FCC TEST REPORT

REPORT NO.:	RF111117E01
MODEL NO.:	RU-827, RU-827-00X (X :0~9 , A~Z , Configuration Code)
FCC ID:	MAD-RU-827
RECEIVED:	Nov. 17, 2011
TESTED:	Nov. 25 to Dec. 05, 2011
TESTED:	Dec. 15, 2011

APPLICANT:	Microelectronics Technology Inc.
ADDRESS:	1, Innovation Road II,Hsinchu Science-based Industrial Park, Hsinchu, Taiwan, R.O.C.

ISSUED BY :	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
LAB ADDRESS :	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan
TEST LOCATION (1):	No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan
TEST LOCATION (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF111117E01	Original release	Dec. 15, 2011

1 CERTIFICATION

PRODUCT :	RFID UHF 827 SERIES WITH AMS 3992 MODULE
BRAND NAME :	MTI
MODEL NO. :	RU-827, RU-827-00X (X :0~9 , A~Z , Configuration Code)
APPLICANT :	Microelectronics Technology Inc.
TESTED DATE:	Nov. 25 to Dec. 05, 2011
TEST SAMPLE :	ENGINEERING SAMPLE
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247) ANSI C63.4: 2003 ANSI C63.10-2009

The above equipment (Model: RU-827) 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 EMC characteristics under the conditions specified in this report.

PREPARED BY : Phoenix Huang , **DATE:** Dec. 15, 2011
(Phoenix Huang, Specialist)

APPROVED BY : , **DATE:** Dec. 15, 2011
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR Part 15, Subpart C			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -6.92dB at 0.201 MHz
15.247(a)(1)(I)	Number of Hopping Frequency Used Spec.:	PASS	Meet the requirement of limit
15.247(a)(1)(i)	Dwell Time on Each Channel Spec. : Max. 0.4 second	PASS	Meet the requirement of limit
15.247(a)(1)	Hopping Channel Separation Spec. : Min. 25 kHz or 20 dB bandwidth, which ever is greater	PASS	Meet the requirement of limit
15.247(a)(1)(i)	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System Spec.: Max. 0.5 MHz	PASS	Meet the requirement of limit
15.247(b)(2)	Maximum Peak Output Power Spec.: max. 24dBm	PASS	Meet the requirement of limit
15.247(d)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -4.0dB at 140.47MHz
15.247(d)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit
15.203	Antenna Requirement	-	Antenna connector is a MHF standard connector.

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:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions	2.45 dB
Radiated emissions (30MHz-1GHz)	3.81 dB
Radiated emissions (1GHz ~18GHz)	2.19 dB
Radiated emissions (18GHz ~40GHz)	2.56 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	RFID UHF 827 SERIES WITH AMS 3992 MODULE
MODEL NO.	RU-827, RU-827-00X (X :0~9 , A~Z , Configuration Code)
FCC ID	MAD-RU-827
POWER SUPPLY	DC 5V from host equipment
MODULATION TYPE	ASK
MODULATION TECHNOLOGY	FHSS
FREQUENCY RANGE	902.75MHz ~ 927.25MHz
NUMBER OF CHANNEL	50
OUTPUT POWER	70.8mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT has below model names which are identical to each other in all aspects except for the following table:

Brand Name	Model No.	Difference
MTI	RU-827	For marketing requirement
	RU-827-00X (X :0~9 , A~Z , Configuration Code)	

From the above models, model: **RU-827** was selected as representative model for the test and their data were recorded in this report.

2. There is one antenna provided to this EUT, please refer to the following table:

Antenna Type	Gain(dBi) Include cable loss	Frequency range (MHz to MHz)
Reverse- F	-0.51	902~928

3. The EUT was pre-tested under the following test modes for three different axes placements:

Test Mode	Description
Mode A	X plane
Mode B	**Y plane**
Mode C	Z plane

From the above modes, the worst emission level was found in **Mode B**. Therefore only the test data of the modes were recorded in this report individually.

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

3.2 DESCRIPTION OF TEST MODES

Fifty channels are provided to this EUT.

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

3.3 TEST MODE APPLICABLITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ³ 1G	APCM	OB	
-	√	√	√	√	√	-

Where **PLC:** Power Line Conducted Emission **RE < 1G:** Radiated Emission below 1GHz

RE ³ 1G: Radiated Emission above 1GHz **APCM:** Antenna Port Conducted Measurement

OB: Conducted Out-Band Emission Measurement

Power Line Conducted Emission:

☒ Pre-Scan to determine the worst-case mode from all possible combinations between available modulations and packet types.

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0	FHSS	ASK

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	ASK

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	ASK

Antenna Port Conducted Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 24, 49	FHSS	ASK

Conducted Out-Band Emission Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

Available Channel	Tested Channel	Modulation Technology	Modulation Type
0 to 49	0, 49	FHSS	ASK

※ **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 67%RH	120Vac, 60Hz	Kyle Huang
RE≥1G	23deg. C, 70%RH	120Vac, 60Hz	Evan Huang
RE<1G	23deg. C, 72%RH	120Vac, 60Hz	Evan Huang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Wen Yu
OB	25deg. C, 60%RH	120Vac, 60 Hz	Wen Yu

3.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR Part 15, Subpart C. (15.247)
ANSI C63.4 : 2003
ANSI C63.10-2009

All test items have been performed and recorded as per the above standards.

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

3.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

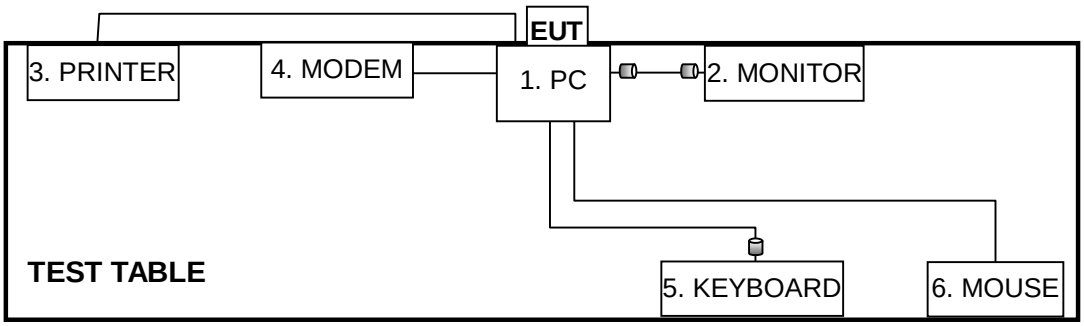
For Conducted test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	PC	DELL	DCSCMF	9KKB32S	FCC DoC
2	MONITOR	DELL	2408WFPb	CN-0NN792-74261-83B-03US	FCC DoC
3	PRINTER	EPSON	LQ-300+II	G88Y074083	FCC DoC
4	MODEM	ACEEX	1414	0206026778	IFAXDM1414
5	KEYBOARD	DELL	SK-8115	MY-0DJ325-71619-99B-0476	FCC DoC
6	MOUSE	DELL	MOC5UO	I1401LVG	FCC DoC
For Radiated test					
1	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC

For Conducted test	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	VGA cable, shielded, 1.8m with two core
3	USB cable, shielded, 1.8m
4	RS232 cable, 1.1m
5	USB cable, shielded, 1.8m with one core
6	USB cable, shielded, 1.8m
For Radiated test	
1	NA

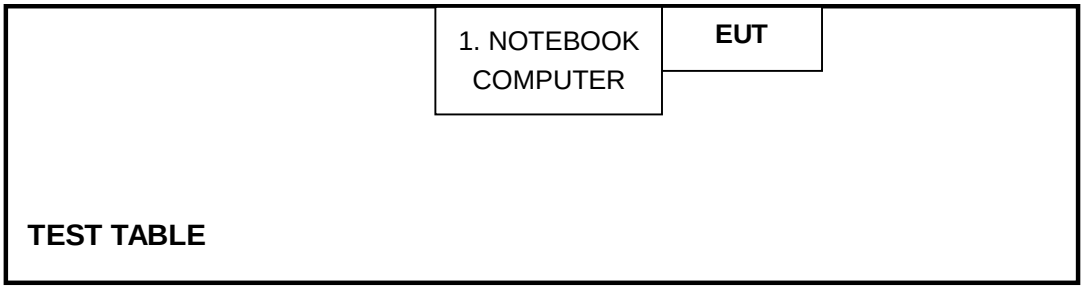
NOTE: All power cords of the above support units are non shielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted test:



For Radiated test:



4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

NOTE:
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.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

Test date: Dec. 05, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Mar. 02, 2011	Mar. 01, 2012
Line-Impedance Stabilization Network (for EUT)	NSLK 8127	8127-523	Sep. 20, 2011	Sep. 19, 2012
Line-Impedance Stabilization Network (for Peripheral)	ENV-216	100072	June 10, 2011	June 09, 2012
RF Cable (JYEBAO)	5DFB	CONCAB-003	Aug. 05, 2011	Aug. 04, 2012
50 ohms Terminator	50	3	Nov. 02, 2011	Nov. 01, 2012
Software	BV ADT_Cond_V7.3.7	NA	NA	NA

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. A.
3 The VCCI Con A Registration No. is C-817.

