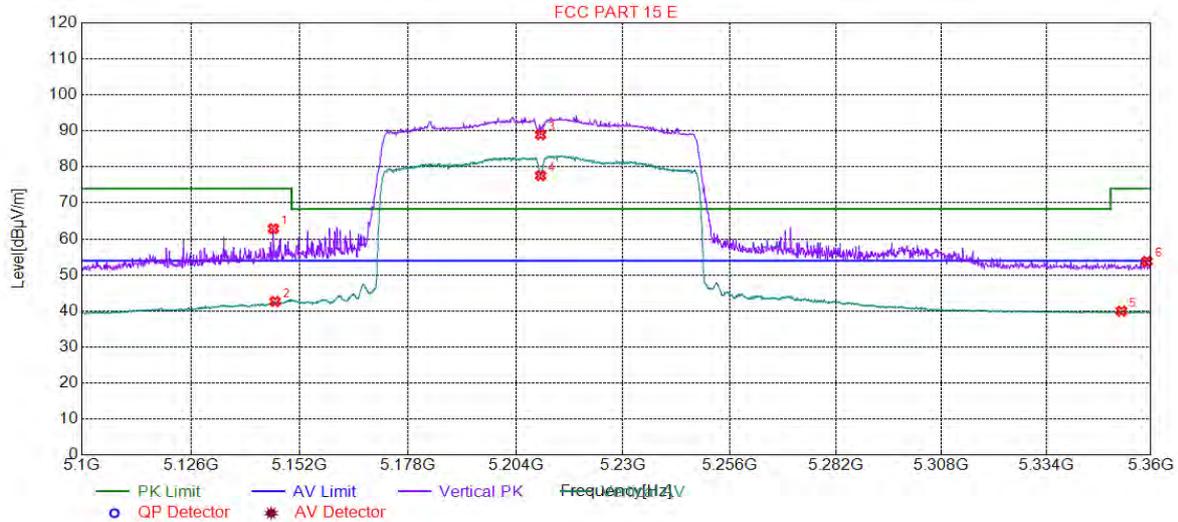


4.10.1.91 11AC80_42 ANT 1_ Vertical



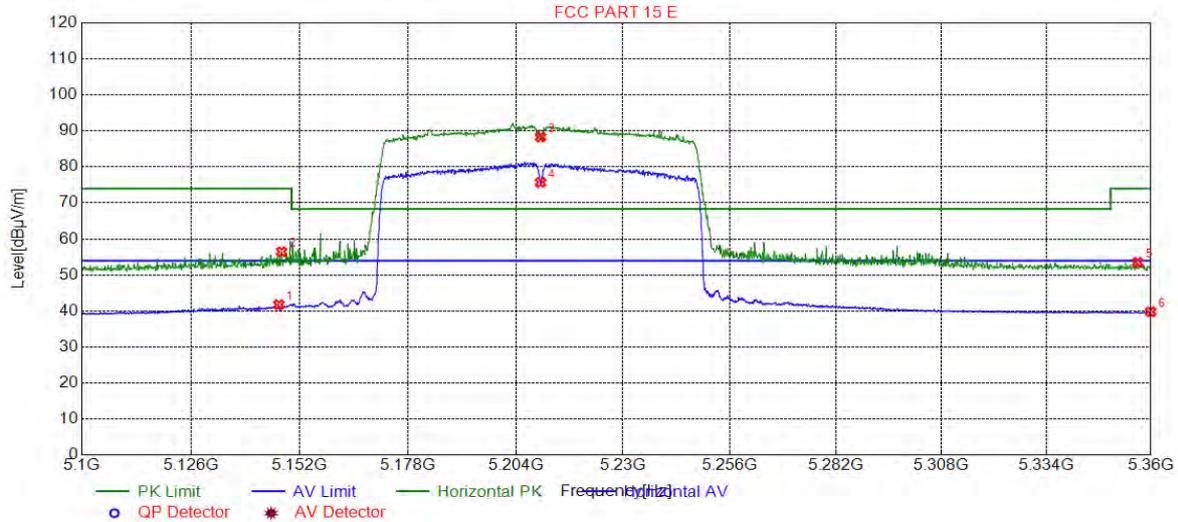
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5145.6528	62.87	15.30	74.00	11.13	280	117	Vertical
2	5146.0430	42.65	15.30	54.00	11.35	251	123	Vertical
3	5210.0000	88.96	15.39	68.30	-20.66	256	82	Vertical
4	5210.0000	77.59	15.39	54.00	-23.59	158	130	Vertical
5	5352.7164	39.97	16.04	54.00	14.03	158	137	Vertical
6	5359.0895	53.83	16.05	74.00	20.17	200	16	Vertical



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4.10.1.92 11AC80_42 ANT 1_ Horizontal

