TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart C (Section 15.247)**
Report No.:	RFBHTN-WTW-P25080061-2
FCC ID:	S6J3128
Product:	3128 BLUETOOTH® UHF RFID RAIN READER
Brand:	TECHNOLOGY SOLUTIONS (UK) LTD
Model No.:	3128
Received Date:	2025/11/17
Test Date:	2025/12/22 ~ 2025/12/29
Issued Date:	2026/7/17
Applicant:	Technology Solutions (UK) Ltd.
Address:	Suite A, Loughborough Technology Centre, Epinal Way, Loughborough, Leicestershire, LE11 3GE, UK
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy . Lin , **Date:** **2026/7/17**

Jeremy Lin / Project Engineer

This test report consists of 50 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Gina Liu / Specialist

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBHTN-WTW-P25080061-2	Original release.	2026/7/17

1 Certificate

Product:	3128 BLUETOOTH® UHF RFID RAIN READER
Brand:	TECHNOLOGY SOLUTIONS (UK) LTD
Test Model:	3128
Sample Status:	Engineering sample
Applicant:	Technology Solutions (UK) Ltd.
Test Date:	2025/12/22 ~ 2025/12/29
Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure:	ANSI C63.10-2020 KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247 (b)(2)	RF Output Power	Pass	Meet the requirement of limit.
15.247(a)(1) (i)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1) (i)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)	Hopping Channel Separation	Pass	Meet the requirement of limit.
15.247(a)(1)	20 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -22.26 dB at 0.15400 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -2.3 dB at 281.18 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.8 dB at 2745.75 MHz
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.371 dB
Dwell Time on Each Channel	-	0.0218
Hopping Channel Separation	-	390 Hz
20 dB Bandwidth	-	206.5 Hz
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.90 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	3128 BLUETOOTH® UHF RFID RAIN READER
Brand	TECHNOLOGY SOLUTIONS (UK) LTD
Test Model	3128
Status of EUT	Engineering sample
Power Supply Rating	Refer to note
Modulation Type	ASK
Modulation Technology	FHSS
Transfer Rate	Up to 640kbps
Operating Frequency	902.75 MHz ~ 927.25 MHz
Number of Channel	50
Output Power	984.011 mW (29.93 dBm)

Note:

1. All models are listed as below. Part Number: 3128-AS1-US were chosen for final test.

Model	Part Number	Antenna Frequency	Barcode Imager	Product Description
3128	3128-AS1-US	902–928 MHz	SE4107	Handheld UHF RFID Reader with 2D Imager
	3128-AX1-US		None	Handheld UHF RFID Reader

2. The EUT uses following accessories.

Item	Brand	Model	Description
Power handle for USBC (in EUT box) (optional)	Technology Solutions UK Ltd	31PH-01	-
Type C Cable for USBC & dock (in EUT box) (optional)	Pro-Signal	PSG91214	0.95M
Docking Cradle (optional)	Technology Solutions UK Ltd	3138-CR-01-KIT	-
Power handle for dock (optional)	Technology Solutions UK Ltd	31PH-02	-
Adapter (optional)	ECOPAC Power	DSA-45PDH	Input power: 100-240V ~ 50-60Hz 1.5A Output power: 5.0V/3.0A, 15.0W 9.0V/3.0A, 27.0W 12.0V/3.0A, 36.0W 15.0V/3.0A, 45.0W 20.0V/2.25A, 45.0W
Built-in rechargeable battery (in Power handle)	-	PA-INB76-C17UL.4.2.R001	Normal Voltage: 7.27Vdc Normal Capacity: 3.5Ah Manufacturer: Fey Elektronik GmbH

3. There are Bluetooth and RFID technology used for the EUT.
4. The EUT contains certified BT module which FCC ID: QOQ-BT122.
5. Simultaneously transmission combination.

Combination	Technology	
1	Bluetooth	RFID
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

6. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Antenna Description of EUT

The antenna information is listed as below.

Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Description
TSL	1128-A1-US	0.0	902~928MHz	Quadrifilar Spiral	Proprietary	For 3128-AX1-US
TSL	1128-IMG-US	0.0	902~928MHz	Quadrifilar Spiral	Proprietary	For 3128-AS1-US

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.3 Channel List

50 channels are provided to this EUT:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	902.75	10	907.75	20	912.75	30	917.75	40	922.75
1	903.25	11	908.25	21	913.25	31	918.25	41	923.25
2	903.75	12	908.75	22	913.75	32	918.75	42	923.75
3	904.25	13	909.25	23	914.25	33	919.25	43	924.25
4	904.75	14	909.75	24	914.75	34	919.75	44	924.75
5	905.25	15	910.25	25	915.25	35	920.25	45	925.25
6	905.75	16	910.75	26	915.75	36	920.75	46	925.75
7	906.25	17	911.25	27	916.25	37	921.25	47	926.25
8	906.75	18	911.75	28	916.75	38	921.75	48	926.75
9	907.25	19	912.25	29	917.25	39	922.25	49	927.25

3.4 Test Mode Applicability and Tested Channel Detail

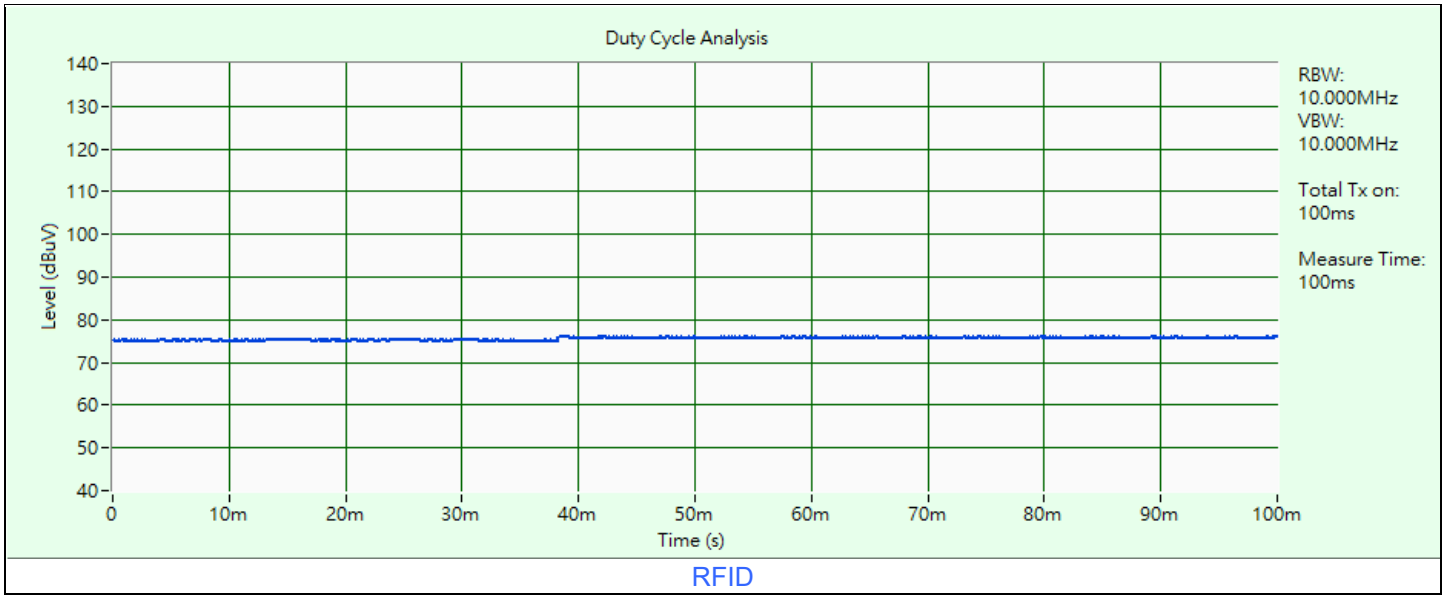
Pre-Scan:	1. For device External interface: USB-C connector option/ 8-Way Power Pins option, for use with Docking Cradle. Pre-scan these modes and find the worst case as a representative test condition. 2. EUT can be used in the following ways: X-axis/ Y-axis/ Z-axis. Pre-scan these ways and find the worst case as a representative test condition.
Worst Case:	1. For External interfac Worst Condition: 8-Way Power Pins option, for usewith Docking Cradle 2. X-axis/ Y-axis/ Z-axis Worst Condition: X-axis

Following channel(s) was (were) selected for the final test as listed below:

Test Item	Tested Channel	Modulation	Data Rate
RF Output Power	0, 25, 49	ASK	640kbps
Number of Hopping Frequency Used	Hopping	ASK	640kbps
Dwell Time on Each Channel	Hopping	ASK	640kbps
Hopping Channel Separation	0, 25, 49	ASK	640kbps
20dB Bandwidth	0, 25, 49	ASK	640kbps
Conducted Out of Band Emissions	Hopping 0, 49	ASK	640kbps
AC Power Conducted Emissions	25	ASK	640kbps
Unwanted Emissions below 1 GHz	0, 25, 49	ASK	640kbps
Unwanted Emissions above 1 GHz	0, 25, 49	ASK	640kbps

