FCC REPORT

(RFID)

Applicant:	Shenzhen RodinBell Technology Co., Ltd.
Address of Applicant:	905#, Tower B, Xinghe WORLD, Wuhe Avenue, Longgang District, Shenzhen City, PRC
Equipment Under Test (EUT)	
Product Name:	D-100 UHF RFID Desktop Reader
Model No.:	D-100
FCC ID:	2AKQD-D100
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	08 Jun., 2017
Date of Test:	08 Jun., to 12 Jul., 2017
Date of report issued:	12 Jul., 2017
Test Result:	PASS*

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

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2 Version

Version No.	Date	Description
00	*12 Jul., 2017*	*Original*

Tested by: Carey Chen ***Date:*** *12 Jul., 2017*

Test Engineer

Reviewed by: RYan.Lee ***Date:*** *12 Jul., 2017*

Project Engineer

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna Requirement	15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(1)	Pass
20dB Occupied Bandwidth	15.247 (a)(1)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	15.247 (a)(1)	Pass
Dwell Time	15.247 (a)(1)	Pass
Radiated Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 Client Information

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

5.2 General Description of E.U.T.

Product Name:	D-100 UHF RFID Desktop Reader
Model No.:	D-100
Operation Frequency:	902MHz~928MHz
Number of channel:	50
Modulation type:	GFSK
Modulation technology:	FHSS
Antenna Type:	Ceramic antenna
Antenna gain:	2.0dBi
Power supply:	AC 120V

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
0	902.5 MHz	13	908.61 MHz	26	914.72 MHz	39	921.3 MHz
1	902.97 MHz	14	909.08 MHz	27	915.19 MHz	40	921.77 MHz
2	903.44 MHz	15	909.55 MHz	28	915.66 MHz	41	922.24 MHz
3	903.91 MHz	16	910.02 MHz	29	916.13 MHz	42	922.71 MHz
4	904.38 MHz	17	910.49 MHz	30	916.6 MHz	43	923.18 MHz
5	904.85 MHz	18	910.96 MHz	31	917.07 MHz	44	923.65 MHz
6	905.32 MHz	19	911.43 MHz	32	917.54 MHz	45	924.12 MHz
7	905.79 MHz	20	911.9 MHz	33	918.01 MHz	46	924.59 MHz
8	906.26 MHz	21	912.37 MHz	34	918.48 MHz	47	925.06 MHz
9	906.73 MHz	22	912.84 MHz	35	918.95 MHz	48	925.53 MHz
10	907.2 MHz	23	913.31 MHz	36	919.42 MHz	49	926 MHz
11	907.67 MHz	24	913.78 MHz	37	919.89 MHz		
12	908.14 MHz	25	914.25 MHz	38	920.36 MHz		
Remark: Channel 0, 25 & 49 selected for tested.							

5.3 Test mode

Test mode 1 (TM 1)	Keep the EUT in continuous transmitting mode with 100% duty cycle.
Test mode 2 (TM 2)	Keep the EUT in hopping mode.
The sample was considered typical configuration to obtain the worst position	

5.4 Measurement Uncertainty

Items	Expanded Uncertainty (Confidence of 95%)
Conducted Emission (9kHz ~ 30MHz)	2.14 dB (k=2)
Radiated Emission (9kHz ~ 30MHz)	4.24 dB (k=2)
Radiated Emission (30MHz ~ 1000MHz)	4.35 dB (k=2)
Radiated Emission (1GHz ~ 18GHz)	4.44 dB (k=2)
Radiated Emission (18GHz ~ 26.5GHz)	4.56 dB (k=2)

5.5 Laboratory Facility

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

- **FCC - Registration No.: 817957**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in out files. Registration 817957, February 27, 2012.

- **IC - Registration No.: 10106A-1**

The 3m Semi-anechoic chamber of Shenzhen Zhongjian Nanfang Testing 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 L6048**

Shenzhen Zhongjian Nanfang Testing Co., Ltd. is accredited to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration laboratories for the competence of testing. The Registration No. is CNAS L6048.

5.6 Laboratory Location

Shenzhen Zhongjian Nanfang Testing Co., Ltd.
Address: No. B-C, 1/F., Building 2, Laodong No.2 Industrial Park, Xixiang Road,
Bao'an District, Shenzhen, Guangdong, China
Tel: +86-755-23118282, Fax: +86-755-23116366
Email: info@ccis-cb.com, Website: www.ccis-cb.com

5.7 Test Instruments list

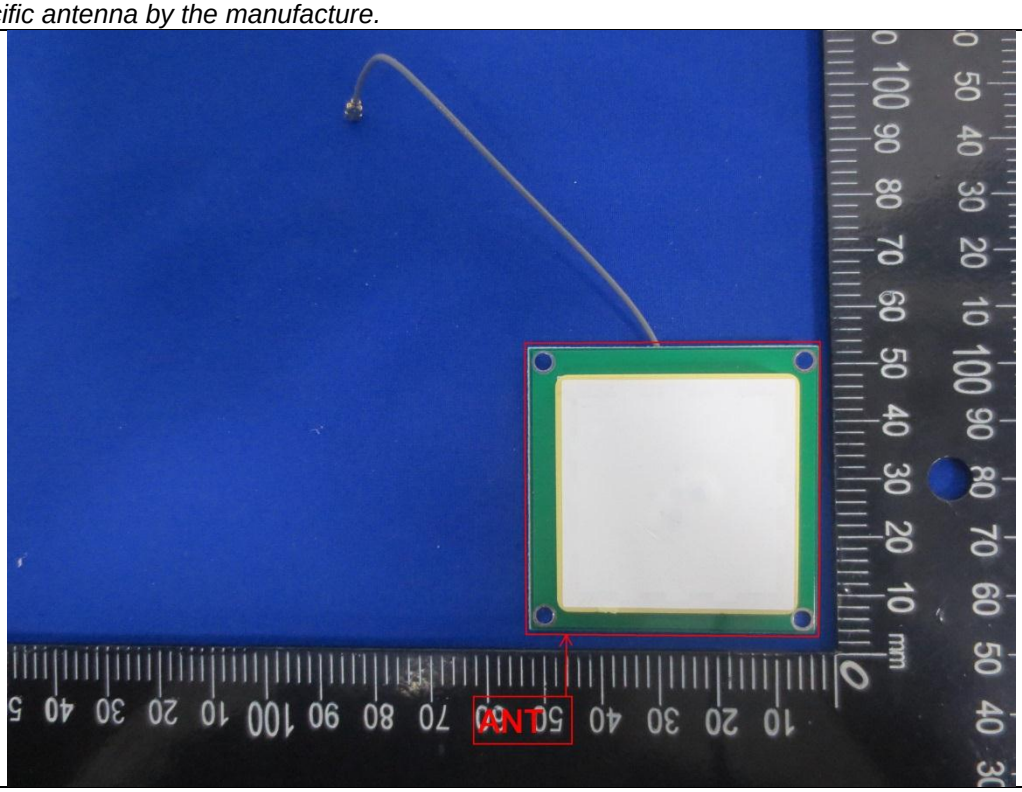
Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
1	3m SAC	SAEMC	9(L)*6(W)* 6(H)	CCIS0001	08-23-2014	08-22-2017
2	BiConiLog Antenna	SCHWARZBECK	VULB9163	CCIS0005	02-25-2017	02-24-2018
3	Horn Antenna	SCHWARZBECK	BBHA9120D	CCIS0006	02-25-2017	02-24-2018
4	Pre-amplifier (10kHz-1.3GHz)	HP	8447D	CCIS0003	02-25-2017	02-24-2018
5	Pre-amplifier (1GHz-18GHz)	Compliance Direction Systems Inc.	PAP-1G18	CCIS0011	02-25-2017	02-24-2018
6	Spectrum analyzer 9k-30GHz	Rohde & Schwarz	FSP30	CCIS0023	02-25-2017	02-24-2018
7	EMI Test Receiver	Rohde & Schwarz	ESRP7	CCIS0167	02-25-2017	02-24-2018
8	Loop antenna	Laplace instrument	RF300	EMC0701	02-25-2017	02-24-2018
9	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

