Most Technology Service Co., Ltd.
Tel:(86) 755-26825180 Fax:(86) 755-86170310
Http:// www. szmost.com Email: szmost@szmost.com

Test Report

Product Name: UHF RFID Reader

FCC ID: XNO-RFID308X

MODEL NO. : HKRUR-3083, HKRUR-3081

Applicant:

Hong Kong RFID Ltd.
Unit 207A, 2/F, Building 9, No.5 Science Park West Avenue,
Hong Kong Science Park, Shatin, N.T., Hong Kong

Date Received: 08/17/2009

Date Tested: 08/15-16/2009

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APPLICANT: HONG KONG RFID LTD.

FCC ID: XNO-RFID308X

TEST REPORT CONTAINING:

EXHIBIT INCLUDED:

Most Technology Service Co., Ltd.
Tel:(86) 755-26825180 Fax:(86) 755-86170310
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EMC Equipment List

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100492	Mar 10,2009	1 Year
LISN	ROHDE&SCHWARZ	ENV216	100093	Mar 10,2009	1Year
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	101202	Mar 10,2009	1 Year
Spectrum Analyzer	ANRITSU	MS2651B	6200238316	Mar 10,2009	1 Year
50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10,2009	1 Year
Bilog Antenna	Sunol	JB3	A121206	Mar 10,2009	1 Year
Horn Antenna	EMCO	3115	640201028-06	Mar 10,2009	1 Year
50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10,2009	1 Year
Cable	Resenberger	N/A	NO.1	Mar 10,2009	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10,2009	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10,2009	1 Year
Single Phase Power Line Filter	Kikusui	LIN40MA-PCR-L	LM002352	Mar 10,2009	1Year
AC Power Source	Kikusui	AC40MA	LM003232	Mar 10,2009	1Year
Test analyzer	Kikusui	KHA1000	LM003720	Mar 10,2009	1Year
ESD Tester	Kikusui	KES4021	LM003537	Mar 10,2009	1 Year
Signal Generator	IFR	2032	203002/100	Mar 10,2009	1 Year
Amplifier	A&R	150W1000	301584	NCR	NCR
Dual Directional Coupler	A&R	DC6080	301508	Mar 10,2009	1 Year
Power Head	A&R	PH2000	301193	Mar 10,2009	1 Year
Power Meter	A&R	PM2002	302799	Mar 10,2009	1 Year
Field Monitor	A&R	FM5004	300329	Mar 10,2009	1 Year
Field Probe	A&R	FP5000	300221	Mar 10,2009	1 Year
EMCPRO System	EM Test	UCS-500-M4	V0648102026	Mar 10,2009	1 Year
EMCPRO System	EM Test	UCS-500-M4	V0648102026	Mar 10,2009	1 Year
Spectrum Analyzer	Agilent	E4446A	US44300459	Mar 10,2009	1 Year
Attenuator	Agilent	8491B	MY39262165	Mar 10,2009	1 Year

Remark:

Test Firm Name: Most Technology Service Co., Ltd.
Test Firm Address:
No. 5, 2nd Langshan Road, North District, Hi-tech Industrial Park,Nanshan, Shenzhen, Guangdong, China
FCC Registered Test Site Number: 490827

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of MOST TECHNOLOGY SERVICE CO., LTD. The EUT was transmitting a test signal during the testing.

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50uH LISN. Both Lines were observed. The bandwidth of the receiver was 10kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25 ℃ with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. The ambient temperature of the EUT was 25℃ with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:
Freq (MHz) METER READING + ACF + CABLE = FS
33 20 dBuV + 10.36 dB + 0.9 dB= 31.26 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings were converted to average readings based on the duration of "ON" time.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

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APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: POWER LINE CONDUCTED INTERFERENCE

RULES PART NUMBER: 15.207(a), DA 00-705

REQUIREMENTS:

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

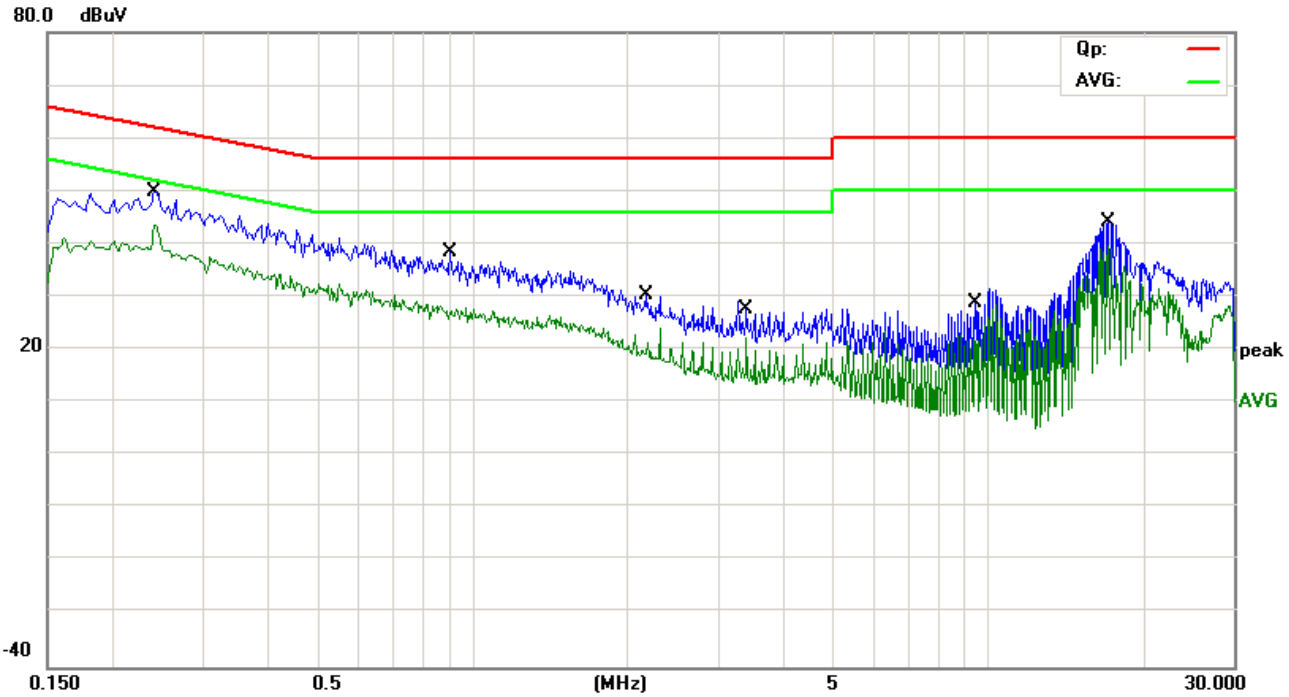
* Decreases with the logarithm of the frequency.