4.1.3 TEST PROCEDURES

a. The EUT was 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/ 50uH of coupling impedance for the measuring instrument.

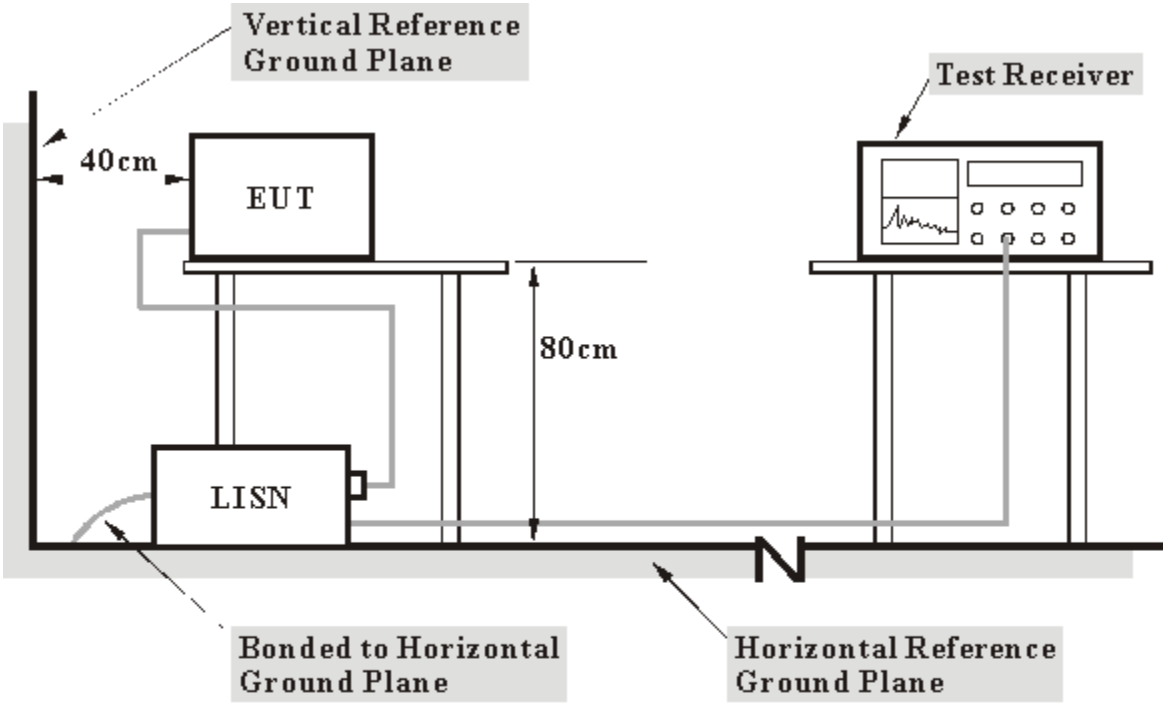
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.1.6 EUT OPERATING CONDITIONS

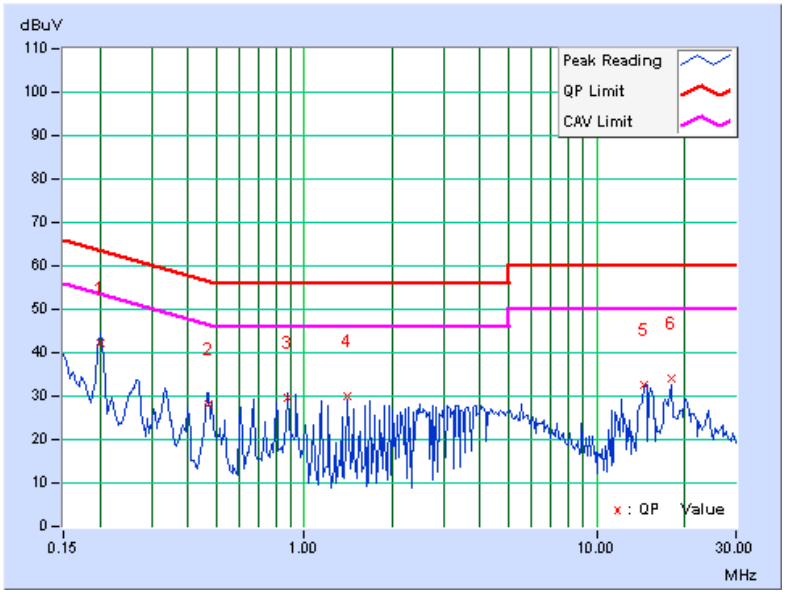
1. Placed the EUT on the testing table.
2. The support unit 1 (PC) ran test program “MTI RFID ME HW GUI Setup v1.0.6.exe” to enable EUT under transmission condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

PHASE	Line (L)	6dB BANDWIDTH	9 kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.201	0.06	42.12	40.78	42.18	40.84	63.58	53.58	-21.40	-12.74
2	0.470	0.07	27.93	21.54	28.00	21.61	56.51	46.51	-28.51	-24.90
3	0.873	0.09	29.51	28.43	29.60	28.52	56.00	46.00	-26.40	-17.48
4	1.410	0.12	29.83	28.79	29.95	28.91	56.00	46.00	-26.05	-17.09
5	14.553	0.53	31.97	28.68	32.50	29.21	60.00	50.00	-27.50	-20.79
6	18.031	0.60	33.44	32.62	34.04	33.22	60.00	50.00	-25.96	-16.78

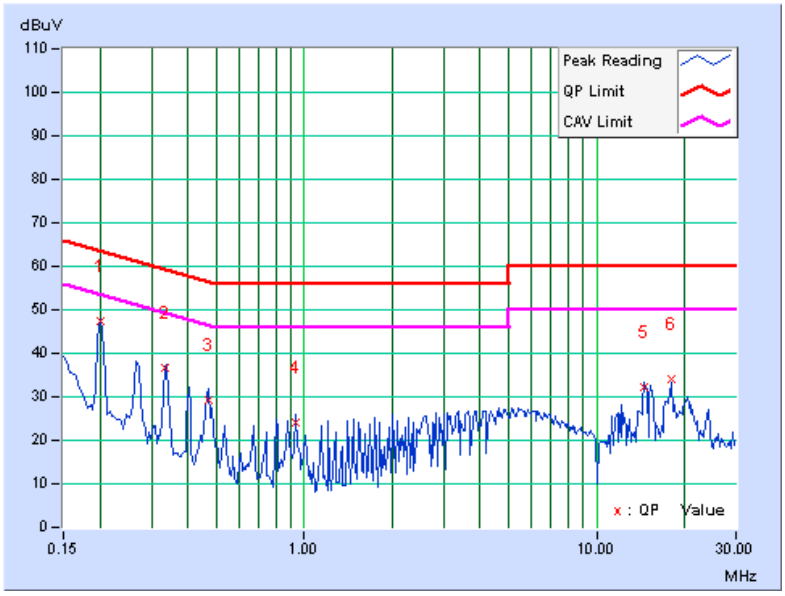
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level - Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.201**	**0.07**	**47.47**	**46.59**	**47.54**	**46.66**	**63.58**	**53.58**	**-16.04**	**-6.92**
2	0.336	0.08	36.73	35.21	36.81	35.29	59.30	49.30	-22.50	-14.02
3	0.470	0.08	29.03	23.70	29.11	23.78	56.51	46.51	-27.40	-22.73
4	0.941	0.09	23.91	23.26	24.00	23.35	56.00	46.00	-32.00	-22.65
5	14.563	0.51	31.85	29.48	32.36	29.99	60.00	50.00	-27.64	-20.01
6	18.031	0.58	33.52	32.64	34.10	33.22	60.00	50.00	-25.90	-16.78

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.