Conducted Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date (mm-dd-yy)**	**Cal. Due date (mm-dd-yy)**
1	Shielding Room	ZhongShuo Electron	11.0(L)x4.0(W)x3.0(H)	CCIS0061	08-23-2014	08-22-2017
2	EMI Test Receiver	Rohde & Schwarz	ESCI	CCIS0002	02-25-2017	02-24-2018
3	LISN	CHASE	MN2050D	CCIS0074	02-25-2017	02-24-2018
4	Coaxial Cable	CCIS	N/A	CCIS0086	02-25-2017	02-24-2018
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A

6 Test results and Measurement Data

6.1 Antenna requirement

Standard requirement:	FCC Part 15 C Section 15.203 /247(c)
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(c) (1)(i) requirement:* *(i) Systems operating in the 902-928MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.*	
E.U.T Antenna:	
The antenna under test sample is a ceramic *antenna as below, and the best case gain of the antenna is 2.0dBi. Device is equipped with unique non-standard antenna connector and the recommended specific antenna by the manufacture.*	



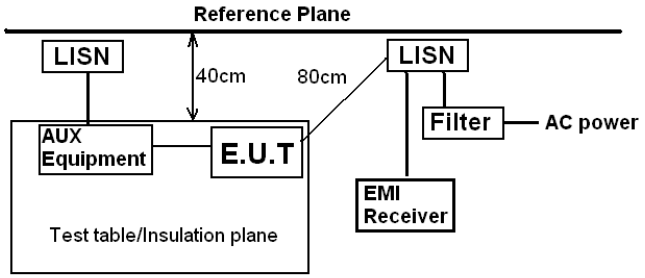
6.2 Conducted Emissions

Test Requirement:	FCC Part 15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150 kHz to 30 MHz
Class / Severity:	Class B
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto
Limit:	

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test setup:



Remark:
E.U.T: Equipment Under Test
LISN: Line Impedence Stabilization Network
Test table height=0.8m

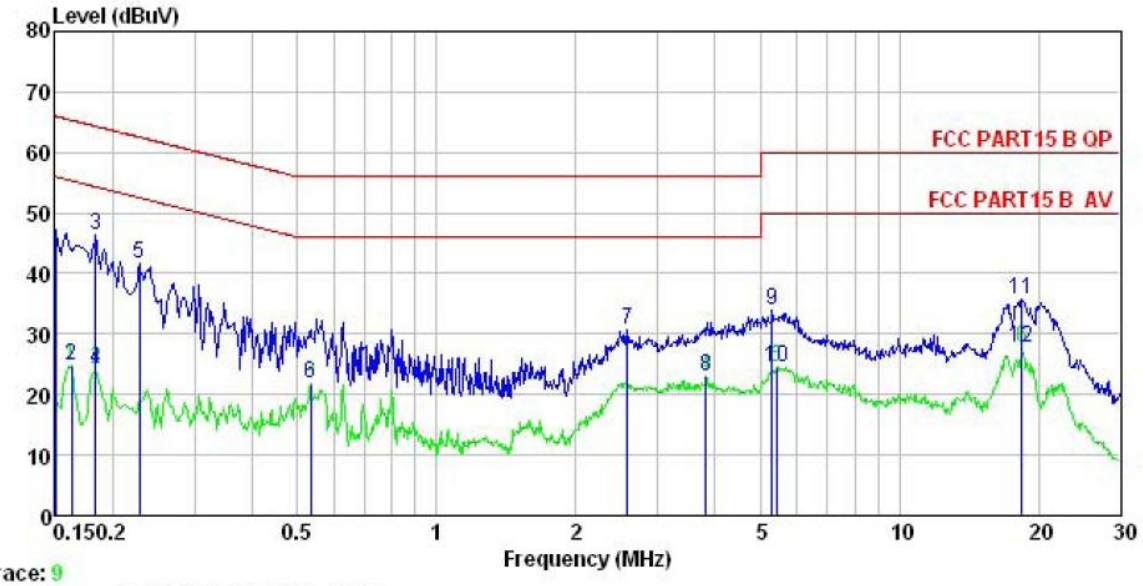
Test procedure:

1. 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.
2. 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).
3. 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: 2013 on conducted measurement.

Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 2
Test results:	Pass

Measurement Data

Line:

