

FCC AND ISED CERTIFICATION TEST REPORT

FOR

Applicant	:	Navitas Digital Safety Ltd
Address	:	1st Floor 13 Phoenix Park, Coalville, Leicestershire, United Kingdom, LE67 3HB
Equipment under Test	:	Smart probe
Model No.	:	Version 3
Trade Mark	:	N/A
FCC ID	:	2AYVU-SP3
IC	:	26965-SP3
Manufacturer	:	Navitas Digital Safety Ltd
Address	:	1st Floor 13 Phoenix Park, Coalville, Leicestershire, United Kingdom, LE67 3HB

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

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Dongguan City, Guangdong Province, China, 523808

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REPORT

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Test Report Declare

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Test Standard Used: FCC Rules and Regulations Part 15 Subpart E, RSS-247 Issue 2 February 2017.

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-R21011324-1E3		
Date of Receipt:	Jan. 11, 2021	Date of Test:	Jan. 11, 2021 ~ Jan. 31, 2021

Prepared By:

Sam Li

Sam Li/Engineer

Approved By:

Damon Hu

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	Jan. 31, 2021	

1. Summary of test results

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

Description of Test Item	Standard	Verdict
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e) RSS-247 Clause 6.2	Pass
Maximum Conducted Output Power	FCC 15.407 (a) RSS-247 Clause 6.2	Pass
Power Spectral Density	FCC 15.407 (a) RSS-247 Clause 6.2	Pass
Frequency Stability Measurement	FCC 15.407 (g)	Pass
Emissions in restricted frequency bands	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass
Band Edge Compliance	FCC 15.407 (a) FCC 15.209 FCC 15.205 RSS-247 Clause 6.2 RSS-GEN Clause 8.9	Pass
Power Line Conducted Emission	FCC 15.207 RSS-GEN Clause 8.8	Pass
Antenna requirement	FCC 15.203 RSS-GEN Clause 8.3	Pass
Dynamic Frequency Selection	FCC 15.407 (h) RSS-247 Clause 6.3	N/A

Note: N/A is an abbreviation for Not Applicable and means this test item is not applicable for this device according to the technology characteristic of device.

2. General Test Information

2.1. Description of EUT

EUT* Name	: Smart probe
Model Number	: Version 3
EUT function description	: Please reference user manual of this device
Power supply	: DC 3.7V Polymer Li-ion built-in battery
Operating temperature	: -10℃ to +55℃
Radio Technology	: IEEE 802.11a/n/ac
FCC Operation frequency	: IEEE 802.11a: 5180MHz-5240MHz, 5745MHz-5825MHz IEEE 802.11n HT20: 5180MHz-5240MHz, 5745MHz-5825MHz IEEE 802.11n HT40: 5190MHz-5230MHz, 5755MHz-5795MHz IEEE 802.11ac HT20: 5180MHz-5240MHz, 5745MHz-5825MHz IEEE 802.11ac HT40: 5190MHz-5230MHz, 5755MHz-5795MHz IEEE 802.11ac HT80: 5210MHz, 5775MHz
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: MCS0~MCS7 IEEE 802.11n HT40: MCS0~MCS7 IEEE 802.11ac VHT20: MCS0~MCS7 IEEE 802.11ac VHT40: MCS0~MCS7 IEEE 802.11ac VHT80: MCS0~MCS7
Antenna Type	: SMD antenna, maximum PK gain: 3.0 dBi
Serial Number	: N/A

Note 1: EUT is the ab. of equipment under test.

Note 2: EUT without DFS detection.

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
N/A	N/A	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
AC Adapter	SAMSUNG	EP-TA200	R37KA8770J1SE3	N/A

2.4. Block diagram of EUT configuration for test

EUT

Run a special test software “QRCT.exe” provided by manufacturer to control EUT work in Continuous Tx mode, and select test channel, wireless mode and data rate.

Tested mode, channel, and data rate information				
Mode	Setting Tx Power	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
IEEE 802.11a	11	6	Low: CH36	5180
	11	6	Middle: CH44	5220
	11	6	High: CH48	5240
	/	6	Low: CH149	5745
	/	6	Middle: CH157	5785
	/	6	High: CH165	5825
IEEE 802.11n HT20	11	MCS 0	Low: CH36	5180
	11	MCS 0	Middle: CH44	5220
	11	MCS 0	High: CH48	5240
	/	MCS 0	Low: CH149	5745
	/	MCS 0	Middle: CH157	5785
	/	MCS 0	High: CH165	5825
IEEE 802.11n HT40	11	MCS 0	Low: CH38	5190
	11	MCS 0	Middle: CH46	5230
	/	MCS 0	Middle: CH151	5755
	/	MCS 0	High: CH159	5795
IEEE 802.11ac HT20	11	MCS 0	Low: CH36	5180
	11	MCS 0	Middle: CH44	5220
	11	MCS 0	High: CH48	5240
	/	MCS 0	Low: CH149	5745
	/	MCS 0	Middle: CH157	5785
	/	MCS 0	High: CH165	5825
IEEE 802.11ac HT40	11	MCS 0	Low: CH38	5190
	11	MCS 0	Middle: CH46	5230
	/	MCS 0	Middle: CH151	5755
	/	MCS 0	High: CH159	5795
IEEE 802.11ac HT80	11	MCS 0	CH42	5210
	/	MCS 0	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℃
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: 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 Registration No. CNAS L6451; A2LA Certificate Number: 3870.01;

FCC Designation Number: CN1182; FCC 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 ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Frequencies Stability	6.7×10^{-8} (Antenna couple method) 5.5×10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 1.40 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$) 1.66 dB ($8 \text{ GHz} \leq f < 22 \text{ GHz}$)
Uncertainty for radio frequency (RBW<20kHz)	3×10^{-8}
Temperature	0.4℃

Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-40GHz)	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.	

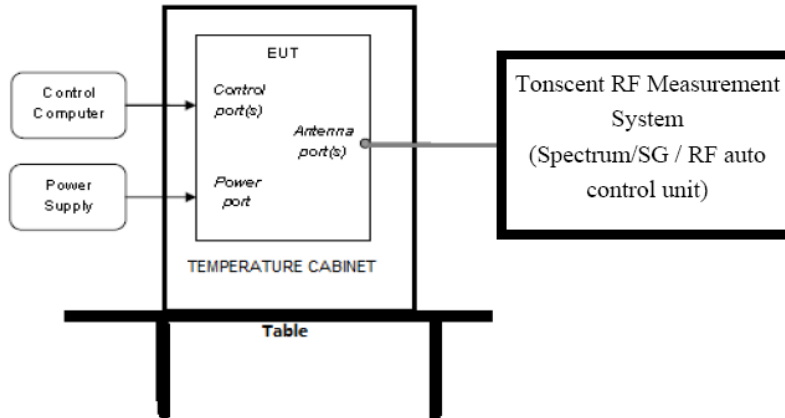
3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (Tonscend RF Measurement System)					
Spectrum analyzer	R&S	FSU26	200071	Sep. 24, 2020	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jul. 01, 2020	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 24, 2020	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, 2020	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Jul. 01, 2020	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. 24, 2020	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 14, 2020	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 14, 2020	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 14, 2020	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 28, 2020	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 28, 2020	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 28, 2020	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 24, 2020	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 28, 2020	1 Year
MI Cable	HUBSER	C10-01-01-1 M	1091629	Sep. 28, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Radiation 2#chamber					
EMI Test Receiver	R&S	ESCI	101364	Sep. 28, 2020	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jul. 01, 2020	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-994	Nov. 14, 2020	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 14, 2020	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 11, 2020	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 28, 2020	1 Year
Pre-amplifier	TERA-MW	TRLA-0040	101303	Sep. 28, 2020	1 Year

		G35			
RF Cable	N/A	14+1.5m	06270619	Sep. 28, 2020	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. 28, 2020	1 Year
LISN 1	R&S	ENV216	101109	Sep. 28, 2020	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 28, 2020	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 28, 2020	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 28, 2020	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

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

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5150 - 5250
	26 dB Bandwidth	5250 - 5350
	26 dB Bandwidth	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 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% OBW

Test Mode	Antenna	Channel	99% BW (MHz)	Limit (MHz)	Verdict
11A	ANT1	5180	16.707	---	Pass
11A	ANT1	5220	16.560	---	Pass
11A	ANT1	5240	16.452	---	Pass
11A	ANT1	5745	16.311	---	Pass
11A	ANT1	5785	16.293	---	Pass
11A	ANT1	5825	16.290	---	Pass
11N20SISO	ANT1	5180	17.931	---	Pass
11N20SISO	ANT1	5220	17.499	---	Pass
11N20SISO	ANT1	5240	17.409	---	Pass
11N20SISO	ANT1	5745	17.430	---	Pass
11N20SISO	ANT1	5785	17.409	---	Pass
11N20SISO	ANT1	5825	17.436	---	Pass
11N40SISO	ANT1	5190	35.976	---	Pass
11N40SISO	ANT1	5230	35.874	---	Pass
11N40SISO	ANT1	5755	35.820	---	Pass
11N40SISO	ANT1	5795	35.808	---	Pass
11AC20SISO	ANT1	5180	17.841	---	Pass
11AC20SISO	ANT1	5220	17.496	---	Pass
11AC20SISO	ANT1	5240	17.454	---	Pass
11AC20SISO	ANT1	5745	17.433	---	Pass
11AC20SISO	ANT1	5785	17.409	---	Pass
11AC20SISO	ANT1	5825	17.397	---	Pass
11AC40SISO	ANT1	5190	36.606	---	Pass
11AC40SISO	ANT1	5230	36.618	---	Pass
11AC40SISO	ANT1	5755	35.820	---	Pass
11AC40SISO	ANT1	5795	35.802	---	Pass
11AC80SISO	ANT1	5210	75.132	---	Pass
11AC80SISO	ANT1	5775	74.772	---	Pass

26dB OBW

Test Mode	Antenna	Channel	26dB BW (MHz)	Limit (MHz)	Verdict
11A	ANT1	5180	23.805	---	Pass
11A	ANT1	5220	29.958	---	Pass
11A	ANT1	5240	29.967	---	Pass
11N20SISO	ANT1	5180	23.793	---	Pass

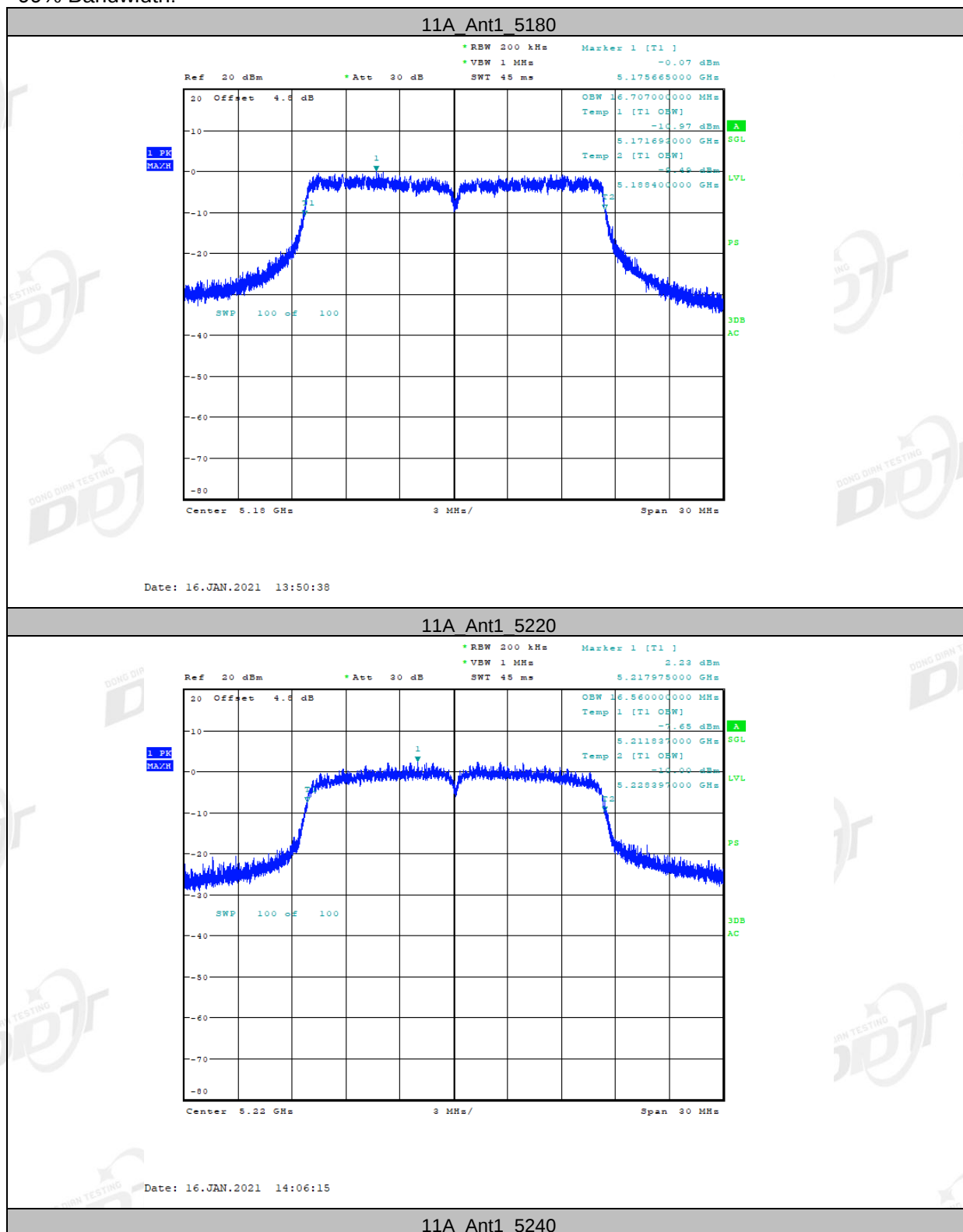
11N20SISO	ANT1	5220	24.513	---	Pass
11N20SISO	ANT1	5240	21.936	---	Pass
11N40SISO	ANT1	5190	45.126	---	Pass
11N40SISO	ANT1	5230	42.720	---	Pass
11AC20SISO	ANT1	5180	23.643	---	Pass
11AC20SISO	ANT1	5220	23.670	---	Pass
11AC20SISO	ANT1	5240	22.953	---	Pass
11AC40SISO	ANT1	5190	45.756	---	Pass
11AC40SISO	ANT1	5230	50.310	---	Pass
11AC80SISO	ANT1	5210	90.624	---	Pass

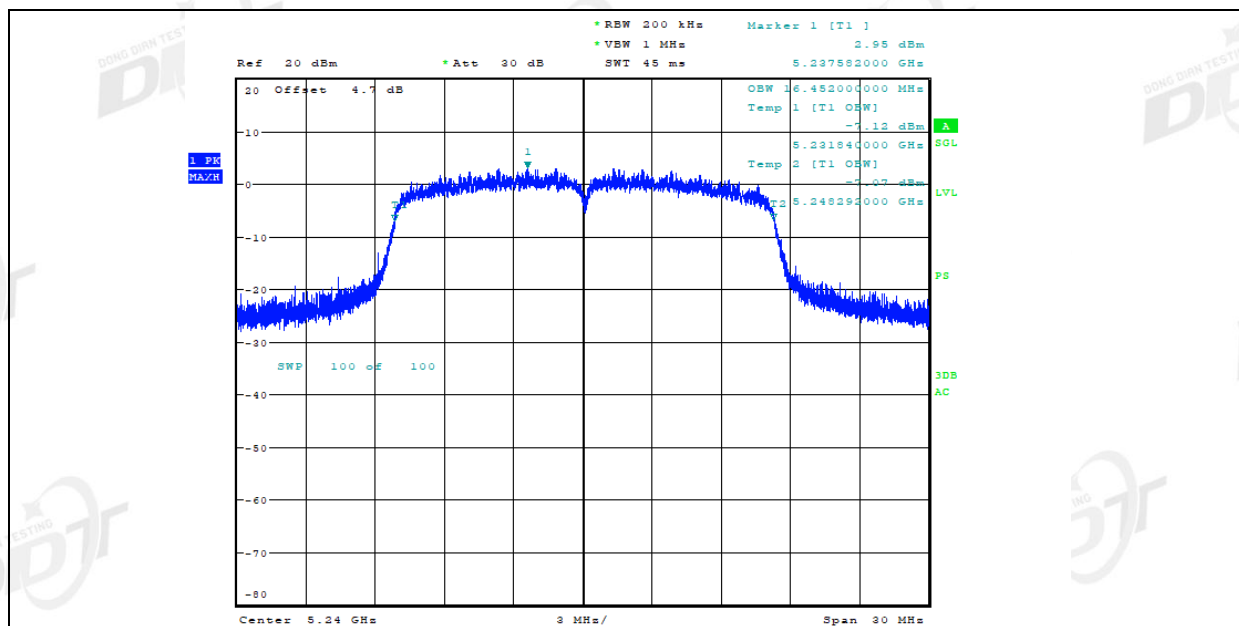
6dB OBW

Test Mode	Antenna	Channel	6dB BW (MHz)	Limit (MHz)	Verdict
11A	ANT1	5745	16.461	0.5	Pass
11A	ANT1	5785	15.129	0.5	Pass
11A	ANT1	5825	15.120	0.5	Pass
11N20SISO	ANT1	5745	15.318	0.5	Pass
11N20SISO	ANT1	5785	15.120	0.5	Pass
11N20SISO	ANT1	5825	15.111	0.5	Pass
11N40SISO	ANT1	5755	35.082	0.5	Pass
11N40SISO	ANT1	5795	35.082	0.5	Pass
11AC20SISO	ANT1	5745	15.102	0.5	Pass
11AC20SISO	ANT1	5785	15.114	0.5	Pass
11AC20SISO	ANT1	5825	15.108	0.5	Pass
11AC40SISO	ANT1	5755	35.100	0.5	Pass
11AC40SISO	ANT1	5795	35.088	0.5	Pass
11AC80SISO	ANT1	5775	71.304	0.5	Pass

4.5. Original test data

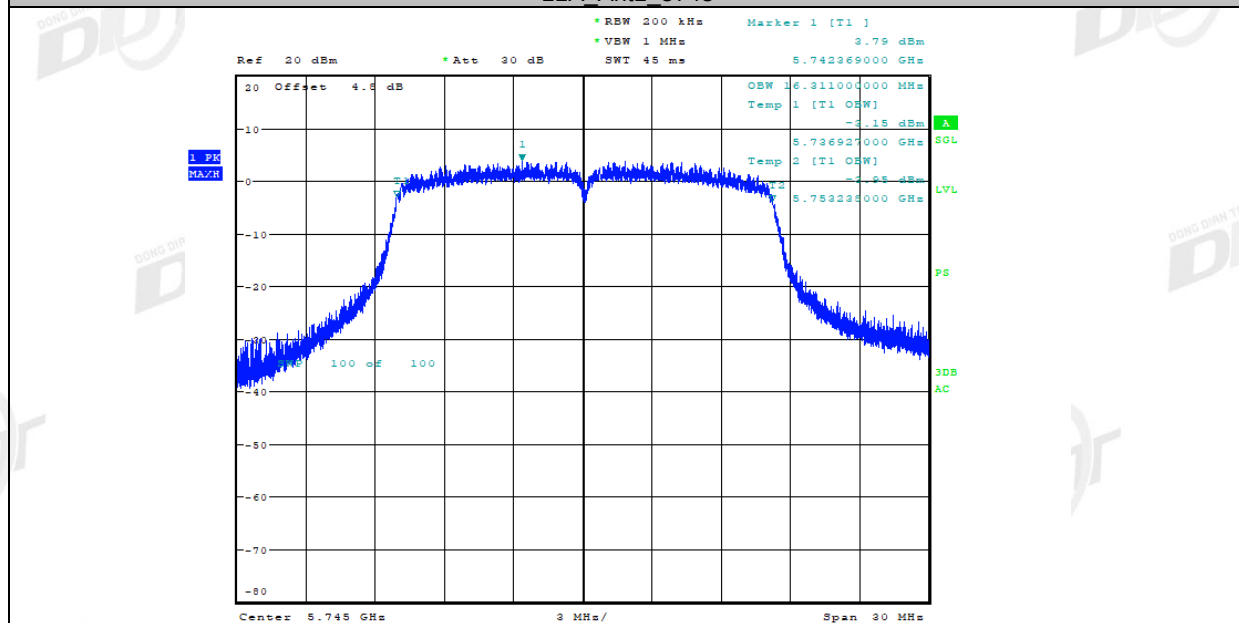
99% Bandwidth:





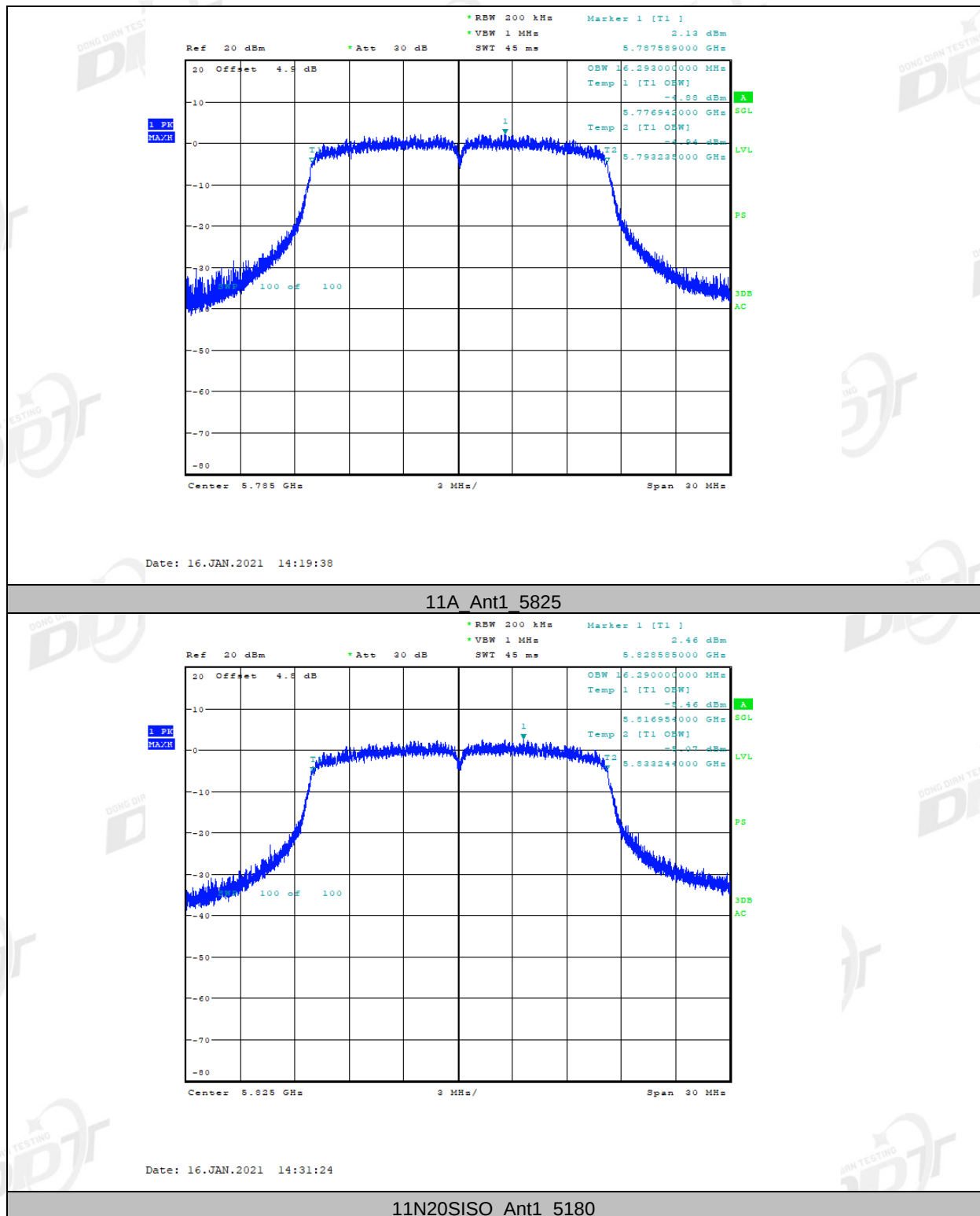
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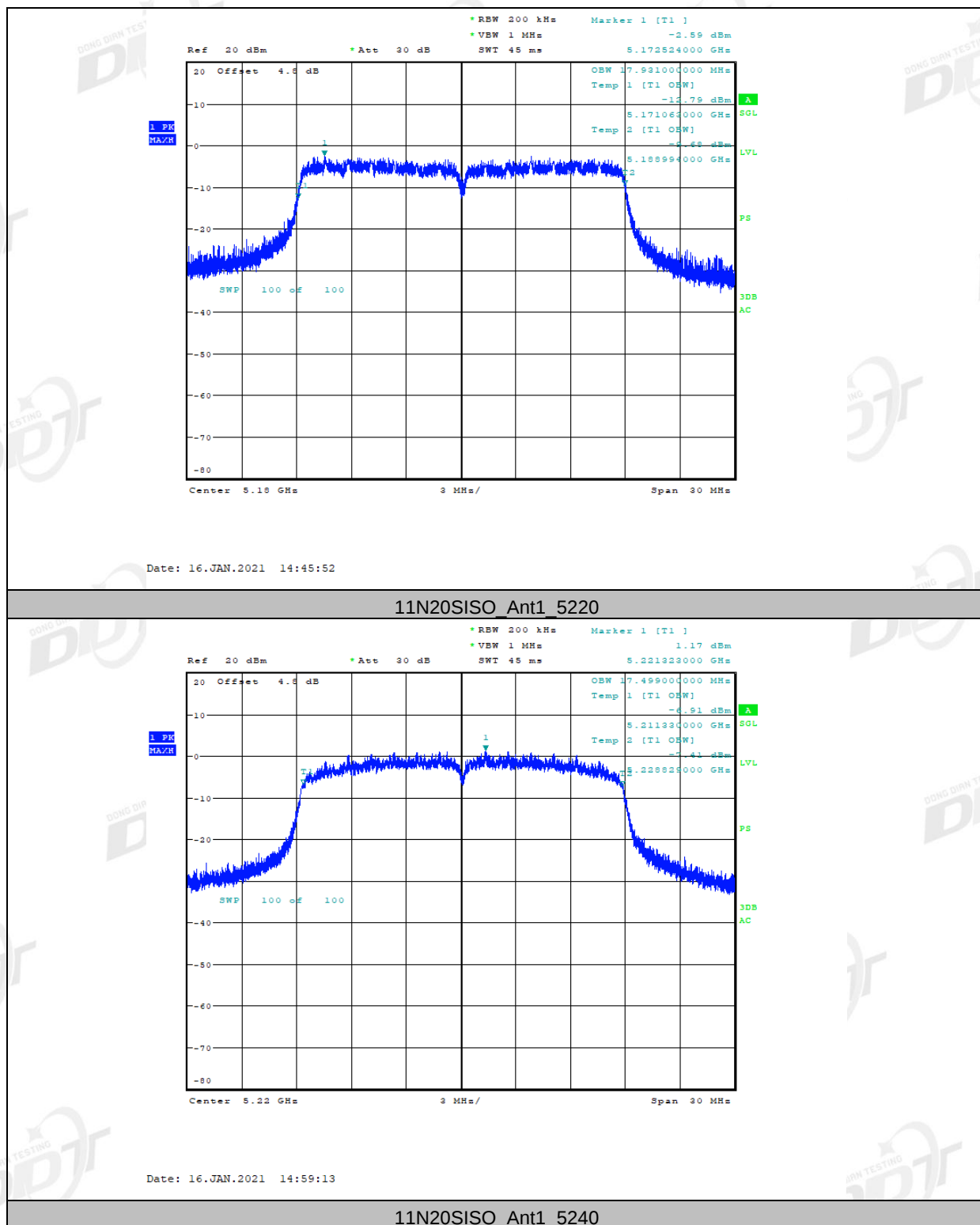
11A Ant1 5745

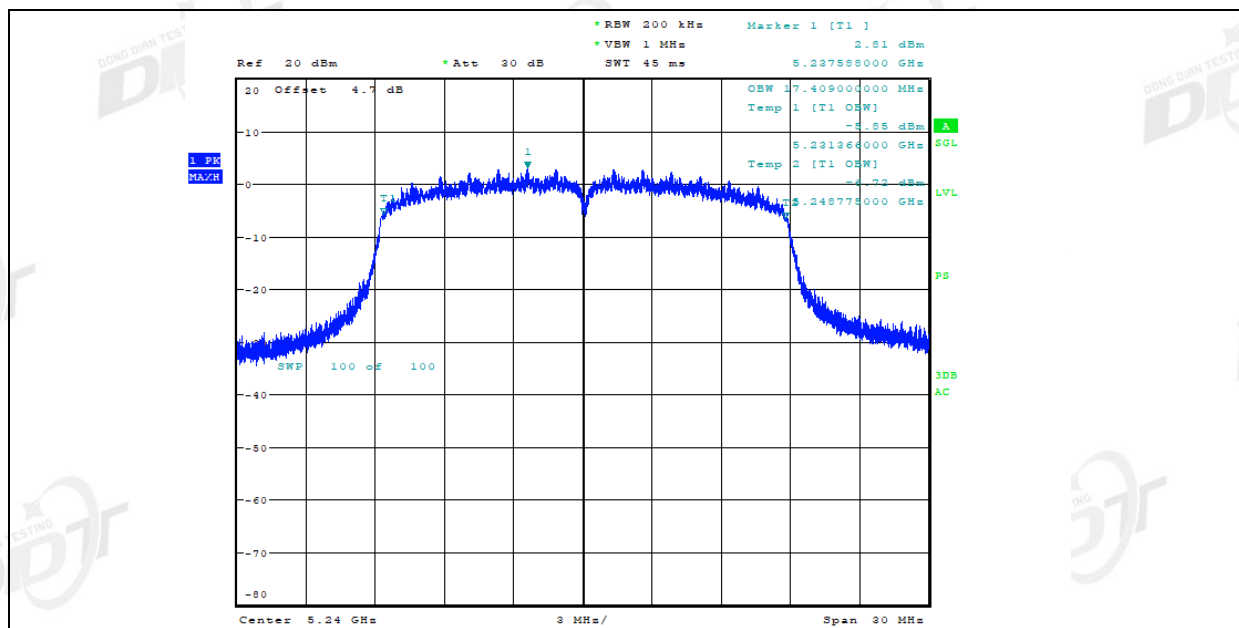


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11A Ant1 5785

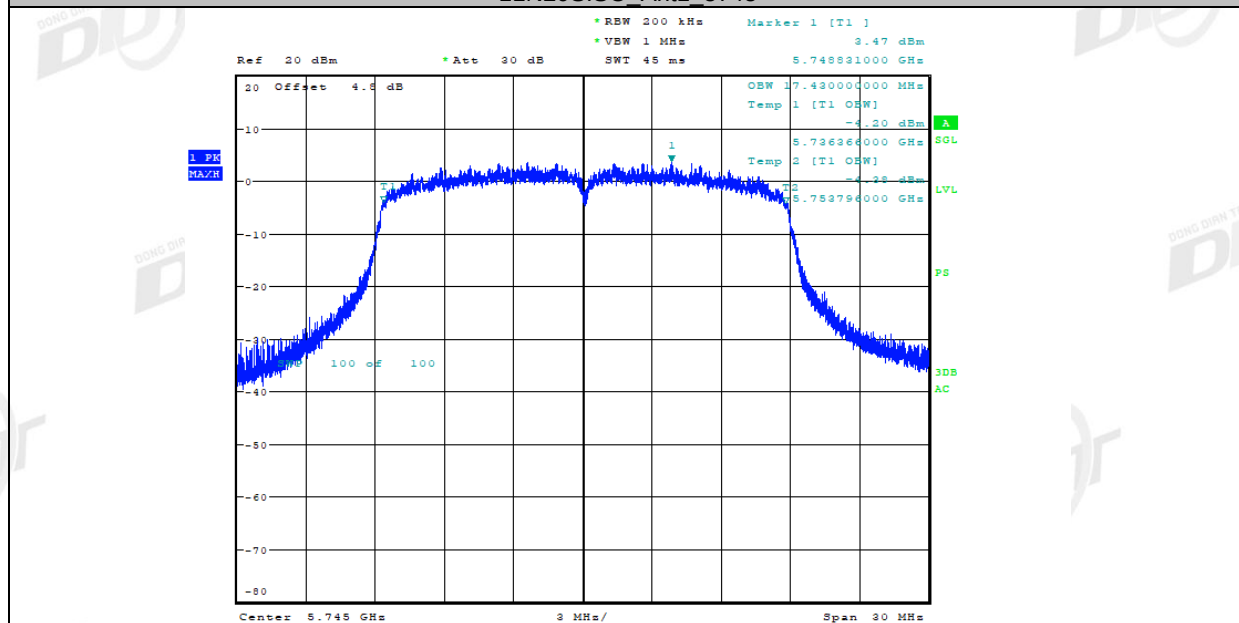






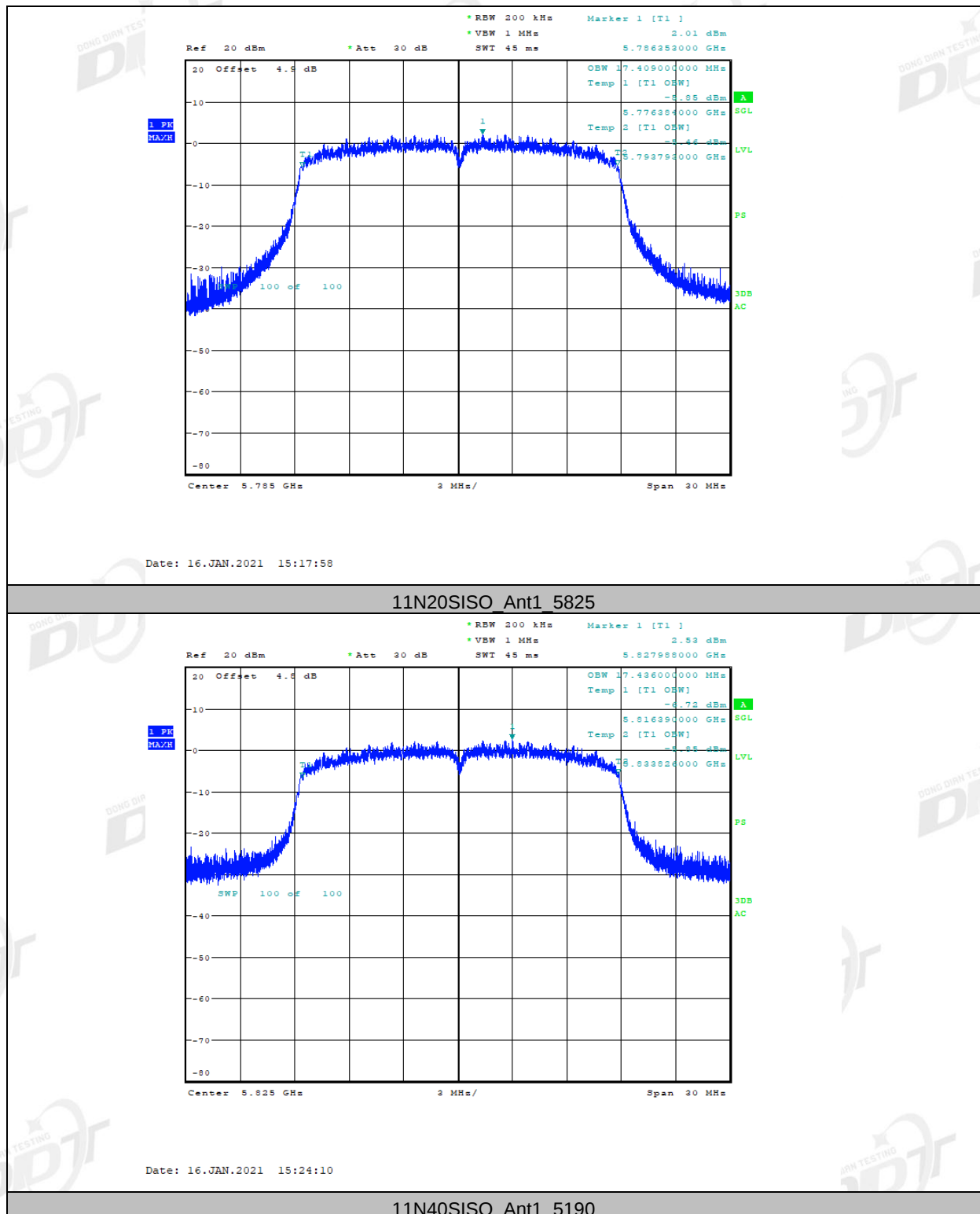
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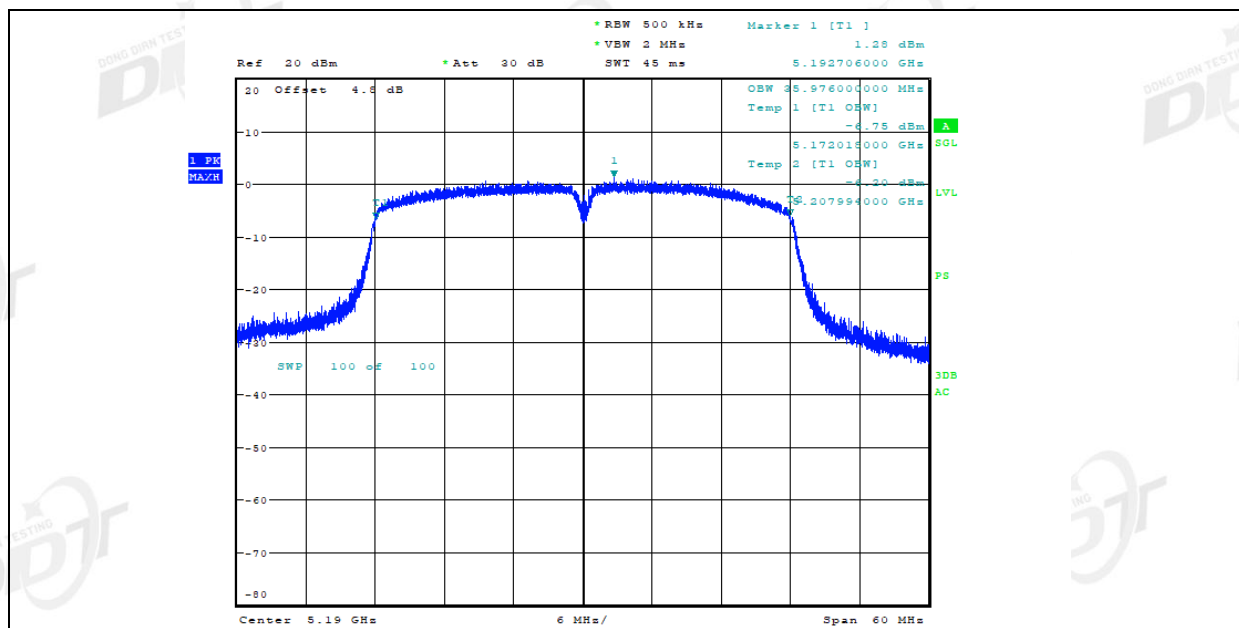
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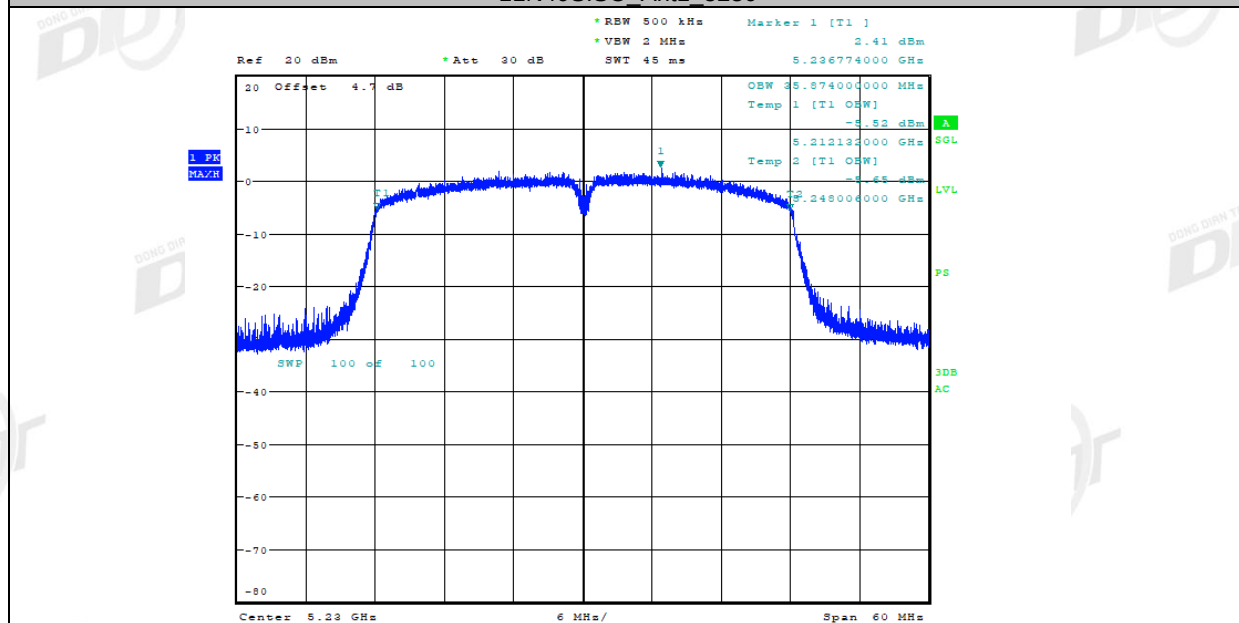
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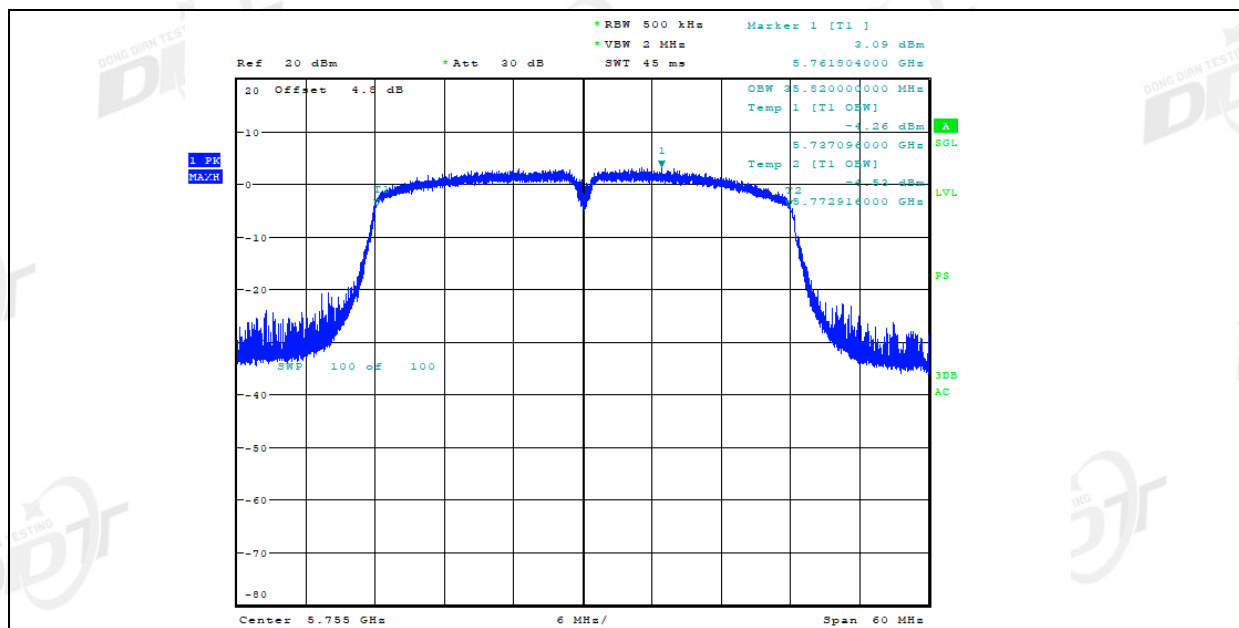
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11N40SISO Ant1 5230