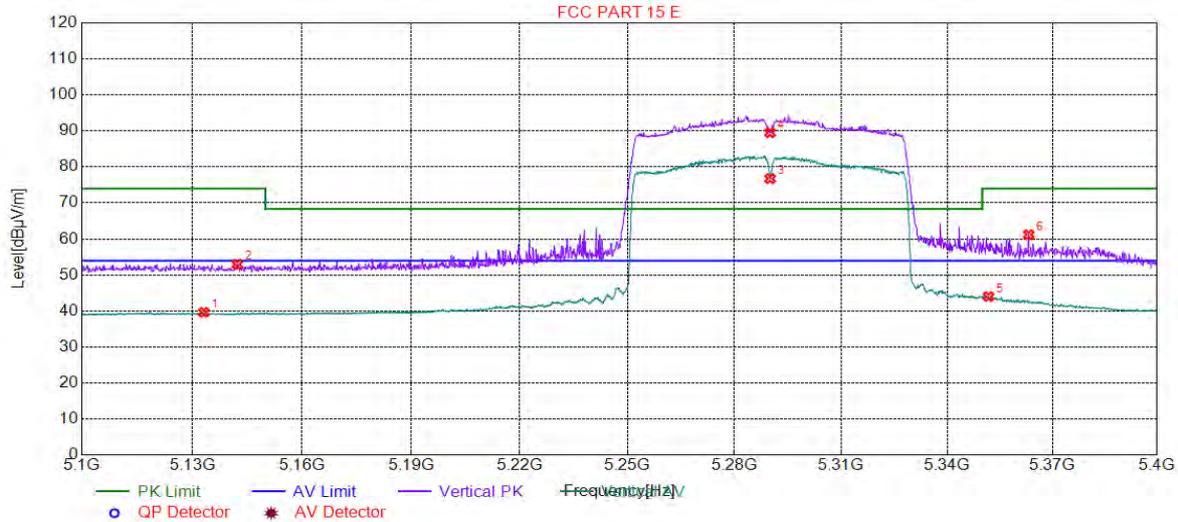


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5146.9535	41.76	15.30	54.00	12.24	248	311	Horizontal
2	5147.6038	56.47	15.30	74.00	17.53	221	311	Horizontal
3	5210.0000	88.34	15.39	68.30	-20.04	149	311	Horizontal
4	5210.0000	75.72	15.39	54.00	-21.72	210	269	Horizontal
5	5356.7484	53.53	16.05	74.00	20.47	130	276	Horizontal
6	5360.0000	39.78	16.06	54.00	14.22	216	304	Horizontal



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4.10.1.93 11AC80_58 ANT 1_ Vertical

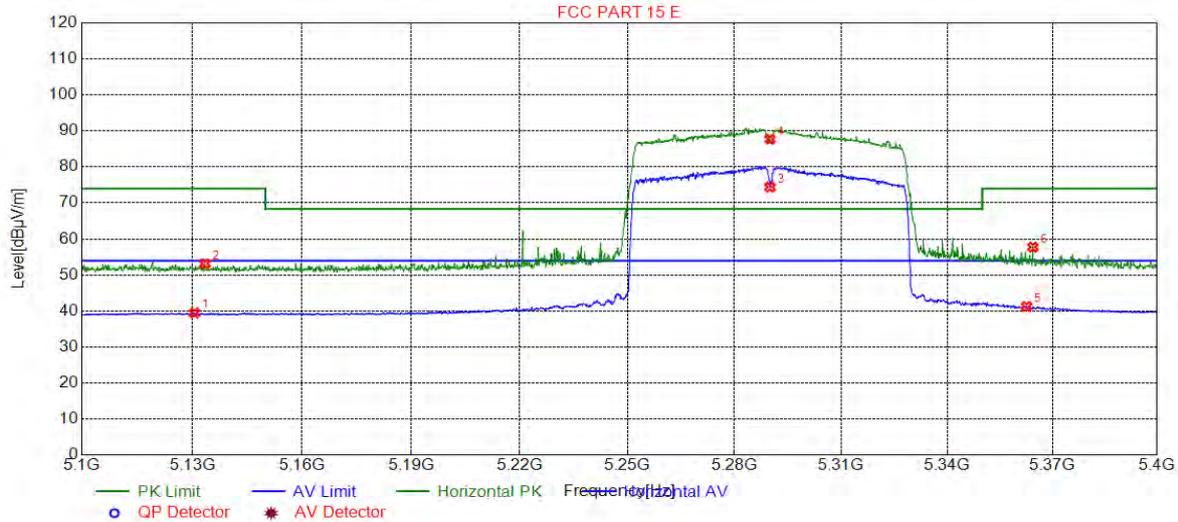


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5133.1666	39.64	15.29	54.00	14.36	219	29	Vertical
2	5142.3212	52.95	15.30	74.00	21.05	191	156	Vertical
3	5290.0000	76.74	15.87	54.00	-22.74	193	136	Vertical
4	5290.0000	89.51	15.87	68.30	-21.21	269	122	Vertical
5	5351.8259	44.01	16.04	54.00	9.99	247	136	Vertical
6	5363.2316	61.18	16.06	74.00	12.82	263	63	Vertical



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4.10.1.94 11AC80_58 ANT 1_ Horizontal

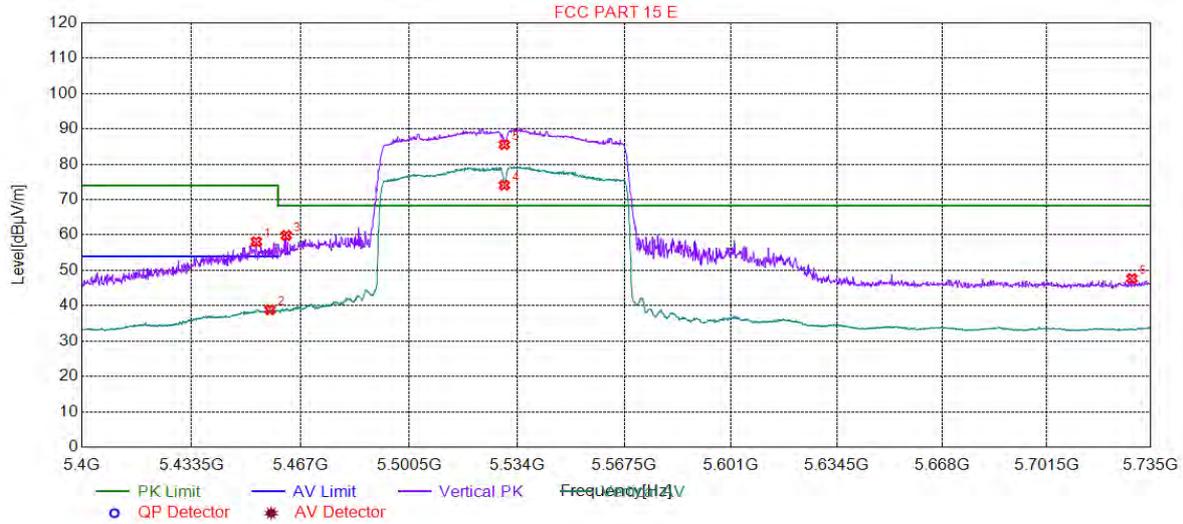


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5130.6153	39.44	15.29	54.00	14.56	142	174	Horizontal
2	5133.4667	53.10	15.29	74.00	20.90	177	57	Horizontal
3	5290.0000	74.40	15.87	54.00	-20.40	207	270	Horizontal
4	5290.0000	87.66	15.87	68.30	-19.36	222	263	Horizontal
5	5362.6313	41.25	16.06	54.00	12.75	224	263	Horizontal
6	5364.4322	57.73	16.07	74.00	16.27	209	92	Horizontal