4.2 NUMBER OF HOPPING FREQUENCY USED

4.2.1 LIMIT OF HOPPING FREQUENCY USED

At least 25 hopping frequencies, and should be equally spaced.

4.2.2 TEST INSTRUMENTS

Test date: Dec. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 11, 2011	May 10, 2012

NOTE: 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

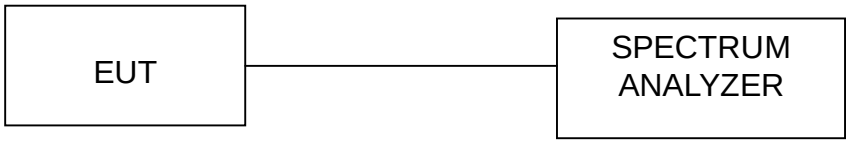
4.2.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. 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.
3. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

4.2.4 DEVIATION FROM TEST STANDARD

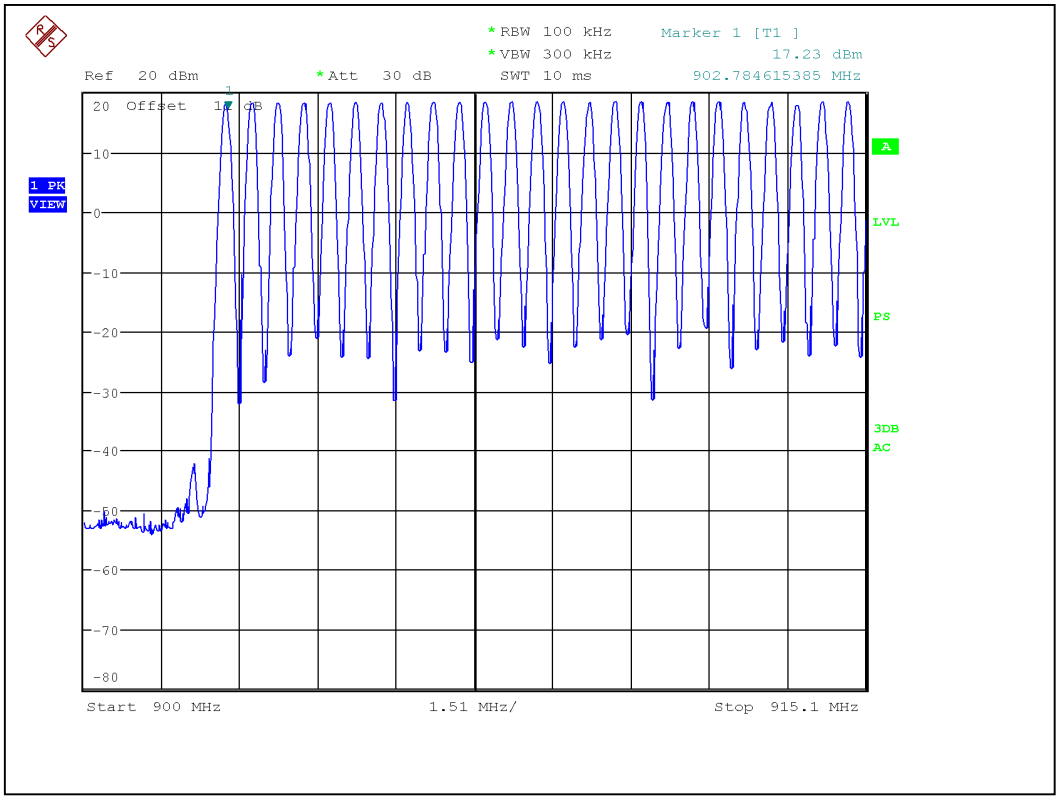
No deviation

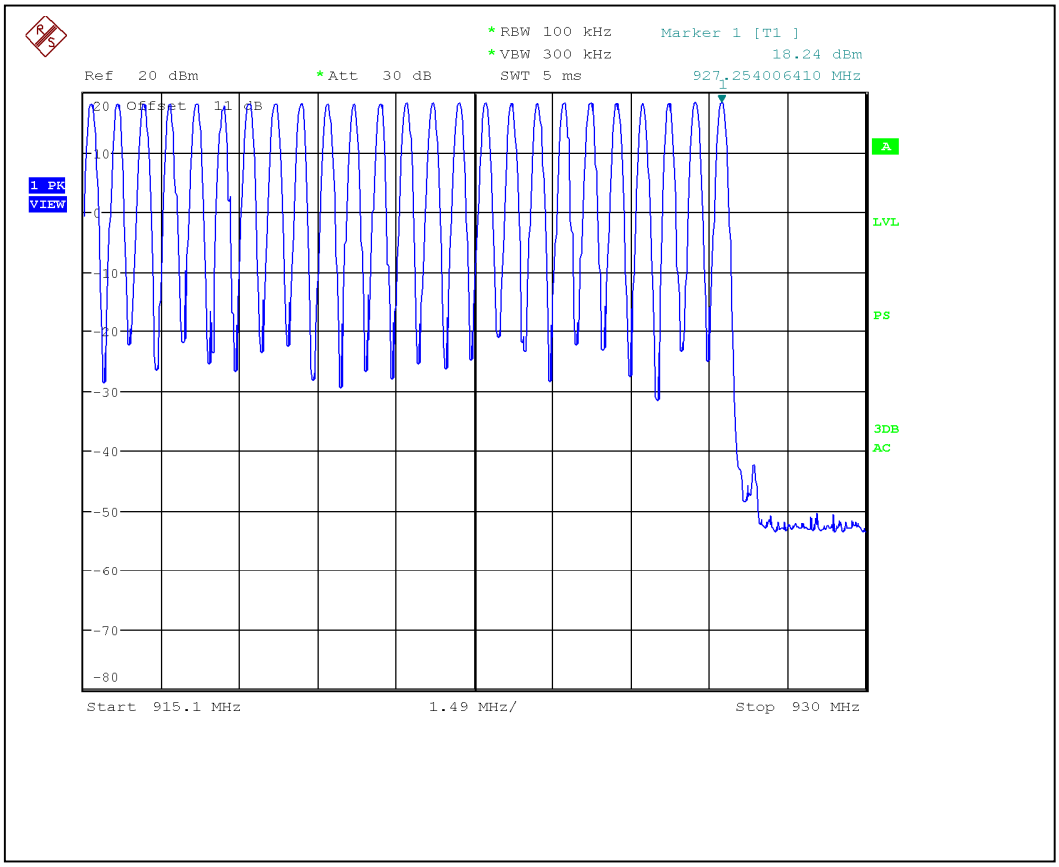
4.2.5 TEST SETUP



4.2.6 TEST RESULTS

There are 50 hopping frequencies in the hopping mode. Please refer to next page for the test result. On the plots, it shows that the hopping frequencies are equally spaced.


*RBW 100 kHz
*VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
17.23 dBm
902.784615385 MHz
Ref 20 dBm
*Att 30 dB
Offset 11 dB
1 PK
VIEW
A
LVL
PS
3DB
AC
Start 900 MHz
1.51 MHz/
Stop 915.1 MHz


*RBW 100 kHz
*VBW 300 kHz
SWT 5 ms
Marker 1 [T1]
18.24 dBm
927.254006410 MHz
Ref 20 dBm
*Att 30 dB
Offset 11 dB
1 PK
VIEW
A
LVL
PS
3DB
AC
Start 915.1 MHz
1.49 MHz/
Stop 930 MHz

4.3 DWELL TIME ON EACH CHANNEL

4.3.1 LIMIT OF DWELL TIME USED

For FHSS, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

4.3.2 TEST INSTRUMENTS

Test date: Dec. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 11, 2011	May 10, 2012

NOTE: 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

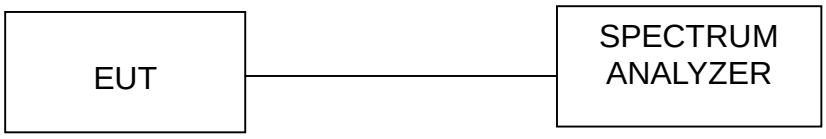
4.3.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. 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.
3. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