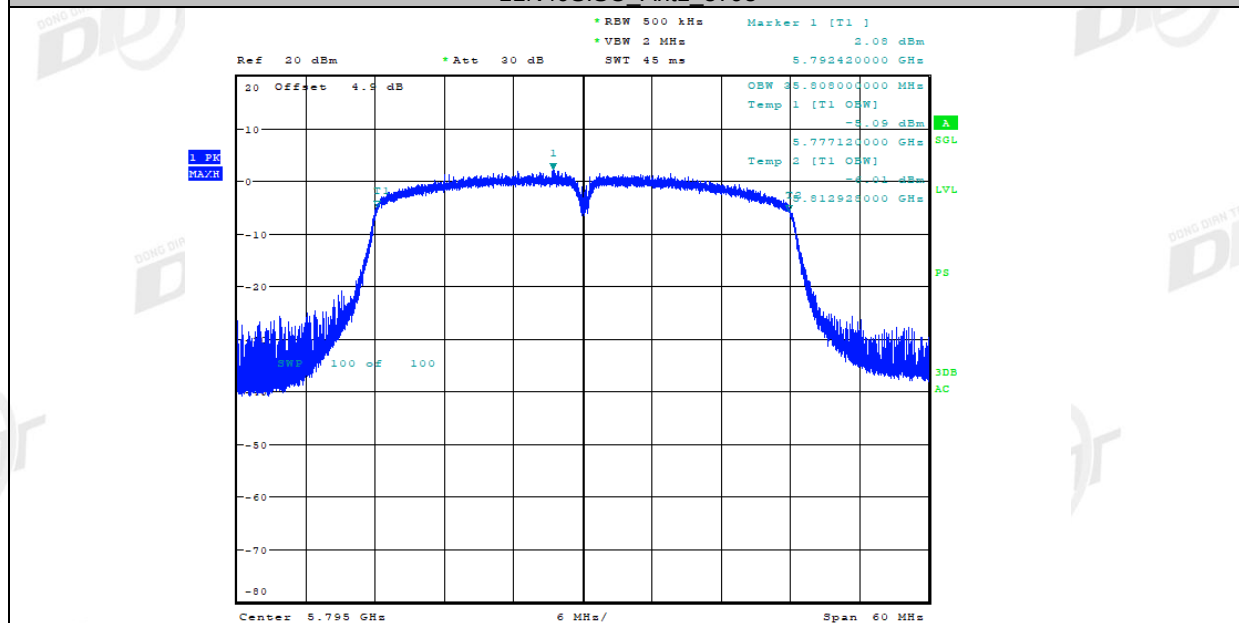
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11N40SISO Ant1 5755



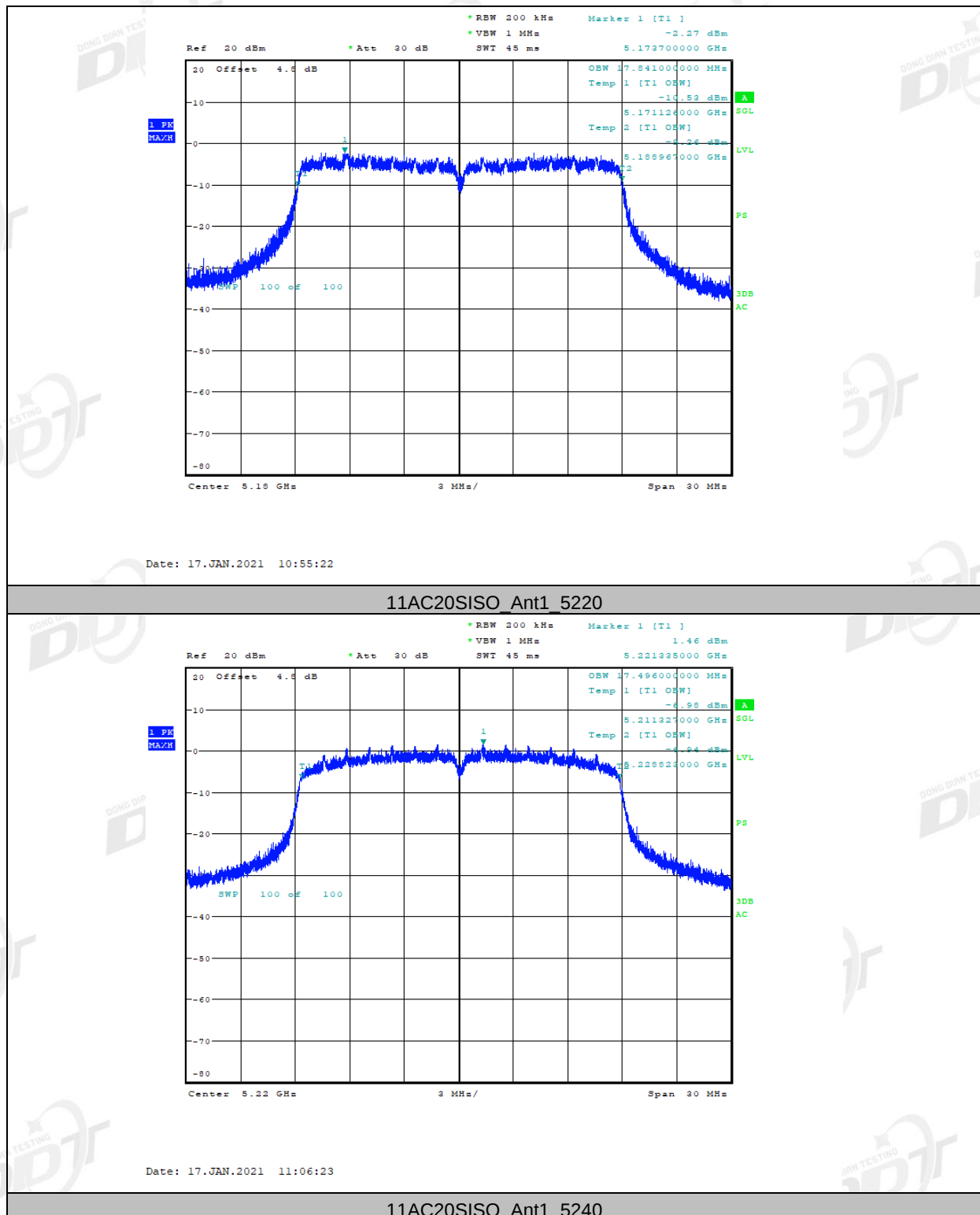
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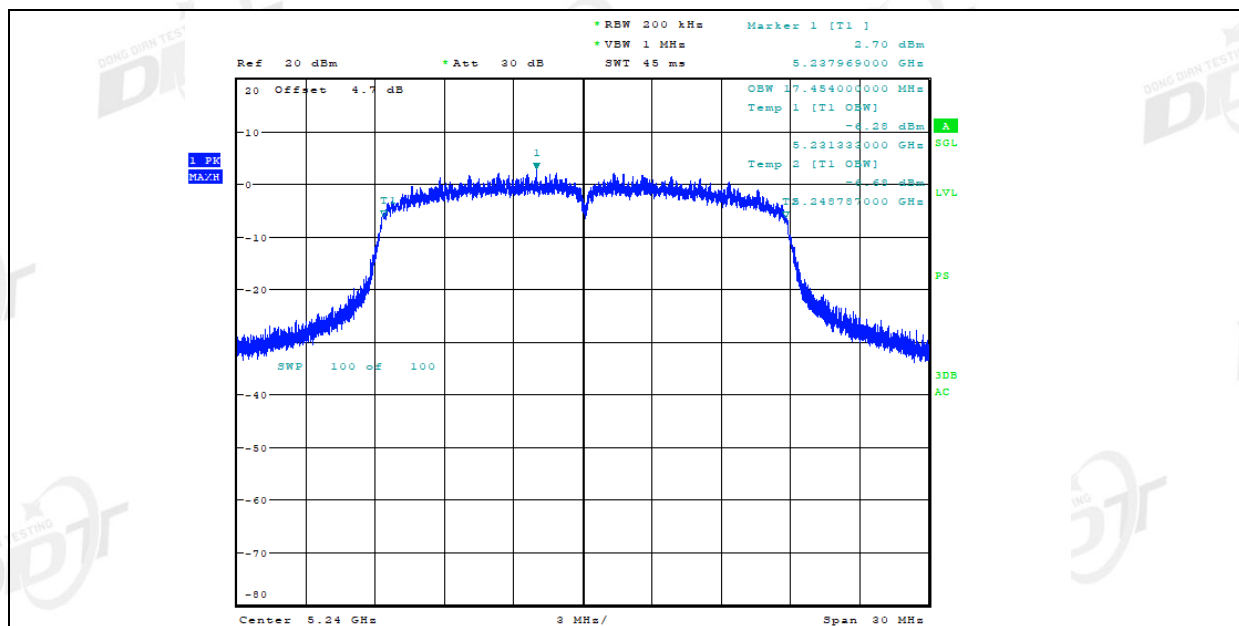
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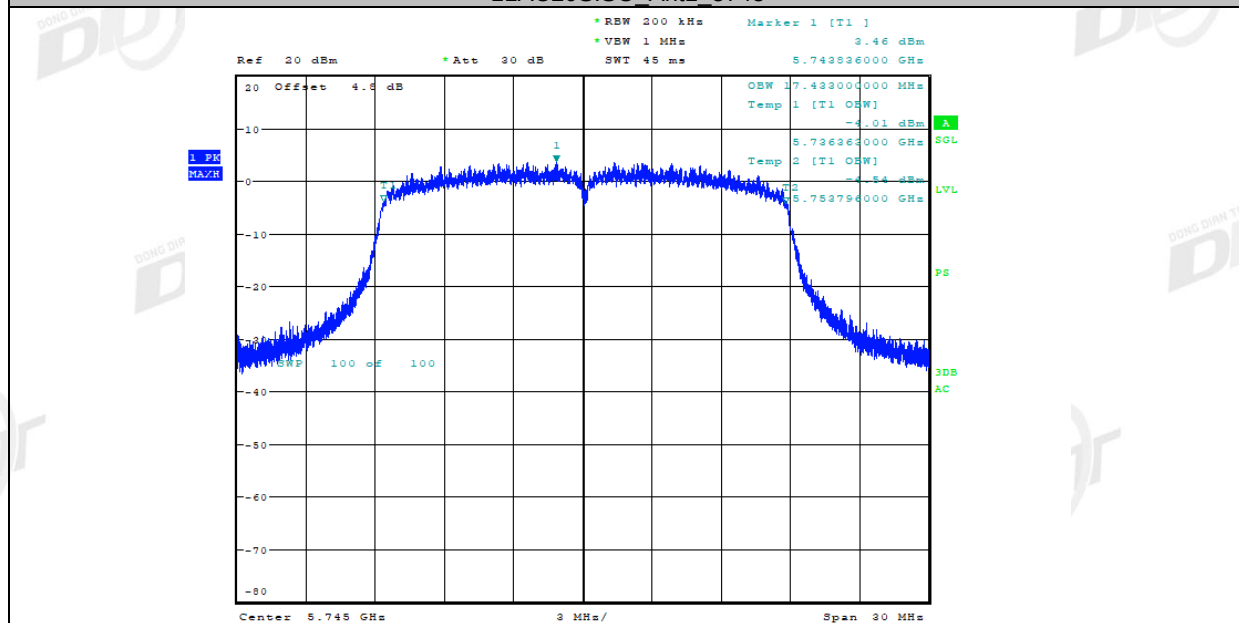
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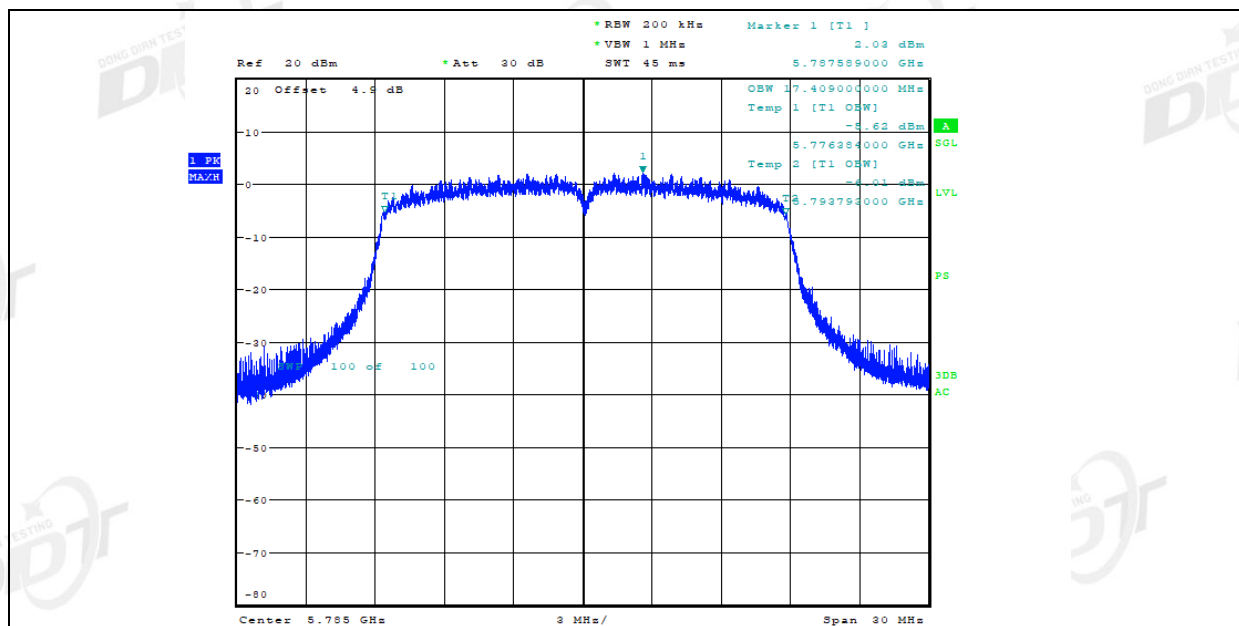
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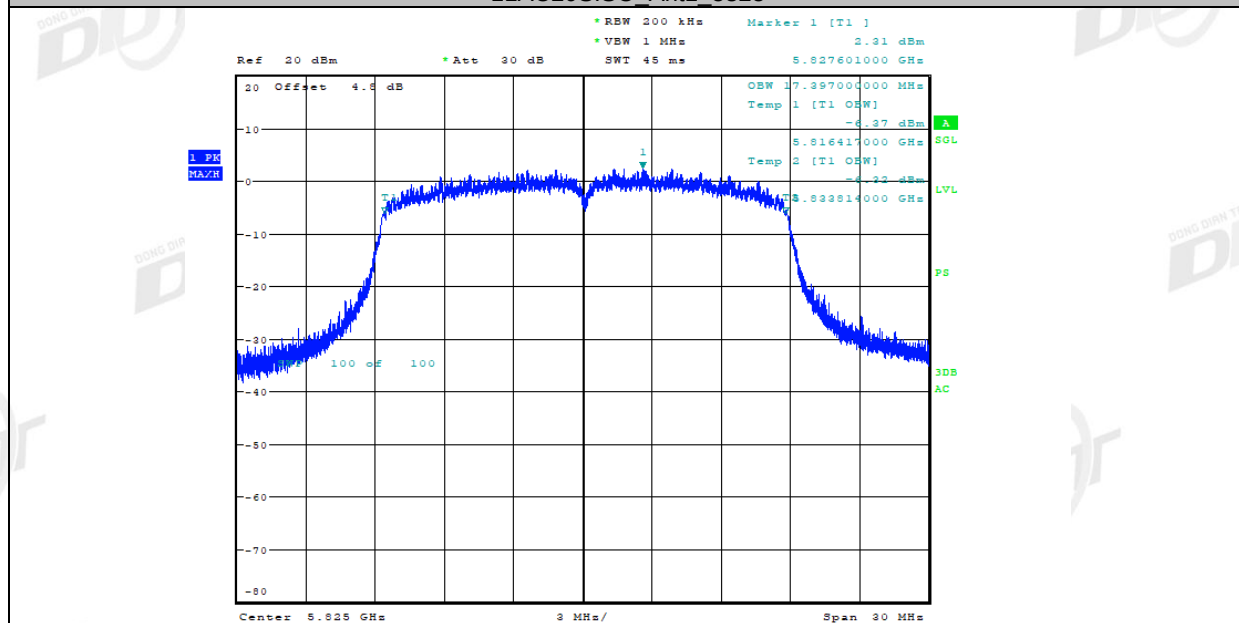
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11AC20SISO_Ant1_5785



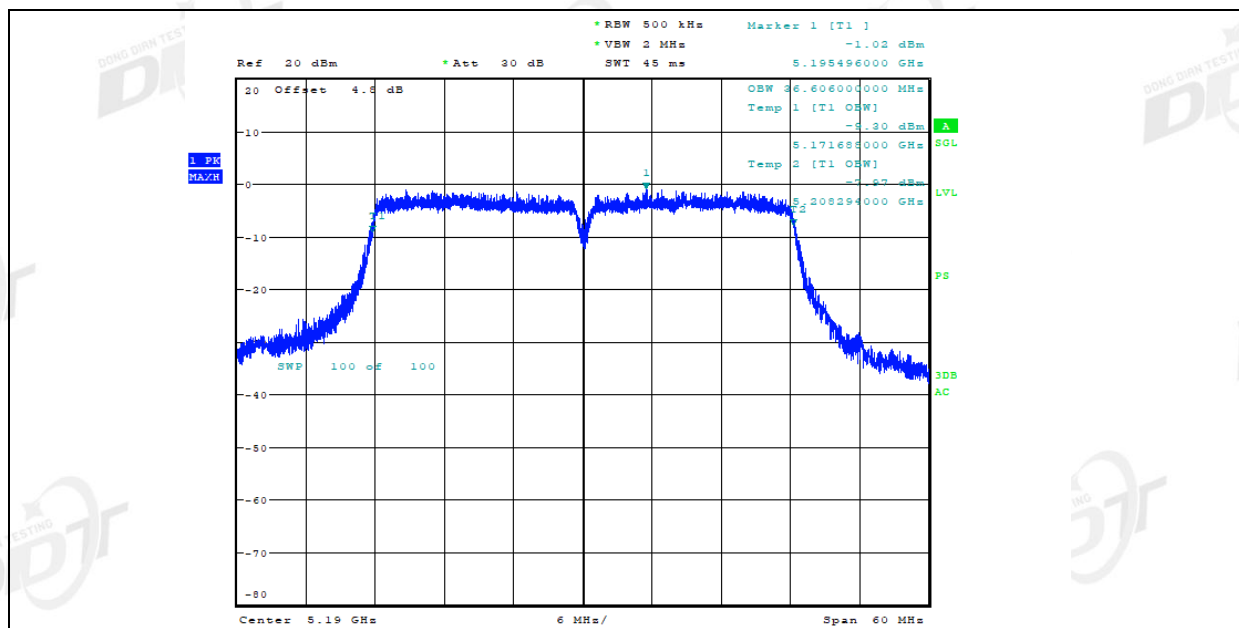
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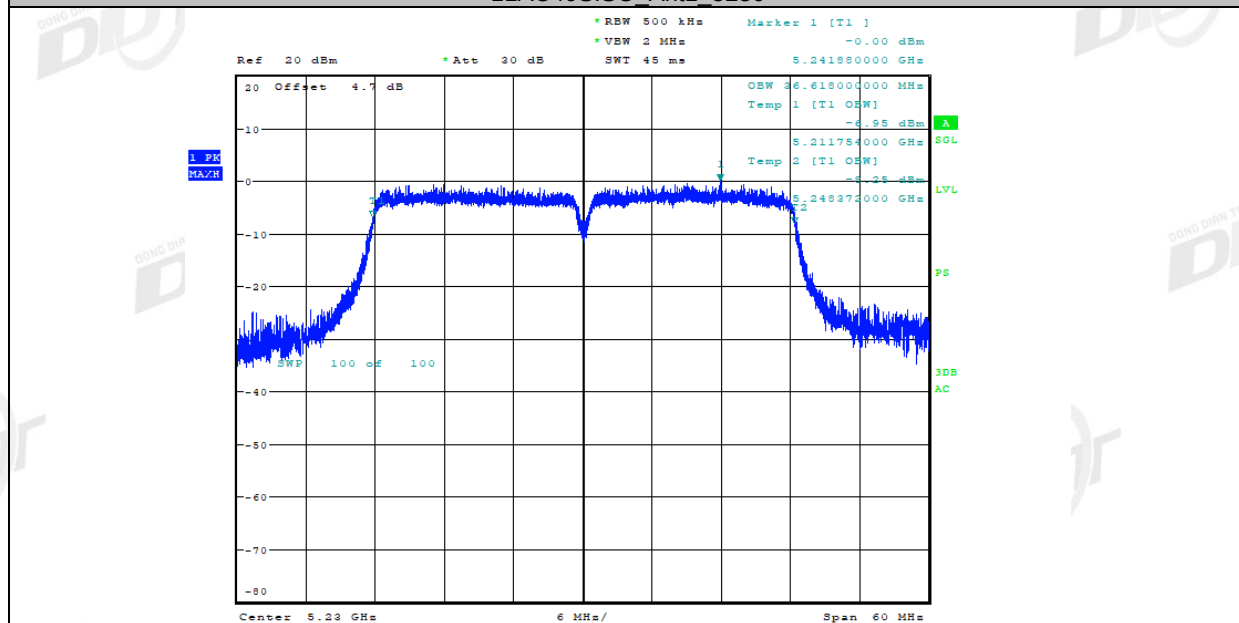
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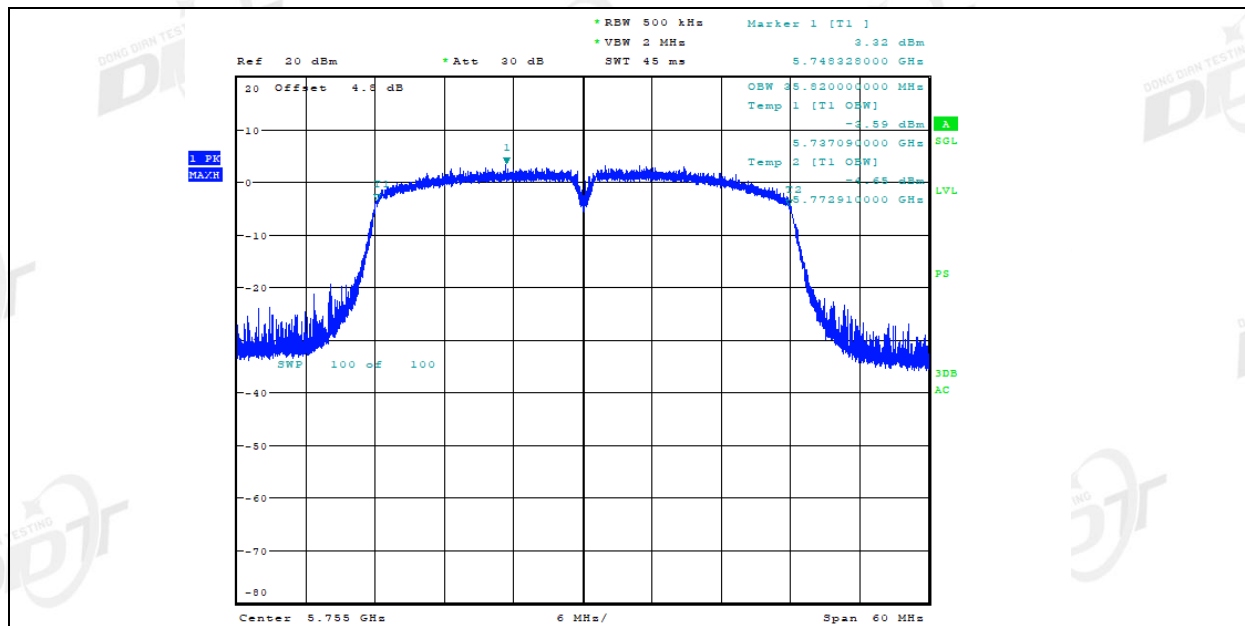
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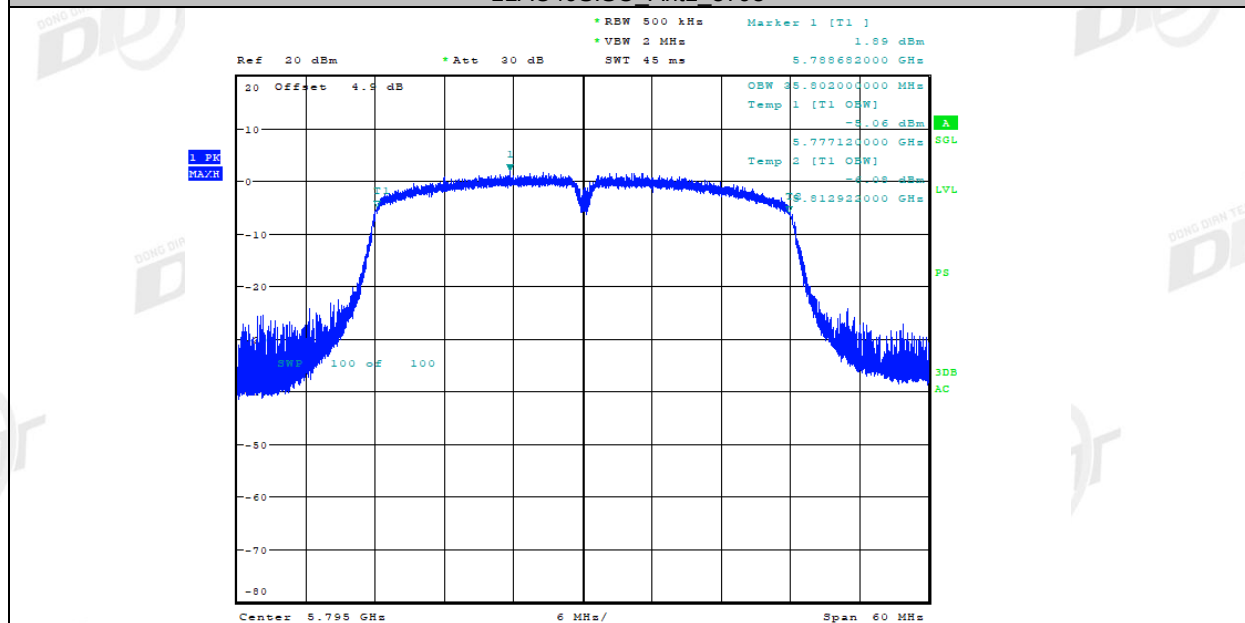
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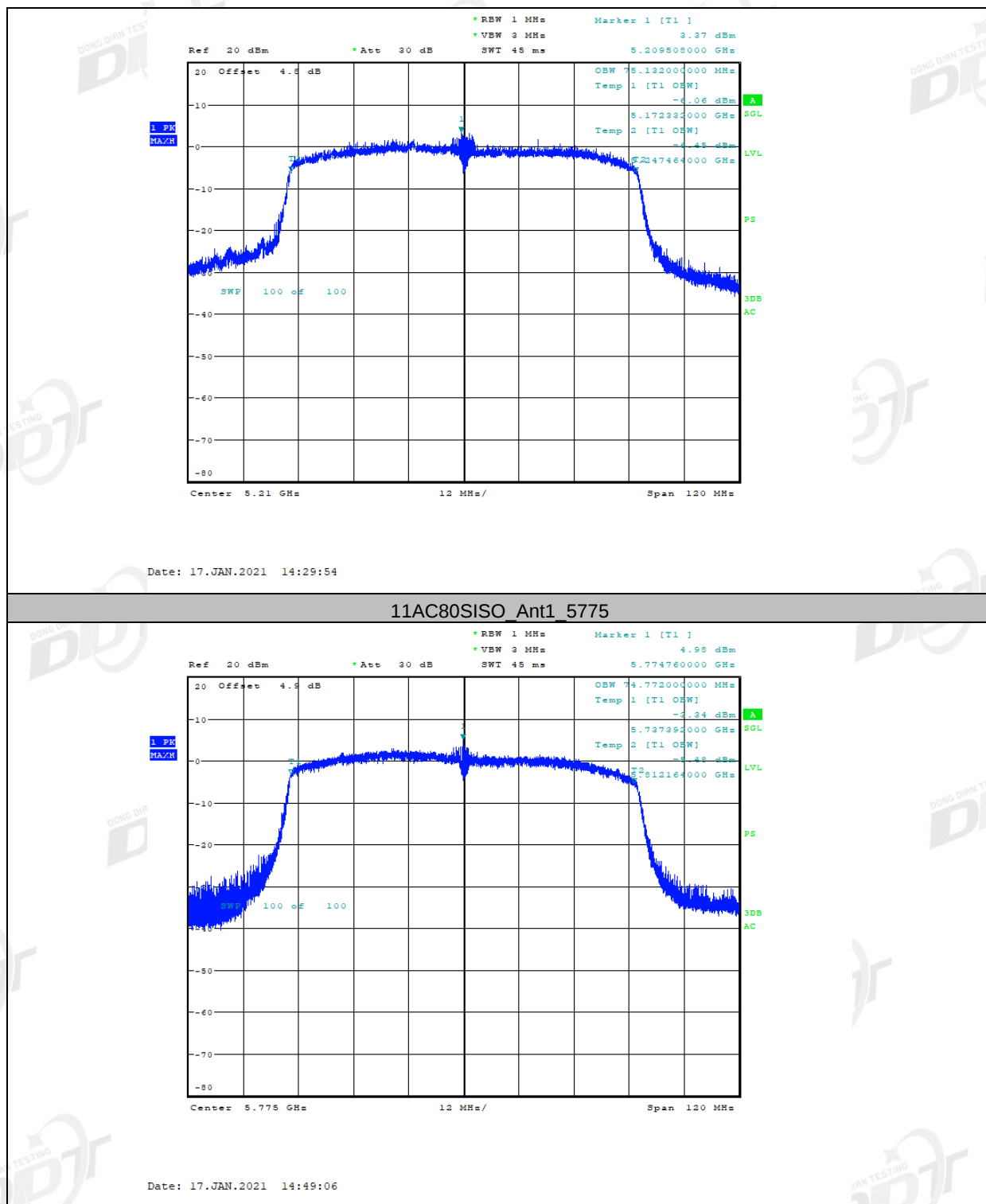
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11AC40SISO_Ant1_5795



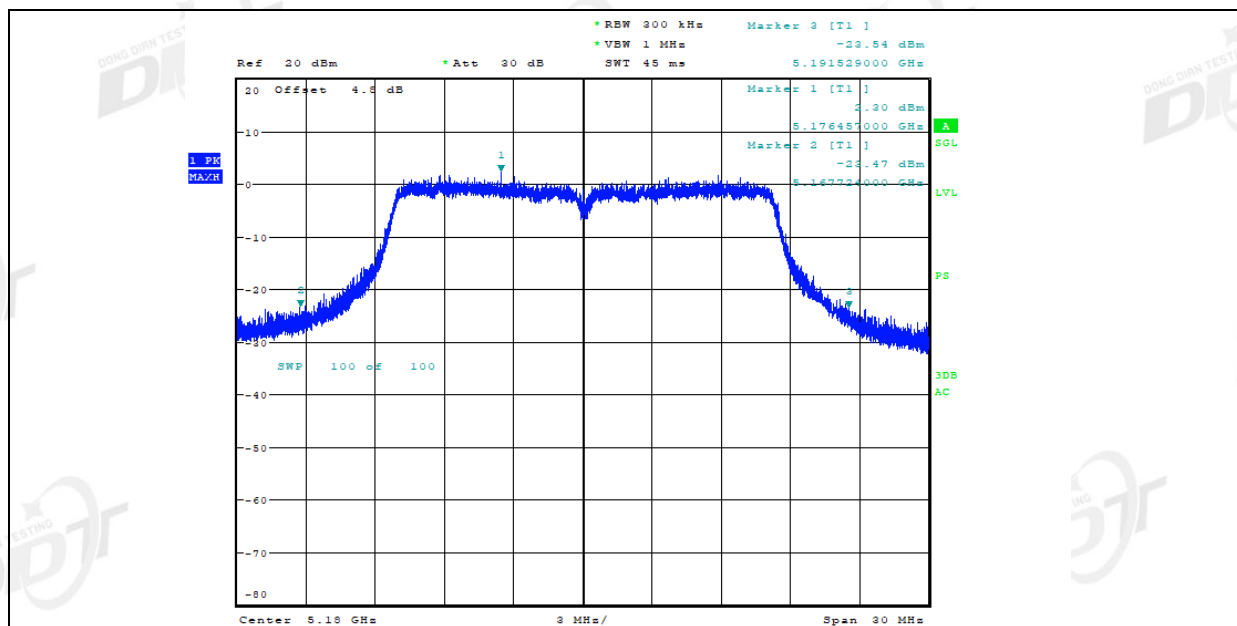
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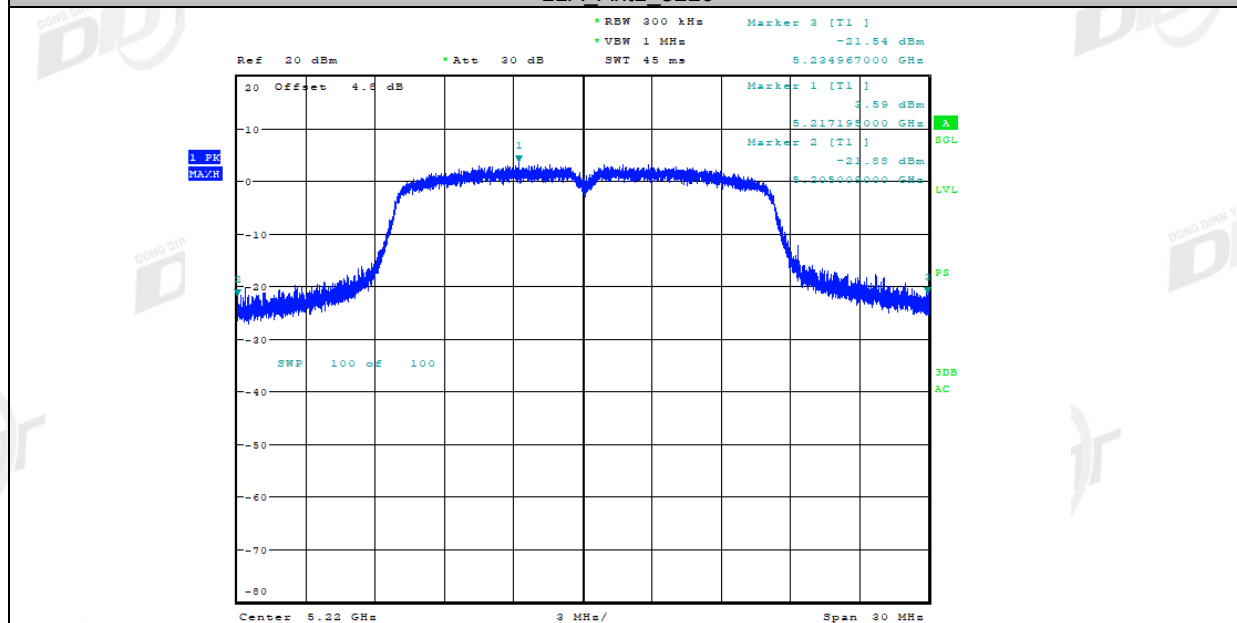
26dB Bandwidth:

11A_Ant1_5180



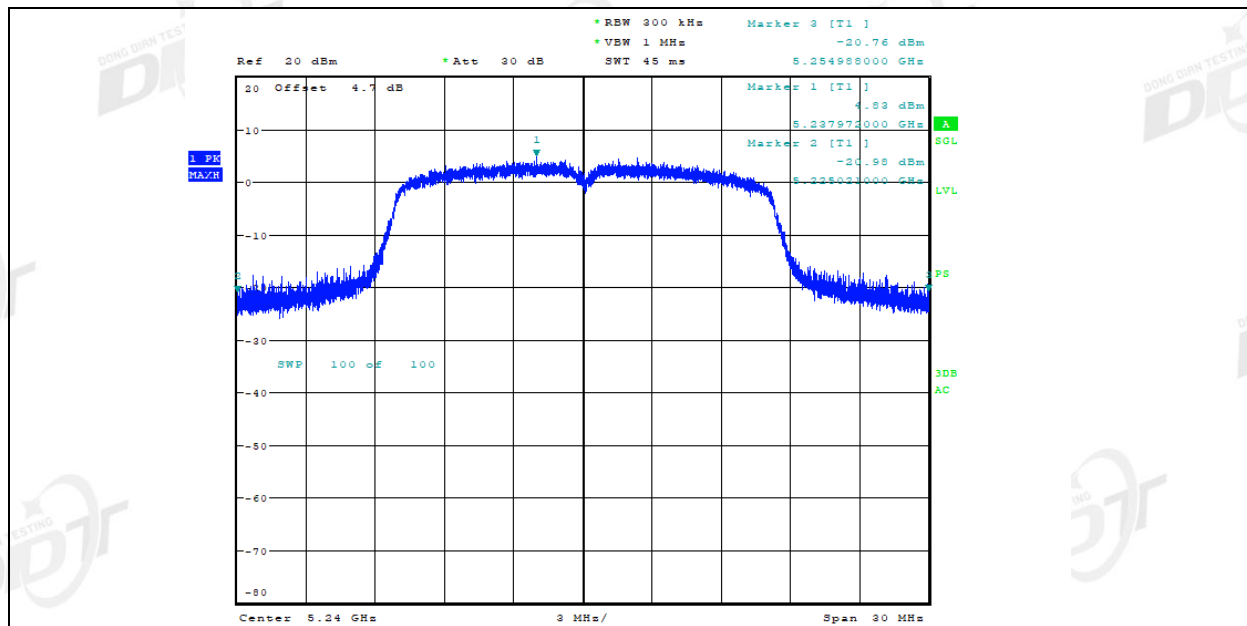
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11A Ant1 5220



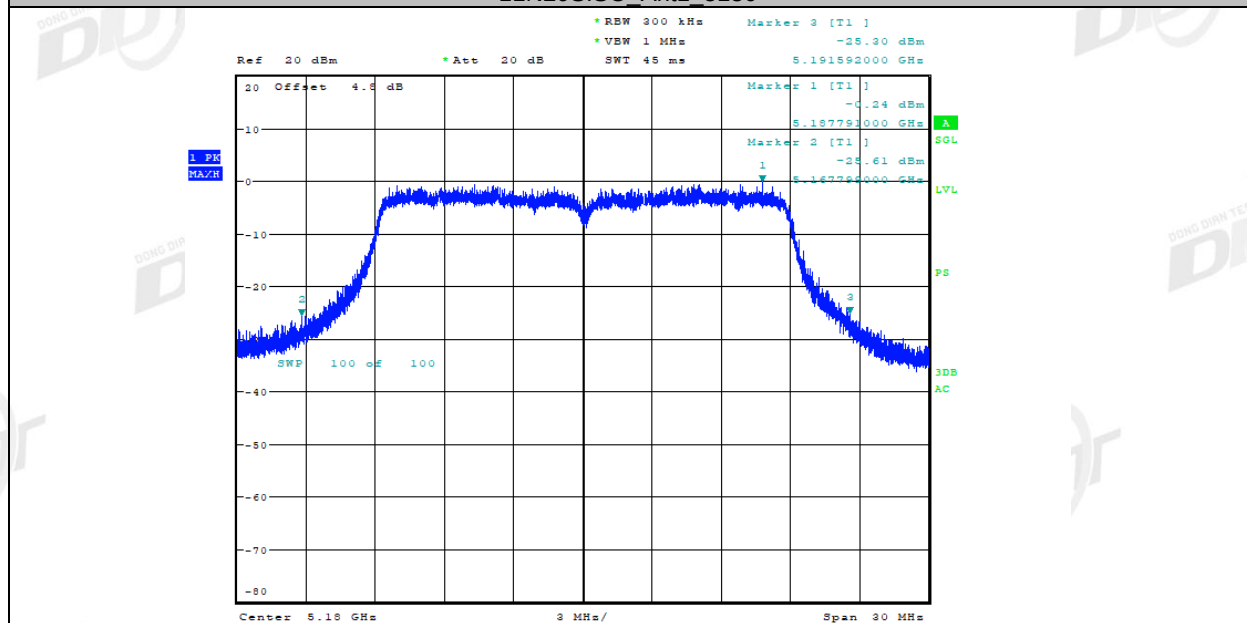
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11A Ant1 5240



