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Middlefield, Ohio 44062
United States of America
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CERTIFICATION TEST REPORT

Manufacturer: PCTEL, Inc
471 Brighton Drive
Bloomington, Illinois 60108-3102 USA

Applicant: Same as Above

Product Name: Industrial IoT Radio Module

Product Description: 2x2, 802.11ac, 5 GHz, mPCIe radio module

**Operating Voltage/Freq.
of EUT During Testing:** 120V/60 Hz; PoE 48VDC

Model: RM-WIFI-AC-2X2-HP-US

FCC ID: NYPRMWIFIAC2X2

Testing Commenced: 2021-09-07

Testing Ended: 2022-05-04

Summary of Test Results: In Compliance

The EUT complies with the EMC requirements when manufactured identically as the unit tested in this report, including any required modifications. Any changes to the design or build of this unit subsequent to this testing may deem it non-compliant.

Rule(s):

- **FCC Part 15 Subpart E – Unlicensed National Information Infrastructure Devices, Section 15.407 General technical requirements**



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

A handwritten signature in black ink, appearing to read 'Julius Chiller'.

Evaluation Conducted by:

Julius Chiller, EMC/Wireless Engineer

A handwritten signature in black ink, appearing to read 'Ken Littell'.

Report Reviewed by:

Ken Littell, Vice President of EMC

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TABLE OF CONTENTS

Section	Title	Page
1	ADMINISTRATIVE INFORMATION	4
2	SUMMARY OF TEST RESULTS/MODIFICATIONS	7
3	ENGINEERING STATEMENT	8
4	EUT INFORMATION AND DATA	9
5	LIST OF MEASUREMENT INSTRUMENTATION	10
6	OCCUPIED BANDWIDTH	11
7	OUTPUT POWER	22
8	POWER SPECTRAL DENSITY	65
9	RADIATED SPURIOUS EMISSIONS	106
10	CONDUCTED SPURIOUS EMISSIONS	118
11	TEST SETUP PHOTOGRAPHS	131



1 ADMINISTRATIVE INFORMATION

1.1 Measurement Location:

F2 Labs in Middlefield, Ohio. Site description and attenuation data are on file with the FCC's Sampling and Measurement Branch at the FCC Laboratory in Columbia, MD.

1.2 Measurement Procedure:

All measurements were performed according to ANSI C63.10:2013 and recommended FCC measurement procedures under Section 15.407 and in KDB789033 v02r01. A list of the measurement equipment can be found in Section 6.



1.3 Uncertainty Budget:

The uncertainty in EMC measurements arises from several factors which affect the results, some associated with environmental conditions in the measurement room, the test equipment being used, and the measurement techniques adopted.

The measurement uncertainty budgets detailed below are calculated from the test and calibration data and are expressed with a 95% confidence factor using a coverage factor of $k=2$. The Uncertainty for a laboratory is referred to as U_{lab} . For Radiated and Conducted Emissions, the Expanded Uncertainty is compared to the U_{cispr} values to determine if a specific margin is required to deem compliance.

U_{lab}

Measurement Range	Combined Uncertainty	Expanded Uncertainty
Radiated Emissions <1 GHz @ 3m	2.54	5.07dB
Radiated Emissions <1 GHz @ 10m	2.55	5.09dB
Radiated Emissions 1 GHz to 2.7 GHz	1.81	3.62dB
Radiated Emissions 2.7 GHz to 18 GHz	1.55	3.10dB
AC Power Line Conducted Emissions, 150kHz to 30 MHz	1.38	2.76dB
AC Power Line Conducted Emissions, 9kHz to 150kHz	1.66	3.32dB

U_{cispr}

Measurement Range	Expanded Uncertainty
Radiated Emissions <1 GHz @ 3m	5.2dB
Radiated Emissions <1 GHz @ 10m	5.2dB
Radiated Emissions 1 GHz to 2.7 GHz	Under Consideration
Radiated Emissions 2.7 GHz to 18 GHz	Under Consideration
AC Power Line Conducted Emissions, 150kHz to 30 MHz	3.6dB
AC Power Line Conducted Emissions, 9kHz to 150kHz	4.0dB

If U_{lab} is less than or equal to U_{cispr} , then:

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} in table 1, then:

- compliance is deemed to occur if no measured disturbance, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

Note: Only measurements listed in the tables above that relate to tests included in this Test Report are applicable.



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1.4 Document History

Document Number	Description	Issue Date	Approved By
F2P19924D-05E	First Issue	2022-08-13	K. Littell

**2 SUMMARY OF TEST RESULTS**

Note: Results below apply to Straddle Channels for OFDM, HT20, HT40 & HT80.

Test Name	Standard(s)	Results
Occupied Bandwidth	CFR 47 Part 15.407(e) / Part 15.209 / KDB789033	Complies
Output Power	CFR 47 Part 15.407(a)(1)(iv) / Part 15.407(a)(3) / KDB789033	Complies
Power Spectral Density	CFR 47 Part 15.407(a)(1)(iv) / Part 15.407(a)(3) / KDB789033	Complies
Radiated Spurious Emissions	CFR 47 Part 15.205 / KDB789033	Complies
Conducted Spurious Emissions	CFR 47 Part 15.407(b)(1,4)	Complies
Voltage Variations (Frequency Stability)	CFR 47 Part 15.31(e)	*

**Not required in test report per KDB 789033 Sec II A 3.*

Modifications Made to the Equipment
None



3 ENGINEERING STATEMENT

This report has been prepared on behalf of PCTEL, Inc to provide documentation for the testing described herein. This equipment has been tested and found to comply with Part 15.407 of the FCC Rules using ANSI C63.10 and KDB789033 standards. The test results found in this test report relate only to the items tested.



4 EUT INFORMATION AND DATA

4.1 Equipment Under Test:

Product: **Industrial IoT Radio Module**Model: **RM-WIFI-AC-2X2-HP-US**

Serial No.: 928504a24210004

Software Version: *Manufacturer documentation states there is no software for this device (refer to Section 7 of document titled "RM-WIFI-AC-2x2-HP FCC Theory of Operation."*FCC ID: **NYPRMWIFIAC2X2**

4.2 Trade Name:

PCTEL, Inc

4.3 Power Supply:

PhiHong PSAC60W-120

4.4 Applicable Rules:

CFR 47, Part 15.407, subpart E

4.5 Equipment Category:

Radio Transmitter-UNII

4.6 Antenna:

External, Detachable 7dBi Dipole. NOTE: 3dB as worse case aggregate gain, the total Output Power and PSD is calculated by summing the measured value in linear power from both output ports. The max antenna gain for this device is 7dBi, and so the total directional gain is 10dB, therefore the maximum Output Power and PSD limit is reduced by 4 dB when in beamforming mode.

4.7 Accessories:

Device	Manufacturer	Model Number	Serial Number
Power Supply	PhiHong	PSAC60W-120	P73102761A1
Access Point	Qualcomm	None Specified	None Specified
Laptop	Hewlett Packard	G42	None Specified
Accessory Software/ Version	Qualcomm	Procomm Plus v4.8, Qualcomm QRCT v4.0.00050	

4.8 Testing Algorithm:

The EUT was set up in a test mode to continuously transmit at selected Straddle Channels within the various UNII bands. The EUT was powered by a client-supplied POE adaptor.

**5 LIST OF MEASUREMENT INSTRUMENTATION**

Equipment Type	Asset Number	Manufacturer	Model	Serial Number	Calibration Due Date
Shielded Chamber 2014	CL166-E	AlbatrossProjects	B83117-DF435-T261	US140023	2022-09-09
Temp/Hum. Recorder	CL232	Extech	445814	01	2023-05-19
Temp/Hum. Recorder	CL261	Extech	445814	04	2023-05-19
Spectrum Analyzer	CL138	Agilent Technologies	E4407B	US41192779	2023-02-09
Receiver	CL151	Rohde & Schwarz	ESU40	100319	2023-01-31
Receiver	CL204	Rohde & Schwarz	ESR7	101714	2023-03-30
Antenna, JB3 Combination	CL175	Sunol Sciences	JB3	A030315	2022-09-14
Horn Antenna	CL098	Emco	3115	9809-5580	2023-01-26
Horn Antenna	CL114	AH Systems, Inc.	SAS-572	237	2023-07-30
Pre-Amplifier	CL189	Com-Power	PAM-840A	461303	2023-03-30
Pre-Amplifier	CL153	Agilent	83006-69007	MY39500791	2022-08-12
Pre-Amplifier	CL250	Com-Power	PAM-118A	18040011	2023-04-01
Amplifier w/Monopole & 18" Loop	CL163-Loop	A.H. Systems, Inc.	EHA-52B	100	2022-09-14
Horn Antenna	CL188	Comm Power	AH - 640	091065	2023-07-29
Low Loss Cable Set	--	Pasternack	PE3C0666-252 / PE3C066-50CM	None Spec.	2023-10-12
Software:	Tile Version 3.4.B.3.		Software Verified: 2022-01-24, 2022-05-05		
Software:	EMC 32, Version 8.53.0		Software Verified: 2022-01-24, 2022-05-05		



6 OCCUPIED BANDWIDTH

6.1 Requirements:

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the -26dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage.

Bandwidth measurements were made at the Straddle Channels. The bandwidth was measured using the analyzer's marker function.



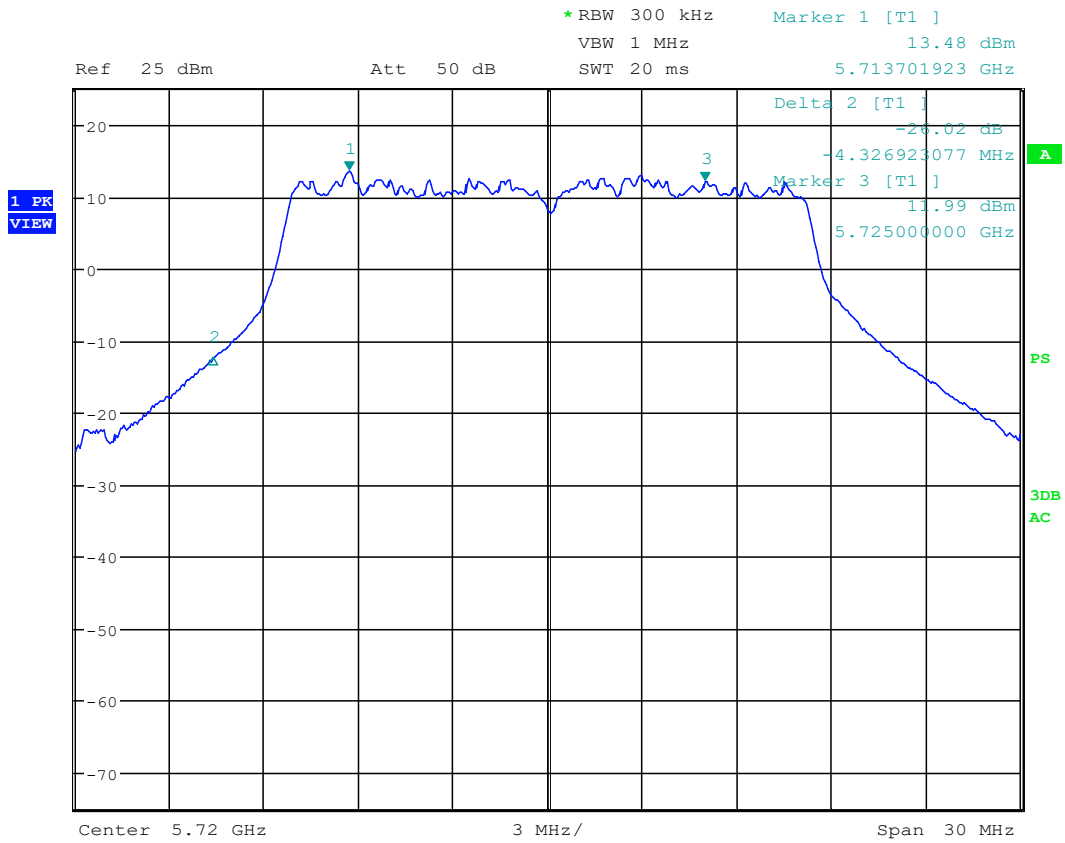
Occupied Bandwidth Test Data

Test Date(s):	2022-05-04	Test Engineer(s):	J. Chiller
Standards:	CFR 47 Part 15.215(c)	Air Temperature:	21.5° C
		Relative Humidity:	38%

OCCUPIED BANDWIDTH UNII 2C			
Channel	Frequency (MHz)	-26dB (MHz)	Limit
Modulation: OFDM			
High	5720	15.626	> 500kHz
Modulation: HT20			
High	5720	17.128	> 500kHz
Modulation: HT40			
High	5710	36.398	> 500kHz
Modulation: HT80			
High	5690	78.115	> 500kHz



UNII 2C, OFDM

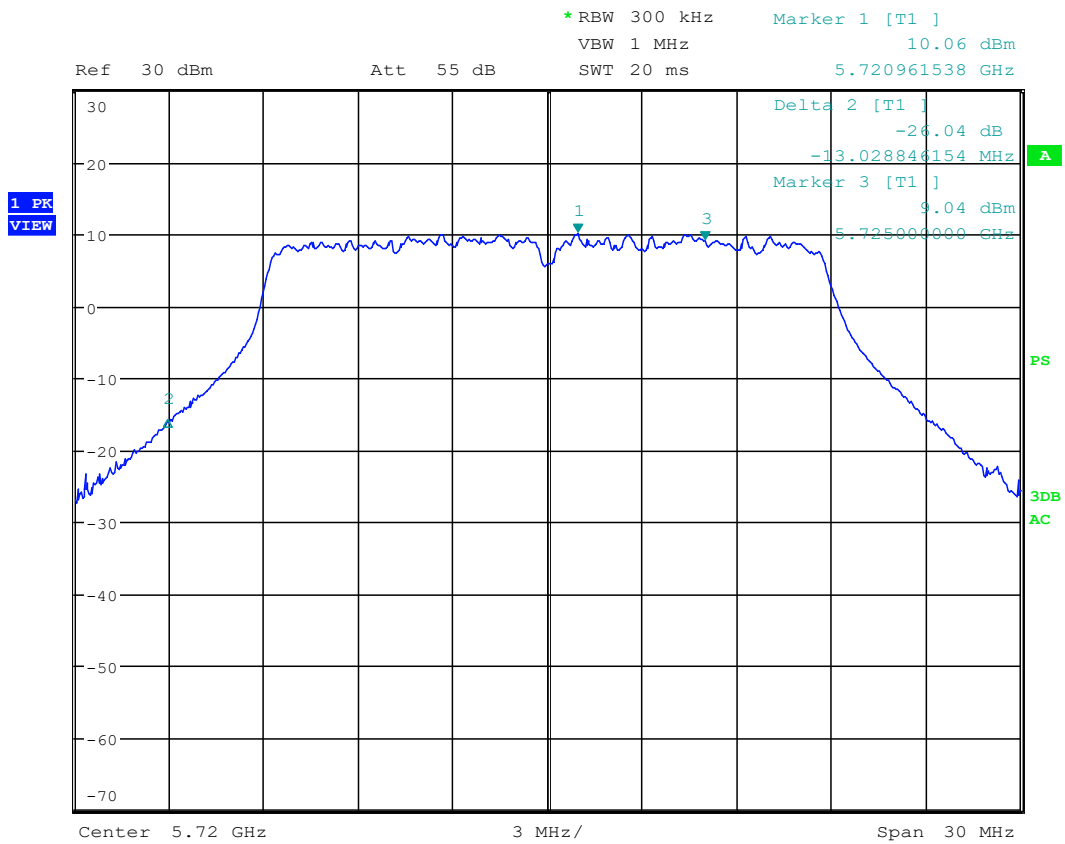




Order Number: F2P19924D

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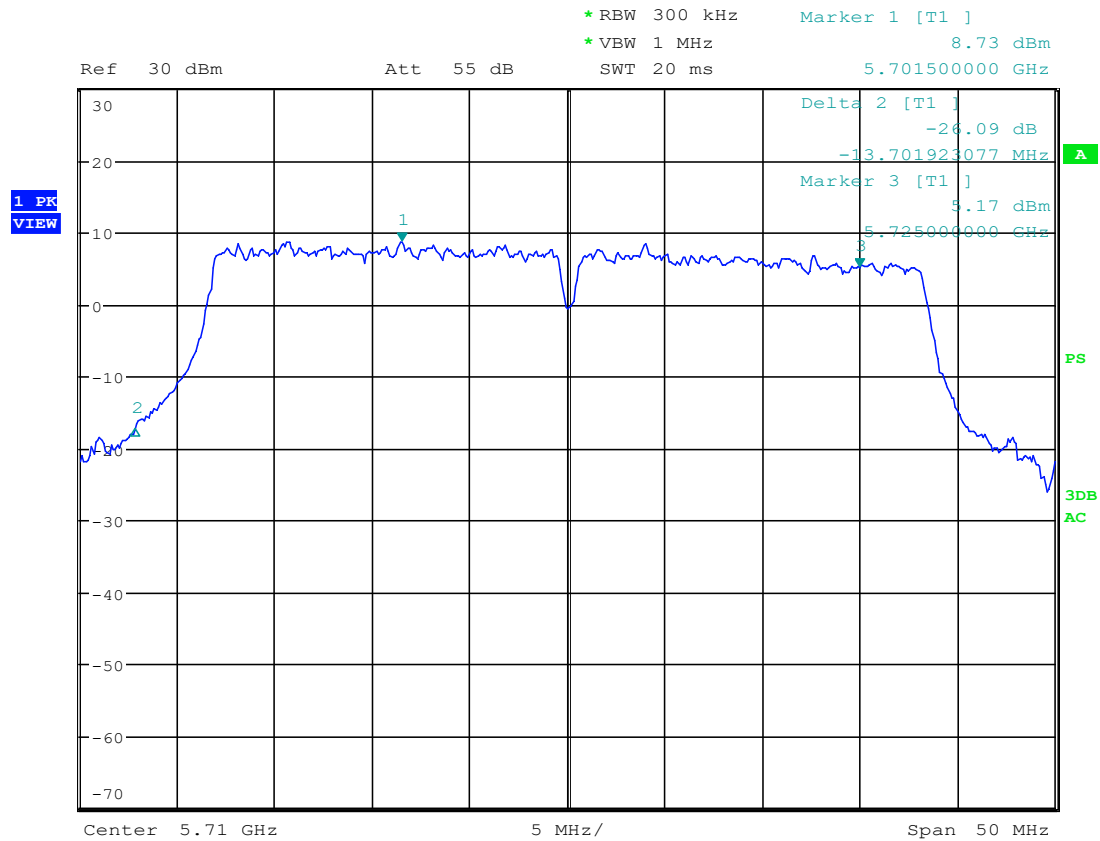
UNII 2C, HT20





Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, HT40



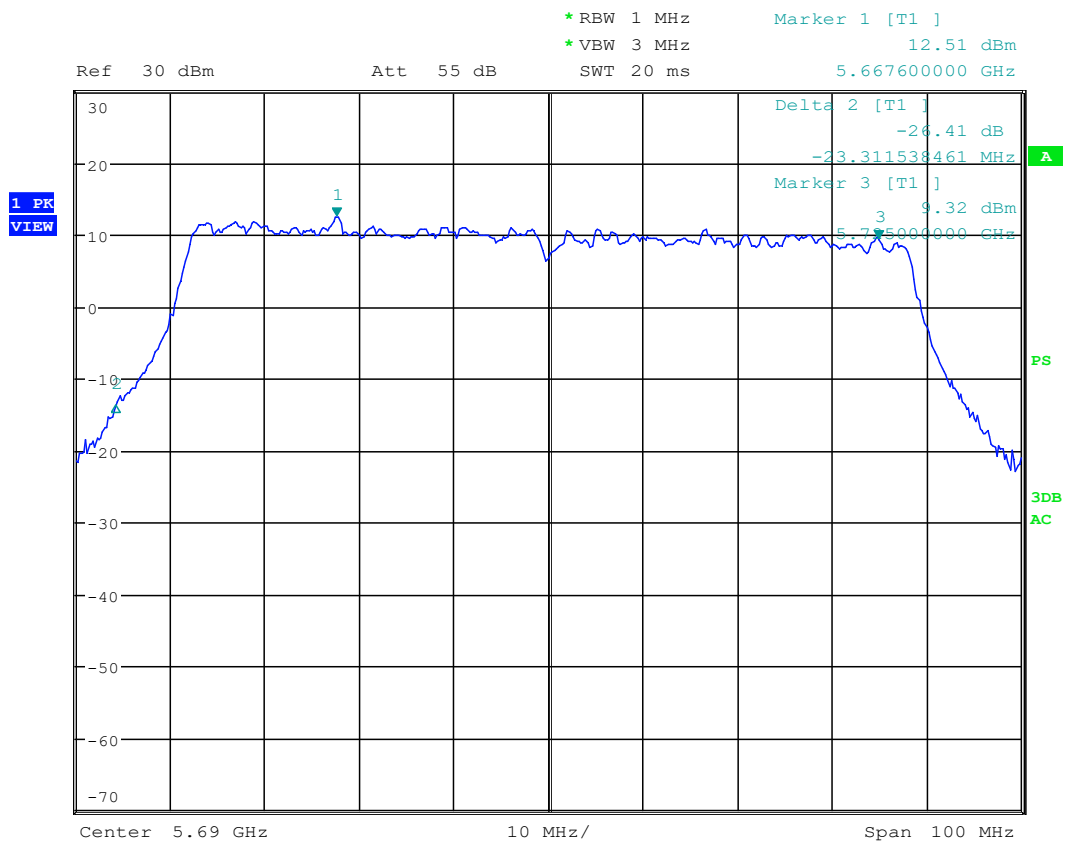
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Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, HT80



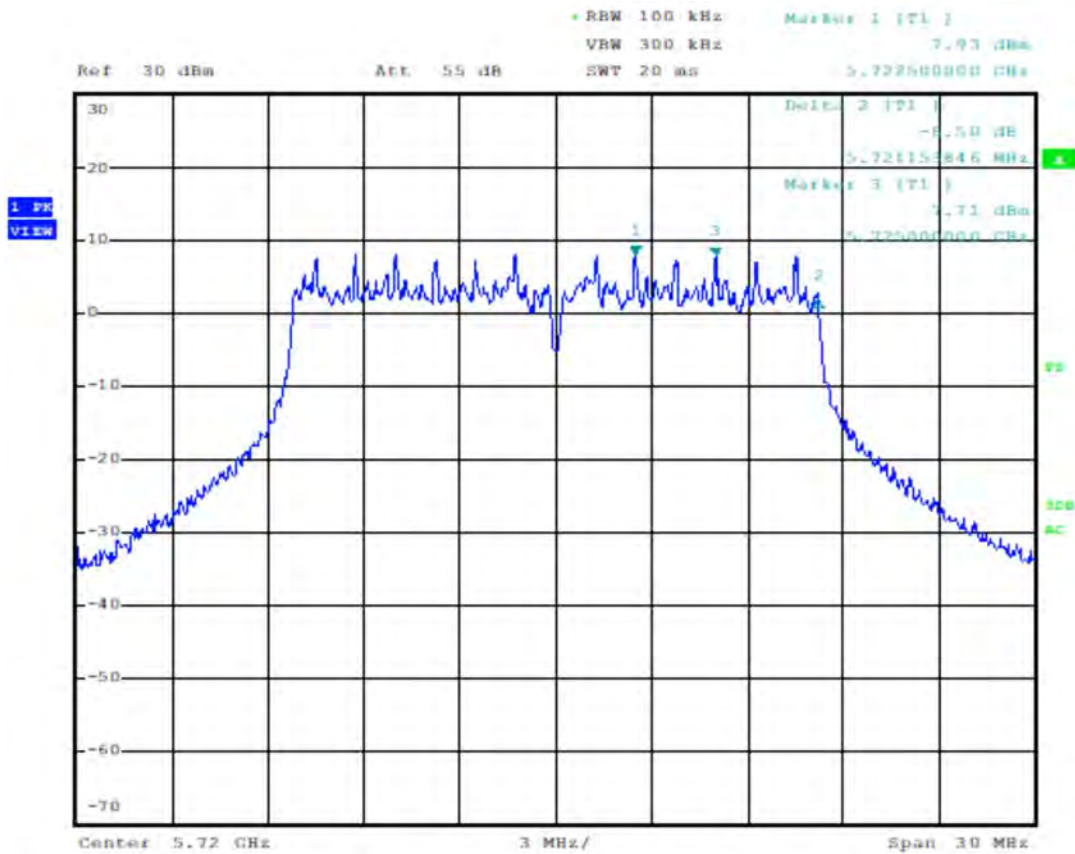
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OCCUPIED BANDWIDTH UNII 3			
Channel	Frequency (MHz)	-6dB (MHz)	Limit
Modulation: OFDM			
High	5720	3.221	> 500kHz
Modulation: HT20			
High	5720	3.846	> 500kHz
Modulation : HT40			
High	5710	3.301	> 500kHz
Modulation : HT 80			
High	5690	3.302	> 500kHz



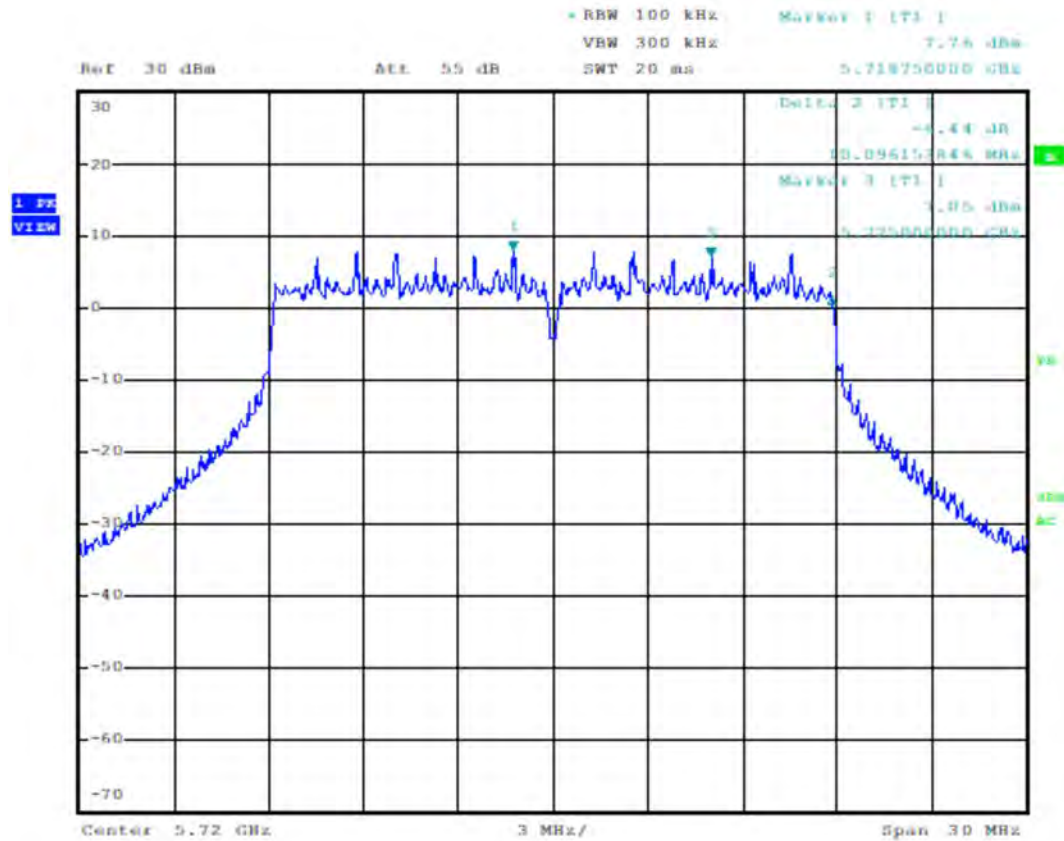
UNII 3, OFDM:





Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, HT20

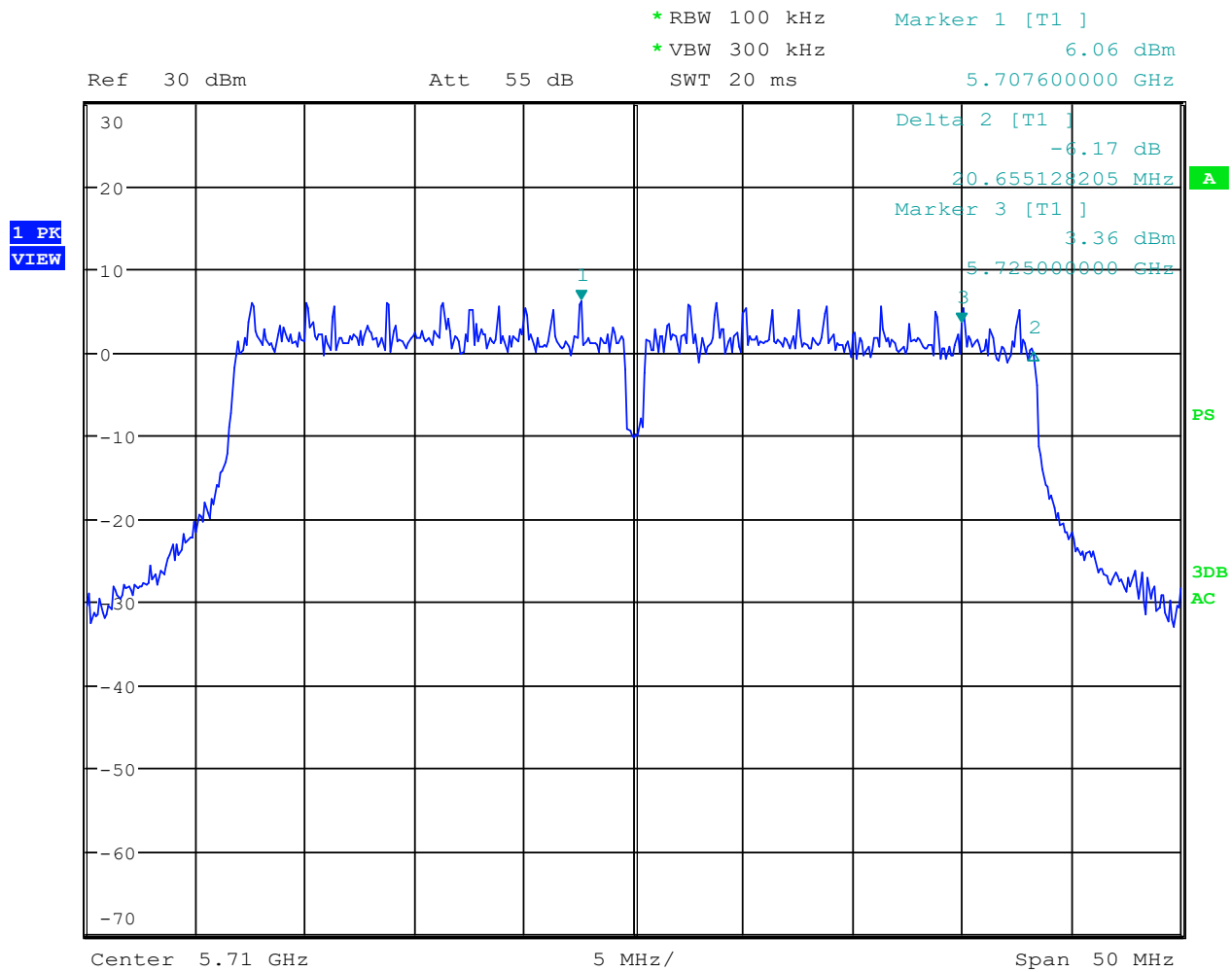




Order Number: F2P19924D

Applicant: PCTEL, Inc
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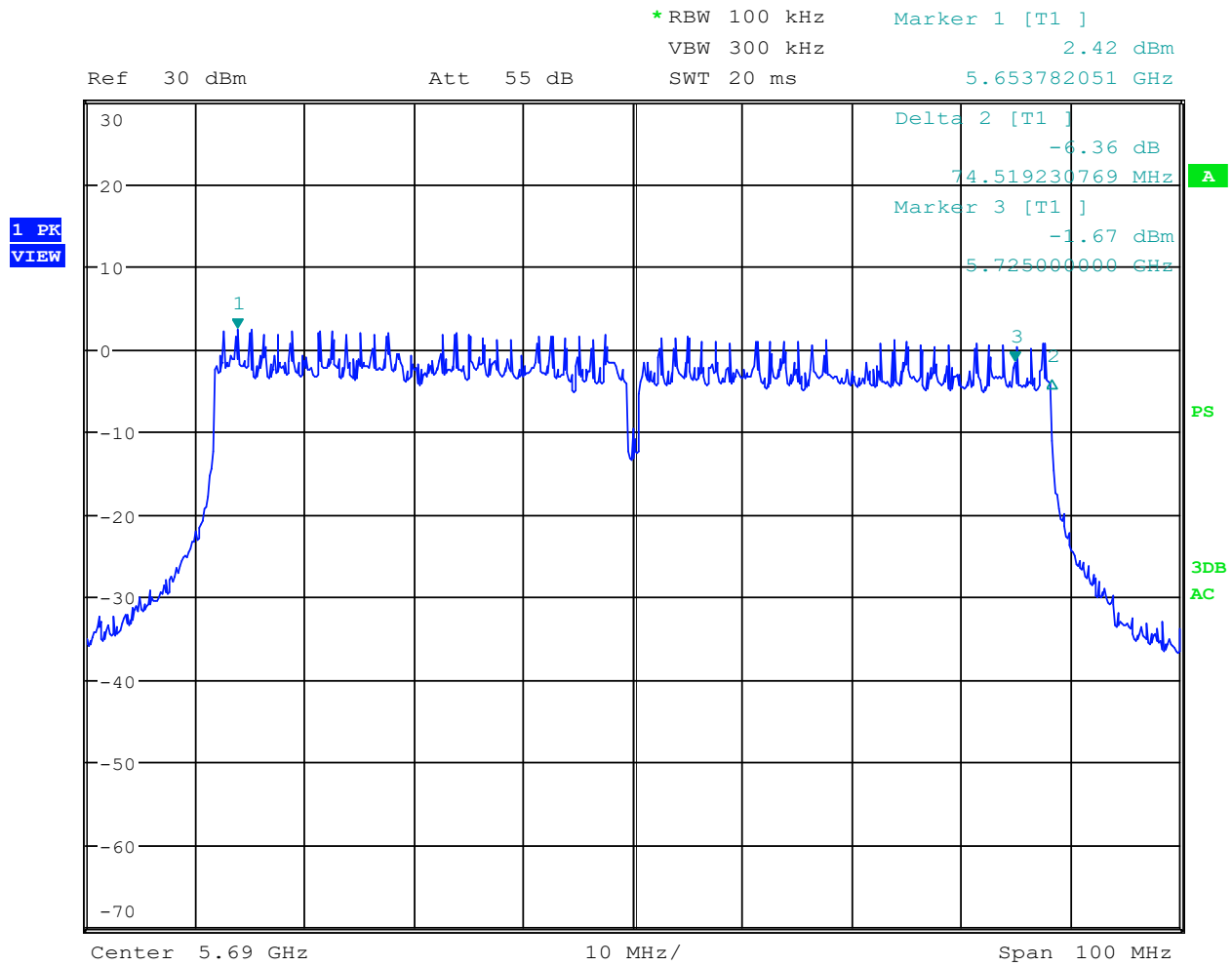
UNII 3, HT40



Date: 19.JAN.2022 16:32:31



UNII 3, HT80





7 OUTPUT POWER

The EUT antenna ports were fitted with Type N connectors and directly connected to the input of the receiver.

7.1 Requirements:

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW (24 dBm) provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W (30 dBm). If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.