3.5 Duty Cycle of Test Signal

RFID: Duty cycle = 100 ms / 100 ms x 100% = 100.0%

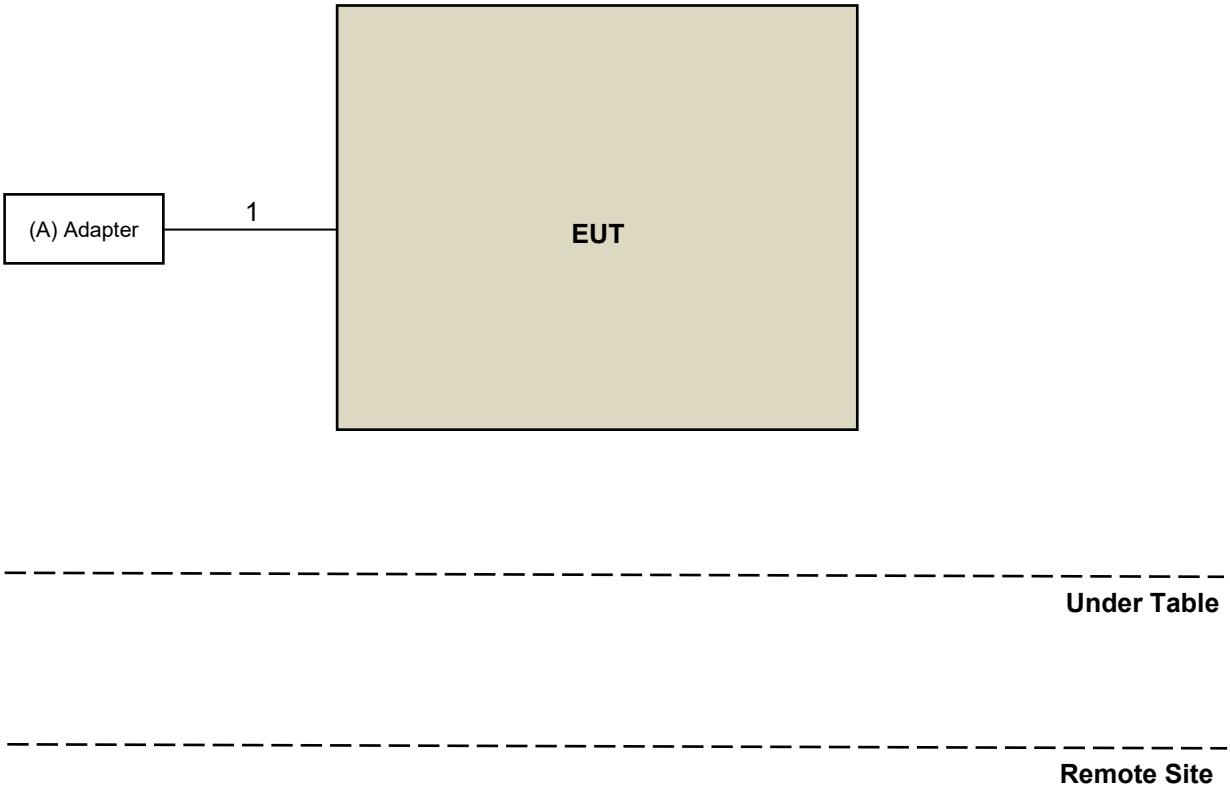


RFID

3.6 Test Program Used and Operation Descriptions

Controlling software RF Test USB V1.9.1 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	Remarks
A	ADAPTER	ECOPAC Power	DSA-45PDH	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	USB typeC Cable	1	0.95	Y	1	Supplied by applicant

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Peak Power Analyzer Keysight	8990B	MY51000485	2025/1/20	2026/1/19
Wideband Power Sensor Keysight	N1923A	MY58020002	2025/1/21	2026/1/20
		MY58140009	2025/1/21	2026/1/20

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/29

4.2 Number of Hopping Frequency Used

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
Signal & Spectrum Analyzer R&S	FSV3044	101504	2025/6/18	2026/6/17
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/29

4.3 Dwell Time on Each Channel

Refer to section 4.2 to get the tested date and information of the instruments.

4.4 Hopping Channel Separation

Refer to section 4.2 to get the tested date and information of the instruments.

4.5 20 dB Bandwidth

Refer to section 4.2 to get the tested date and information of the instruments.

4.6 Conducted Out of Band Emissions

Refer to section 4.2 to get the tested date and information of the instruments.

4.7 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance HUBER+SUHNER	E1-011276	01	2025/2/11	2026/2/10
	E1-011277	02	2025/10/31	2026/10/30
	E1-011313	11	2025/2/11	2026/2/10
DC LISN Schwarzbeck	NNBM 8126G	8126G-069	2025/11/3	2026/11/2
Diode Pulse Limiter Schwarzbeck	VTSD 9561 F-N	01617	2025/8/23	2026/8/22
EMI Test Receiver R&S	ESR3	102783	2025/12/15	2026/12/14
LISN R&S	ESH2-Z5	100100	2025/3/5	2026/3/4
	ESH3-Z5	100312	2025/8/29	2026/8/28
RF Coaxial Cable Woken	5D-FB	Cable-cond2-01	2025/8/23	2026/8/22
Software BVADT	BVADT_Cond_ V7.4.1.0	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2025/8/27	2026/8/26

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2025/12/22

4.8 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2025/9/16	2026/9/15
Loop Antenna TESEQ	HLA 6121	45745	2025/9/1	2026/8/31
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 330H	980112	2025/9/21	2026/9/20
	EMC001340	980201	2025/9/21	2026/9/20
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2025/9/21	2026/9/20
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/12/22

4.9 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC118A45SE	980809	2025/4/24	2026/4/23
RF Coaxial Cable EMCI	EMC104-SM-SM-8000+3000	171005	2025/9/21	2026/9/20
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM-1000(140807)	2025/9/21	2026/9/20
Software BV ADT	ADT_Radiated_V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/12/23

5 Limits of Test Items

5.1 RF 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.

5.2 Number of Hopping Frequency Used

If the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies ; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

5.3 Dwell Time on Each Channel

If the 20 dB bandwidth of the hopping channel is less than 250 kHz, 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 average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

5.4 Hopping Channel Separation

At least 25 kHz or 20 dB hopping channel bandwidth (whichever is greater).

5.5 20 dB Bandwidth

The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

5.6 Conducted Out of Band Emissions

Below 20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.7 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.8 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).

5.9 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

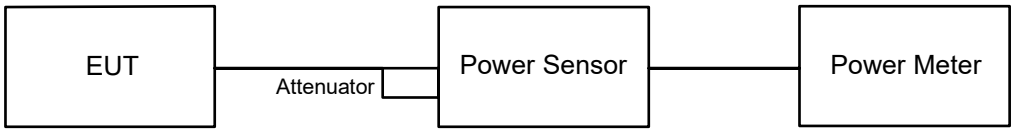
Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



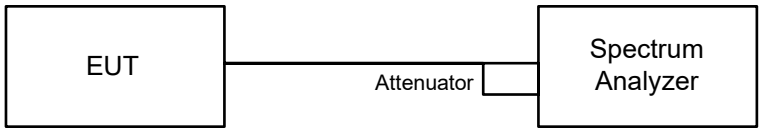
6.1.2 Test Procedure

Peak Power:
A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.
The power meter video bandwidth is greater than or equal to the DTS bandwidth and use a fast responding diode detector.

Average Power:
Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

6.2 Number of Hopping Frequency Used

6.2.1 Test Setup



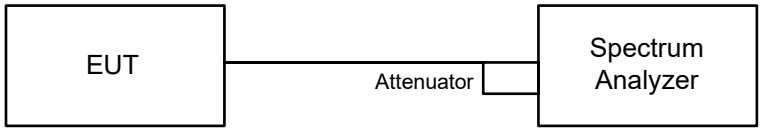
6.2.2 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
d. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
e. Video (or average) bandwidth (VBW) ≥ RBW.
f. Sweep: No faster than coupled (auto) time.
g. Detector function: Peak.
h. Trace: Max-hold.
i. Allow the trace to stabilize

Note: Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the number of channels need only be measured for one of those modulation schemes or data rates.

6.3 Dwell Time on Each Channel

6.3.1 Test Setup



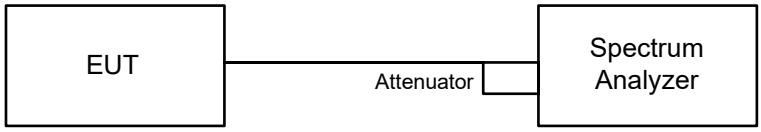
6.3.2 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Span: Zero span, centered on a hopping channel.
d. RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected transmission time per hop.
e. Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = 1/hopping rate) should achieve this.
f. Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
g. Detector function: Peak.
h. Trace: Clear-write, single sweep.
i. Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

Note: Where the device shares the same hopping algorithms (dwell time, channel selection) across multiple data rates or modulation schemes then the time of occupancy need only be measured for one of those modulation schemes or data rates. If the dwell time value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in dwell time.

