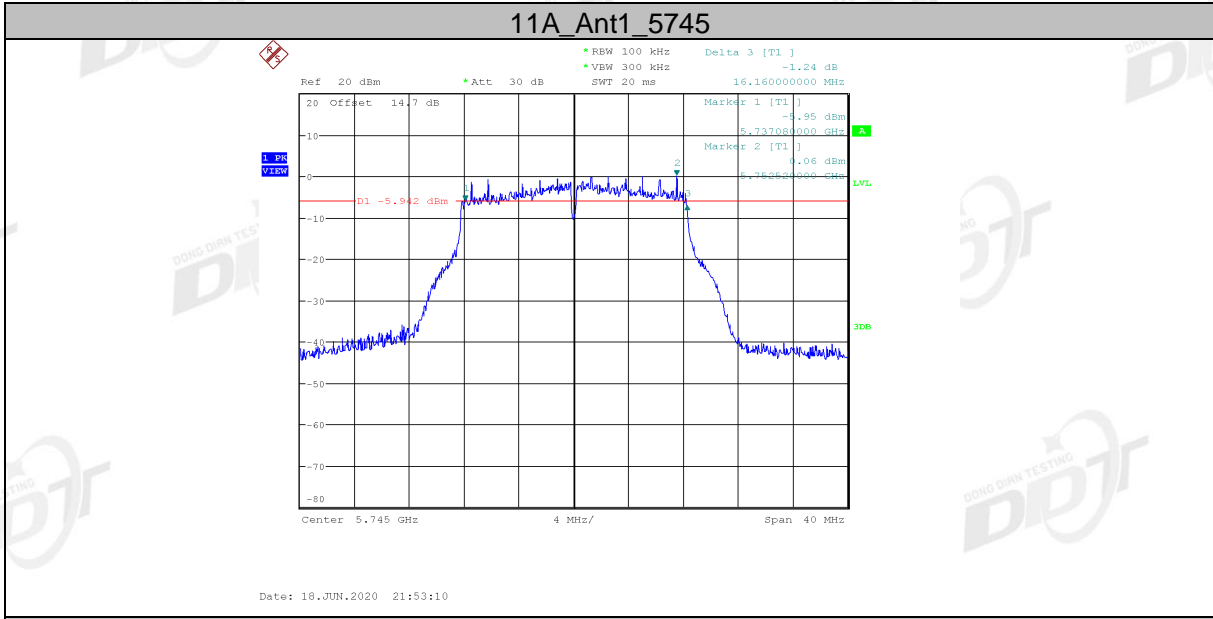
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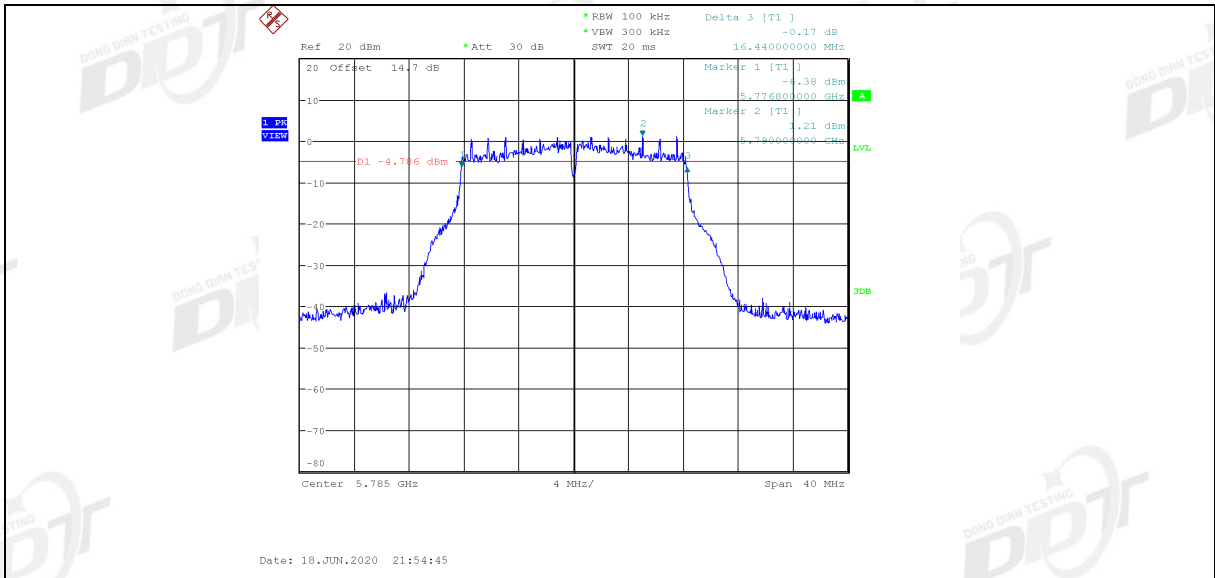
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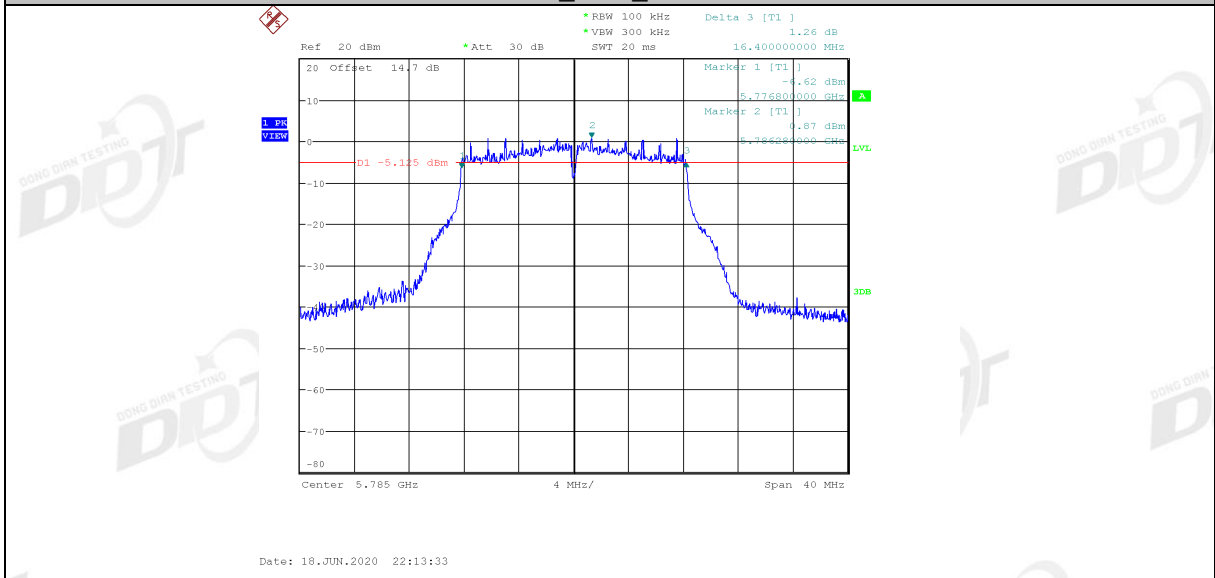
6 dB EBW:



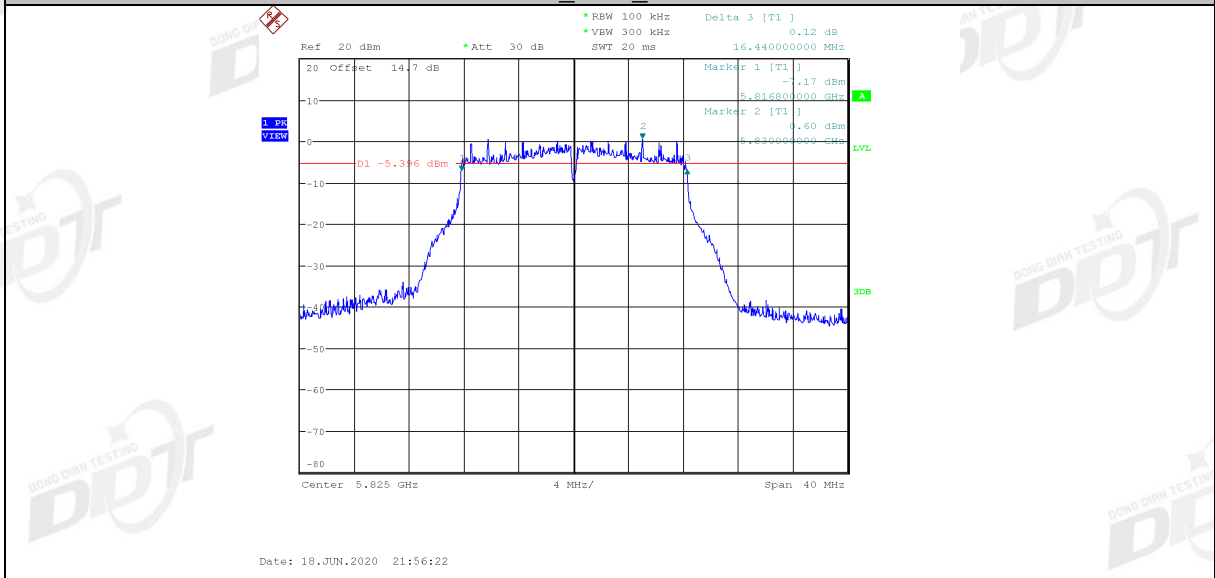
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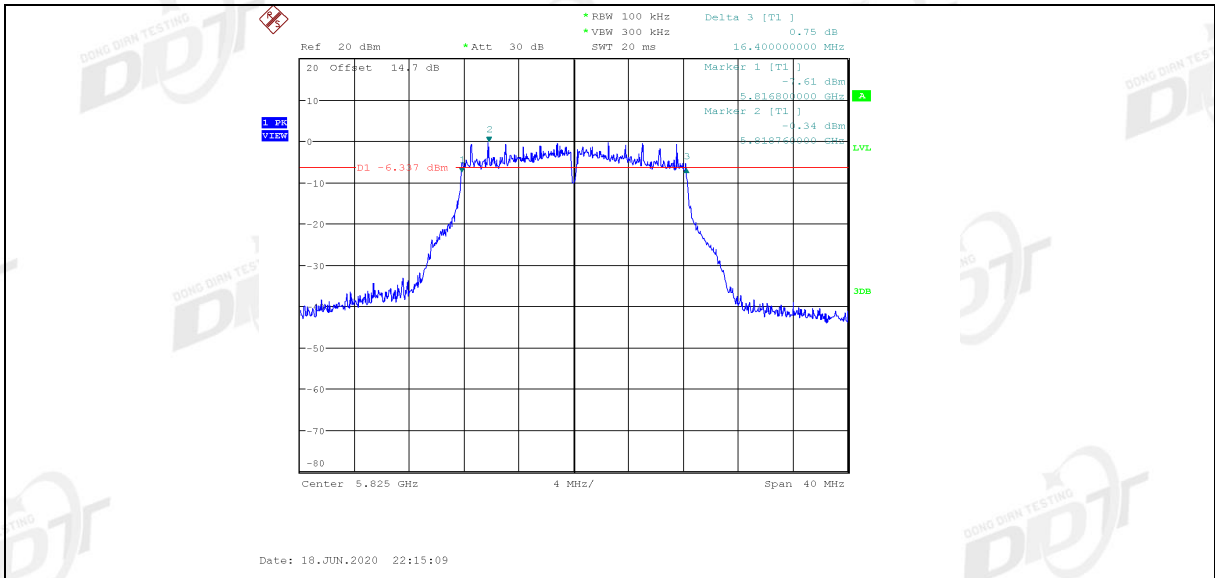
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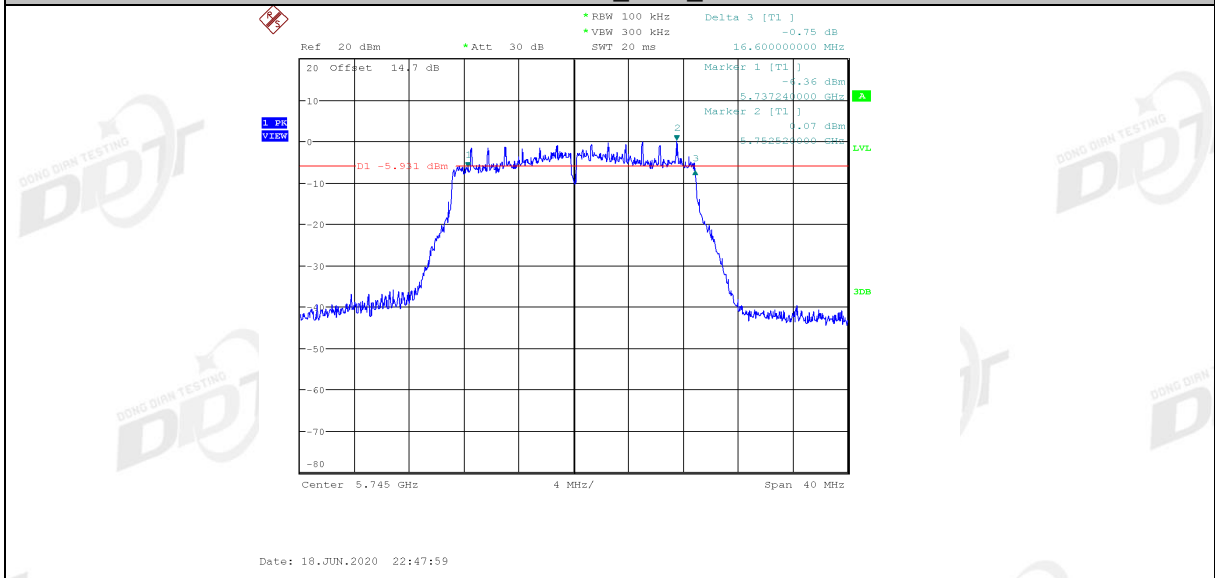
