



# TEST REPORT

REPORT NUMBER: I23W00020-WIFI 5.8G RF

ON

**Type of Equipment:** 4G Smart Phone  
**Type of Designation:** MobiWire H6322, Altice S35  
**Brand Name:** MobiWire, Altice  
**Manufacturer:** MobiWire SAS  
**FCC ID:** QPN-H6322

ACCORDING TO

FCC Part15

**Chongqing Academy of Information and Communications Technology**

*Month date, year*

*Jun 16, 2023*

*Signature*

**Xiang Luoyong**

**Director**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.



Report No.: 123W00020-WIFI 5.8G RF

Revision Version

Report Number	Revision	Date	Memo
I23W00020-WIFI 5.8G RF	00	2023-06-16	Initial creation of test report

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CONTENTS

1.	Test Laboratory .....	5
1.1.	Testing Location .....	5
1.2.	Testing Environment .....	5
1.3.	Project data .....	5
1.4.	Signature .....	5
2.	Client Information .....	6
2.1.	Applicant Information .....	6
2.2.	Manufacturer Information .....	6
3.	Equipment under Test (EUT) and Ancillary Equipment (AE) .....	7
3.1.	About EUT .....	7
3.2.	Internal Identification of EUT used during the test .....	7
3.3.	Outline of Equipment under Test .....	9
3.4.	Internal Identification of AE used during the test .....	9
3.5.	EUT Test RF Confagle Configuration .....	9
4.	Reference Documents .....	10
4.1.	Documents supplied by applicant .....	10
4.2.	Reference Documents for testing .....	10
5.	Test Equipments Utilized .....	11
5.1.	RF Test System .....	11
5.2.	RSE and CE Test System .....	11
5.3.	Climate Chamber .....	12
5.4.	Anechoic chamber Vibration table .....	12
5.5.	Test software .....	12
6.	Test Results .....	12
6.1	Summary of Test Results .....	13
6.2	Duty cycle .....	14
7.1	Maximum conducted output power .....	22

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Report No.: 123W00020-WIFI 5.8G RF

7.2	Maximum power spectral density .....	32
7.3	6dB Occupied Bandwidth .....	42
7.4	99% Occupied Bandwidth .....	51
7.5	Band Edges Compliance .....	59
7.6	Transmitter Spurious Emission .....	65
7.7	AC Powerline Conducted Emission .....	99
7.8	Frequency Stability .....	103
	Annex A EUT Photos .....	104
	Annex B Deviations from Prescribed Test Methods .....	105

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## 1. Test Laboratory

### 1.1. Testing Location

Name:	Chongqing Academy of Information and Communications Technology
FCC/IC Registration Number:	CN1239
Address:	Building C, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China
Postal Code:	401336
Telephone:	0086-23-88069965
Fax:	0086-23-88608777

### 1.2. Testing Environment

Normal Temperature:	15-35°C
Relative Humidity:	25-75%

### 1.3. Project data

Testing Start Date:	2023-05-23
Testing End Date:	2023-05-26

### 1.4. Signature



2023-06-16

**Dong Junxin**  
(Prepared this test report)

**Date**

2023-06-16

**Li Xu**  
(Reviewed this test report)

**Date**

2023-06-16

**Xiang Luoyong**  
Director of the laboratory  
(Approved this test report)

**Date**

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## 2. Client Information

### 2.1. Applicant Information

Company Name:	MobiWire SAS
Address /Post:	107 Boulevard de la Mission Marchand 92400 Courbevoie,France
City:	Courbevoie
Country:	France
Telephone:	+33625028368
Fax:	N/A
Email:	olivier.tiennault@mobiwire.com
Contact Person:	Olivier Tiennault

### 2.2. Manufacturer Information

Company Name:	MobiWire SAS
Address /Post:	107 Boulevard de la Mission Marchand 92400 Courbevoie,France
City:	Courbevoie
Country:	France
Telephone:	+33625028368
Fax:	N/A
Email:	olivier.tiennault@mobiwire.com
Contact Person:	Olivier Tiennault

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### 3. Equipment under Test (EUT) and Ancillary Equipment (AE)

#### 3.1. About EUT

EUT Description	4G Smart Phone
Model name	MobiWire H6322, Altice S35
Brand name	MobiWire, Altice
Product Type	Slave
GSM Frequency Band	GSM:850/ 900/ 1800/1900
WCDMA Frequency Band	WCDMA: B1/B2/B5/B8
LTE Frequency Band	LTE: B1/2/3/4/5/7/8/20/28/38/41
BLUETOOTH Frequency Band	2402MHz-2480MHz
WLAN Frequency Band	Wi-Fi 2.4G:802.11b/g/n, Wi-Fi 5G U-NII-1/ U-NII-2a/U-NII-2c/U-NII-3:802.11a/n/ac
Type of modulation	OFDM
Extreme Temperature	-10-55°C
Nominal Voltage	3.85V
Extreme High Voltage	4.4V
Extreme Low Voltage	3.6V

Note: Photographs of EUT are shown in ANNEX A of this test report.

Note: High and low voltage values in extreme condition test are given by manufacturer.

#### 3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt
S4	354365420003740 354365420003757	V01	Mobiwire_H6322_V01	2023-05-23
S8	354365420006222 354365420006230	V01	Mobiwire_H6322_V01	2023-05-23
S9	354365420009044 354365420009051	V01	Mobiwire_H6322_V01	2023-05-23

\*EUT ID: is used to identify the test sample in the lab internally.

Technology	Band	UL Freq.(MHz)	DL Freq.(MHz)	Note
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Report No.: 123W00020-WIFI 5.8G RF

WLAN	5G	UNII 3: 5725MHz-5850MHz	--
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**3.3. Outline of Equipment under Test**

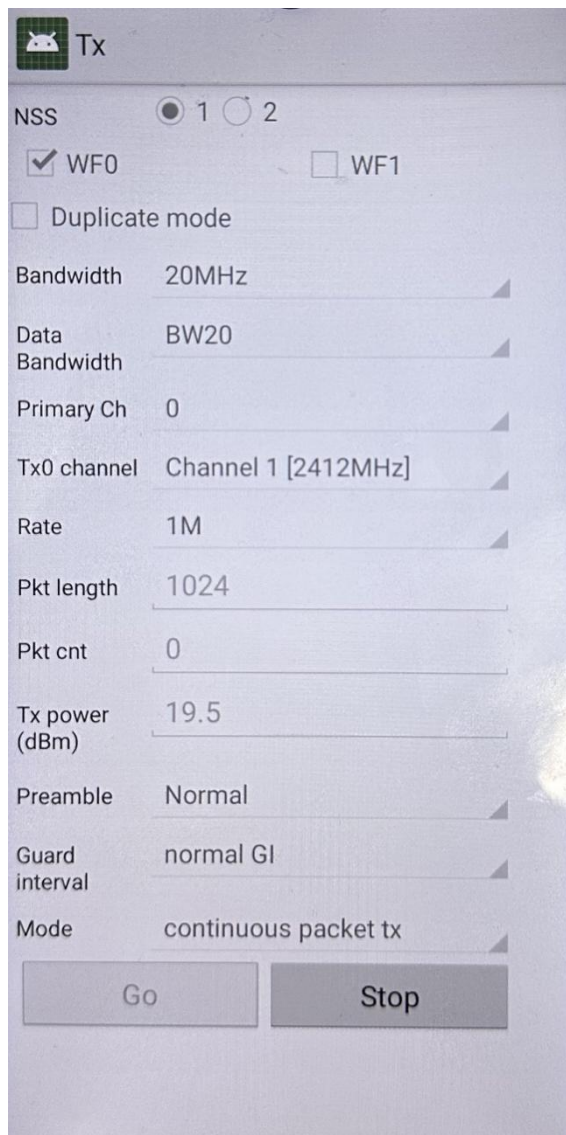
**3.4. Internal Identification of AE used during the test**

AE ID*	Description	dB*
AE1	RF cable	1dB

\*AE ID: is used to identify the test sample in the lab internally.

**3.5. EUT Test RF Confagle Configuration**

EUT uses MTK working control emission measurement, Change power level, channel, rate and HT .



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## 4. Reference Documents

### 4.1. Documents supplied by applicant

PICS/PIXIT, referring to Annex B for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

### 4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title
FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
ANSI 63.10-2013	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
KDB 789033-2017	Information Infrastructure (U-NII) Devices - Part 15, Subpart E
KDB 905462-2016	COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION

## 5. Test Equipments Utilized

### 5.1. RF Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal.Due Date
1	Spectrum analyzer	FSQ 26	201137/026	--	--	R&S	2023-06-29
2	Spectrum analyzer	FSW26	104280	--	--	R&S	2023-06-29
3	DC Power Supply	3303D	801128	--	--	Topward	2023-06-29

### 5.2. RSE and CE Test System

No.	Equipment	Model	SN	HW Version	SW Version	Manufacture	Cal.Due Date
1	EMI Test Receiver	ESU40	100307	--	--	R&S	2023-06-29
2	TRILOG Broadband Antenna	VULB9163	9163-586	--	--	Schwarzbeck	2024-10-28
3	Horn antenna	9120D	1083	--	--	Schwarzbeck	2024-12-14
4	Horn antenna	DATE 1152	LM7127	--	--	ETS	2024-09-06
5	Horn antenna	DATE 1012	LM5945	--	--	ETS	2024-09-06
6	Amplifier1	SCU-08F1	8320027	--	--	R&S	2023-06-29
7	Amplifier2	SCU-18F	180093	--	--	R&S	2023-06-29
8	2-Line V-Network	ENV216	102368	--	--	R&S	2024-05-27
9	Test Receiver	ESR 3	101382	03	3.48 SP2	R&S	2024-01-28
10	Test Receiver	ESW 26	101382	00	1.50 SP1	R&S	2023-06-29

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### 5.3. Climate Chamber

No.	Name	Type	SN	Manufacture	Cal.Due Date
--	--	--	--	--	--

### 5.4. Anechoic chamber Vibration table

No.	Name	Type	SN	Manufacture	Cal.Due Date
1	Fully-Anechoic Chamber	FAC5	--	TDK	2024-09-22
2	Anechoic Chamber	SAC 10	--	TDK	2026-08-26

### 5.5. Test software

No.	Name	version	SN	Manufacture
1	EMC32 (Transmitter Spurious Emission-Radiated Above 1GHz)	V 10.20.01	--	R&S
2	EMC32 (Transmitter Spurious Emission-Radiated Below 1GHz)	V9.26.01	--	R&S
3	EMC32 (AC Powerline Conducted Emission)	V 10.40.10	--	R&S

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## 6. Test Results

### 6.1. Summary of Test Results

A brief summary of the tests carried out is shown as following.

FCC Rules	Name of Test	Result
15.407(a)	Duty cycle	Pass
15.407(a)	Maximum Output Power	Pass
15.407(a)	Power Spectral Density	Pass
15.407(e)	6dB Occupied Bandwidth	Pass
15.407(e)	99% Occupied Bandwidth	Pass
15.407(b)	Band edge compliance	Pass
15.407	Transmitter Spurious Emission-Conducted	Pass
15.407,15.205,15.209	Transmitter Spurious Emission - Radiated	Pass
15.207	AC Powerline Conducted Emission	Pass
15.407(g)	Frequency Stability	Pass

NOTE:  
The MobiWire H6322, Altice 535, manufactured by MobiWire SAS is a new product for testing.  
The following configurations were tested for radiation spurious emission:

## 6.2. Duty cycle

<b>6 Specifications:</b>	FCC 47 Part 15.247(b)
<b>DUT Serial Number:</b>	S4
<b>Test conditions:</b>	Ambient Temperature:15 °C-35 °C Relative Humidity:30%-60% Air pressure: 86-106kPa
<b>Test Results:</b>	Pass

Measurement Uncertainty:

Measurement Uncertainty	--
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The measurement method is made according to KDB 789033 B

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on and off times of the transmitted signal.

b) The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission, Set  $RBW > EBW$  if possible: otherwise, set  $RBW$  to the largest available value. Set  $VBW > RBW$ . Set detector = peak or average. The zero-span measurement method shall not be used unless both  $RBW$  and  $VBW$  are  $> 50/T$ , where  $T$  is defined in II.B.1.a), and the number of sweep points across duration  $T$  exceeds 100. (For example, if  $VBW$  and/or  $RBW$  are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if  $T < 16.7$  microseconds.)

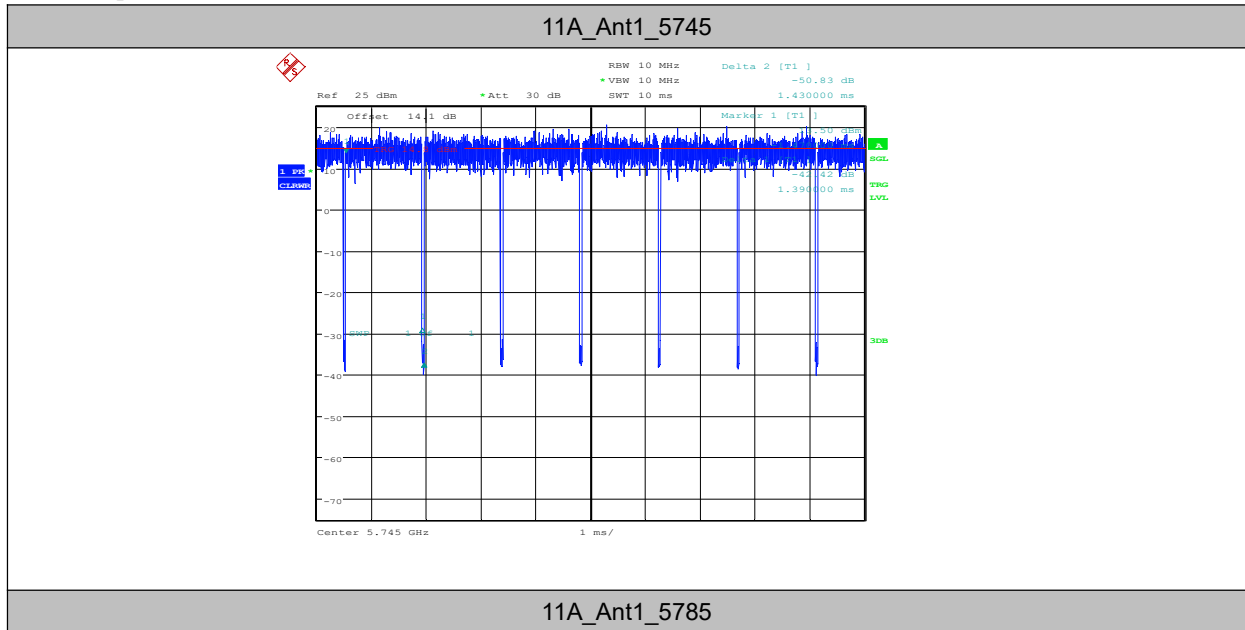
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Measurement Results

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]
11A	Ant1	5745	1.39	1.43	97.20
		5785	1.39	1.44	96.53
		5825	1.39	1.44	96.53
11N20SISO	Ant1	5745	1.30	1.35	96.30
		5785	1.30	1.35	96.30
		5825	1.30	1.35	96.30
11N40SISO	Ant1	5755	0.65	0.69	94.20
		5795	0.65	0.70	92.86
11AC20SISO	Ant1	5745	1.31	1.35	97.04
		5785	1.31	1.36	96.32
		5825	1.31	1.36	96.32
11AC40SISO	Ant1	5755	0.65	0.69	94.20
		5795	0.65	0.70	92.86
11AC80SISO	Ant1	5775	0.33	0.37	89.19

Test Graphs

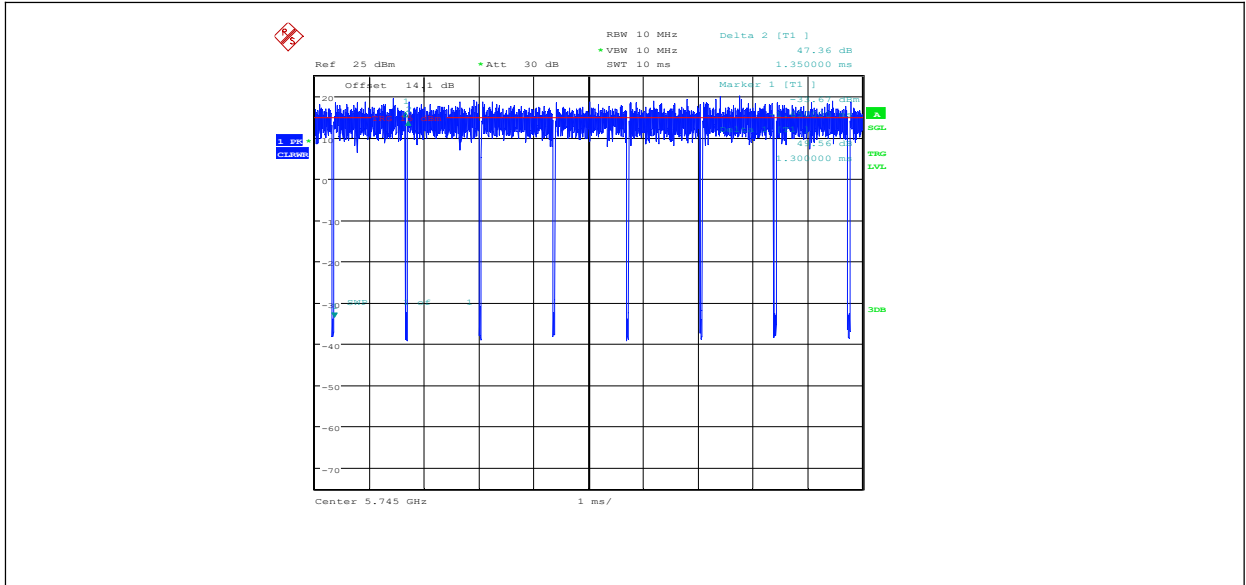


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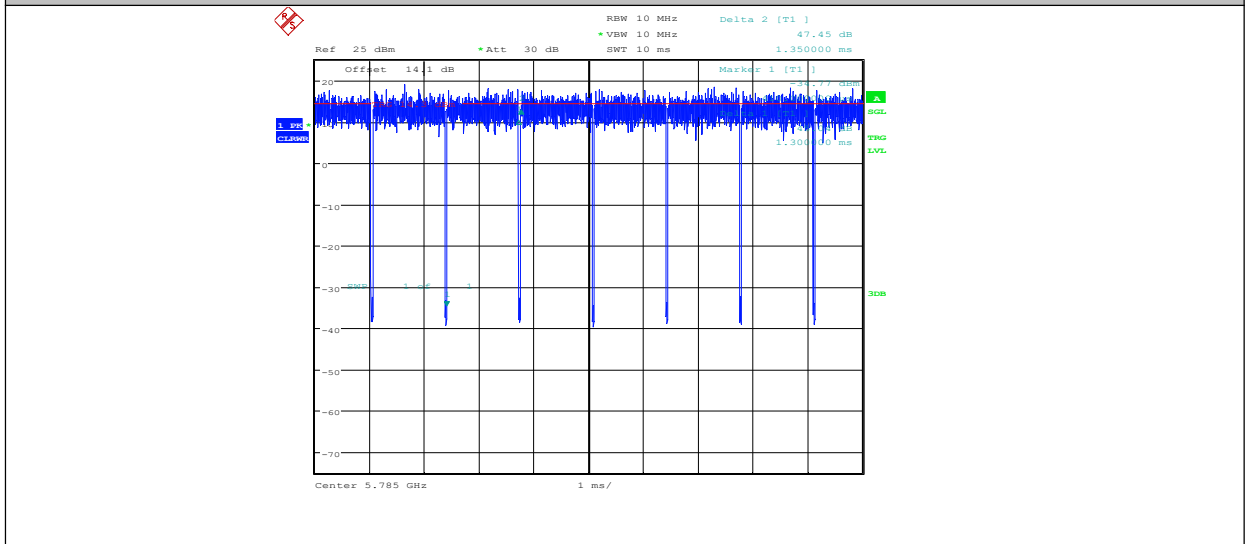
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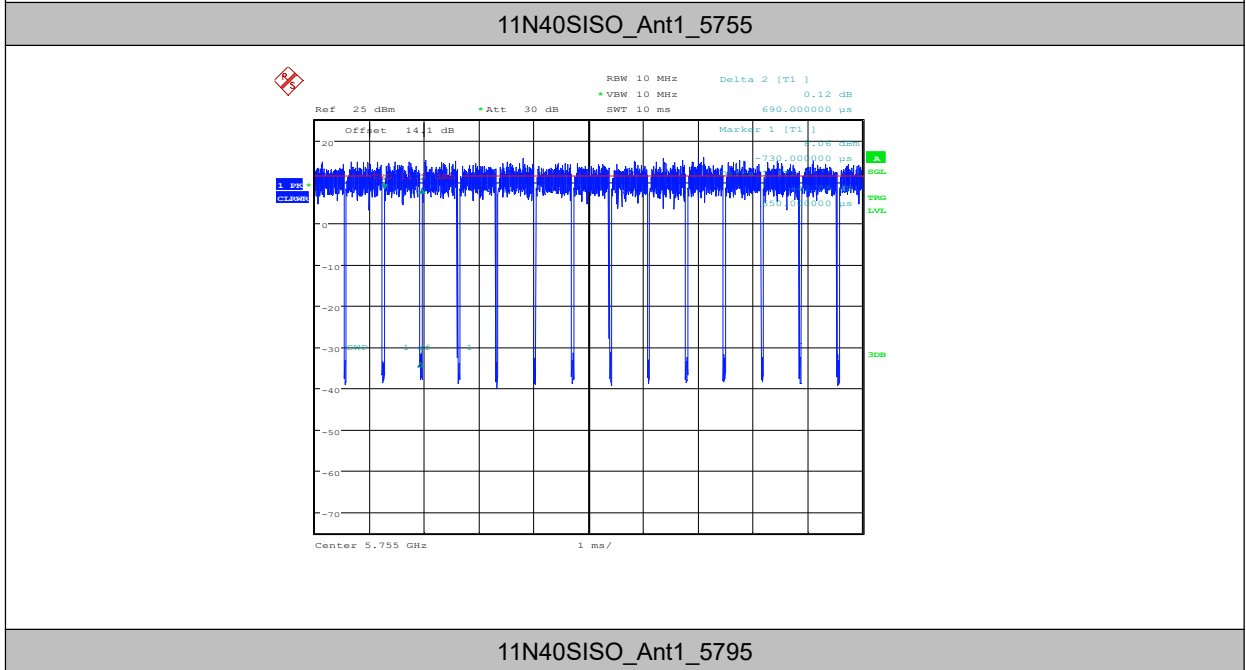
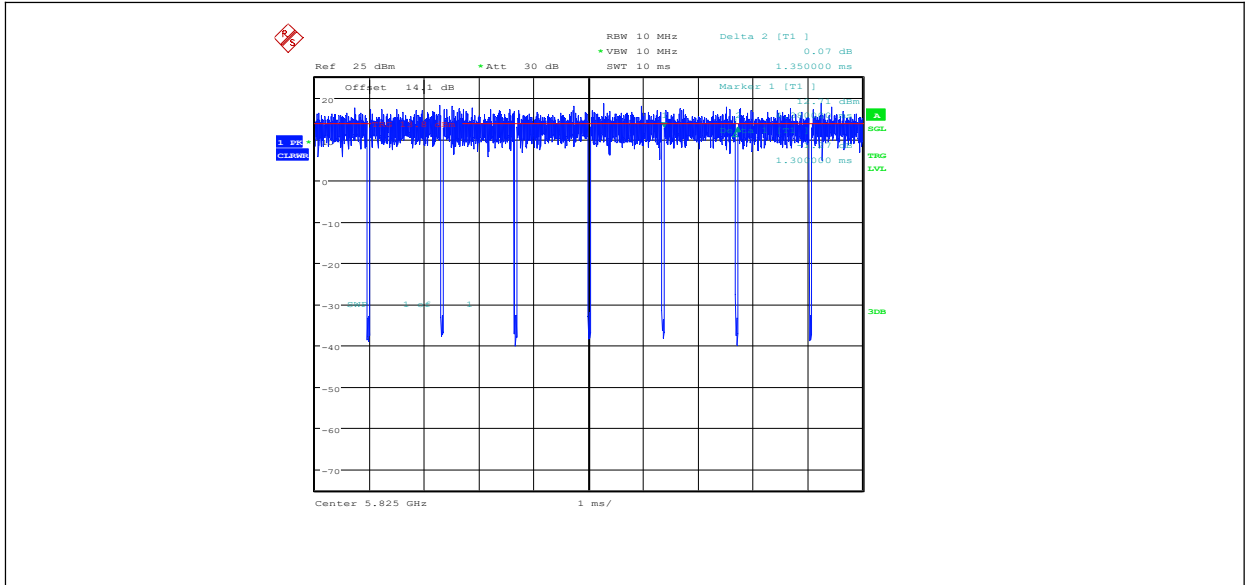




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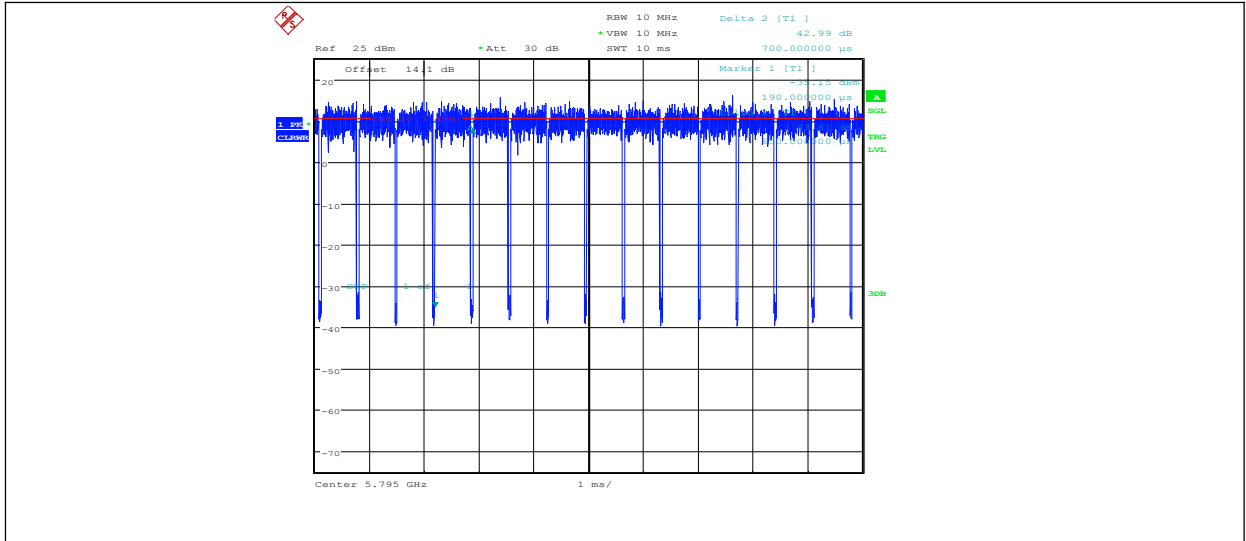


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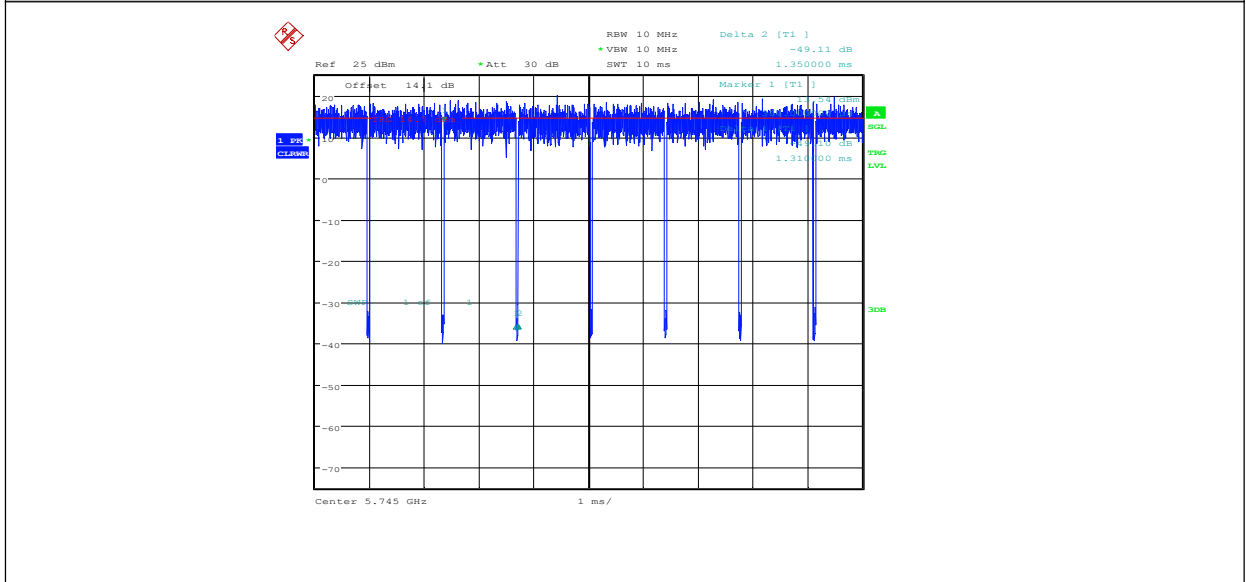


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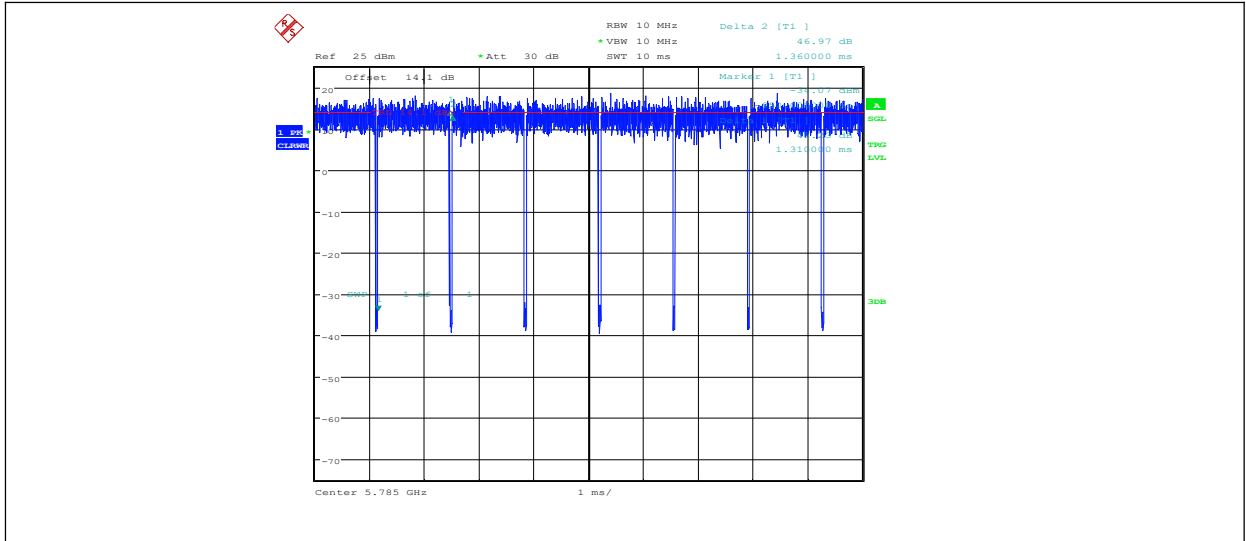
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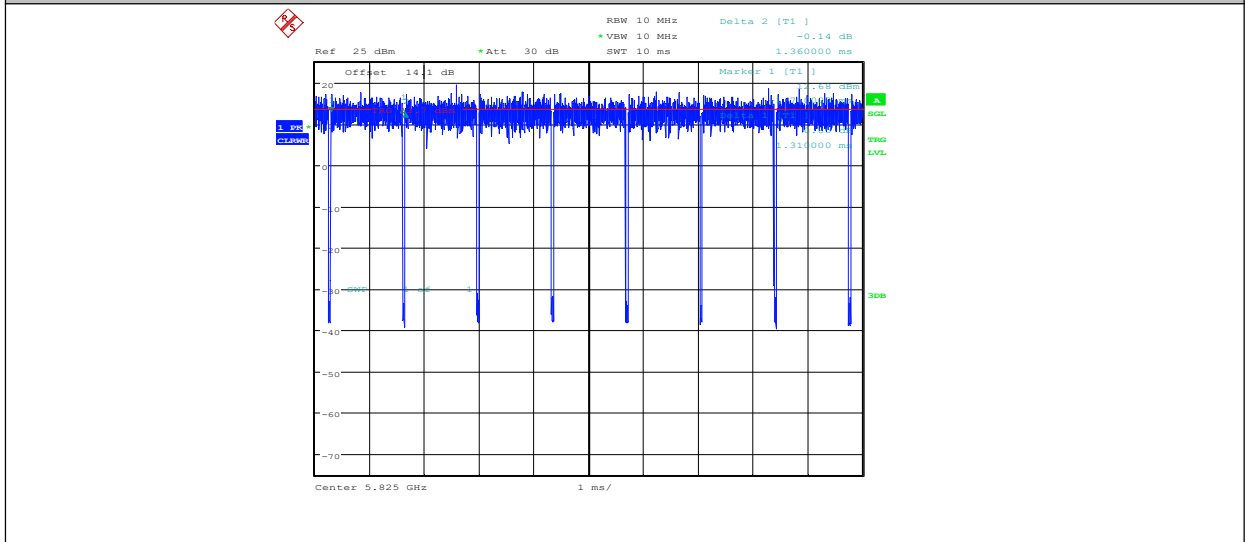
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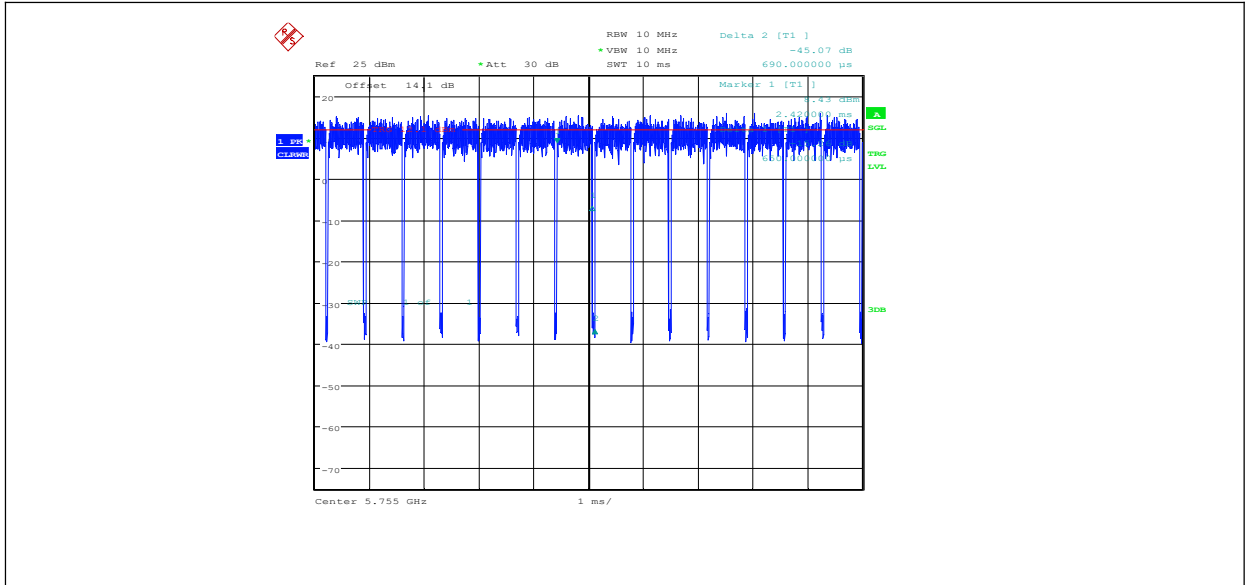
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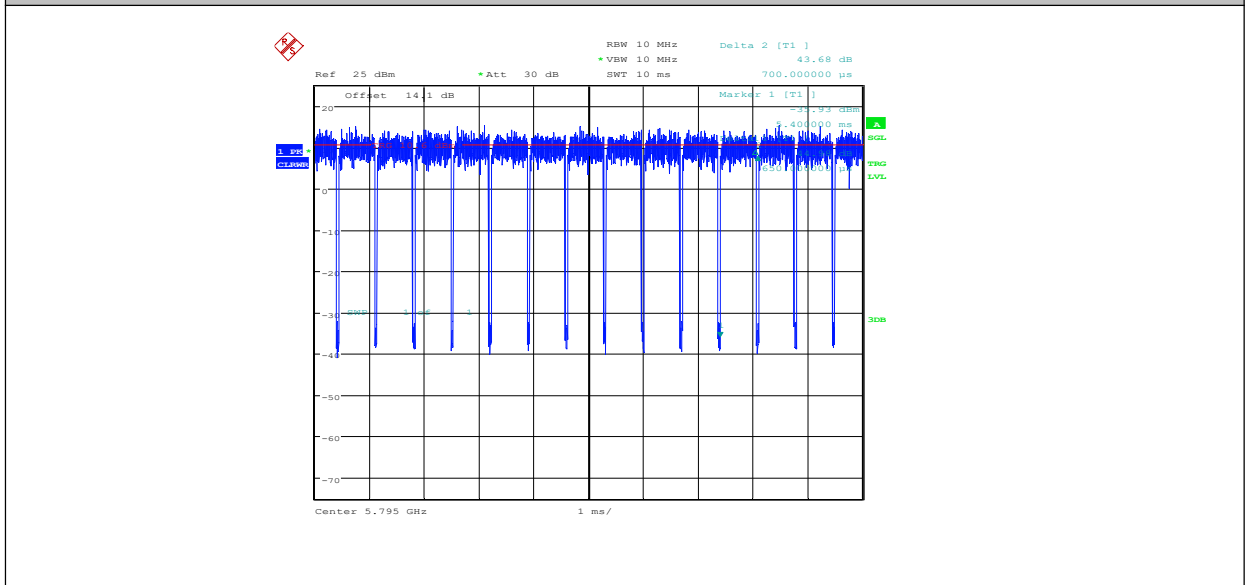
11AC20SISO\_Ant1\_5825



11AC40SISO\_Ant1\_5755



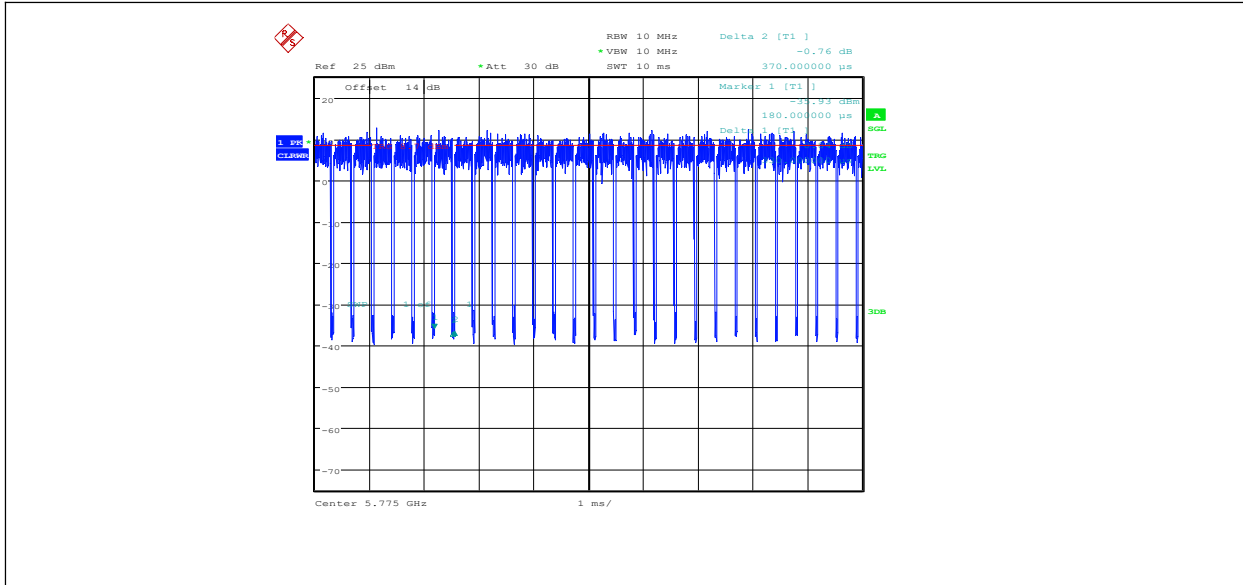
11AC40SISO\_Ant1\_5795



11AC80SISO\_Ant1\_5775

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### 6.3. Maximum conducted output power

<b>Specifications:</b>	FCC CRF Part 15.407(a)
<b>DUT Serial Number:</b>	S4
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

#### Measurement Limit and Method

Standard	Limit (dBm)
FCC CRF Part 15.407(a)	< 30

#### Measurement Uncertainty:

Measurement Uncertainty	±0.48dB
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The measurement method SA-2 is made according to KDB 789033 E

Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

1. Measure the duty cycle, x, of the transmitter output signal as described in II.B.
2. Set span to encompass the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
3. Set RBW = 1 MHz. (iv) Set VBW ≥ 3 MHz.
4. Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so

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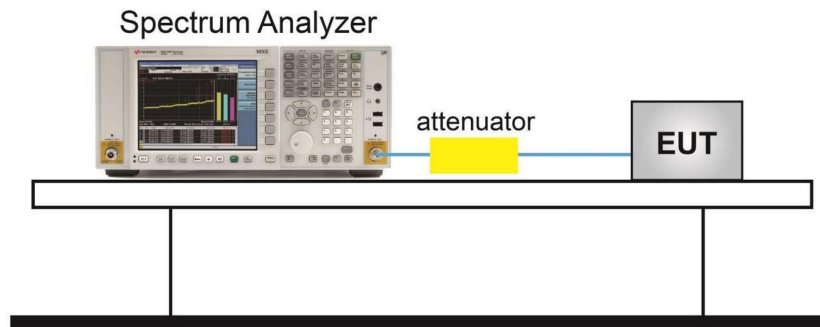
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that narrowband signals are not lost between frequency bins.)

