

Test Report

Report No.: MTi230620016-05E2
Date of issue: 2024-09-05
Applicant: INSTAR Deutschland GmbH
Product name: IP / NETWORK CAMERA
Model(s): IN-8401 2K+, IN-8402 2K+
FCC ID: SO6-IN8401

Shenzhen Microtest Co., Ltd.

<http://www.mtitest.cn>

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Table of contents

1	General Description	5
1.1	Description of the EUT	5
1.2	Description of test modes	6
1.3	Environmental Conditions	9
1.4	Description of support units	9
1.5	Measurement uncertainty	9
2	Summary of Test Result	10
3	Test Facilities and accreditations	11
3.1	Test laboratory	11
4	List of test equipment.....	12
5	Evaluation Results (Evaluation).....	14
5.1	Antenna requirement	14
6	Radio Spectrum Matter Test Results (RF)	14
6.1	Conducted Emission at AC power line.....	14
6.2	Duty Cycle.....	17
6.3	Emission bandwidth and occupied bandwidth	18
6.4	Maximum conducted output power	20
6.5	Power spectral density	22
6.6	Band edge emissions (Radiated).....	24
6.7	Undesirable emission limits (below 1GHz)	75
6.8	Undesirable emission limits (above 1GHz).....	80
	Photographs of the test setup	89
	Photographs of the EUT.....	90
	Appendix A1: Emission bandwidth (26dB bandwidth)	92
6.9	Appendix A2: Occupied channel bandwidth	103
	Appendix B: Duty Cycle	115
	Appendix C: Maximum conducted output power	126
	Appendix D: Maximum power spectral density.....	137
	Photographs of the Test Setup.....	148
	Photographs of the EUT.....	149

Test Result Certification	
Applicant:	INSTAR Deutschland GmbH
Address:	Auf der Hostert 17, 65510 Hünstetten, Germany
Manufacturer:	INSTAR Deutschland GmbH
Address:	Auf der Hostert 17, 65510 Hünstetten, Germany
Product description	
Product name:	IP / NETWORK CAMERA
Trademark:	INSTAR
Model name:	IN-8401 2K+
Series Model(s):	IN-8402 2K+
Standards:	47 CFR Part 15E
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01 ANSI C63.10-2013
Date of Test	
Date of test:	2023-01-04 to 2023-01-08 2024-07-01 to 2024-07-04
Test result:	Pass

Test Engineer	:	Letter. Lan.
		(Letter Lan)
Reviewed By	:	David. Lee
		(David Lee)
Approved By	:	Leon Chen
		(Leon Chen)

1 General Description

1.1 Description of the EUT

Product name:	IP / NETWORK CAMERA
Model name:	IN-8401 2K+
Series Model(s):	IN-8402 2K+
Model difference:	All the models are the same circuit and module, except the model name.
Electrical rating:	Input: 5VDC 2A
Accessories:	Adapter: Model: GLH50C2000HW Input: AC 100-240V 50/60Hz, 0.4A Output: DC 5V 2A, 10W Manufacturer: INSTAR Deutschland GmbH Cable 1: USB-A to DC cable 3m *1 Cable 2: Lan cable 3m *1
Hardware version:	1.2
Software version:	1.1.1
Test sample(s) number:	MTi230620016-05S1001
RF specification	
Operating frequency range:	802.11a/n(HT20)/ac (HT20): U-NII Band 1: 5180MHz to 5240MHz; U-NII Band 3: 5745MHz to 5825MHz; 802.11n(HT40)/ac (HT40): U-NII Band 1: 5190MHz to 5230MHz; U-NII Band 3: 5755MHz to 5795MHz; 802.11ac (HT80): U-NII Band 1: 5210MHz; U-NII Band 3: 5755MHz;
Channel number:	802.11a/n(HT20)/ac (HT20): U-NII Band 1: 4; U-NII Band 3: 5; 802.11n(HT40)/ac (HT40): U-NII Band 1: 2; U-NII Band 3: 2; 802.11ac (HT80): U-NII Band 1: 1; U-NII Band 3: 1;
Modulation type:	802.11a: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM); 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM);
Antenna(s) type:	Metal antenna
Antenna(s) gain:	U-NII-1: 1.17dBi U-NII-3: 2.30dBi

1.2 Description of test modes

No.	Emission test modes
Mode1	802.11a mode
Mode2	802.11n20 mode
Mode3	802.11n40 mode
Mode4	802.11ac20 mode
Mode5	802.11ac40 mode
Mode6	802.11ac80 mode

1.2.1 Operation channel list

U-NII Band 1

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	/	/
44	5220	/	/	/	/
48	5240	/	/	/	/

U-NII Band 3

Bandwidth:	20MHz	Bandwidth:	40MHz	Bandwidth:	80MHz
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	151	5755	155	5775
153	5765	159	5795	/	/
157	5785	/	/	/	/
161	5805	/	/	/	/
165	5825	/	/	/	/

Test Channel List

Operation Band: 5150-5250 MHz

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
20	5180	5200	5240
40	5190	/	5230
80	/	5210	/

Operation Band: 5725-5850 MHz

Bandwidth (MHz)	Lowest Channel (LCH) (MHz)	Middle Channel (MCH) (MHz)	Highest Channel (HCH) (MHz)
20	5745	5785	5825
40	5755	/	5825
80	/	5755	/

Note: The test software provided by manufacturer is used to control EUT for working in engineering mode, that enables selectable channel, and capable of continuous transmitting mode.

Test Software: Please Apply settings before executing TX or RX

For power setting, refer to below table.

For U-NII-1 band:			
802.11a		802.11n20	
Channel	Power setting	Channel	Power setting
36	55	36	55
40	55	40	53
48	55	48	52
802.11n40		802.11ac20	
Channel	Power setting	Channel	Power setting
38	52	36	48
46	50	40	44
--	--	48	44
802.11ac40		802.11ac80	
38	44	42	44
46	46	--	--
--	--	--	--

For U-NII-3 band:			
802.11a		802.11n20	
Channel	Power setting	Channel	Power setting
149	55	149	55
157	55	157	53
165	55	165	52
802.11n40		802.11ac20	
Channel	Power setting	Channel	Power setting
151	52	149	48
159	50	157	48
--	--	165	44
802.11ac40		802.11ac80	
151	44	155	44
159	46	--	--
--	--	--	--

1.3 Environmental Conditions

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

Temperature:	15°C ~ 35°C
Humidity:	20% RH ~ 75% RH
Atmospheric pressure:	98 kPa ~ 101 kPa

1.4 Description of support units

Support equipment list			
Description	Model	Serial No.	Manufacturer
/	/	/	/
Support cable list			
Description	Length (m)	From	To
/	/	/	/

1.5 Measurement uncertainty

Measurement	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	±3.1dB
Time	±1 %
Occupied channel bandwidth	±3 %
RF output power, conducted	±1 dB
Power Spectral Density, conducted	±1 dB
Radiated spurious emissions (above 1GHz)	±5.3dB
Radiated spurious emissions (9kHz~30MHz)	±4.3dB
Radiated spurious emissions (30MHz~1GHz)	±4.7dB
Temperature	±1 °C
Humidity	± 5 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2 Summary of Test Result

No.	Item	Standard	Requirement	Result
1	Antenna requirement	47 CFR Part 15E	Part 15.203	Pass
2	Conducted Emission at AC power line	47 CFR Part 15E	47 CFR Part 15.207(a)	Pass
3	Duty Cycle	47 CFR Part 15E		Pass
4	Emission bandwidth and occupied bandwidth	47 CFR Part 15E	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. 47 CFR Part 15.407(e)	Pass
5	Maximum conducted output power	47 CFR Part 15E	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)	Pass
6	Power spectral density	47 CFR Part 15E	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)	Pass
7	Band edge emissions (Radiated)	47 CFR Part 15E	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass
8	Undesirable emission limits (below 1GHz)	47 CFR Part 15E	47 CFR Part 15.407(b)(9)	Pass
9	Undesirable emission limits (above 1GHz)	47 CFR Part 15E	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)	Pass

3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No.7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868
FCC Registration No.:	448573
IC Registration No.:	21760
CABID:	CN0093

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Conducted Emission at AC power line						
1	EMI Test Receiver	Rohde&schwarz	ESCI3	101368	2024-03-20	2025-03-19
2	Artificial mains network	Schwarzbeck	NSLK 8127	183	2024-03-21	2025-03-20
3	Artificial Mains Network	Rohde & Schwarz	ESH2-Z5	100263	2024-03-20	2025-03-19
Duty Cycle Emission bandwidth and occupied bandwidth Maximum conducted output power Power spectral density						
1	Wideband Radio Communication Tester	Rohde&schwarz	CMW500	149155	2024-03-20	2025-03-19
2	ESG Series Analog Ssignal Generator	Agilent	E4421B	GB40051240	2024-03-21	2025-03-20
3	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
4	Synthesized Sweeper	Agilent	83752A	3610A01957	2024-03-21	2025-03-20
5	MXA Signal Analyzer	Agilent	N9020A	MY50143483	2024-03-21	2025-03-20
6	RF Control Unit	Tonscend	JS0806-1	19D8060152	2024-03-21	2025-03-20
7	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2024-03-21	2025-03-20
8	ESG Vector Signal Generator	Agilent	N5182A	MY50143762	2024-03-20	2025-03-19
9	DC Power Supply	Agilent	E3632A	MY40027695	2024-03-21	2025-03-20
Band edge emissions (Radiated) Undesirable emission limits (above 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
2	Double Ridged Broadband Horn Antenna	schwarabeck	BBHA 9120 D	2278	2023-06-17	2025-06-16
3	Amplifier	Agilent	8449B	3008A01120	2024-03-20	2025-03-19
4	MXA signal analyzer	Agilent	N9020A	MY54440859	2024-03-21	2025-03-20
5	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2024-03-21	2025-03-20
6	Horn antenna	Schwarzbeck	BBHA 9170	00987	2023-06-17	2025-06-16
7	Pre-amplifier	Space-Dtronics	EWLAN1840 G	210405001	2024-03-21	2025-03-20
Undesirable emission limits (below 1GHz)						
1	EMI Test Receiver	Rohde&schwarz	ESCI7	101166	2024-03-20	2025-03-19
2	TRILOG Broadband Antenna	schwarabeck	VULB 9163	9163-1338	2023-06-11	2025-06-10
3	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00066	2024-03-23	2025-03-22
4	Amplifier	Hewlett-Packard	8447F	3113A06184	2024-03-20	2025-03-19

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
MTi-E002	EMI Test Receiver	R&S	ESCI3	101368	2022/05/05	2023/05/04
MTi-E023	Artificial power network	Schwarzbeck	NSLK8127	NSLK8127#841	2022/05/05	2023/05/04
MTi-E025	Artificial power network	Schwarzbeck	NSLK8127	8127183	2022/05/05	2023/05/04
MTi-E043	EMI test receiver	R&S	ESCI7	101166	2022/05/05	2023/05/04
MTi-E046	Active Loop Antenna	Schwarzbeck	FMZB 1519 B	00044	2021/05/30	2023/05/29
MTi-E044	Broadband antenna	Schwarzbeck	VULB9163	9163-1338	2021/05/30	2023/05/29
MTi-E045	Horn antenna	Schwarzbeck	BBHA9120D	9120D-2278	2021/05/30	2023/05/29
MTi-E047	Pre-amplifier	Hewlett-Packard	8447F	3113A06184	2022/05/05	2023/05/04
MTi-E048	Pre-amplifier	Agilent	8449B	3008A01120	2022/05/05	2023/05/04
MTi-E120	Broadband antenna	Schwarzbeck	VULB9163	9163-1419	2021/05/30	2023/05/29
MTi-E121	Pre-amplifier	Hewlett-Packard	8447D	2944A09365	2022/04/15	2023/04/14
MTi-E123	Pre-amplifier	Agilent	8449B	3008A04723	2022/05/05	2023/05/04
MTi-E135	Horn antenna	Schwarzbeck	BBHA 9170	00987	2021/05/30	2023/05/29
MTi-E136	Pre-amplifier	Space-Dtronics	EVLAN1840 G-G45	210405001	2022/05/05	2023/05/04
MTi-E062	PXA Signal Analyzer	Agilent	N9030A	MY51350296	2022/05/05	2023/05/04
MTi-E067	RF Control Unit	Tonscend	JS0806-1	19D8060152	2022/05/05	2023/05/04
MTi-E068	RF Control Unit	Tonscend	JS0806-2	19D8060153	2022/05/05	2023/05/04
MTi-E069	Band Reject Filter Group	Tonscend	JS0806-F	19D8060160	2022/05/05	2023/05/04
MTi-E010S	EMI Measurement Software	Farad	EZ-EMC Ver. EMEC-3A1	/	/	/
MTi-E014S	RF Test System	Tonscend	TS@JS1120 V2.6.88.0330	/	/	/

Note: the calibration interval of the test equipment is 12 or 24 months and the calibrations are traceable to international system unit(SI)

5 Evaluation Results (Evaluation)

5.1 Antenna requirement

Test Requirement:	Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.
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6 Radio Spectrum Matter Test Results (RF)

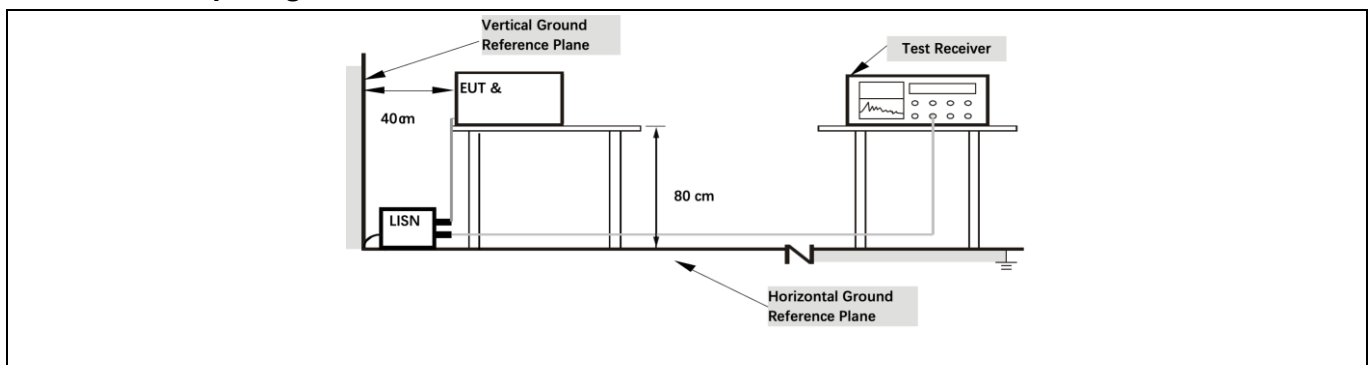
6.1 Conducted Emission at AC power line

Test Requirement:	47 CFR Part 15.207(a)		
Test Limit:	Frequency of emission (MHz)	Conducted limit (dB μ V)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
	*Decreases with the logarithm of the frequency.		
Test Method:	ANSI C63.10-2013 section 6.2		

6.1.1 E.U.T. Operation:

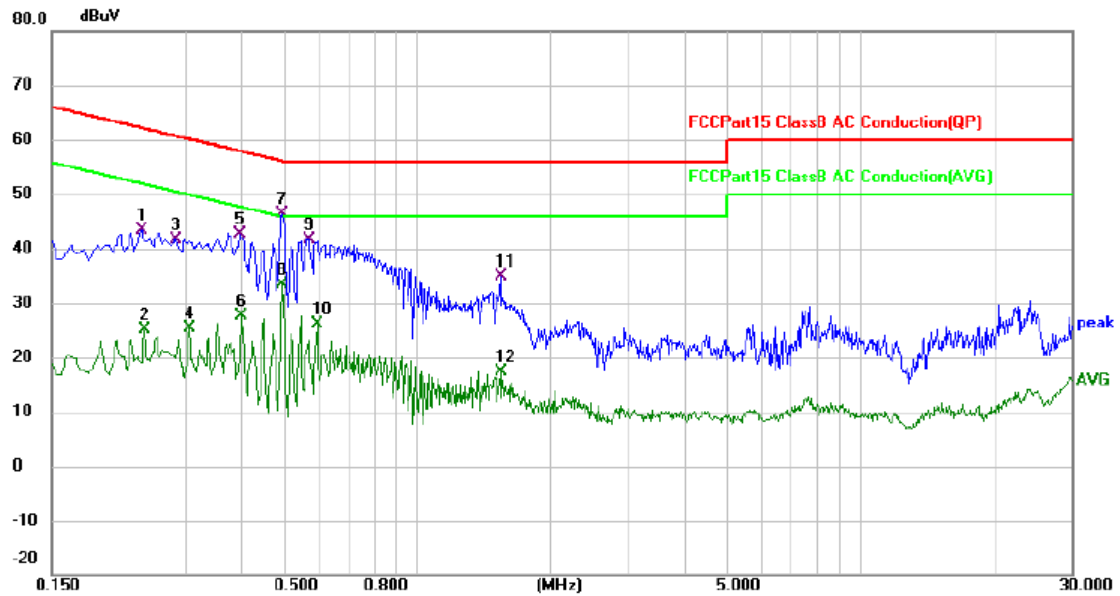
Operating Environment:					
Temperature:	29.9 °C	Humidity:	57.1 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	All of the listed pre-test mode were tested, only the data of the worst mode (Mode1) is recorded in the report				

6.1.2 Test Setup Diagram:



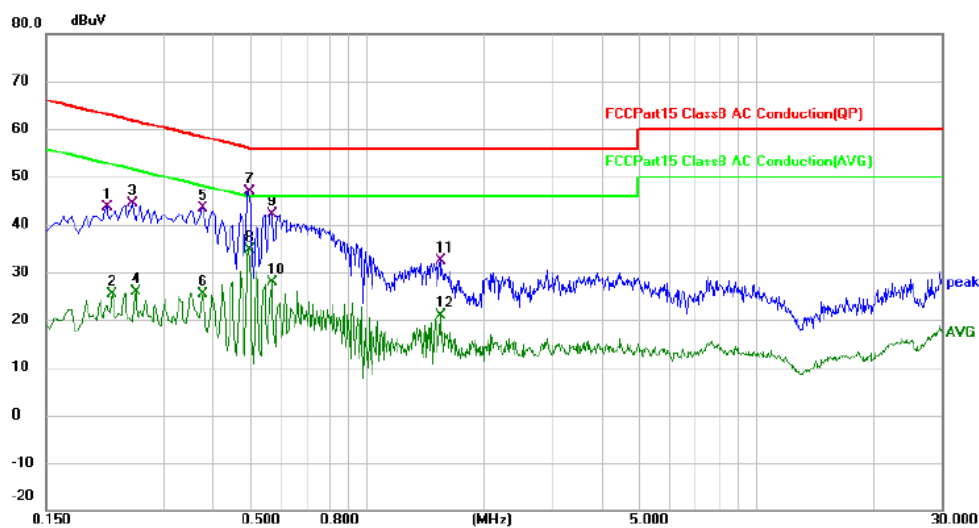
6.1.3 Test Data:

Mode1 / Line: Line / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2380	33.09	10.32	43.41	62.17	-18.76	QP	
2		0.2420	14.82	10.32	25.14	52.03	-26.89	AVG	
3		0.2860	31.34	10.35	41.69	60.64	-18.95	QP	
4		0.3060	15.04	10.36	25.40	50.08	-24.68	AVG	
5		0.3980	32.18	10.39	42.57	57.90	-15.33	QP	
6		0.4020	17.22	10.39	27.61	47.81	-20.20	AVG	
7	*	0.4980	35.98	10.43	46.41	56.03	-9.62	QP	
8		0.4980	23.06	10.43	33.49	46.03	-12.54	AVG	
9		0.5700	31.25	10.45	41.70	56.00	-14.30	QP	
10		0.5940	15.71	10.45	26.16	46.00	-19.84	AVG	
11		1.5460	24.40	10.55	34.95	56.00	-21.05	QP	
12		1.5460	6.87	10.55	17.42	46.00	-28.58	AVG	

Mode1 / Line: Neutral / CH: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2140	33.28	10.31	43.59	63.05	-19.46	QP	
2		0.2220	15.11	10.31	25.42	52.74	-27.32	AVG	
3		0.2500	33.99	10.32	44.31	61.76	-17.45	QP	
4		0.2540	15.56	10.33	25.89	51.63	-25.74	AVG	
5		0.3780	32.97	10.38	43.35	58.32	-14.97	QP	
6		0.3780	15.06	10.38	25.44	48.32	-22.88	AVG	
7	*	0.4980	36.46	10.43	46.89	56.03	-9.14	QP	
8		0.4980	24.27	10.43	34.70	46.03	-11.33	AVG	
9		0.5700	31.74	10.45	42.19	56.00	-13.81	QP	
10		0.5700	17.43	10.45	27.88	46.00	-18.12	AVG	
11		1.5460	21.76	10.55	32.31	56.00	-23.69	QP	
12		1.5460	10.26	10.55	20.81	46.00	-25.19	AVG	

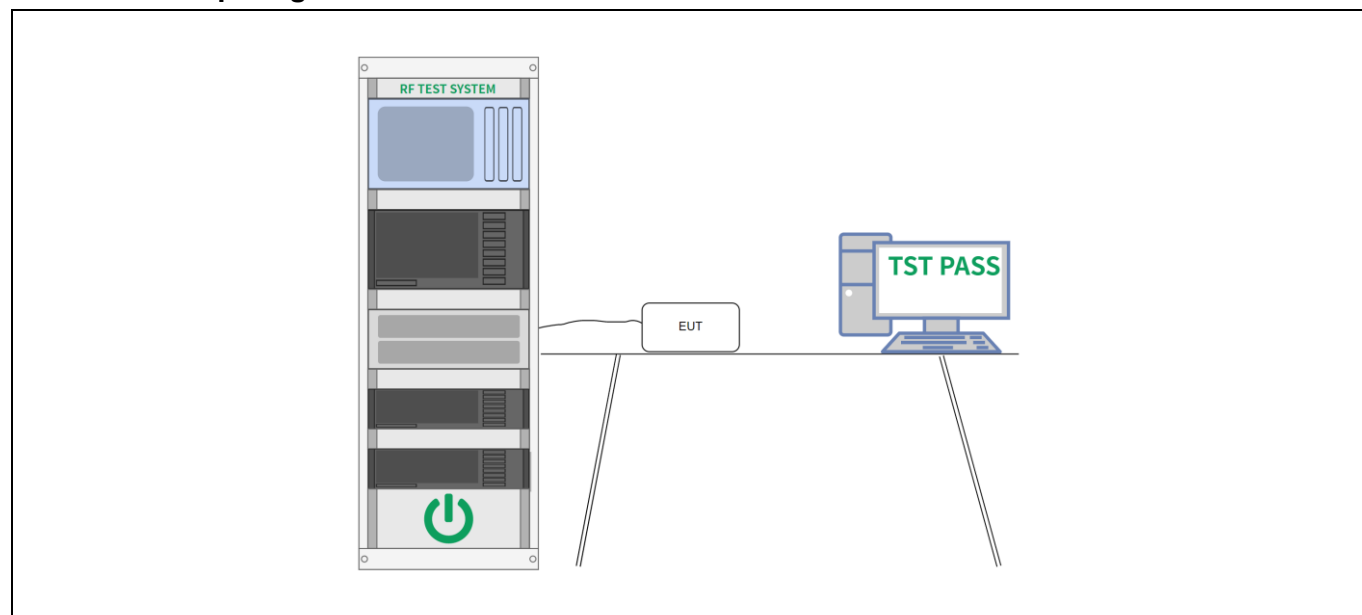
6.2 Duty Cycle

Test Requirement:	All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x, and maximum-power transmission duration, T, are required for each tested mode of operation.
Test Limit:	No limits, only for report use.
Test Method:	ANSI C63.10-2013 section 12.2 (b)
Procedure:	i) Set the center frequency of the instrument to the center frequency of the transmission. ii) Set RBW $\geq$ EBW if possible; otherwise, set RBW to the largest available value. iii) Set VBW $\geq$ RBW. iv) Set detector = peak. v) The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in item a1) of 12.2, and the number of sweep points across duration T exceeds 100.

6.2.1 E.U.T. Operation:

Operating Environment:					
Temperature:	16.5 °C	Humidity:	67.4 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				

6.2.2 Test Setup Diagram:



6.2.3 Test Data:

Please Refer to Appendix for Details.