TEST PROCEDURE: ANSI STANDARD C63.4-2003

Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86170306 Fax: 0755-86170310

Conducted Emission Measurement

File :RFID Data :#35 Date: 2009/08/15 Time: 17:10:52



Site site #1 Phase: *L1* Temperature: 26

Limit: FCC Part 15C QP Power: DC 9V Adaptor AC 120V/60Hz Humidity: 60 %

EUT: UHF RFID Reader

M/N: HKRUR-3083

Mode: Running

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.2420	38.26	11.72	49.98	62.03	-12.05	QP	
2		0.9060	28.41	10.00	38.41	56.00	-17.59	QP	
3		2.1700	21.08	9.17	30.25	56.00	-25.75	QP	
4		3.4100	17.25	10.41	27.66	56.00	-28.34	QP	
5		9.4980	19.51	9.30	28.81	60.00	-31.19	QP	
6		17.1780	35.17	9.00	44.17	60.00	-15.83	QP	

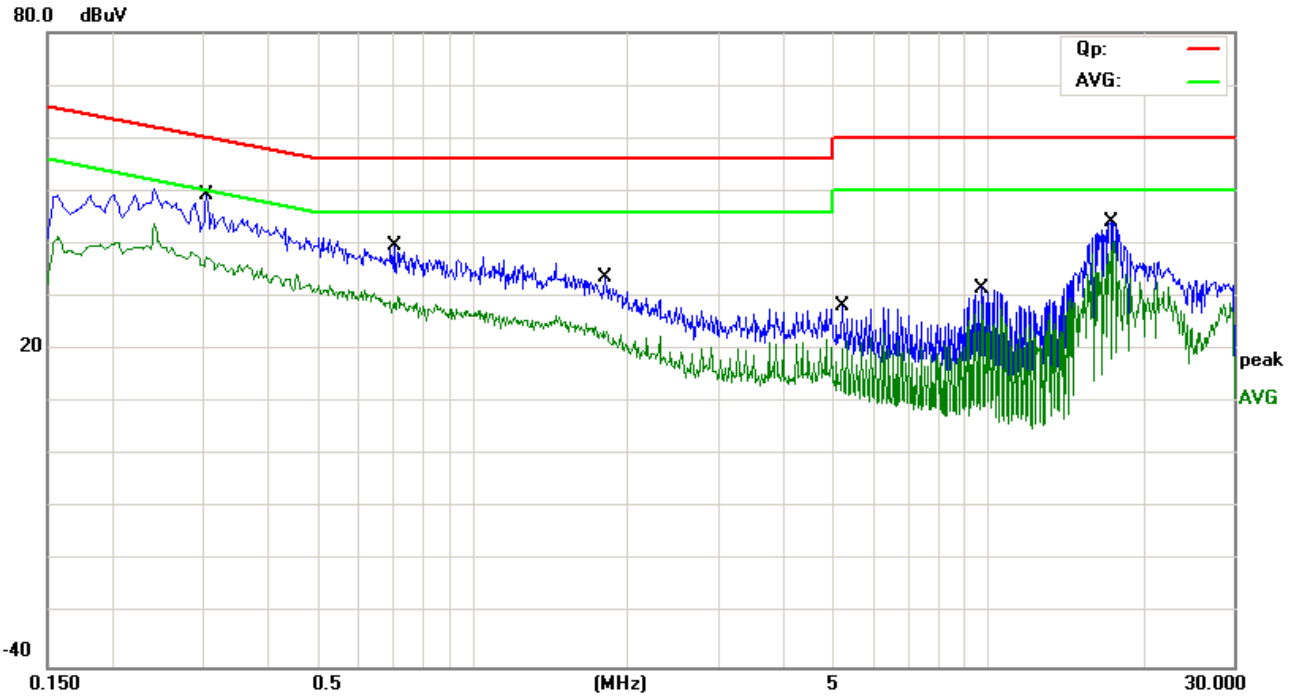
*:Maximum data x:Over limit !:over margin

APPLICANT: Hong Kong RFID Ltd.
FCC ID: XNO-RFID308X

Address:No.5,Langshan 2nd Rd., North Hi-Tech Industrial park
Guangdong ,China
Tel: 0755-86170306 Fax: 0755-86170310

Conducted Emission Measurement

File :RFID Data :#36 Date: 2009/08/15 Time: 17:16:37



Site site #1 Phase: *N* Temperature: 26

Limit: FCC Part 15C QP Power: DC 9V Adaptor AC 120V/60Hz Humidity: 60 %

EUT: UHF RFID Reader

M/N: HKRUR-3083

Mode: Running

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.3060	38.07	11.29	49.36	60.08	-10.72	QP	
2		0.7060	29.61	10.00	39.61	56.00	-16.39	QP	
3		1.8180	24.58	9.18	33.76	56.00	-22.24	QP	
4		5.2220	16.40	11.87	28.27	60.00	-31.73	QP	
5		9.7220	22.53	9.17	31.70	60.00	-28.30	QP	
6		17.3780	35.05	9.00	44.05	60.00	-15.95	QP	

*:Maximum data x:Over limit !:over margin

APPLICANT: Hong Kong RFID Ltd.
FCC ID: XNO-RFID308X

APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.209(a), DA 00-705

REQUIREMENTS:

30-88 MHz 40 dBuV/m @3m
88-216 MHz 43.5 dBuV/m @3m
216-960 MHz 46 dBuV/m @3m
960-1000 MHz 54 dBuV/m @3m
Above 1000MHz 74 dBuV/m(Peak) @3m, 54 dBuV/m(AV) @3m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 Db BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REMARK: 1. After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the highest emission level. Then, the EUT configuration and cable configuration of the CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) test mode of highest emission mode was chosen for all final test item
2. Emissions attenuated more than 20 dB below the permissible value are not reported.

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)			FCC 15 Subpart C Limit(dBuV/m)
		Avg	QP	Peak	
Low CH(903MHz)					
47.32	Vertical	---	33.76	36.32	40.0
1806.01	Vertical	34.23	---	36.04	54.0
2709.04	Vertical	---	---	35.50	54.0
3612.06	Vertical	---	---	35.23	54.0
4515.02	Vertical	---	---	34.63	54.0
5418.00	Vertical	---	---	34.40	54.0
6321.03	Vertical	---	---	32.09	54.0
7224.04	Vertical	---	---	32.17	54.0
8127.01	Vertical	---	---	30.19	54.0
9030.02	Vertical	---	---	29.85	54.0
109.47	Horizontal	---	32.65	35.89	43.5
1806.01	Horizontal	33.87	---	36.23	54.0
2709.03	Horizontal	---	---	35.29	54.0
3612.05	Horizontal	---	---	34.54	54.0
4515.02	Horizontal	---	---	34.20	54.0
5418.00	Horizontal	---	---	33.42	54.0
6321.04	Horizontal	---	---	32.09	54.0
7224.07	Horizontal	---	---	30.30	54.0
8127.01	Horizontal	---	---	30.57	54.0
9030.02	Horizontal	---	---	29.43	54.0

APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.209(a), DA 00-705

REQUIREMENTS:

30-88 MHz 40 dBuV/m @3m
88-216 MHz 43.5 dBuV/m @3m
216-960 MHz 46 dBuV/m @3m
960-1000 MHz 54 dBuV/m @3m
Above 1000MHz 74 dBuV/m(Peak) @3m, 54 dBuV/m(AV) @3m

EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 Db BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REMARK: 1. After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the highest emission level. Then, the EUT configuration and cable configuration of the CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) test mode of highest emission mode was chosen for all final test item
2. Emissions attenuated more than 20 dB below the permissible value are not reported.