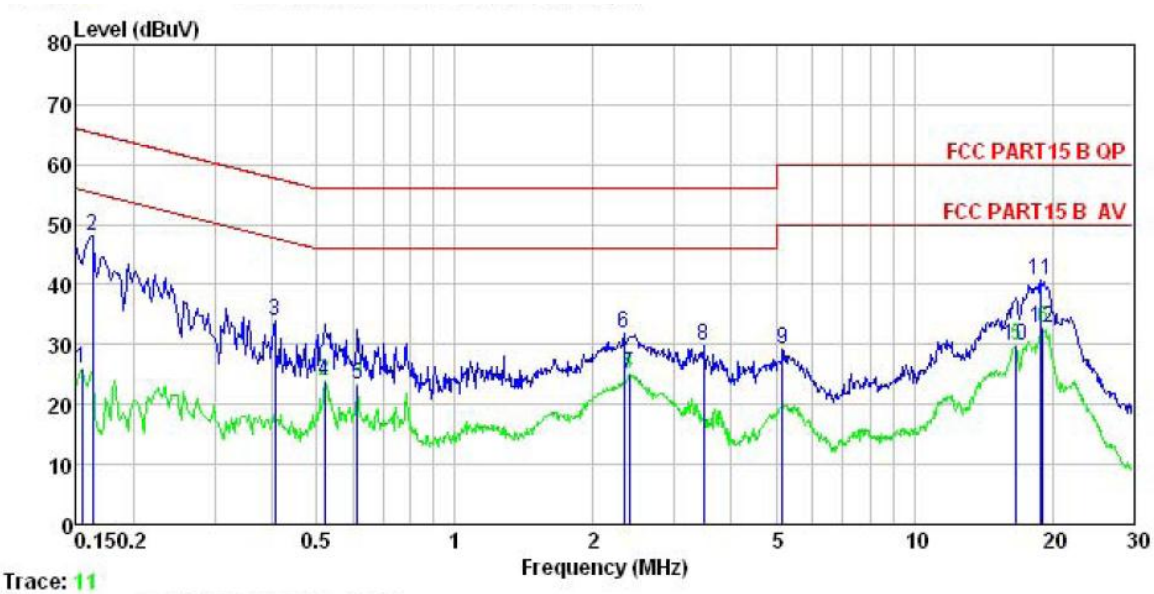


Trace: 9

Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN LINE
EUT : D-100 UHF RFID Desktop Reader
Model : D-100
Test Mode : RFID Mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV		dB	dBuV	dBuV	dB	
1	0.150	36.32	0.14	10.78	47.24	66.00	-18.76	QP
2	0.162	13.85	0.14	10.77	24.76	55.34	-30.58	Average
3	0.183	35.36	0.15	10.77	46.28	64.33	-18.05	QP
4	0.183	13.34	0.15	10.77	24.26	54.33	-30.07	Average
5	0.228	30.61	0.15	10.75	41.51	62.52	-21.01	QP
6	0.535	10.84	0.26	10.76	21.86	46.00	-24.14	Average
7	2.581	19.54	0.33	10.93	30.80	56.00	-25.20	QP
8	3.820	11.69	0.34	10.90	22.93	46.00	-23.07	Average
9	5.305	22.78	0.35	10.84	33.97	60.00	-26.03	QP
10	5.419	13.34	0.35	10.84	24.53	50.00	-25.47	Average
11	18.426	24.38	0.31	10.91	35.60	60.00	-24.40	QP
12	18.426	16.56	0.31	10.91	27.78	50.00	-22.22	Average

Neutral:



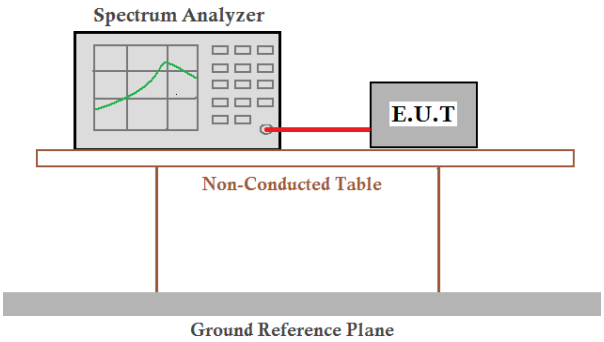
Site : CCIS Shielding Room
Condition : FCC PART15 B QP LISN NEUTRAL
EUT : D-100 UHF RFID Desktop Reader
Model : D-100
Test Mode : RFID Mode
Power Rating : AC 120V/60Hz
Environment : Temp: 23 ℃ Huni:56% Atmos:101KPa
Test Engineer: Carey
Remark :

	Freq	Read Level	LISN	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV		dB	dBuV	dBuV	dB	
1	0.154	15.02	0.12	10.78	25.92	55.78	-29.86	Average
2	0.162	37.33	0.13	10.77	48.23	65.34	-17.11	QP
3	0.406	23.02	0.23	10.72	33.97	57.73	-23.76	QP
4	0.521	13.04	0.25	10.76	24.05	46.00	-21.95	Average
5	0.614	12.35	0.30	10.77	23.42	46.00	-22.58	Average
6	2.334	20.73	0.28	10.94	31.95	56.00	-24.05	QP
7	2.396	13.79	0.28	10.94	25.01	46.00	-20.99	Average
8	3.472	18.68	0.32	10.91	29.91	56.00	-26.09	QP
9	5.166	18.14	0.33	10.84	29.31	60.00	-30.69	QP
10	16.661	18.60	0.27	10.91	29.78	50.00	-20.22	Average
11	18.820	29.45	0.28	10.92	40.65	60.00	-19.35	QP
12	19.021	21.49	0.28	10.92	32.69	50.00	-17.31	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss

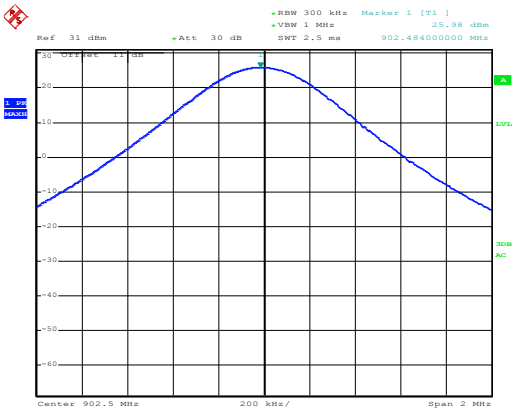
6.3 Conducted Output Power

Test Requirement:	FCC Part 15 C Section 15.247 (b)(3)
Test Method:	ANSI C63.10:2013 and KDB558074v01r04 section 9.2.2
Receiver setup:	RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤1 MHz) RBW=3MHz, VBW=10MHz, Detector=Peak (If 20dB BW > 1 MHz and <3MHz)
Limit:	1W (30 dBm)
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 1
Test results:	Pass

Measurement Data

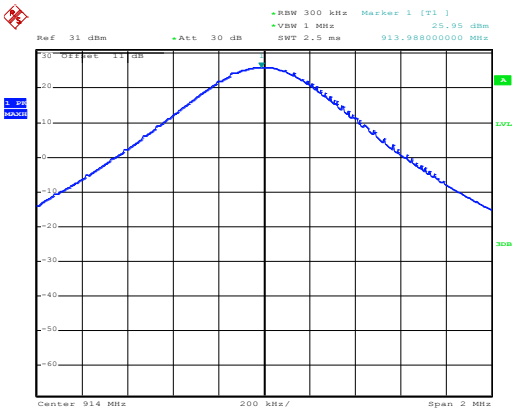
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	25.98	30.00	Pass
Middle	25.95	30.00	Pass
Highest	25.95	30.00	Pass

Test plot as follows:



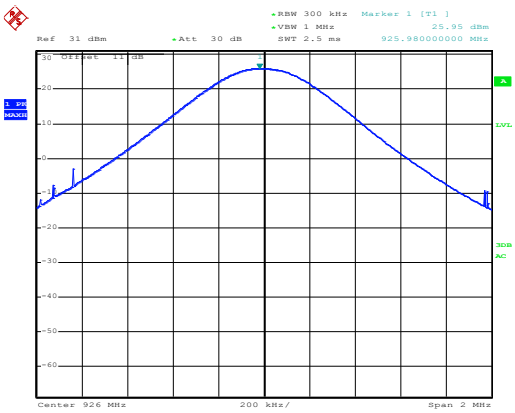
Date: 13.JUN.2017 11:29:41

Lowest channel



Date: 13.JUN.2017 17:59:37

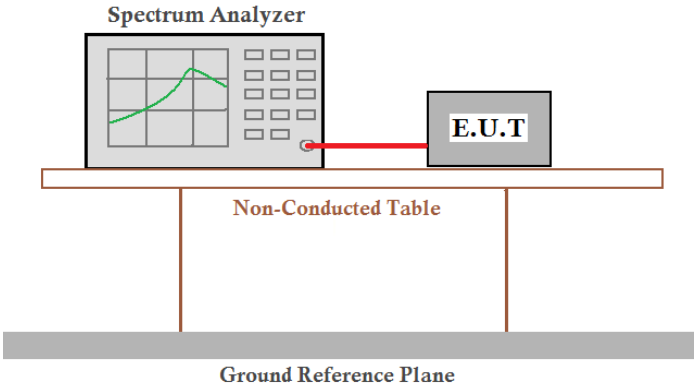
Middle channel



Date: 13.JUN.2017 12:24:20

Highest channel

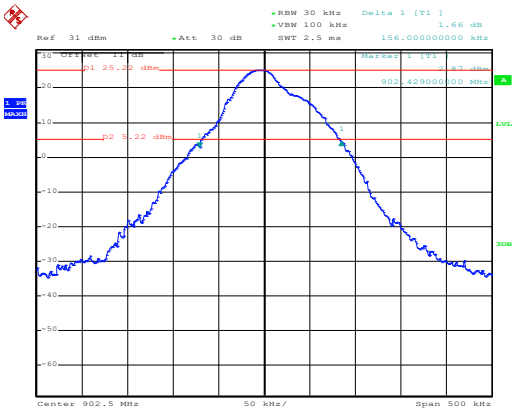
6.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013 and KDB558074v01r04 section 8.1
Receiver setup:	RBW=30 kHz, VBW=100 kHz, detector=Peak
Limit:	500kHz
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 1
Test results:	Pass