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4.10.1.95 11AC80_106 ANT 1_ Vertical

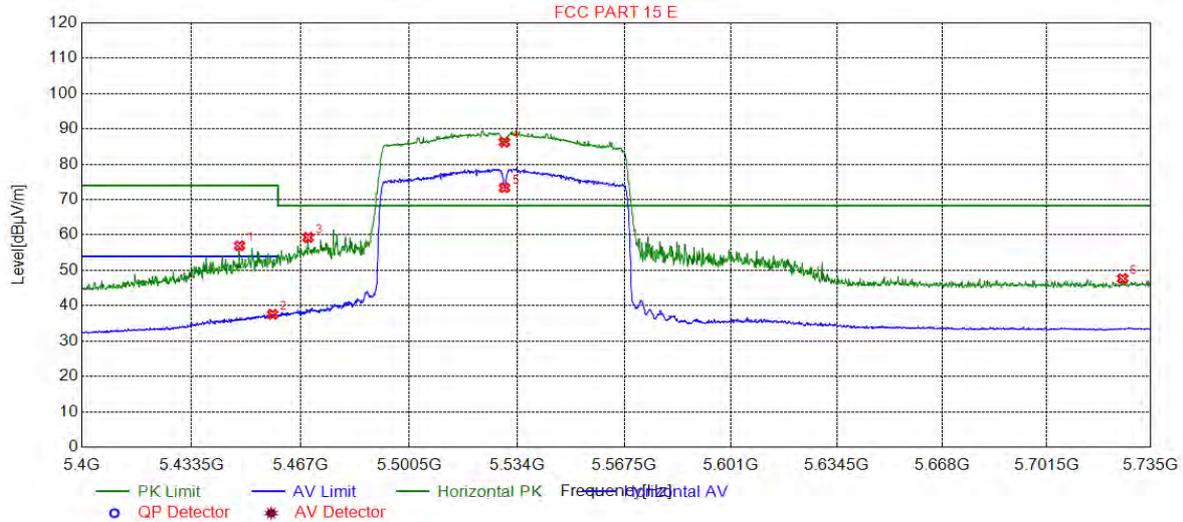


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5453.2916	58.12	16.13	74.00	15.88	275	152	Vertical
2	5457.4812	38.87	16.13	54.00	15.13	294	110	Vertical
3	5462.5088	59.89	16.13	68.30	8.41	246	110	Vertical
4	5530.0000	74.08	16.26	0.00	-74.08	214	82	Vertical
5	5530.0000	85.57	16.26	68.30	-17.27	296	124	Vertical
6	5728.9670	47.68	16.68	68.30	20.62	254	356	Vertical



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4.10.1.96 11AC80_106 ANT 1_ Horizontal

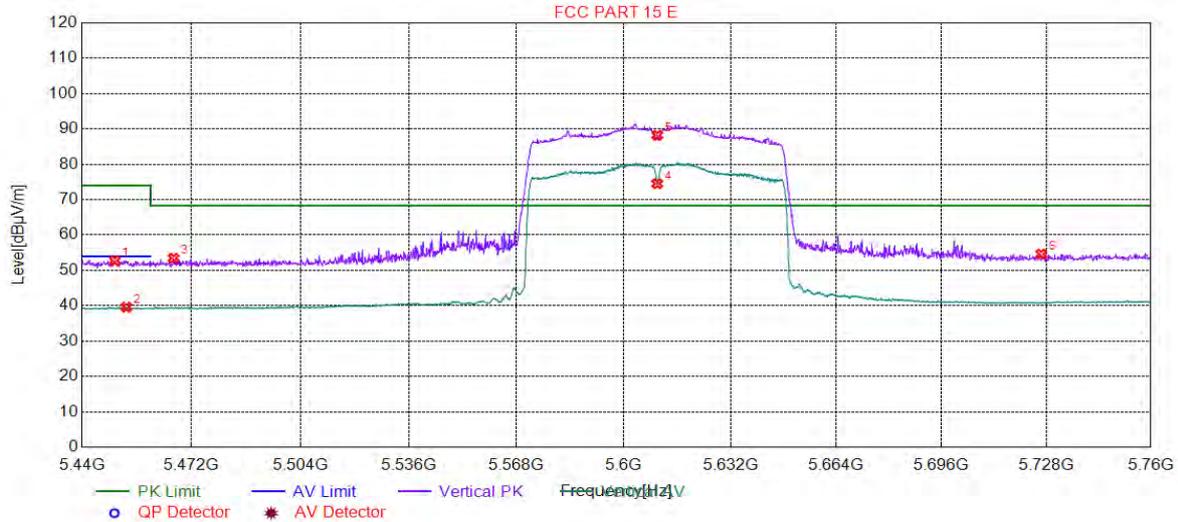


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5448.0965	56.99	16.13	74.00	17.01	101	106	Horizontal
2	5458.3192	37.58	16.13	54.00	16.42	190	113	Horizontal
3	5469.2121	59.32	16.13	68.30	8.98	195	113	Horizontal
4	5530.0000	86.26	16.26	68.30	-17.96	225	120	Horizontal
5	5530.0000	73.37	16.26	0.00	-73.37	161	113	Horizontal
6	5725.9505	47.69	16.67	68.30	20.61	112	72	Horizontal



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4.10.1.97 11AC80_122 ANT 1_ Vertical

