

FCC RF Test Report

(FHSS)

Report No.: JYTSZ-R12-2400904

Applicant: Shenzhen RodinBell Technology Co., Ltd.

Address of Applicant: 905#, Block B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen City, PRC

Equipment Under Test (EUT)

Product Name: 8-port UHF RFID Module

Model No.: M-703

Trade Mark: N/A

FCC ID: 2AKQD-M-703

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

Date of Sample Receipt: 30 Jul., 2024

Date of Test: 31 Jul., to 30 Aug., 2024

Date of Report Issued: 20 Sep., 2024

Test Result: PASS

Tested by:

no. 600 64

Project Engineer

Date:

20 Sep., 2024

Reviewed by:

Wang Ping

Senior Engineer

Date:

20 Sep., 2024

Approved by:

Janet Wei
Manager

Date:

20 Sep., 2024

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.

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1 Version

Version No.	Date	Description
00	02 Sep., 2024	Original
01	20 Sep., 2024	Update page 5.

2 Contents

Page

Cover Page	1
1 Version	2
2 Contents.....	3
3 General Information.....	4
3.1 Client Information	4
3.2 General Description of E.U.T.	4
3.3 Test Mode and Test Environment.....	5
3.4 Description of Test Auxiliary Equipment	5
3.5 Measurement Uncertainty	5
3.6 Additions to, Deviations, or Exclusions From the Method.....	5
3.7 Laboratory Facility	6
3.8 Laboratory Location.....	6
3.9 Test Instruments List.....	6
4 Measurement Setup and Procedure	8
4.1 Test Channel	8
4.2 Test Setup	8
4.3 Test Procedure.....	10
5 Test Results.....	11
5.1 Summary	11
5.1.1 Clause and data summary.....	11
5.1.2 Test Limit.....	12
5.2 Antenna Requirement	13
5.3 Conducted Output Power	14
5.4 20dB Occupied Bandwidth	15
5.5 Carrier Frequencies Separation	16
5.6 Hopping Channel Number.....	17
5.7 Dwell Time.....	18
5.8 Spurious Emission.....	19
5.8.1 Band-edge Emission.....	19
5.8.2 Conducted Spurious Emission.....	20
5.8.3 Emissions in Restricted Frequency Bands	21
5.8.4 Emissions in Non-restricted Frequency Bands.....	25

3 General Information

3.1 Client Information

Applicant:	Shenzhen RodinBell Technology Co., Ltd.
Address:	905#, Block B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen City, PRC
Manufacturer:	Shenzhen RodinBell Technology Co., Ltd.
Address:	905#, Block B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen City, PRC

3.2 General Description of E.U.T.

Product Name:	8-port UHF RFID Module
Model No.:	M-703
Operation Frequency:	902 MHz - 928 MHz
Number of Channel:	51
Modulation Technology:	ASK
Antenna Type:	External Antenna
Antenna Gain:	1.5 dBi (declare by applicant)
Power Supply:	DC 4.8V
Test Sample Condition:	The test samples were provided in good working order with no visible defects.

3.3 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.
Remark: 1. For spurious emission of below 1GHz, pre-scan lowest, middle and highest channel, found lowest channel was worse case mode. The report only reflects the test data of worst mode. 2. The product has 8 antenna ports, each antenna port is the same, and can be separately launched, but can not be launched at the same time, is time-sharing emission; The antenna does not support MIMO, so select antenna port 1 for testing.	
Operating Environment:	
Temperature:	15°C ~ 35°C
Humidity:	20 % ~ 75 % RH
Atmospheric Pressure:	1008 mbar
Voltage:	Nominal: 4.8 Vdc
Test Engineer:	Robin (Conducted measurement) Alan (Radiated measurement)

3.4 Description of Test Auxiliary Equipment

The EUT has been tested as an independent unit.

3.5 Measurement Uncertainty

Parameter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
Radiated Emission (30MHz ~ 200MHz) (3m SAC)	4.6 dB
Radiated Emission (200MHz ~ 1000MHz) (3m SAC)	5.8 dB
Radiated Emission (1GHz ~ 6GHz) (3m SAC)	4.5 dB
Radiated Emission (6GHz ~ 18GHz) (3m SAC)	4.7 dB
Radiated Emission (18GHz ~ 40GHz) (3m SAC)	5.34 dB
Radiated Emission (1GHz ~ 6GHz) (3m FAR)	4.95 dB
Radiated Emission (6GHz ~ 18GHz) (3m FAR)	5.23 dB
Radiated Emission (18GHz ~ 40GHz) (3m FAR)	5.32 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.

3.6 Additions to, Deviations, or Exclusions From the Method

No

3.7 Laboratory Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **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>

3.8 Laboratory Location

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>

3.9 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	04-14-2021	04-13-2026
Loop Antenna	Schwarzbeck	FMZB 1519 B	WXJ002-4	01-05-2024	01-04-2025
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ002	01-09-2024	01-08-2025
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-2	01-05-2024	01-04-2025
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	12-28-2023	12-27-2024
Pre-amplifier (30MHz ~ 1GHz)	Schwarzbeck	BBV9743B	WXJ001-2	12-27-2023	12-26-2024
Pre-amplifier (1GHz ~ 18GHz)	SKET	LNPA_0118G-50	WXJ001-3	12-27-2023	12-26-2024
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	12-28-2023	12-27-2024
EMI Test Receiver	Rohde & Schwarz	ESRP7	WXJ003-1	12-27-2023	12-26-2024
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	12-27-2023	12-26-2024
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ004-2	09-25-2023	09-24-2024
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-8M	WXG001-4	01-17-2024	01-16-2025
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG001-5	01-17-2024	01-16-2025
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG001-7	01-17-2024	01-16-2025
Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Test Software	Tonscend	TS+	Version: 3.0.0.1		
EMI Test Software	AUDIX	E3	Version: 6.110919b		

Radiated Emission(3m FAR):					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
3m FAR	YUNYI	9m*6m*6m	WXJ097	06-15-2023	06-14-2028
BiConiLog Antenna	Schwarzbeck	VULB9163	WXJ097-2	06-26-2024	06-25-2025
Biconical Antenna	Schwarzbeck	VUBA9117	WXJ002-1	07-01-2024	06-30-2027
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ097-3	06-16-2024	06-15-2025
Horn Antenna	Schwarzbeck	BBHA9120D	WXJ002-3	12-28-2023	12-27-2024
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-5	12-28-2023	12-27-2024
Horn Antenna	Schwarzbeck	BBHA9170	WXJ002-6	12-28-2023	12-27-2024
Pre-amplifier (30MHz ~ 1GHz)	YUNYI	PAM-310N	WXJ097-5	04-24-2024	04-23-2025
Pre-amplifier (1GHz ~ 18GHz)	YUNYI	PAM-118N	WXJ097-6	04-24-2024	04-23-2025
Pre-amplifier (18GHz ~ 40GHz)	RF System	TRLA-180400G45B	WXJ002-7	12-27-2023	12-26-2024
EMI Test Receiver	Rohde & Schwarz	ESCI3	WXJ003	12-27-2023	12-26-2024
Spectrum Analyzer	Rohde & Schwarz	FSP 30	WXJ004	12-27-2023	12-26-2024
Spectrum Analyzer	KEYSIGHT	N9010B	WXJ081-1	06-11-2024	06-10-2025
Coaxial Cable (30MHz ~ 1GHz)	JYTSZ	JYT3M-1G-NN-13M	WXG097-1	08-01-2023	07-31-2024
				07-30-2024	07-29-2025
Coaxial Cable (1GHz ~ 18GHz)	JYTSZ	JYT3M-18G-NN-8M	WXG097-2	08-01-2023	07-31-2024
				07-30-2024	07-29-2025
Coaxial Cable (18GHz ~ 40GHz)	JYTSZ	JYT3M-40G-SS-8M	WXG097-3	08-01-2023	07-31-2024
				07-30-2024	07-29-2025
High Band Reject Filter Group	Tonscend	JS0806-F	WXJ089	N/A	
Low Band Reject Filter Group	Tonscend	JS0806-F	WXJ097-4	N/A	
Test Software	Tonscend	TS+	Version: 5.0.0		

Conducted Method:					
Test Equipment	Manufacturer	Model No.	Manage No.	Cal. Date (mm-dd-yy)	Cal. Due date (mm-dd-yy)
Spectrum Analyzer	Keysight	N9010B	WXJ004-3	09-25-2023	09-24-2024

4 Measurement Setup and Procedure

4.1 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:

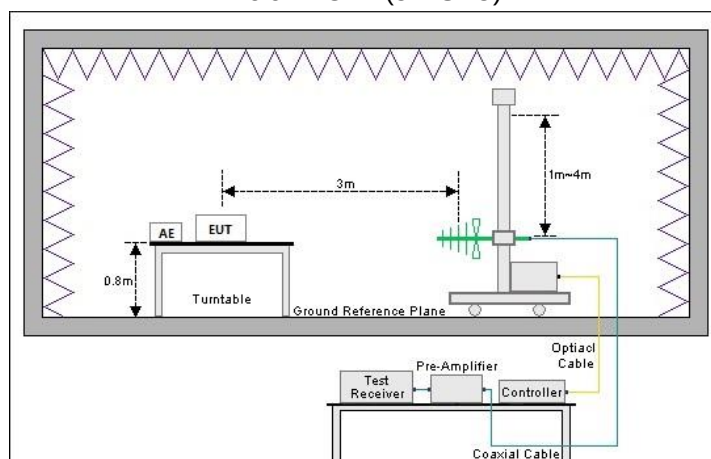
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
0	902.5	17	911.0	34	919.5
1	903.0	18	911.5	35	920.0
2	903.5	19	912.0	36	920.5
3	904.0	20	912.5	37	921.0
4	904.5	21	913.0	38	921.5
5	905.0	22	913.5	39	922.0
6	905.5	23	914.0	40	922.5
7	906.0	24	914.5	41	923.0
8	906.5	25	915.0	42	923.5
9	907.0	26	915.5	43	924.0
10	907.5	27	916.0	44	924.5
11	908.0	28	916.5	45	925.0
12	908.5	29	917.0	46	925.5
13	909.0	30	917.5	47	926.0
14	909.5	31	918.0	48	926.5
15	910.0	32	918.5	49	927.0
16	910.5	33	919.0	50	927.5

Remark: Channel 0, 25 & 50 selected for tested.