Measurement Data

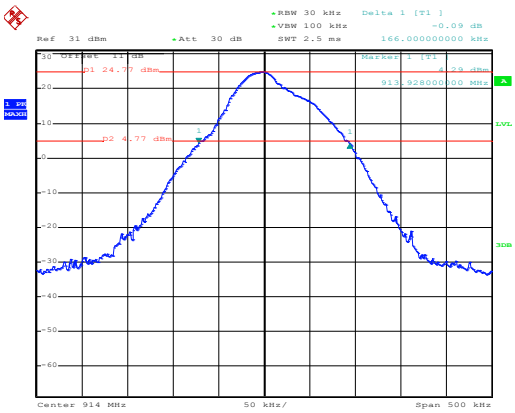
Test channel	20dB Occupy Bandwidth (kHz)	Limit (kHz)
Lowest	156	500
Middle	166	500
Highest	156	500

Test plot as follows:



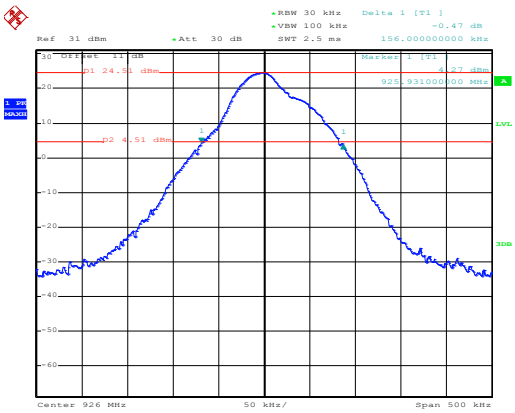
Date: 14.JUN.2017 14:01:24

Lowest channel



Date: 14.JUN.2017 14:02:03

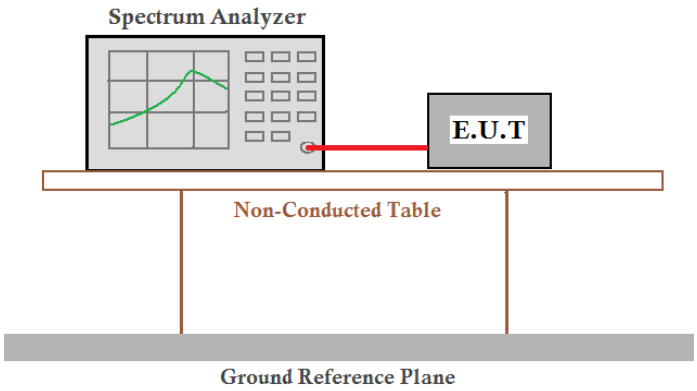
Middle channel



Date: 14.JUN.2017 14:00:07

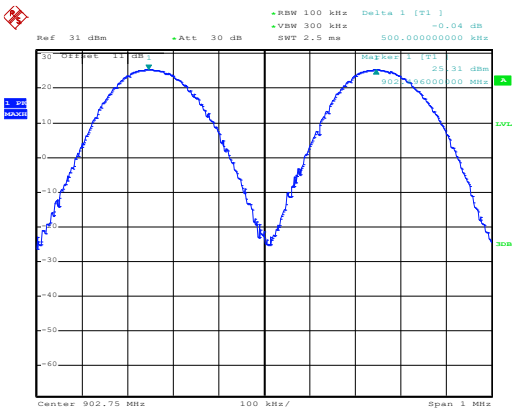
Highest channel

6.5 Carrier Frequencies Separation

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100 kHz, VBW=300 kHz, detector=Peak
Limit:	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.
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 2
Test results:	Pass

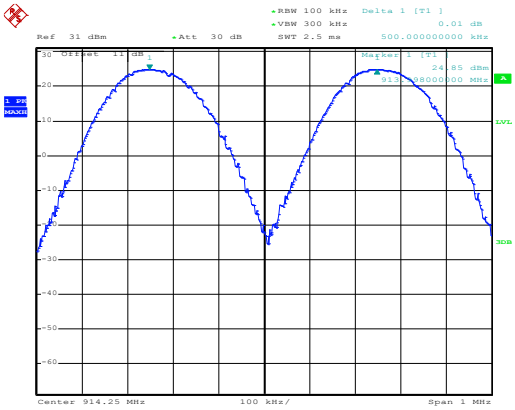
Measurement Data

Test channel	Carrier Frequencies Separation (kHz)	Limit (kHz)
Lowest	500	137
Middle	500	136
Highest	502	141