11A_Ant1_5825



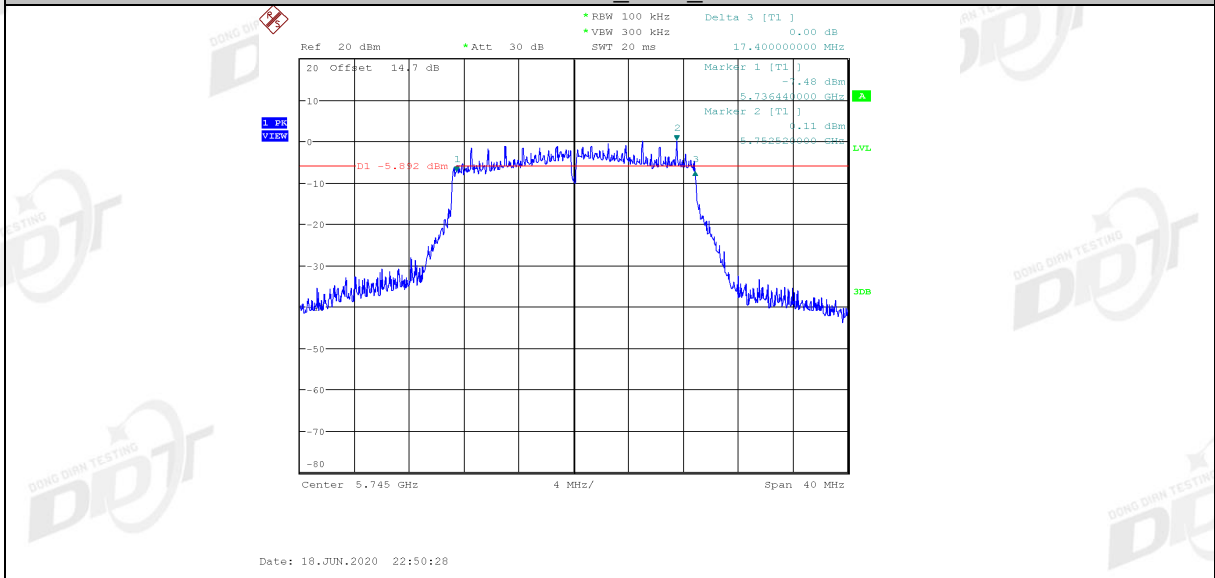
11A_Ant2_5825



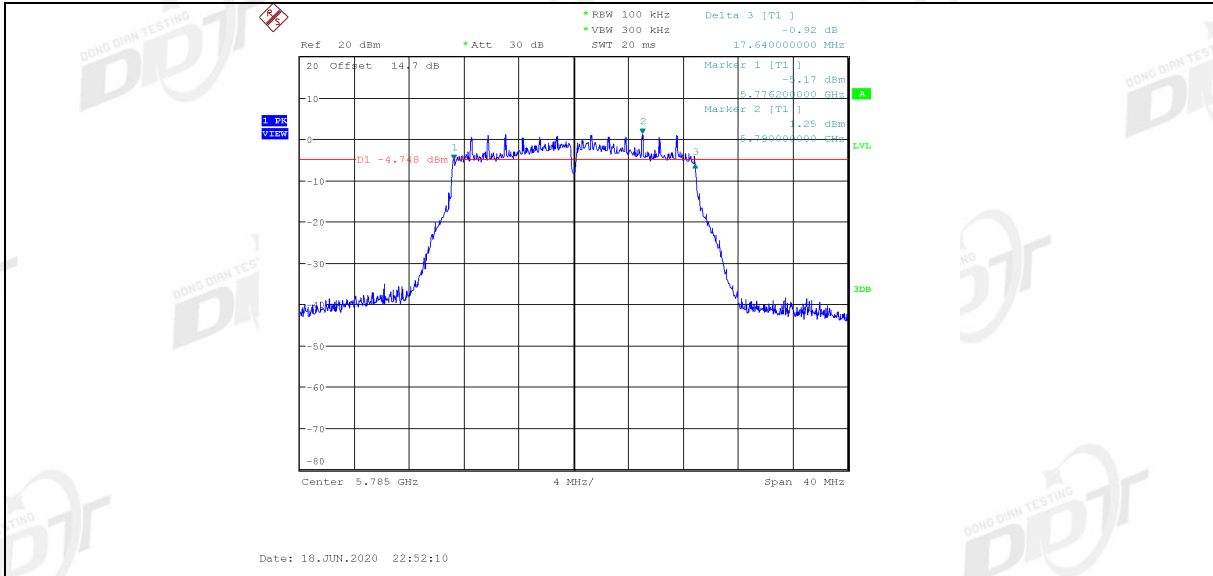
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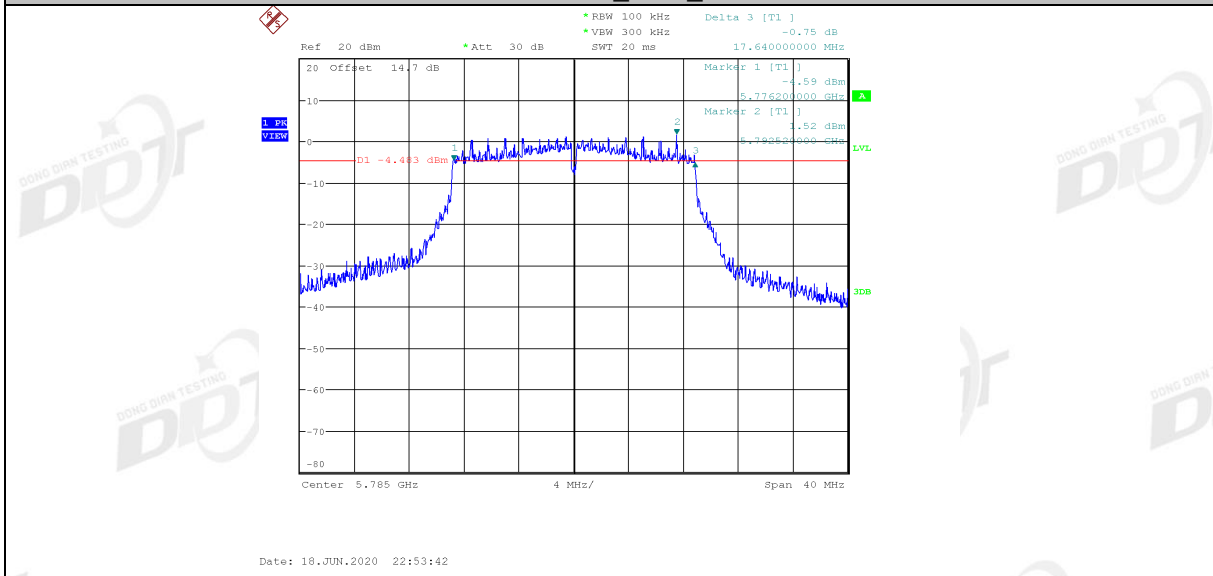
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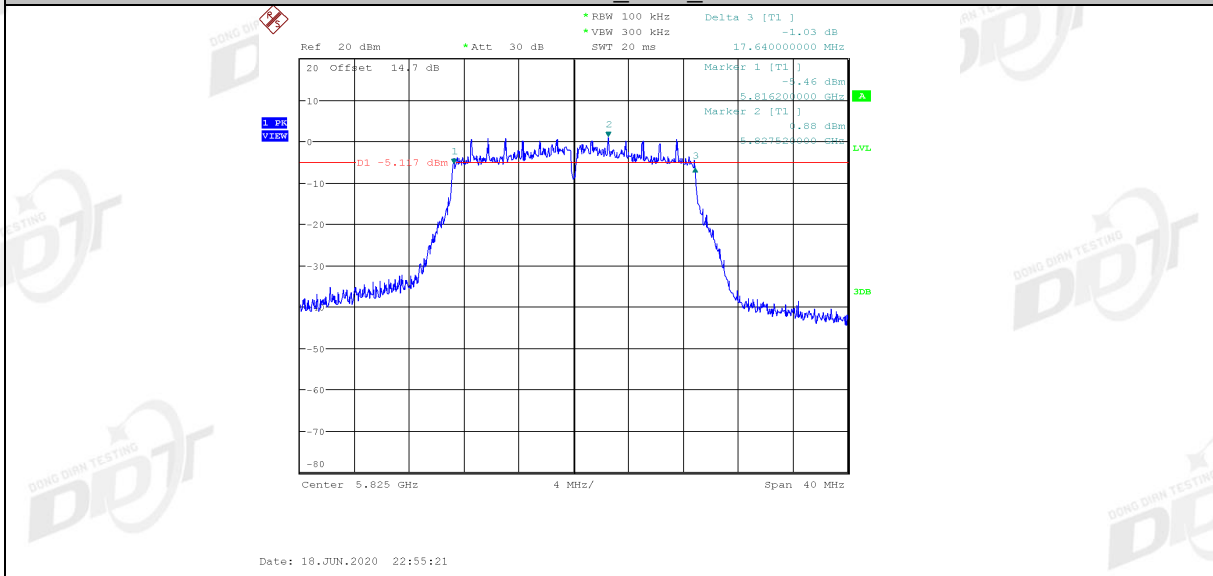
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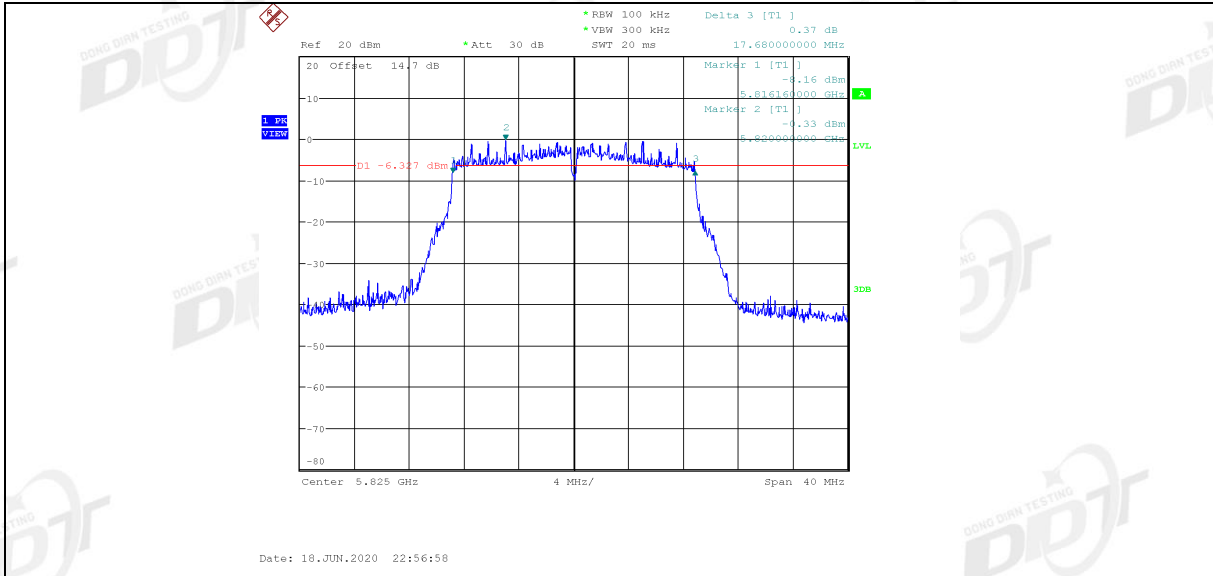