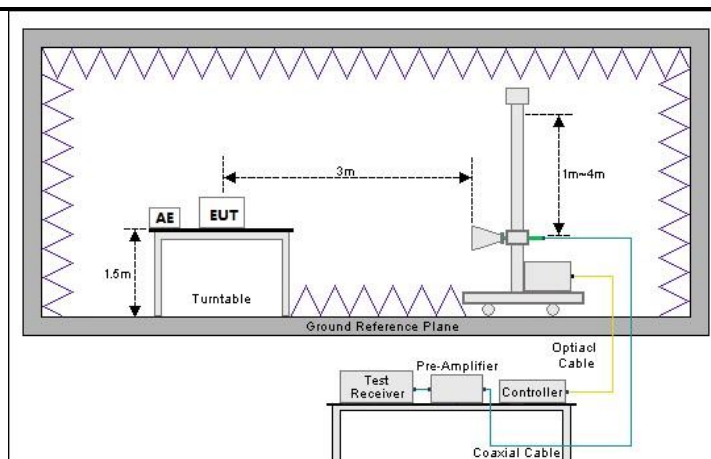
4.2 Test Setup

1) Radiated emission measurement:

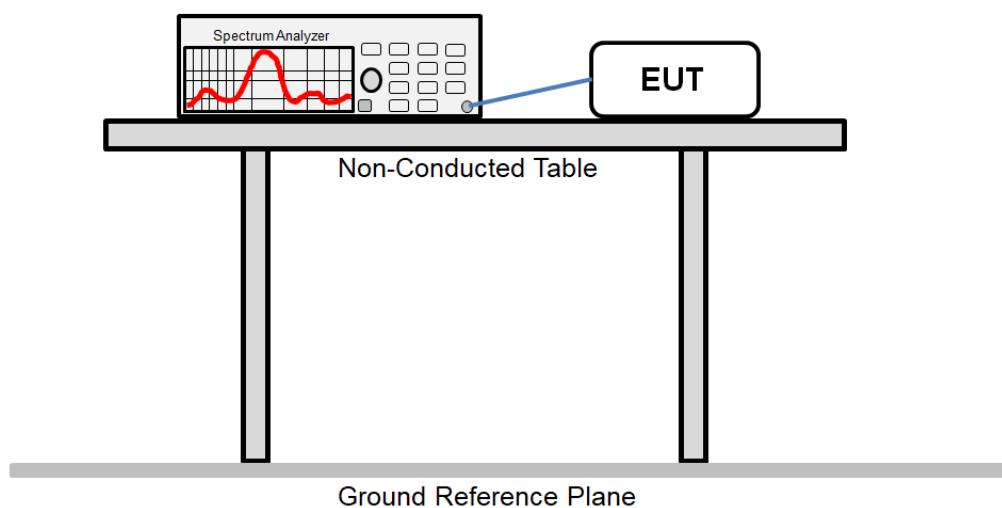
Below 1GHz (3m SAC)



Above 1GHz (3m SAC or 3m FAR)



2) Conducted test method



4.3 Test Procedure

Test method	Test step
Radiated emission	For below 1GHz: 1. 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. 2. 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. 3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data. For above 1GHz: 1. 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. 2. 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. 3. 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	1. The antenna port of EUT was connected to the test port of the test system through an RF cable. 2. The EUT is keeping in continuous transmission mode and tested in all modulation modes. 3. 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.

5 Test Results

5.1 Summary

5.1.1 Clause and data summary

Test items	Standard clause	Test data	Result
Antenna Requirement	15.203 15.247 (b)(4)	See Section 5.2	Pass
AC Power Line Conducted Emission	15.207	N/A	N/A
Conducted Output Power	15.247 (b)(2)	See Section 5.2	Pass
20dB Occupied Bandwidth	15.247 (a)(1)(i)	See Section 5.3	Pass
Carrier Frequencies Separation	15.247 (a)(1)	See Section 5.4	Pass
Hopping Channel Number	5.247 (a)(1)(i)	See Section 5.5	Pass
Dwell Time	15.247 (a)(1)(i)	See Section 5.6	Pass
Spurious Emission	15.205 15.209 15.247 (d)	See Section 5.7	Pass
Remark: 1. Pass: The EUT complies with the essential requirements in the standard. 2. N/A: Not Applicable. 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		

5.1.2 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	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)): <table><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><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></table> Note: The more stringent limit applies at transition frequencies. <table><tr><th rowspan="2">Frequency</th><th colspan="2">Limit (dBµV/m) @ 3m</th></tr><tr><th>Average</th><th>Peake</th></tr><tr><td>Above 1 GHz</td><td>54.0</td><td>74.0</td></tr></table> Note: The measurement bandwidth shall be 1 MHz or greater.	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																													
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																												
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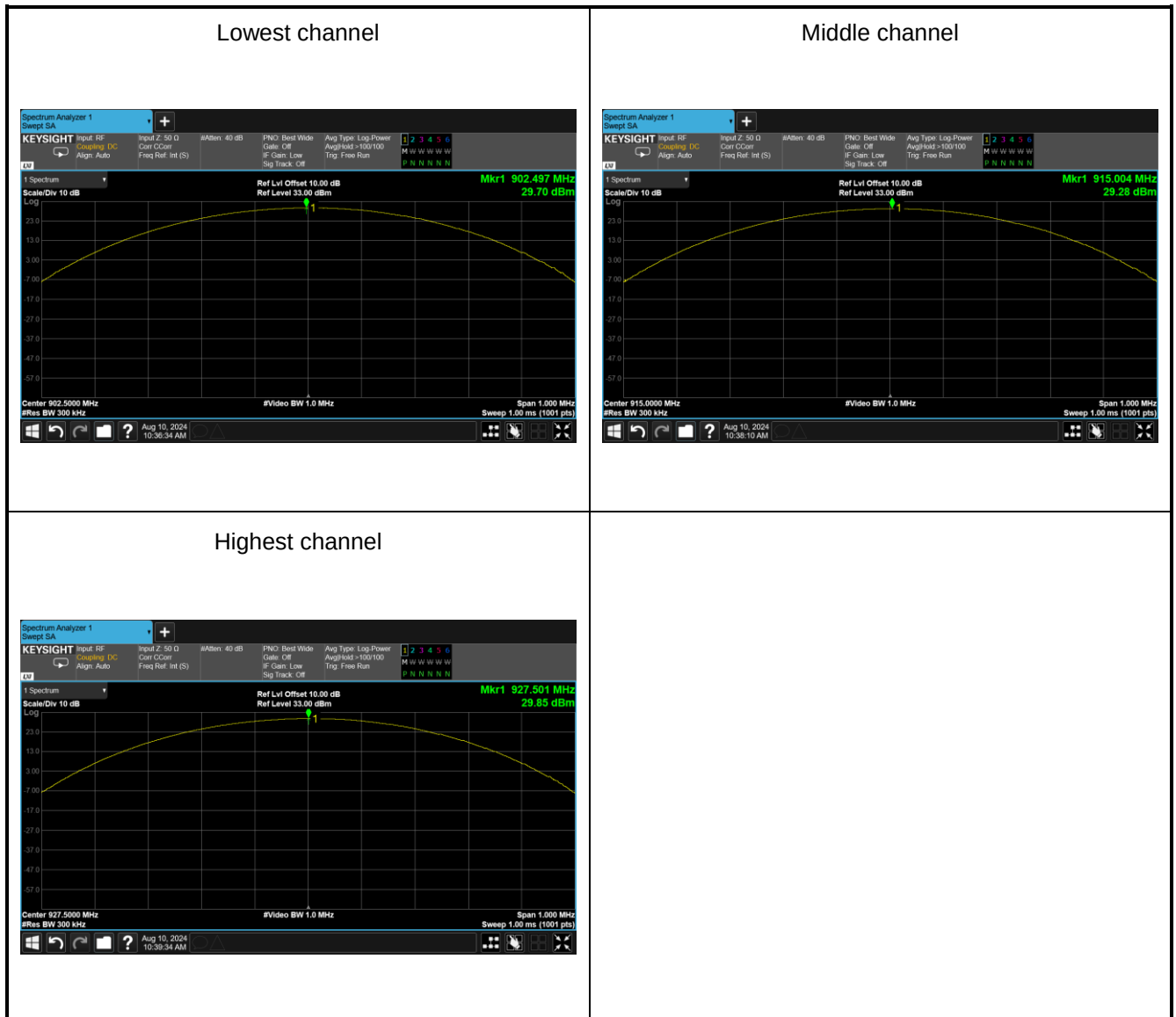
5.2 Antenna Requirement

Standard requirement:	FCC Part 15 C Section 15.203 & 247(b)
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. 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.	
E.U.T Antenna:	
The EUT antenna is a External antenna which permanently attached, and the best case gain of the antenna is 1.50 dBi. See product internal photos for details.	