7.2 Output Power Test Data

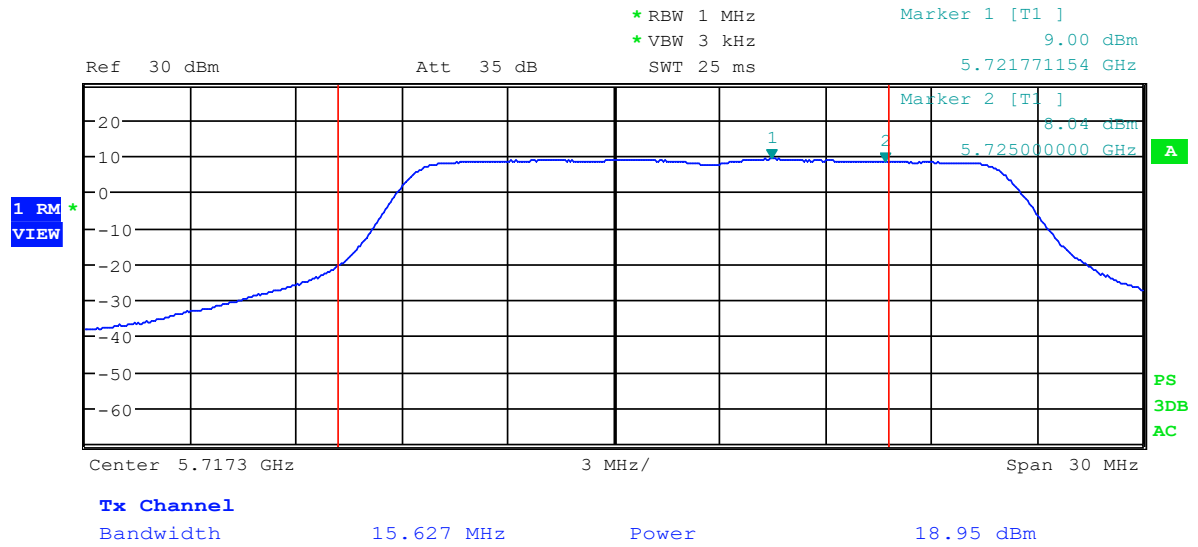
Test Date(s):	2022-01-24	Test Engineer:	J. Chiller
Standards:	CFR 47 Part 15.407(a)(1,2,3); KDB789033	Air Temperature:	22.4°C
		Relative Humidity:	39%

UNII 2C, Port 1 – Non-Beamforming Mode

RF OUTPUT POWER UNII 2C, Port 1 - Non-Beamforming Mode								
Modulation: OFDM								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5720	78.52	18.95	199.5	23	393.55	25.95	1000	30
Modulation: HT20								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5720	82.22	19.15	199.5	23	412.10	26.15	1000	30
Modulation: HT40								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5710	94.41	19.75	199.5	23	473.15	26.75	1000	30
Modulation: HT80								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5690	100.0	20.00	199.5	23	501.19	27.00	1000	30



UNII 2C, Port 1: OFDM Non-Beamforming

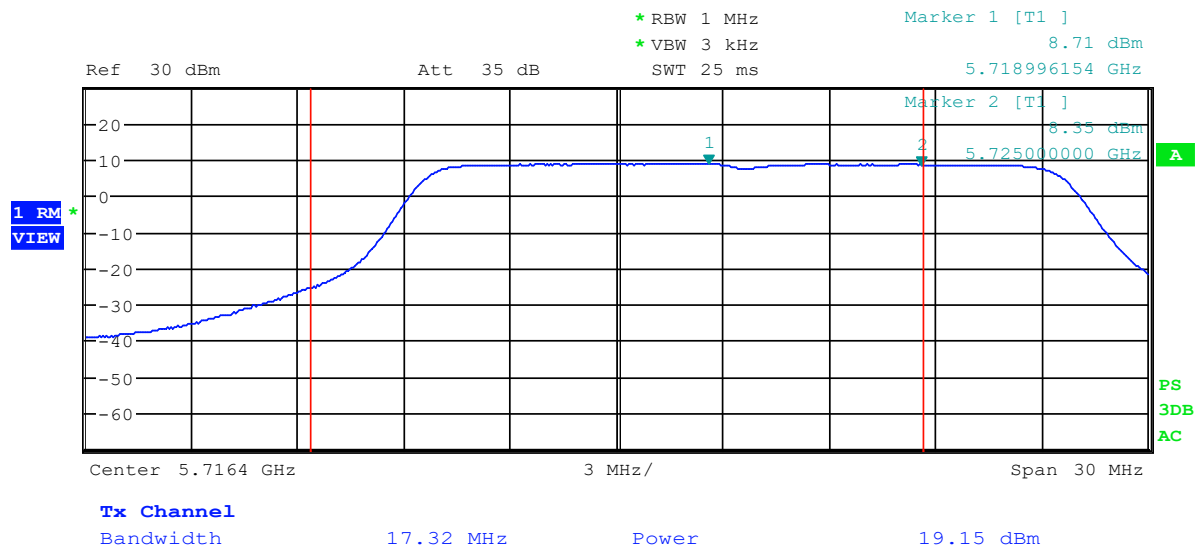




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FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT20 Non-Beamforming

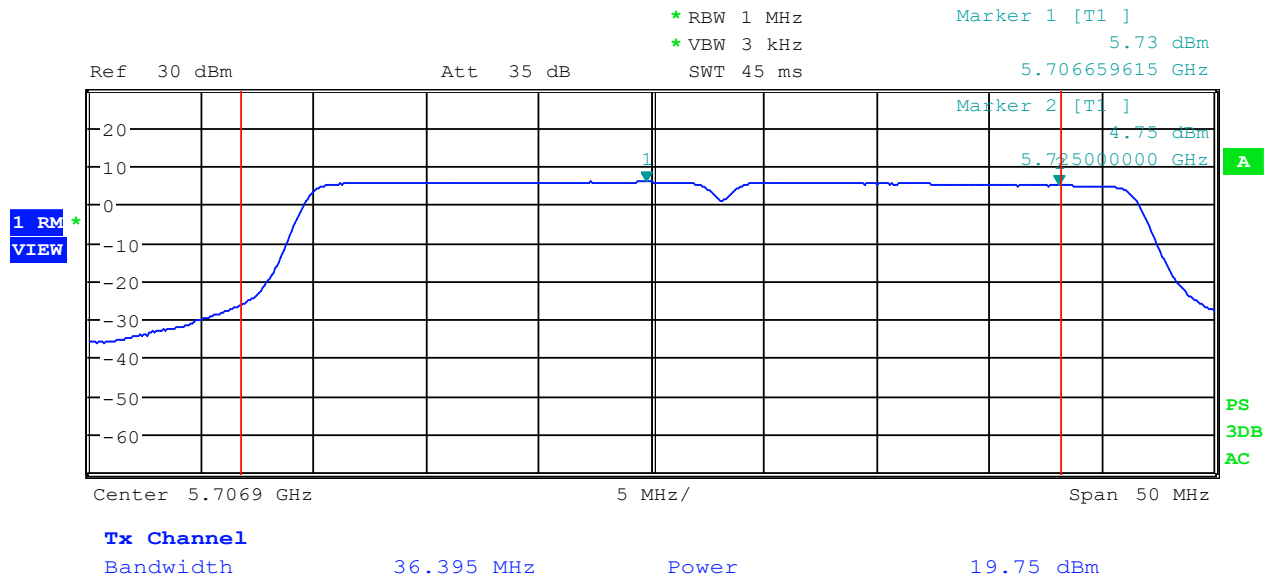




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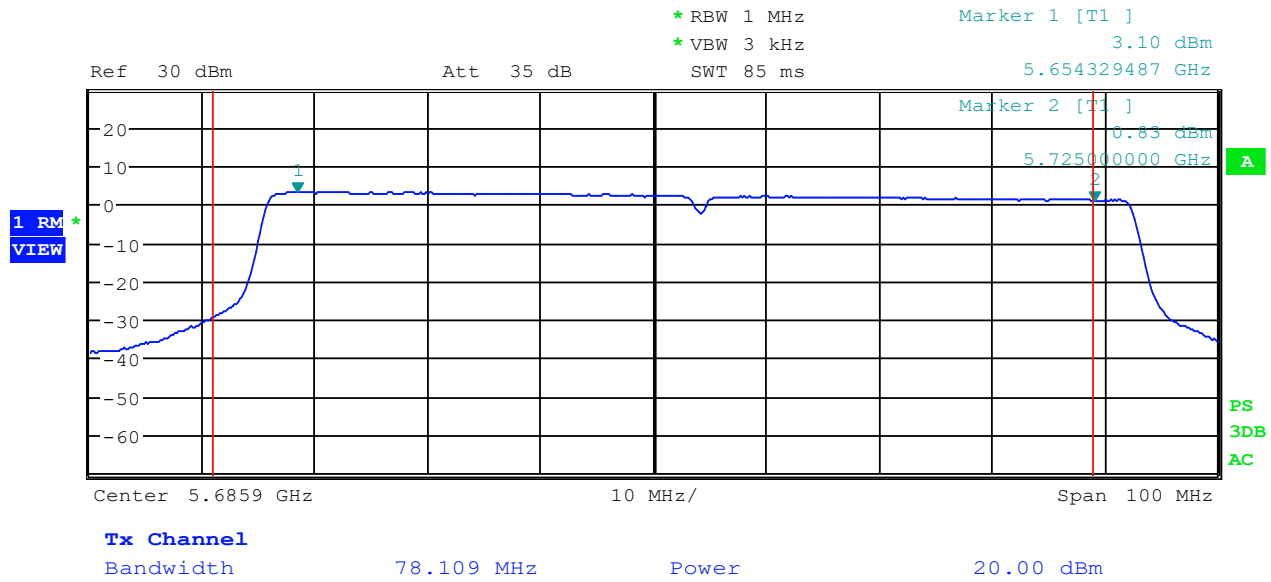
Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT40 Non-Beamforming





UNII 2C, Port 1: HT80 Non-Beamforming





UNII 2C, Port 2

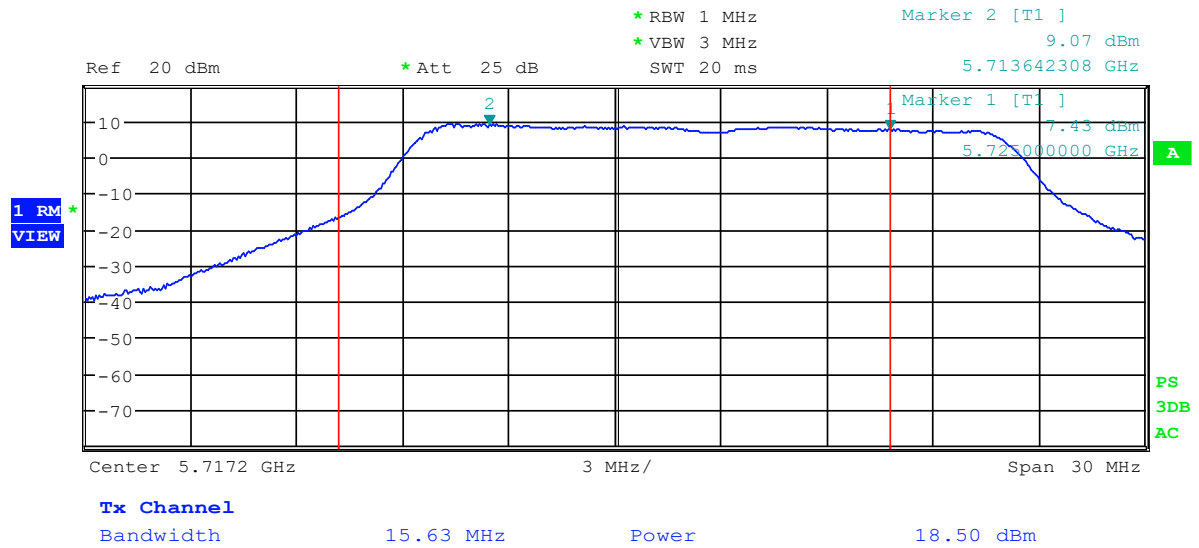
RF OUTPUT POWER UNII 2C, Port 2 - Non-Beamforming Mode									
Modulation: OFDM									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	70.79	18.50	199.5	23	354.81	25.50	1000	30
Modulation: HT20									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	88.51	19.47	199.5	23	443.61	26.47	1000	30
Modulation: HT40									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5710	97.50	19.89	199.5	23	488.65	26.89	1000	30
Modulation: HT80									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5690	116.14	20.65	199.5	23	582.1	27.65	1000	30



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FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: OFDM Non-Beamforming

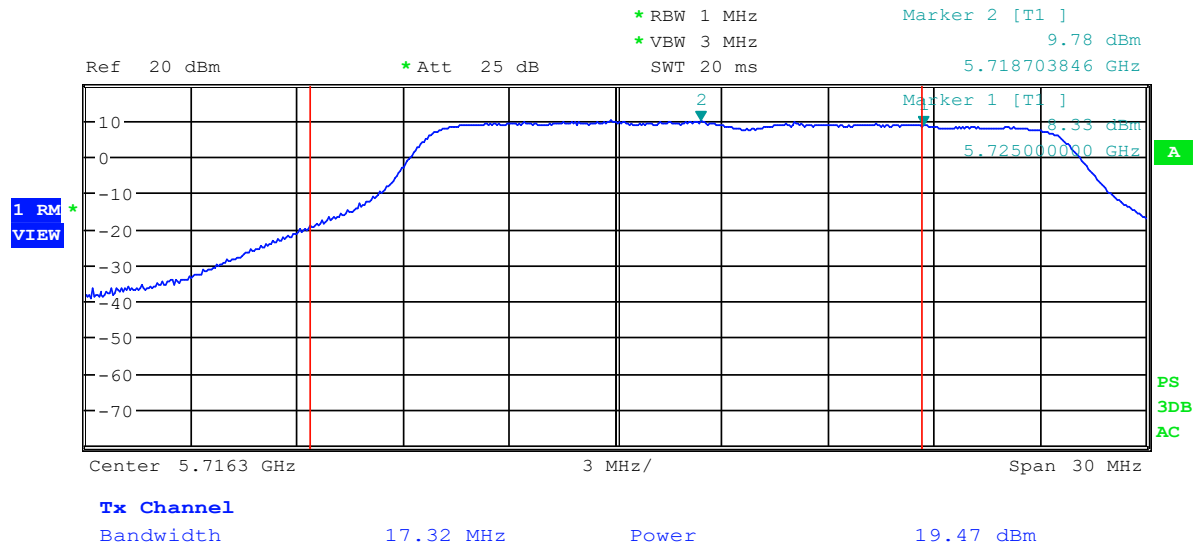




Order Number: F2P19924D

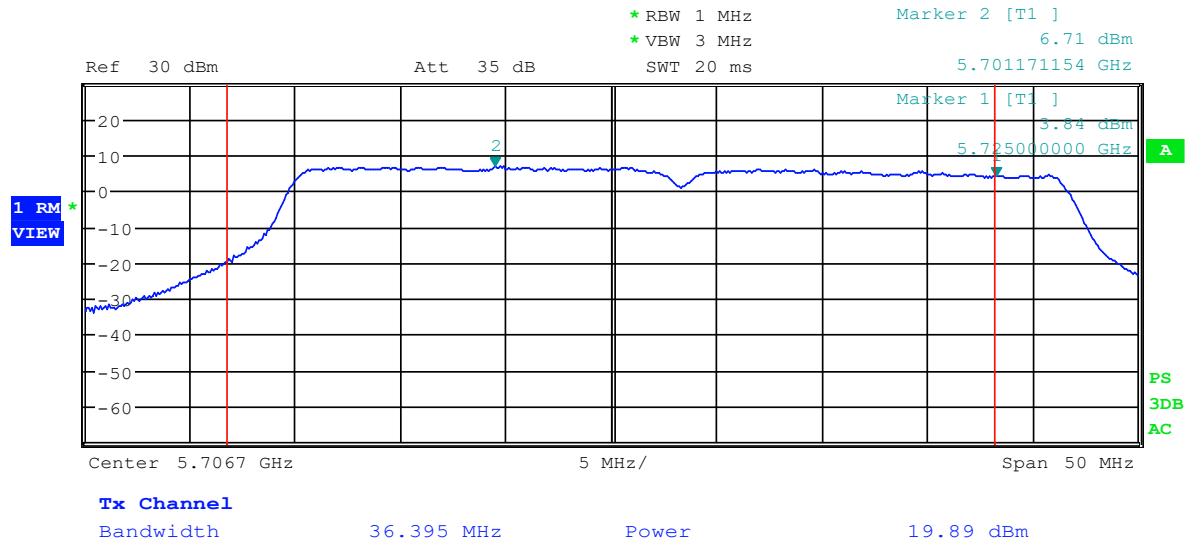
Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: HT20 Non-Beamforming



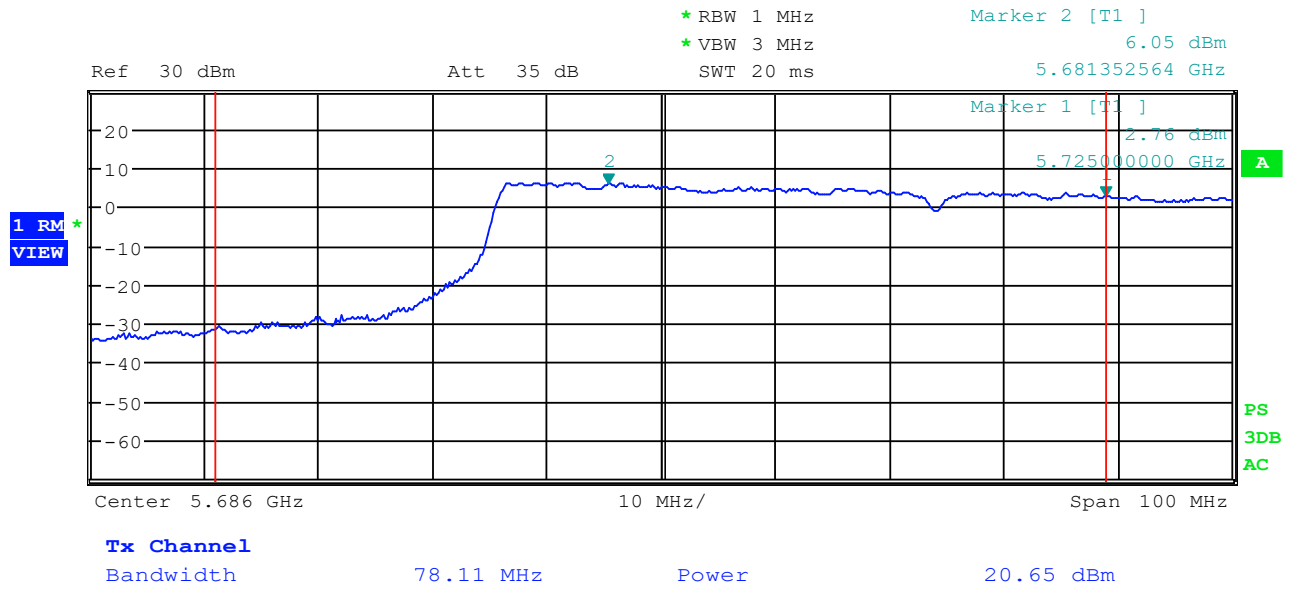


UNII 2C, Port 2: HT40 Non-Beamforming





UNII 2C, Port 2: HT80 Non-Beamforming



**REDUCED POWER FOR BEAMFORMING****UNII 2C, Port 1 – Beamforming Mode**

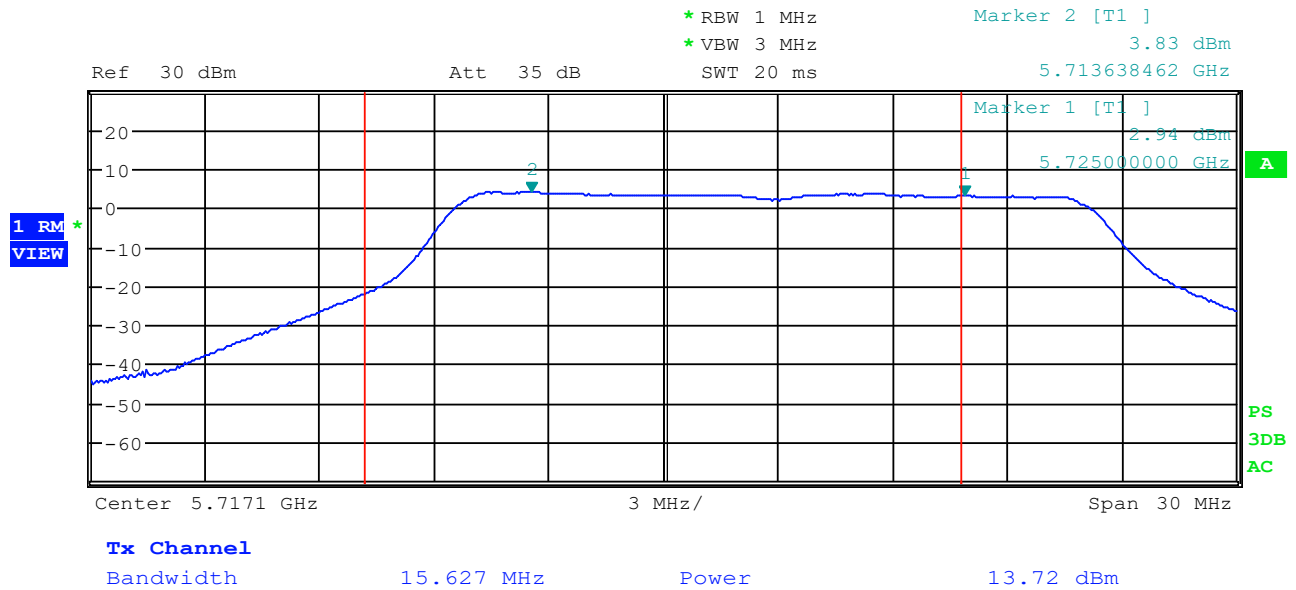
RF OUTPUT POWER UNII 2C, Port 1 - Beamforming Mode									
Modulation: OFDM									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	23.55	13.72	199.5	23	235.5	23.72	1000	30
Modulation: HT20									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	22.59	13.54	199.5	23	225.94	23.54	1000	30
Modulation: HT40									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5710	40.36	16.06	199.5	23	403.65	26.06	1000	30
Modulation: HT80									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5690	40.83	16.11	199.5	23	408.32	26.11	1000	30



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UNII 2C, Port 1: OFDM Beamforming

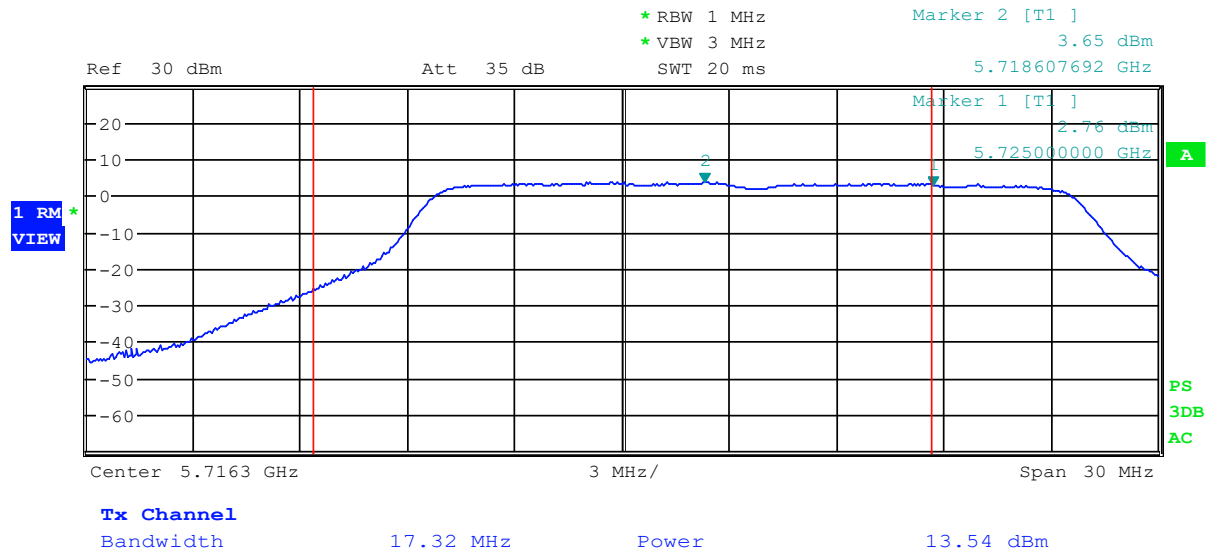




Order Number: F2P19924D

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UNII 2C, Port 1: HT20 Beamforming

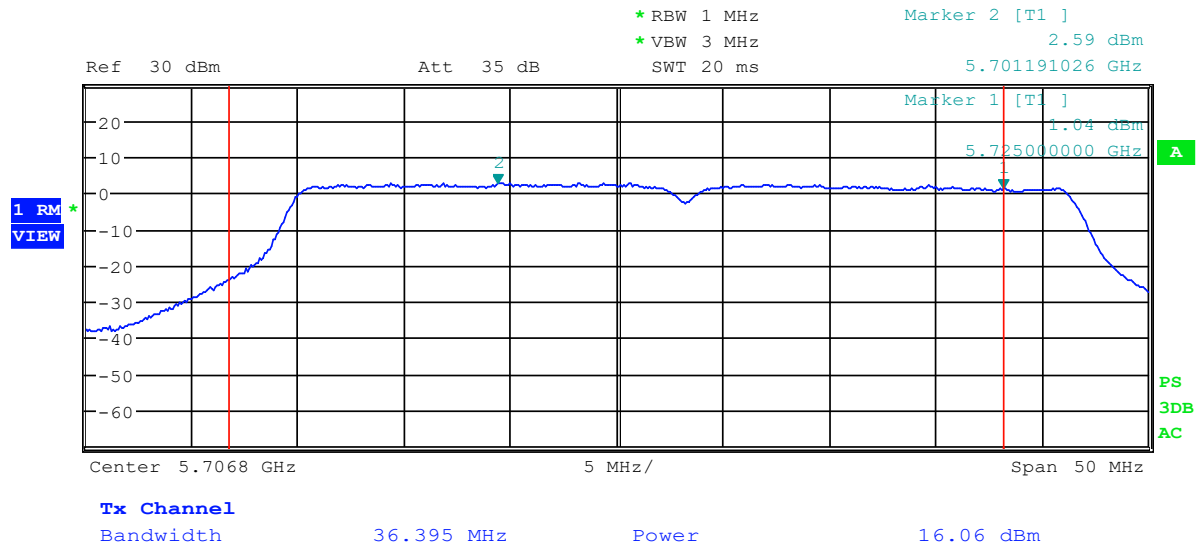




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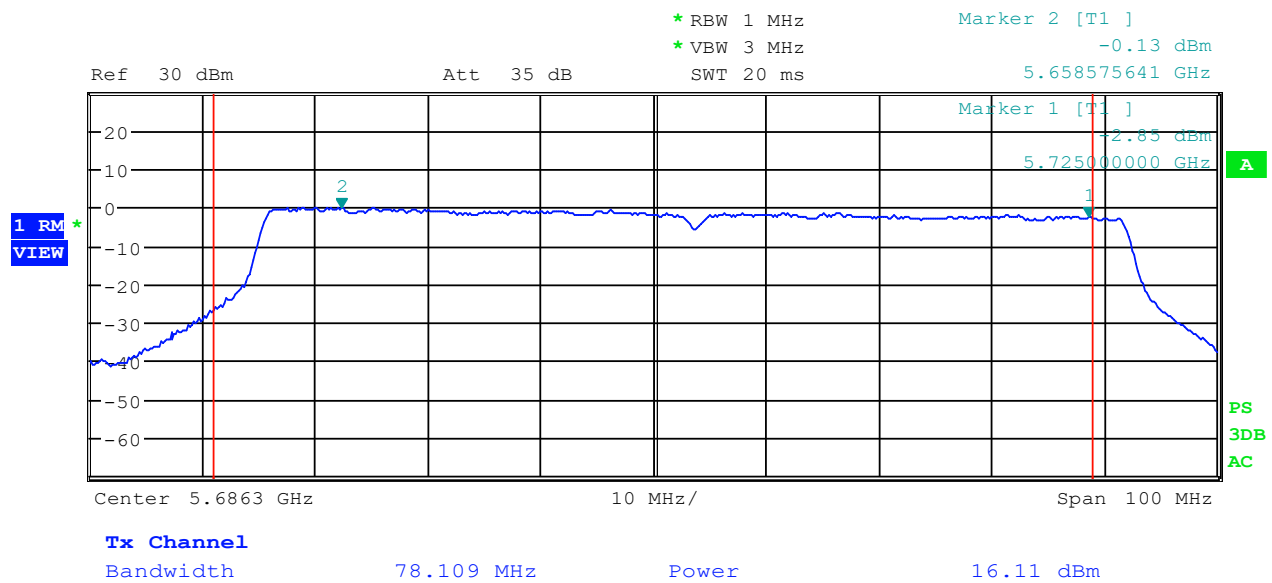
Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT40 Beamforming





UNII 2C, Port 1: HT80 Beamforming





UNII 2C, Port 2 – Beamforming Mode

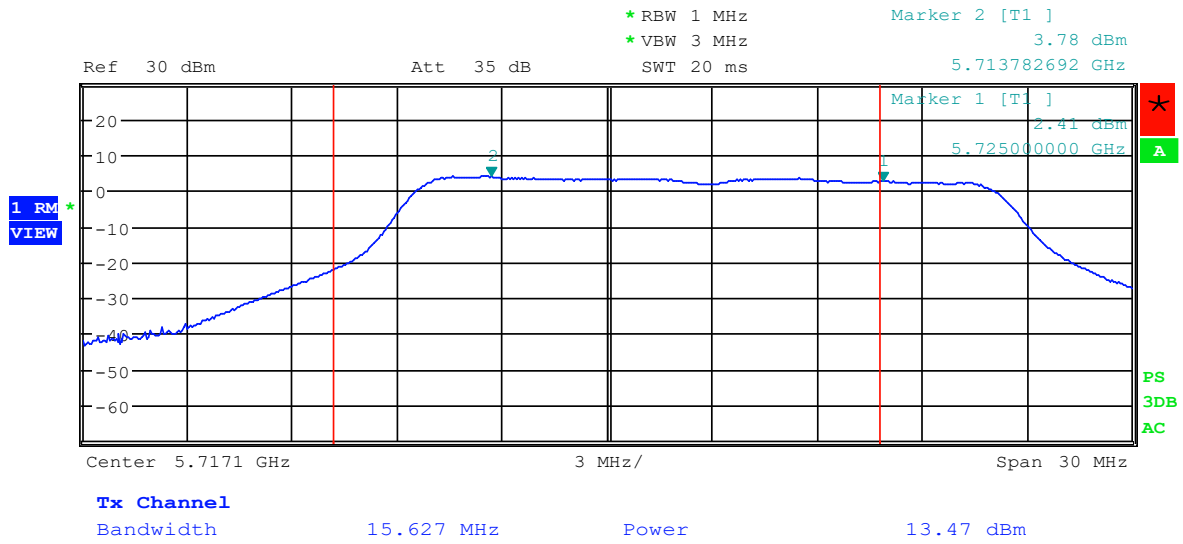
RF OUTPUT POWER UNII 2C Port 2 - Beamforming Mode									
Modulation: OFDM									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	22.23	13.47	199.5	23	222.3	23.47	1000	30
Modulation: HT20									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	21.93	13.41	199.5	23	219.3	23.41	1000	30
Modulation: HT40									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5710	49.20	16.92	199.5	23	492.0	26.92	1000	30
Modulation: HT80									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5690	42.36	16.27	199.5	23	423.6	26.27	1000	30



Order Number: F2P19924D

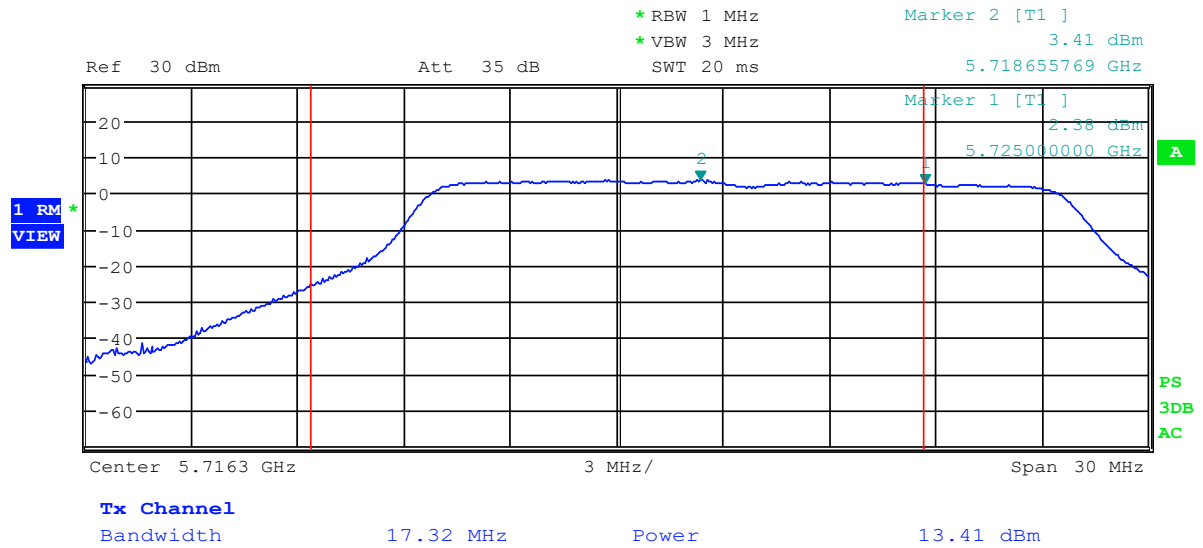
Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: OFDM Beamforming