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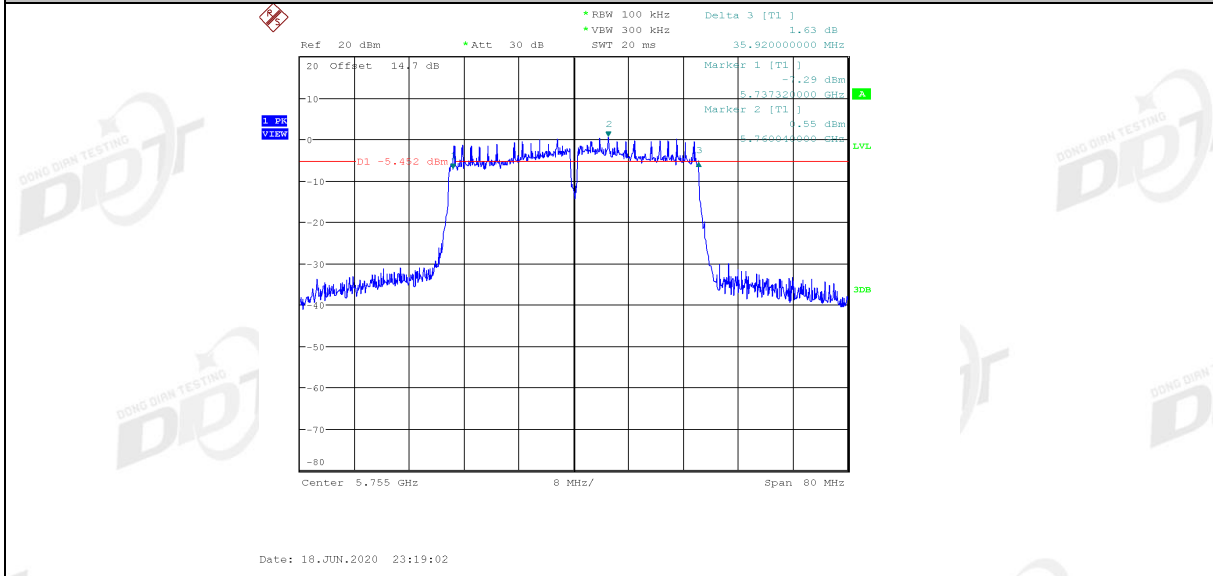
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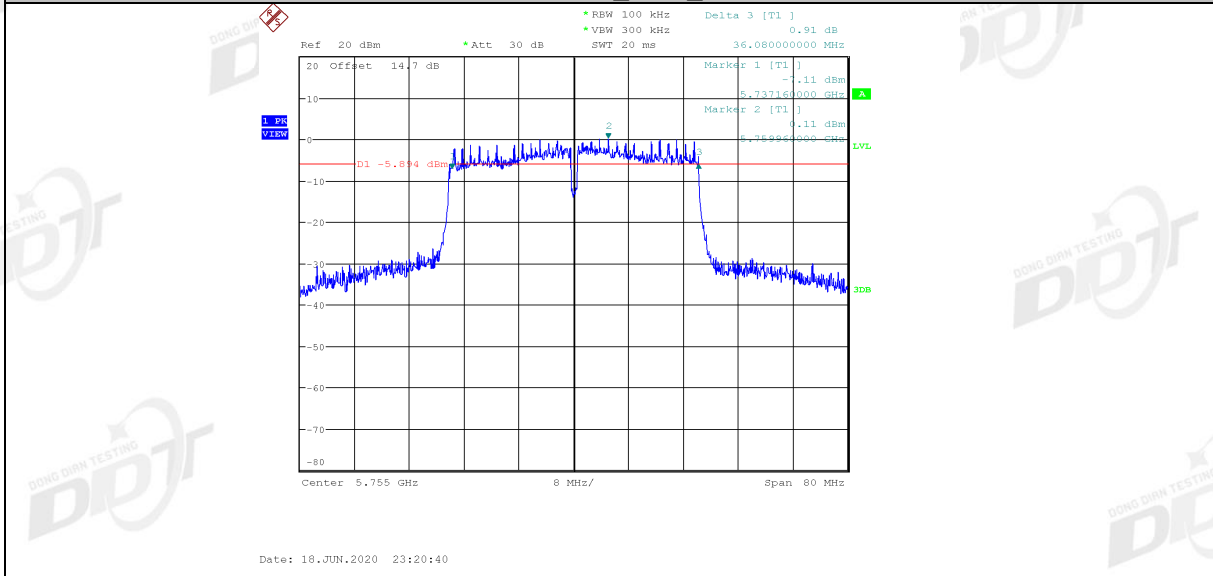
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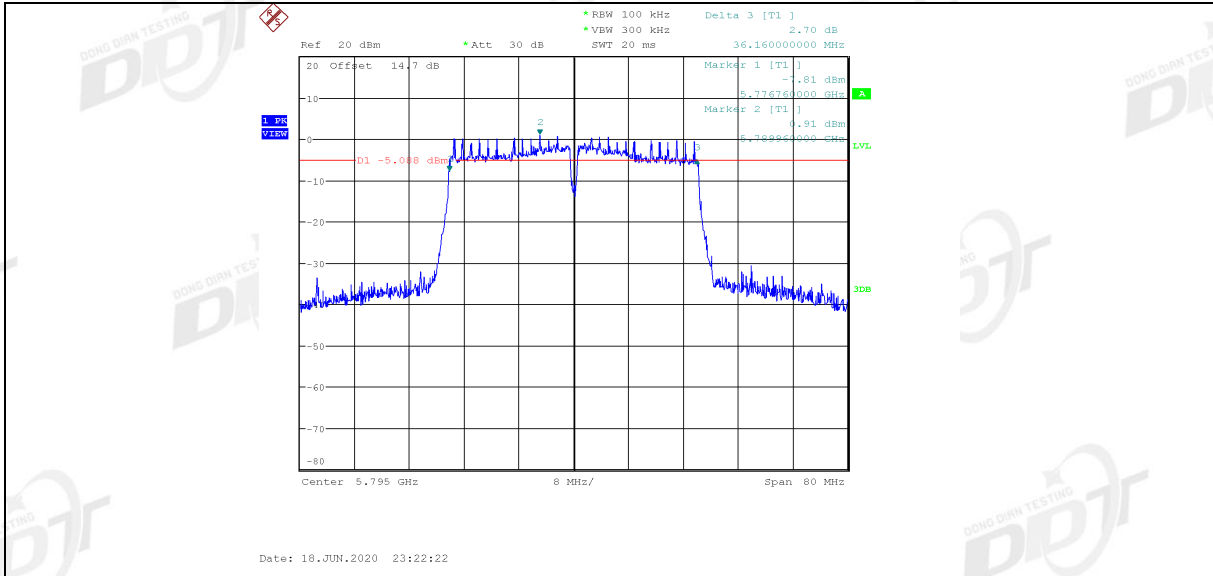
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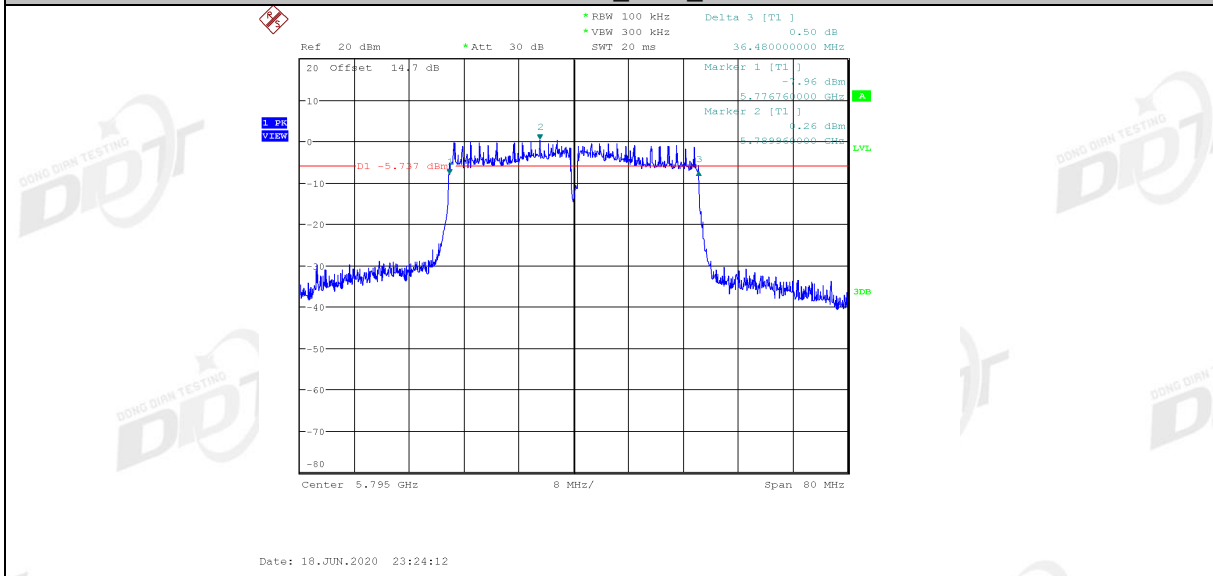
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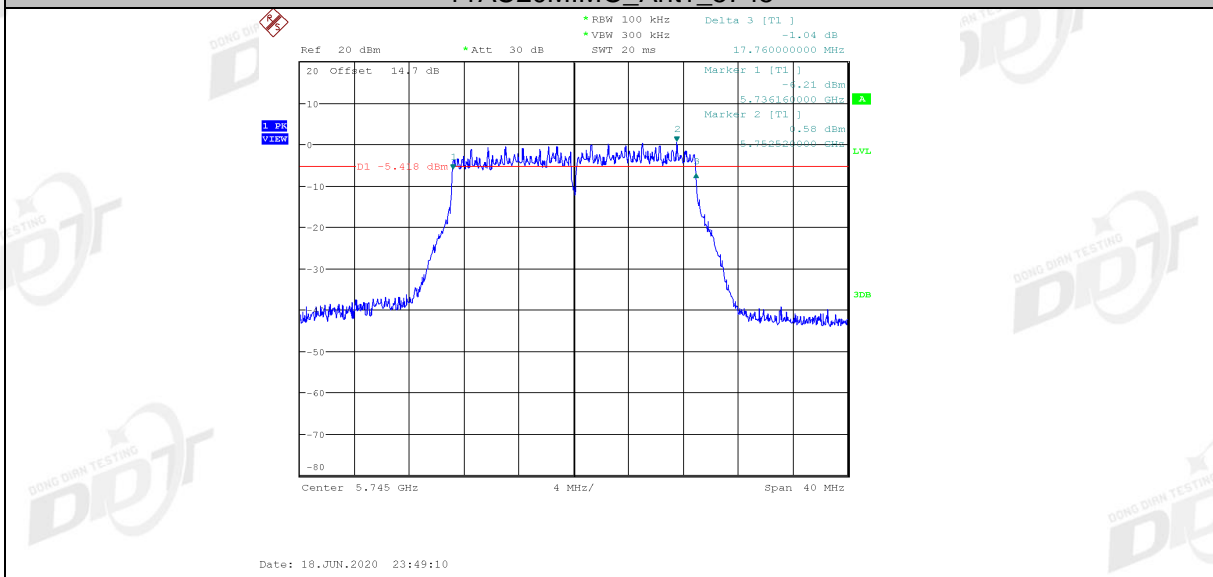