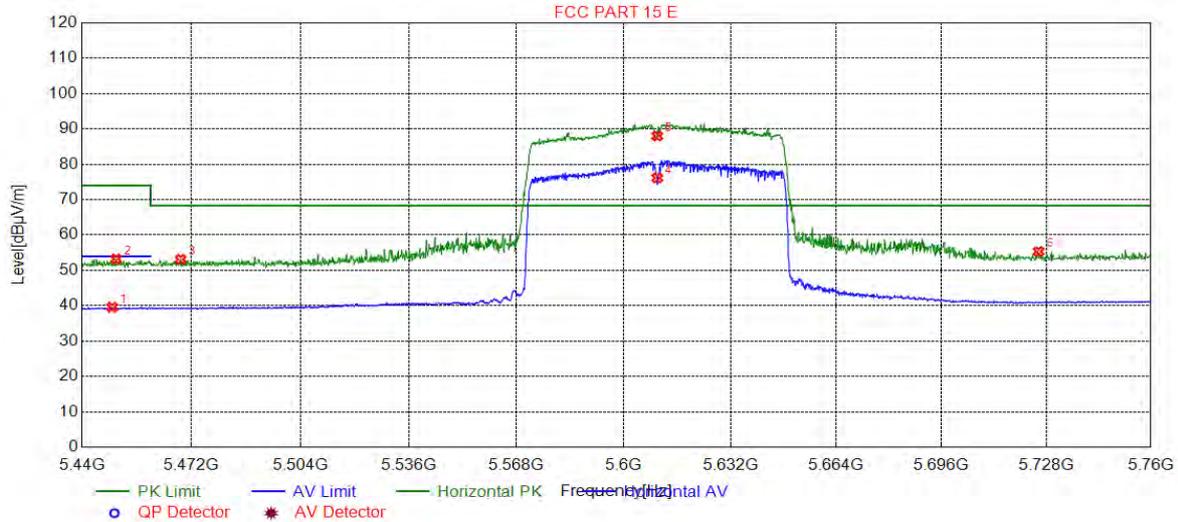


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5449.6048	52.76	16.13	74.00	21.24	216	144	Vertical
2	5452.9665	39.61	16.13	54.00	14.39	232	42	Vertical
3	5466.7334	53.47	16.13	68.30	14.83	265	244	Vertical
4	5610.0000	74.53	16.60	0.00	-74.53	243	90	Vertical
5	5610.0000	88.22	16.60	68.30	-19.92	152	96	Vertical
6	5726.3832	54.65	16.67	68.30	13.65	173	198	Vertical



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4.10.1.98 11AC80_122 ANT 1_ Horizontal

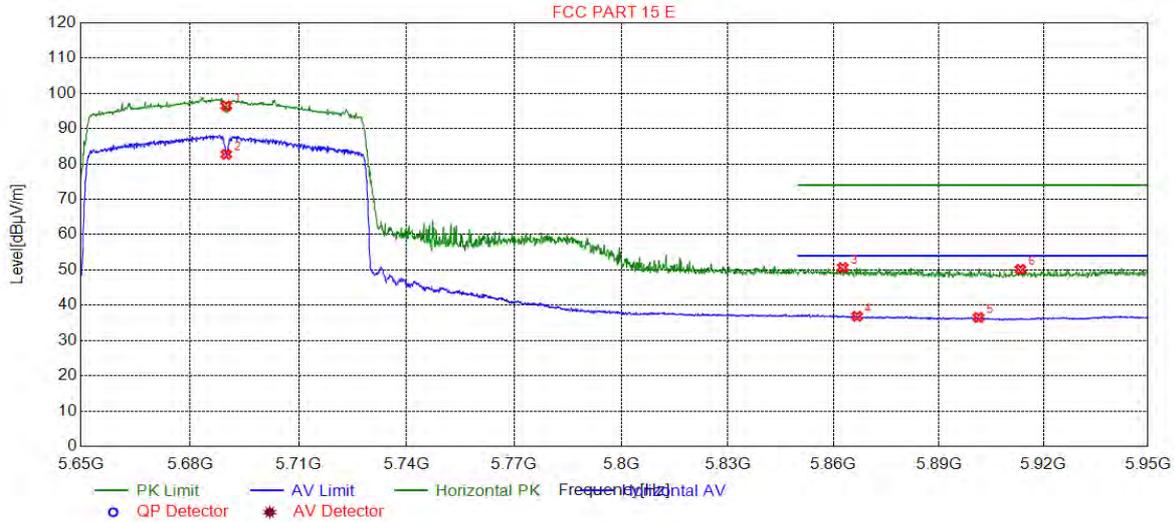


Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5448.8044	39.58	16.13	54.00	14.42	240	100	Horizontal
2	5449.9250	53.23	16.13	74.00	20.77	155	31	Horizontal
3	5468.8144	53.15	16.13	68.30	15.15	189	24	Horizontal
4	5610.0000	76.15	16.60	0.00	-76.15	213	269	Horizontal
5	5610.0000	88.01	16.60	68.30	-19.71	192	269	Horizontal
6	5725.5828	55.35	16.67	68.30	12.95	242	317	Horizontal



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4.10.1.99 11AC80_138 ANT 1_ Horizontal