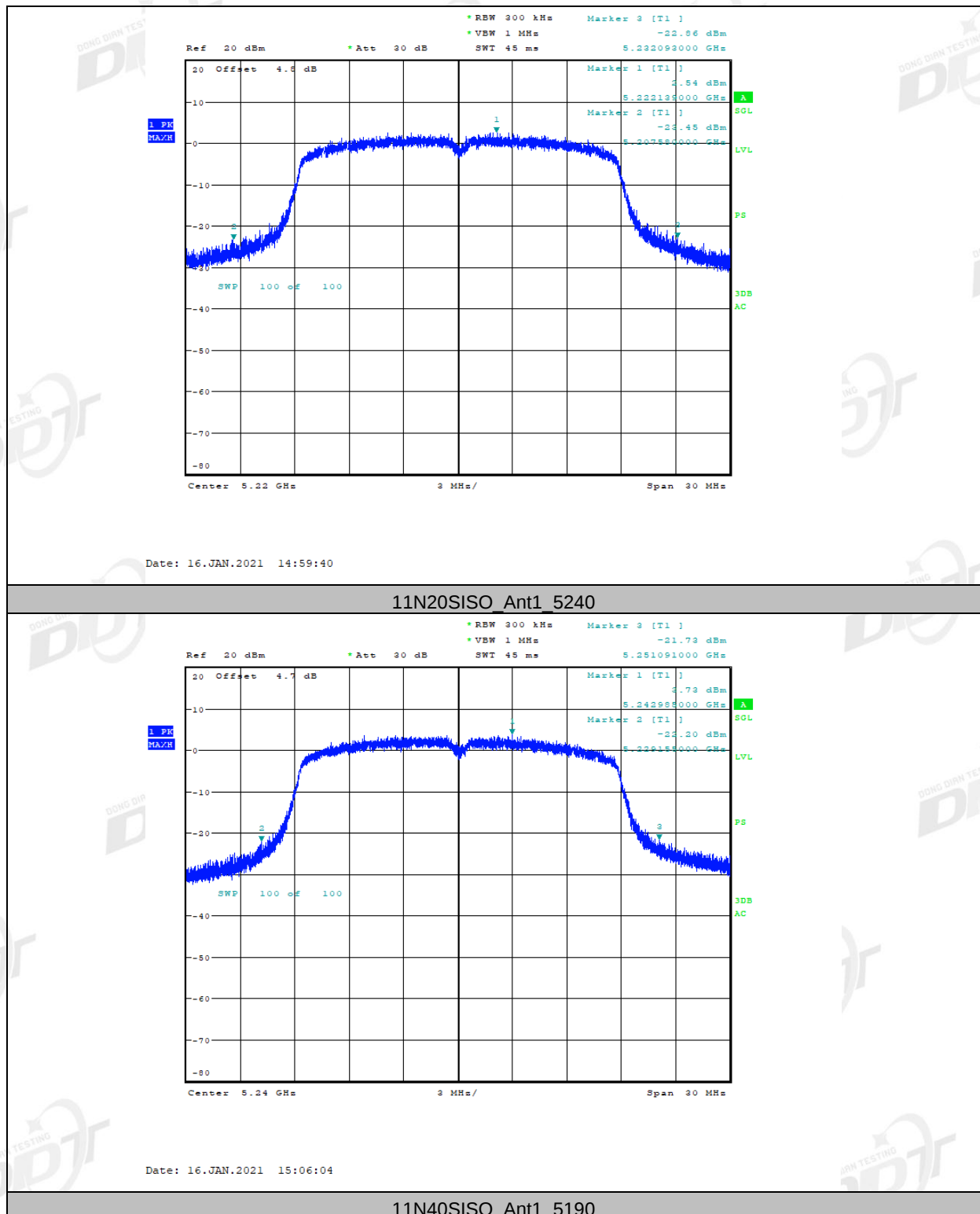
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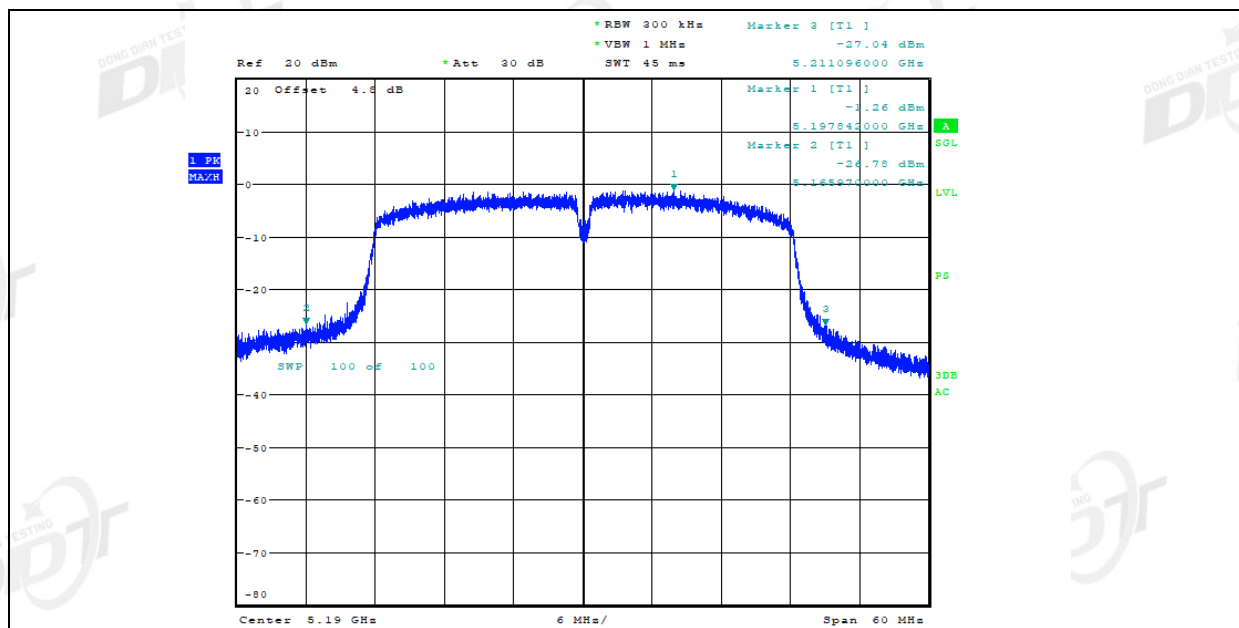
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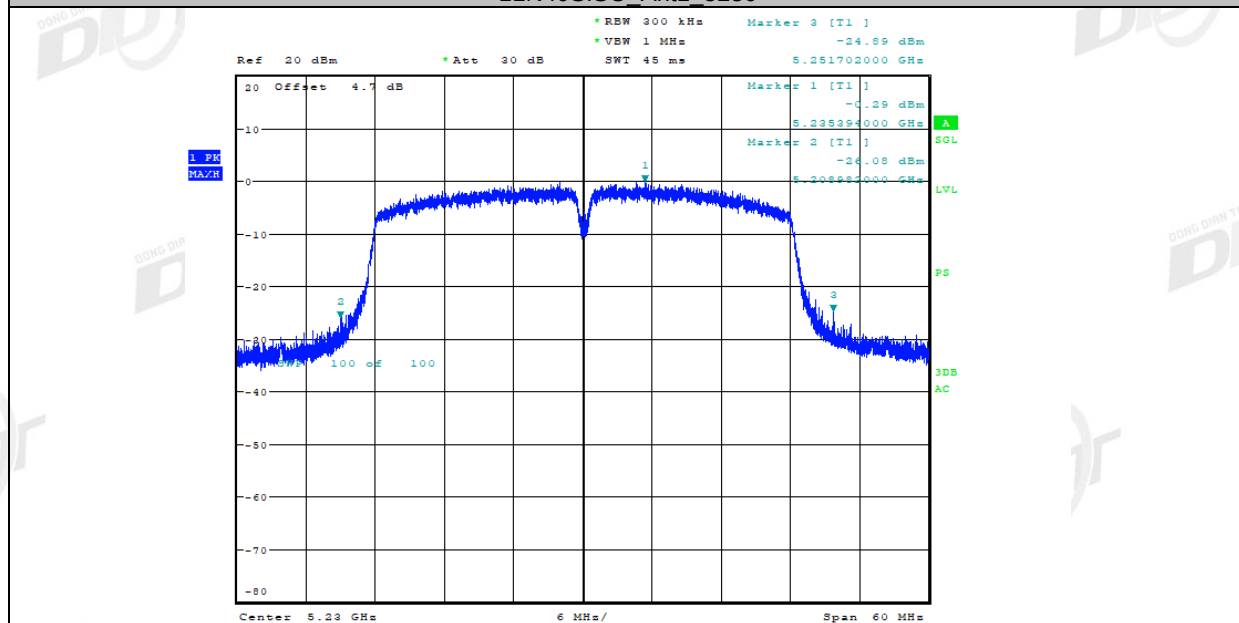
11N20SISO Ant1 5220





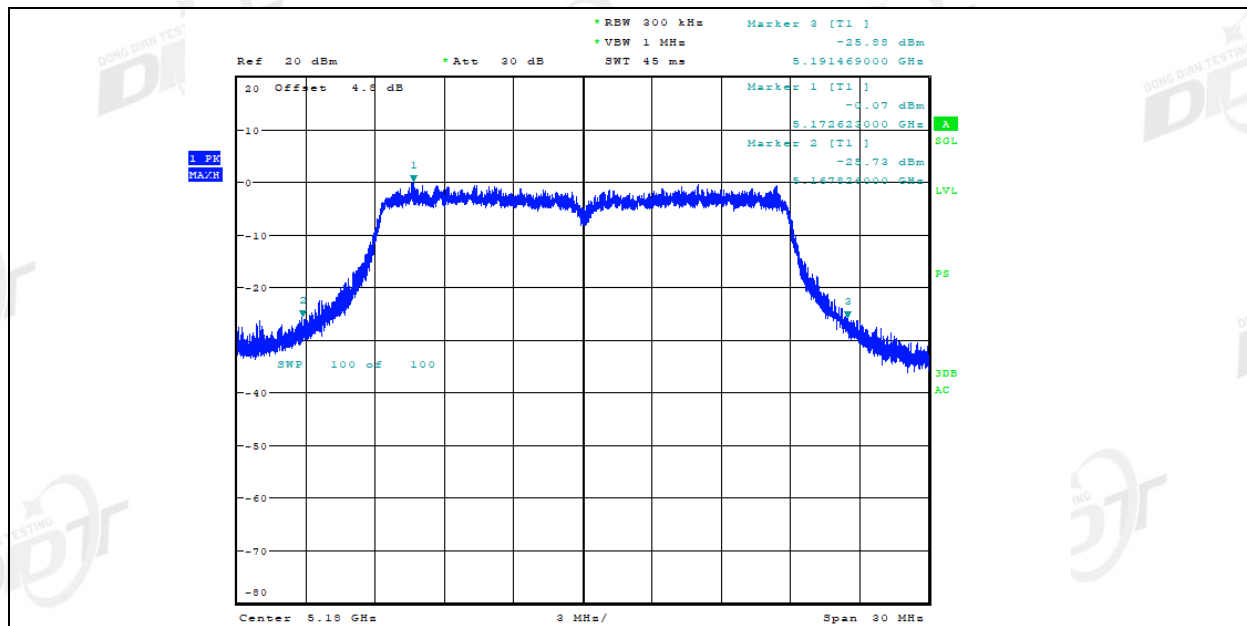
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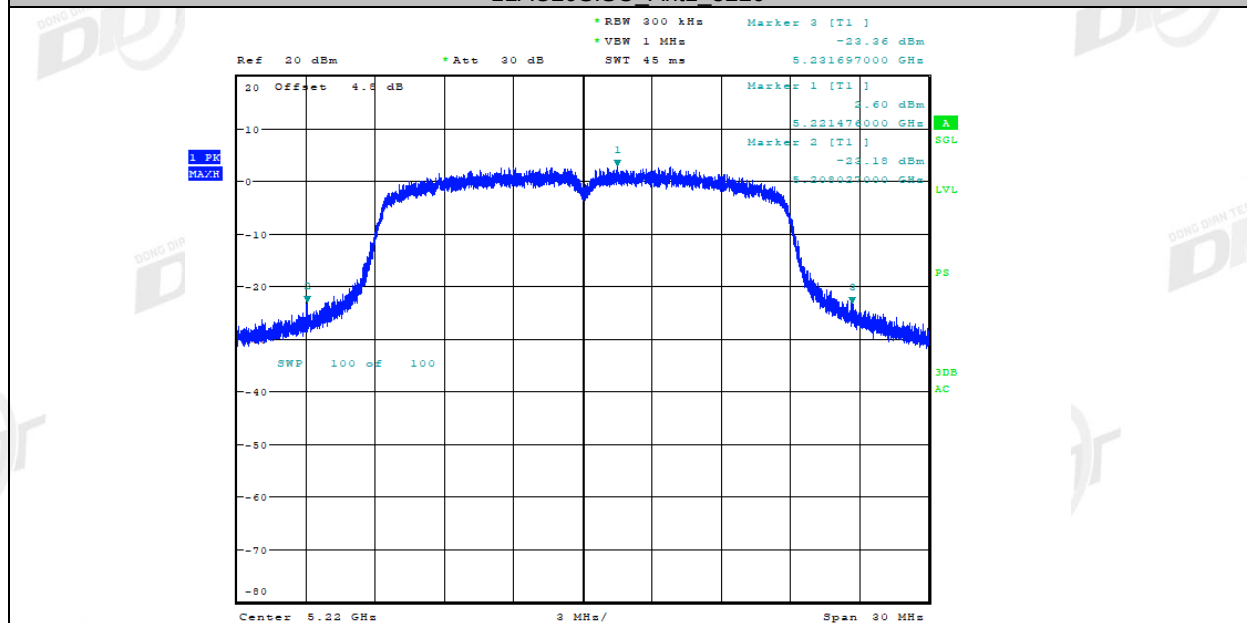
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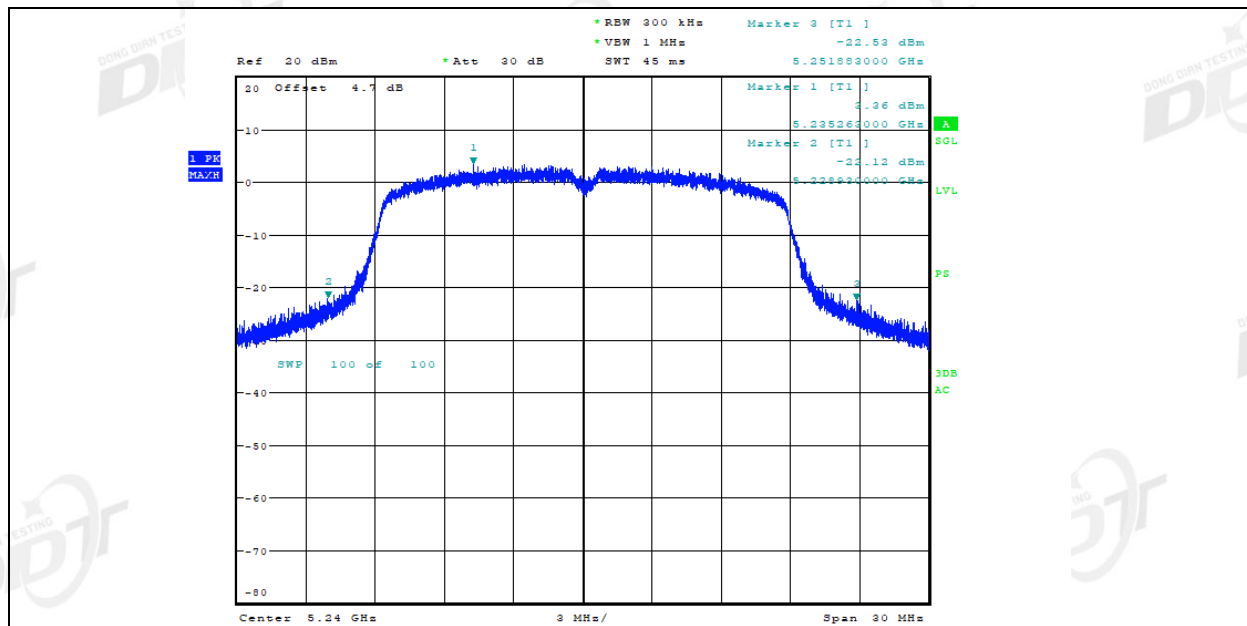
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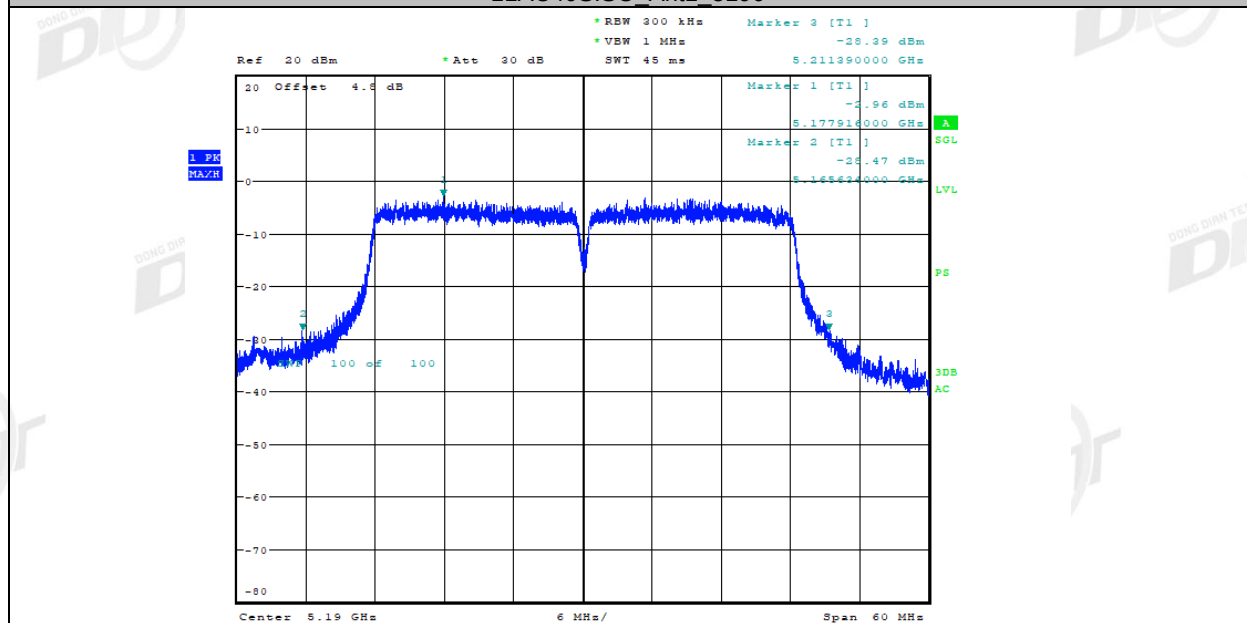


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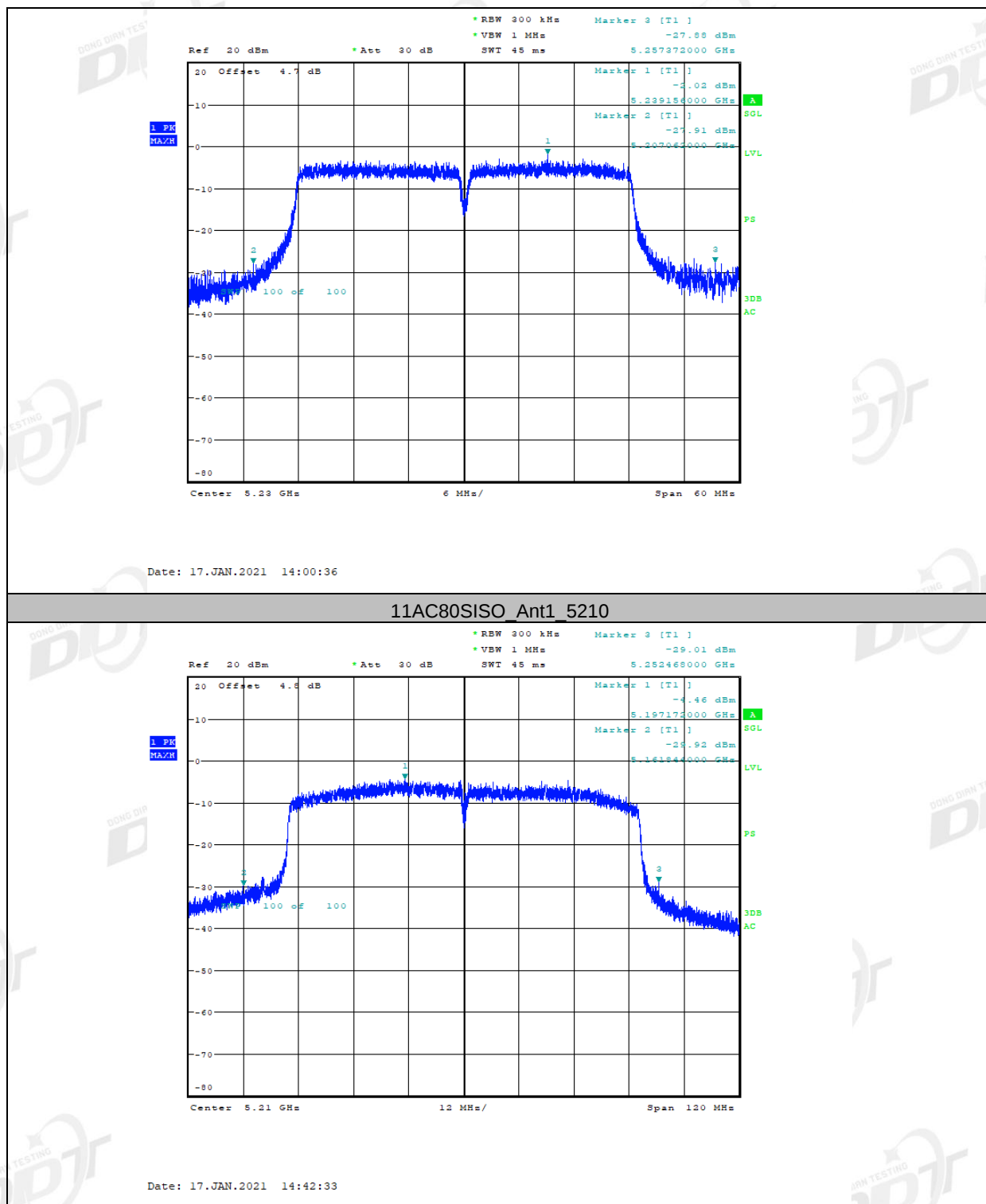
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11AC40SISO_Ant1_5190

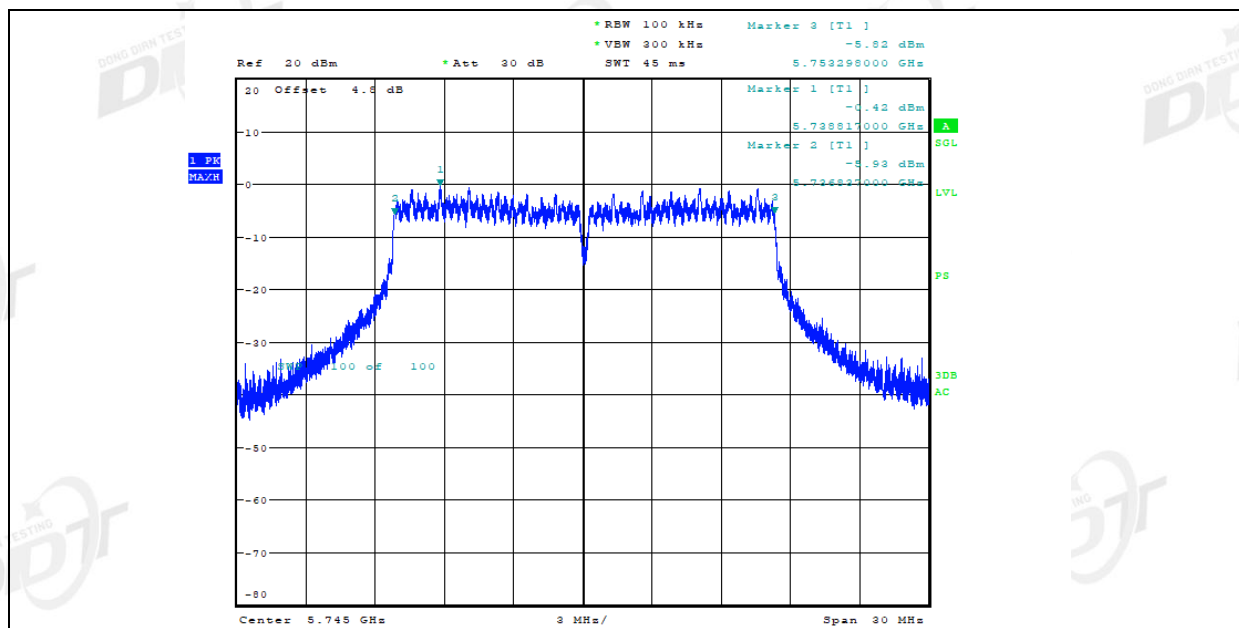


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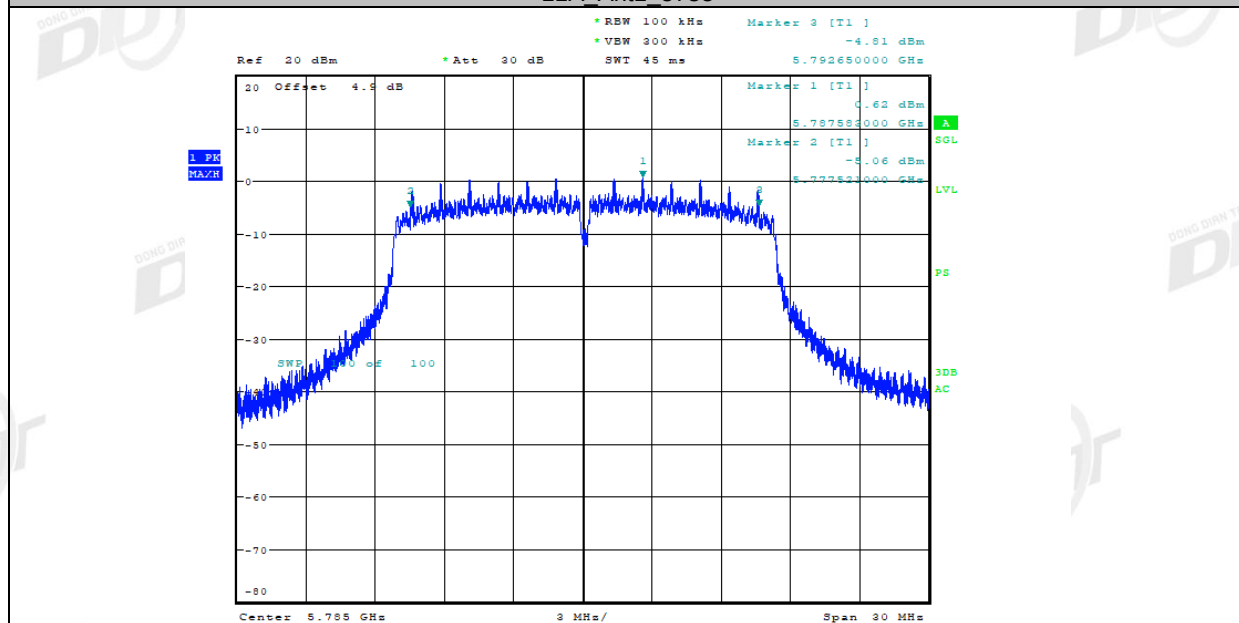
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11A_Ant1_5745



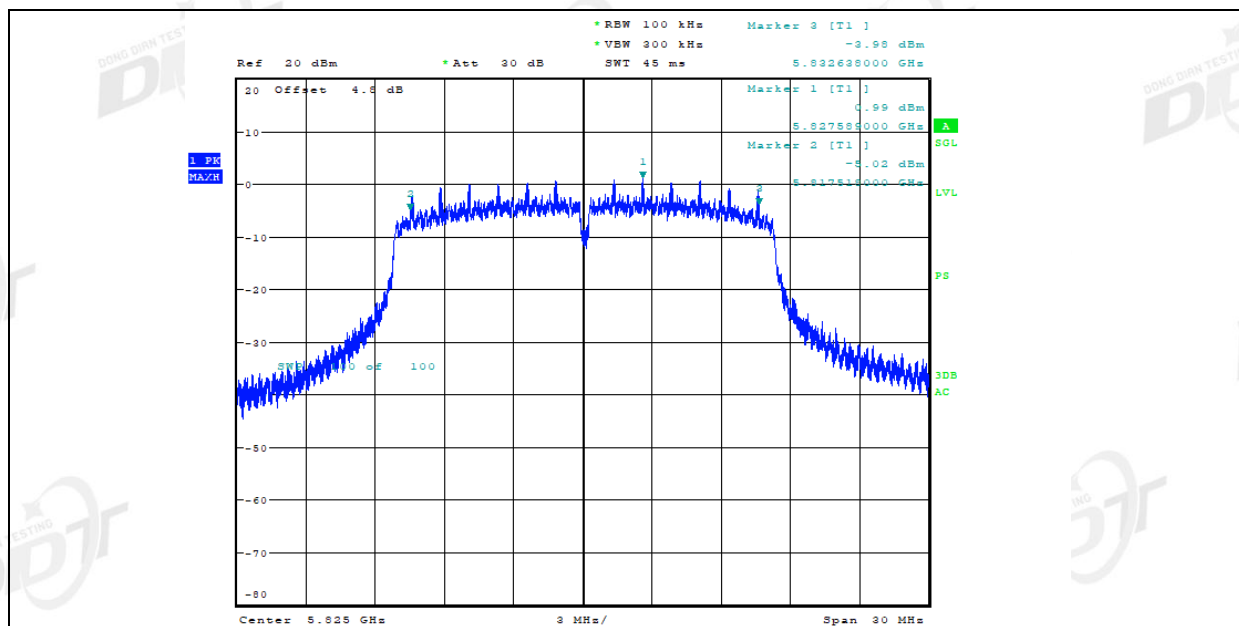
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11A Ant1 5785



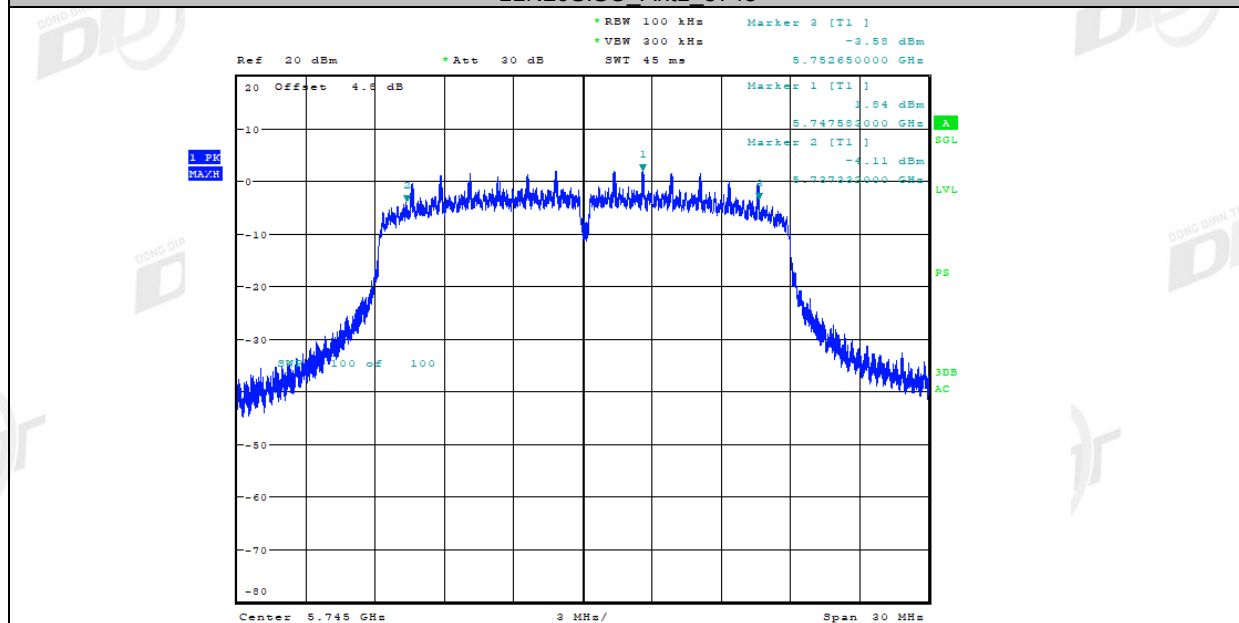
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11A Ant1 5825



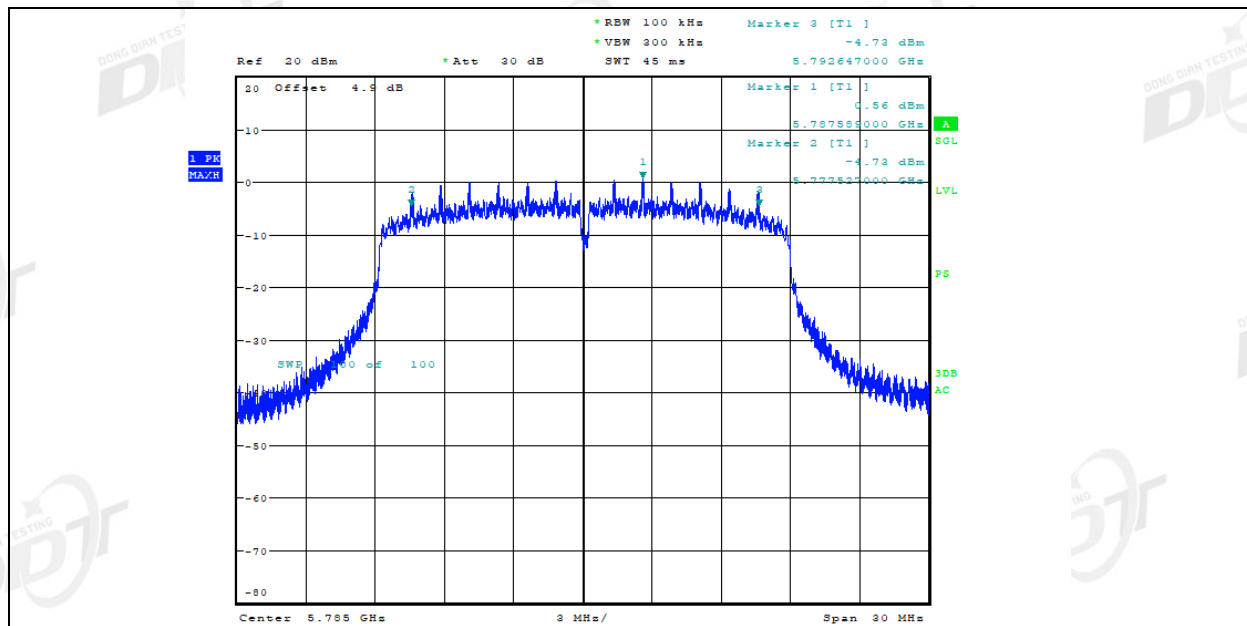
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11N20SISO Ant1 5745



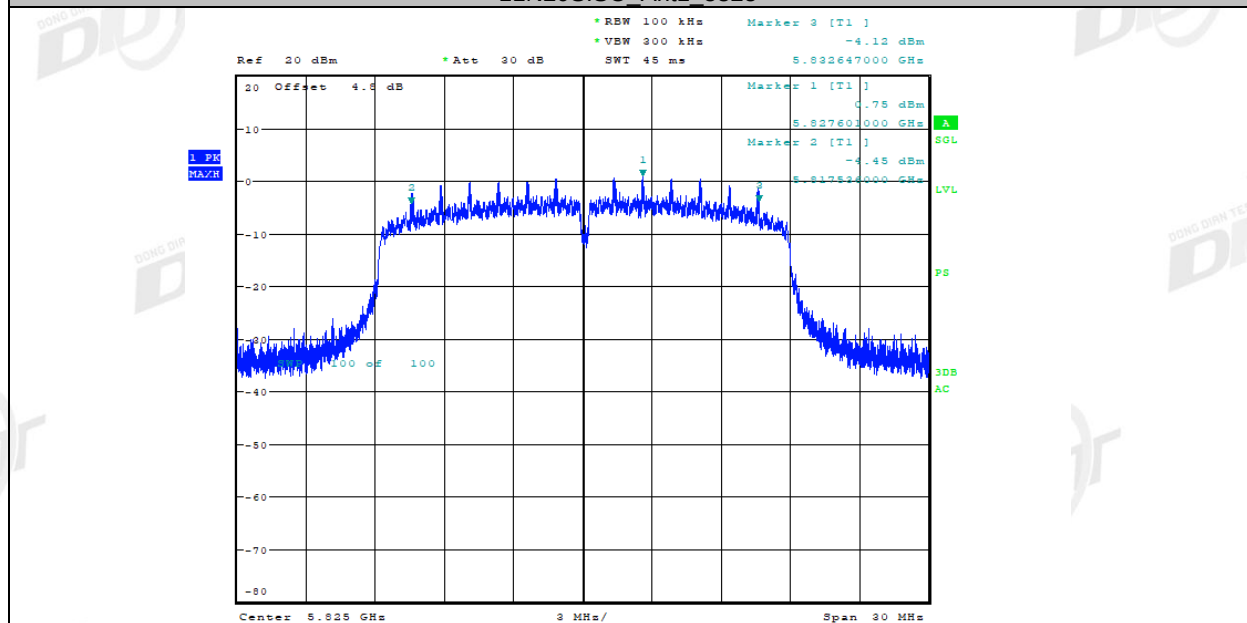
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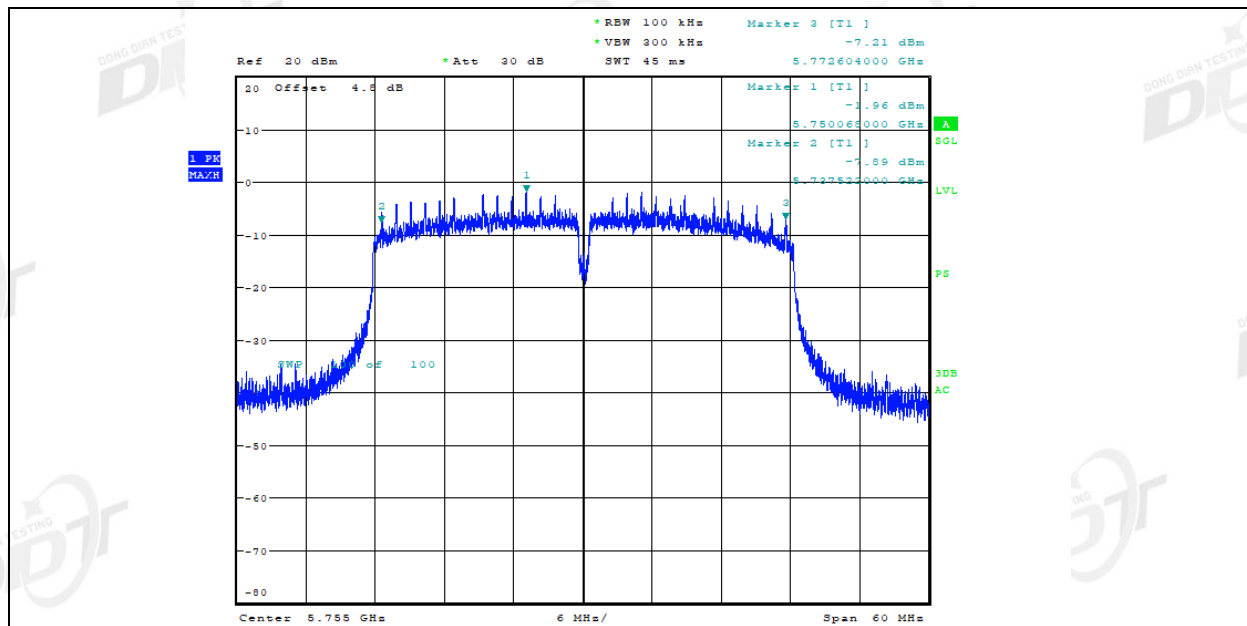
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11N20SISO Ant1 5825



