11N40MIMO_Ant1_Low_5755

11N40MIMO_Ant2_Low_5755

11N40MIMO_Ant1_High_5795

11N40MIMO_Ant2_High_5795

11AC20MIMO_Ant1_Low_5745

11AC20MIMO_Ant2_Low_5745

11AC20MIMO_Ant1_High_5825

11AC20MIMO_Ant2_High_5825

11AC40MIMO_Ant1_Low_5755

11AC40MIMO_Ant2_Low_5755

11AC40MIMO_Ant1_High_5795

11AC40MIMO_Ant2_High_5795

11AC80MIMO_Ant1_Low_5775

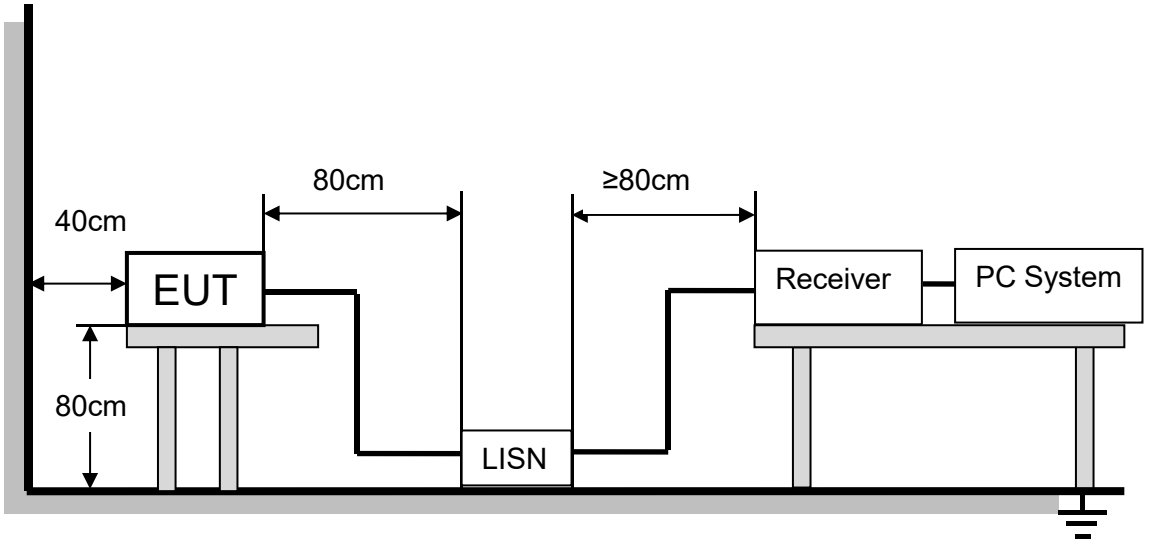
11AC80MIMO_Ant1_High_5775

11AC80MIMO_Ant2_Low_5775

11AC80MIMO_Ant2_High_5775

14. AC Power Line Conducted Emissions

14.1. Block Diagram of Test Setup



The EUT is put on a table of non-conducting material that is 80 cm high. The vertical conducting wall of shielding is located 40 cm to the rear of the EUT. The power line of the EUT is connected to the AC mains through an Artificial Mains Network (A.M.N.). A EMI Measurement Receiver (R&S Test Receiver ESR3) is used to test the emissions from both sides of AC line. According to the requirements in Section 6.2 of ANSI C63.10-2013.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode. The bandwidth of EMI test receiver is set at 9 kHz.

The arrangement of the equipment is installed to meet the standards and operating in a manner, which tends to maximize its emission characteristics in a normal application.

14.2. Limits

Please refer to CFR 47 FCC §15.207 (a).

Frequency (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note 1: * Decreasing linearly with logarithm of frequency.

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

14.3. Test Procedure

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

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

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

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

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

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

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

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

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

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

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

The bandwidth of test receiver is set at 9 kHz.

14.4. Test Result

According to 15.207, power Line Conducted Emission is not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

15. Dynamic Frequency Selection

15.1. Applicability of DFS Requirements

A U-NII network will employ a DFS function to detect signals from radar systems and to avoid co-channel operation with these systems. This applies to the 5250-5350 MHz and/or 5470-5725 MHz bands.

Within the context of the operation of the DFS function, a U-NII device will operate in either Master Mode or Client Mode. U-NII devices operating in Client Mode can only operate in a network controlled by a U-NII device operating in Master Mode.

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

Requirement	Operational Mode		
	☐Master	☒Client Without Radar Detection	☐Client with Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	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
DFS Detection Threshold	Yes	Not required
Channel Closing Transmission Time	Yes	Yes
Channel Move Time	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required

Additional requirements for devices with multiple bandwidth modes	☐Master Device or Client with Radar Detection	☒Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check 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.		

15.2. Limit

(1) 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 ≥ 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
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. 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. Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KdB Publication 662911 D01.	

(2) DFS Response Requirements

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel 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. Note 3: During the U-NII Detection Bandwidth 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.	

15.3. Parameters of Radar Test Waveform

This section provides the parameters for required test waveforms, minimum percentage of successful detection, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the

number of pulses will be utilized for the random determination of specific test waveforms.

Table 5 Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (μsec)	PRI (μsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A	$\text{Roundup}\left\{\left(\frac{1}{360}\right)\cdot\left(\frac{19\cdot10^6}{\text{PRI}_{\mu\text{sec}}}\right)\right\}$	60%	30
		Test B			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.
Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a
Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B. Test aggregate is average of the percentage of successful detections of short pulse radar types 1-4

15.4. Calibration of Radar Waveform

Radar Waveform Calibration Procedure:

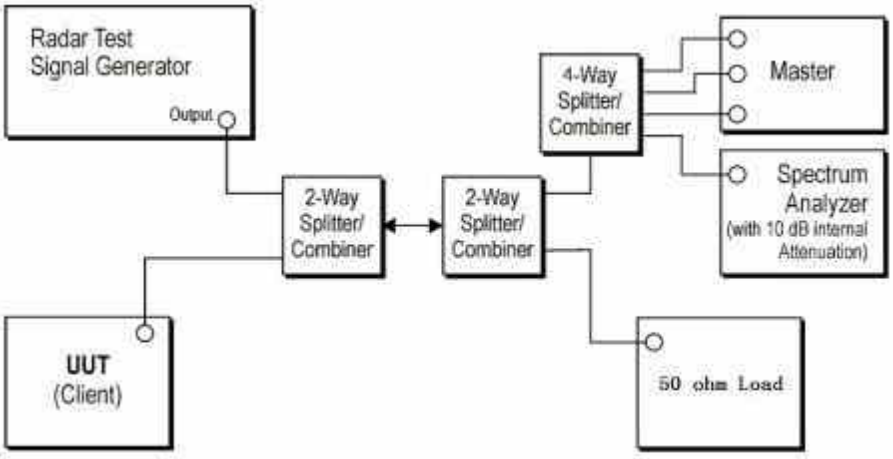
A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master

The interference Radar Detection Threshold Level is -62dBm + 0dBi +1dB = -61dBm that had been taken into account the output power range and antenna gain.

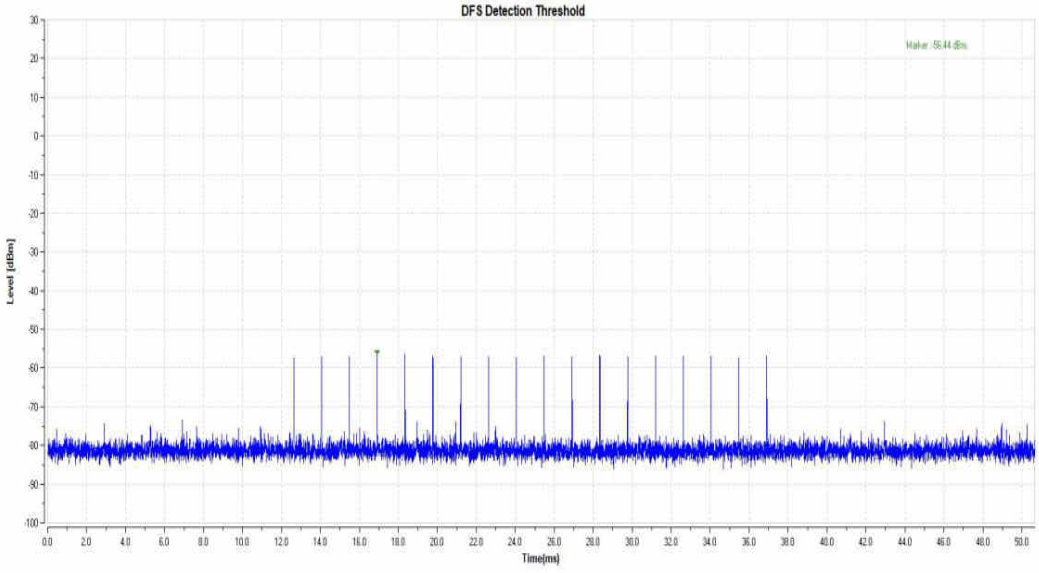
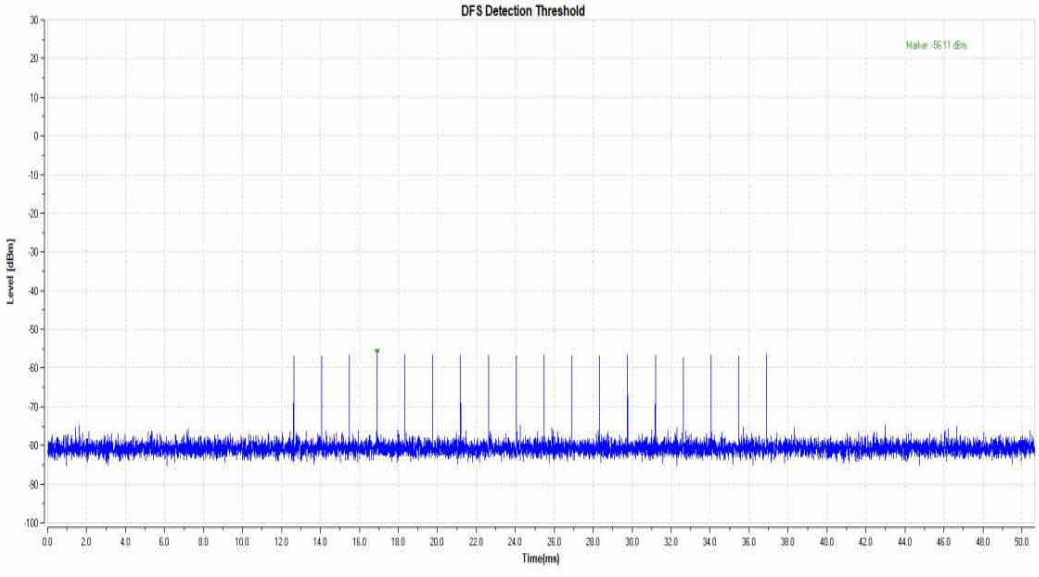
The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.