5. Sweep time = auto.
6. Detector = power averaging (rms), if available. Otherwise, use sample detector mode.
7. Do not use sweep triggering. Allow the sweep to “free run.”
8. Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed to ensure that the average accurately represents the true average over the on and off periods of the transmitter.
9. Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument’s band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
2. Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add  $10 \log (1/0.25) = 6 \text{ dB}$  if the duty cycle is 25%

Test setup



Antenna gain of EUT

No.	Item(s)	Data
1	Antenna 0 gain of EUT	0.61 dBi

Note: The data is provided by the customer may affect the validity of the test results in this report, and the impact and consequences of this shall be undertaken by the customer.

Test Result Channel Power

Test Mode	Frequency [MHz]	Set Power	Channel Power [dBm]	Duty Cycle [%]	DC Factor [dBm]	Result [dBm]	Limit [dBm]	Gain [dBi]	EIRP [dBm]	Verdict
11A	5745	15	11.78	97.20	0.12	11.90	≤30.00	0.61	12.51	PASS
	5785	15	10.89	96.53	0.15	11.04	≤30.00	0.61	11.65	PASS
	5825	15	10.60	96.53	0.15	10.75	≤30.00	0.61	11.36	PASS
11N20SISO	5745	14	11.82	96.30	0.16	11.98	≤30.00	0.61	12.59	PASS
	5785	14	11.00	96.30	0.16	11.16	≤30.00	0.61	11.77	PASS
	5825	14	10.37	96.30	0.16	10.53	≤30.00	0.61	11.14	PASS
11N40SISO	5755	14	11.24	94.20	0.26	11.50	≤30.00	0.61	12.11	PASS
	5795	14	10.60	92.86	0.32	10.92	≤30.00	0.61	11.53	PASS
11AC20SISO	5745	14	11.80	97.04	0.13	11.93	≤30.00	0.61	12.54	PASS
	5785	14	10.86	96.32	0.16	11.02	≤30.00	0.61	11.63	PASS
	5825	14	10.38	96.32	0.16	10.54	≤30.00	0.61	11.15	PASS
11AC40SISO	5755	14	11.18	94.20	0.26	11.44	≤30.00	0.61	12.05	PASS
	5795	14	10.41	92.86	0.32	10.73	≤30.00	0.61	11.34	PASS
11AC80SISO	5775	13.5	10.53	89.19	0.50	11.03	≤30.00	0.61	11.64	PASS

Note: The Duty Cycle Factor is compensated in the graph.

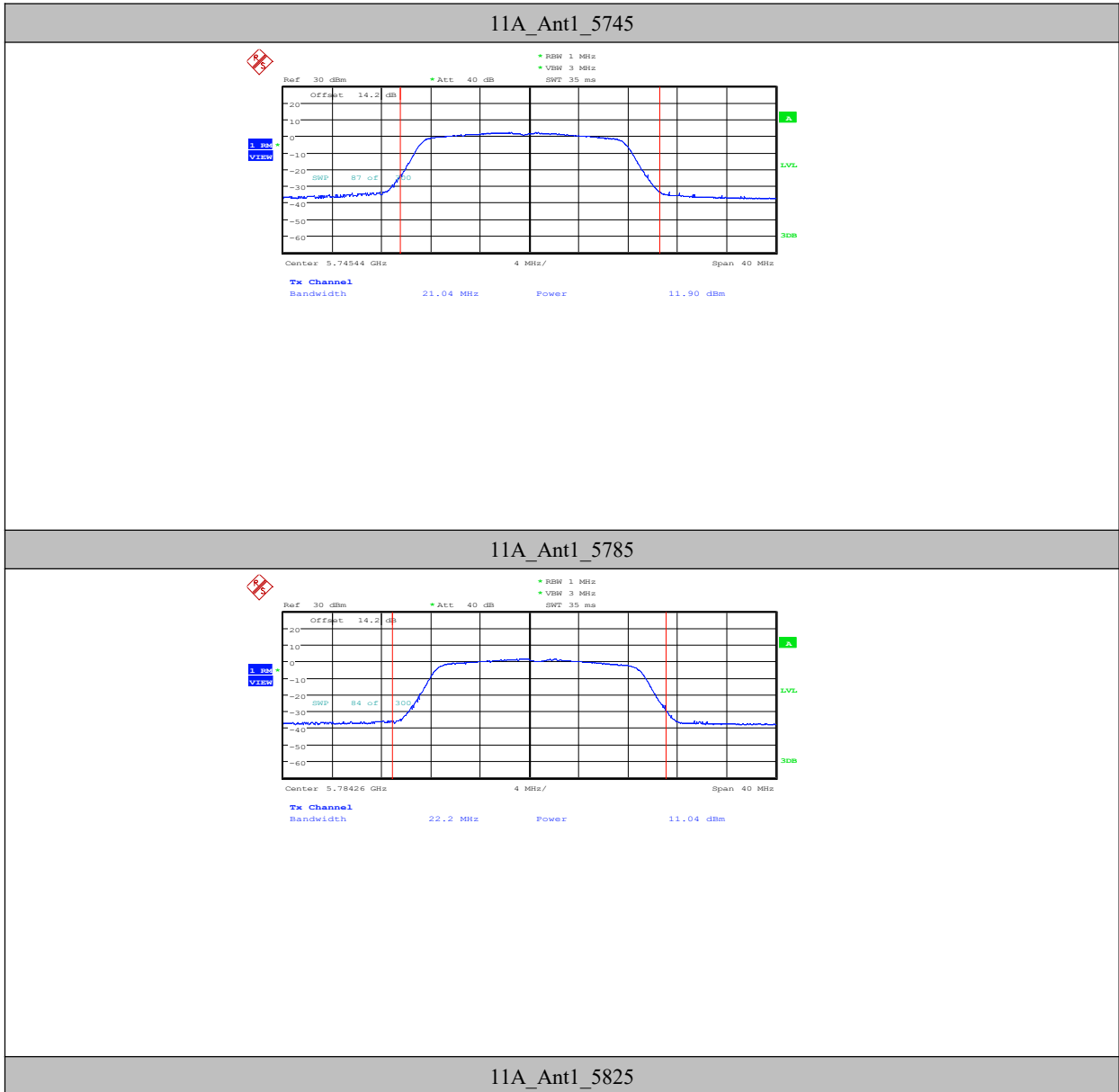
The 11a data rate 6Mbps is selected as worse condition, 11n/11ac data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

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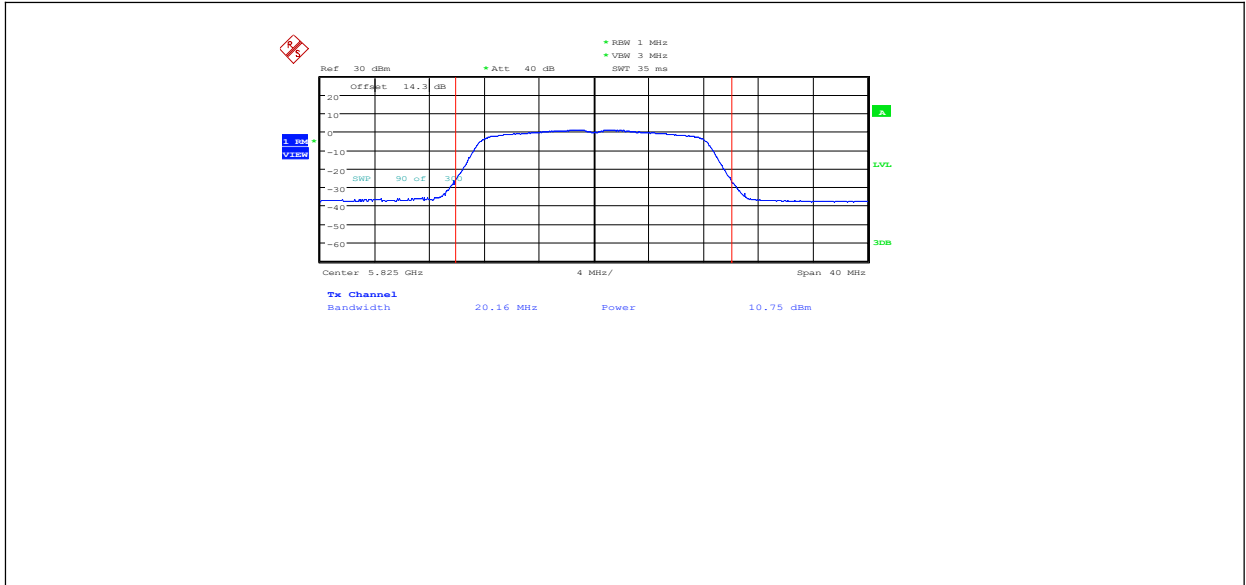


Test Graphs Channel Power

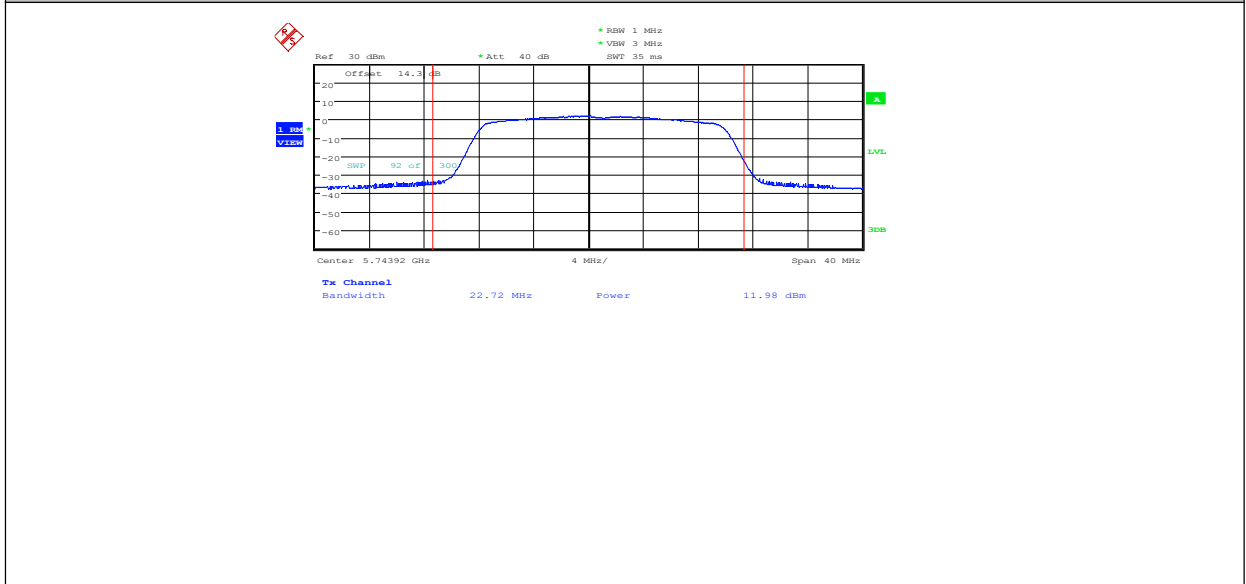


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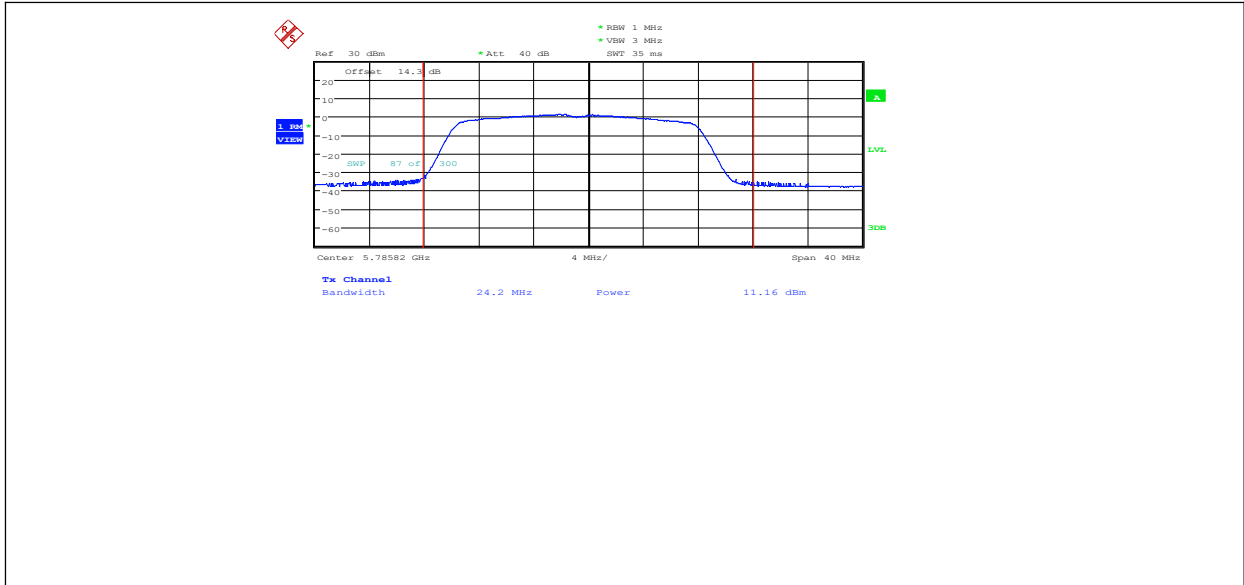
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Tel: 0086-23-88069965    FAX: 0086-23-88608777



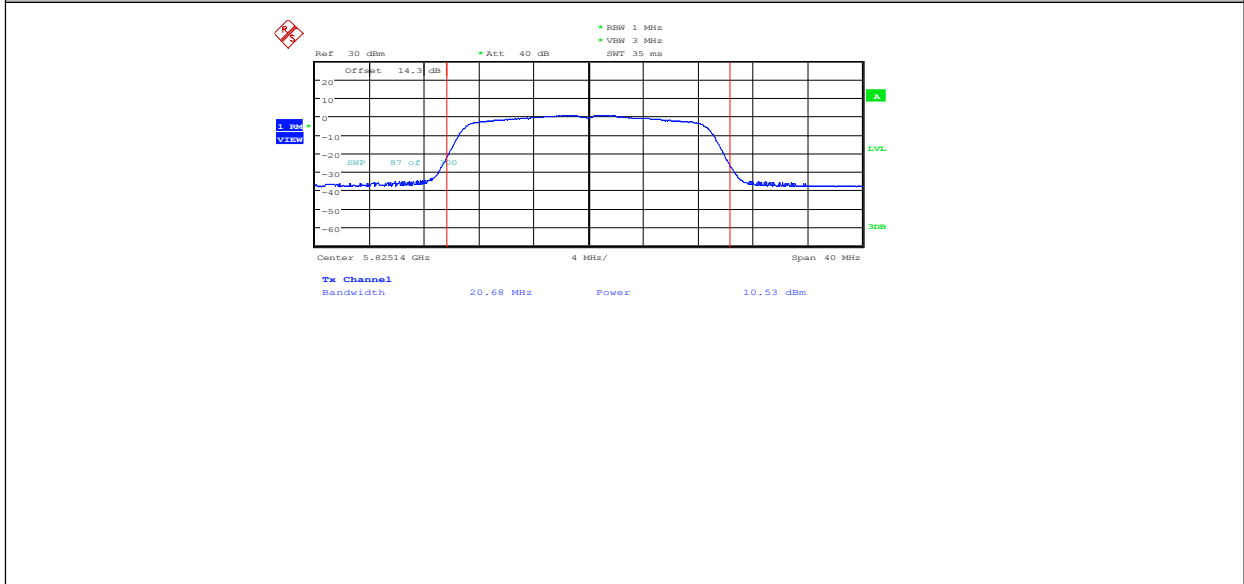
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11N20SISO\_Ant1\_5785



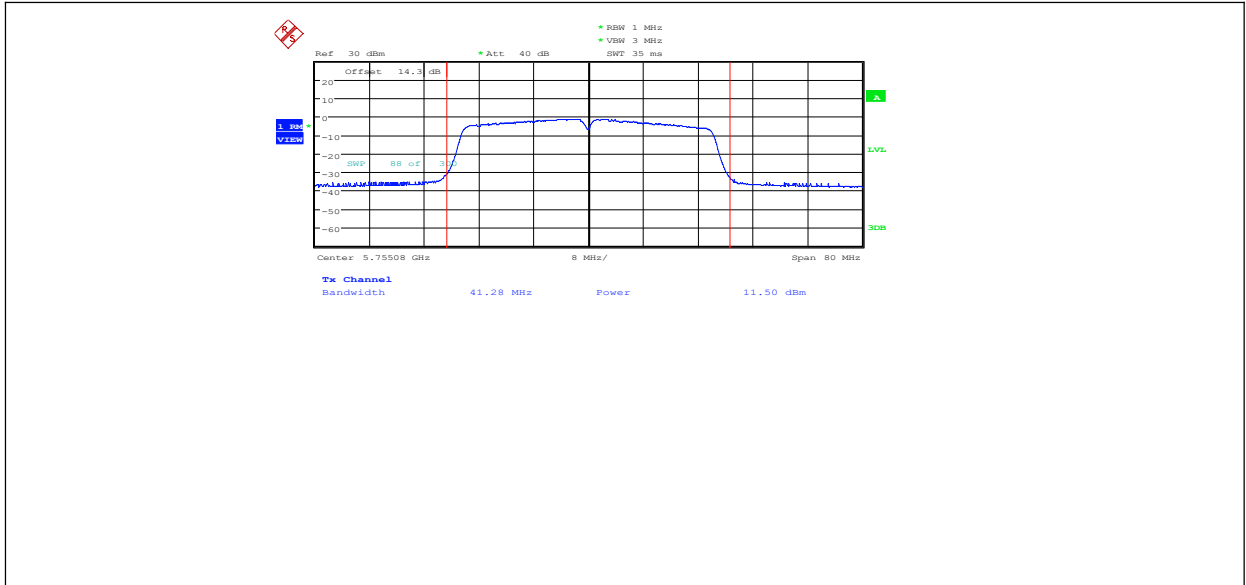
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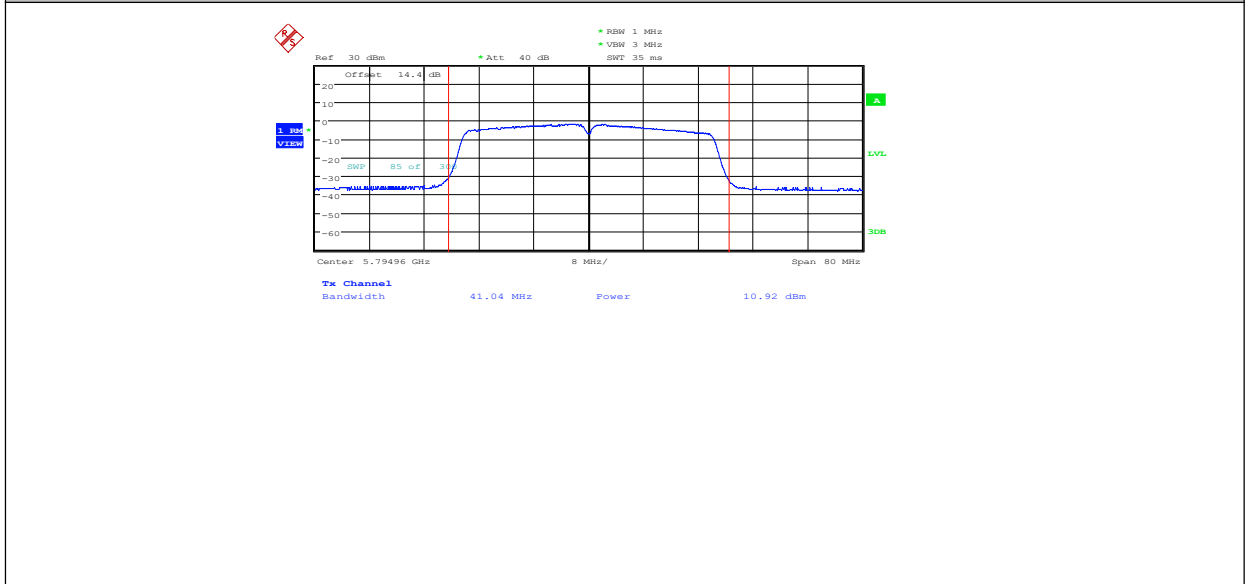
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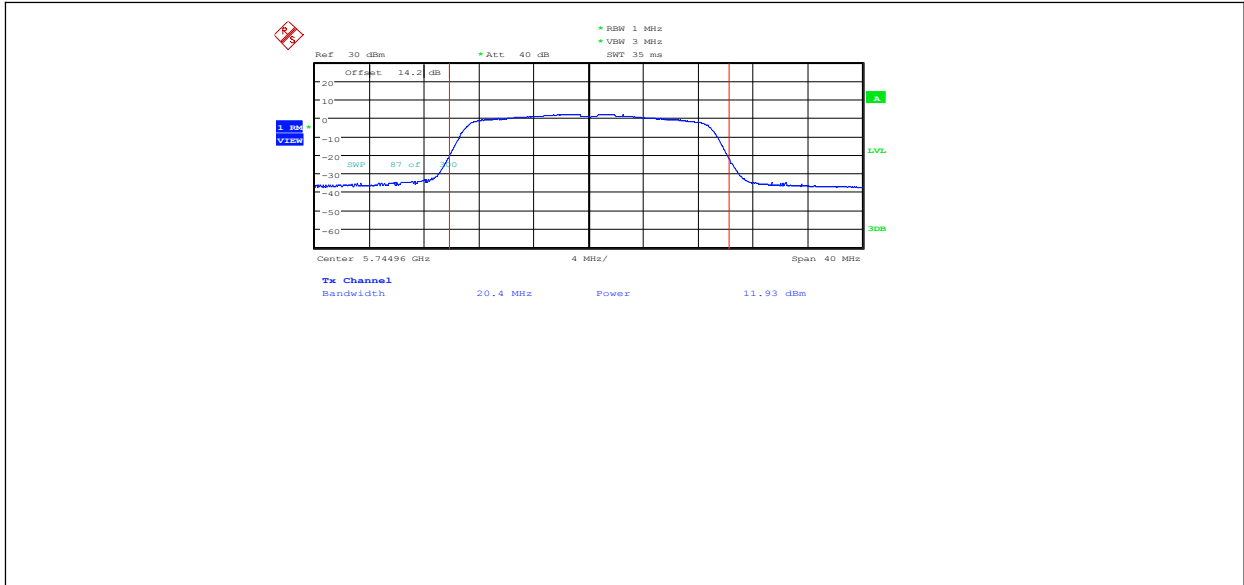
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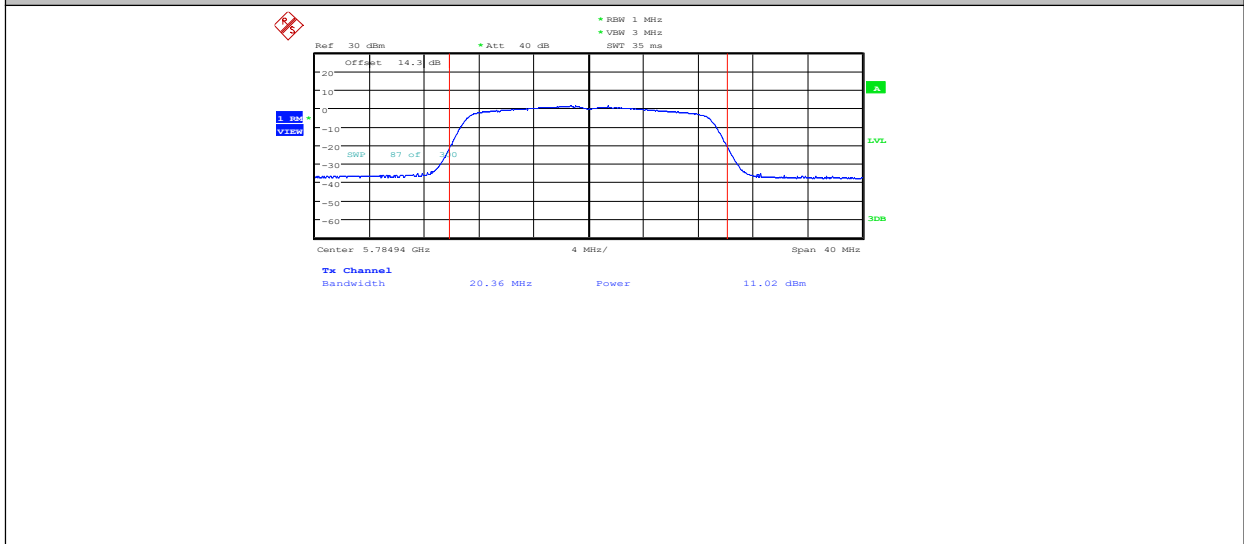
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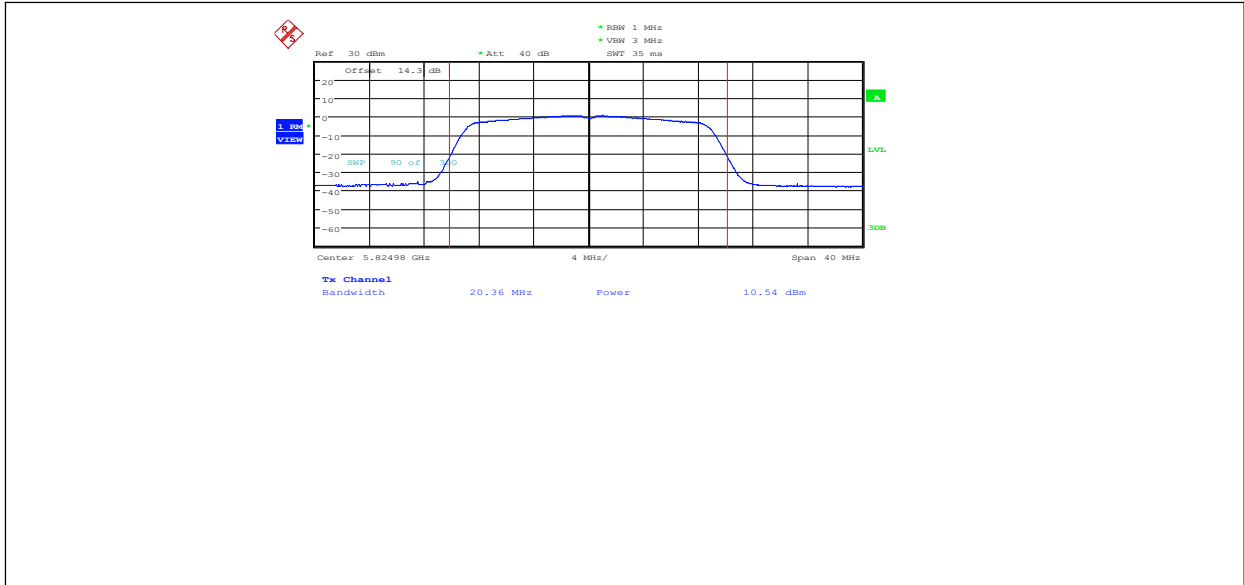
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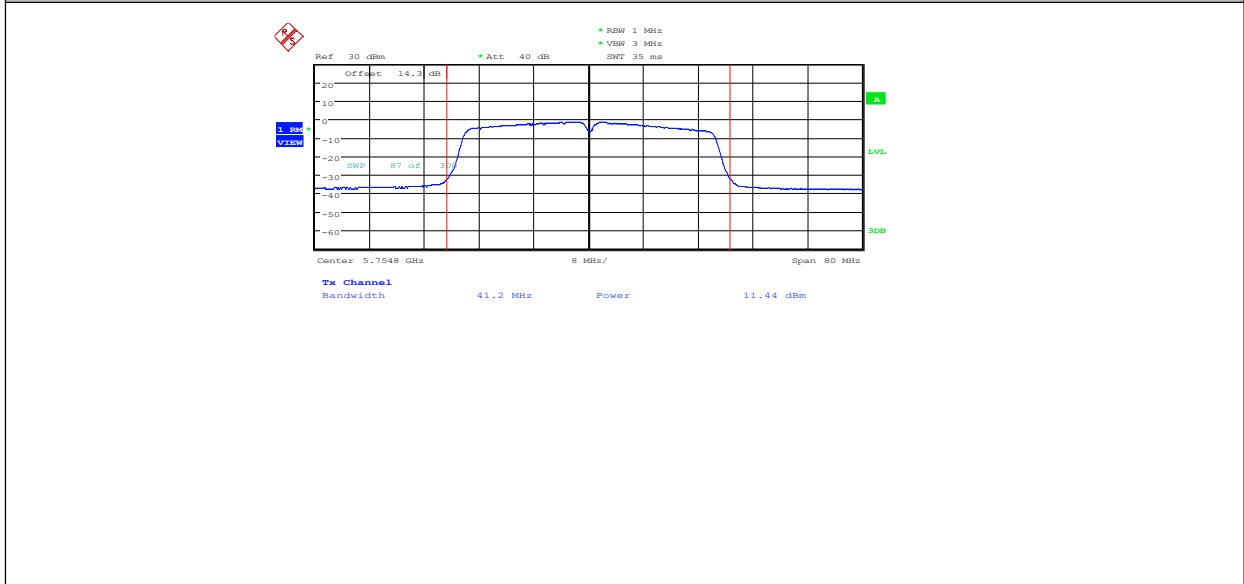
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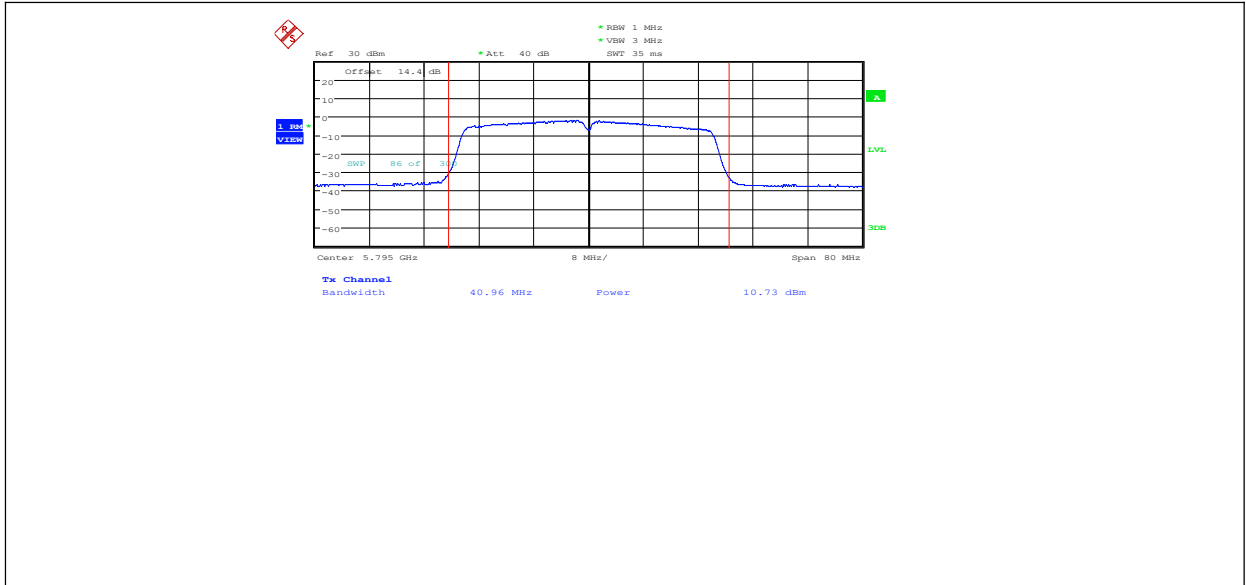
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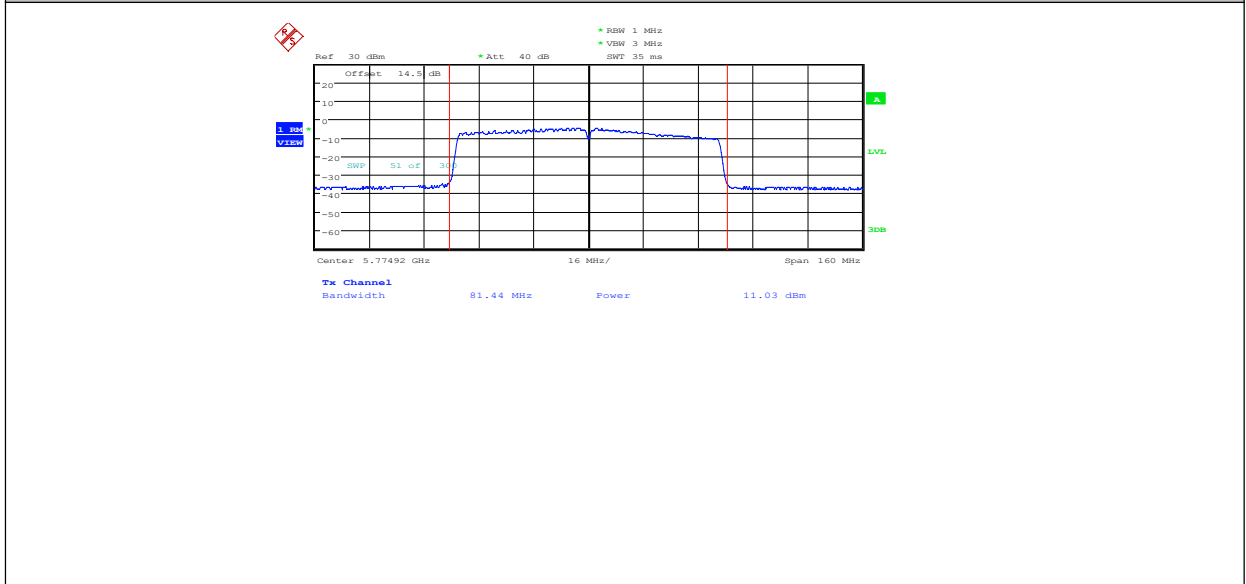
11AC40SISO\_Ant1\_5755



11AC40SISO\_Ant1\_5795



11AC80SISO\_Ant1\_5775



#### 6.4. Maximum power spectral density

<b>Specifications:</b>	FCC CRF Part 15.407(a)
<b>DUT Serial Number:</b>	S4
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

##### Measurement Limit and Method

Standard	Limit
FCC 47 CFR Part 15.407(a)	< 30 dBm/500 kHz

##### Measurement Uncertainty:

Measurement Uncertainty	±0.48dB
-------------------------	---------

The measurement method is made according to KDB 789033 F

1. Create an average power spectrum for the EUT operating mode being tested by following the instructions in II.E.2. for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, “Compute power...” (This procedure is required even if the maximum conducted output power measurement was performed using a power meter, method PM.)
2. Use the peak search function on the instrument to find the peak of the spectrum and record its value.
3. Make the following adjustments to the peak value of the spectrum, if applicable:
  - a) If Method SA-2 or SA-2 Alternative was used, add  $10 \log(1/x)$ , where x is the duty cycle, to the peak of the spectrum.
  - b) If Method SA-3 Alternative was used and the linear mode was used in step II.E.2.g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.
4. The result is the Maximum PSD over 1 MHz reference bandwidth.
5. For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in Section 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may

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need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 kHz bandwidth, the following adjustments to the procedures apply:

a) Set  $RBW \geq 1/T$ , where  $T$  is defined in II.B.1.a).

b) Set  $VBW \geq 3 RBW$ .