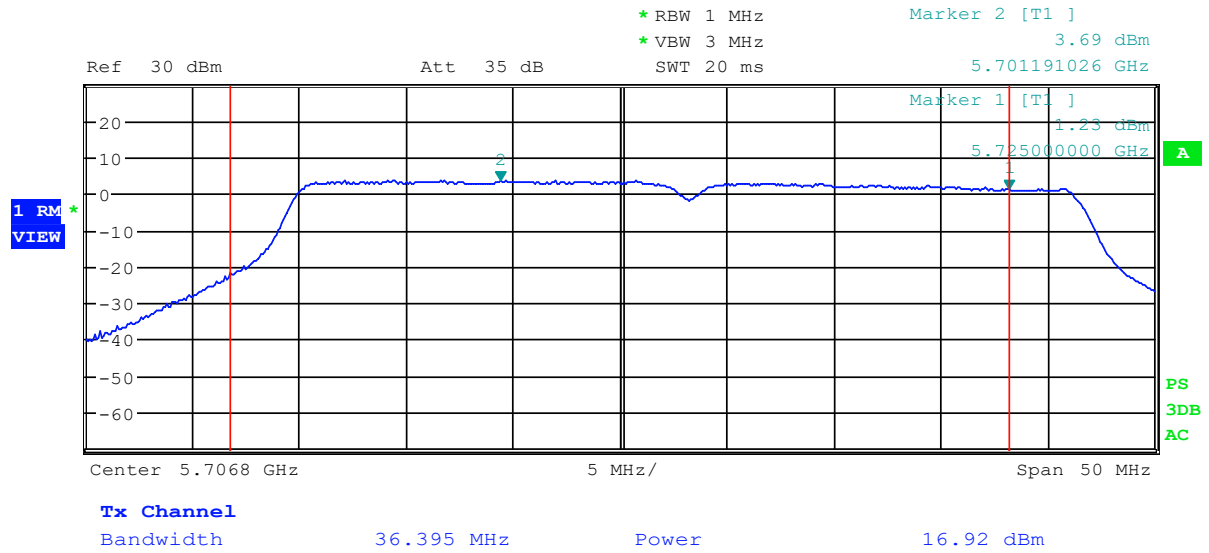


UNII 2C, Port 2: HT20 Beamforming





UNII 2C, Port 2: HT40 Beamforming

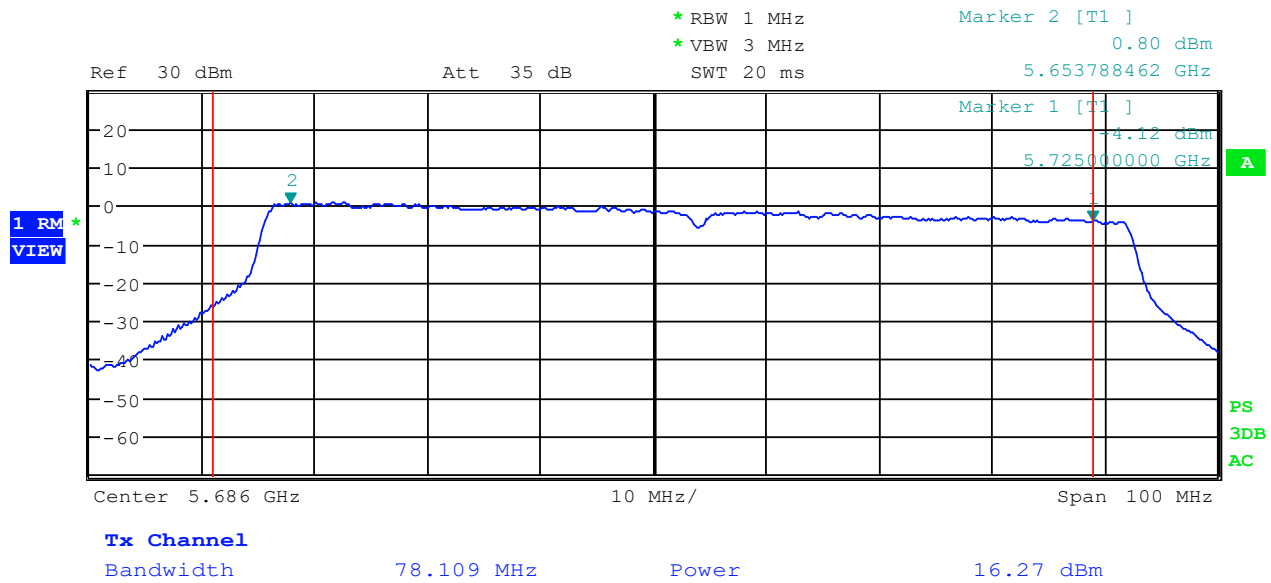




Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: HT80 Beamforming





RF OUTPUT POWER UNII 2C SUMMING PORT 1 AND PORT 2 (Beamforming)										
Modulation: OFDM										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5720	23.55	22.23	45.78	16.61	100	20	458.2	26.61	1000	30
Modulation: HT20										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5720	22.59	21.93	44.52	16.48	100	20	444.6	26.48	1000	30
Modulation: HT40										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5710	40.36	49.2	89.56	19.52	100	20	895.4	29.52	1000	30
Modulation: HT80										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5690	40.83	42.36	83.19	19.2	100	20	831.8	29.2	1000	30

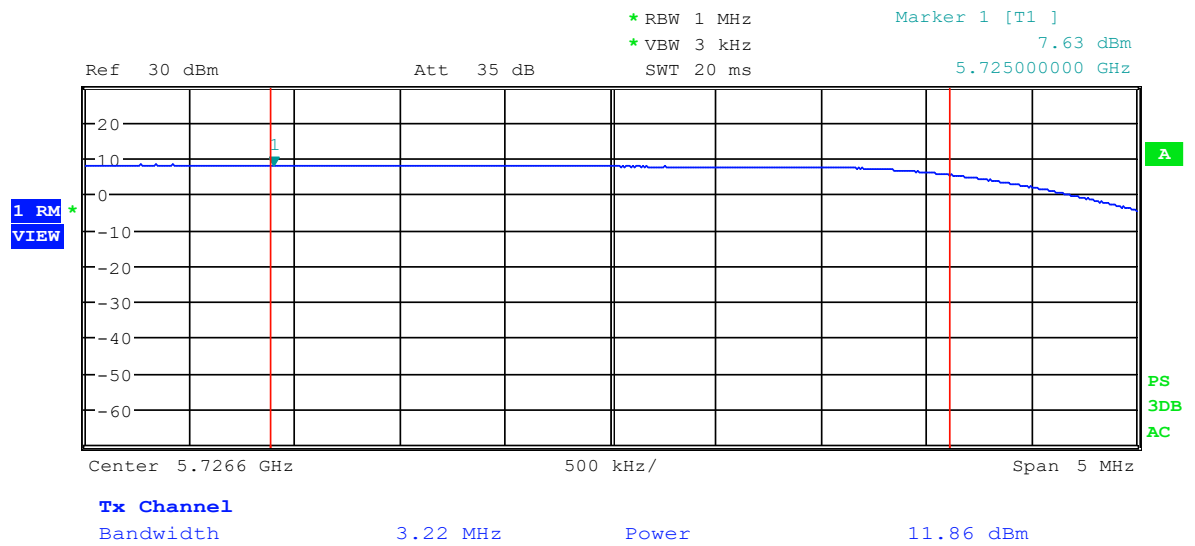


UNII 3, Port 1 – Non-Beamforming Mode

RF OUTPUT POWER UNII 3 Port 1 - Non-Beamforming Mode								
Modulation: OFDM								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5720	15.35	11.86	794	29	76.9	18.86	3162	35
Modulation: HT20								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5720	18.92	12.77	794	29	94.8	19.77	3162	35
Modulation: HT40								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5710	7.05	8.48	794	29	35.3	15.48	3162	35
Modulation: HT80								
Channel Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
	mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High 5690	3.21	5.06	794	29	16.1	12.06	3162	35

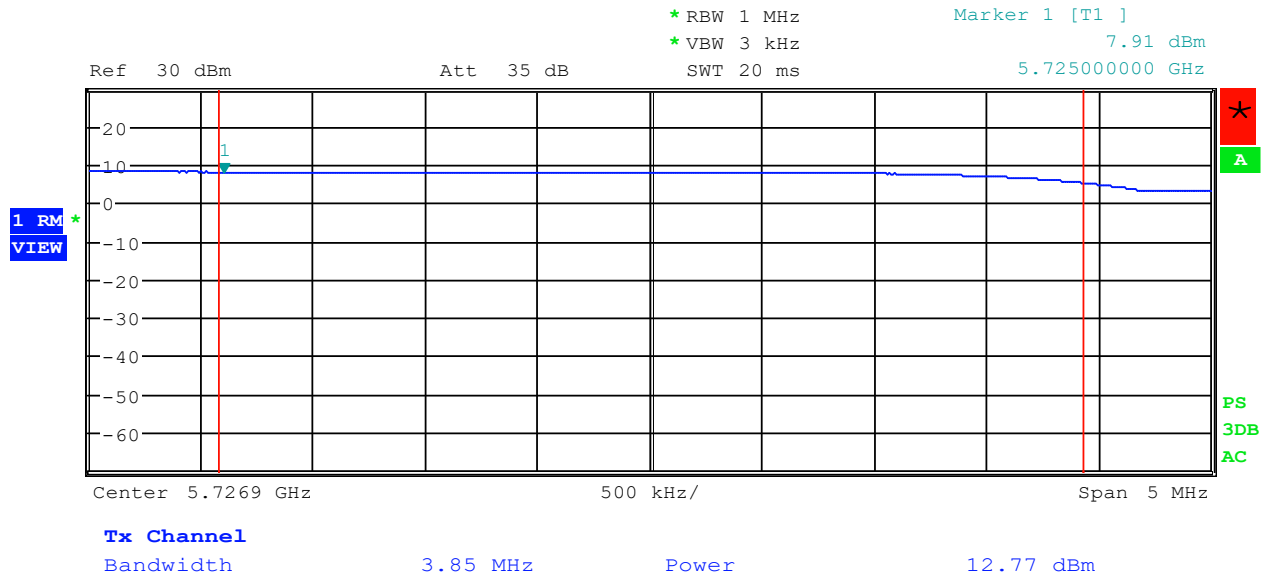


UNII 3, Port 1: OFDM Non-Beamforming



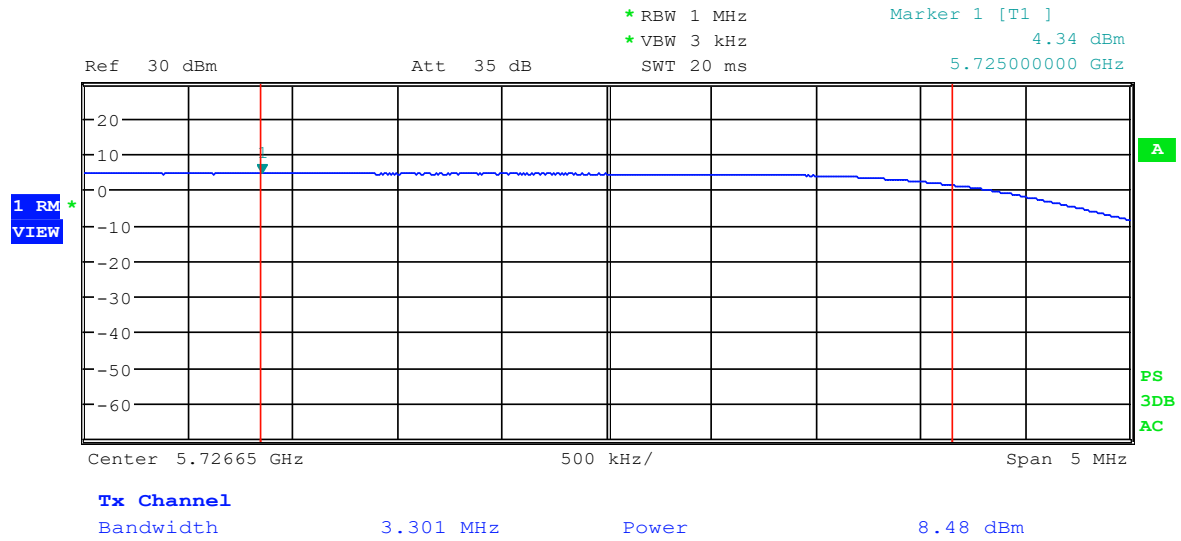


UNII 3, Port 1: HT20 Non-Beamforming



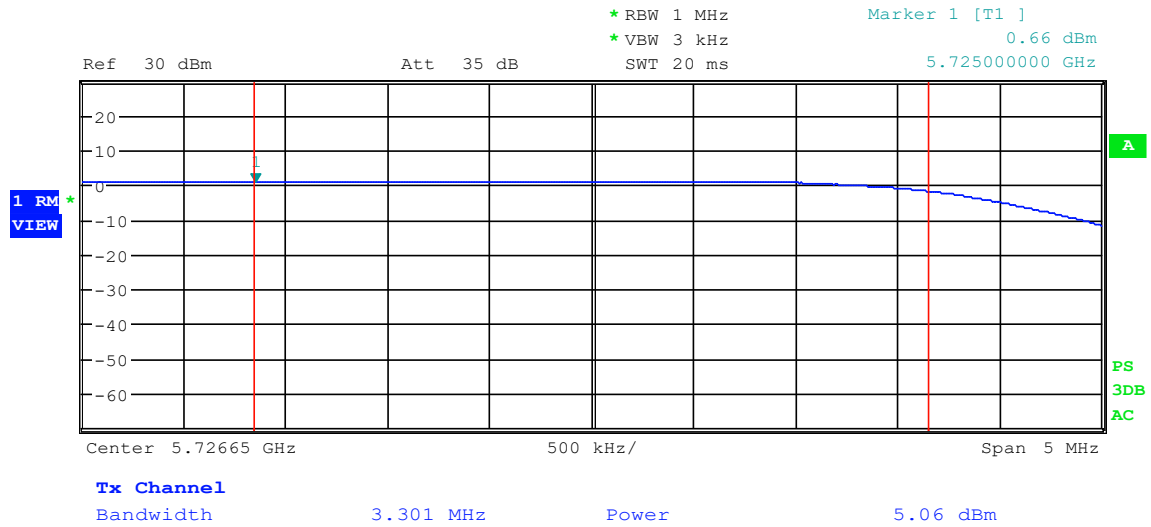


UNII 3, Port 1: HT40 Non-Beamforming





UNII 3, Port 1: HT80 Non-Beamforming



**UNII 3, Port 2 – Non-Beamforming Mode**

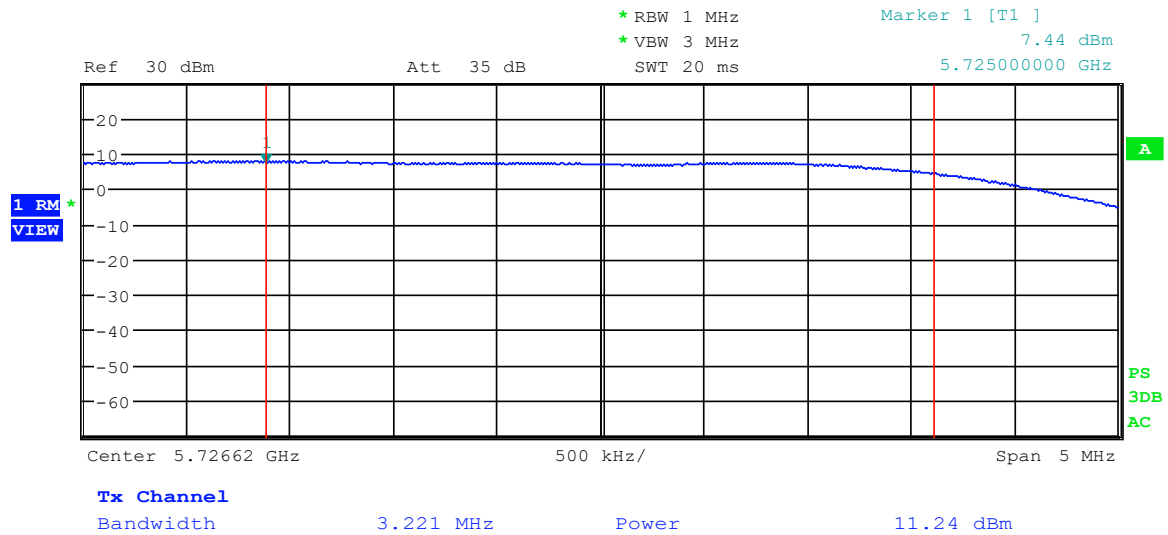
RF OUTPUT POWER UNII 3 Port 2 - Non-Beamforming Mode									
Modulation: OFDM									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	13.30	11.24	794	29	66.7	18.24	3162	35
Modulation: HT20									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	18.92	12.77	794	29	94.8	19.77	3162	35
Modulation: HT40									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5710	8.07	9.07	794	29	40.5	16.07	3162	35
Modulation: HT80									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5690	3.50	5.44	794	29	17.5	12.44	3162	35



Order Number: F2P19924D

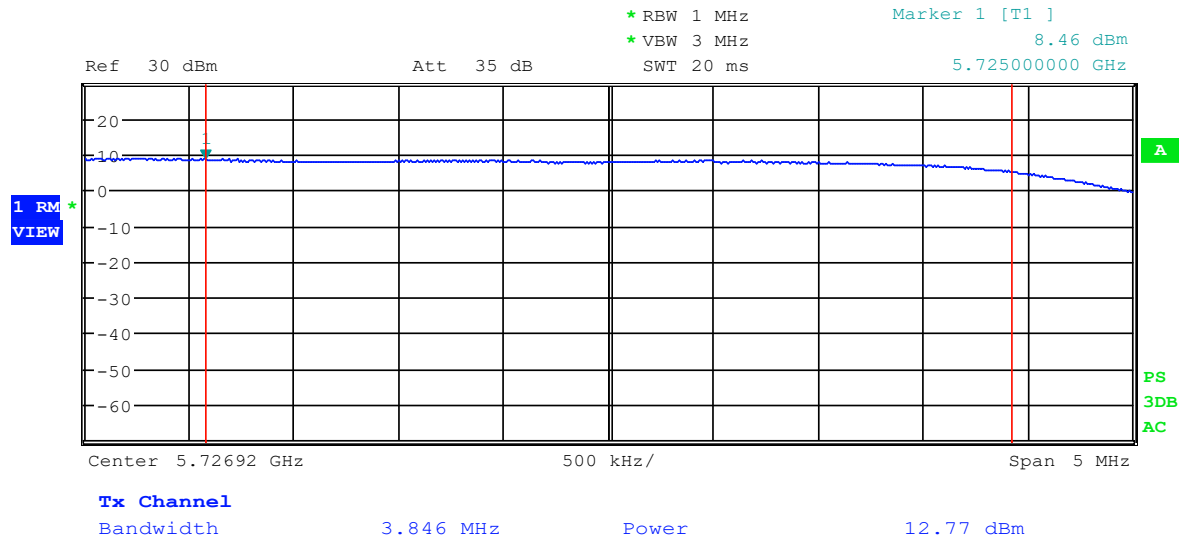
Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: OFDM Non-Beamforming



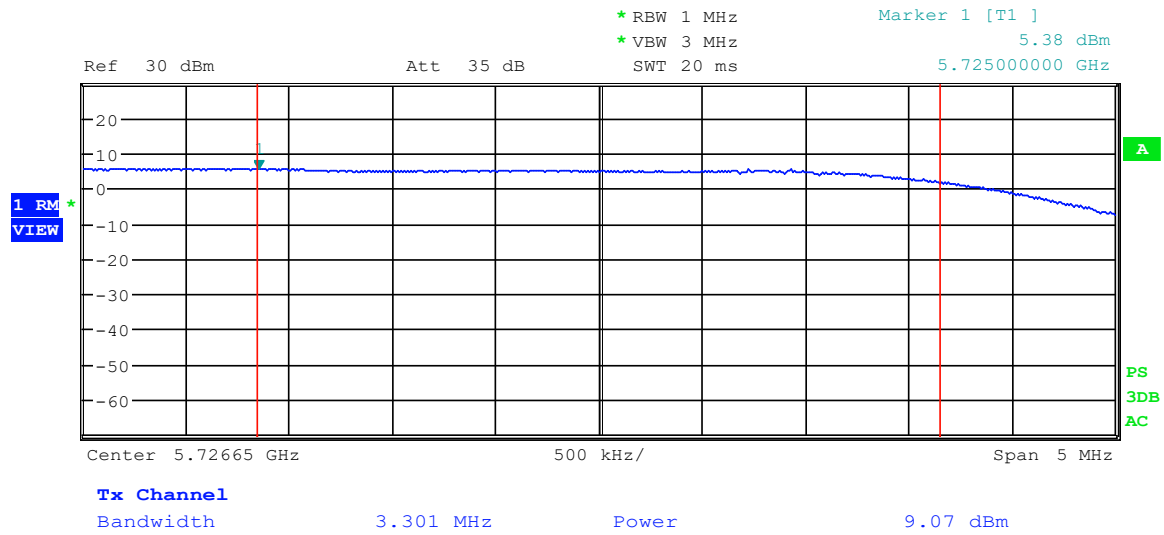


UNII 3, Port 2: HT20 Non-Beamforming





UNII 3, Port 2: HT40 Non-Beamforming

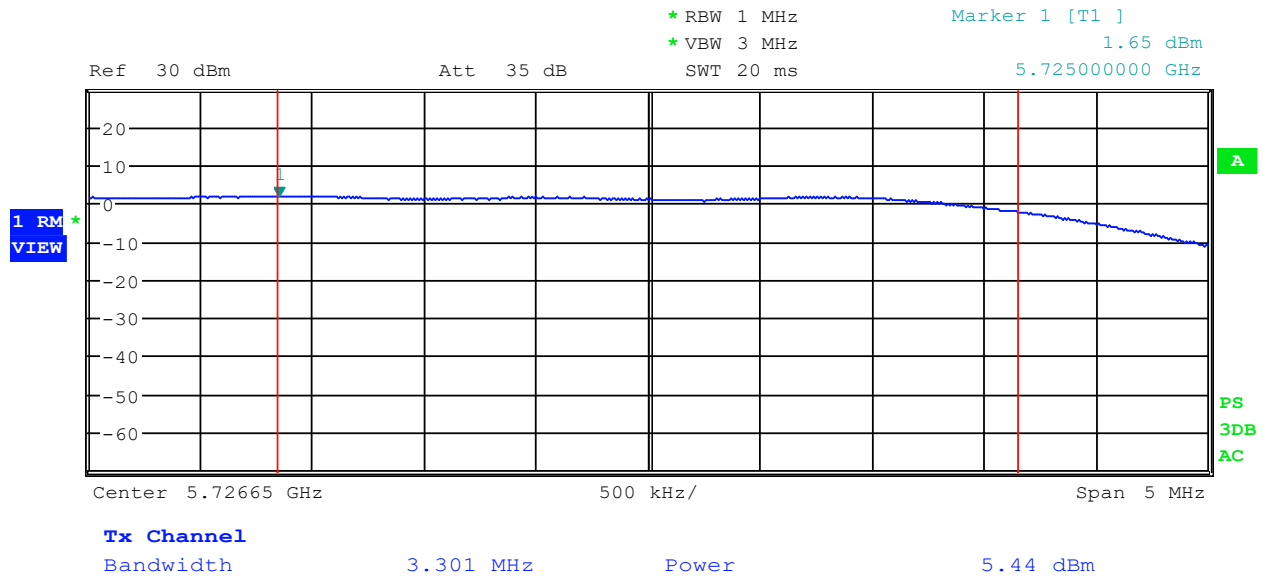




Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: HT80 Non-Beamforming



**REDUCED POWER FOR BEAMFORMING****UNII 3, Port 1**

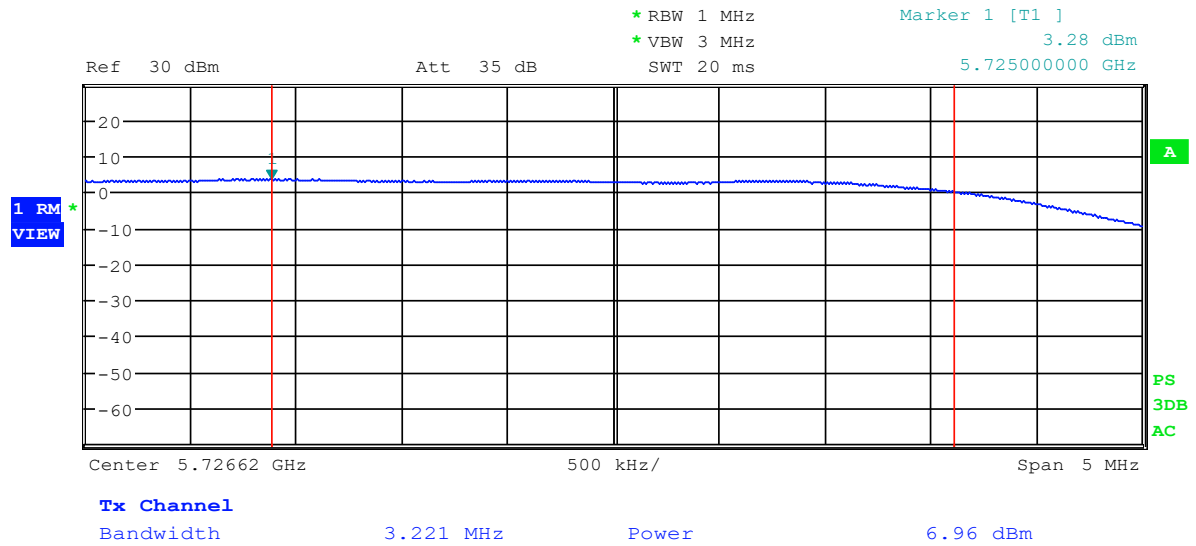
RF OUTPUT POWER UNII 3, Port 1 - Beamforming Mode									
Modulation: OFDM									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	4.97	6.96	794	29	46.7	16.69	3162	35
Modulation: HT20									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	5.56	7.45	794	29	55.6	17.45	3162	35
Modulation: HT40									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5710	3.31	5.20	794	29	33.1	15.2	3162	35
Modulation: HT80									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5690	1.41	1.48	794	29	14.1	11.48	3162	35



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 1: OFDM Beamforming



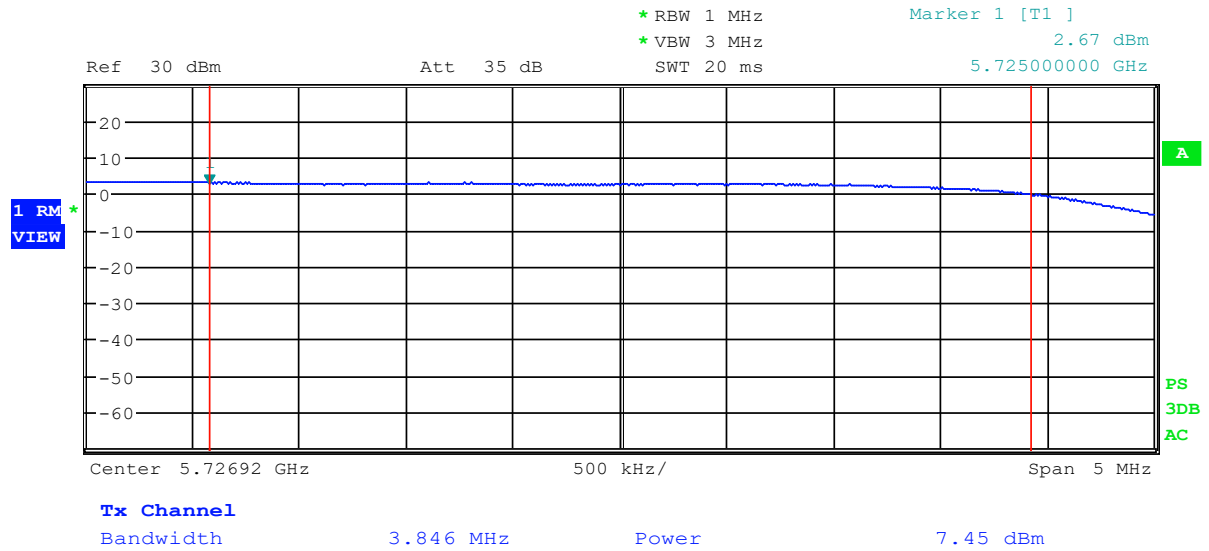
Date: 5.MAY.2022 16:41:43



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

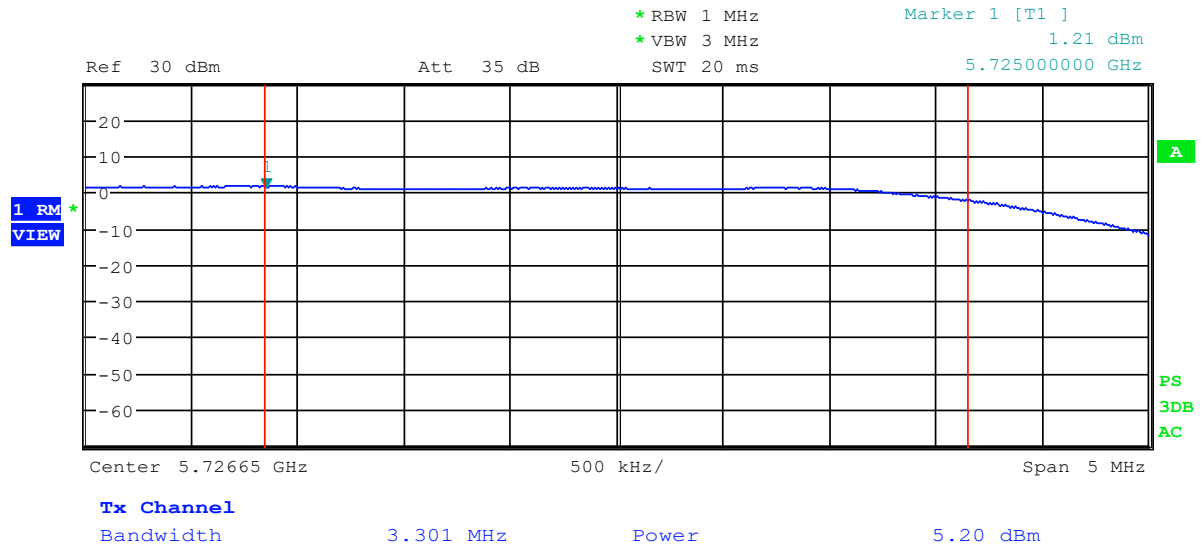
UNII 3, Port 1: HT20 Beamforming



Date: 5.MAY.2022 16:40:19



UNII 3, Port 1: HT40 Beamforming



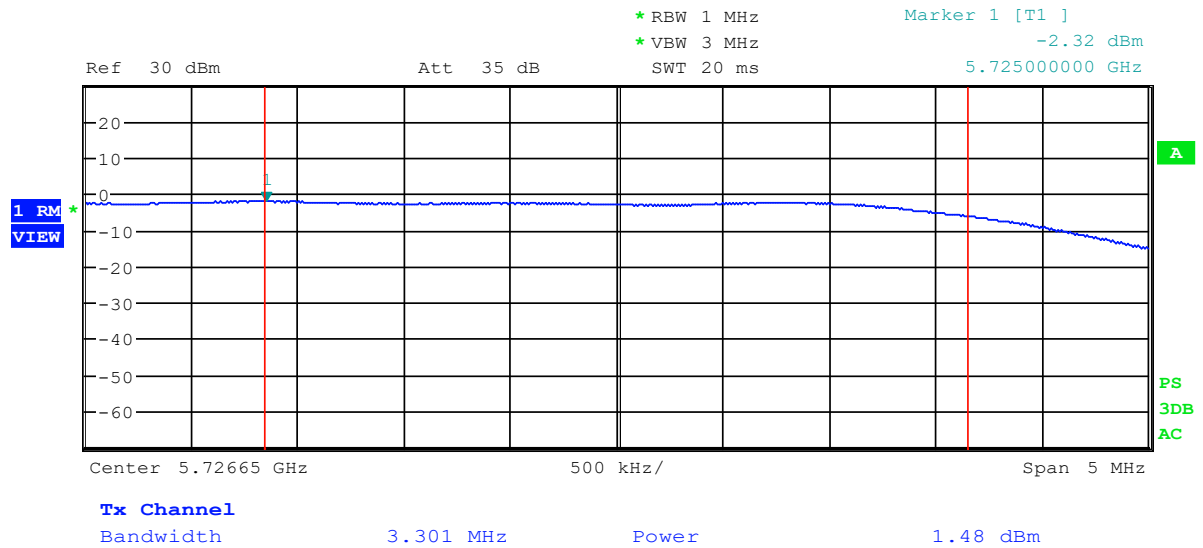
Date: 5.MAY.2022 16:38:13



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 1: HT80 Beamforming



Date: 5.MAY.2022 16:36:37



UNII 3, Port 2 – Beamforming Mode

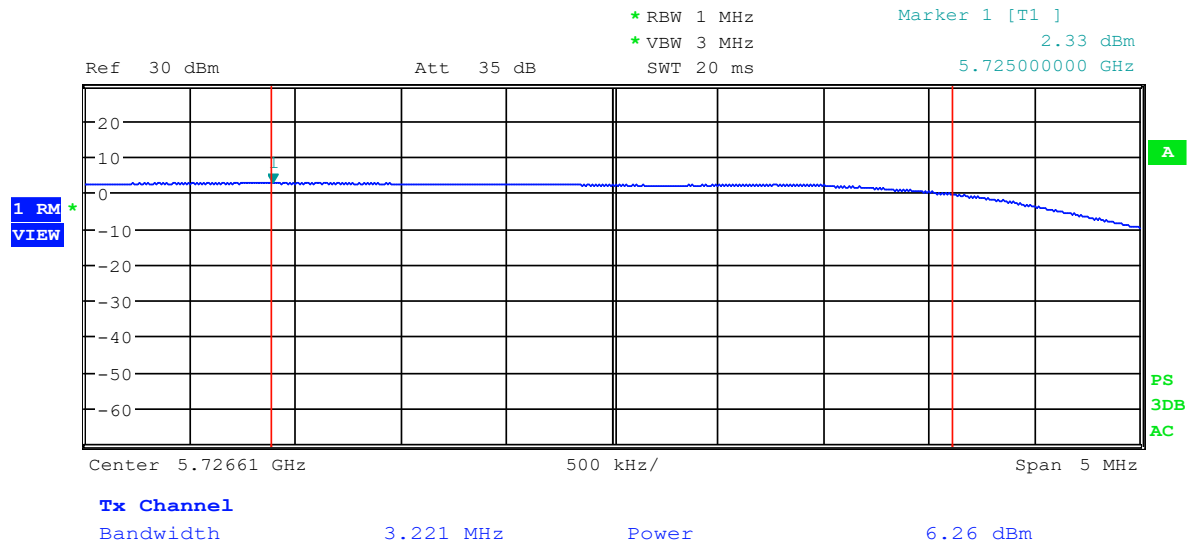
RF OUTPUT POWER UNII 3, Port 2 - Beamforming Mode									
Modulation: OFDM									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	4.23	6.26	794	29	42.27	16.26	3162	35
Modulation: HT20									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5720	4.86	6.87	794	29	48.6	16.87	3162	35
Modulation: HT40									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5710	2.67	4.26	794	29	26.7	14.26	3162	35
Modulation: HT80									
Channel	Frequency (MHz)	Measured Power		Limit		E.I.R.P.		Limit	
		mW	dBm	mW	dBm	mW	dBm	E.I.R.P (mW)	E.I.R.P (dBm)
High	5690	1.01	0.01	794	29	10.01	10.01	3162	35



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: OFDM Beamforming



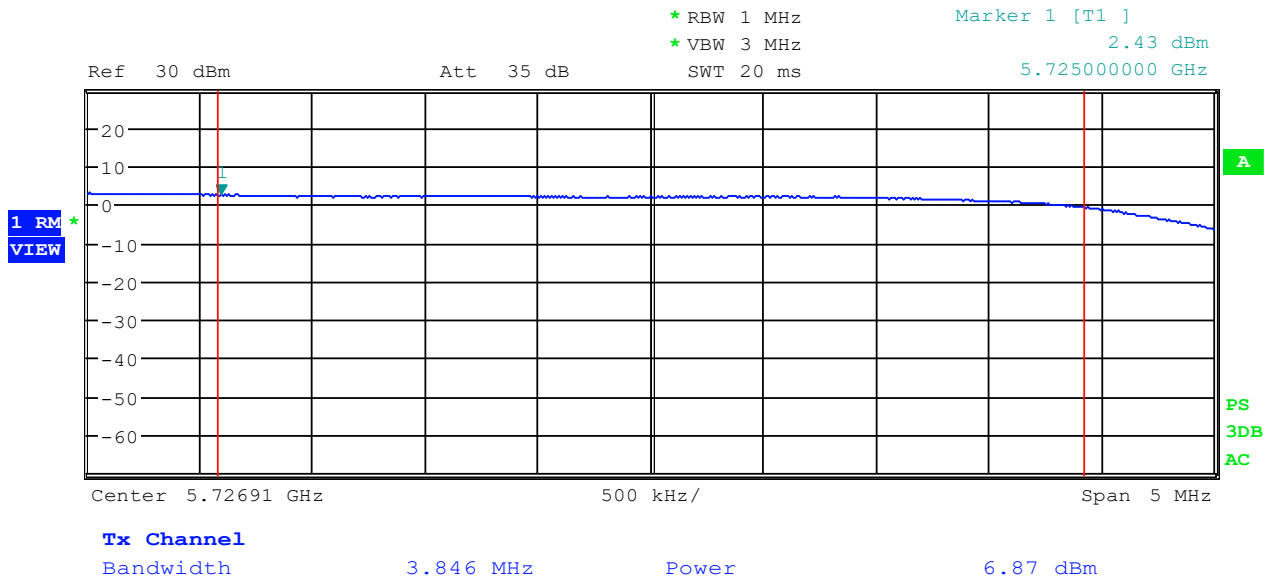
Date: 5.MAY.2022 15:37:26



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: HT20 Beamforming



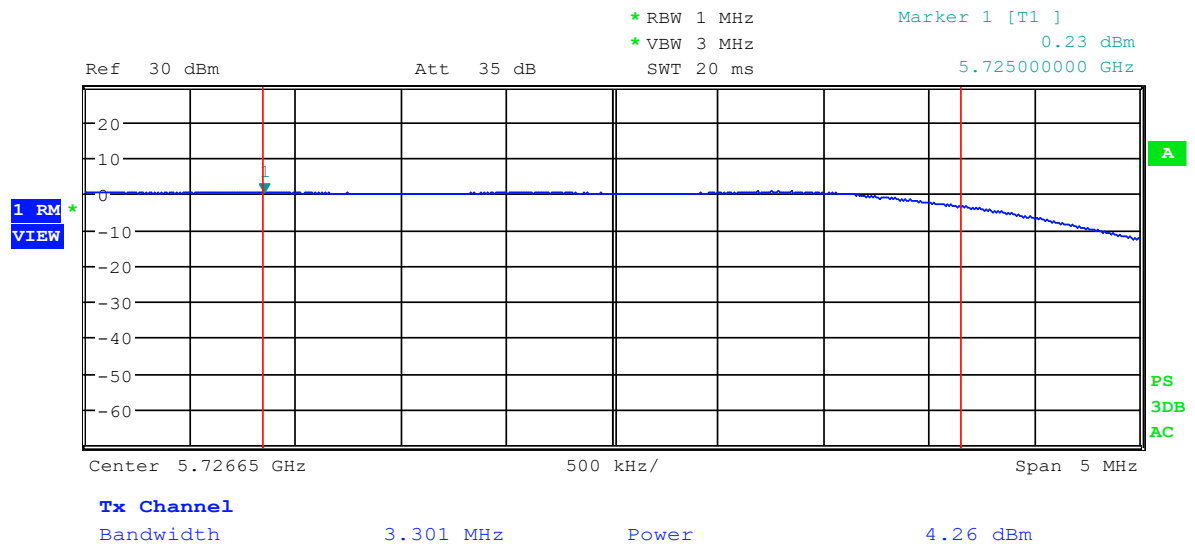
Date: 5.MAY.2022 15:35:52



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: HT40 Beamforming



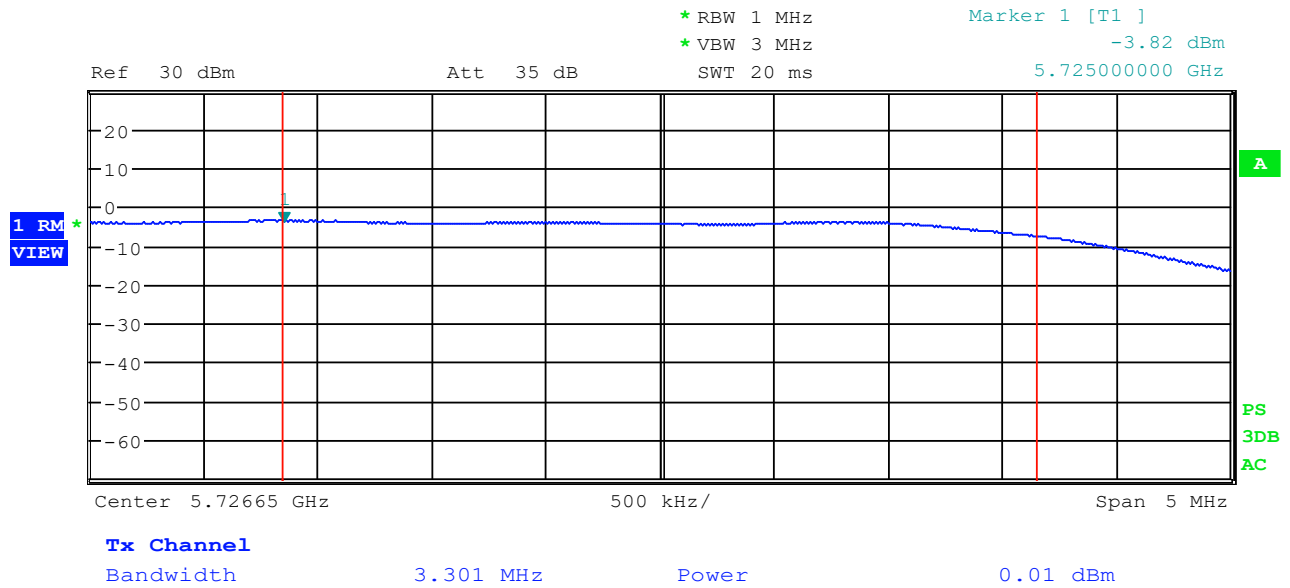
Date: 5.MAY.2022 15:33:40



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: HT80 Beamforming



Date: 5.MAY.2022 15:31:04



RF OUTPUT POWER UNII 3 SUMMING PORT 1 AND PORT 2 (Beamforming)										
Modulation: OFDM										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5720	4.97	4.23	9.2	9.64	100	20	92.1	19.64	1000	30
Modulation: HT20										
5720	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5720	5.56	4.86	10.42	10.18	100	20	104.23	20.18	1000	30
Modulation: HT40										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5710	3.31	2.67	5.98	7.77	100	20	59.84	17.77	1000	30
Modulation: HT80										
Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)				Limit		E.I.R.P. (including 3dB aggregate gain)		Limit	
	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	mW	dBm	mW	dBm	mW	dBm
5690	1.41	1.01	2.42	3.84	100	20	24.21	13.84	1000	30



8 PEAK POWER SPECTRAL DENSITY (PSD)

Peak power spectral density measurements were performed.