The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was - -62dBm + 0dBi +1dB = -61dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

Conducted Calibration Setup:



Note: 1. Use the software "Web" to set the frequency channel.
2. EUT is not support TPC and not with Radar detection.
Radar Waveform Calibration Result:
Radar Type 0

11AC80MIMO_5290_Type0

11AC80MIMO_5530_Type0


15.5. Channel Closing Transmission Time, Channel Move Time

Block diagram of test setup Test Procedure:

The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.

The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.

EUT will associate with the master at channel. The file “iperf.exe” specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Test Software in order to properly load the network for the entire period of the test.

When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.

Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.

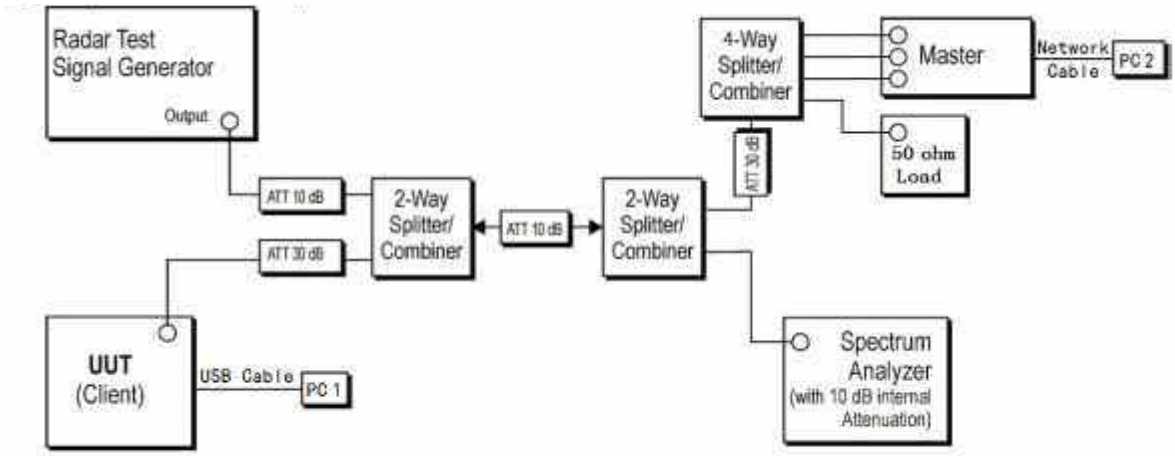
Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.

Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

15.6. Test Setup

Setup for Client with injection at the Master

Master Name	Brand Name	Model Name	FCC ID	Run-up Time(s)
ROG Rapture Tri-band Gaming Router	ASUS	GT-AXE11000	MSQ-RTAXJF00	90

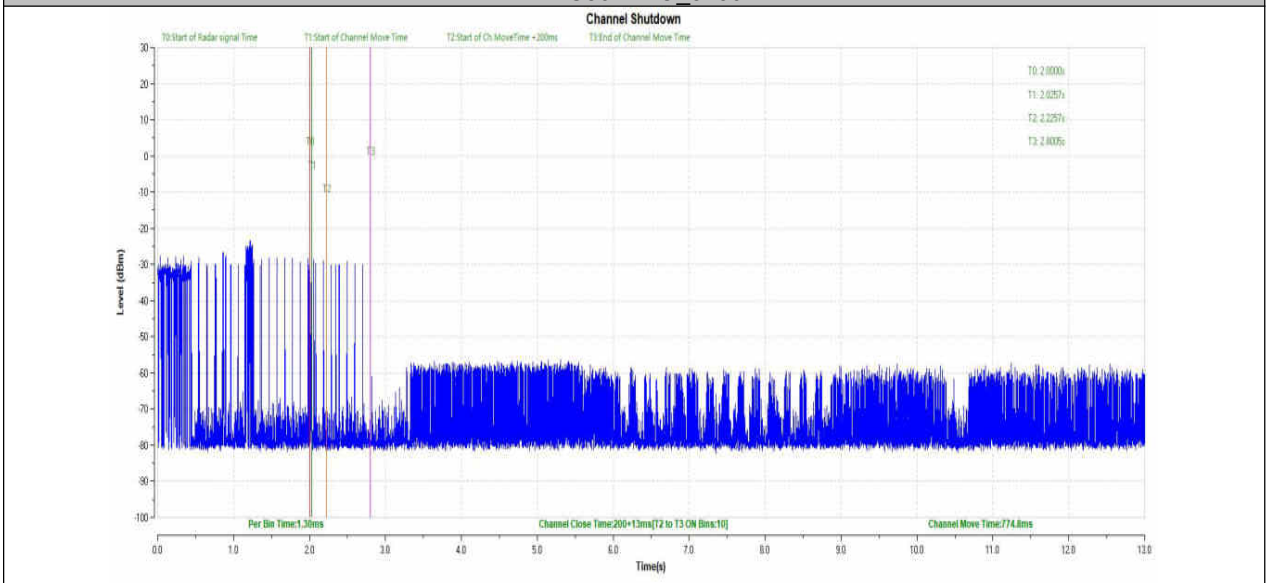


15.7. Test Result

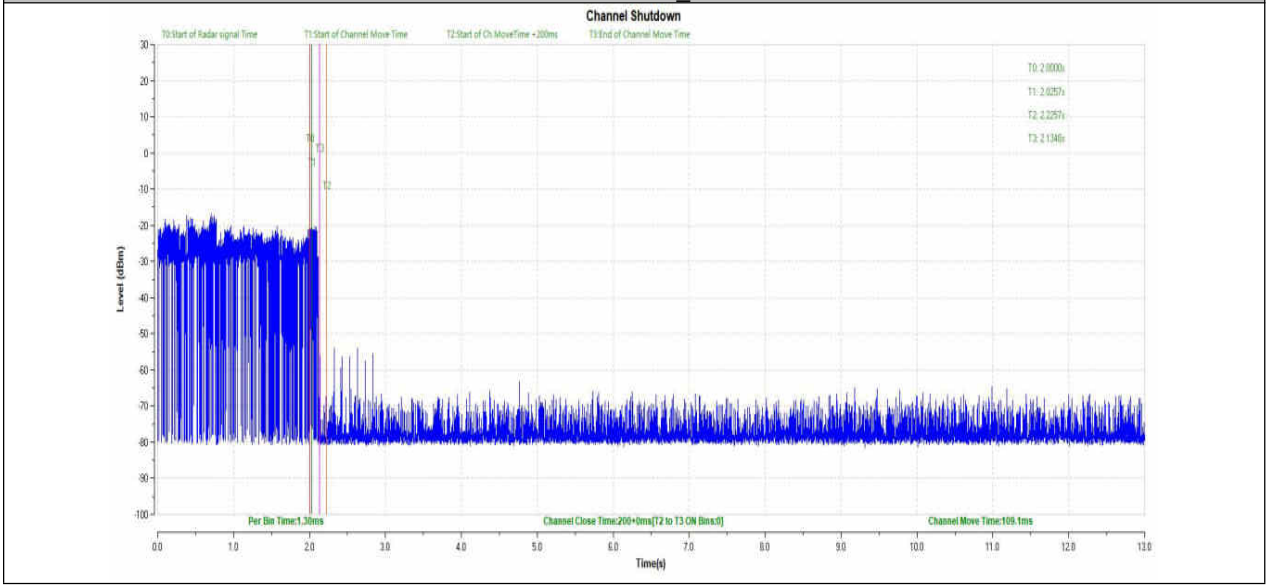
TestMode	Frequency(MHz)	CCTT(ms)	Limit(ms)	CMT(ms)	Limit(ms)	Verdict
11AC80MIMO	5290	200+13	200+60	774.8	10000	PASS
	5530	200+0	200+60	109.1	10000	PASS

15.8. Original Test Data

11AC80MIMO_5290



11AC80MIMO_5530



16. Antenna Requirements

16.1. Applicable Requirements

Please refer to FCC §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. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Please refer to FCC §15.247(b)(4)

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

16.2. Result

The device support 2T2R MIMO, the antennas both used for this product are dedicated PCB antennas and other than that furnished by the responsible party shall be used with the device, maximum antenna gain is 5.29 dBi for antenna 1, 5.37 dBi for antenna 2.

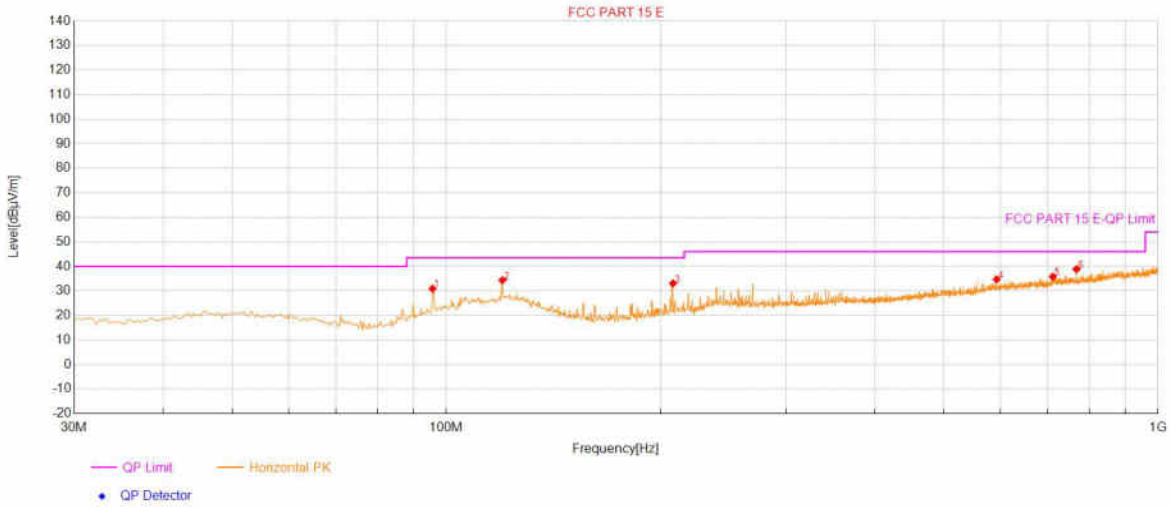
APPENDIX A – Radiated Emission Below 1GHz Test Data

Test Report

Project Information			
EUT:		Environment:	24.3℃;52%
Model:	P13.A01.H4	SN:	
Mode:	11N40_5795	Voltage:	DC 4.2V
Customer:		Engineer:	Fly Liao
Remark:			