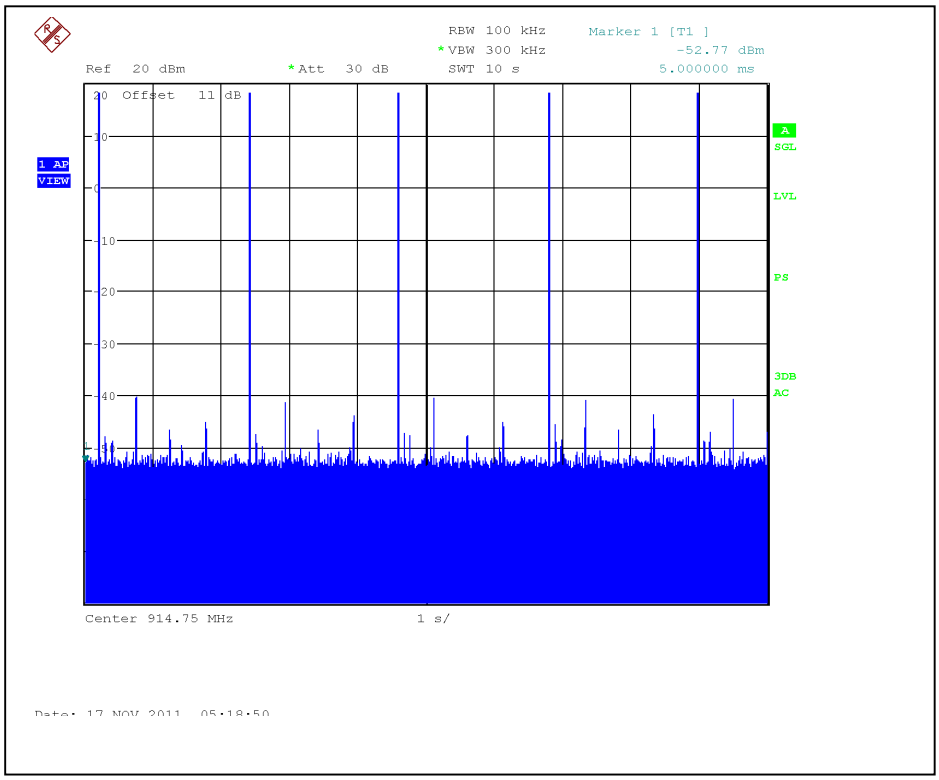
4.3.5 TEST SETUP

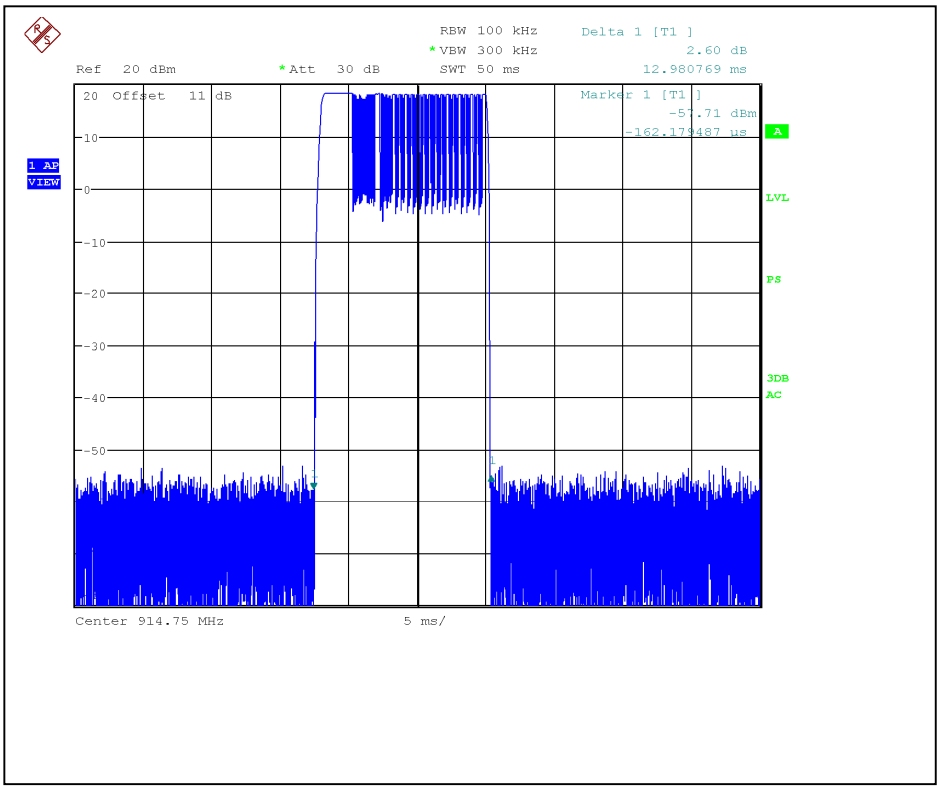


4.3.6 TEST RESULTS

Number of transmission in a 10 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
5 time	12.98	64.9	400

Test plots of the transmitting time slot are shown on next page.


RBW 100 kHz
*VBW 300 kHz
SWT 10 s
Marker 1 [T1]
-52.77 dBm
5.000000 ms
Ref 20 dBm
*Att 30 dB
20 Offset 11 dB
1 AP
VIEW
A
SGL
LVL
PS
3DB
AC
Center 914.75 MHz
1 s/


RBW 100 kHz
*VBW 300 kHz
SWT 50 ms
Delta 1 [T1]
2.60 dB
12.980769 ms
Marker 1 [T1]
-57.71 dBm
-162.179487 us
Ref 20 dBm
*Att 30 dB
20 Offset 11 dB
1 AP
VIEW
A
LVL
PS
3DB
AC
Center 914.75 MHz
5 ms/

4.4 CHANNEL BANDWIDTH

For frequency hopping system operating in the 902-928MHz, If the 20dB bandwidth of hopping channel is greater than 250kHz, 20dB bandwidth of hopping channel shell be a minimum limit for the hopping channel separation.

4.4.1 TEST INSTRUMENTS

Test date: Dec. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 11, 2011	May 10, 2012

NOTE: 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.4.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

4.4.3 DEVIATION FROM TEST STANDARD

No deviation

4.4.4 TEST SETUP

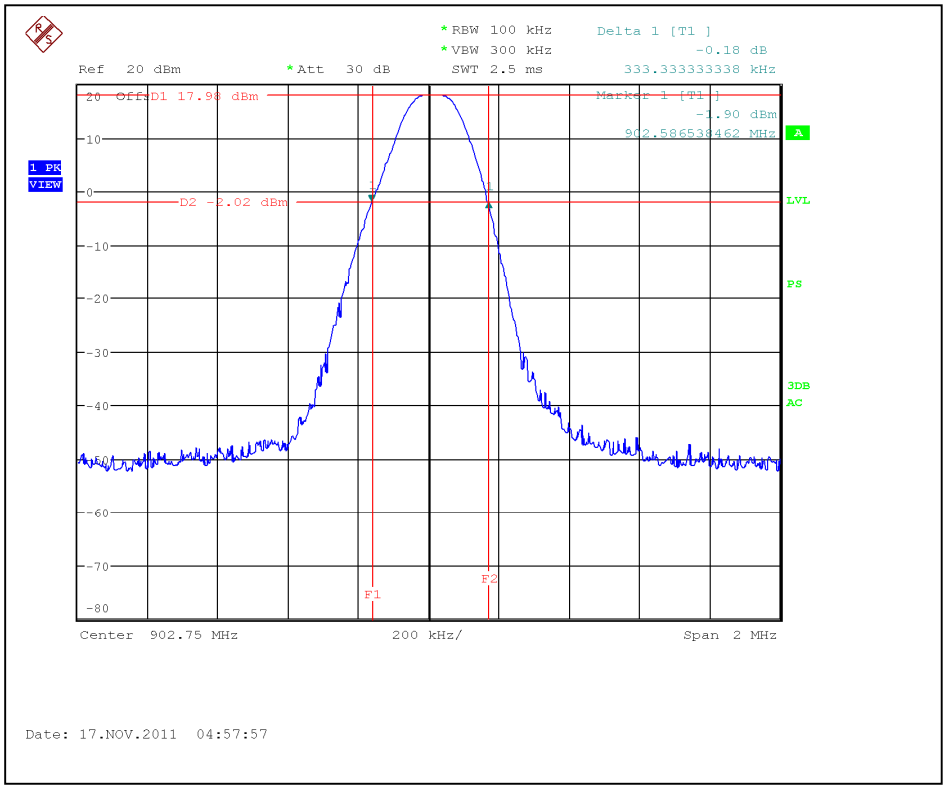
4.4.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.4.6 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.33
24	914.75	0.32
49	927.25	0.32