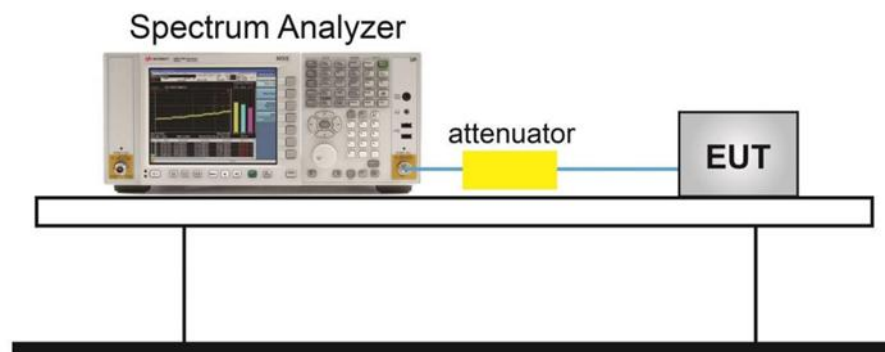
c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log(500 \text{ kHz}/RBW)$  to the measured result, whereas  $RBW (< 500 \text{ kHz})$  is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10 \log(1\text{MHz}/RBW)$  to the measured result, whereas  $RBW (< 1 \text{ MHz})$  is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for steps 5.c) and 5.d) above, since  $RBW=100 \text{ KHZ}$  is available on nearly all spectrum analyzers.

Test setup



**Test Result**

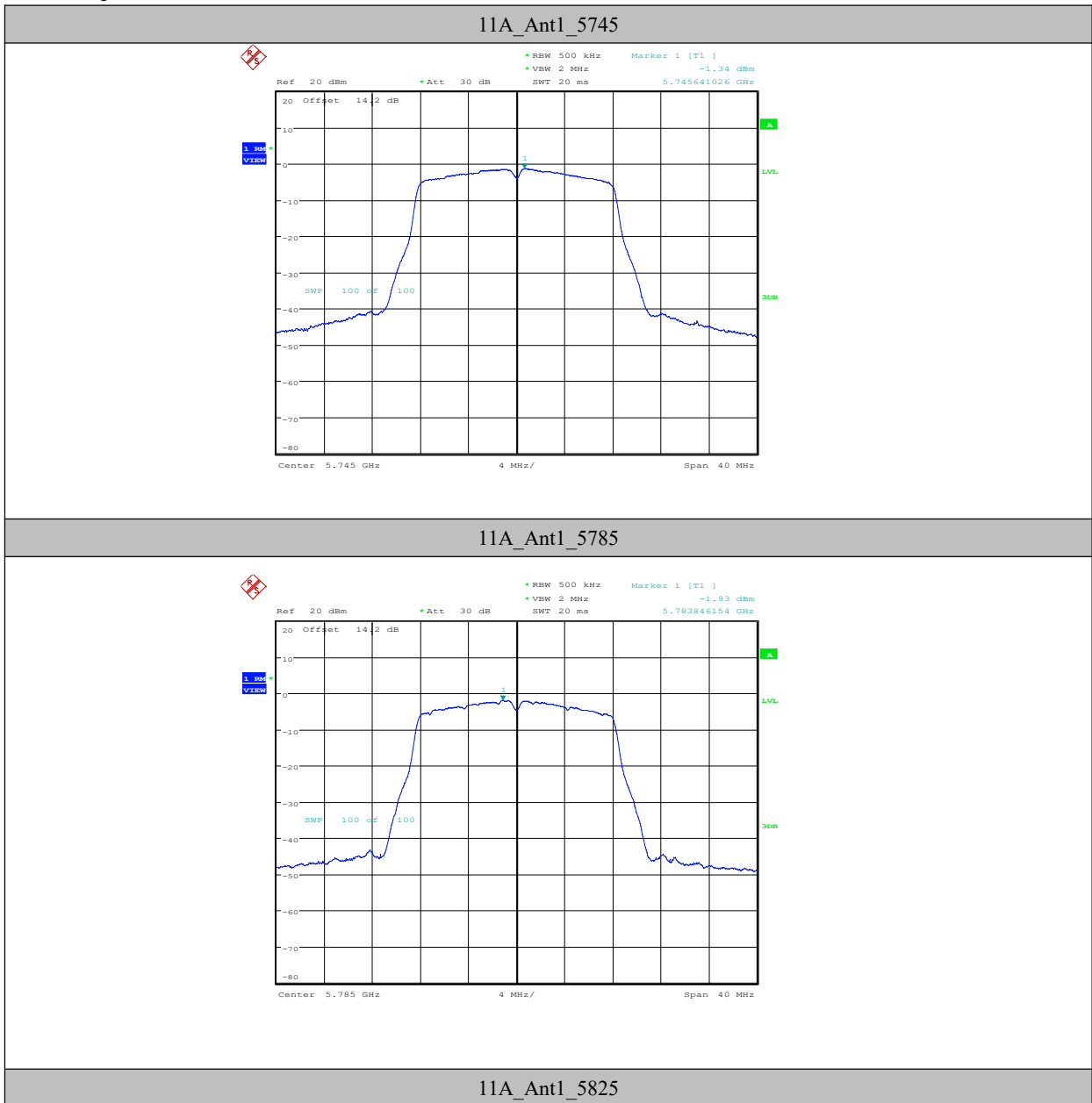
TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5745	-1.34	$\leq 30.00$	PASS
		5785	-1.93	$\leq 30.00$	PASS
		5825	-2.24	$\leq 30.00$	PASS
11N20SISO	Ant1	5745	-1.46	$\leq 30.00$	PASS
		5785	-2.03	$\leq 30.00$	PASS
		5825	-2.7	$\leq 30.00$	PASS
11N40SISO	Ant1	5755	-4.72	$\leq 30.00$	PASS
		5795	-5.27	$\leq 30.00$	PASS
11AC20SISO	Ant1	5745	-1.53	$\leq 30.00$	PASS
		5785	-2.21	$\leq 30.00$	PASS
		5825	-2.67	$\leq 30.00$	PASS
11AC40SISO	Ant1	5755	-4.78	$\leq 30.00$	PASS
		5795	-5.35	$\leq 30.00$	PASS
11AC80SISO	Ant1	5775	-8.15	$\leq 30.00$	PASS

Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.  
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

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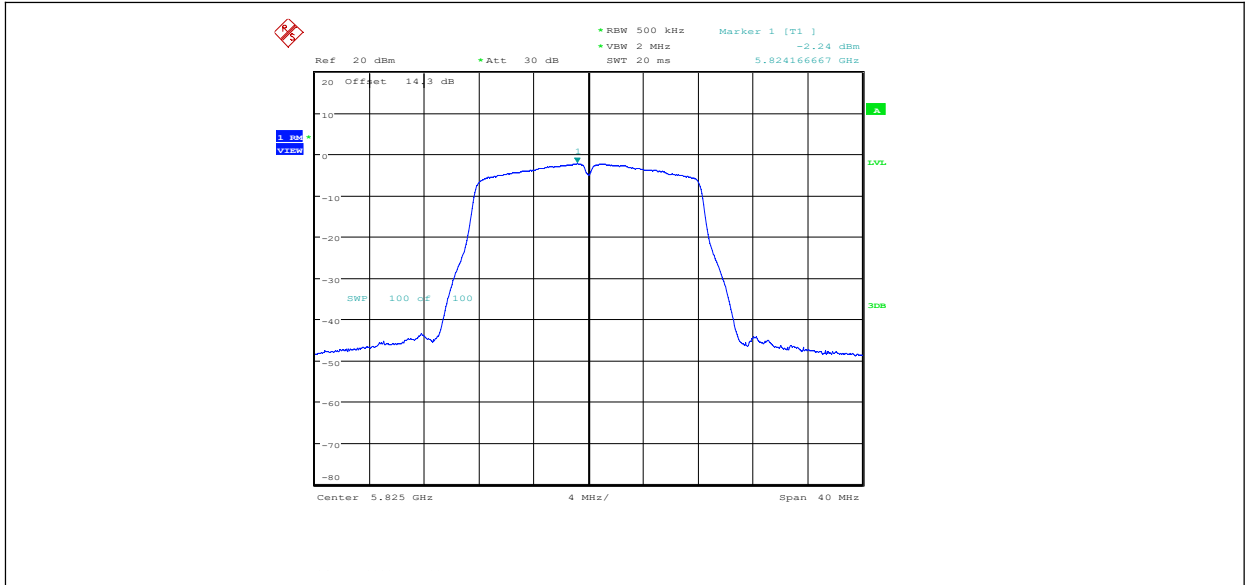
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Test Graphs

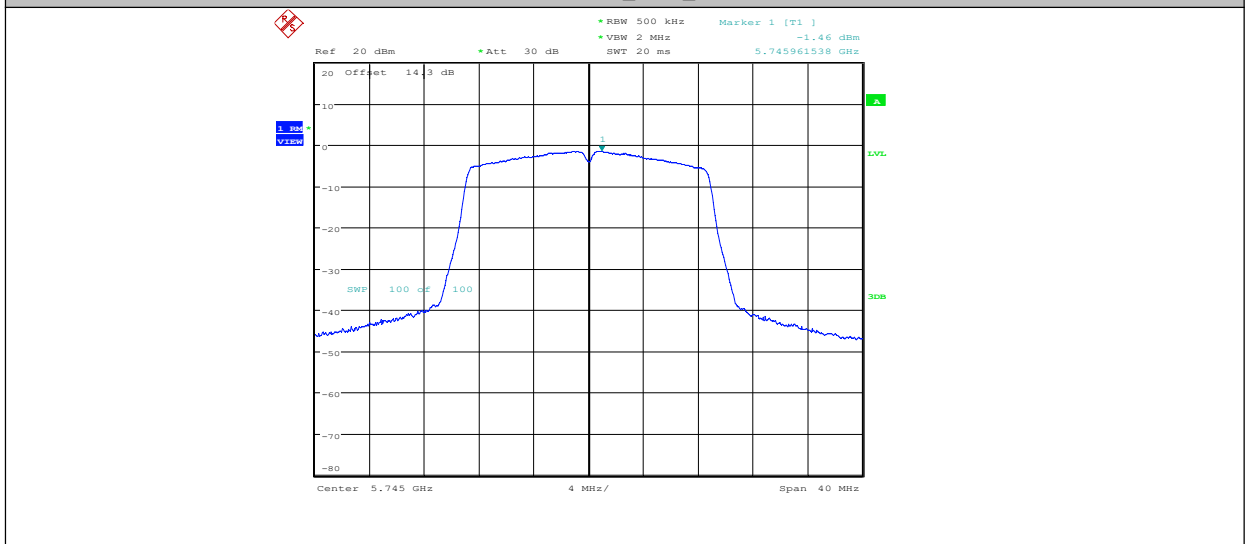


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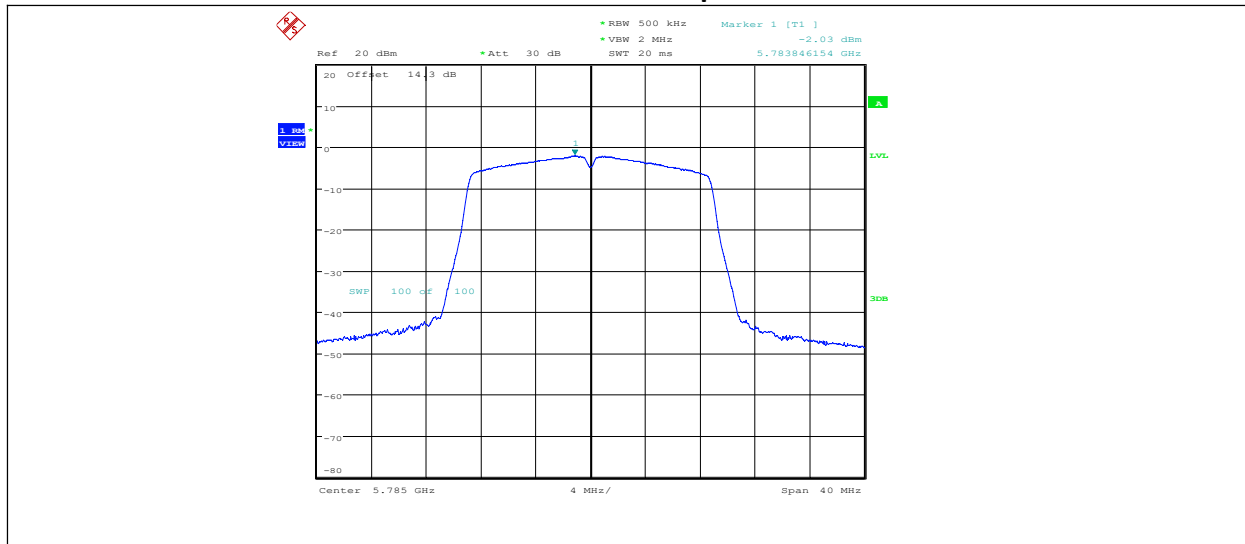
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336  
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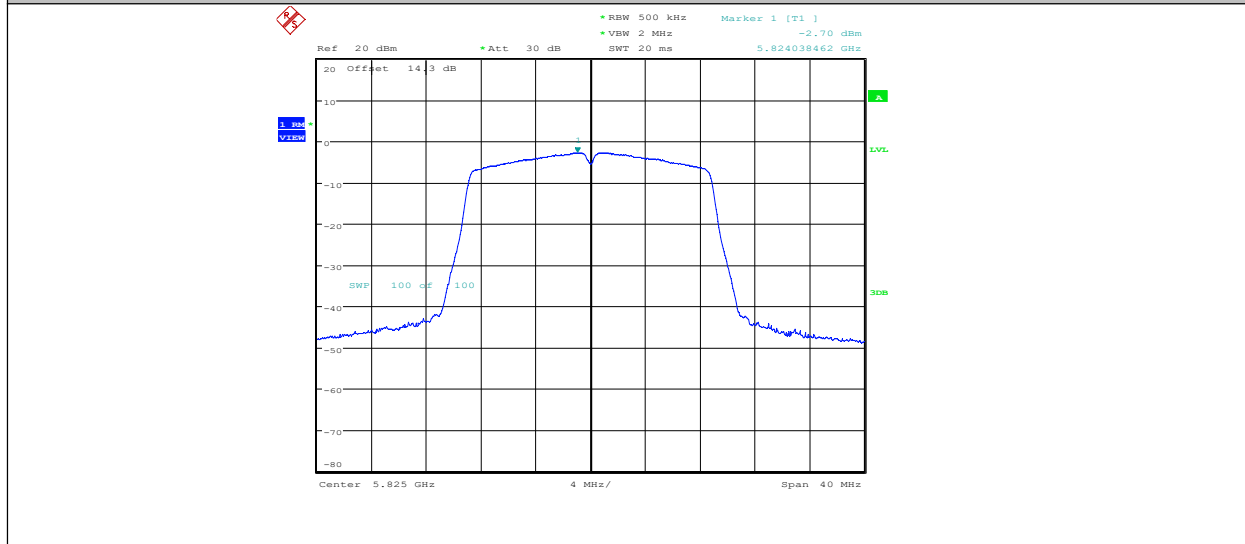
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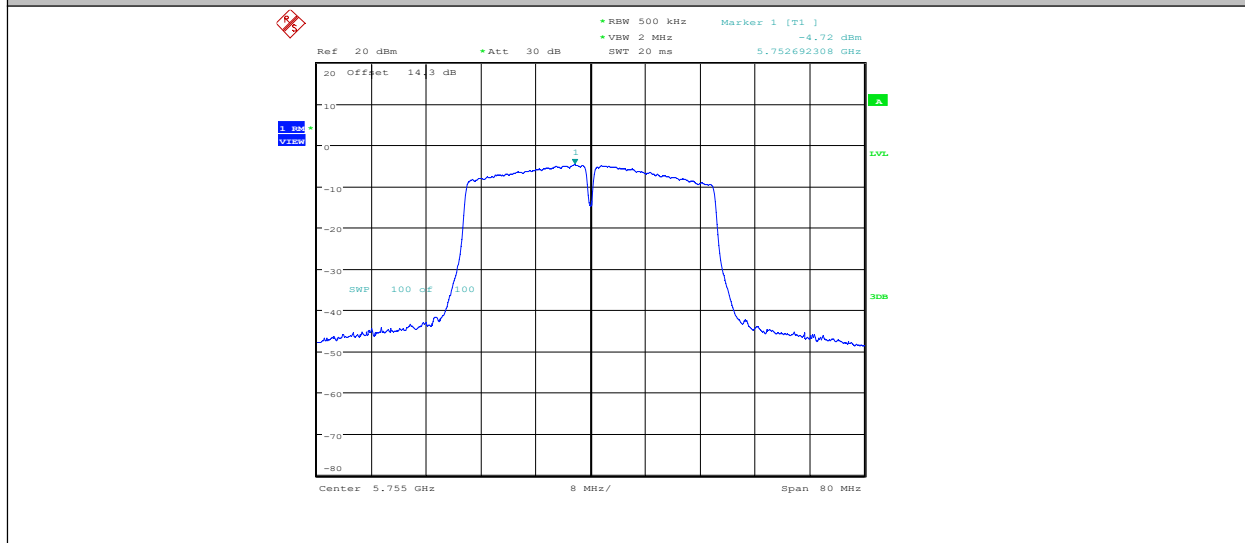
11N20SISO\_Ant1\_5785



11N20SISO\_Ant1\_5825



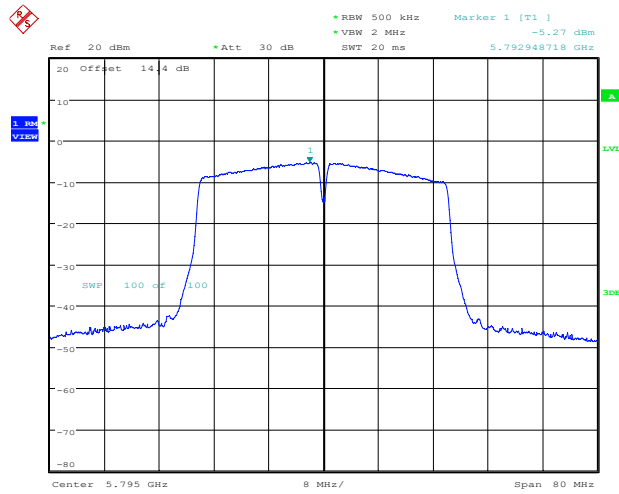
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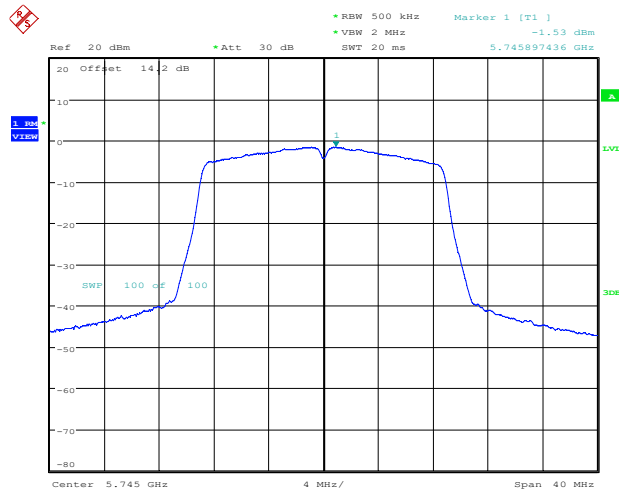
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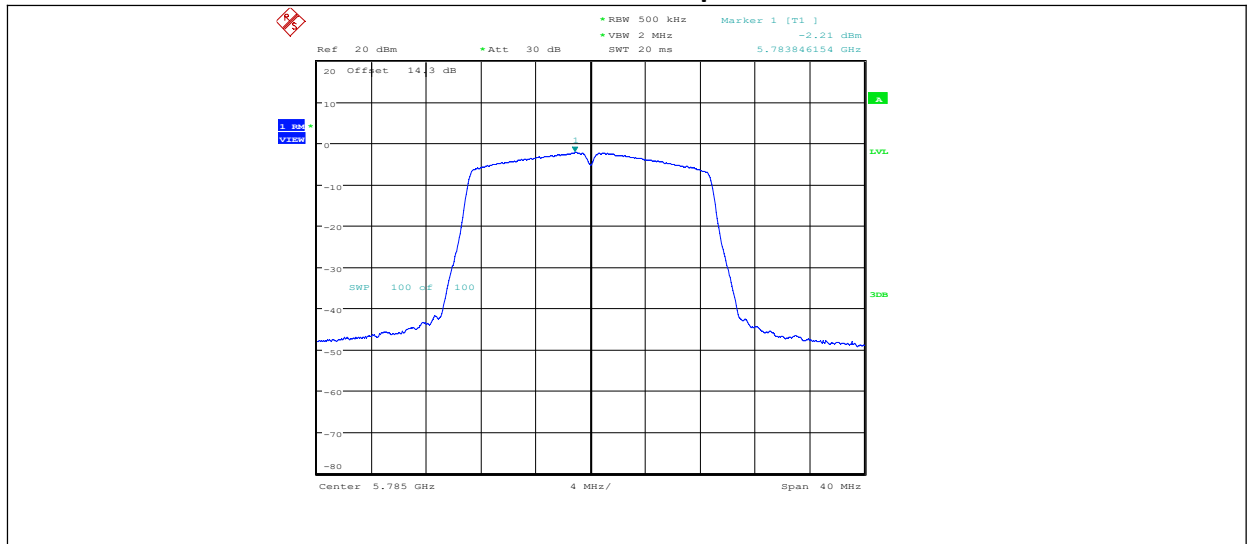
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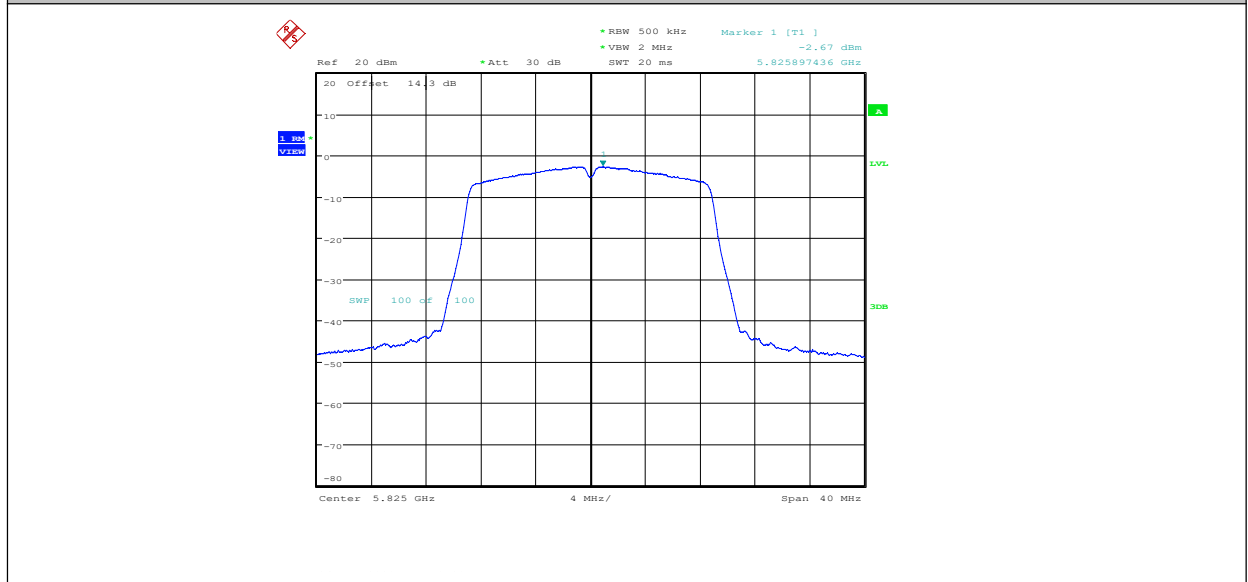
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11AC20SISO\_Ant1\_5785



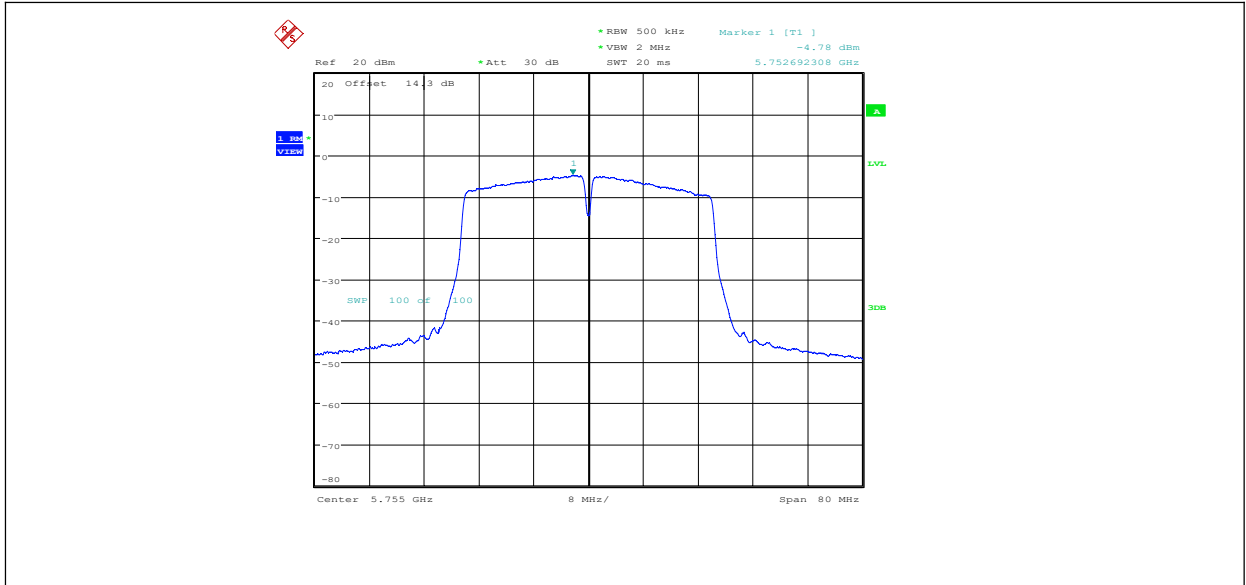
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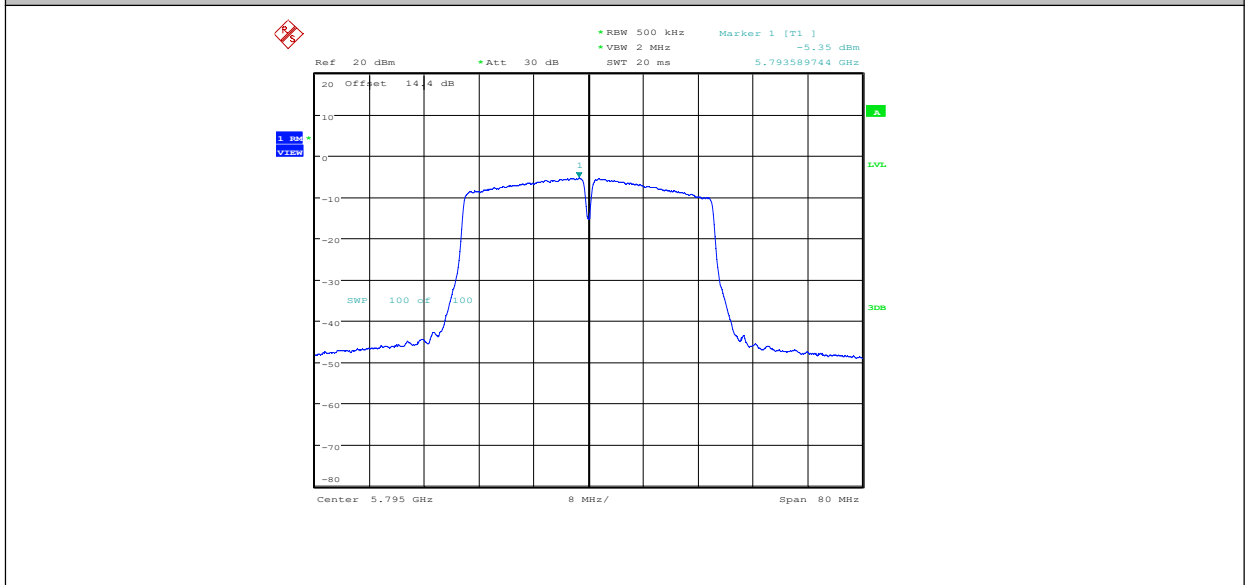
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11AC40SISO\_Ant1\_5795

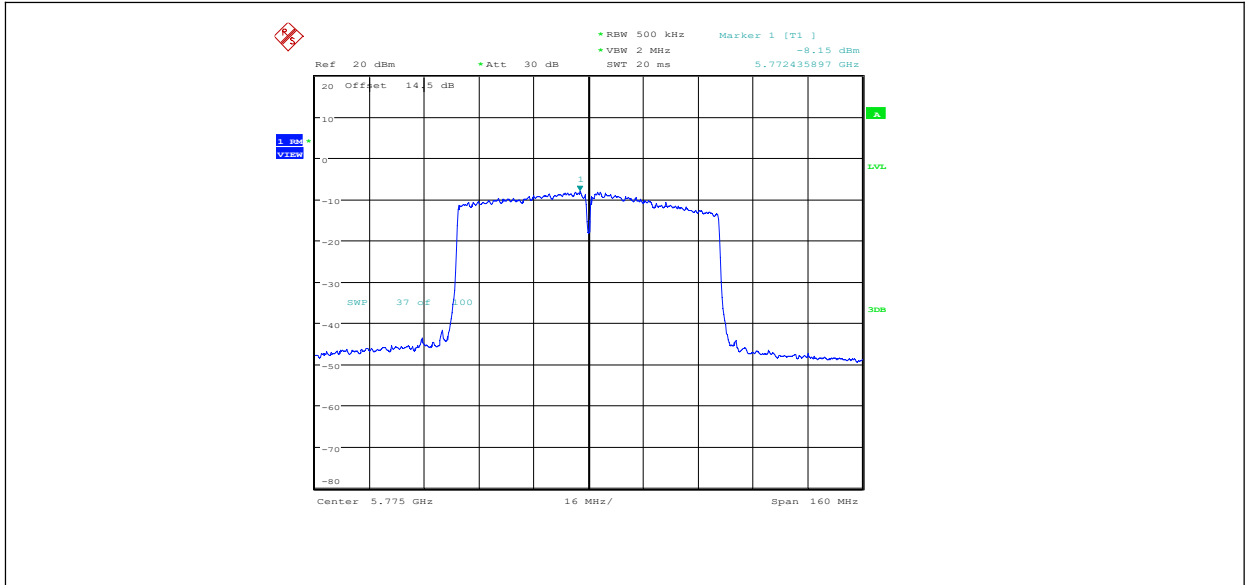


11AC80SISO\_Ant1\_5775

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### 6.5. 6dB Occupied Bandwidth

<b>Specifications:</b>	FCC 47 CFR Part 15.407(e)
<b>DUT Serial Number:</b>	S4
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

Measurement Limit and Method

Standard	Limit(KHz)
FCC 47 CFR Part 15.407(e)	≥500

Measurement Uncertainty:

Measurement Uncertainty	28KHz
-------------------------	-------

The measurement is made according to KDB 789033 C

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 kHz for the band 5.725-5.85GHz. The following procedure shall be used for measuring this bandwidth:

- a) Set RBW= 100 kHz.
- b) Set the video bandwidth (VBW) ≥ 3 × RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated

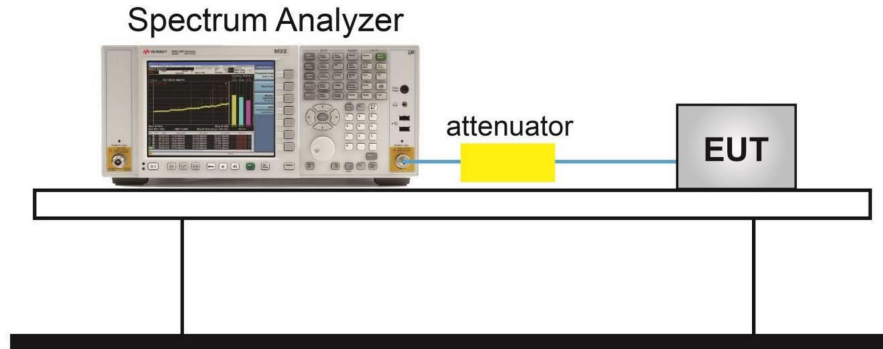
with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: The automatic bandwidth measurement capability of a spectrum analyzer or EMI receiver maybe employed if it implements the functionality described above.