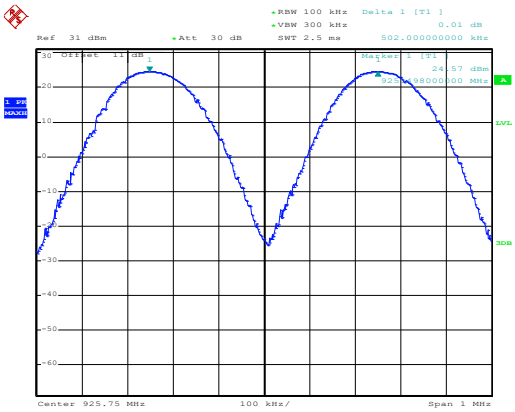
Date: 14.JUN.2017 14:03:38

Lowest channel



Date: 14.JUN.2017 14:04:17

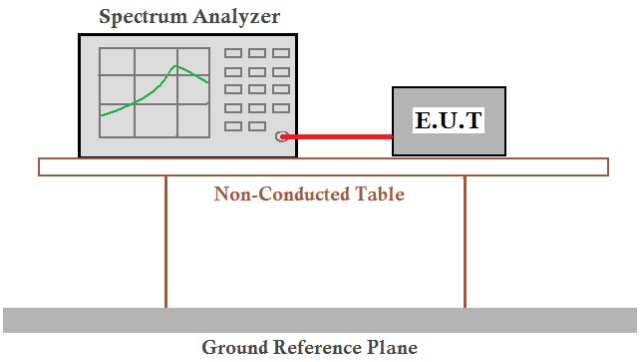
Middle channel



Date: 14.JUN.2017 14:05:02

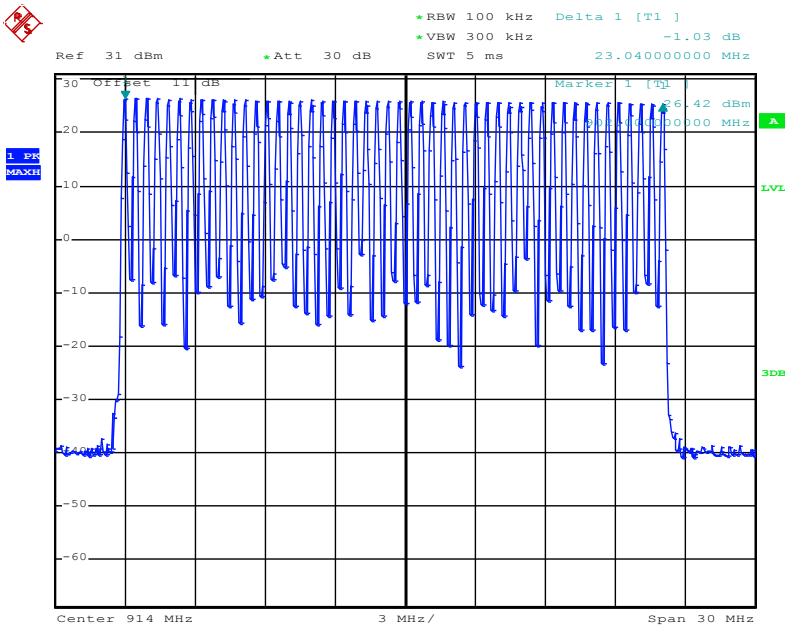
Highest channel

6.6 Hopping Channel Number

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Frequency range=2400MHz-2483.5MHz, Detector=Peak
Limit:	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.
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 2
Test results:	Pass

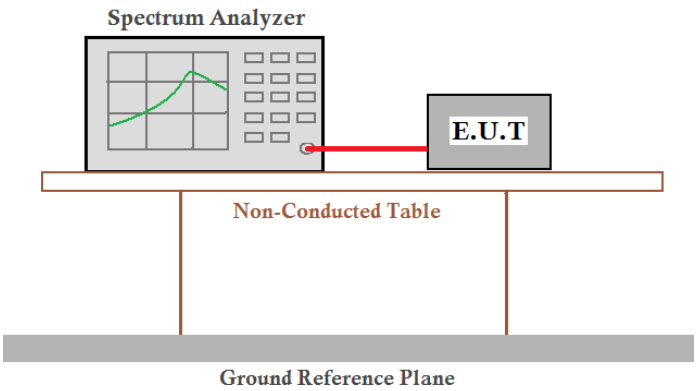
Measurement Data:

Hopping channel numbers	Limit	Result
50	50	Pass



Date: 14.JUN.2017 17:29:51

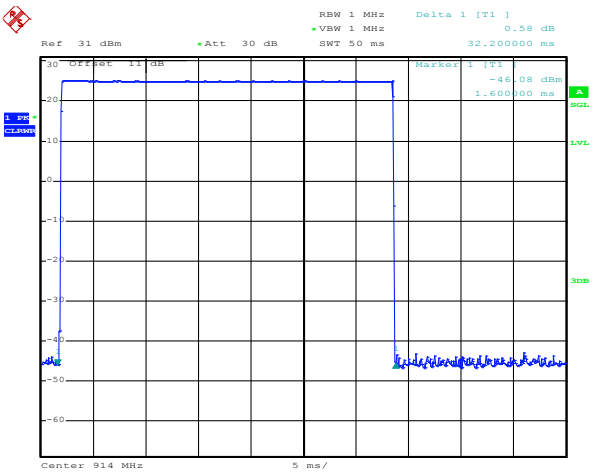
6.7 Dwell Time

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1 MHz, VBW=1 MHz, Span=0 Hz, Detector=Peak
Limit:	0.4 seconds within a 20 second period
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 2
Test results:	Pass

Measurement Data

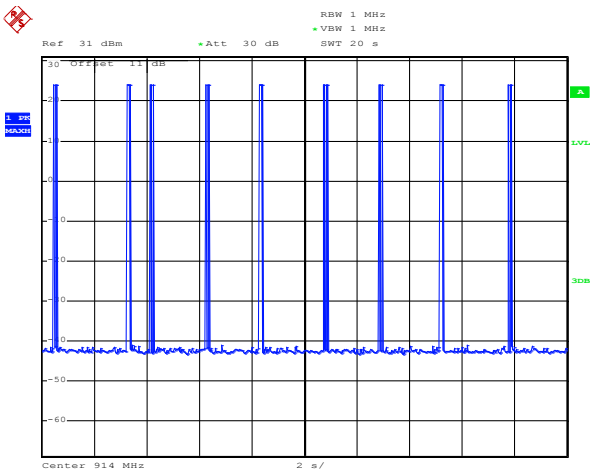
Dwell time per hop (Second)	Hopping numbers	Dwell time in one period (Second)	Limit (Second)	Result
0.03220	9	0.290	0.4	Pass

Remark:
The test period: T= 20s



Date: 13.JUN.2017 18:16:59

Duration time



Date: 14.JUN.2017 14:27:22

Hopping number

6.8 Pseudorandom Frequency Hopping Sequence

Test Requirement:	FCC Part 15 C Section 15.247 (a)(1) requirement:

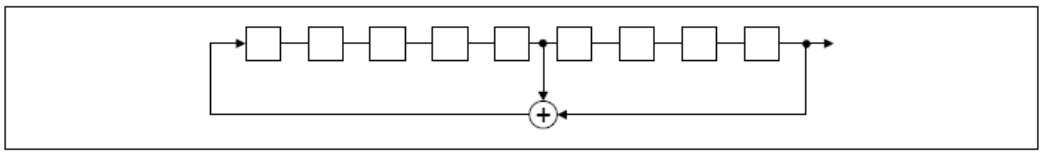
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Alternatively. Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

EUT Pseudorandom Frequency Hopping Sequence

The pseudorandom sequence may be generated in a nine-stage shift register whose 5th and 9th stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- *Number of shift register stages: 9*
- *Length of pseudo-random sequence: 2^9 -1 = 511 bits*
- *Longest sequence of zeros: 8 (non-inverted signal)*



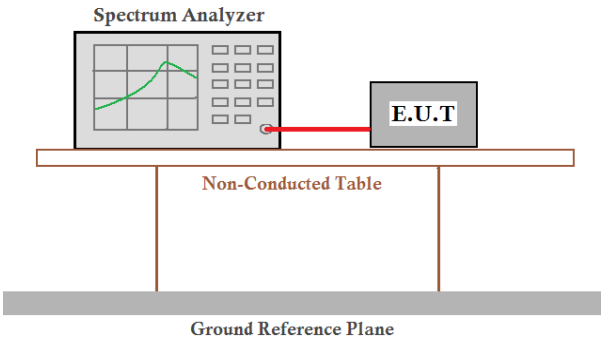
Linear Feedback Shift Register for Generation of the PRBS sequence

Each frequency used equally on the average by each transmitter.

The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies in synchronization with the transmitted signals.