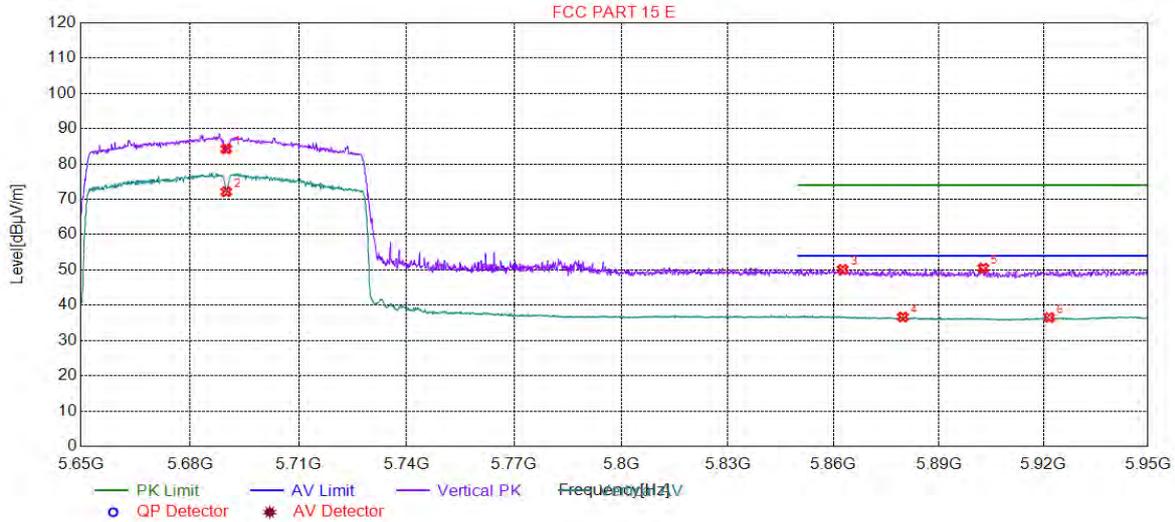
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5690.00	96.49	19.66	0.00	-96.49	115	21	Horizontal
2	5690.00	82.75	19.66	0.00	-82.75	251	21	Horizontal
3	5862.65	50.65	20.33	74.00	23.35	284	8	Horizontal
4	5866.70	36.84	20.31	54.00	17.16	295	21	Horizontal
5	5901.37	36.50	20.19	54.00	17.50	164	35	Horizontal
6	5913.38	50.15	20.30	74.00	23.85	261	222	Horizontal



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4.10.1.100 11AC80_138 ANT 1_ Vertical



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5690.00	84.28	19.66	0.00	-84.28	225	192	Vertical
2	5690.00	72.13	19.66	0.00	-72.13	256	192	Vertical
3	5862.65	50.15	20.33	74.00	23.85	352	16	Vertical
4	5879.76	36.65	20.26	54.00	17.35	335	50	Vertical
5	5902.72	50.50	20.20	74.00	23.50	216	260	Vertical
6	5921.63	36.50	20.37	54.00	17.50	226	267	Vertical

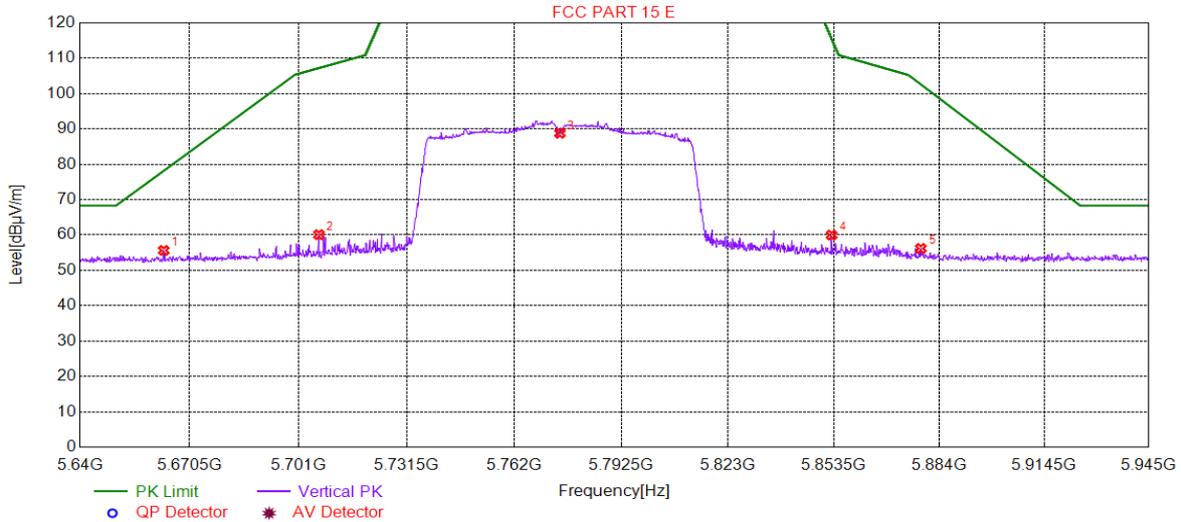


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4.10.1.101 11AC80_155 ANT 1_ Vertical



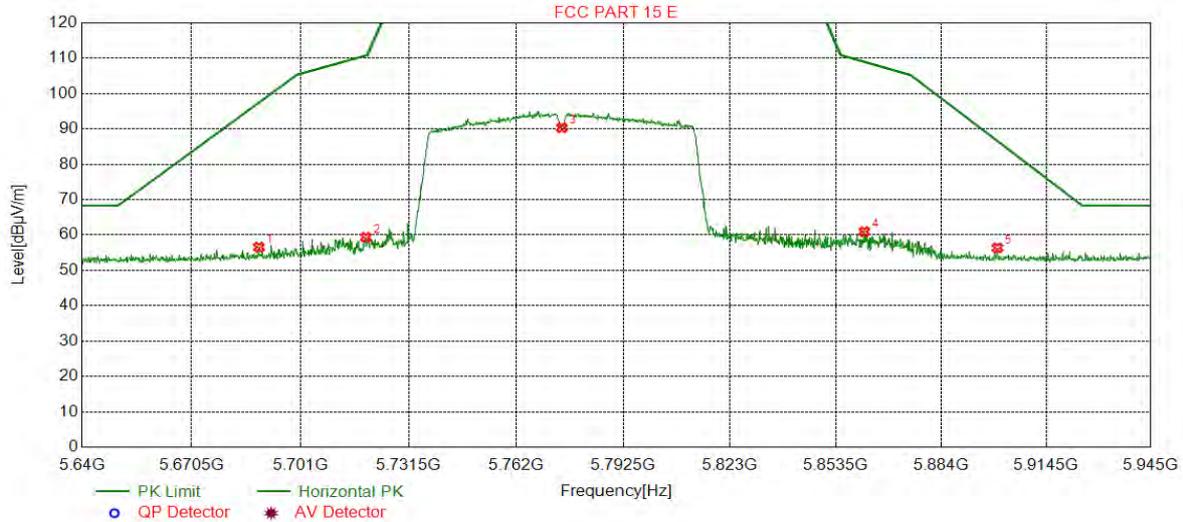
Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5663.3442	55.65	16.59	78.17	22.52	167	98	Vertical
2	5706.8284	60.11	16.60	107.21	47.10	262	116	Vertical
3	5775.0000	88.79	16.85	122.30	33.51	225	148	Vertical
4	5852.8439	59.99	17.05	115.82	55.83	276	162	Vertical
5	5878.6293	56.20	17.10	102.61	46.41	159	130	Vertical



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4.10.1.102 11AC80_155 ANT 1_ Horizontal



Suspected List								
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5689.4347	56.57	16.58	97.48	40.91	211	308	Horizontal
2	5719.4922	59.35	16.65	110.76	51.41	122	312	Horizontal
3	5775.0000	90.37	16.85	122.30	31.93	188	308	Horizontal
4	5861.6933	60.94	17.06	109.03	48.09	167	267	Horizontal
5	5900.2951	56.36	17.14	86.58	30.22	157	267	Horizontal

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

All modes have been tested, but only the worst case data displayed in this report.