8.1 Requirements:

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6dBi. In addition, the maximum power spectral density shall not exceed 17dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125mW (21dBm).

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. **In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.** If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1W. **In addition, the maximum power spectral density shall not exceed 30dBm in any 500 kHz band.**



8.2 Peak Power Spectral Density Test Data

Test Date(s):	2022-05-04	Test Engineer:	J. Chiller
Standards:	CFR 47 Part 15.407(a)(1,3); KDB789033	Air Temperature:	22.4° C
		Relative Humidity:	37%

UNII 2C, Port 1 – Non-Beamforming Mode

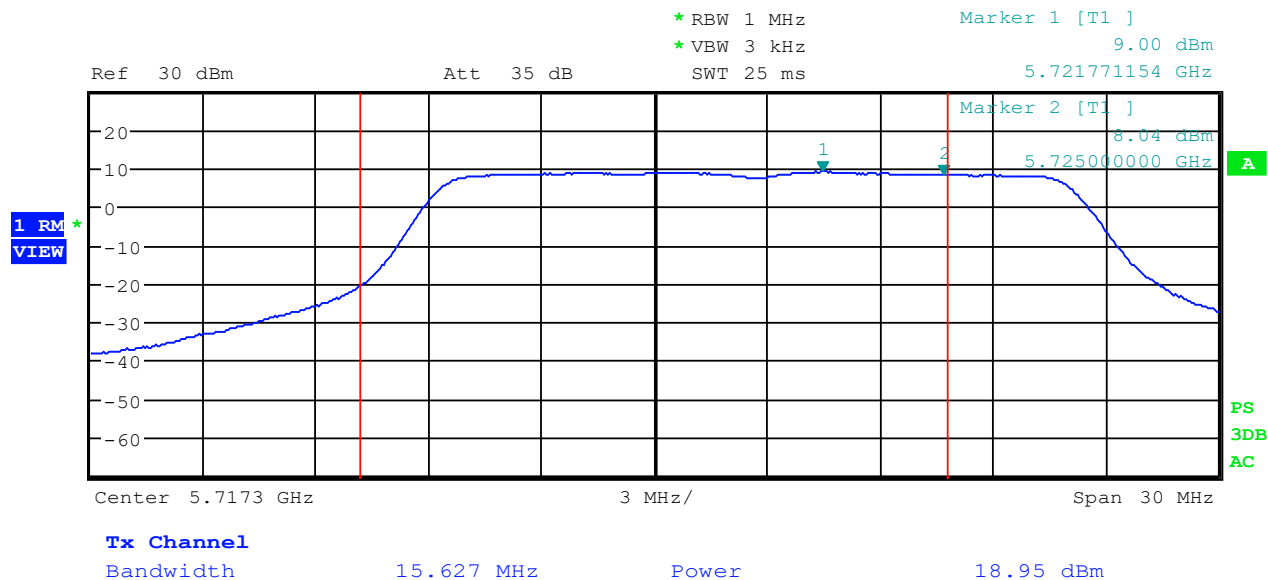
POWER SPECTRAL DENSITY UNII 2C - Port 1 - Non-Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	9.00	10
Modulation: HT20			
High	5720	8.71	10
Modulation : HT40			
High	5710	5.73	10
Modulation : HT80			
High	5690	3.10	10



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: OFDM Non-Beamforming



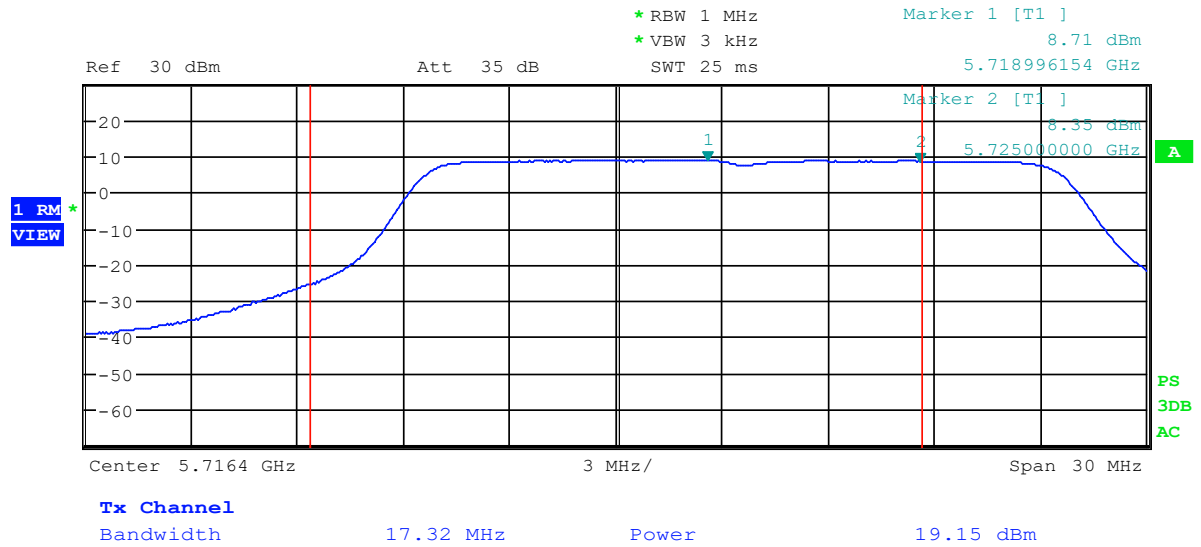
Date: 4.MAY.2022 18:33:40



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT20 Non-Beamforming



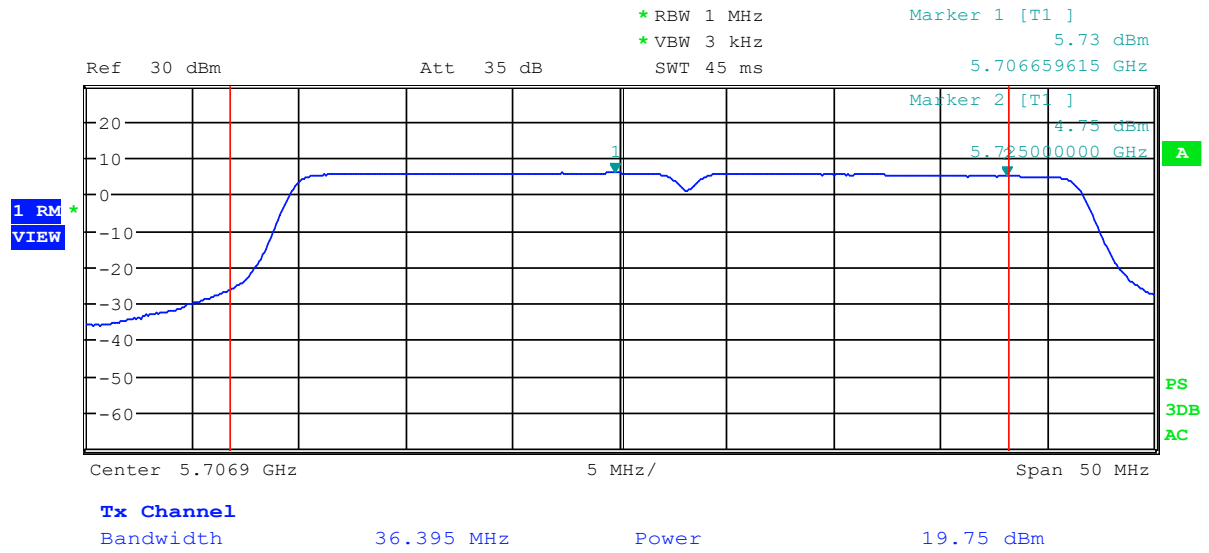
Date: 4.MAY.2022 18:37:16



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT40 Non-Beamforming



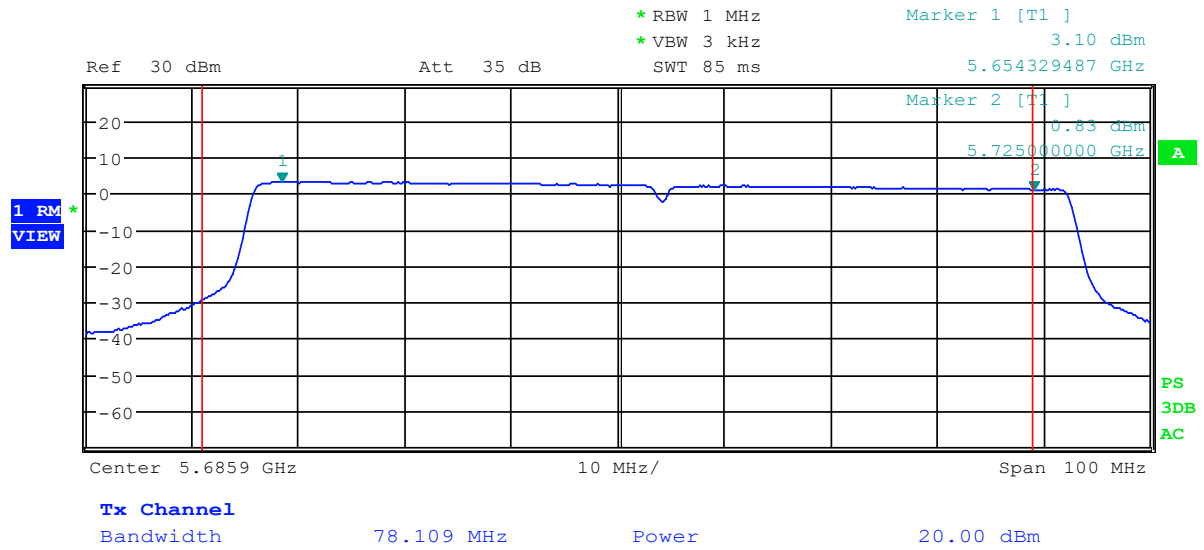
Date: 4.MAY.2022 18:39:42



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT80 Non-Beamforming



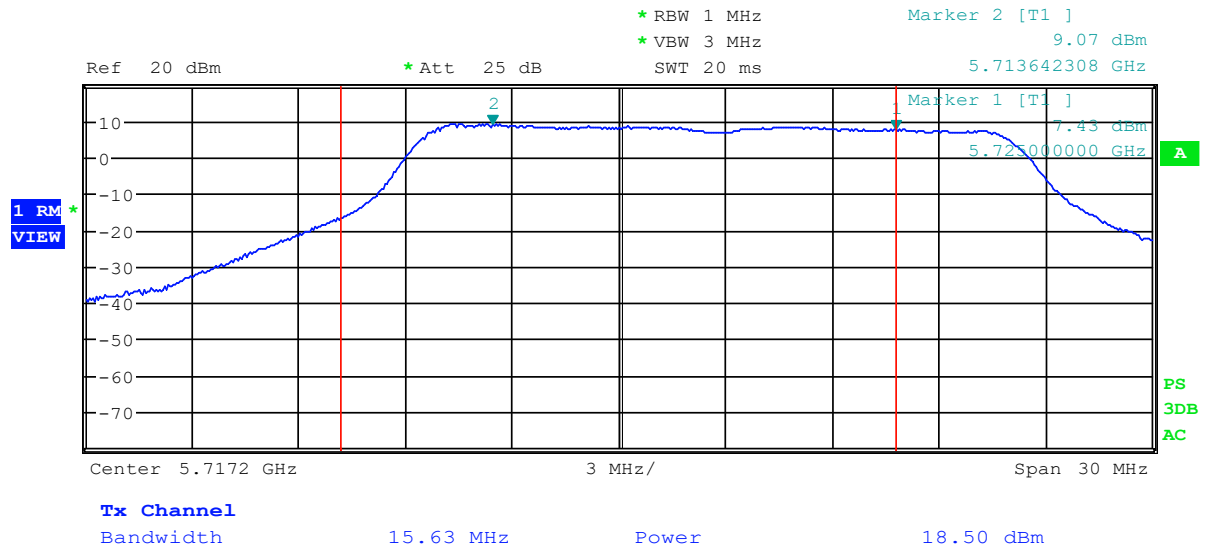
Date: 4.MAY.2022 18:41:39



UNII 2C, Port 2

POWER SPECTRAL DENSITY UNII 2C, Port 2 - Non-Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	9.07	10
Modulation: HT20			
High	5720	9.78	10
Modulation: HT40			
High	5710	6.71	10
Modulation: HT80			
High	5690	6.05	10

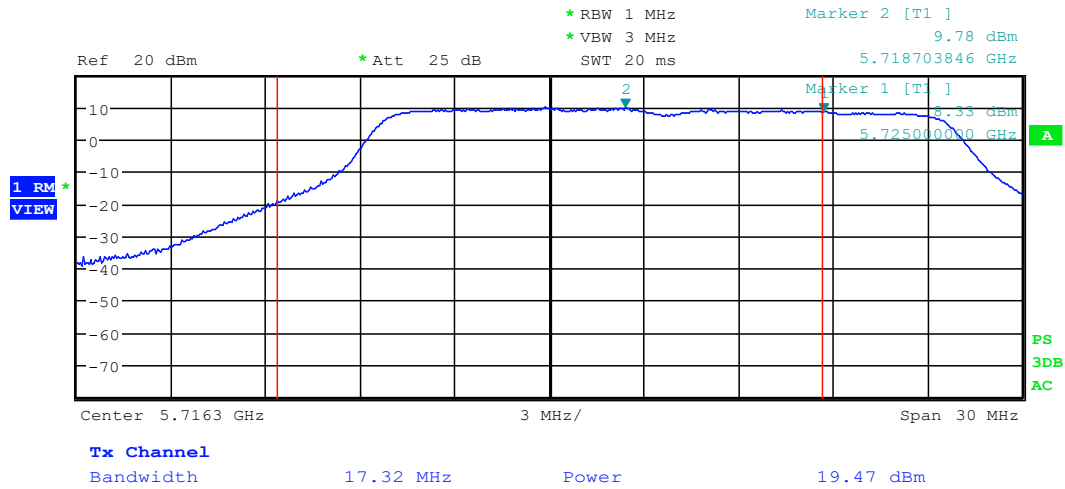
UNII 2C, Port 2: OFDM Non-Beamforming



Date: 5.MAY.2022 13:12:03



UNII 2C, Port 2: HT20 Non-Beamforming



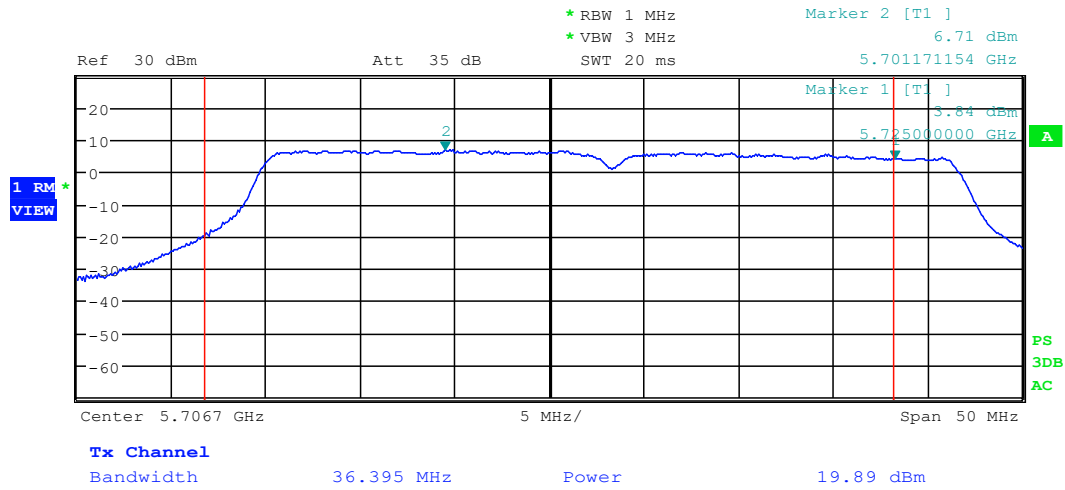
Date: 5.MAY.2022 13:15:26



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: HT40 Non-Beamforming



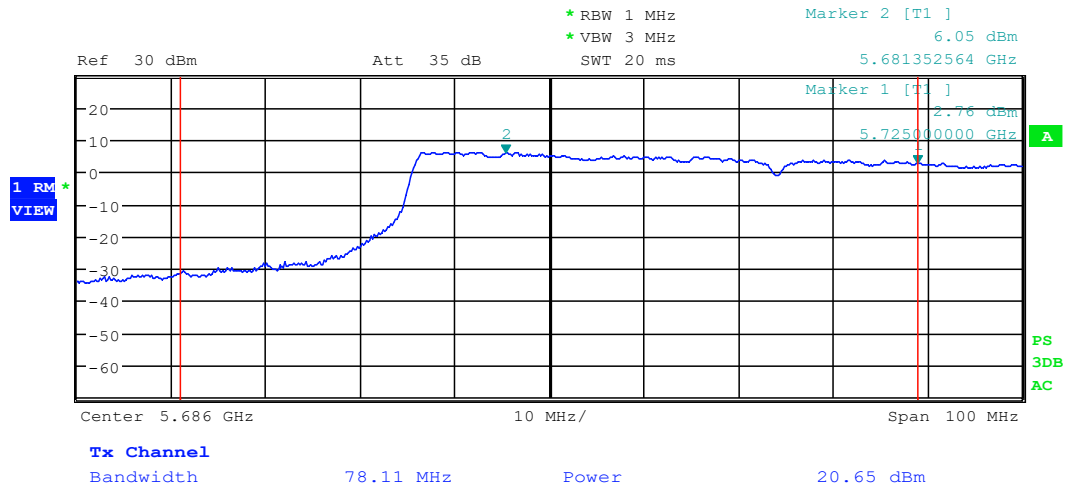
Date: 5.MAY.2022 13:19:14



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: HT80 Non-Beamforming



Date: 5.MAY.2022 13:23:15

**REDUCED POWER WHEN BEAMFORMING****UNII 2C, Port 1 – Beamforming Mode**

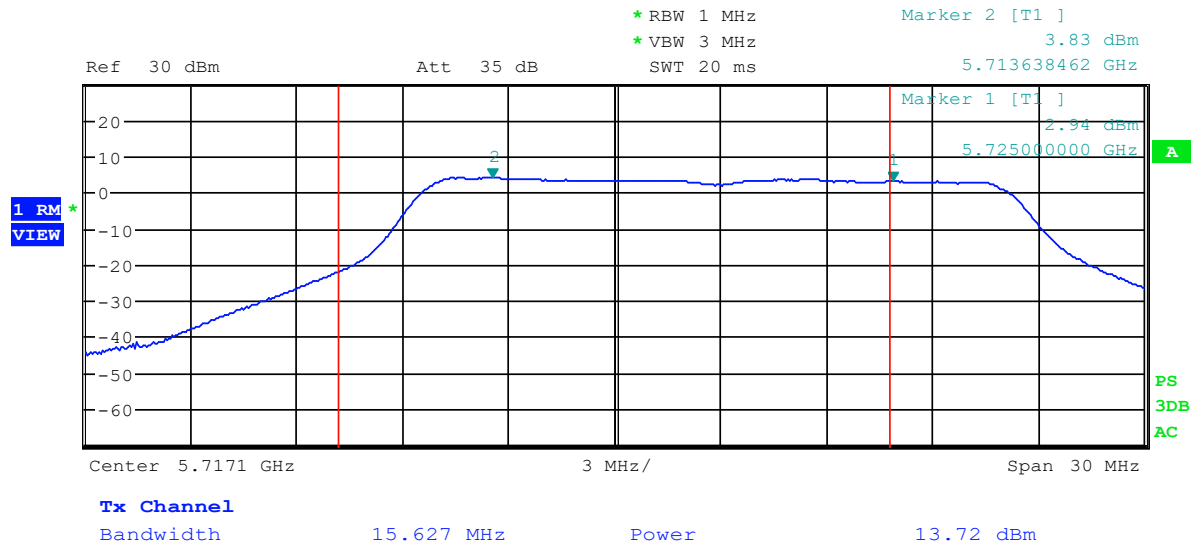
POWER SPECTRAL DENSITY UNII 2C, Port 1 - Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	3.83	10
Modulation: HT20			
High	5720	3.65	10
Modulation : HT40			
High	5710	2.59	10
Modulation HT80			
High	5690	-0.13	10



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: OFDM Beamforming



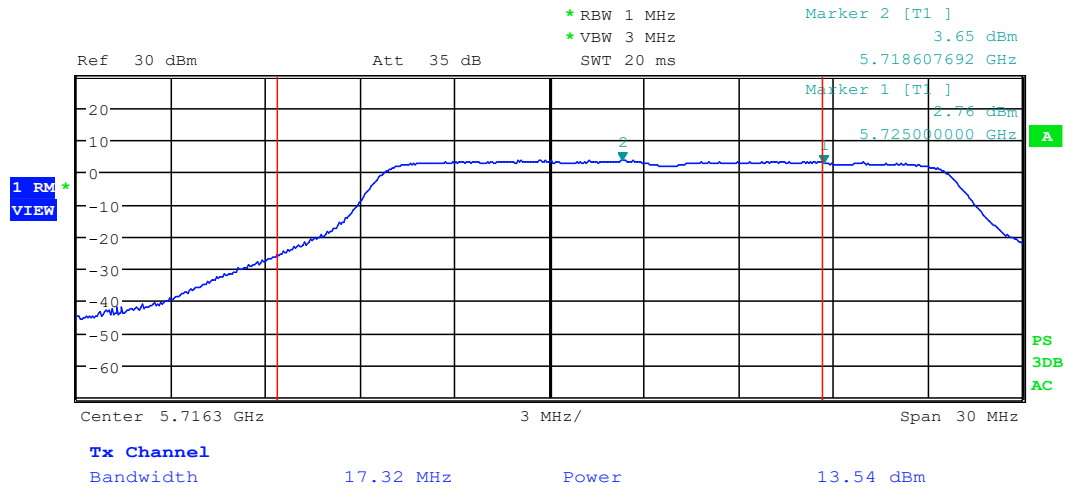
Date: 5.MAY.2022 16:25:00



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT20 Beamforming



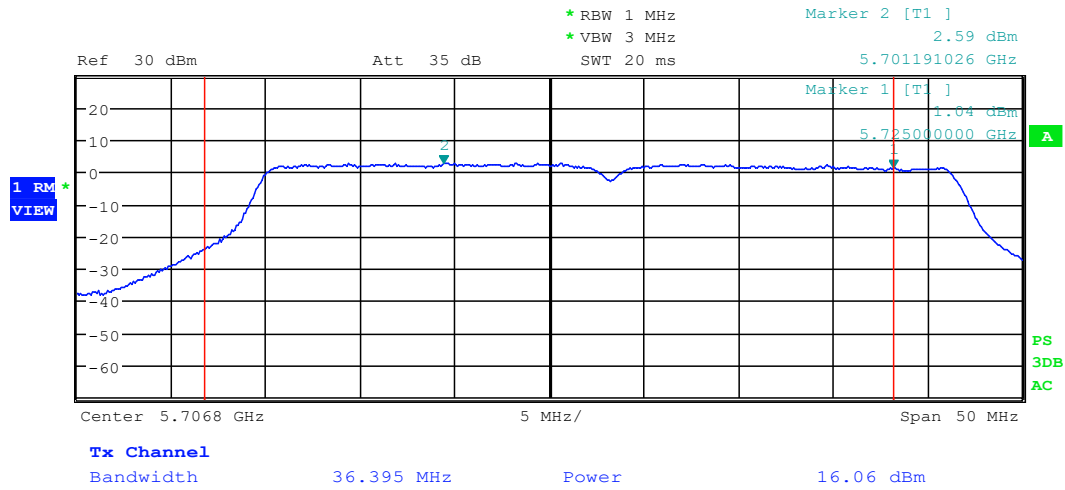
Date: 5.MAY.2022 16:27:09



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT40 Beamforming



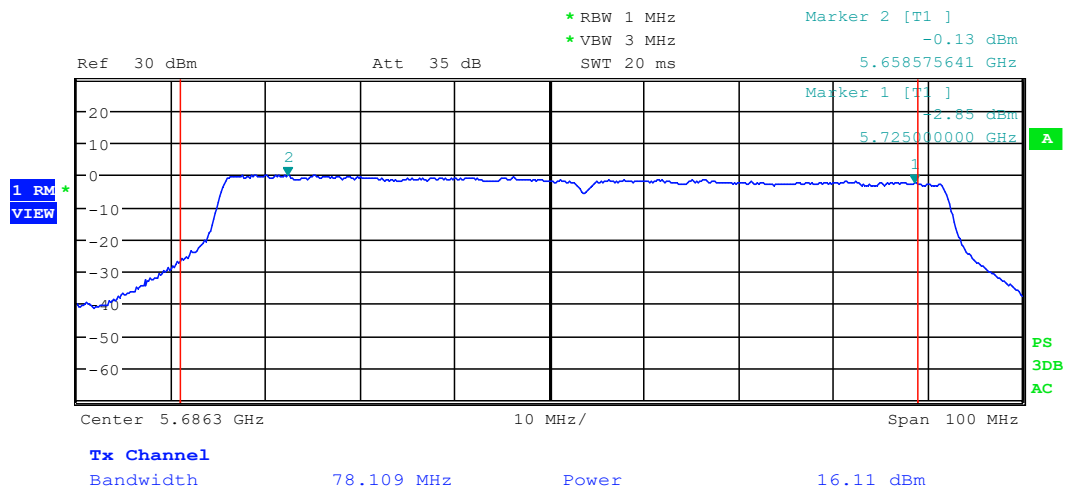
Date: 5.MAY.2022 16:29:34



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 1: HT80 Beamforming



Date: 5.MAY.2022 16:32:24

**UNII 2C, Port 2 – BEAMFORMING MODE**

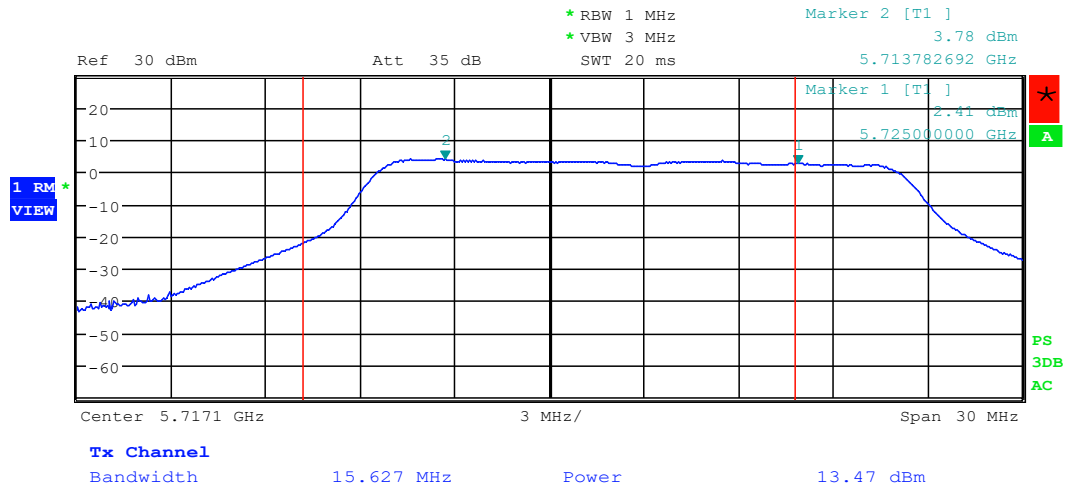
POWER SPECTRAL DENSITY UNII 2C, Port 2 - Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	3.78	10
Modulation: HT20			
High	5720	3.41	10
Modulation: HT40			
High	5710	3.69	10
Modulation: HT80			
High	5690	0.80	10



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: OFDM Beamforming



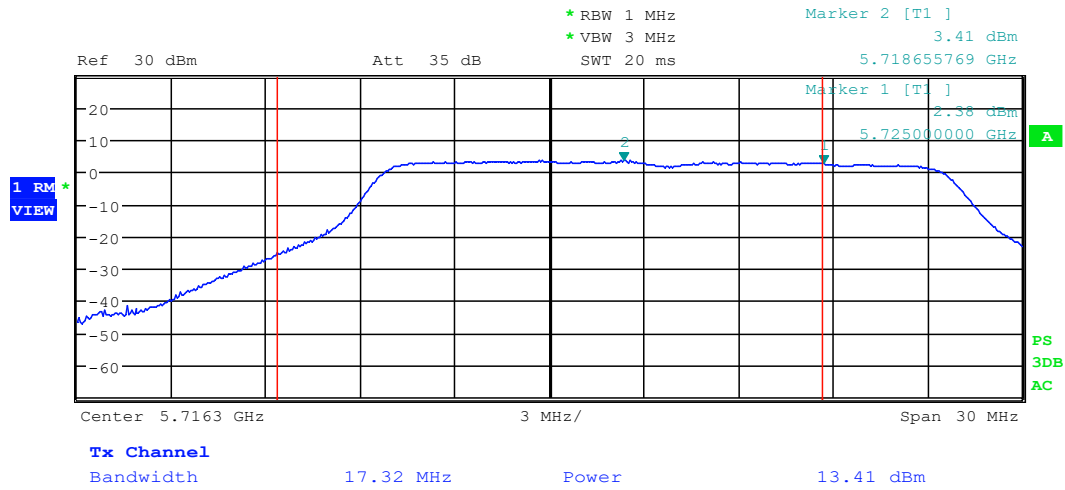
Date: 5.MAY.2022 15:04:10



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 2C, Port 2: HT20 Beamforming



