

FCC RF Test Report

(FHSS)

Applicant: PORTMAN ELECTRONICS (DONGGUAN) CO., LTD.

Address of Applicant: NO#10, Luyi 2 Road, Keyuancheng, Tangxia Town

Equipment Under Test (EUT)

Product Name: CAR ALARM

Model No.: 185TWSPTI, 185TWPRTI

FCC ID: TBQT12-SS2WTI

Applicable Standards: FCC CFR Title 47 Part 15C (§15.247)

Date of Sample Receipt: 08 Mar., 2022

Date of Test: 09 Mar., to 25 Apr., 2022

Date of Report Issued: 26 Apr., 2022

Test Result: PASS

Tested by: _____

Mike OU

Test Engineer

Date: _____

26 Apr., 2022

Reviewed by: _____

Winnier Zhang
Project Engineer

Date: _____

26 Apr., 2022

Approved by: _____

Winnier Zhang
Manager

Date: _____

26 Apr., 2022

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in above the application standard version. Test results reported herein relate only to the item(s) tested.

This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

2 Version

Version No.	Date	Description
00	26 Apr., 2022	Original

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4 General Information

4.1 Client Information

Applicant:	PORTMAN ELECTRONICS (DONGGUAN) CO., LTD.
Address:	NO#10, Luyi 2 Road, Keyuancheng, Tangxia Town
Manufacturer/ Factory:	DONGGUAN PORTMAN ELECTRONIC SCIENCE AND TECHNOLOGY CO., LTD.
Address:	NO.10, LUYI 2 ROAD, TANGXIA TOWN, DONGGUAN CITY GUANGDONG PROVINCE

4.2 General Description of E.U.T.

Product Name:	CAR ALARM
Model No.:	185TWSPTI, 185TWXPRTI
Operation Frequency:	905.4 MHz – 924.6 MHz
Number of Channel:	25
Modulation Technology:	FSK
Antenna Type:	HELIX Antenna
Antenna Gain:	-1.25 dBi (declare by applicant)
Power Supply:	DC 3.0V (CR2450 battery)
Remark:	Model No.: 185TWSPTI, 185TWXPRTI were identical inside, the electrical circuit design, layout, components used and internal wiring, with only difference being model name.
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

4.3 Test Mode and Test Environment

Test Modes:	
Non-hopping mode:	Keep the EUT in continuous transmitting mode.
Hopping mode:	Keep the EUT in hopping mode.
<i>Remark: The report only reflects the test data of worst mode.</i>	
Operating Environment:	
Temperature:	15°C ~ 35°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1010 mbar

4.4 Description of Support Units

The EUT has been tested as an independent unit.

4.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 1GHz) (3m SAC)	±4.45 dB
Radiated Emission (1GHz ~ 18GHz) (3m SAC)	±5.34 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	±5.34 dB

Note: All the measurement uncertainty value were shown with a coverage k=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

4.6 Additions to, Deviations, or Exclusions From the Method

No

4.7 Laboratory Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC - Designation No.: CN1211 JianYan Testing Group Shenzhen Co., Ltd. has been accredited as a testing laboratory by FCC(Federal Communications Commission). The test firm Registration No. is 727551. ● ISED – CAB identifier.: CN0021 The 3m Semi-anechoic chamber and 10m Semi-anechoic chamber of JianYan Testing Group Shenzhen Co., Ltd. has been Registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 10106A-1. ● CNAS - Registration No.: CNAS L15527 JianYan Testing Group Shenzhen Co., Ltd. is accredited to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L15527. ● A2LA - Registration No.: 4346.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. The test scope can be found as below link: https://portal.a2la.org/scopepdf/4346-01.pdf
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4.8 Laboratory Location

<p>JianYan Testing Group Shenzhen Co., Ltd. Address: No.101, Building 8, Innovation Wisdom Port, No.155 Hongtian Road, Huangpu Community, Xinqiao Street, Bao'an District, Shenzhen, Guangdong, People's Republic of China. Tel: +86-755-23118282, Fax: +86-755-23116366 Email: info-JYTee@lets.com, Website: http://jyt.lets.com</p>

4.9 Test Instruments List

Radiated Emission(3m SAC):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal.Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m SAC	ETS	9m*6m*6m	WXJ001-1	01-19-2021	01-18-2024
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	02-17-2022	02-16-2023
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	06-20-2021	06-19-2022
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	02-17-2022	02-16-2023
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	06-18-2021	06-17-2022
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXG001-7	02-17-2022	02-16-2023
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXG001-3	02-17-2022	02-16-2023
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXG001-9	02-17-2022	02-16-2023
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	02-17-2022	02-16-2023
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	11-27-2021	11-26-2022
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	02-17-2022	02-16-2023
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	02-17-2022	02-16-2023
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	02-17-2022	02-16-2023
Test Software	Tonscend	TS+	Version: 3.0.0.1		

Conducted Method:					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	01-20-2022	01-20-2023
DC Power Supply	Keysight	E3642A	WXJ025-2	10-25-2021	10-24-2022

5 Measurement Setup and Procedure

5.1 Test Channel

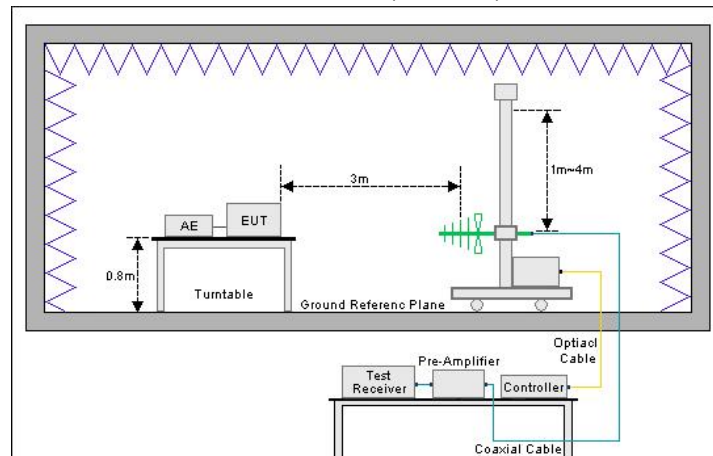
According to ANSI C63.10-2013 chapter 5.6.1 Table 4 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	905.4	13	915	24	924.6

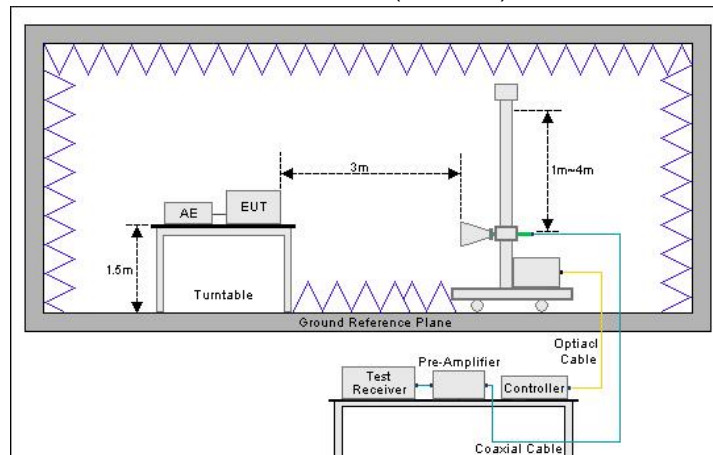
5.2 Test Setup

1) Radiated emission measurement:

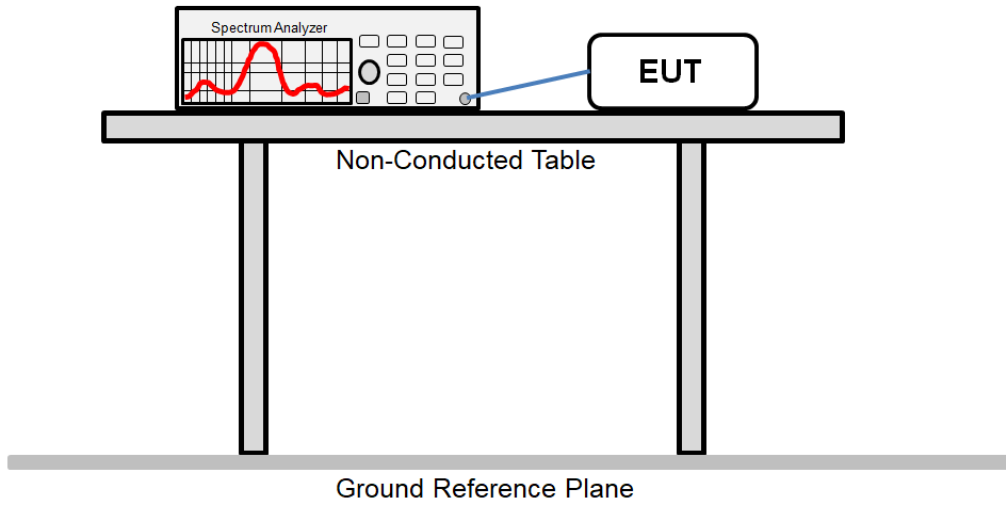
Below 1GHz (3m SAC)



Above 1GHz (3m SAC)



2) Conducted test method



5.3 Test Procedure

Test method	Test step
Conducted emission	<ol style="list-style-type: none"> The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Radiated emission	<p>For below 1GHz:</p> <ol style="list-style-type: none"> The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. <p>For above 1GHz:</p> <ol style="list-style-type: none"> The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working, respectively on 3 axis (X, Y & Z) and considered typical configuration to obtain worst position. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
Conducted test method	<ol style="list-style-type: none"> The antenna port of EUT was connected to the test port of the test system through an RF cable. The EUT is keeping in continuous transmission mode and tested in all modulation modes. Open the test software, prepare a test plan, and control the system through the software. After the test is completed, the test report is exported through the test software.