Channel 0



4.5 HOPPING CHANNEL SEPARATION

4.5.1 LIMIT OF HOPPING CHANNEL SEPARATION

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

4.5.2 TEST INSTRUMENTS

Test date: Dec. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 11, 2011	May 10, 2012

NOTE: 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

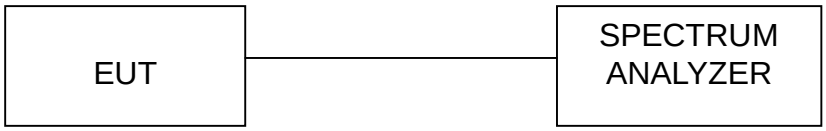
4.5.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP

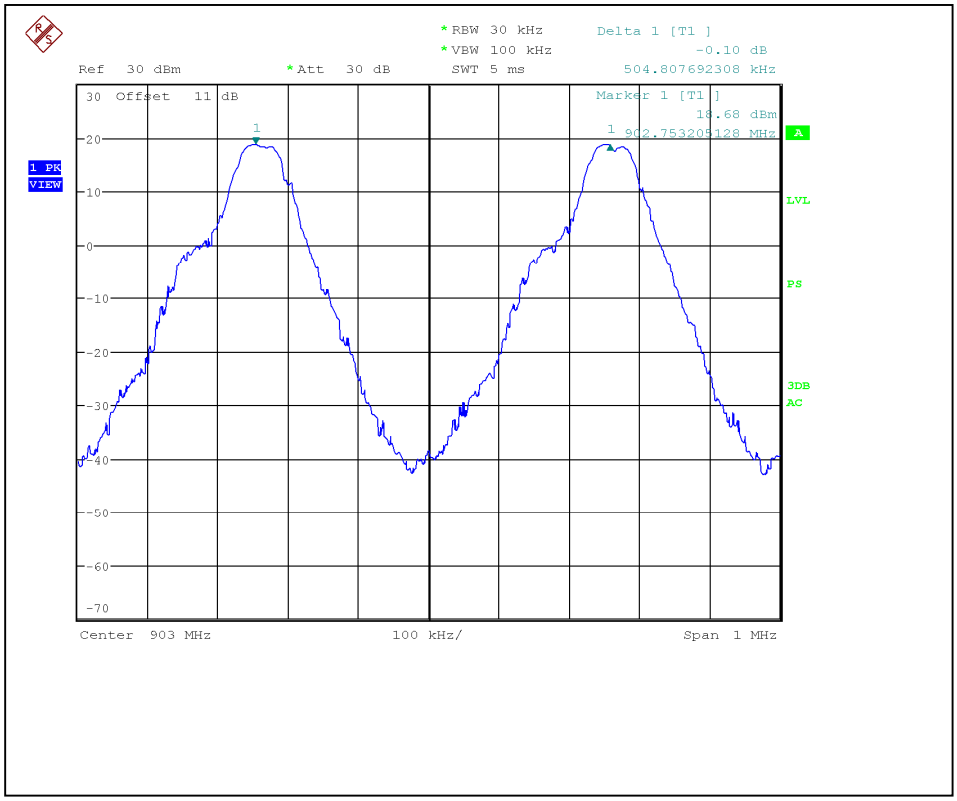


4.5.6 TEST RESULTS

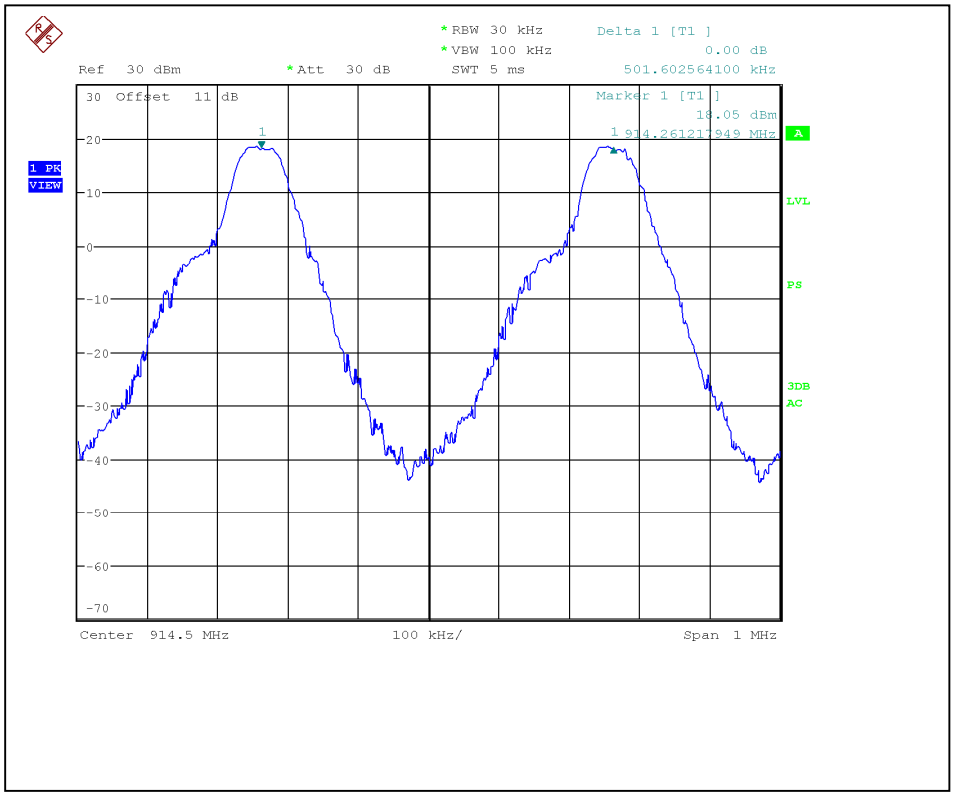
Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.5	0.33	PASS
24	914.75	0.5	0.32	PASS
49	927.25	0.5	0.32	PASS

The minimum limit is 20dB bandwidth. Test results please refer to next two pages.

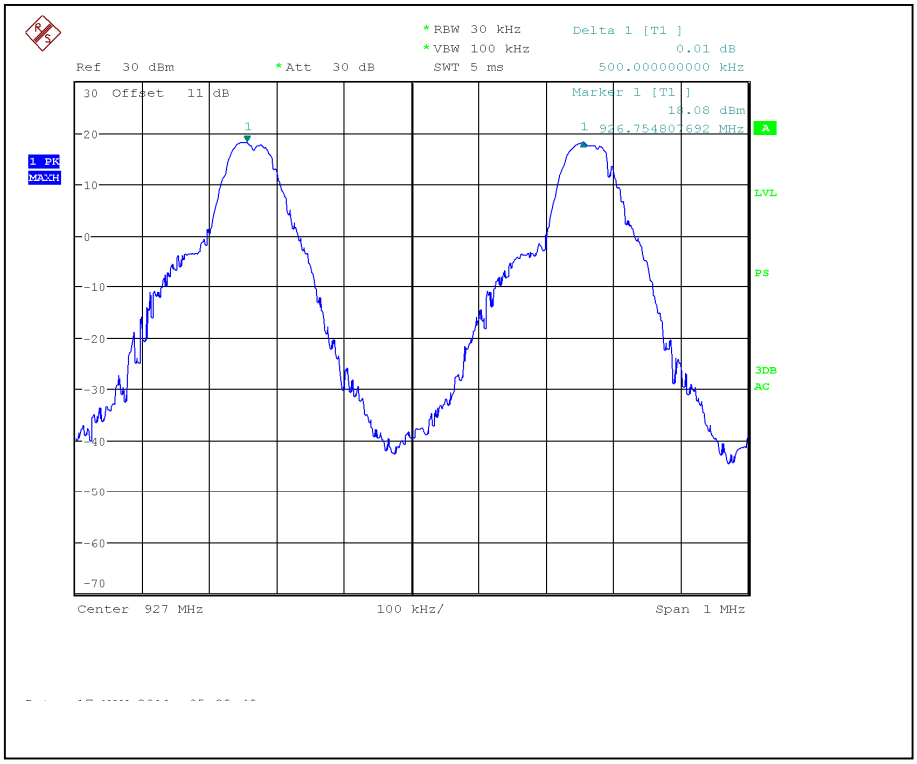
Channel 0



Channel 24



Channel 49


RBW 30 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.01 dB
500.000000000 kHz
Ref 30 dBm
Att 30 dB
30 Offset 11 dB
Marker 1 [T1]
18.08 dBm
1 926.754807692 MHz
1 PK
MAXH
A
LVL
PS
3DB
AC
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 927 MHz
100 kHz/
Span 1 MHz

4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 250mW.