5.3 Conducted Output Power

Test channel	Maximum Output Power (dBm)	Limit (dBm)	Result
Lowest channel	29.70	30.00	Pass
Middle channel	29.28	30.00	Pass
Highest channel	29.85	30.00	Pass

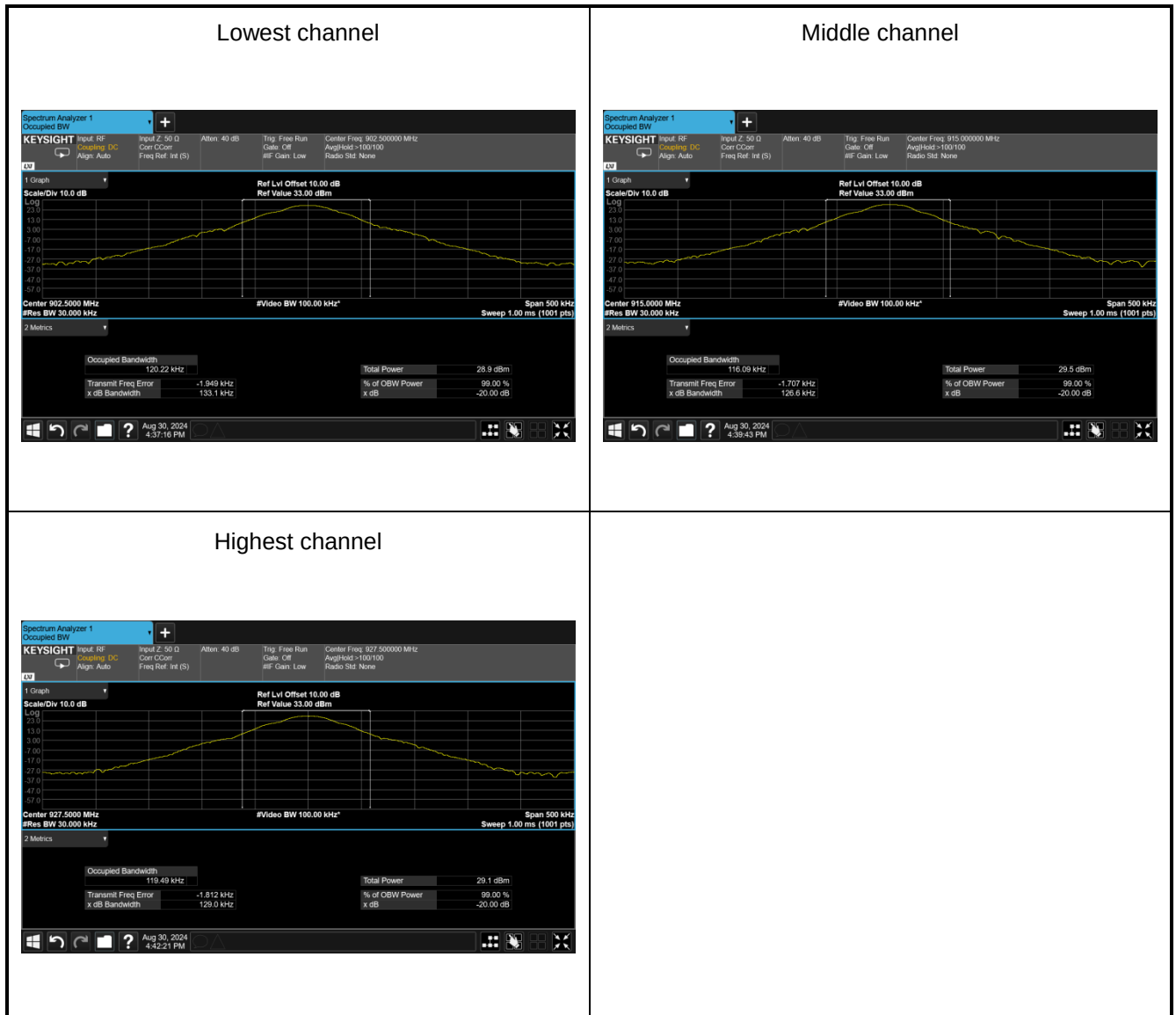
Test plot as follows:



5.4 20dB Occupied Bandwidth

Test channel	20dB Occupy Bandwidth (kHz)	Limit (kHz)	Result
Lowest channel	133.1	$BW_{20dB} \leq 250$	Pass
Middle channel	126.6	$BW_{20dB} \leq 250$	Pass
Highest channel	129.0	$BW_{20dB} \leq 250$	Pass

Test plot as follows:

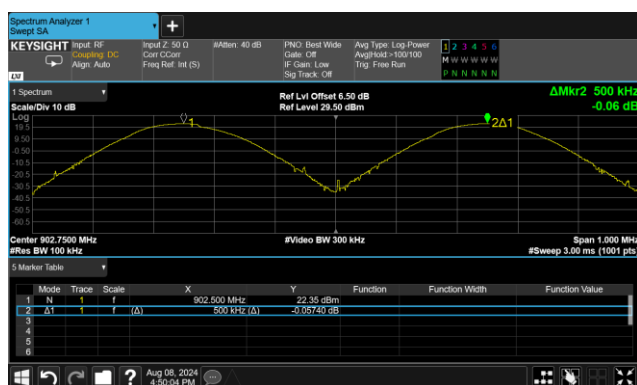


5.5 Carrier Frequencies Separation

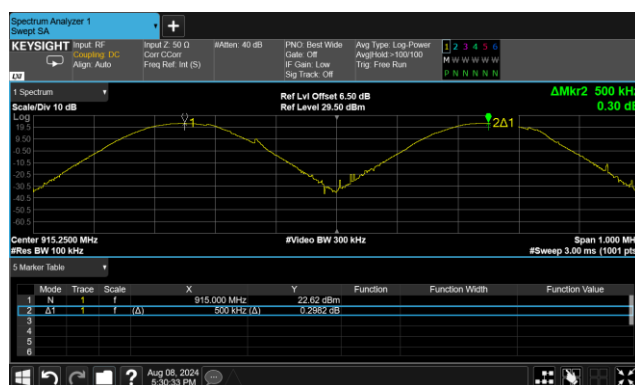
Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
Lowest channel	500	250	Pass
Middle channel	500	250	Pass
Highest channel	500	250	Pass

Test plot as follows:

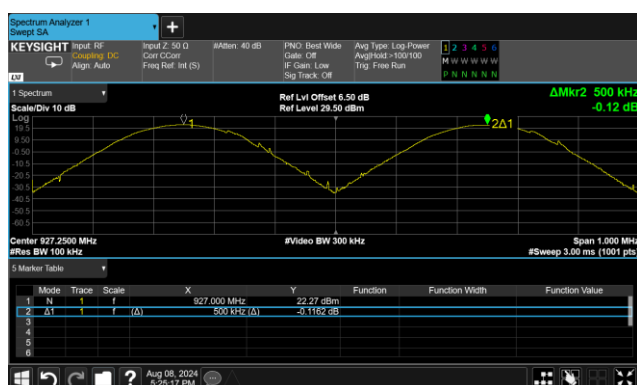
Lowest channel



Middle channel



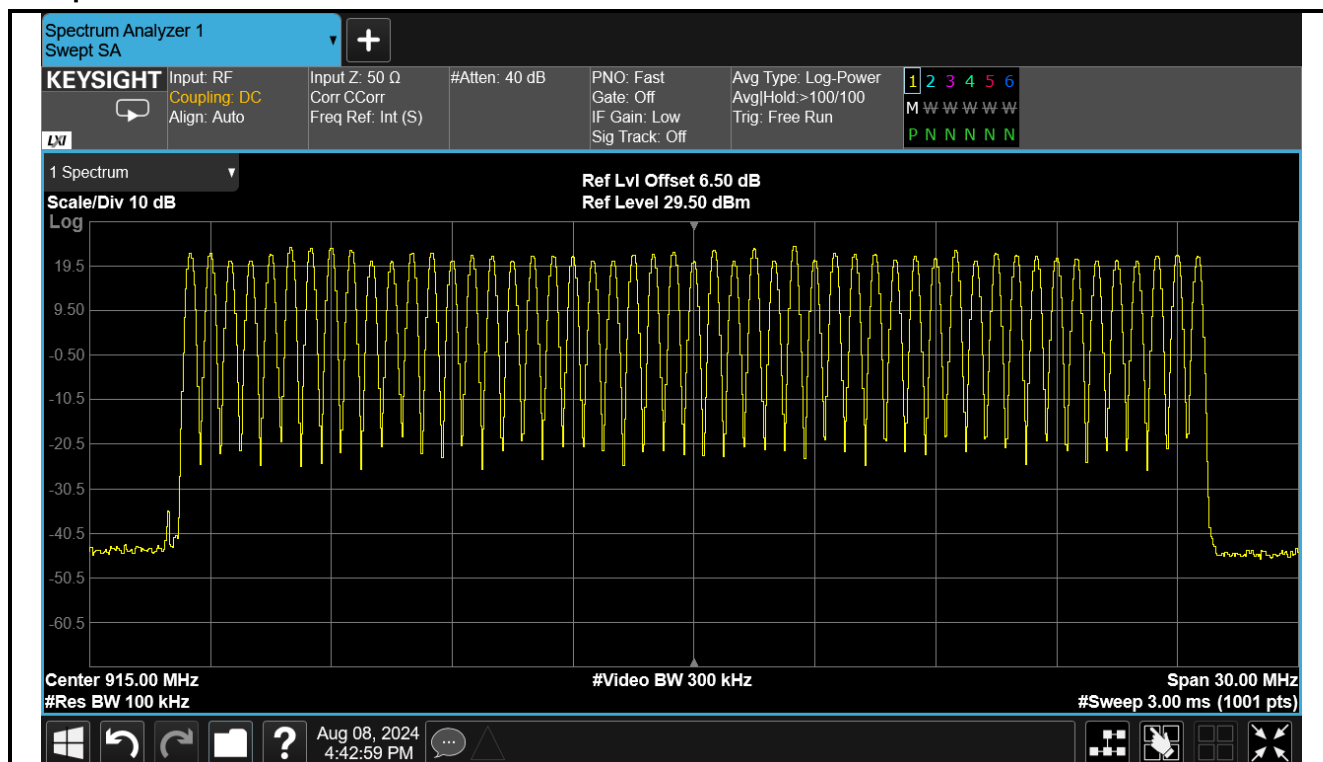
Highest channel



5.6 Hopping Channel Number

Hopping channel numbers	Limit	Result
51	$N_{ch} \geq 50$	Pass

Test plot as follows:



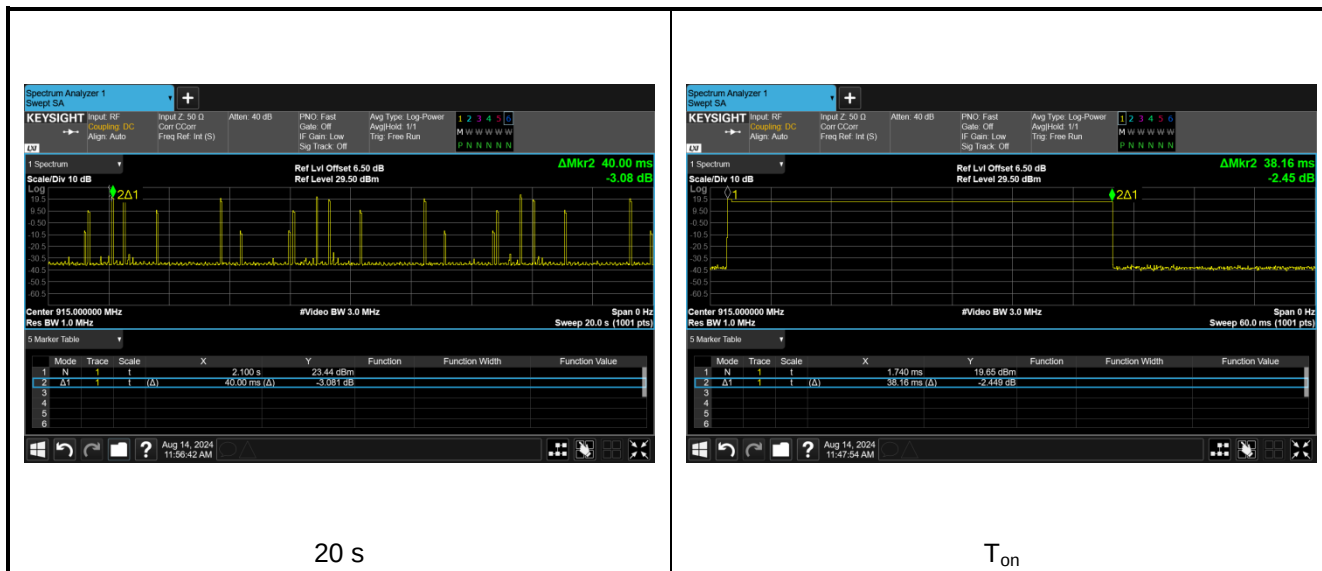
5.7 Dwell Time

T_{on} (s)	Hopping numbers (20 s period)	Dwell time (s)	Limit (s)	Result
0.03816	9	0.343	0.4	Pass

Note:

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

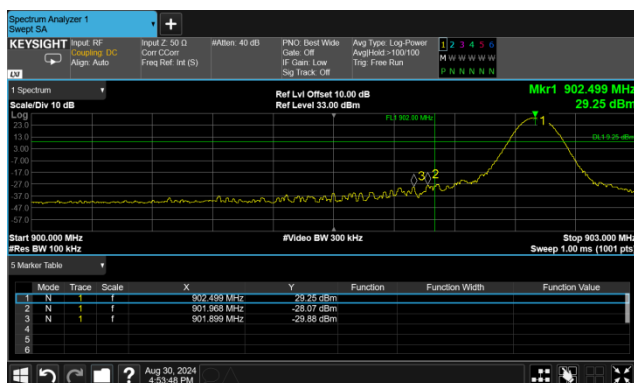
Test plot as follows:



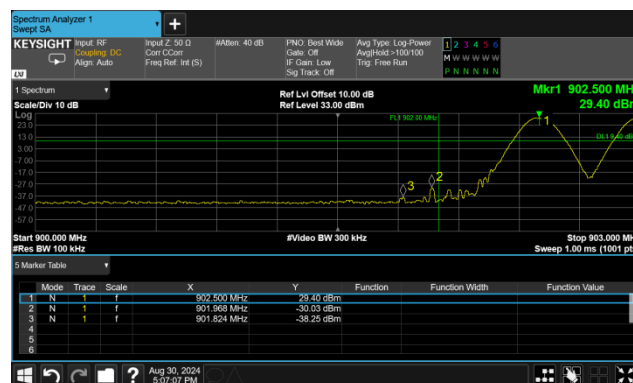
5.8 Spurious Emission

5.8.1 Band-edge Emission

Lowest Channel

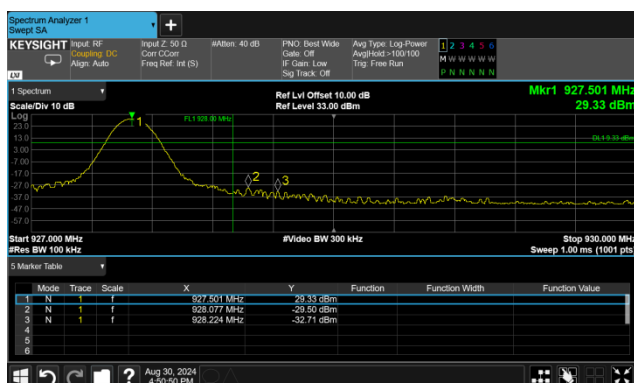


No-hopping mode

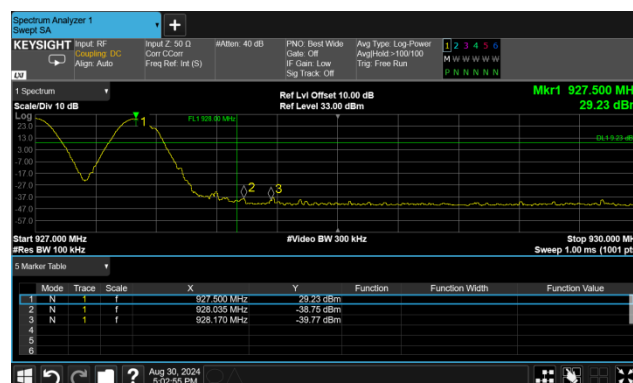


Hopping mode

Highest Channel



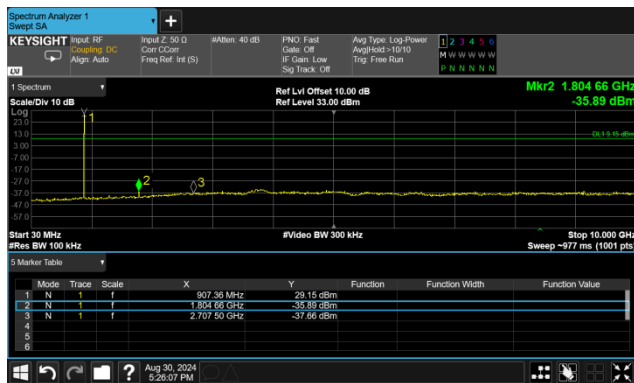
No-hopping mode



Hopping mode

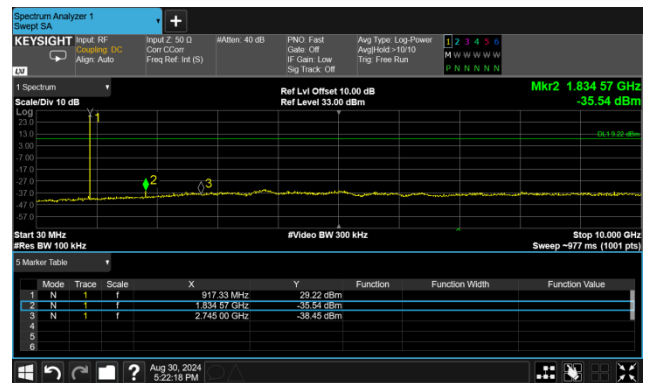
5.8.2 Conducted Spurious Emission

Lowest channel



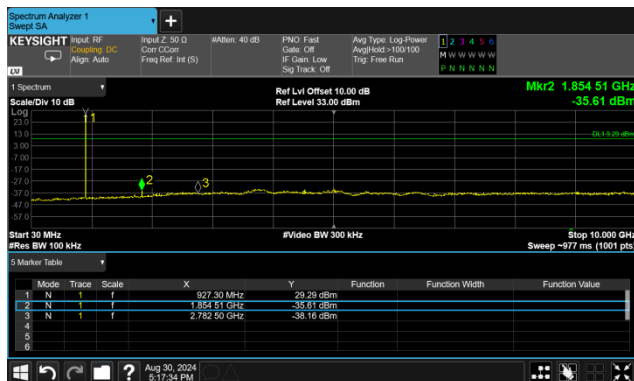
30MHz~10GHz

Middle channel



30MHz~10GHz

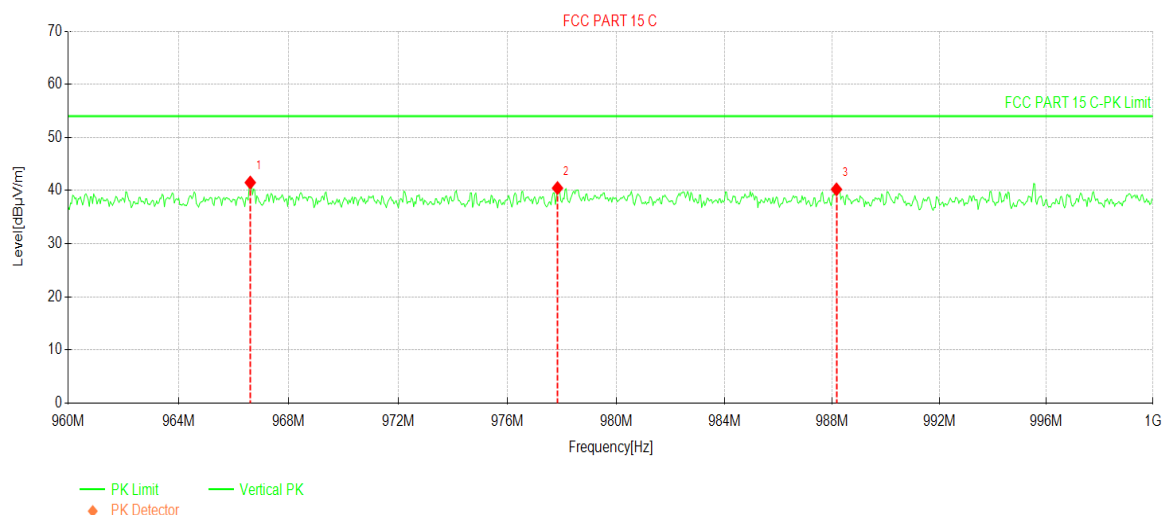
Highest channel



30MHz~10GHz

5.8.3 Emissions in Restricted Frequency Bands

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Kiran Zeng	Test mode:	Tx mode
Test Channel:	Lowest channel	Polarization:	Vertical
Test Voltage:	DC 4.8V		