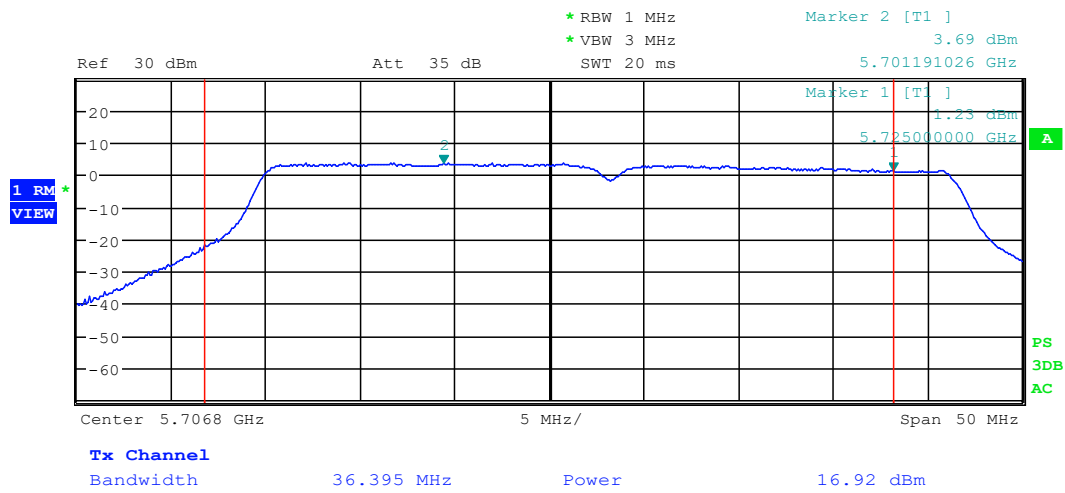
Date: 5.MAY.2022 15:06:32



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

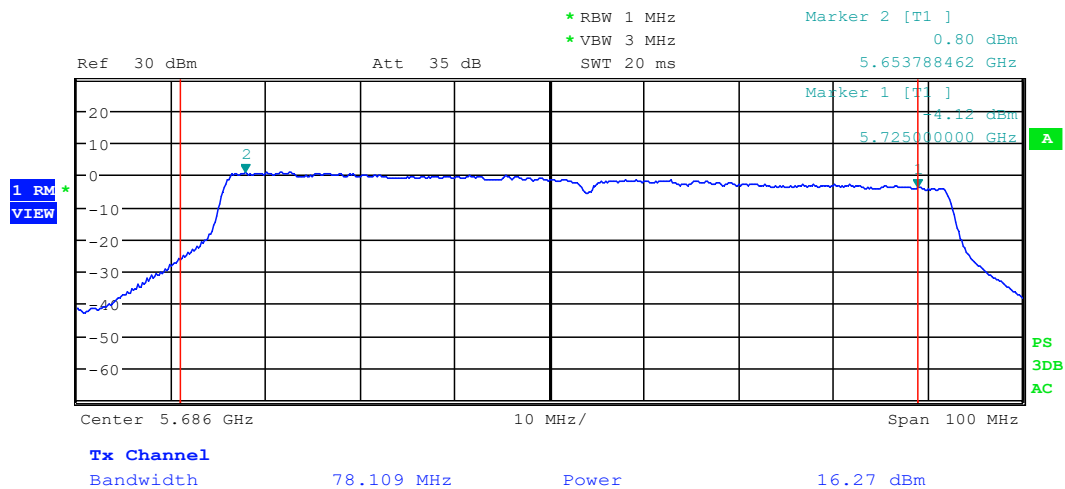
UNII 2C, Port 2: HT40 Beamforming



Date: 5.MAY.2022 15:09:26



UNII 2C, Port 2: HT80 Beamforming



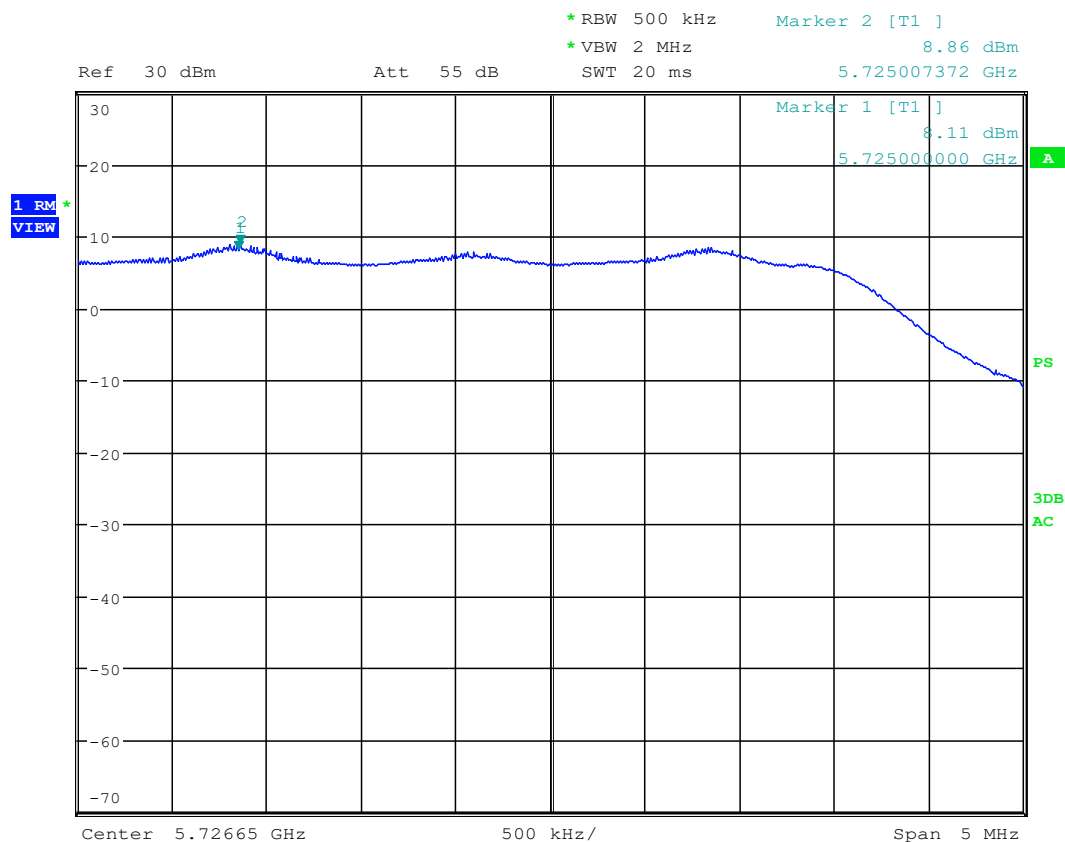
Date: 5.MAY.2022 15:23:25



UNII 3, Port 1 – Non-Beamforming Mode

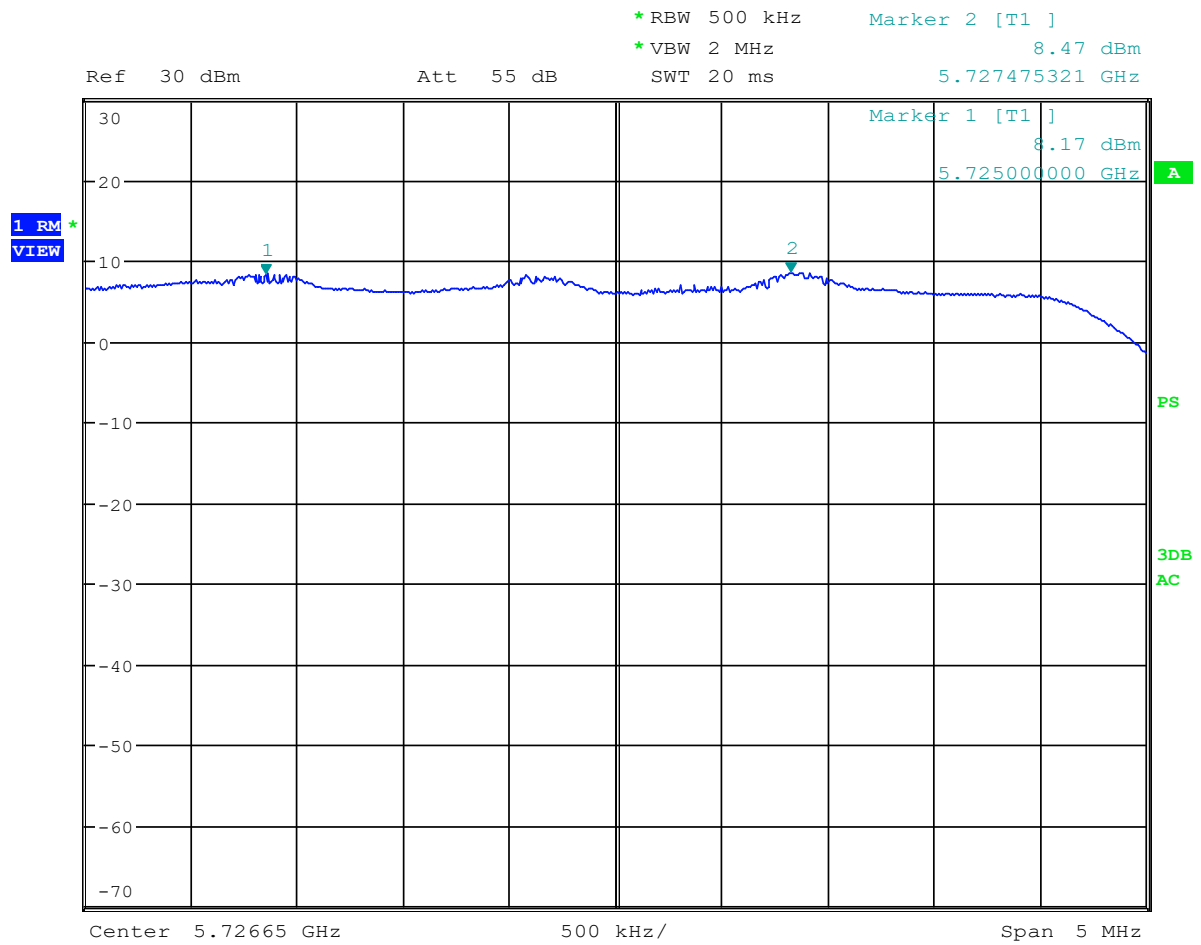
POWER SPECTRAL DENSITY UNII 3, Port 1 - Non-Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	8.86	30
Modulation: HT20			
High	5720	8.47	30
Modulation: HT40			
High	5710	5.06	30
Modulation: HT80			
High	5690	1.74	30

UNII 3, Port 1: OFDM Non-Beamforming





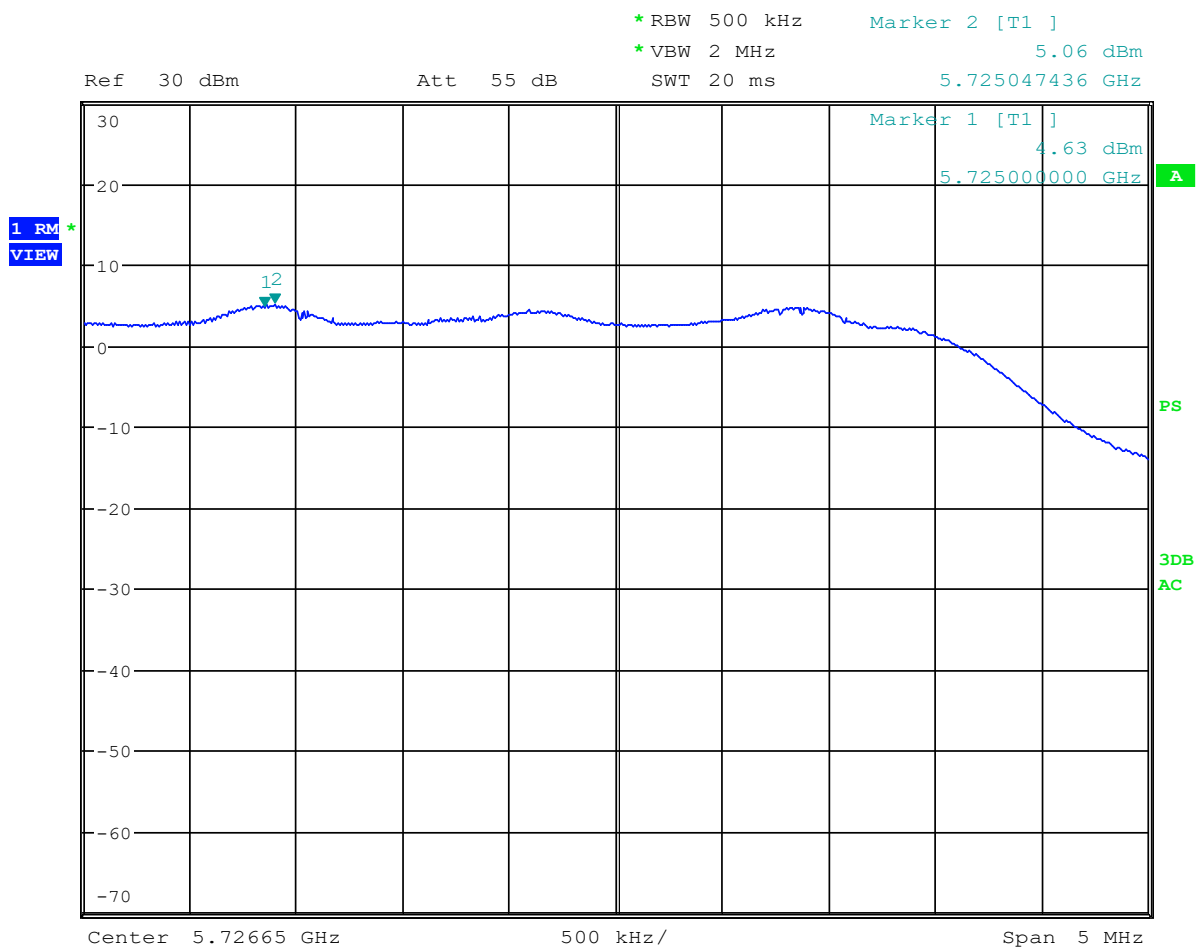
UNII 3, Port 1: HT20 Non-Beamforming



Date: 5.MAY.2022 11:41:18



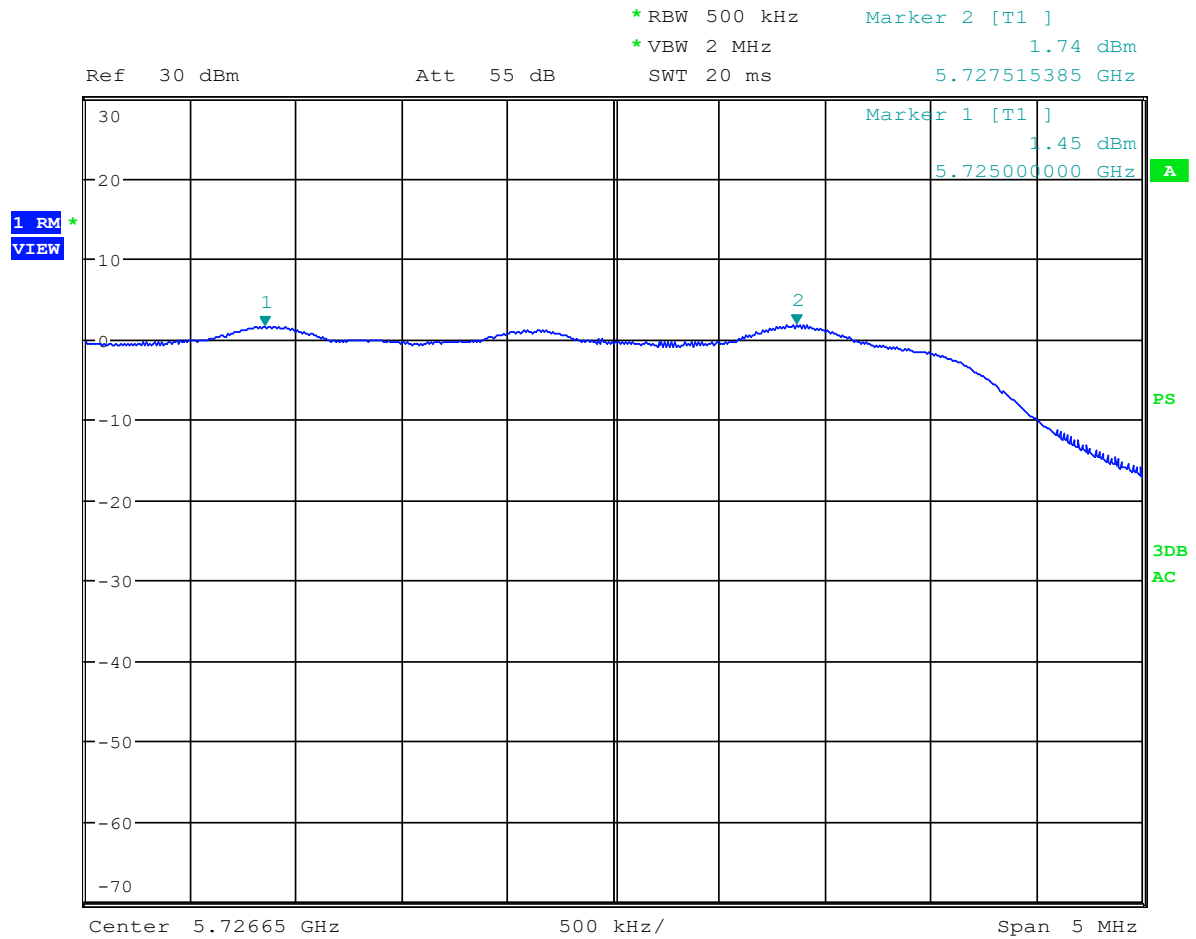
UNII 3, Port 1: HT40 Non-Beamforming



Date: 5.MAY.2022 11:39:13



UNII 3, Port 1: HT80 Non-Beamforming



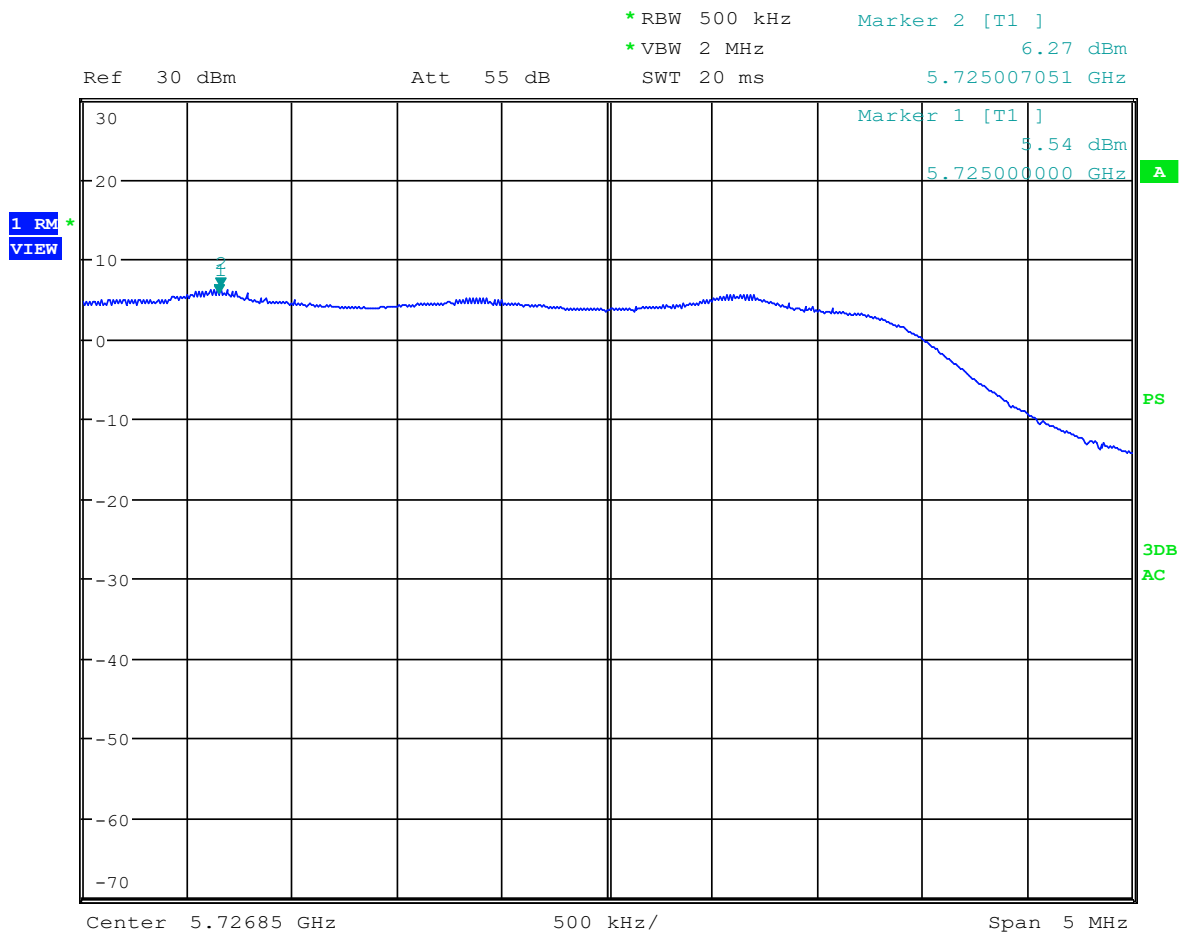
Date: 5.MAY.2022 11:37:12

**UNII 3, Port 2 – Non-Beamforming Mode**

POWER SPECTRAL DENSITY UNII 3, Port 2 - Non-Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	6.27	30
Modulation: HT20			
High	5720	7.24	30
Modulation: HT40			
High	5710	3.95	30
Modulation: HT80			
High	5690	-0.10	30



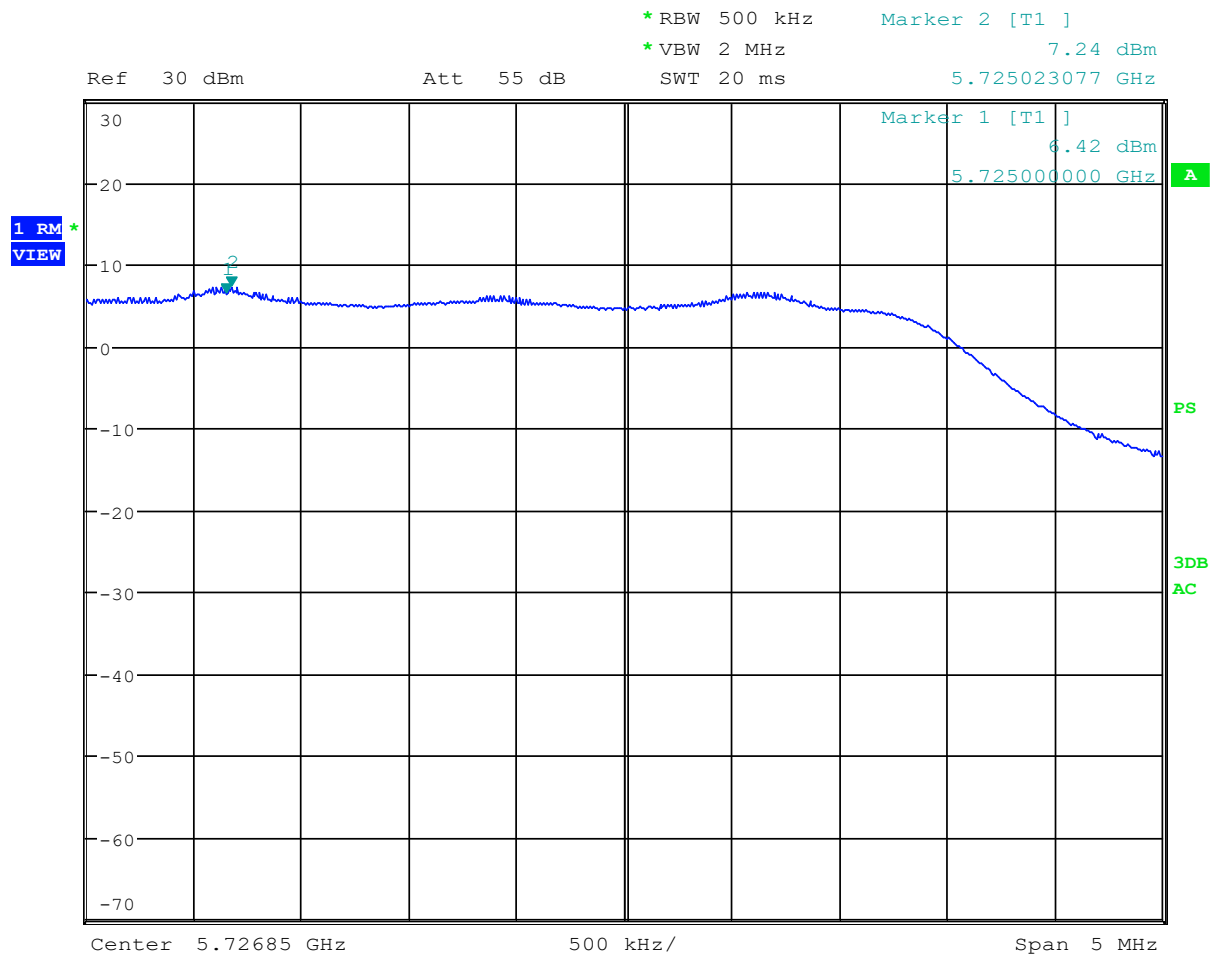
UNII 3, Port 2: OFDM Non-Beamforming



Date: 5.MAY.2022 13:39:22



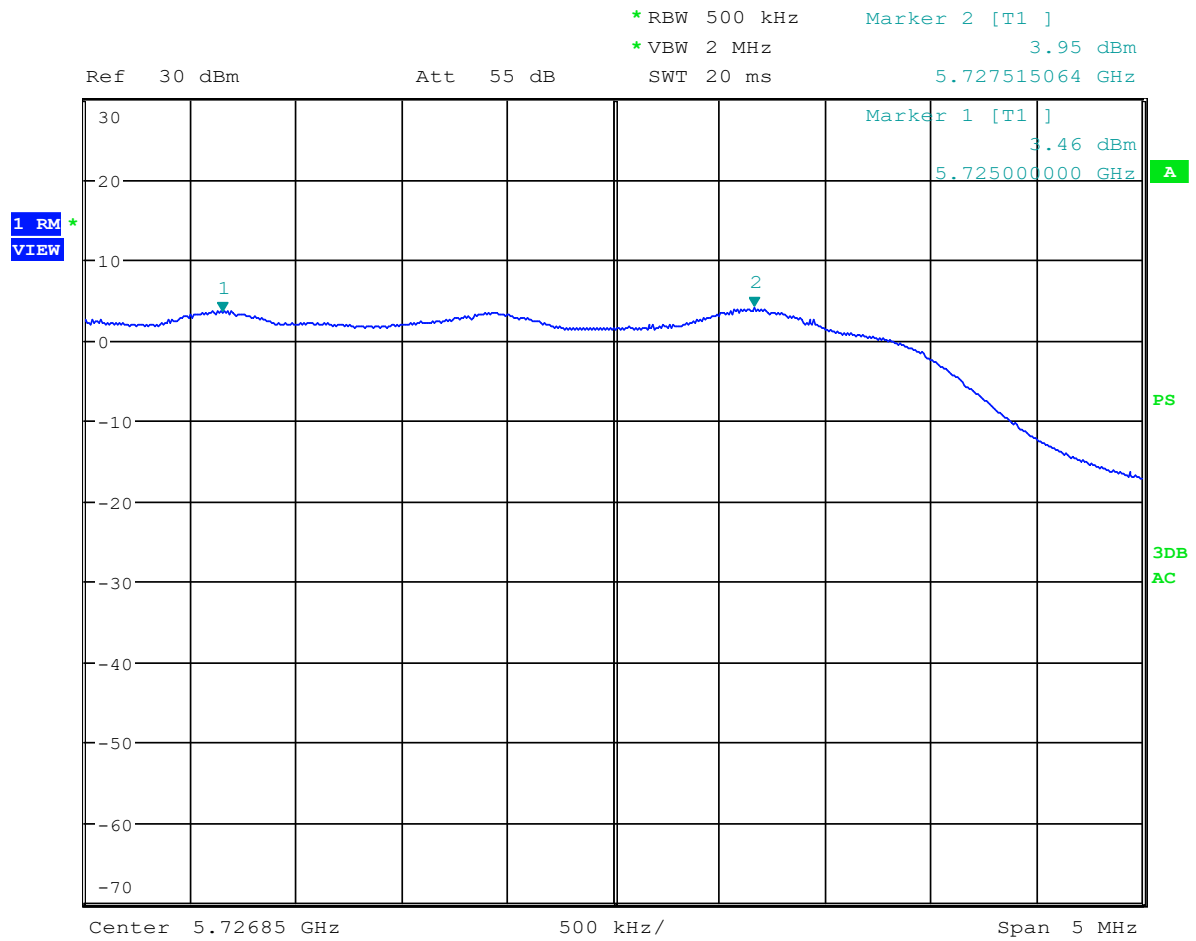
UNII 3, Port 2: HT20 Non-Beamforming



Date: 5.MAY.2022 13:40:37



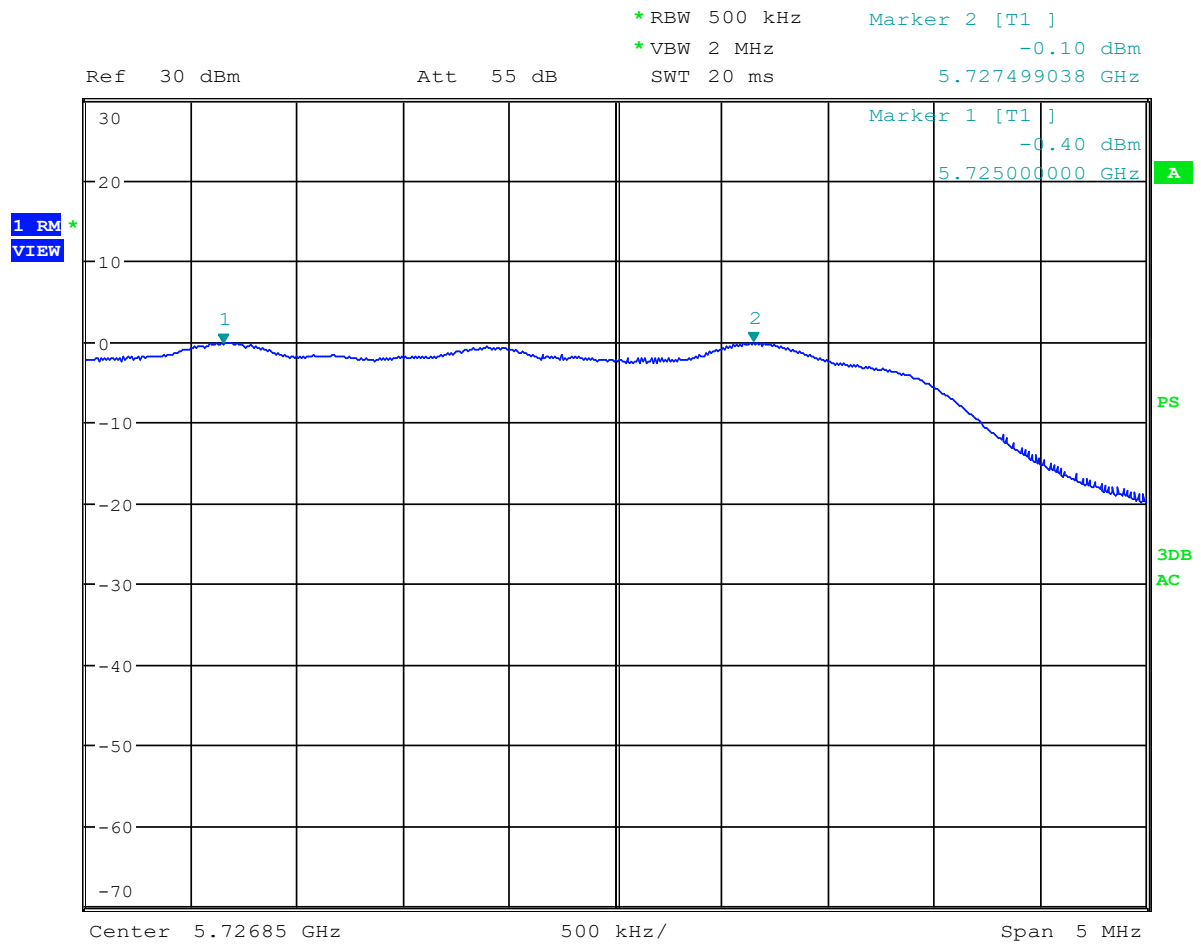
UNII 3, Port 2: HT40 Non-Beamforming



Date: 5.MAY.2022 13:42:55



UNII 3, Port 2: HT80 Non-Beamforming



Date: 5.MAY.2022 13:44:31



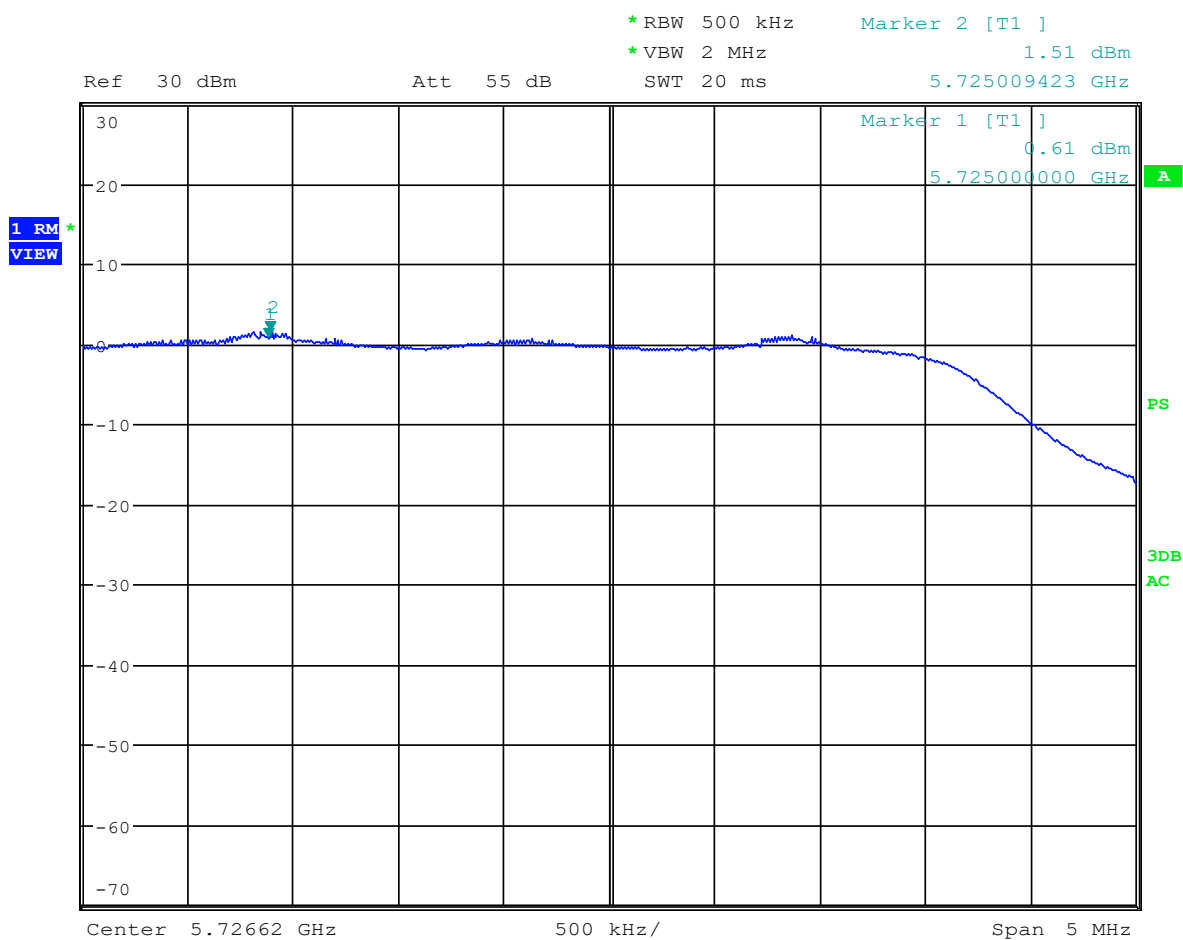
REDUCED POWER WHEN BEAMFORMING
(U-NII-2C had to be reduced and therefore U-NII-3 reduced accordingly)

UNII 3, Port 1 – Beamforming Mode

POWER SPECTRAL DENSITY UNII 3, Port 1 - Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	1.51	30
Modulation: HT20			
High	5720	1.19	30
Modulation: HT40			
High	5710	-0.09	30
Modulation: HT80			
High	5690	-3.66	30