4.6.2 INSTRUMENTS

Test date: Dec. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 11, 2011	May 10, 2012

NOTE: 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

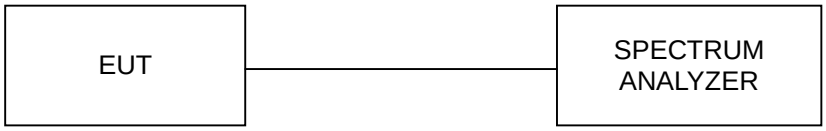
4.6.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3 MHz RBW and 10 MHz VBW.
4. Measure the captured power within the band and recording the plot.
5. Repeat above procedures until all frequencies measured were complete.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

4.6.6 EUT OPERATING CONDITION

The software (MTI RFID ME HW GUI Setup v1.0.6.exe) provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER OUTPUT (mW)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	902.75	18.50	70.8	250	PASS
24	914.75	17.90	61.7	250	PASS
49	927.25	17.70	58.9	250	PASS

4.7 RADIATED EMISSION MEASUREMENT

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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

As shown in 15.35(b), for frequencies above 1000MHz, 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 20dB under any condition of modulation.

4.7.2 TEST INSTRUMENTS

Test date: Nov. 25, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012
Agilent Pre-Selector	N9039A	MY46520311	July 12, 2011	July 11, 2012
Agilent Signal Generator	N5181A	MY49060517	July 12, 2011	July 11, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-03	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02578	July 04, 2011	July 03, 2012
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-360	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000320091110	Nov. 14, 2011	Nov. 13, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-201 RF104-203 RF104-204	Dec. 27, 2010	Dec. 26, 2011
RF Cable	NA	CHGCAB_001	Oct. 07, 2011	Oct. 06, 2012
Software	ADT_Radiated_V8.7.05	NA	NA	NA
CT Antenna Tower & Turn Table	NA	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5. The VCCI Site Registration No. is G-137.
6. The CANADA Site Registration No. is IC 7450H-2.

4.7.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters chamber room. 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 antenna is a broadband antenna, and its 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.

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, quasi-peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.

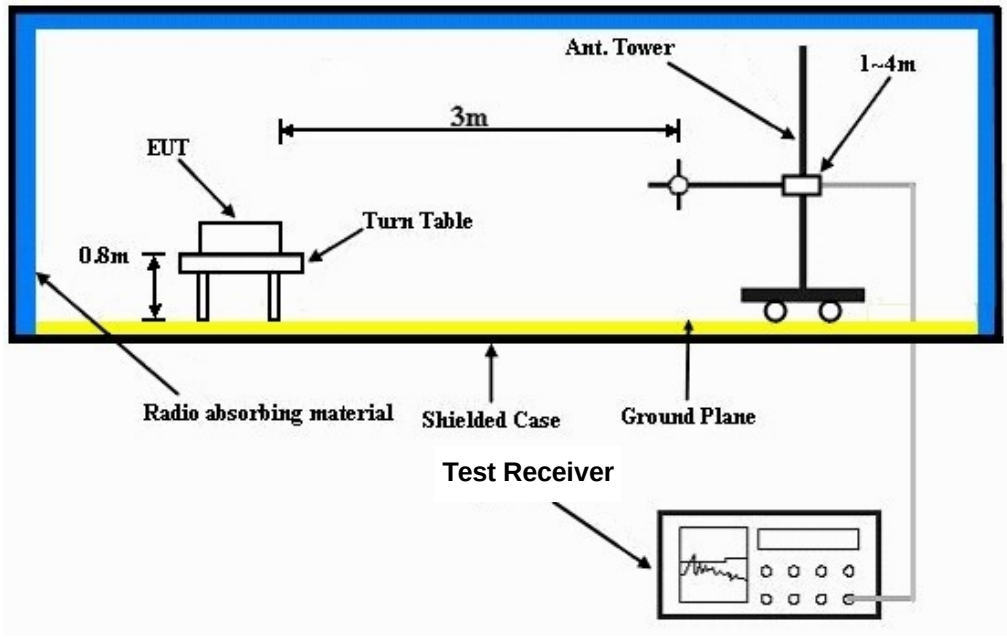
NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

4.7.6 EUT OPERATING CONDITION

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

4.7.7 TEST RESULTS

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 72%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.93	28.3 QP	40.0	-11.7	2.00 H	360	14.33	13.94
2	154.11	36.3 QP	43.5	-7.2	1.50 H	124	21.67	14.67
3	166.54	33.0 QP	43.5	-10.6	1.00 H	56	18.77	14.18
4	831.37	41.7 QP	46.0	-4.3	2.00 H	295	15.37	26.36
5	846.88	35.5 QP	46.0	-10.5	1.00 H	137	8.91	26.60
6	897.21	37.6 QP	46.0	-8.5	1.50 H	166	10.23	27.32
7	#901.94	46.3 PK	83.5	-37.2	1.31 H	102	18.91	27.38
8	#901.94	31.7AV	81.2	-49.5	1.31 H	102	4.31	27.38
9	*902.75	103.5 PK	-	-	1.31 H	102	76.11	27.38
10	*902.75	101.2 AV	-	-	1.31 H	102	73.80	27.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	33.8 QP	40.0	-6.2	1.00 V	134	20.85	12.91
2	69.67	27.8 QP	40.0	-12.2	1.00 V	93	15.22	12.56
3	140.47	38.1 QP	43.5	-5.4	1.50 V	0	23.85	14.26
4	153.63	37.1 QP	43.5	-6.4	1.50 V	345	22.40	14.67
5	306.99	35.7 QP	46.0	-10.4	2.00 V	196	20.15	15.50
6	898.87	35.9 QP	46.0	-10.1	1.00 V	88	8.52	27.34
7	#901.89	45.1 PK	86.8	-41.6	1.06 V	293	17.74	27.38
8	#901.89	31.9 AV	84.4	-52.5	1.06 V	293	4.54	27.38
9	*902.76	106.8 PK	-	-	1.06 V	293	79.37	27.38
10	*902.76	104.4 AV	-	-	1.06 V	293	77.03	27.38

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0	FREQUENCY RANGE	1GHz ~10GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2708.35	43.0 PK	74.0	-31.0	1.32 H	333	10.65	32.37
2	2708.35	30.9 AV	54.0	-23.1	1.32 H	333	-1.48	32.37
3	3611.00	43.5 PK	74.0	-30.5	1.01 H	223	8.91	34.59
4	3611.00	32.0 AV	54.0	-22.0	1.01 H	223	-2.57	34.59
5	4513.30	44.3 PK	74.0	-29.7	1.05 H	360	6.47	37.85
6	4513.30	35.1 AV	54.0	-18.9	1.05 H	360	-2.74	37.85
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2708.30	44.5 PK	74.0	-29.5	1.02 V	353	12.14	32.36
2	2708.30	31.9 AV	54.0	-22.1	1.02 V	353	-0.46	32.36
3	3611.00	44.9 PK	74.0	-29.1	1.14 V	321	10.28	34.59
4	3611.00	32.0 AV	54.0	-22.0	1.14 V	321	-2.61	34.59
5	4513.80	45.7 PK	74.0	-28.3	1.02 V	255	7.85	37.85
6	4513.80	35.7 AV	54.0	-18.3	1.02 V	255	-2.18	37.85