6 Test Results

6.1 Summary

6.1.1 Clause and data summary

Test items	Standard clause	Test data	Result
Antenna Requirement	15.203 15.247 (b)(4)	See Section 6.2	Pass
AC Power Line Conducted Emission	15.207	/	N/A
Conducted Output Power	15.247 (b)(2)	See Section 6.3	Pass
20dB Occupied Bandwidth	15.247 (a)(1)(i)	See Section 6.4	Pass
Carrier Frequencies Separation	15.247 (a)(1)	See Section 6.5	Pass
Hopping Channel Number	5.247 (a)(1)(i)	See Section 6.6	Pass
Dwell Time	15.247 (a)(1)(i)	See Section 6.7	Pass
Spurious Emission	15.205 15.209 15.247 (d)	See Section 6.8	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: Not Applicable. DUT power by DC 3.0V (CR2450 battery). 3. The cable insertion loss used by "RF Output Power" and other conduction measurement items is 0.5dB (provided by the customer).			
Test Method:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02		

6.1.2 Test Limit

Test items	Limit																														
Conducted Output Power	For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.																														
20dB Occupied Bandwidth Hopping Channel Number Dwell Time	For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.																														
Carrier Frequencies Separation	Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater																														
Spurious Emission	<p>In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)):</p> <table border="1" data-bbox="557 1249 1433 1442"> <thead> <tr> <th rowspan="2">Frequency (MHz)</th> <th colspan="2">Limit (dBµV/m)</th> <th rowspan="2">Detector</th> </tr> <tr> <th>@ 3m</th> <th>@ 10m</th> </tr> </thead> <tbody> <tr> <td>30 – 88</td> <td>40.0</td> <td>30.0</td> <td>Quasi-peak</td> </tr> <tr> <td>88 – 216</td> <td>43.5</td> <td>33.5</td> <td>Quasi-peak</td> </tr> <tr> <td>216 – 960</td> <td>46.0</td> <td>36.0</td> <td>Quasi-peak</td> </tr> <tr> <td>960 – 1000</td> <td>54.0</td> <td>44.0</td> <td>Quasi-peak</td> </tr> </tbody> </table> <p>Note: The more stringent limit applies at transition frequencies.</p> <table border="1" data-bbox="557 1473 1433 1581"> <thead> <tr> <th rowspan="2">Frequency</th> <th colspan="2">Limit (dBµV/m) @ 3m</th> </tr> <tr> <th>Average</th> <th>Peake</th> </tr> </thead> <tbody> <tr> <td>Above 1 GHz</td> <td>54.0</td> <td>74.0</td> </tr> </tbody> </table> <p>Note: The measurement bandwidth shall be 1 MHz or greater.</p>	Frequency (MHz)	Limit (dBµV/m)		Detector	@ 3m	@ 10m	30 – 88	40.0	30.0	Quasi-peak	88 – 216	43.5	33.5	Quasi-peak	216 – 960	46.0	36.0	Quasi-peak	960 – 1000	54.0	44.0	Quasi-peak	Frequency	Limit (dBµV/m) @ 3m		Average	Peake	Above 1 GHz	54.0	74.0
Frequency (MHz)	Limit (dBµV/m)		Detector																												
	@ 3m	@ 10m																													
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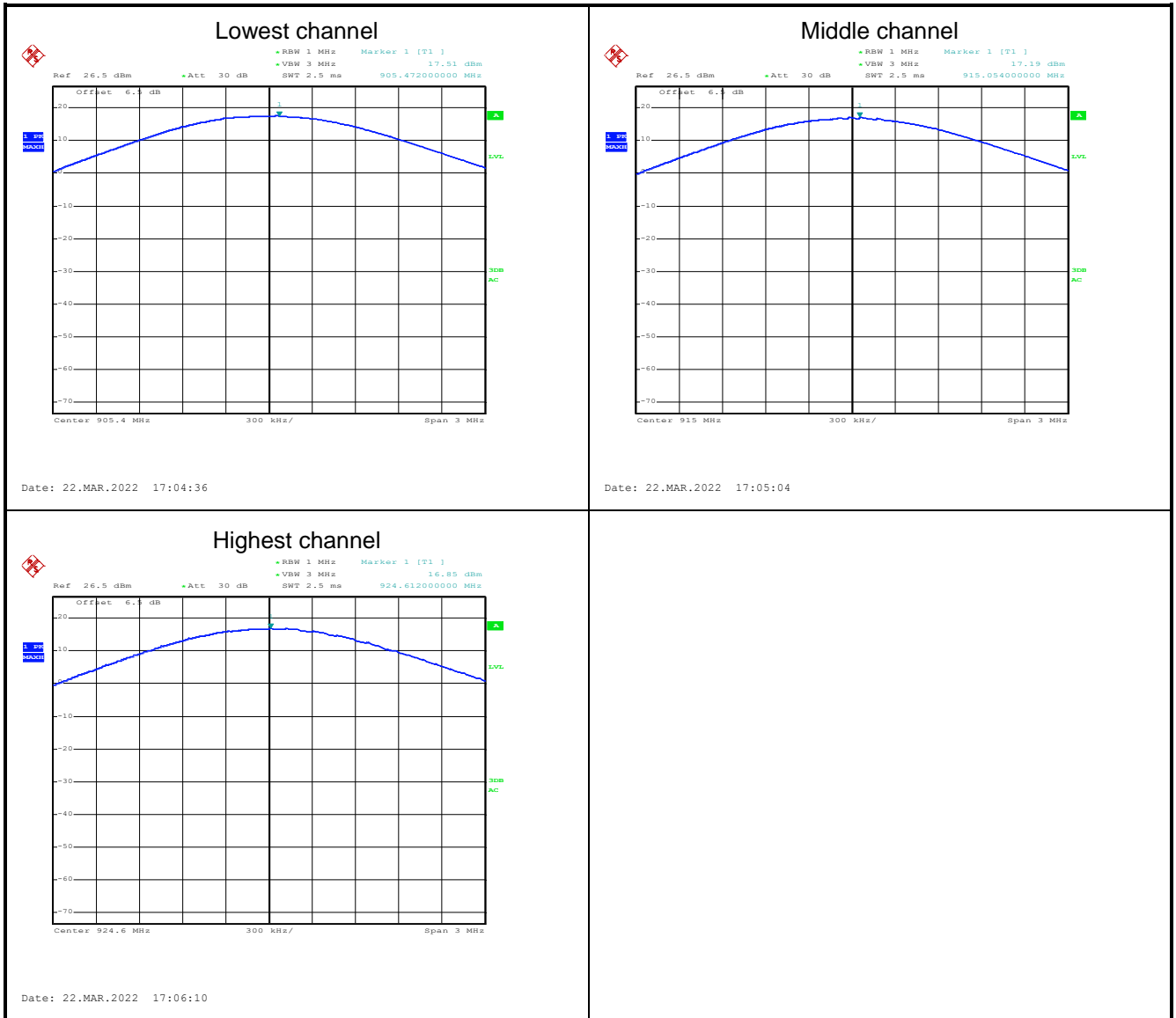
6.2 Antenna Requirement

Standard requirement:	FCC Part 15 C Section 15.203 & 247(b)
<p>15.203 requirement: 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, 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.</p> <p>15.247(b) (4) requirement: (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.</p>	
E.U.T Antenna:	
<p>The EUT antenna is an HELIX Antenna which permanently attached, and the best case gain of the antenna is -1.25 dBi. See product internal photos for details.</p>	

6.3 Conducted Output Power

Test channel	Maximum Output Power (dBm)	Limit (dBm)	Result
Lowest channel	17.51	24.00	Pass
Middle channel	17.19	24.00	Pass
Highest channel	16.85	24.00	Pass