Start of Test: 2024-12-19

Test Graph



Suspected Data List

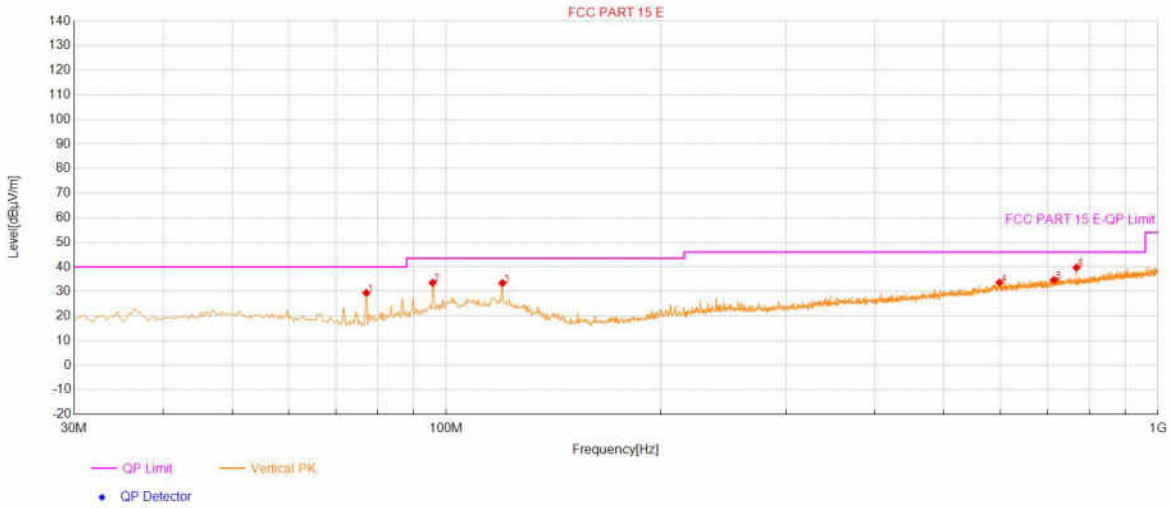
NO.	Frequency (MHz)	Level (dBµV/m)	Factor (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Detector	Polarity	Verdict
1	95.6586	30.92	19.14	43.50	12.58	100	214	PK	Horizontal	PASS
2	119.9166	34.38	17.98	43.50	9.12	100	231	PK	Horizontal	PASS
3	208.2161	33.06	20.75	43.50	10.44	100	131	PK	Horizontal	PASS
4	593.1110	34.69	30.23	46.00	11.31	100	265	PK	Horizontal	PASS
5	711.4905	35.81	31.61	46.00	10.19	100	22	PK	Horizontal	PASS
6	768.0927	38.88	32.81	46.00	7.12	100	107	PK	Horizontal	PASS

Test Report

Project Information			
EUT:		Environment:	24.3℃;52%
Model:	P13.A01.H4	SN:	
Mode:	11N40_5795	Voltage:	DC 4.2V
Customer:		Engineer:	Fly Liao
Remark:			

Start of Test: 2024-12-19

Test Graph



Suspected Data List										
NO.	Frequency (MHz)	Level (dBµV/m)	Factor (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Detector	Polarity	Verdict
1	77.2224	29.42	15.63	40.00	10.58	100	146	PK	Vertical	PASS
2	95.6586	33.55	19.14	43.50	9.95	100	289	PK	Vertical	PASS
3	119.9166	33.43	17.98	43.50	10.07	100	330	PK	Vertical	PASS
4	598.9330	33.68	30.48	46.00	12.32	100	322	PK	Vertical	PASS
5	714.0780	34.70	31.70	46.00	11.30	100	10	PK	Vertical	PASS
6	768.0927	39.71	32.81	46.00	6.29	100	146	PK	Vertical	PASS

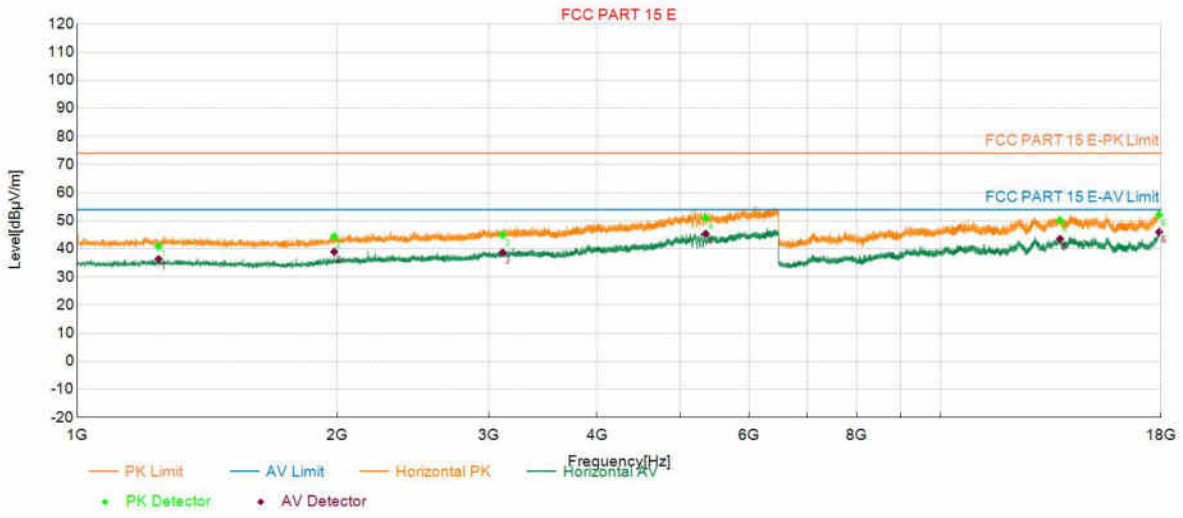
APPENDIX B – Radiated Emission Above 1GHz Test Data

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5190	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:38:32

Test Graph



PK Final Data List

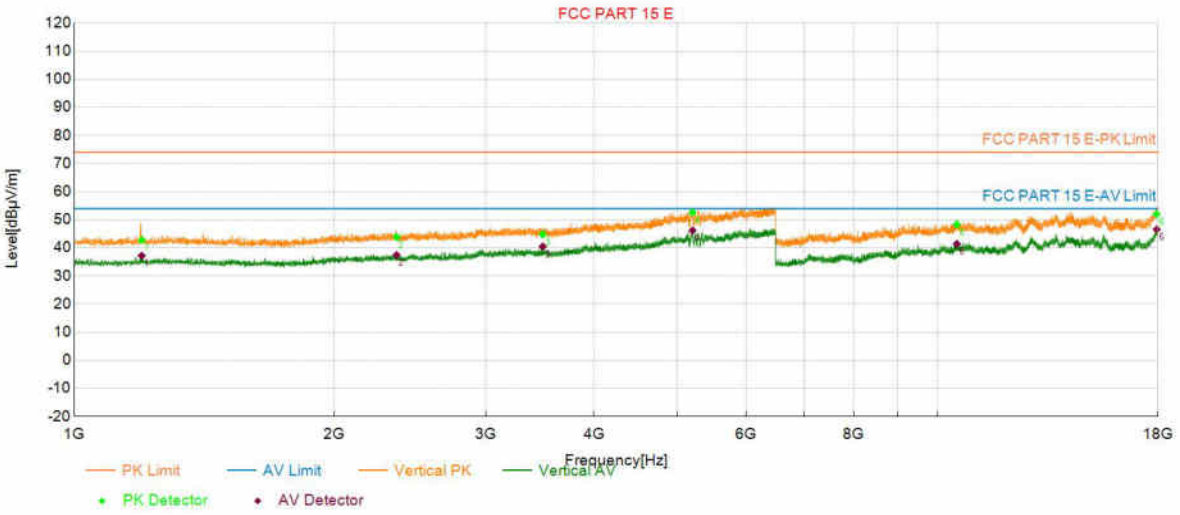
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1242.5743	40.91	74.00	33.09	36.39	54.00	17.61	150	2	Horizontal
2	1984.5985	44.46	74.00	29.54	38.96	54.00	15.04	150	173	Horizontal
3	3110.0110	44.92	74.00	29.08	38.73	54.00	15.27	150	360	Horizontal
4	5344.8845	50.99	74.00	23.01	45.40	54.00	8.60	150	295	Horizontal
5	13750.3250	50.12	74.00	23.88	43.54	54.00	10.46	150	288	Horizontal
6	17912.5913	52.13	74.00	21.87	46.01	54.00	7.99	150	212	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5190	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:39:52

Test Graph



PK Final Data List

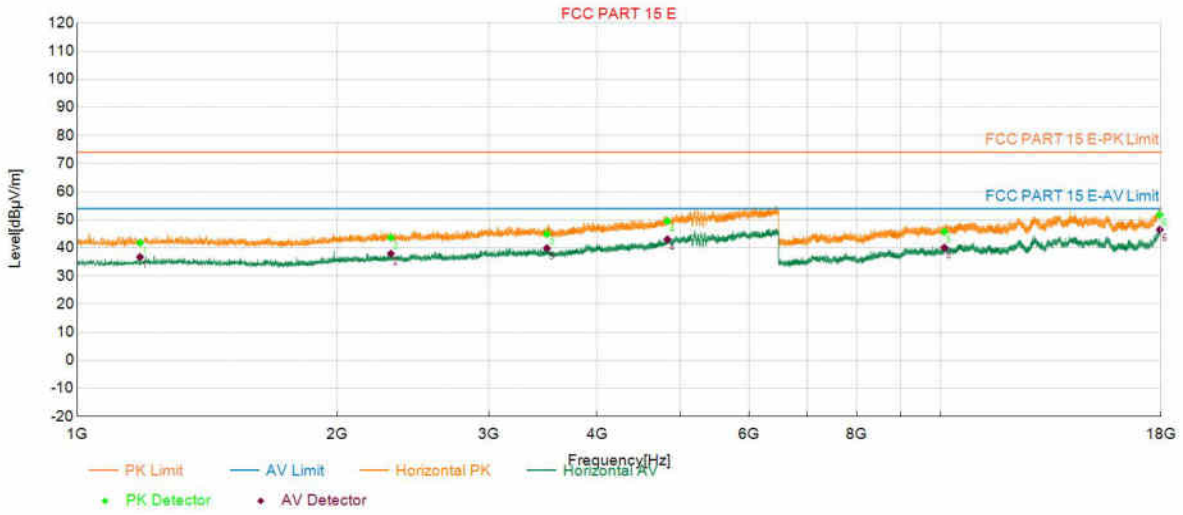
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1197.4697	42.75	74.00	31.25	37.20	54.00	16.80	150	114	Vertical
2	2363.0363	43.83	74.00	30.17	37.43	54.00	16.57	150	228	Vertical
3	3488.4488	44.83	74.00	29.17	40.47	54.00	13.53	150	114	Vertical
4	5201.8702	52.60	74.00	21.40	46.20	54.00	7.80	150	345	Vertical
5	10527.7028	48.30	74.00	25.70	41.40	54.00	12.60	150	196	Vertical
6	17939.0439	51.96	74.00	22.04	46.59	54.00	7.41	150	130	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5230	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:44:43