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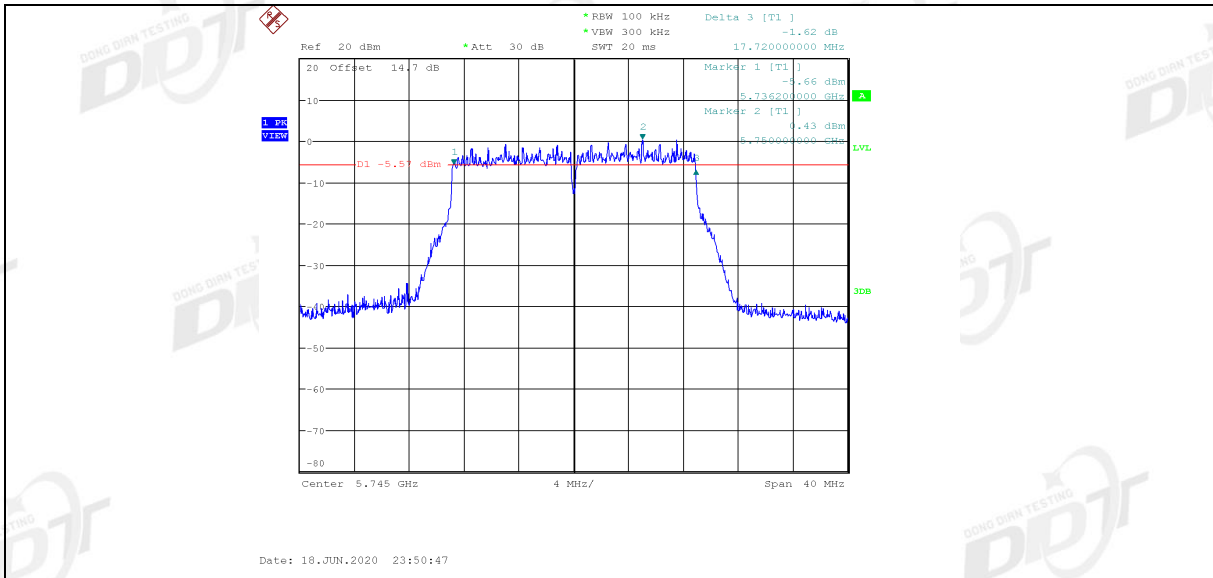
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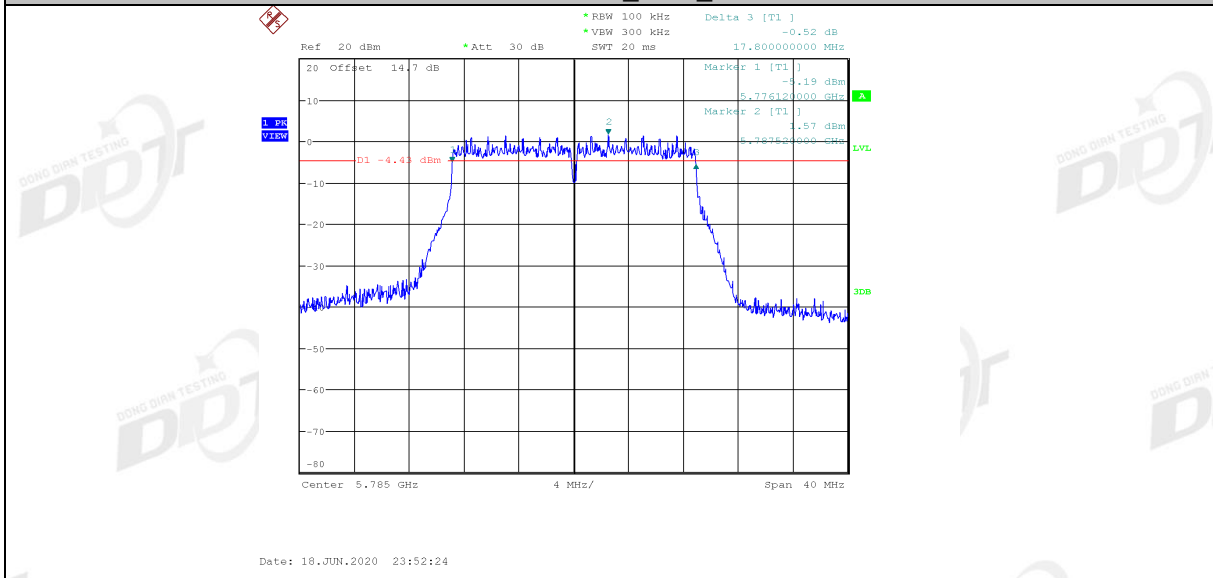
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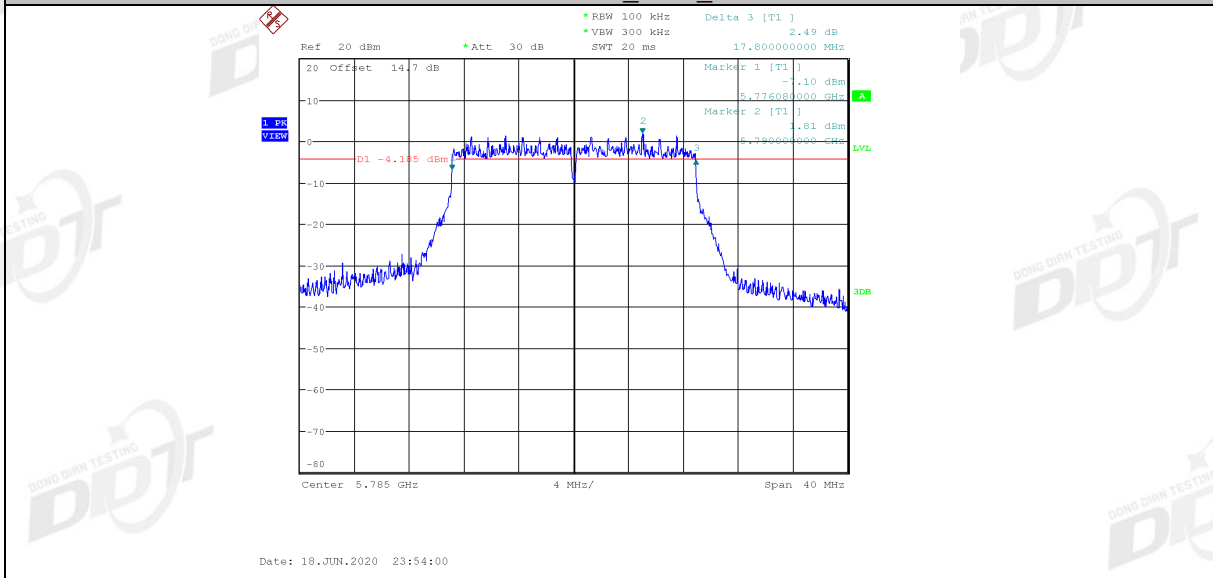
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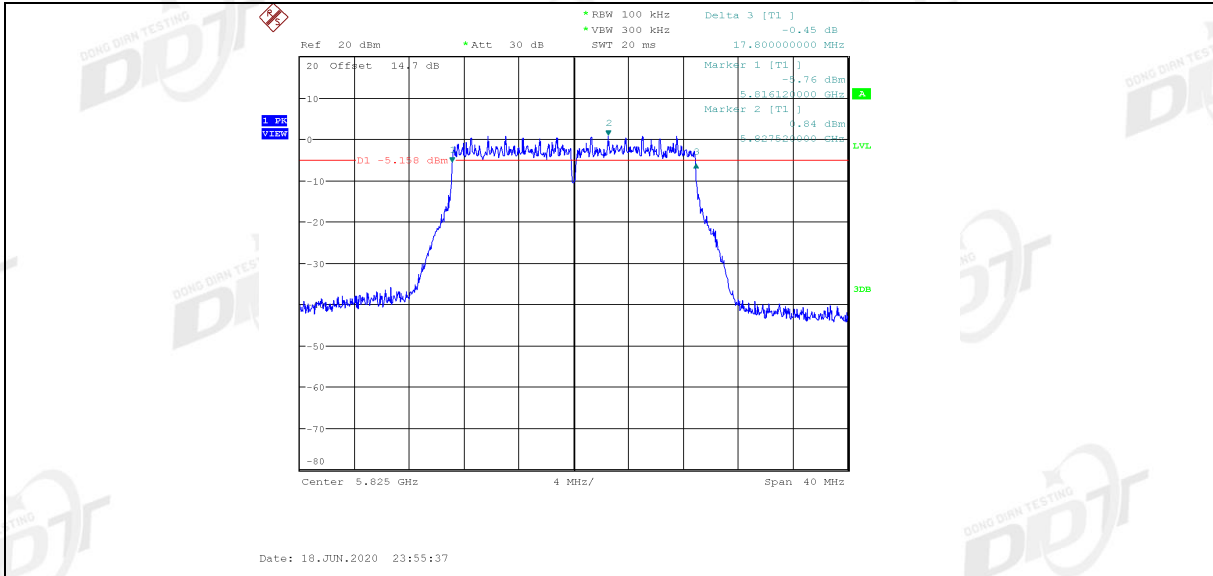
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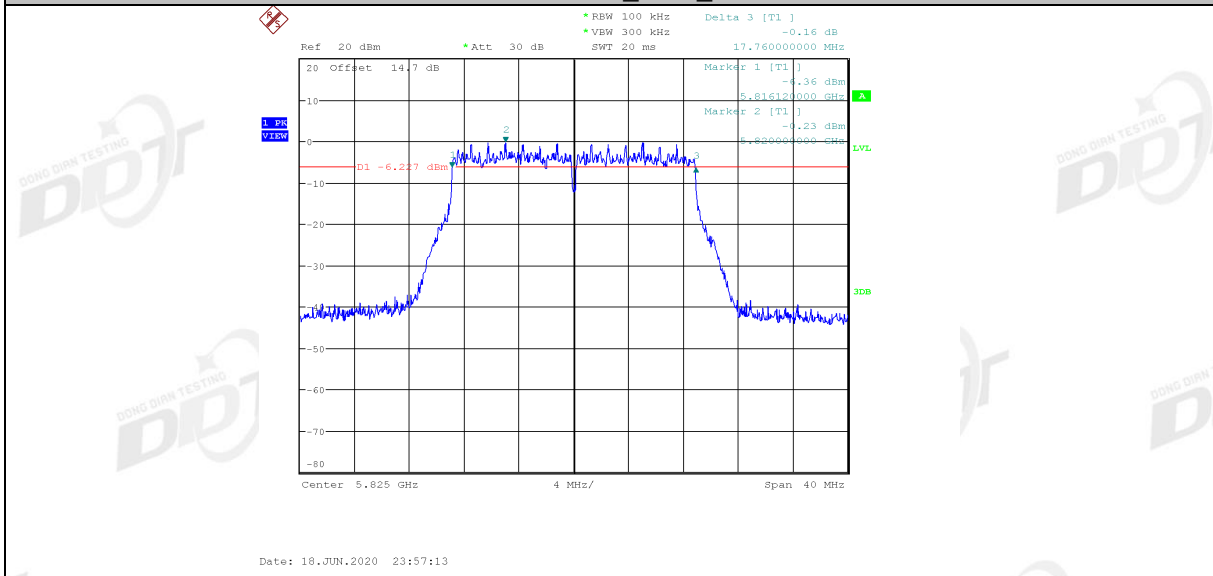