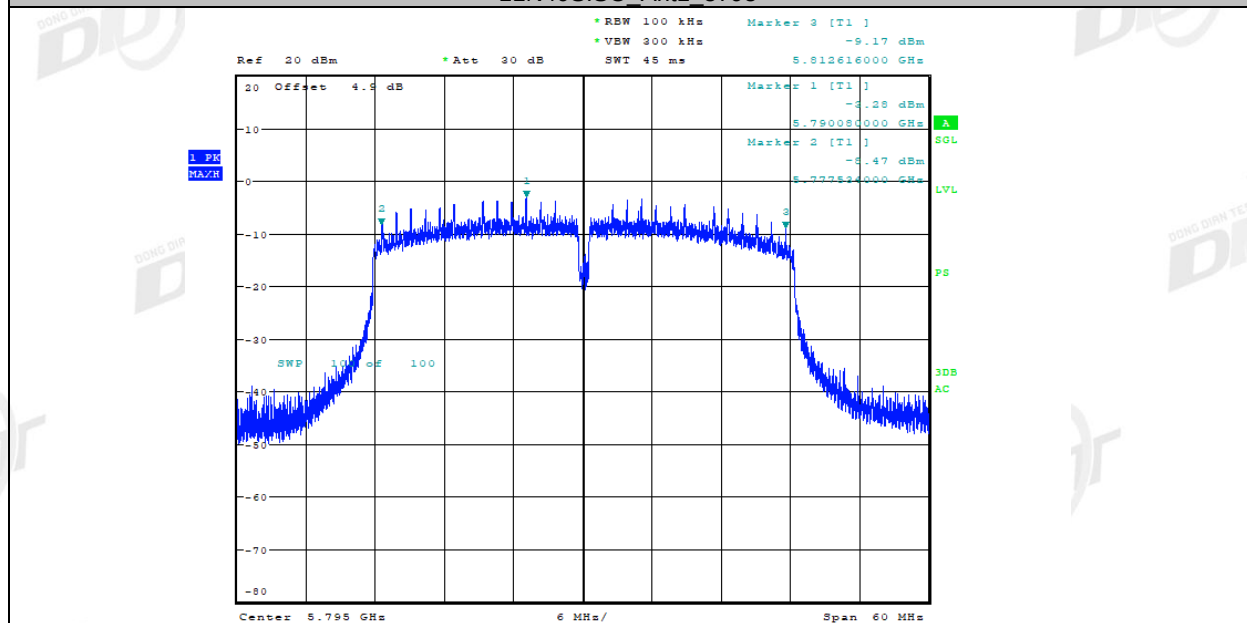
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11N40SISO Ant1 5755



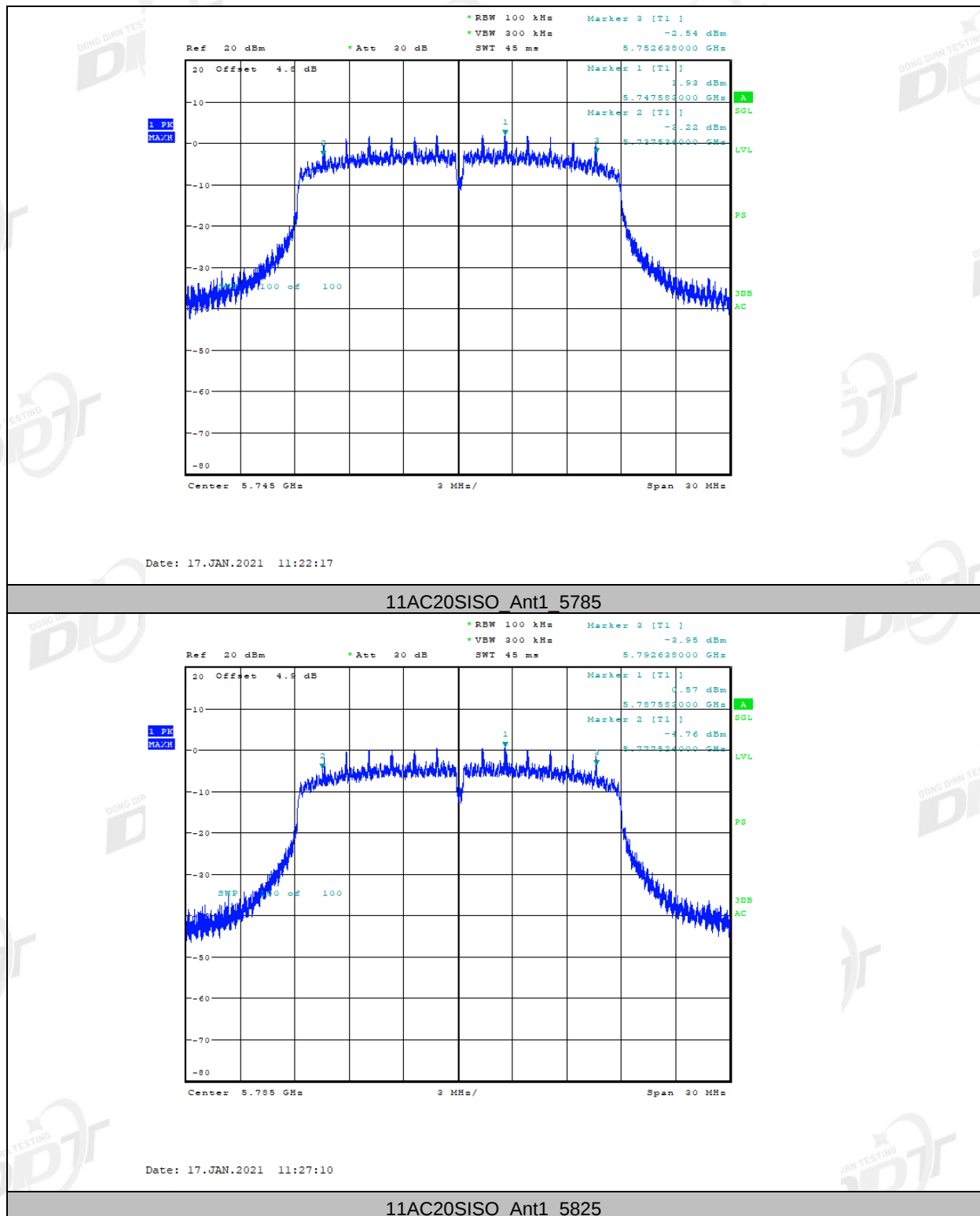
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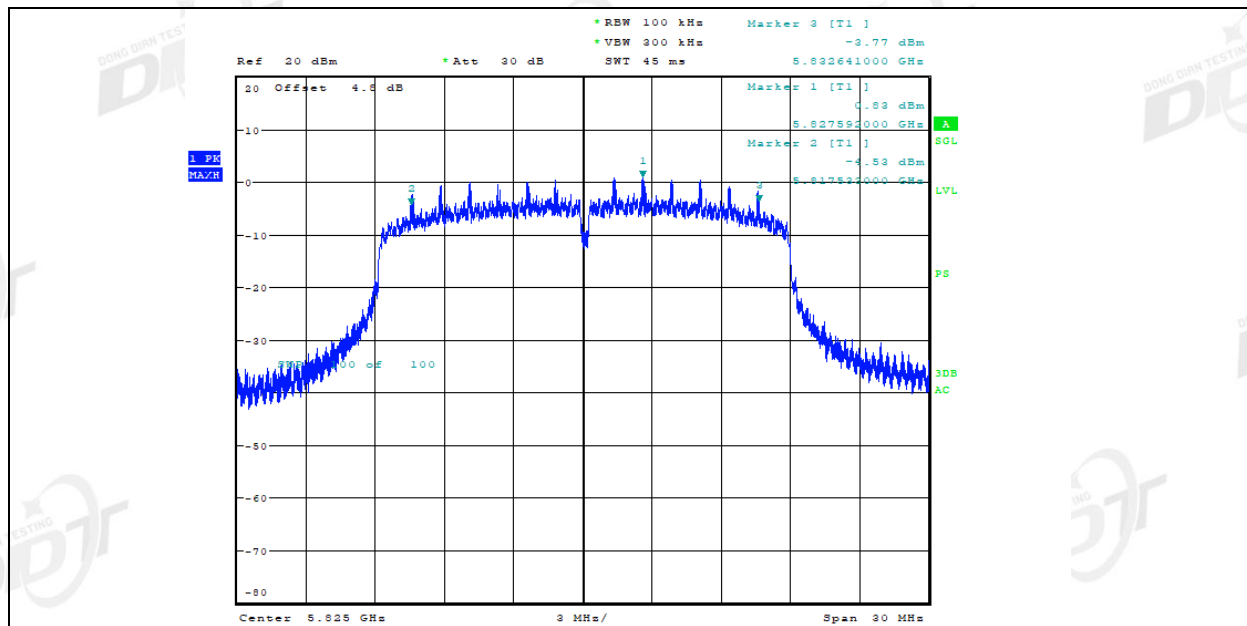
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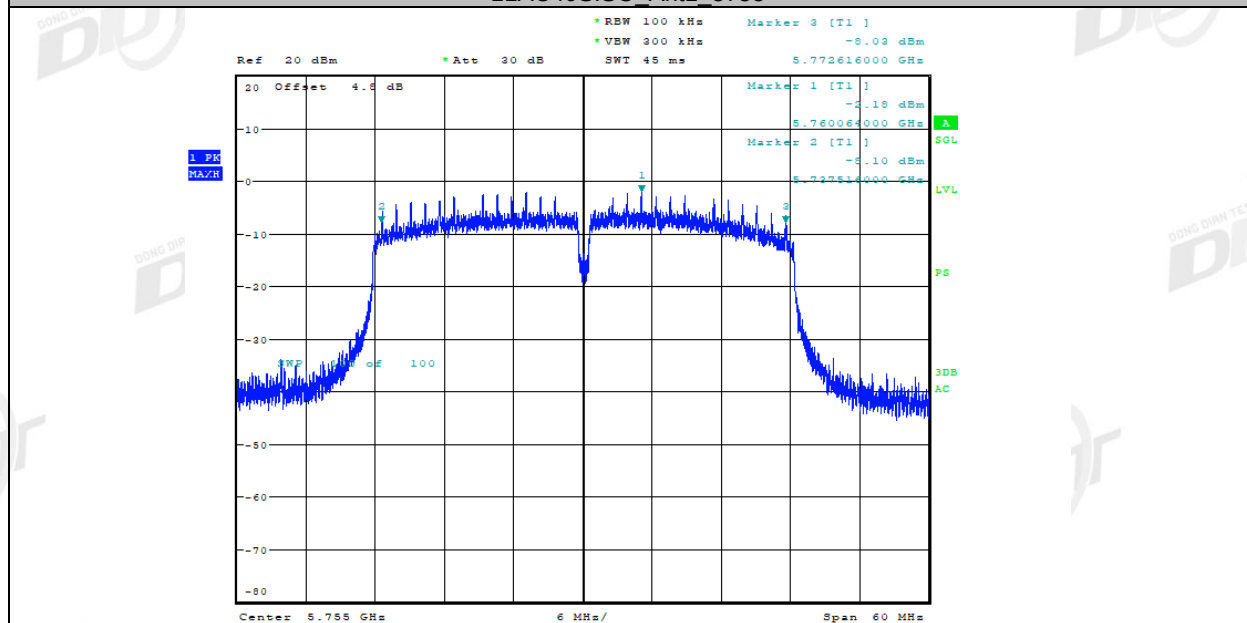
11AC20SISO Ant1 5745





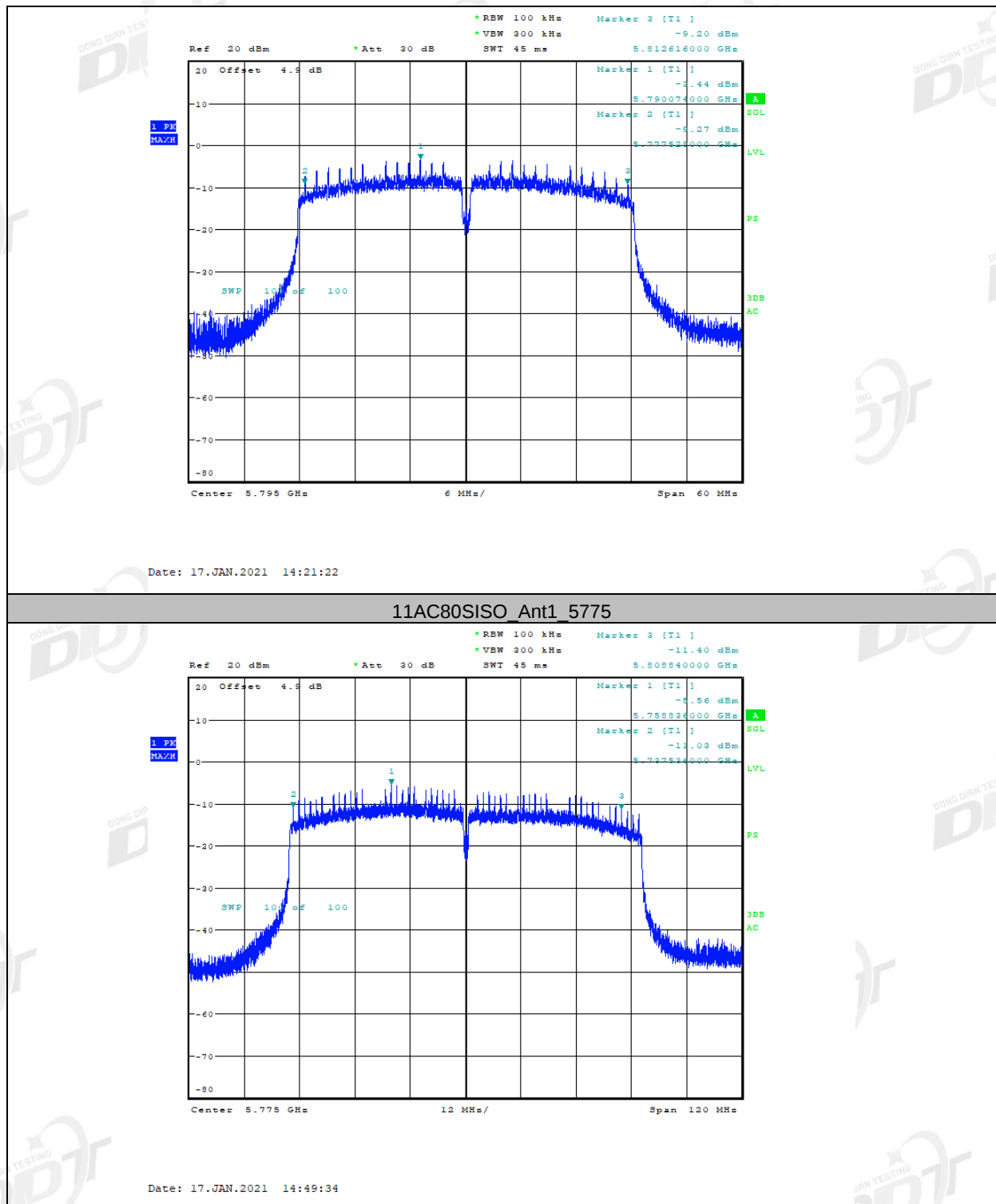
Date: 17.JAN.2021 11:34:26

11AC40SISO_Ant1_5755



Date: 17.JAN.2021 14:12:12

11AC40SISO_Ant1_5795



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 RSS: e.i.r.p. power: not exceed 200 mW (23 dBm) or $10 + 10 \log_{10} B$	
	For FCC: 250 mW (24 dBm) or $11 + 10 \log_{10} B$	
	For RSS: For conducted output power: 250 mW (24 dBm) or $11 + 10 \log_{10} B$	5250-5350
	For RSS: e.i.r.p. power: not exceed 1.0 W (30 dBm) or $17 + 10 \log_{10} B$	
	For FCC: 250 mW (24 dBm) or $11 + 10 \log_{10} B$	
	For RSS: For conducted output power: 250 mW (24 dBm) or $11 + 10 \log_{10} B$	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 5725
	For RSS: e.i.r.p. power: not exceed 1.0 W (30 dBm) or $17 + 10 \log_{10} B$	
	1 Watt (30 dBm)	5725-5850

Note 1: For FCC: B=26 bandwidth; For ISDE: B=99% bandwidth.

5.3. Test procedure

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

5.4. Test result

(5150-5250)

Test Mode	Ant	Test Channel	Output Power (dBm)	EIRP (dBm)	FCC LIMIT (dBm)	ISED LIMIT (dBm)
11A	ANT1	5180	6.08	9.08	24	22.2
11A	ANT1	5220	6.22	9.22	24	22.2
11A	ANT1	5240	6.85	9.85	24	22.2
11N20SISO	ANT1	5180	5.95	8.95	24	22.4
11N20SISO	ANT1	5220	5.92	8.92	24	22.4
11N20SISO	ANT1	5240	6.65	8.65	24	22.4
11N40SISO	ANT1	5190	9.37	12.37	24	23.0
11N40SISO	ANT1	5230	9.59	12.59	24	23.0
11AC20SISO	ANT1	5180	5.72	8.72	24	22.4
11AC20SISO	ANT1	5220	6.00	9.00	24	22.4

11AC20SISO	ANT1	5240	6.62	9.62	24	22.4
11AC40SISO	ANT1	5190	9.37	12.37	24	23.0
11AC40SISO	ANT1	5230	9.49	12.40	24	23.0
11AC80SISO	ANT1	5210	8.84	11.84	24	23.0

(5725-5850)

Test Mode	Ant	Test Channel	Output Power (dBm)	LIMIT (dBm)
11A	ANT1	5745	12.02	30
11A	ANT1	5785	11.65	30
11A	ANT1	5825	11.03	30
11N20SISO	ANT1	5745	11.68	30
11N20SISO	ANT1	5785	11.16	30
11N20SISO	ANT1	5825	10.65	30
11N40SISO	ANT1	5755	10.93	30
11N40SISO	ANT1	5795	10.04	30
11AC20SISO	ANT1	5745	11.66	30
11AC20SISO	ANT1	5785	11.22	30
11AC20SISO	ANT1	5825	10.67	30
11AC40SISO	ANT1	5755	10.80	30
11AC40SISO	ANT1	5795	9.81	30
11AC80SISO	ANT1	5775	9.76	30

6. Power Spectral Density

6.1. Block diagram of test setup

Same with 4.1

6.2. Limits

FCC Part15, Subpart E/ RSS-247		
Test Item	Limit	Frequency Range (MHz)
Power Spectral Density	For FCC: Other than Mobile and portable:17 dBm/MHz Mobile and portable client devices:11 dBm/MHz	5150-5250
	For RSS eirp: 10 dBm/MHz	
	11 dBm/MHz	5250-5350
	11 dBm/MHz	For FCC: 5470 - 5725 For IC: 5470 - 5600 5650 - 5725
	30 dBm/500 kHz	5725-5850

6.3. Test procedure

The transmitter output was connected to a spectrum analyzer. Power density was measured by spectrum analyzer with 1MHz RBW and 3MHz VBW.

Connect the UUT to the spectrum analyser and use the following settings:

5150 MHz~5250 MHz

Center Frequency	The centre frequency of the channel under test
Detector	peak
RBW	1MHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

5725 MHz-5850 MHz

Center Frequency	The centre frequency of the channel under test
Detector	peak
RBW	500 kHz
VBW	$\geq 3 \times \text{RBW}$
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

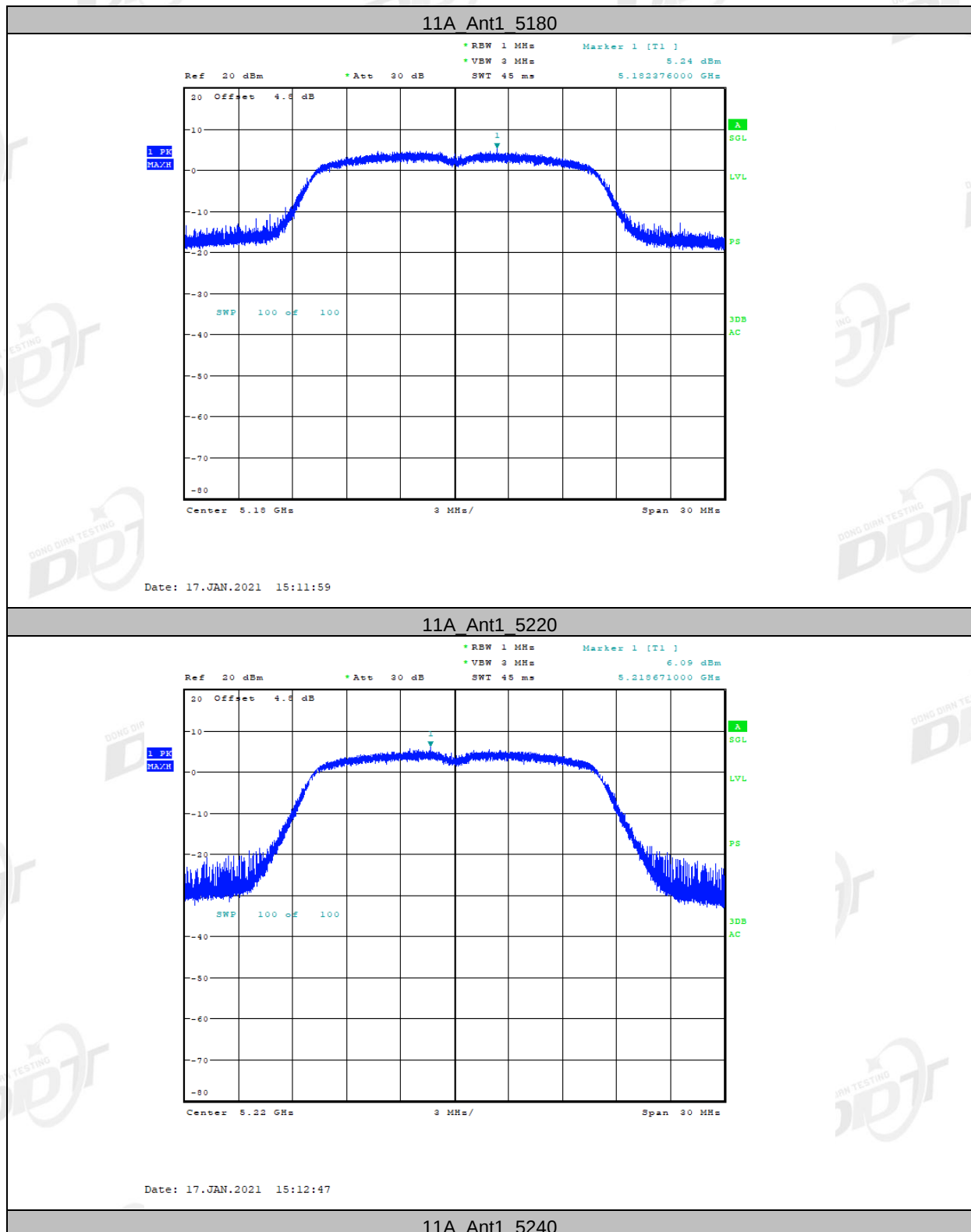
6.4. Test result**(5150-5250)**

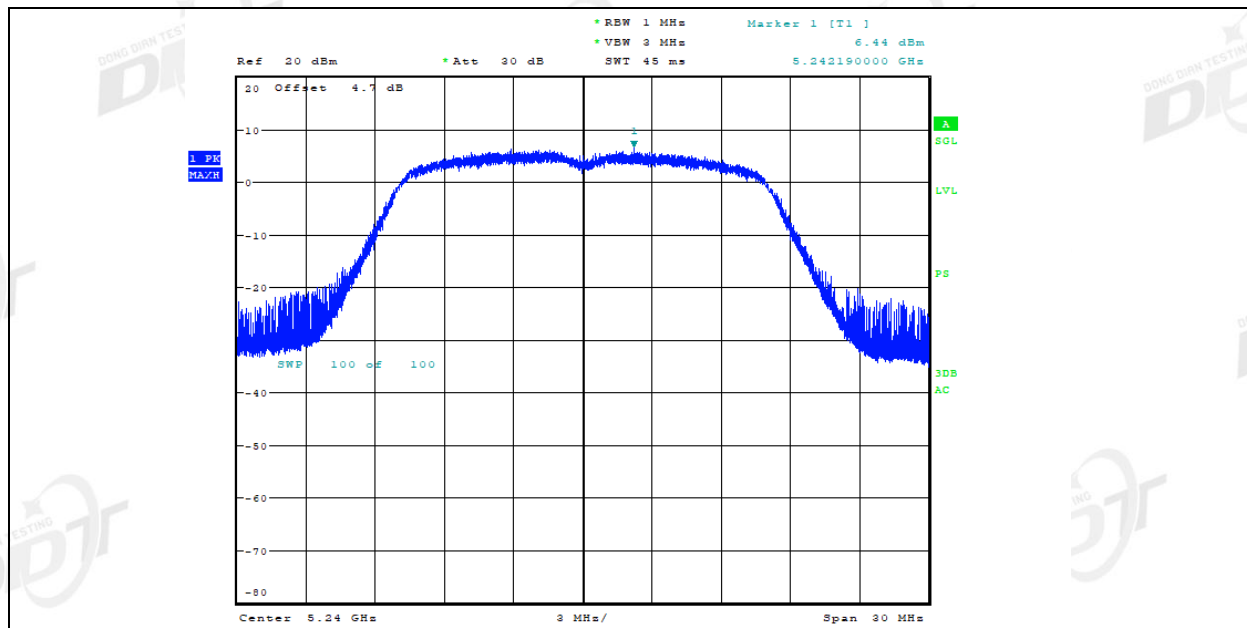
Test Mode	Ant	Test Channel	PSD (dBm/MHz)	PSD eirp (dBm/MHz)	FCC Limit (dBm/MHz)	ISED Limit (dBm/MHz)	Verdict
11A	ANT1	5180	5.239	8.239	11	10	Pass
11A	ANT1	5220	6.095	9.095	11	10	Pass
11A	ANT1	5240	6.437	9.437	11	10	Pass
11N20SISO	ANT1	5180	4.856	7.856	11	10	Pass
11N20SISO	ANT1	5220	4.929	7.929	11	10	Pass
11N20SISO	ANT1	5240	5.823	8.823	11	10	Pass
11N40SISO	ANT1	5190	4.638	7.638	11	10	Pass
11N40SISO	ANT1	5230	5.958	8.958	11	10	Pass
11AC20SISO	ANT1	5180	4.367	7.367	11	10	Pass
11AC20SISO	ANT1	5220	4.911	7.491	11	10	Pass
11AC20SISO	ANT1	5240	5.695	8.695	11	10	Pass
11AC40SISO	ANT1	5190	2.655	5.655	11	10	Pass
11AC40SISO	ANT1	5230	5.997	8.997	11	10	Pass
11AC80SISO	ANT1	5210	3.335	5.335	11	10	Pass

(5725-5850)

Test Mode	Ant	Test Channel	PSD (dBm/1MHz)	Limit (dBm/1MHz)	Verdict
11A	ANT1	5745	7.065	30	Pass
11A	ANT1	5785	6.035	30	Pass
11A	ANT1	5825	6.340	30	Pass
11N20SISO	ANT1	5745	6.928	30	Pass
11N20SISO	ANT1	5785	6.462	30	Pass
11N20SISO	ANT1	5825	5.966	30	Pass
11N40SISO	ANT1	5755	3.334	30	Pass
11N40SISO	ANT1	5795	2.128	30	Pass
11AC20SISO	ANT1	5745	6.943	30	Pass
11AC20SISO	ANT1	5785	5.470	30	Pass
11AC20SISO	ANT1	5825	5.928	30	Pass
11AC40SISO	ANT1	5755	3.441	30	Pass
11AC40SISO	ANT1	5795	1.678	30	Pass
11AC80SISO	ANT1	5775	-0.802	30	Pass

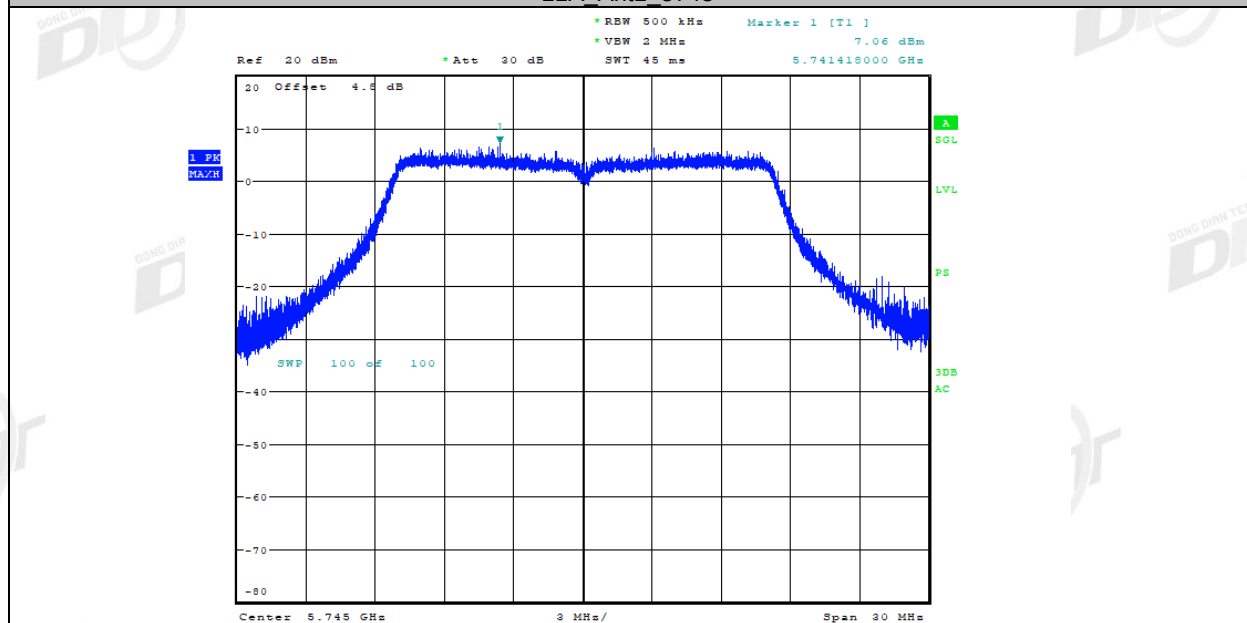
6.5. Original test data





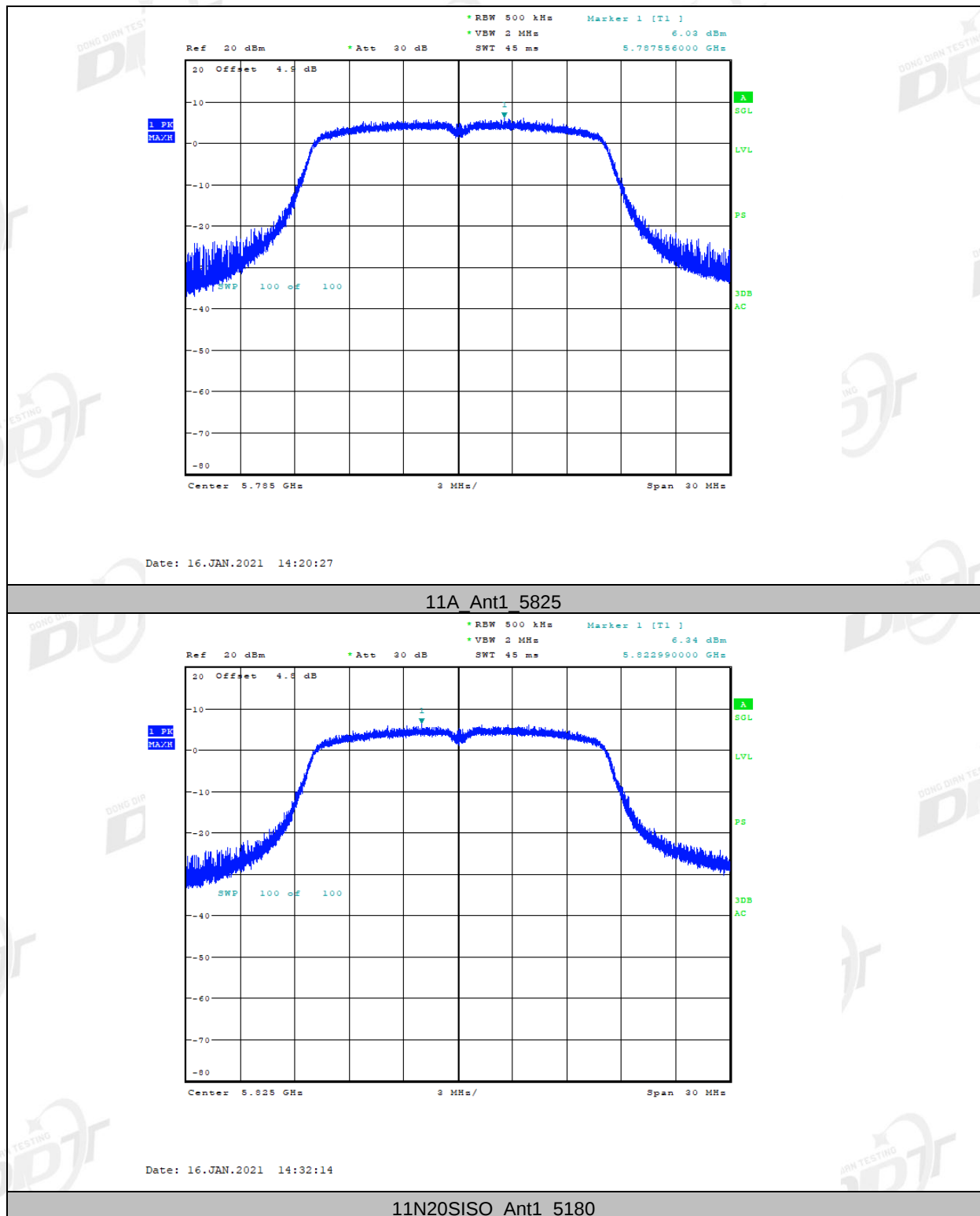
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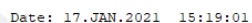
11A Ant1 5745



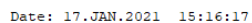
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11A Ant1 5785