6.3 Emission bandwidth and occupied bandwidth

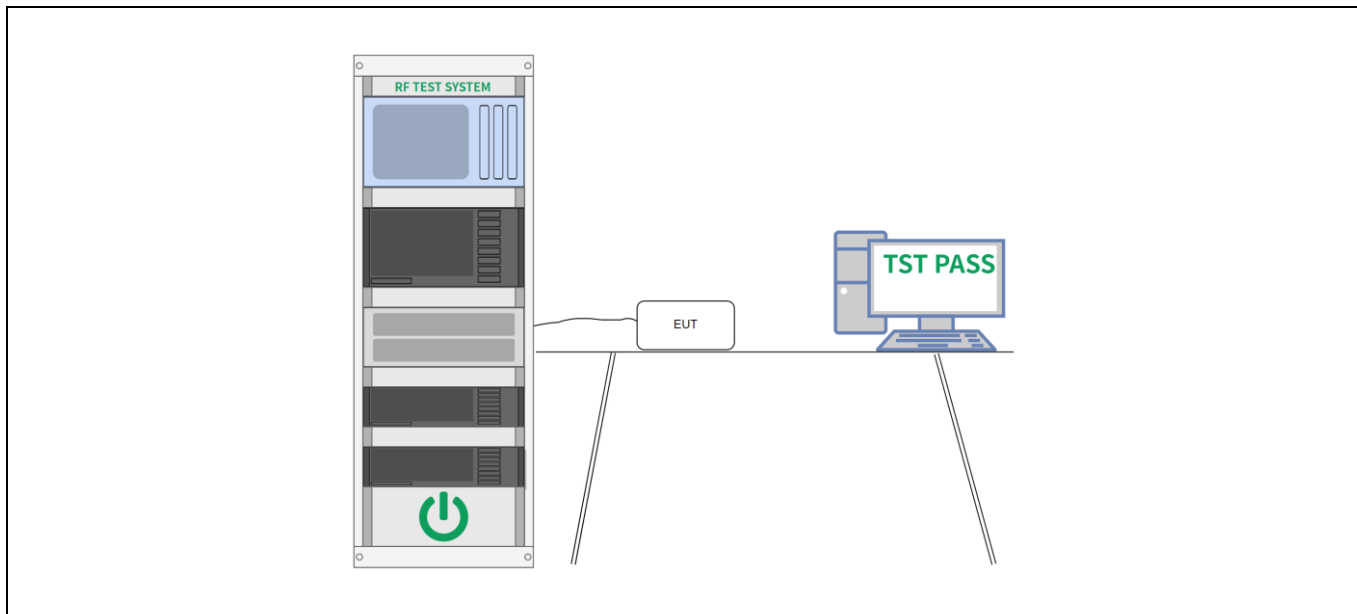
Test Requirement:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: 47 CFR Part 15.407(e)
Test Limit:	U-NII 1, U-NII 2A, U-NII 2C: No limits, only for report use. U-NII 3, U-NII 4: Within the 5.725-5.850 GHz and 5.850-5.895 GHz bands, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.
Test Method:	ANSI C63.10-2013, section 6.9 & 12.4 KDB 789033 D02, Clause C.2
Procedure:	Emission bandwidth: - Set RBW = approximately 1% of the emission bandwidth. - Set the VBW > RBW. - Detector = peak. - Trace mode = max hold. - Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the instrument. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%. Occupied bandwidth: - The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. - The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement. - Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2. - Step a) through step c) might require iteration to adjust within the specified range. - 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. - Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth. - If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. 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% power bandwidth is the difference between these two frequencies. h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s). 6 dB emission bandwidth: a) Set RBW = 100 kHz. b) Set the video bandwidth (VBW) $\geq 3 \times$ 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.
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6.3.1 E.U.T. Operation:

Operating Environment:					
Temperature:	16.5 °C	Humidity:	67.4 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				

6.3.2 Test Setup Diagram:



6.3.3 Test Data:

Please Refer to Appendix for Details.

6.4 Maximum conducted output power

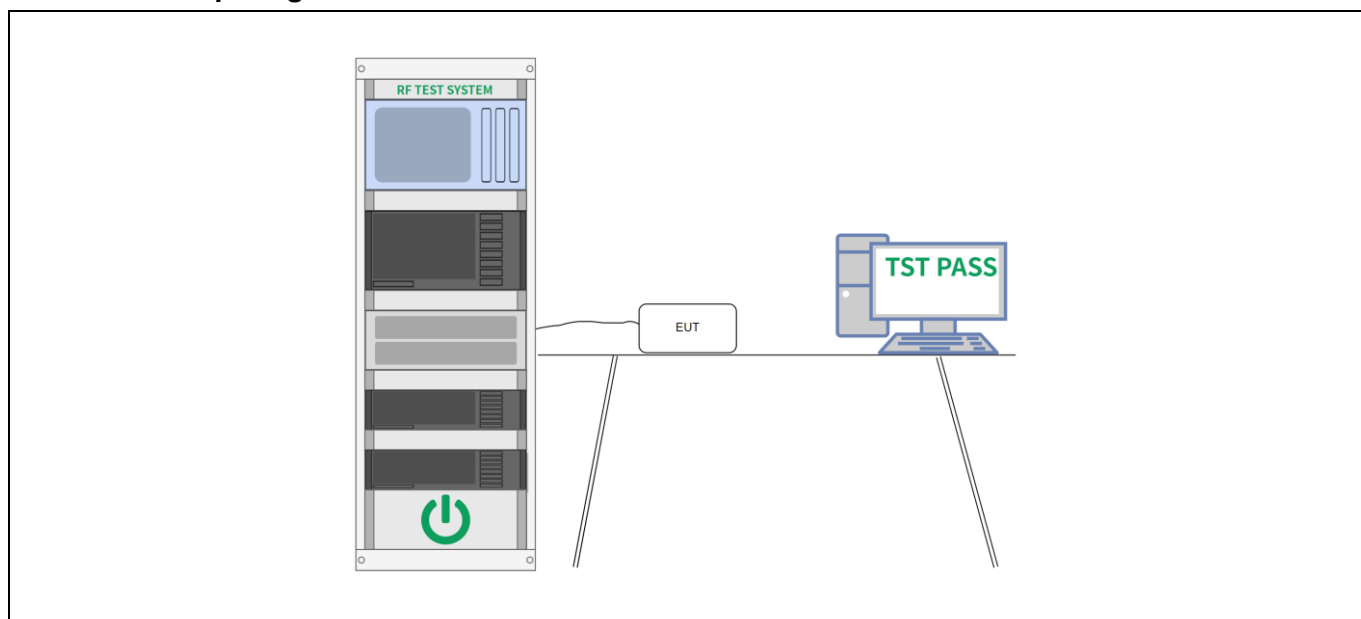
Test Requirement:	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Test Limit:	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power 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 an indoor 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 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For fixed point-to-point access points 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. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. 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 provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For the band 5.725-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems

	employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2013, section 12.3
Procedure:	Refer to ANSI C63.10-2013 section 12.3.2.4

6.4.1 E.U.T. Operation:

Operating Environment:					
Temperature:	16.5 °C	Humidity:	67.4 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				

6.4.2 Test Setup Diagram:



6.4.3 Test Data:

Please Refer to Appendix for Details.

6.5 Power spectral density

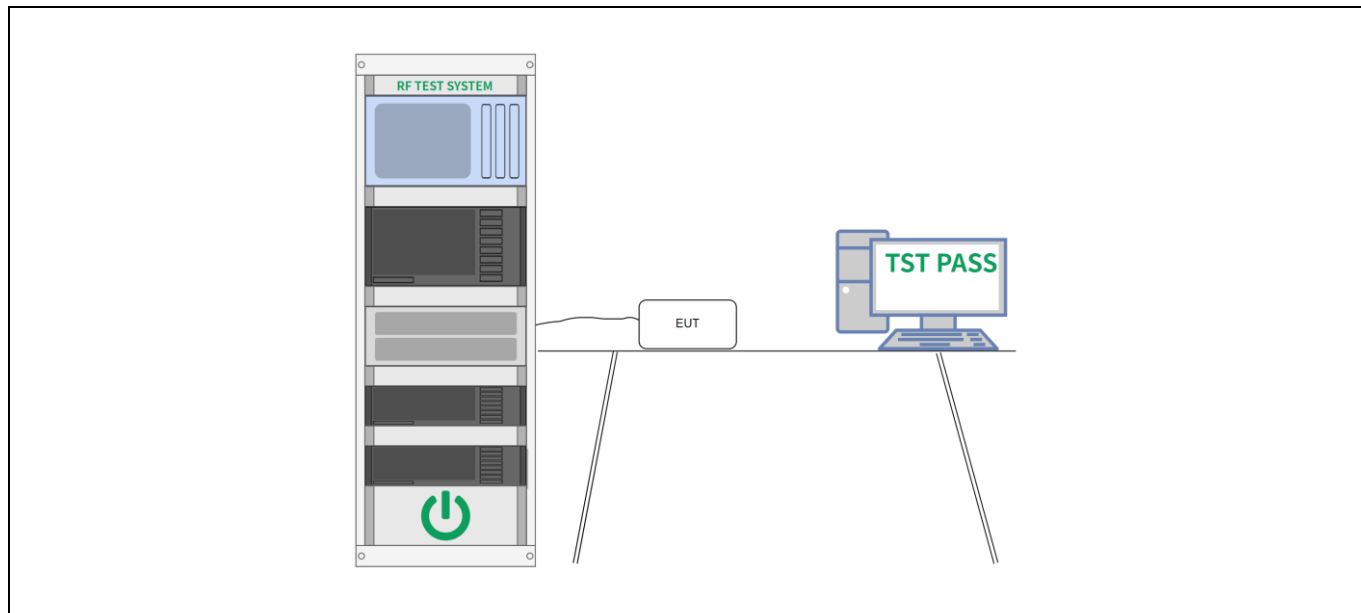
Test Requirement:	47 CFR Part 15.407(a)(1)(i) 47 CFR Part 15.407(a)(1)(ii) 47 CFR Part 15.407(a)(1)(iii) 47 CFR Part 15.407(a)(1)(iv) 47 CFR Part 15.407(a)(3)(i)
Test Limit:	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations. For client devices in the 5.15-5.25 GHz band, 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, 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 5.725-5.850 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.
Test Method:	ANSI C63.10-2013, section 12.5

Procedure:	Refer to ANSI C63.10-2013, section 12.5
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6.5.1 E.U.T. Operation:

Operating Environment:					
Temperature:	16.5 °C	Humidity:	67.4 %	Atmospheric Pressure:	100 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				

6.5.2 Test Setup Diagram:



6.5.3 Test Data:

Please Refer to Appendix for Details.

6.6 Band edge emissions (Radiated)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)																																																																										
Test Limit:	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 solely in the 5.725-5.850 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. <table border="1"> <thead> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> </thead> <tbody> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>¹ 0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>(²)</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </tbody> </table> ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ² Above 38.6 The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	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			
MHz	MHz	MHz	GHz																																																																								
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																								
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																								
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6.215-6.218	74.8-75.2	1660-1710	10.6-12.7																																																																								
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12.57675-12.57725	322-335.4	3600-4400	(²)																																																																								
13.36-13.41																																																																											

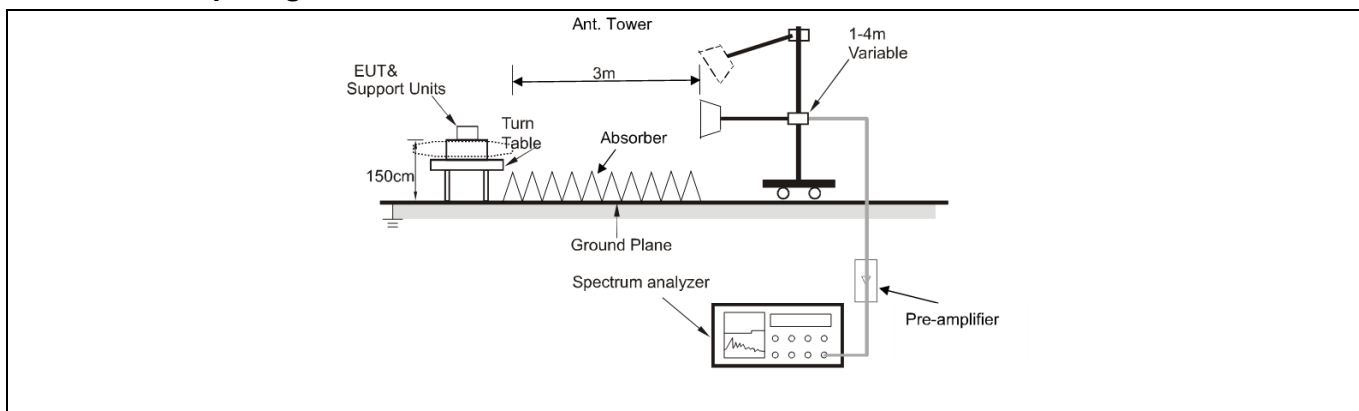
	<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.	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
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																							
Test Method:	ANSI C63.10-2013, section 12.7.4, 12.7.6, 12.7.7																								
Procedure:	Above 1GHz: a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength																								

	limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
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6.6.1 E.U.T. Operation:

Operating Environment:					
Temperature:	0 °C	Humidity:	0 %	Atmospheric Pressure:	0 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1				

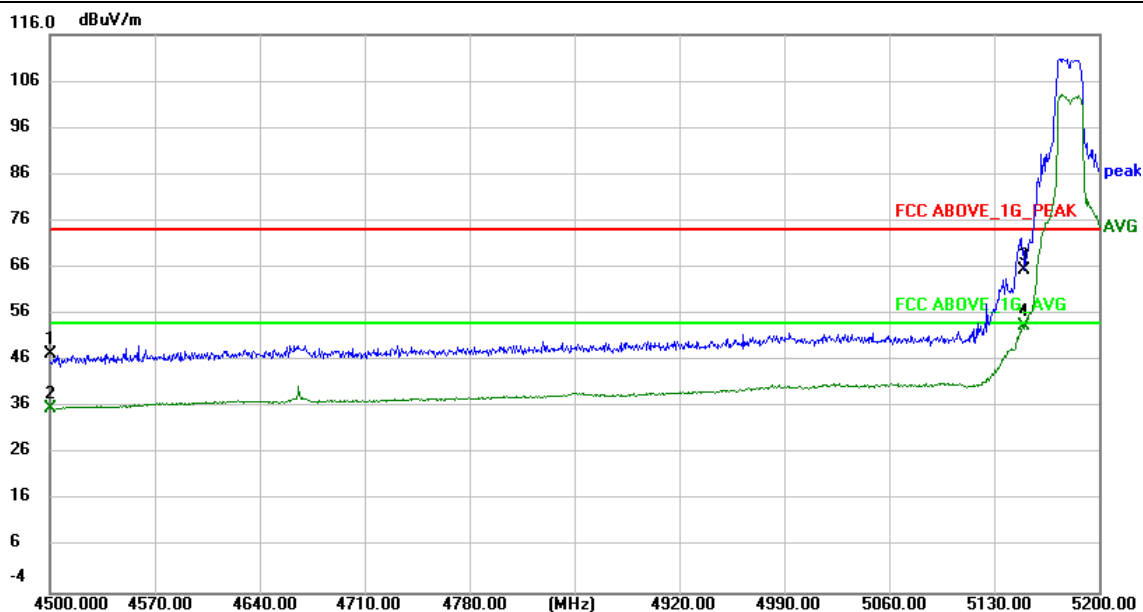
6.6.2 Test Setup Diagram:



6.6.3 Test Data:

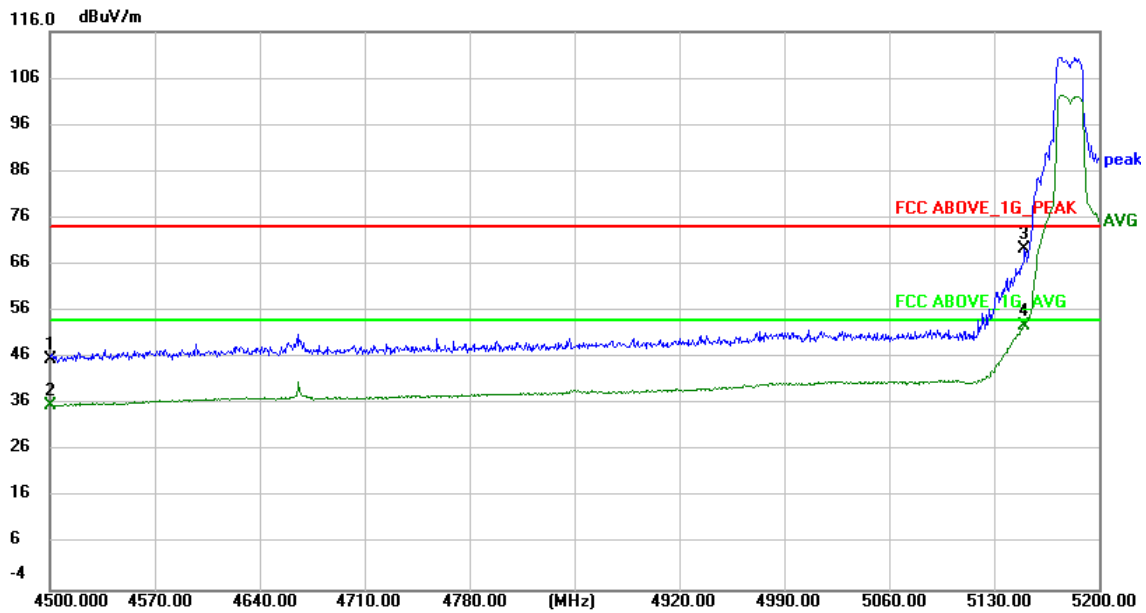
U-NII-1

Mode1 / Polarization: Horizontal / CH: L



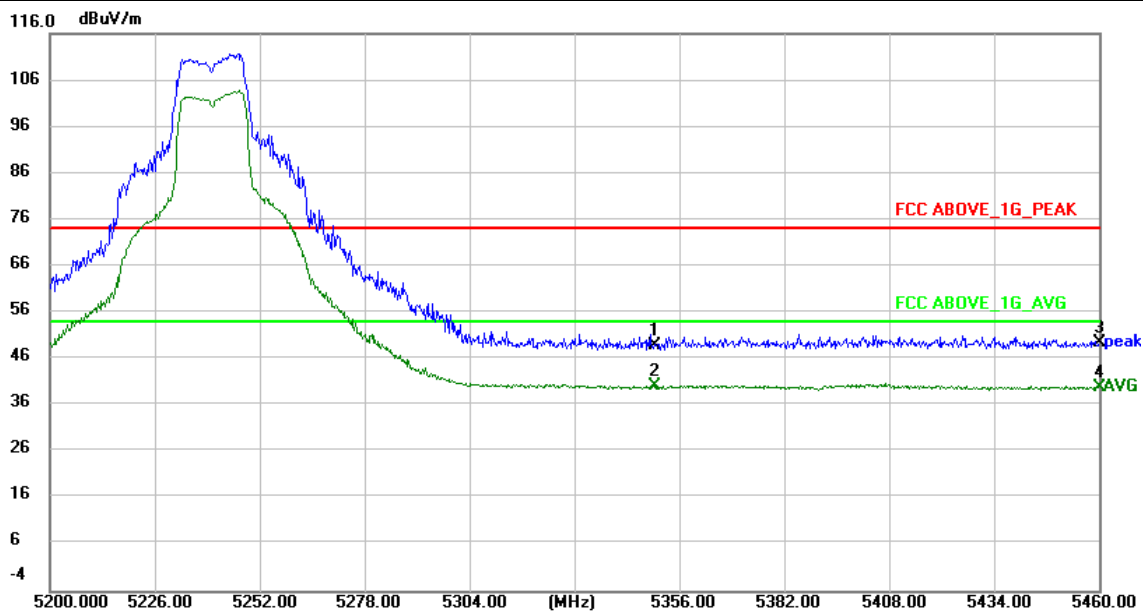
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4500.000	48.42	-0.91	47.51	74.00	-26.49	peak
2		4500.000	36.56	-0.91	35.65	54.00	-18.35	AVG
3		5150.000	63.41	1.92	65.33	74.00	-8.67	peak
4	*	5150.000	51.65	1.92	53.57	54.00	-0.43	AVG

Mode1 / Polarization: Vertical / CH: L



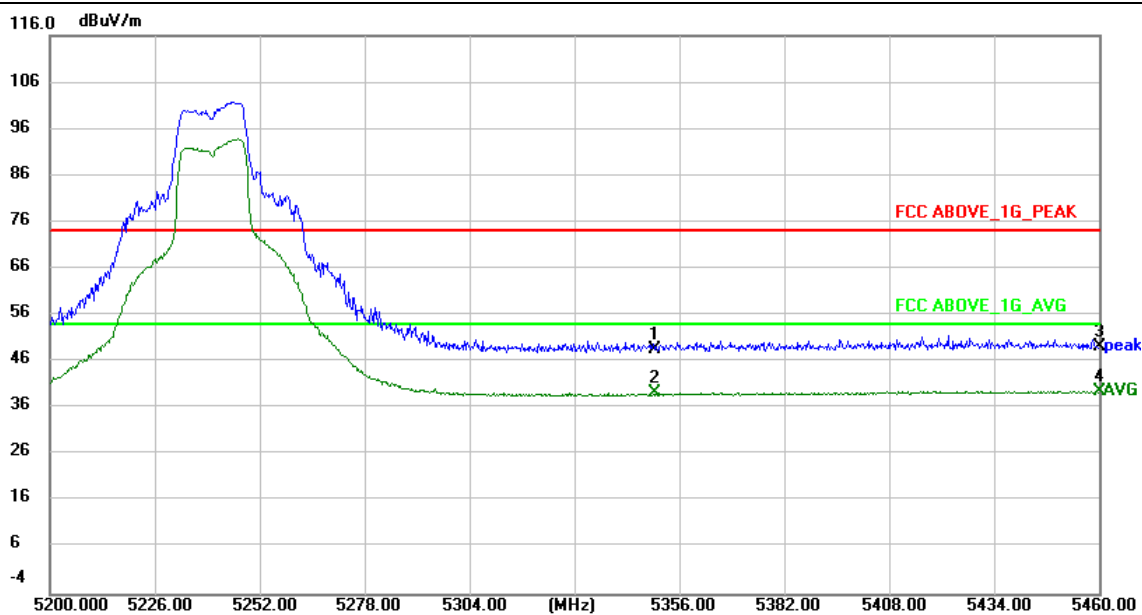
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4500.000	46.48	-0.91	45.57	74.00	-28.43	peak
2		4500.000	36.55	-0.91	35.64	54.00	-18.36	AVG
3		5150.000	67.50	1.92	69.42	74.00	-4.58	peak
4	*	5150.000	50.93	1.92	52.85	54.00	-1.15	AVG

Mode1 / Polarization: Horizontal / CH: H



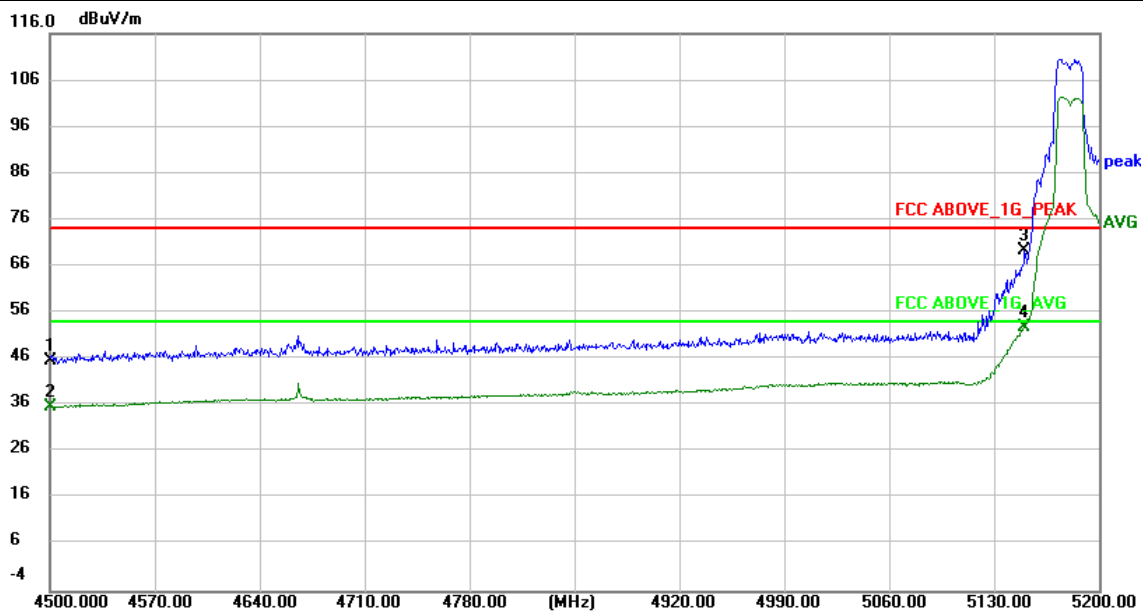
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	46.92	2.03	48.95	74.00	-25.05	peak
2	*	5350.000	38.23	2.03	40.26	54.00	-13.74	AVG
3		5460.000	47.32	2.14	49.46	74.00	-24.54	peak
4		5460.000	37.79	2.14	39.93	54.00	-14.07	AVG

Mode1 / Polarization: Vertical / CH: H



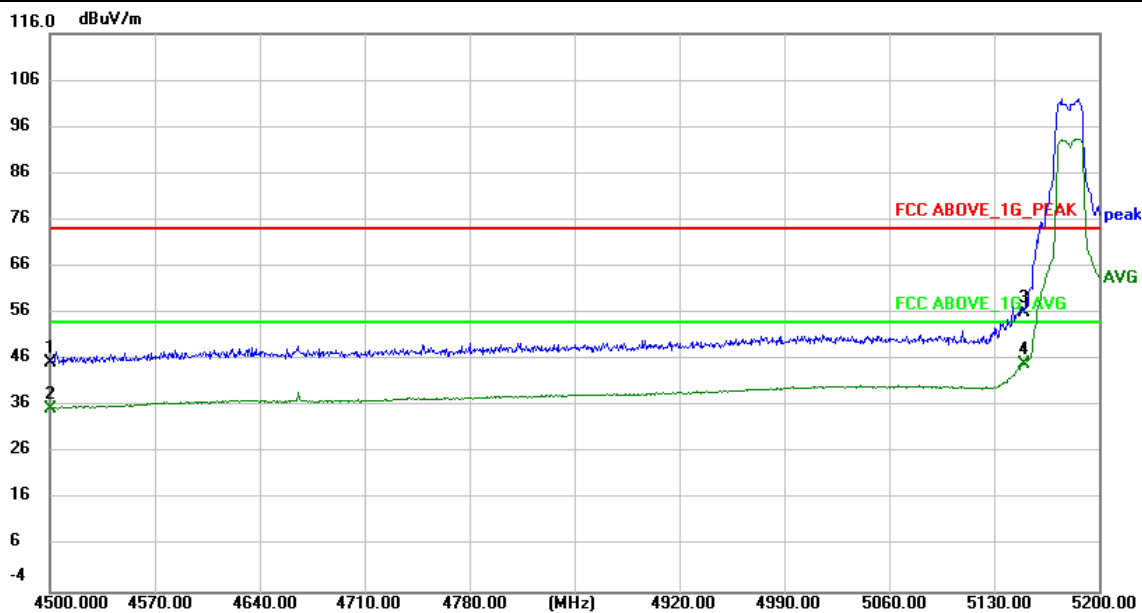
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		5350.000	46.66	2.03	48.69	74.00	-25.31	peak
2		5350.000	37.17	2.03	39.20	54.00	-14.80	AVG
3		5460.000	47.19	2.14	49.33	74.00	-24.67	peak
4	*	5460.000	37.45	2.14	39.59	54.00	-14.41	AVG