Test Setup

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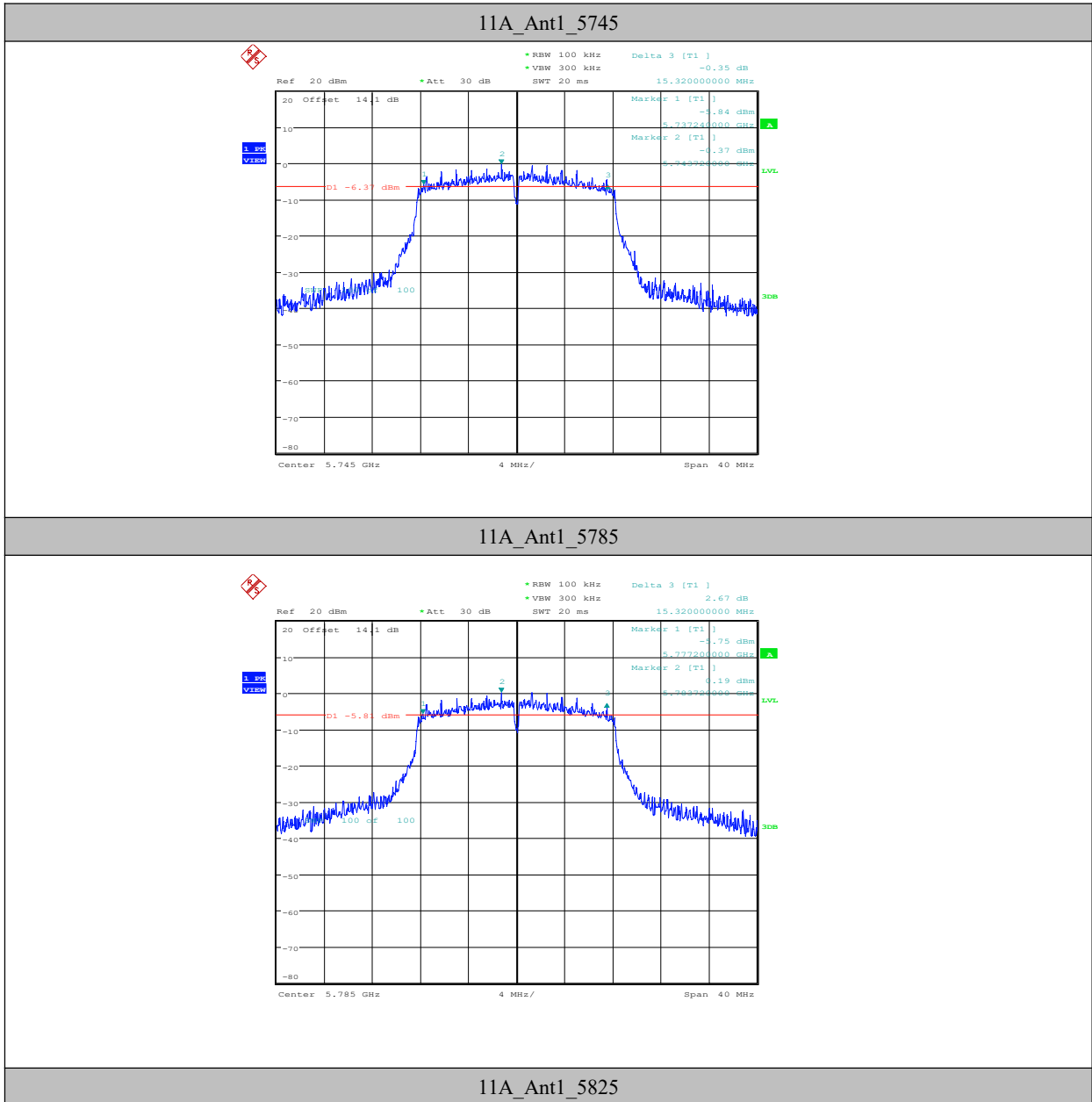
Test Result

TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	15.32	5737.24	5752.56	0.5	PASS
		5785	15.32	5777.20	5792.52	0.5	PASS
		5825	15.08	5817.48	5832.56	0.5	PASS
11N20SISO	Ant1	5745	15.48	5737.08	5752.56	0.5	PASS
		5785	15.08	5777.44	5792.52	0.5	PASS
		5825	15.32	5817.44	5832.76	0.5	PASS
11N40SISO	Ant1	5755	35.12	5737.40	5772.52	0.5	PASS
		5795	35.12	5777.40	5812.52	0.5	PASS
11AC20SISO	Ant1	5745	15.08	5737.48	5752.56	0.5	PASS
		5785	15.12	5777.44	5792.56	0.5	PASS
		5825	15.04	5817.44	5832.48	0.5	PASS
11AC40SISO	Ant1	5755	35.04	5737.48	5772.52	0.5	PASS
		5795	35.12	5777.40	5812.52	0.5	PASS
11AC80SISO	Ant1	5775	75.20	5737.40	5812.60	0.5	PASS

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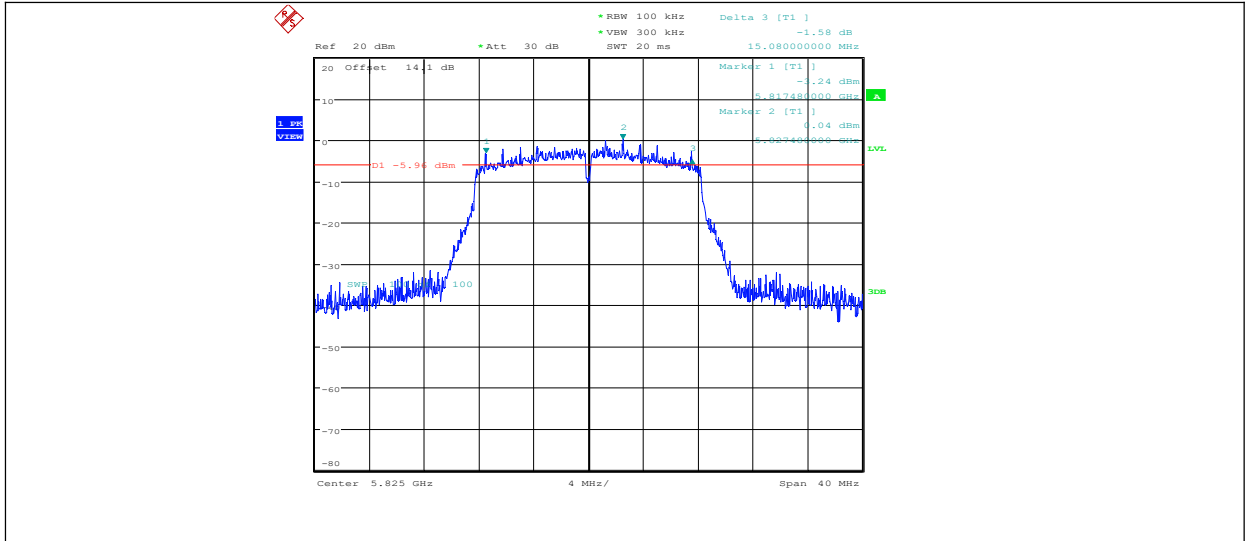
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Test Graphs

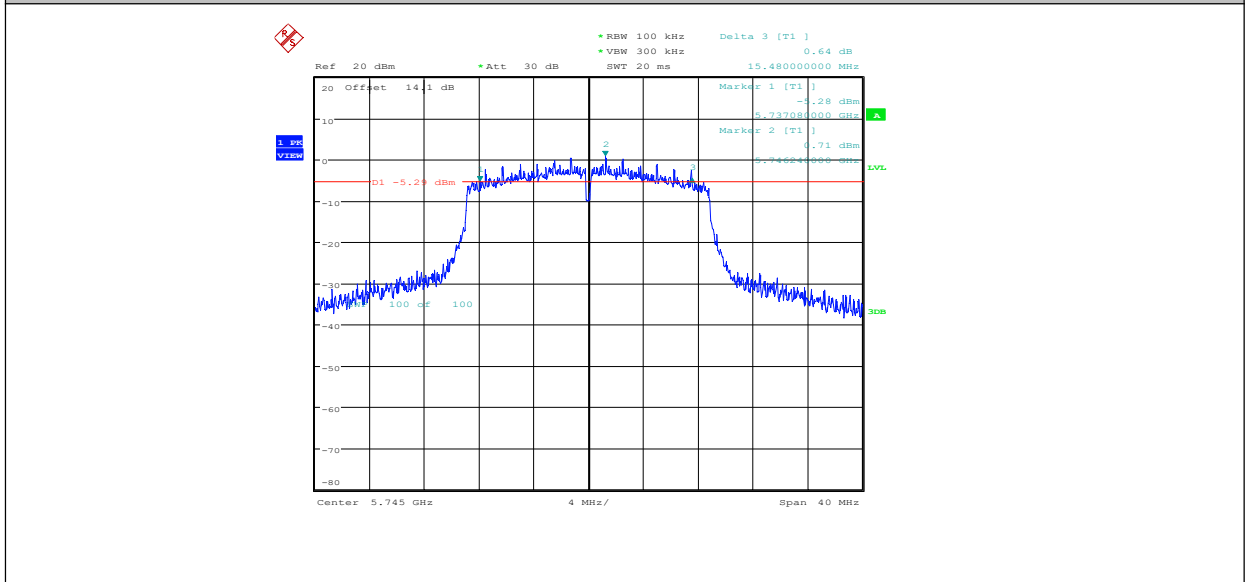


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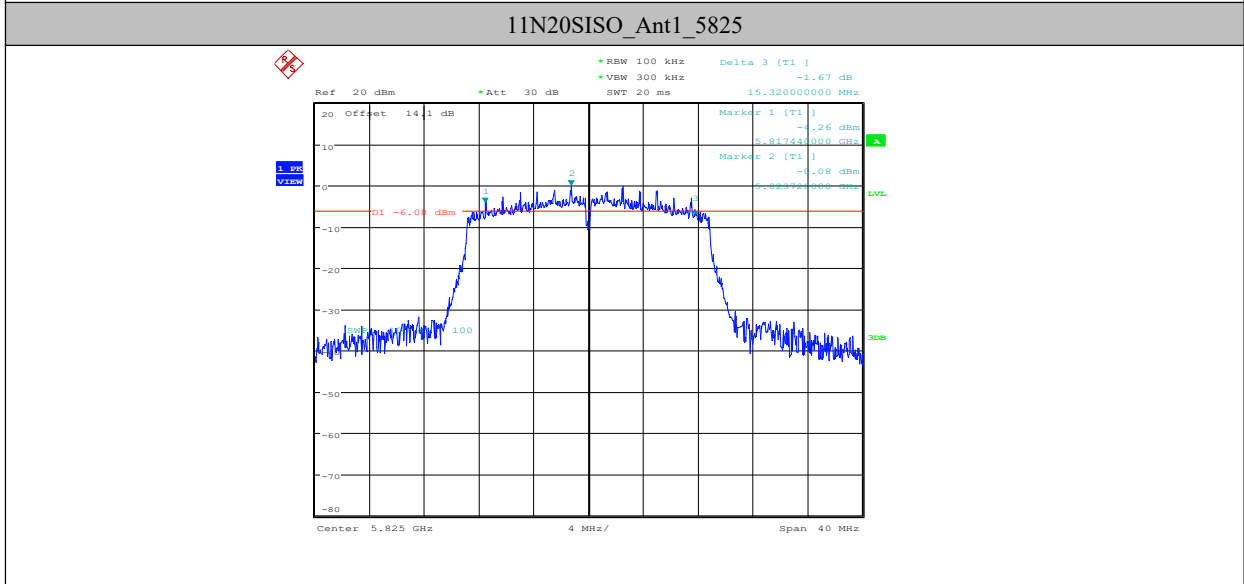
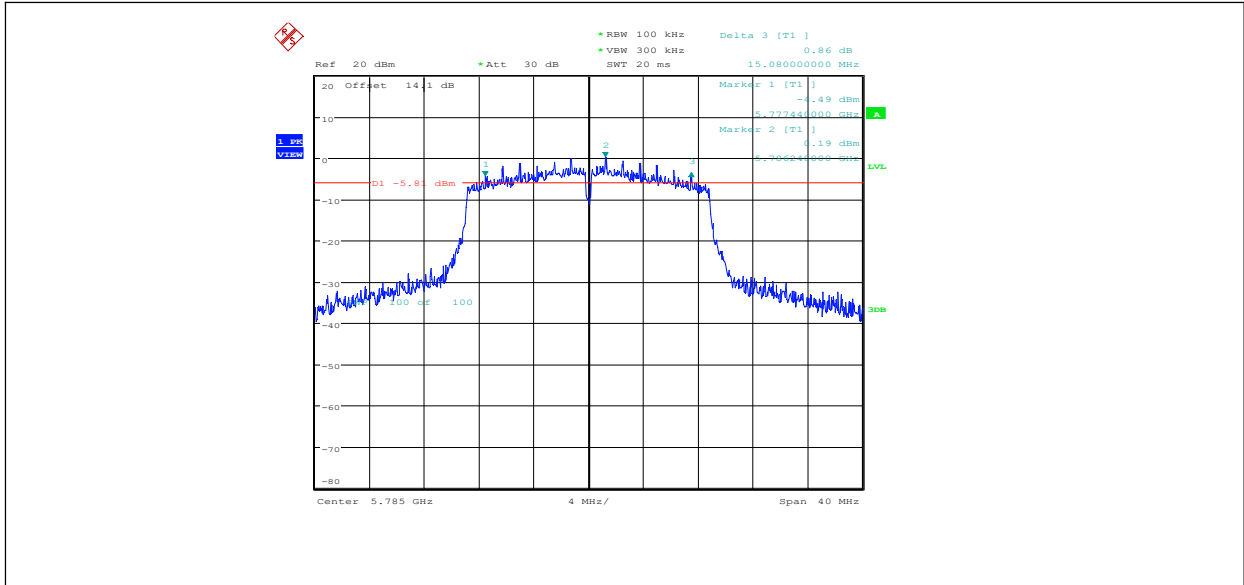
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11N20SISO\_Ant1\_5785

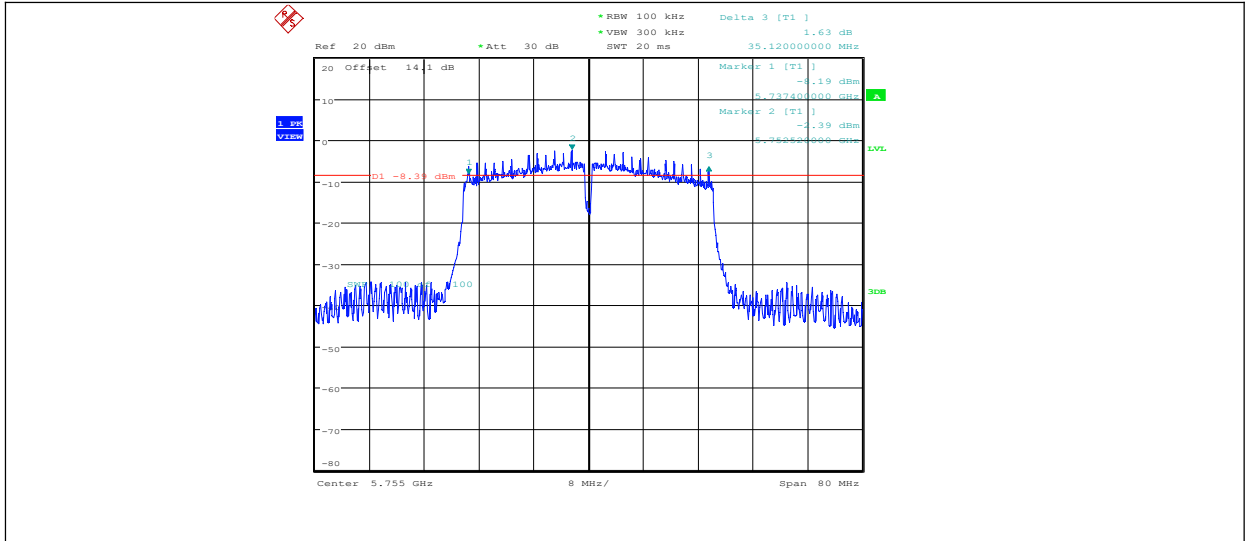
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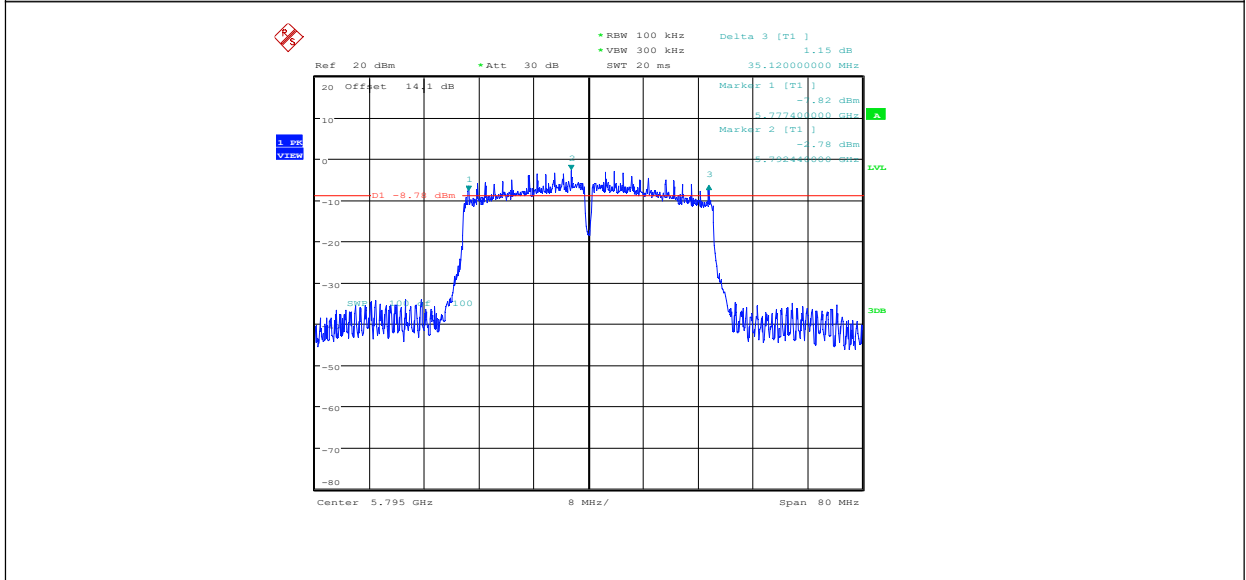


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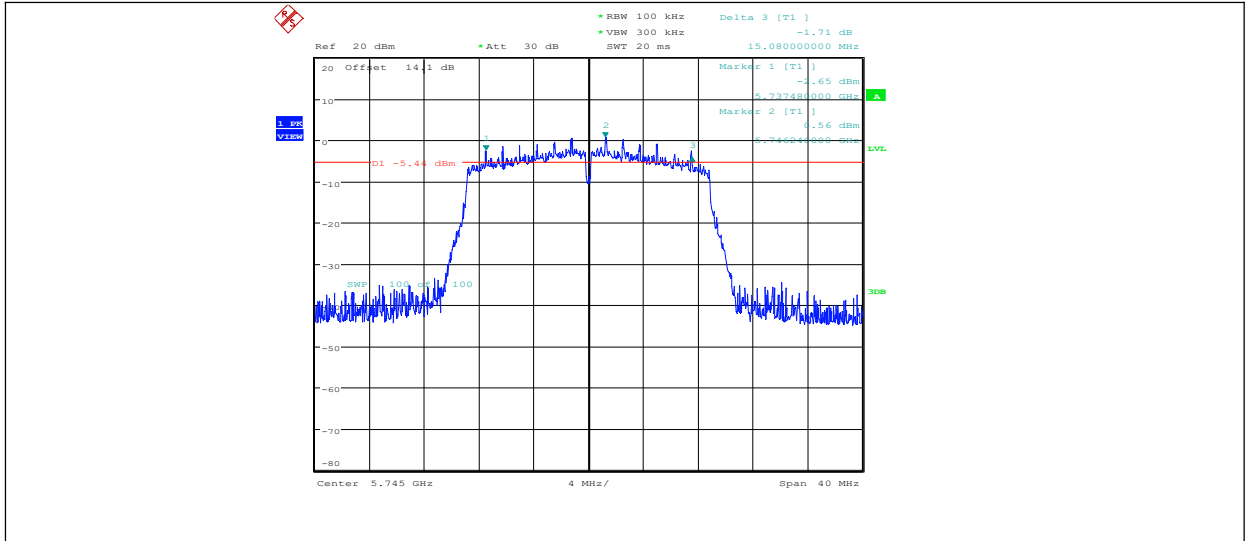
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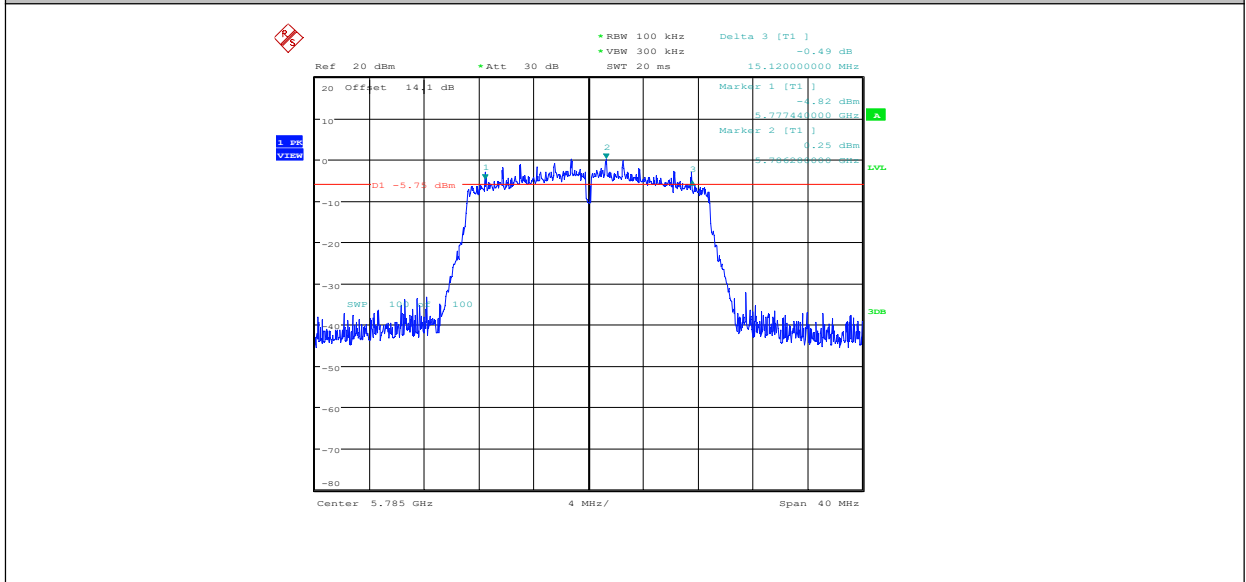
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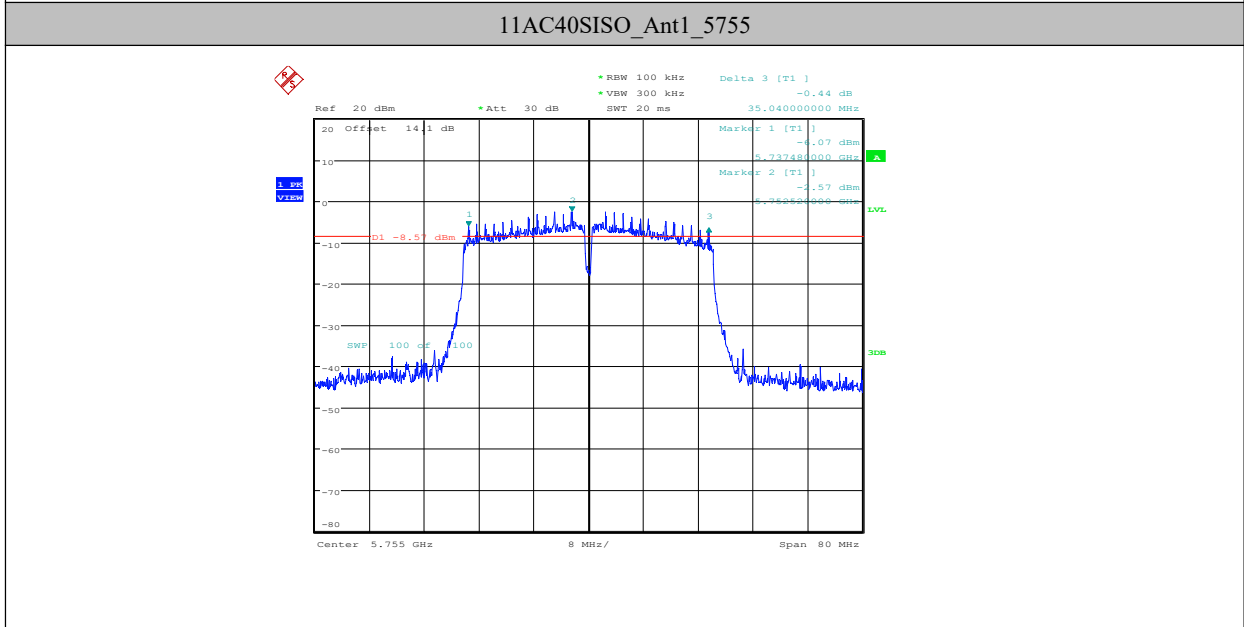
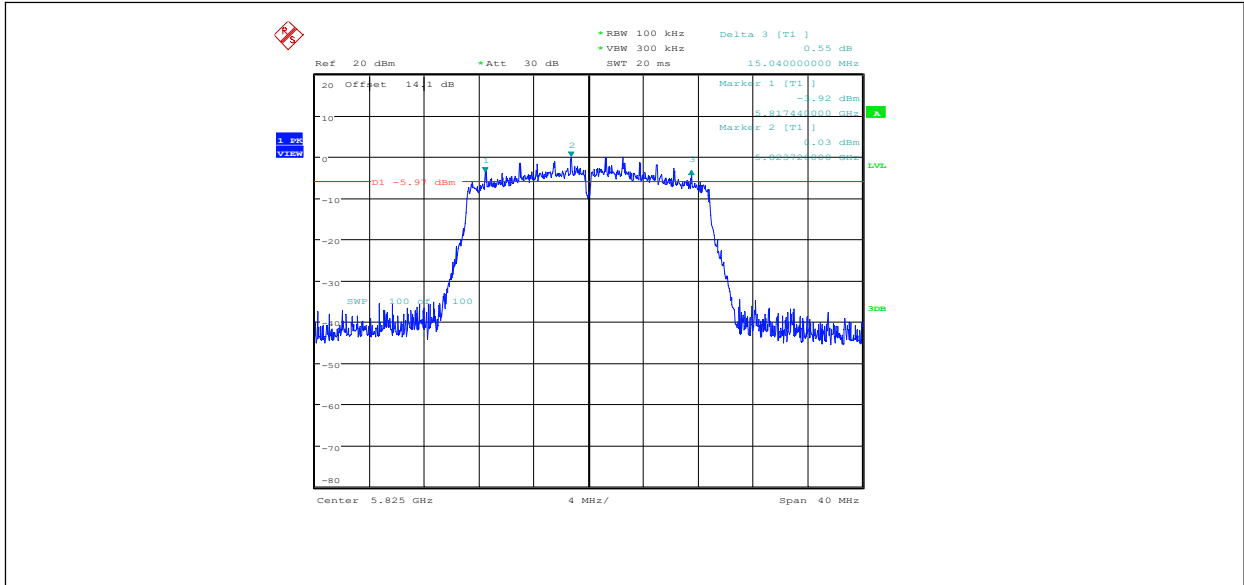


11AC20SISO\_Ant1\_5785



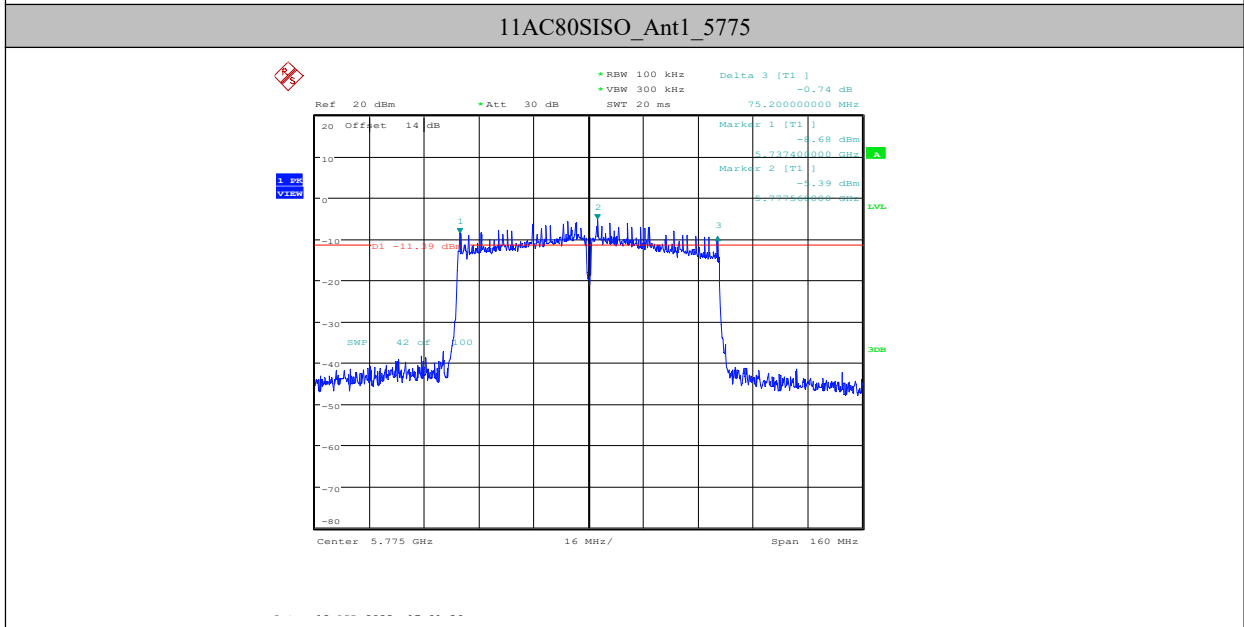
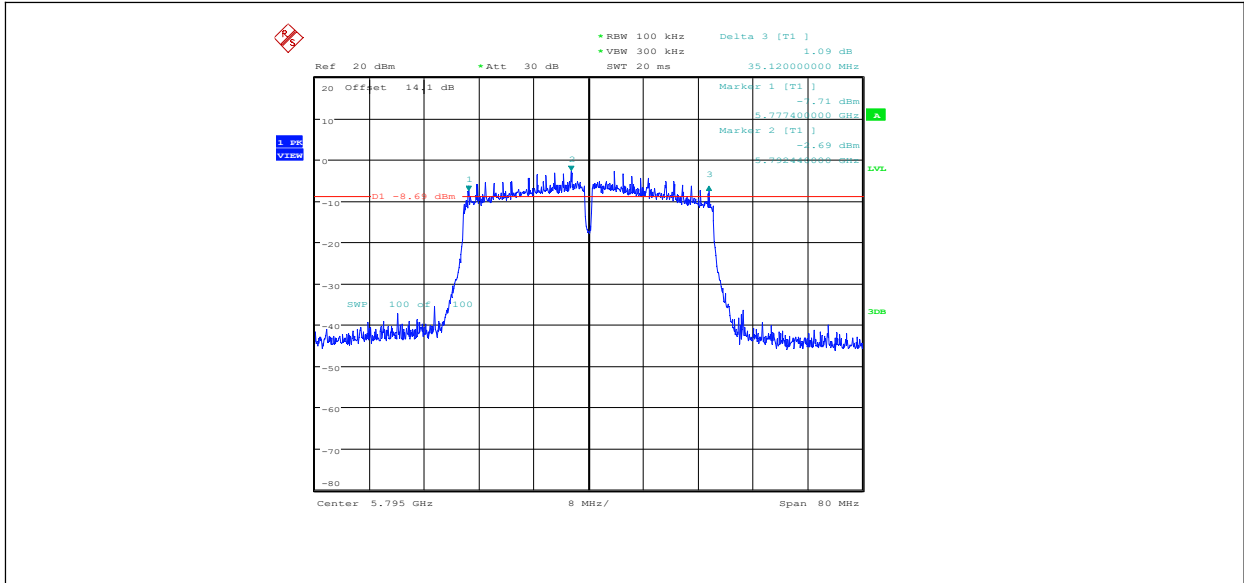
11AC20SISO\_Ant1\_5825





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### 6.6. 99% Occupied Bandwidth

<b>Specifications:</b>	FCC Part 15.407(e)
<b>DUT Serial Number:</b>	S4
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

#### Measurement Limit and Method

Standard	Limit(KHz)
FCC Part 15.407(e)	N/A

#### Measurement Uncertainty:

Measurement Uncertainty	28KHz
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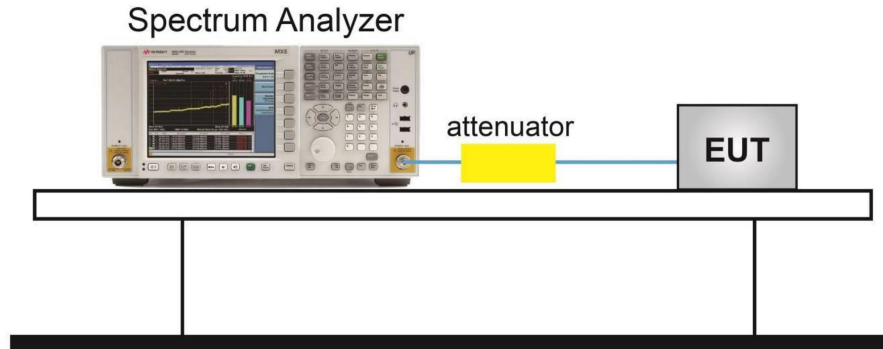
The measurement method is made according to KDB 789033 D

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 \cdot$  RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

#### Test Setup

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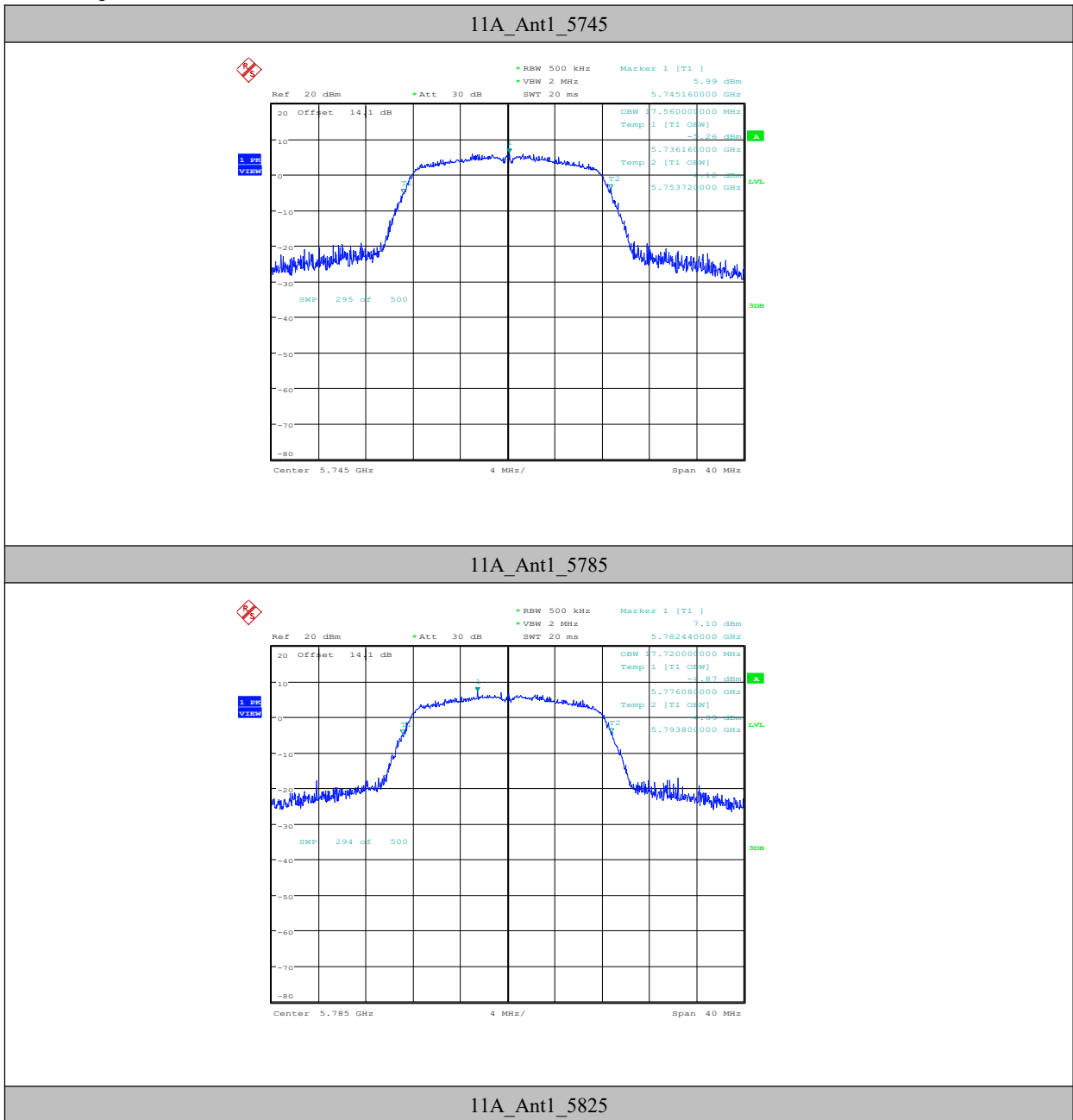
Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	Ant1	5745	17.56	5736.1600	5753.7200	---	---
		5785	17.72	5776.0800	5793.8000	---	---
		5825	17.52	5816.2400	5833.7600	---	---
11N20SISO	Ant1	5745	18.56	5735.6800	5754.2400	---	---
		5785	18.52	5775.7200	5794.2400	---	---
		5825	18.4	5815.8000	5834.2000	---	---
11N40SISO	Ant1	5755	36.96	5736.3600	5773.3200	---	---
		5795	37.04	5776.3600	5813.4000	---	---
11AC20SISO	Ant1	5745	18.2	5735.8800	5754.0800	---	---
		5785	18.2	5775.8800	5794.0800	---	---
		5825	18.2	5815.9200	5834.1200	---	---
11AC40SISO	Ant1	5755	36.64	5736.6000	5773.2400	---	---
		5795	36.72	5776.6000	5813.3200	---	---
11AC80SISO	Ant1	5775	75.68	5736.9200	5812.6000	---	---