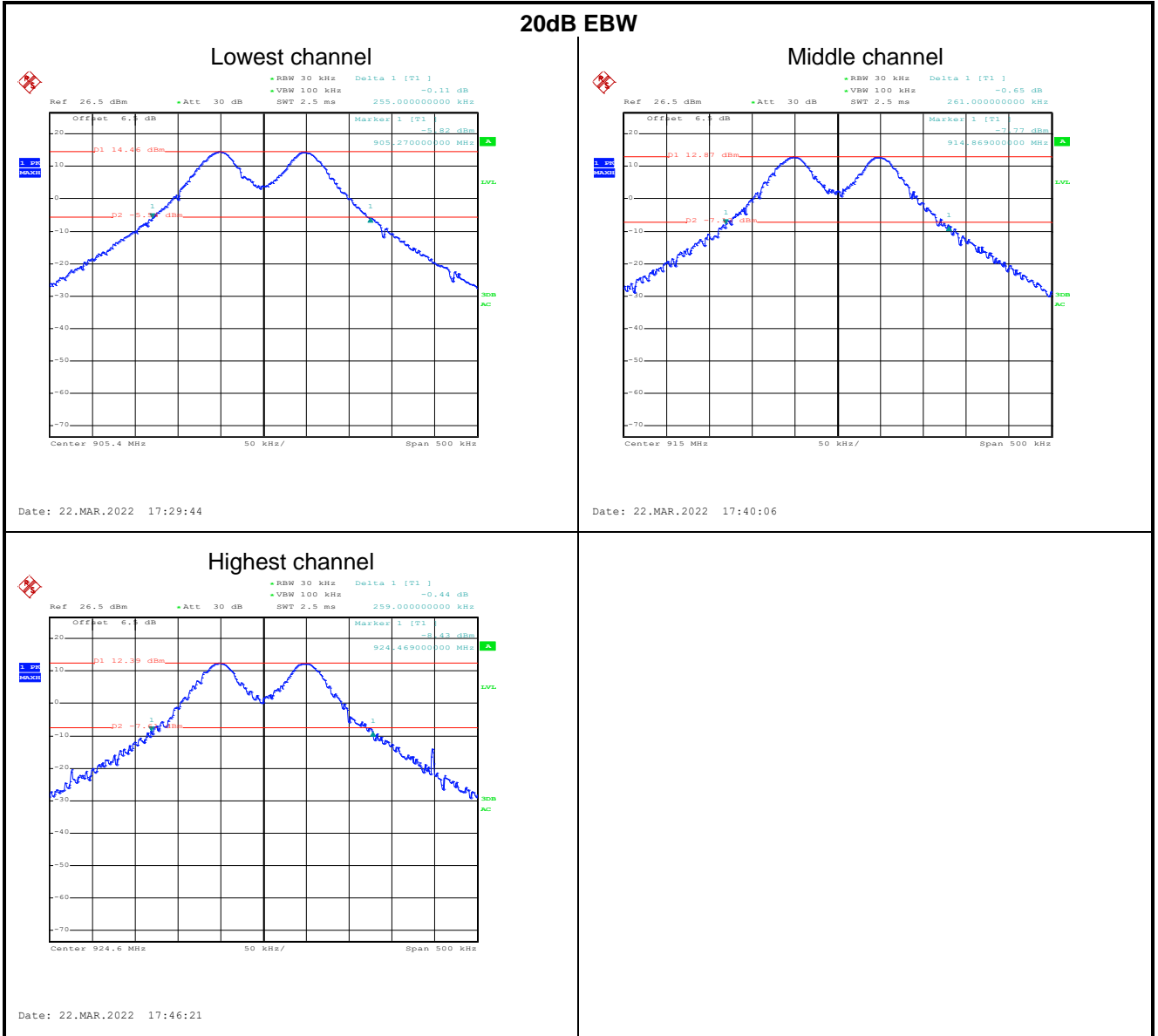
Test plot as follows:



6.4 20dB Occupied Bandwidth

Test Channel	20dB Emission Bandwidth (MHz)	Limit (kHz)	Result
Lowest channel	0.255	250 < BW _{20dB} ≤ 500	Pass
Middle channel	0.261		
Highest channel	0.259		

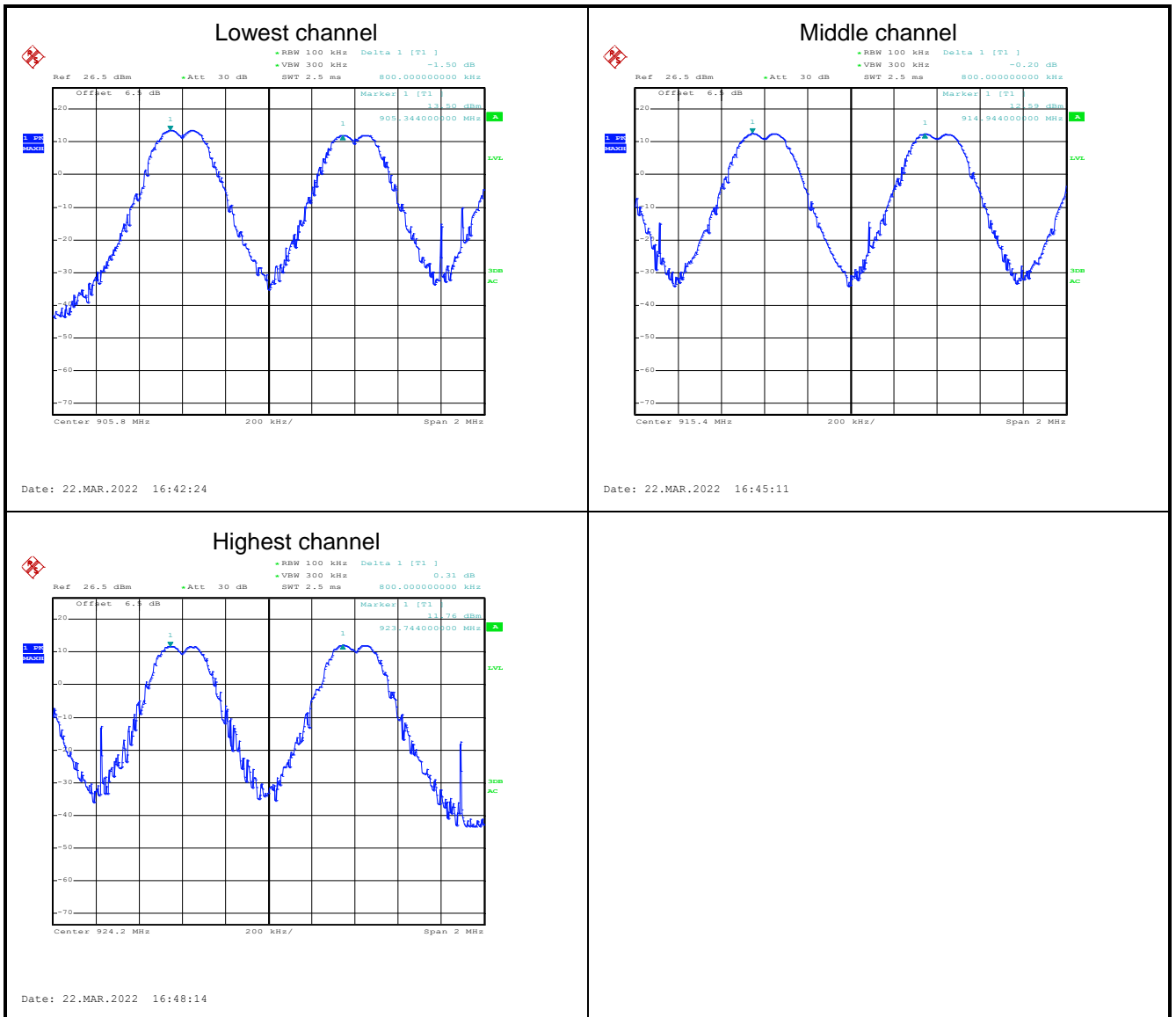
Test plot as follows:



6.5 Carrier Frequencies Separation

Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
Lowest channel	800	261	Pass
Middle channel	800	261	Pass
Highest channel	800	261	Pass

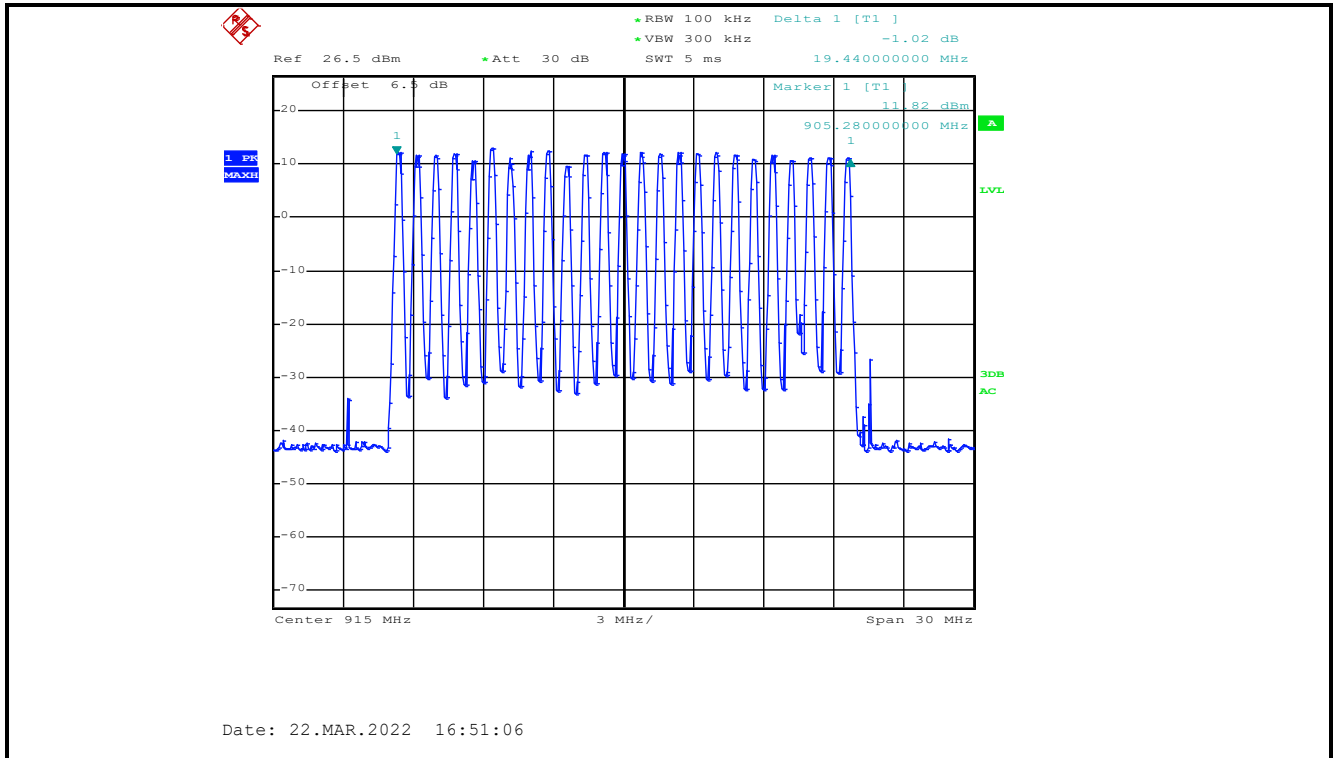
Test plot as follows:



6.6 Hopping Channel Number

Hopping channel numbers	Limit	Result
25	$25 \leq N_{ch} < 50$	Pass

Test plot as follows:



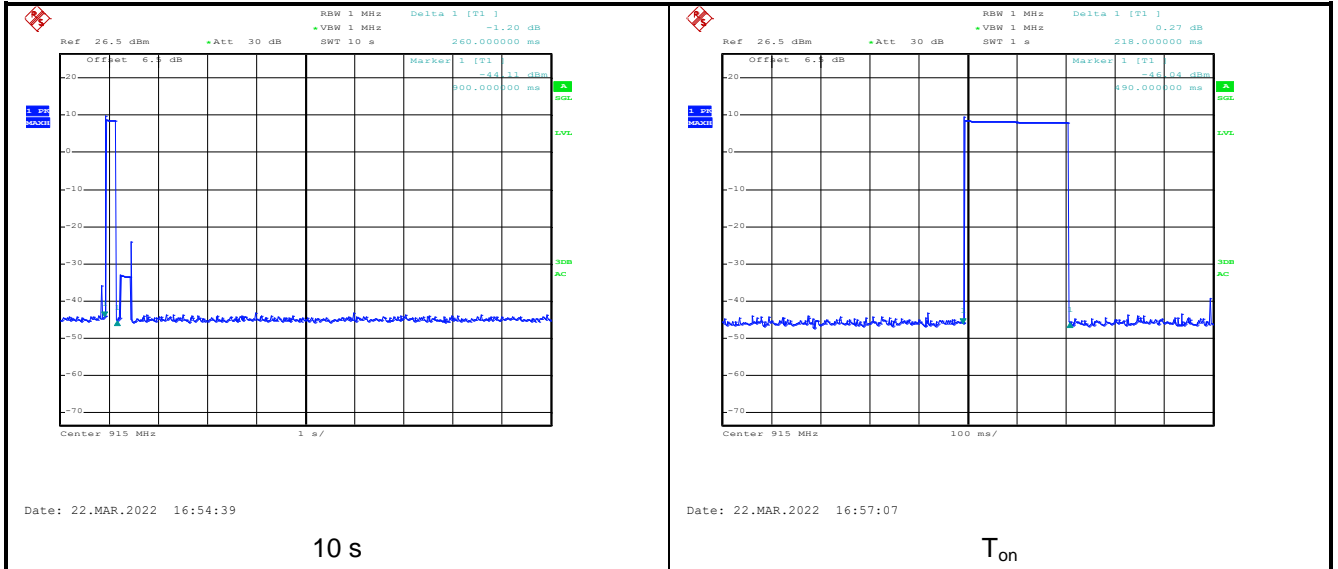
6.7 Dwell Time

T_{on} (s)	Hopping numbers (10 s period)	Dwell time (s)	Limit (s)	Result
0.218	1	0.218	0.4	Pass

Note:

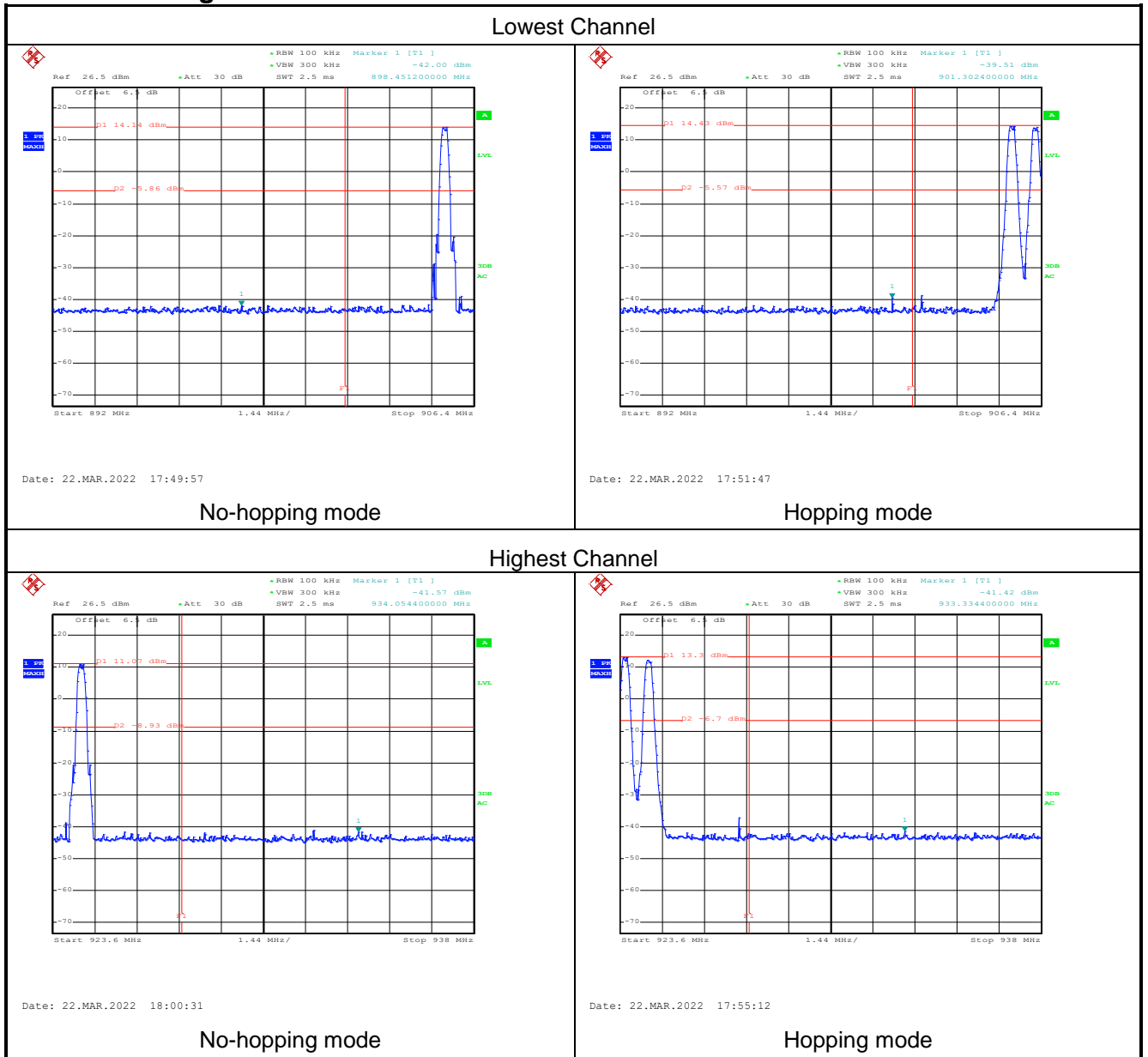
- T_{on} is time per hop.
- Dwell time = T_{on} * Hopping numbers.

Test plot as follows:

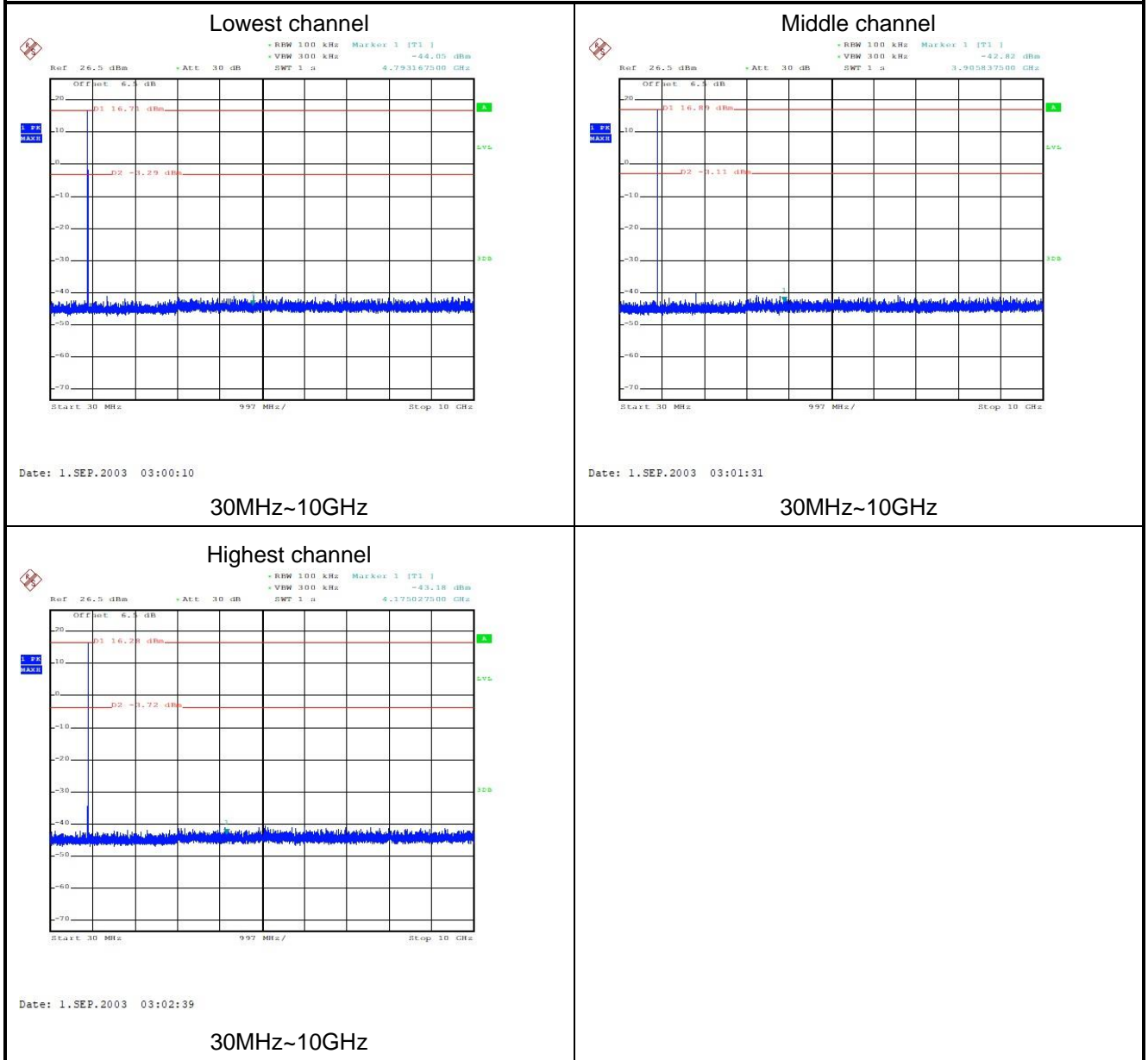


6.8 Spurious Emission

6.8.1 Band-edge Emission

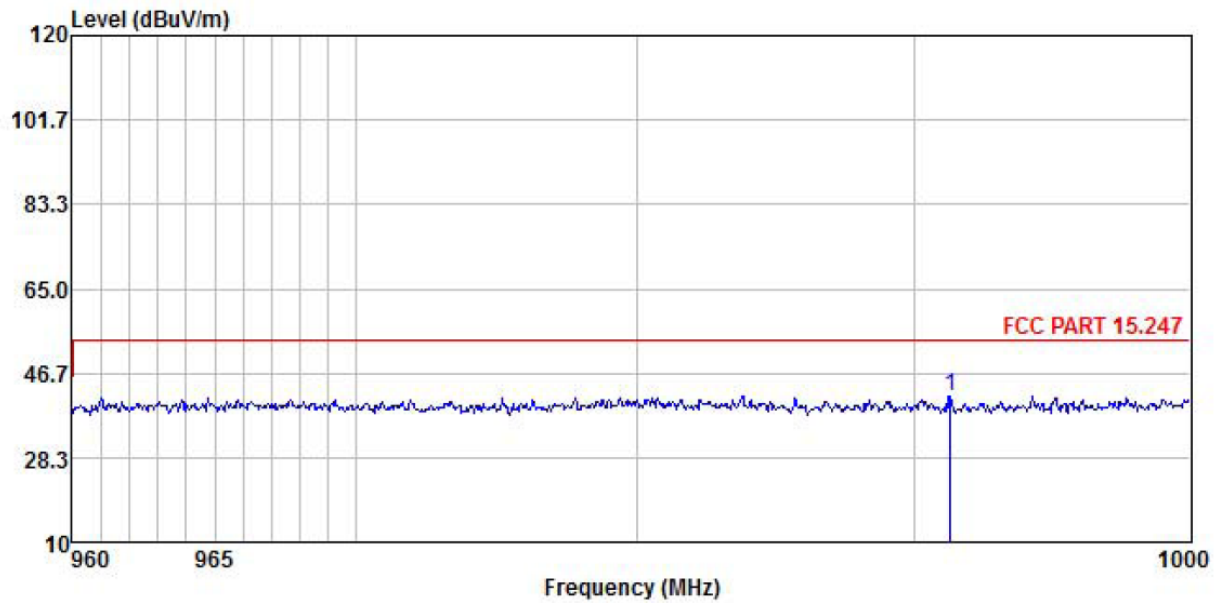


6.8.2 Conducted Spurious Emission



6.8.3 Emissions in Restricted Frequency Bands

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	DC3.0V		

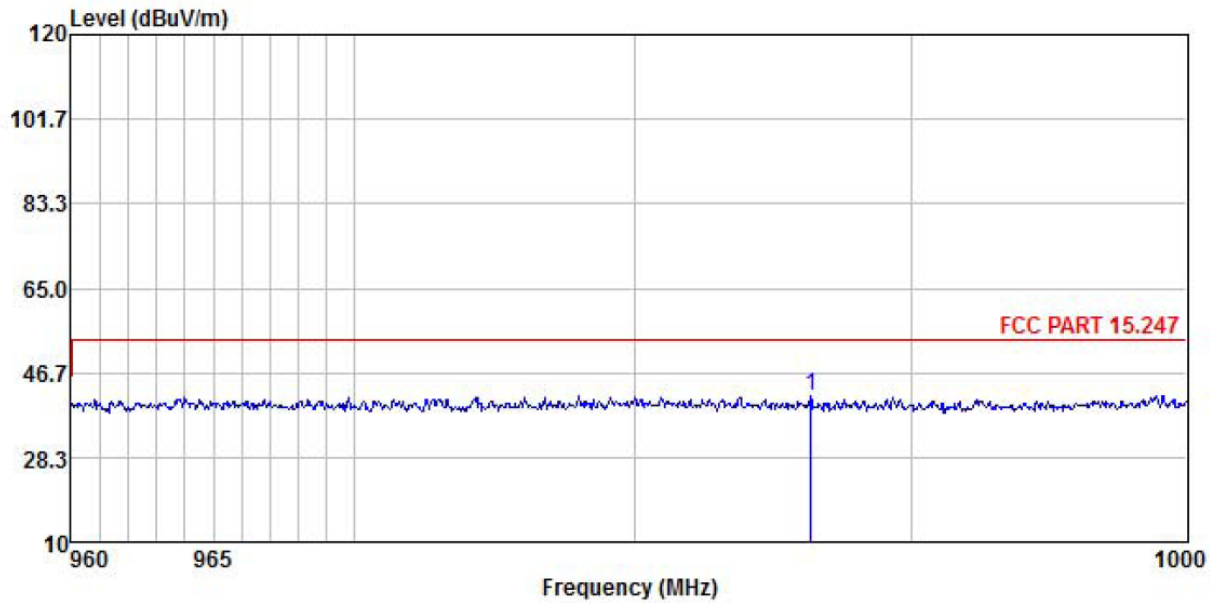


	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1 991.262	15.13	23.04	3.64	0.00	41.81	54.00	-12.19

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	DC3.0V		

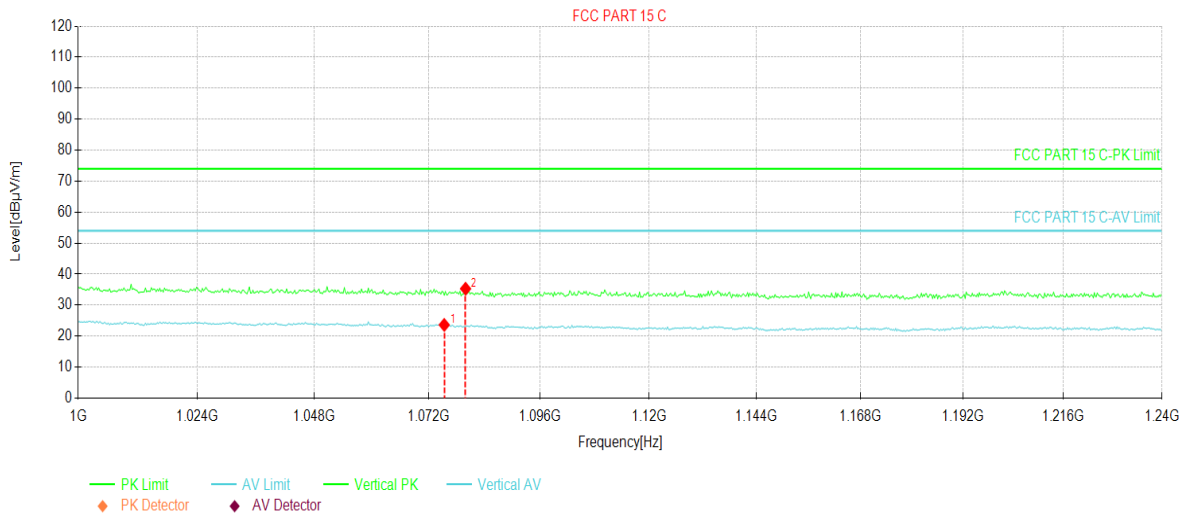


	Read	Antenna	Cable	Preamp	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit
-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB
1	986.337	15.14	23.02	3.62	0.00	41.78	54.00 -12.22

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	DC3.0V		

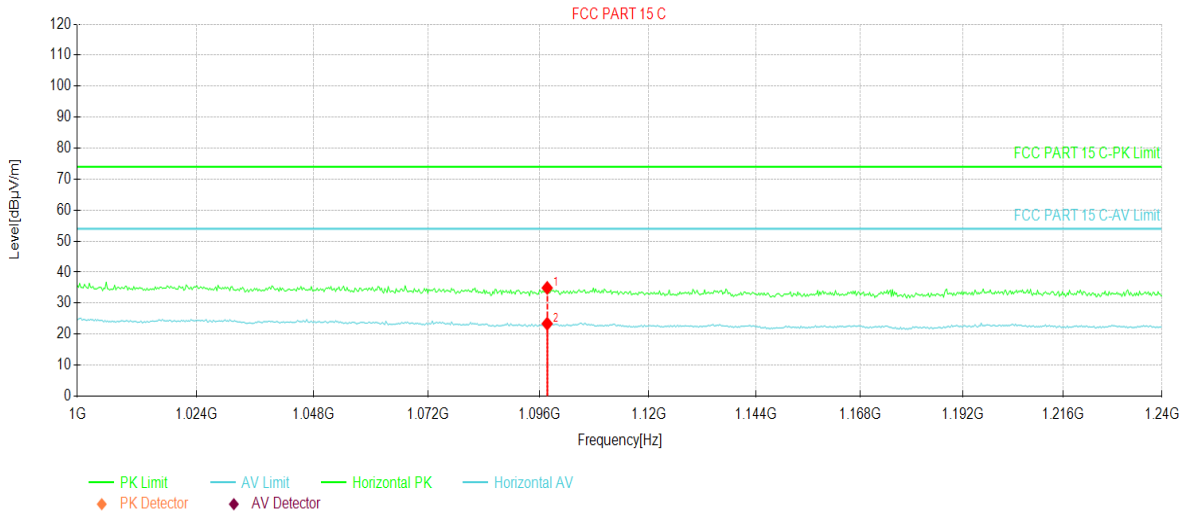


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV/m]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Trace	Polarity
1	1075.36	46.34	23.62	-22.72	54.00	30.38	AV	Vertical
2	1079.92	58.08	35.29	-22.79	74.00	38.71	PK	Vertical