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).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 72%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.93	28.2 QP	40.0	-11.8	2.00 H	360	14.25	13.94
2	154.11	36.2 QP	43.5	-7.3	1.50 H	124	21.53	14.67
3	166.54	32.8 QP	43.5	-10.7	1.00 H	56	18.66	14.18
4	831.37	41.6 QP	46.0	-4.4	2.00 H	295	15.28	26.36
5	846.88	35.4 QP	46.0	-10.6	1.00 H	137	8.79	26.60
6	897.21	37.4 QP	46.0	-8.6	1.50 H	166	10.08	27.32
7	*914.75	106.3 PK	-	-	1.61 H	360	78.82	27.48
8	*914.75	104.0 AV	-	-	1.61 H	360	76.51	27.48
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	33.7 QP	40.0	-6.3	1.00 V	134	20.78	12.91
2	69.67	27.7 QP	40.0	-12.3	1.00 V	93	15.14	12.56
3	140.47	37.6 QP	43.5	-5.9	1.50 V	0	23.32	14.26
4	153.63	36.5 QP	43.5	-7.0	1.50 V	345	21.80	14.67
5	306.99	36.0 QP	46.0	-10.0	2.00 V	196	20.50	15.50
6	898.87	36.9 QP	46.0	-9.1	1.00 V	88	9.55	27.34
7	*914.74	108.6 PK	-	-	1.08 V	131	81.07	27.48
8	*914.74	105.8 AV	-	-	1.08 V	131	78.29	27.48

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).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24	FREQUENCY RANGE	1GHz ~10GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2749.20	43.7 PK	74.0	-30.3	1.12 H	214	11.24	32.44
2	2749.20	31.2 AV	54.0	-22.8	1.12 H	214	-1.24	32.44
3	3658.00	43.9 PK	74.0	-30.1	1.12 H	254	9.12	34.78
4	3658.00	32.5 AV	54.0	-21.5	1.12 H	254	-2.28	34.78
5	4576.50	44.6 PK	74.0	-29.4	1.09 H	235	6.45	38.15
6	4576.50	35.3 AV	54.0	-18.7	1.09 H	235	-2.85	38.15
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2749.00	45.7 PK	74.0	-28.3	1.02 V	222	13.24	32.44
2	2749.00	32.6 AV	54.0	-21.4	1.02 V	222	0.16	32.44
3	3659.50	45.6 PK	74.0	-28.4	1.05 V	123	10.78	34.78
4	3659.50	32.7 AV	54.0	-21.3	1.05 V	123	-2.10	34.78
5	4571.90	45.8 PK	74.0	-28.2	1.02 V	103	7.67	38.13
6	4571.90	35.8 AV	54.0	-18.2	1.02 V	103	-2.33	38.13

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).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 72%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.93	27.6 QP	40.0	-12.4	2.00 H	360	13.62	13.94
2	154.11	35.2 QP	43.5	-8.4	1.50 H	124	20.48	14.67
3	166.54	35.6 QP	43.5	-7.9	1.00 H	56	21.46	14.18
4	831.37	41.7 QP	46.0	-4.3	2.00 H	295	15.36	26.36
5	846.88	36.2 QP	46.0	-9.8	1.00 H	137	9.64	26.60
6	897.21	38.1 QP	46.0	-7.9	1.50 H	166	10.74	27.32
7	*927.26	103.1 PK	-	-	1.25 H	102	75.51	27.58
8	*927.26	100.4 AV	-	-	1.25 H	102	72.81	27.58
9	#928.17	45.4 PK	83.1	-37.7	1.25 H	102	17.84	27.59
10	#928.17	31.8 AV	80.4	-48.6	1.25 H	102	4.24	27.59
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.00	34.6 QP	40.0	-5.4	1.00 V	134	21.65	12.91
2	69.67	28.4 QP	40.0	-11.7	1.00 V	93	15.79	12.56
3	**140.47**	**39.5 QP**	**43.5**	**-4.0**	**1.50 V**	**0**	**25.28**	**14.26**
4	153.63	38.3 QP	43.5	-5.3	1.50 V	345	23.58	14.67
5	306.99	36.2 QP	46.0	-9.9	2.00 V	196	20.65	15.50
6	898.87	36.0 QP	46.0	-10.0	1.00 V	88	8.69	27.34
7	*927.27	107.6 PK	-	-	1.05 V	121	80.01	27.58
8	*927.27	104.9 AV	-	-	1.05 V	121	77.32	27.58
9	#928.12	46.4 PK	87.6	-41.2	1.05 V	121	18.84	27.59
10	#928.12	32.6 AV	84.9	-52.3	1.05 V	121	5.04	27.59

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).
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. "#":The radiated frequency is out the restricted band.

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49	FREQUENCY RANGE	1GHz ~10GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	TESTED BY	Evan Huang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2781.90	44.3 PK	74.0	-29.8	1.05 H	214	11.75	32.50
2	2781.90	32.7 AV	54.0	-21.3	1.05 H	214	0.16	32.50
3	3708.10	44.3 PK	74.0	-29.8	1.24 H	252	9.29	34.96
4	3708.10	33.7 AV	54.0	-20.3	1.24 H	252	-1.28	34.96
5	4631.00	45.5 PK	74.0	-28.5	1.01 H	122	7.15	38.35
6	4631.00	36.8 AV	54.0	-17.2	1.01 H	122	-1.55	38.35
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2781.80	46.5 PK	74.0	-27.5	1.13 V	235	14.00	32.50
2	2781.80	33.2 AV	54.0	-20.8	1.13 V	235	0.70	32.50
3	3709.20	46.0 PK	74.0	-28.0	1.03 V	20	11.07	34.96
4	3709.20	33.3 AV	54.0	-20.7	1.03 V	20	-1.70	34.96
5	4632.60	46.1 PK	74.0	-27.9	1.23 V	325	7.74	38.36
6	4632.60	36.2 AV	54.0	-17.8	1.23 V	325	-2.12	38.36

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).

3. The other emission levels were very low against the limit.

4. Margin value = Emission level – Limit value.

4.8 CONDUCTED OUT-BAND EMISSION MEASUREMENT

4.8.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

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

4.8.2 TEST INSTRUMENTS

Test date: Dec. 06, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S SPECTRUM ANALYZER	FSP40	100060	May 11, 2011	May 10, 2012

NOTE: 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set RBW of spectrum analyzer to 100kHz and VBW of spectrum analyzer to 300kHz with suitable frequency span including 20 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (RBW = 100kHz, VBW = 300kHz) are attached on the following pages.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