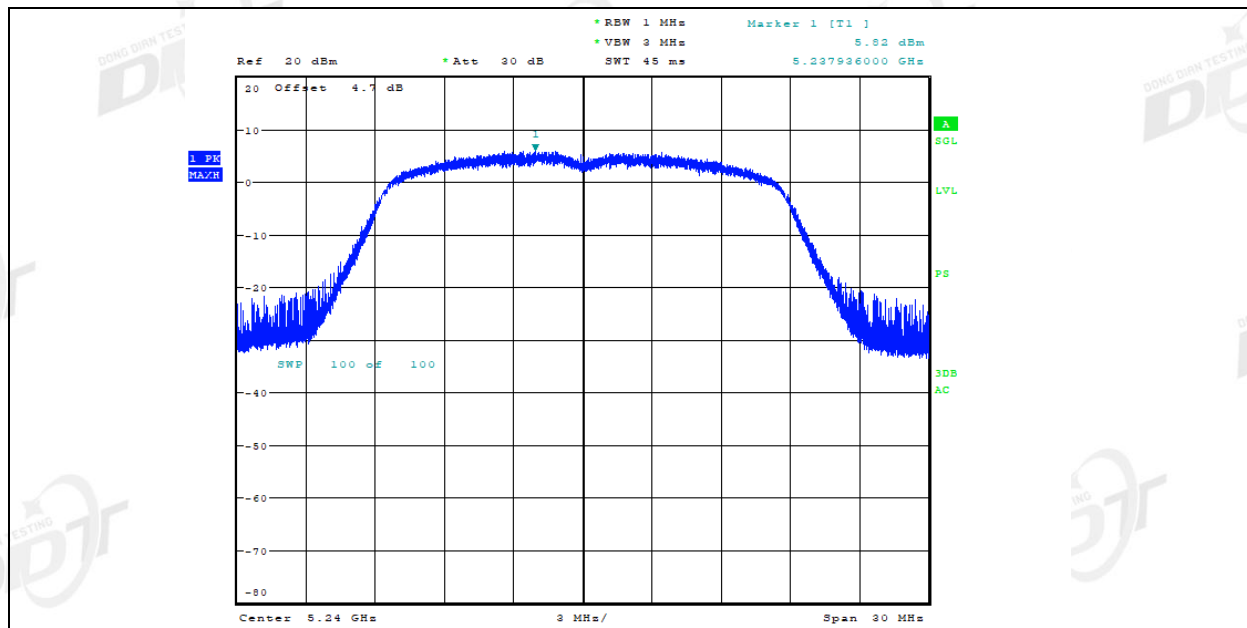




11N20SISO Ant1 5220

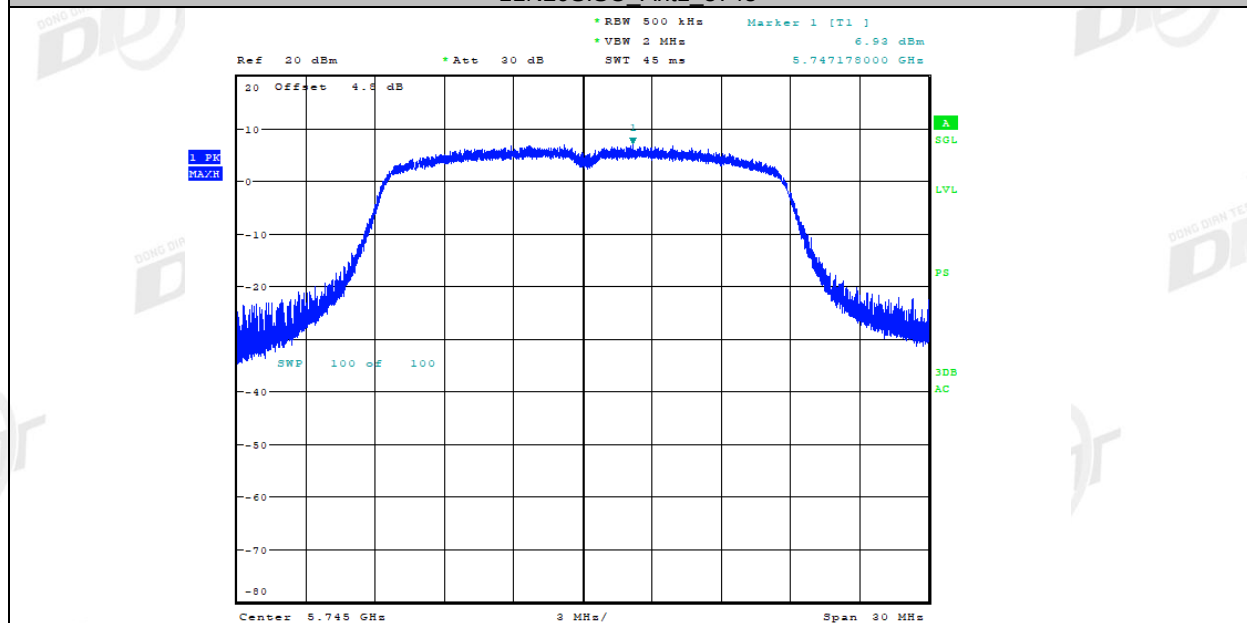


11N20SISO Ant1 5240



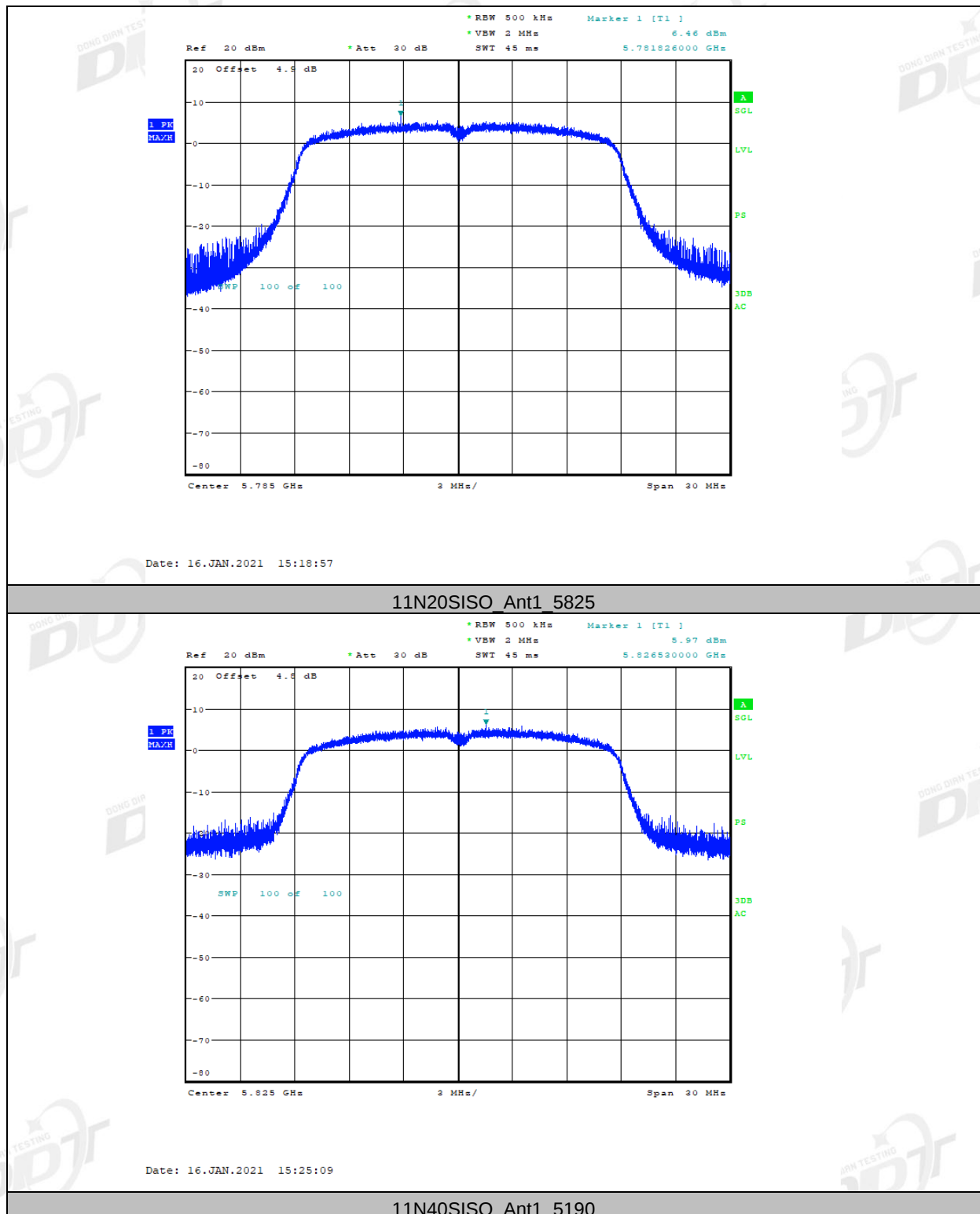
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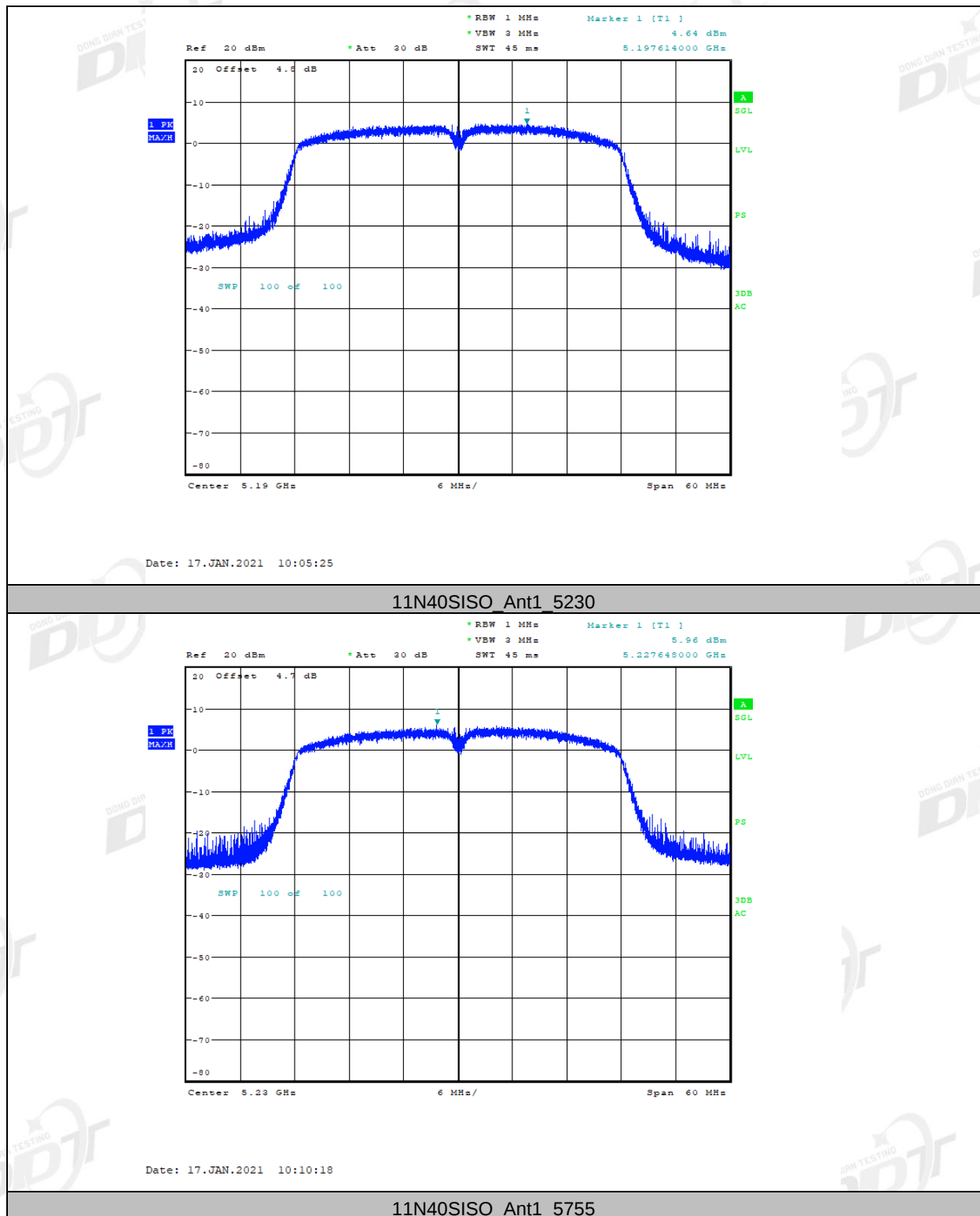
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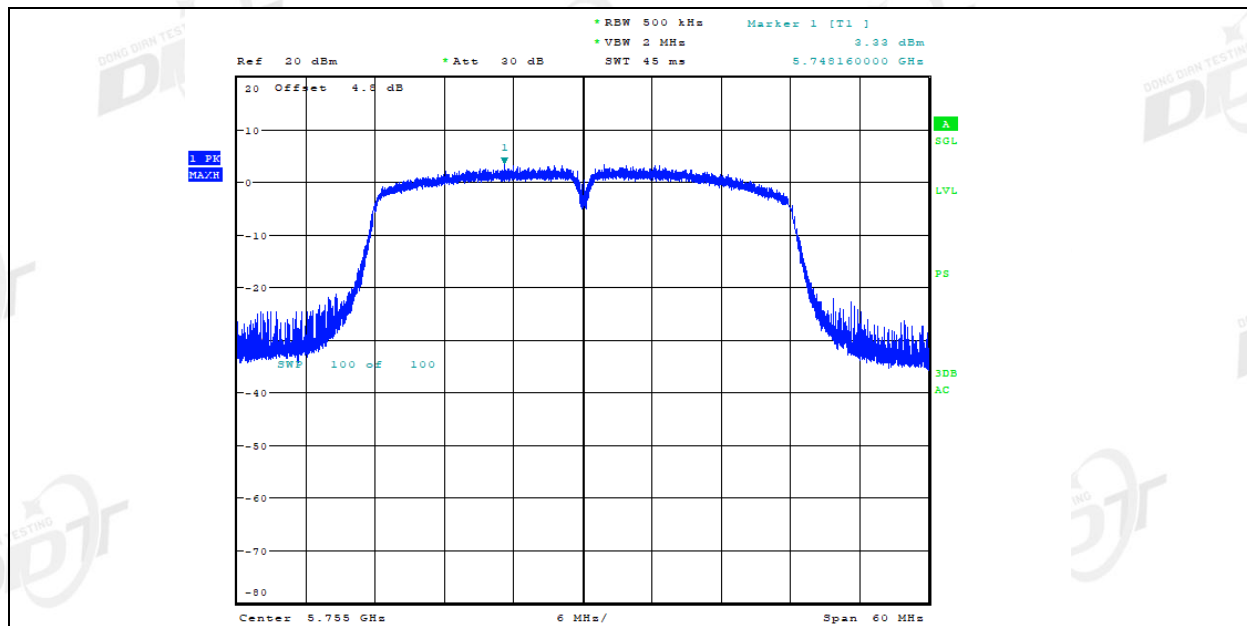


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11N20SISO Ant1 5785

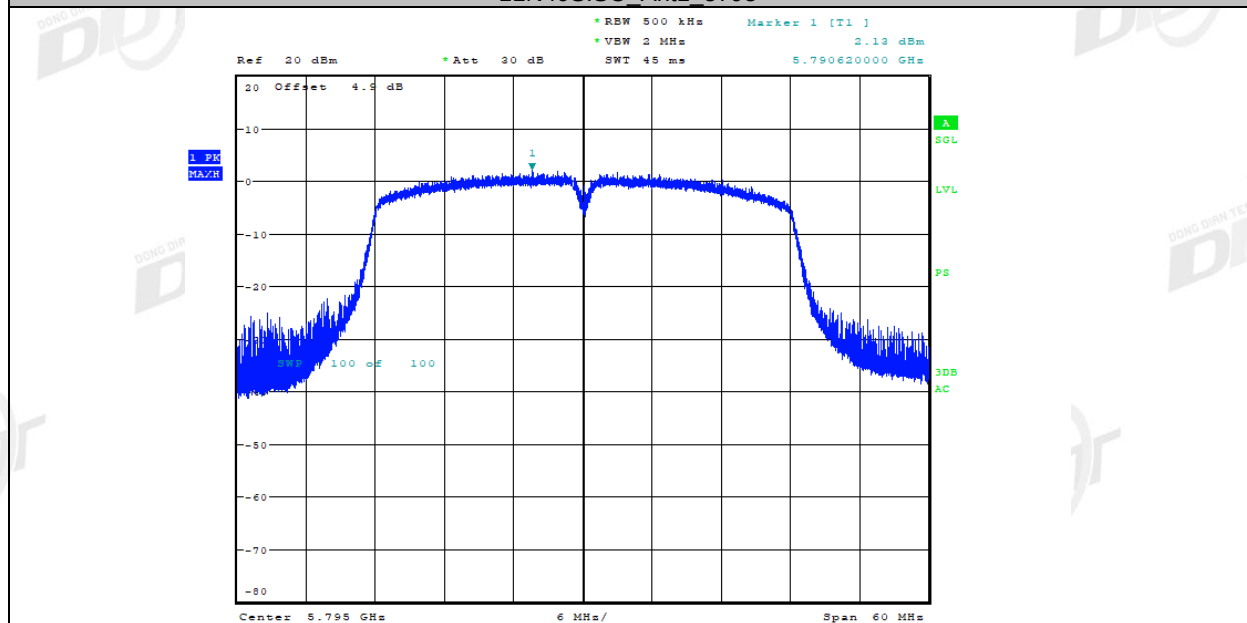






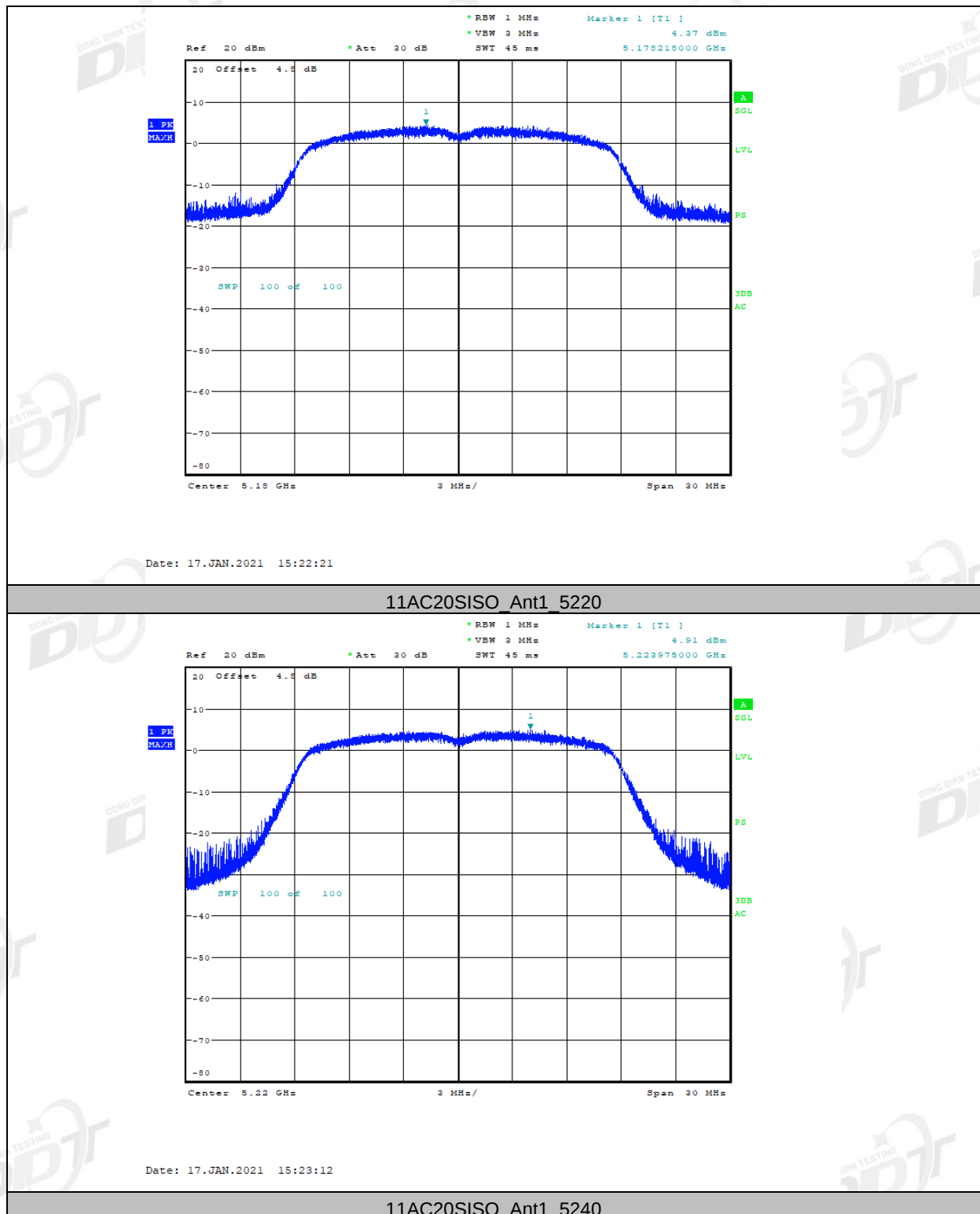
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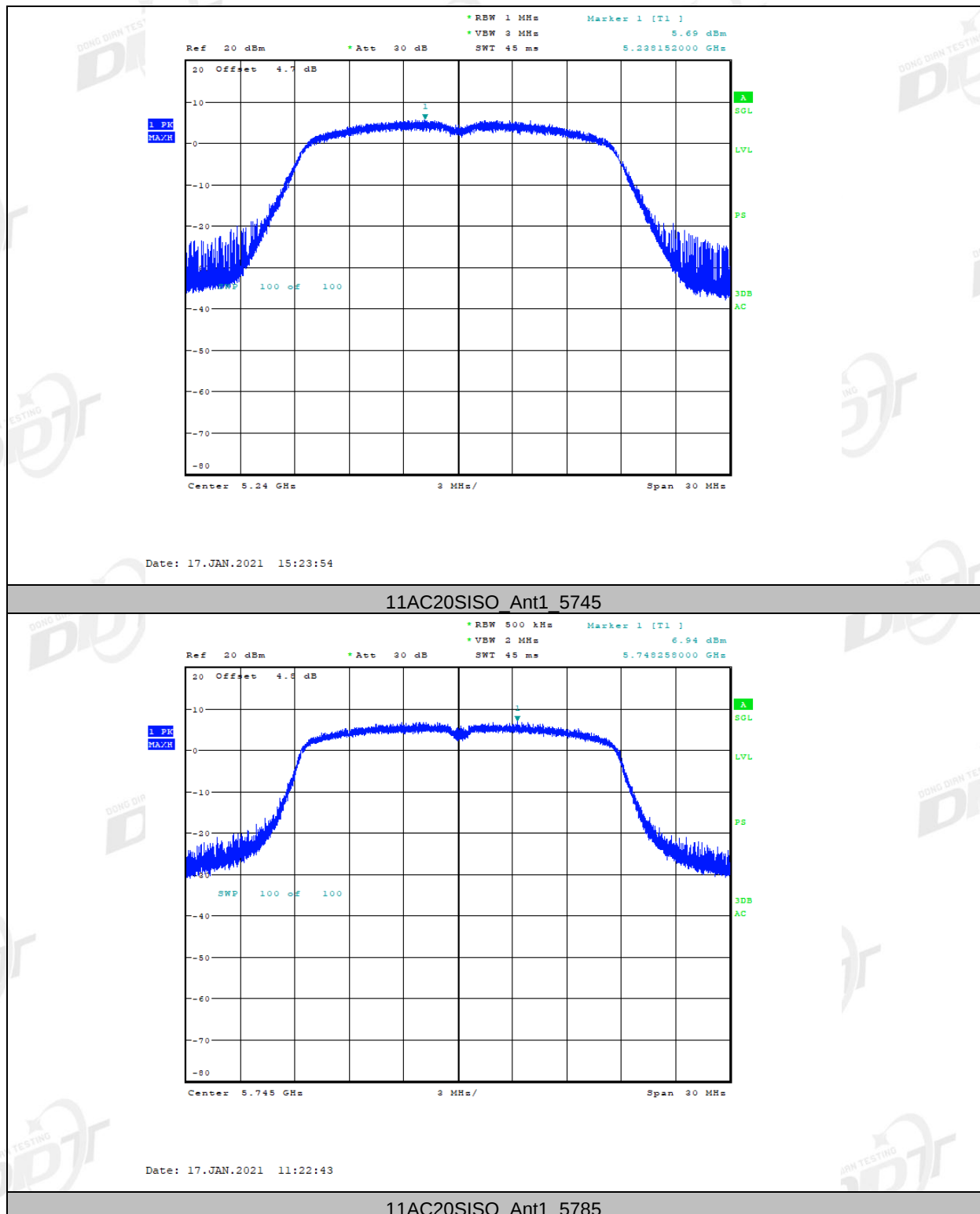
11N40SISO Ant1 5795

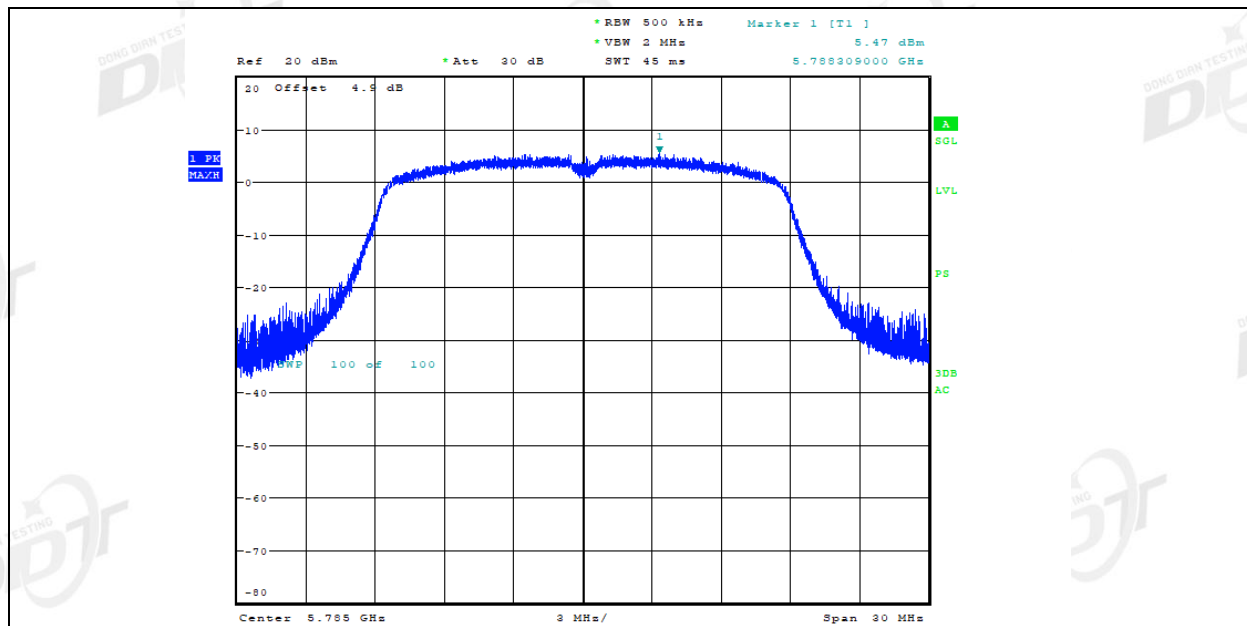


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11AC20SISO Ant1 5180

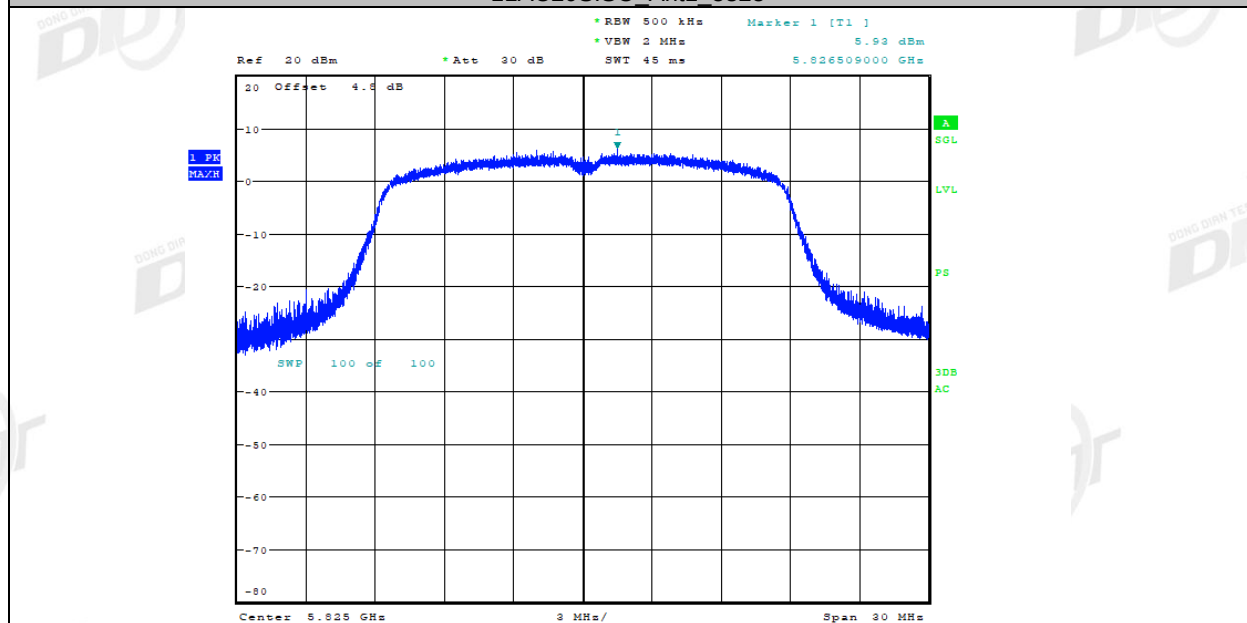






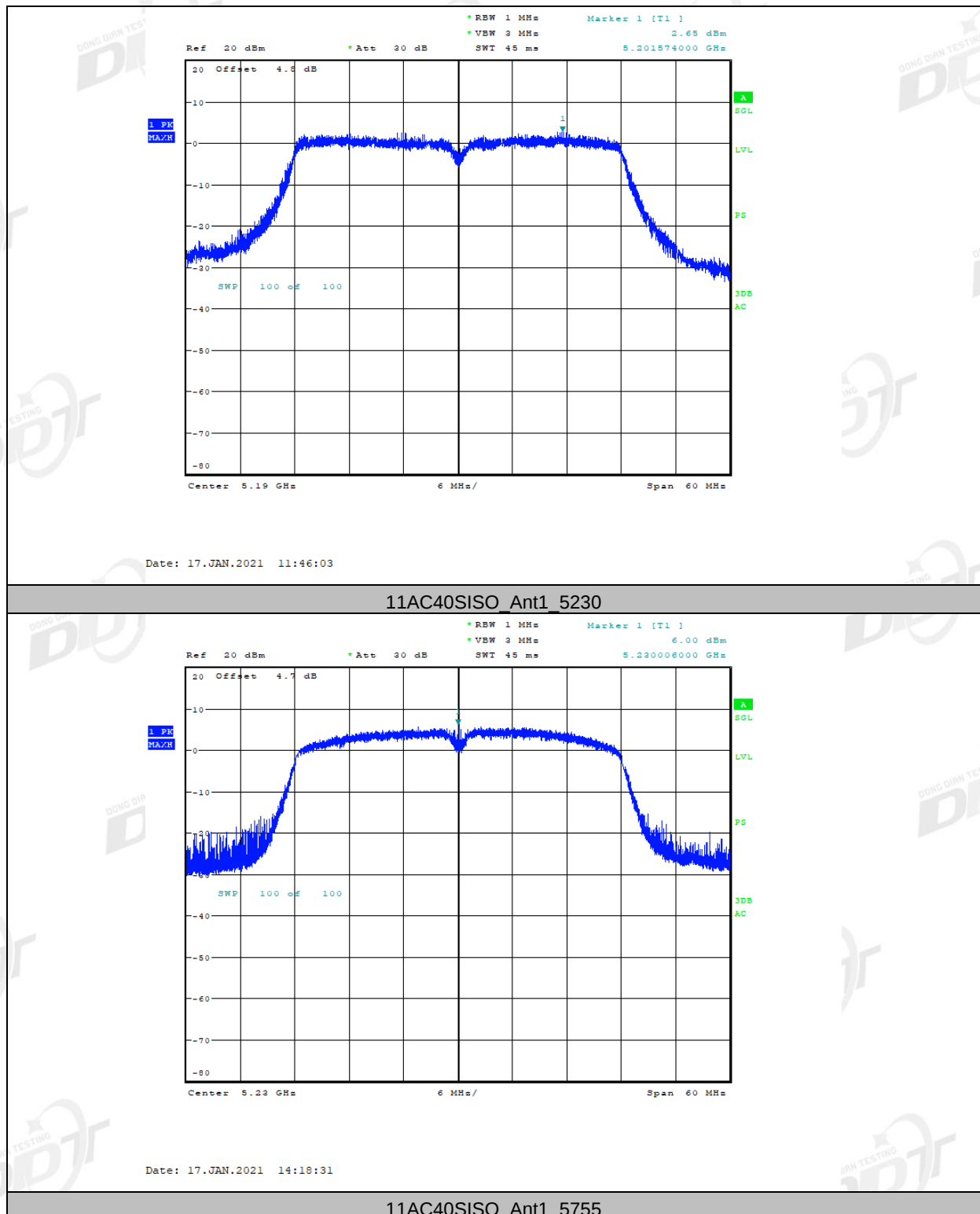
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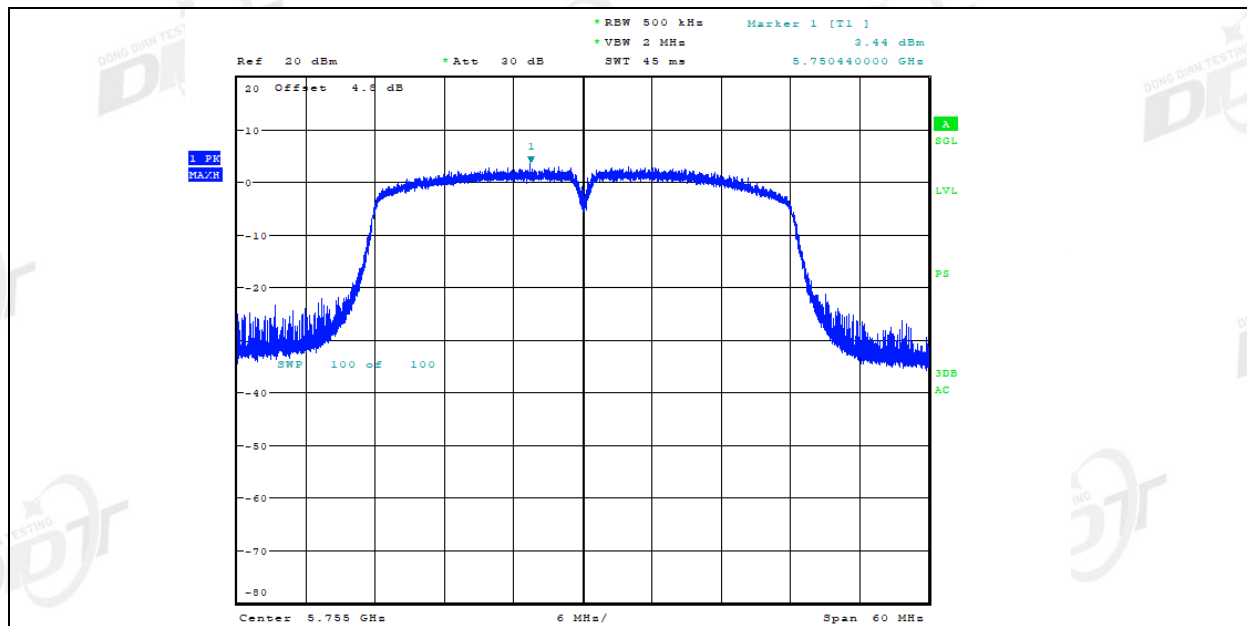
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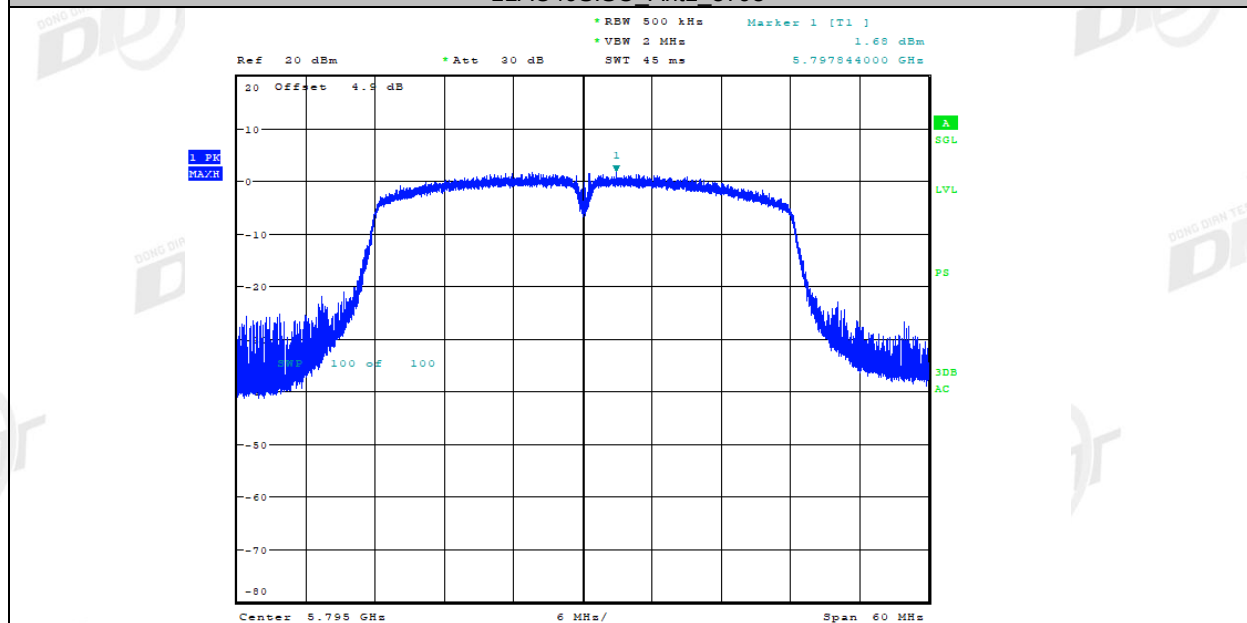
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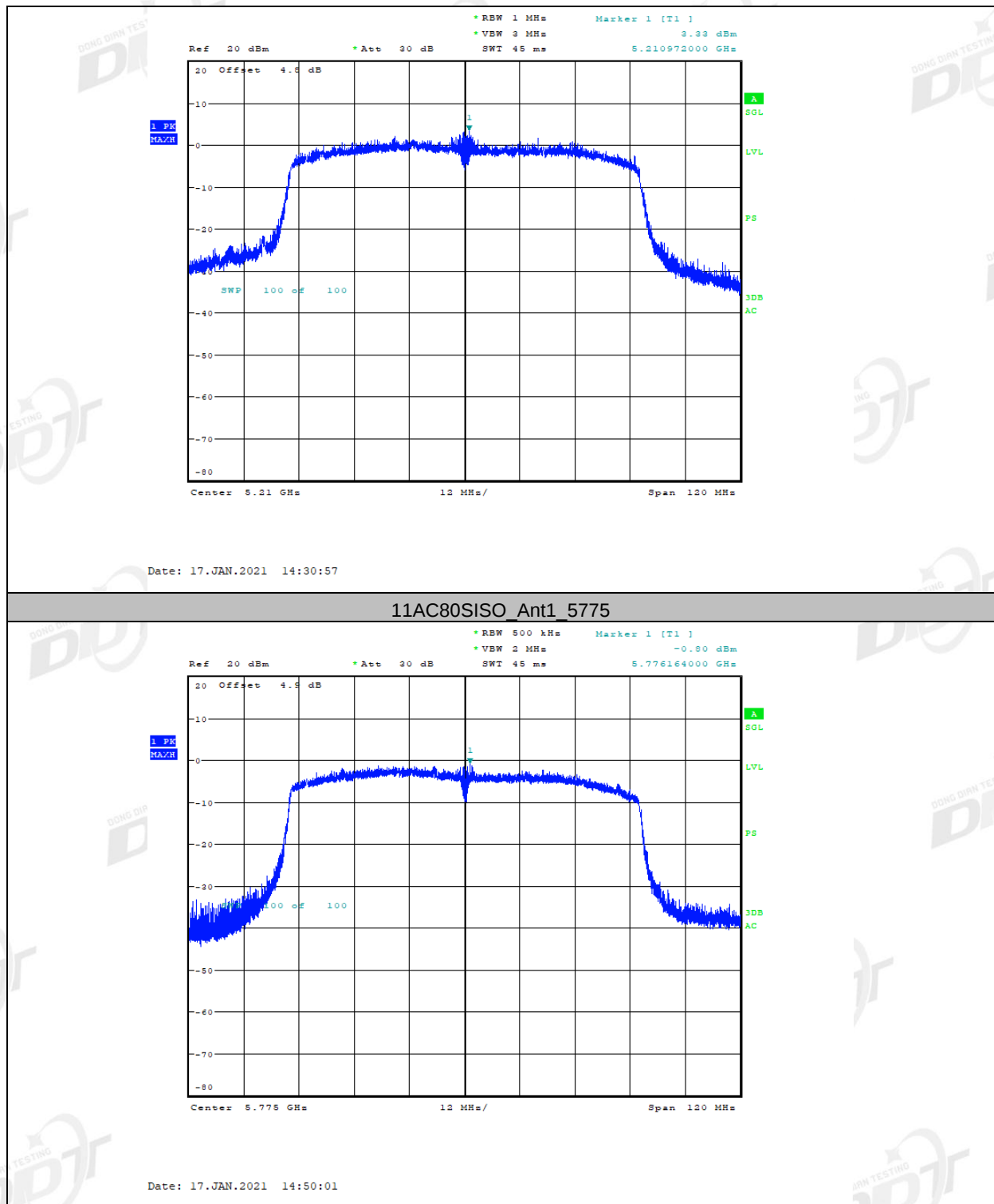
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11AC40SISO_Ant1_5795



Date: 17.JAN.2021 14:21:51

11AC80SISO_Ant1_5210



7. Frequency Stability Measurement

7.1. Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

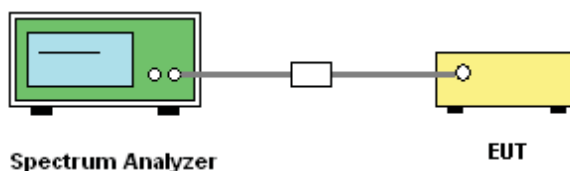
7.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

7.3. Test procedures

- (1) To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
- (2) The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
- (3) The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

7.4. Test setup



7.5. Test result

Antenna	Mode	Temperature(°C)	Voltage (Vdc)	Frequency (MHz)	Measured Frequency (MHz)	Limit (Mhz)	Verdict
Ant1	11a	20°C	3.15V	5180	5180.10	>5150MHz and <5250MHz	Pass
Ant1	11a	20°C	3.7V	5180	5180.10	>5150MHz and <5250MHz	Pass
Ant1	11a	20°C	4.26V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11a	-10°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11a	0°C	3.7V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11a	10°C	3.7V	5180	5180.04	>5150MHz and <5250MHz	Pass
Ant1	11a	30°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass

Ant1	11a	40°C	3.7V	5180	5180.10	>5150MHz and <5250MHz	Pass
Ant1	11a	50°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11a	55°C	3.7V	5180	5180.04	>5150MHz and <5250MHz	Pass
Ant1	11a	20°C	3.15V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11a	20°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11a	20°C	4.26V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11a	-10°C	3.7V	5240	5240.06	>5150MHz and <5250MHz	Pass
Ant1	11a	0°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11a	10°C	3.7V	5240	5240.10	>5150MHz and <5250MHz	Pass
Ant1	11a	30°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11a	40°C	3.7V	5240	5240.10	>5150MHz and <5250MHz	Pass
Ant1	11a	50°C	3.7V	5240	5240.10	>5150MHz and <5250MHz	Pass
Ant1	11a	55°C	3.7V	5240	5240.12	>5150MHz and <5250MHz	Pass
Ant1	11a	20°C	3.15V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11a	20°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11a	20°C	4.26V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11a	-10°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11a	0°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11a	10°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11a	20°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11a	30°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11a	40°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11a	50°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11a	55°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11a	20°C	3.15V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11a	20°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass

Ant1	11a	20°C	4.26V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11a	-10°C	3.7V	5825	5825.14	>5725MHz and <5850MHz	Pass
Ant1	11a	0°C	3.7V	5825	5825.12	>5725MHz and <5850MHz	Pass
Ant1	11a	10°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11a	20°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11a	30°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11a	40°C	3.7V	5825	5825.12	>5725MHz and <5850MHz	Pass
Ant1	11a	50°C	3.7V	5825	5825.12	>5725MHz and <5850MHz	Pass
Ant1	11a	55°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	3.15V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	20°C	3.7V	5180	5180.10	>5150MHz and <5250MHz	Pass
Ant1	11n20	20°C	4.26V	5180	5180.04	>5150MHz and <5250MHz	Pass
Ant1	11n20	-10°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	0°C	3.7V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11n20	10°C	3.7V	5180	5180.10	>5150MHz and <5250MHz	Pass
Ant1	11n20	30°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	40°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	50°C	3.7V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11n20	55°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	20°C	3.15V	5240	5240.10	>5150MHz and <5250MHz	Pass
Ant1	11n20	20°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	20°C	4.26V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	-10°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	0°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	10°C	3.7V	5240	5240.10	>5150MHz and <5250MHz	Pass
Ant1	11n20	30°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass

Ant1	11n20	40°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11n20	50°C	3.7V	5240	5240.12	>5150MHz and <5250MHz	Pass
Ant1	11n20	55°C	3.7V	5240	5240.10	>5150MHz and <5250MHz	Pass
Ant1	11n20	20°C	3.15V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	4.26V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	-10°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	0°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11n20	10°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	30°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	40°C	3.7V	5745	5745.12	>5725MHz and <5850MHz	Pass
Ant1	11n20	50°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	55°C	3.7V	5745	5745.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	3.15V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	4.26V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	-10°C	3.7V	5825	5825.06	>5725MHz and <5850MHz	Pass
Ant1	11n20	0°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11n20	10°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	20°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	30°C	3.7V	5825	5825.06	>5725MHz and <5850MHz	Pass
Ant1	11n20	40°C	3.7V	5825	5825.12	>5725MHz and <5850MHz	Pass
Ant1	11n20	50°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11n20	55°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	3.15V	5190	5190.08	>5150MHz and <5250MHz	Pass

Ant1	11n40	20°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	4.26V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	-10°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	0°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	10°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	30°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11n40	40°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	50°C	3.7V	5190	5190.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	55°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	3.15V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	4.26V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	-10°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	0°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	10°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	3.7V	5230	5230.12	>5150MHz and <5250MHz	Pass
Ant1	11n40	30°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	40°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	50°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11n40	55°C	3.7V	5230	5230.12	>5150MHz and <5250MHz	Pass
Ant1	11n40	20°C	3.15V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	4.26V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	-10°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	0°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass

Ant1	11n40	10°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	3.7V	5755	5754.84	>5725MHz and <5850MHz	Pass
Ant1	11n40	30°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	40°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	50°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	55°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	3.15V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	4.26V	5795	5794.80	>5725MHz and <5850MHz	Pass
Ant1	11n40	-10°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	0°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	10°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	20°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	30°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	40°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11n40	50°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11n40	55°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	3.15V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	20°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	20°C	4.26V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	-10°C	3.7V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	0°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	10°C	3.7V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	30°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	40°C	3.7V	5180	5180.04	>5150MHz and <5250MHz	Pass
Ant1	11ac20	50°C	3.7V	5180	5180.08	>5150MHz and <5250MHz	Pass

Ant1	11ac20	55°C	3.7V	5180	5180.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	20°C	3.15V	5240	5240.04	>5150MHz and <5250MHz	Pass
Ant1	11ac20	20°C	3.7V	5240	5240.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	20°C	4.26V	5240	5240.04	>5150MHz and <5250MHz	Pass
Ant1	11ac20	-10°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	0°C	3.7V	5240	5240.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	10°C	3.7V	5240	5240.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	30°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	40°C	3.7V	5240	5240.08	>5150MHz and <5250MHz	Pass
Ant1	11ac20	50°C	3.7V	5240	5240.06	>5150MHz and <5250MHz	Pass
Ant1	11ac20	55°C	3.7V	5240	5240.04	>5150MHz and <5250MHz	Pass
Ant1	11ac20	20°C	3.15V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	4.26V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	-10°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	0°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	10°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	30°C	3.7V	5745	5745.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	40°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	50°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	55°C	3.7V	5745	5745.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	3.15V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	4.26V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11ac20	-10°C	3.7V	5825	5825.04	>5725MHz and <5850MHz	Pass