6.4 Hopping Channel Separation

6.4.1 Test Setup



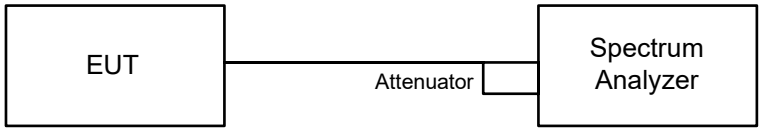
6.4.2 Test Procedure

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
c. Span: Wide enough to capture the peaks of two adjacent channels.
d. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
e. Video (or average) bandwidth (VBW) ≥ RBW.
f. Sweep: No faster than coupled (auto) time.
g. Detector function: Peak.
h. Trace: Max-hold.
i. Allow the trace to stabilize.

Note: Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the carrier separation need only be measured for one of those modulation schemes or data rates.

6.5 20 dB Bandwidth

6.5.1 Test Setup



6.5.2 Test Procedure

a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

b. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.

c. The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be at least three times RBW, unless otherwise specified by the applicable requirement.

d. Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level.

e. Steps a) through c) might require iteration to adjust within the specified tolerances.

f. The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target “−xx dB down” requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.

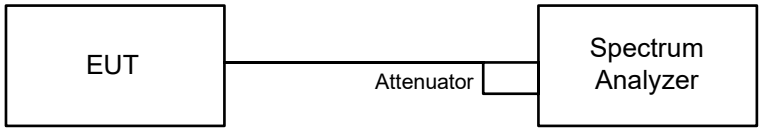
g. Set detection mode to peak and trace mode to max-hold.

h. Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

i. Determine the “−xx dB down amplitude” using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.

6.6 Conducted Out of Band Emissions

6.6.1 Test Setup



6.6.2 Test Procedure

MEASUREMENT PROCEDURE REF

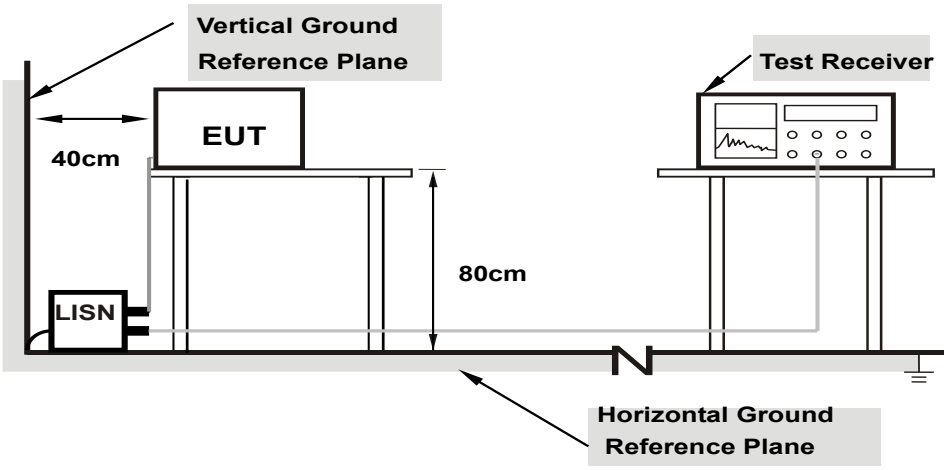
a. Set instrument center frequency to DTS channel center frequency.
b. Set the span to ≥ 1.5 times the DTS bandwidth.
c. Set the RBW = 100 kHz.
d. Set the VBW ≥ 300 kHz.
e. Detector = peak.
f. Sweep time = No faster than coupled (auto) time.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum PSD level.

MEASUREMENT PROCEDURE OOBE

a. Set the center frequency and span to encompass frequency range to be measured. Note that the frequency range might need to be divided into multiple frequency ranges to retain frequency resolution.
b. Set RBW = 100 kHz.
c. Set VBW ≥ 300 kHz.
d. Detector = peak.
e. Sweep = No faster than coupled (auto) time.
f. Trace Mode = max hold.
g. Allow trace to fully stabilize.
h. Use the peak marker function to determine the maximum amplitude level.

6.7 AC Power Conducted Emissions

6.7.1 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.7.2 Test Procedure

a. Exploratory ac power-line conducted emission measurements: The EUT shall be operated on the mid channel and in the mode with highest output power unless the fundamental operates in the AC power-line emission test range then the EUT shall be operated in the range of typical modes of operation.

b. The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.

c. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

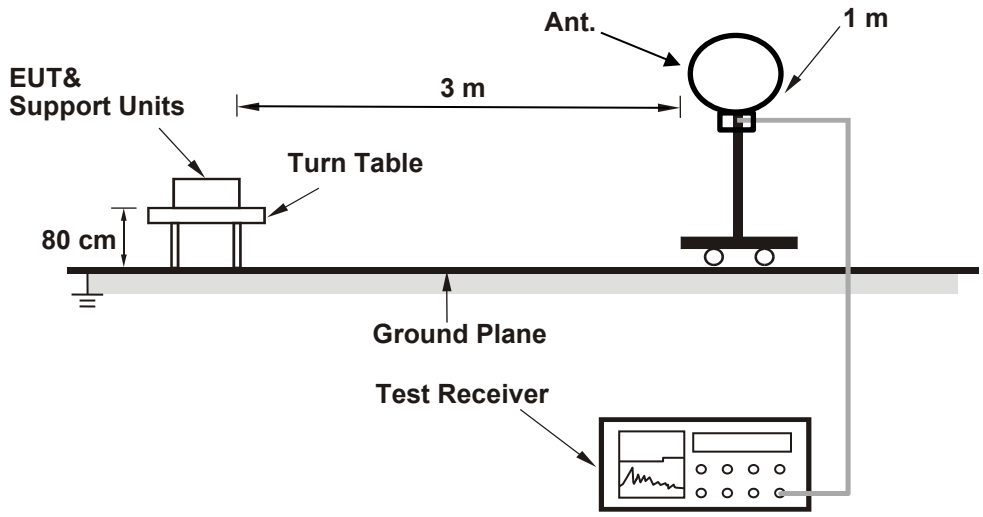
d. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

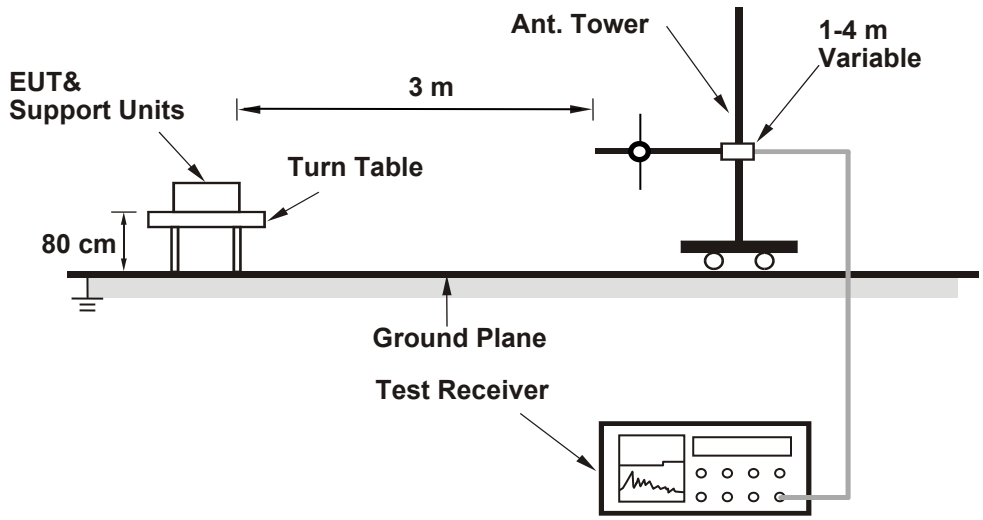
6.8 Unwanted Emissions below 1 GHz

6.8.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.8.2 Test Procedure

For Radiated emission below 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode (however, peak detector measurements may be used to determine compliance with QP requirements), except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna 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.

d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

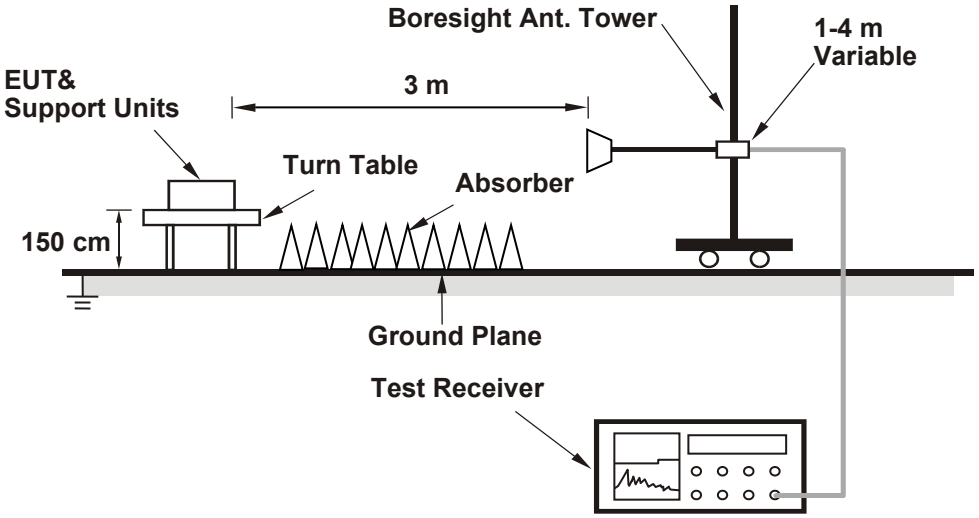
e. The test-receiver system was set to Quasi-peak(QP) detect function, Average(AV) detect function, Peak(PK) detect function and specified bandwidth with maximum hold mode when the test frequencies less than or equal to 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz (however, peak detector measurements may be used to determine compliance with QP requirements).
2. All modes of operation were investigated and the worst-case emissions are reported.