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)			FCC 15 Subpart C Limit(dBuV/m)
		Avg	QP	Peak	
Middle CH(915.00MHz)					
47.40	Vertical	---	33.49	36.53	40.0
1830.00	Vertical	34.23	---	36.02	54.0
2745.00	Vertical	33.56	---	36.03	54.0
3660.00	Vertical	---	---	35.72	54.0
4575.00	Vertical	---	---	34.54	54.0
5490.00	Vertical	---	---	34.44	54.0
6405.00	Vertical	---	---	32.21	54.0
7320.00	Vertical	---	---	32.20	54.0
8235.00	Vertical	---	---	30.23	54.0
9150.00	Vertical	---	---	29.79	54.0
109.31	Horizontal	---	33.04	36.09	43.5
1830.00	Horizontal	34.07	---	36.23	54.0
2745.00	Horizontal	33.86	---	36.30	54.0
3660.00	Horizontal	---	---	34.24	54.0
4575.00	Horizontal	---	---	33.87	54.0
5490.00	Horizontal	---	---	33.32	54.0
6405.00	Horizontal	---	---	32.19	54.0
7320.00	Horizontal	---	---	30.32	54.0
8235.00	Horizontal	---	---	30.60	54.0
9150.00	Horizontal	---	---	29.42	54.0

APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: RADIATION INTERFERENCE

RULES PART NUMBER: 15.209(a), DA 00-705

REQUIREMENTS:
30-88 MHz 40 dBuV/m @3m
88-216 MHz 43.5 dBuV/m @3m
216-960 MHz 46 dBuV/m @3m
960-1000 MHz 54 dBuV/m @3m
Above 1000MHz 74 dBuV/m(Peak) @3m, 54 dBuV/m(AV) @3m
EMISSIONS RADIATED OUTSIDE OF THE SPECIFIED FREQUENCY BANDS, EXCEPT FOR HARMONICS, SHALL BE ATTENUATED BY AT LEAST 50 Db BELOW THE LEVEL OF THE FUNDAMENTAL OR TO THE GENERAL RADIATED EMISSION LIMITS IN 15.209, WHICHEVER IS THE LESSER ATTENUATION.

REMARK: 1. After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the highest emission level. Then, the EUT configuration and cable configuration of the CH0 (903MHz),CH25 (915MHz), CH50 (927MHz) test mode of highest emission mode was chosen for all final test item
2. Emissions attenuated more than 20 dB below the permissible value are not reported.

Frequency (MHz)	Antenna Polarization	Emission Level (dBuV/m)			FCC 15 Subpart C Limit(dBuV/m)
		Avg	QP	Peak	
High CH(927MHz)					
47.15	Vertical	---	34.50	36.64	40.0
1854.00	Vertical	34.16	---	36.32	54.0
2781.00	Vertical	33.93	---	36.04	54.0
3708.00	Vertical	---	---	35.70	54.0
4635.00	Vertical	---	---	34.53	54.0
5562.00	Vertical	---	---	34.57	54.0
6489.00	Vertical	---	---	32.20	54.0
7416.00	Vertical	---	---	32.34	54.0
8343.00	Vertical	---	---	30.28	54.0
9270.00	Vertical	---	---	29.80	54.0
109.80	Horizontal	---	34.11	36.16	43.5
1854.00	Horizontal	34.09	---	36.24	54.0
2781.00	Horizontal	33.43	---	36.32	54.0
3708.00	Horizontal	---	---	34.26	54.0
4635.00	Horizontal	---	---	33.89	54.0
5562.00	Horizontal	---	---	33.31	54.0
6489.00	Horizontal	---	---	32.19	54.0
7416.00	Horizontal	---	---	31.22	54.0
8343.00	Horizontal	---	---	31.64	54.0
9270.00	Horizontal	---	---	30.57	54.0

TEST PROCEDURE: ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector and an appropriate antenna. The resolution bandwidth of spectrum analyzer was 100 kHz below 1 GHz and 1 MHz above 1 GHz. An appropriate sweep speed was used. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: 20dB Bandwidth Test

RULES PART NUMBER: 15.247(a)(1)(i), DA 00-705

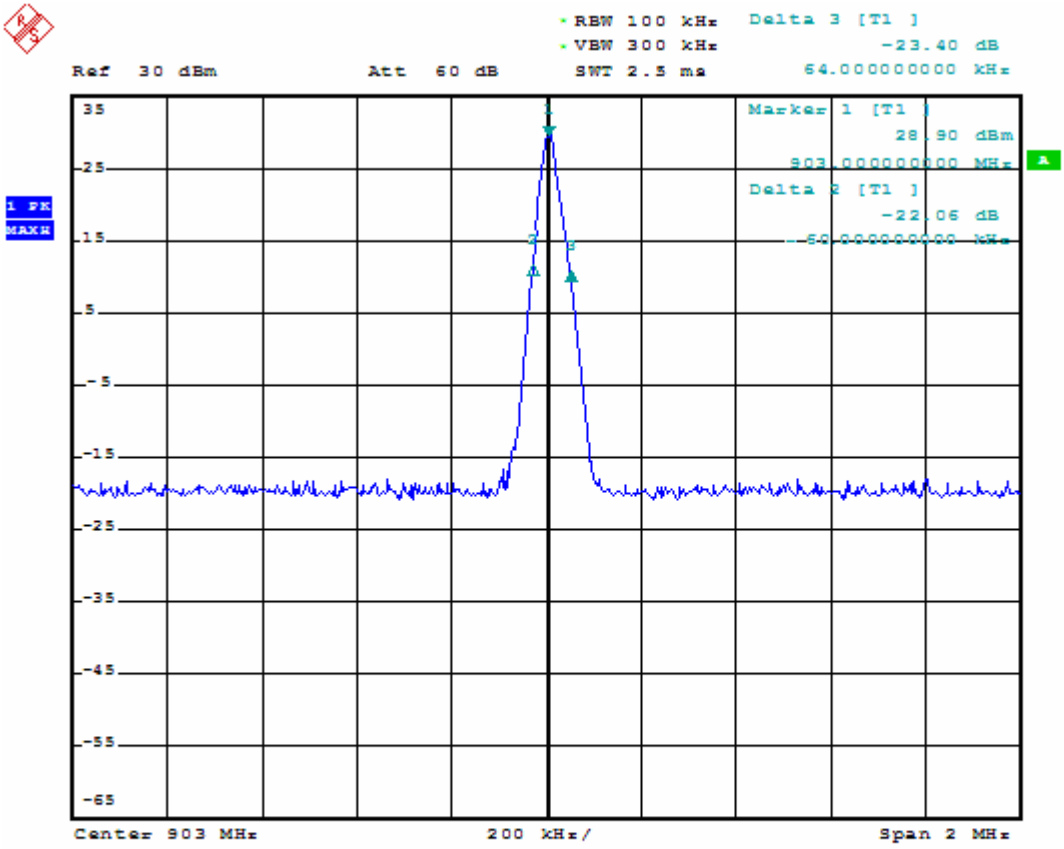
REQUIREMENTS: The 20dB bandwidth must be less than 250kHz.