Ant1	11ac20	0°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	10°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	20°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	30°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11ac20	40°C	3.7V	5825	5825.08	>5725MHz and <5850MHz	Pass
Ant1	11ac20	50°C	3.7V	5825	5825.06	>5725MHz and <5850MHz	Pass
Ant1	11ac20	55°C	3.7V	5825	5825.10	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	3.15V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	4.26V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	-10°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	0°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	10°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	30°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	40°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	50°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	55°C	3.7V	5190	5190.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	3.15V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	4.26V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	-10°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	0°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	10°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	30°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass

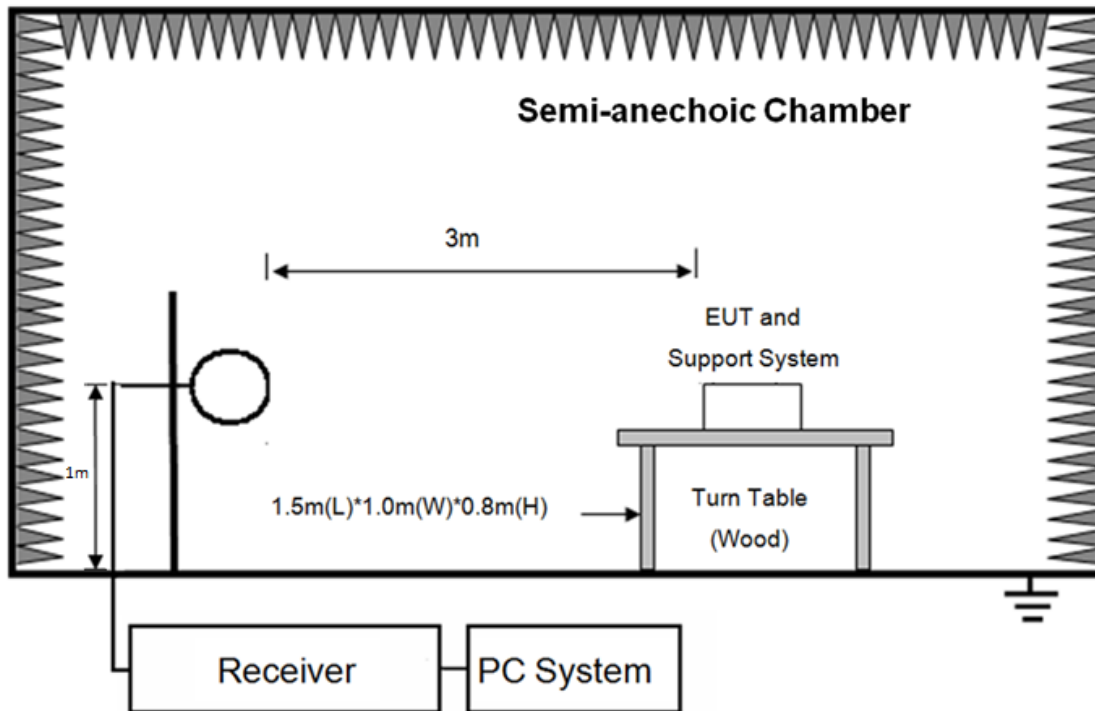
Ant1	11ac40	40°C	3.7V	5230	5230.04	>5150MHz and <5250MHz	Pass
Ant1	11ac40	50°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11ac40	55°C	3.7V	5230	5230.08	>5150MHz and <5250MHz	Pass
Ant1	11ac40	20°C	3.15V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	4.26V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	-10°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	0°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	10°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11ac40	30°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	40°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	50°C	3.7V	5755	5755.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	55°C	3.7V	5755	5755.08	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	3.15V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	4.26V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	-10°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	0°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11ac40	10°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11ac40	20°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	30°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	40°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac40	50°C	3.7V	5795	5795.08	>5725MHz and <5850MHz	Pass
Ant1	11ac40	55°C	3.7V	5795	5795.04	>5725MHz and <5850MHz	Pass
Ant1	11ac80	20°C	3.15V	5210	5210.00	>5150MHz and <5250MHz	Pass

Ant1	11ac80	20°C	3.7V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	20°C	4.26V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	-10°C	3.7V	5210	5210.08	>5150MHz and <5250MHz	Pass
Ant1	11ac80	0°C	3.7V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	10°C	3.7V	5210	5210.08	>5150MHz and <5250MHz	Pass
Ant1	11ac80	20°C	3.7V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	30°C	3.7V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	40°C	3.7V	5210	5210.08	>5150MHz and <5250MHz	Pass
Ant1	11ac80	50°C	3.7V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	55°C	3.7V	5210	5210.00	>5150MHz and <5250MHz	Pass
Ant1	11ac80	20°C	3.15V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	20°C	3.7V	5775	5775.08	>5725MHz and <5850MHz	Pass
Ant1	11ac80	20°C	4.26V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	-10°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	0°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	10°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	20°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	30°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	40°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass
Ant1	11ac80	50°C	3.7V	5775	5775.08	>5725MHz and <5850MHz	Pass
Ant1	11ac80	55°C	3.7V	5775	5775.00	>5725MHz and <5850MHz	Pass

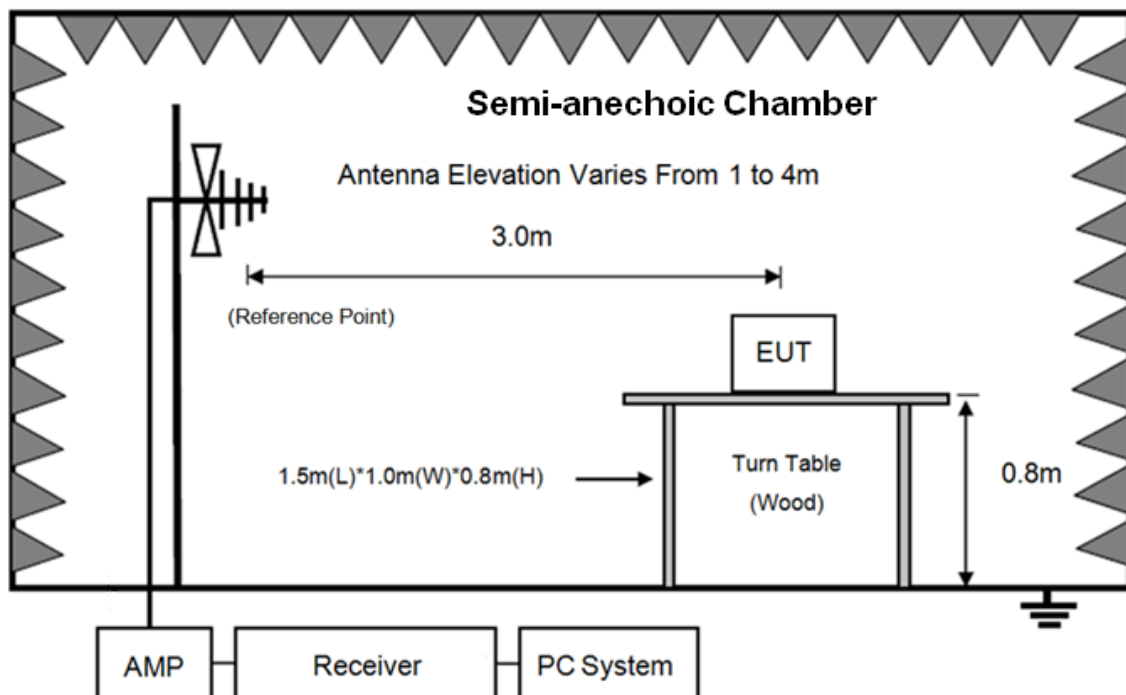
8. Emissions in restricted frequency bands

8.1. Block diagram of test setup

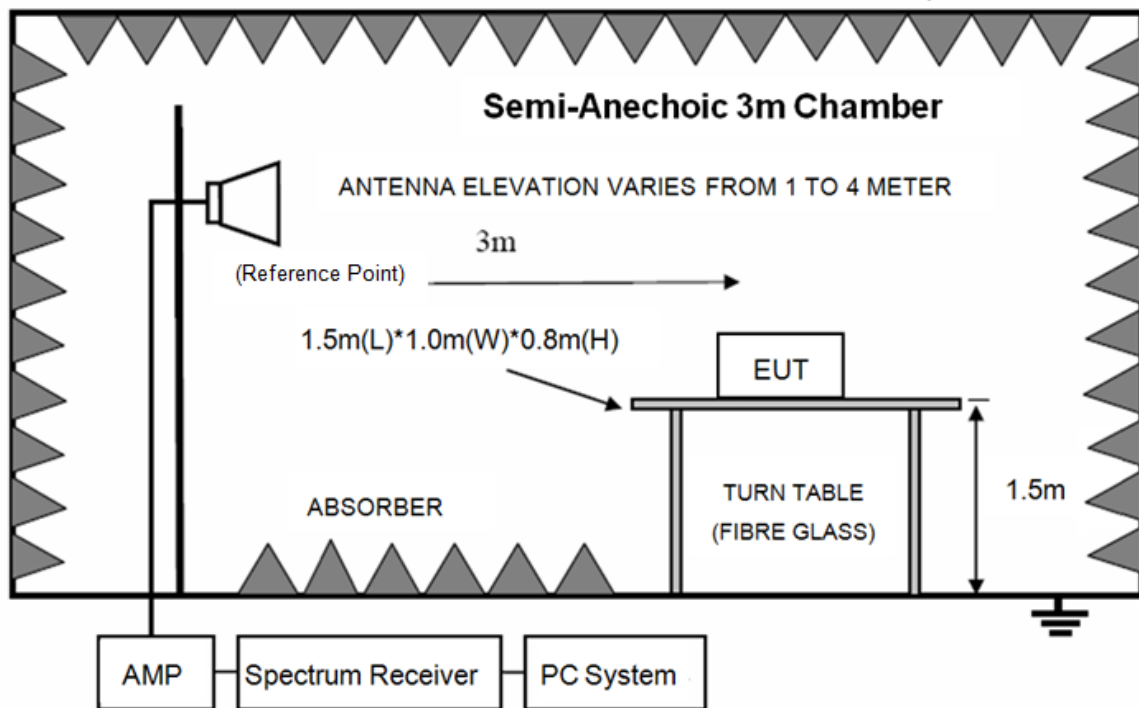
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz – 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

8.2. Limit

8.3.1 FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6

8.3.2 FCC 15.209 Limit.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3\text{m}}(\text{dB}\mu\text{V}/\text{m}) = \text{Limit}_{30\text{m}}(\text{dB}\mu\text{V}/\text{m}) + 40\text{Log}(30\text{m}/3\text{m})$$

8.3.3 Limit for this EUT

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions or comply with 15.209 limits.

8.3. Test procedure

- (1) EUT height should be 0.8 m for below 1 GHz at a semi - anechoic chamber while EUT height should be 1.5 m for above 1GHz at full chamber or semi - anechoic chamber ground with absorbers
- (2) Setup EUT and assistant system according clause 2.3 and 8.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test distance
9 kHz-30 MHz	Active Loop antenna	3 m
30 MHz-1 GHz	Trilog Broadband Antenna	3 m
1 GHz-18 GHz	Double Ridged Horn Antenna(1GHz-18GHz)	3 m
18 GHz-40 GHz	Horn Antenna(18GHz-40GHz)	1 m

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical

axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30 MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(4) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 40 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 40 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.

(5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(6) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9-90 kHz, 110-490 kHz, for emissions from 9 kHz-90kHz,110kHz-490kHz and above 1GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(7) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW

Frequency band	RBW
9 kHz-150 kHz	200 Hz
150 kHz-30 MHz	9 kHz
30 MHz-1 GHz	120 kHz

(8) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3MHz for Peak measure, the RBW is set at 1 MHz, VBW is set at 10 Hz for AV value.

8.4. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9kHz to 40GHz were comply with 15.209 limit.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in 11a mode.

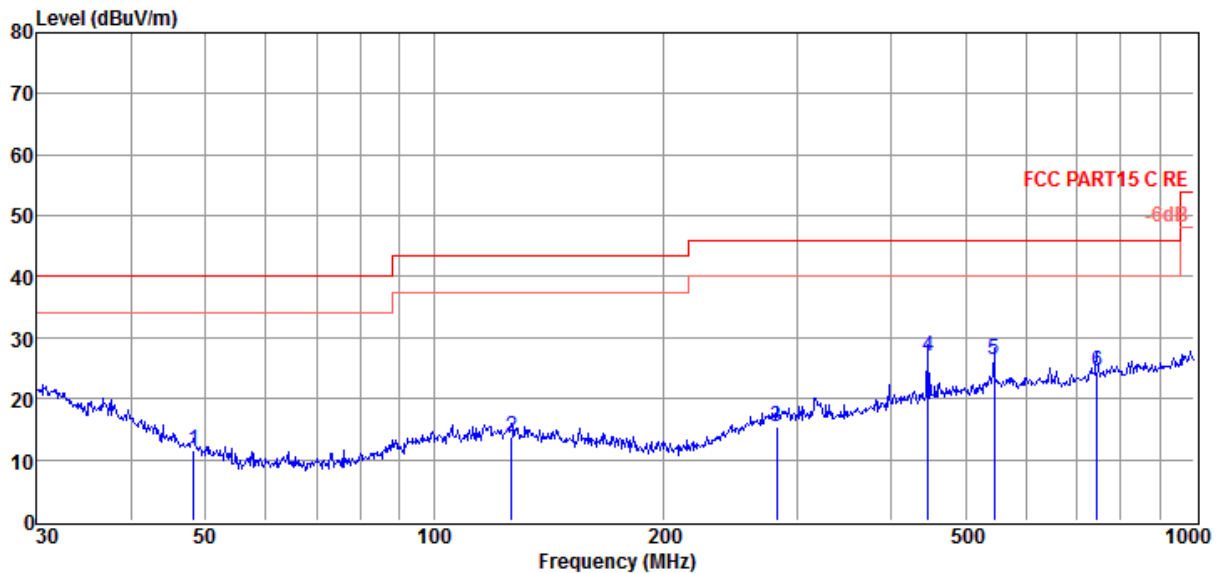
Note3: For below test data, when the limit tabular marked “/” means this frequency point is the fundamental emission and no need comply with this limit.

Radiated Emission test (below 1GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1# **E:\2019E3ReportTestData\SmartProble\CE TX SE.EM6**
Test Date : 2021-01-21 **Tested By** : Sunny
EUT : Smart probe **Model Number** : Version 3
Power Supply : Battery **Test Mode** : WIFI mode
Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 VULB 9163/3m/VERTICAL
Memo : 5G WIFI

Data: 43



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	48.33	25.29	15.17	-28.97	11.49	40.00	-28.51	QP	VERTICAL
2	126.33	24.43	18.12	-28.68	13.87	43.50	-29.63	QP	VERTICAL
3	282.00	24.13	18.84	-27.56	15.41	46.00	-30.59	QP	VERTICAL
4	446.41	31.03	22.63	-26.71	26.95	46.00	-19.05	QP	VERTICAL
5	545.18	27.66	24.86	-26.09	26.43	46.00	-19.57	QP	VERTICAL
6	744.87	24.20	25.70	-25.36	24.54	46.00	-21.46	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

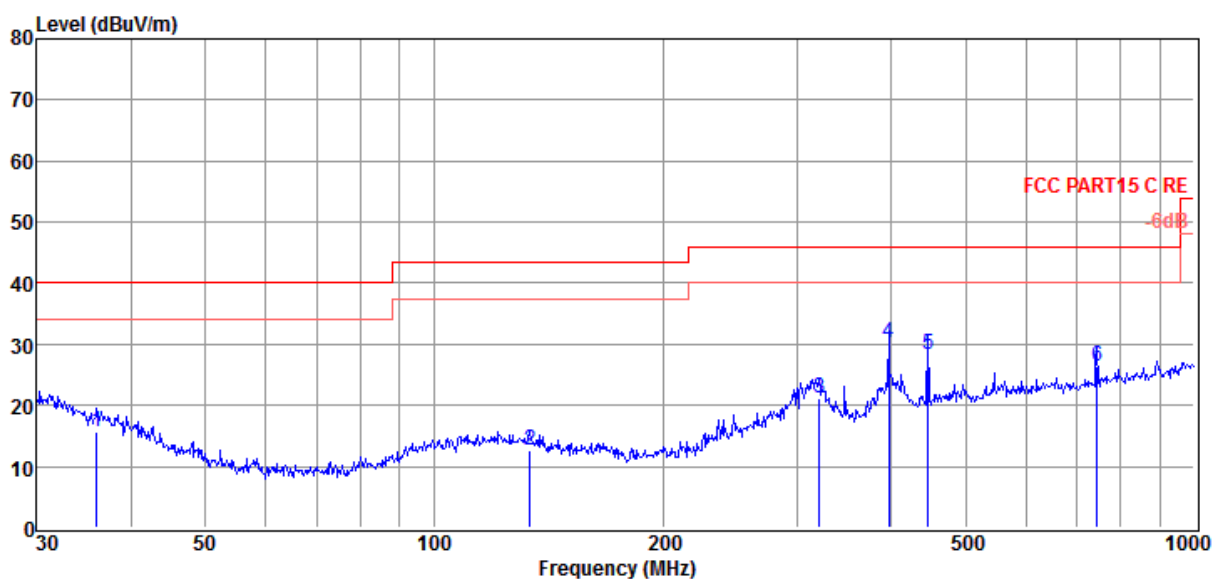
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#
Test Date : 2021-01-21
EUT : Smart probe
Power Supply : Battery
Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa
Memo : 5G WIFI

Tested By : Sunny
Model Number : Version 3
Test Mode : WIFI mode
Antenna/Distance : 2019 VULB 9163/3m/HORIZONTAL

E:\2019E3ReportTestData\SmartProble\CE TX SE.EM6

Data: 44



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	36.00	23.23	21.50	-29.13	15.60	40.00	-24.40	QP	HORIZONTAL
2	133.62	23.43	17.68	-28.54	12.57	43.50	-30.93	QP	HORIZONTAL
3	321.06	28.95	19.62	-27.37	21.20	46.00	-24.80	QP	HORIZONTAL
4	396.24	35.60	21.77	-27.15	30.22	46.00	-15.78	QP	HORIZONTAL
5	446.41	32.37	22.63	-26.71	28.29	46.00	-17.71	QP	HORIZONTAL
6	744.87	26.12	25.70	-25.36	26.46	46.00	-19.54	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Radiated Emission test (above 1GHz)

Freq (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor(d B)	Cabl e Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detecto r type	Polarization
11a 5180MHz									
6576.00	43.27	35.92	38.96	5.36	45.59	74.00	-28.41	Peak	HORIZONTAL
9126.00	40.62	37.78	39.38	6.20	45.22	74.00	-28.78	Peak	HORIZONTAL
10384.00	43.45	38.45	39.20	6.31	49.01	74.00	-24.99	Peak	HORIZONTAL
13869.00	39.28	41.14	39.61	7.39	48.20	74.00	-25.80	Peak	HORIZONTAL
15535.00	43.38	38.22	39.04	7.66	50.22	74.00	-23.78	Peak	HORIZONTAL
17575.00	38.45	42.80	39.37	7.70	49.58	74.00	-24.42	Peak	HORIZONTAL
5981.00	43.09	35.24	38.71	4.96	44.58	74.00	-29.42	Peak	VERTICAL
7630.00	40.24	37.30	39.22	5.42	43.74	74.00	-30.26	Peak	VERTICAL
9126.00	40.56	37.78	39.38	6.20	45.16	74.00	-28.84	Peak	VERTICAL
10333.00	45.15	38.43	39.16	6.34	50.76	74.00	-23.24	Peak	VERTICAL
13750.00	39.70	40.90	39.83	7.60	48.37	74.00	-25.63	Peak	VERTICAL
17269.00	37.33	42.58	39.12	7.75	48.54	74.00	-25.46	Peak	VERTICAL
11a 5220MHz									
2564.00	53.63	28.07	38.46	3.30	46.54	74.00	-27.46	Peak	HORIZONTAL
7715.00	40.26	37.23	39.24	5.38	43.63	74.00	-30.37	Peak	HORIZONTAL
9636.00	40.55	38.08	39.44	6.17	45.36	74.00	-28.64	Peak	HORIZONTAL
11540.00	38.21	38.69	38.54	6.79	45.15	74.00	-28.85	Peak	HORIZONTAL
14294.00	36.83	40.99	39.01	7.82	46.63	74.00	-27.37	Peak	HORIZONTAL
16776.00	37.40	41.12	38.73	7.86	47.65	74.00	-26.35	Peak	HORIZONTAL
2904.00	53.72	28.95	38.41	3.51	47.77	74.00	-26.23	Peak	VERTICAL
6576.00	42.40	35.92	38.96	5.36	44.72	74.00	-29.28	Peak	VERTICAL
7681.00	42.65	37.26	39.24	5.40	46.07	74.00	-27.93	Peak	VERTICAL
10333.00	40.15	38.43	39.16	6.34	45.76	74.00	-28.24	Peak	VERTICAL
13750.00	38.70	40.90	39.83	7.60	47.37	74.00	-26.63	Peak	VERTICAL
16266.00	38.88	39.19	38.75	7.44	46.76	74.00	-27.24	Peak	VERTICAL
11a 5240MHz									
4009.00	47.31	31.61	38.13	4.09	44.88	74.00	-29.12	Peak	HORIZONTAL
7171.00	39.93	36.87	39.07	5.31	43.04	74.00	-30.96	Peak	HORIZONTAL
8854.00	40.99	37.61	39.41	6.08	45.27	74.00	-28.73	Peak	HORIZONTAL
11540.00	37.21	38.69	38.54	6.79	44.15	74.00	-29.85	Peak	HORIZONTAL
14430.00	37.44	40.80	38.84	7.75	47.15	74.00	-26.85	Peak	HORIZONTAL
17575.00	37.45	42.80	39.37	7.70	48.58	74.00	-25.42	Peak	HORIZONTAL
5981.00	42.09	35.24	38.71	4.96	43.58	74.00	-30.42	Peak	VERTICAL
9126.00	42.56	37.78	39.38	6.20	47.16	74.00	-26.84	Peak	VERTICAL
10333.00	40.15	38.43	39.16	6.34	45.76	74.00	-28.24	Peak	VERTICAL
12016.00	39.73	38.60	38.58	6.88	46.63	74.00	-27.37	Peak	VERTICAL
15280.00	37.66	38.55	38.92	7.57	44.86	74.00	-29.14	Peak	VERTICAL
17269.00	36.33	42.58	39.12	7.75	47.54	74.00	-26.46	Peak	VERTICAL

Freq (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor(dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
11a 5745MHz									
2122.00	51.89	28.43	38.63	2.98	44.67	74.00	-29.33	Peak	HORIZONTAL
8106.00	40.43	37.08	39.50	5.76	43.77	74.00	-30.23	Peak	HORIZONTAL
9636.00	41.55	38.08	39.44	6.17	46.36	74.00	-27.64	Peak	HORIZONTAL
11540.00	40.21	38.69	38.54	6.79	47.15	74.00	-26.85	Peak	HORIZONTAL
14294.00	37.83	40.99	39.01	7.82	47.63	74.00	-26.37	Peak	HORIZONTAL
16997.00	36.32	42.19	38.93	7.86	47.44	74.00	-26.56	Peak	HORIZONTAL
4791.00	46.25	32.48	38.02	4.56	45.27	74.00	-28.73	Peak	VERTICAL
6899.00	41.93	36.44	38.84	5.27	44.80	74.00	-29.20	Peak	VERTICAL
9806.00	41.11	38.18	39.33	6.25	46.21	74.00	-27.79	Peak	VERTICAL
12016.00	38.73	38.60	38.58	6.88	45.63	74.00	-28.37	Peak	VERTICAL
14141.00	38.28	41.20	39.19	7.47	47.76	74.00	-26.24	Peak	VERTICAL
17014.00	37.07	42.22	38.94	7.85	48.20	74.00	-25.80	Peak	VERTICAL
11a 5785MHz									
2564.00	49.63	28.07	38.46	3.30	42.54	74.00	-31.46	Peak	HORIZONTAL
6593.00	40.32	35.95	38.99	5.37	42.65	74.00	-31.35	Peak	HORIZONTAL
8854.00	39.99	37.61	39.41	6.08	44.27	74.00	-29.73	Peak	HORIZONTAL
10911.00	39.27	38.66	38.86	6.69	45.76	74.00	-28.24	Peak	HORIZONTAL
13376.00	40.04	40.18	40.20	7.59	47.61	74.00	-26.39	Peak	HORIZONTAL
15246.00	40.88	38.61	38.90	7.56	48.15	74.00	-25.85	Peak	HORIZONTAL
2547.00	47.68	28.02	38.44	3.28	40.54	74.00	-33.46	Peak	VERTICAL
7800.00	39.72	37.16	39.20	5.35	43.03	74.00	-30.97	Peak	VERTICAL
9466.00	38.30	37.98	39.42	6.23	43.09	74.00	-30.91	Peak	VERTICAL
10571.00	38.61	38.53	39.32	6.36	44.18	74.00	-29.82	Peak	VERTICAL
13869.00	38.53	41.14	39.61	7.39	47.45	74.00	-26.55	Peak	VERTICAL
16997.00	36.90	42.19	38.93	7.86	48.02	74.00	-25.98	Peak	VERTICAL
11a 5825MHz									
2360.00	44.16	28.10	38.32	3.16	37.10	74.00	-36.90	Peak	HORIZONTAL
6032.00	38.71	35.33	38.71	4.98	40.31	74.00	-33.69	Peak	HORIZONTAL
8361.00	39.17	37.29	39.70	5.80	42.56	74.00	-31.44	Peak	HORIZONTAL
10248.00	37.66	38.40	39.10	6.38	43.34	74.00	-30.66	Peak	HORIZONTAL
12390.00	38.58	38.60	39.24	7.01	44.95	74.00	-29.05	Peak	HORIZONTAL
14311.00	36.02	40.96	38.99	7.82	45.81	74.00	-28.19	Peak	HORIZONTAL
2530.00	42.71	27.98	38.42	3.27	35.54	74.00	-38.46	Peak	VERTICAL
4383.00	39.29	31.83	38.02	4.25	37.35	74.00	-36.65	Peak	VERTICAL
6151.00	40.86	35.45	38.74	4.97	42.54	74.00	-31.46	Peak	VERTICAL
9347.00	39.49	37.91	39.36	6.29	44.33	74.00	-29.67	Peak	VERTICAL
12594.00	38.50	38.77	39.73	7.24	44.78	74.00	-29.22	Peak	VERTICAL
16878.00	36.41	41.61	38.82	7.88	47.08	74.00	-26.92	Peak	VERTICAL
Conclusion: Pass									
Note: $-27 \text{ dBm/MHz Limit} = 95.2 + \text{EIRP}[\text{dBm}] = 95.2 - 27 = 68.2 \text{ dBμV/m}$ For transmitters operating in the 5150MHz-5250MHz, 5725MHz-5850MHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.									

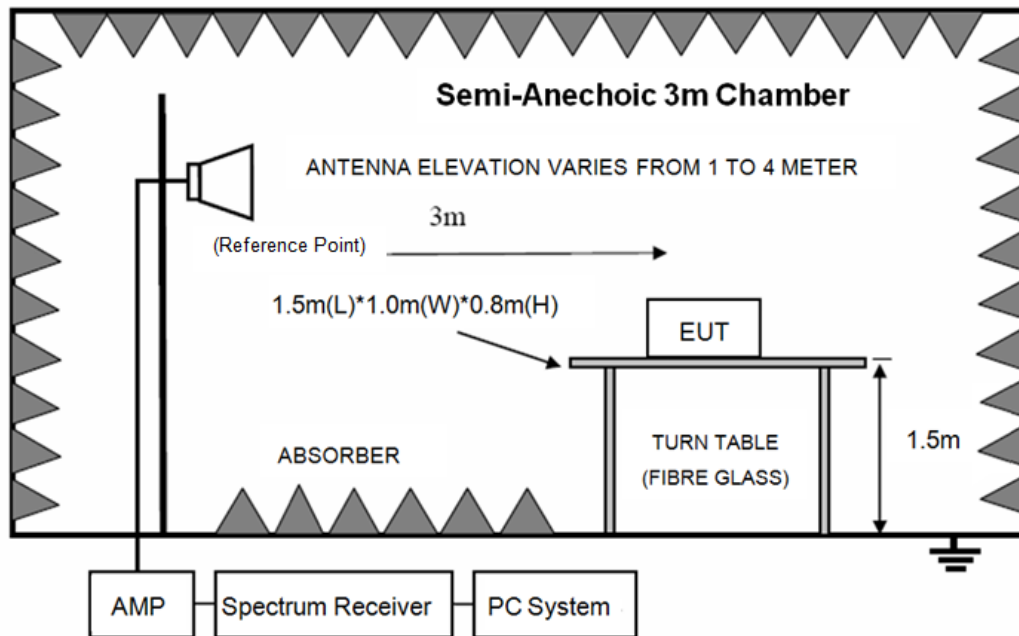
Note: 1. 30MHz~40GHz: (11a, 11n20, 11n40, 11ac20, 11ac40, 11ac80 mode all have been tested, only 11a mode is the worst case and reported.)

2. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

9. Band Edge Compliance

9.1. Block diagram of test setup



9.2. Limit

- (1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm / MHz.
 - (2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm / MHz.
 - (3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm / MHz.
 - (4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm / MHz.
 - (5) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.
 - (6) The provisions of §15.205 apply to intentional radiators operating under this section.
- $-27 \text{ dBm/MHz Limit} = 95.2 + \text{EIRP [dBm]} = 95.2 - 27 = 68.2 \text{ dB}\mu\text{V/m}$

9.3. Test procedure

Same with clause 8.3 except change investigated frequency range from 5.15-5.25 GHz,

5250-5350 GHz, 5470-5725 GHz, 5.725-5.85 GHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

9.4. Test result

Pass. (See below detailed test result)

Note1: As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit

Note2: 11a, 11n20, n40, 11ac20, 11ac40, 11ac80 mode all have been tested, 11a mode of ANT1 and ANT 2, 11n20, n40, 11ac20, 11ac40, 11ac80 mode of SISO mode is worse case and reported

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3Report\TestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

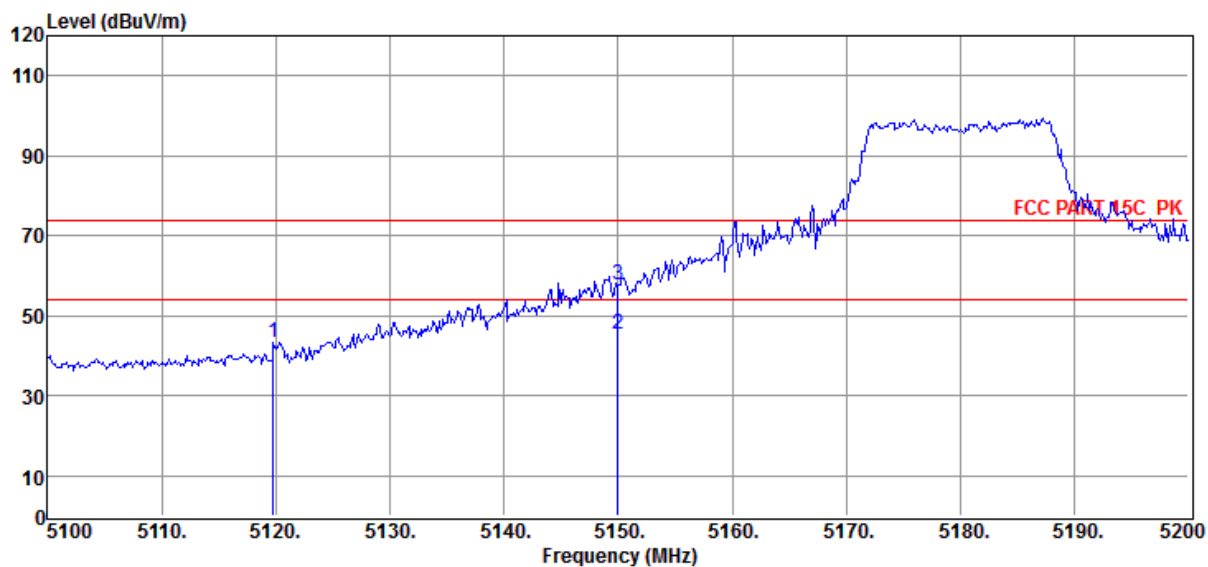
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11a 5180MHz

Data: 17



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5119.80	43.54	33.12	37.86	4.50	43.30	74.00	-30.70	Peak	HORIZONTAL
2	5150.00	45.83	33.17	37.94	4.49	45.55	54.00	-8.45	Average	HORIZONTAL
3	5150.00	57.99	33.17	37.94	4.49	57.71	74.00	-16.29	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

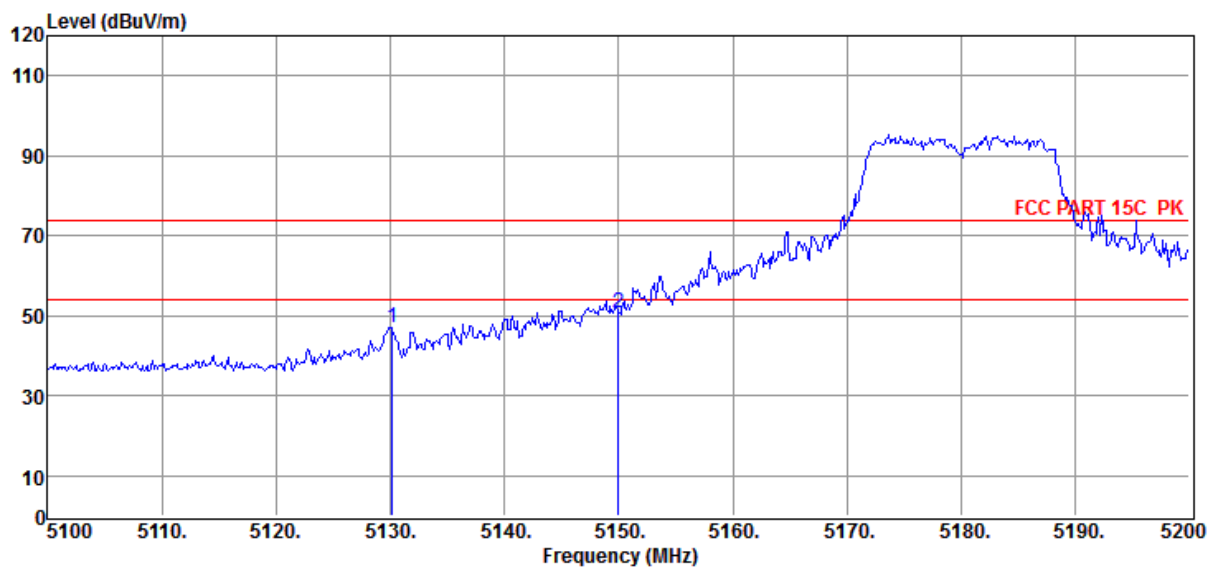
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11a 5180MHz

Data: 18



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5130.20	47.48	33.13	37.89	4.49	47.21	74.00	-26.79	Peak	VERTICAL
2	5150.00	51.05	33.17	37.94	4.49	50.77	74.00	-23.23	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

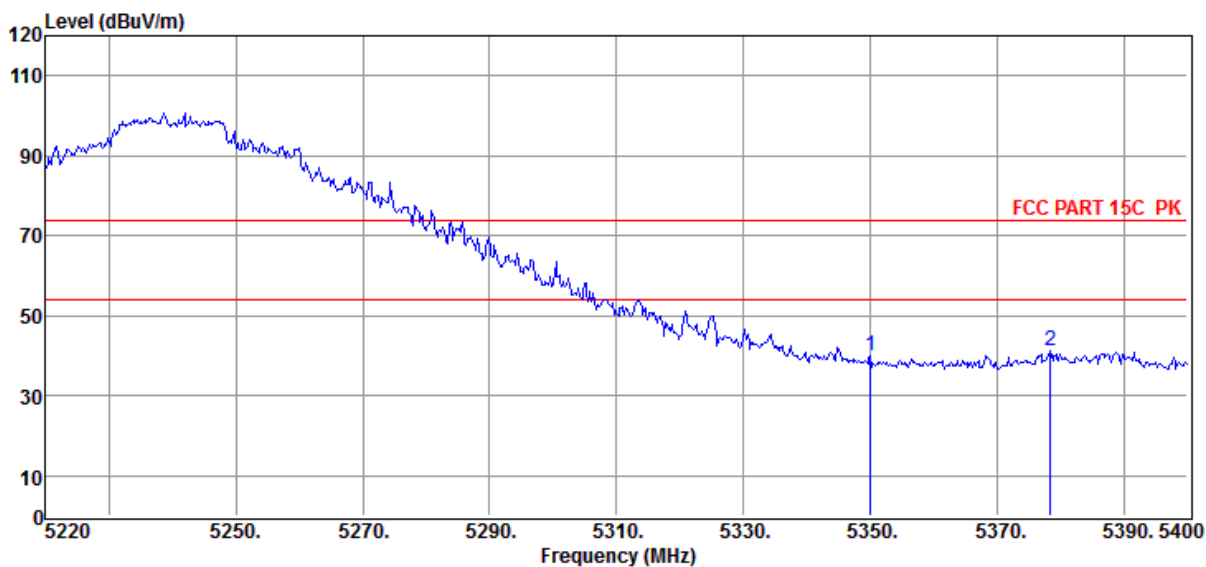
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11a 5240MHz

Data: 19



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	39.96	33.53	37.92	4.58	40.15	74.00	-33.85	Peak	HORIZONTAL
2	5378.40	41.11	33.58	37.94	4.60	41.35	74.00	-32.65	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

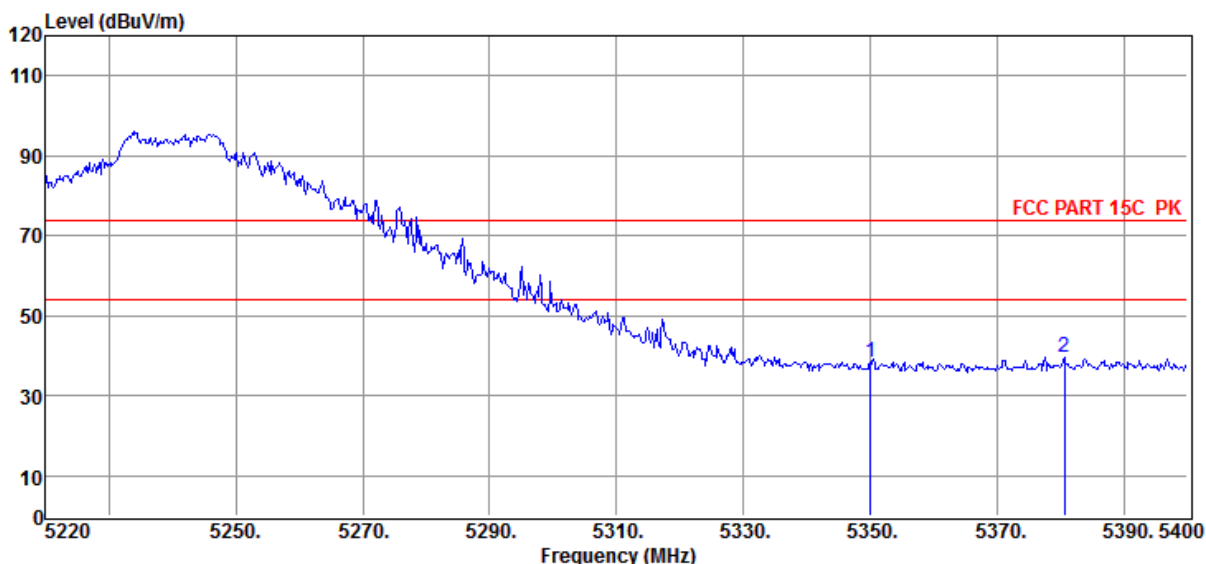
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11a 5240MHz

Data: 20



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	37.99	33.53	37.92	4.58	38.18	74.00	-35.82	Peak	VERTICAL
2	5380.56	39.30	33.59	37.94	4.61	39.56	74.00	-34.44	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

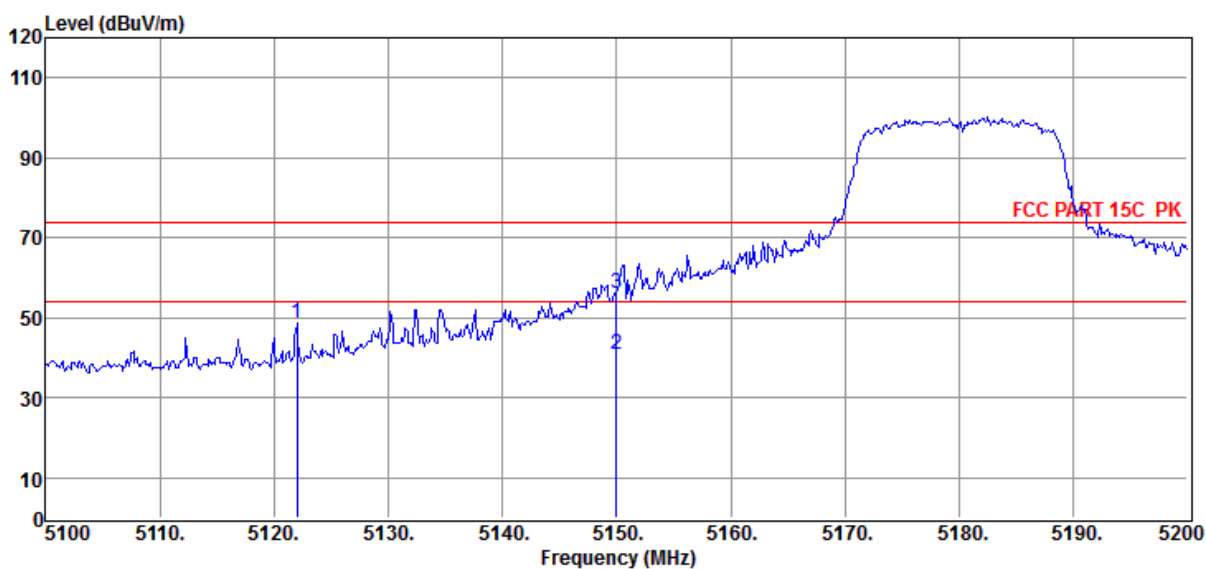
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11n20 5180MHz