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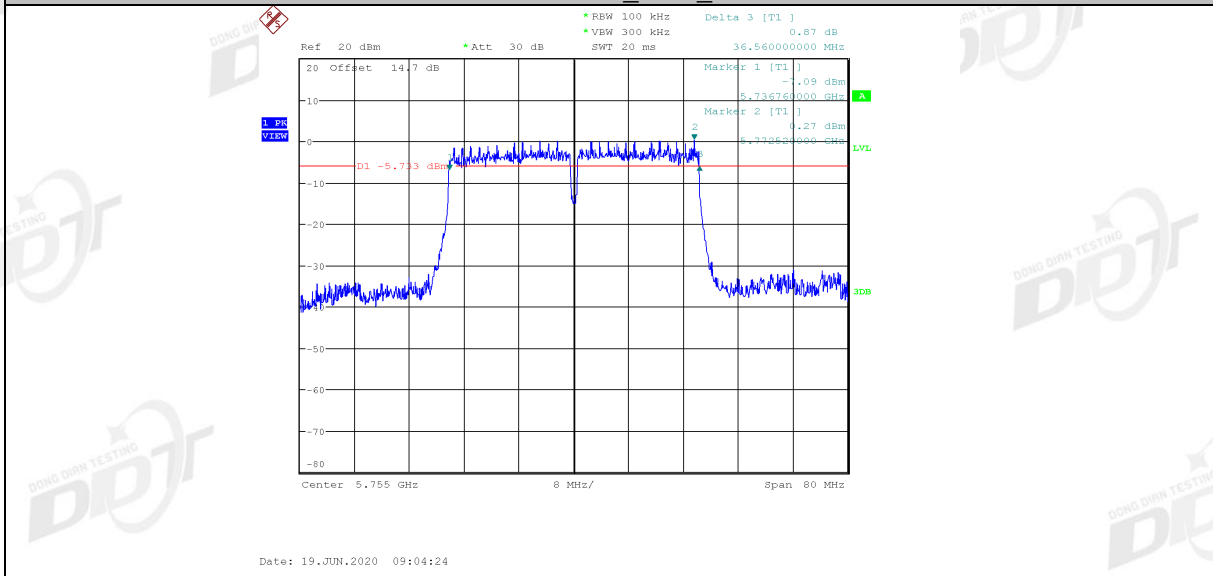
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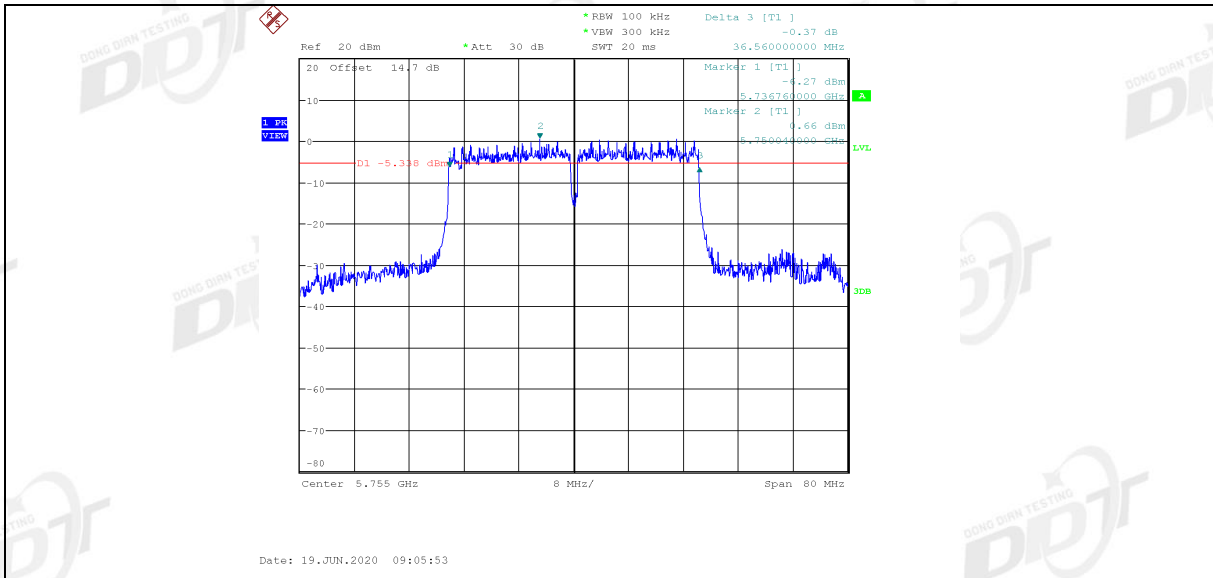
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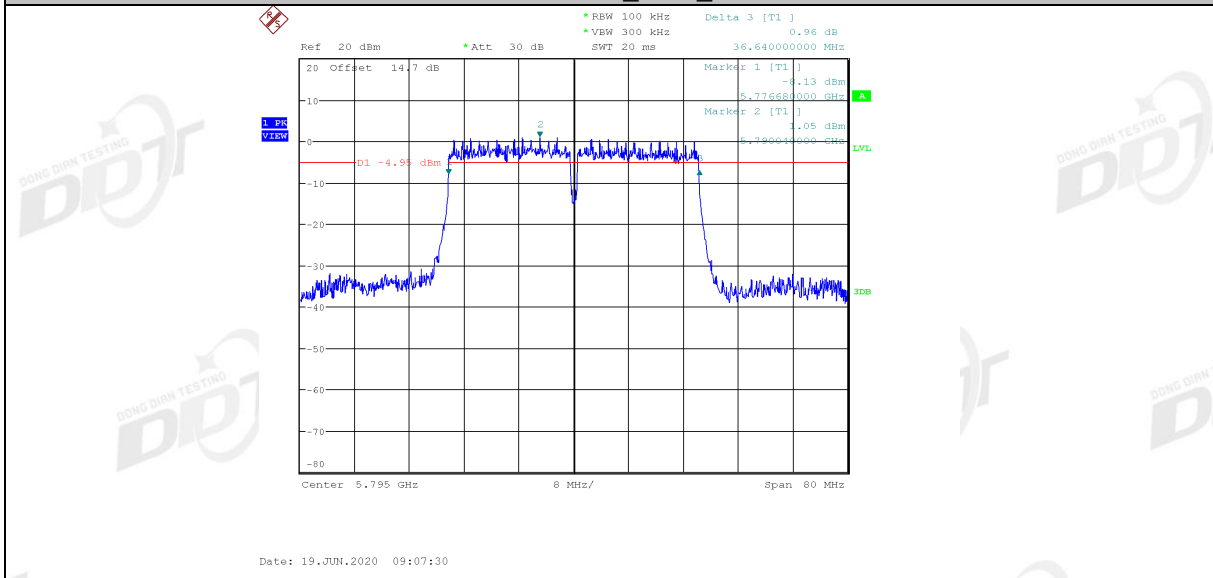
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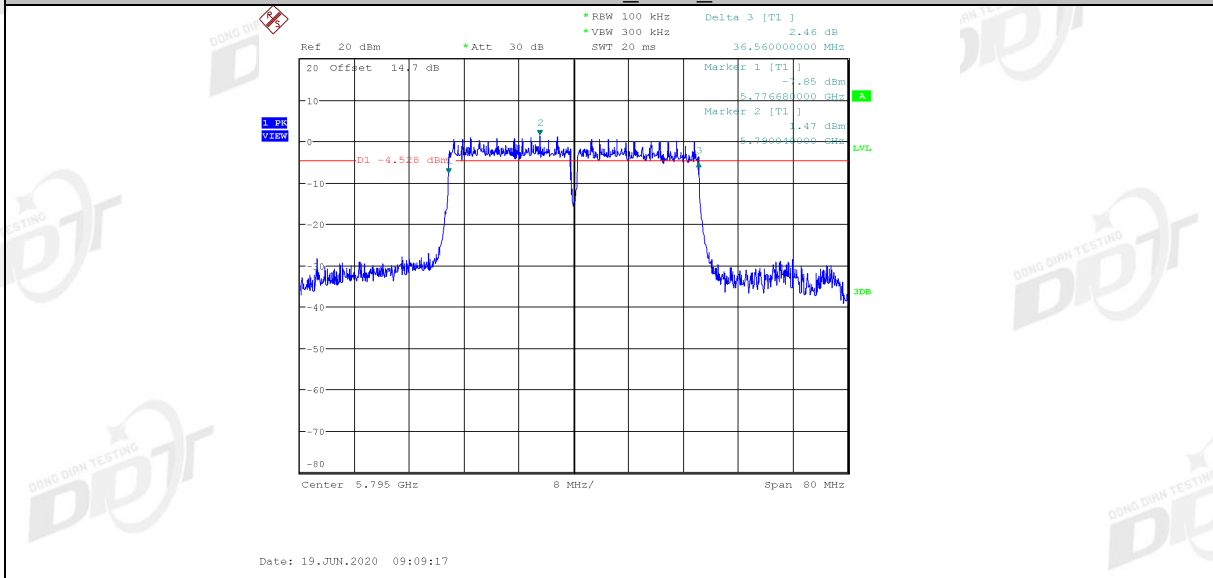