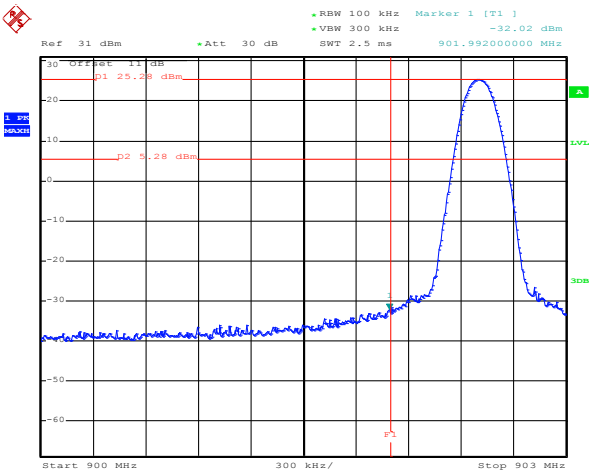
6.9 Band Edge

6.9.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074v01r04 section 13
Receiver setup:	RBW=100 kHz, VBW=300 kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 1 & TM 2
Test results:	Pass

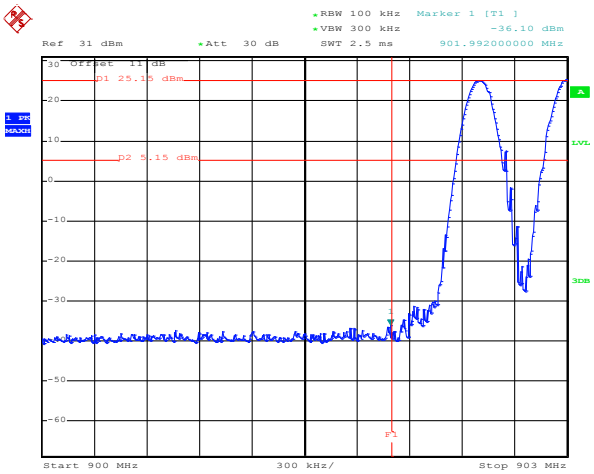
Test plot as follows:

Lowest Channel



Date: 14.JUN.2017 13:55:21

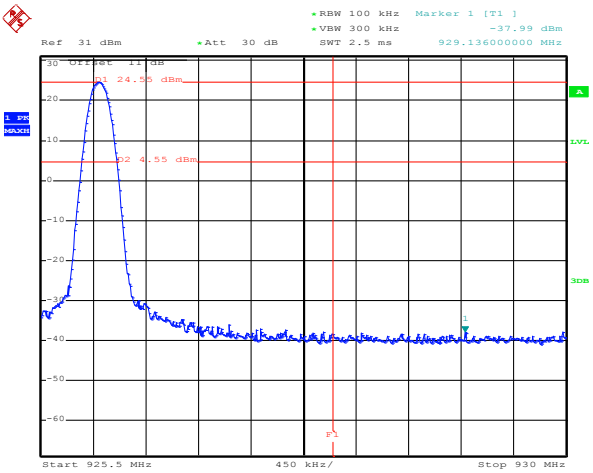
Non-hopping



Date: 14.JUN.2017 13:56:04

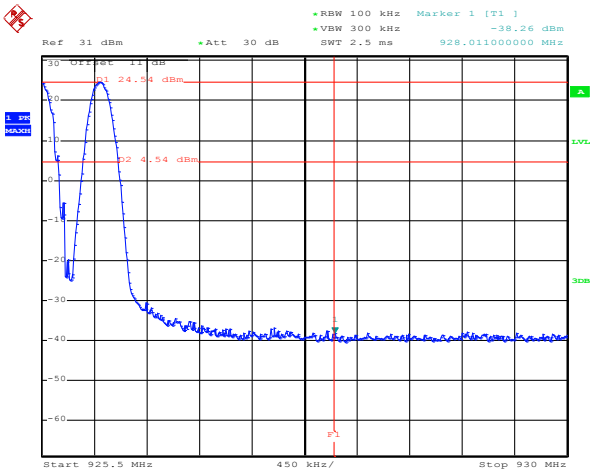
Hopping

Highest Channel



Date: 14.JUN.2017 13:58:37

Non-hopping



Date: 14.JUN.2017 13:58:07

Hopping

6.9.2 Radiated Emission Method

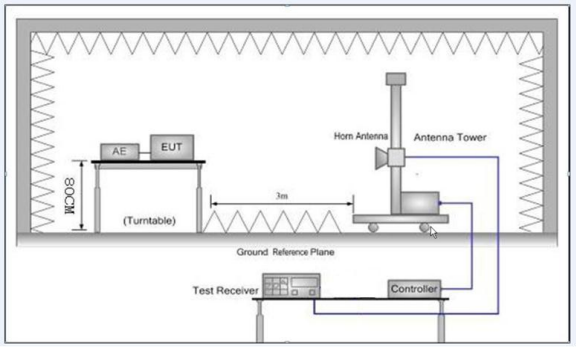
Test Requirement:	FCC Part 15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013 and KDB558074v01r04 section 12.1
Test Frequency Range:	960MHz to 1.240GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Remark
960MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	RMS	1MHz	3MHz	Average Value

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.00	Average Value
	74.00	Peak Value

Test setup:



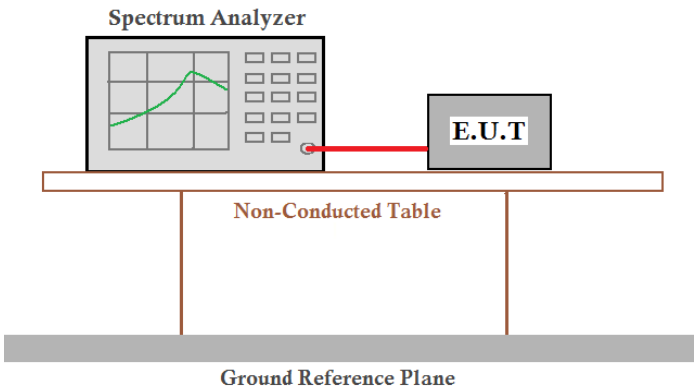
Test Procedure:

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

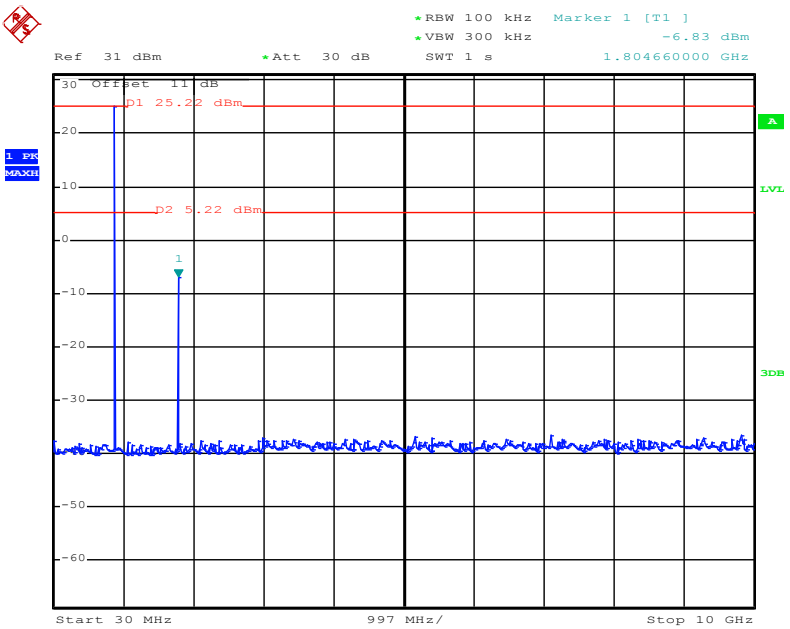
Test Instruments:	Refer to section 5.7 for details
Test mode:	
Test results:	Pass
Remark:	All the reading values were the noise floor and not recorded.