REMARK: After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the worst frequency output. Then, the EUT configuration and cable configuration of the CH0 (903MHz),CH25 (915MHz), CH50 (927MHz) test mode was chosen for all final test item

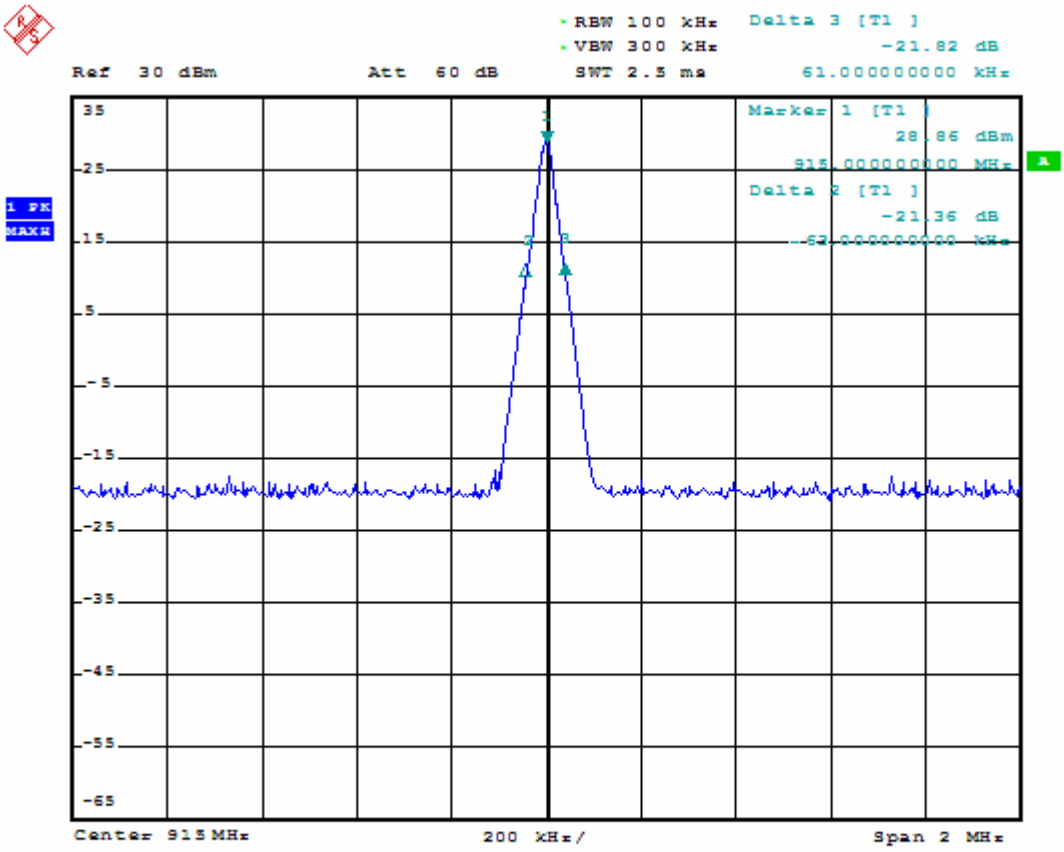
TEST RESULTS:

Test Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Conclusion
Low CH:903.00MHz	124	250	PASS
Middle CH:915.00MHz	123	250	PASS
High CH:927.00MHz	128	250	PASS

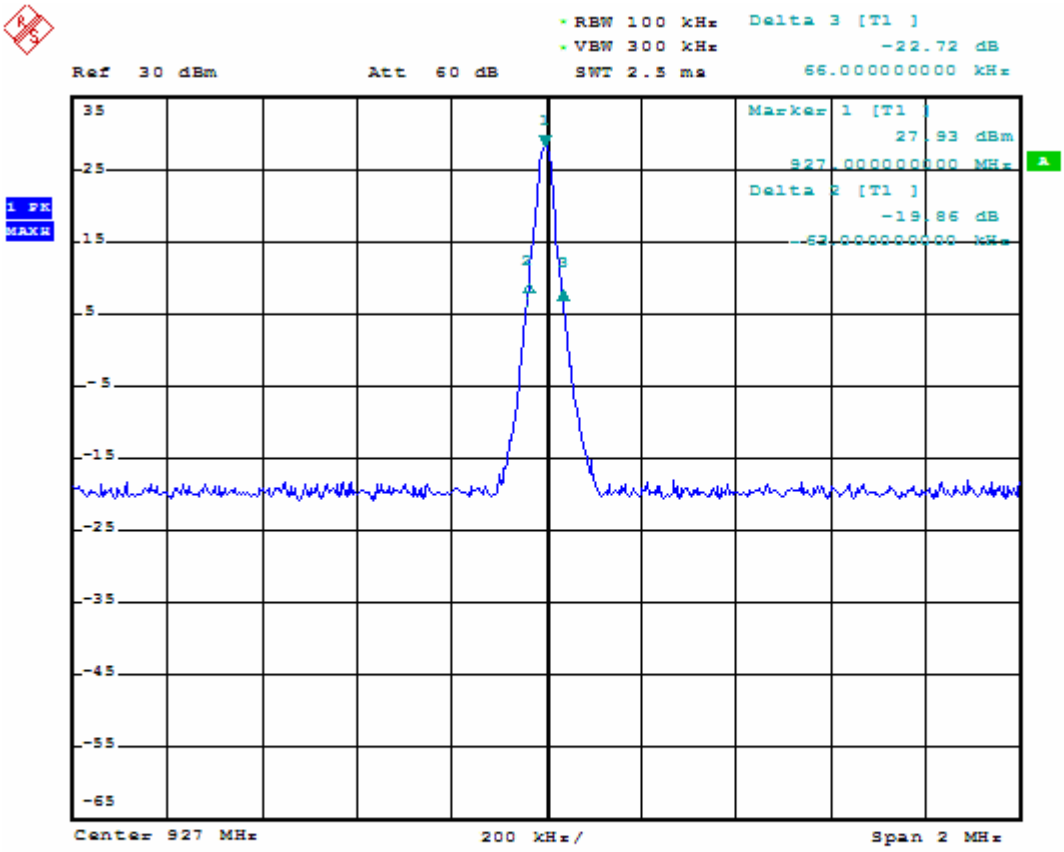
Low CH: 903.00MHz



Middle CH: 915.00MHz



High CH: 927.00MHz



APPLICANT: Hong Kong RFID Ltd.