Data: 21



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5122.00	48.80	33.12	37.87	4.50	48.55	74.00	-25.45	Peak	HORIZONTAL
2	5150.00	41.29	33.17	37.94	4.49	41.01	54.00	-12.99	Average	HORIZONTAL
3	5150.00	56.41	33.17	37.94	4.49	56.13	74.00	-17.87	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

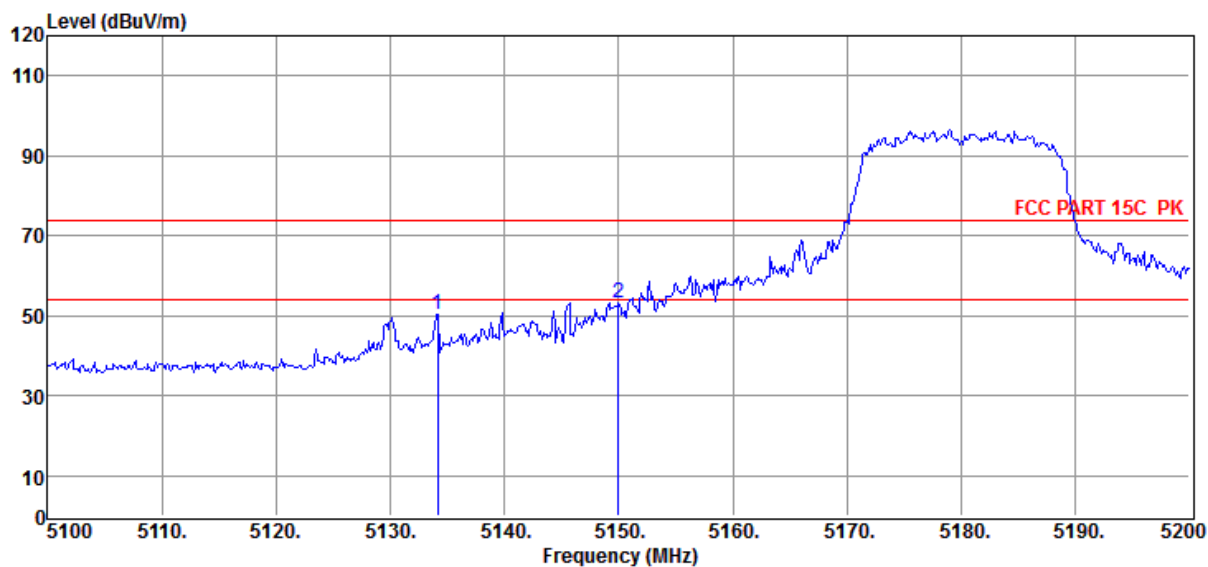
Test Mode : Tx mode

Condition : Temp:24.5'C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11n20 5180MHz

Data: 22



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5134.20	50.68	33.14	37.90	4.49	50.41	74.00	-23.59	Peak	VERTICAL
2	5150.00	53.43	33.17	37.94	4.49	53.15	74.00	-20.85	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

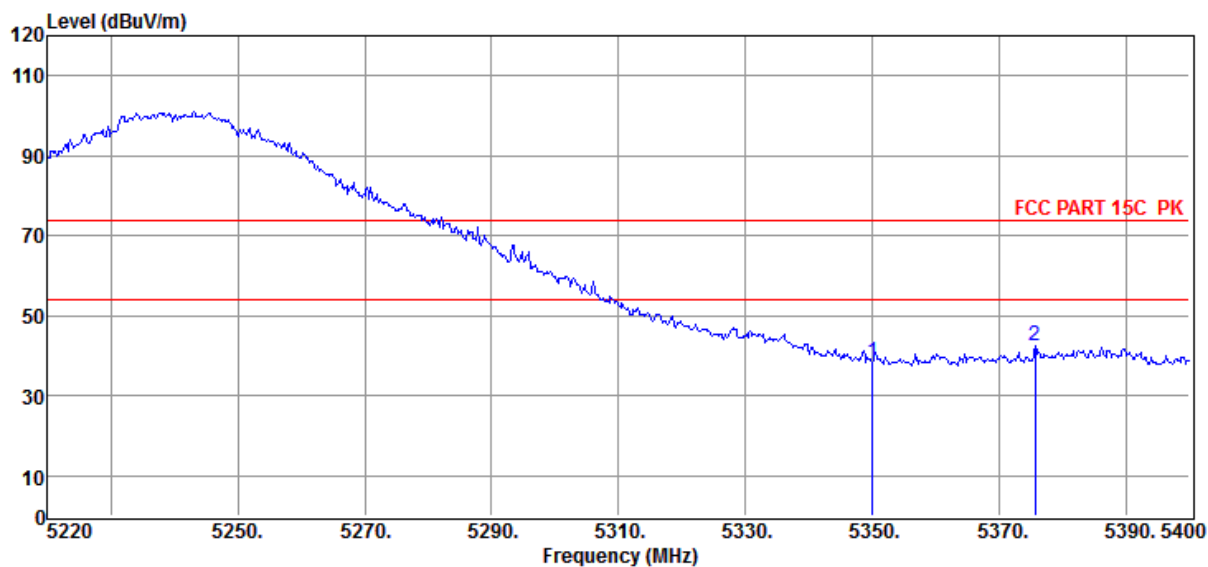
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11n20 5240MHz

Data: 23



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	38.33	33.53	37.92	4.58	38.52	74.00	-35.48	Peak	HORIZONTAL
2	5375.70	42.19	33.58	37.94	4.60	42.43	74.00	-31.57	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

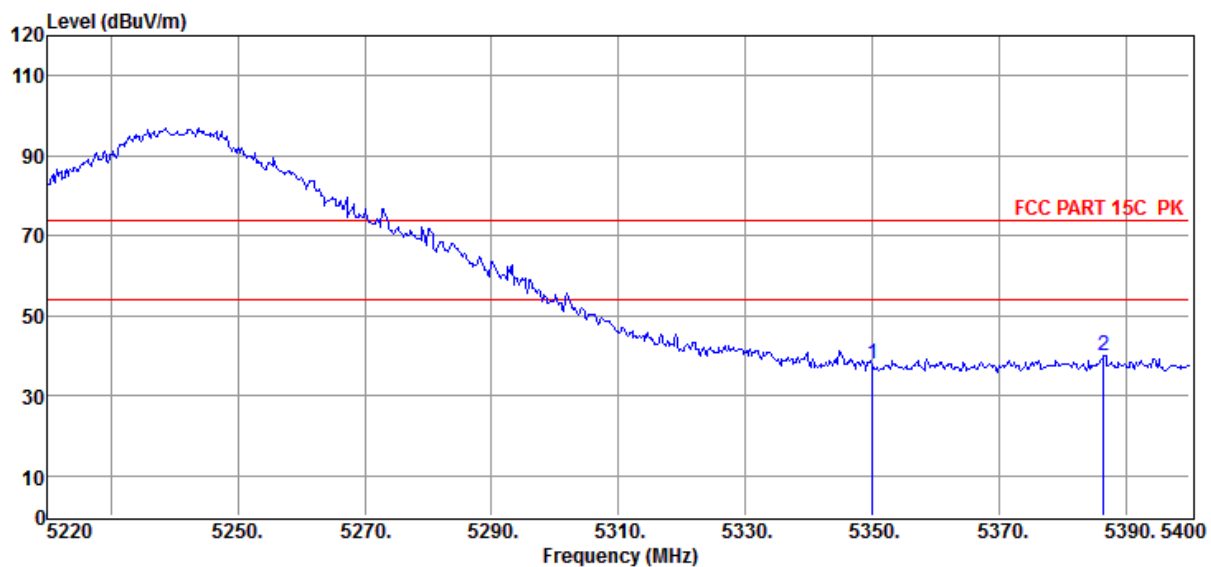
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11n20 5240MHz

Data: 24



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	37.61	33.53	37.92	4.58	37.80	74.00	-36.20	Peak	VERTICAL
2	5386.50	39.79	33.60	37.94	4.61	40.06	74.00	-33.94	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

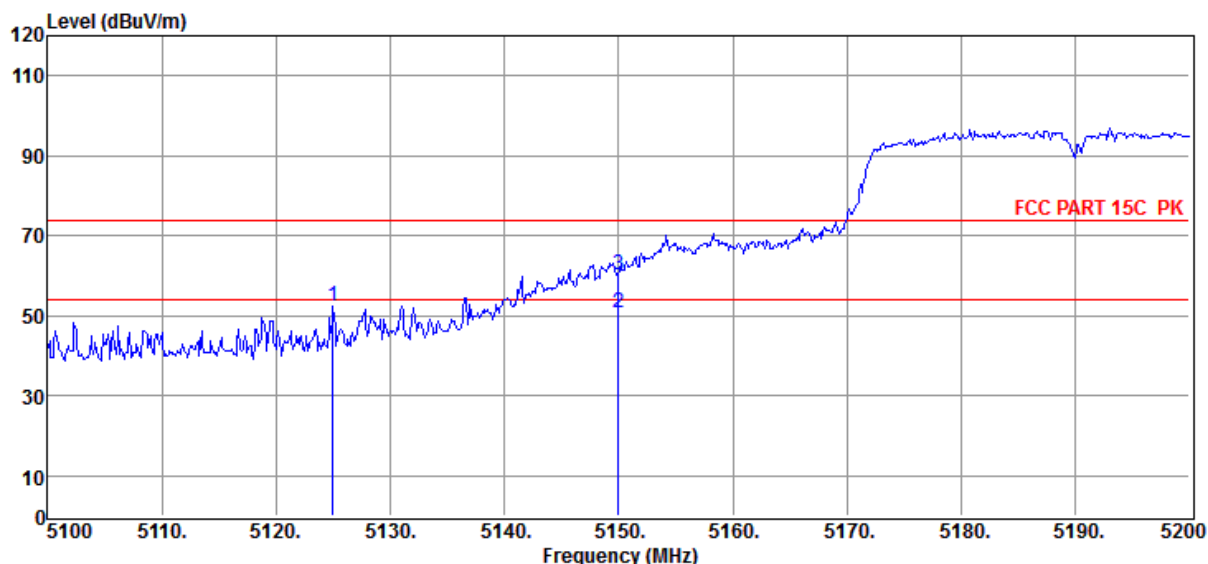
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11n40 5190MHz

Data: 25



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5125.00	52.68	33.12	37.88	4.50	52.42	74.00	-21.58	Peak	HORIZONTAL
2	5150.00	51.02	33.17	37.94	4.49	50.74	54.00	-3.26	Average	HORIZONTAL
3	5150.00	60.35	33.17	37.94	4.49	60.07	74.00	-13.93	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3Report\TestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

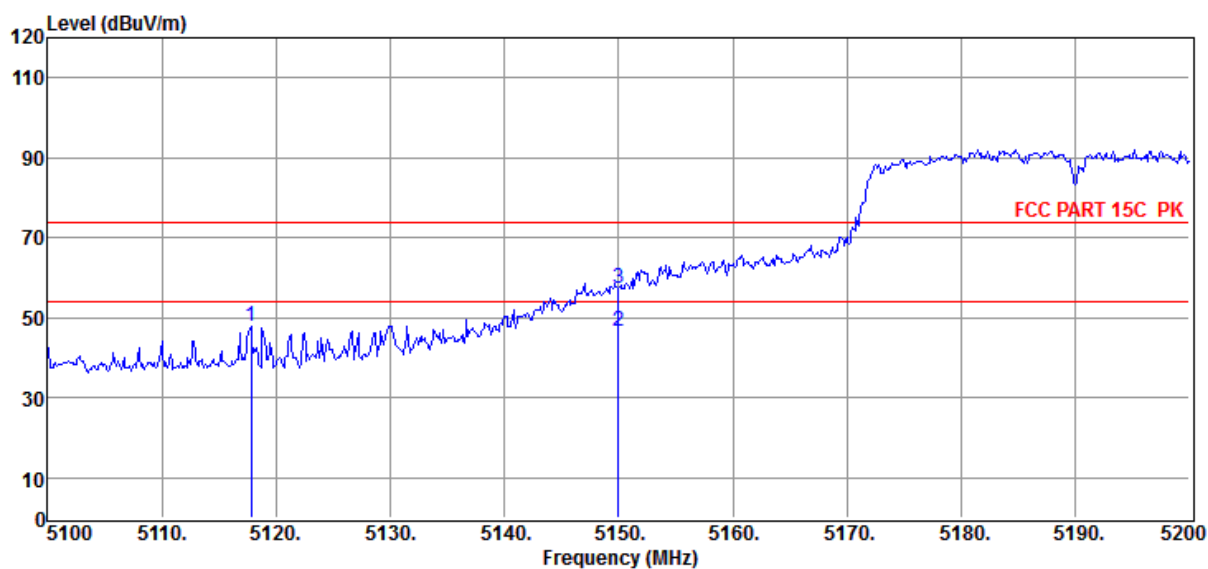
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11n40 5190MHz

Data: 26



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5117.80	48.22	33.11	37.86	4.50	47.97	74.00	-26.03	Peak	VERTICAL
2	5150.00	47.06	33.17	37.94	4.49	46.78	54.00	-7.22	Average	VERTICAL
3	5150.00	57.44	33.17	37.94	4.49	57.16	74.00	-16.84	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

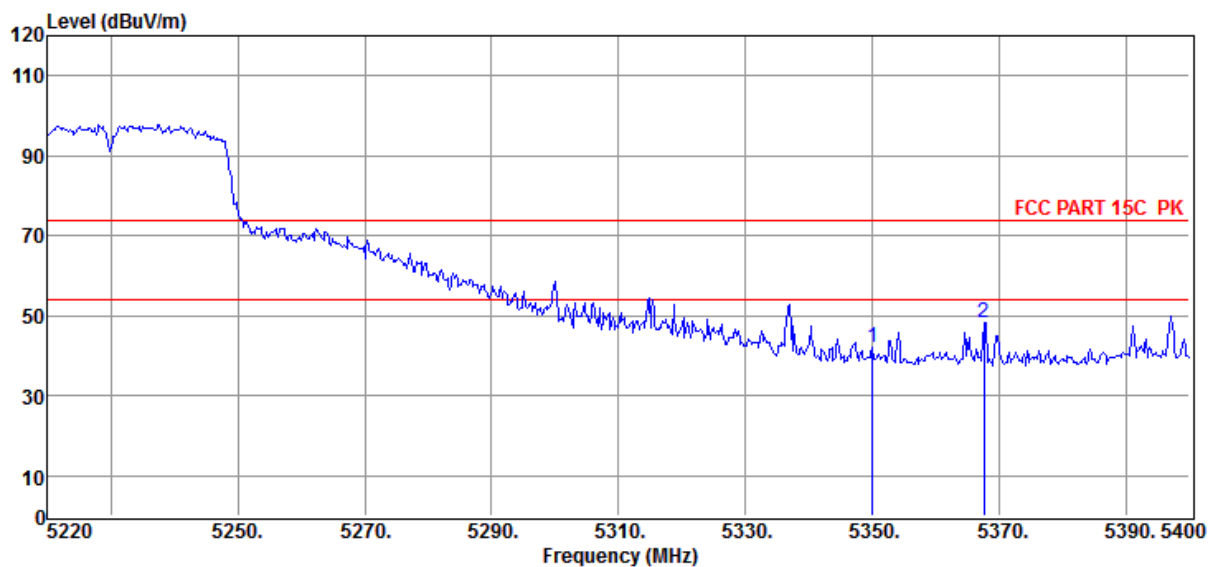
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11n40 5230MHz

Data: 27



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	41.87	33.53	37.92	4.58	42.06	74.00	-31.94	Peak	HORIZONTAL
2	5367.60	48.08	33.56	37.93	4.60	48.31	74.00	-25.69	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

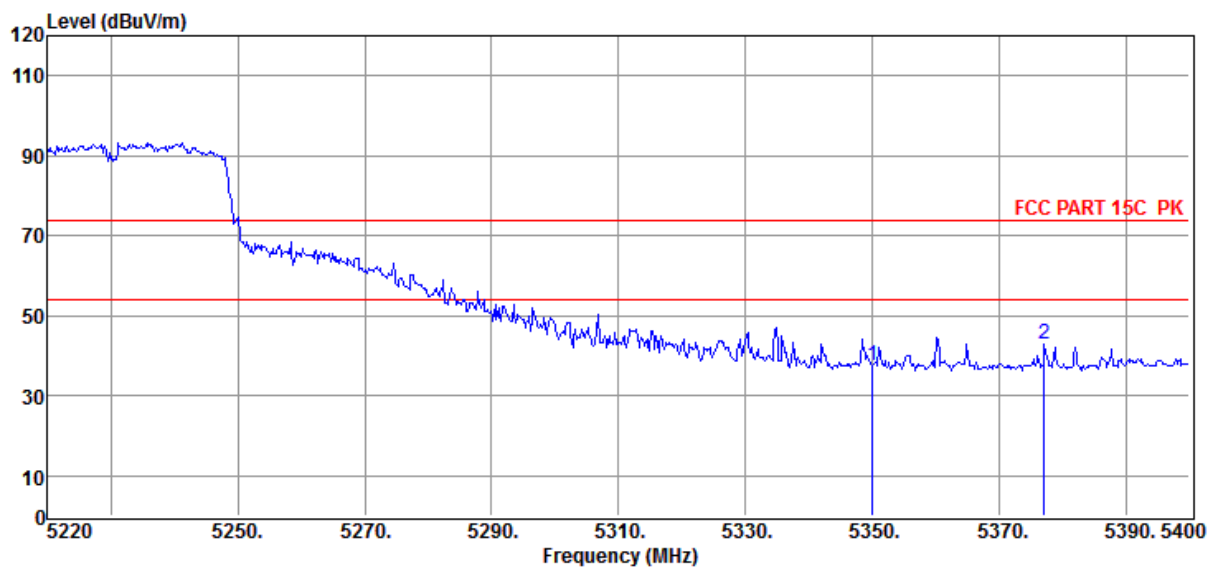
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11n40 5230MHz

Data: 28



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	37.49	33.53	37.92	4.58	37.68	74.00	-36.32	Peak	VERTICAL
2	5377.14	42.60	33.58	37.94	4.60	42.84	74.00	-31.16	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3Report\TestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

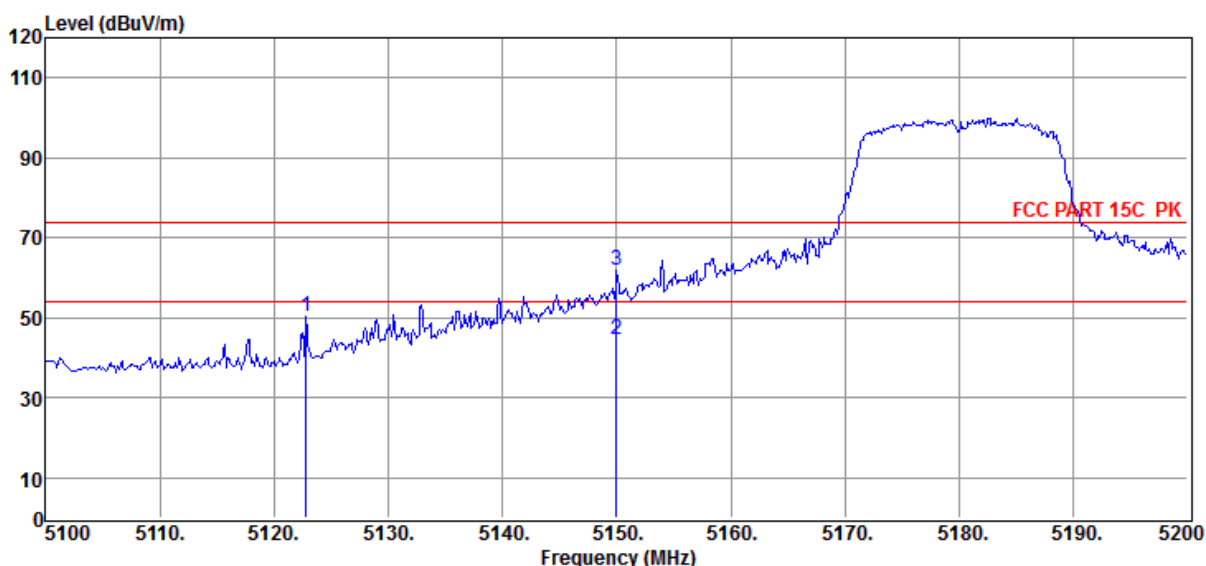
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11ac20 5180MHz

Data: 29



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5122.80	50.43	33.12	37.87	4.50	50.18	74.00	-23.82	Peak	HORIZONTAL
2	5150.00	44.94	33.17	37.94	4.49	44.66	54.00	-9.34	Average	HORIZONTAL
3	5150.00	62.18	33.17	37.94	4.49	61.90	74.00	-12.10	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

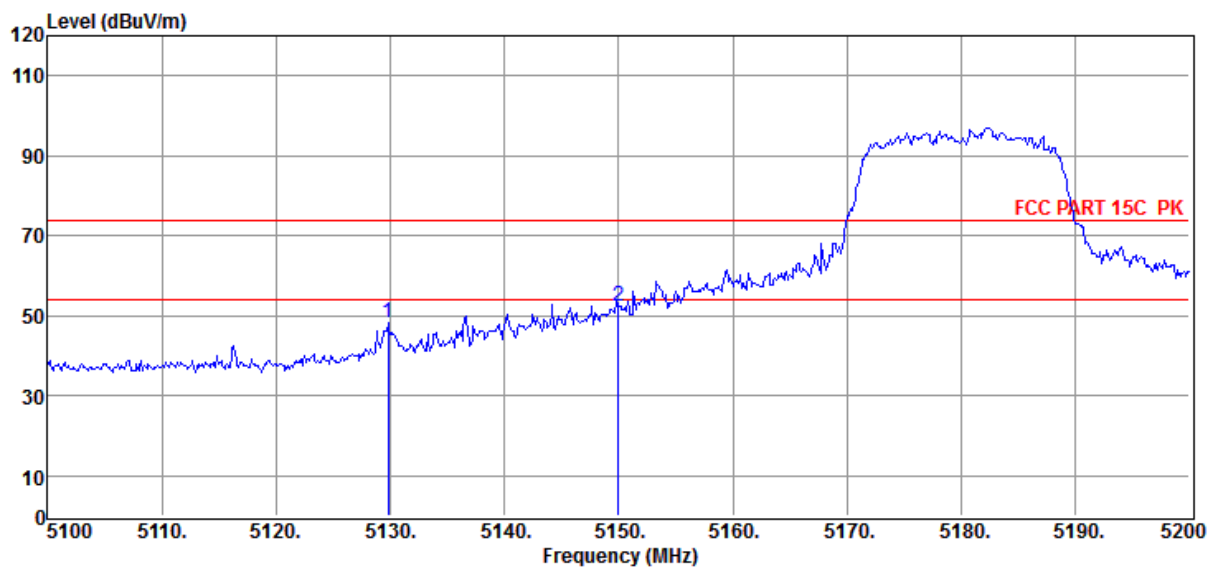
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11ac20 5180MHz

Data: 30



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5129.80	48.40	33.13	37.89	4.49	48.13	74.00	-25.87	Peak	VERTICAL
2	5150.00	52.62	33.17	37.94	4.49	52.34	74.00	-21.66	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

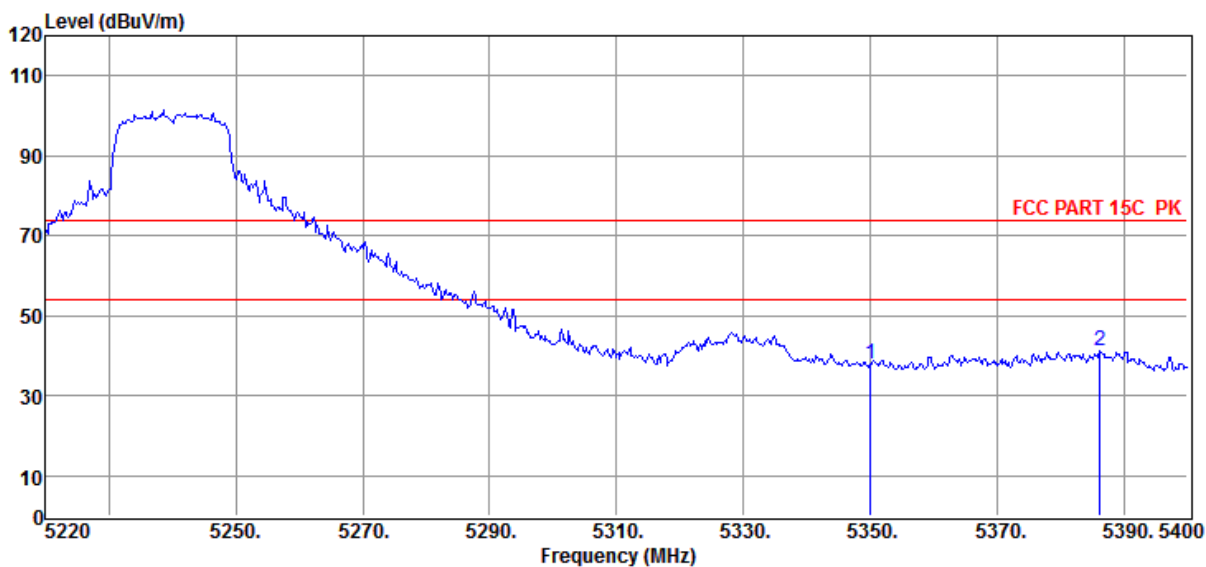
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11ac20 5240MHz

Data: 31



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	37.82	33.53	37.92	4.58	38.01	74.00	-35.99	Peak	HORIZONTAL
2	5386.14	41.07	33.60	37.94	4.61	41.34	74.00	-32.66	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

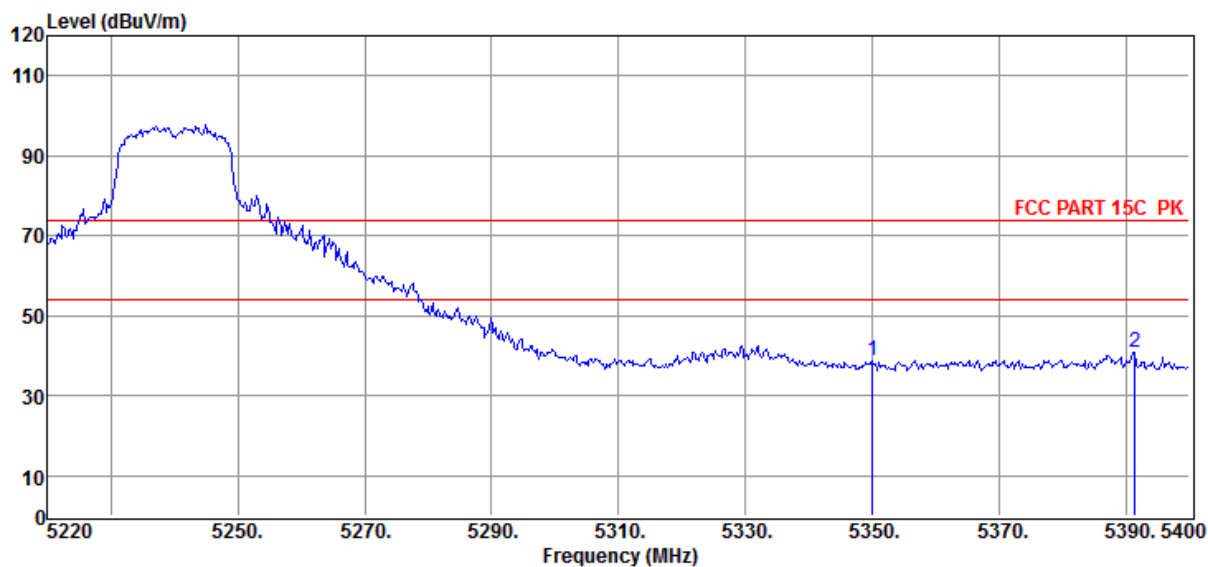
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11ac20 5240MHz

Data: 32



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	38.55	33.53	37.92	4.58	38.74	74.00	-35.26	Peak	VERTICAL
2	5391.36	40.45	33.60	37.94	4.61	40.72	74.00	-33.28	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3Report\TestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

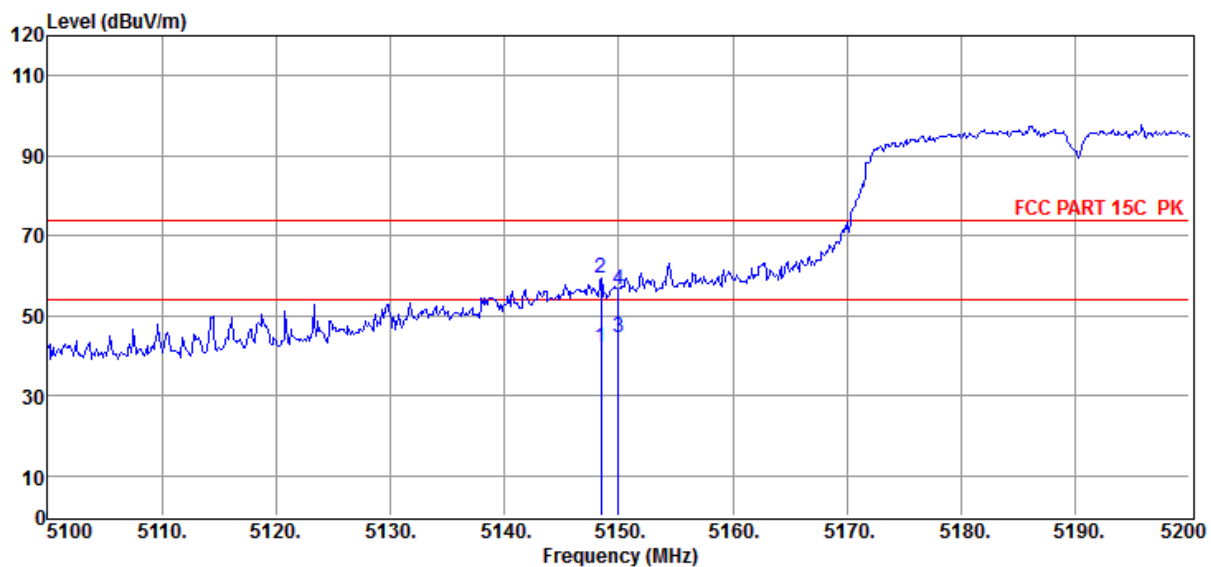
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11ac40 5190MHz

Data: 33



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5148.50	42.37	33.17	37.94	4.49	42.09	54.00	-11.91	Average	HORIZONTAL
2	5148.50	59.71	33.17	37.94	4.49	59.43	74.00	-14.57	Peak	HORIZONTAL
3	5150.00	44.71	33.17	37.94	4.49	44.43	54.00	-9.57	Average	HORIZONTAL
4	5150.00	56.64	33.17	37.94	4.49	56.36	74.00	-17.64	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

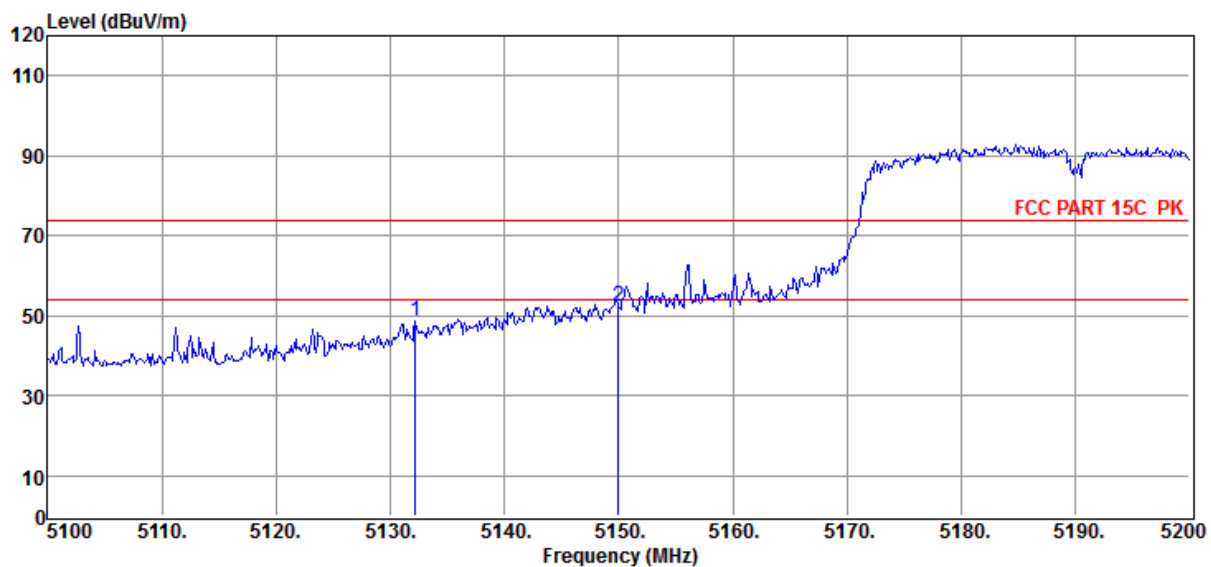
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11ac40 5190MHz

Data: 34



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5132.20	48.97	33.14	37.89	4.49	48.71	74.00	-25.29	Peak	VERTICAL
2	5150.00	52.78	33.17	37.94	4.49	52.50	74.00	-21.50	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3Report\TestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

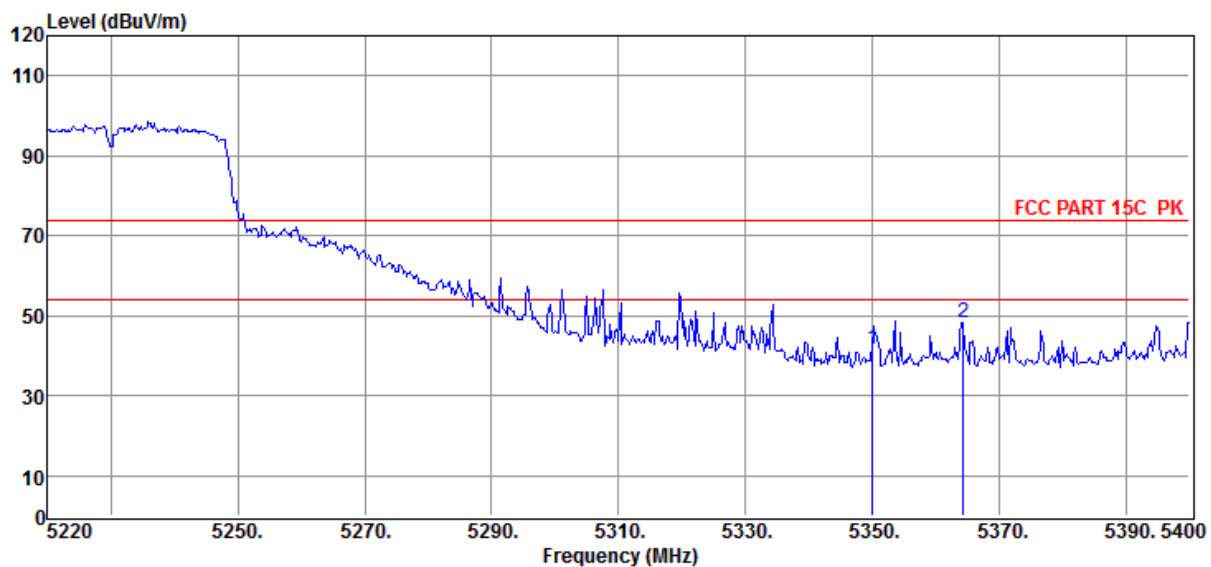
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11ac40 5230MHz

Data: 35



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	41.34	33.53	37.92	4.58	41.53	74.00	-32.47	Peak	HORIZONTAL
2	5364.36	48.23	33.56	37.93	4.59	48.45	74.00	-25.55	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC
ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

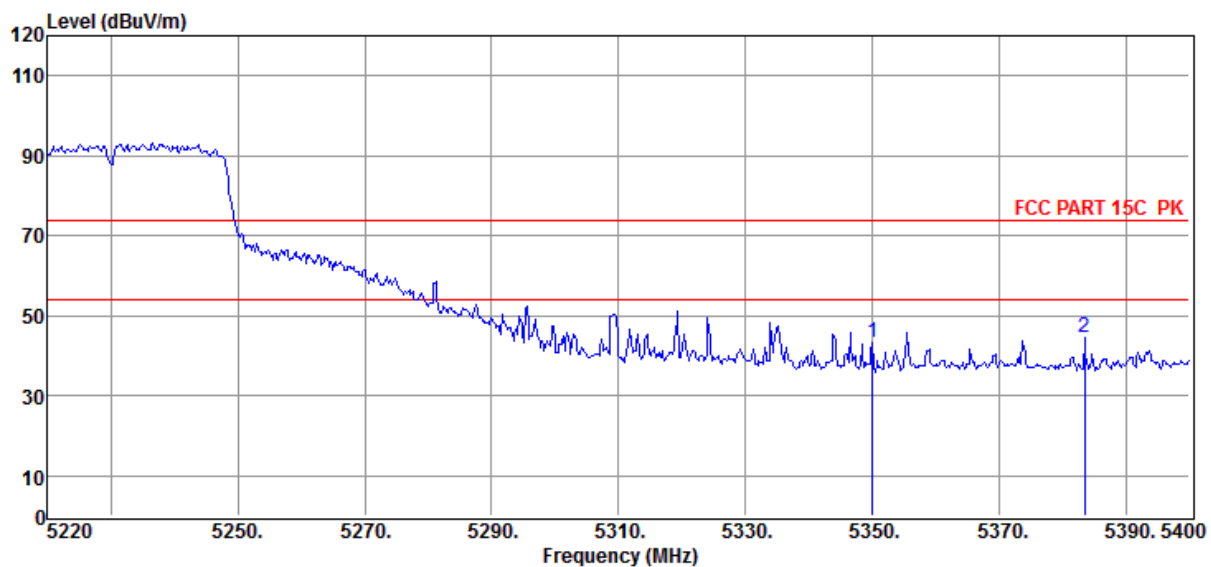
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11ac40 5230MHz

Data: 36



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5350.00	43.12	33.53	37.92	4.58	43.31	74.00	-30.69	Peak	VERTICAL
2	5383.44	44.23	33.59	37.94	4.61	44.49	74.00	-29.51	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

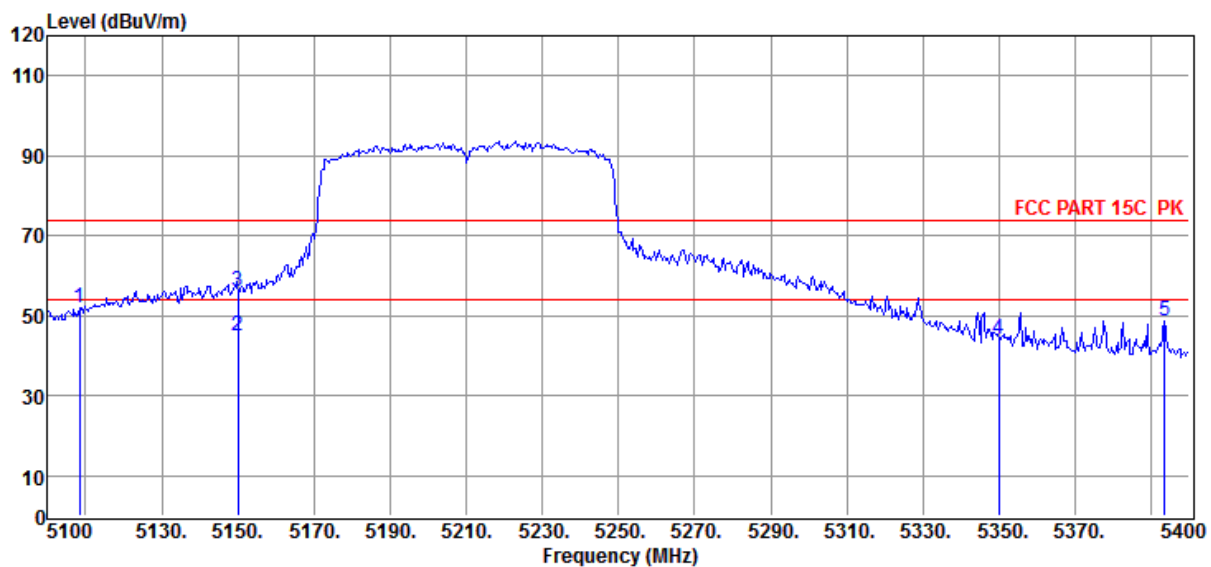
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/HORIZONTAL

Memo : 11ac80 5210MHz

Data: 37



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5108.40	52.05	33.10	37.83	4.50	51.82	74.00	-22.18	Peak	HORIZONTAL
2	5150.00	45.26	33.17	37.94	4.49	44.98	54.00	-9.02	Average	HORIZONTAL
3	5150.00	56.39	33.17	37.94	4.49	56.11	74.00	-17.89	Peak	HORIZONTAL
4	5350.00	43.93	33.53	37.92	4.58	44.12	74.00	-29.88	Peak	HORIZONTAL
5	5393.40	48.53	33.61	37.95	4.62	48.81	74.00	-25.19	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 1#