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preampifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	DC3.0V		



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1097.68	57.98	34.91	-23.07	74.00	39.09	PK	Horizontal
2	1097.68	46.42	23.35	-23.07	54.00	30.65	AV	Horizontal

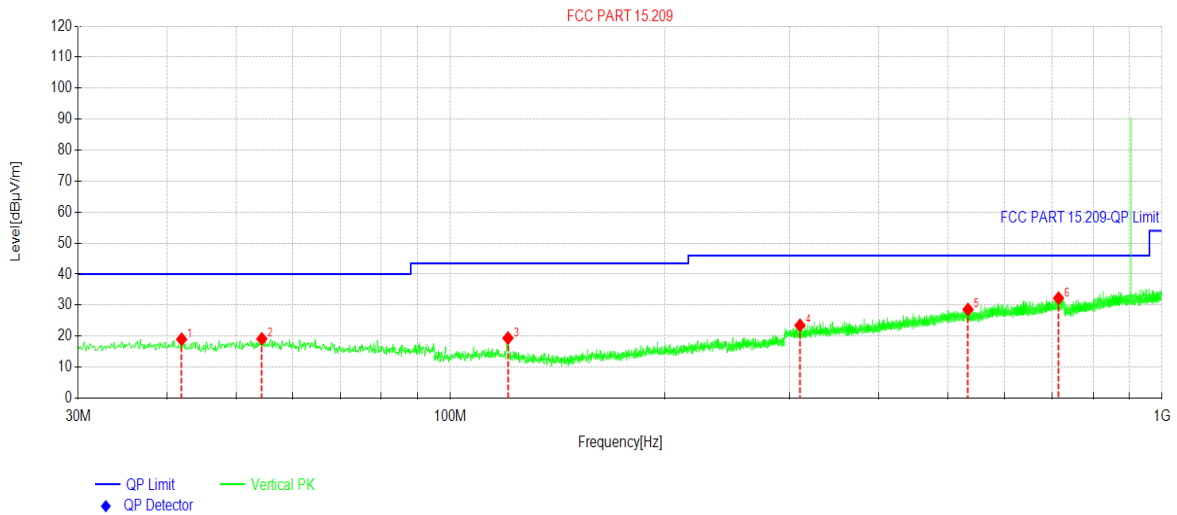
Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

6.8.4 Emissions in Non-restricted Frequency Bands

Below 1GHz:

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	DC3.0V		

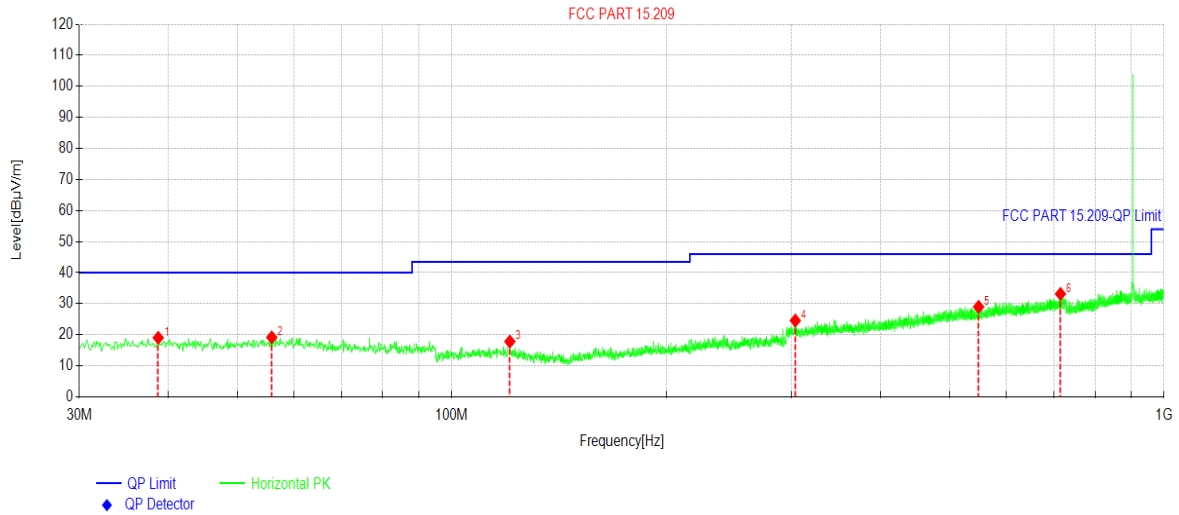


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	41.9322	36.02	18.98	-17.04	40.00	21.02	PK	Vertical
2	54.3494	36.07	19.12	-16.95	40.00	20.88	PK	Vertical
3	120.510	37.58	19.37	-18.21	43.50	24.13	PK	Vertical
4	309.970	37.48	23.49	-13.99	46.00	22.51	PK	Vertical
5	533.771	38.11	28.59	-9.52	46.00	17.41	PK	Vertical
6	715.470	39.19	32.24	-6.95	46.00	13.76	PK	Vertical

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	DC3.0V		



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	38.7309	35.96	19.03	-16.93	40.00	20.97	PK	Horizontal
2	55.9016	36.15	19.17	-16.98	40.00	20.83	PK	Horizontal
3	120.704	36.05	17.81	-18.24	43.50	25.69	PK	Horizontal
4	303.664	38.65	24.57	-14.08	46.00	21.43	PK	Horizontal
5	549.195	38.51	28.99	-9.52	46.00	17.01	PK	Horizontal
6	715.567	40.12	33.17	-6.95	46.00	12.83	PK	Horizontal

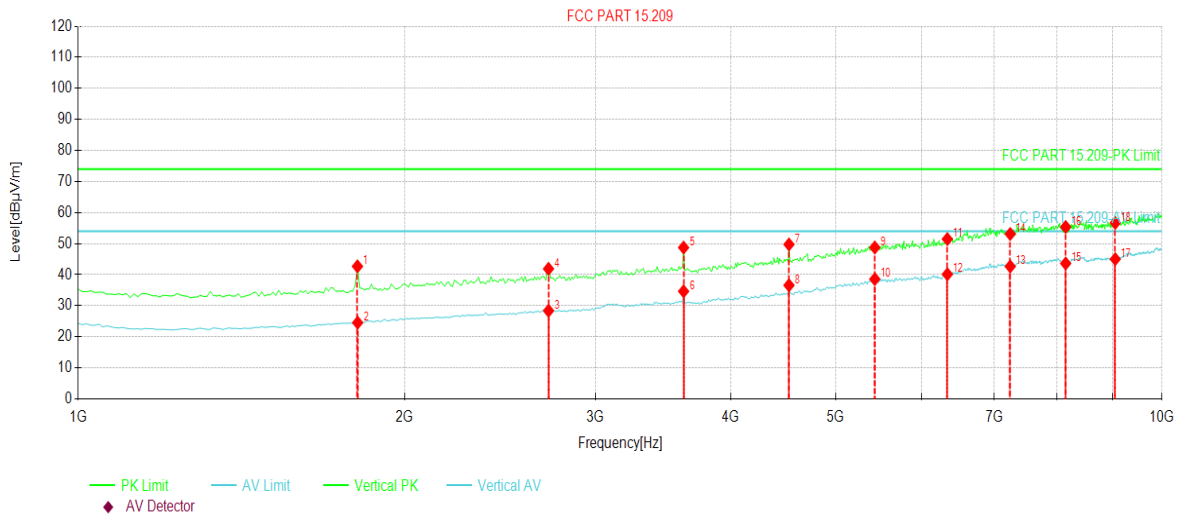
Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.