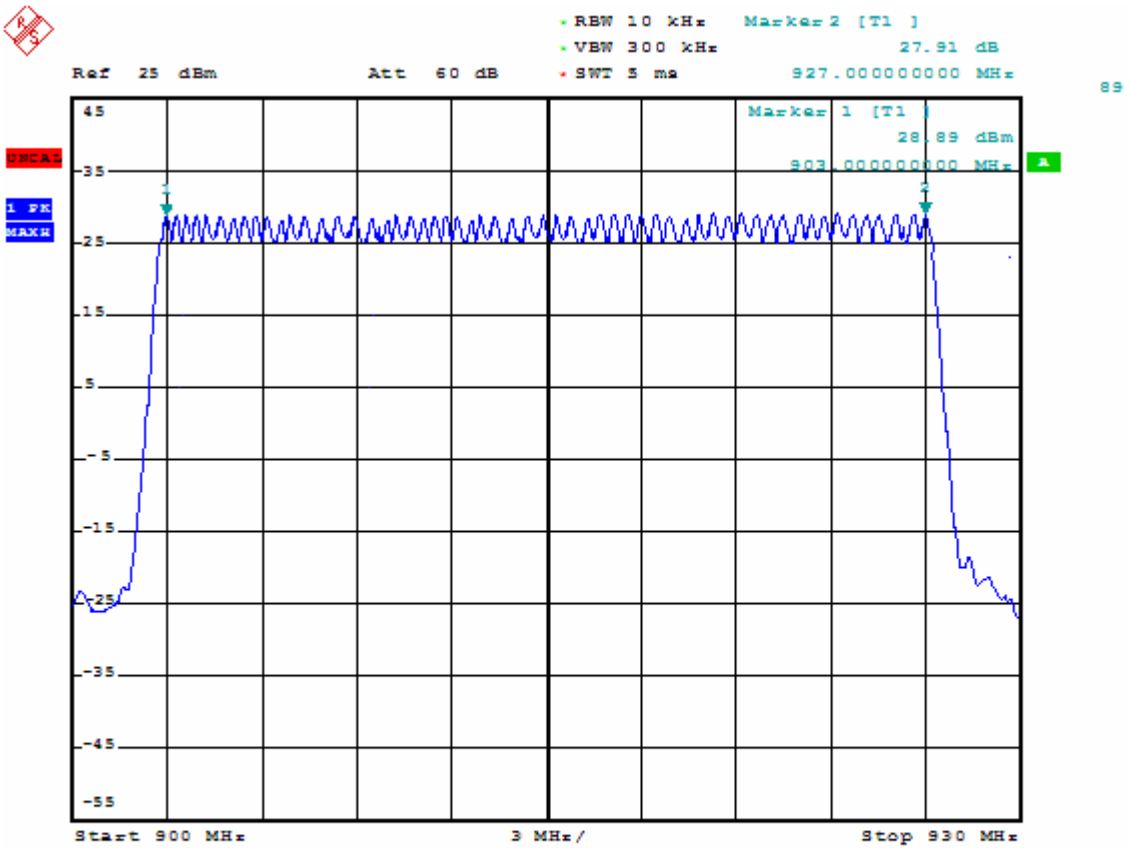
FCC ID: XNO-RFID308X

NAME OF TEST: Number of Hopping Frequency Test

RULES PART NUMBER: 15.247(a)(1)(i), DA 00-705

REQUIREMENTS: If the 20dB bandwidth is less than 250KHz, the system shall use at least 50 hopping frequencies. If the 20dB bandwidth is 250kHz or greater, the system shall use at least 25 hopping frequencies.

TEST RESULTS: There are 51 hopping channels



APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

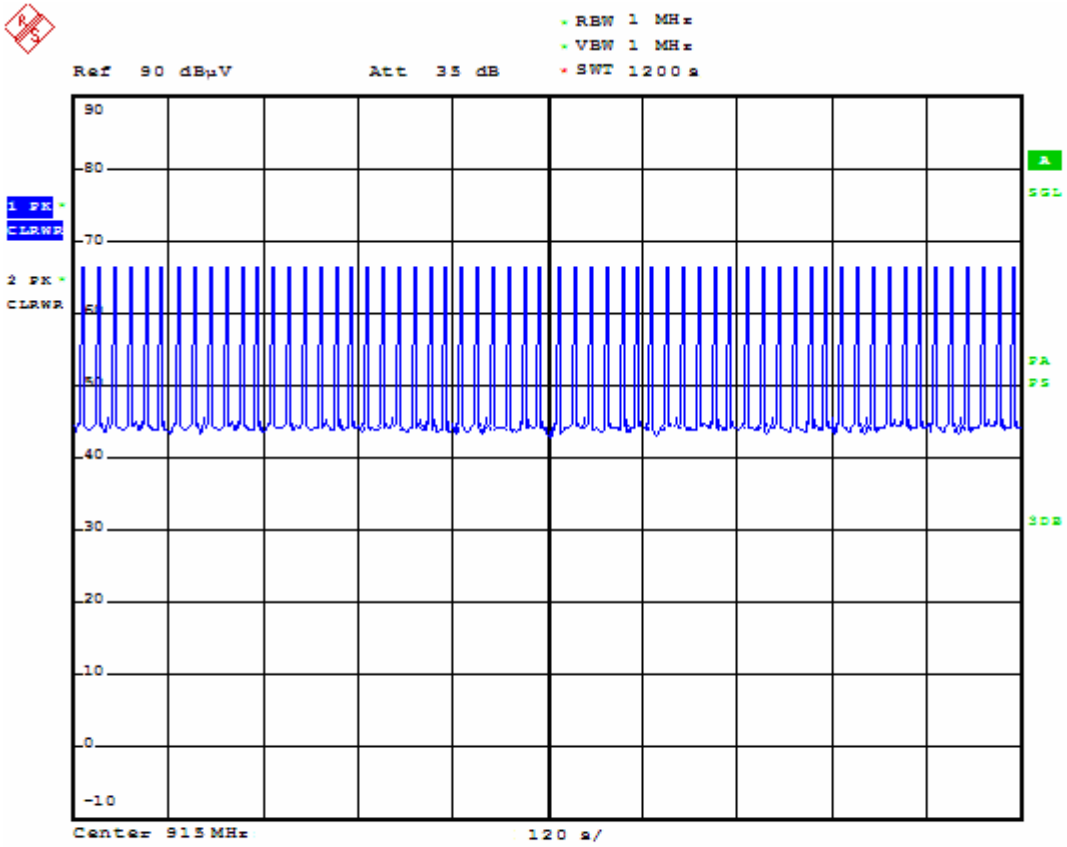
NAME OF TEST: Dwell Time of A Hopping Channel Test