E:\2019E3ReportTestData\Q21011324-1E Smartprobe\FCC ID.EM6

Test Date : 2021-01-21

Tested By : Sunny

EUT : Smart probe

Model Number : Version 3

Power Supply : Battery

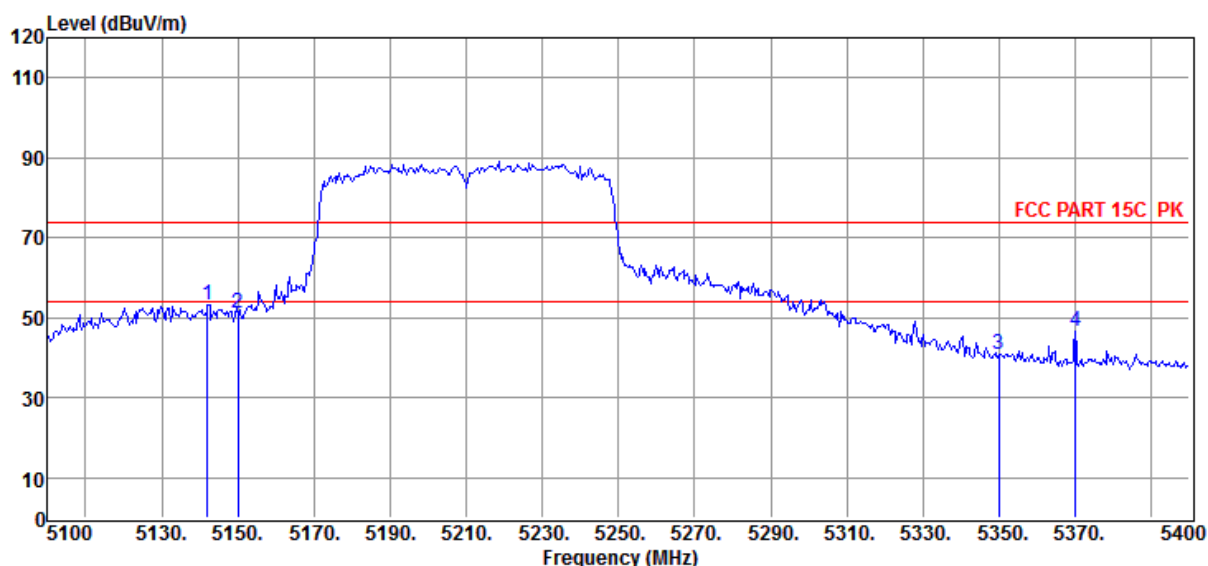
Test Mode : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa

Antenna/Distance : 2019 HF 907/3m/VERTICAL

Memo : 11ac80 5210MHz

Data: 38



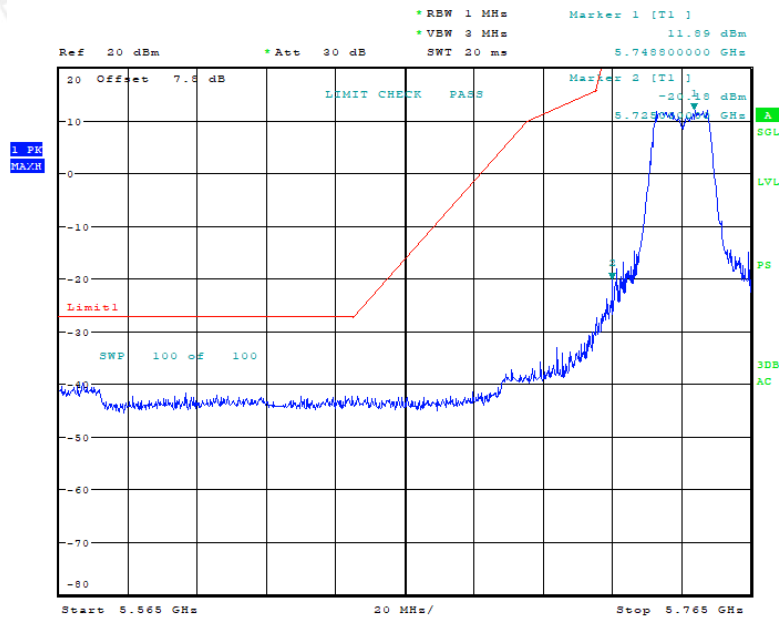
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	5142.00	53.37	33.16	37.92	4.49	53.10	74.00	-20.90	Peak	VERTICAL
2	5150.00	51.41	33.17	37.94	4.49	51.13	74.00	-22.87	Peak	VERTICAL
3	5350.00	40.80	33.53	37.92	4.58	40.99	74.00	-33.01	Peak	VERTICAL
4	5370.00	46.45	33.57	37.93	4.60	46.69	74.00	-27.31	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

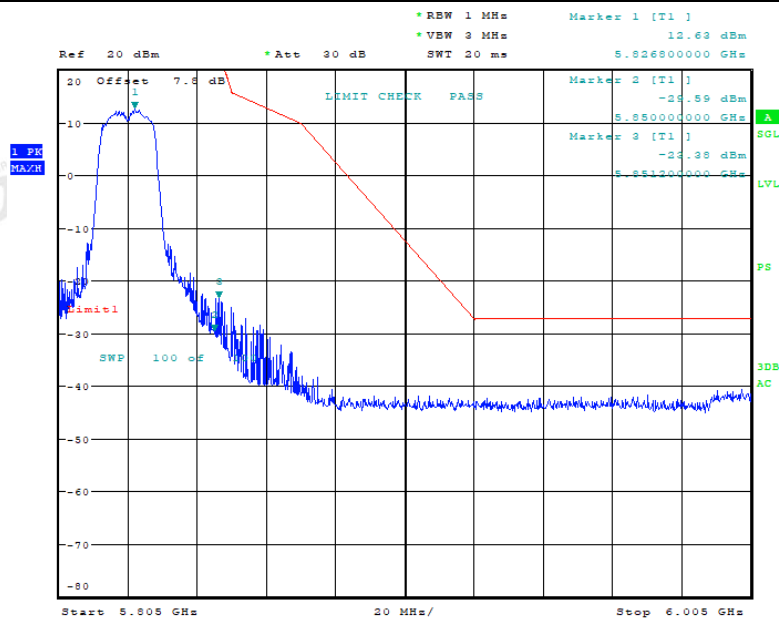
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

11A Ant1 Low 5745



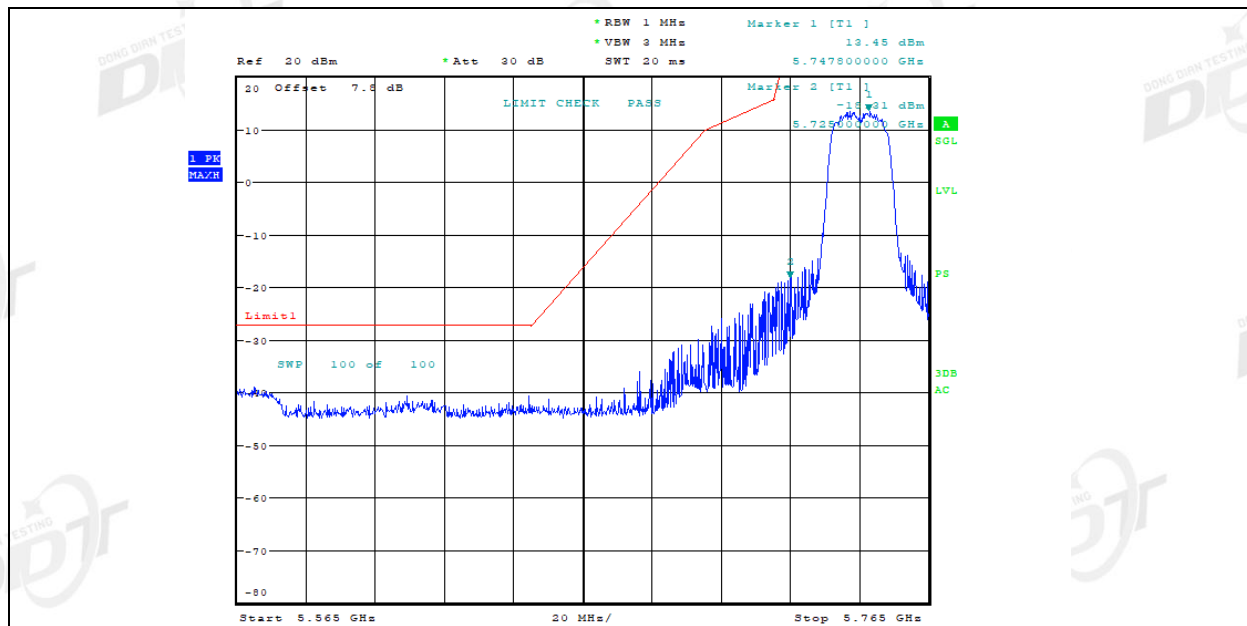
Date: 16.JAN.2021 13:57:28

11A Ant1 High 5825



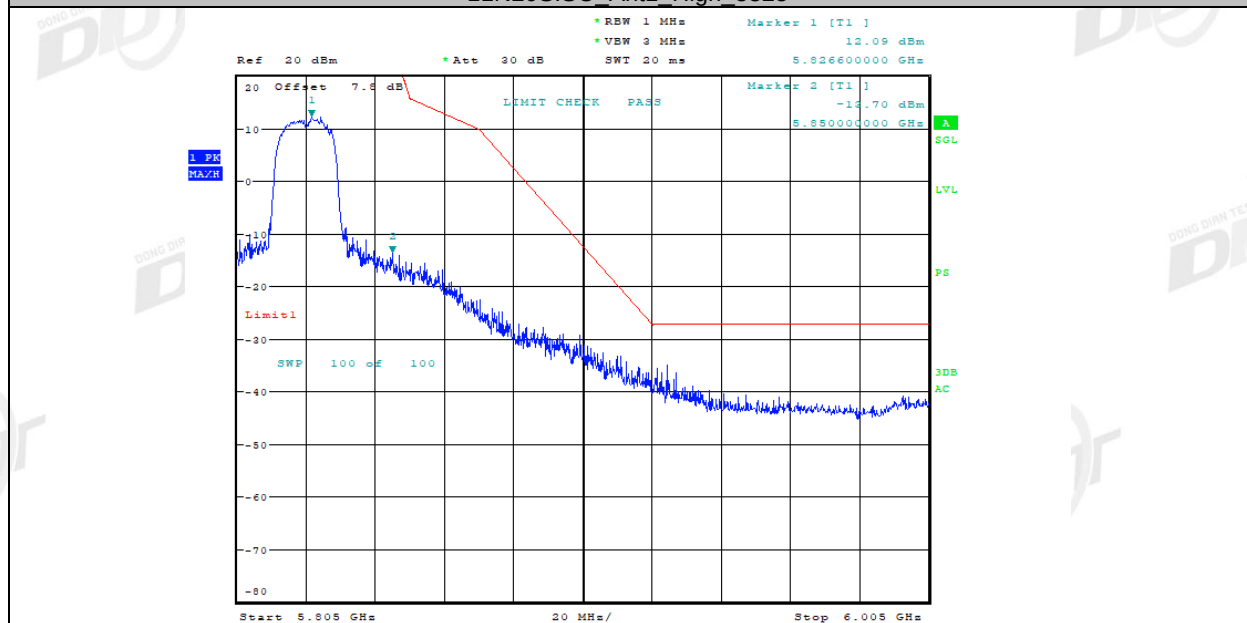
Date: 16.JAN.2021 14:32:30

11N20SISO Ant1 Low 5745



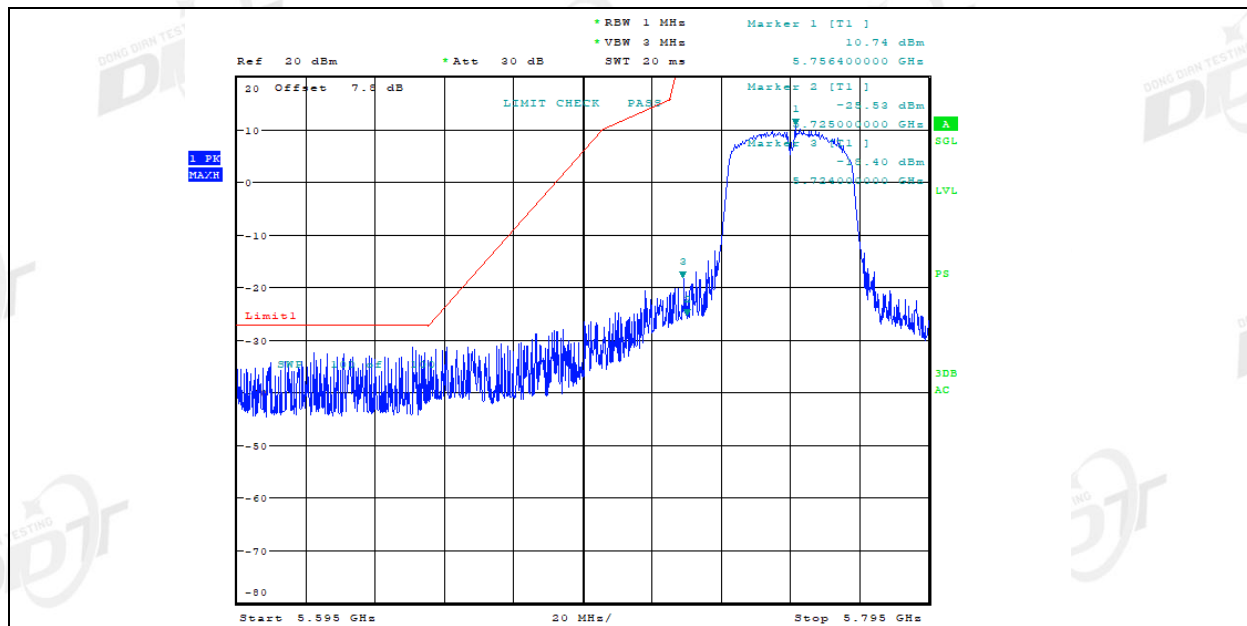
Date: 16.JAN.2021 15:13:29

11N20SISO Ant1 High 5825



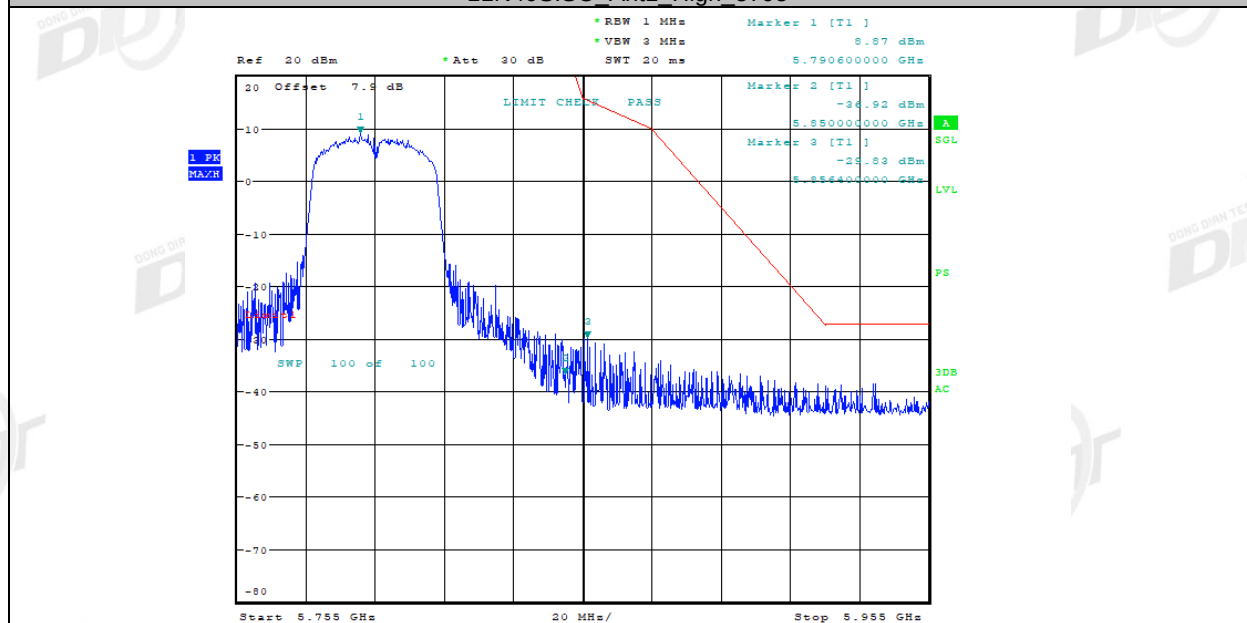
Date: 16.JAN.2021 15:25:28

11N40SISO Ant1 Low 5755



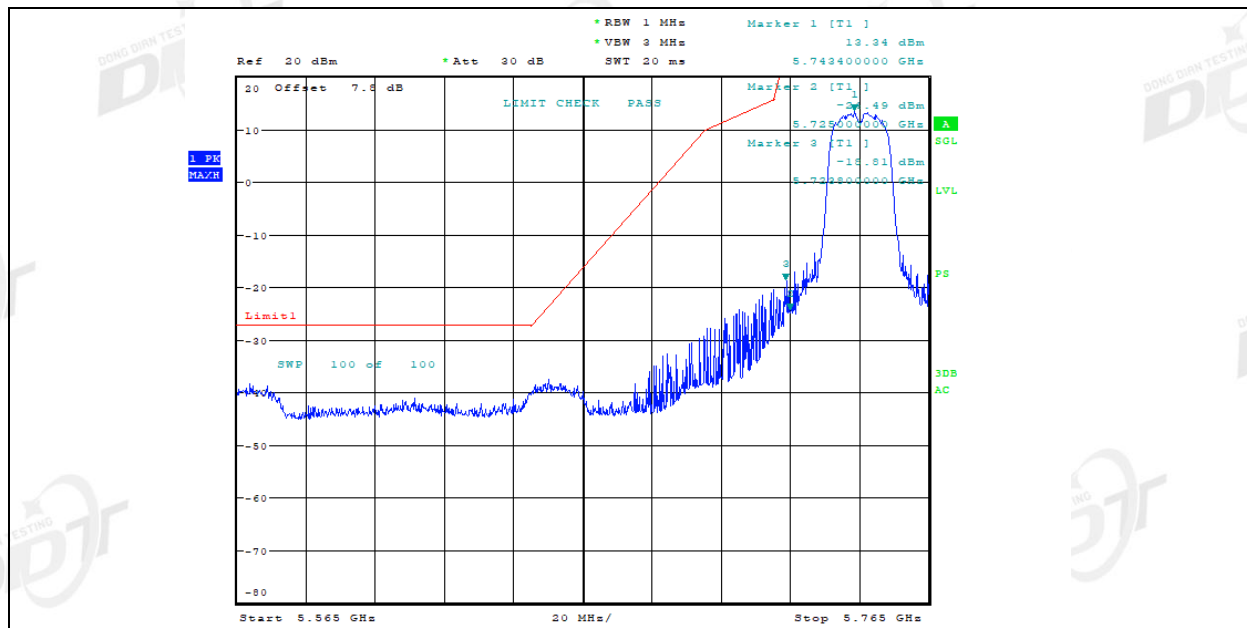
Date: 17.JAN.2021 10:19:03

11N40SISO Ant1 High 5795



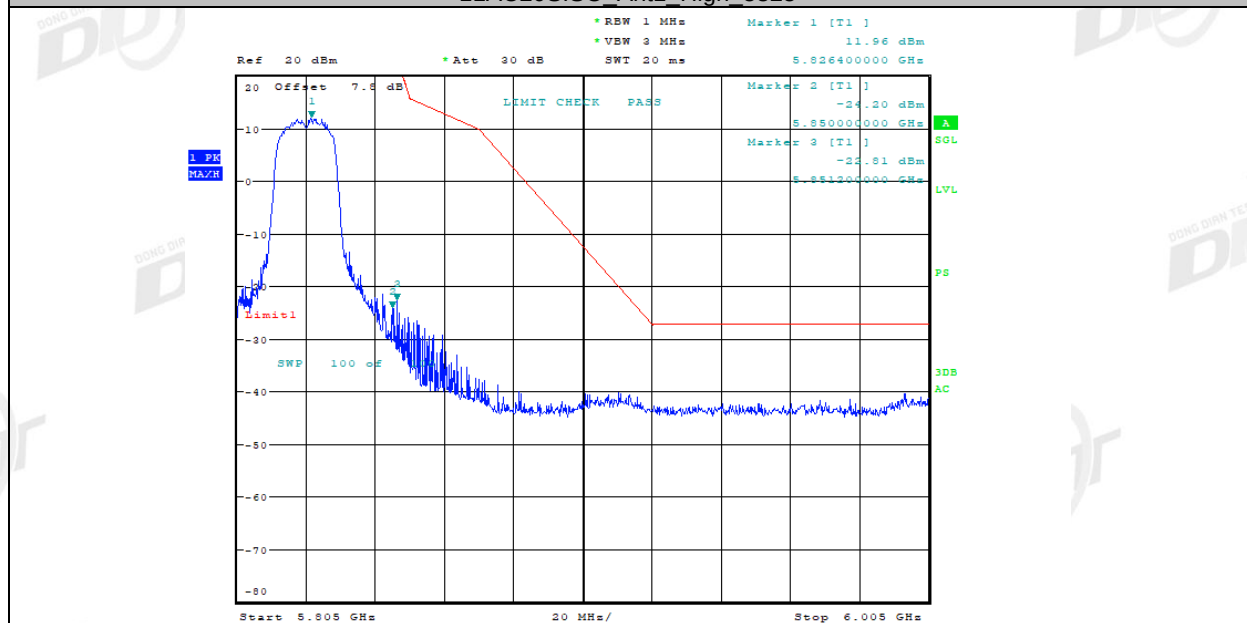
Date: 17.JAN.2021 10:41:16

11AC20SISO Ant1 Low 5745



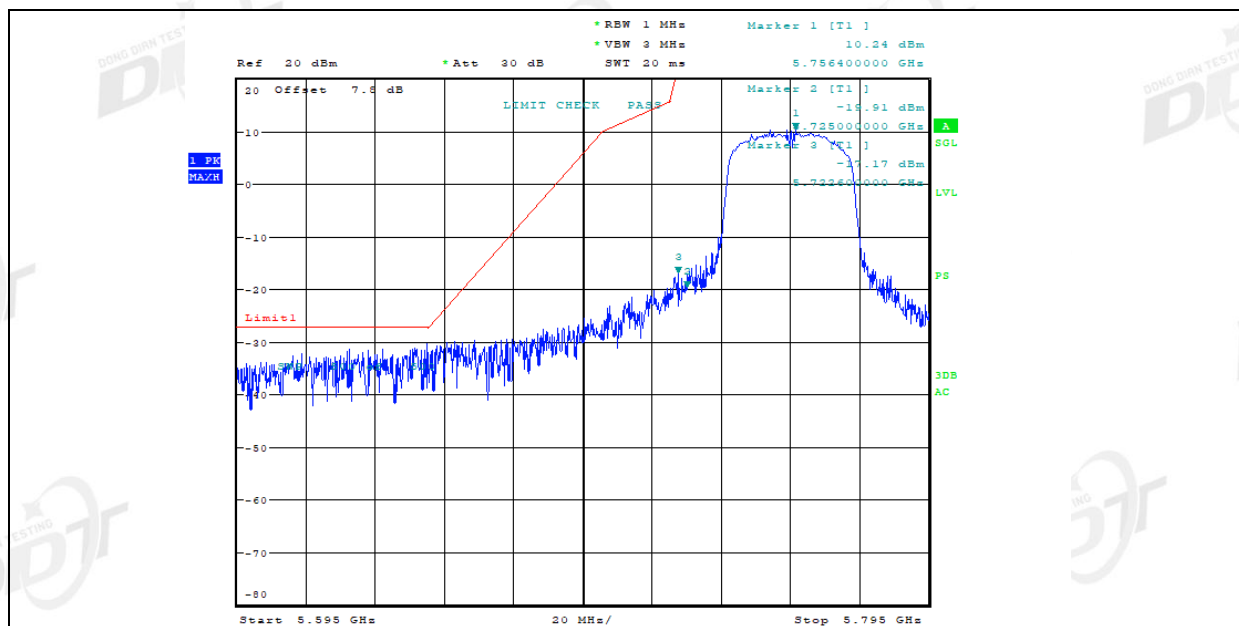
Date: 17.JAN.2021 11:22:59

11AC20SISO_Ant1_High_5825

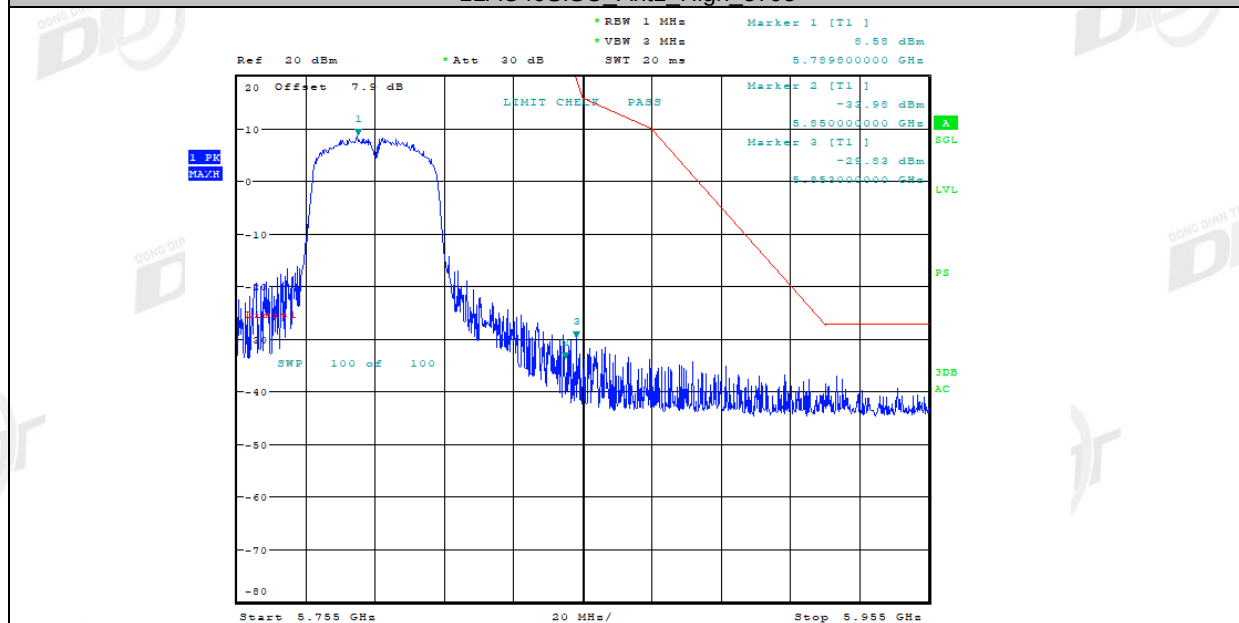


Date: 17.JAN.2021 11:35:10

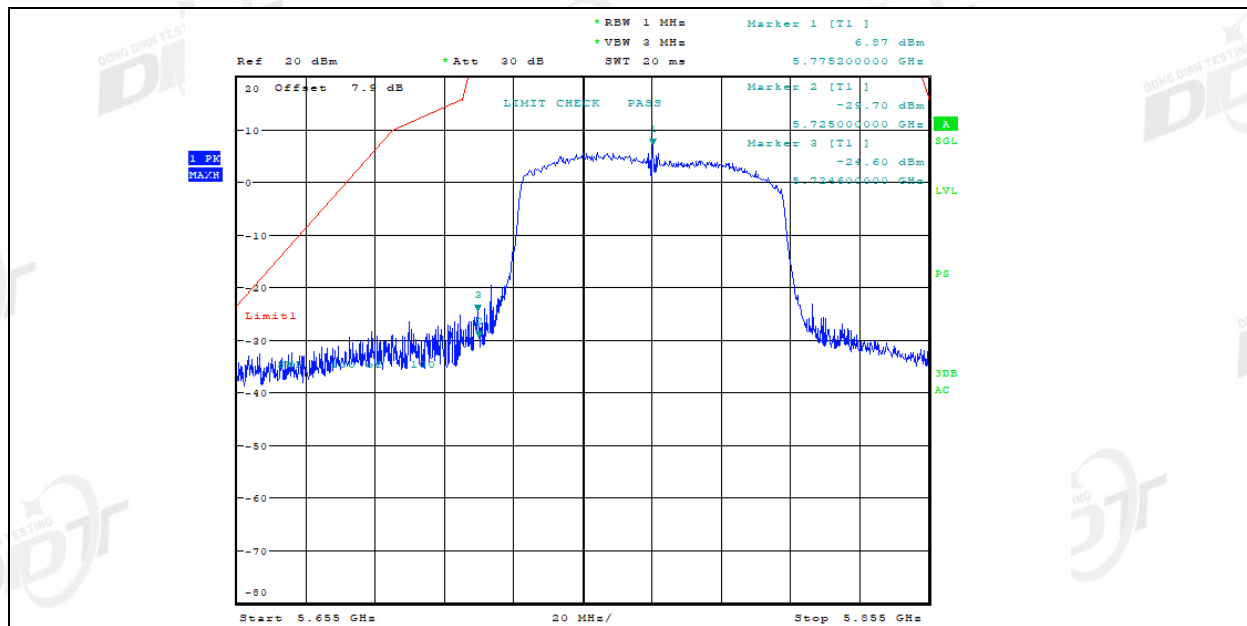
11AC40SISO_Ant1_Low_5755



11AC40SISO_Ant1_High_5795

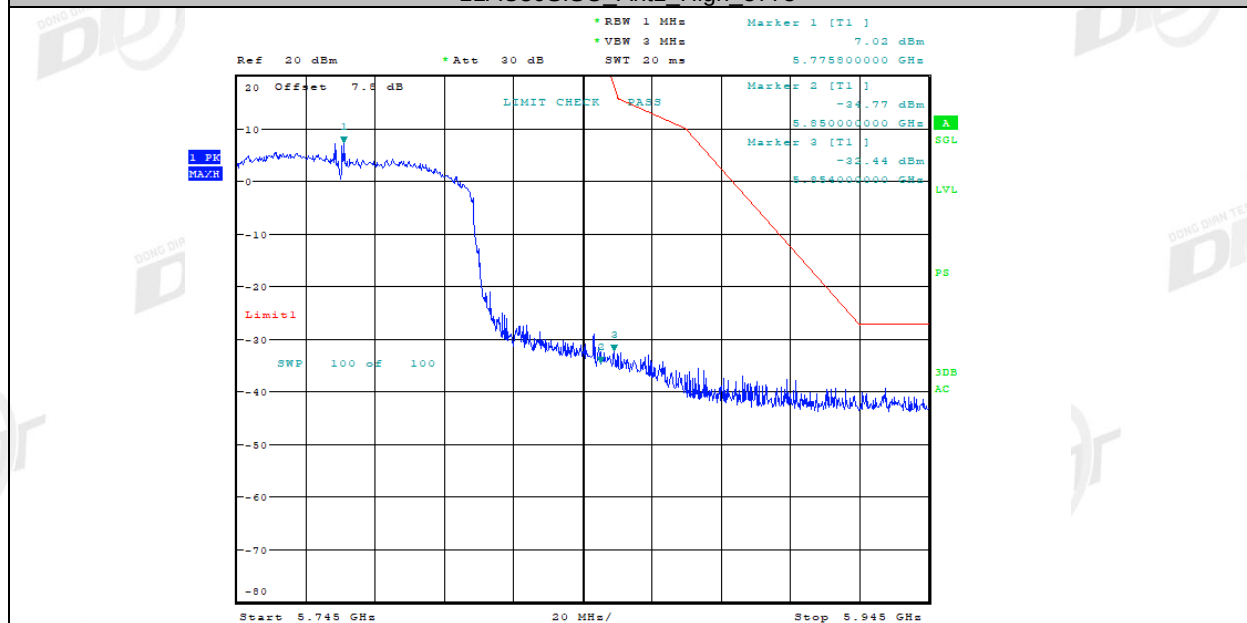


11AC80SISO_Ant1_Low_5775



Date: 17.JAN.2021 14:50:16

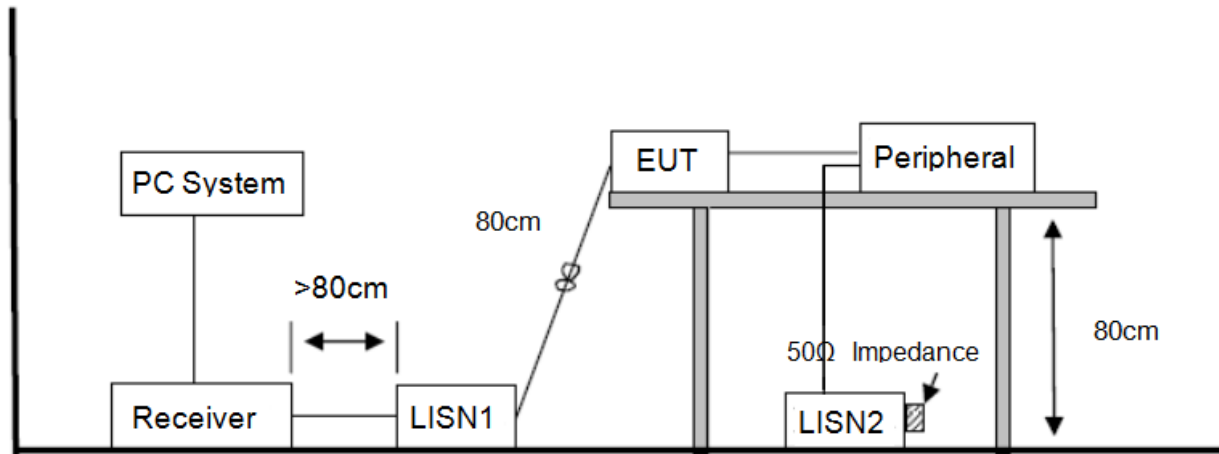
11AC80SISO_Ant1_High_5775



Date: 17.JAN.2021 15:36:20

10. Power Line Conducted Emission

10.1. Block diagram of test setup



10.2. Power Line Conducted Emission Limits (Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

10.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test. EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

10.4. Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

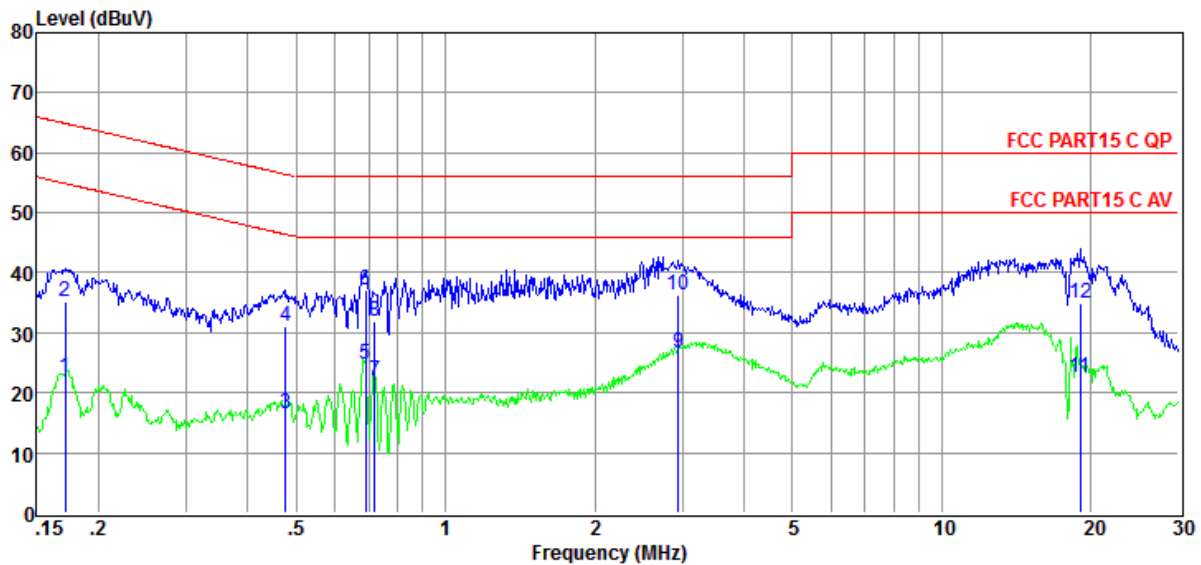
Note2: “----” means peak detection; “----” means average detection

Note3: Pre-test AC conducted emission at both voltage AC 120V/60Hz and AC 240V/50Hz, recorded worse case.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 2# Shield Room **E:\2019E3ReportTestData\SmartProble\CE TX SE.EM6**
Test Date : 2021-01-19 **Tested By** : Sunny
EUT : Smart probe **Model Number** : Version 3
Power Supply : AC 120V/60Hz **Test Mode** : WIFI mode
Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa **LISN** : EVN216_CE/NEUTRAL
Memo : 5G WIFI

Data: 38



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Cable Loss (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.17	12.07	0.03	22.51	54.90	-32.39	Average	NEUTRAL
2	0.17	24.87	0.03	35.31	64.90	-29.59	QP	NEUTRAL
3	0.48	6.43	0.05	16.52	46.41	-29.89	Average	NEUTRAL
4	0.48	20.92	0.05	31.01	56.41	-25.40	QP	NEUTRAL
5	0.69	14.20	0.67	24.88	46.00	-21.12	Average	NEUTRAL
6	0.69	26.46	0.67	37.14	56.00	-18.86	QP	NEUTRAL
7	0.72	11.33	0.71	22.05	46.00	-23.95	Average	NEUTRAL
8	0.72	21.07	0.71	31.79	56.00	-24.21	QP	NEUTRAL
9	2.95	16.55	0.14	26.71	46.00	-19.29	Average	NEUTRAL
10	2.95	26.13	0.14	36.29	56.00	-19.71	QP	NEUTRAL
11	19.02	9.59	0.25	22.58	50.00	-27.42	Average	NEUTRAL
12	19.02	21.91	0.25	34.90	60.00	-25.10	QP	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

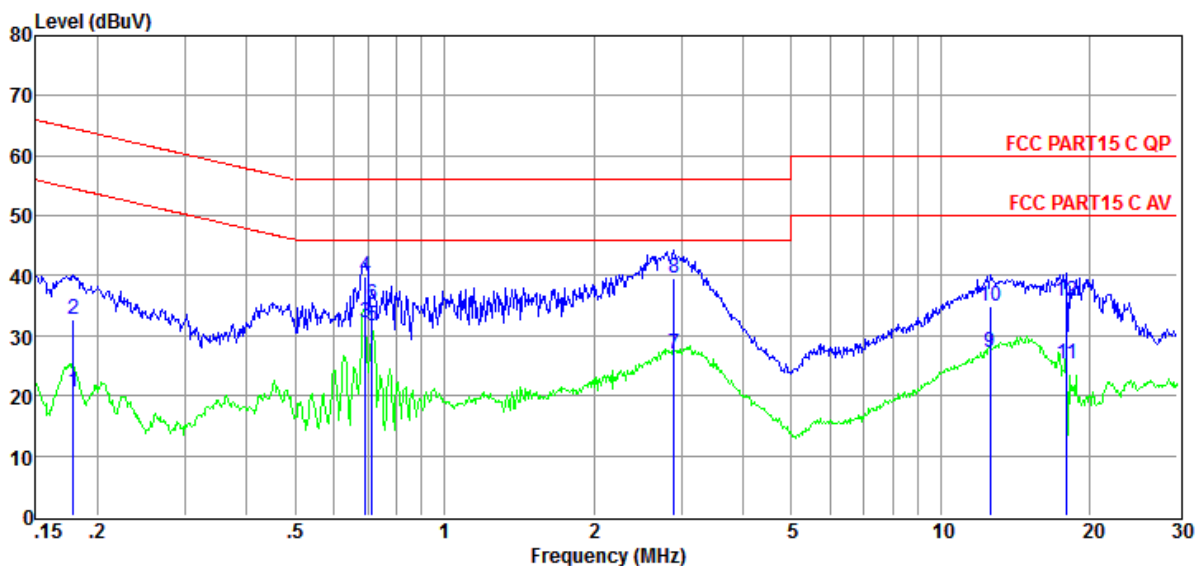
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site : DDT 2# Shield Room **E:\2019E3ReportTestData\SmartProble\CE TX SE.EM6**
Test Date : 2021-01-19 **Tested By** : Sunny
EUT : Smart probe **Model Number** : Version 3
Power Supply : AC 120V/60Hz **Test Mode** : WIFI mode
Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa **LISN** : EVN216_CE/LINE
Memo : 5G WIFI

Data: 40



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Cable Loss (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Phase
1	0.18	10.35	0.03	20.71	54.55	-33.84	Average	LINE
2	0.18	22.30	0.03	32.66	64.55	-31.89	QP	LINE
3	0.69	21.50	0.68	32.15	46.00	-13.85	Average	LINE
4	0.69	29.08	0.68	39.73	56.00	-16.27	QP	LINE
5	0.72	20.85	0.71	31.53	46.00	-14.47	Average	LINE
6	0.72	24.39	0.71	35.07	56.00	-20.93	QP	LINE
7	2.90	16.84	0.13	26.95	46.00	-19.05	Average	LINE
8	2.90	29.43	0.13	39.54	56.00	-16.46	QP	LINE
9	12.58	15.28	0.18	27.29	50.00	-22.71	Average	LINE
10	12.58	23.01	0.18	35.02	60.00	-24.98	QP	LINE
11	17.94	12.50	0.23	25.24	50.00	-24.76	Average	LINE
12	17.94	23.10	0.23	35.84	60.00	-24.16	QP	LINE

Note: 1. Result Level = Read Level + LISN Factor + Pulse Limiter Factor + Cable loss.

2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).

4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

11. Antenna Requirements

11.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

11.2. Result

The antenna used for this product is SMD antenna and no antenna other than that furnished by the responsible party shall be used with the device, maximum antenna gain is 3.0 dBi.