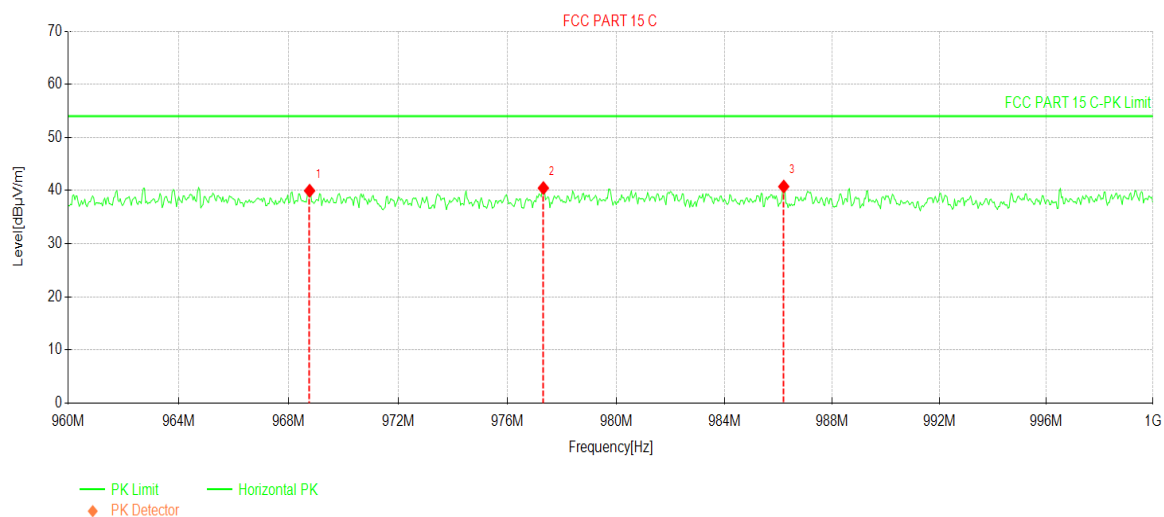
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	966.6000	14.87	41.51	26.64	54.00	12.49	PK	Vertical
2	977.8400	13.70	40.47	26.77	54.00	13.53	PK	Vertical
3	988.1600	13.36	40.23	26.87	54.00	13.77	PK	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Kiran Zeng	Test mode:	Tx mode
Test Channel:	Lowest channel	Polarization:	Horizontal
Test Voltage:	DC 4.8V		



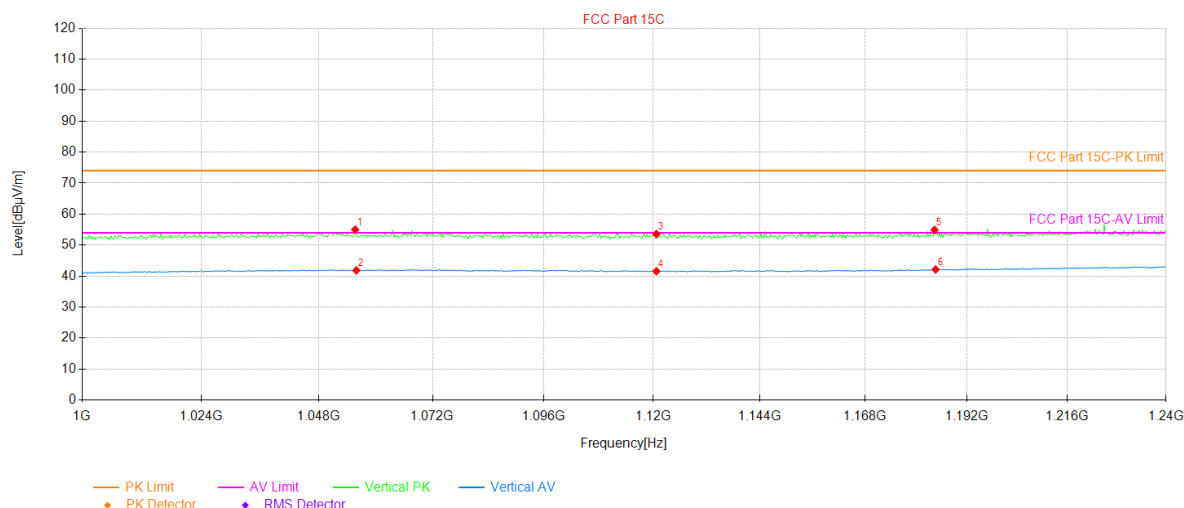
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	968.7600	13.28	39.97	26.69	54.00	14.03	PK	Horizontal
2	977.3200	13.71	40.47	26.76	54.00	13.53	PK	Horizontal
3	986.2000	13.92	40.76	26.84	54.00	13.24	PK	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Vertical
Test Voltage:	DC 4.8V		



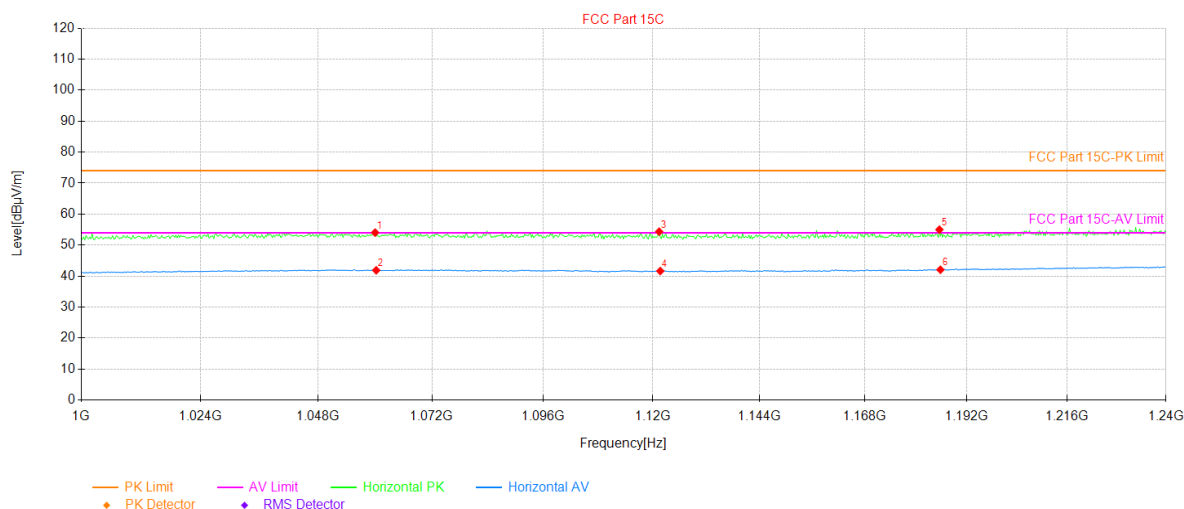
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1055.68	24.27	30.74	55.01	74.00	18.99	4	PK	PASS	Vertical
2	1055.92	11.09	30.75	41.84	54.00	12.16	101	AV	PASS	Vertical
3	1120.72	22.77	30.80	53.57	74.00	20.43	164	PK	PASS	Vertical
4	1120.72	10.78	30.80	41.58	54.00	12.42	79	AV	PASS	Vertical
5	1184.32	23.79	31.13	54.92	74.00	19.08	93	PK	PASS	Vertical
6	1184.56	11.01	31.13	42.14	54.00	11.86	186	AV	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Channel:	Highest channel	Polarization:	Horizontal
Test Voltage:	DC 4.8V		



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1060.00	23.31	30.74	54.05	74.00	19.95	84	PK	PASS	Horizontal
2	1060.24	11.14	30.74	41.88	54.00	12.12	84	AV	PASS	Horizontal
3	1121.44	23.54	30.81	54.35	74.00	19.65	280	PK	PASS	Horizontal
4	1121.68	10.83	30.81	41.64	54.00	12.36	124	AV	PASS	Horizontal
5	1185.52	23.87	31.13	55.00	74.00	19.00	66	PK	PASS	Horizontal
6	1185.76	10.94	31.13	42.07	54.00	11.93	288	AV	PASS	Horizontal