Mode2 / Polarization: Horizontal / CH: L



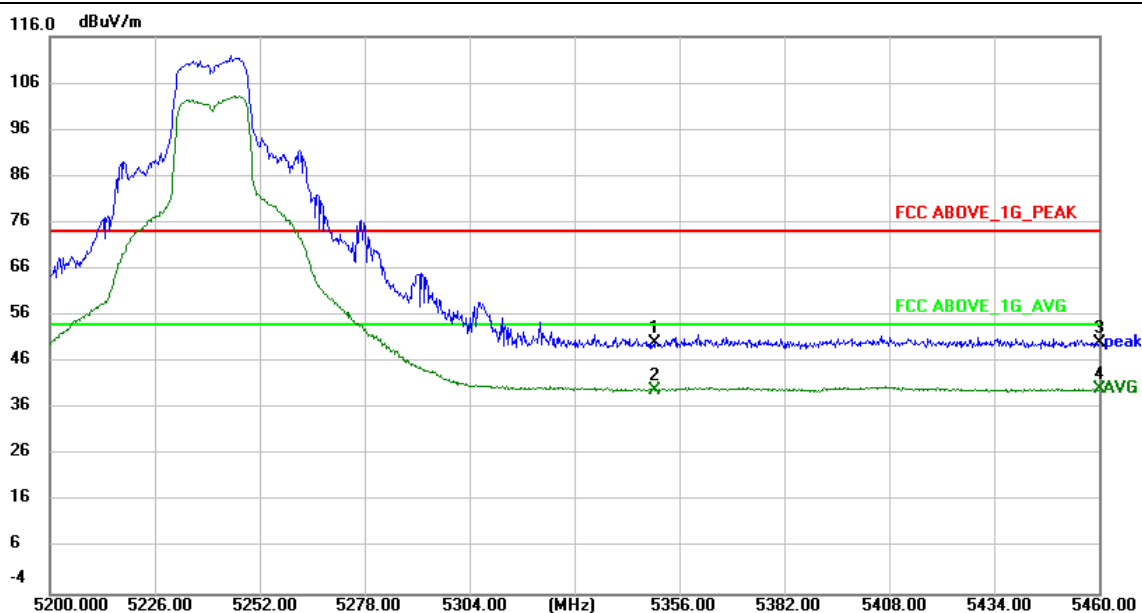
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		4500.000	46.48	-0.91	45.57	74.00	-28.43	peak
2		4500.000	36.55	-0.91	35.64	54.00	-18.36	AVG
3		5150.000	67.50	1.92	69.42	74.00	-4.58	peak
4	*	5150.000	50.93	1.92	52.85	54.00	-1.15	AVG

Mode2 / Polarization: Vertical / CH: L



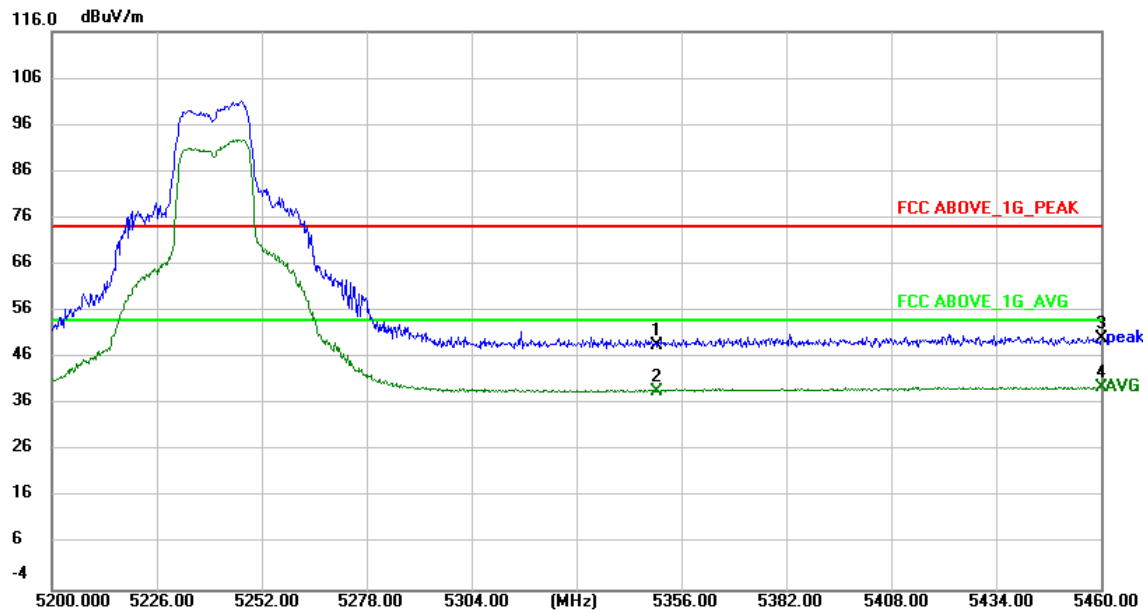
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4500.000	46.34	-0.91	45.43	74.00	-28.57	peak
2		4500.000	36.45	-0.91	35.54	54.00	-18.46	AVG
3		5150.000	54.31	1.92	56.23	74.00	-17.77	peak
4	*	5150.000	43.07	1.92	44.99	54.00	-9.01	AVG

Mode2 / Polarization: Horizontal / CH: H



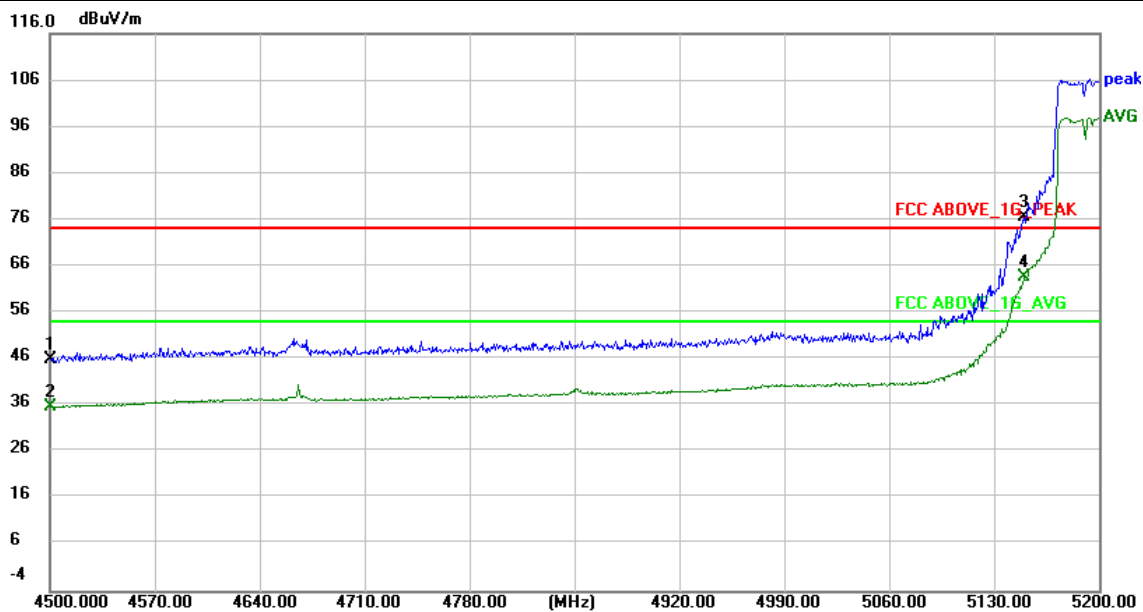
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	48.25	2.03	50.28	74.00	-23.72	peak
2		5350.000	37.99	2.03	40.02	54.00	-13.98	AVG
3		5460.000	48.09	2.14	50.23	74.00	-23.77	peak
4	*	5460.000	38.06	2.14	40.20	54.00	-13.80	AVG

Mode2 / Polarization: Vertical / CH: H



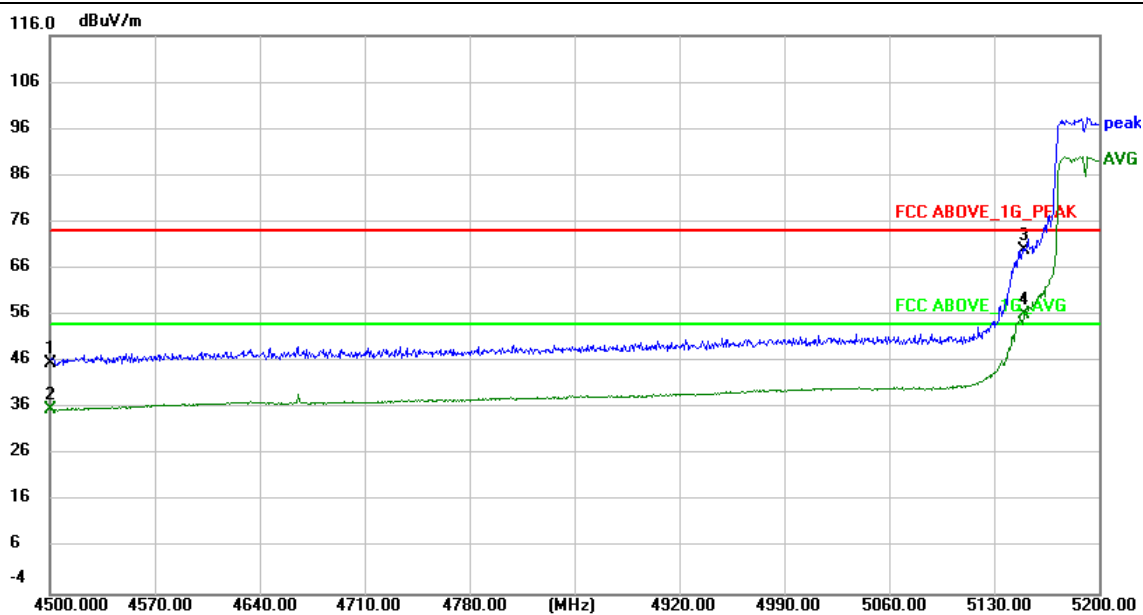
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	46.55	2.03	48.58	74.00	-25.42	peak
2		5350.000	36.85	2.03	38.88	54.00	-15.12	AVG
3		5460.000	48.10	2.14	50.24	74.00	-23.76	peak
4	*	5460.000	37.38	2.14	39.52	54.00	-14.48	AVG

Mode3 / Polarization: Horizontal / CH: L



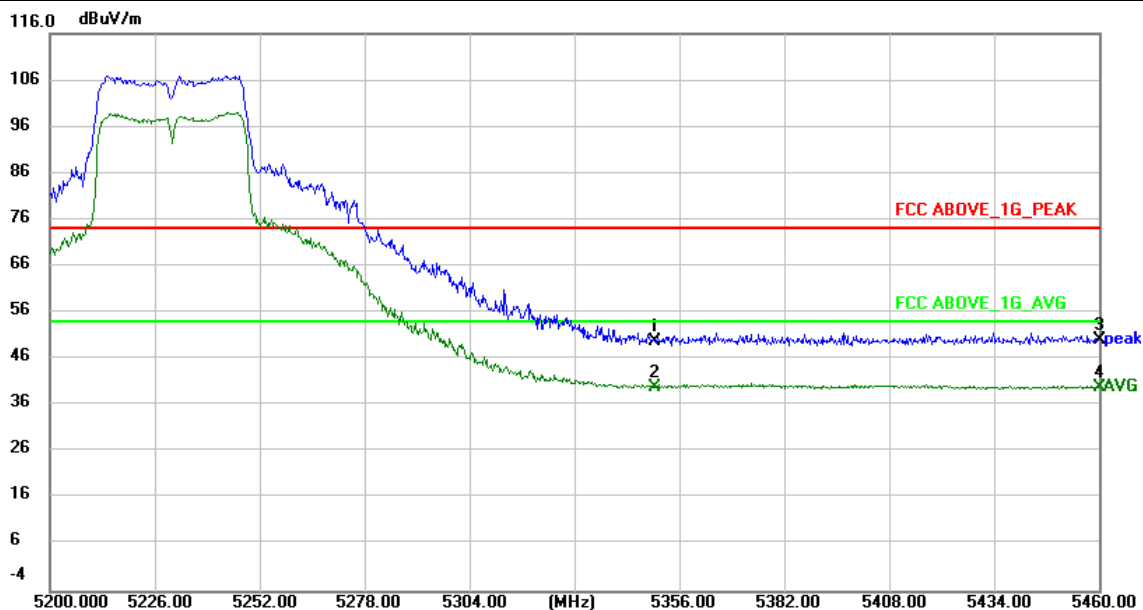
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4500.000	46.74	-0.91	45.83	74.00	-28.17	peak
2		4500.000	36.64	-0.91	35.73	54.00	-18.27	AVG
3	X	5150.000	74.77	1.92	76.69	74.00	2.69	peak
4	*	5150.000	61.82	1.92	63.74	54.00	9.74	AVG

Mode3 / Polarization: Vertical / CH: L



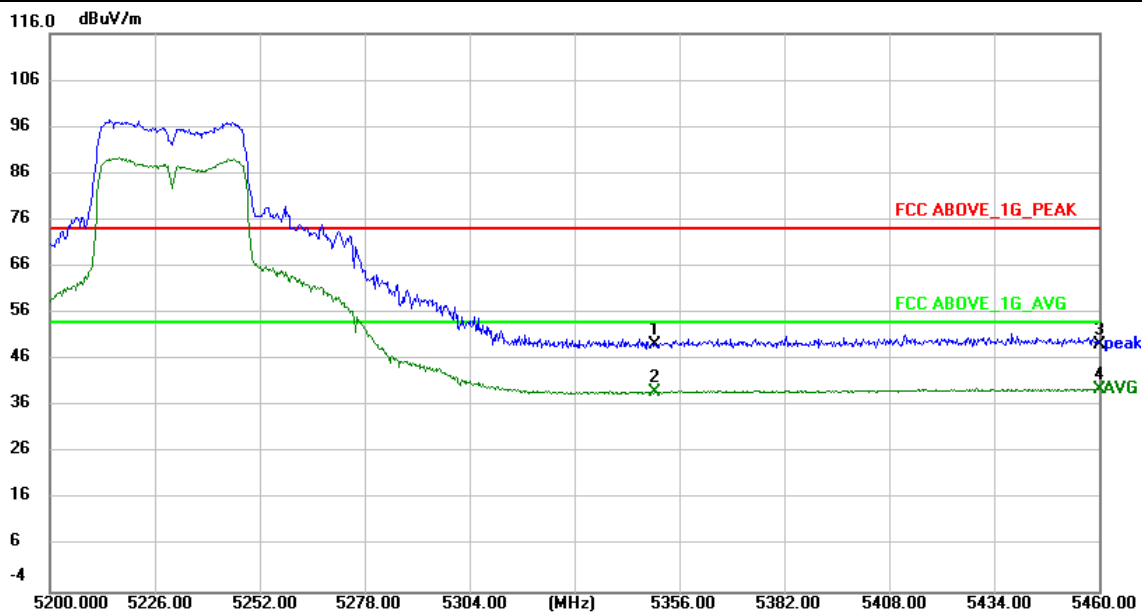
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		4500.000	46.53	-0.91	45.62	74.00	-28.38	peak
2		4500.000	36.57	-0.91	35.66	54.00	-18.34	AVG
3		5150.000	68.14	1.92	70.06	74.00	-3.94	peak
4	*	5150.000	54.13	1.92	56.05	54.00	2.05	AVG

Mode3 / Polarization: Horizontal / CH: H



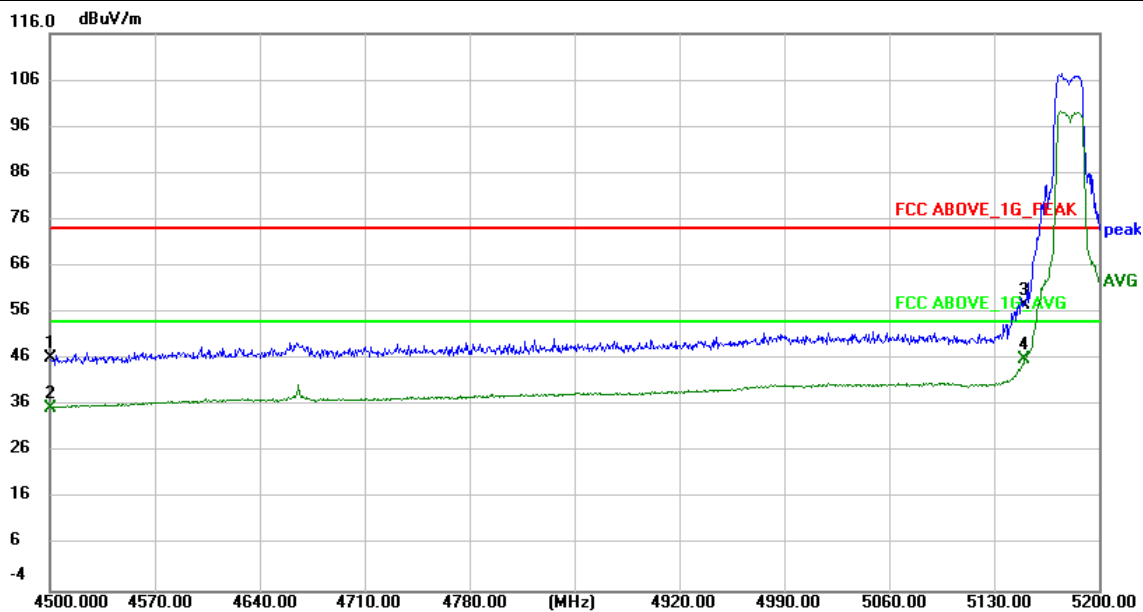
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5350.000	47.92	2.03	49.95	74.00	-24.05	peak
2	*	5350.000	38.04	2.03	40.07	54.00	-13.93	AVG
3		5460.000	48.12	2.14	50.26	74.00	-23.74	peak
4		5460.000	37.70	2.14	39.84	54.00	-14.16	AVG

Mode3 / Polarization: Vertical / CH: H



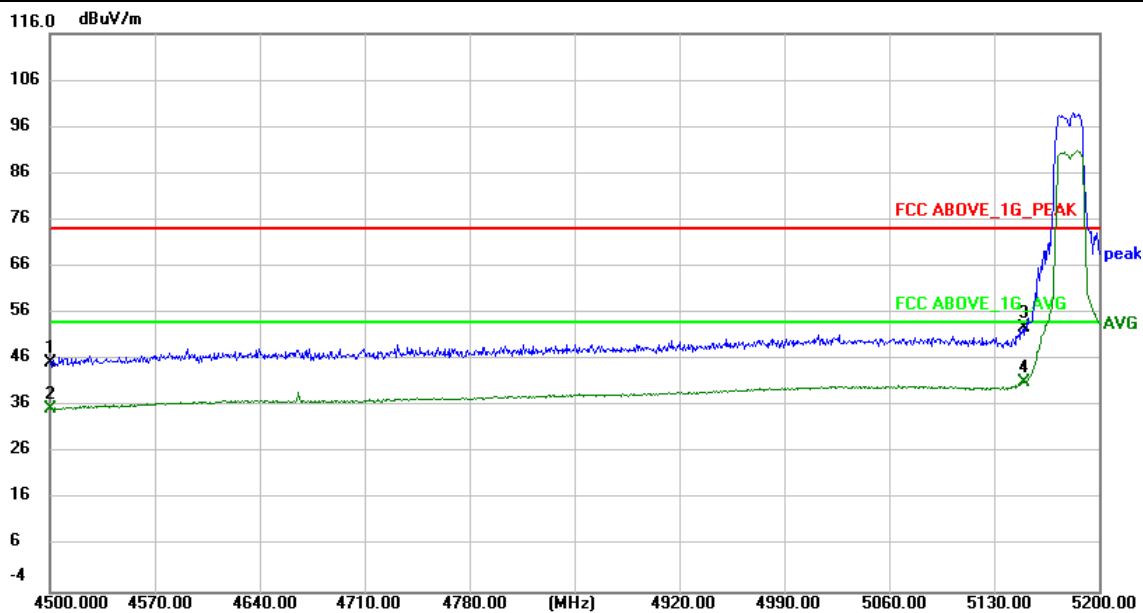
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	47.23	2.03	49.26	74.00	-24.74	peak
2		5350.000	36.91	2.03	38.94	54.00	-15.06	AVG
3		5460.000	47.10	2.14	49.24	74.00	-24.76	peak
4	*	5460.000	37.59	2.14	39.73	54.00	-14.27	AVG

Mode4 / Polarization: Horizontal / CH: L



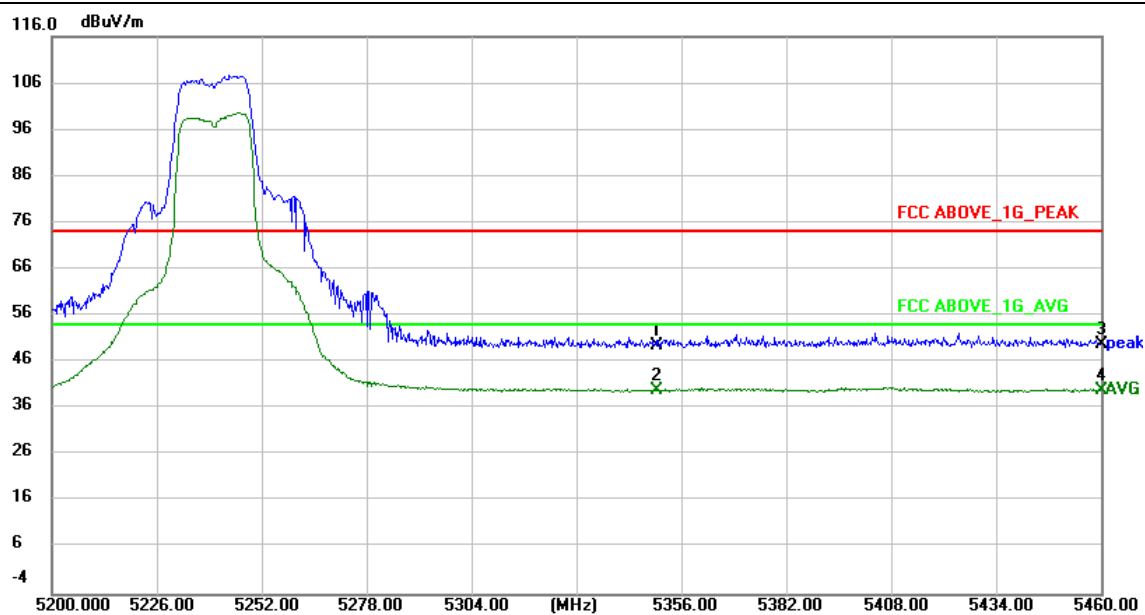
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB Detector
1		4500.000	47.10	-0.91	46.19	74.00	-27.81 peak
2		4500.000	36.42	-0.91	35.51	54.00	-18.49 AVG
3		5150.000	55.64	1.92	57.56	74.00	-16.44 peak
4	*	5150.000	44.02	1.92	45.94	54.00	-8.06 AVG

Mode4 / Polarization: Vertical / CH: L



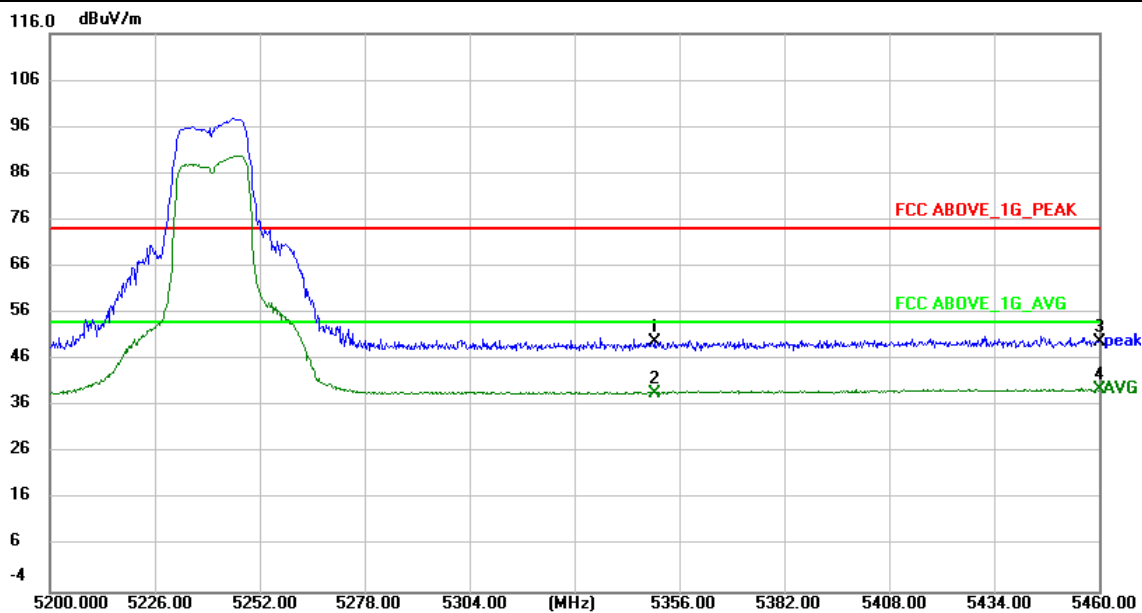
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB
1		4500.000	46.16	-0.91	45.25	74.00	-28.75
2		4500.000	36.43	-0.91	35.52	54.00	-18.48
3		5150.000	50.86	1.92	52.78	74.00	-21.22
4	*	5150.000	39.16	1.92	41.08	54.00	-12.92