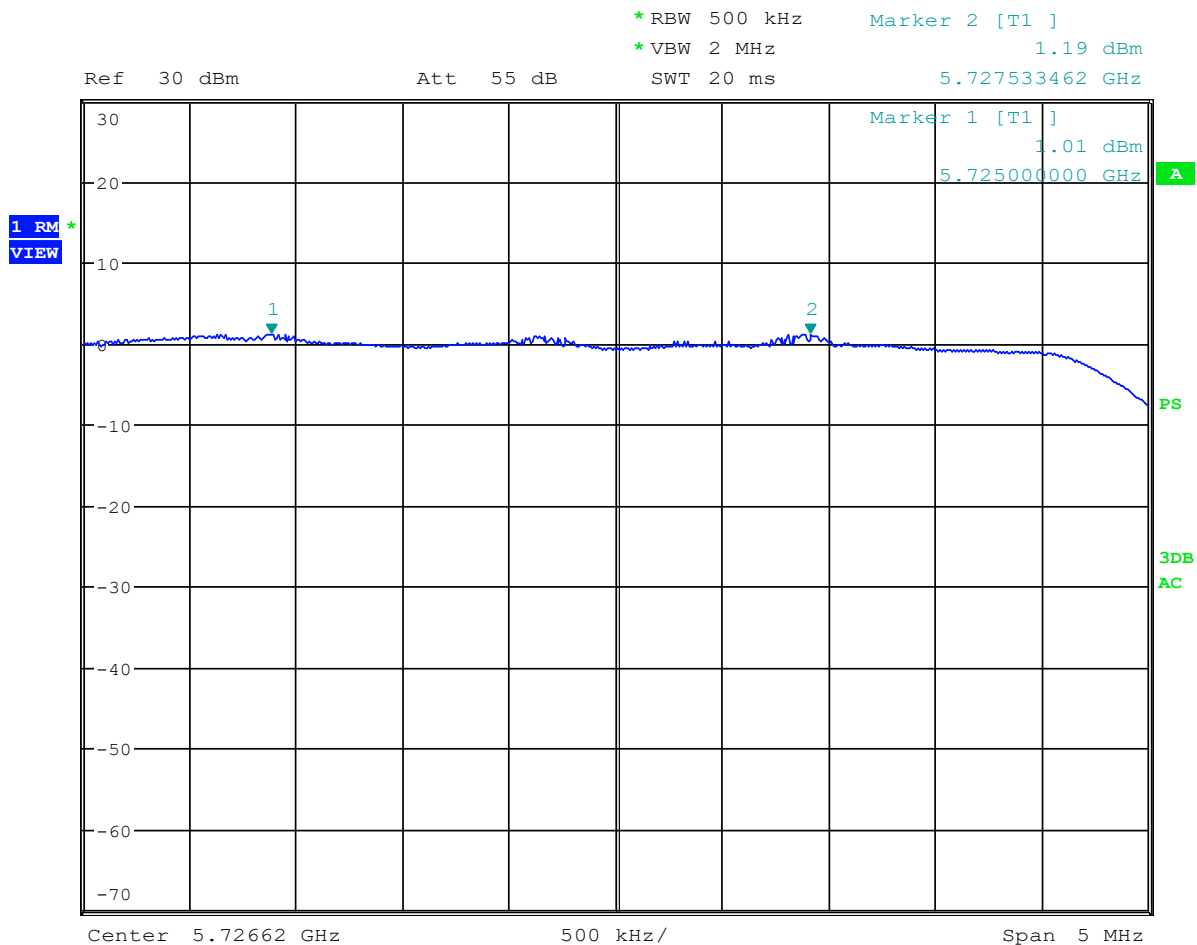
UNII 3, Port 1: OFDM Beamforming



Date: 5.MAY.2022 16:44:30



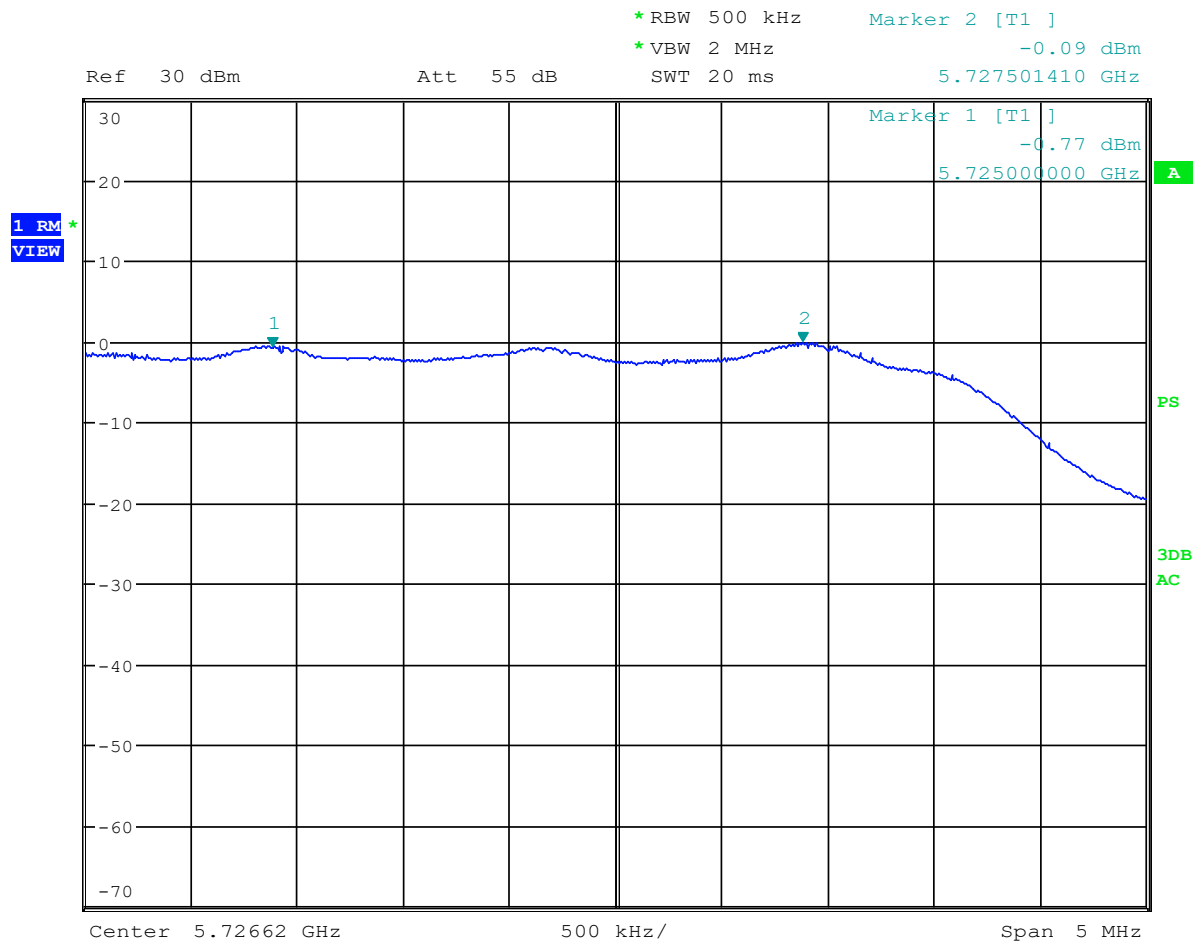
UNII 3, Port 1: HT20 Beamforming



Date: 5.MAY.2022 16:45:32



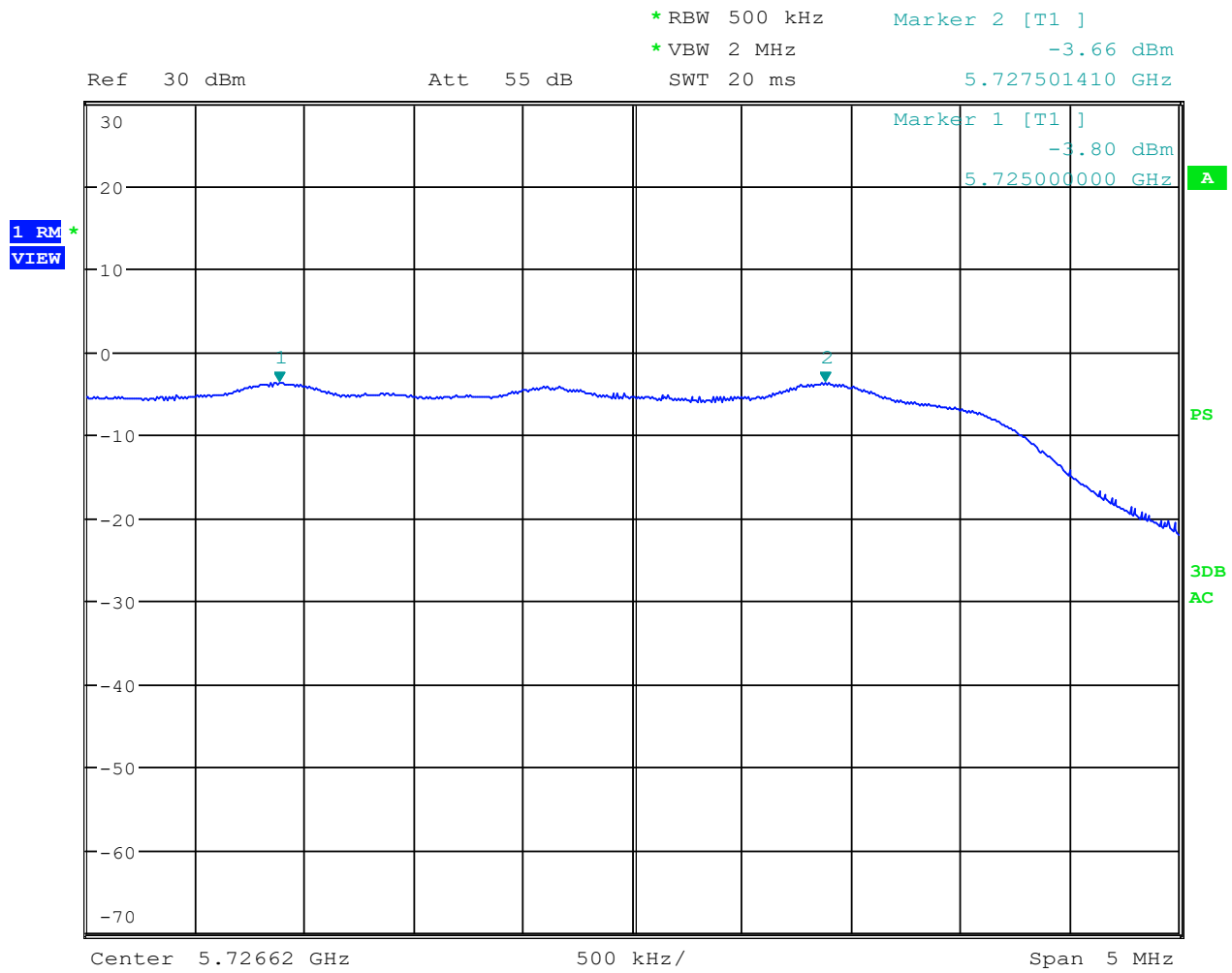
UNII 3, Port 1: HT40 Beamforming



Date: 5.MAY.2022 16:47:04



UNII 3, Port 1: HT80 Beamforming



Date: 5.MAY.2022 16:48:17



UNII 3, Port 2 – Beamforming Mode

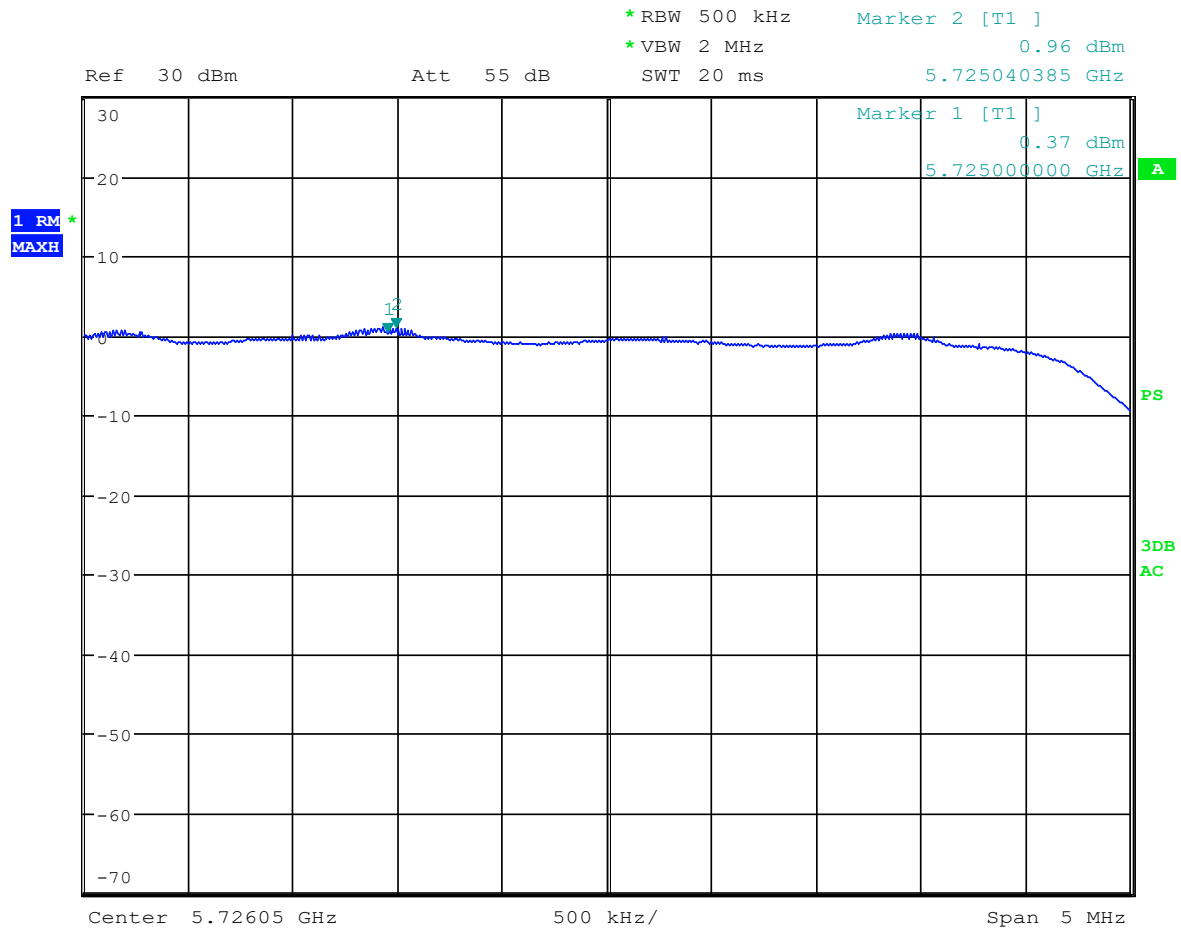
POWER SPECTRAL DENSITY UNII 3, Port 2 - Beamforming Mode			
Channel	Frequency (MHz)	Measured PSD (dbm)	Limit (dbm)
Modulation: OFDM			
High	5720	0.96	30
Modulation: HT20			
High	5720	0.56	30
Modulation: HT40			
High	5710	-1.20	30
Modulation: HT80			
High	5690	-5.17	30



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: OFDM Beamforming



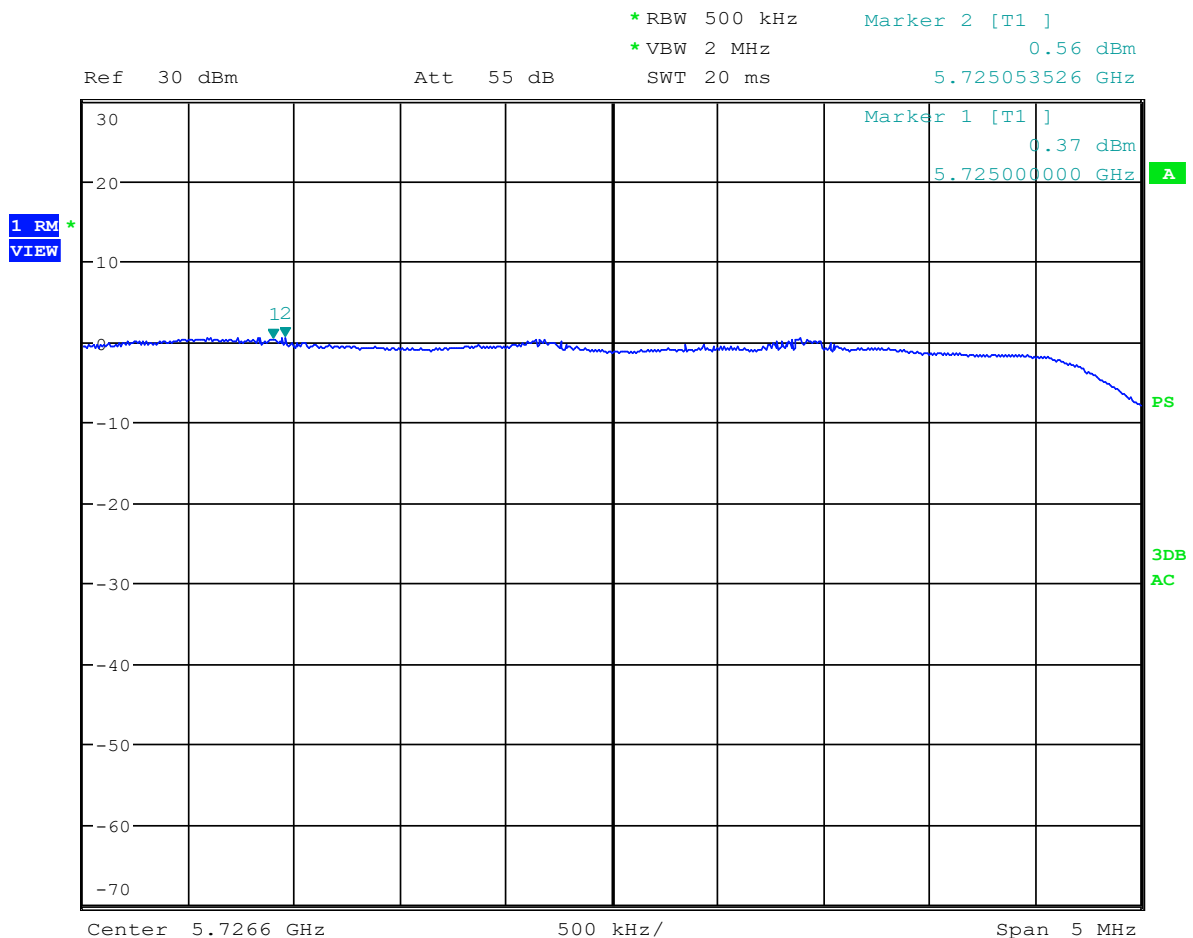
Date: 5.MAY.2022 15:41:16



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

UNII 3, Port 2: HT20 Beamforming



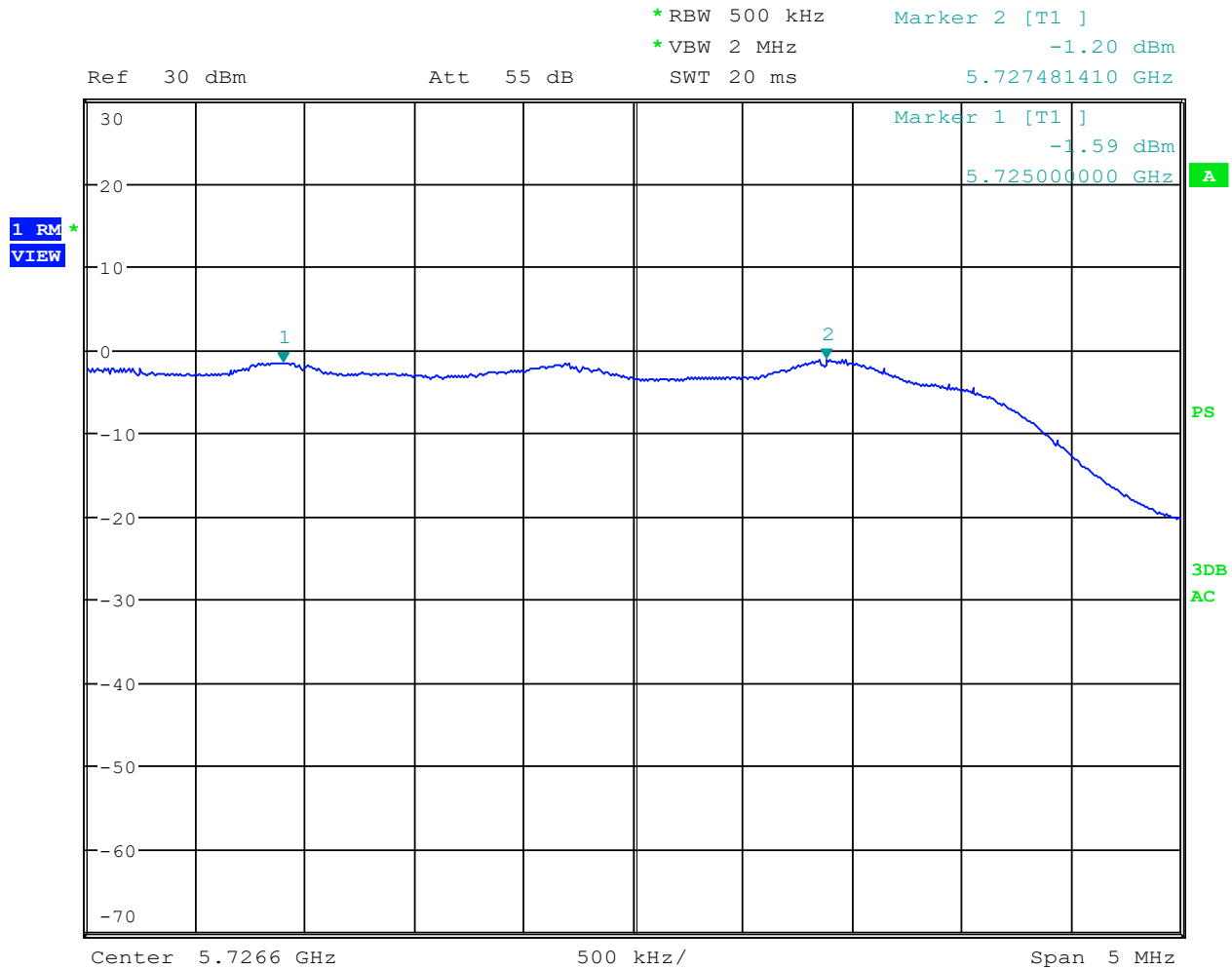
Date: 5.MAY.2022 15:42:40



Order Number: F2P19924D

Applicant: PCTEL, Inc
FCC ID: NYPRMWIFIAC2X2

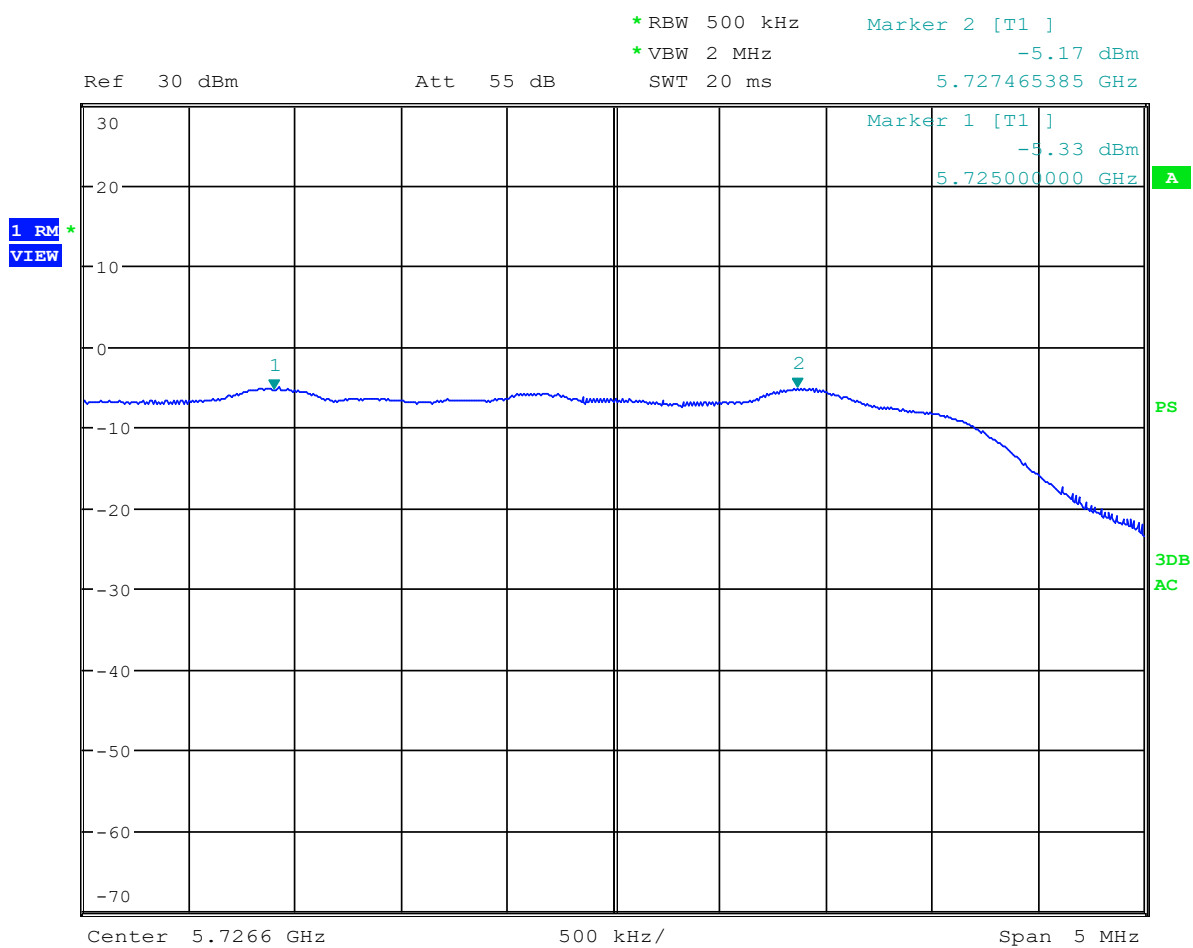
UNII 3, Port 2: HT40 Beamforming



Date: 5.MAY.2022 15:45:32



UNII 3, Port 2: HT80 Beamforming



Date: 5.MAY.2022 15:47:29

**PSD UNII 3 SUMMING PORT 1 AND PORT 2 FOR BEAMFORMING MIMO****Modulation: OFDM**

Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)						Limit
	Port 1 dBm	Port 2 dBm	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	26
5720	1.51	0.96	1.41	1.24	2.65	4.23	

Modulation: HT20

Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)						Limit
	Port 1 dBm	Port 2 dBm	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	26
5720	1.19	0.56	1.31	1.13	2.44	3.87	

Modulation: HT40

Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)						Limit
	Port 1 dBm	Port 2 dBm	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	26
5710	-0.09	-1.2	0.97	0.75	1.72	2.35	

Modulation: HT80

Frequency (MHz)	Measure and Sum (Summing port 1 and port 2)						Limit
	Port 1 dBm	Port 2 dBm	Port 1 mW	Port 2 mW	Summed mW	Summed dBm	26
5690	-3.66	-5.17	0.43	0.30	0.73	-1.36	



9 RADIATED SPURIOUS EMISSION

The EUT antenna port was fitted with all antennas. Radiated emissions were measured in a Semi-Anechoic Chamber. All emissions generated that fall in the restricted bands per FCC Part 15.205 were examined.

9.1 Requirements:

All emissions that fall in the restricted bands defined in FCC Part 15.205 shall not exceed the maximum field strength listed in FCC Part 15.209(a).

All other undesirable emission that do not fall under the provisions of Part 15.205, shall meet the following limits:

- (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 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.*



9.2 Radiated Spurious Emission Test Data

Test Date(s):	2022-01-24	Test Engineer:	J. Chiller
Standards:	CFR 47 Part 15.407; Part 15.209 / KDB789033	Air Temperature:	22.6°C
		Relative Humidity:	35%

Notes: Plots are peak, max hold prescan data included only to determine what frequencies to investigate and measure. The EUT was initially placed in a semi-anechoic chamber, and rotated in all three orthogonal positions to maximize the emissions. The orthogonal position that showed the highest emissions was used. Characterization measurements were then performed to determine at which frequencies significant emissions occurred. These graphs are shown below.

The equipment was fully exercised with all cabling attached to the EUT and was positioned in a semi-anechoic chamber for maximum emissions. All antennas were mounted and all transmitters were on and transmitting at the same time to set worst-case Radiated Emissions and Beamforming due to MIMO configuration. While the equipment was energized, the receiving antenna was scanned from 1.0 meter to 4.0 meters in both vertical and horizontal polarities while the turntable was adjusted 360 degrees to determine the maximum field strength. The tables of measured results can be found below.

Some of the frequencies did not change with the EUT on or off. At those frequencies, the test distance was shortened to 1 meter and still no emissions from the EUT were visible or over the ambient or limit.

In the following plots, emissions to be found by the EUT were measured and listed in tables. The black lines are active scans while the green lines are the max peak scan of the unit during rotations. The plots are for reference only and the limit lines are not actual limit lines but merely a guide.

Limits are indicated as follows:

Solid Red = 15.407 Peak

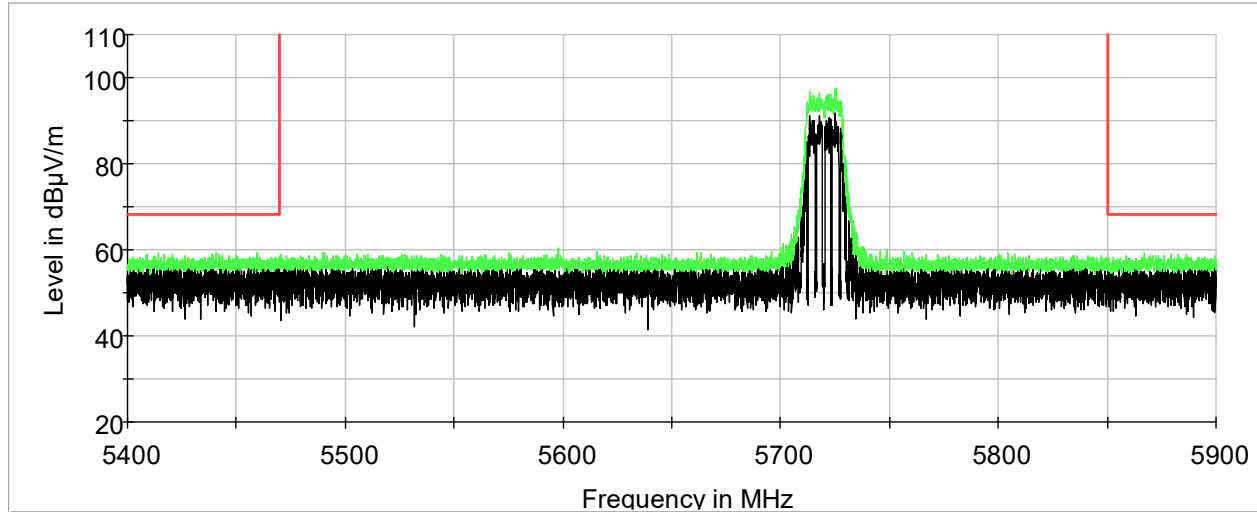
Green = Restricted Band Avg

Blue = Restricted Band Peak

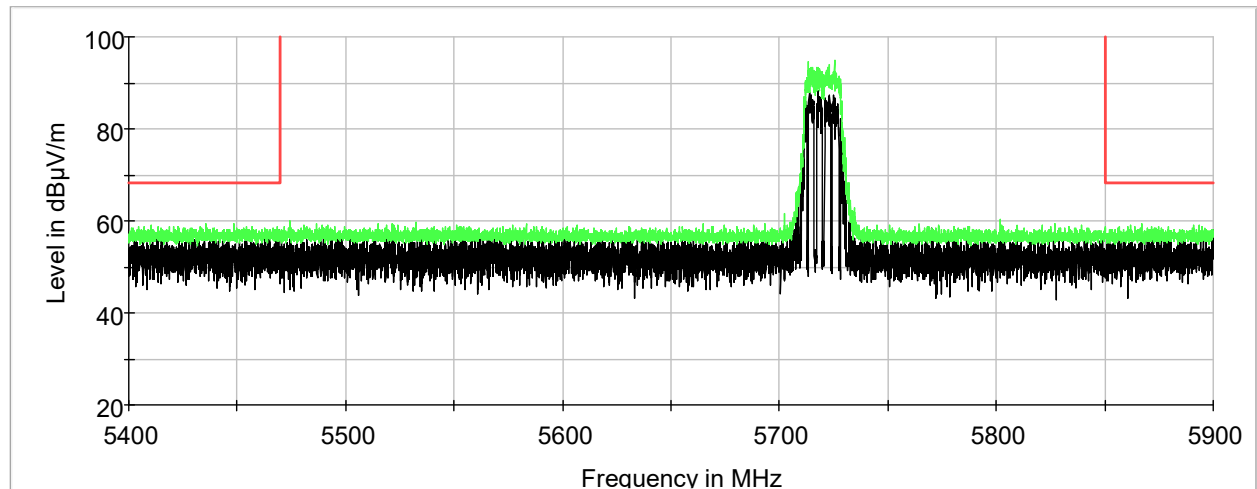
In the UNII-1 (5.15-5.25 GHz) band, UNII-2A (5.25-5.35 GHz) band, and lower end of the UNII-2C (5.47-5.725 GHz) band, there are restricted bands that applies from 4.5-5.15 GHz, and from 5.35-5.46 GHz. In these restricted bands, the limits are 54 dBuV/m Avg and 74 dBuV/m Peak.