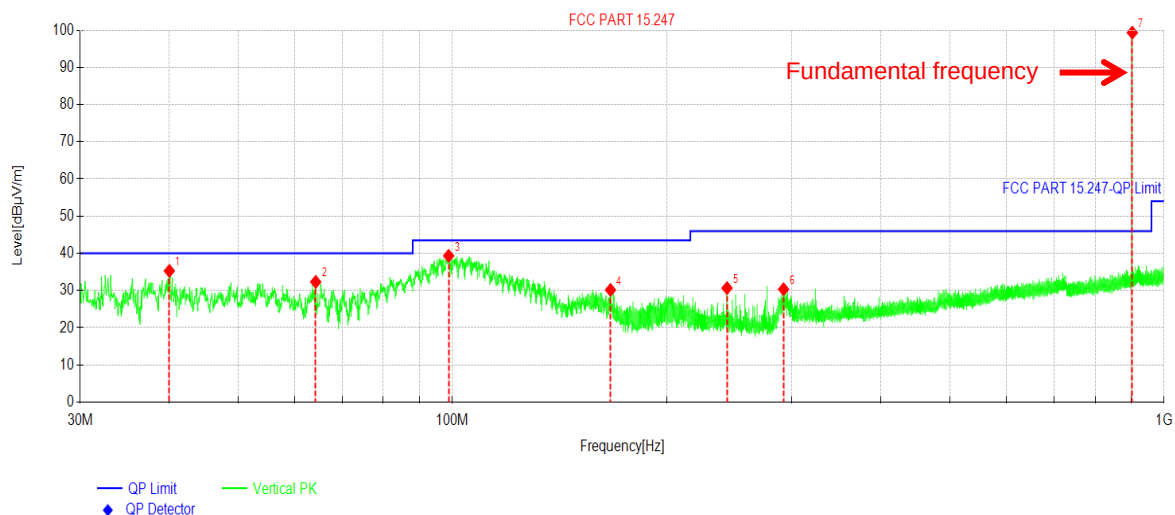
Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

5.8.4 Emissions in Non-restricted Frequency Bands

Below 1GHz:

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Kiran Zeng	Test mode:	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Vertical
Test Voltage:	DC 4.8V		



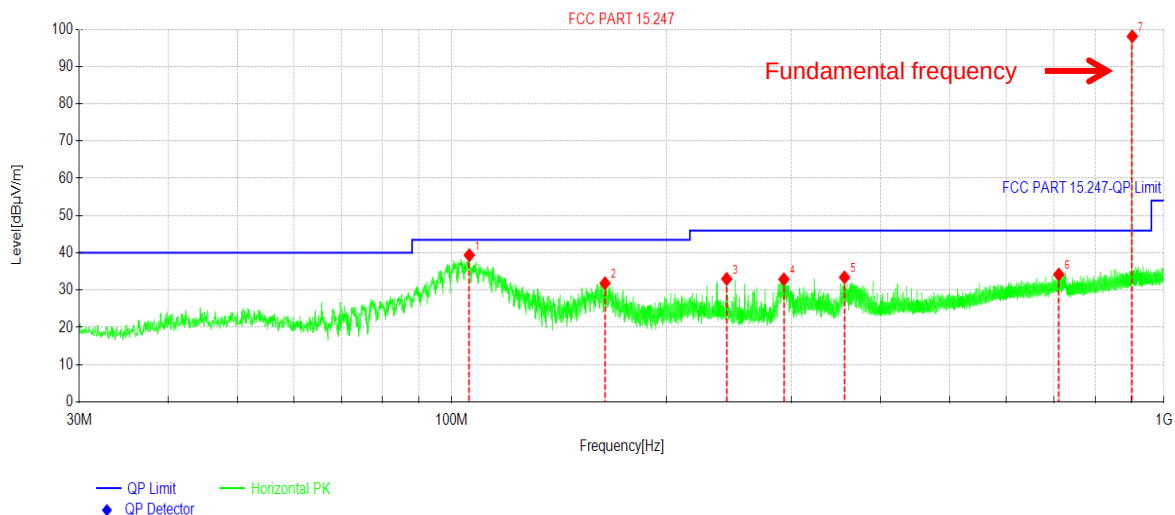
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	40.0400	48.93	-13.65	35.28	40.00	4.72	PK	Vertical
2	64.2912	47.19	-14.86	32.33	40.00	7.67	PK	Vertical
3	98.8249	54.22	-14.89	39.33	43.50	4.17	PK	Vertical
4	166.8253	47.76	-17.60	30.16	43.50	13.34	PK	Vertical
5	243.2167	44.75	-14.08	30.67	46.00	15.33	PK	Vertical
6	292.0101	43.53	-13.17	30.36	46.00	15.64	PK	Vertical
7	902.5101	102.01	-2.68	99.33	46.00	-53.33	PK	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Kiran Zeng	Test mode:	Tx mode
Test Frequency:	30 MHz ~ 1 GHz	Polarization:	Horizontal
Test Voltage:	DC 4.8V		



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Trace	Polarity
1	105.8578	53.98	-14.61	39.37	43.50	4.13	PK	Horizontal
2	164.1577	49.55	-17.71	31.84	43.50	11.66	PK	Horizontal
3	243.2652	47.09	-14.08	33.01	46.00	12.99	PK	Horizontal
4	292.6891	46.06	-13.16	32.90	46.00	13.10	PK	Horizontal
5	356.0333	45.05	-11.63	33.42	46.00	12.58	PK	Horizontal
6	711.7501	39.42	-5.23	34.19	46.00	11.81	PK	Horizontal
7	902.5101	100.76	-2.68	98.08	46.00	-52.08	PK	Horizontal

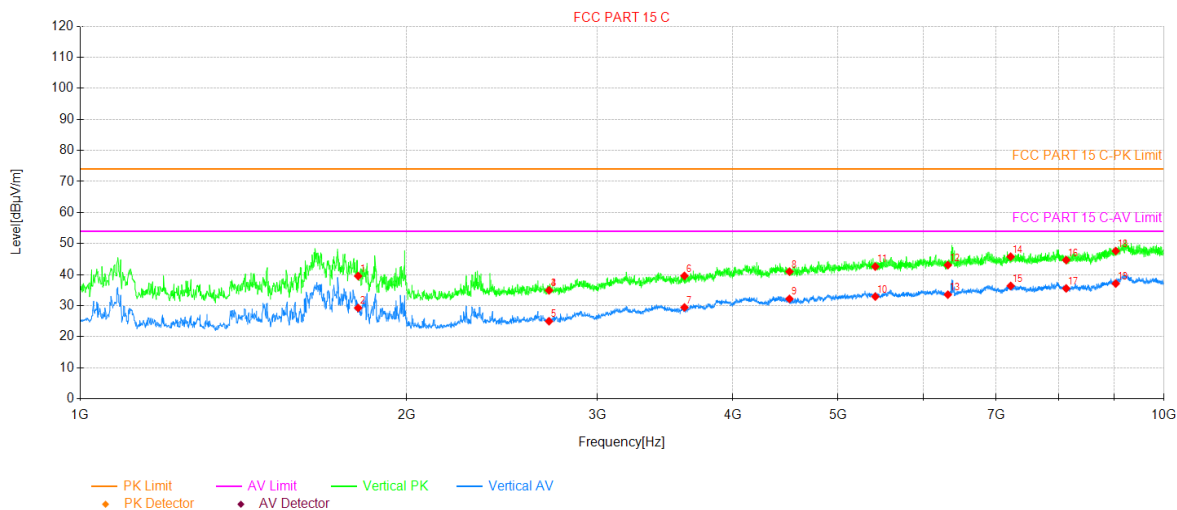
Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Above 1GHz:

902.5MHz:

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Vertical
Test Voltage:	DC 4.8V		



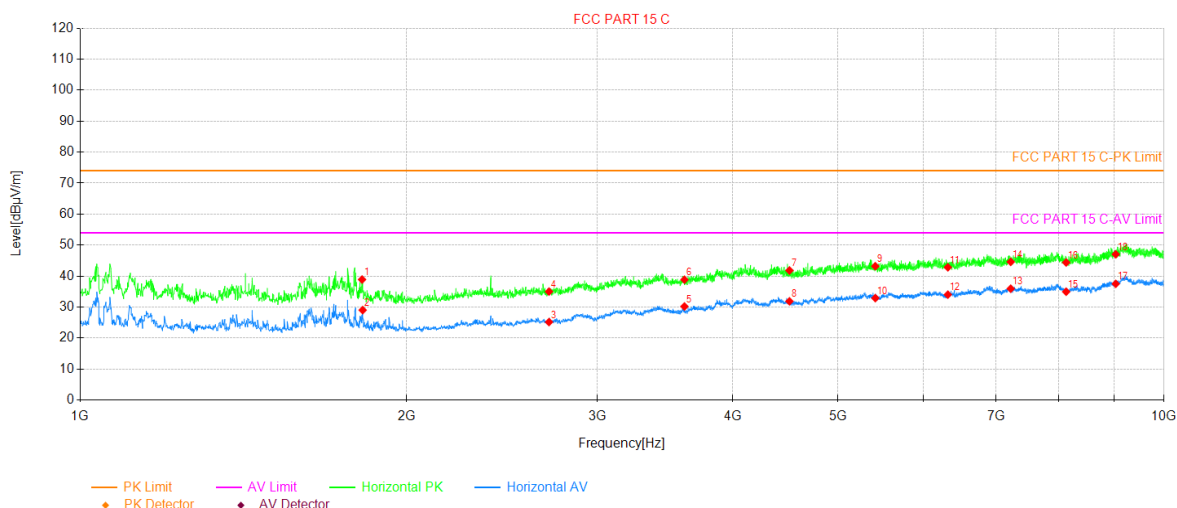
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1805.00	61.96	-22.40	39.56	74.00	34.44	185	PK	PASS	Vertical
2	1805.00	51.69	-22.40	29.29	54.00	24.71	185	AV	PASS	Vertical
3	2707.50	52.56	-17.62	34.94	74.00	39.06	6	PK	PASS	Vertical
4	2707.50	52.56	-17.62	34.94	74.00	39.06	6	PK	PASS	Vertical
5	2707.50	42.62	-17.62	25.00	54.00	29.00	172	AV	PASS	Vertical
6	3610.00	52.35	-12.75	39.60	74.00	34.40	179	PK	PASS	Vertical
7	3610.00	42.21	-12.75	29.46	54.00	24.54	179	AV	PASS	Vertical
8	4512.50	49.56	-8.59	40.97	74.00	33.03	96	PK	PASS	Vertical
9	4512.50	40.81	-8.59	32.22	54.00	21.78	234	AV	PASS	Vertical
10	5415.00	38.91	-5.96	32.95	54.00	21.05	165	AV	PASS	Vertical
11	5415.00	48.56	-5.96	42.60	74.00	31.40	41	PK	PASS	Vertical
12	6317.50	48.92	-5.84	43.08	74.00	30.92	214	PK	PASS	Vertical
13	6317.50	39.40	-5.84	33.56	54.00	20.44	283	AV	PASS	Vertical
14	7220.00	49.13	-3.34	45.79	74.00	28.21	214	PK	PASS	Vertical
15	7220.00	39.72	-3.34	36.38	54.00	17.62	357	AV	PASS	Vertical
16	8122.50	46.57	-1.86	44.71	74.00	29.29	248	PK	PASS	Vertical
17	8122.50	37.44	-1.86	35.58	54.00	18.42	158	AV	PASS	Vertical
18	9025.00	47.25	0.36	47.61	74.00	26.39	227	PK	PASS	Vertical
19	9025.00	36.77	0.36	37.13	54.00	16.87	69	AV	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Horizontal
Test Voltage:	DC 4.8V		