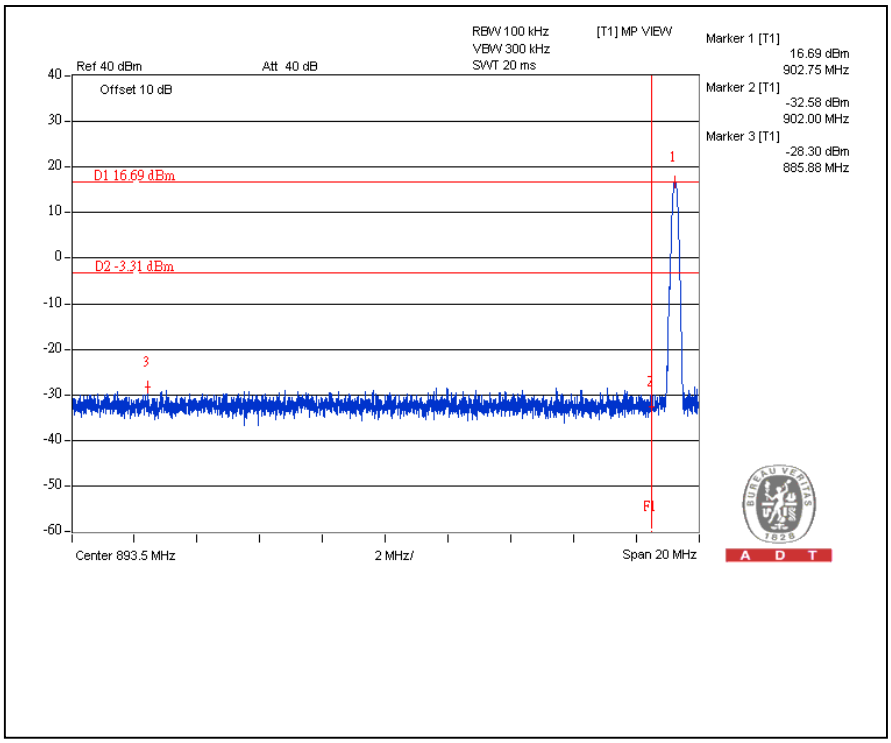
4.8.5 EUT OPERATING CONDITION

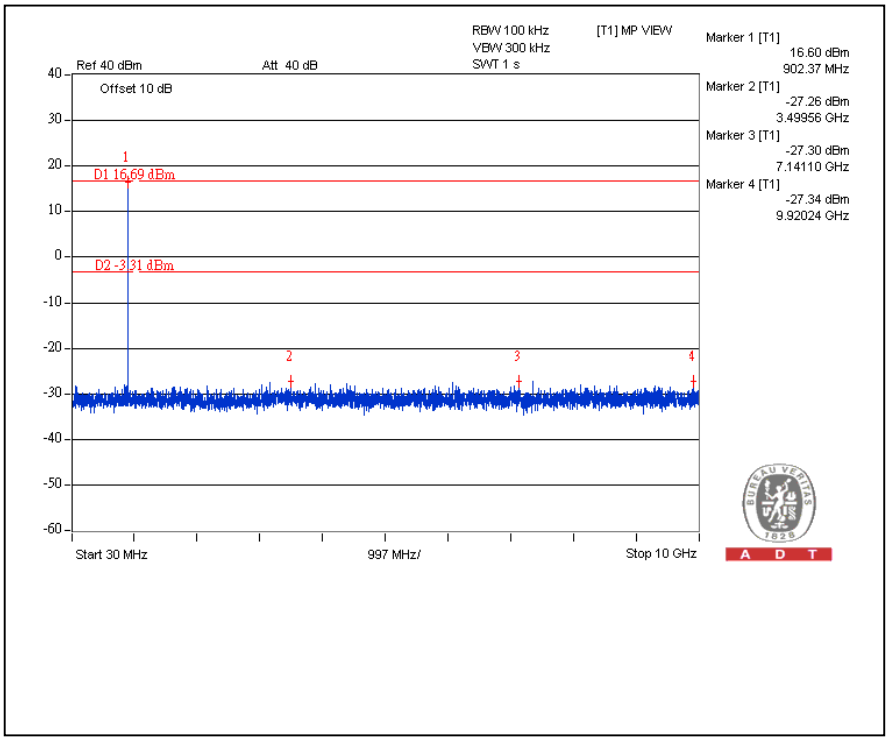
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.8.6 TEST RESULTS

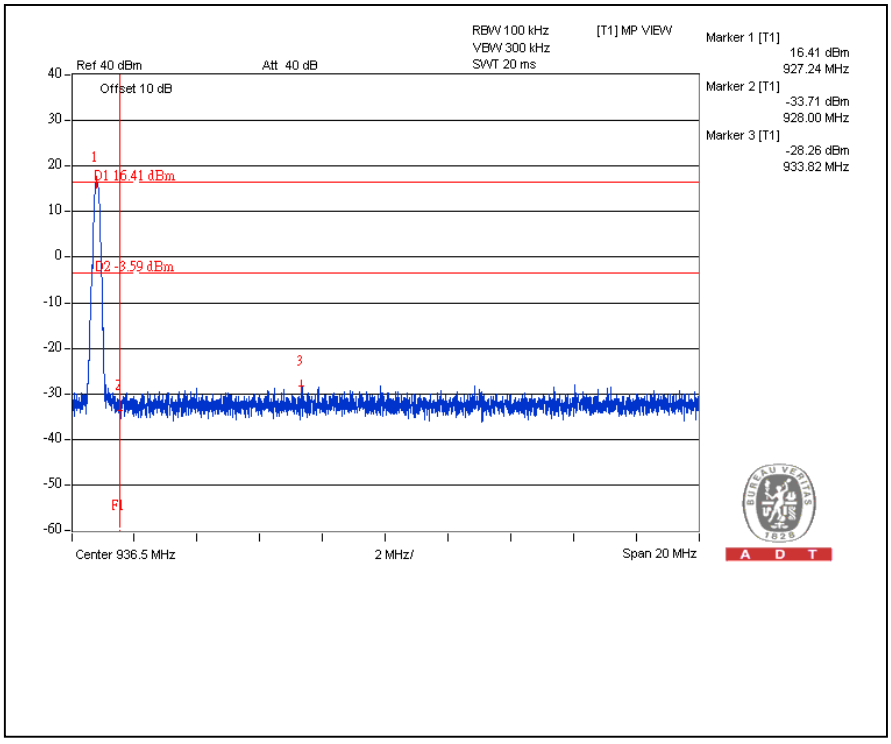
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

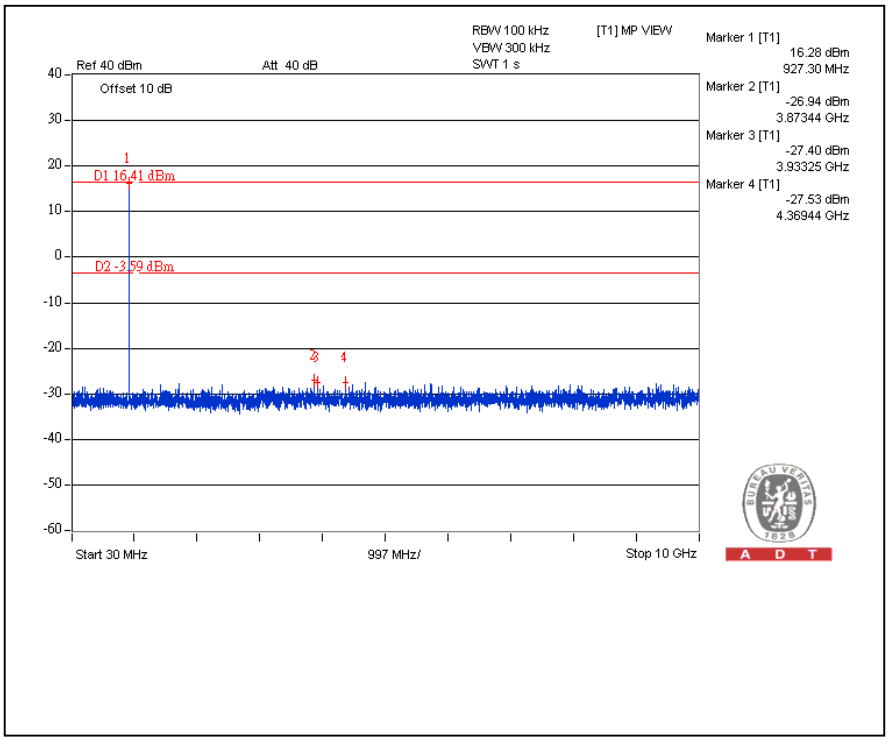
CH0


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MP VIEW
Ref 40 dBm
Att 40 dB
Offset 10 dB
D1 16.69 dBm
D2 -3.31 dBm
Marker 1 [T1]
16.69 dBm
902.75 MHz
Marker 2 [T1]
-32.58 dBm
902.00 MHz
Marker 3 [T1]
-28.30 dBm
885.88 MHz
Center 893.5 MHz
2 MHz/
Span 20 MHz


RBW 100 kHz
VBW 300 kHz
SWT 1 s
[T1] MP VIEW
Ref 40 dBm
Att 40 dB
Offset 10 dB
D1 16.69 dBm
D2 -3.31 dBm
Marker 1 [T1]
16.60 dBm
902.37 MHz
Marker 2 [T1]
-27.26 dBm
3.49956 GHz
Marker 3 [T1]
-27.30 dBm
7.14110 GHz
Marker 4 [T1]
-27.34 dBm
9.92024 GHz
Start 30 MHz
997 MHz/
Stop 10 GHz

CH49


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MP VIEW
Ref 40 dBm
Att 40 dB
Offset 10 dB
D1 16.41 dBm
D2 -3.59 dBm
Marker 1 [T1]
16.41 dBm
927.24 MHz
Marker 2 [T1]
-33.71 dBm
928.00 MHz
Marker 3 [T1]
-28.26 dBm
933.82 MHz
Center 936.5 MHz
2 MHz/
Span 20 MHz


RBW 100 kHz
VBW 300 kHz
SWT 1 s
[T1] MP VIEW
Ref 40 dBm
Att 40 dB
Offset 10 dB
D1 16.41 dBm
D2 -3.59 dBm
Marker 1 [T1]
16.28 dBm
927.30 MHz
Marker 2 [T1]
-26.94 dBm
3.87344 GHz
Marker 3 [T1]
-27.40 dBm
3.93325 GHz
Marker 4 [T1]
-27.53 dBm
4.36944 GHz
Start 30 MHz
997 MHz/
Stop 10 GHz

5 INFORMATION ON 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 accredited and approved according to ISO/IEC 17025.

Copies of accreditation and authorization certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5.phtml.
If you have any comments, please feel free to contact us at the following:

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

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Email: service.adt@tw.bureauveritas.com
Web Site: www.adt.com.tw

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

6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

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