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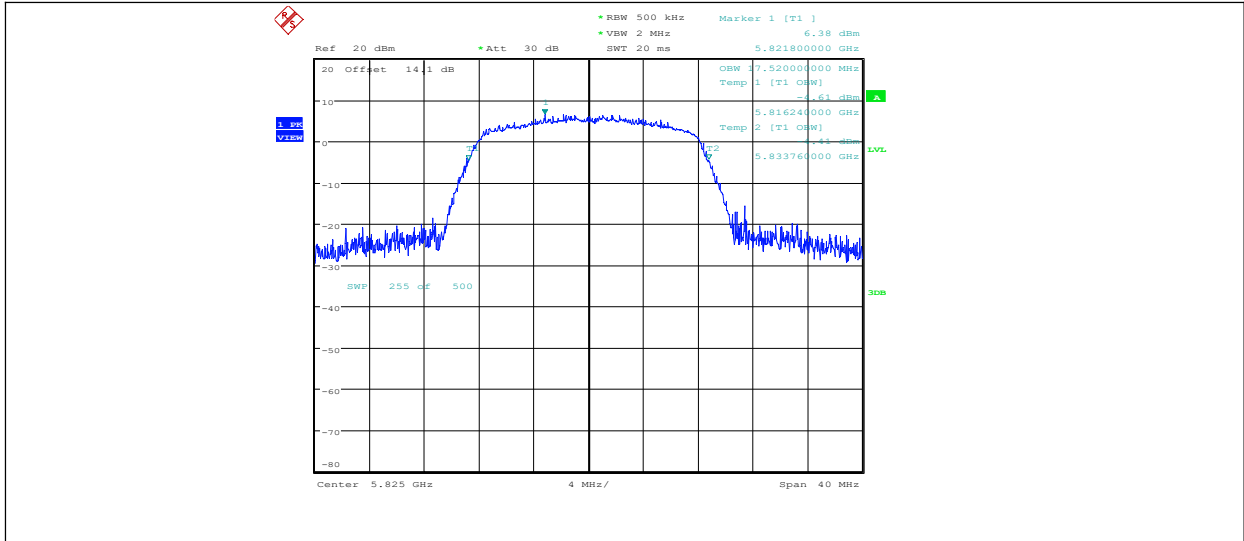
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777

Test Graphs

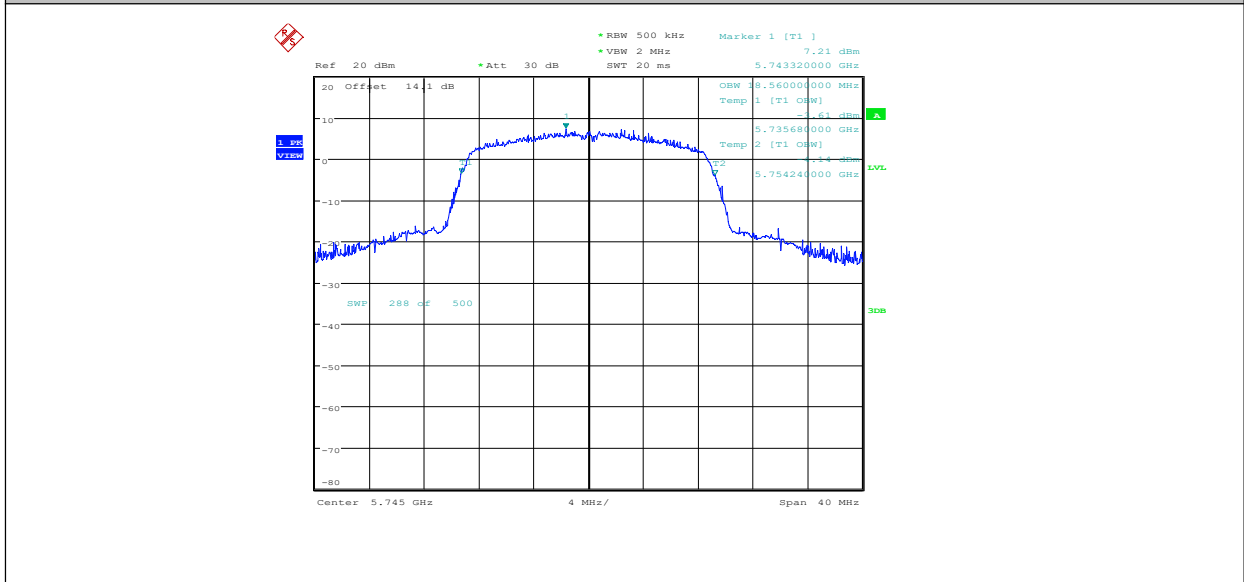


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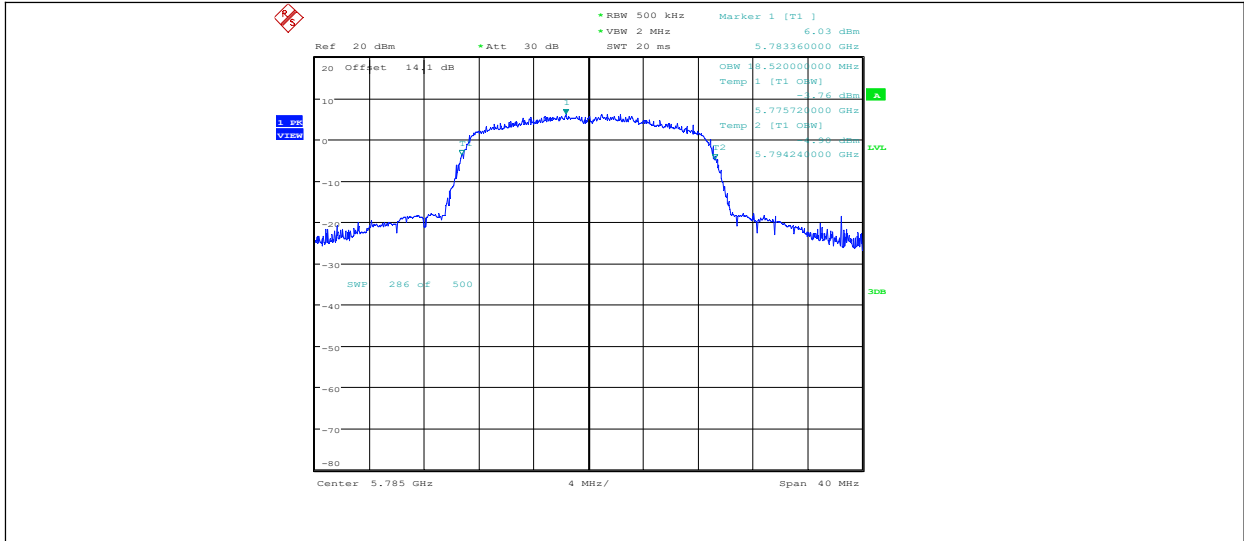
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336  
 Tel: 0086-23-88069965 FAX: 0086-23-88608777



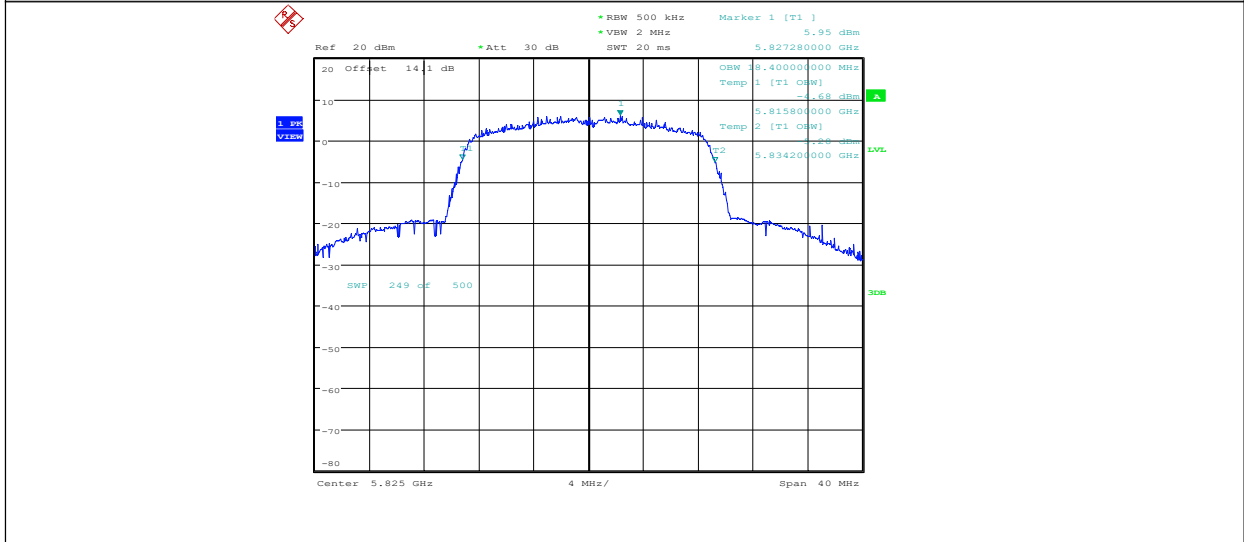
11N20SISO\_Ant1\_5745



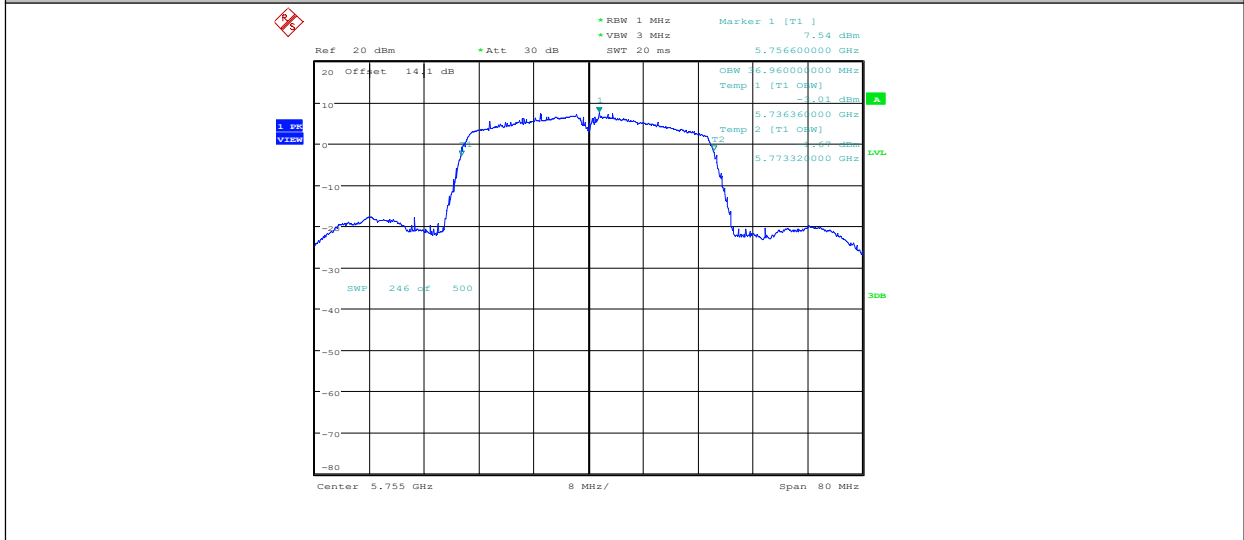
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11N20SISO\_Ant1\_5825



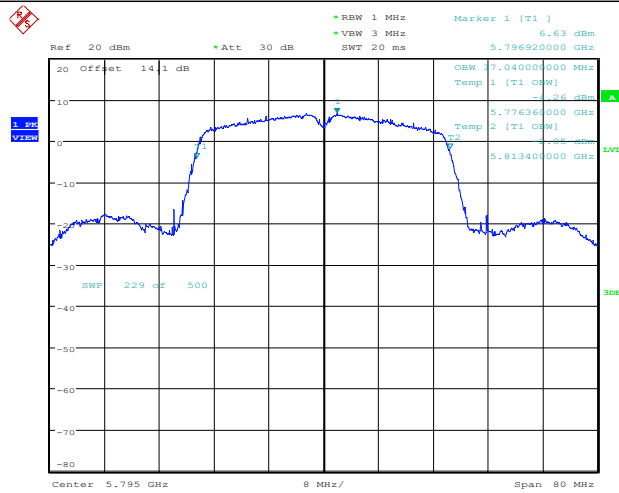
11N40SISO\_Ant1\_5755



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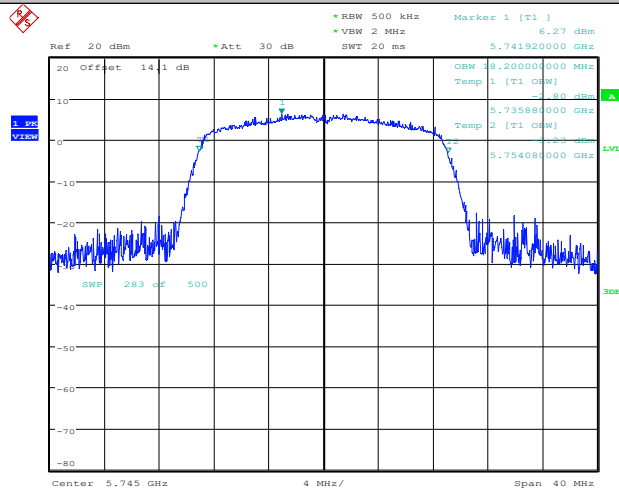
Address: No. 8, Yuma Road, Chayuan New City, Nan'an District, Chongqing, P. R. China, 401336  
 Tel: 0086-23-88069965    FAX: 0086-23-88608777

11N40SISO\_Ant1\_5795



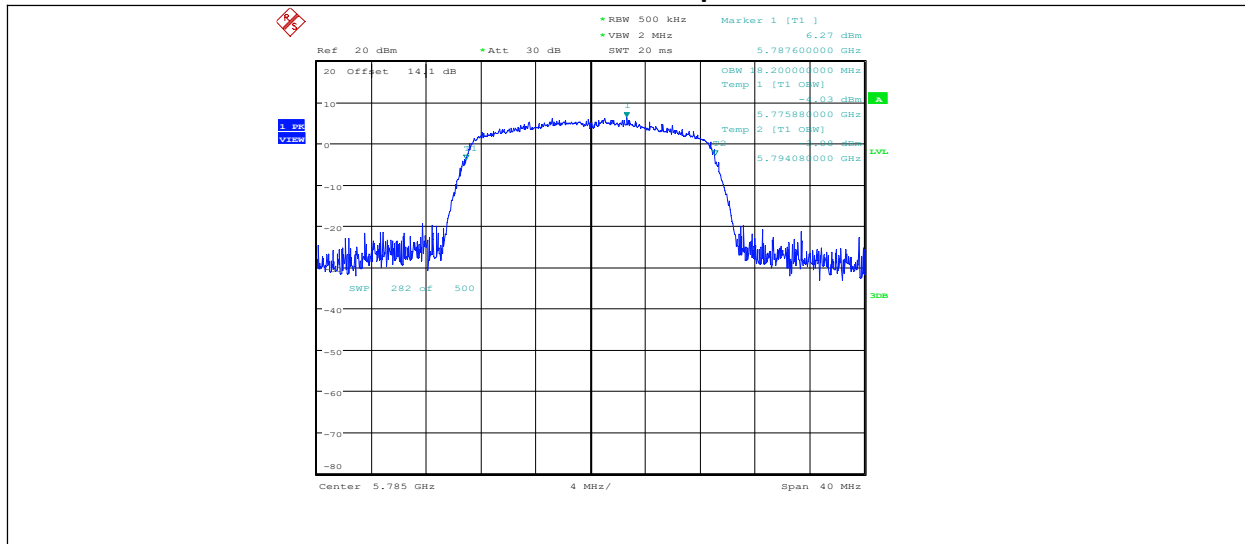
Date: 12.APR.2023 16:46:27

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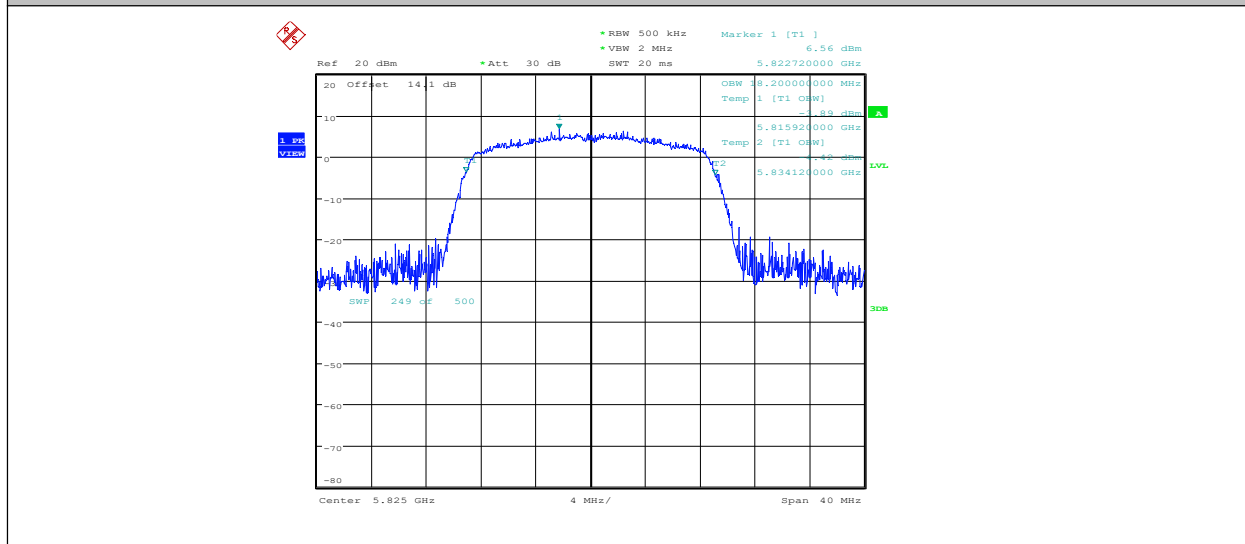


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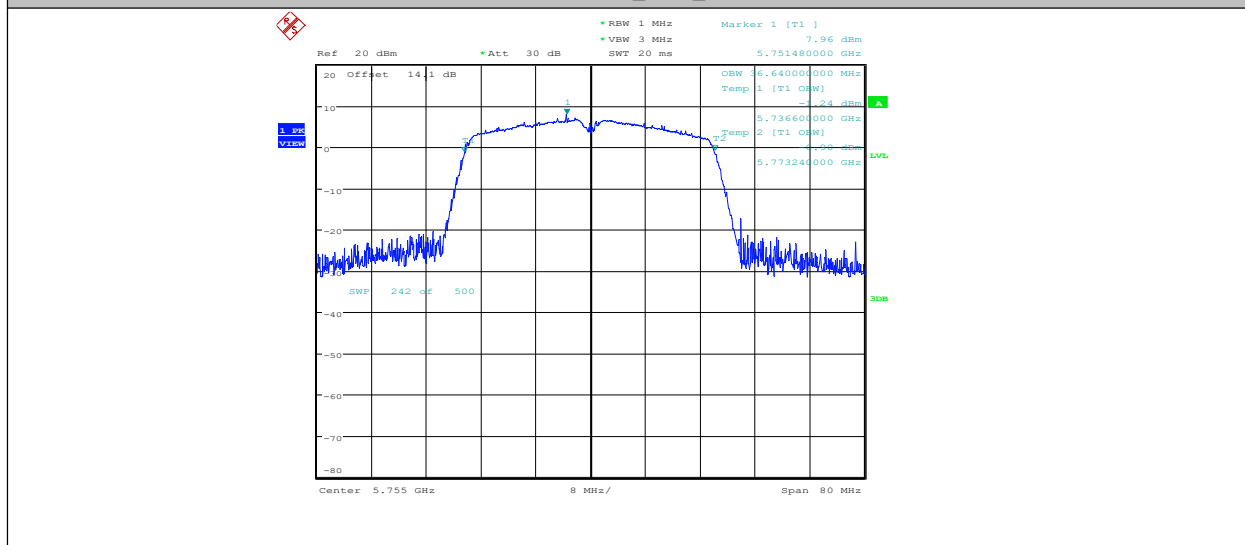




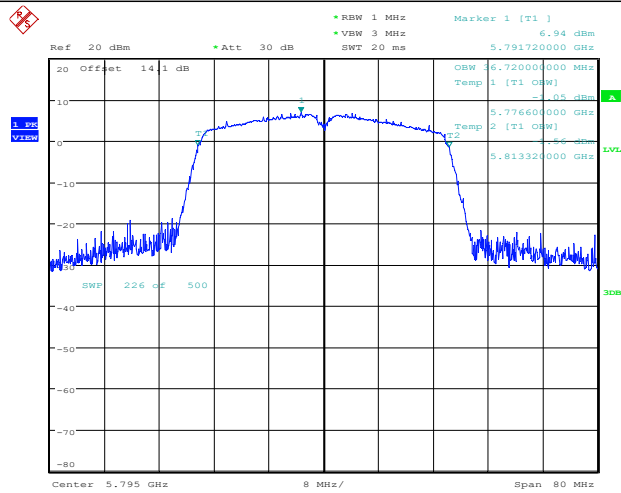
11AC20SISO\_Ant1\_5825



11AC40SISO\_Ant1\_5755

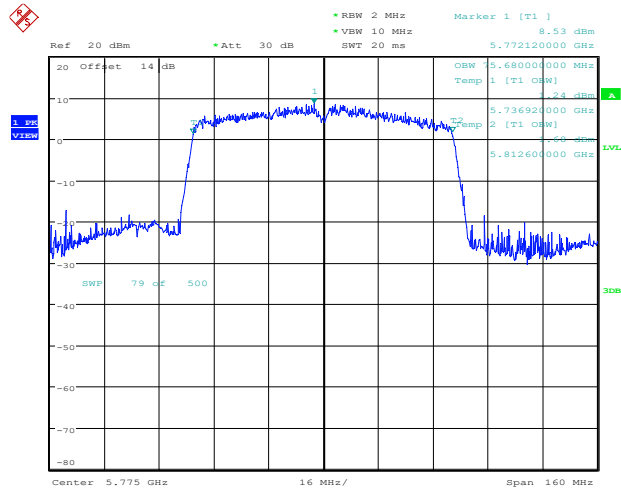


11AC40SISO\_Ant1\_5795



Date: 12.APR.2023 16:59:02

11AC80SISO\_Ant1\_5775



### 6.7. Band Edges Compliance

<b>Specifications:</b>	FCC 47 Part 15.407(b)
<b>DUT Serial Number:</b>	S4 S8 S9
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

#### Measurement 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) All emissions shall be limited to a level of  $-27$  dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.
- (5) In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
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
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	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			

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Measurement Uncertainty:

Measurement Uncertainty	4.84dB(K=2)
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Set the spectrum analyzer in the following

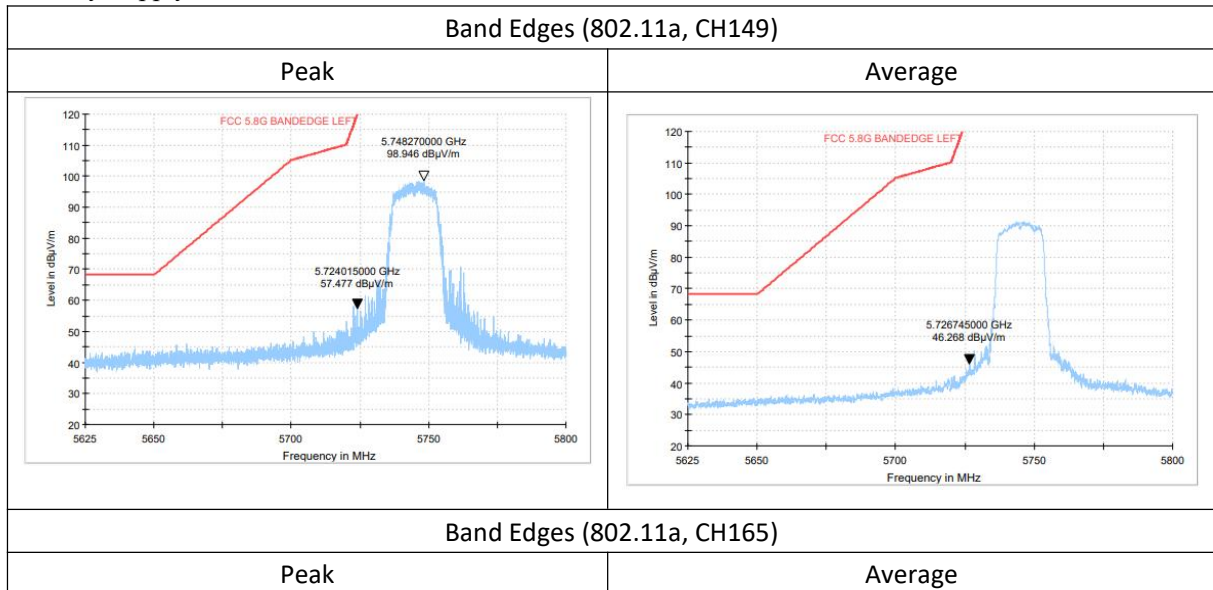
1. Sweep mode: SweepAnalyzer6db.
2. PEAK: RBW=1MHz / VBW=3MHz / Sweep=2.5ms, Sweep point;5001
3. AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=2.5ms, Sweep point;5001

Measurement Result

Mode	Channel	Conclusion
802.11a	149	P
	165	P
802.11n HT20	149	P
	165	P
802.11n HT40	151	P
	159	P
802.11ac VHT20	149	P
	165	P
802.11ac VHT40	151	P
	159	P
802.11ac VHT80	155	P

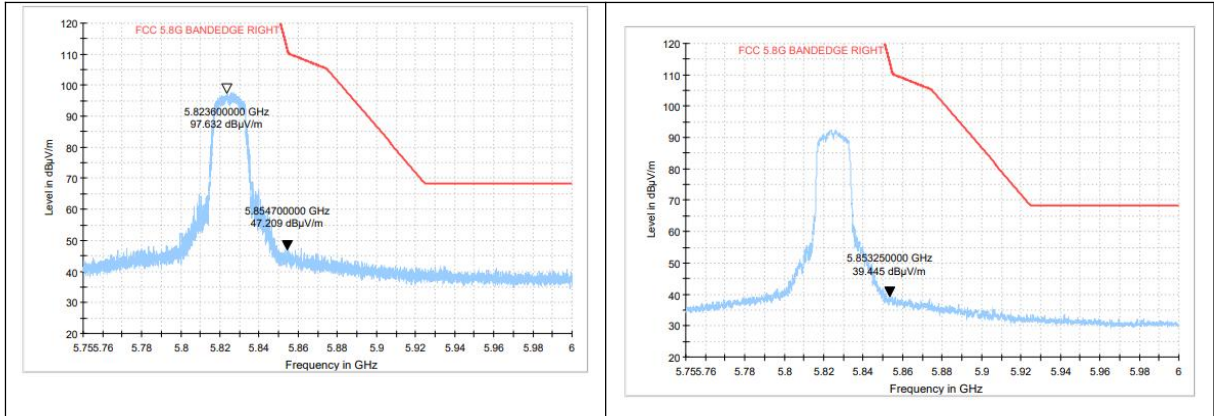
Test graphs as below:

Mainly Supply:

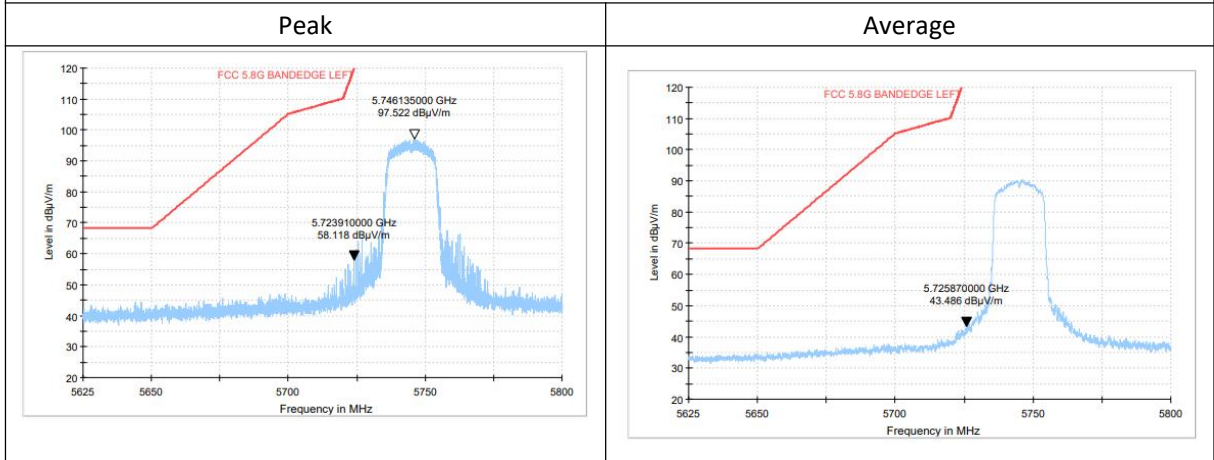


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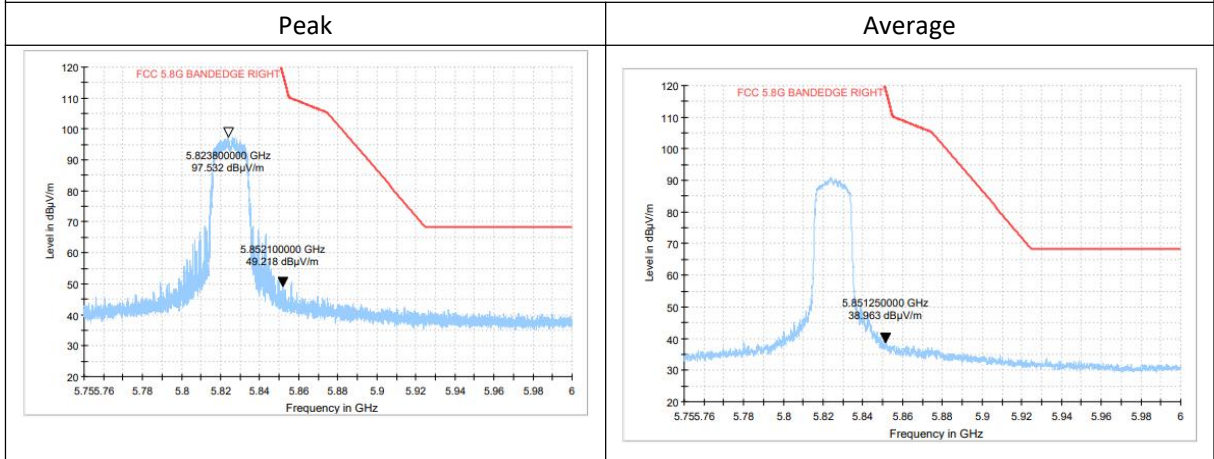
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Band Edges (802.11n-HT20, CH149)



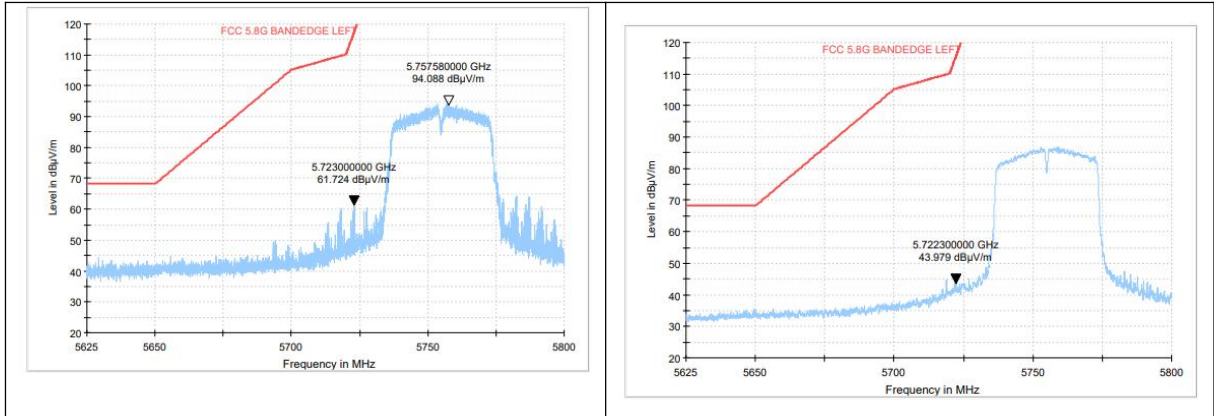
Band Edges (802.11n-HT20, CH165)



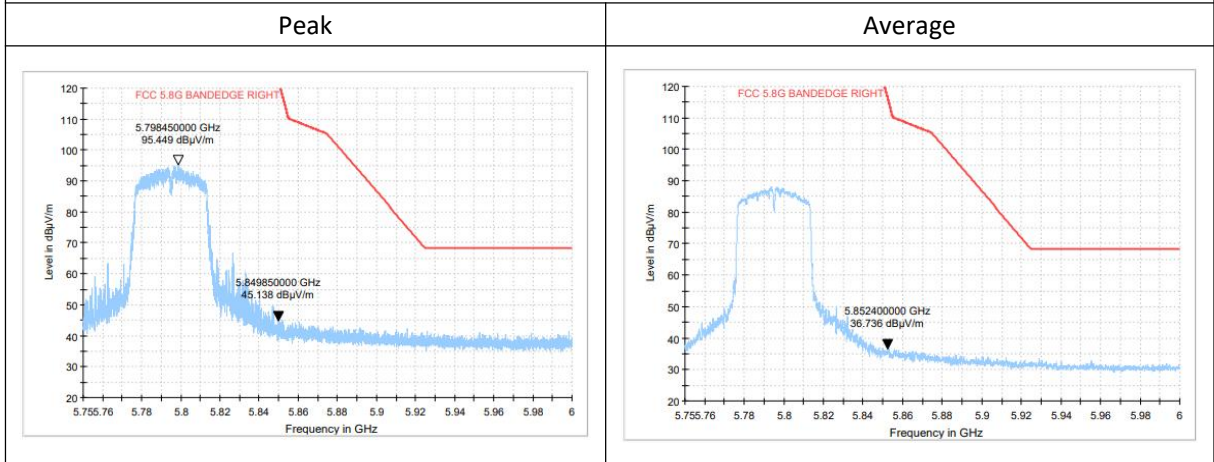
Band Edges (802.11n-HT40, CH151)



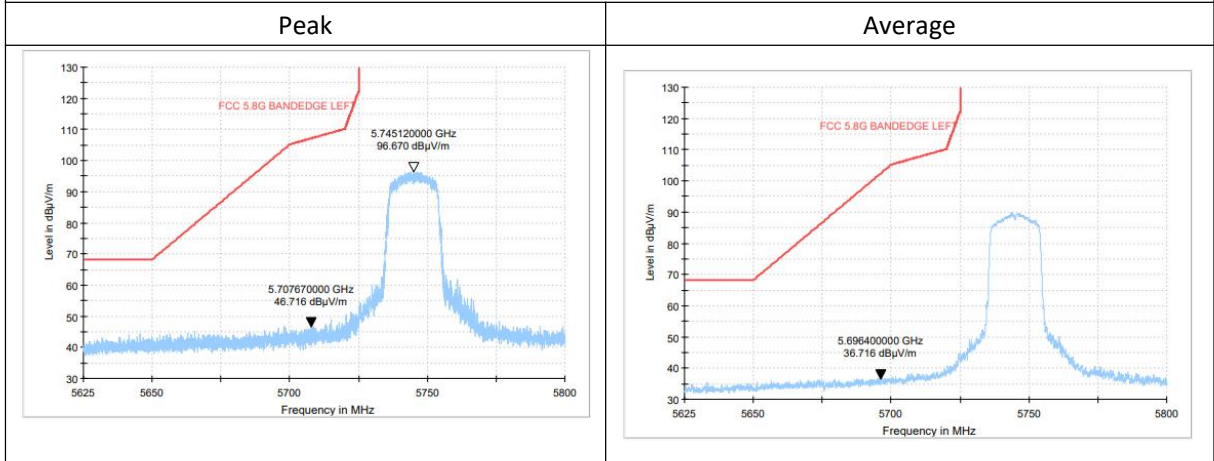




Band Edges (802.11n-HT40, CH159)



Band Edges (802.11ac-VHT20, CH149)

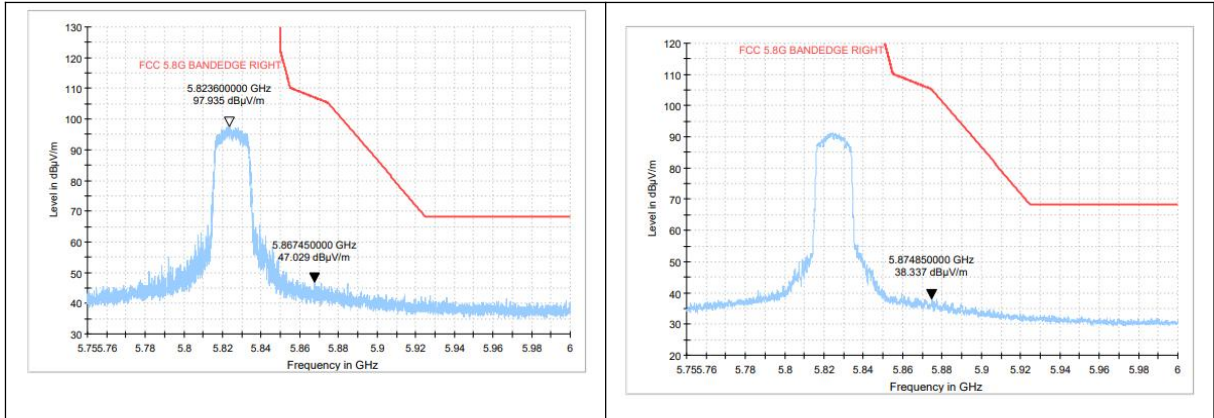


Band Edges (802.11ac-VHT20, CH165)