Mode4 / Polarization: Horizontal / CH: H



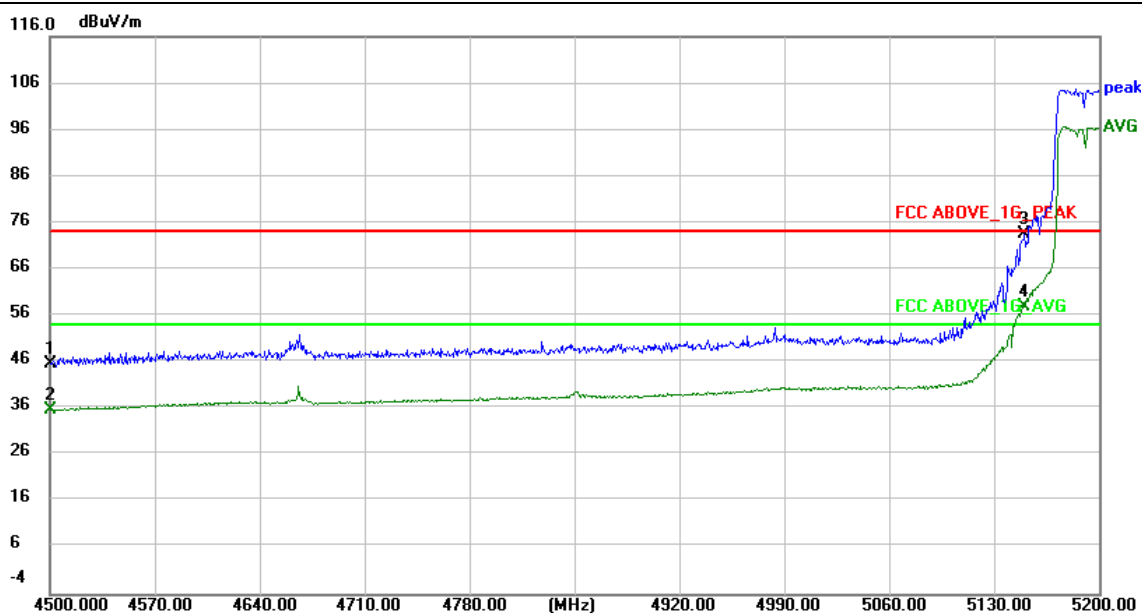
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	47.44	2.03	49.47	74.00	-24.53	peak
2		5350.000	37.92	2.03	39.95	54.00	-14.05	AVG
3		5460.000	47.66	2.14	49.80	74.00	-24.20	peak
4	*	5460.000	37.87	2.14	40.01	54.00	-13.99	AVG

Mode4 / Polarization: Vertical / CH: H



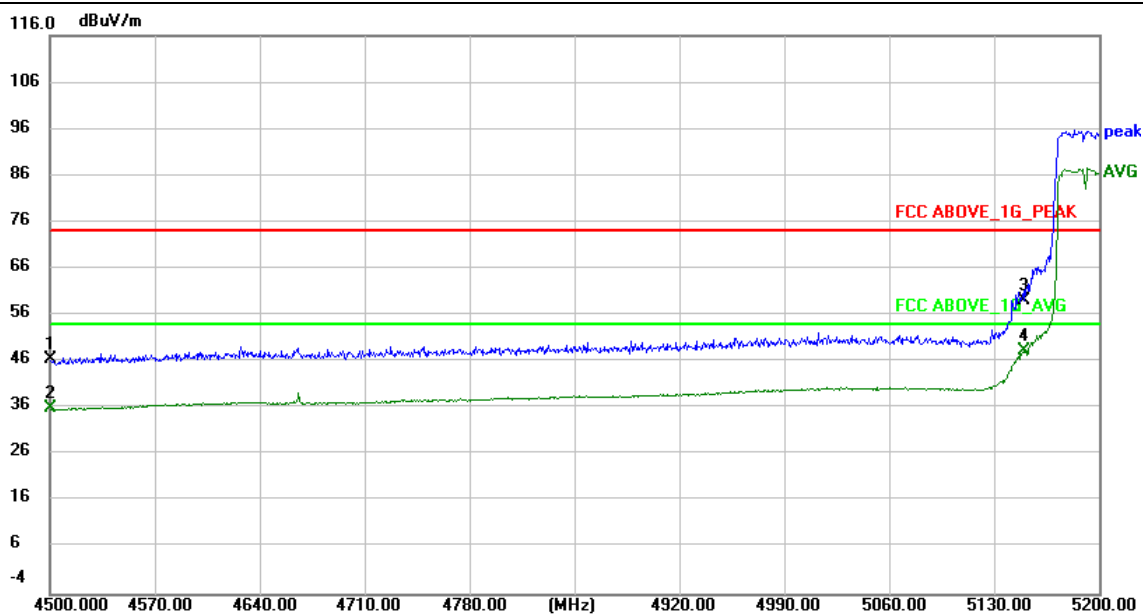
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		5350.000	47.89	2.03	49.92	74.00	-24.08	peak
2		5350.000	36.87	2.03	38.90	54.00	-15.10	AVG
3		5460.000	47.56	2.14	49.70	74.00	-24.30	peak
4	*	5460.000	37.41	2.14	39.55	54.00	-14.45	AVG

Mode5 / Polarization: Horizontal / CH: L



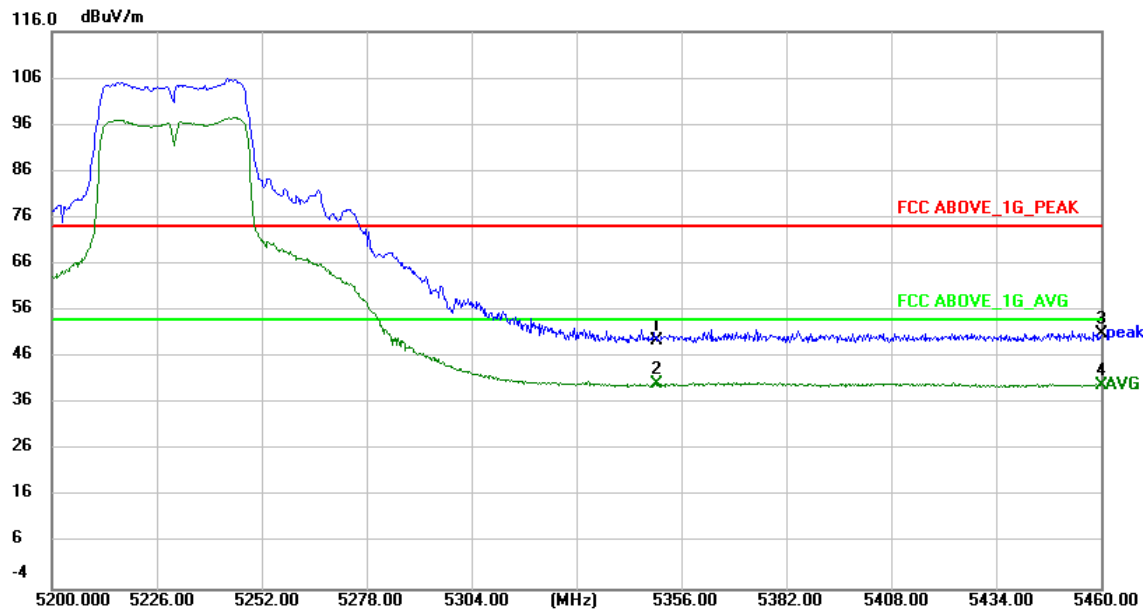
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4500.000	46.51	-0.91	45.60	74.00	-28.40	peak
2		4500.000	36.60	-0.91	35.69	54.00	-18.31	AVG
3		5150.000	71.56	1.92	73.48	74.00	-0.52	peak
4	*	5150.000	56.03	1.92	57.95	54.00	3.95	AVG

Mode5 / Polarization: Vertical / CH: L



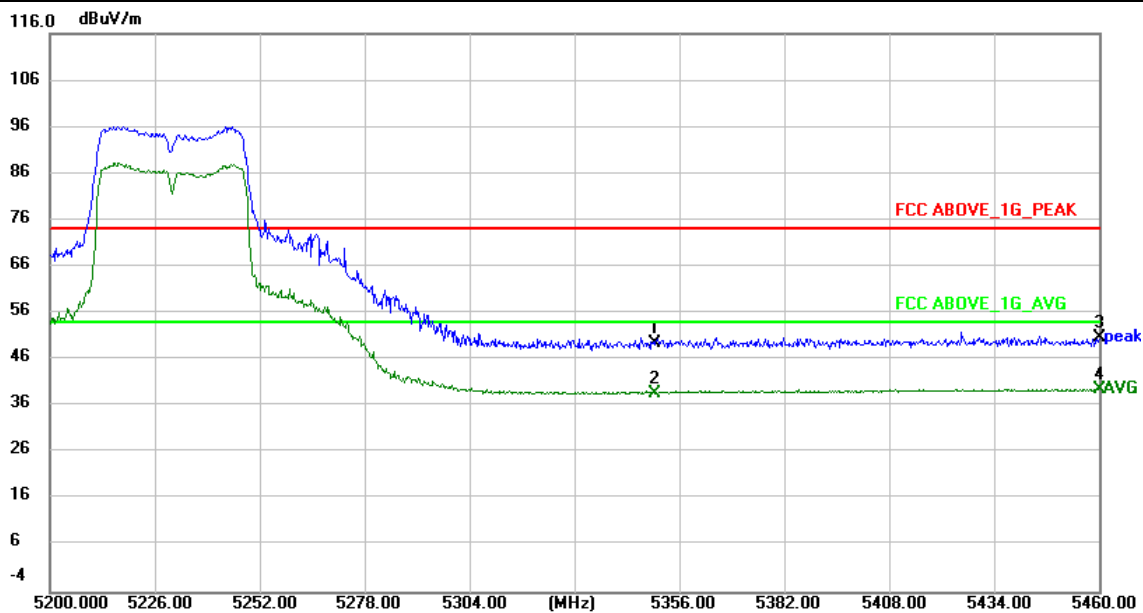
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		4500.000	47.56	-0.91	46.65	74.00	-27.35	peak
2		4500.000	36.82	-0.91	35.91	54.00	-18.09	AVG
3		5150.000	57.26	1.92	59.18	74.00	-14.82	peak
4	*	5150.000	46.56	1.92	48.48	54.00	-5.52	AVG

Mode5 / Polarization: Horizontal / CH: H



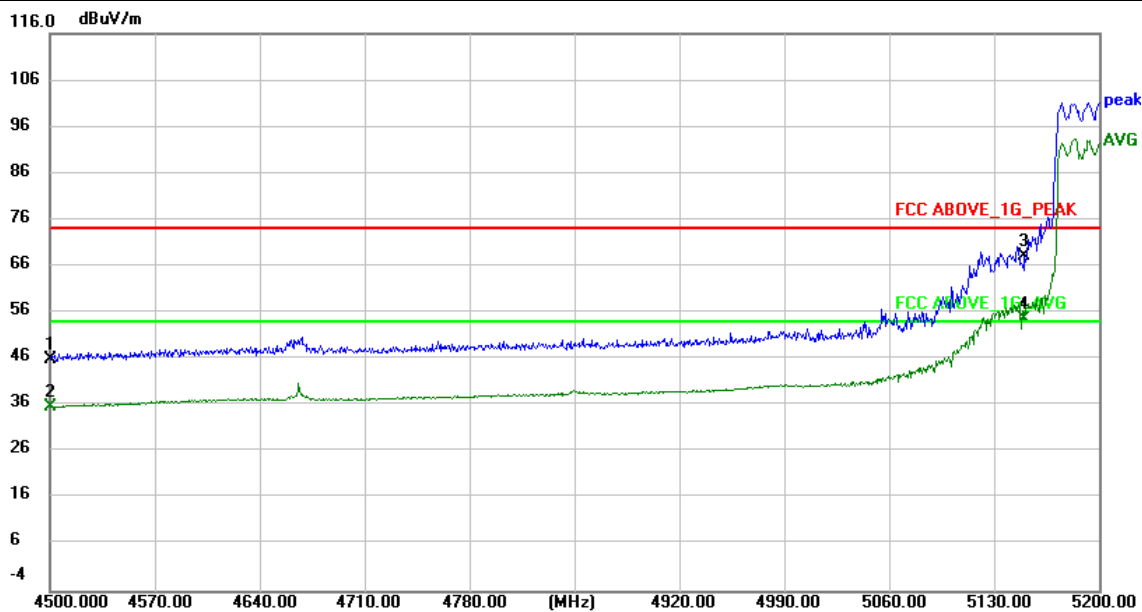
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		5350.000	47.50	2.03	49.53	74.00	-24.47	peak
2	*	5350.000	38.26	2.03	40.29	54.00	-13.71	AVG
3		5460.000	48.85	2.14	50.99	74.00	-23.01	peak
4		5460.000	37.80	2.14	39.94	54.00	-14.06	AVG

Mode5 / Polarization: Vertical / CH: H



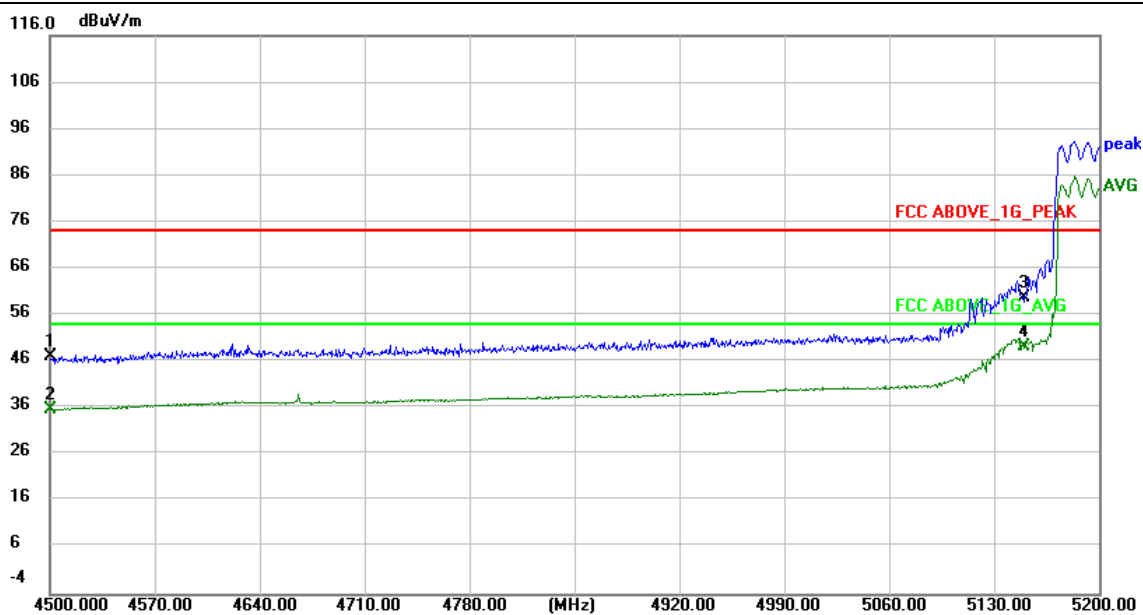
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		5350.000	47.66	2.03	49.69	74.00	-24.31	peak
2		5350.000	36.83	2.03	38.86	54.00	-15.14	AVG
3		5460.000	48.51	2.14	50.65	74.00	-23.35	peak
4	*	5460.000	37.39	2.14	39.53	54.00	-14.47	AVG

Mode6 / Polarization: Horizontal / CH: L



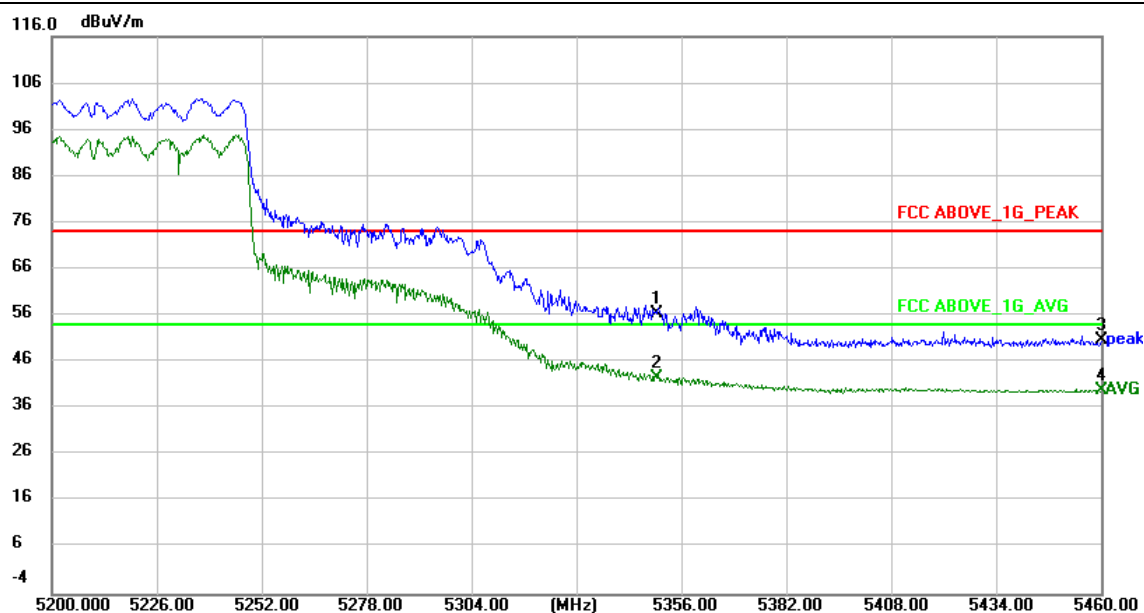
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		4500.000	46.76	-0.91	45.85	74.00	-28.15	peak
2		4500.000	36.73	-0.91	35.82	54.00	-18.18	AVG
3		5150.000	66.19	1.92	68.11	74.00	-5.89	peak
4	*	5150.000	52.79	1.92	54.71	54.00	0.71	AVG

Mode6 / Polarization: Vertical / CH: L



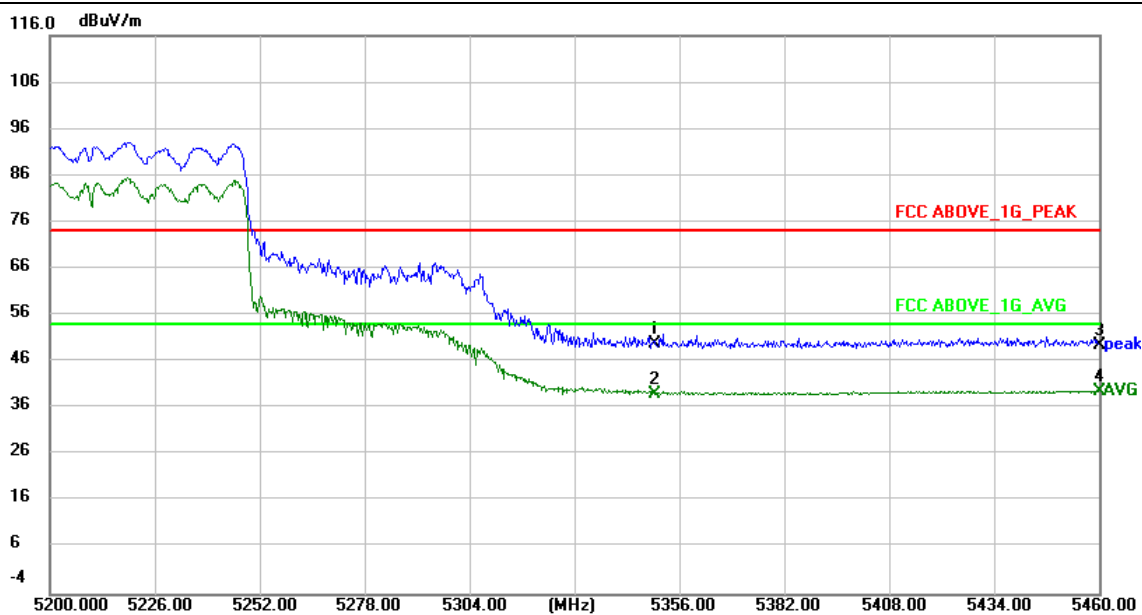
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		4500.000	48.09	-0.91	47.18	74.00	-26.82	peak
2		4500.000	36.75	-0.91	35.84	54.00	-18.16	AVG
3		5150.000	57.71	1.92	59.63	74.00	-14.37	peak
4	*	5150.000	47.32	1.92	49.24	54.00	-4.76	AVG

Mode6 / Polarization: Horizontal / CH: H



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	54.51	2.03	56.54	74.00	-17.46	peak
2	*	5350.000	40.72	2.03	42.75	54.00	-11.25	AVG
3		5460.000	48.68	2.14	50.82	74.00	-23.18	peak
4		5460.000	37.68	2.14	39.82	54.00	-14.18	AVG

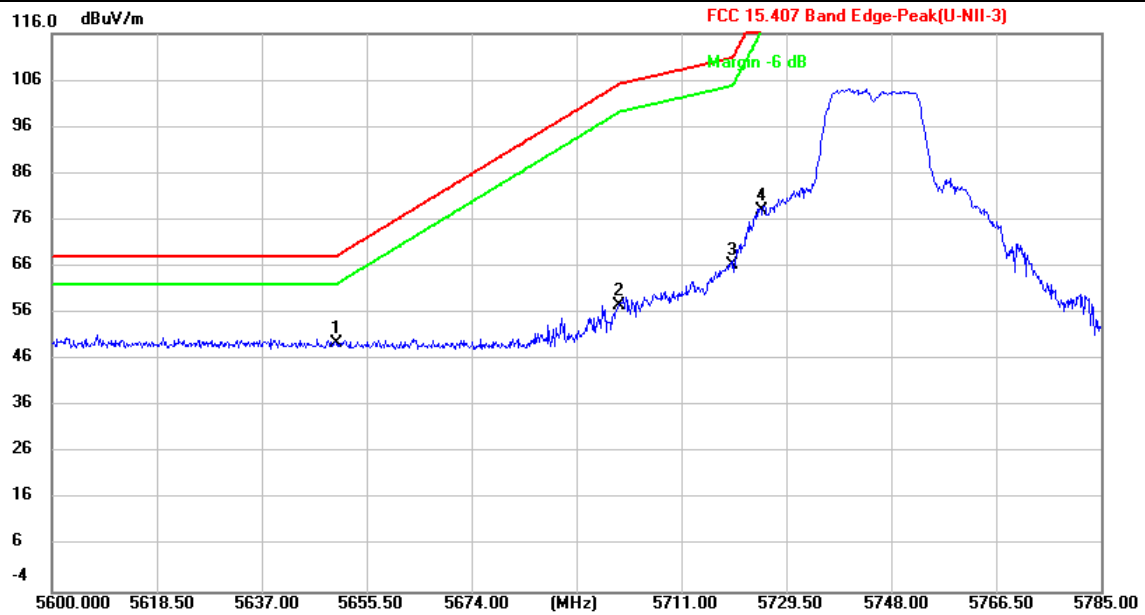
Mode6 / Polarization: Vertical / CH: H



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5350.000	47.95	2.03	49.98	74.00	-24.02	peak
2		5350.000	37.15	2.03	39.18	54.00	-14.82	AVG
3		5460.000	47.43	2.14	49.57	74.00	-24.43	peak
4	*	5460.000	37.46	2.14	39.60	54.00	-14.40	AVG