6.9 Unwanted Emissions above 1 GHz

6.9.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.9.2 Test Procedure

a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna 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.

d. 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

For Peak Power

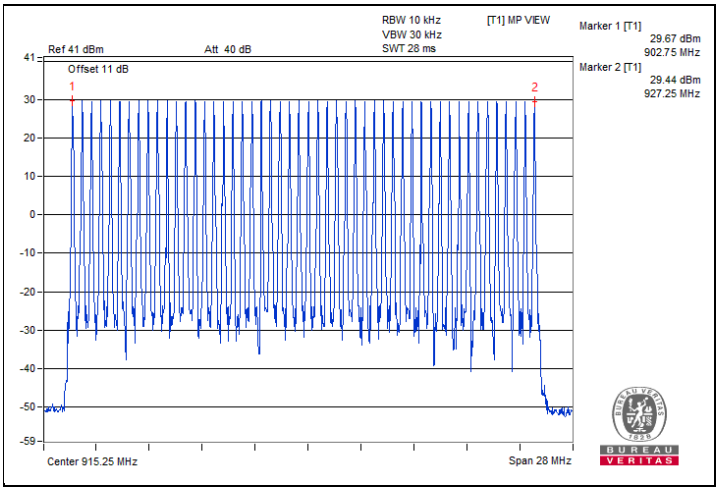
Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	902.75	922.571	29.65	30	Pass
25	915.25	984.011	29.93	30	Pass
49	927.25	981.748	29.92	30	Pass

For Average Power

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	902.75	660.693	28.20
25	915.25	778.037	28.91
49	927.25	774.462	28.89

7.2 Number of Hopping Frequency Used

Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang



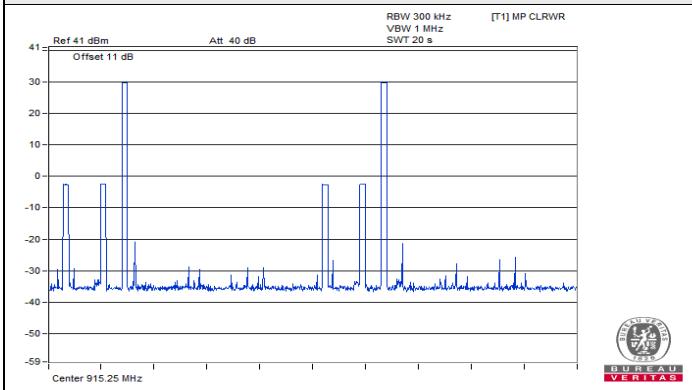
Note: There are 50 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

7.3 Dwell Time on Each Channel

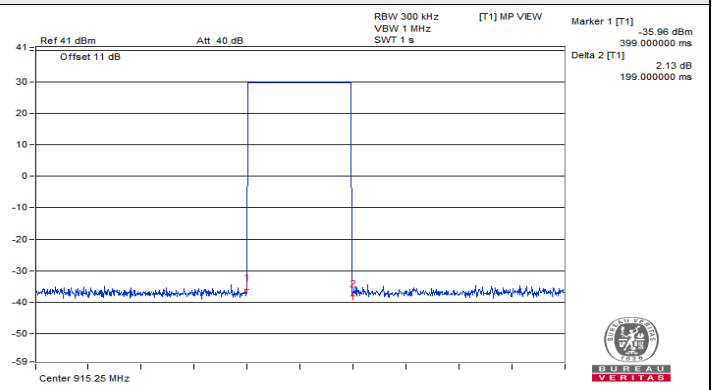
Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

Mode	Number of transmission in 20 sec	Length of transmission time (msec)	Dwell Time (msec)	Limit (msec)	Test Result
FHSS	2 times	199	398	400	Pass

Spectrum plots of Dwell Time



RFID-FCC FHSS



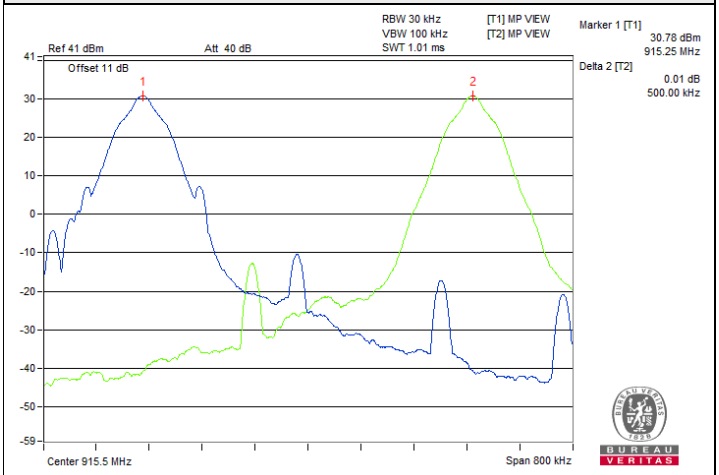
RFID-FCC FHSS

7.4 Hopping Channel Separation

Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Minimum Limit (MHz)	Test Result
0	902.75	0.51	0.08	Pass
25	915.25	0.50	0.08	Pass
49	927.25	0.50	0.08	Pass

Spectrum Plot of Minimum Value



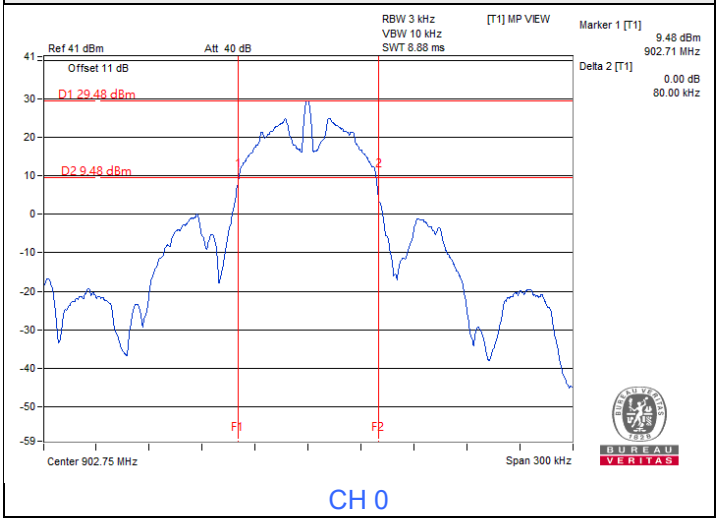
CH 25

7.5 20 dB Bandwidth

Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	Maximum Limit (MHz)	Test Result
0	902.75	0.08	0.5	Pass
25	915.25	0.08	0.5	Pass
49	927.25	0.08	0.5	Pass