6.10 Spurious Emission

6.10.1 Conducted Emission Method

Test Requirement:	FCC Part 15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013 and KDB558074v01r04 section 11
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 1
Test results:	Pass

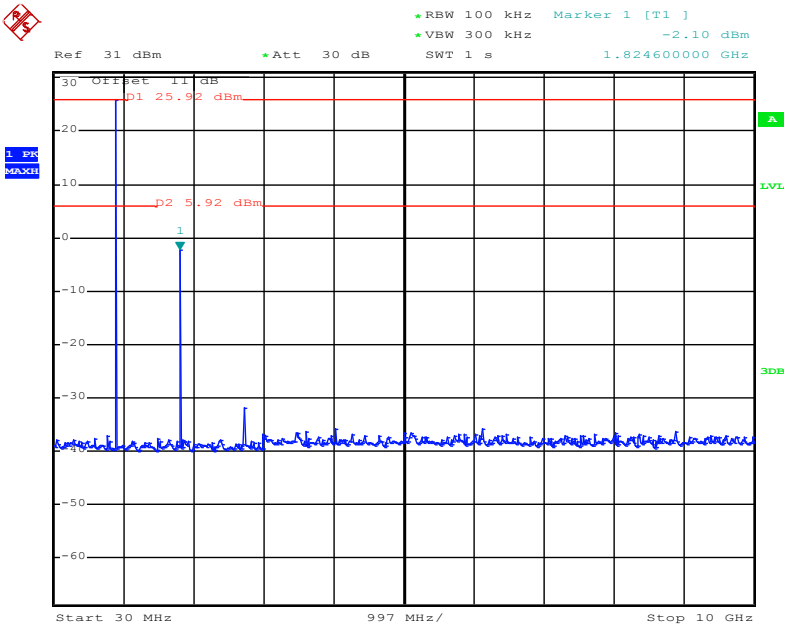
Lowest channel



Date: 13.JUN.2017 18:02:27

30MHz~10GHz

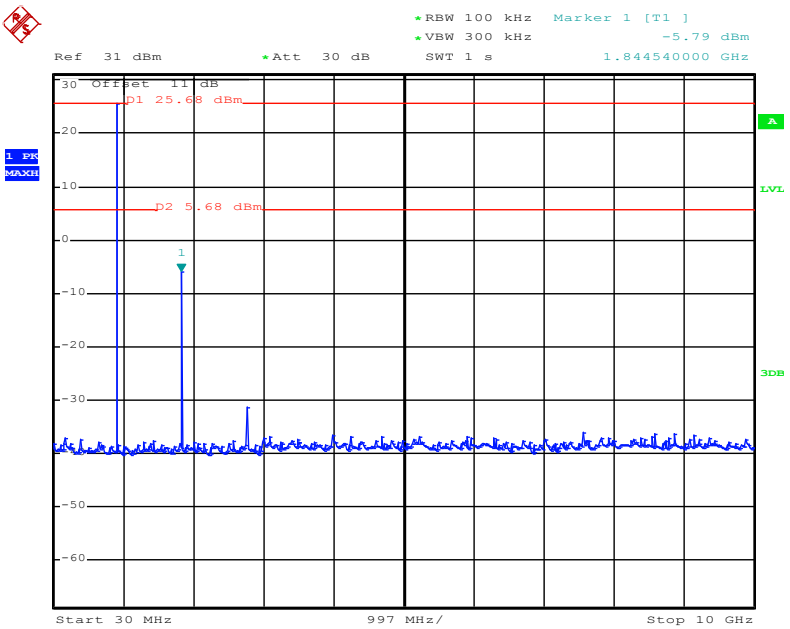
Middle channel



Date: 13.JUN.2017 18:00:57

30MHz~10GHz

Highest channel



Date: 13.JUN.2017 18:01:30

30MHz~10GHz

6.10.2 Radiated Emission Method

Test Requirement:	FCC Part 15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9 kHz to 10 GHz
Test site:	Measurement Distance: 3m

Receiver setup:

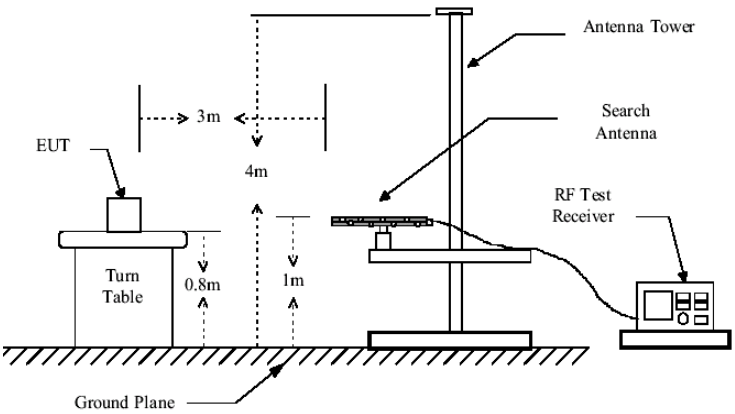
Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	RMS	1MHz	3MHz	Average Value

Limit:

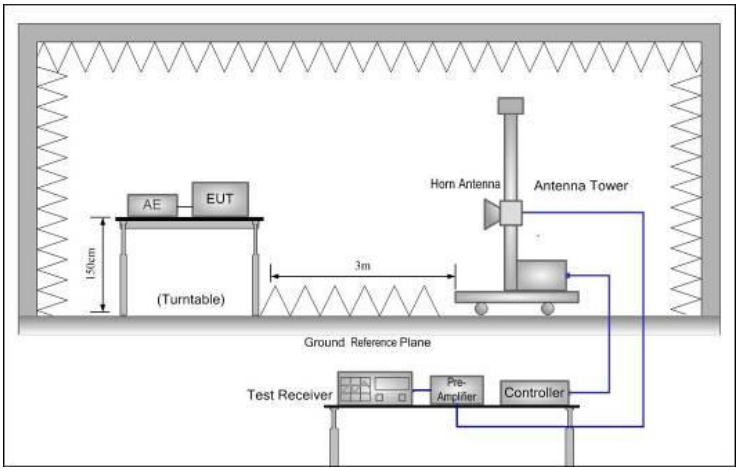
Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test setup:

Below 1GHz



Above 1GHz



Test Procedure:	1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 5.7 for details
Test mode:	TM 1 mode
Test results:	Pass