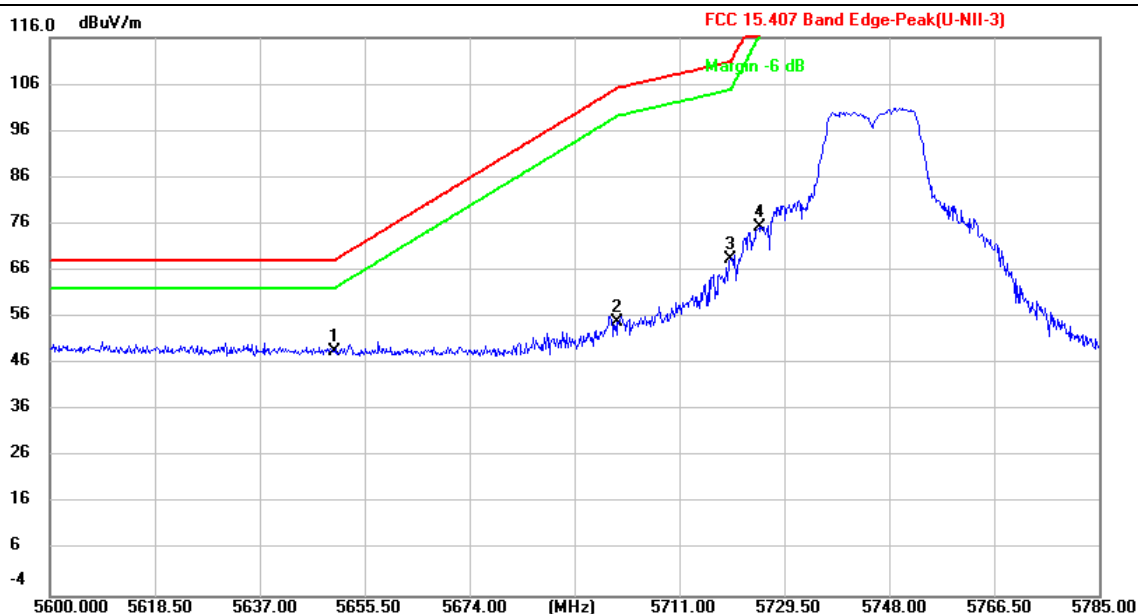
U-NII-3

Mode1 / Polarization: Horizontal / CH: L



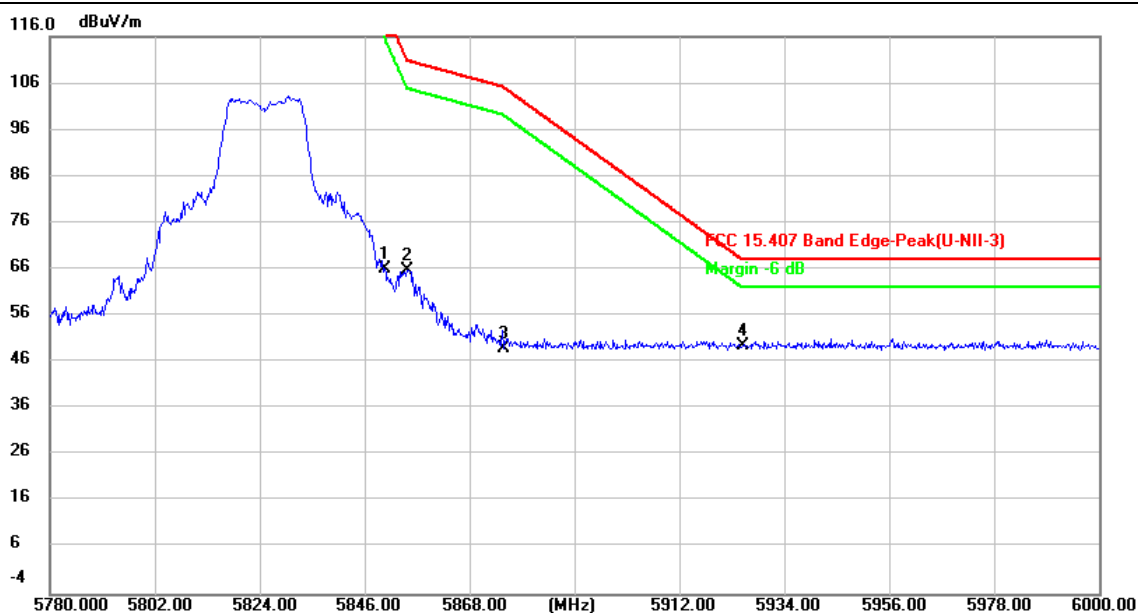
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	47.77	1.86	49.63	68.20	-18.57	peak
2		5700.000	56.05	1.71	57.76	105.2	-47.44	peak
3		5720.000	64.67	1.69	66.36	110.8	-44.44	peak
4		5725.000	76.33	1.67	78.00	122.2	-44.20	peak

Mode1 / Polarization: Vertical / CH: L



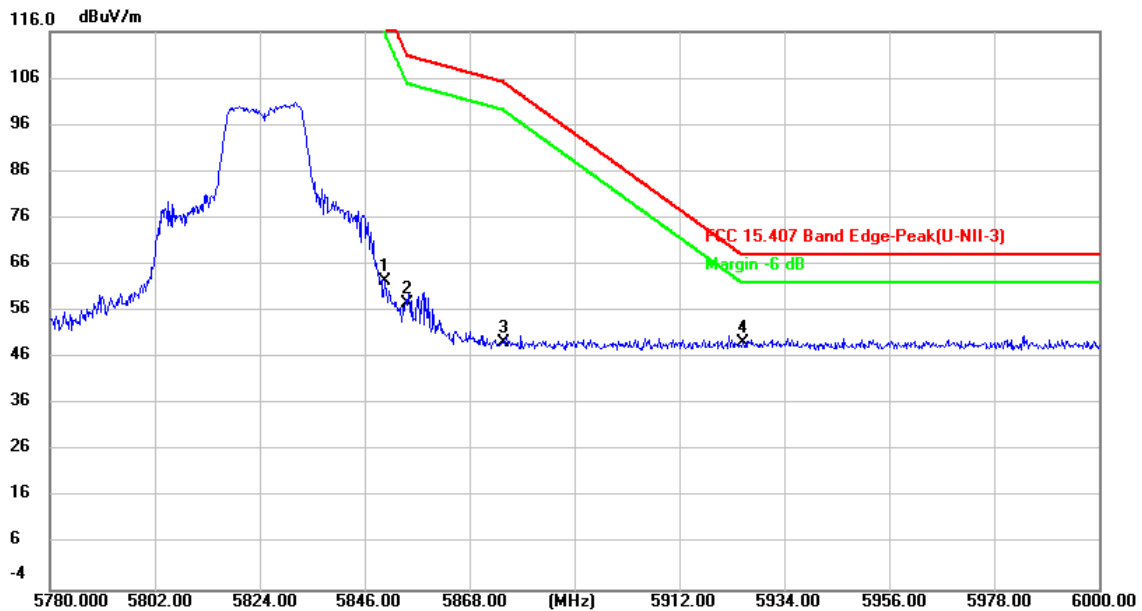
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	46.89	1.86	48.75	68.20	-19.45	peak
2		5700.000	53.38	1.71	55.09	105.2	-50.11	peak
3		5720.000	66.70	1.69	68.39	110.8	-42.41	peak
4		5725.000	73.73	1.67	75.40	122.2	-46.80	peak

Mode1 / Polarization: Horizontal / CH: H



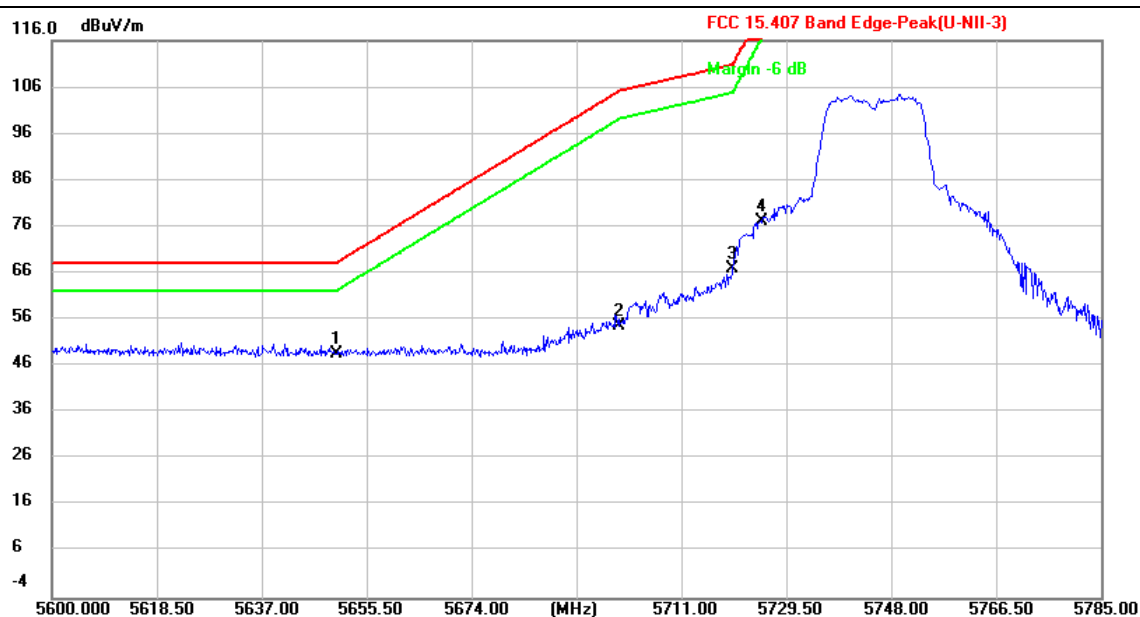
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	64.36	1.54	65.90	122.2	-56.30	peak
2		5855.000	64.13	1.55	65.68	110.8	-45.12	peak
3		5875.000	47.32	1.53	48.85	105.2	-56.35	peak
4	*	5925.000	48.22	1.44	49.66	68.20	-18.54	peak

Mode1 / Polarization: Vertical / CH: H



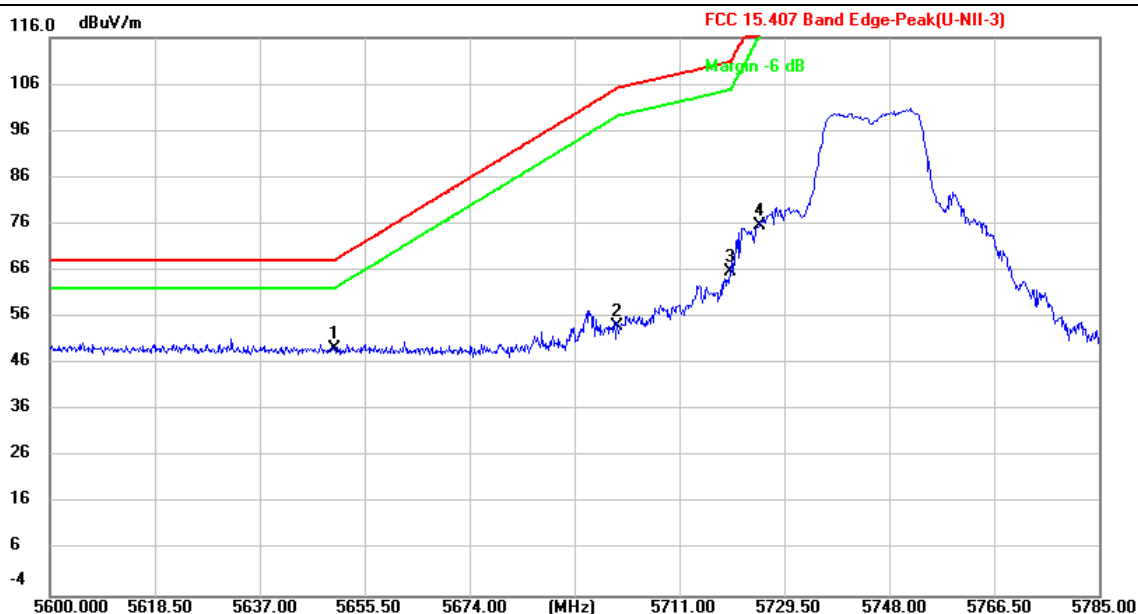
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1		5850.000	61.05	1.54	62.59	122.2	-59.61	peak
2		5855.000	56.13	1.55	57.68	110.8	-53.12	peak
3		5875.000	47.84	1.53	49.37	105.2	-55.83	peak
4	*	5925.000	47.68	1.44	49.12	68.20	-19.08	peak

Mode2 / Polarization: Horizontal / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	46.83	1.86	48.69	68.20	-19.51	peak
2		5700.000	53.04	1.71	54.75	105.2	-50.45	peak
3		5720.000	65.14	1.69	66.83	110.8	-43.97	peak
4		5725.000	75.35	1.67	77.02	122.2	-45.18	peak

Mode2 / Polarization: Vertical / CH: L



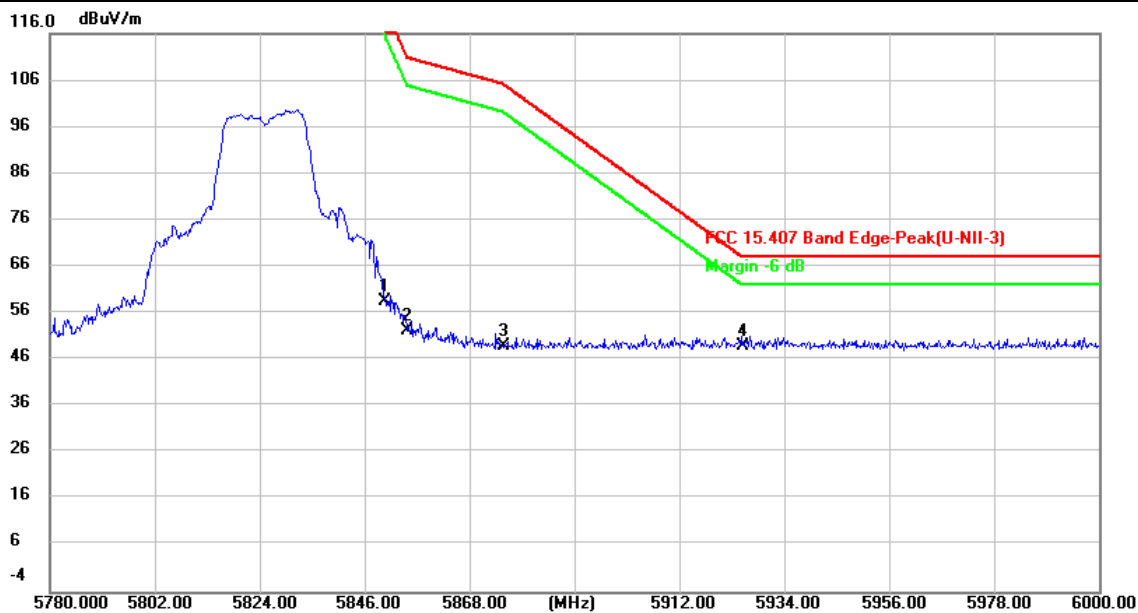
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	47.51	1.86	49.37	68.20	-18.83	peak
2		5700.000	52.42	1.71	54.13	105.2	-51.07	peak
3		5720.000	64.11	1.69	65.80	110.8	-45.00	peak
4		5725.000	73.94	1.67	75.61	122.2	-46.59	peak

Mode2 / Polarization: Horizontal / CH: H



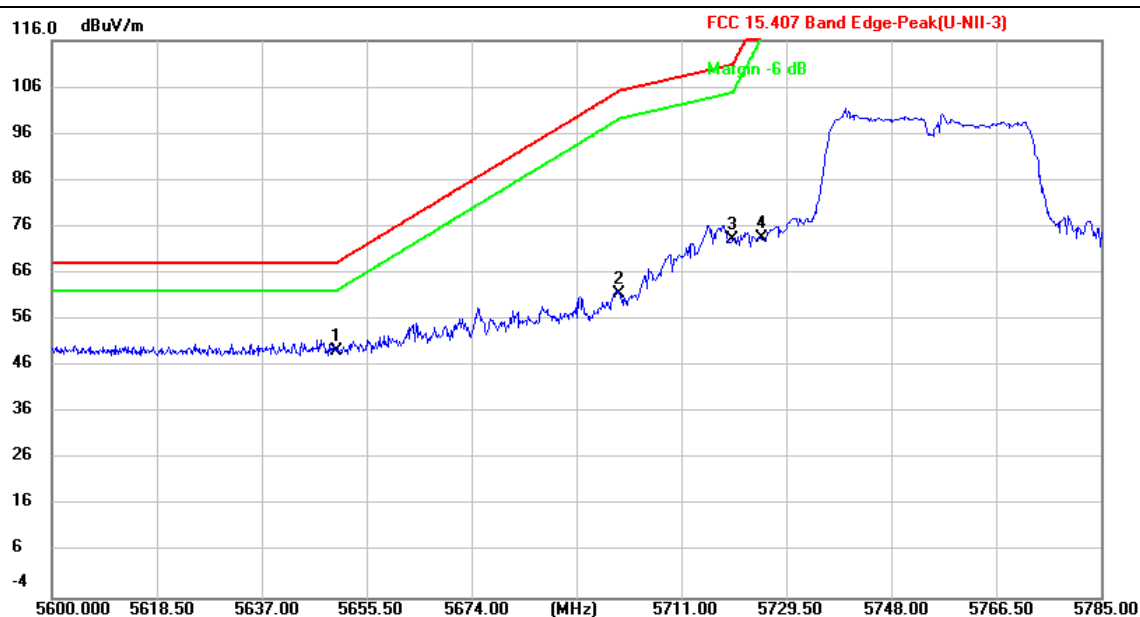
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	61.86	1.54	63.40	122.2	-58.80	peak
2		5855.000	56.68	1.55	58.23	110.8	-52.57	peak
3		5875.000	48.09	1.53	49.62	105.2	-55.58	peak
4	*	5925.000	47.47	1.44	48.91	68.20	-19.29	peak

Mode2 / Polarization: Vertical / CH: H



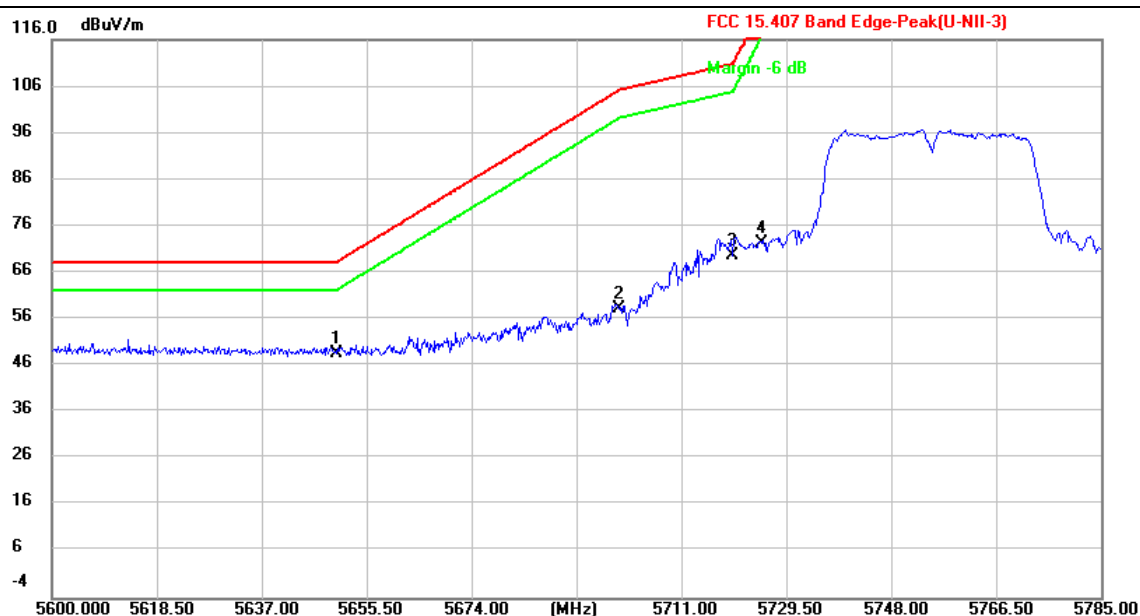
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	57.05	1.54	58.59	122.2	-63.61	peak
2		5855.000	50.67	1.55	52.22	110.8	-58.58	peak
3		5875.000	47.53	1.53	49.06	105.2	-56.14	peak
4	*	5925.000	47.66	1.44	49.10	68.20	-19.10	peak

Mode3 / Polarization: Horizontal / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	47.41	1.86	49.27	68.20	-18.93	peak
2		5700.000	59.80	1.71	61.51	105.2	-43.69	peak
3		5720.000	71.60	1.69	73.29	110.8	-37.51	peak
4		5725.000	71.86	1.67	73.53	122.2	-48.67	peak

Mode3 / Polarization: Vertical / CH: L



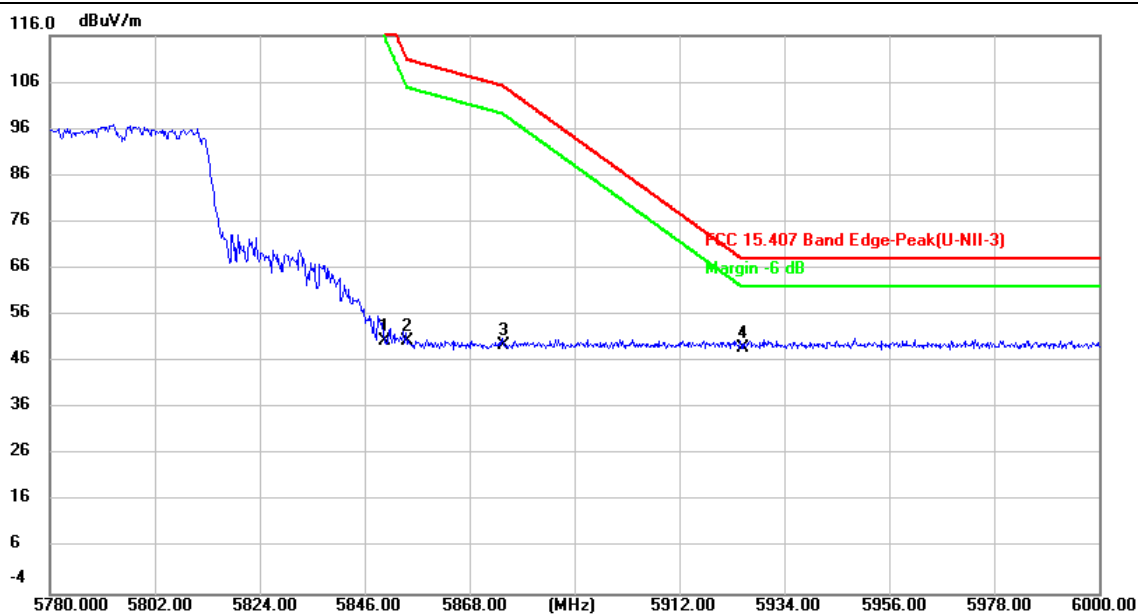
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	5650.000	46.78	1.86	48.64	68.20	-19.56	peak
2		5700.000	56.57	1.71	58.28	105.2	-46.92	peak
3		5720.000	67.88	1.69	69.57	110.8	-41.23	peak
4		5725.000	70.67	1.67	72.34	122.2	-49.86	peak

Mode3 / Polarization: Horizontal / CH: H



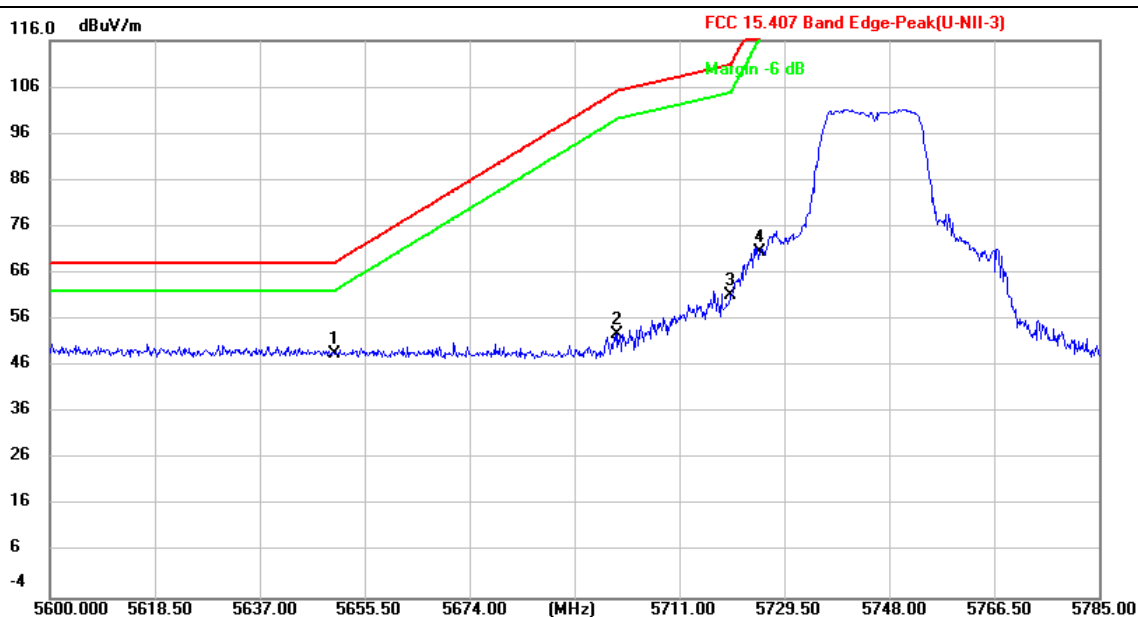
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	52.82	1.54	54.36	122.2	-67.84	peak
2		5855.000	51.95	1.55	53.50	110.8	-57.30	peak
3		5875.000	48.15	1.53	49.68	105.2	-55.52	peak
4	*	5925.000	47.74	1.44	49.18	68.20	-19.02	peak