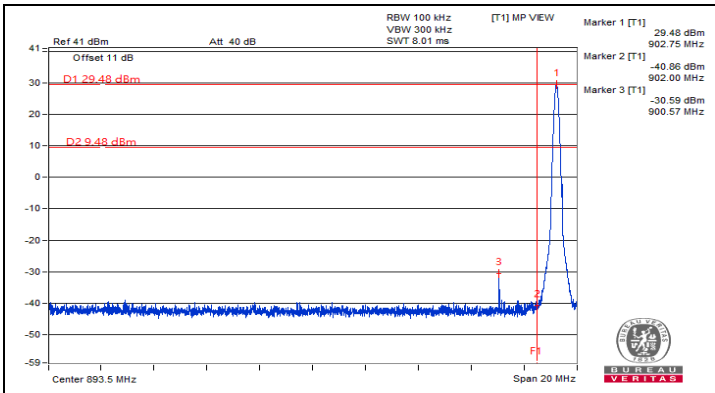
Spectrum Plot of Minimum Value



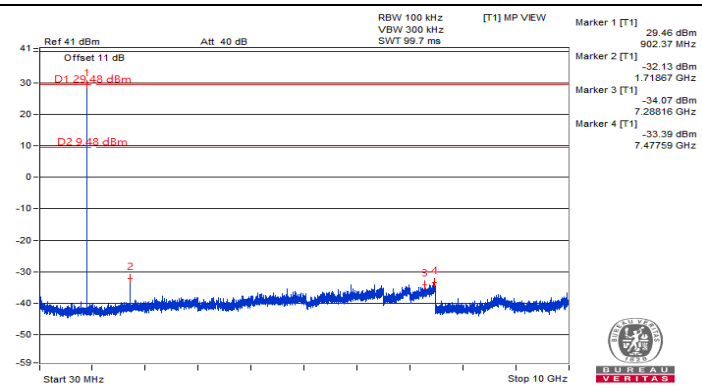
CH 0

7.6 Conducted Out of Band Emissions

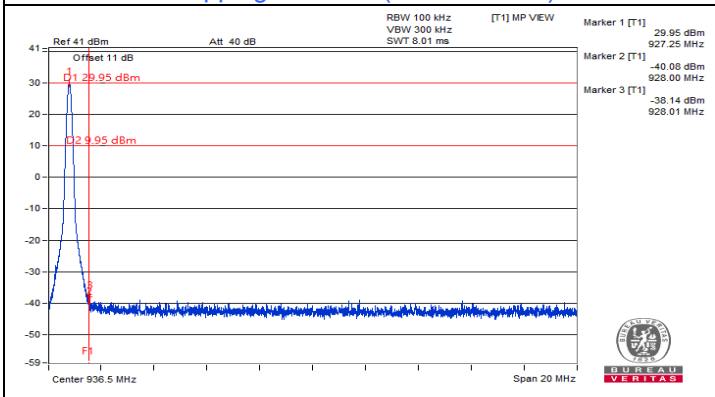
Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang



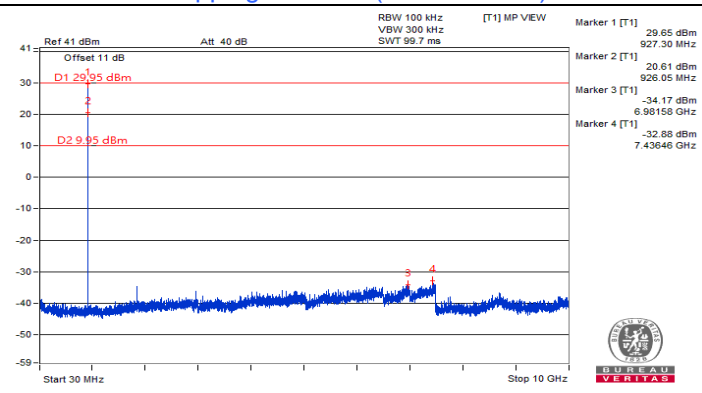
Hopping disabled (Low Channel)



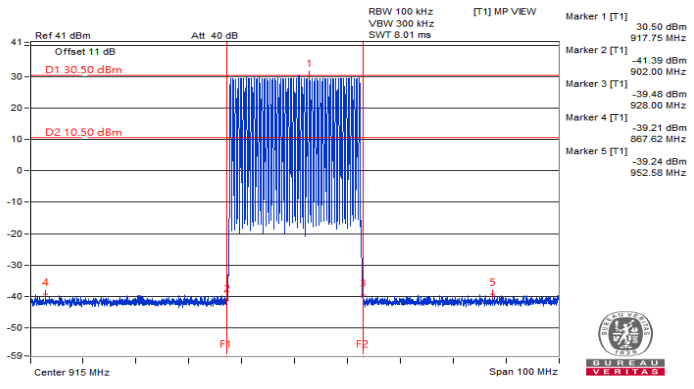
Hopping disabled (Low Channel)



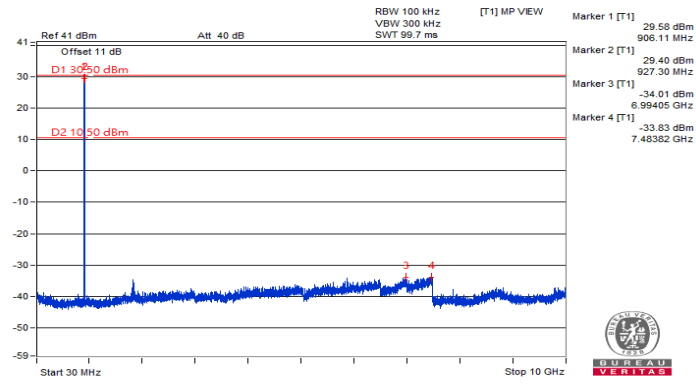
Hopping disabled (High Channel)



Hopping disabled (High Channel)



Hopping enabled



Hopping enabled

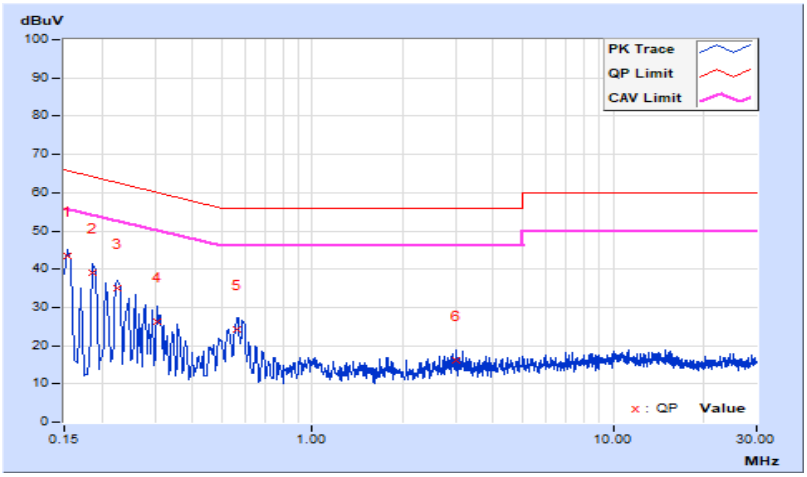
7.7 AC Power Conducted Emissions

RF Mode	RFID-DRM	**Channel**	CH 25：915.25 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	20 °C, 68% RH
Tested By	Thomas Cheng		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	**0.15400**	**10.24**	**33.28**	**15.25**	**43.52**	**25.49**	**65.78**	**55.78**	**-22.26**	**-30.29**
2	0.18600	10.27	28.68	11.27	38.95	21.54	64.21	54.21	-25.26	-32.67
3	0.22505	10.30	24.84	4.92	35.14	15.22	62.63	52.63	-27.49	-37.41
4	0.30600	10.34	15.98	3.74	26.32	14.08	60.08	50.08	-33.76	-36.00
5	0.56295	10.43	13.83	7.76	24.26	18.19	56.00	46.00	-31.74	-27.81
6	3.01000	10.67	5.58	1.81	16.25	12.48	56.00	46.00	-39.75	-33.52

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

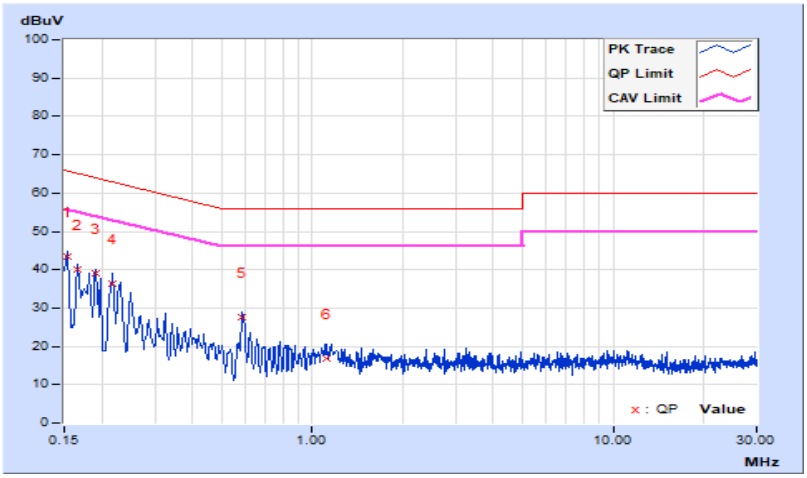


RF Mode	RFID-DRM	**Channel**	CH 25：915.25 MHz
Frequency Range	150 kHz ~ 30 MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	20 °C, 68% RH
Tested By	Thomas Cheng		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15400	10.29	32.99	16.48	43.28	26.77	65.78	55.78	-22.50	-29.01
2	0.16600	10.30	29.74	11.57	40.04	21.87	65.16	55.16	-25.12	-33.29
3	0.19000	10.31	28.60	15.55	38.91	25.86	64.04	54.04	-25.13	-28.18
4	0.21690	10.32	25.92	12.70	36.24	23.02	62.94	52.94	-26.70	-29.92
5	0.58600	10.48	17.21	9.88	27.69	20.36	56.00	46.00	-28.31	-25.64
6	1.11000	10.58	6.42	1.09	17.00	11.67	56.00	46.00	-39.00	-34.33