Test Graph



PK Final Data List

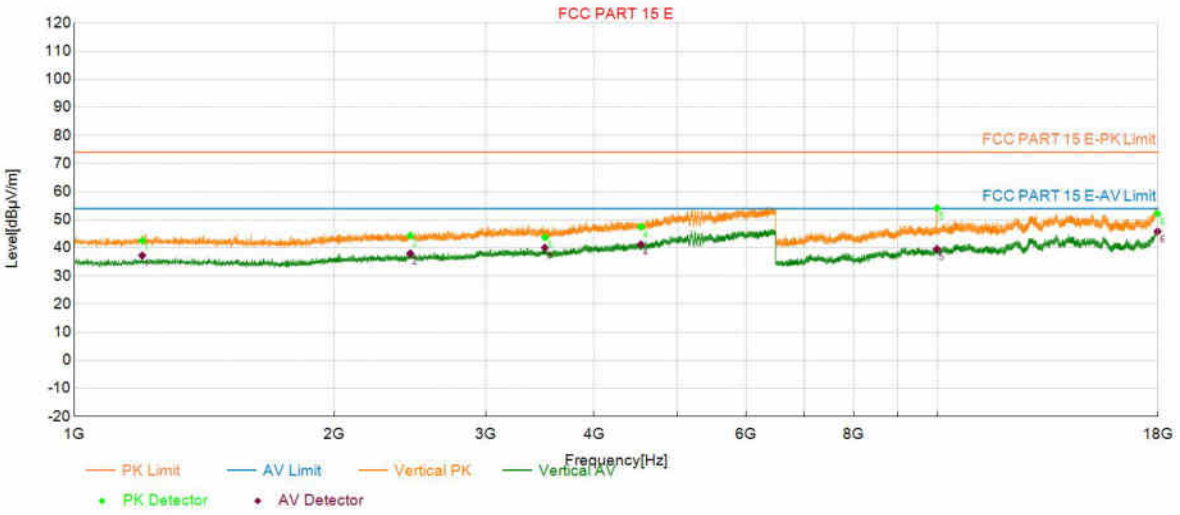
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1182.6183	41.78	74.00	32.22	36.74	54.00	17.26	150	228	Horizontal
2	2308.5809	43.62	74.00	30.38	37.90	54.00	16.10	150	350	Horizontal
3	3499.4499	44.90	74.00	29.10	39.87	54.00	14.13	150	143	Horizontal
4	4826.1826	49.53	74.00	24.47	43.02	54.00	10.98	150	358	Horizontal
5	10098.7099	45.75	74.00	28.25	40.08	54.00	13.92	150	267	Horizontal
6	17941.3441	51.72	74.00	22.28	46.45	54.00	7.55	150	254	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5230	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:46:02

Test Graph



PK Final Data List

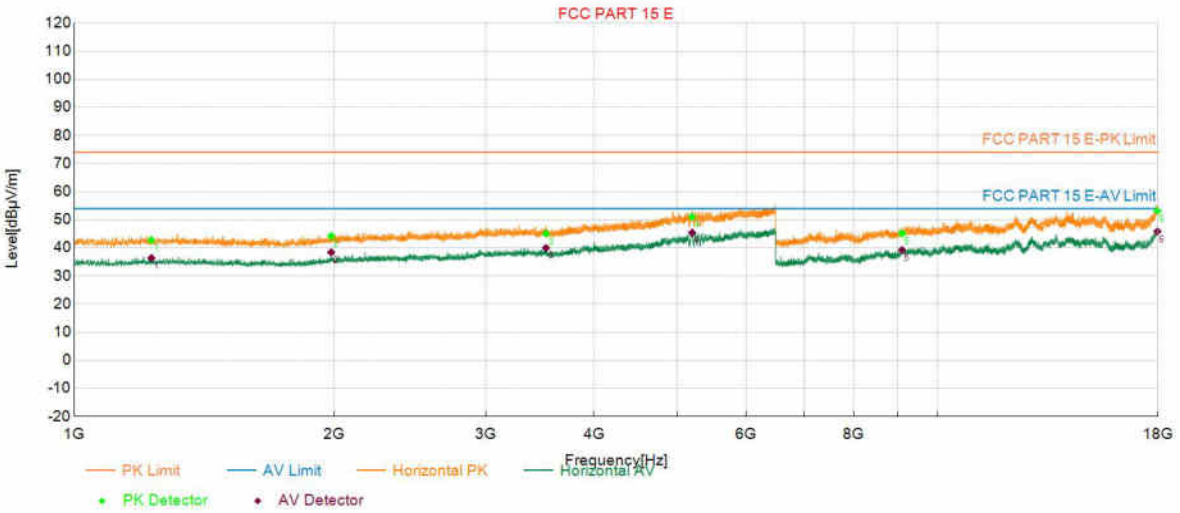
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1199.1199	42.57	74.00	31.43	37.27	54.00	16.73	150	103	Vertical
2	2451.0451	44.36	74.00	29.64	38.00	54.00	16.00	150	110	Vertical
3	3509.9010	43.74	74.00	30.26	40.07	54.00	13.93	150	166	Vertical
4	4533.0033	47.44	74.00	26.56	41.22	54.00	12.78	150	73	Vertical
5	9983.6984	54.08	74.00	19.92	39.60	54.00	14.40	150	213	Vertical
6	17979.2979	52.15	74.00	21.85	45.83	54.00	8.17	150	348	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5270	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:49:44

Test Graph



PK Final Data List

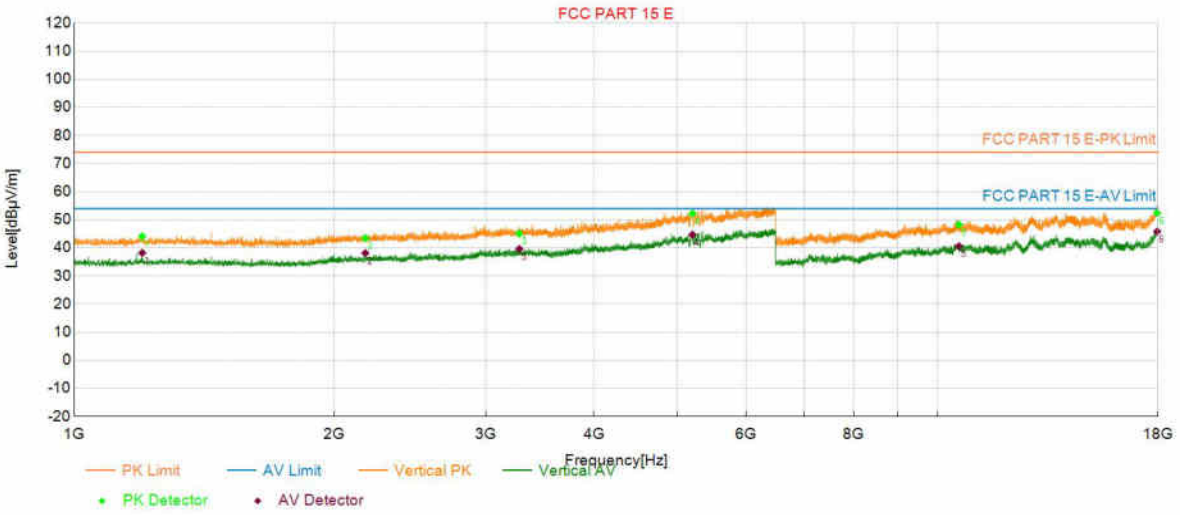
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1228.8229	42.75	74.00	31.25	36.37	54.00	17.63	150	102	Horizontal
2	1984.5985	44.23	74.00	29.77	38.39	54.00	15.61	150	188	Horizontal
3	3519.2519	45.03	74.00	28.97	39.95	54.00	14.05	150	146	Horizontal
4	5196.9197	51.03	74.00	22.97	45.42	54.00	8.58	150	41	Horizontal
5	9094.6595	45.08	74.00	28.92	39.24	54.00	14.76	150	167	Horizontal
6	17971.2471	53.17	74.00	20.83	45.85	54.00	8.15	150	49	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5270	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:51:03

Test Graph



PK Final Data List

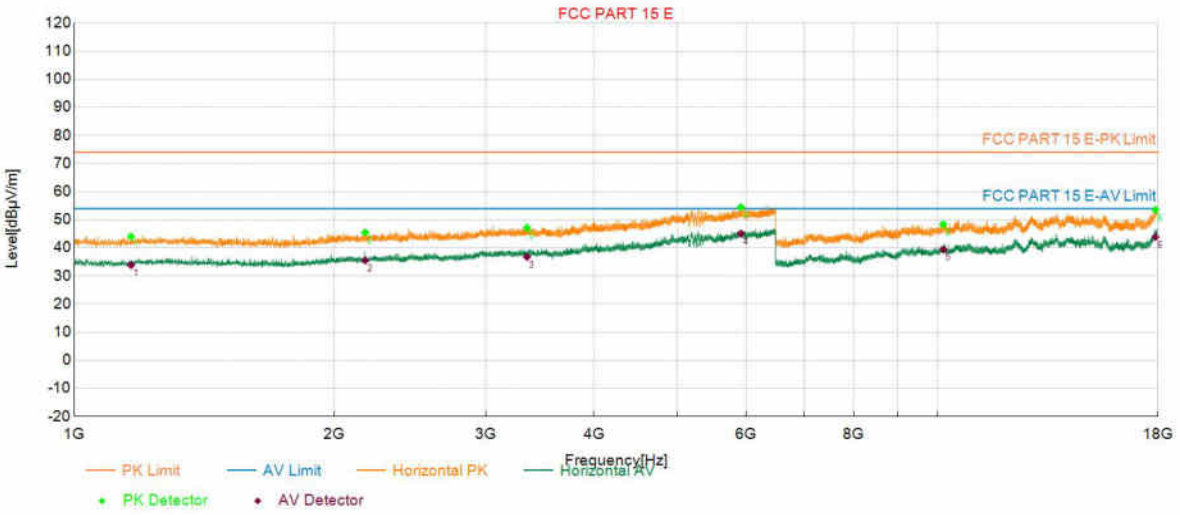
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1199.1199	44.07	74.00	29.93	38.22	54.00	15.78	150	110	Vertical
2	2173.8174	43.47	74.00	30.53	38.12	54.00	15.88	150	60	Vertical
3	3277.7778	45.09	74.00	28.91	39.60	54.00	14.40	150	221	Vertical
4	5200.7701	52.17	74.00	21.83	44.70	54.00	9.30	150	358	Vertical
5	10585.2085	48.27	74.00	25.73	40.57	54.00	13.43	150	322	Vertical
6	17960.8961	52.39	74.00	21.61	45.83	54.00	8.17	150	348	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5310	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:53:51