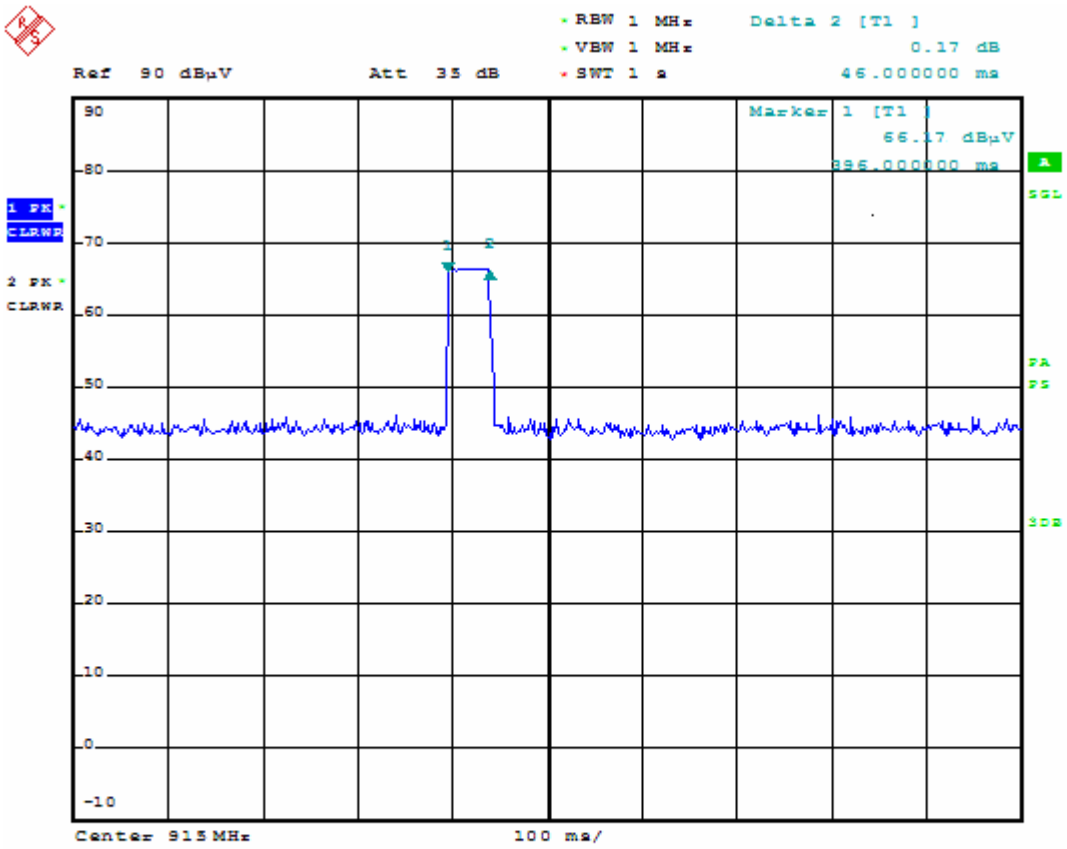
RULES PART NUMBER: 15.247(a)(1)(i), DA 00-705

REQUIREMENTS: If the 20Db bandwidth is less than 250kHz, Dwell time<=0.4 Seconds in a 20 second period. If the 20Db bandwidth is 250kHz or greater, Dwell time<=0.4 seconds in a 10 second Period.

REMARK: After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the worst frequency output. Then, the EUT configuration and cable configuration of the CH0 (903MHz),CH25 (915MHz), CH50 (927MHz) test mode was chosen for all final test item

TEST RESULTS: Dwell time=60 timies/1200s*20s*46ms=46ms


RBW 1 MHz
VBW 1 MHz
SWT 1200 s
Ref 90 dBµV
Att 35 dB
1 PK
CLRWR
2 PK
CLRWR
90
80
70
60
50
40
30
20
10
0
-10
A
SGL
PA
PS
3DB
Center 915 MHz
120 s/


RBW 1 MHz
VBW 1 MHz
SWT 1 s
Delta 2 [T1]
0.17 dB
46.000000 ms
Ref 90 dBµV
Att 35 dB
Marker 1 [T1]
66.17 dBµV
896.000000 ms
1 PK
CLRWR
2 PK
CLRWR
90
80
70
60
50
40
30
20
10
0
-10
Center 915 MHz
100 ms/

APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: Carrier Frequency Separation Test

RULES PART NUMBER: 15.247(a)(1), DA 00-705

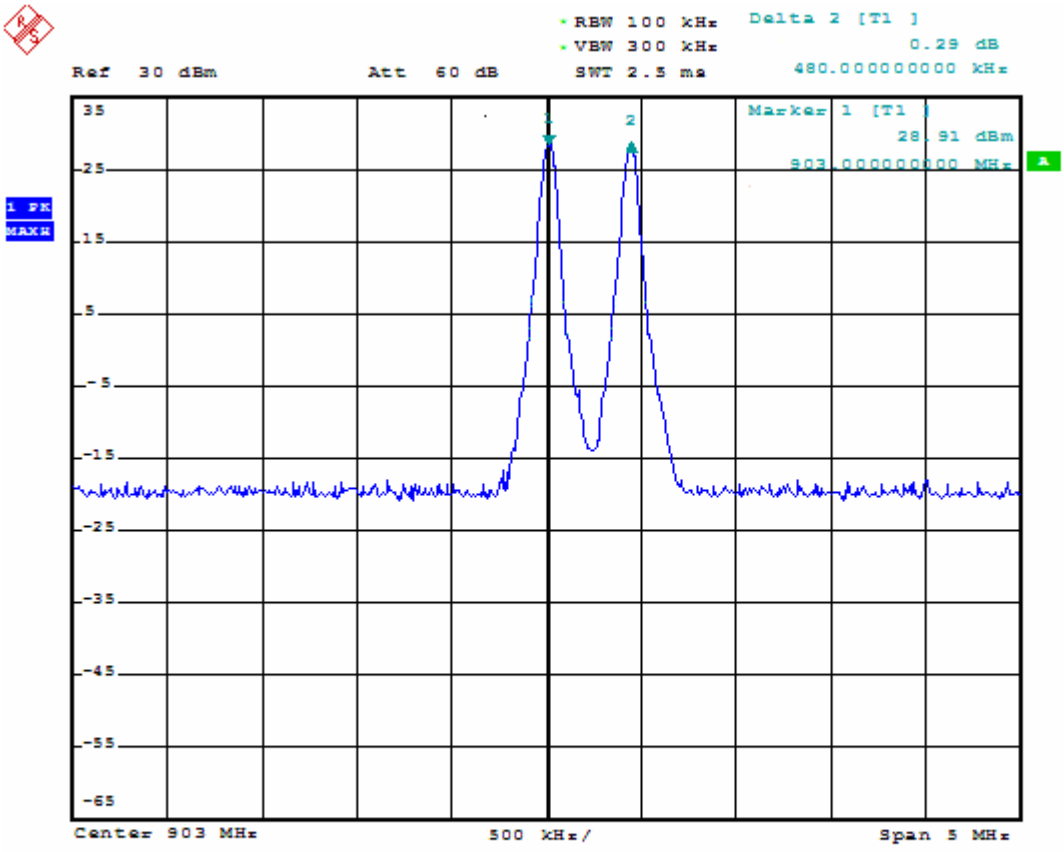
REQUIREMENTS: Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25KHz or the 20dB Bandwidth Of the hopping channel, whichever is greater.