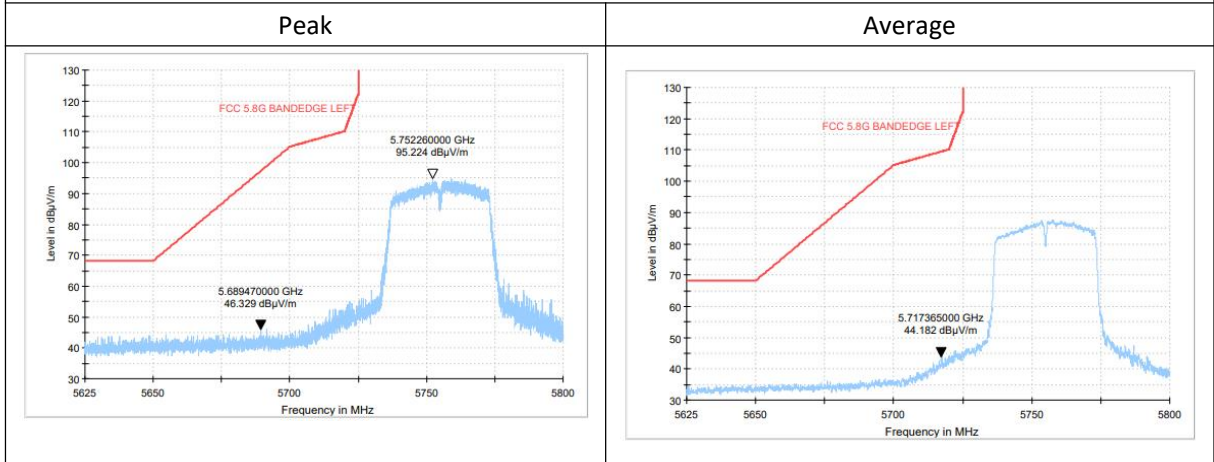


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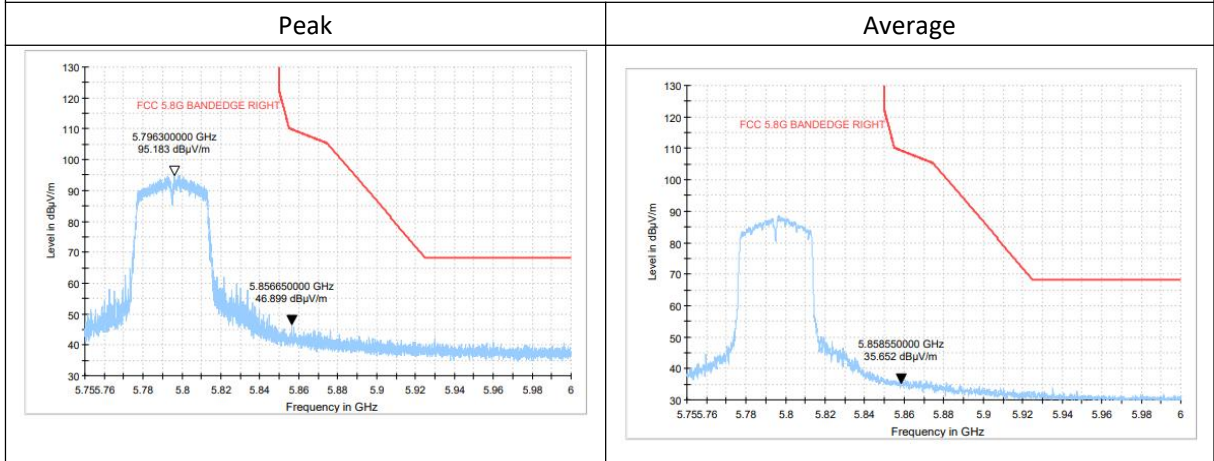
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Band Edges (802.11ac-VHT40, CH151)



Band Edges (802.11ac-VHT40, CH159)

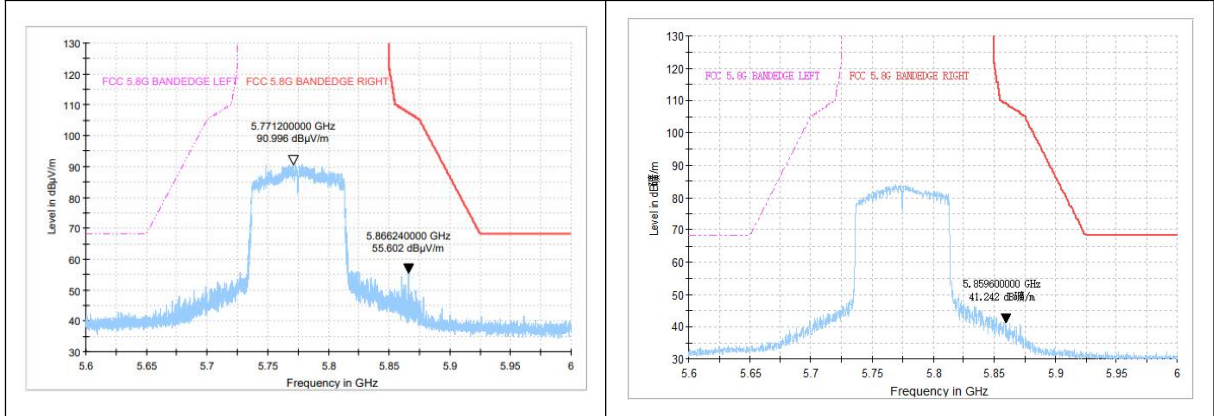


Band Edges (802.11ac-VHT80, CH155)

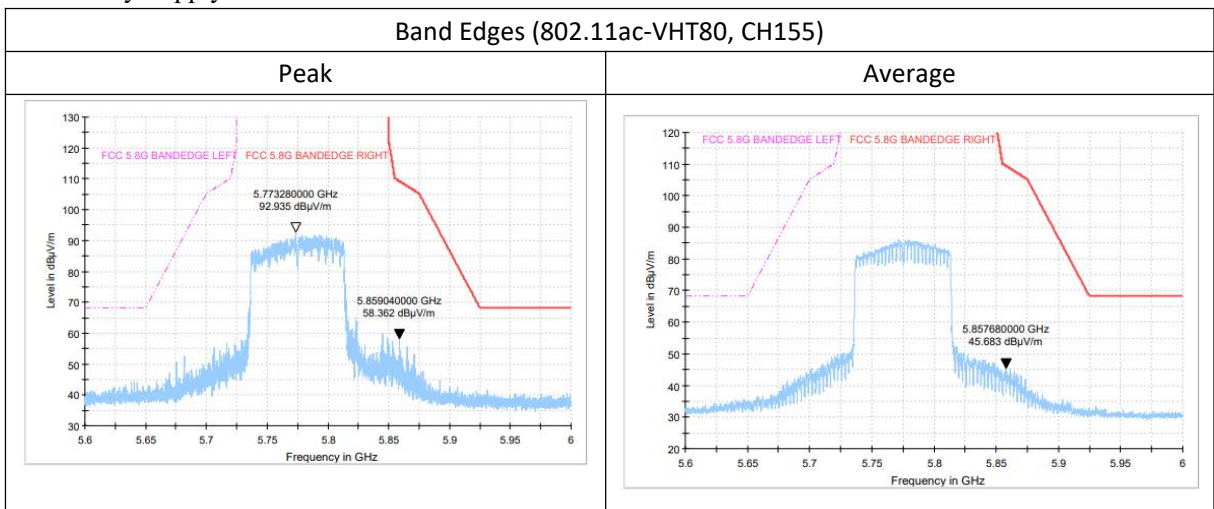


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Secondary Supply:



Note: Only data in worst mode is provided.

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### 6.8. Transmitter Spurious Emission

<b>Specifications:</b>	FCC 47 Part 15.407, 15.205, 15.209
<b>DUT Serial Number:</b>	S4 S8 S9
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

Transmitter Spurious Emission – Conducted

#### Measurement Limit and Method

Standard	Limit
FCC 47 Part 15.407, 15.205, 15.209	< -27

Measurement Uncertainty:

Measurement Uncertainty	±0.80dB
-------------------------	---------

The measurement method is made according to KDB 789033 G(2)

1. For all measurements, follow the requirements in II.G.3. “General Requirements for Unwanted Emissions Measurements.”
2. At frequencies below 1000 MHz, use the procedure described in II.G.4. “Procedure for Unwanted Emissions Measurements Below 1000 MHz.”
3. At frequencies above 1000 MHz, use the procedure for maximum emissions described in II.G.5., “Procedure for Unwanted Emissions Measurements Above 1000 MHz.”

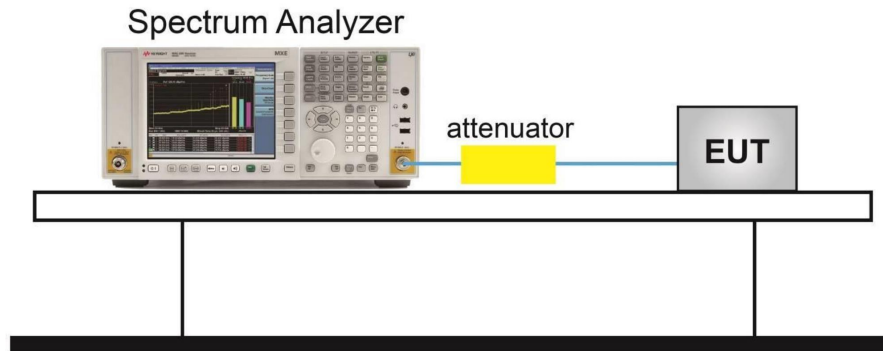
(i) Sections 15.407(b)(1) to (b)(3) specify the unwanted emission limits for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz.

(ii) Section 15.407(b)(4) specifies the unwanted emission limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are in terms of a Peak detector. An alternative to the band emissions mask is specified in Section 15.407(b)(4)(ii). The alternative limits are based on the highest antenna gain specified in the filing. There are also marketing and importation restrictions for the devices using the alternative limit.

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Test Setup



Modulation type and data rate tested:

Mode	Data rate	Channel
802.11a	6Mbps	149,157,165
802.11n-HT20	6Mbps	149,157,165
802.11n-HT40	MCS0	151,159
802.11ac-VHT20	MCS0	149,157,165
802.11ac-VHT40	MCS0	151,159
802.11ac-VHT80	MCS0	155

Test Result

TestMode	Antenna	Frequency[MHz]	FreqRange [MHz]	Max. Fre [MHz]	Max. Level [dBm]	Limit [dBm]	Verdict
11A	Ant1	5745	30~5650	3417.36	-37.6	≤-27	PASS
			5925~40000	39359.39	-32.87	≤-27	PASS
		5785	30~5650	3508.78	-38.12	≤-27	PASS
			5925~40000	39758.07	-33.45	≤-27	PASS
		5825	30~5650	3583.71	-38.04	≤-27	PASS
			5925~40000	39274.2	-33.79	≤-27	PASS
11N20SISO	Ant1	5745	30~5650	3465.32	-37.78	≤-27	PASS
			5925~40000	39987.51	-33.96	≤-27	PASS
		5785	30~5650	3544.75	-37.65	≤-27	PASS
			5925~40000	38740.36	-33.19	≤-27	PASS
		5825	30~5650	3487.24	-38.24	≤-27	PASS
			5925~40000	39982.96	-33.32	≤-27	PASS
11N40SISO	Ant1	5755	30~5650	3463.26	-37.99	≤-27	PASS

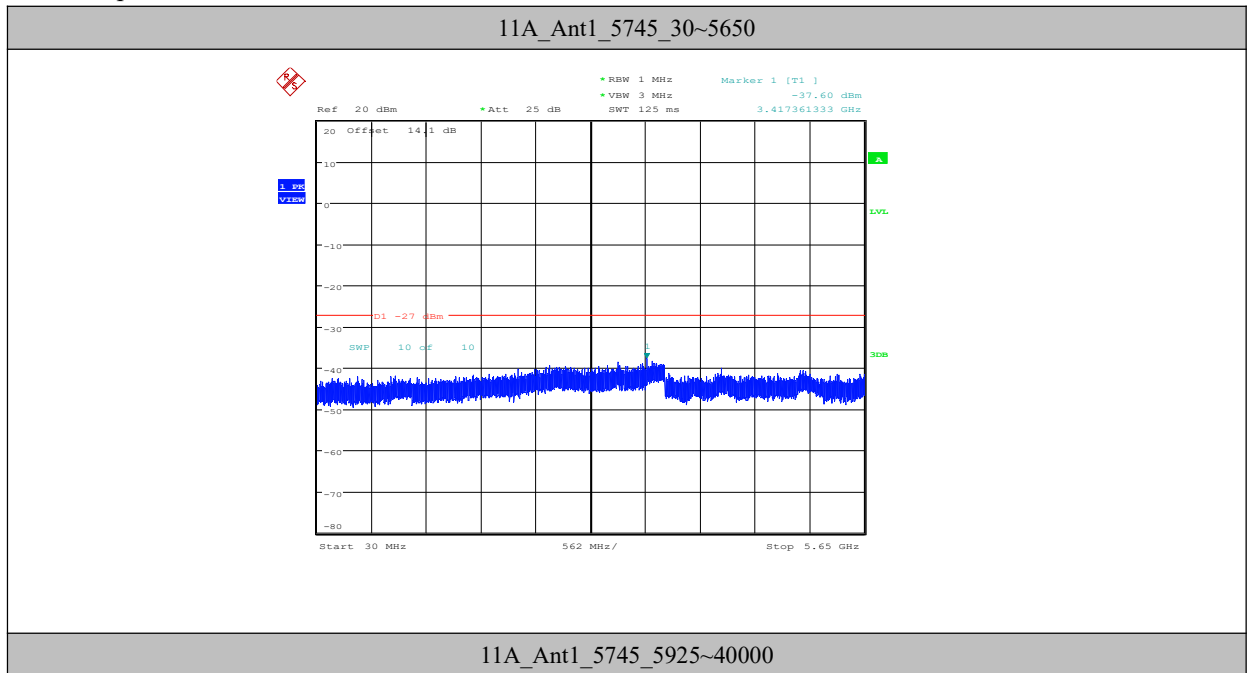
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Report No.: 123W00020-WIFI 5.8G RF

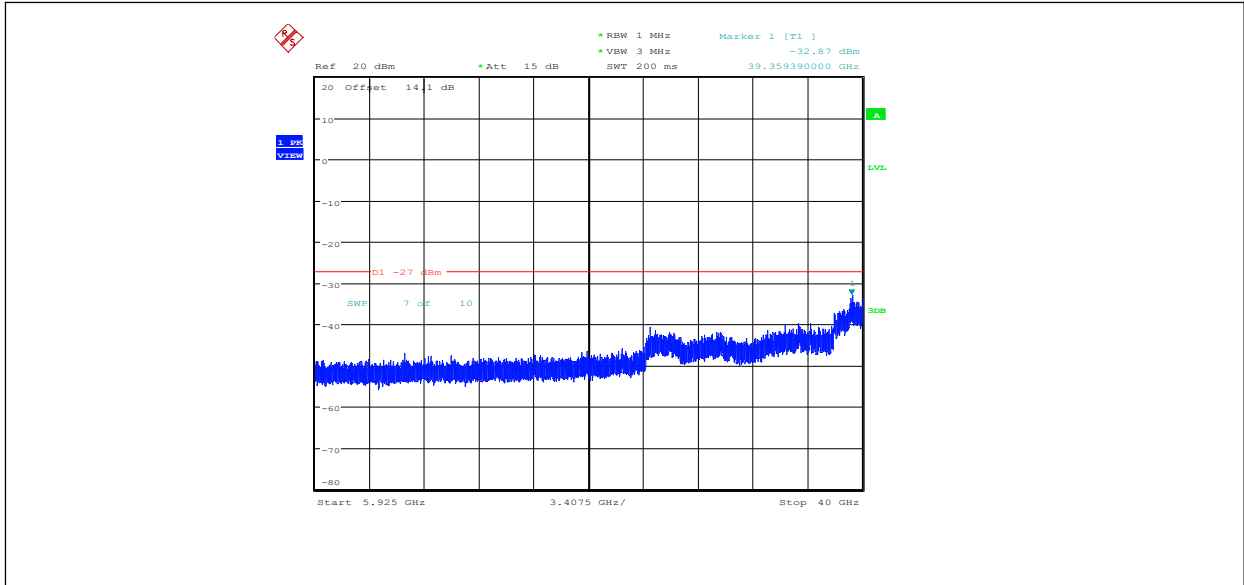
			5925~40000	39973.88	-33.4	≤-27	PASS
		5795	30~5650	3530.14	-37.64	≤-27	PASS
			5925~40000	39299.19	-32.95	≤-27	PASS
11AC20SISO	Ant1	5745	30~5650	3280.42	-38.39	≤-27	PASS
			5925~40000	39987.51	-33.96	≤-27	PASS
		5785	30~5650	3456.7	-38.43	≤-27	PASS
			5925~40000	39988.64	-33.2	≤-27	PASS
		5825	30~5650	3564.04	-37.59	≤-27	PASS
			5925~40000	39978.42	-32.53	≤-27	PASS
11AC40SISO	Ant1	5755	30~5650	3564.98	-38.08	≤-27	PASS
			5925~40000	39231.04	-33.81	≤-27	PASS
		5795	30~5650	3480.49	-38.19	≤-27	PASS
			5925~40000	39989.78	-33.69	≤-27	PASS
11AC80SISO	Ant1	5775	30~5650	5640.07	-36.82	≤-27	PASS
			5925~40000	39243.54	-33.35	≤-27	PASS

Test Graphs

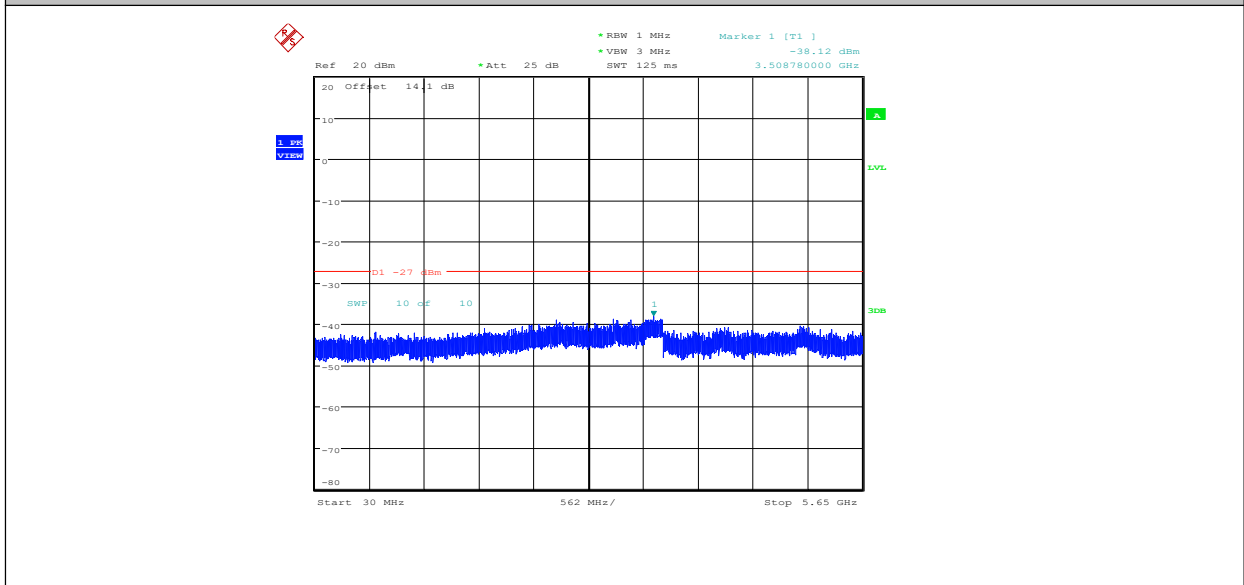


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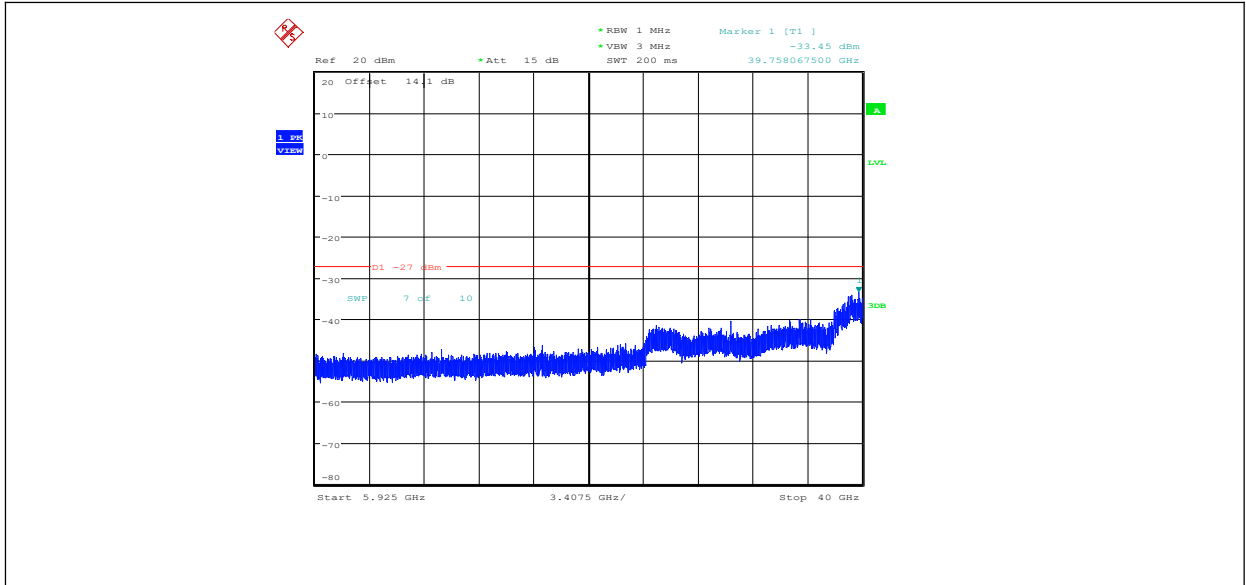
11A\_Ant1\_5785\_30~5650



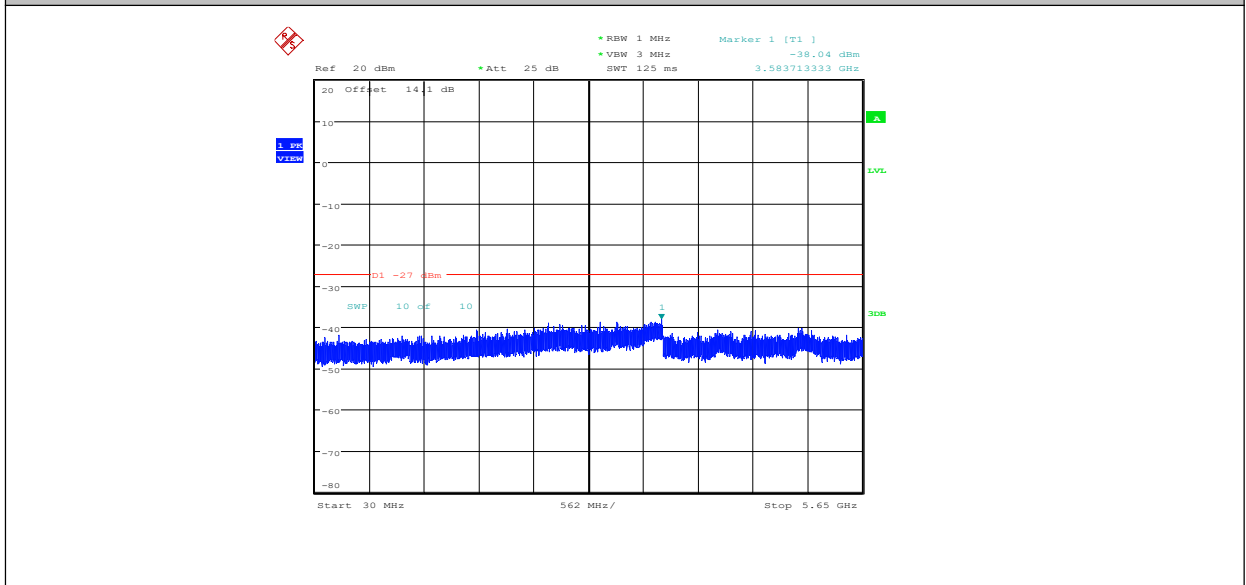
11A\_Ant1\_5785\_5925~40000

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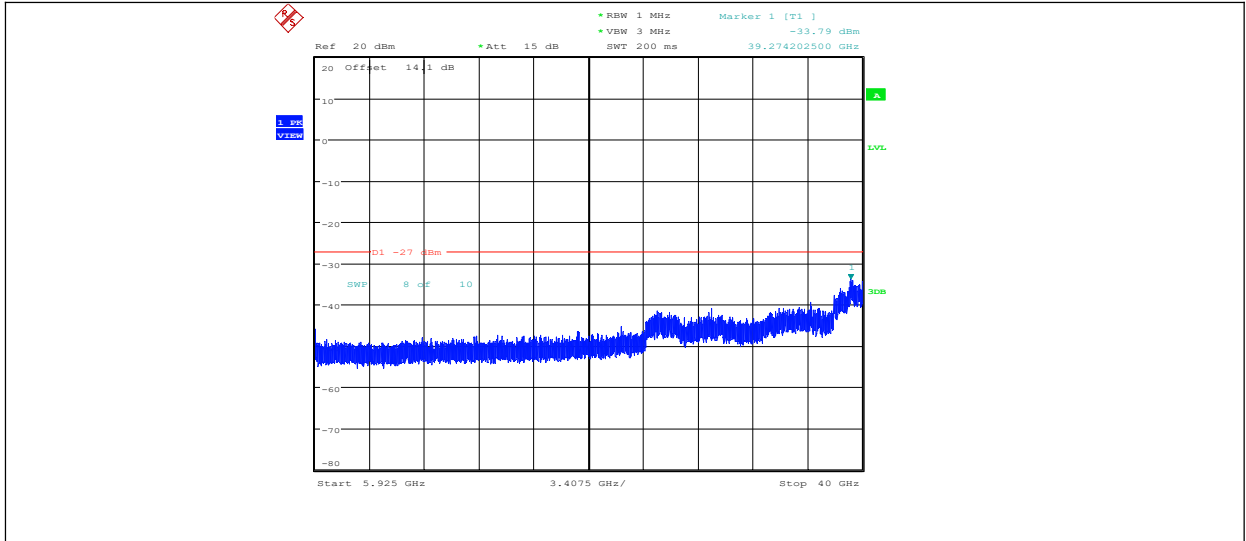
11A\_Ant1\_5825\_30~5650



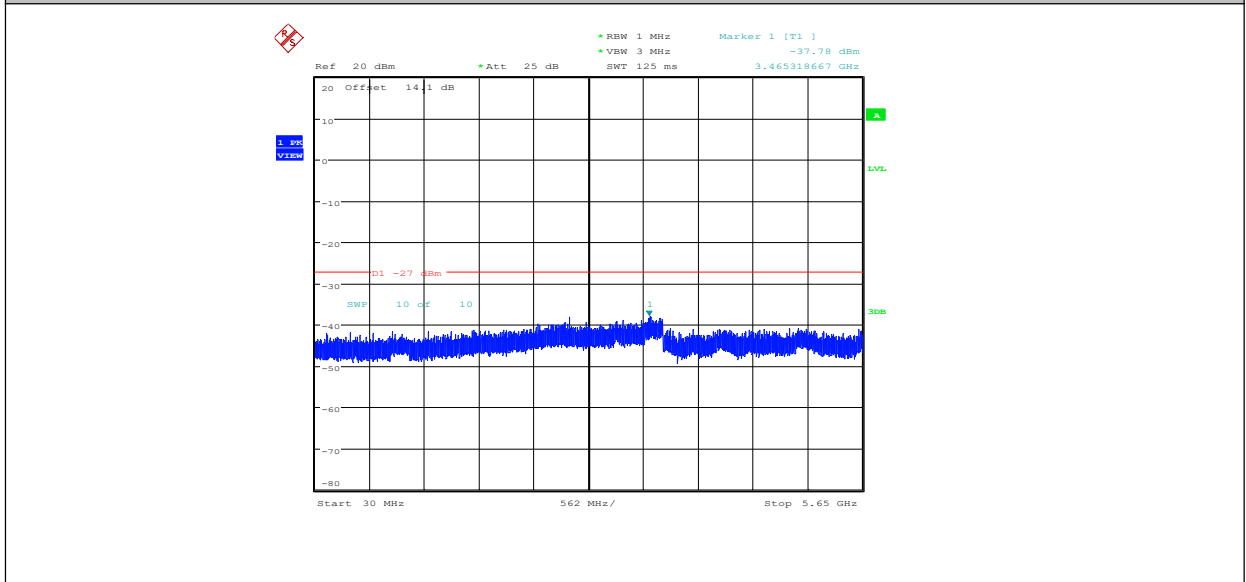
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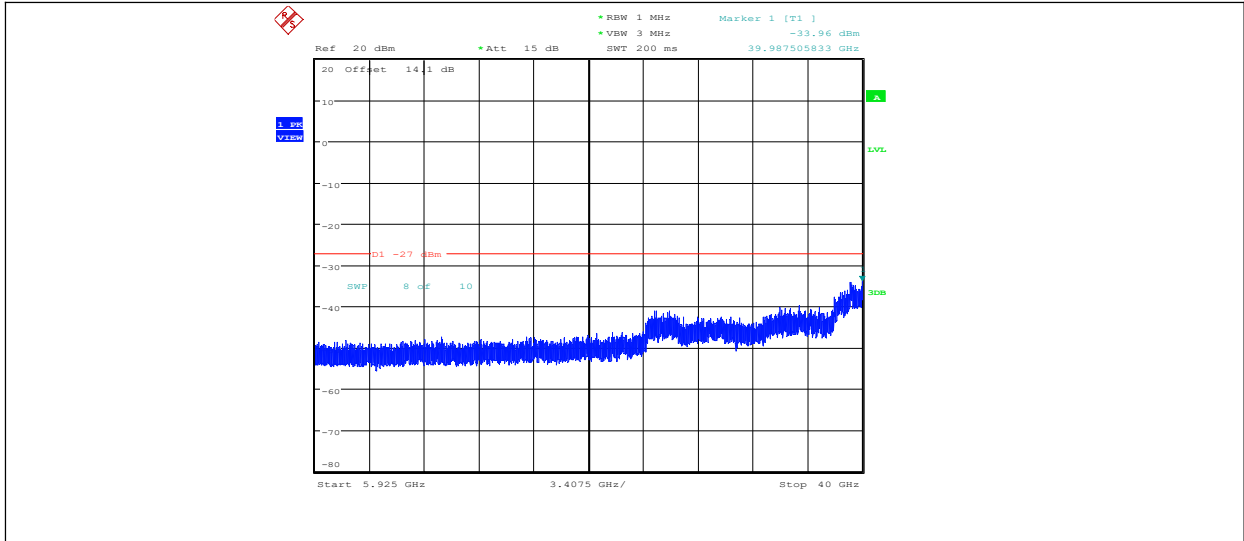
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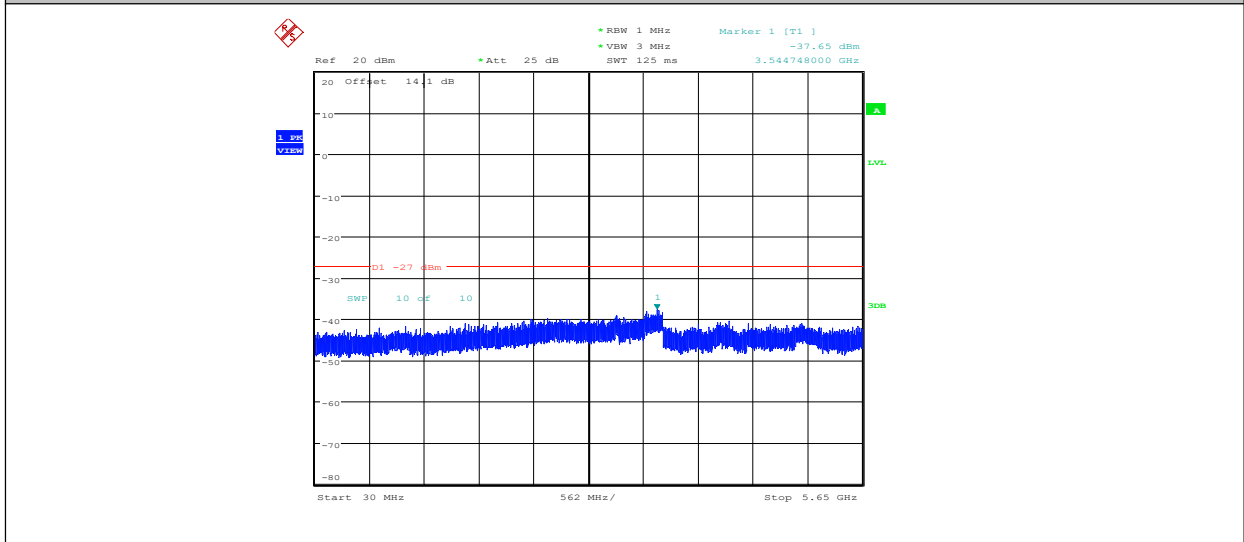
11N20SISO\_Ant1\_5745\_30~5650



11N20SISO\_Ant1\_5745\_5925~40000



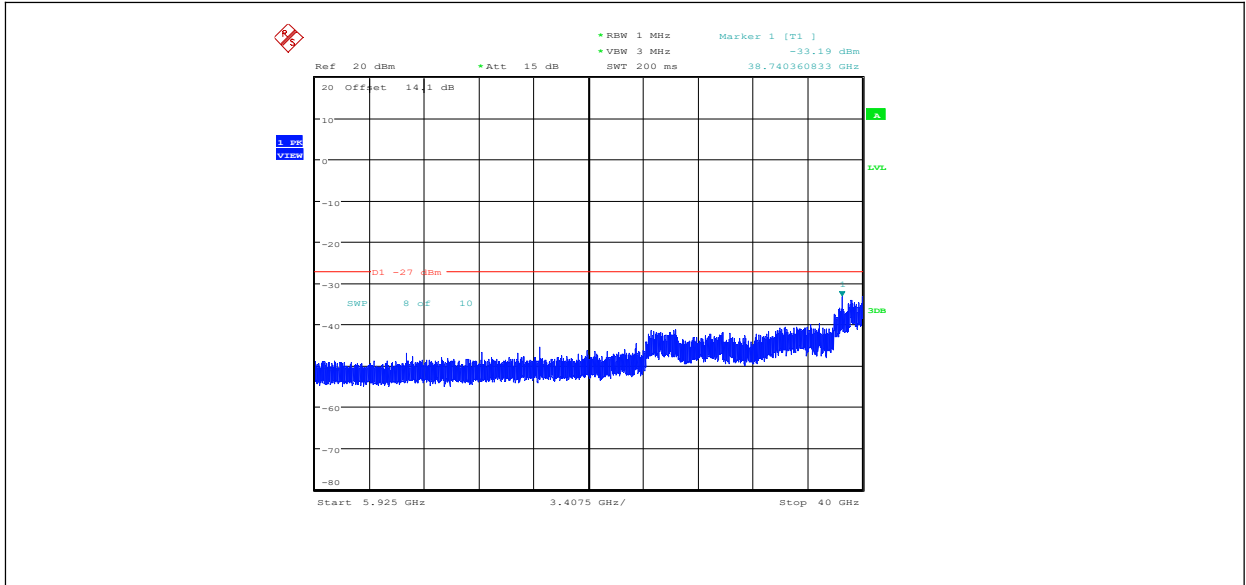
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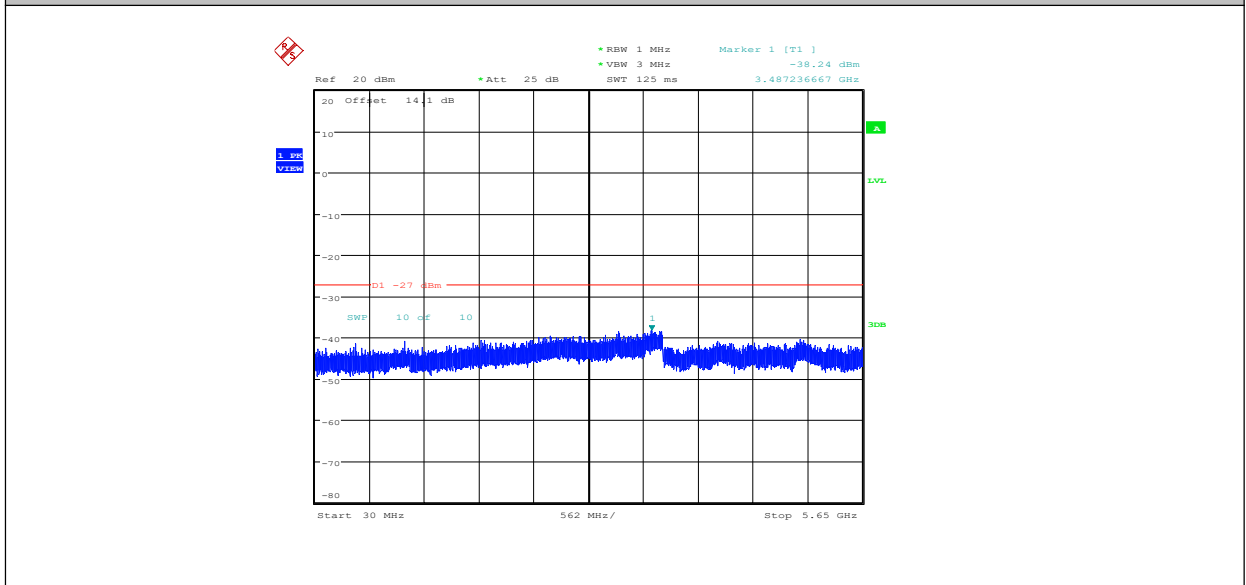
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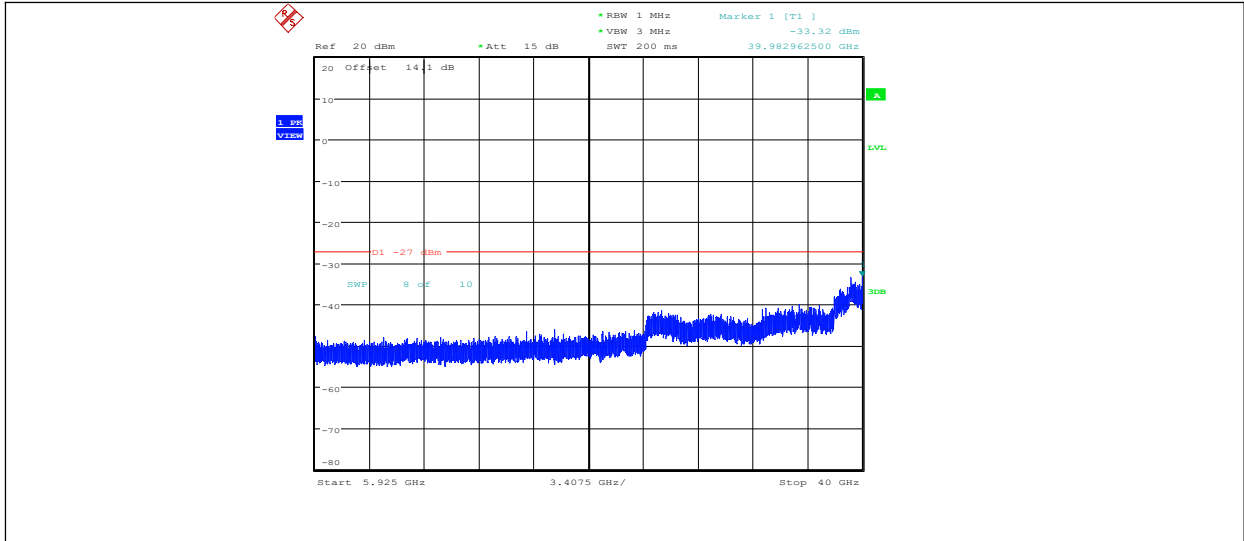