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



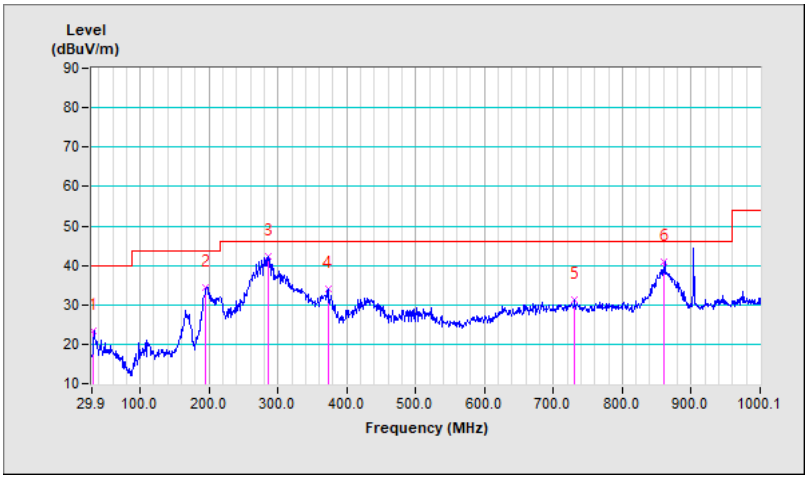
7.8 Unwanted Emissions below 1 GHz

RF Mode	RFID-DRM	**Channel**	CH 0：902.75 MHz
Frequency Range	30 MHz ~ 1000 MHz	**Detector Function & Bandwidth**	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	32.81	23.4 QP	40.0	-16.6	2.00 H	118	36.3	-12.9
2	195.80	34.5 QP	43.5	-9.0	1.50 H	92	49.8	-15.3
3	286.03	42.3 QP	46.0	-3.7	1.50 H	129	54.1	-11.8
4	372.38	34.1 QP	46.0	-11.9	1.00 H	275	43.8	-9.7
5	730.38	31.3 QP	46.0	-14.7	1.00 H	212	32.7	-1.4
6	861.36	40.9 QP	46.0	-5.1	2.00 H	30	40.8	0.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

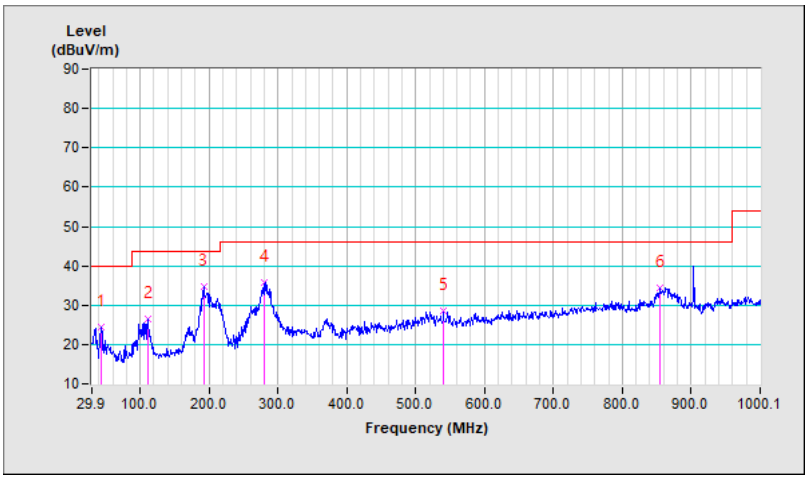


RF Mode	RFID-DRM	Channel	CH 0：902.75 MHz
Frequency Range	30 MHz ~ 1000 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	43.48	24.3 QP	40.0	-15.7	1.00 V	306	36.2	-11.9
2	110.43	26.6 QP	43.5	-16.9	1.50 V	255	41.7	-15.1
3	191.92	34.7 QP	43.5	-8.8	1.00 V	92	49.8	-15.1
4	281.18	35.7 QP	46.0	-10.3	2.00 V	129	47.6	-11.9
5	540.23	28.4 QP	46.0	-17.6	2.00 V	57	33.9	-5.5
6	854.57	34.5 QP	46.0	-11.5	1.00 V	333	34.4	0.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

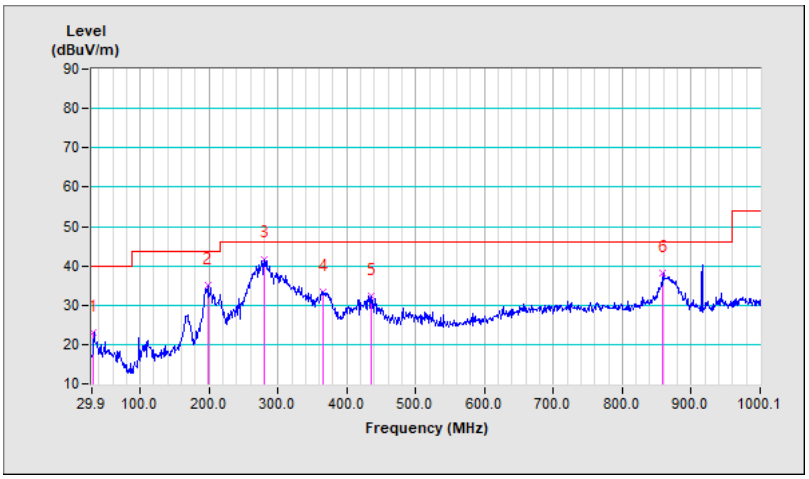


RF Mode	RFID-DRM	Channel	CH 25：915.25 MHz
Frequency Range	30 MHz ~ 1000 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.81	23.1 QP	40.0	-16.9	2.00 H	78	36.0	-12.9
2	197.74	35.0 QP	43.5	-8.5	1.00 H	81	50.4	-15.4
3	280.21	41.8 QP	46.0	-4.2	1.00 H	112	53.8	-12.0
4	365.59	33.5 QP	46.0	-12.5	1.50 H	257	43.5	-10.0
5	435.44	32.3 QP	46.0	-13.7	2.00 H	14	40.1	-7.8
6	859.42	38.3 QP	46.0	-7.7	2.00 H	10	38.2	0.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

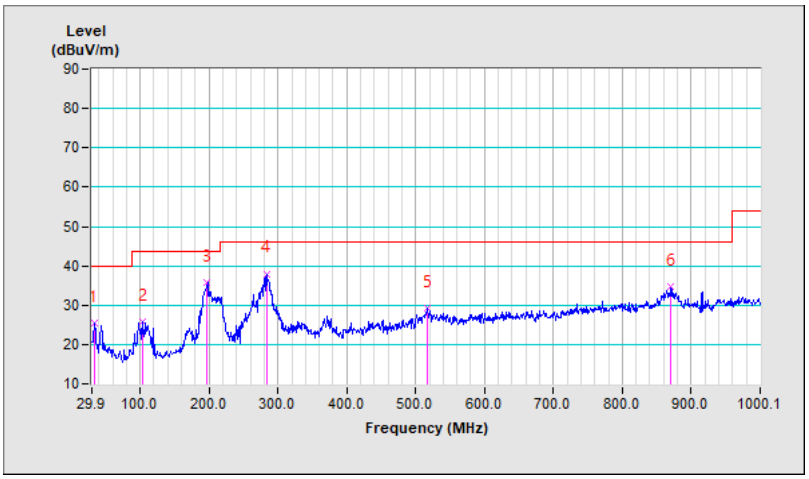


RF Mode	RFID-DRM	Channel	CH 25：915.25 MHz
Frequency Range	30 MHz ~ 1000 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.81	25.4 QP	40.0	-14.6	1.00 V	34	38.3	-12.9
2	102.67	25.8 QP	43.5	-17.7	1.50 V	257	42.0	-16.2
3	197.74	35.8 QP	43.5	-7.7	2.00 V	220	51.2	-15.4
4	283.12	38.0 QP	46.0	-8.0	1.00 V	92	49.9	-11.9
5	516.94	29.1 QP	46.0	-16.9	1.50 V	255	34.7	-5.6
6	870.09	34.6 QP	46.0	-11.4	2.00 V	340	34.6	0.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

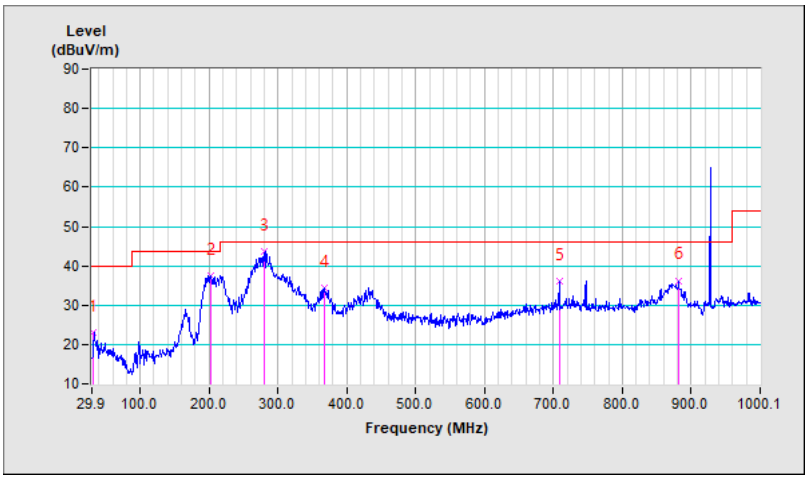


RF Mode	RFID-DRM	Channel	CH 49：927.25 MHz
Frequency Range	30 MHz ~ 1000 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.81	23.1 QP	40.0	-16.9	2.00 H	66	36.0	-12.9
2	202.60	37.4 QP	43.5	-6.1	1.00 H	113	52.8	-15.4
3	**281.18**	**43.7 QP**	**46.0**	**-2.3**	**1.50 H**	**214**	**55.6**	**-11.9**
4	366.56	34.5 QP	46.0	-11.5	2.00 H	200	44.5	-10.0
5	708.07	36.2 QP	46.0	-9.8	2.00 H	125	38.5	-2.3
6	881.74	36.3 QP	46.0	-9.7	1.00 H	17	36.1	0.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