REMARK: After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the worst frequency output. Then, the EUT configuration and cable configuration of the CH0 (903MHz),CH25 (915MHz), CH50 (927MHz) test mode was chosen for all final test item

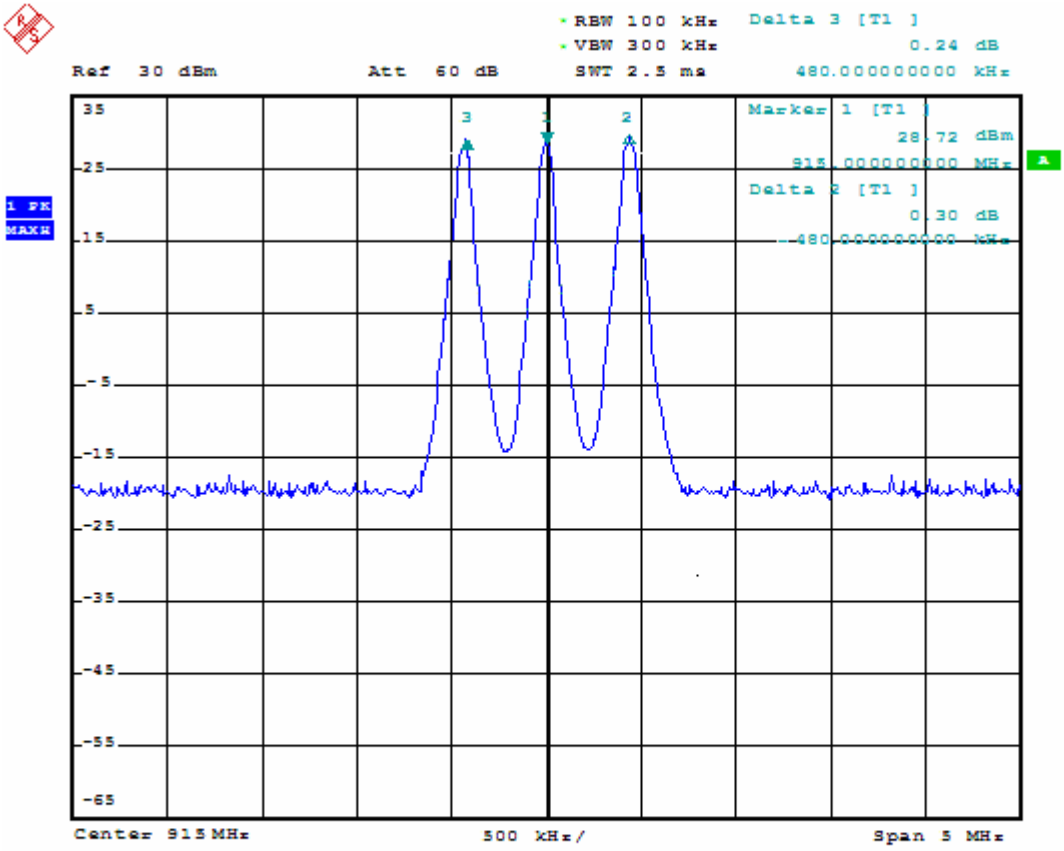
TEST RESULTS:

Test Frequency (MHz)	Carrier Frequency Separation (kHz)	Limit (kHz)	Conclusion
Low CH:903.00MHz	480	>128	PASS
Middle CH:914.52MHz	480	>128	PASS
High CH:927.00MHz	480	>128	PASS

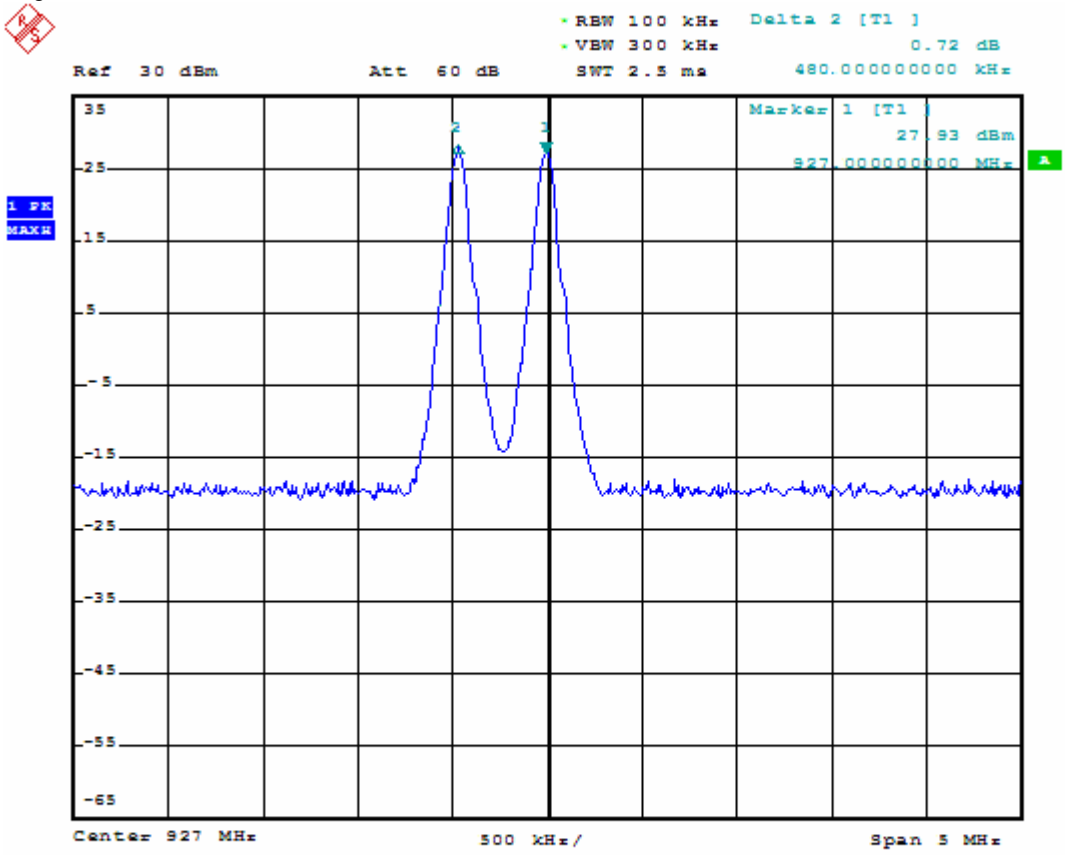
Low CH: 903.00MHz



Middle CH: 915.00MHz



High CH: 927.00MHz



APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: Maximum Peak Output Power Test

RULES PART NUMBER: 15.247 (b)(2), DA 00-705

REQUIREMENTS: The transmitter output was connected to a power meter via a Attenuator, use the power meter to read out the peak output power, the peak output power shall be not exceed 1w or 30dBmw .