Above 1GHz:

905.4 MHz:

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Vertical
Test Voltage:	DC3.0V		

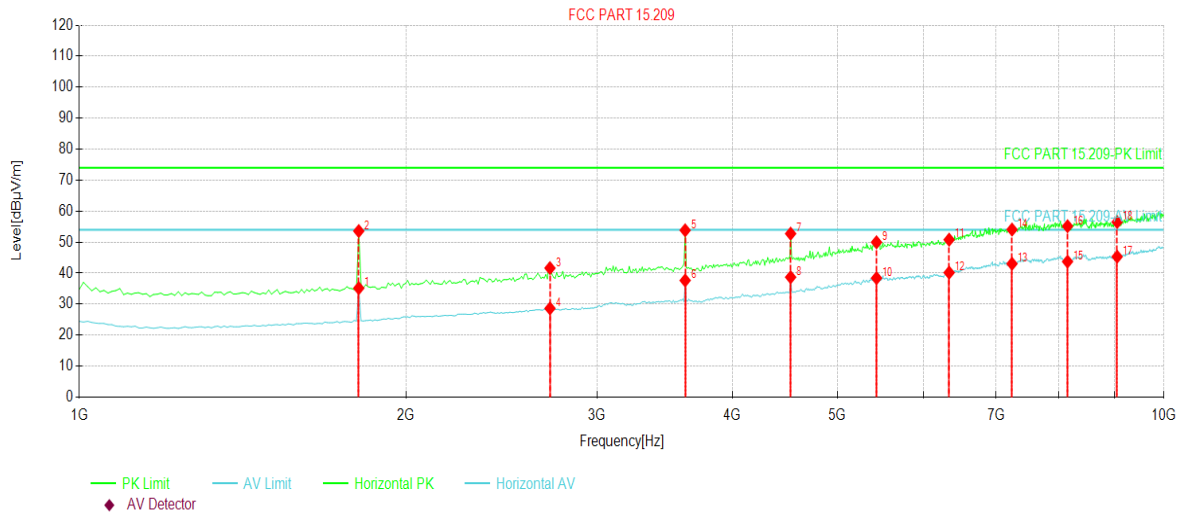


Suspected Data List								
NO.	Freq [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1810.00	64.02	42.67	-21.35	74.00	31.33	PK	Vertical
2	1810.80	45.85	24.54	-21.31	54.00	29.46	AV	Vertical
3	2716.20	45.97	28.38	-17.59	54.00	25.62	AV	Vertical
4	2716.20	59.48	41.89	-17.59	74.00	32.11	PK	Vertical
5	3619.00	63.56	48.73	-14.83	74.00	25.27	PK	Vertical
6	3619.00	49.48	34.65	-14.83	54.00	19.35	AV	Vertical
7	4527.00	60.42	49.74	-10.68	74.00	24.26	PK	Vertical
8	4527.00	47.25	36.57	-10.68	54.00	17.43	AV	Vertical
9	5432.40	54.75	48.76	-5.99	74.00	25.24	PK	Vertical
10	5432.40	44.56	38.57	-5.99	54.00	15.43	AV	Vertical
11	6337.80	54.93	51.45	-3.48	74.00	22.55	PK	Vertical
12	6337.80	43.61	40.13	-3.48	54.00	13.87	AV	Vertical
13	7243.20	42.70	42.65	-0.05	54.00	11.35	AV	Vertical
14	7243.20	53.16	53.11	-0.05	74.00	20.89	PK	Vertical
15	8148.60	42.76	43.61	0.85	54.00	10.39	AV	Vertical
16	8148.60	54.51	55.36	0.85	74.00	18.64	PK	Vertical
17	9054.00	43.19	45.02	1.83	54.00	8.98	AV	Vertical
18	9054.00	54.84	56.67	1.83	74.00	17.33	PK	Vertical

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Horizontal
Test Voltage:	DC3.0V		



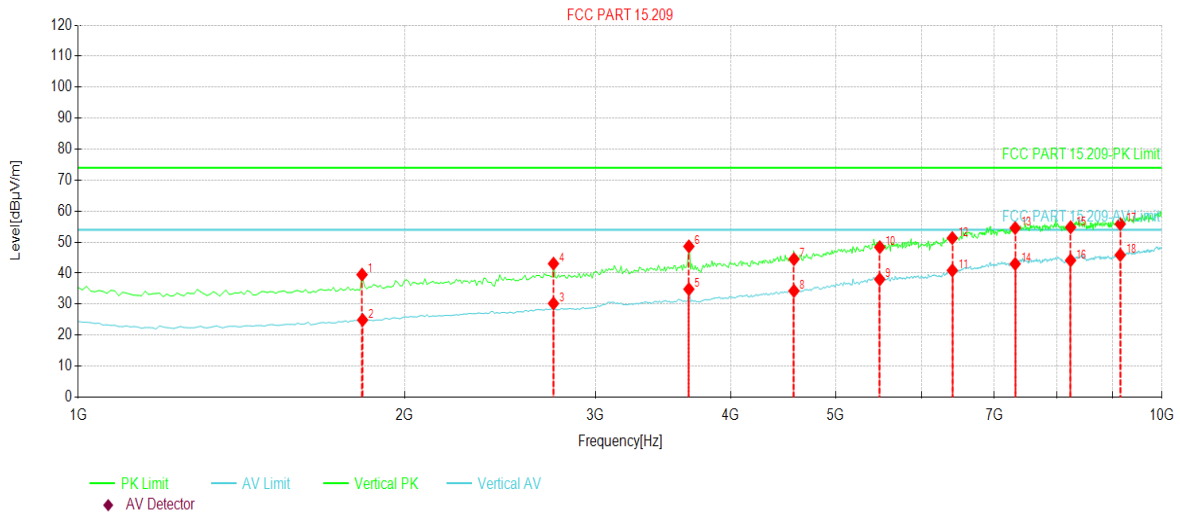
Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1810.00	56.50	35.15	-21.35	54.00	18.85	AV	Horizontal
2	1810.00	74.93	53.58	-21.35	74.00	20.42	PK	Horizontal
3	2716.20	59.22	41.63	-17.59	74.00	32.37	PK	Horizontal
4	2716.20	46.21	28.62	-17.59	54.00	25.38	AV	Horizontal
5	3619.00	68.66	53.83	-14.83	74.00	20.17	PK	Horizontal
6	3619.00	52.48	37.65	-14.83	54.00	16.35	AV	Horizontal
7	4527.00	63.43	52.75	-10.68	74.00	21.25	PK	Horizontal
8	4527.00	49.38	38.70	-10.68	54.00	15.30	AV	Horizontal
9	5432.40	55.95	49.96	-5.99	74.00	24.04	PK	Horizontal
10	5432.40	44.40	38.41	-5.99	54.00	15.59	AV	Horizontal
11	6337.80	54.27	50.79	-3.48	74.00	23.21	PK	Horizontal
12	6337.80	43.64	40.16	-3.48	54.00	13.84	AV	Horizontal
13	7243.20	43.08	43.03	-0.05	54.00	10.97	AV	Horizontal
14	7243.20	54.11	54.06	-0.05	74.00	19.94	PK	Horizontal
15	8148.60	42.88	43.73	0.85	54.00	10.27	AV	Horizontal
16	8148.60	54.30	55.15	0.85	74.00	18.85	PK	Horizontal
17	9054.00	43.48	45.31	1.83	54.00	8.69	AV	Horizontal
18	9054.00	54.65	56.48	1.83	74.00	17.52	PK	Horizontal

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

915 MHz:

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Vertical
Test Voltage:	DC3.0V		

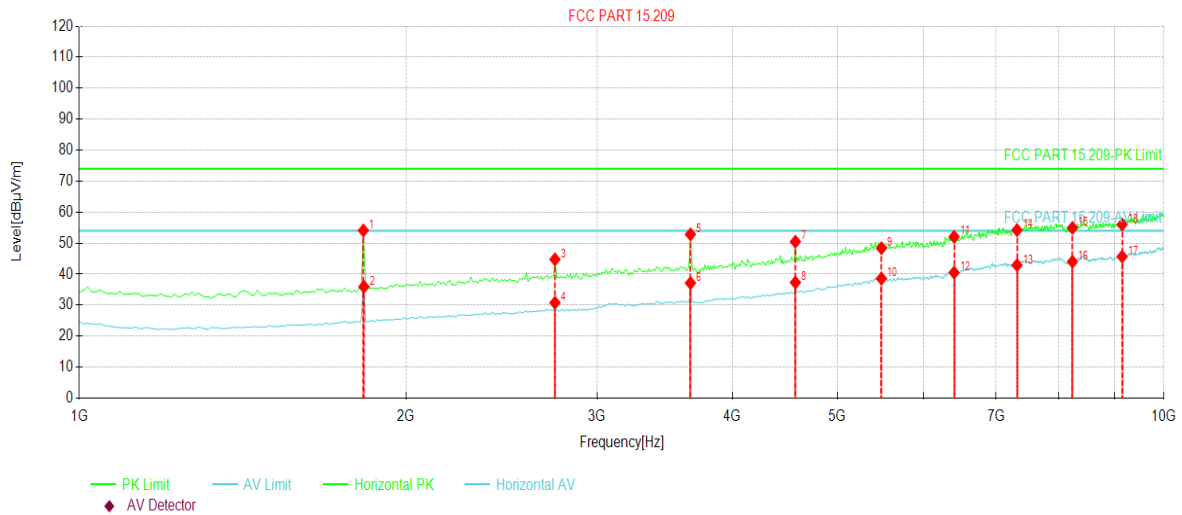


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1828.00	60.78	39.52	-21.26	74.00	34.48	PK	Vertical
2	1830.00	46.10	24.88	-21.22	54.00	29.12	AV	Vertical
3	2745.00	47.79	30.22	-17.57	54.00	23.78	AV	Vertical
4	2745.00	60.63	43.06	-17.57	74.00	30.94	PK	Vertical
5	3660.00	49.46	34.83	-14.63	54.00	19.17	AV	Vertical
6	3660.00	63.26	48.63	-14.63	74.00	25.37	PK	Vertical
7	4575.00	54.95	44.51	-10.44	74.00	29.49	PK	Vertical
8	4575.00	44.70	34.26	-10.44	54.00	19.74	AV	Vertical
9	5490.00	44.06	37.99	-6.07	54.00	16.01	AV	Vertical
10	5490.00	54.43	48.36	-6.07	74.00	25.64	PK	Vertical
11	6405.00	43.61	40.88	-2.73	54.00	13.12	AV	Vertical
12	6405.00	54.05	51.32	-2.73	74.00	22.68	PK	Vertical
13	7320.00	54.50	54.55	0.05	74.00	19.45	PK	Vertical
14	7320.00	42.94	42.99	0.05	54.00	11.01	AV	Vertical
15	8235.00	53.68	54.81	1.13	74.00	19.19	PK	Vertical
16	8235.00	43.00	44.13	1.13	54.00	9.87	AV	Vertical
17	9150.00	53.62	55.84	2.22	74.00	18.16	PK	Vertical
18	9150.00	43.63	45.85	2.22	54.00	8.15	AV	Vertical