Suspected Data List

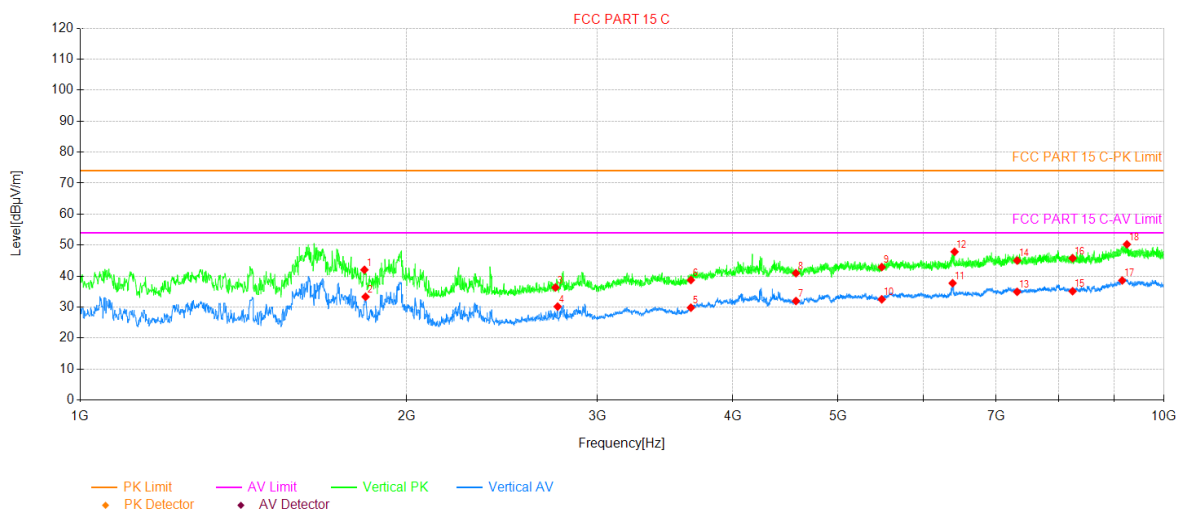
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1820.13	61.23	-22.32	38.91	74.00	35.09	195	PK	PASS	Horizontal
2	1822.38	51.34	-22.30	29.04	54.00	24.96	195	AV	PASS	Horizontal
3	2707.50	42.81	-17.62	25.19	54.00	28.81	154	AV	PASS	Horizontal
4	2707.50	52.64	-17.62	35.02	74.00	38.98	92	PK	PASS	Horizontal
5	3610.00	42.96	-12.75	30.21	54.00	23.79	264	AV	PASS	Horizontal
6	3610.00	51.60	-12.75	38.85	74.00	35.15	264	PK	PASS	Horizontal
7	4512.50	50.42	-8.59	41.83	74.00	32.17	58	PK	PASS	Horizontal
8	4512.50	40.48	-8.59	31.89	54.00	22.11	58	AV	PASS	Horizontal
9	5415.00	49.16	-5.96	43.20	74.00	30.80	195	PK	PASS	Horizontal
10	5415.00	38.88	-5.96	32.92	54.00	21.08	306	AV	PASS	Horizontal
11	6317.50	48.68	-5.84	42.84	74.00	31.16	326	PK	PASS	Horizontal
12	6317.50	39.87	-5.84	34.03	54.00	19.97	78	AV	PASS	Horizontal
13	7220.00	39.28	-3.34	35.94	54.00	18.06	292	AV	PASS	Horizontal
14	7220.00	47.95	-3.34	44.61	74.00	29.39	9	PK	PASS	Horizontal
15	8122.50	36.84	-1.86	34.98	54.00	19.02	58	AV	PASS	Horizontal
16	8122.50	46.27	-1.86	44.41	74.00	29.59	292	PK	PASS	Horizontal
17	9025.00	37.16	0.36	37.52	54.00	16.48	99	AV	PASS	Horizontal
18	9025.00	46.69	0.36	47.05	74.00	26.95	202	PK	PASS	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

915MHz:

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Vertical
Test Voltage:	DC 4.8V		



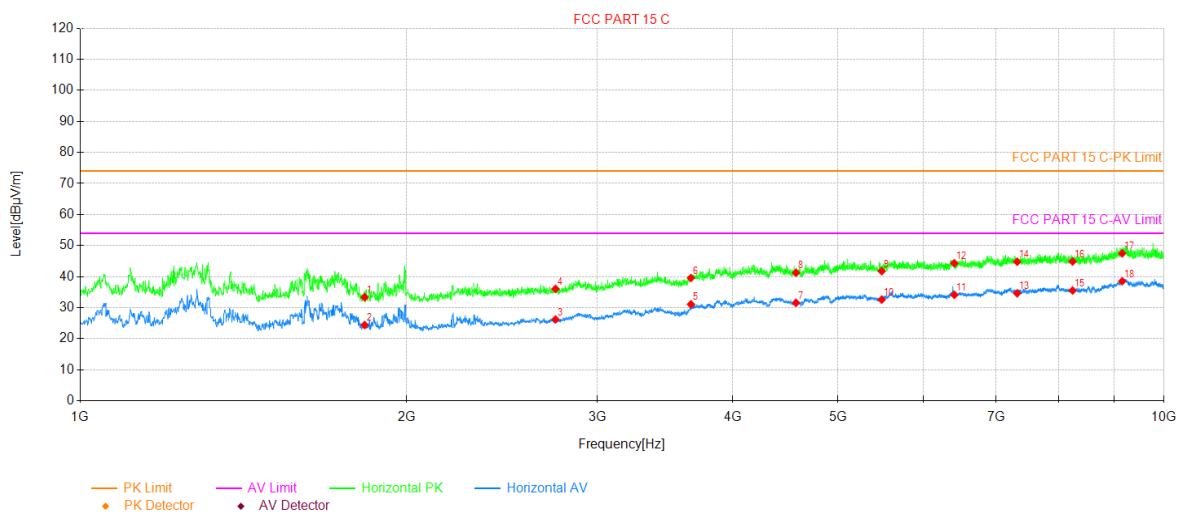
Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1829.23	64.31	-22.27	42.04	74.00	31.96	178	PK	PASS	Vertical
2	1833.73	55.57	-22.24	33.33	54.00	20.67	178	AV	PASS	Vertical
3	2745.00	53.74	-17.40	36.34	74.00	37.66	150	PK	PASS	Vertical
4	2757.47	47.51	-17.33	30.18	54.00	23.82	143	AV	PASS	Vertical
5	3660.00	41.40	-11.58	29.82	54.00	24.18	1	AV	PASS	Vertical
6	3660.00	50.32	-11.58	38.74	74.00	35.26	317	PK	PASS	Vertical
7	4575.00	40.60	-8.63	31.97	54.00	22.03	26	AV	PASS	Vertical
8	4575.00	49.58	-8.63	40.95	74.00	33.05	157	PK	PASS	Vertical
9	5490.00	49.15	-6.22	42.93	74.00	31.07	19	PK	PASS	Vertical
10	5490.00	38.74	-6.22	32.52	54.00	21.48	5	AV	PASS	Vertical
11	6381.55	43.26	-5.54	37.72	54.00	16.28	150	AV	PASS	Vertical
12	6408.55	53.35	-5.50	47.85	74.00	26.15	114	PK	PASS	Vertical
13	7320.00	38.36	-3.42	34.94	54.00	19.06	5	AV	PASS	Vertical
14	7320.00	48.43	-3.42	45.01	74.00	28.99	309	PK	PASS	Vertical
15	8235.00	37.03	-1.89	35.14	54.00	18.86	164	AV	PASS	Vertical
16	8235.00	47.68	-1.89	45.79	74.00	28.21	251	PK	PASS	Vertical
17	9150.00	37.21	1.40	38.61	54.00	15.39	62	AV	PASS	Vertical
18	9241.66	48.62	1.63	50.25	74.00	23.75	309	PK	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Horizontal
Test Voltage:	DC 4.8V		