11N20SISO\_Ant1\_5825\_30~5650

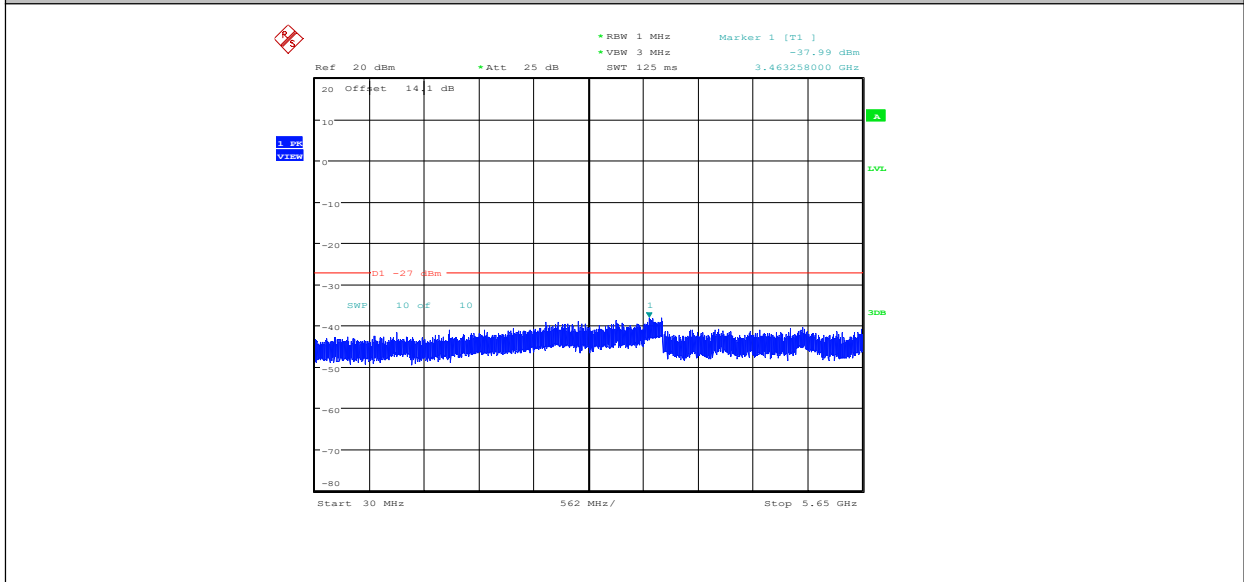


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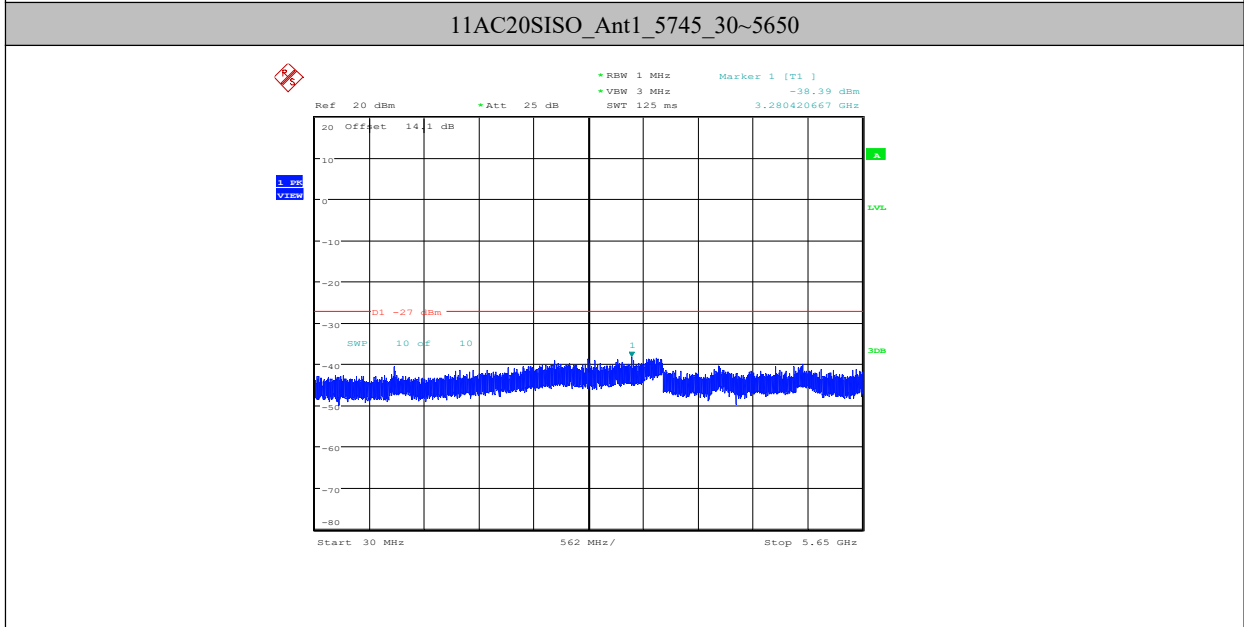
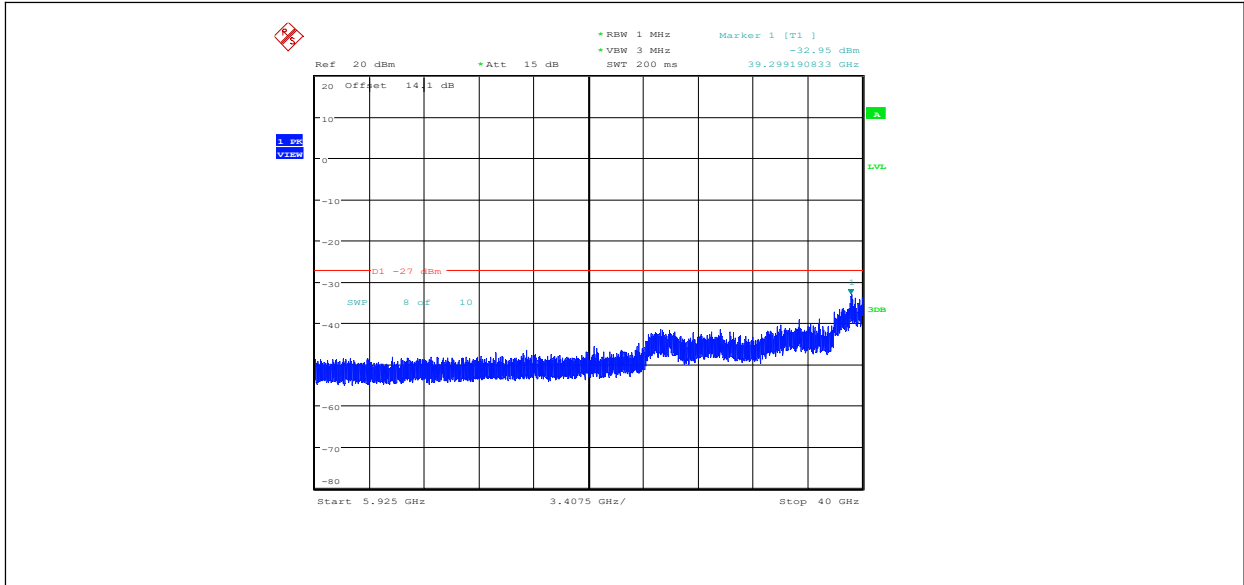


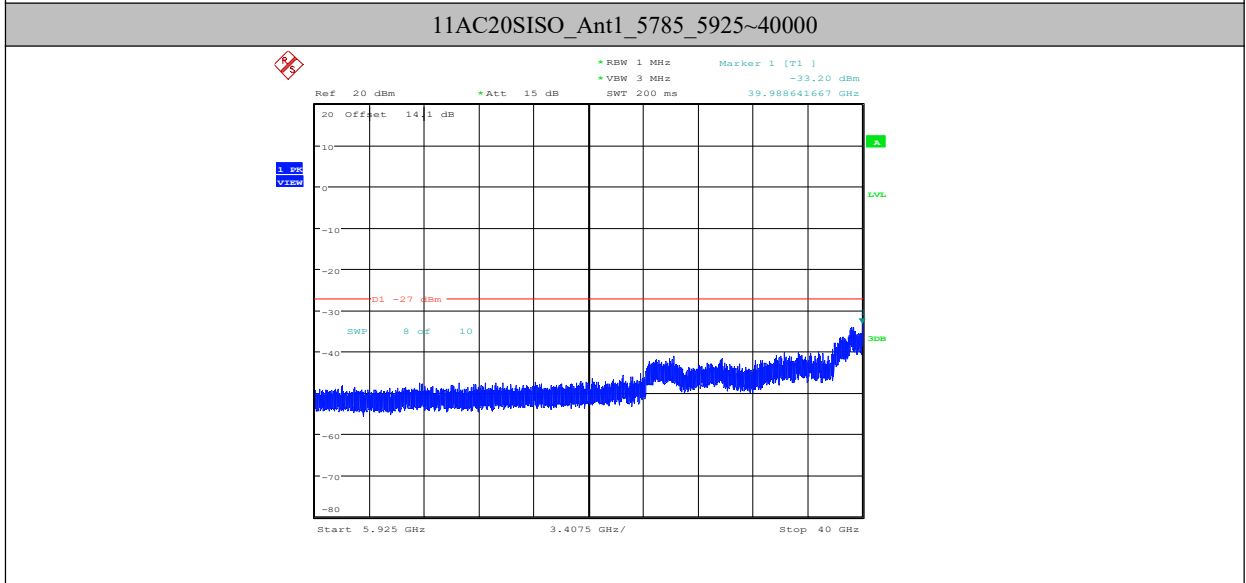
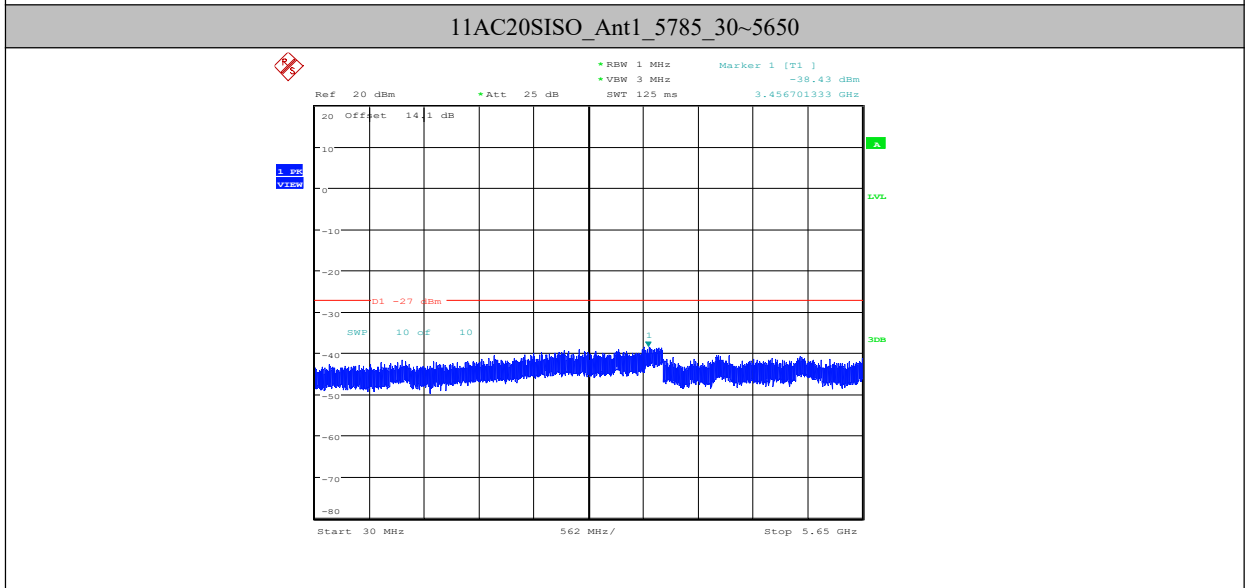
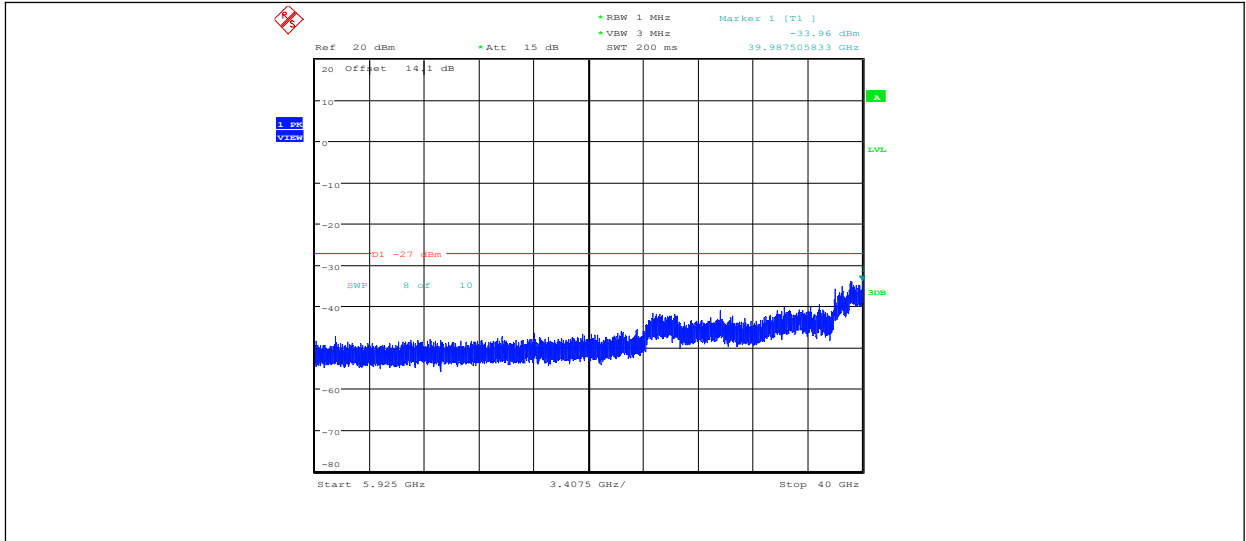
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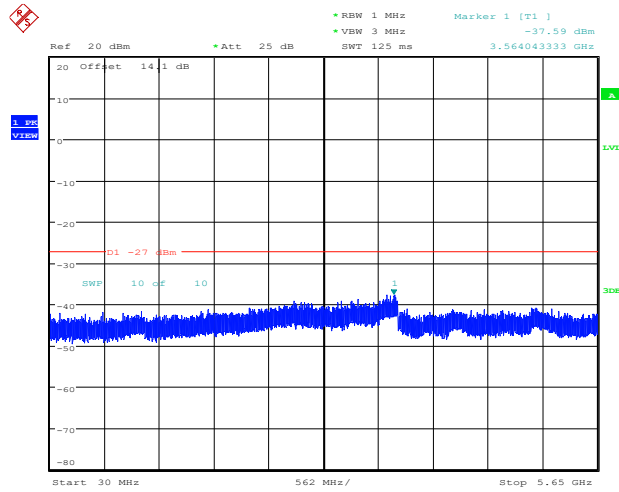
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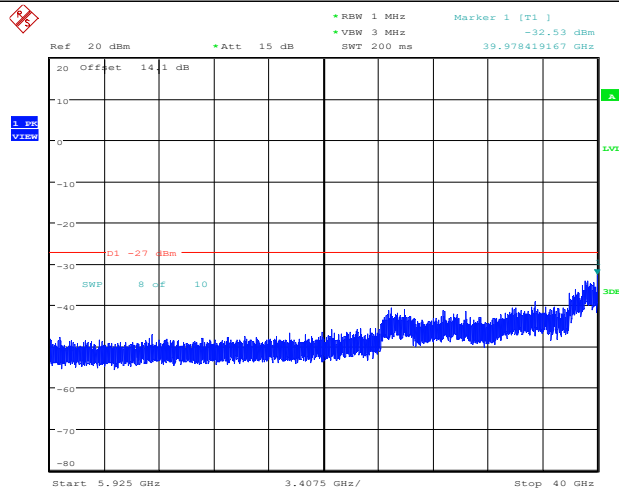




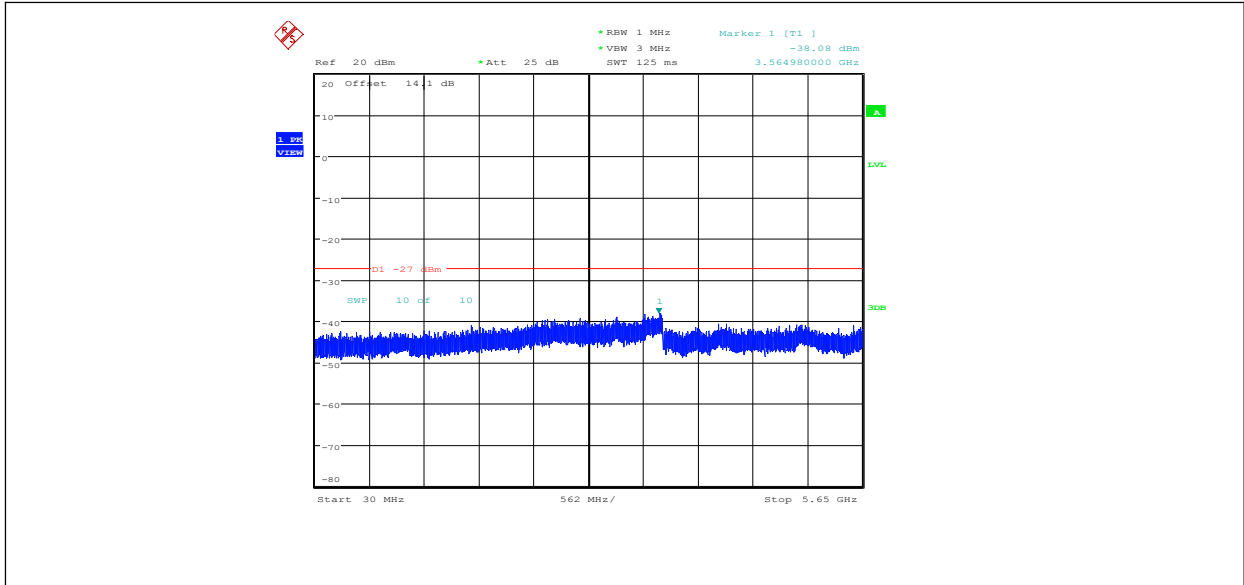
11AC20SISO\_Ant1\_5825\_30~5650



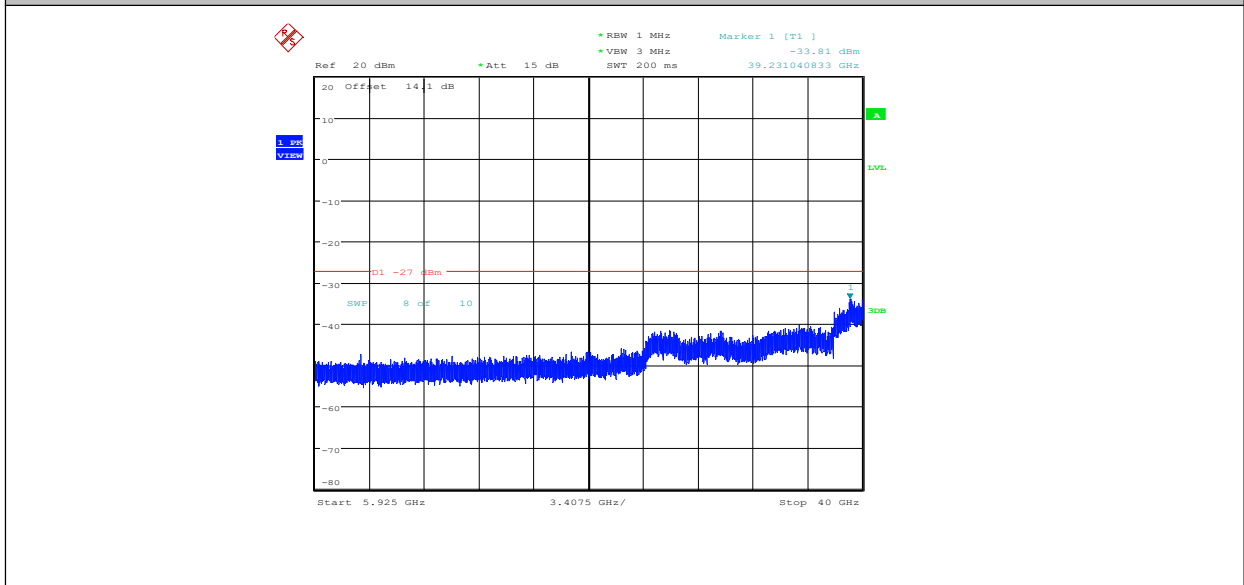
11AC20SISO\_Ant1\_5825\_5925~40000



11AC40SISO\_Ant1\_5755\_30~5650



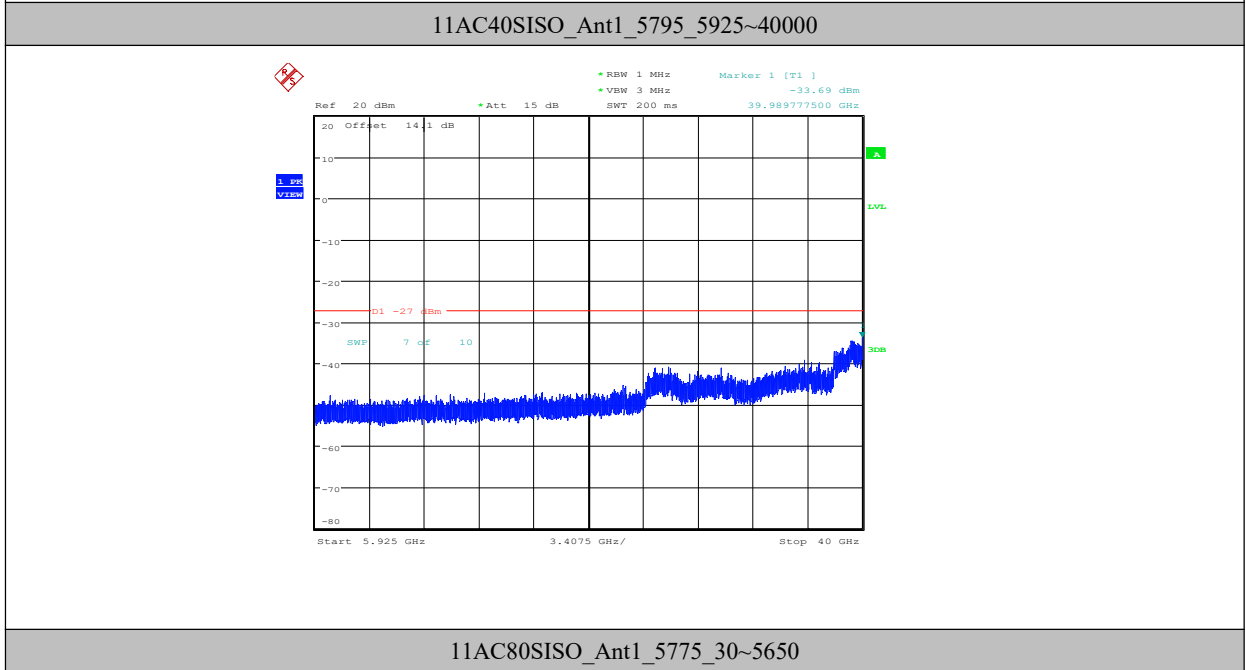
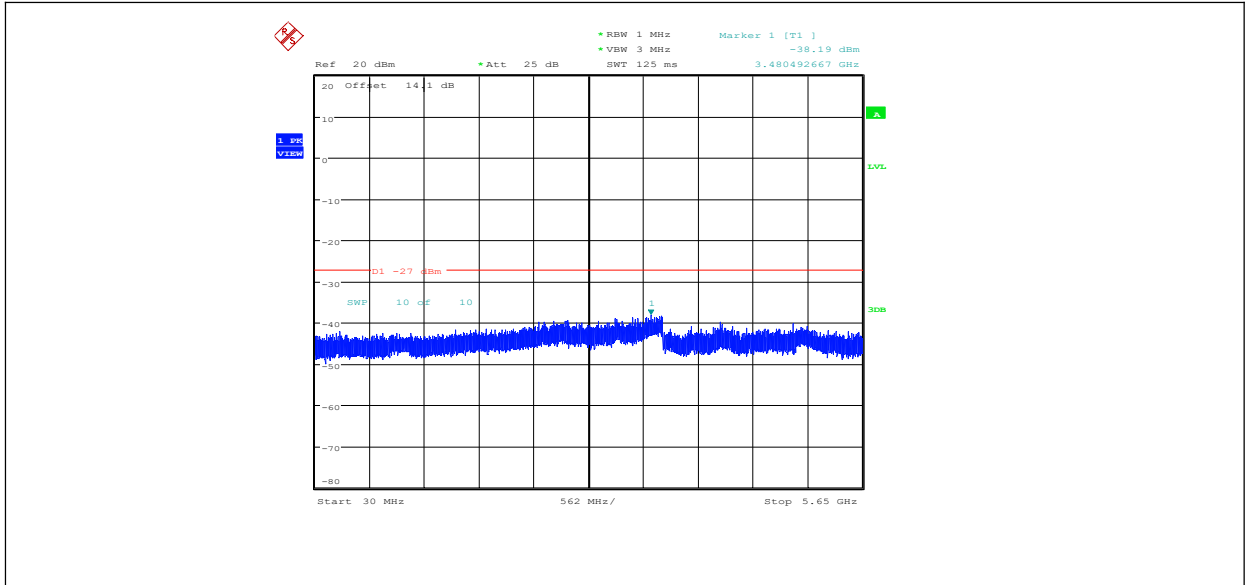
11AC40SISO\_Ant1\_5755\_5925~40000



11AC40SISO\_Ant1\_5795\_30~5650

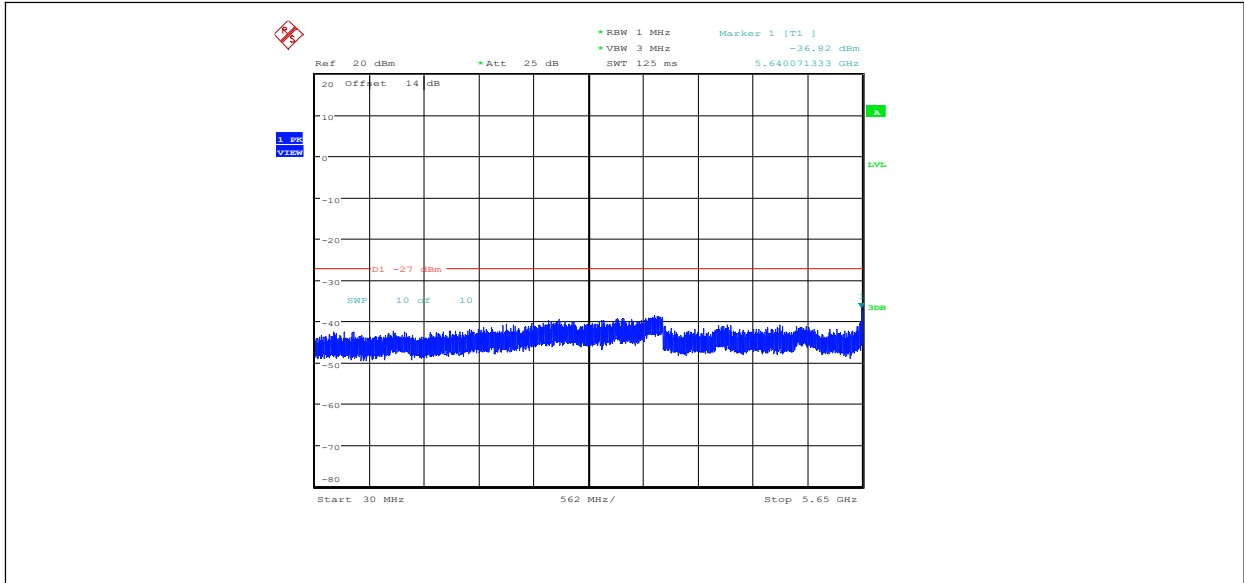
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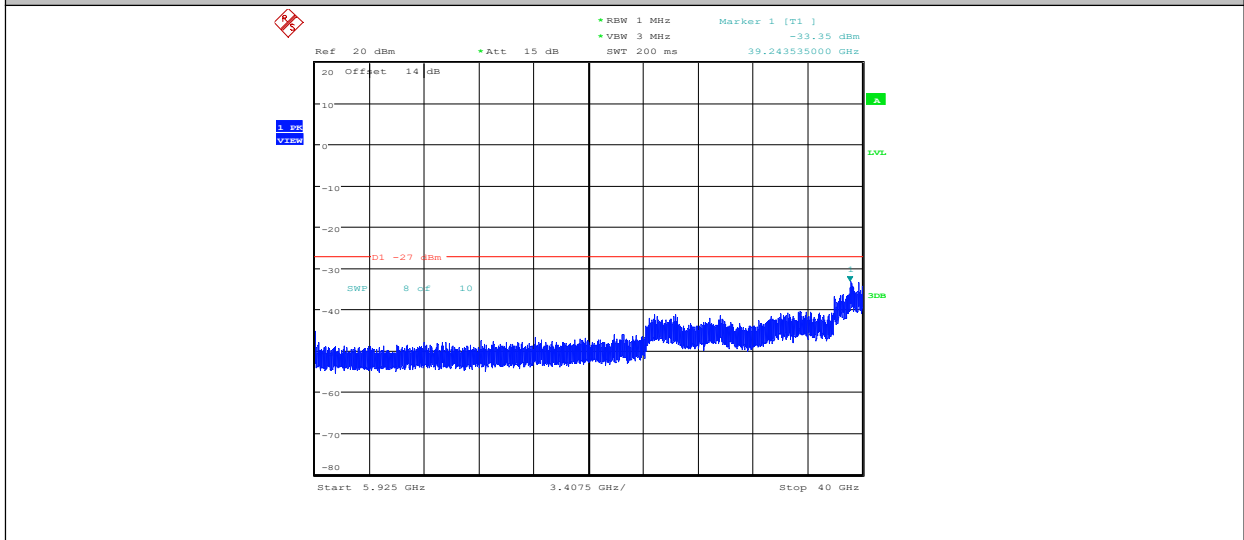


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11AC80SISO\_Ant1\_5775\_5925~40000



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**Transmitter Spurious Emission - Radiated**

The measurement is made according to ANSI C63.10.

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)
0.009-0.490	2400/F(kHz)	129-94
0.490-1.705	24000/F(kHz)	74-63
1.705-30	30	70
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

**Measurement Uncertainty:**

Measurement Uncertainty	<p>30MHz-150MHz: 3.79 dB (k=2).            150MHz-1000MHz: 3.51dB (k=2).            1000MHz-6000MHz: 4.84 dB (k=2).            6000MHz-18000MHz: 4.52 dB (k=2).            18GHz-26.5GHz:6.19dB (k=2)            26.5GHz-40GHz:6.03dB (k=2)</p>
-------------------------	---

**Test procedures**

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

Tabletop devices shall be placed on a nonconducting platform with nominal top surface dimensions 1 m by 1.5 m. For emissions testing at or below 1 GHz, the table height shall be 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m.

The turntable rotated 360 degrees to determine the position of the maximum emission level.

The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

The EUT was tested according to KDB 789033 D02: Section G.