Mode3 / Polarization: Vertical / CH: H



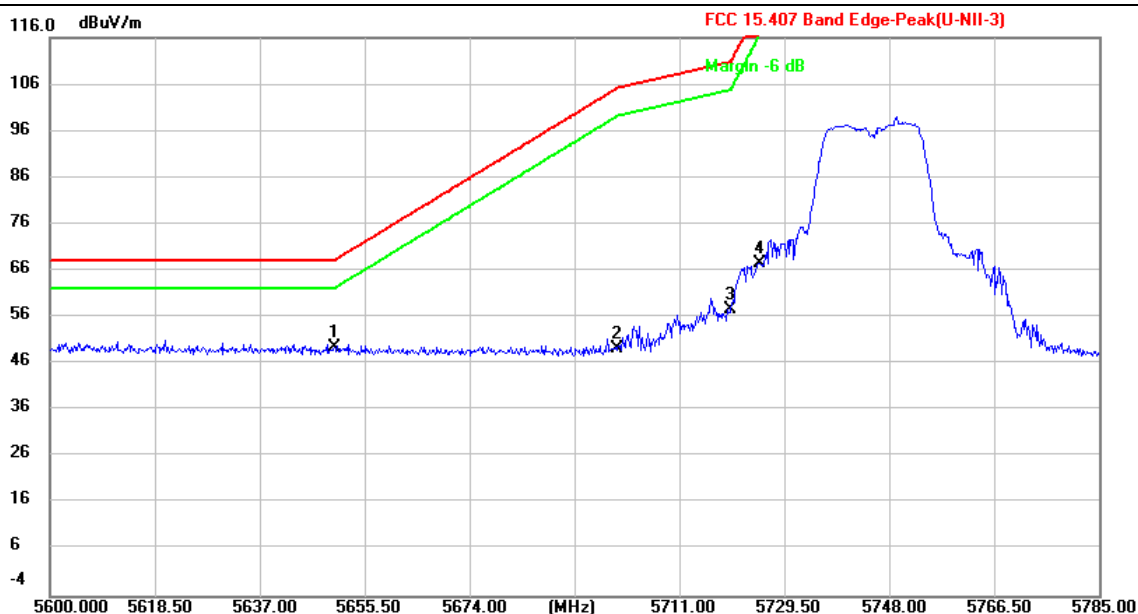
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	49.01	1.54	50.55	122.2	-71.65	peak
2		5855.000	49.04	1.55	50.59	110.8	-60.21	peak
3		5875.000	48.04	1.53	49.57	105.2	-55.63	peak
4	*	5925.000	47.59	1.44	49.03	68.20	-19.17	peak

Mode4 / Polarization: Horizontal / CH: L



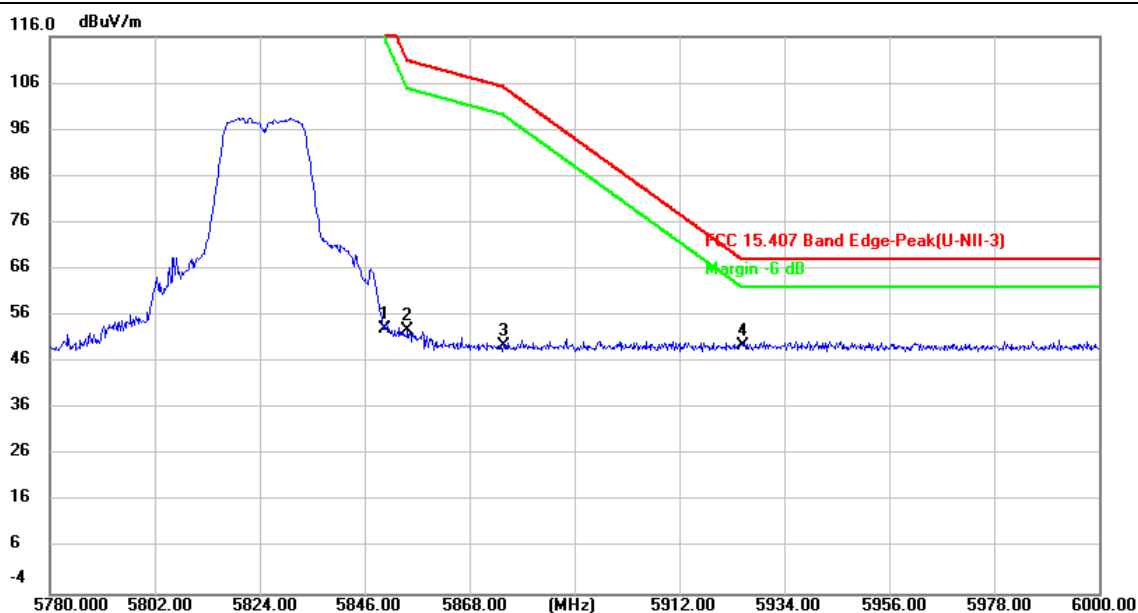
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	5650.000	46.77	1.86	48.63	68.20	-19.57	peak
2		5700.000	51.08	1.71	52.79	105.2	-52.41	peak
3		5720.000	59.51	1.69	61.20	110.8	-49.60	peak
4		5725.000	69.00	1.67	70.67	122.2	-51.53	peak

Mode4 / Polarization: Vertical / CH: L



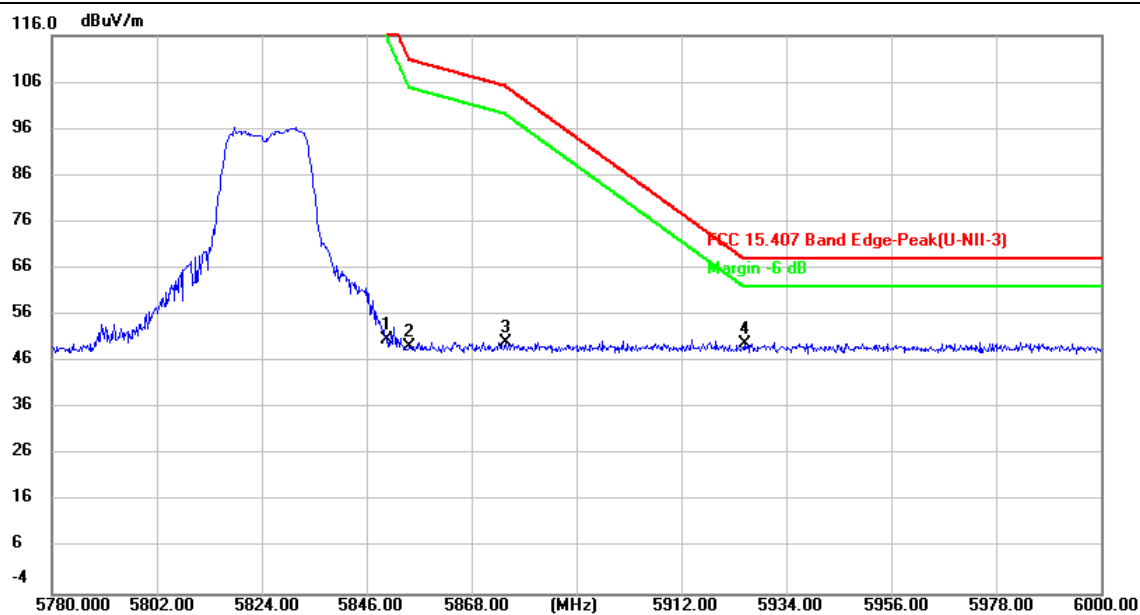
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1	*	5650.000	47.72	1.86	49.58	68.20	-18.62	peak
2		5700.000	47.63	1.71	49.34	105.2	-55.86	peak
3		5720.000	55.91	1.69	57.60	110.8	-53.20	peak
4		5725.000	66.00	1.67	67.67	122.2	-54.53	peak

Mode4 / Polarization: Horizontal / CH: H



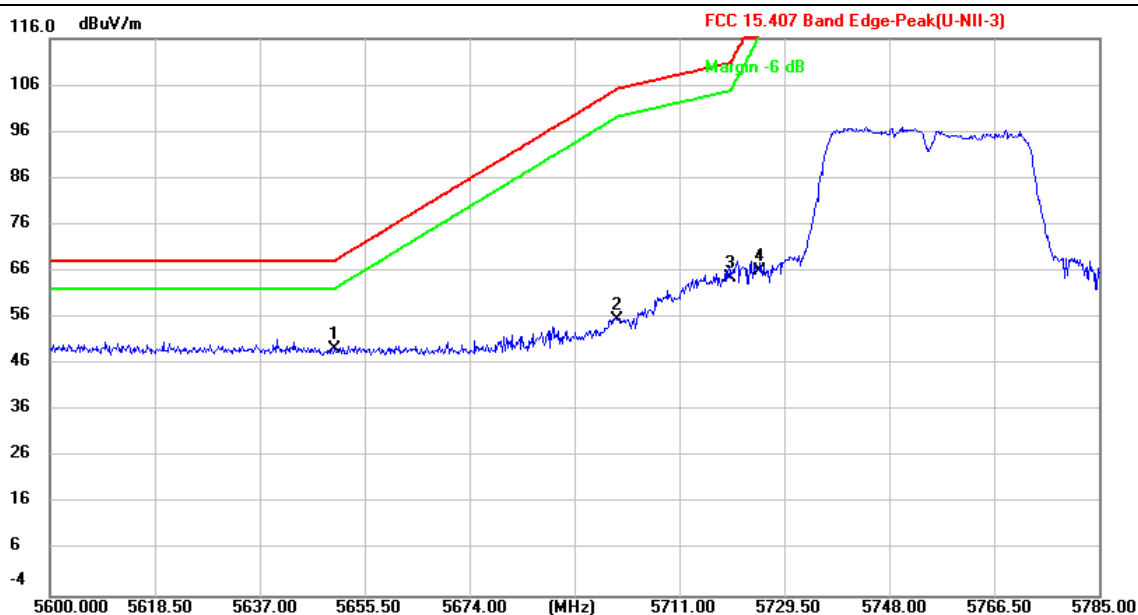
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	51.61	1.54	53.15	122.2	-69.05	peak
2		5855.000	51.22	1.55	52.77	110.8	-58.03	peak
3		5875.000	48.06	1.53	49.59	105.2	-55.61	peak
4	*	5925.000	48.00	1.44	49.44	68.20	-18.76	peak

Mode4 / Polarization: Vertical / CH: H



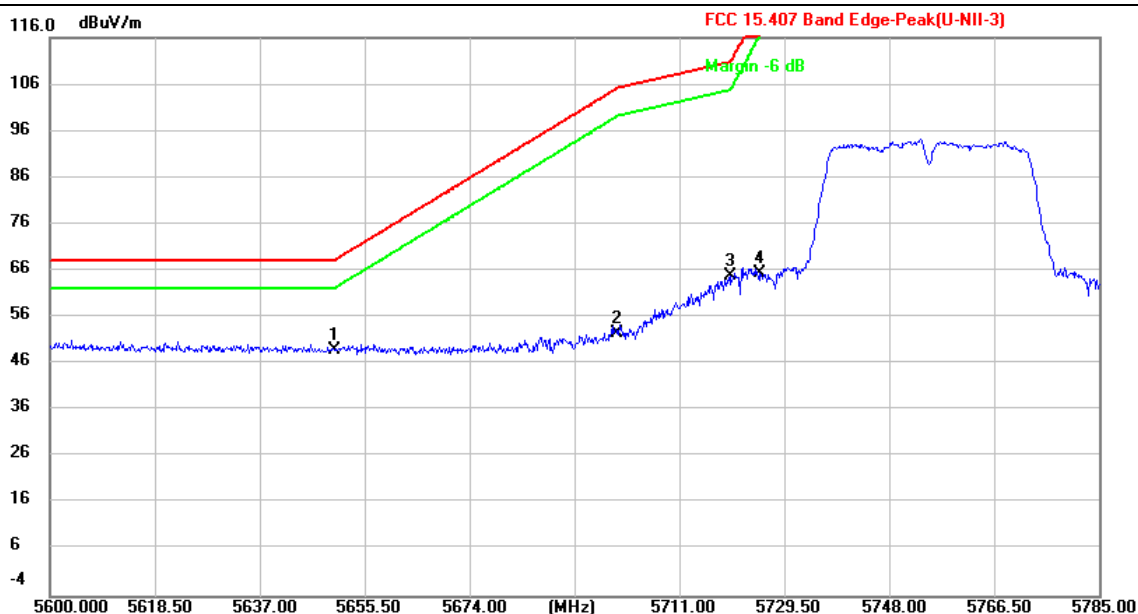
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	49.34	1.54	50.88	122.2	-71.32	peak
2		5855.000	47.58	1.55	49.13	110.8	-61.67	peak
3		5875.000	48.48	1.53	50.01	105.2	-55.19	peak
4	*	5925.000	48.39	1.44	49.83	68.20	-18.37	peak

Mode5 / Polarization: Horizontal / CH: L



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	47.51	1.86	49.37	68.20	-18.83	peak
2		5700.000	53.77	1.71	55.48	105.2	-49.72	peak
3		5720.000	62.79	1.69	64.48	110.8	-46.32	peak
4		5725.000	64.49	1.67	66.16	122.2	-56.04	peak

Mode5 / Polarization: Vertical / CH: L



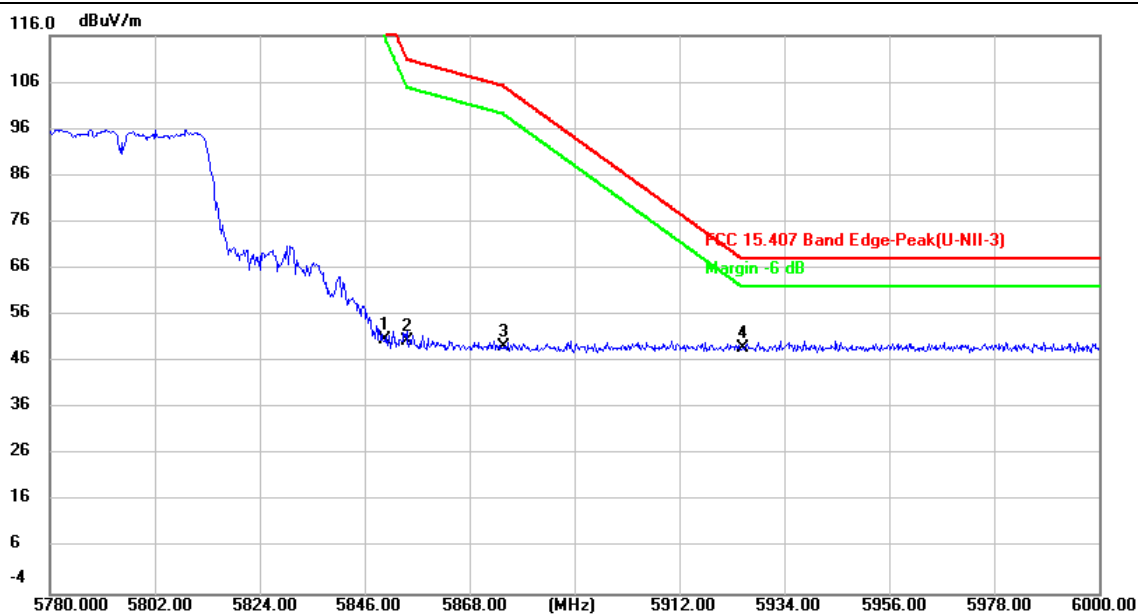
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1	*	5650.000	47.09	1.86	48.95	68.20	-19.25	peak
2		5700.000	50.83	1.71	52.54	105.2	-52.66	peak
3		5720.000	63.13	1.69	64.82	110.8	-45.98	peak
4		5725.000	63.68	1.67	65.35	122.2	-56.85	peak

Mode5 / Polarization: Horizontal / CH: H



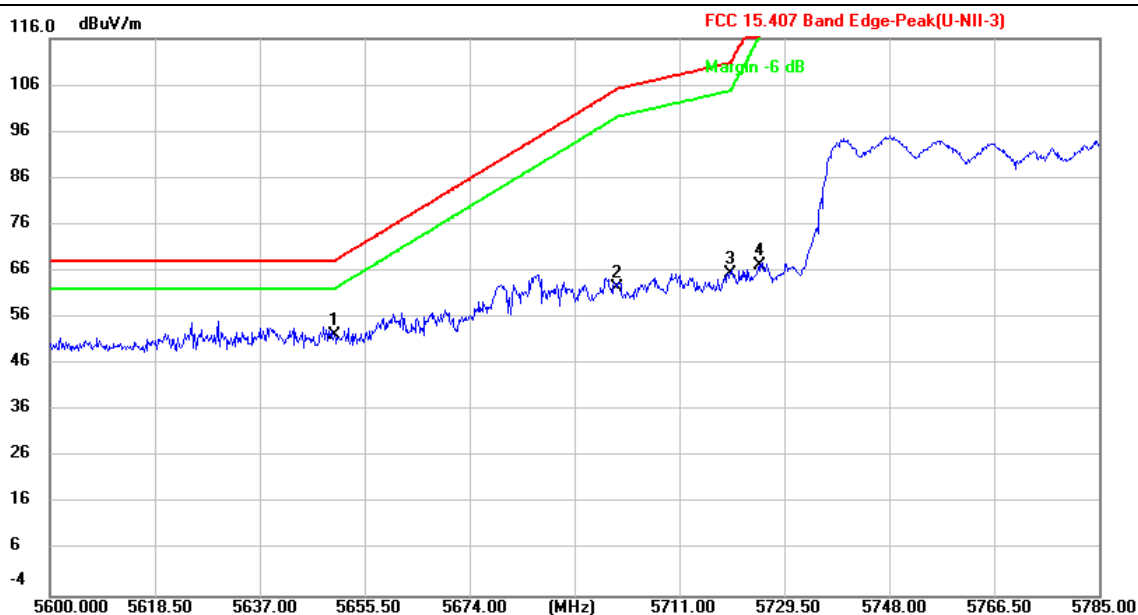
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	49.20	1.54	50.74	122.2	-71.46	peak
2		5855.000	48.80	1.55	50.35	110.8	-60.45	peak
3		5875.000	47.58	1.53	49.11	105.2	-56.09	peak
4	*	5925.000	47.51	1.44	48.95	68.20	-19.25	peak

Mode5 / Polarization: Vertical / CH: H



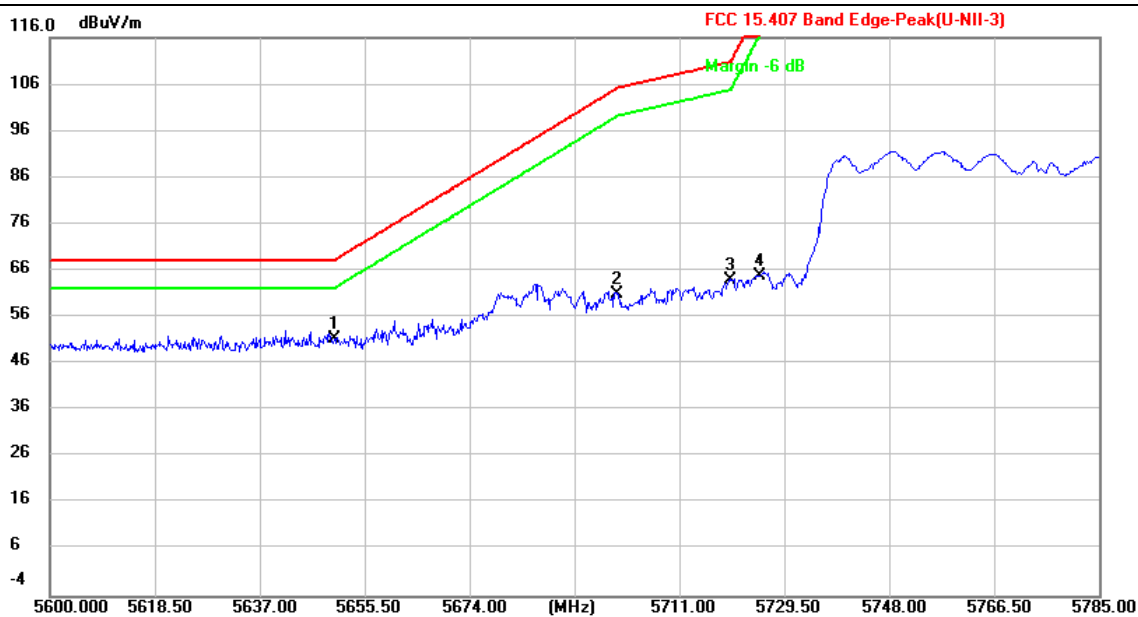
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	49.20	1.54	50.74	122.2	-71.46	peak
2		5855.000	48.80	1.55	50.35	110.8	-60.45	peak
3		5875.000	47.58	1.53	49.11	105.2	-56.09	peak
4	*	5925.000	47.51	1.44	48.95	68.20	-19.25	peak

Mode6 / Polarization: Horizontal / CH: L



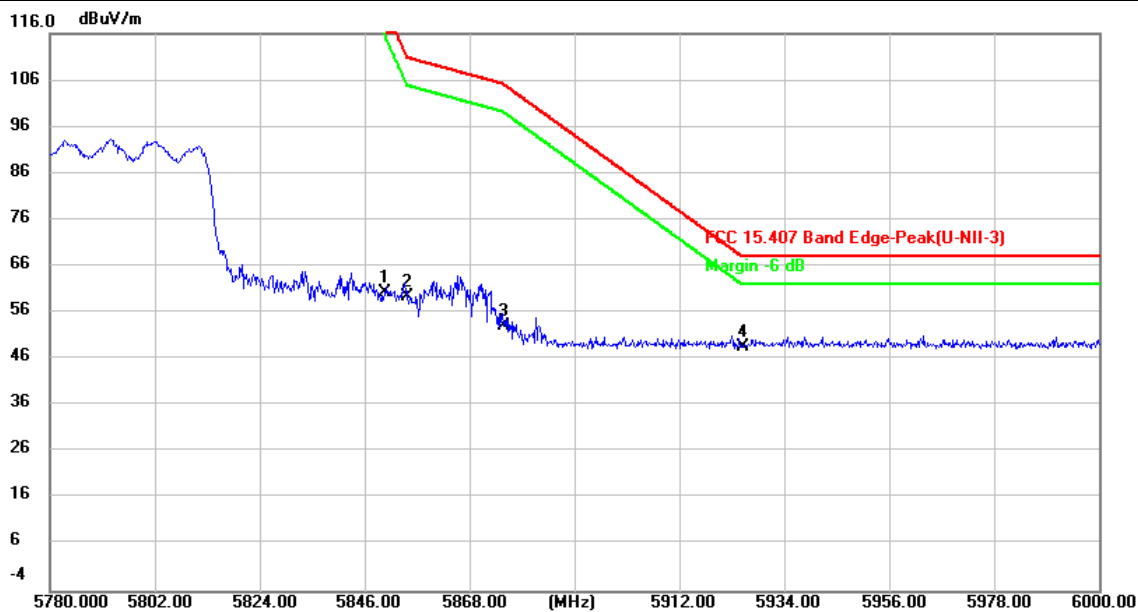
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	*	5650.000	50.33	1.86	52.19	68.20	-16.01	peak
2		5700.000	60.87	1.71	62.58	105.2	-42.62	peak
3		5720.000	63.67	1.69	65.36	110.8	-45.44	peak
4		5725.000	65.69	1.67	67.36	122.2	-54.84	peak

Mode6 / Polarization: Vertical / CH: L



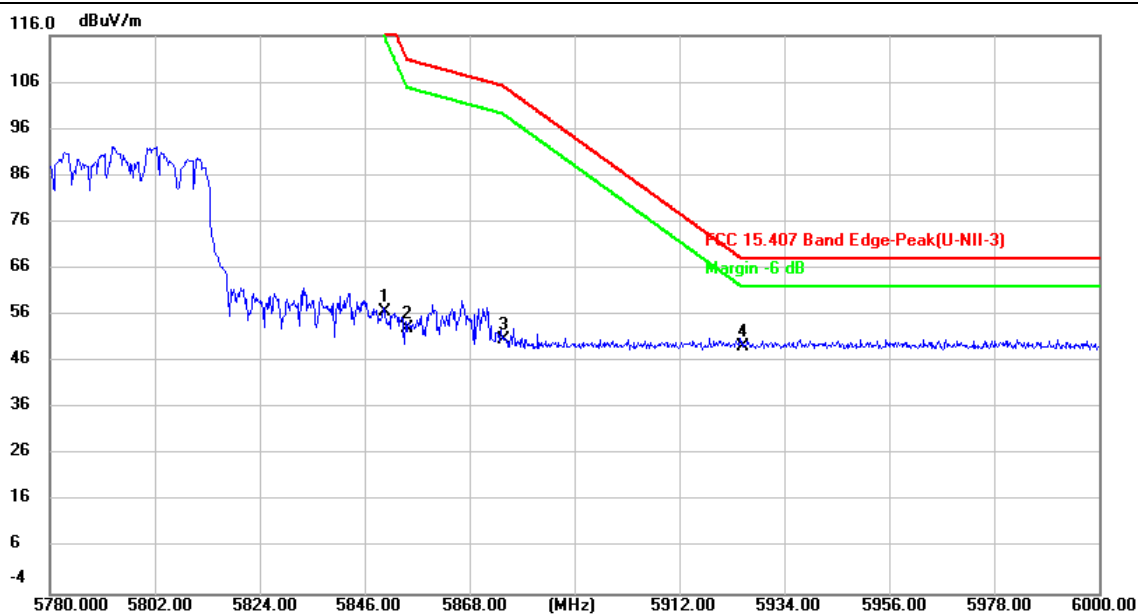
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	*	5650.000	49.57	1.86	51.43	68.20	-16.77	peak
2		5700.000	59.27	1.71	60.98	105.2	-44.22	peak
3		5720.000	62.20	1.69	63.89	110.8	-46.91	peak
4		5725.000	63.30	1.67	64.97	122.2	-57.23	peak

Mode6 / Polarization: Horizontal / CH: H



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	58.80	1.54	60.34	122.2	-61.86	peak
2		5855.000	57.78	1.55	59.33	110.8	-51.47	peak
3		5875.000	51.75	1.53	53.28	105.2	-51.92	peak
4	*	5925.000	47.11	1.44	48.55	68.20	-19.65	peak

Mode6 / Polarization: Vertical / CH: H



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		5850.000	55.27	1.54	56.81	122.2	-65.39	peak
2		5855.000	51.48	1.55	53.03	110.8	-57.77	peak
3		5875.000	49.19	1.53	50.72	105.2	-54.48	peak
4	*	5925.000	47.78	1.44	49.22	68.20	-18.98	peak

6.7 Undesirable emission limits (below 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(9)																								
Test Limit:	Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in § 15.209. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table: <table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.	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
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																							
Test Method:	ANSI C63.10-2013, section 12.7.4, 12.7.5																								
Procedure:	Below 1GHz: a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete.																								