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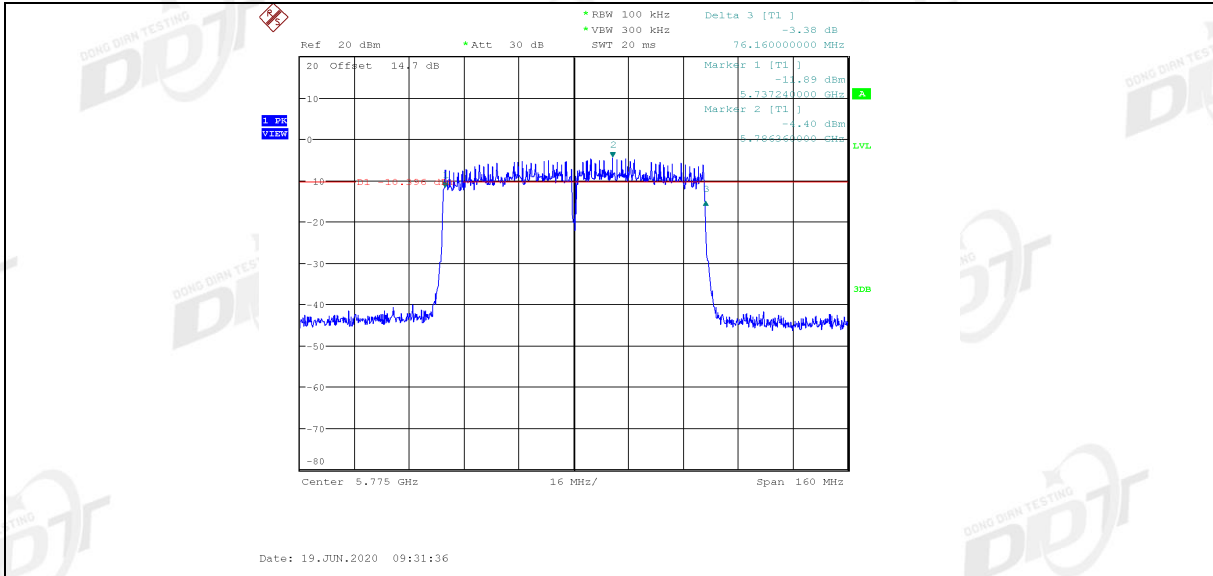
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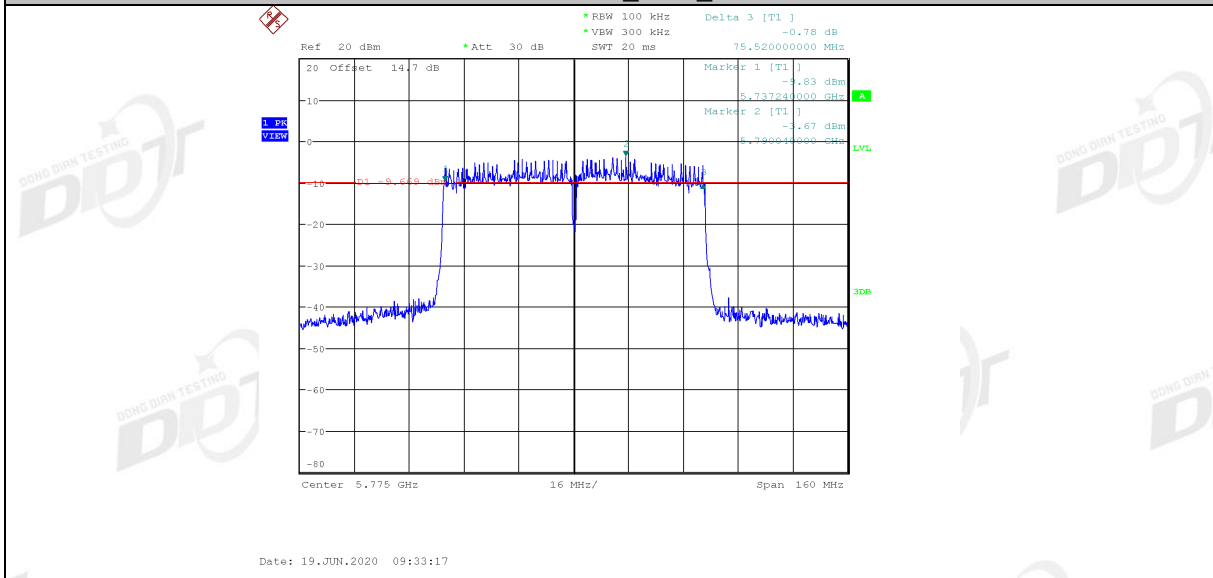
11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775



5. Maximum Output Power

5.1. Block diagram of test setup

Same as section 4.1

5.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	For FCC client devices: 250 mW (24 dBm)	5150 - 5250
	For FCC: 250 mW (24 dBm) or $11 + 10 \log_{10} B$	5250 - 5350