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4.11 Frequencies Stability

4.11.1 Frequency Error vs. Voltage:

Test Conditions	Measured Frequency (MHz)	
	5180	5825
V nom(V)	5180.004921	5825.007955
V max(V)	5180.012335	5825.008627
V min(V)	5180.009081	5825.006371
Max. Deviation Frequency	0.012335	0.008627
Max. Frequency Error (ppm)	2.381351	1.480957

4.11.2 Frequency Error vs. Temperature:

Test Conditions(°C)	Measured Frequency (MHz)	
	5180	5825
-5	5180.006314	5825.009856
5	5180.007751	5825.002400
15	5180.007733	5825.010544
25	5180.013151	5825.015275
35	5180.012867	5825.022038
45	5180.011759	5825.002795
50	5180.003918	5824.998131
Max. Deviation Frequency	0.013151	0.022038
Max. Frequency Error (ppm)	2.538894	3.783428



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4.12 Dynamic Frequency Selection

4.12.1 DFS Overview

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
<i>Non-Occupancy Period</i>	Yes	Not required	Yes
<i>DFS Detection Threshold</i>	Yes	Not required	Yes
<i>Channel Availability Check Time</i>	Yes	Not required	Not required
<i>U-NII Detection Bandwidth</i>	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode	
	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>DFS Detection Threshold</i>	Yes	Not required
<i>Channel Closing Transmission Time</i>	Yes	Yes
<i>Channel Move Time</i>	Yes	Yes
<i>U-NII Detection Bandwidth</i>	Yes	Not required
Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
<i>U-NII Detection Bandwidth and Statistical Performance Check</i>	All BW modes must be tested	Not required
<i>Channel Move Time and Channel Closing Transmission Time</i>	Test using widest BW mode available	Test using the widest BW mode available for the link
<i>All other tests</i>	Any single BW mode	Not required
<p>Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.</p>		



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4.12.2 DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices with Radar Detection

Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP \geq 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
<p>Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.</p> <p>Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.</p> <p>Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.</p>	

4.12.3 Response Requirements

Table 4: DFS Response Requirement Values

Parameter	Value
<i>Non-occupancy period</i>	Minimum 30 minutes
<i>Channel Availability Check Time</i>	60 seconds
<i>Channel Move Time</i>	10 seconds See Note 1.
<i>Channel Closing Transmission Time</i>	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
<i>U-NII Detection Bandwidth</i>	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
<p>Note 1: <i>Channel Move Time</i> and the <i>Channel Closing Transmission Time</i> should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</p> <p>Note 2: The <i>Channel Closing Transmission Time</i> is comprised of 200 milliseconds starting at the beginning of the <i>Channel Move Time</i> plus any additional intermittent control signals required to facilitate a <i>Channel</i> move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</p> <p>Note 3: During the <i>U-NII Detection Bandwidth</i> detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</p>	