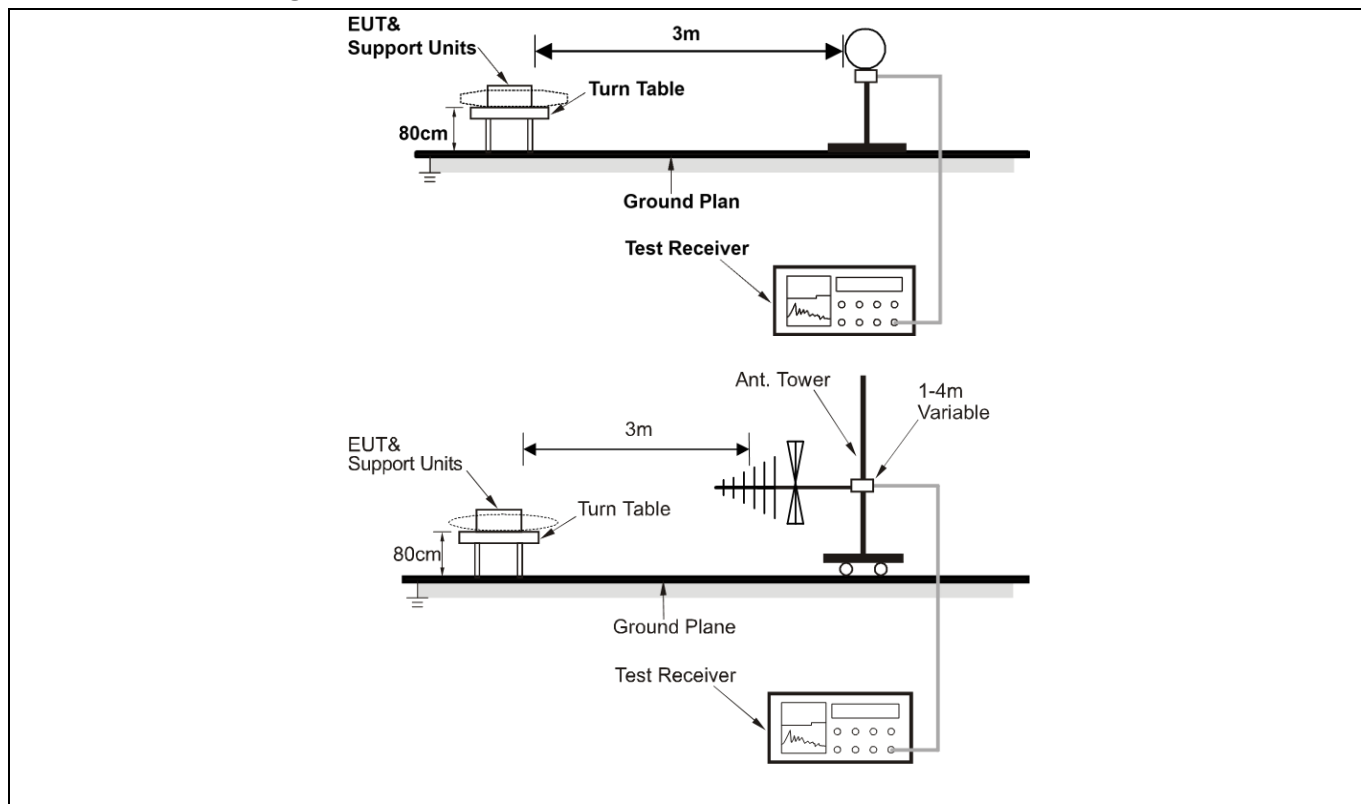
	Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. Above 1GHz: a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
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6.7.1 E.U.T. Operation:

Operating Environment:

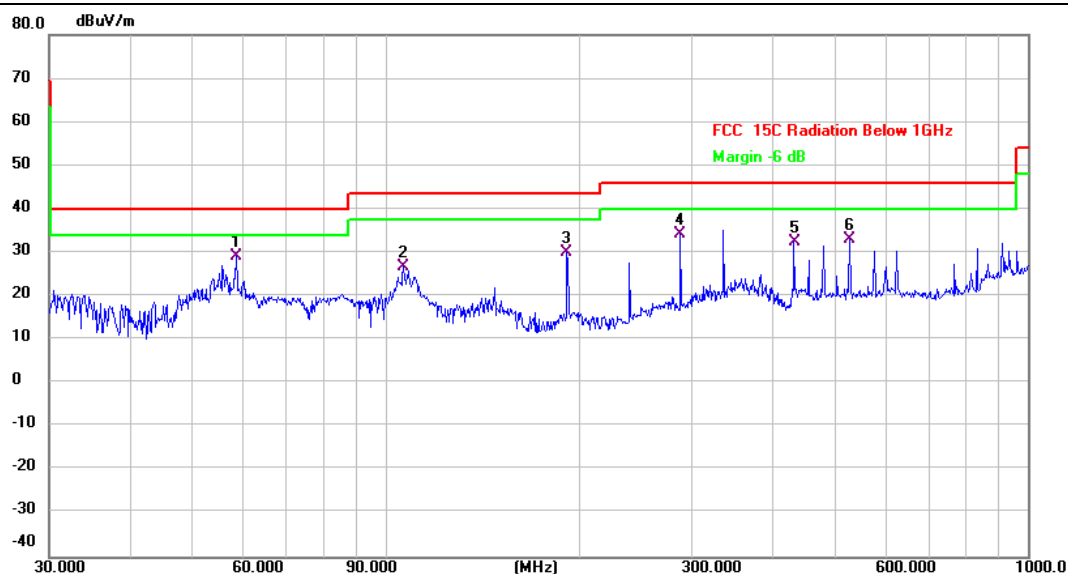
Temperature:	0 °C	Humidity:	0 %	Atmospheric Pressure:	0 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1				

6.7.2 Test Setup Diagram:



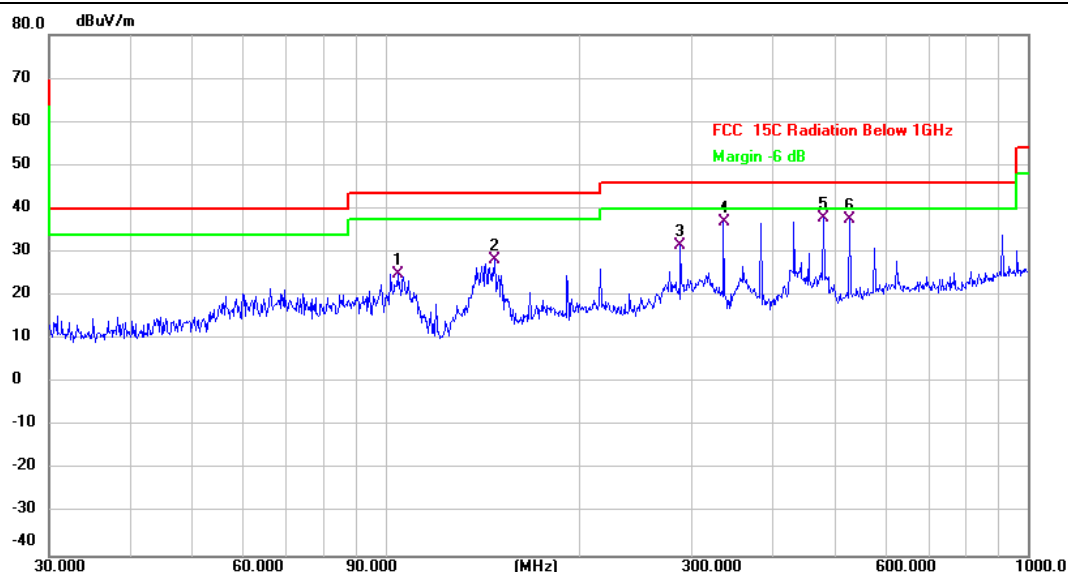
6.7.3 Test Data:

Mode1 / Polarization: Horizontal / CH: L



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV/m	dBuV/m	dB	
1	*	58.6126	40.20	-10.98	29.22	40.00	-10.78	QP
2		106.7587	37.32	-10.65	26.67	43.50	-16.83	QP
3		191.7450	40.52	-10.52	30.00	43.50	-13.50	QP
4		287.9904	42.22	-8.07	34.15	46.00	-11.85	QP
5		432.5457	38.46	-5.90	32.56	46.00	-13.44	QP
6		528.2458	38.01	-4.91	33.10	46.00	-12.90	QP

Mode1 / Polarization: Vertical / CH: L



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over
		MHz	Level	Factor	ment		
			dBuV	dB	dBuV/m	dBuV/m	dB
1		104.5360	35.46	-10.58	24.88	43.50	-18.62
2		147.9214	40.86	-12.50	28.36	43.50	-15.14
3		287.9904	39.74	-8.07	31.67	46.00	-14.33
4		336.0351	43.88	-7.00	36.88	46.00	-9.12
5	*	480.5276	43.65	-5.91	37.74	46.00	-8.26
6		528.2458	42.39	-4.91	37.48	46.00	-8.52

6.8 Undesirable emission limits (above 1GHz)

Test Requirement:	47 CFR Part 15.407(b)(1) 47 CFR Part 15.407(b)(4) 47 CFR Part 15.407(b)(10)																																																																										
Test Limit:	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 solely in the 5.725-5.850 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. <table border="1"> <thead> <tr> <th>MHz</th><th>MHz</th><th>MHz</th><th>GHz</th></tr> </thead> <tbody> <tr> <td>0.090-0.110</td><td>16.42-16.423</td><td>399.9-410</td><td>4.5-5.15</td></tr> <tr> <td>¹ 0.495-0.505</td><td>16.69475-16.69525</td><td>608-614</td><td>5.35-5.46</td></tr> <tr> <td>2.1735-2.1905</td><td>16.80425-16.80475</td><td>960-1240</td><td>7.25-7.75</td></tr> <tr> <td>4.125-4.128</td><td>25.5-25.67</td><td>1300-1427</td><td>8.025-8.5</td></tr> <tr> <td>4.17725-4.17775</td><td>37.5-38.25</td><td>1435-1626.5</td><td>9.0-9.2</td></tr> <tr> <td>4.20725-4.20775</td><td>73-74.6</td><td>1645.5-1646.5</td><td>9.3-9.5</td></tr> <tr> <td>6.215-6.218</td><td>74.8-75.2</td><td>1660-1710</td><td>10.6-12.7</td></tr> <tr> <td>6.26775-6.26825</td><td>108-121.94</td><td>1718.8-1722.2</td><td>13.25-13.4</td></tr> <tr> <td>6.31175-6.31225</td><td>123-138</td><td>2200-2300</td><td>14.47-14.5</td></tr> <tr> <td>8.291-8.294</td><td>149.9-150.05</td><td>2310-2390</td><td>15.35-16.2</td></tr> <tr> <td>8.362-8.366</td><td>156.52475-156.52525</td><td>2483.5-2500</td><td>17.7-21.4</td></tr> <tr> <td>8.37625-8.38675</td><td>156.7-156.9</td><td>2690-2900</td><td>22.01-23.12</td></tr> <tr> <td>8.41425-8.41475</td><td>162.0125-167.17</td><td>3260-3267</td><td>23.6-24.0</td></tr> <tr> <td>12.29-12.293</td><td>167.72-173.2</td><td>3332-3339</td><td>31.2-31.8</td></tr> <tr> <td>12.51975-12.52025</td><td>240-285</td><td>3345.8-3358</td><td>36.43-36.5</td></tr> <tr> <td>12.57675-12.57725</td><td>322-335.4</td><td>3600-4400</td><td>(²)</td></tr> <tr> <td>13.36-13.41</td><td></td><td></td><td></td></tr> </tbody> </table> ¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz. ² Above 38.6 The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in § 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in § 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in § 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in § 15.35 apply to these measurements. Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:			MHz	MHz	MHz	GHz	0.090-0.110	16.42-16.423	399.9-410	4.5-5.15	¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46	2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75	4.125-4.128	25.5-25.67	1300-1427	8.025-8.5	4.17725-4.17775	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			
MHz	MHz	MHz	GHz																																																																								
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15																																																																								
¹ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46																																																																								
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75																																																																								
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5																																																																								
4.17725-4.17775	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																																																																											

	<table><tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr><tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr><tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr><tr><td>1.705-30.0</td><td>30</td><td>30</td></tr><tr><td>30-88</td><td>100 **</td><td>3</td></tr><tr><td>88-216</td><td>150 **</td><td>3</td></tr><tr><td>216-960</td><td>200 **</td><td>3</td></tr><tr><td>Above 960</td><td>500</td><td>3</td></tr></table> ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. In the emission table above, the tighter limit applies at the band edges. The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.	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
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																							
Test Method:	ANSI C63.10-2013, section 12.7.4, 12.7.6, 12.7.7																								
Procedure:	Above 1GHz: a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet. g. Test the EUT in the lowest channel, the middle channel, the Highest channel. h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case. i. Repeat above procedures until all frequencies measured was complete. Remark: 1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor 2. Scan from 18GHz to 40GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. 3. As shown in this section, for frequencies above 1GHz, the field strength																								

	limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report. 4. The disturbance above 18GHz were very low and the harmonics were the highest point could be found when testing, so only the above harmonics had been displayed.
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6.8.1 E.U.T. Operation:

Operating Environment:					
Temperature:	0 °C	Humidity:	0 %	Atmospheric Pressure:	0 kPa
Pre test mode:	Mode1, Mode2, Mode3, Mode4, Mode5, Mode6				
Final test mode:	Mode1				

6.8.2 Test Data:

U-NII 1:

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		10360.00	42.60	6.93	49.53	74.00	-24.47	peak
2		10360.00	31.18	6.93	38.11	54.00	-15.89	AVG
3		15540.00	43.77	13.65	57.42	74.00	-16.58	peak
4	*	15540.00	33.58	13.65	47.23	54.00	-6.77	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		10360.00	43.88	6.93	50.81	74.00	-23.19	peak
2		10360.00	33.30	6.93	40.23	54.00	-13.77	AVG
3		15540.00	45.06	13.65	58.71	74.00	-15.29	peak
4	*	15540.00	34.71	13.65	48.36	54.00	-5.64	AVG

Mode1 / Polarization: Horizontal / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		10440.00	41.15	6.98	48.13	74.00	-25.87	peak
2		10440.00	31.07	6.98	38.05	54.00	-15.95	AVG
3		15660.00	44.12	13.69	57.81	74.00	-16.19	peak
4	*	15660.00	33.77	13.69	47.46	54.00	-6.54	AVG

Mode1 / Polarization: Vertical / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		10440.00	41.55	6.98	48.53	74.00	-25.47	peak
2		10440.00	31.23	6.98	38.21	54.00	-15.79	AVG
3		15660.00	45.85	13.69	59.54	74.00	-14.46	peak
4	*	15660.00	35.75	13.69	49.44	54.00	-4.56	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		10480.00	41.98	7.00	48.98	74.00	-25.02	peak
2		10480.00	31.69	7.00	38.69	54.00	-15.31	AVG
3		15720.00	43.55	13.63	57.18	74.00	-16.82	peak
4	*	15720.00	33.48	13.63	47.11	54.00	-6.89	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		10480.00	41.04	7.00	48.04	74.00	-25.96	peak
2		10480.00	30.59	7.00	37.59	54.00	-16.41	AVG
3		15720.00	44.62	13.63	58.25	74.00	-15.75	peak
4	*	15720.00	34.48	13.63	48.11	54.00	-5.89	AVG

U-NII 3:

Mode1 / Polarization: Horizontal / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11650.00	46.24	9.51	55.75	74.00	-18.25	peak
2		11650.00	33.80	9.51	43.31	54.00	-10.69	AVG
3		17475.00	43.46	13.76	57.22	74.00	-16.78	peak
4	*	17475.00	31.40	13.76	45.16	54.00	-8.84	AVG

Mode1 / Polarization: Vertical / CH: L

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11650.00	43.82	9.51	53.33	74.00	-20.67	peak
2		11650.00	31.75	9.51	41.26	54.00	-12.74	AVG
3		17475.00	43.08	13.76	56.84	74.00	-17.16	peak
4	*	17475.00	30.72	13.76	44.48	54.00	-9.52	AVG

Mode1 / Polarization: Horizontal / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11568.00	43.87	9.43	53.30	74.00	-20.70	peak
2		11568.00	31.70	9.43	41.13	54.00	-12.87	AVG
3		17355.00	42.94	13.44	56.38	74.00	-17.62	peak
4	*	17355.00	30.85	13.44	44.29	54.00	-9.71	AVG

Mode1 / Polarization: Vertical / CH: M

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11568.00	40.93	9.43	50.36	74.00	-23.64	peak
2		11568.00	30.92	9.43	40.35	54.00	-13.65	AVG
3		17355.00	44.01	13.44	57.45	74.00	-16.55	peak
4	*	17355.00	31.92	13.44	45.36	54.00	-8.64	AVG

Mode1 / Polarization: Horizontal / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11490.00	41.66	9.24	50.90	74.00	-23.10	peak
2		11490.00	29.11	9.24	38.35	54.00	-15.65	AVG
3		17235.00	42.31	13.34	55.65	74.00	-18.35	peak
4	*	17235.00	29.85	13.34	43.19	54.00	-10.81	AVG

Mode1 / Polarization: Vertical / CH: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		11490.00	42.96	9.24	52.20	74.00	-21.80	peak
2		11490.00	30.86	9.24	40.10	54.00	-13.90	AVG
3		17235.00	43.61	13.34	56.95	74.00	-17.05	peak
4	*	17235.00	31.18	13.34	44.52	54.00	-9.48	AVG

Photographs of the test setup

Refer to Appendix - Test Setup Photos

Photographs of the EUT

Refer to Appendix - EUT Photos

Appendix

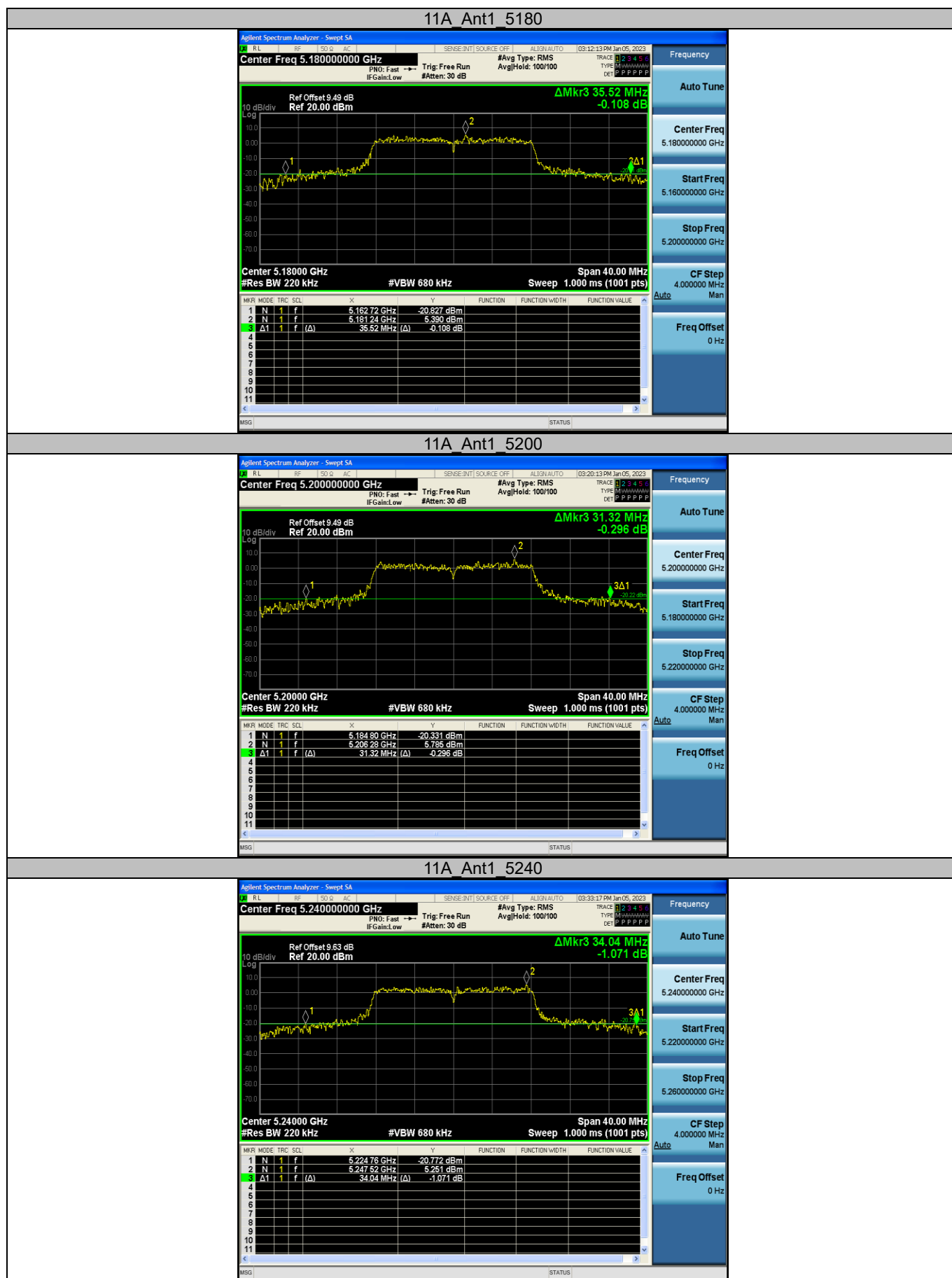
Appendix A1: Emission bandwidth (26dB bandwidth)

Test Result

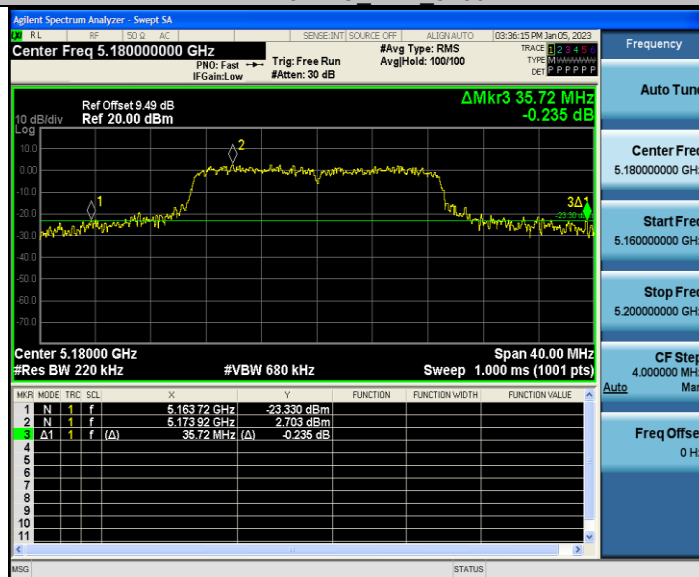
Test Mode	Antenna	Frequency [MHz]	26db EBW [MHz]
11A	Ant1	5180	35.520
		5200	31.320
		5240	34.040
11N20SISO	Ant1	5180	35.720
		5200	36.880
		5240	30.960
11N40SISO	Ant1	5190	69.600
		5230	74.160
11AC20SISO	Ant1	5180	24.760
		5200	23.560
		5240	23.240
11AC40SISO	Ant1	5190	41.760
		5230	53.200
11AC80SISO	Ant1	5210	92.480

Test Mode	Antenna	Frequency [MHz]	26db EBW [MHz]
11A	Ant1	5745	30.320
		5785	31.640
		5825	31.160
11N20SISO	Ant1	5745	34.800
		5785	25.080
		5825	21.640
11N40SISO	Ant1	5755	46.800
		5795	44.480
11AC20SISO	Ant1	5745	26.520
		5785	21.520
		5825	21.120
11AC40SISO	Ant1	5755	58.560
		5795	52.080
11AC80SISO	Ant1	5775	81.280