REMARK: After the preliminary test for all channels, CH0 (903MHz), CH25 (915MHz), CH50 (927MHz) was found to produce the worst frequency output. Then, the EUT configuration and cable configuration of the CH0 (903MHz),CH25 (915MHz), CH50 (927MHz) test mode was chosen for all final test item

TEST RESULTS:

Test Frequency (MHz)	Read(PK) (dBm)	Cable loss (dB)	Atten loss (dB)	Result (dBm)	Limit (dBm)	Conclusion
Low CH (903.00MHz)	8.30	0.6	20	28.90	30	PASS
Middle CH (915.00MHz)	8.10	0.6	20	28.70	30	PASS
High CH (927.00MHz)	7.33	0.6	20	27.93	30	PASS

APPLICANT: Hong Kong RFID Ltd.

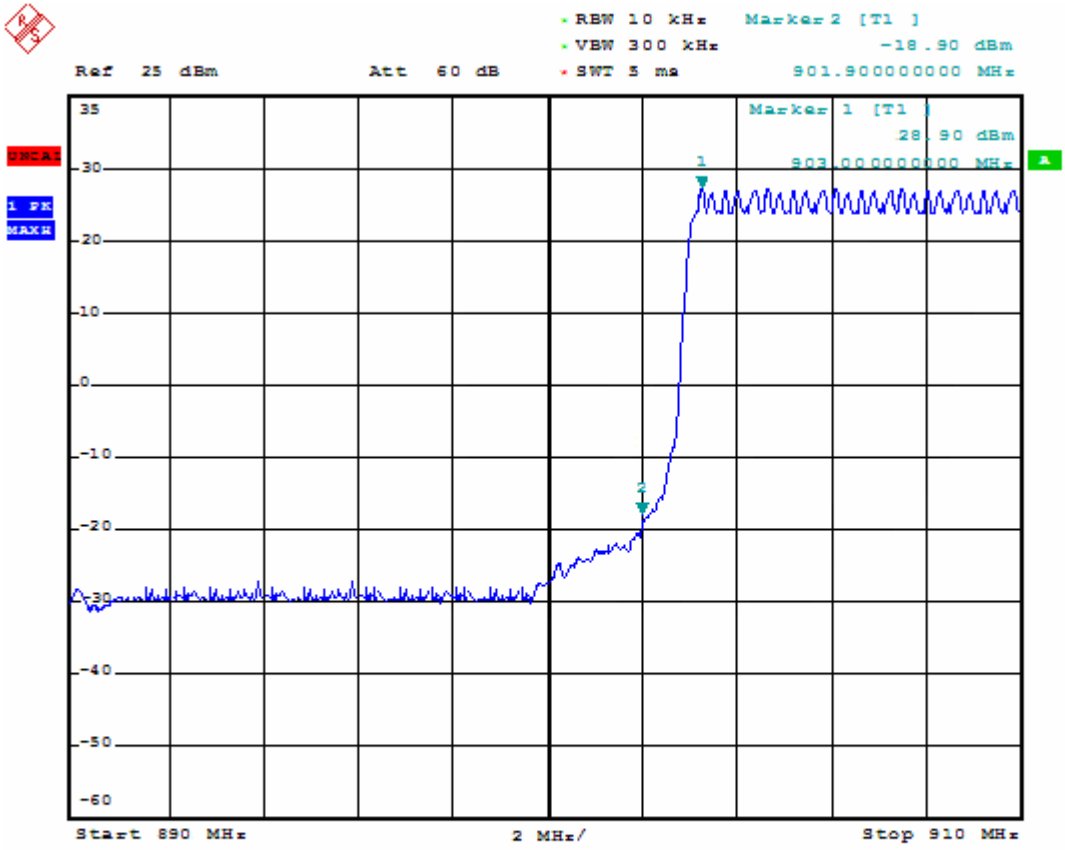
FCC ID: XNO-RFID308X

NAME OF TEST: Band Edge Compliance Test

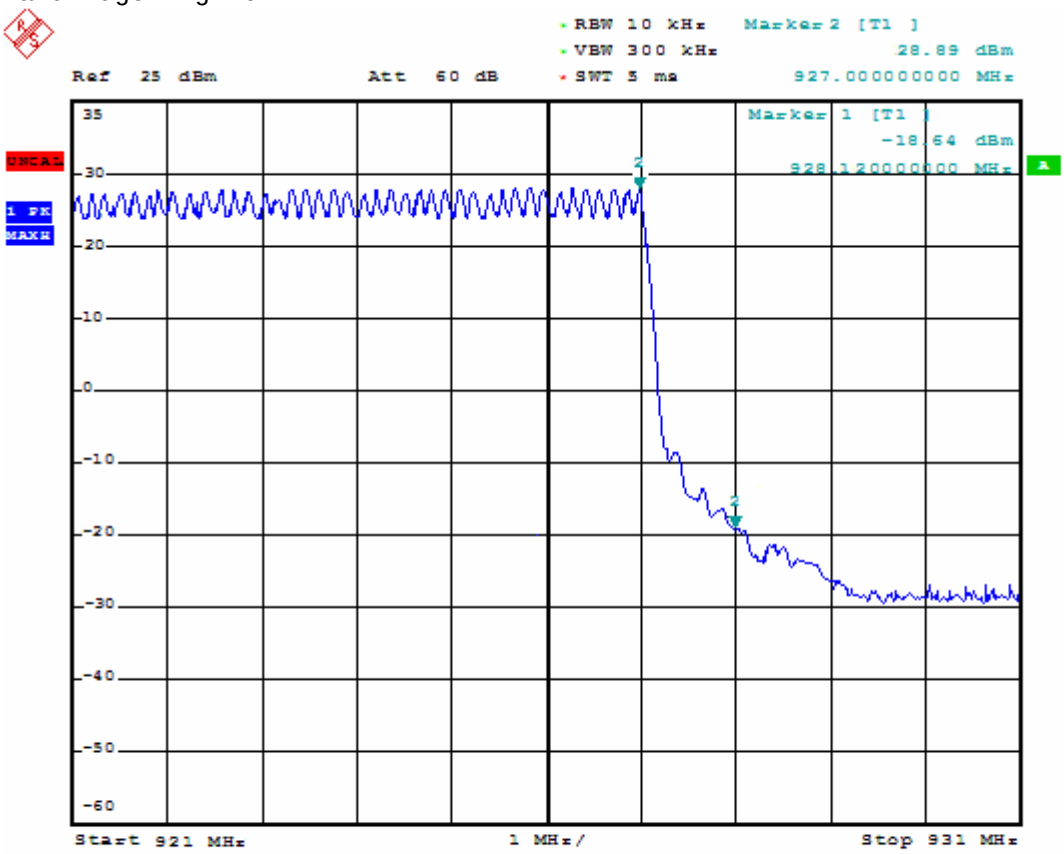
RULES PART NUMBER: 15.205(b), 15.247(d), DA 00-705

TEST RESULTS:

Band Edge-Low CH



Band Edge-High CH



APPLICANT: Hong Kong RFID Ltd.

FCC ID: XNO-RFID308X

NAME OF TEST: Antenna Requirement

RULES PART NUMBER: 15.205(b),15.247(d), DA 00-705

REQUIREMENTS: For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain great than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

ANTENNA SPECIFICATION for EUT: The antenna used for this product is designed that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna .The maximum peak Gain of this antenna is only 5dBi.