	For FCC: 250 mW (24 dBm) or $11 + 10 \log_{10} B$	5470 - 5725
	1 Watt (30 dBm)	5725 - 5850

Note: For FCC: B=26 bandwidth.

5.3. Test procedure

- (1) Connect each EUT's antenna output to Power Sensor by RF cable and attenuator
- (2) Add each antenna port's results to get the total output power of EUT.

5.4. Test result

Test Mode	Antenna	Channel	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	5180	13.72	≤ -24	PASS
	Ant2	5180	14.30	≤ -24	PASS
	Ant1	5200	15.83	≤ -24	PASS
	Ant2	5200	15.95	≤ -24	PASS
	Ant1	5240	16.93	≤ -24	PASS
	Ant2	5240	16.26	≤ -24	PASS
	Ant1	5260	17.38	≤ -24	PASS
	Ant2	5260	16.81	≤ -24	PASS
	Ant1	5280	17.25	≤ -24	PASS
	Ant2	5280	16.84	≤ -24	PASS
	Ant1	5320	14.46	≤ -24	PASS
	Ant2	5320	15.45	≤ -24	PASS
	Ant1	5500	12.86	≤ -24	PASS
	Ant2	5500	11.97	≤ -24	PASS
	Ant1	5580	11.86	≤ -24	PASS
	Ant2	5580	12.48	≤ -24	PASS
Ant1	5700	13.39	≤ -24	PASS	