HT20 Radiated Band Edge: Vertical

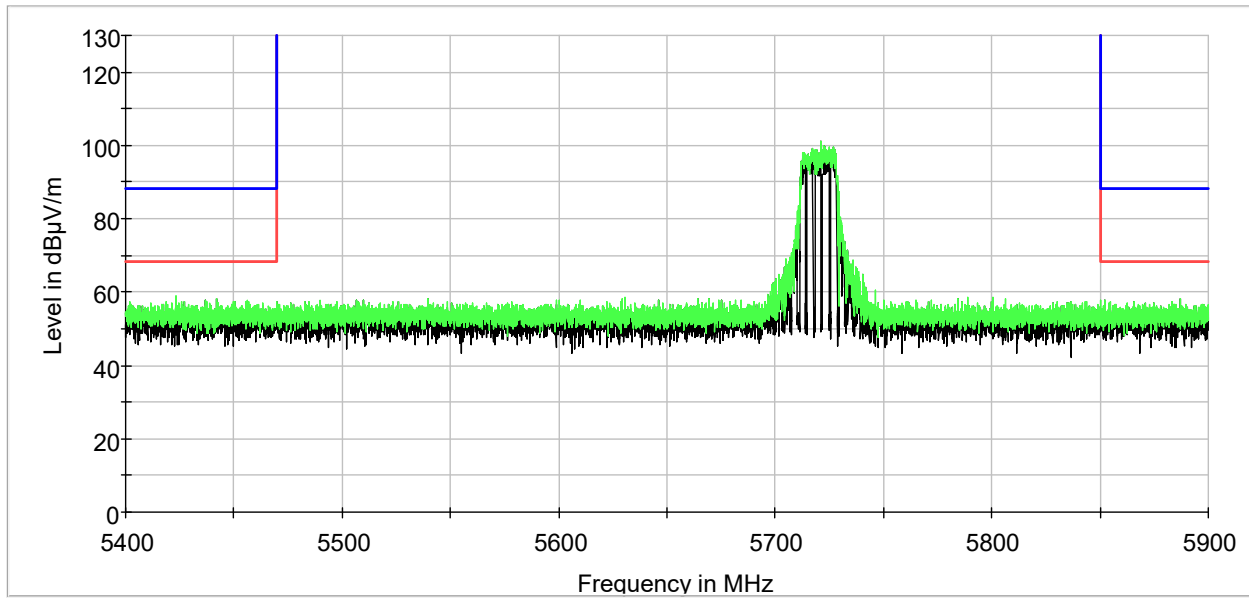


HT20 Radiated Band Edge: Horizontal

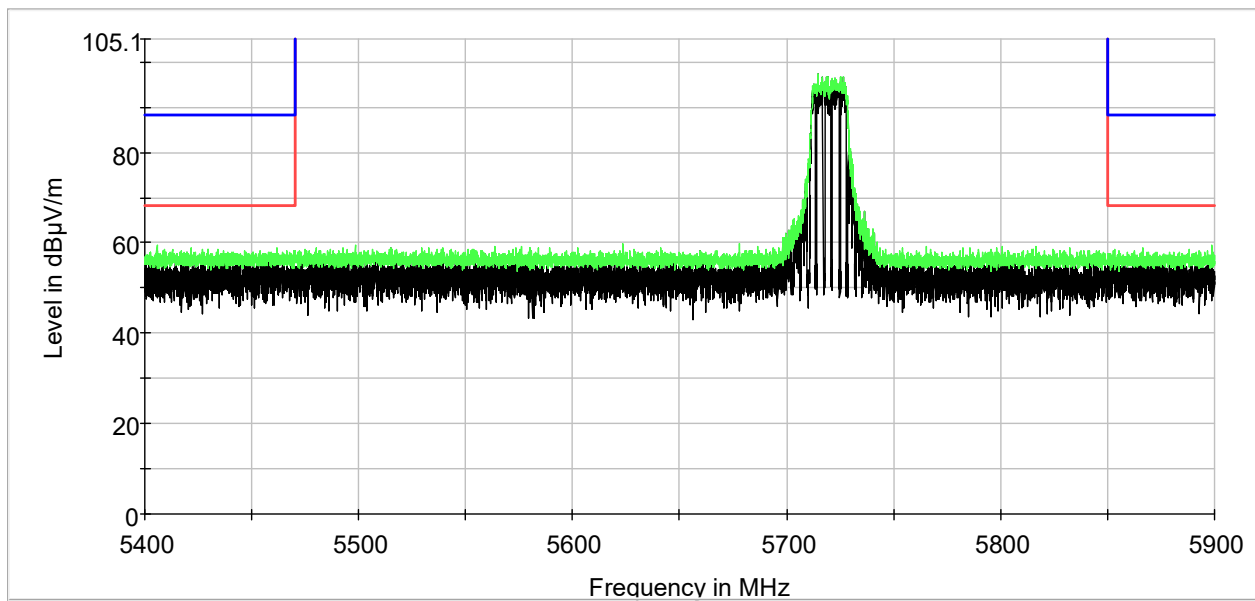




OFDM Radiated Band Edge: Vertical

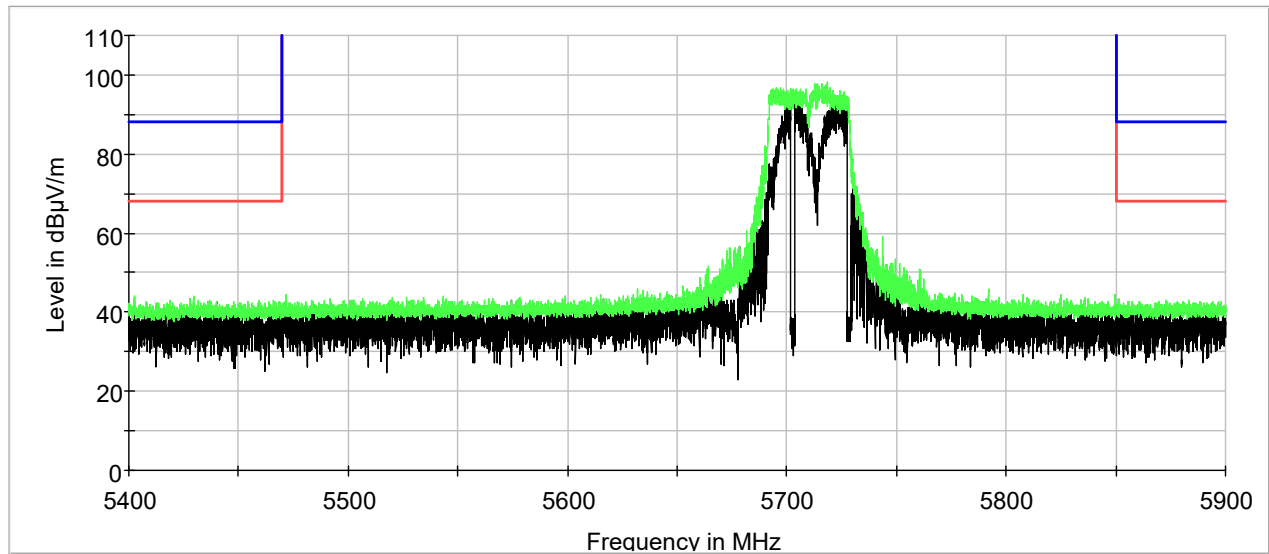


OFDM Radiated Band Edge: Horizontal

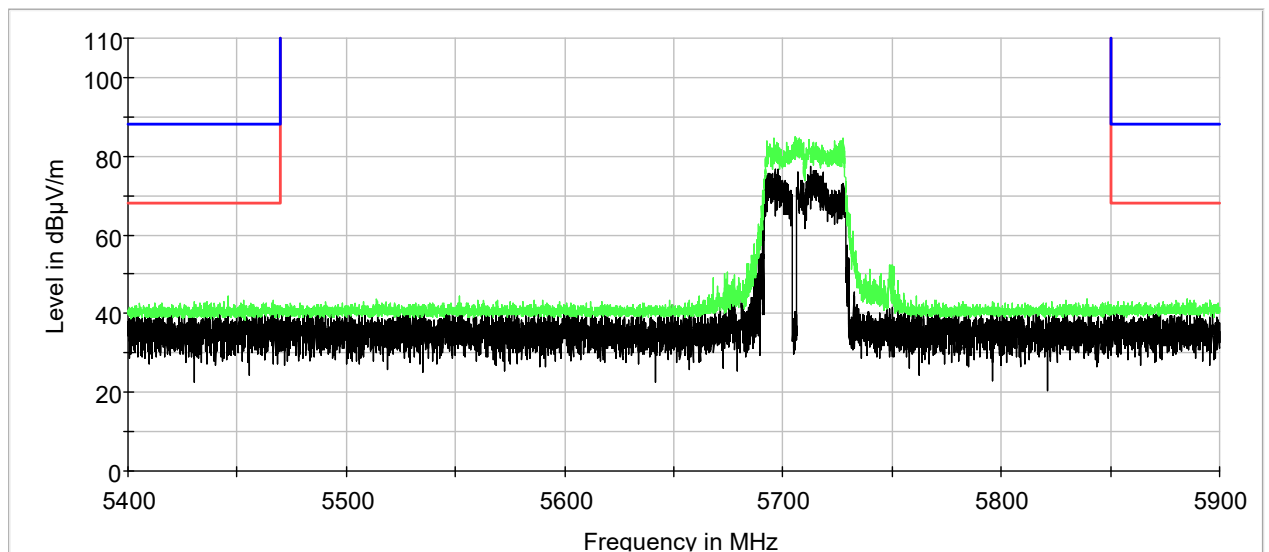




HT40, Radiated Band Edge: Vertical

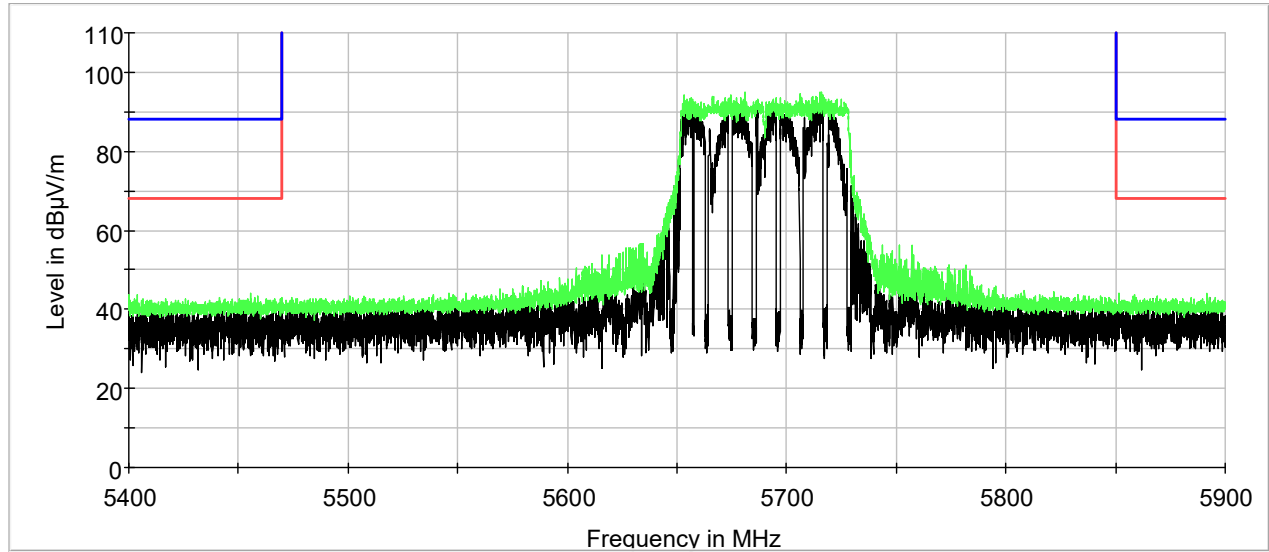


HT40, Radiated Band Edge: Horizontal

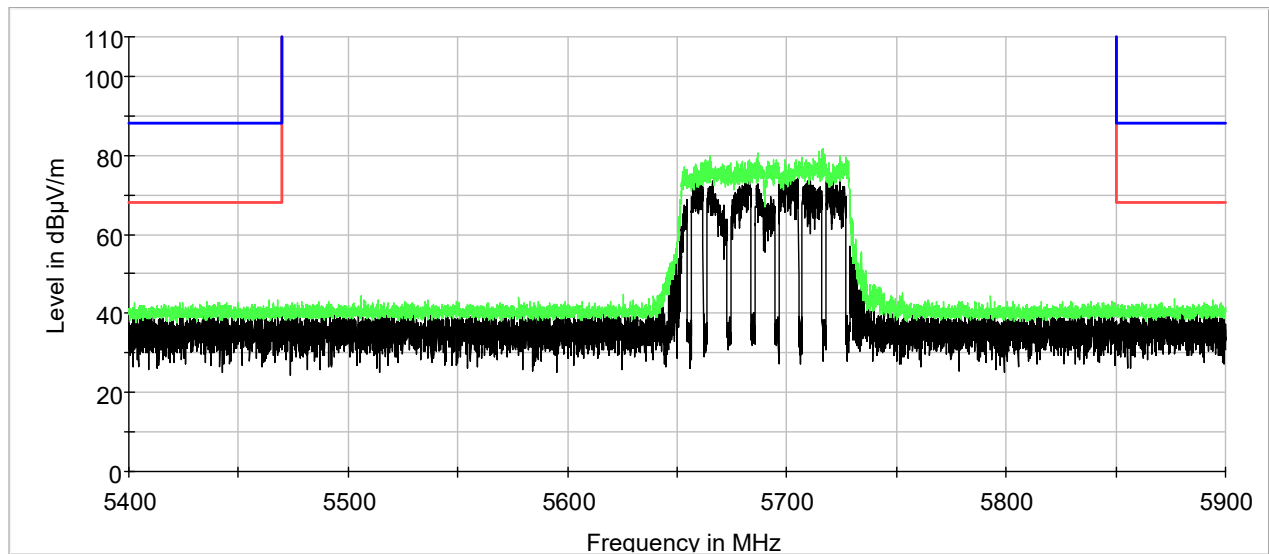




HT80, Radiated Band Edge: Vertical



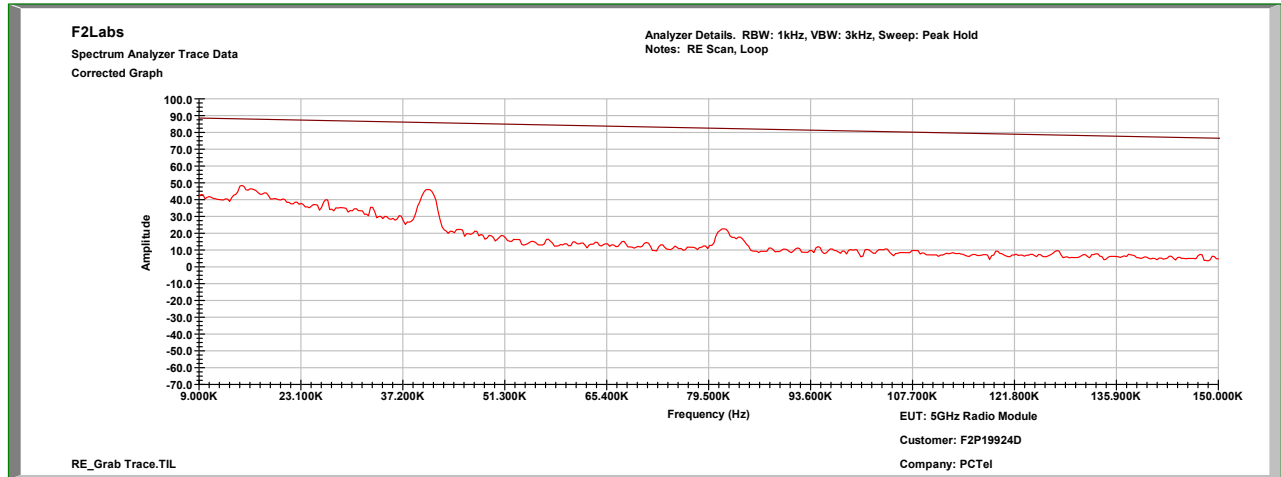
HT80, Radiated Band Edge: Horizontal



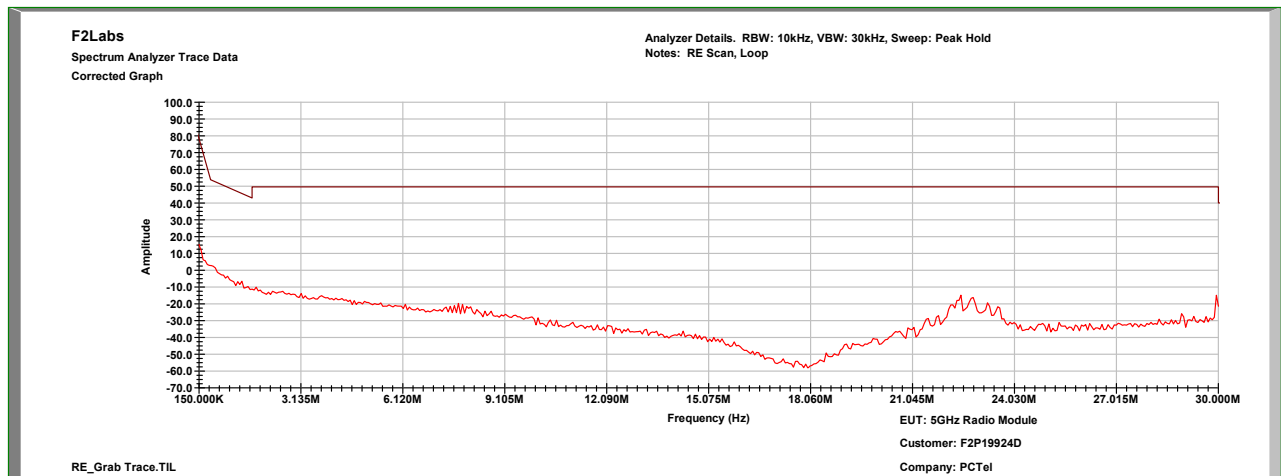


The following plots are of worse-case emissions scans from all modulations.

Radiated Spurious Emissions: 0.009 MHz to 0.15 MHz

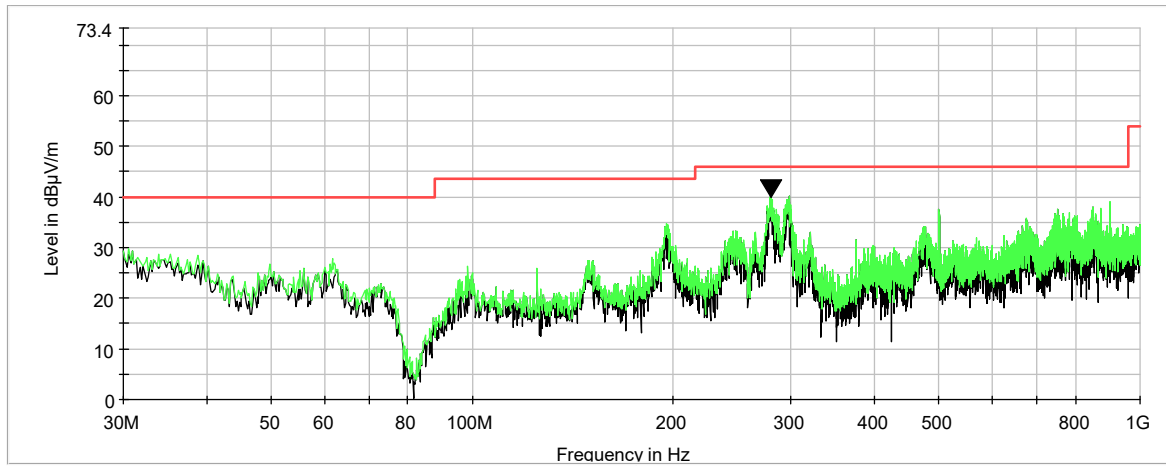


Radiated Spurious Emissions: 0.15MHz to 30.0 MHz

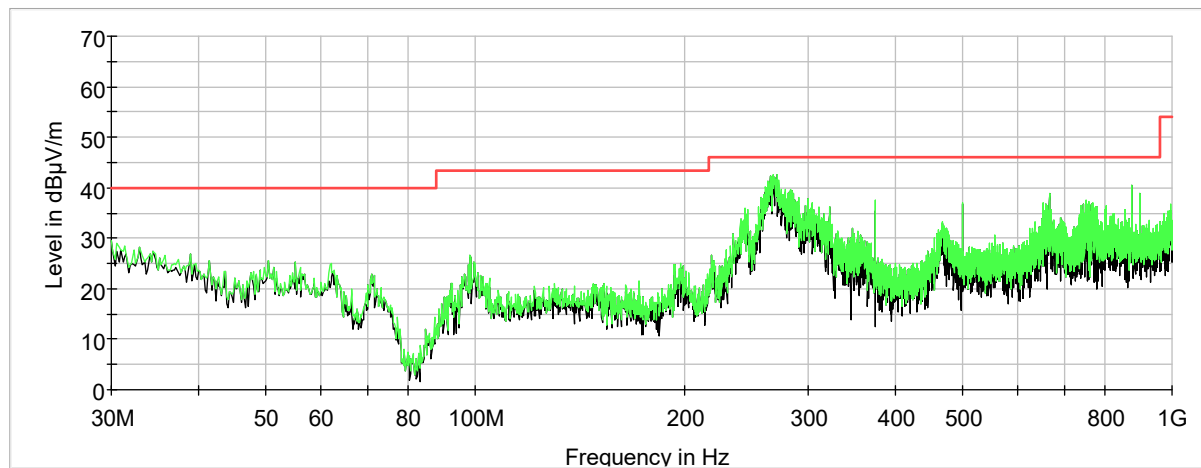




Radiated Spurious Emissions: 30 MHz to 1000 MHz, Vertical



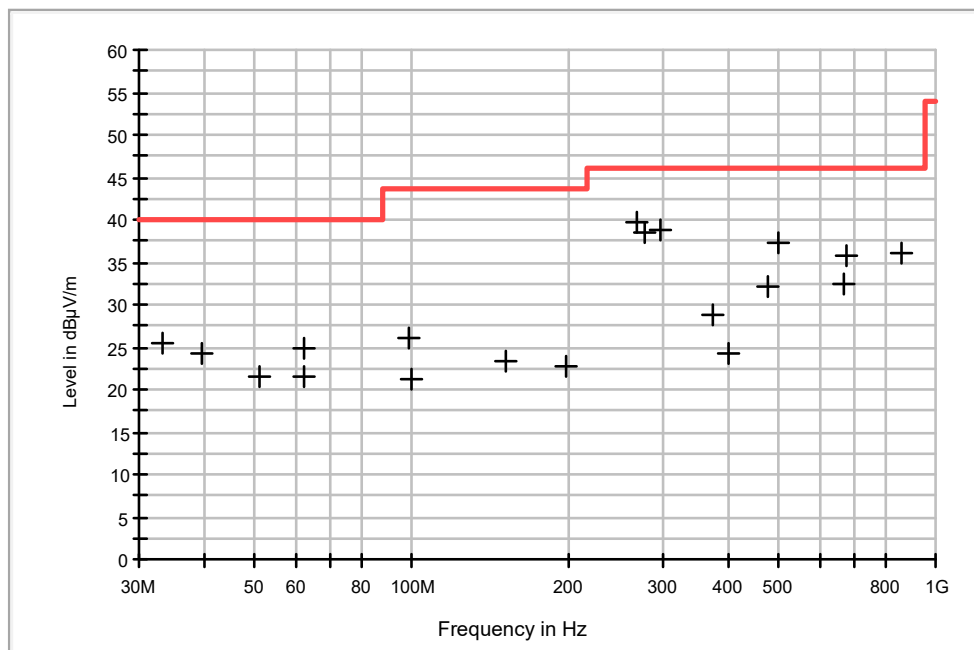
Radiated Spurious Emissions: 30 MHz to 1000 MHz, Horizontal





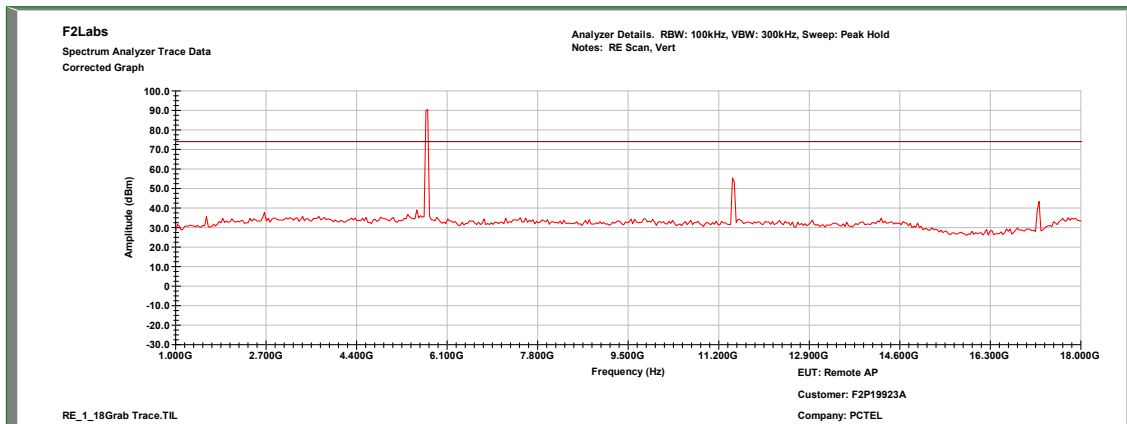
Measurements from all Modulations, 30 MHz to 1000 MHz

Frequency (MHz)	Ant. Pol.	Antenna Height (cm)	Azimuth (degrees)	Reading (dBμV)	Corr. Factors (dB)	Emission (dBμV/m)	Limit (dBμV/m)	Margin (dB)
33.1	V	100.00	180.00	28.9	-3.5	25.40	49.6	-24.2
39.51	H	150.00	51.00	32.7	-8.3	24.40	49.6	-25.2
50.95	H	145.00	32.00	35.8	-14.4	21.40	49.6	-28.2
62.01	V	100.00	335.00	36.5	-14.9	21.60	49.6	-28.0
62.01	H	150.00	0.00	39.6	-14.9	24.70	54.0	-29.3
98.48	H	150.00	22.00	38.4	-12.5	25.90	54.0	-28.1
99.84	H	150.00	289.00	33.2	-12	21.20	54.0	-32.8
151.06	H	180.00	253.00	32.8	-9.4	23.40	56.9	-33.5
196.84	H	200.00	231.00	31.8	-9.1	22.70	56.9	-34.2
267.26	V	100.00	12.00	47.8	-8	39.80	56.9	-17.1
278.9	H	150.00	33.00	46.1	-7.7	38.40	56.9	-18.5
296.56	H	150.00	25.00	46.4	-7.5	38.90	56.9	-18.0
375.13	H	150.00	227.00	34.0	-5.3	28.70	56.9	-28.2
400.15	H	210.00	0.00	28.7	-4.6	24.10	56.9	-32.8
476.01	H	200.00	90.00	34.4	-2.3	32.10	56.9	-24.8
500.06	H	210.00	135.00	39.5	-2.1	37.40	56.9	-19.5
666.32	H	180.00	268.00	31.3	1.1	32.40	56.9	-24.5

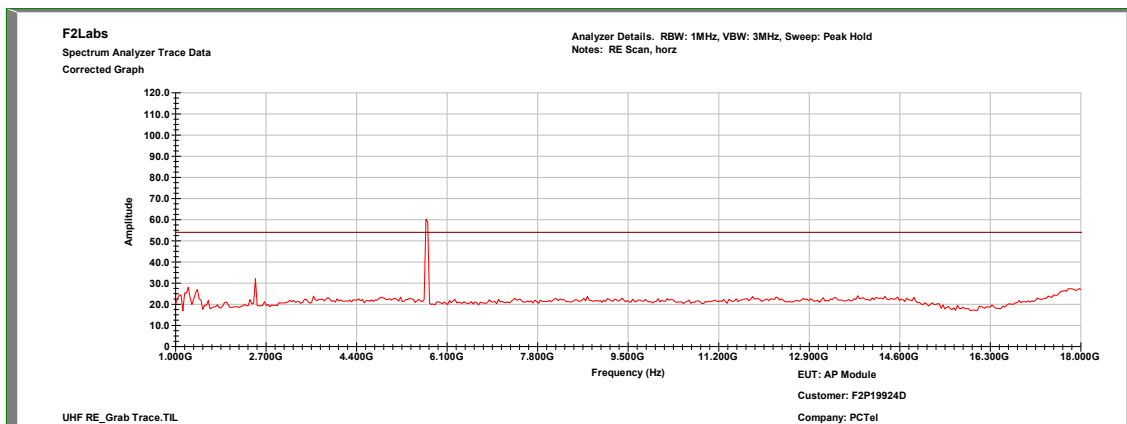




Radiated Spurious Emissions: 1 GHz to 18 GHz, Vertical

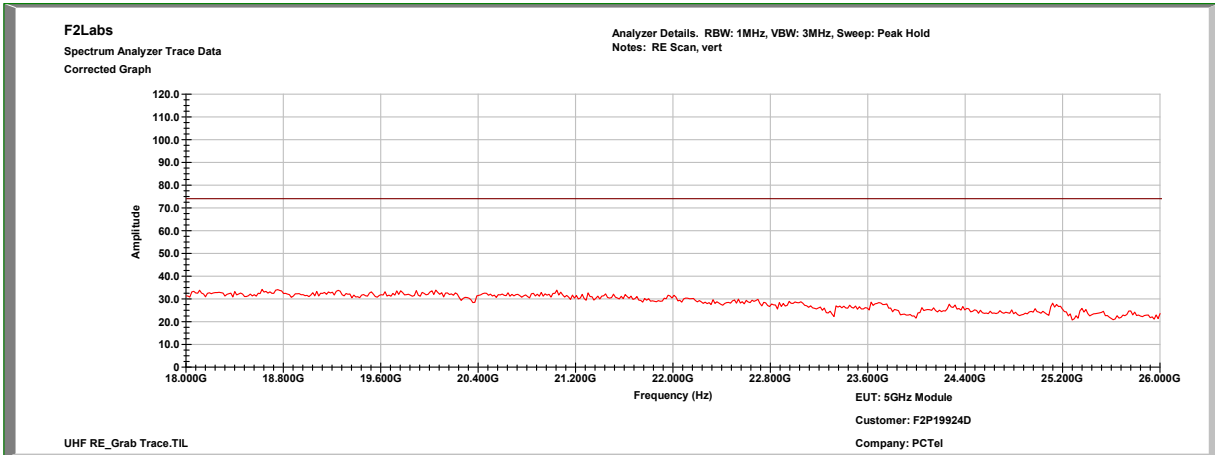


Radiated Spurious Emissions: 1 GHz to 18 GHz, Horizontal

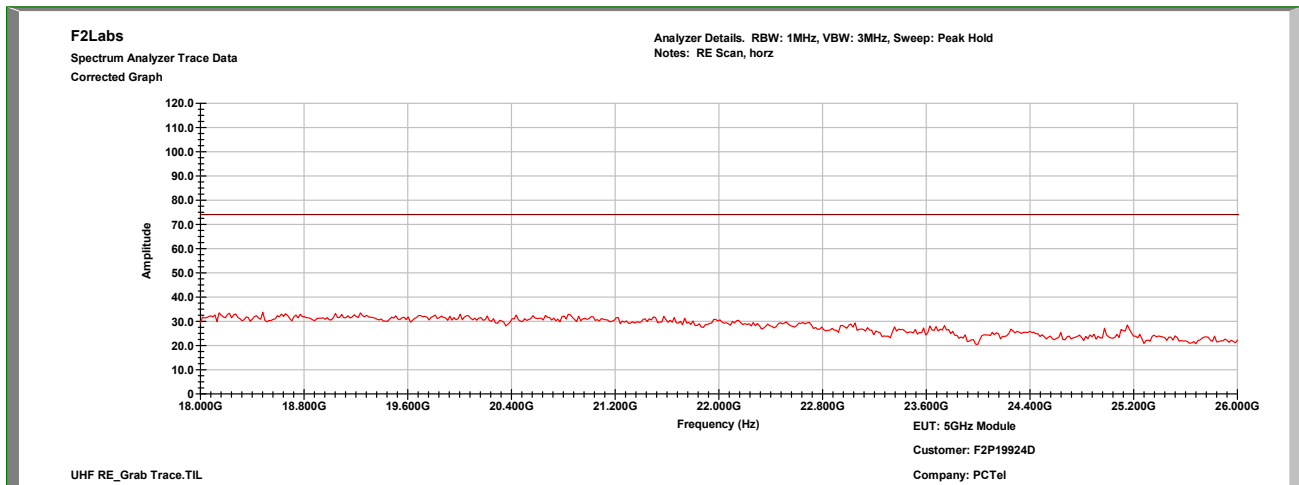




Radiated Spurious Emissions: 18 GHz to 26 GHz, Vertical

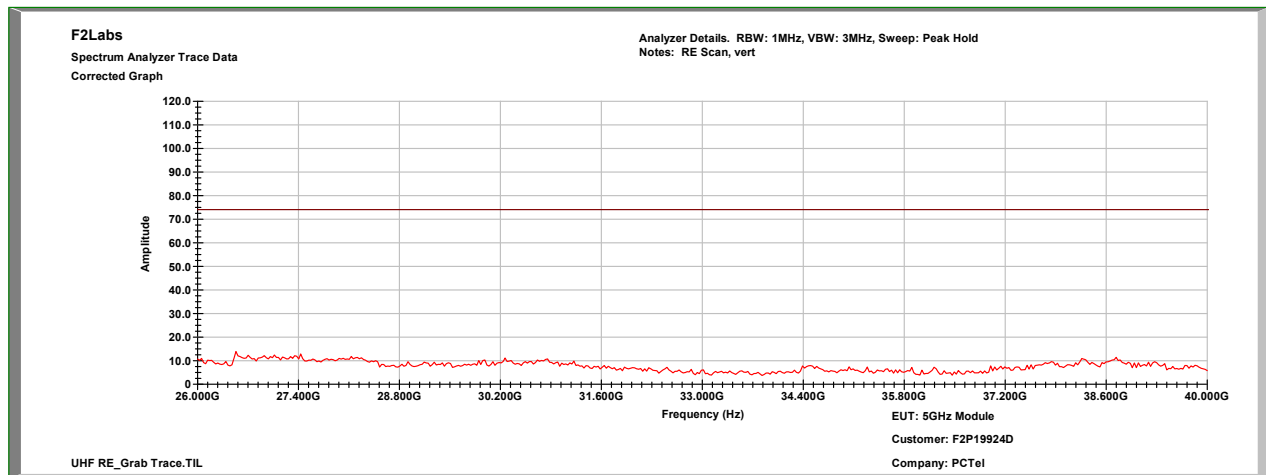


Radiated Spurious Emissions: 18 GHz to 26 GHz, Horizontal

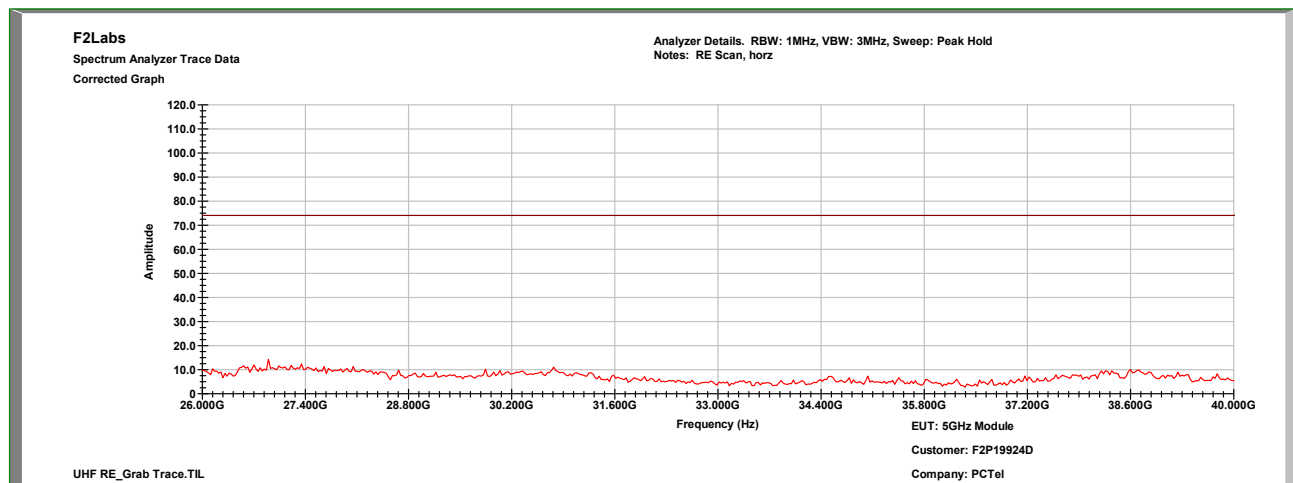




Radiated Spurious Emissions: 26 GHz to 40 GHz, Vertical



Radiated Spurious Emissions: 26 GHz to 40 GHz, Horizontal





10 CONDUCTED SPURIOUS EMISSIONS

The following tests were performed to demonstrate compliance.

RF Antenna Conducted Test

The EUT antenna ports were fitted with Type N connectors and directly connected to the input of the spectrum analyzer. Limit lines were adjusted to account for the 1dB over 6dBi gain of the antenna(s).

Test data presented is from Straddle Channel 5720 MHz Output Port 1, determined to be worst-case.

Summing and aggregation were not added to Conducted Spurious Emissions, as these were all more than 20dB below the limit and aggregation with antenna gain would only total 10dB to be added.

10.1 Requirements:

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.

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.

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.

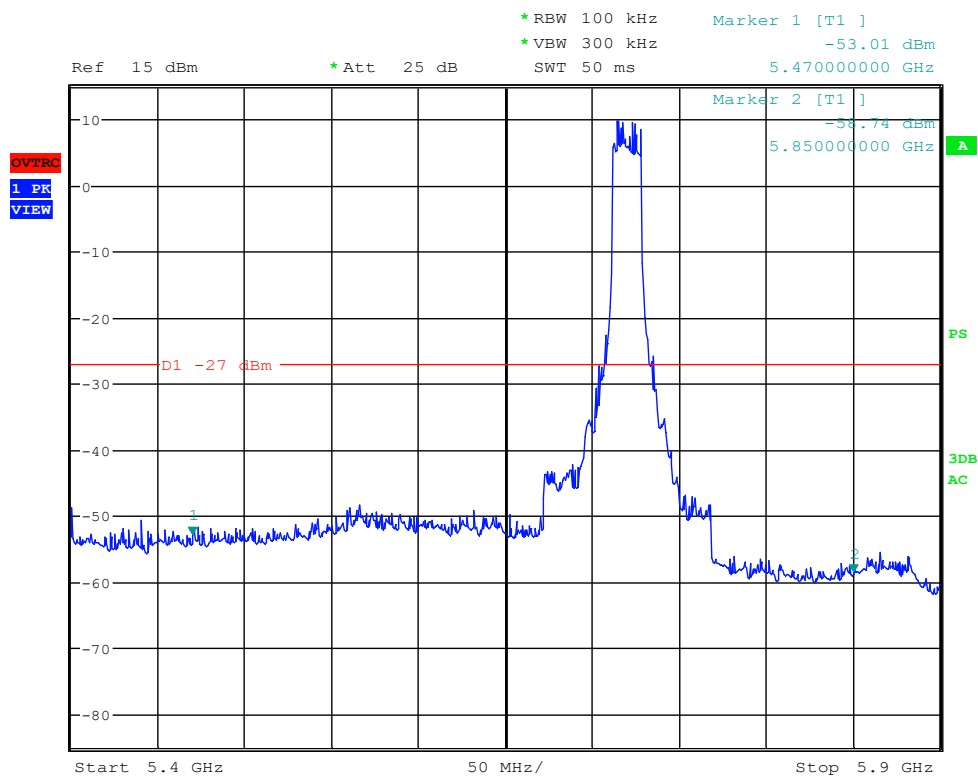
For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.