Suspected Data List

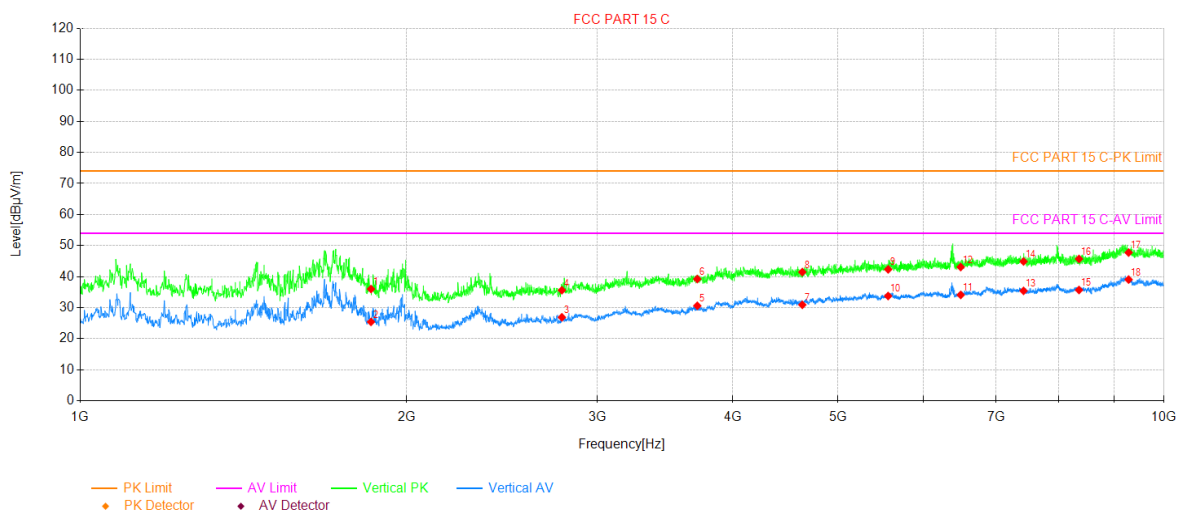
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1830.00	55.65	-22.26	33.39	74.00	40.61	123	PK	PASS	Horizontal
2	1830.00	46.68	-22.26	24.42	54.00	29.58	2	AV	PASS	Horizontal
3	2745.00	43.63	-17.40	26.23	54.00	27.77	312	AV	PASS	Horizontal
4	2745.00	53.46	-17.40	36.06	74.00	37.94	123	PK	PASS	Horizontal
5	3660.00	42.68	-11.58	31.10	54.00	22.90	232	AV	PASS	Horizontal
6	3660.00	51.15	-11.58	39.57	74.00	34.43	86	PK	PASS	Horizontal
7	4575.00	40.21	-8.63	31.58	54.00	22.42	101	AV	PASS	Horizontal
8	4575.00	49.89	-8.63	41.26	74.00	32.74	232	PK	PASS	Horizontal
9	5490.00	48.00	-6.22	41.78	74.00	32.22	189	PK	PASS	Horizontal
10	5490.00	38.84	-6.22	32.62	54.00	21.38	181	AV	PASS	Horizontal
11	6405.00	39.65	-5.51	34.14	54.00	19.86	360	AV	PASS	Horizontal
12	6405.00	49.84	-5.51	44.33	74.00	29.67	204	PK	PASS	Horizontal
13	7320.00	38.06	-3.42	34.64	54.00	19.36	50	AV	PASS	Horizontal
14	7320.00	48.23	-3.42	44.81	74.00	29.19	349	PK	PASS	Horizontal
15	8235.00	37.44	-1.89	35.55	54.00	18.45	218	AV	PASS	Horizontal
16	8235.00	46.77	-1.89	44.88	74.00	29.12	247	PK	PASS	Horizontal
17	9150.00	46.09	1.40	47.49	74.00	26.51	240	PK	PASS	Horizontal
18	9150.00	37.14	1.40	38.54	54.00	15.46	137	AV	PASS	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

927.5MHz:

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Vertical
Test Voltage:	DC 4.8V		

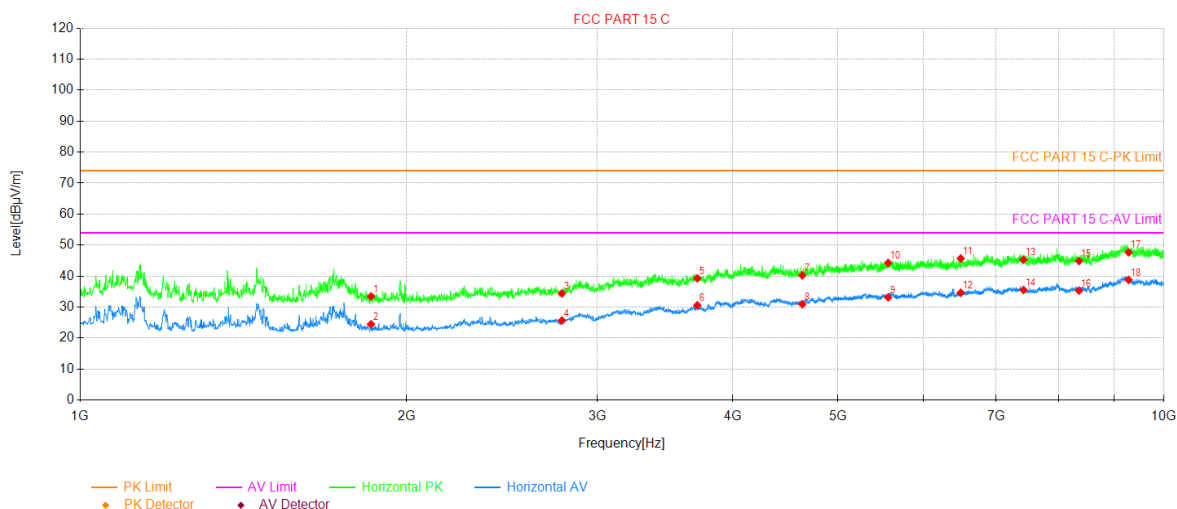


Suspected Data List										
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1855.00	58.12	-22.10	36.02	74.00	37.98	171	PK	PASS	Vertical
2	1855.00	47.54	-22.10	25.44	54.00	28.56	185	AV	PASS	Vertical
3	2782.50	44.14	-17.23	26.91	54.00	27.09	82	AV	PASS	Vertical
4	2782.50	52.85	-17.23	35.62	74.00	38.38	82	PK	PASS	Vertical
5	3710.00	41.32	-10.70	30.62	54.00	23.38	323	AV	PASS	Vertical
6	3710.00	49.94	-10.70	39.24	74.00	34.76	75	PK	PASS	Vertical
7	4637.50	39.19	-8.25	30.94	54.00	23.06	40	AV	PASS	Vertical
8	4637.50	49.74	-8.25	41.49	74.00	32.51	2	PK	PASS	Vertical
9	5565.00	48.13	-5.78	42.35	74.00	31.65	68	PK	PASS	Vertical
10	5565.00	39.55	-5.78	33.77	54.00	20.23	254	AV	PASS	Vertical
11	6492.50	39.06	-4.94	34.12	54.00	19.88	302	AV	PASS	Vertical
12	6492.50	48.04	-4.94	43.10	74.00	30.90	2	PK	PASS	Vertical
13	7420.00	38.67	-3.25	35.42	54.00	18.58	233	AV	PASS	Vertical
14	7420.00	48.13	-3.25	44.88	74.00	29.12	261	PK	PASS	Vertical
15	8347.50	37.51	-1.80	35.71	54.00	18.29	178	AV	PASS	Vertical
16	8347.50	47.52	-1.80	45.72	74.00	28.28	192	PK	PASS	Vertical
17	9275.00	46.35	1.40	47.75	74.00	26.25	316	PK	PASS	Vertical
18	9275.00	37.67	1.40	39.07	54.00	14.93	2	AV	PASS	Vertical

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

Product Name:	8-port UHF RFID Module	Product Model:	M-703
Test By:	Alan Chen	Test mode:	Tx mode
Test Frequency:	1 GHz ~ 10 GHz	Polarization:	Horizontal
Test Voltage:	DC 4.8V		



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Angle [°]	Detector	Verdict	Polarity
1	1855.00	55.56	-22.10	33.46	74.00	40.54	120	PK	PASS	Horizontal
2	1855.00	46.59	-22.10	24.49	54.00	29.51	120	AV	PASS	Horizontal
3	2782.50	51.66	-17.23	34.43	74.00	39.57	15	PK	PASS	Horizontal
4	2782.50	42.91	-17.23	25.68	54.00	28.32	120	AV	PASS	Horizontal
5	3710.00	49.99	-10.70	39.29	74.00	34.71	43	PK	PASS	Horizontal
6	3710.00	41.30	-10.70	30.60	54.00	23.40	50	AV	PASS	Horizontal
7	4637.50	48.50	-8.25	40.25	74.00	33.75	203	PK	PASS	Horizontal
8	4637.50	39.20	-8.25	30.95	54.00	23.05	285	AV	PASS	Horizontal
9	5565.00	38.92	-5.78	33.14	54.00	20.86	216	AV	PASS	Horizontal
10	5565.00	50.05	-5.78	44.27	74.00	29.73	126	PK	PASS	Horizontal
11	6492.50	50.63	-4.94	45.69	74.00	28.31	182	PK	PASS	Horizontal
12	6492.50	39.57	-4.94	34.63	54.00	19.37	22	AV	PASS	Horizontal
13	7420.00	48.57	-3.25	45.32	74.00	28.68	85	PK	PASS	Horizontal
14	7420.00	38.77	-3.25	35.52	54.00	18.48	22	AV	PASS	Horizontal
15	8347.50	46.69	-1.80	44.89	74.00	29.11	43	PK	PASS	Horizontal
16	8347.50	37.13	-1.80	35.33	54.00	18.67	8	AV	PASS	Horizontal
17	9275.00	46.27	1.40	47.67	74.00	26.33	120	PK	PASS	Horizontal
18	9275.00	37.39	1.40	38.79	54.00	15.21	189	AV	PASS	Horizontal

Remark:

1. Level = Reading + FactorAntenna Factor + Cable Loss – Preamplifier Factor).

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