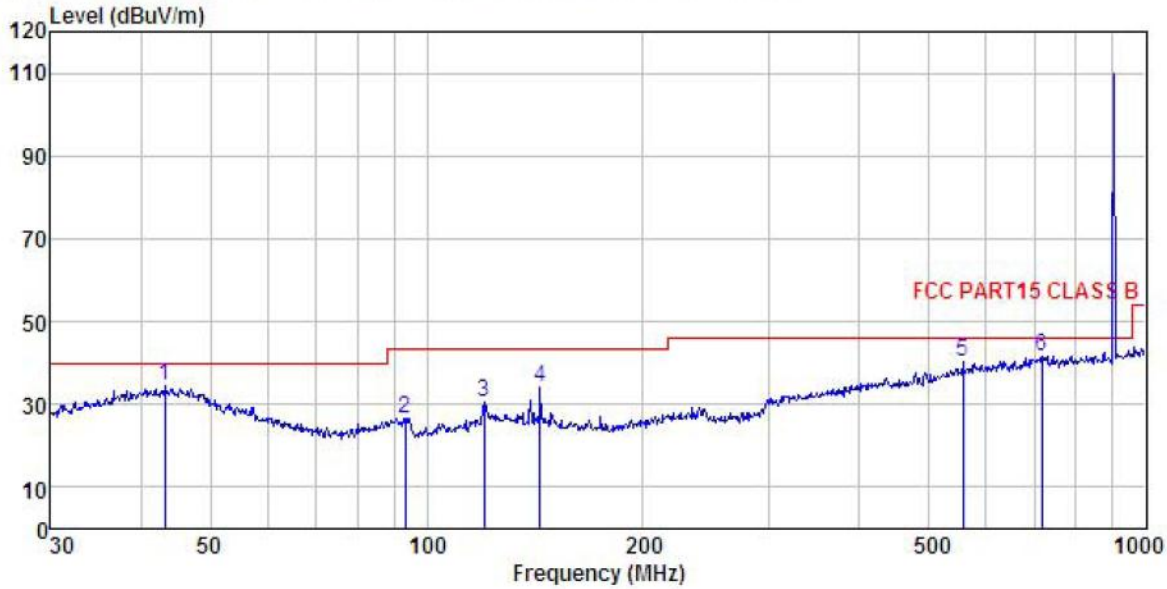
Remark:

1. *9 kHz to 30 MHz is noise floor, so only shows the data of above 30MHz in this report.*
2. *Low, mid and high 3 channels all have been tested for 30MHz to 1GHz, only report worst case.*

Measurement data:

Below 1GHz

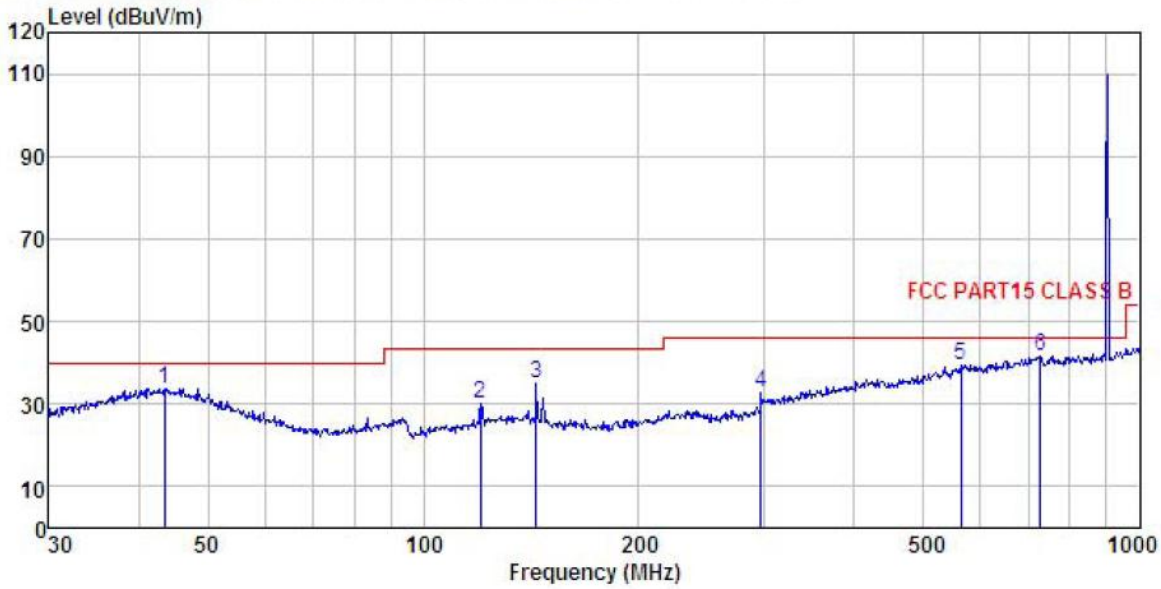
Vertical:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) VERTICAL
EUT : D-100 UHF RFID Desktop Reader
Model : D-100
Test mode : RFID mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5°C Huni:55%
Test Engineer: Carey
REMARK :

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	43.202	15.63	17.44	1.26	0.00	34.33	40.00	-5.67	QP
2	93.440	16.22	8.49	2.02	0.00	26.73	43.50	-16.77	QP
3	120.277	16.76	11.83	2.17	0.00	30.76	43.50	-12.74	QP
4	143.830	20.21	11.34	2.44	0.00	33.99	43.50	-9.51	QP
5	556.774	18.11	18.14	3.90	0.00	40.15	46.00	-5.85	QP
6	716.682	17.76	19.60	4.24	0.00	41.60	46.00	-4.40	QP

Horizontal:



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163(30M3G) HORIZONTAL
EUT : D-100 UHF RFID Desktop Reader
Model : D-100
Test mode : RFID mode
Power Rating : AC 120V/60Hz
Environment : Temp:25.5℃ Huni:55%
Test Engineer: Carey
REMARK :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBm	dB/m	dB	dB	dBm/m	dBm/m	dB	
1	43.506	14.98	17.52	1.26	0.00	33.76	40.00	-6.24	QP
2	120.277	15.98	11.83	2.17	0.00	29.98	43.50	-13.52	QP
3	143.830	21.26	11.34	2.44	0.00	35.04	43.50	-8.46	QP
4	296.184	17.09	12.53	2.93	0.00	32.55	46.00	-13.45	QP
5	562.662	17.46	18.21	3.90	0.00	39.57	46.00	-6.43	QP
6	726.805	17.59	19.84	4.28	0.00	41.71	46.00	-4.29	QP

Above 1GHz:

Test channel:			Lowest		Level:		Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1805.00	55.18	23.10	4.12	41.21	41.19	74.00	-32.81	Vertical
1805.00	60.36	23.10	4.12	41.21	46.37	74.00	-27.63	Horizontal
Test channel:			Lowest		Level:		Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1805.00	55.23	23.10	4.12	41.21	41.24	54	-12.76	Vertical
1805.00	49.86	23.10	4.12	41.21	35.87	54	-18.13	Horizontal

Test channel:			Middle		Level:		Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1830.00	64.82	23.17	4.15	41.27	50.87	74.00	-23.13	Vertical
1830.00	60.55	23.17	4.15	41.27	46.60	74.00	-27.40	Horizontal
Test channel:			Middle		Level:		Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1830.00	54.27	23.17	4.15	41.27	40.32	54.00	-13.68	Vertical
1830.00	50.96	23.17	4.15	41.27	37.01	54.00	-16.99	Horizontal

Test channel:			Highest		Level:		Peak	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1855.00	64.77	23.22	4.17	41.32	50.84	74.00	-23.16	Vertical
1855.00	57.77	23.22	4.17	41.32	43.84	74.00	-30.16	Horizontal
Test channel:			Highest		Level:		Average	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1855.00	54.68	23.22	4.17	41.32	40.75	54.00	-13.25	Vertical
1855.00	47.23	23.22	4.17	41.32	33.30	54.00	-20.70	Horizontal

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*