Test Graph



PK Final Data List

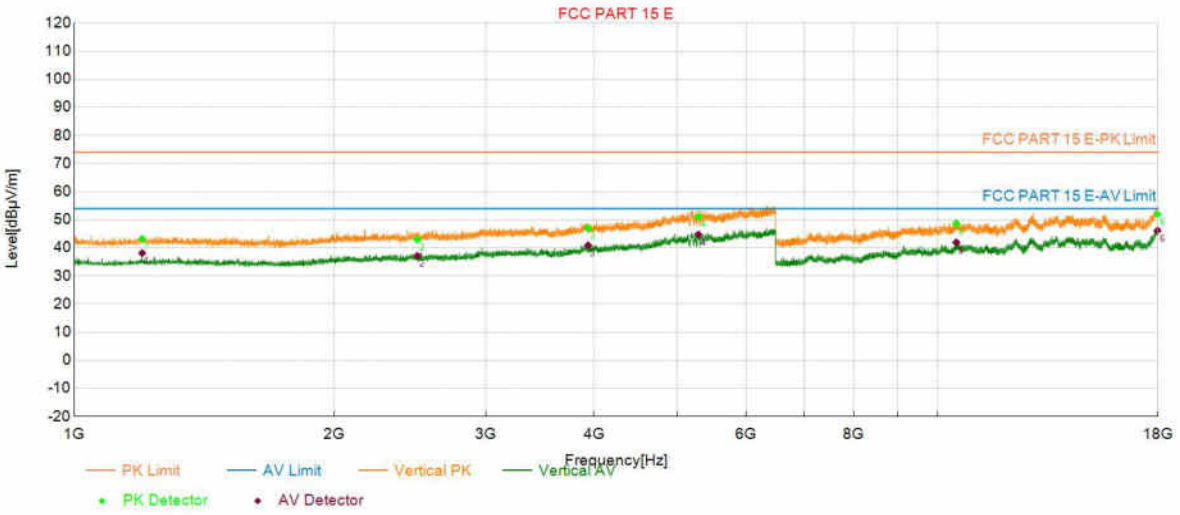
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1163.9164	44.03	74.00	29.97	33.87	54.00	20.13	150	360	Horizontal
2	2173.2673	45.47	74.00	28.53	35.53	54.00	18.47	150	248	Horizontal
3	3345.4345	47.11	74.00	26.89	36.79	54.00	17.21	150	360	Horizontal
4	5919.6920	54.50	74.00	19.50	45.03	54.00	8.97	150	277	Horizontal
5	10152.7653	48.39	74.00	25.61	39.42	54.00	14.58	150	30	Horizontal
6	17883.8384	53.54	74.00	20.46	43.88	54.00	10.12	150	45	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5310	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 11:55:11

Test Graph



PK Final Data List

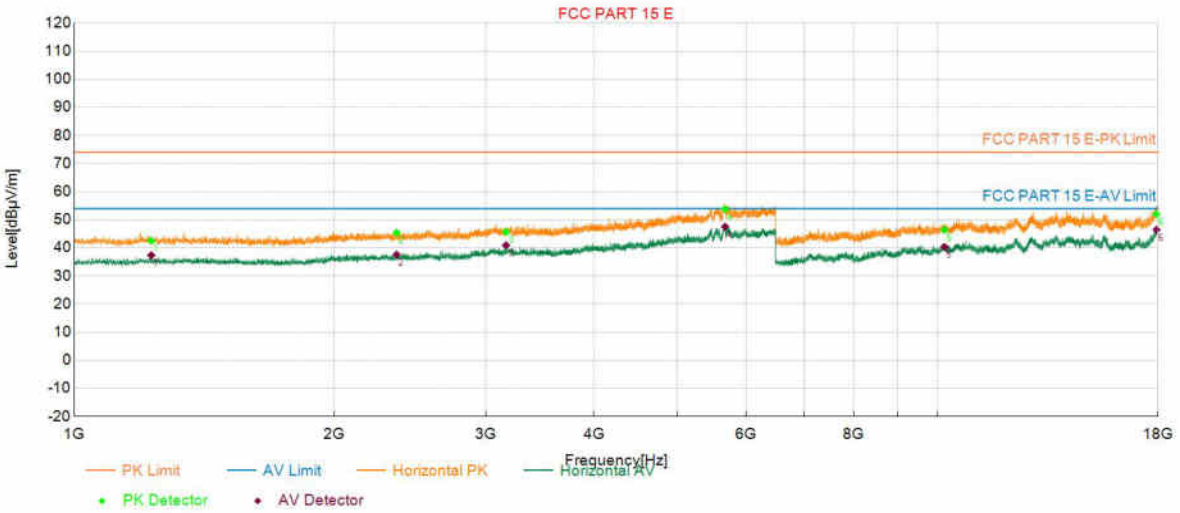
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1199.1199	43.13	74.00	30.87	38.13	54.00	15.87	150	80	Vertical
2	2497.7998	42.97	74.00	31.03	37.17	54.00	16.83	150	139	Vertical
3	3937.2937	47.05	74.00	26.95	40.91	54.00	13.09	150	303	Vertical
4	5286.5787	51.04	74.00	22.96	44.74	54.00	9.26	150	29	Vertical
5	10512.7513	48.64	74.00	25.36	41.92	54.00	12.08	150	6	Vertical
6	17980.4480	51.94	74.00	22.06	46.18	54.00	7.82	150	252	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5510	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:22:44

Test Graph



PK Final Data List

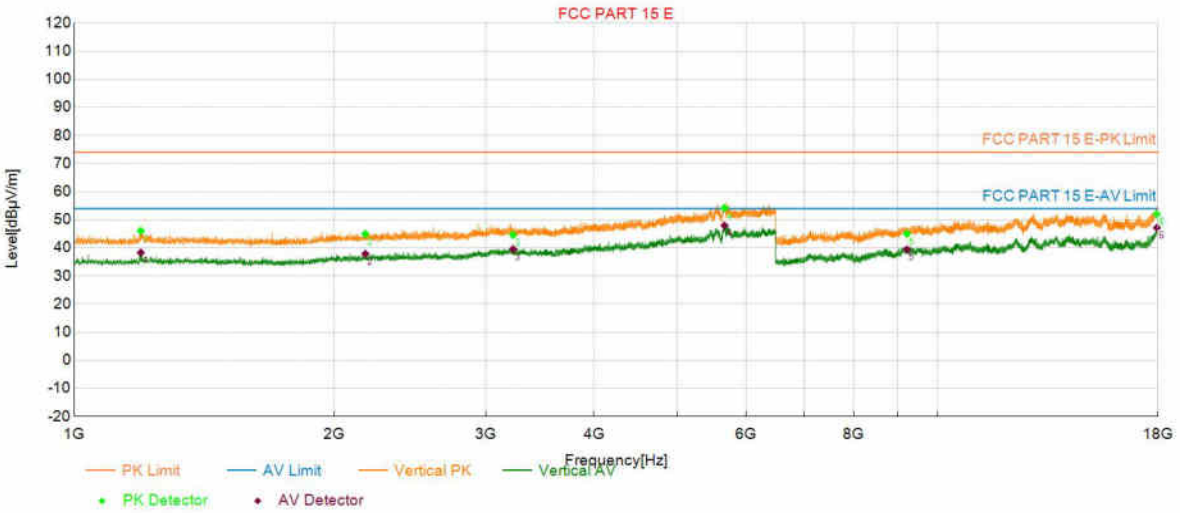
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1228.2728	42.54	74.00	31.46	37.35	54.00	16.65	150	180	Horizontal
2	2363.0363	45.41	74.00	28.59	37.55	54.00	16.45	150	139	Horizontal
3	3163.3663	45.67	74.00	28.33	40.91	54.00	13.09	150	110	Horizontal
4	5672.7173	53.74	74.00	20.26	47.55	54.00	6.45	150	18	Horizontal
5	10182.6683	46.44	74.00	27.56	40.33	54.00	13.67	150	12	Horizontal
6	17928.6929	51.93	74.00	22.07	46.46	54.00	7.54	150	110	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5510	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:24:04

Test Graph



PK Final Data List

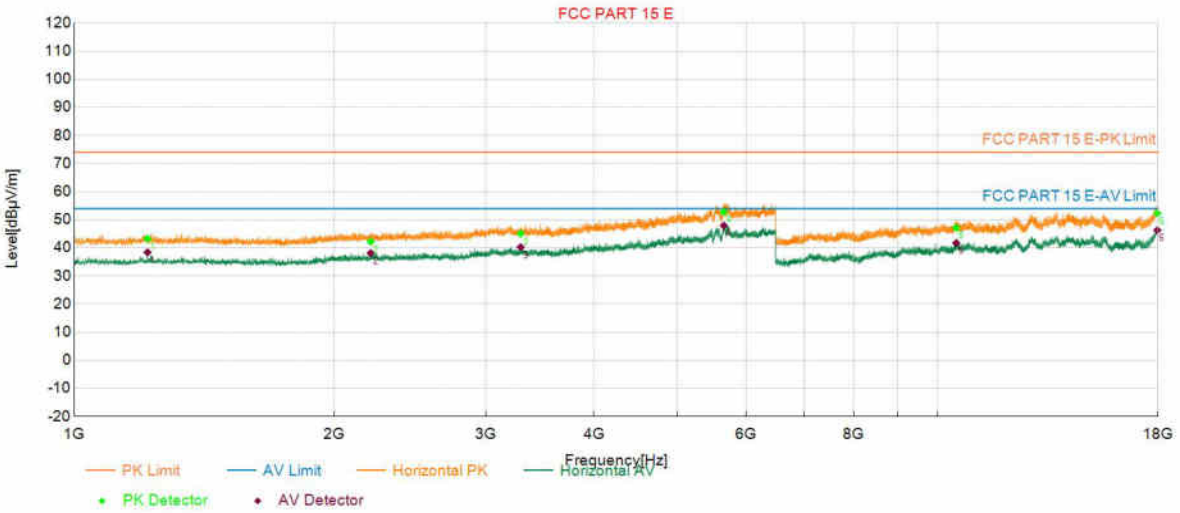
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1194.7195	46.07	74.00	27.93	38.30	54.00	15.70	150	31	Vertical
2	2173.8174	44.93	74.00	29.07	37.86	54.00	16.14	150	216	Vertical
3	3223.3223	44.64	74.00	29.36	39.54	54.00	14.46	150	190	Vertical
4	5665.0165	54.13	74.00	19.87	47.95	54.00	6.05	150	168	Vertical
5	9216.5717	44.99	74.00	29.01	39.43	54.00	14.57	150	16	Vertical
6	17947.0947	51.90	74.00	22.10	47.14	54.00	6.86	150	22	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5550	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:28:00