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**Report No.: 123W00020-WIFI 5.8G RF**

The radiated emission was measured using the Spectrum Analyzer with the resolutions bandwidth set as:

RBW = 300 Hz, VBW = 1 kHz (9 kHz~150 kHz);

RBW = 10 kHz, VBW = 30 kHz (150 kHz~30MHz);

RBW = 100 kHz, VBW = 300 kHz (30MHz~1GHz for PK)

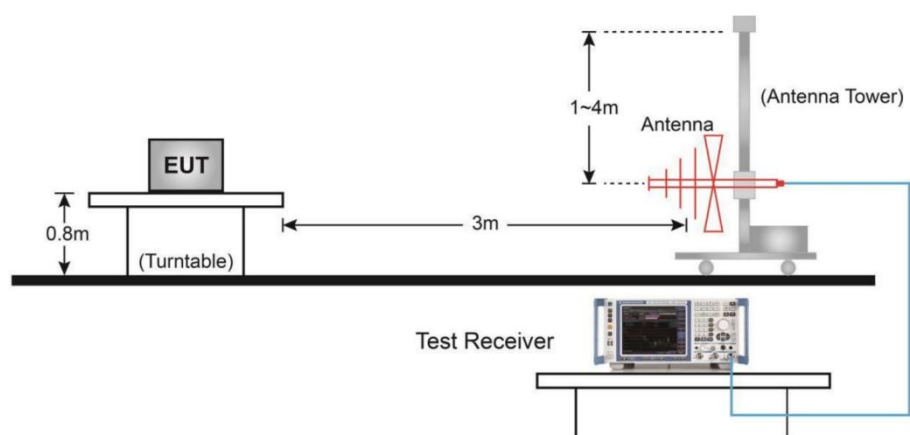
RBW = 1MHz, VBW = 3MHz (>1GHz for PK);

Remark:

1. Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Measured level= Original Receiver Reading + Factor
3. Margin = Limit – Measured level
4. If the PK measured level is lower than AV limit, the AV test can be elided. Modulation type and data rate tested (Only worst case result is given below):

Mode	Data rate	Channel
802.11a	6Mbps	149,157,165
802.11n-HT20	MCS0	149,157,165
802.11n-HT40	MCS0	151,159
802.11ac-HT20	MCS0	149,157,165
802.11ac-HT40	MCS0	151,159
802.11ac-HT80	MCS0	155

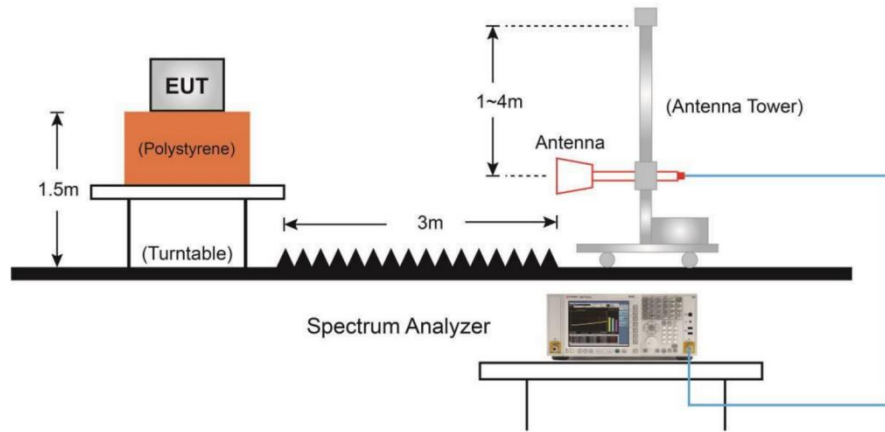
**Below 1GHz Test Setup**



**Above 1GHz Test Setup**

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**6.6.2.2 Measurement Results**

Mode	Channel	Frequency Range	Conclusion
802.11a	157(5785MHz)	30 MHz ~1 GHz	P
		1 GHz ~ 8 GHz	P
		8 GHz ~ 18 GHz	P
		18 GHz ~ 26.5 GHz	P
		26.5 GHz~ 40 GHz	P
802.11n-HT20	157(5785MHz)	30 MHz ~1 GHz	P
		1 GHz ~ 8 GHz	P
		8 GHz ~ 18 GHz	P
		18 GHz ~ 26.5 GHz	P
		26.5 GHz~ 40 GHz	P
802.11n-HT40	159(5795MHz)	30 MHz ~1 GHz	P
		1 GHz ~ 8 GHz	P
		8 GHz ~ 18 GHz	P
		18 GHz ~ 26.5 GHz	P
		26.5 GHz~ 40 GHz	P
802.11ac-VHT20	165(5825MHz)	30 MHz ~1 GHz	P
		1 GHz ~ 8 GHz	P
		8 GHz ~ 18 GHz	P
		18 GHz ~ 26.5 GHz	P
		26.5 GHz~ 40 GHz	P
802.11ac-VHT40	151(5755MHz)	30 MHz ~1 GHz	P
		1 GHz ~ 8 GHz	P
		8 GHz ~ 18 GHz	P
		18 GHz ~ 26.5 GHz	P
		26.5 GHz~ 40 GHz	P
802.11ac-VHT80	155(5775MHz)	30 MHz ~1 GHz	P
		1 GHz ~ 8 GHz	P
		8 GHz ~ 18 GHz	P

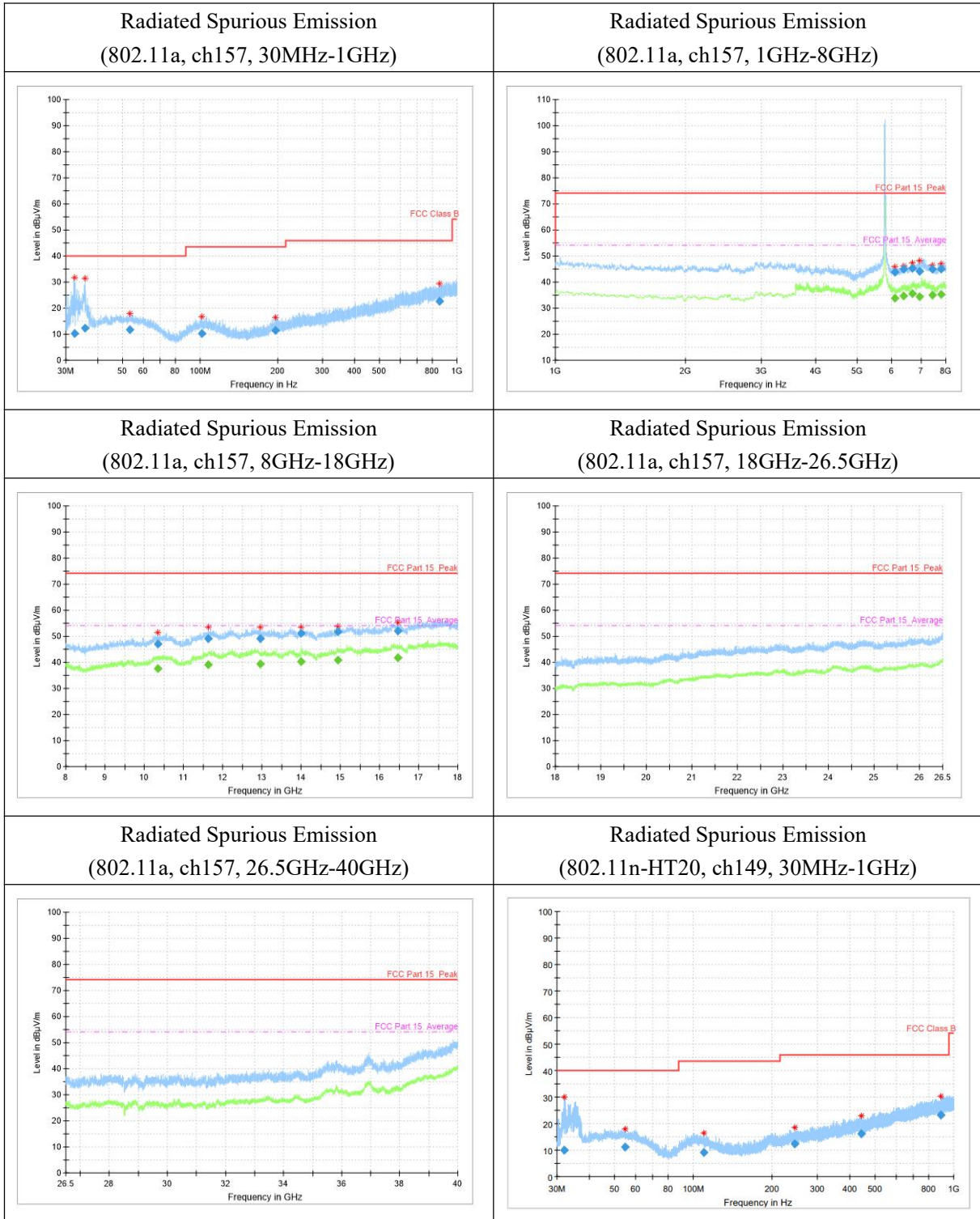
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		18 GHz ~ 26.5 GHz	P
		26.5 GHz~ 40 GHz	P

The test data below 30MHz is more than 20dB lower than the limit value, so it is not provided in the report.

Mainly Supply:



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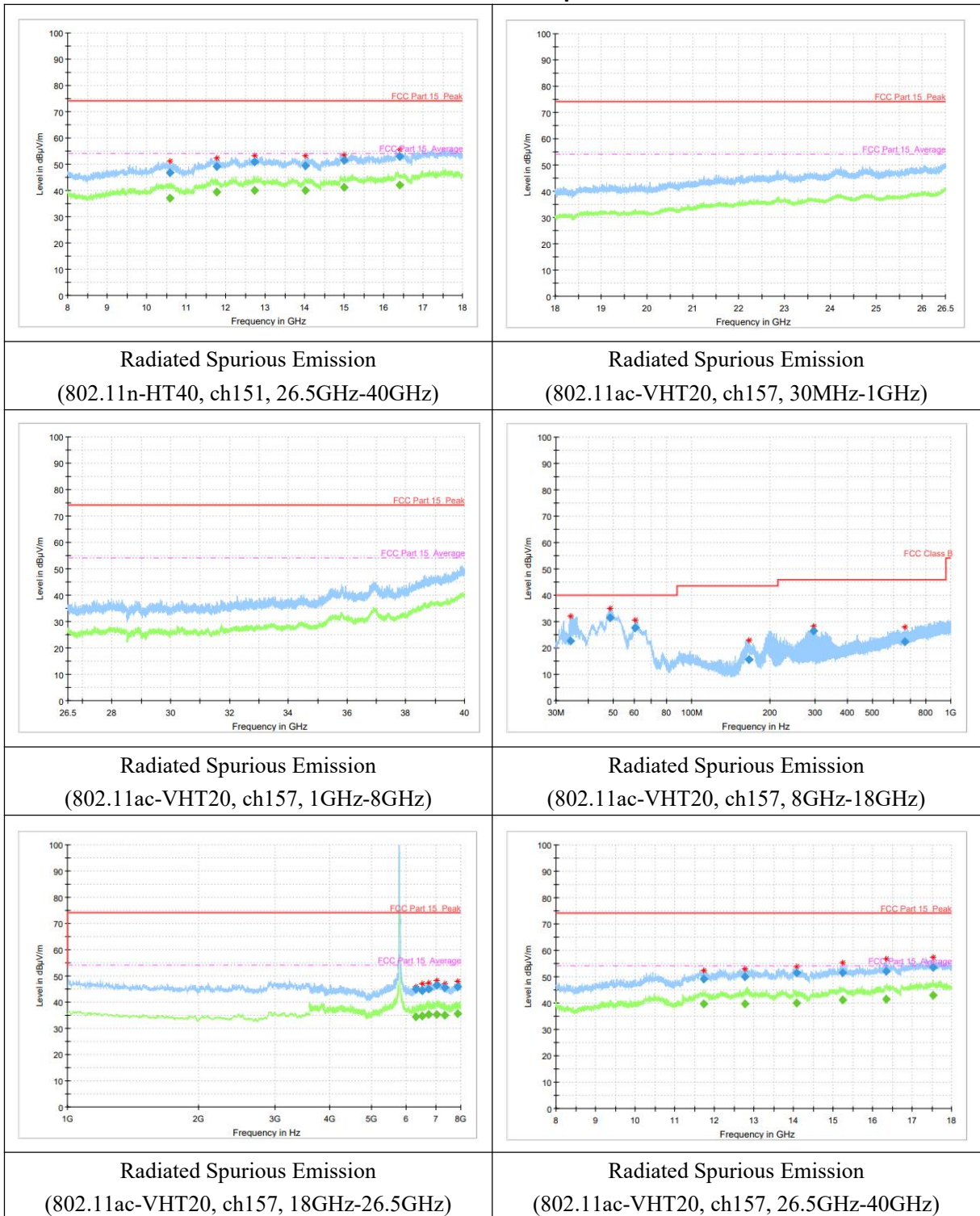
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<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT20, ch149, 1GHz-8GHz)</p>	<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT20, ch149, 8GHz-18GHz)</p>
<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT20, ch149, 18GHz-26.5GHz)</p>	<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT20, ch149, 26.5GHz-40GHz)</p>
<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT40, ch151, 30MHz-1GHz)</p>	<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT40, ch151, 1GHz-8GHz)</p>
<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT40, ch151, 8GHz-18GHz)</p>	<p align="center"><b>Radiated Spurious Emission</b> (802.11n-HT40, ch151, 18GHz-26.5GHz)</p>

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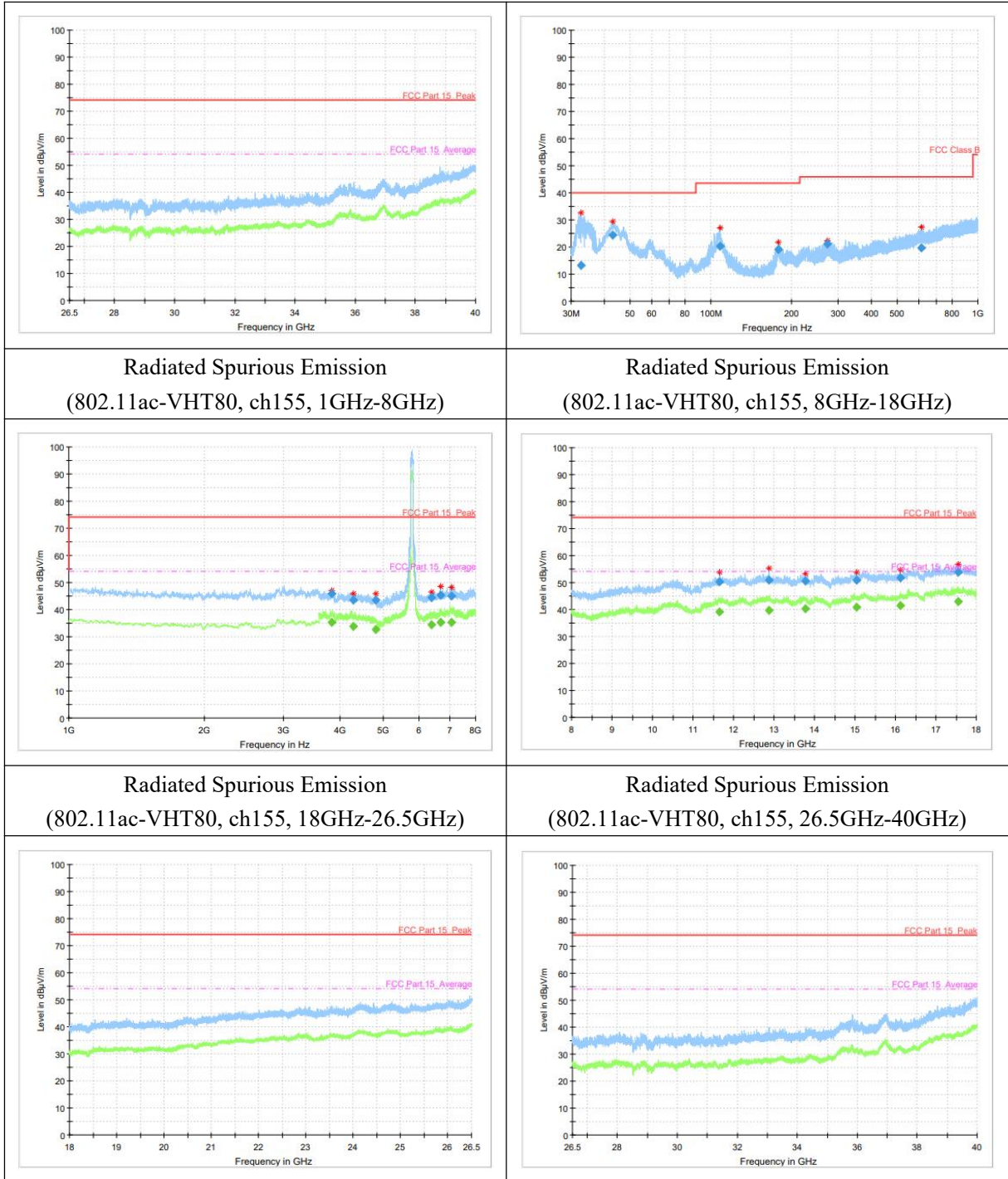


<p>Level in dBμV/m vs Frequency in GHz (18-26.5). FCC Part 15 Peak at ~75 dBμV/m, Average at ~55 dBμV/m. Measured levels are below 50 dBμV/m.</p>	<p>Level in dBμV/m vs Frequency in GHz (26.5-40). FCC Part 15 Peak at ~75 dBμV/m, Average at ~55 dBμV/m. Measured levels are below 50 dBμV/m.</p>
<p><b>Radiated Spurious Emission</b> (802.11ac-VHT40, ch159, 30MHz-1GHz)</p>	<p><b>Radiated Spurious Emission</b> (802.11ac-VHT40, ch159, 1GHz-8GHz)</p>
<p>Level in dBμV/m vs Frequency in Hz (30M-1G). FCC Class B limit shown as a step function. Measured levels are below 40 dBμV/m.</p>	<p>Level in dBμV/m vs Frequency in GHz (1G-8G). FCC Part 15 Peak at ~75 dBμV/m, Average at ~55 dBμV/m. A sharp peak is visible at ~6 GHz.</p>
<p><b>Radiated Spurious Emission</b> (802.11ac-VHT40, ch159, 8GHz-18GHz)</p>	<p><b>Radiated Spurious Emission</b> (802.11ac-VHT40, ch159, 18GHz-26.5GHz)</p>
<p>Level in dBμV/m vs Frequency in GHz (8-18). FCC Part 15 Peak at ~75 dBμV/m, Average at ~55 dBμV/m. Measured levels are below 55 dBμV/m.</p>	<p>Level in dBμV/m vs Frequency in GHz (18-26.5). FCC Part 15 Peak at ~75 dBμV/m, Average at ~55 dBμV/m. Measured levels are below 50 dBμV/m.</p>
<p><b>Radiated Spurious Emission</b> (802.11ac-VHT40, ch159, 26.5GHz-40GHz)</p>	<p><b>Radiated Spurious Emission</b> (802.11ac-VHT80, ch155, 30MHz-1GHz)</p>

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Radiated Spurious Emission  
(802.11ac-VHT80, ch155, 1GHz-8GHz)

Radiated Spurious Emission  
(802.11ac-VHT80, ch155, 8GHz-18GHz)

Radiated Spurious Emission  
(802.11ac-VHT80, ch155, 18GHz-26.5GHz)

Radiated Spurious Emission  
(802.11ac-VHT80, ch155, 26.5GHz-40GHz)

Note:

1. Only data in worst mode is provided
2. The out-of- limit signal in the picture is the main frequency signal.

802.11a mode

Channel 157(30MHz ~ 1GHz)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
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32.4	10.19	-15.8	25.99	V
35.6	12.46	-14.8	27.26	V
53.2	11.83	-11.6	23.43	H
101.3	10.21	-12.7	22.91	H
196.4	11.51	-12.5	24.01	H
857.0	22.68	-0.1	22.78	V

**Channel 157 (1GHz-8GHz)**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
6091.4	43.72	2.5	41.22	H
6395.4	44.98	2.8	42.18	H
6691.2	45.27	4	41.27	H
6963.0	44.07	3.7	40.37	V
7451.6	44.9	3.5	41.4	V
7808.2	45.04	3.9	41.14	H

**Channel 157 (8GHz-18GHz)**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
10353.6	47.05	7.8	39.25	V
11636.4	49.18	9.9	39.28	V
12951.8	49.22	11.1	38.12	H
14005.8	51.3	12.4	38.9	H
14936.8	51.64	13.8	37.84	H
16469.0	52.13	16.7	35.43	H

**802.11n mode**
**Channel 149(30MHz ~ 1GHz)**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
32.0	10.11	-15.8	25.91	V
54.7	11.3	-11.7	23	V
110.0	9.09	-13.1	22.19	V
245.4	12.28	-11.4	23.68	V
442.8	16.03	-6.8	22.83	V
893.1	23.23	0.7	22.53	H

**Channel 149 (1GHz-8GHz)**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
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**Report No.: 123W00020-WIFI 5.8G RF**

6254.4	44.41	2.8	41.61	H
6468.8	44.29	2.9	41.39	H
6746.4	46.08	3.7	42.38	H
7146.0	45.21	4.1	41.11	V
7373.0	45.26	3.8	41.46	V
7750.4	45.64	4	41.64	H

**Channel 149 (8GHz-18GHz)**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
11697.6	50	10	40	V
13199.2	49.52	10.7	38.82	V
14070.4	51.09	12.4	38.69	H
14936.4	50.55	13.8	36.75	V
16382.8	52.21	16.4	35.81	H
17529.6	53.49	17.7	35.79	V

**802.11n-HT40 mode**

**Channel 151(30MHz-1GHz )**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
31.4	9.03	-15.8	24.83	V
35.6	13.23	-14.8	28.03	V
51.4	11.28	-11.5	22.78	V
108.3	9.89	-12.9	22.79	H
276.0	11.52	-10.8	22.32	V
666.7	19.77	-2.5	22.27	V

**Channel 151 (1GHz-8GHz )**

Frequency (MHz)	Result (dB $\mu$ V/m)	ARpl (dB)	PMea (dB $\mu$ V/m)	Polarity
6072.4	44.26	2.5	41.76	V
6394.8	44.85	2.8	42.05	V
6748.8	45	3.7	41.3	V

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**Report No.: 123W00020-WIFI 5.8G RF**

7061.6	45.93	4.4	41.53	H
7330.4	45.18	4	41.18	H

**Channel 151 (8GHz-18GHz )**

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
10584.6	46.8	7.6	39.2	H
11771.2	49.18	10	39.18	H
12733.2	50.83	10.8	40.03	V
14014.2	49.38	12.4	36.98	H
15004.4	51.45	13.7	37.75	V
16405.0	52.81	16.5	36.31	V

**802.11ac-VHT20 mode**

**Channel 157(30MHz-1GHz )**

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
34.1	22.66	-15.3	37.96	V
48.7	31.37	-11.8	43.17	V
60.7	27.64	-12.7	40.34	V
166.3	15.7	-15.5	31.2	H
294.7	26.51	-10.5	37.01	V
662.7	22.49	-2.6	25.09	H

**Channel 157(1GHz-8 GHz )**

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
6294.0	44.87	3	41.87	H
6533.4	44.41	3.1	41.31	H
6746.6	44.97	3.7	41.27	H
7039.6	46.61	4.4	42.21	H
7345.6	45.72	3.9	41.82	V
7881.0	45.94	4.2	41.74	V

**Channel 157(8GHz-18 GHz )**

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**Report No.: 123W00020-WIFI 5.8G RF**

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
11731.0	49.04	10	39.04	V
12776.6	49.87	10.9	38.97	H
14074.6	51.5	12.4	39.1	V
15252.2	51.55	14.3	37.25	H
16342.2	51.93	16.3	35.63	V
17539.6	53.67	17.7	35.97	H

802.11ac-VHT40 mode

Channel 159(30MHz-1 GHz )

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
31.6	8.92	-15.7	24.62	V
35.5	12.93	-14.8	27.73	V
122.7	13.24	-15	28.24	V
197.6	10.36	-12.4	22.76	H
322.4	12.91	-9.4	22.31	H
707.5	20.29	-2	22.29	H

Channel 159(1GHz-8 GHz )

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
4275.0	44	1	43	V
4714.0	42.25	1	41.25	H
5362.8	45.69	2.1	43.59	V
6482.2	45.85	3	42.85	H
7087.6	45.31	4.3	41.01	V
7768.8	45.06	4.1	40.96	H

Channel 159(8GHz-18 GHz )

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
12254.6	49.46	10.9	38.56	V

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**Report No.: 123W00020-WIFI 5.8G RF**

13284.8	49.91	11.2	38.71	H
14007.0	51.72	12.4	39.32	V
15254.2	51.5	14.3	37.2	V
16406.4	51.73	16.5	35.23	H
17689.0	54.77	17.9	36.87	V

## Channel 159(8GHz-18 GHz )(Average)

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
17689.0	43.89	17.9	25.99	V

## 802.11ac-VHT80 mode

## Channel 155(30MHz-1GHz )

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
32.8	13.11	-15.7	28.81	V
43.0	24.46	-12.5	36.96	V
107.9	20.3	-12.9	33.2	V
179.4	19.08	-14.9	33.98	H
273.6	21.2	-10.9	32.1	H
615.5	19.83	-2.4	22.23	V

## Channel 155(1GHz-8 GHz )

Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
3826.6	46.01	2	44.01	H
4288.2	43.53	1.1	42.43	V
4793.2	43.42	1.5	41.92	H
6384.0	44.38	2.8	41.58	H
6678.2	45.44	3.9	41.54	H
7075.6	45.06	4.3	40.76	H

## Channel 155(8GHz-18 GHz )

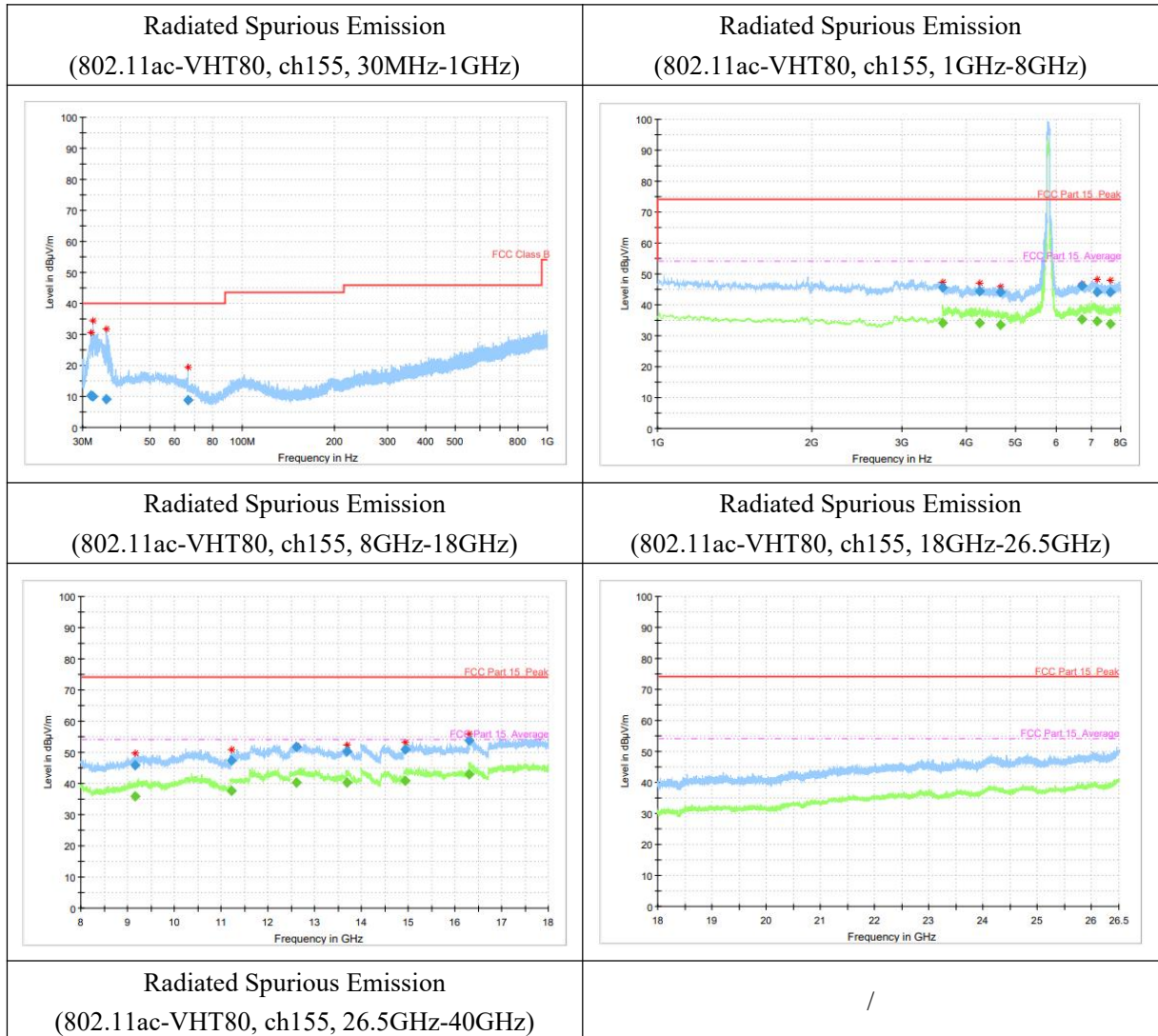
Frequency (MHz)	Result (dBμV/m)	ARpl (dB)	PMea (dBμV/m)	Polarity
11651.6	50.32	9.9	40.42	V

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12873.0	50.93	11.2	39.73	H
13778.6	50.63	11.7	38.93	V
15036.0	50.98	13.7	37.28	H
16114.2	51.72	15.3	36.42	H
17541.8	53.85	17.7	36.15	H

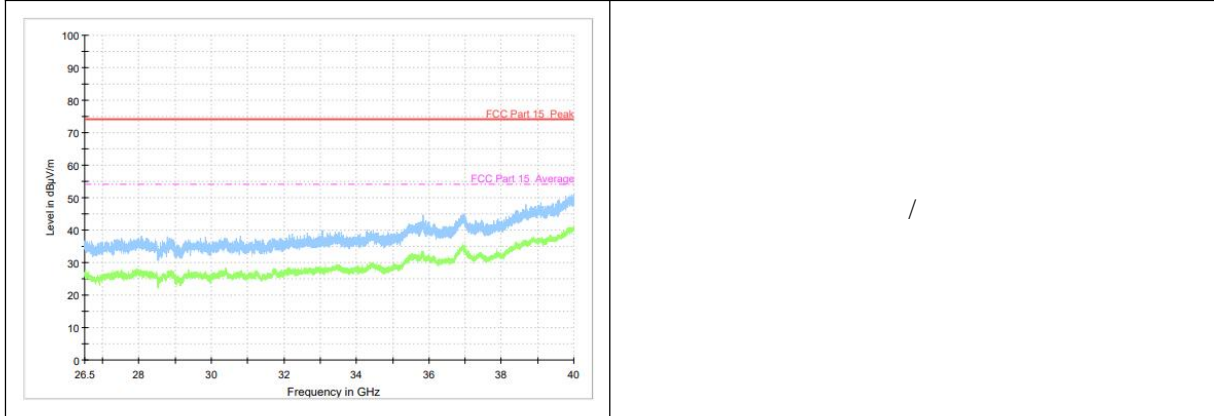
Secondary Supply:



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802.11ac-VHT80 mode

Channel 155(30MHz-1GHz )

Frequency (MHz)	Result (dBµV/m)	ARpl (dB)	PMea (dBµV/m)	Polarity
32.0	10.43	-15.8	26.23	V
32.5	10.04	-15.8	25.84	V
35.9	9.19	-14.7	23.89	V
66.3	8.76	-14.2	22.96	H

Channel 155(1GHz-8 GHz )

Frequency (MHz)	Result (dBµV/m)	ARpl (dB)	PMea (dBµV/m)	Polarity
3598.0	45.52	1.2	44.32	V
4244.8	44.49	1.2	43.29	H
4657.4	44.06	1.3	42.76	V
6710.2	46.31	3.9	42.41	V
7185.6	44.12	4	40.12	V
7642.6	44.16	3.5	40.66	H

Channel 155(8GHz-18 GHz )

Frequency (MHz)	Result (dBµV/m)	ARpl (dB)	PMea (dBµV/m)	Polarity
9153.8	45.98	4.9	41.08	V
11226.0	47.47	8	39.47	H
12614.4	51.72	10.6	41.12	H
13689.8	50.25	11.6	38.65	V

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Report No.: 123W00020-WIFI 5.8G RF

14946.6	50.76	13.8	36.96	H
16306.6	53.71	16.1	37.61	V

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Report No.: 123W00020-WIFI 5.8G RF

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### 6.9. AC Powerline Conducted Emission

<b>Specifications:</b>	FCC 47 Part 15.407(b)
<b>DUT Serial Number:</b>	S8
<b>Test conditions:</b>	Ambient Temperature:20°C Relative Humidity:40% Air pressure: 90kPa
<b>Test Results:</b>	Pass

Method of Measurement: ANSI C63.10-2013-clause 6.2

1. The one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT.
2. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed.
3. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation.
4. If the EUT is comprised of equipment units that have their own separate ac power connections, e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network, each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be separately measured. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

If the EUT uses a detachable antenna, these measurements shall be made with a suitable dummy load connected to the antenna output terminals; otherwise, the tests shall be made with the antenna connected and, if adjustable, fully extended. When measuring the ac conducted emissions from a device that operates between 150 kHz and 30 MHz a non-detachable antenna may be replaced with a dummy load for the measurements within the fundamental emission band of the transmitter, but only for those measurements.<sup>36</sup> Record the six highest EUT emissions relative to the limit of each of the current-carrying conductors of the power cords of the equipment that comprises the EUT over the frequency range specified by the procuring or regulatory agency. Diagram or photograph the test setup that was used. See Clause 8 for full reporting requirements.

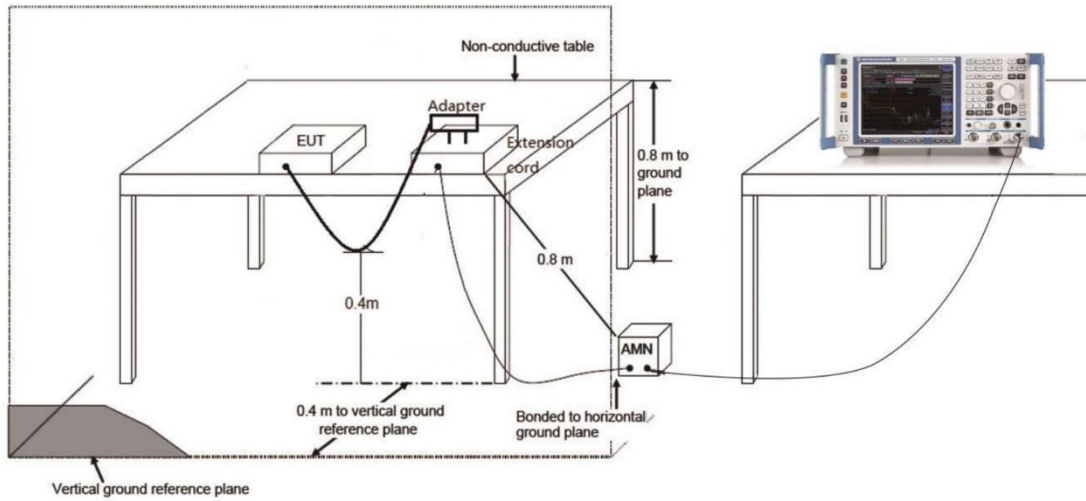
Measurement Uncertainty:

Measurement Uncertainty	1.97dB(K=2)
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Test Setup



Test Condition

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit

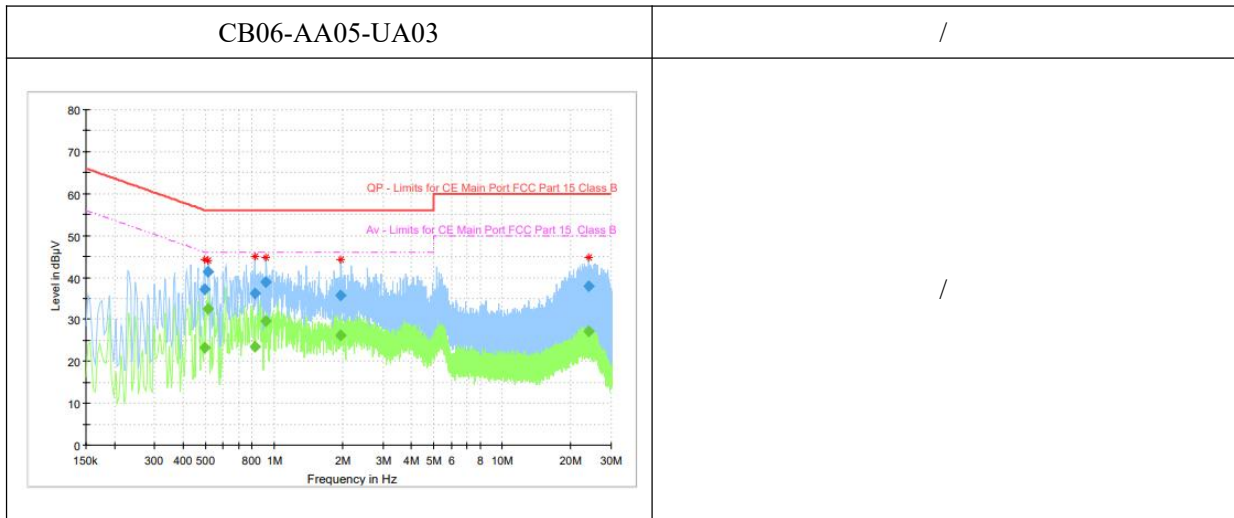
(Quasi-peak-average Limit)

Frequency range (MHz)	Quasi-peak Limit (dB $\mu$ V)	Average Limit (dB $\mu$ V)	Conclusion
0.15 to 0.5	66 to 56	56 to 46	P
0.5 to 5	56	46	
5 to 30	60	50	

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

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Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.497006	---	23.35	46.05	22.70	15000.0	9.000	L1	ON	9.6
0.497006	37.19	---	56.05	18.86	15000.0	9.000	L1	ON	9.6
0.515663	41.30	---	56.00	14.70	15000.0	9.000	N	ON	9.6
0.515663	---	32.52	46.00	13.48	15000.0	9.000	N	ON	9.6
0.821625	36.12	---	56.00	19.88	15000.0	9.000	L1	ON	9.6
0.821625	---	23.51	46.00	22.49	15000.0	9.000	L1	ON	9.6
0.922369	---	29.66	46.00	16.34	15000.0	9.000	N	ON	9.6
0.922369	38.94	---	56.00	17.06	15000.0	9.000	N	ON	9.6
1.963388	---	26.30	46.00	19.70	15000.0	9.000	N	ON	9.7
1.963388	35.79	---	56.00	20.21	15000.0	9.000	N	ON	9.7
23.794931	---	27.08	50.00	22.92	15000.0	9.000	N	ON	10.2
23.794931	37.90	---	60.00	22.10	15000.0	9.000	N	ON	10.2

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**Report No.: 123W00020-WIFI 5.8G RF**

**Test photo**

See the Pic3 in document” I23W00020 \_Wifi Test Setup Photos”.

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### **6.10. Frequency Stability**

Manufacturers ensured the EUT meet the requirement of 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.(According to15.407(g))



Report No.: 123W00020-WIFI 5.8G RF

## Annex A EUT Photos

See the document "I23W00020-External Photos".

See the document "I23W00020-Internal Photos".

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Report No.: 123W00020-WIFI 5.8G RF

## **Annex B Deviations from Prescribed Test Methods**

No deviation from Prescribed Test Methods.

**\*\*\*END OF REPORT\*\*\***

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