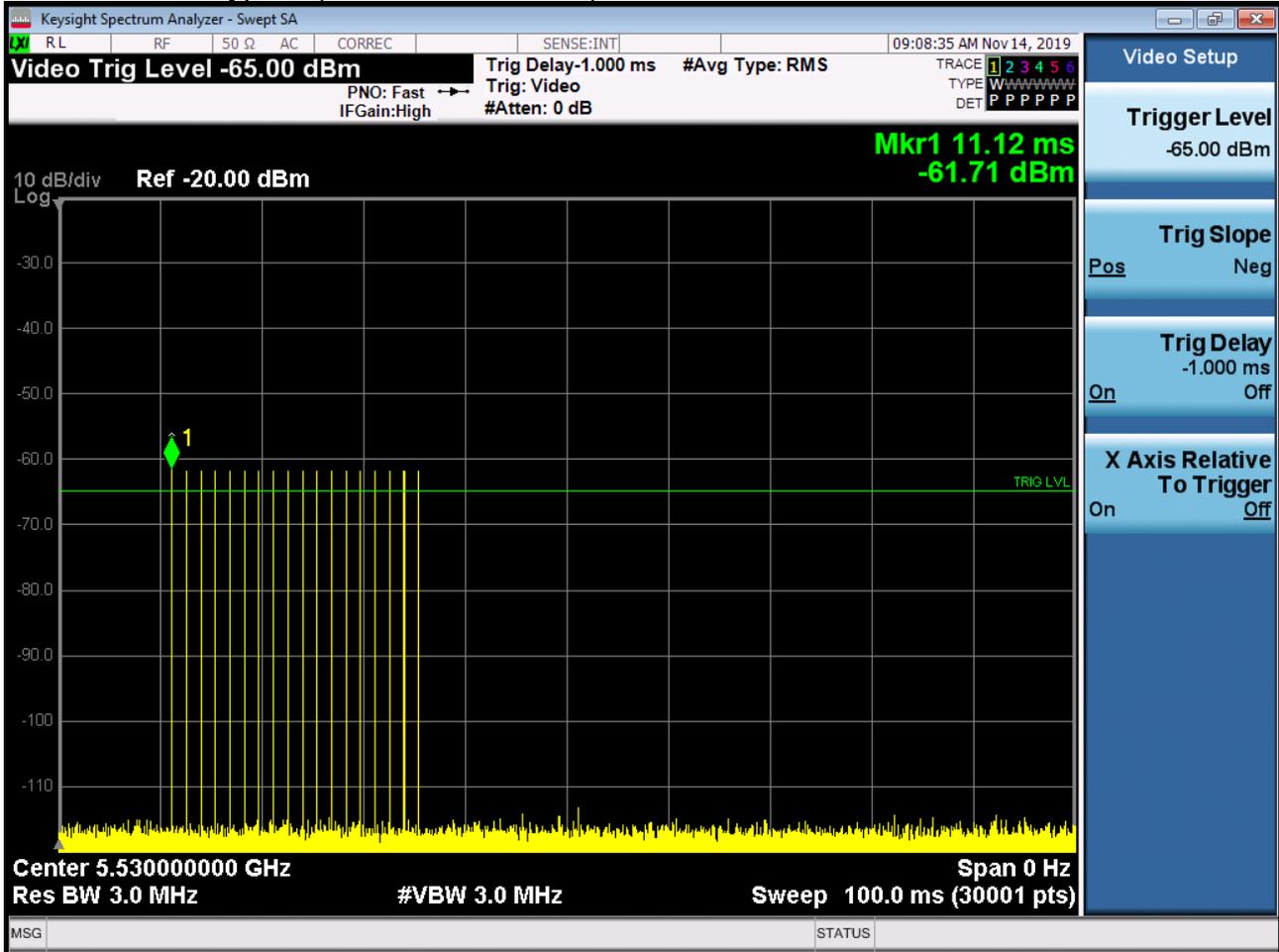


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4.12.4 Test plots
4.12.4.1 Radar Waveform Calibration Result
Radar Type 0 (80MHz / 5530MHz)



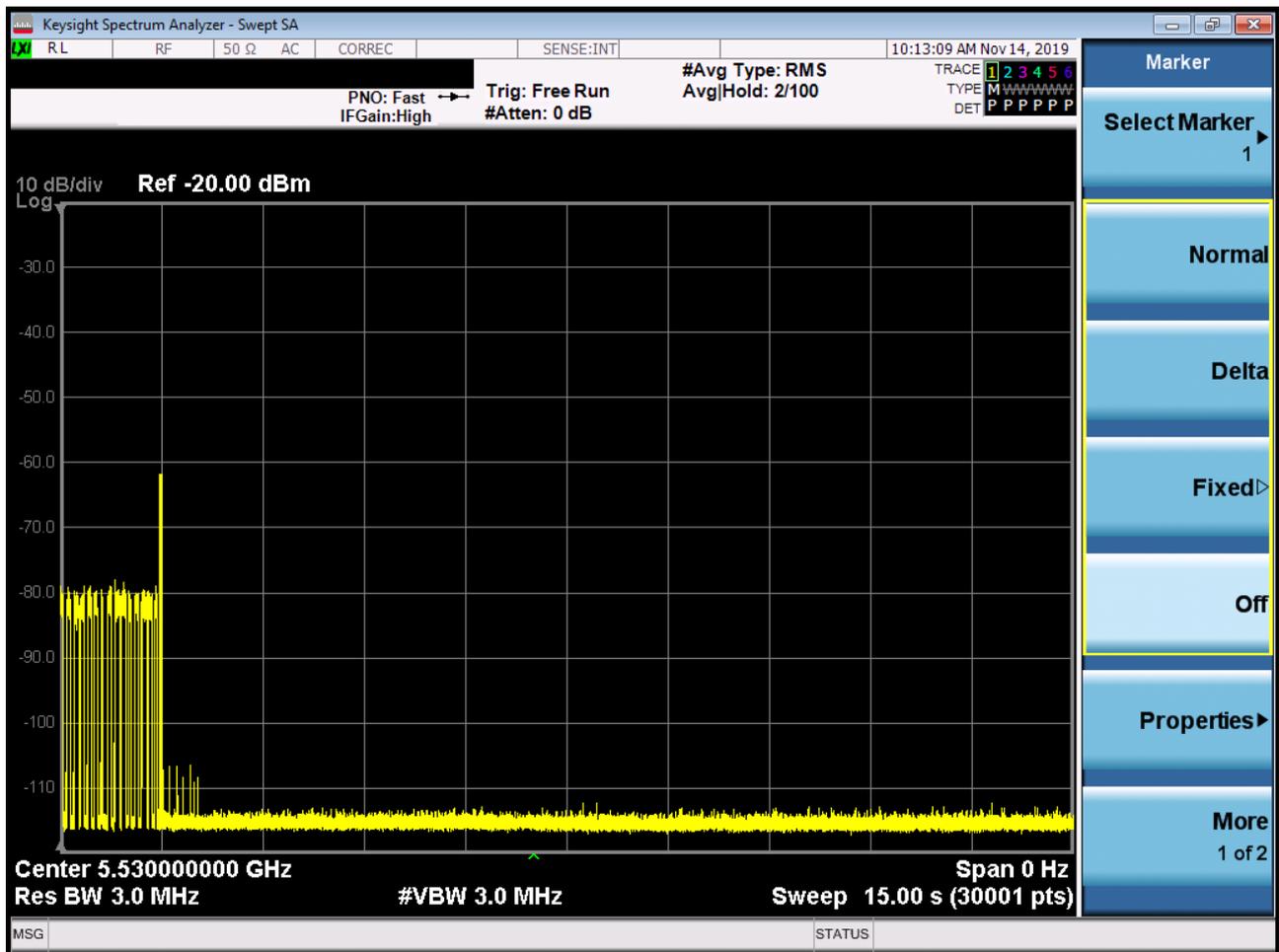


4.12.5 Test Data:

BW/Channel	Test Item	Test Result	Limit	Results
80MHz / 5530MHz	Channel Move Time	0s	<10s	Pass
	Channel Closing Transmission Time	9ms	<60ms	Pass