Test Graph



PK Final Data List

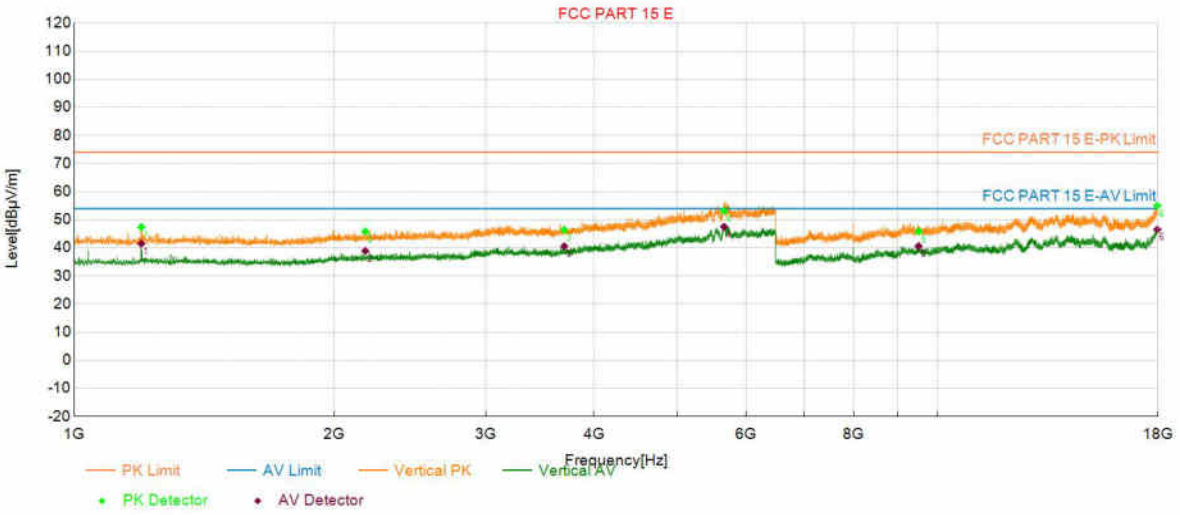
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1216.1716	43.29	74.00	30.71	38.41	54.00	15.59	150	200	Horizontal
2	2205.1705	42.20	74.00	31.80	38.11	54.00	15.89	150	237	Horizontal
3	3289.8790	45.04	74.00	28.96	40.22	54.00	13.78	150	186	Horizontal
4	5654.0154	52.77	74.00	21.23	47.92	54.00	6.08	150	295	Horizontal
5	10509.3009	47.11	74.00	26.89	41.74	54.00	12.26	150	286	Horizontal
6	17967.7968	52.23	74.00	21.77	46.27	54.00	7.73	150	186	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5550	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:29:19

Test Graph



PK Final Data List

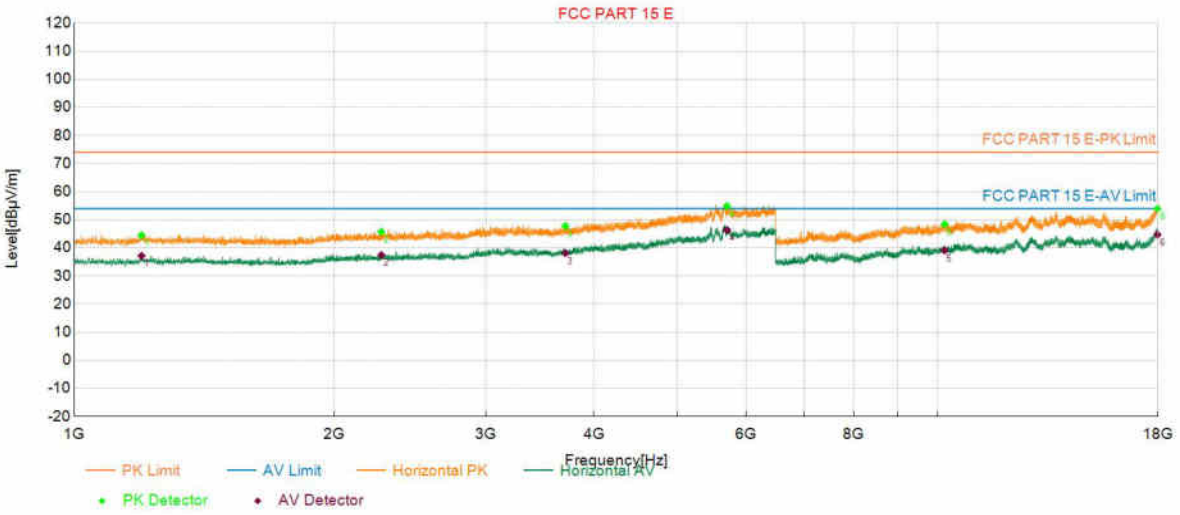
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1196.3696	47.39	74.00	26.61	41.53	54.00	12.47	150	192	Vertical
2	2173.8174	45.83	74.00	28.17	38.91	54.00	15.09	150	239	Vertical
3	3694.7195	46.39	74.00	27.61	40.56	54.00	13.44	150	59	Vertical
4	5657.8658	53.13	74.00	20.87	47.51	54.00	6.49	150	259	Vertical
5	9505.2505	45.85	74.00	28.15	40.63	54.00	13.37	150	116	Vertical
6	17965.4966	54.97	74.00	19.03	46.51	54.00	7.49	150	314	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5670	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:32:25

Test Graph



PK Final Data List

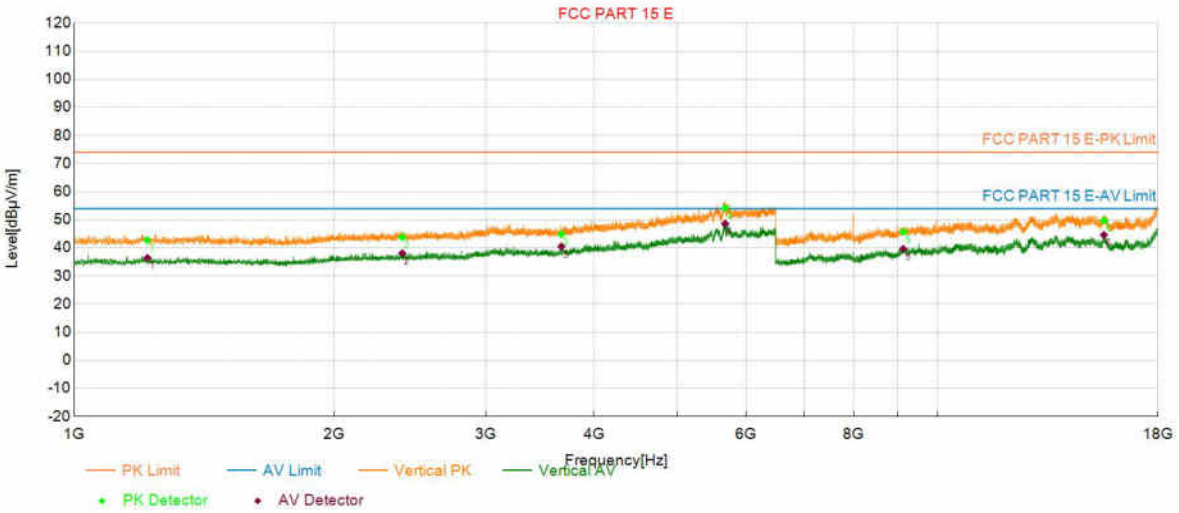
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1196.9197	44.47	74.00	29.53	37.17	54.00	16.83	150	56	Horizontal
2	2268.4268	45.71	74.00	28.29	37.42	54.00	16.58	150	1	Horizontal
3	3706.2706	47.78	74.00	26.22	38.12	54.00	15.88	150	214	Horizontal
4	5702.9703	54.81	74.00	19.19	46.31	54.00	7.69	150	179	Horizontal
5	10187.2687	48.39	74.00	25.61	39.07	54.00	14.93	150	237	Horizontal
6	17973.5474	53.92	74.00	20.08	44.68	54.00	9.32	150	249	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5670	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:33:44

Test Graph



PK Final Data List

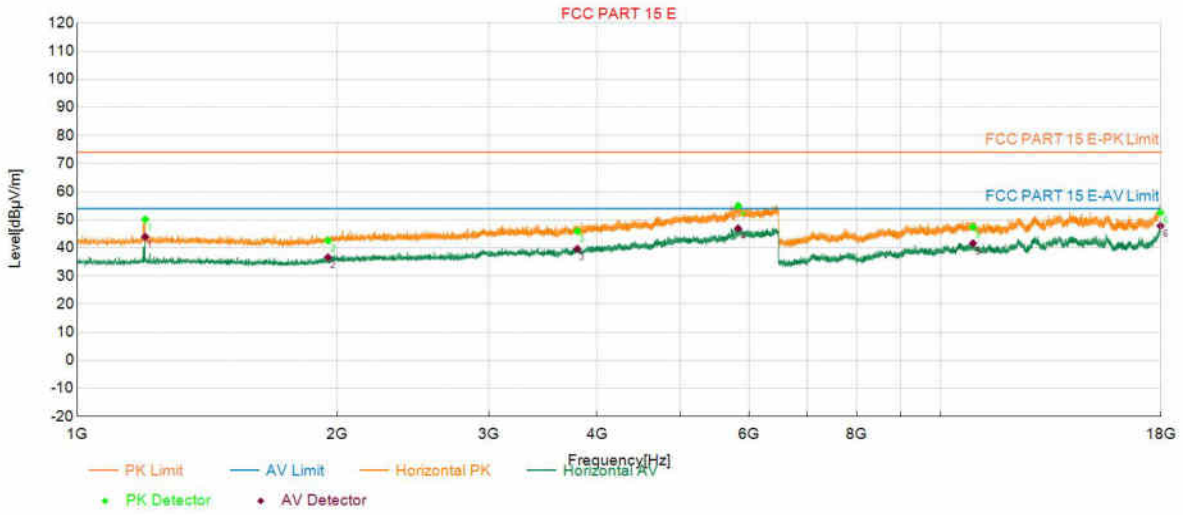
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1215.6216	42.76	74.00	31.24	36.39	54.00	17.61	150	156	Vertical
2	2398.2398	43.80	74.00	30.20	38.07	54.00	15.93	150	6	Vertical
3	3667.2167	44.84	74.00	29.16	40.50	54.00	13.50	150	126	Vertical
4	5674.9175	54.12	74.00	19.88	48.59	54.00	5.41	150	251	Vertical
5	9125.7126	45.67	74.00	28.33	39.63	54.00	14.37	150	2	Vertical
6	15580.1580	49.70	74.00	24.30	44.60	54.00	9.40	150	145	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5755	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:38:02