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Horizontal
Test Voltage:	DC3.0V		



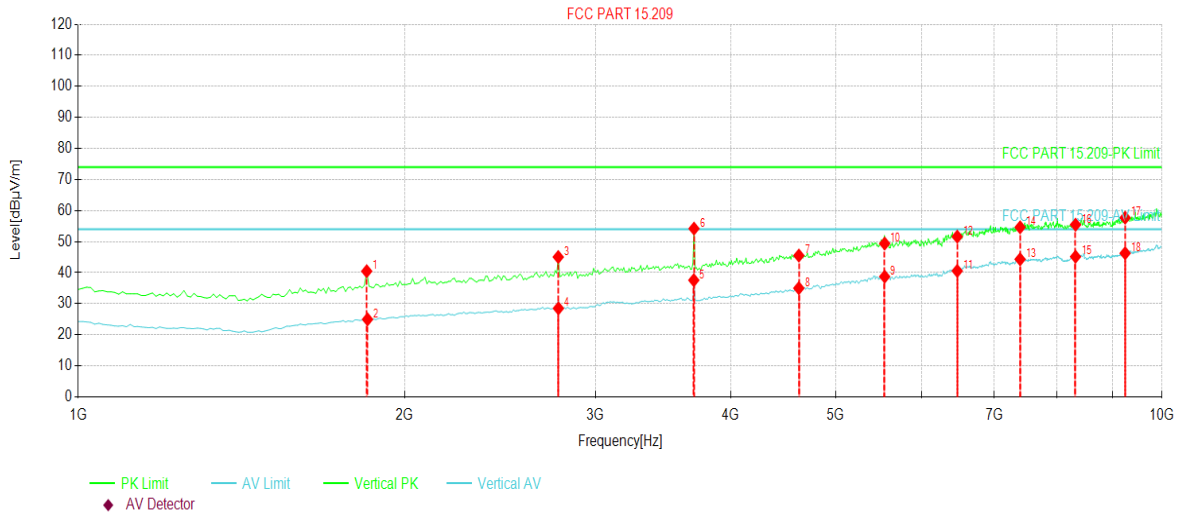
Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1828.00	75.37	54.11	-21.26	74.00	19.89	PK	Horizontal
2	1830.00	57.15	35.93	-21.22	74.00	38.07	PK	Horizontal
3	2745.00	62.35	44.78	-17.57	74.00	29.22	PK	Horizontal
4	2745.00	48.36	30.79	-17.57	54.00	23.21	AV	Horizontal
5	3660.00	67.47	52.84	-14.63	74.00	21.16	PK	Horizontal
6	3660.00	51.75	37.12	-14.63	54.00	16.88	AV	Horizontal
7	4573.00	60.96	50.48	-10.48	74.00	23.52	PK	Horizontal
8	4573.00	47.79	37.31	-10.48	54.00	16.69	AV	Horizontal
9	5490.00	54.45	48.38	-6.07	74.00	25.62	PK	Horizontal
10	5490.00	44.65	38.58	-6.07	54.00	15.42	AV	Horizontal
11	6405.00	54.77	52.04	-2.73	74.00	21.96	PK	Horizontal
12	6405.00	43.24	40.51	-2.73	54.00	13.49	AV	Horizontal
13	7320.00	42.86	42.91	0.05	54.00	11.09	AV	Horizontal
14	7320.00	54.17	54.22	0.05	74.00	19.78	PK	Horizontal
15	8235.00	53.79	54.92	1.13	74.00	19.08	PK	Horizontal
16	8235.00	42.91	44.04	1.13	54.00	9.96	AV	Horizontal
17	9150.00	43.46	45.68	2.22	54.00	8.32	AV	Horizontal
18	9150.00	53.78	56.00	2.22	74.00	18.00	PK	Horizontal

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

924.6 MHz:

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Vertical
Test Voltage:	DC3.0V		

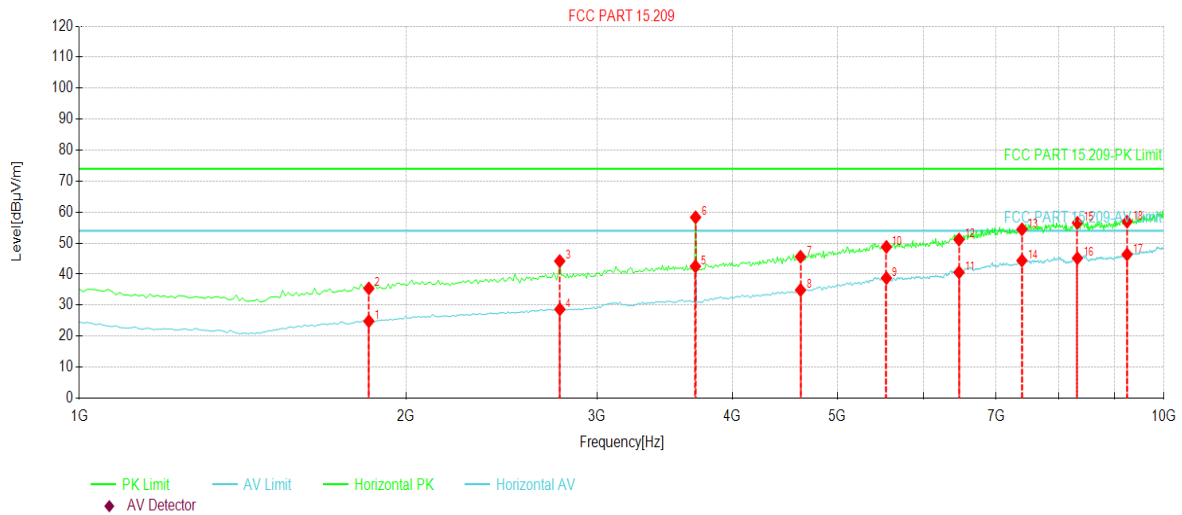


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1846.00	61.64	40.47	-21.17	74.00	33.53	PK	Vertical
2	1849.20	46.10	24.97	-21.13	54.00	29.03	AV	Vertical
3	2773.00	62.60	45.04	-17.56	74.00	28.96	PK	Vertical
4	2773.80	46.07	28.52	-17.55	54.00	25.48	AV	Vertical
5	3698.40	52.05	37.57	-14.48	54.00	16.43	AV	Vertical
6	3700.00	68.67	54.19	-14.48	74.00	19.81	PK	Vertical
7	4623.00	55.71	45.52	-10.19	74.00	28.48	PK	Vertical
8	4623.00	45.20	35.01	-10.19	54.00	18.99	AV	Vertical
9	5547.60	44.80	38.73	-6.07	54.00	15.27	AV	Vertical
10	5547.60	55.45	49.38	-6.07	74.00	24.62	PK	Vertical
11	6472.20	43.17	40.57	-2.60	54.00	13.43	AV	Vertical
12	6472.20	54.21	51.61	-2.60	74.00	22.39	PK	Vertical
13	7396.80	43.89	44.31	0.42	54.00	9.69	AV	Vertical
14	7396.80	54.20	54.62	0.42	74.00	19.38	PK	Vertical
15	8321.40	43.44	45.15	1.71	54.00	8.85	AV	Vertical
16	8321.40	53.73	55.44	1.71	74.00	18.56	PK	Vertical
17	9246.00	54.93	57.71	2.78	74.00	16.29	PK	Vertical
18	9246.00	43.48	46.26	2.78	54.00	7.74	AV	Vertical

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Pre-amplifier Factor.

Product Name:	CAR ALARM	Product Model:	185TWSPTI
Test By:	Mike	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Horizontal
Test Voltage:	DC3.0V		



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBuV/m]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Trace	Polarity
1	1849.20	45.95	24.82	-21.13	54.00	29.18	AV	Horizontal
2	1849.20	56.52	35.39	-21.13	74.00	38.61	PK	Horizontal
3	2773.00	61.77	44.21	-17.56	74.00	29.79	PK	Horizontal
4	2773.80	46.20	28.65	-17.55	54.00	25.35	AV	Horizontal
5	3698.40	57.01	42.53	-14.48	54.00	11.47	AV	Horizontal
6	3700.00	72.81	58.33	-14.48	74.00	15.67	PK	Horizontal
7	4623.00	55.80	45.61	-10.19	74.00	28.39	PK	Horizontal
8	4623.00	45.07	34.88	-10.19	54.00	19.12	AV	Horizontal
9	5547.60	44.80	38.73	-6.07	54.00	15.27	AV	Horizontal
10	5547.60	54.86	48.79	-6.07	74.00	25.21	PK	Horizontal
11	6472.20	43.17	40.57	-2.60	54.00	13.43	AV	Horizontal
12	6472.20	53.75	51.15	-2.60	74.00	22.85	PK	Horizontal
13	7396.80	54.04	54.46	0.42	74.00	19.54	PK	Horizontal
14	7396.80	43.96	44.38	0.42	54.00	9.62	AV	Horizontal
15	8321.40	54.86	56.57	1.71	74.00	17.43	PK	Horizontal
16	8321.40	43.45	45.16	1.71	54.00	8.84	AV	Horizontal
17	9246.00	43.56	46.34	2.78	54.00	7.66	AV	Horizontal
18	9246.00	54.14	56.92	2.78	74.00	17.08	PK	Horizontal

Remark:

1. Level = Read level + Antenna Factor + Cable Loss – Preamplifier Factor.

-----End of report-----