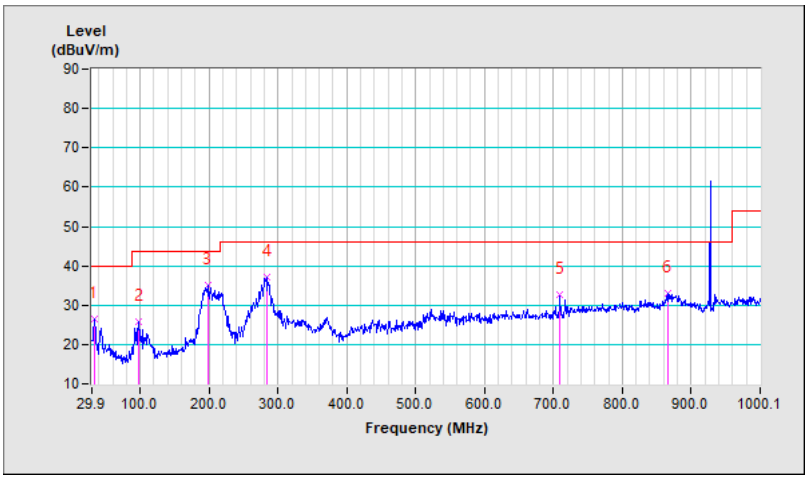


RF Mode	RFID-DRM	Channel	CH 49：927.25 MHz
Frequency Range	30 MHz ~ 1000 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	32.81	26.4 QP	40.0	-13.6	1.00 V	34	39.3	-12.9
2	97.81	25.9 QP	43.5	-17.6	1.50 V	78	43.0	-17.1
3	197.74	35.1 QP	43.5	-8.4	1.00 V	193	50.5	-15.4
4	284.09	37.2 QP	46.0	-8.8	2.00 V	116	49.1	-11.9
5	709.04	32.5 QP	46.0	-13.5	1.50 V	286	34.8	-2.3
6	865.24	32.9 QP	46.0	-13.1	1.00 V	290	32.9	0.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

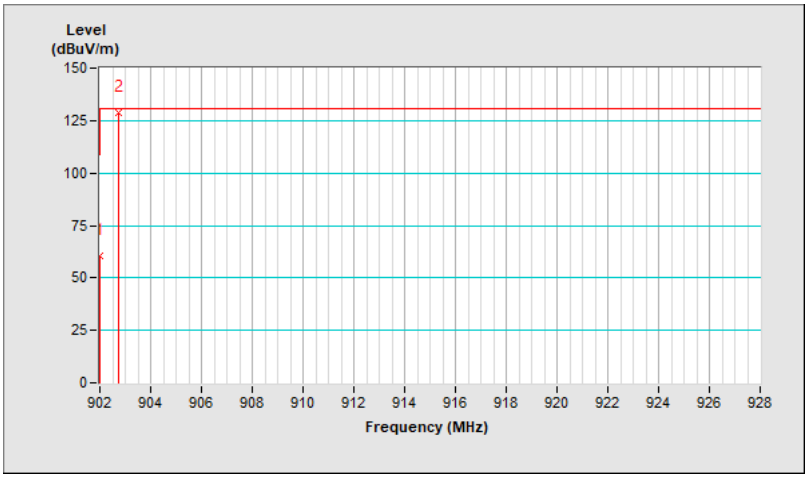


RF Mode	RFID-DRM	Channel	CH 0：902.75 MHz
Frequency Range	902 MHz ~ 928 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	60.8 QP	108.8	-48.0	1.05 H	13	28.3	32.5
2	*902.75	128.8 QP			1.05 H	13	96.2	32.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

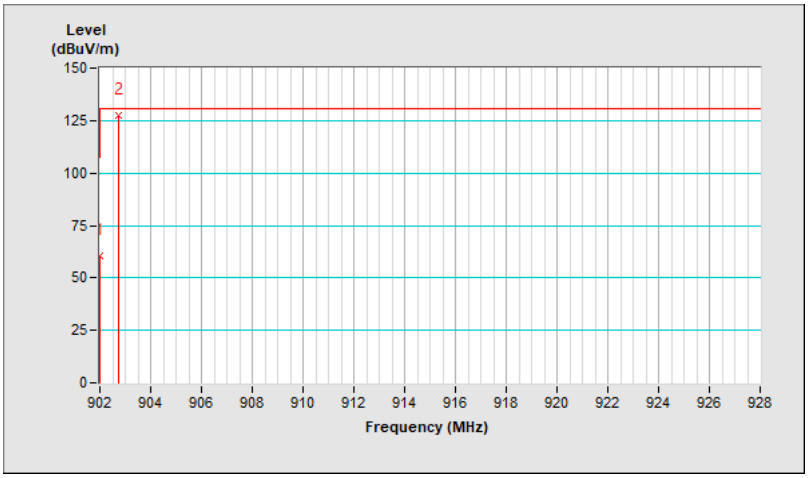


RF Mode	RFID-DRM	Channel	CH 0：902.75 MHz
Frequency Range	902 MHz ~ 928 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	902.00	60.3 QP	107.7	-47.4	1.13 V	297	27.8	32.5
2	*902.75	127.7 QP			1.13 V	297	95.1	32.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

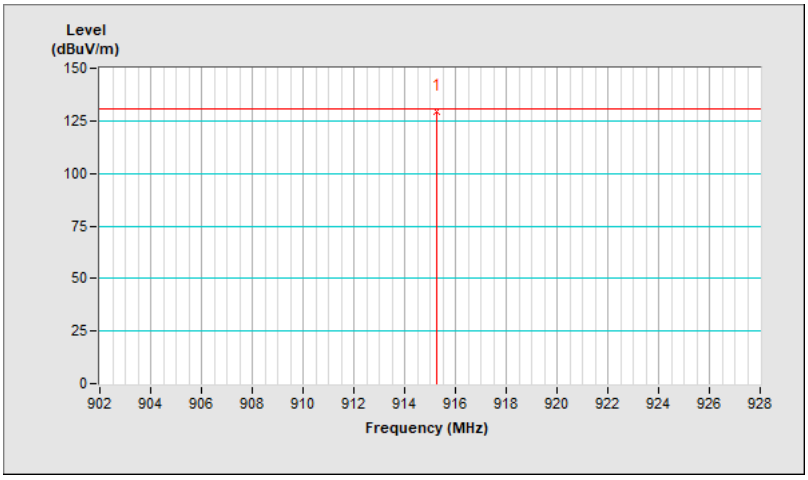


RF Mode	RFID-DRM	**Channel**	CH 25：915.25 MHz
Frequency Range	902 MHz ~ 928 MHz	**Detector Function & Bandwidth**	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*915.25	129.3 QP			1.03 H	9	96.4	32.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

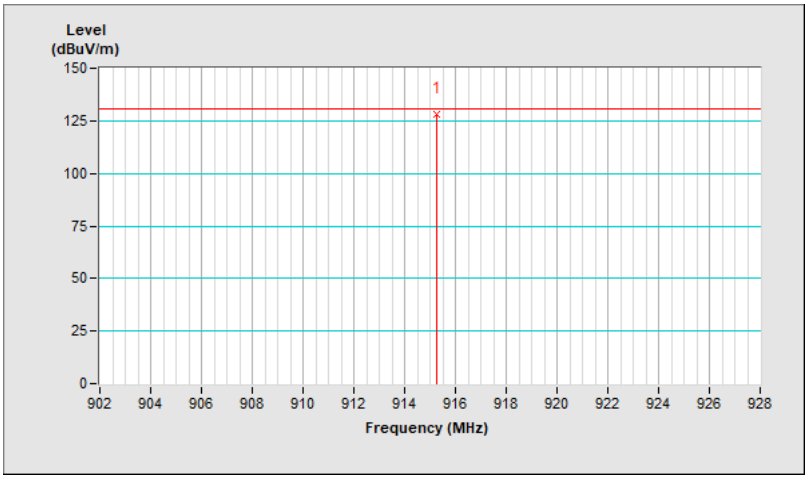


RF Mode	RFID-DRM	**Channel**	CH 25：915.25 MHz
Frequency Range	902 MHz ~ 928 MHz	**Detector Function & Bandwidth**	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	*915.25	128.2 QP			1.15 V	293	95.3	32.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