Test Graph



PK Final Data List

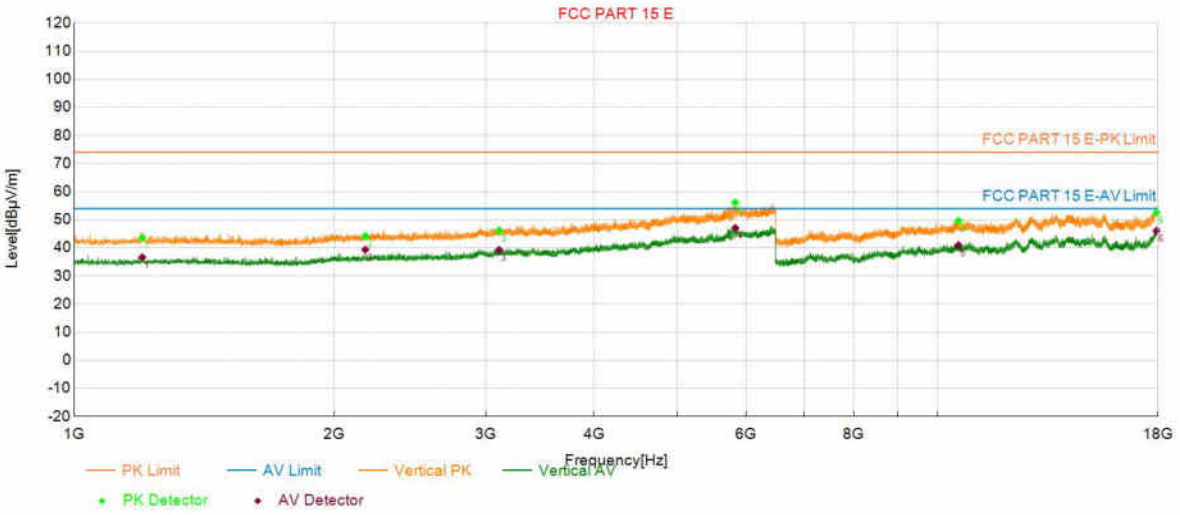
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1199.1199	50.14	74.00	23.86	43.93	54.00	10.07	150	75	Horizontal
2	1952.1452	42.58	74.00	31.42	36.63	54.00	17.37	150	36	Horizontal
3	3795.9296	45.91	74.00	28.09	39.63	54.00	14.37	150	194	Horizontal
4	5828.3828	54.96	74.00	19.04	46.91	54.00	7.09	150	308	Horizontal
5	10902.6403	47.40	74.00	26.60	41.58	54.00	12.42	150	1	Horizontal
6	17972.3972	52.55	74.00	21.45	47.81	54.00	6.19	150	295	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5755	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 14:39:21

Test Graph



PK Final Data List

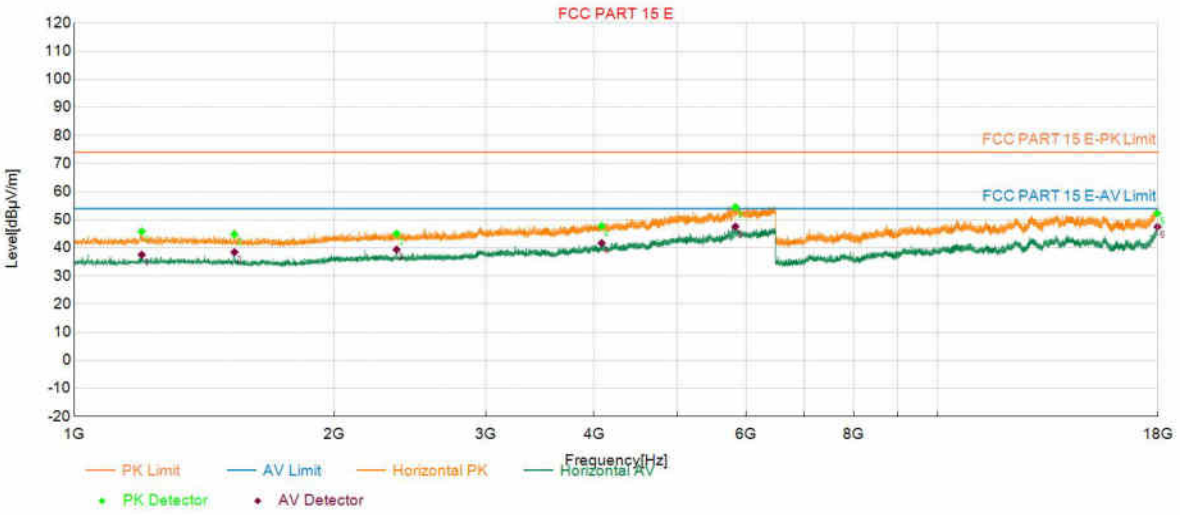
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1199.1199	43.60	74.00	30.40	36.62	54.00	17.38	150	36	Vertical
2	2173.8174	44.22	74.00	29.78	39.37	54.00	14.63	150	241	Vertical
3	3105.0605	46.17	74.00	27.83	39.27	54.00	14.73	150	126	Vertical
4	5830.5831	56.15	74.00	17.85	47.06	54.00	6.94	150	206	Vertical
5	10570.2570	49.64	74.00	24.36	40.95	54.00	13.05	150	162	Vertical
6	17926.3926	52.52	74.00	21.48	46.08	54.00	7.92	150	93	Vertical

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5795	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 15:18:18

Test Graph



PK Final Data List

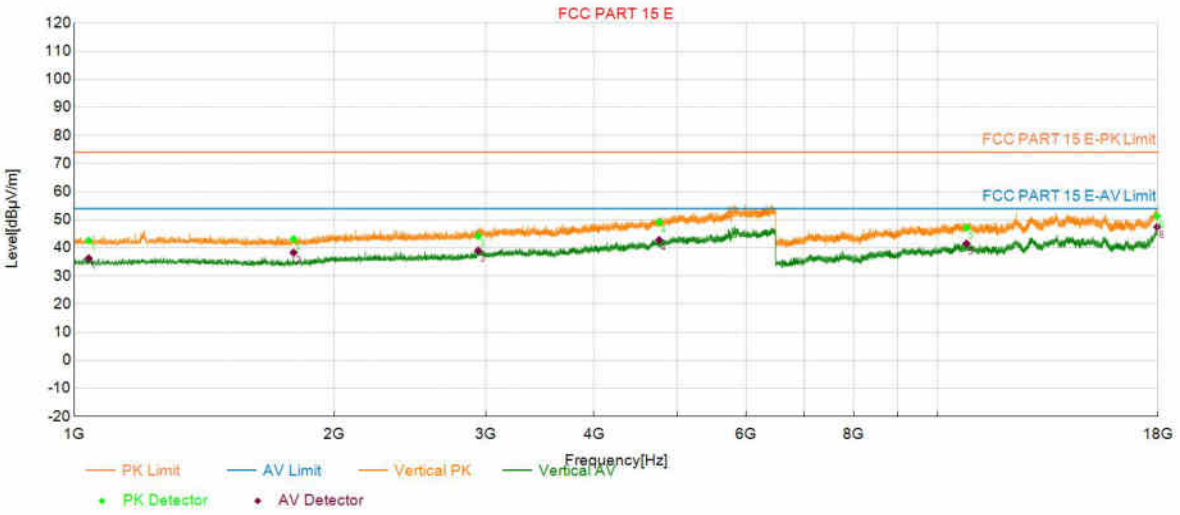
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1197.4697	45.82	74.00	28.18	37.54	54.00	16.46	150	128	Horizontal
2	1533.5534	44.79	74.00	29.21	38.45	54.00	15.55	150	192	Horizontal
3	2363.0363	45.04	74.00	28.96	39.40	54.00	14.60	150	157	Horizontal
4	4081.9582	47.76	74.00	26.24	41.68	54.00	12.32	150	277	Horizontal
5	5832.2332	54.55	74.00	19.45	47.58	54.00	6.42	150	93	Horizontal
6	17974.6975	52.21	74.00	21.79	47.48	54.00	6.52	150	24	Horizontal

Test Report

Project Information			
Customer:			
EUT:	Vehicle wireless module		
Model:	P13.A01.H4	SN:	
Mode:	11N40_5795	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC PART 15 E			

Start of Test:2024-12-04 15:19:37

Test Graph



PK Final Data List

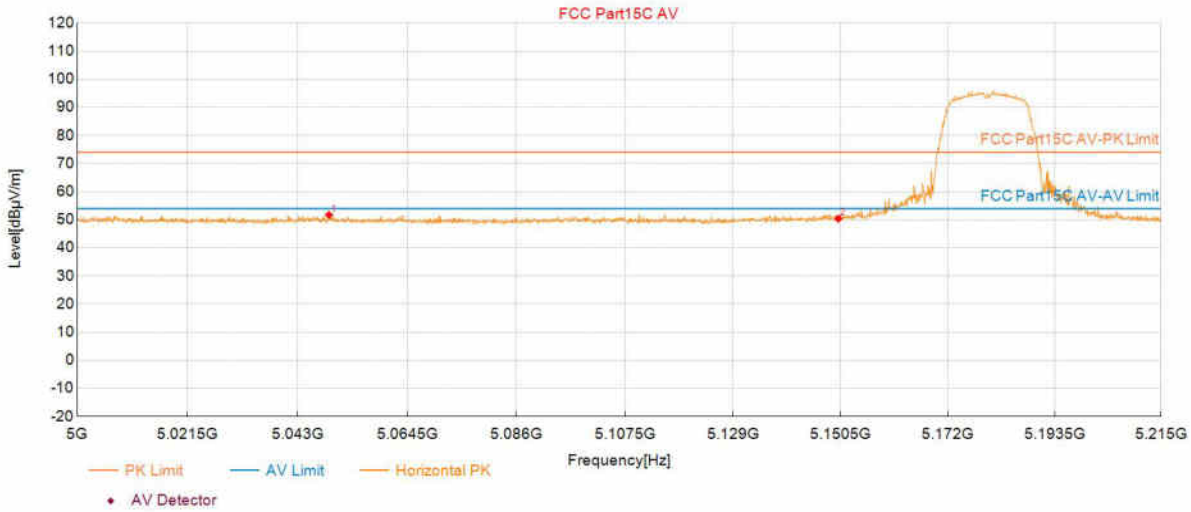
NO.	Frequency (MHz)	PK Value (dBµV/m)	PK Limit (dBµV/m)	PK Margin (dB)	AV Value (dBµV/m)	AV Limit (dBµV/m)	AV Margin (dB)	Height (cm)	Angle (°)	Polarity
1	1039.6040	42.54	74.00	31.46	36.27	54.00	17.73	150	115	Vertical
2	1795.3795	43.16	74.00	30.84	38.29	54.00	15.71	150	86	Vertical
3	2936.7437	44.24	74.00	29.76	39.01	54.00	14.99	150	305	Vertical
4	4759.0759	49.17	74.00	24.83	42.81	54.00	11.19	150	225	Vertical
5	10801.4301	47.21	74.00	26.79	41.52	54.00	12.48	150	297	Vertical
6	17958.5959	51.25	74.00	22.75	47.42	54.00	6.58	150	69	Vertical