4.12.5.1 Test plots

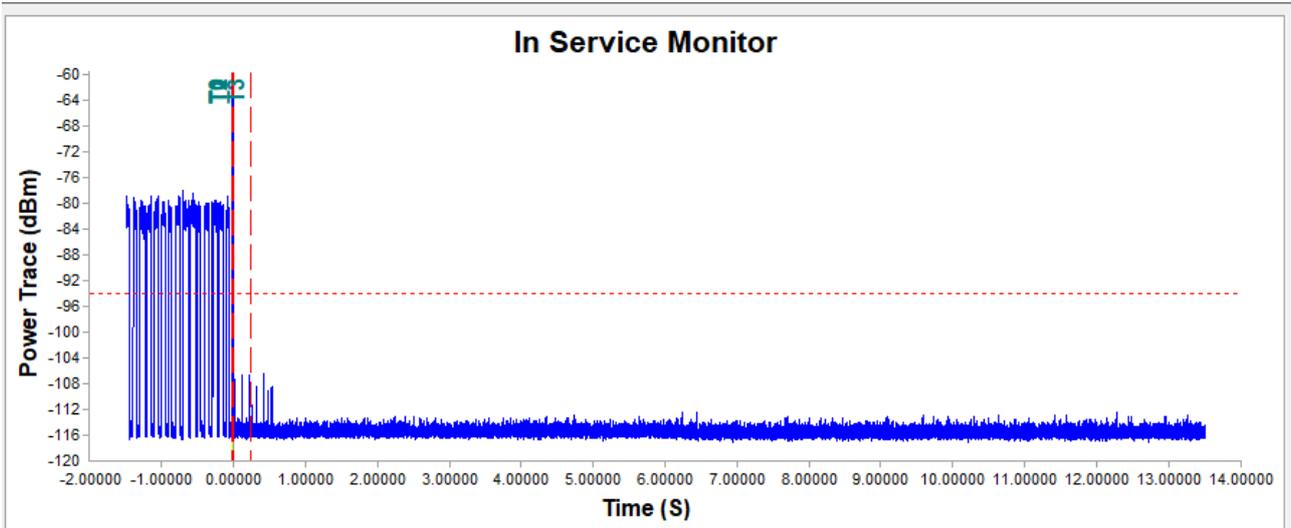
4.12.5.1.1 Test Bandwidth/Channel= 80MHz / 5530MHz



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Time Index Info

T0 : -0.0245 S (Radar Injection Start)	Time Per Bin:0.4999833	Channel Move Time: 0.0 S
T1 : 0.0000 S (Radar Injection Stop)	T2~T3 Bins Over Threshold:	Channel Close Time: 0.0089997 S
T2 : 0.2000 S (200msec Interval)	= 18 Bins	
T3 : 0.0000 S (Channel Move Time)		



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5 Measurement Uncertainty (95% confidence levels, k=2)

Lab A:

No.	Item	Measurement Uncertainty
1	Total RF power, conducted	±0.41dB
2	RF power density, conducted	±1.96dB
3	Spurious emissions, conducted	±0.41dB
4	Radio Frequency	±7.10 x 10 ⁻⁸
5	Duty Cycle	±0.49%
6	Occupied Bandwidth	±0.2%

Lab B:

No.	Item	Measurement Uncertainty
1	Conduction Emission	± 3.0dB (150kHz to 30MHz)
2	Radiated Emission	± 4.8dB (Below 1GHz)
		± 4.8dB (1GHz to 6GHz)
		± 4.5dB (6GHz to 18GHz)
		± 5.02dB (Above 18GHz)



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6 Equipment List

RF conducted					
Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
Signal Analyzer	Rohde & Schwarz	FSV	W025-05	2019/4/9	2020/4/8
DC Power Supply	Rohde & Schwarz	HMP2020	W009-08	2018/12/7	2019/12/6
				2019/11/21	2020/11/20
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2019/7/14	2020/7/13
Humidity/ Temperature Indicator	MingGao	TH101B	W006-05	2019/6/27	2020/6/26

CE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Shielding Room	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Artificial network	ROHDE&SCHWARZ	ENV216	XAW01-04-01	2019-07-16	2020-07-15
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2018-12-20	2019-12-19
Measurement Software	Tonscend	TS+ CE V2.5	XAW02-05-02	NCR	NCR



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RSE Test System					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Semi-Anechoic Chamber	Brilliant-emc	N/A	XAW03-35-01	2019-09-11	2022-09-10
MXA signal analyzer	Keysight	N9020A	XAW01-06-01	2019-06-27	2020-06-26
Spectrum Analyzer	Keysight	N9020B	XAW01-11-03	2019-06-28	2020-06-27
Test receiver	ROHDE&SCHWARZ	ESR	XAW01-08-01	2019-09-07	2020-09-06
Receiving antenna (30MHz-3GHz)	Schwarzbeck	VULB 9163	XAW01-09-01	2019-10-13	2021-10-12
Receiving antenna (1GHz~18GHz)	Schwarzbeck	BBHA 9120D	XAW01-09-02	2019-10-13	2021-10-12
Receiving antenna (15GHz~40GHz)	Schwarzbeck	BBHA 9170	XAW01-09-03	2019-10-13	2021-10-12
Directional antenna rack controller	Max-Full	MF-7802BS	XAW03-03-01	NCR	NCR
High-speed antenna rack controller	Max-Full	MF-7802	XAW03-04-01	NCR	NCR
Filter bank	Tonscend	JS0806-F	XAW03-05-01	NCR	NCR
Filter bank	Tonscend	JS0806s	XAW03-05-02	NCR	NCR
Amplifier	Tonscend	TAP00903040	XAW01-41-01	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Amplifier	Tonscend	TAP01018048	XAW01-41-02	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Amplifier	Tonscend	TAP18040048	XAW01-41-03	2019-12-03	2020-12-02
				2018-12-10	2019-12-09
Amplifier	Shanghai Steed	YX28980930	XAW01-41-06	2018-12-10	2019-12-09
				2019-11-18	2020-11-17
Temperature and humidity meter	MingGao	TH101B	XAW01-01-01	2018-12-20	2019-12-19
Measurement Software	Tonscend	TS+ RSE V3.0.0.2	XAW02-05-01	NCR	NCR

7 Photographs - EUT Test Setup Details

Please refer to setup photo.

The End



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