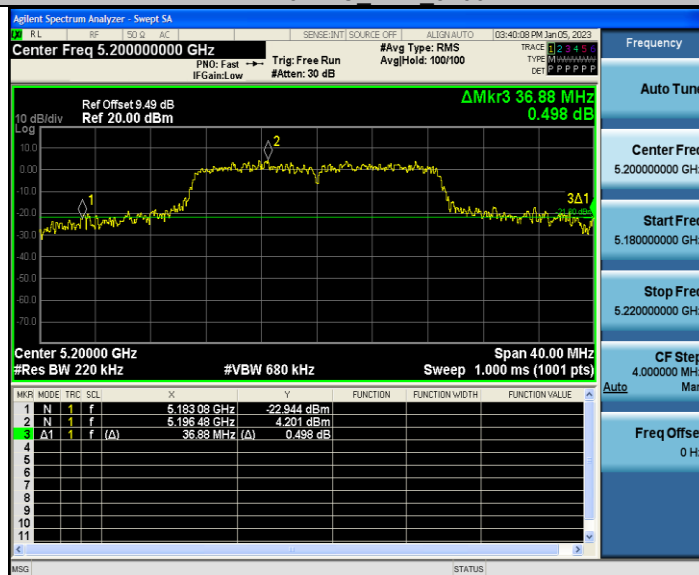
Test Graphs



11N20SISO_Ant1_5180



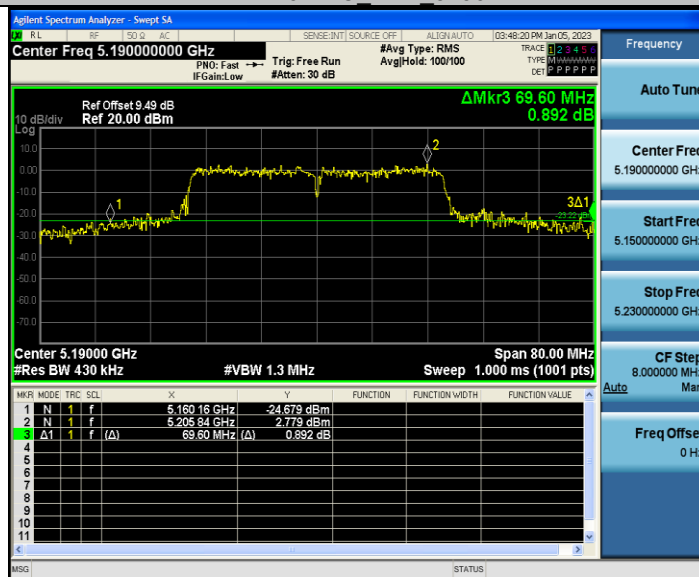
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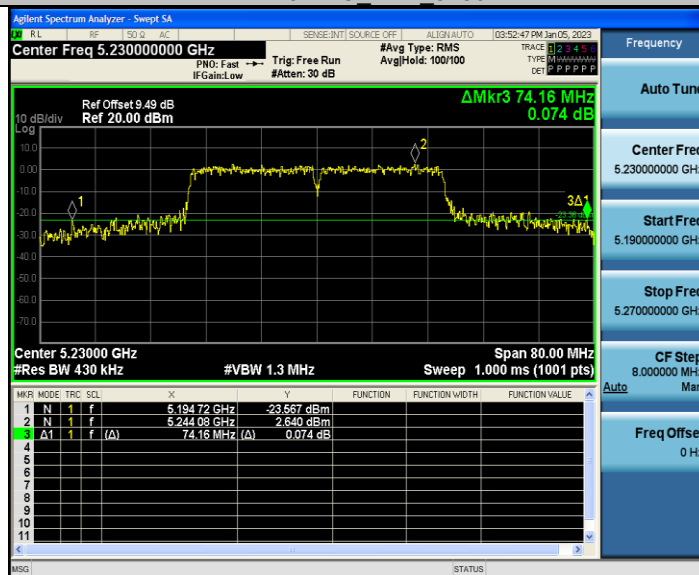
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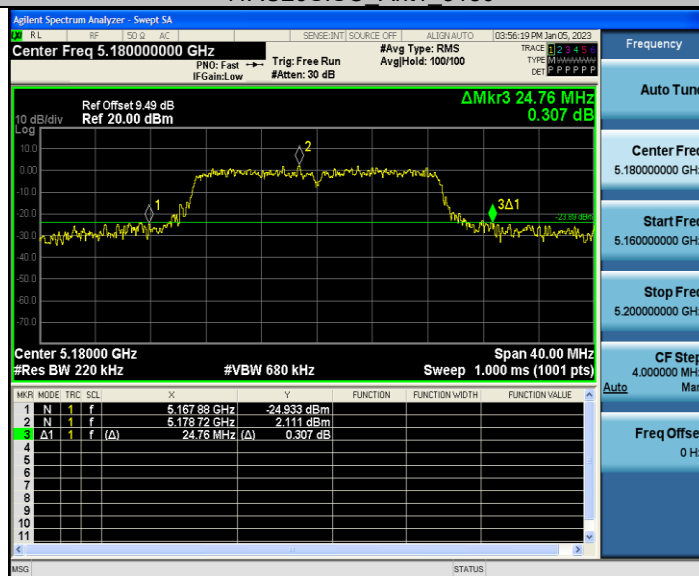
11N40SISO_Ant1_5190

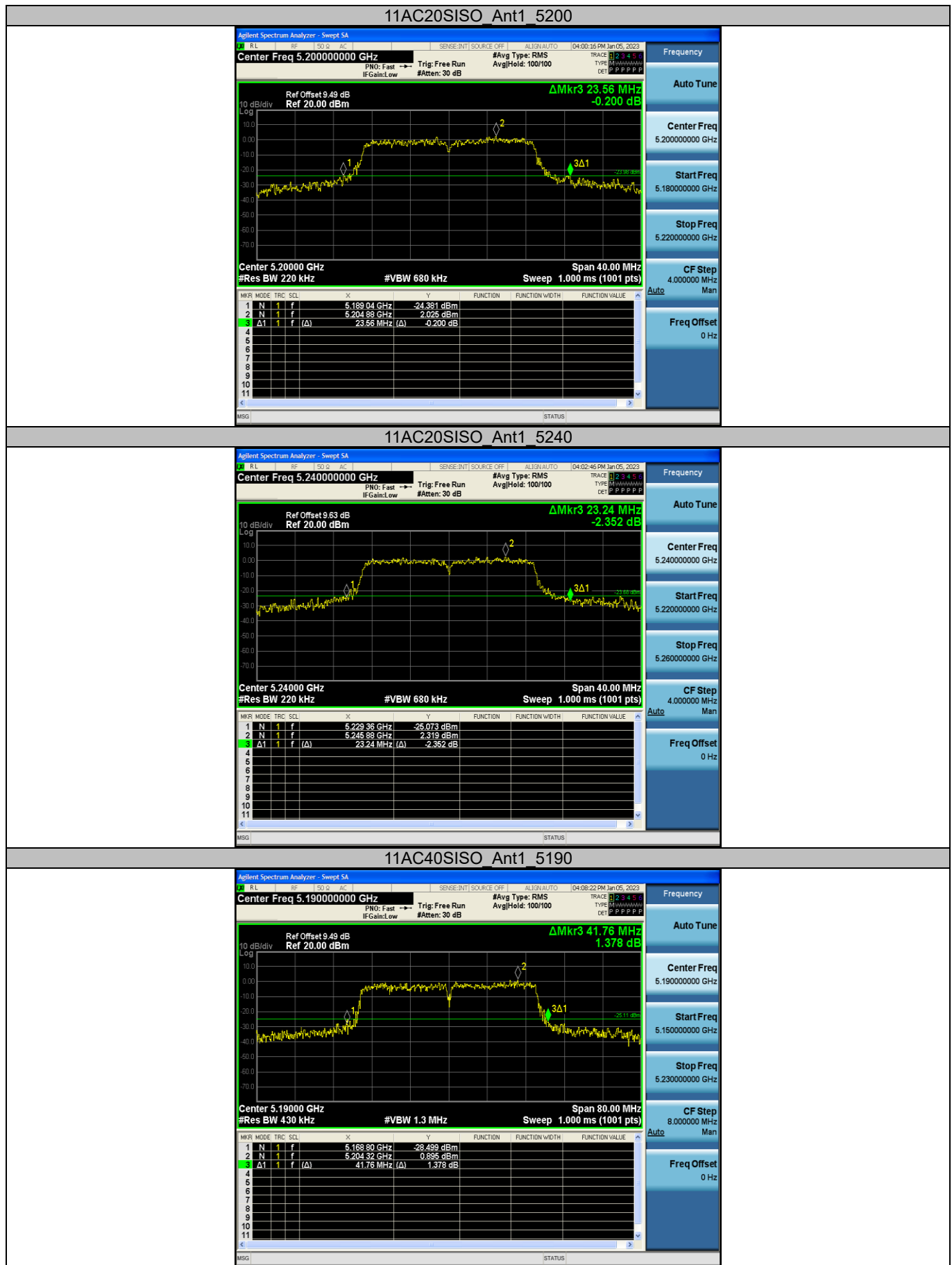


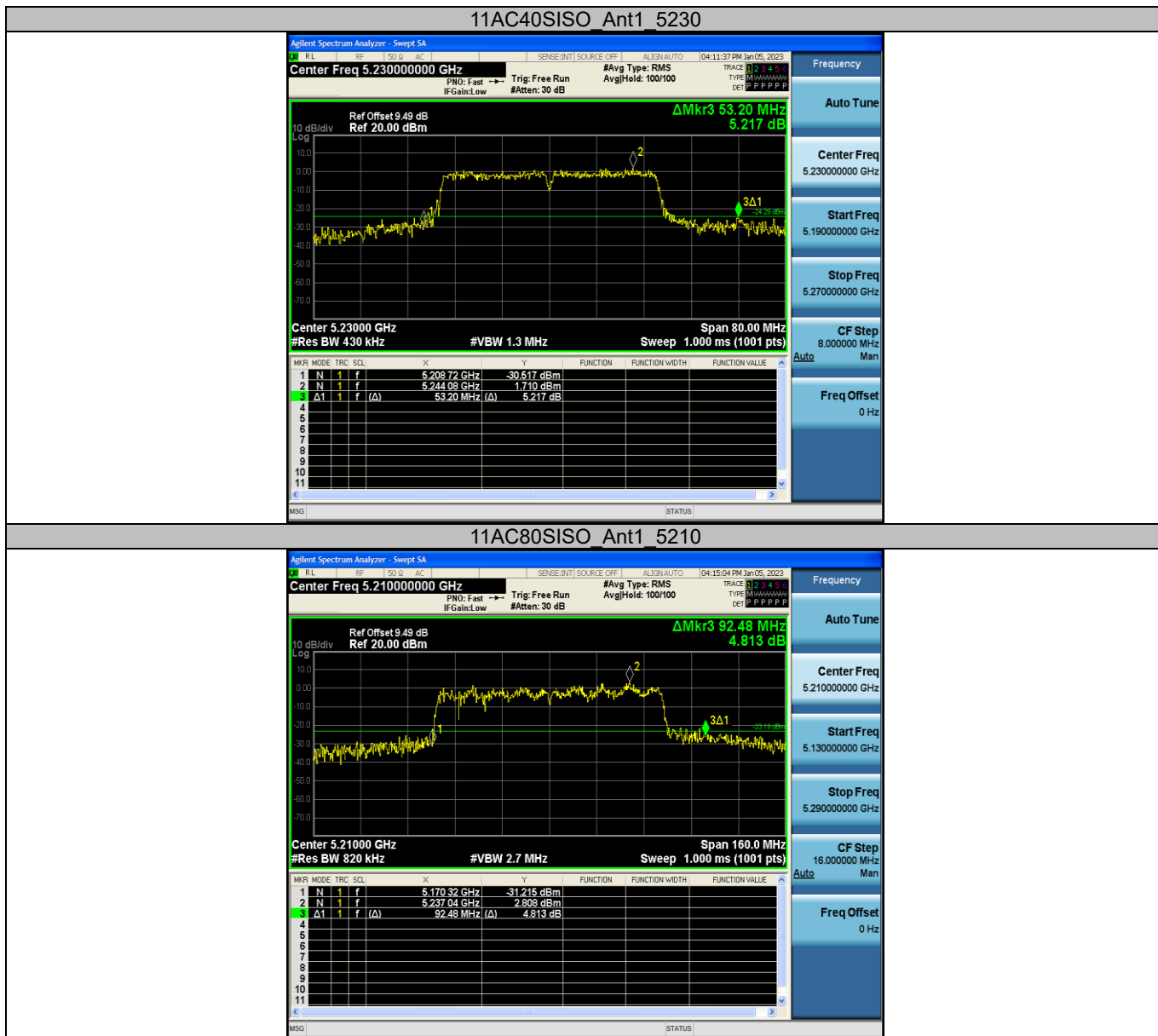
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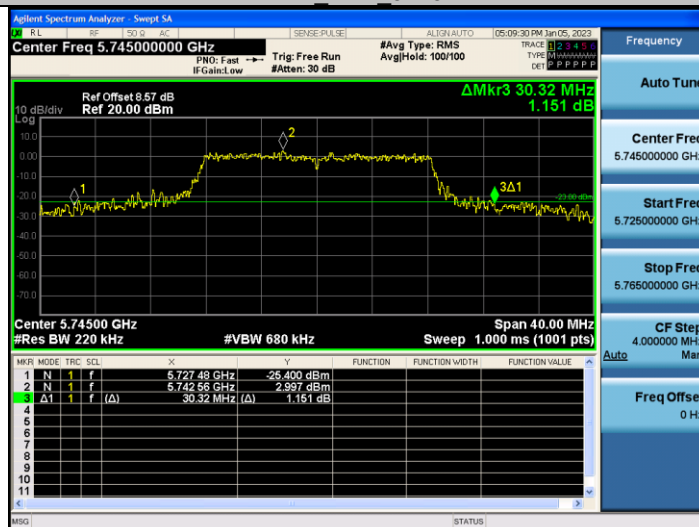
11AC20SISO_Ant1_5180







11A Ant1 5745



11A Ant1 5785



11A Ant1 5825



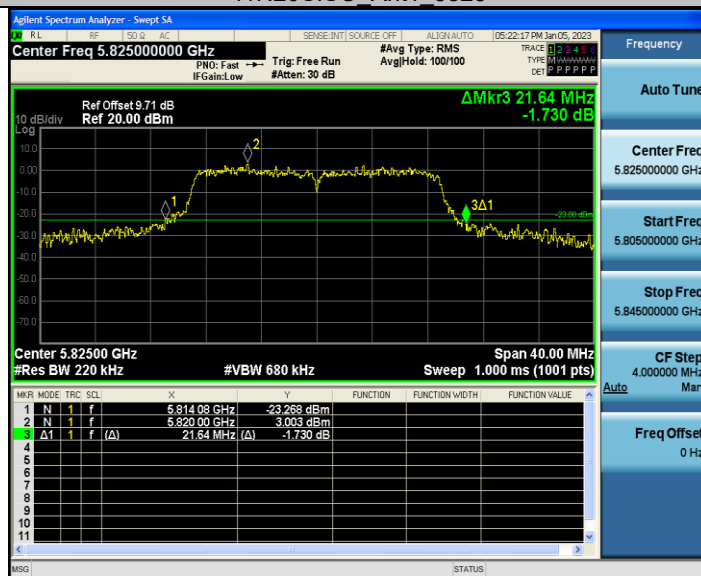
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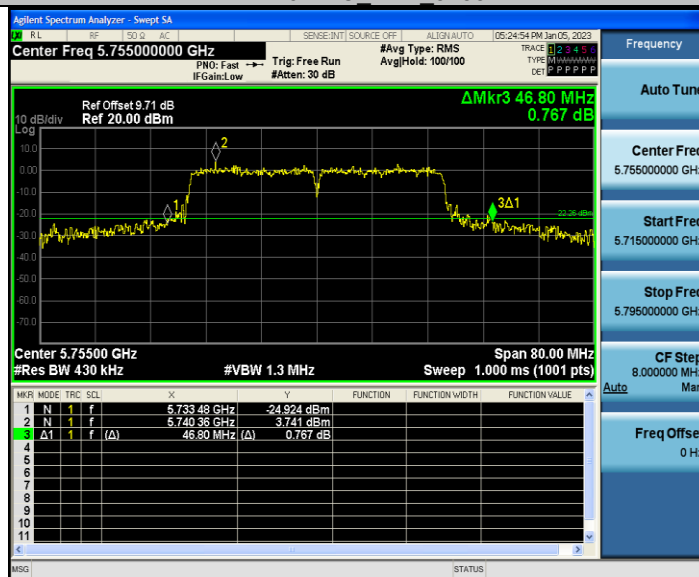
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11N20SISO_Ant1_5825



11N40SISO_Ant1_5755

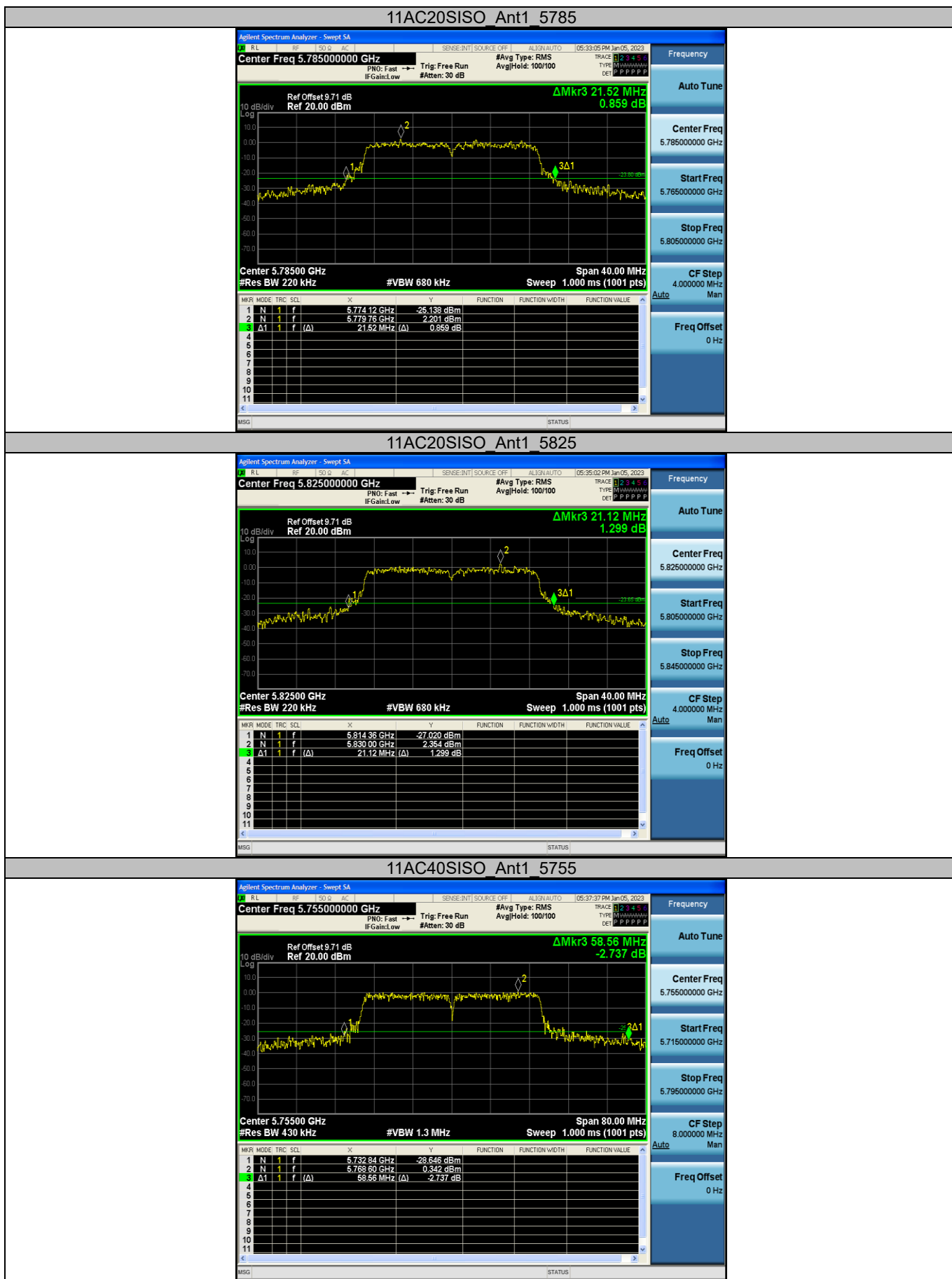


11N40SISO_Ant1_5795



11AC20SISO_Ant1_5745




11AC20SISO Ant1 5825

Frequency

Auto Tune

Center Freq 5.825000000 GHz

Start Freq 5.805000000 GHz

Stop Freq 5.845000000 GHz

CF Step 4.000000 MHz
Man

Freq Offset 0 Hz

11AC40SISO Ant1 5755

Frequency

Auto Tune

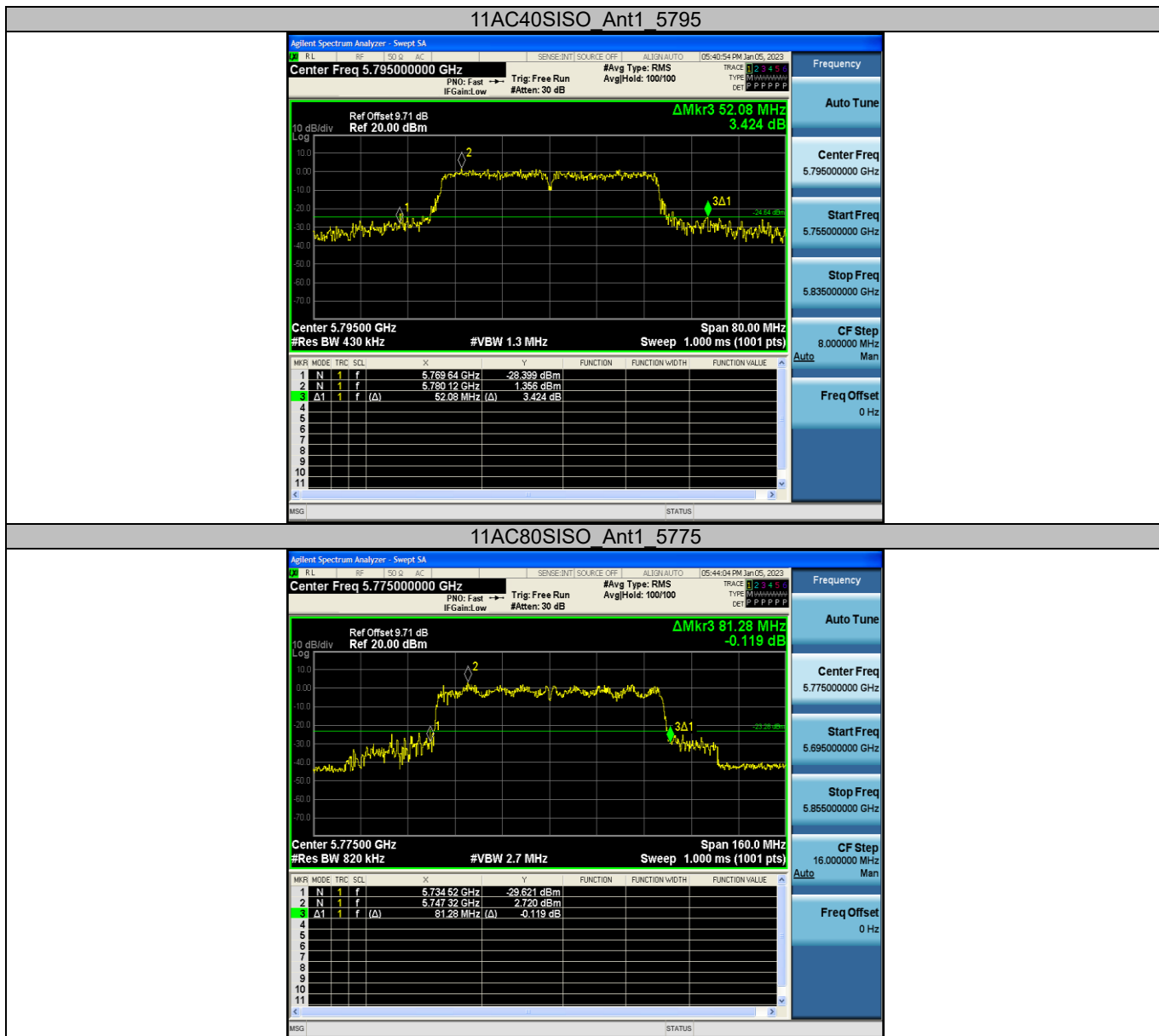
Center Freq 5.755000000 GHz

Start Freq 5.715000000 GHz

Stop Freq 5.795000000 GHz

CF Step 8.000000 MHz
Man

Freq Offset 0 Hz


11AC80SISO Ant1 5775

Frequency

Auto Tune

Center Freq
5.775000000 GHz

Start Freq
5.695000000 GHz

Stop Freq
5.855000000 GHz

CF Step
16.000000 MHz
Man

Freq Offset
0 Hz

6.9 Appendix A2: Occupied channel bandwidth

6.9.1 Test Result

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5180	18.380	5170.9604	5189.3404
		5200	18.680	5191.1085	5209.7885
		5240	18.960	5231.0213	5249.9813
11N20SISO	Ant1	5180	19.142	5170.3927	5189.5347
		5200	19.076	5190.8028	5209.8788
		5240	18.855	5230.7616	5249.6166
11N40SISO	Ant1	5190	37.215	5171.5340	5208.7490
		5230	37.275	5211.5987	5248.8737
11AC20SISO	Ant1	5180	18.251	5170.8591	5189.1101
		5200	18.182	5191.0389	5209.2209
		5240	18.175	5230.9159	5249.0909
11AC40SISO	Ant1	5190	36.465	5171.8500	5208.3150
		5230	36.753	5211.7144	5248.4674
11AC80SISO	Ant1	5210	76.032	5172.3070	5248.3390

TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]
11A	Ant1	5745	18.349	5735.7926	5754.1416
		5785	18.274	5775.7627	5794.0367
		5825	18.219	5815.8313	5834.0503
11N20SISO	Ant1	5745	19.885	5734.7601	5754.6451
		5785	18.290	5775.8021	5794.0921
		5825	18.134	5815.9285	5834.0625
11N40SISO	Ant1	5755	36.996	5736.5616	5773.5576
		5795	36.793	5776.6575	5813.4505
11AC20SISO	Ant1	5745	18.290	5735.7880	5754.0780
		5785	18.110	5775.8979	5794.0079
		5825	18.078	5815.9570	5834.0350
11AC40SISO	Ant1	5755	36.713	5736.6704	5773.3834
		5795	36.633	5776.6705	5813.3035
11AC80SISO	Ant1	5775	75.893	5737.0721	5812.9651

6.9.2 Test Graphs