Test Report

Project Information			
EUT:	Vehicle wireless module		
Customer:			
Model:	P13.A01.H4	SN:	
Mode:	11A_5180	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC Part15C AV			

Start of Test:2024-12-04 15:30:10

Test Graph



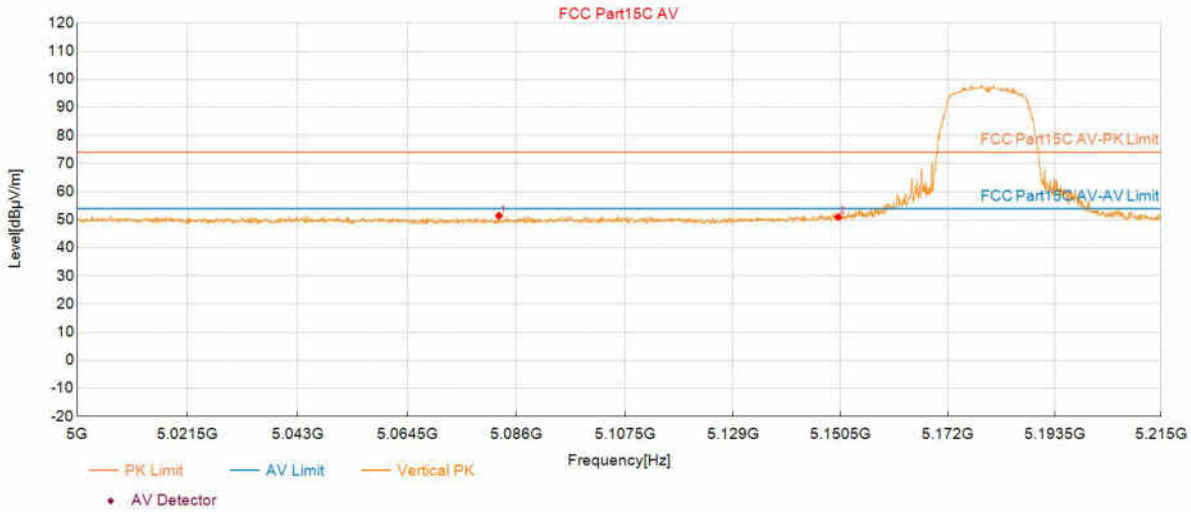
Suspected Data List								
NO.	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	5049.1521	51.69	74.00	22.31	150	352	Horizontal	PASS
2	5150.0375	50.42	74.00	23.58	150	82	Horizontal	PASS

Test Report

Project Information			
EUT:	Vehicle wireless module		
Customer:			
Model:	P13.A01.H4	SN:	
Mode:	11A_5180	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC Part15C AV			

Start of Test:2024-12-04 15:30:52

Test Graph



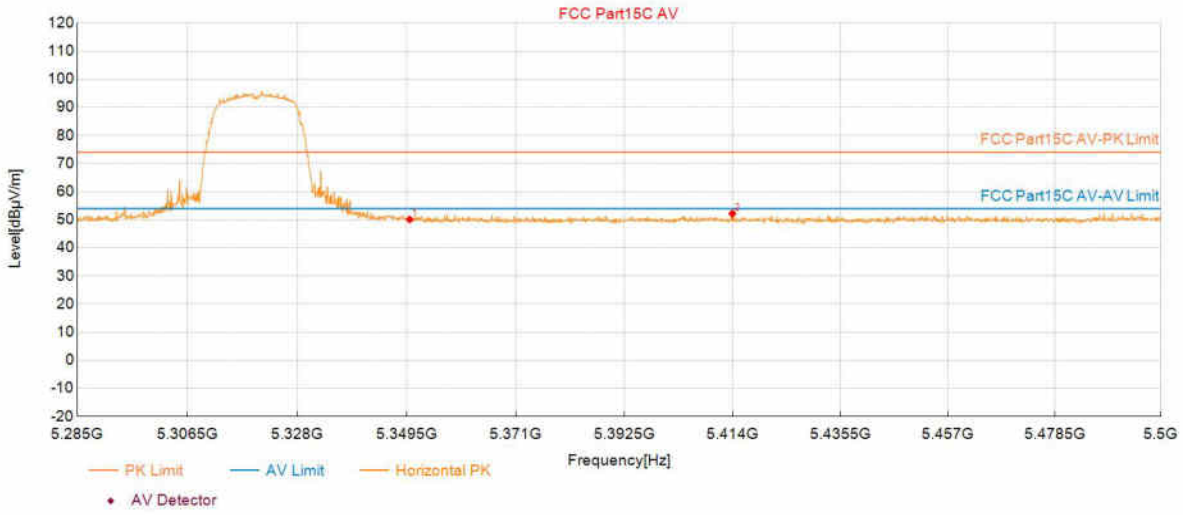
Suspected Data List								
NO.	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	5082.6013	51.42	74.00	22.58	150	2	Vertical	PASS
2	5150.0375	50.94	74.00	23.06	150	46	Vertical	PASS

Test Report

Project Information			
EUT:	Vehicle wireless module		
Customer:			
Model:	P13.A01.H4	SN:	
Mode:	11A_5320	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC Part15C AV			

Start of Test:2024-12-04 15:33:10

Test Graph



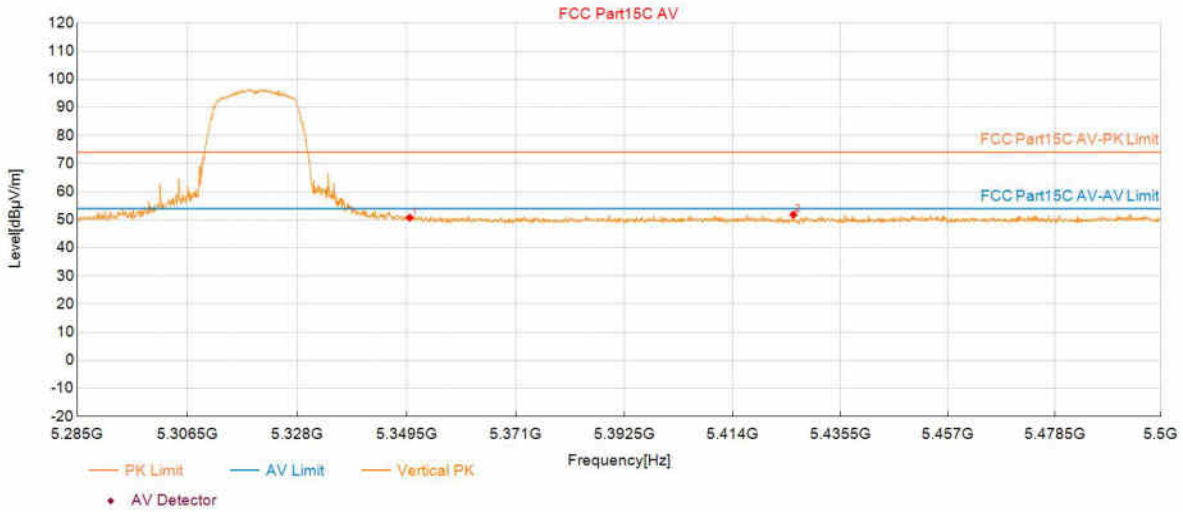
Suspected Data List								
NO.	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	5350.0700	50.08	74.00	23.92	150	38	Horizontal	PASS
2	5413.9570	52.21	74.00	21.79	150	205	Horizontal	PASS

Test Report

Project Information			
EUT:	Vehicle wireless module		
Customer:			
Model:	P13.A01.H4	SN:	
Mode:	11A_5320	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC Part15C AV			

Start of Test:2024-12-04 15:33:53

Test Graph



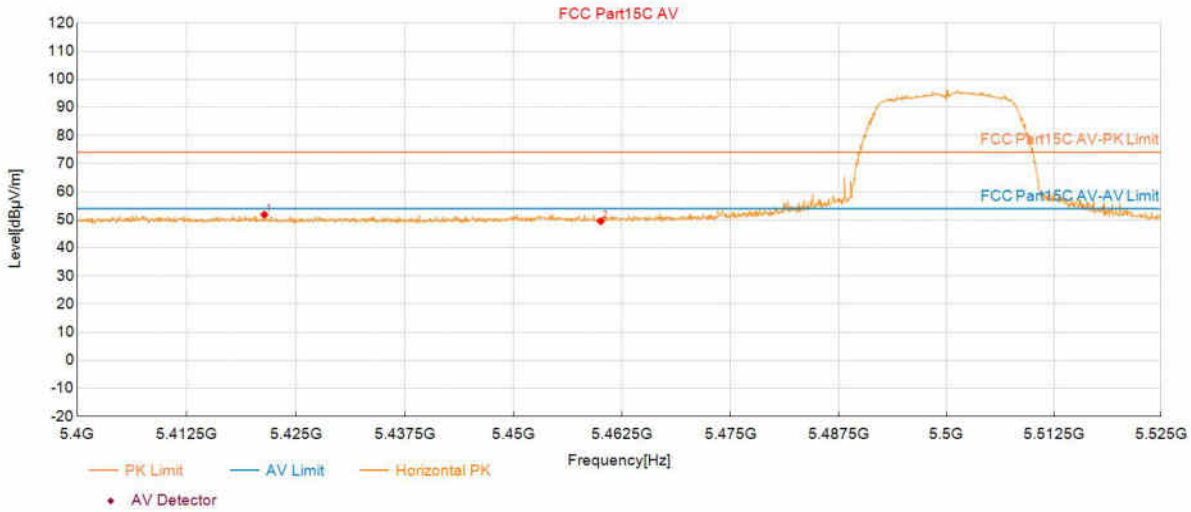
Suspected Data List								
NO.	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	5350.0700	50.71	74.00	23.29	150	130	Vertical	PASS
2	5426.1106	51.80	74.00	22.20	150	210	Vertical	PASS

Test Report

Project Information			
EUT:	Vehicle wireless module		
Customer:			
Model:	P13.A01.H4	SN:	
Mode:	11A_5500	Voltage:	DC 4.2V
Environment:	Temp: 25℃; Humi:60%	Engineer:	Soho Liu
Remark:	Power Set:Default		
Test Standard: FCC Part15C AV			

Start of Test:2024-12-04 15:36:10

Test Graph



Suspected Data List								
NO.	Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Angle (°)	Polarity	Verdict
1	5421.3857	51.78	74.00	22.22	150	147	Horizontal	PASS
2	5460.0300	49.47	74.00	24.53	150	321	Horizontal	PASS