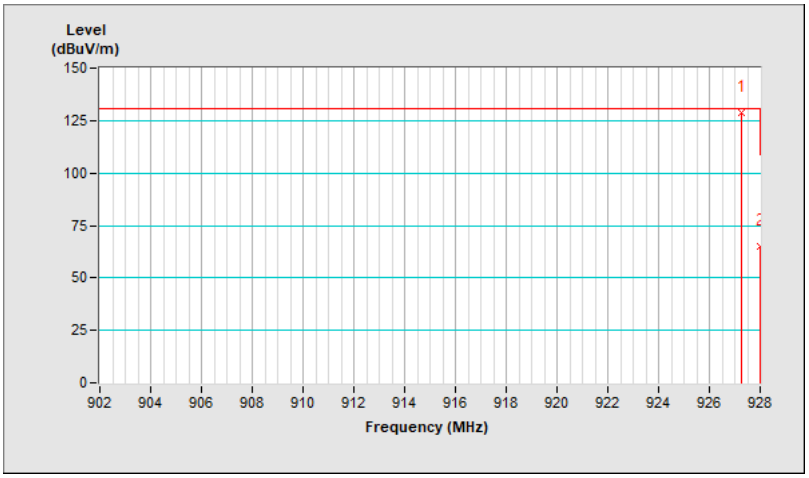


RF Mode	RFID-DRM	Channel	CH 49：927.25 MHz
Frequency Range	902 MHz ~ 928.00001 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.25	129.0 QP			1.03 H	14	96.0	33.0
2	928.00	65.3 QP	109.0	-43.7	1.03 H	14	32.3	33.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

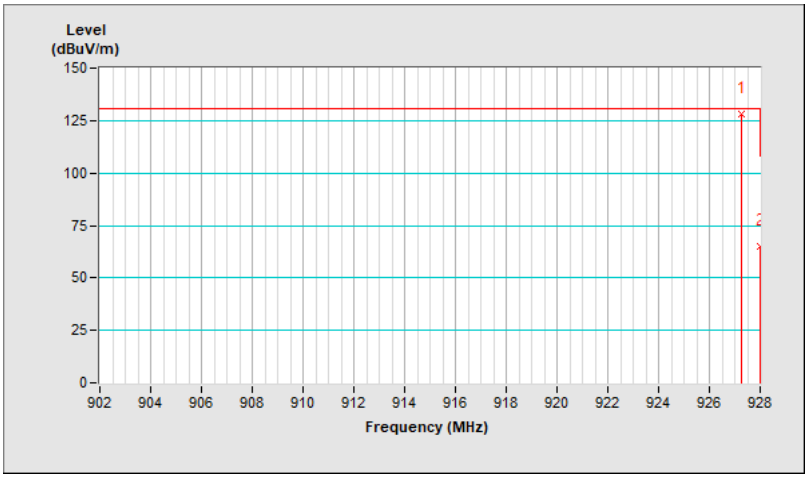


RF Mode	RFID-DRM	Channel	CH 49：927.25 MHz
Frequency Range	902 MHz ~ 928.00001 MHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*927.25	127.9 QP			1.25 V	287	94.9	33.0
2	928.00	65.0 QP	107.9	-42.9	1.25 V	287	32.0	33.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.



7.9 Unwanted Emissions above 1 GHz

RF Mode	RFID-DRM	**Channel**	CH 0：902.75 MHz
Frequency Range	1 GHz ~ 10 GHz	**Detector Function & Bandwidth**	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2708.25	53.5 PK	74.0	-20.5	1.00 H	22	52.5	1.0
2	2708.25	49.1 AV	54.0	-4.9	1.00 H	22	48.1	1.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2708.25	55.8 PK	74.0	-18.2	1.06 V	179	54.8	1.0
2	2708.25	52.6 AV	54.0	-1.4	1.06 V	179	51.6	1.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	RFID-DRM	Channel	CH 25：915.25 MHz
Frequency Range	1 GHz ~ 10 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2745.75	56.7 PK	74.0	-17.3	1.83 H	104	55.5	1.2
2	2745.75	52.9 AV	54.0	-1.1	1.83 H	104	51.7	1.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2745.75	56.6 PK	74.0	-17.4	1.41 V	240	55.4	1.2
2	**2745.75**	**53.2 AV**	**54.0**	**-0.8**	**1.41 V**	**240**	**52.0**	**1.2**

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

RF Mode	RFID-DRM	Channel	CH 49：927.25 MHz
Frequency Range	1 GHz ~ 10 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	21.3 °C, 62.2% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2781.75	56.2 PK	74.0	-17.8	1.53 H	300	54.6	1.6
2	2781.75	52.6 AV	54.0	-1.4	1.53 H	300	51.0	1.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2781.75	56.1 PK	74.0	-17.9	2.68 V	44	54.5	1.6
2	2781.75	51.5 AV	54.0	-2.5	2.68 V	44	49.9	1.6

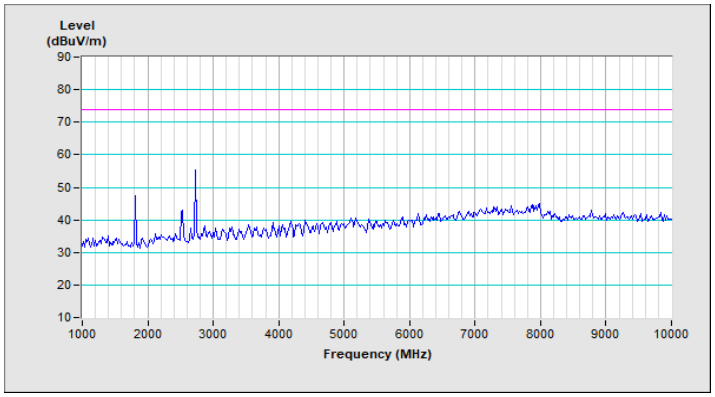
Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

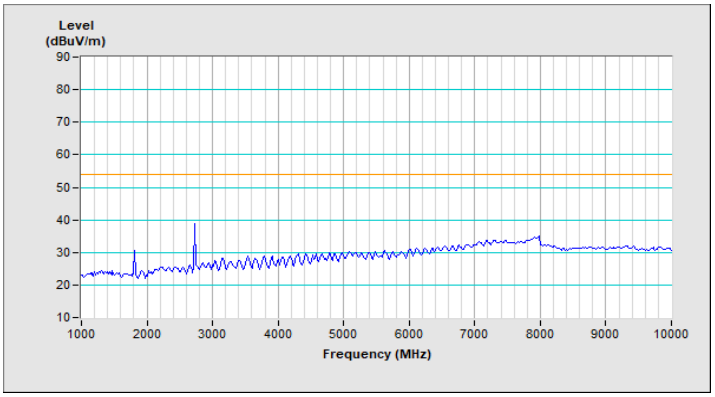
Plot of Other Emission

Frequency Range	1 GHz ~ 10 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS

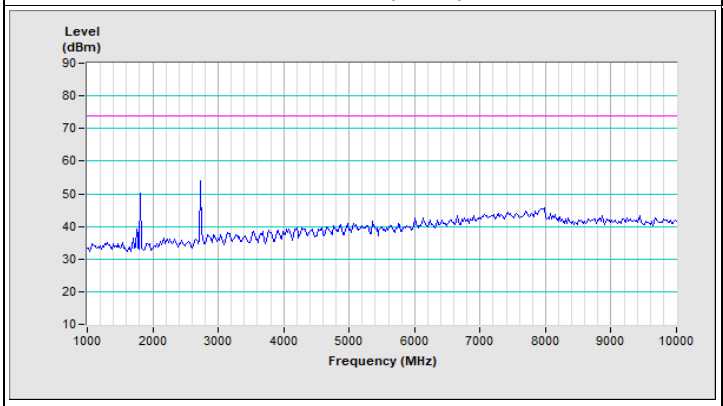
RFID-DRM Channel 25



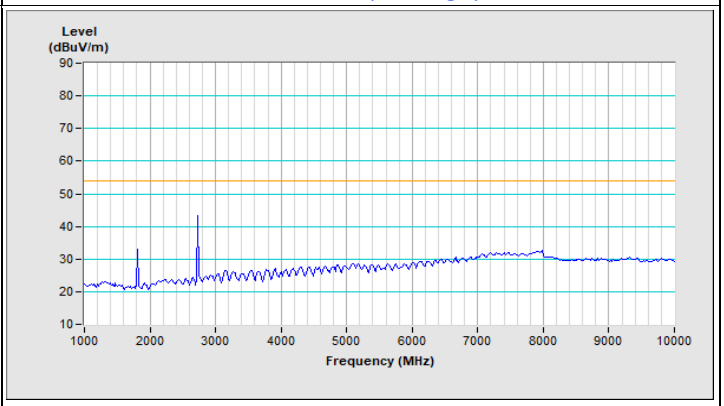
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@bureauveritas.com
Web Site: http://ee.bureauveritas.com.tw

The address and road map of all our labs can be found in our web site also.

--- END ---