10.2 Conducted Spurious Emissions Test Data

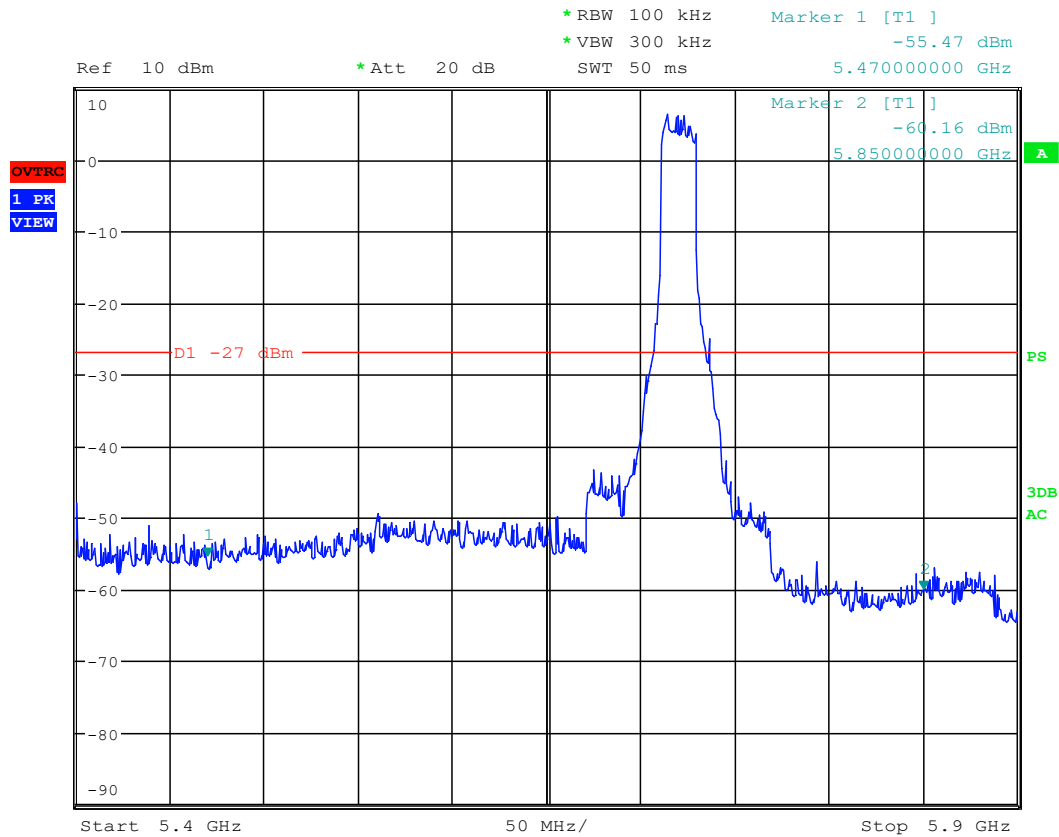
Test Date(s):	2022-05-05	Test Engineer:	J. Chiller
Standards:	CFR 47 Part 15.407(b)(1,4)	Air Temperature:	21.6°C
		Relative Humidity:	38%

Port 1, OFDM: Band Edge



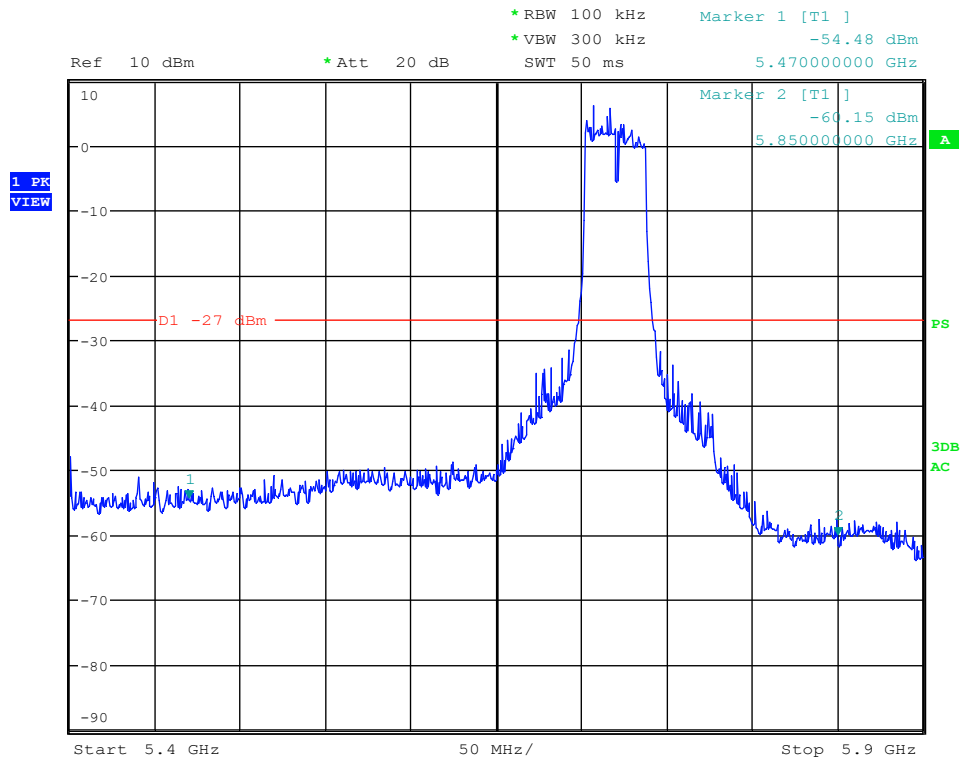


Port 1, HT20: Band Edge



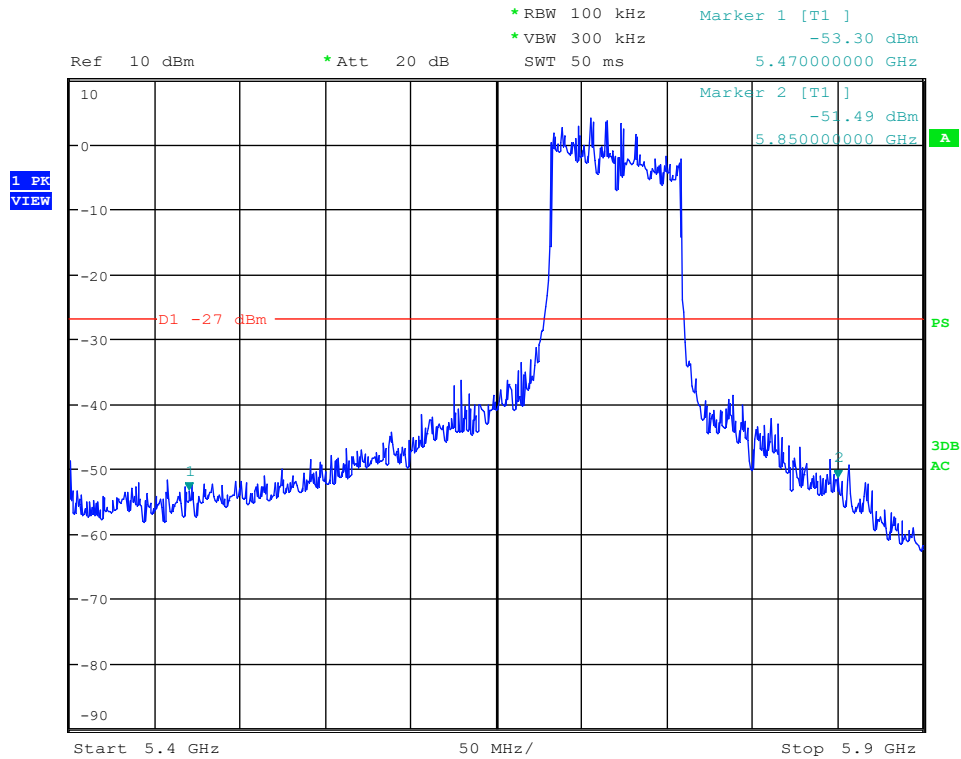


Port 1, HT40: Band Edge



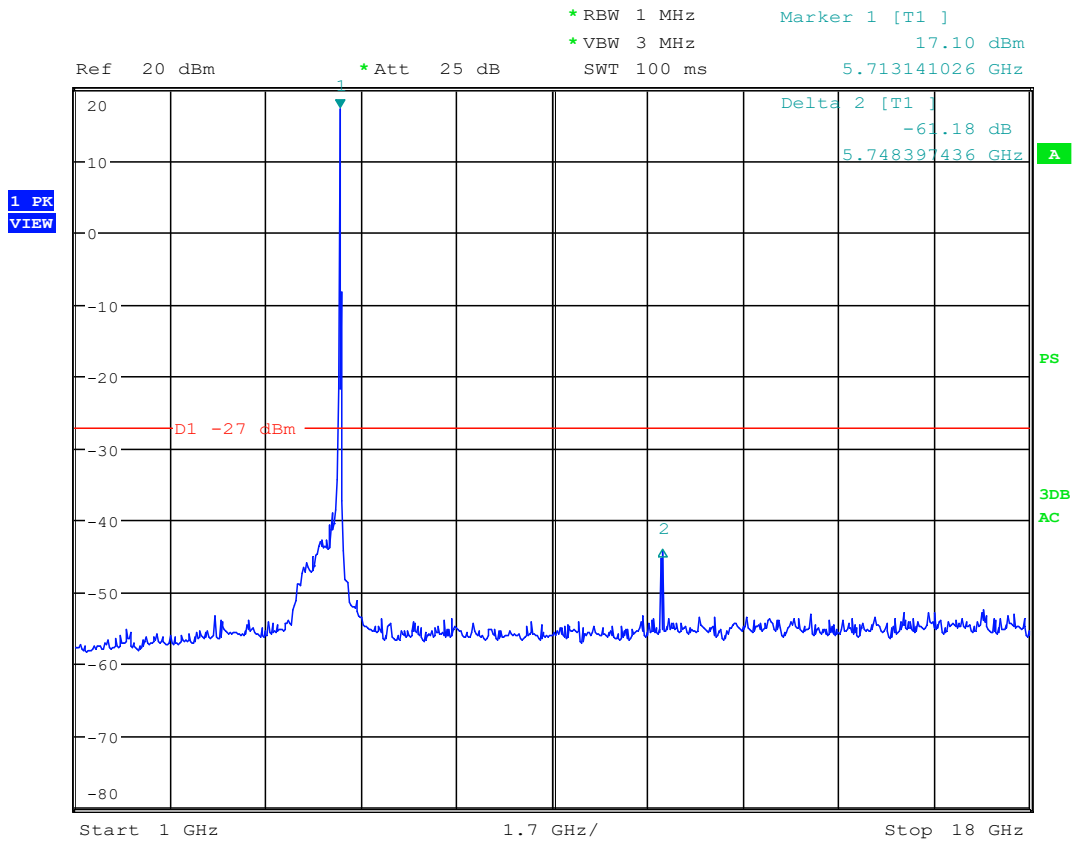


Port 1, HT80: Band Edge



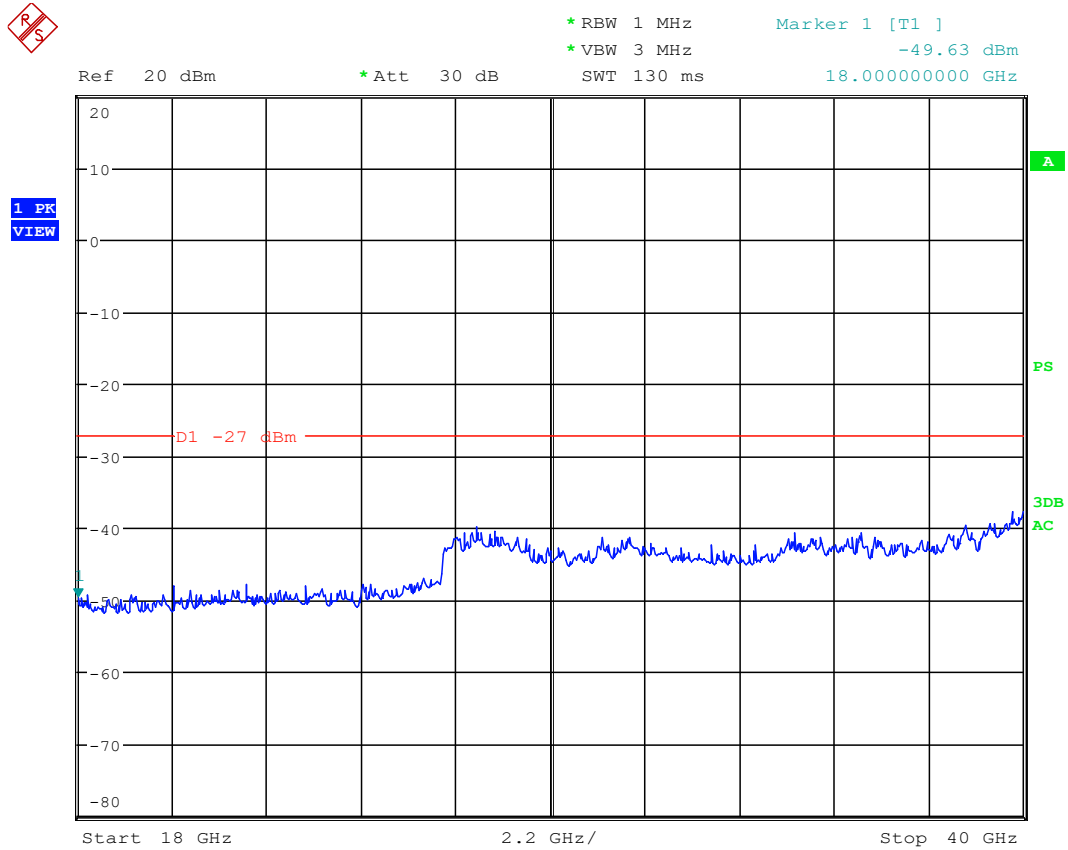


Port 1, Spurs Conducted 1-18 GHz



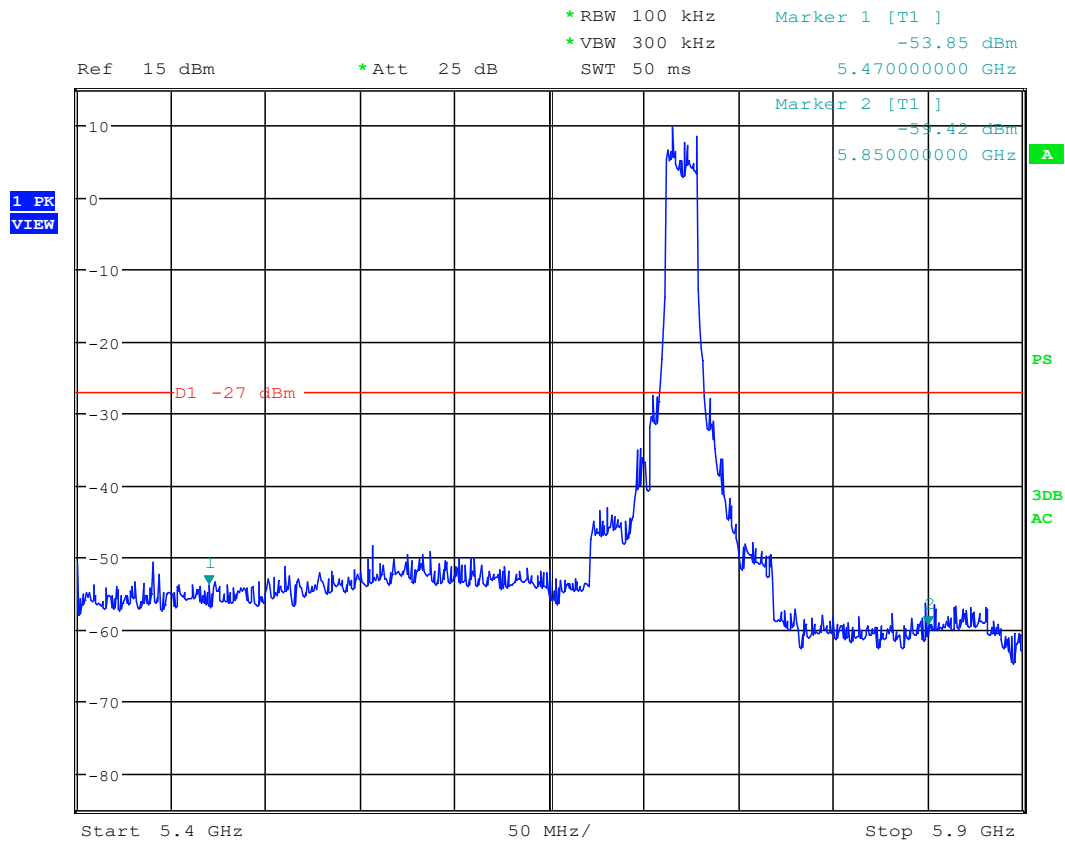


Port 1, Conducted Spurs 18-40 GHz



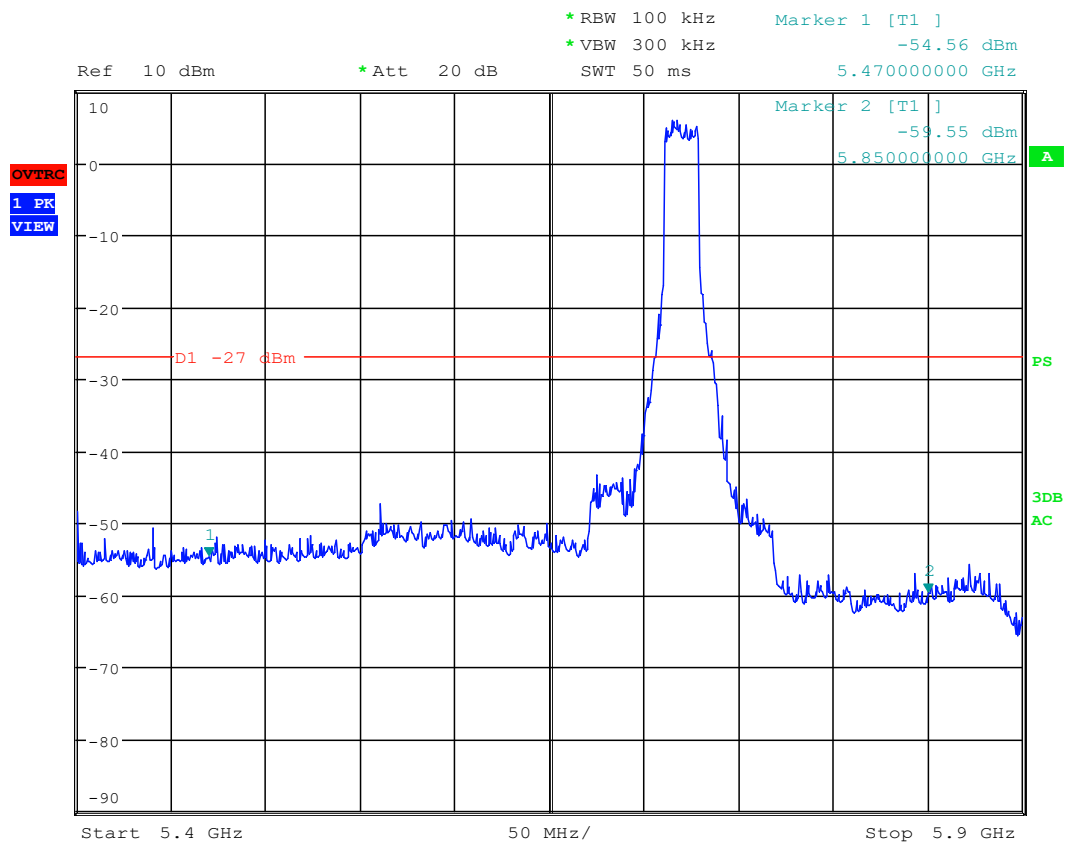


Port 2, OFDM: Band Edge



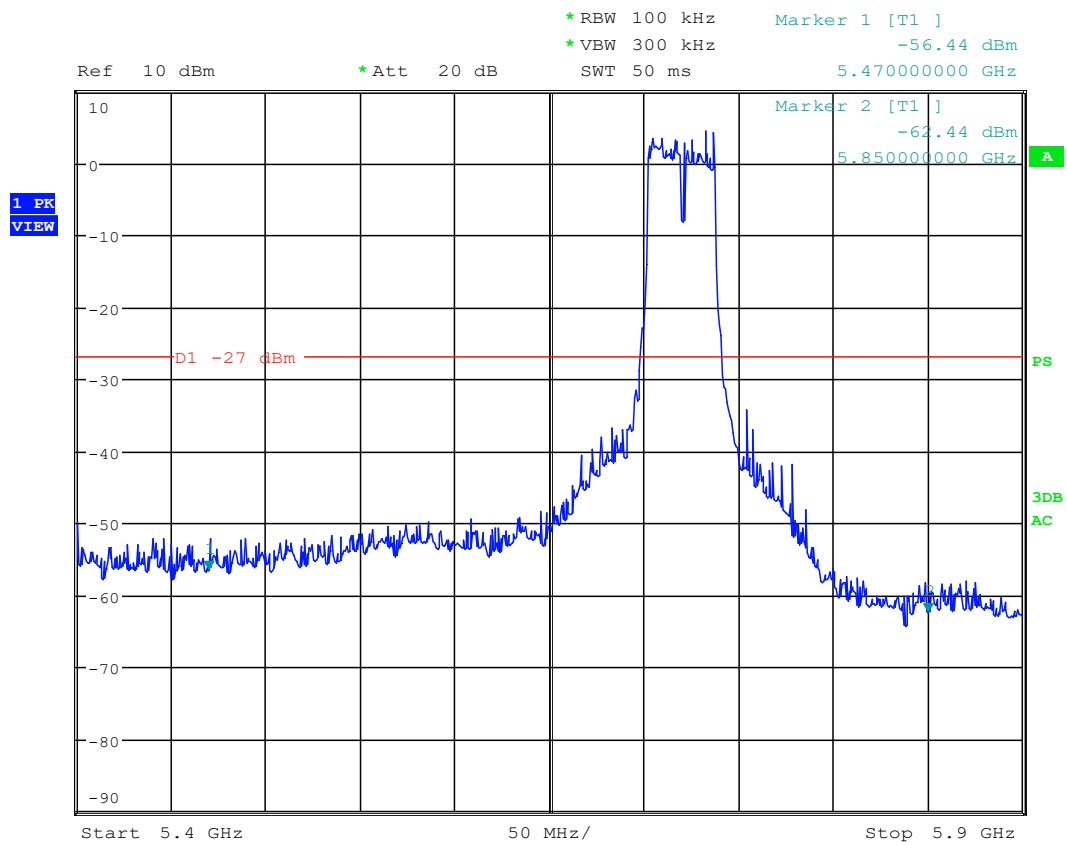


Port 2, HT20: Band Edge



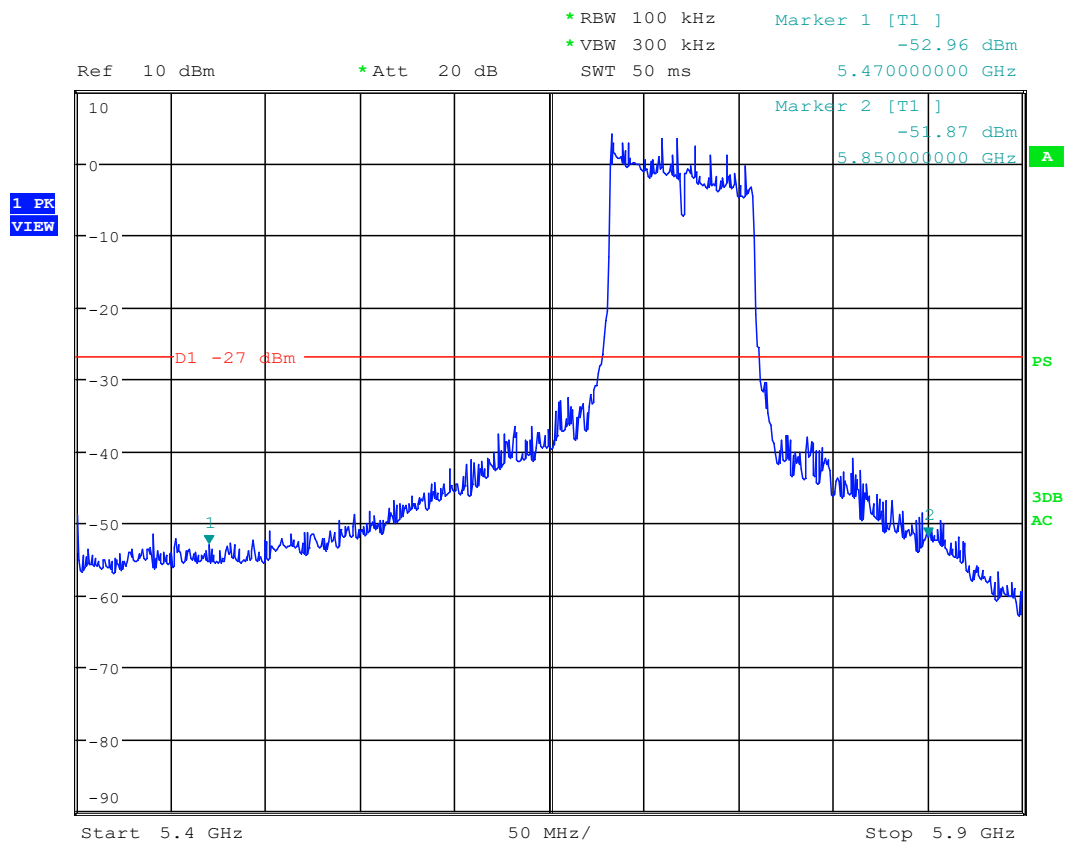


Port 2, HT40: Band Edge



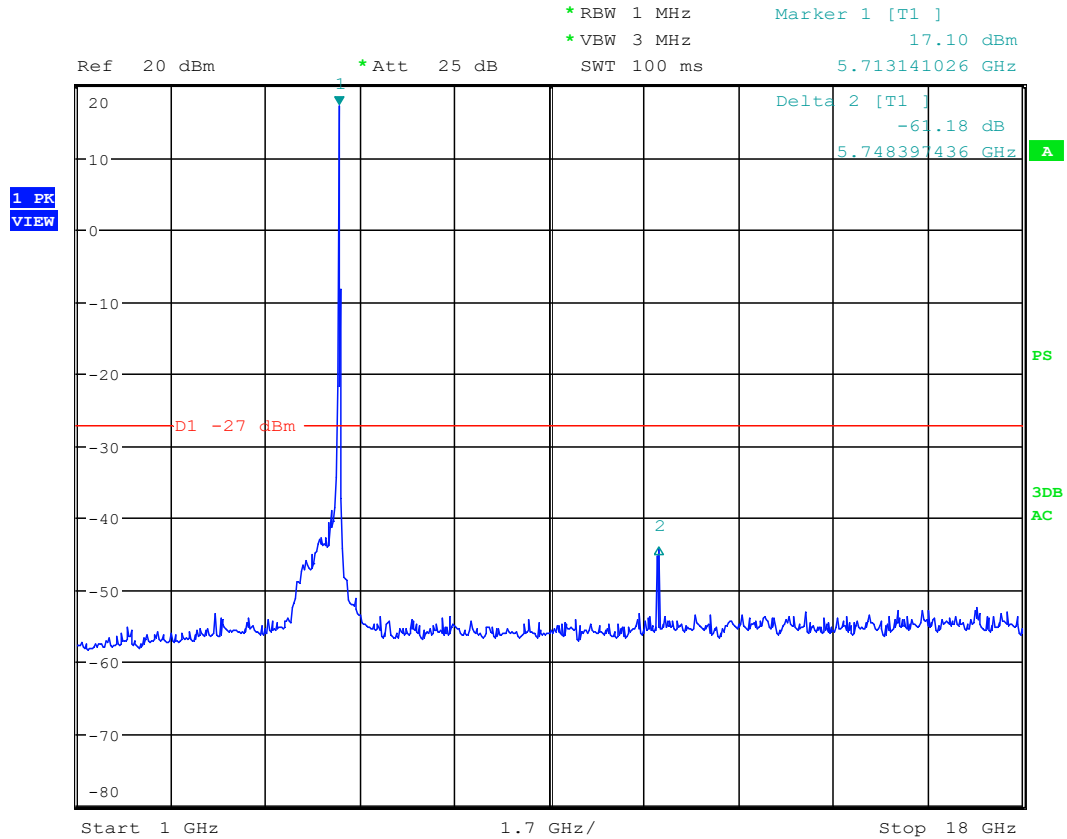


Port 2, HT80: Band Edge



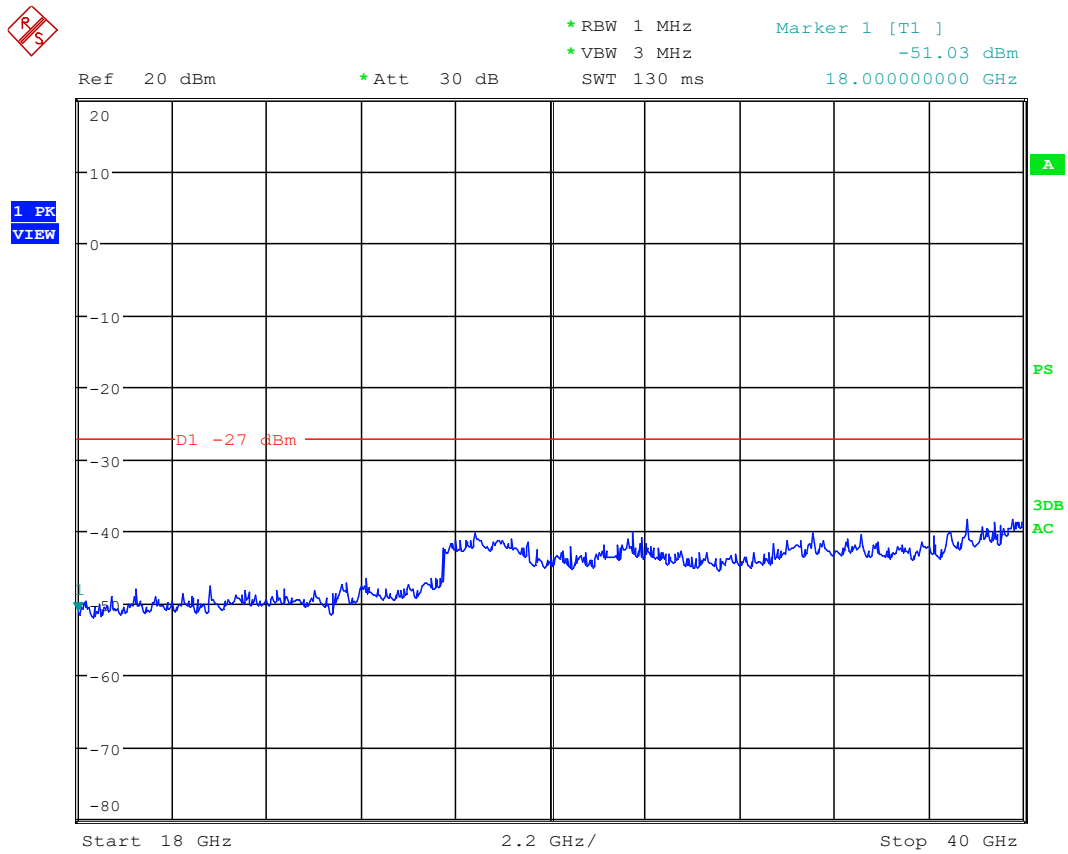


Port 2, Conducted Spurs 1-18 GHz





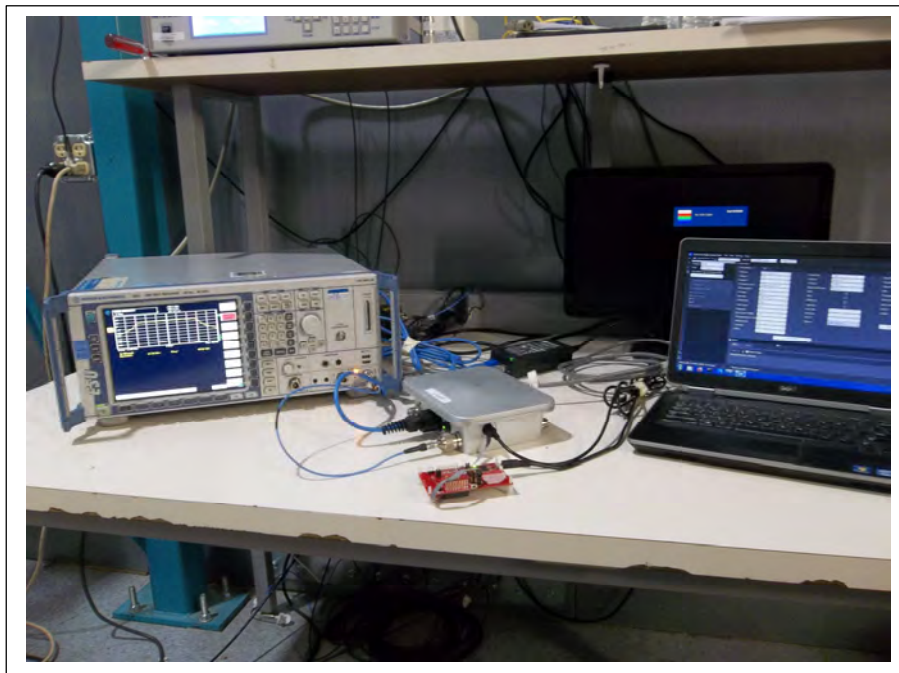
Port 2, Conducted Spurs 18-40 GHz





11 TEST SETUP PHOTOGRAPHS

General Conducted Test Setup



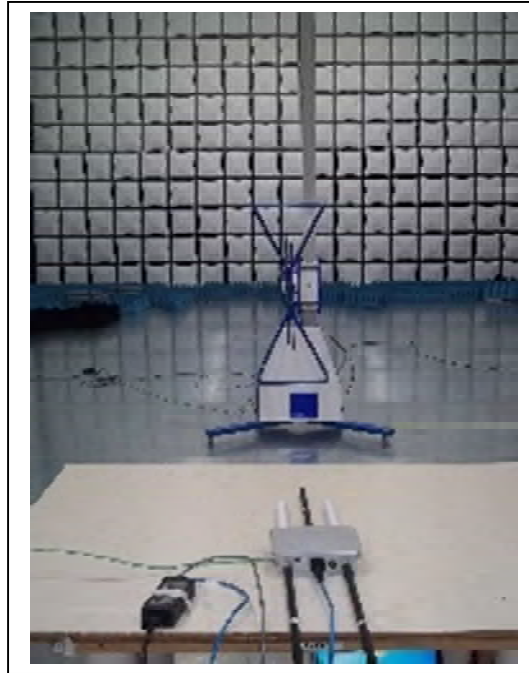


Radiated Spurious Emissions, Less Than 30 MHz





Radiated Spurious Emissions, 30 MHz to 1000 MHz





Radiated Spurious Emissions, Greater than 1 GHz

