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FCC TEST REPORT

REPORT NO.: RF120315E04

MODEL NO.: BLANKA

FCC ID: NKRBLANKA

RECEIVED: Mar. 15, 2012

TESTED: Mar. 19 to Apr. 13, 2012

TESTEFFD: Apr. 19, 2012

APPLICANT: Wistron NeWeb Corp.

ADDRESS: 20 Park Avenue II, Hsinchu Science
Park, Hsinchu 308, 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,
R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (2): No. 49, Ln. 206, Wende Rd., Shangshan Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF120315E04	Original release	Apr. 19, 2012



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1 CERTIFICATION

PRODUCT : WNC RFID Smart Reader
BRAND NAME : WNC
MODEL NO. : BLANKA
APPLICANT : Wistron NeWeb Corp.
TESTED DATE: Mar. 19 to Apr. 13, 2012
TEST SAMPLE : ENGINEERING SAMPLE
STANDARDS : FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10-2009

The above equipment (Model: BLANKA) 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 : , **DATE:** Apr. 19, 2012
(Claire Kuan, Specialist)

APPROVED BY : , **DATE:** Apr. 19, 2012
(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 -4.13dB at 0.21034 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 -4.4dB at 375.00MHz
15.247(d)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit
15.203	Antenna Requirement	-	Antenna connector is a RTNC 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)	3.89 dB
Radiated emissions (1GHz ~18GHz)	2.19 dB
Radiated emissions (18GHz ~40GHz)	2.56 dB



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3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	WNC RFID Smart Reader
MODEL NO.	BLANKA
POWER SUPPLY	DC 12V from power adapter or DC 56V from POE adapter
MODULATION TYPE	ASK
MODULATION TECHNOLOGY	FHSS
FREQUENCY RANGE	902.75MHz ~ 927.25MHz
NUMBER OF CHANNEL	50
OUTPUT POWER	691.831mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	DB9(RS-232) cable (Shielded, 1.86m) x 1 DB9(RS-232) cable (Unshielded, 10m) x 1 50 load (Unshielded, 3m) x 1 RF cable(RTNC connector, Shielded, 1.5m) x 4
I/O PORTS	Refer to user's manual
ASSOCIATED DEVICES	Power Adapter x 1 POE Adapter x 1

NOTE:

1. The antenna provided to the EUT, please refer to the following table:

Brand	Model	Antenna Type	Gain (dBi)	Cable Loss(dB)	Net Gain (dBi)	Antenna Connector	Cable Length
WNC	XRAB-N1	Shelf Antenna	5	1	4	RTNC	150cm

2. The EUT must be supplied with a power adapter or POE adapter and following as table:

Power adapter		
Brand	Model	Spec.
AMIGO	AMS4-1202000F	Input: 100-240V, 0.8A, 50/60Hz AC input cable (unshielded, 1.8m) Output:12V, 2.0A DC output cable (unshielded, 1.55m with one core)
POE adapter		
Brand	Model	Spec.
PHIHONG	POE36U-1AT-R	Input: 100-240V, 1.0A, 50/60Hz AC input cable (unshielded, 1.93m) Output: 56V, 0.643A

3. The EUT was pre-tested under following test modes:

Mode	Adapter
Mode A	POE adapter
Mode B	Power adapter

For the above modes, the worse radiated test mode was found in **Mode A**. Therefore only the test data of the modes were recorded in this report.

4. The RFID reader can support four antenna ports application which can't transmit simultaneously.

5. 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.



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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 APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
1	√	√	√	√	√	POE mode
2	√	-	-	-	-	Adapter mode

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



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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	TESTED BY
PLC	23deg. C, 64%RH	120Vac, 60Hz	JyunChun Lin
	26deg. C, 65%RH	120Vac, 60Hz	JyunChun Lin
RE ³ 1G	24deg. C, 69%RH	120Vac, 60Hz	Amos Chuang
RE<1G	26deg. C, 75%RH	120Vac, 60Hz	Amos Chuang
	24deg. C, 69%RH	120Vac, 60Hz	Amos Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Wen Yu
OB	25deg. C, 60%RH	120Vac, 60 Hz	Wen Yu



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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 C63.10-2009

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.

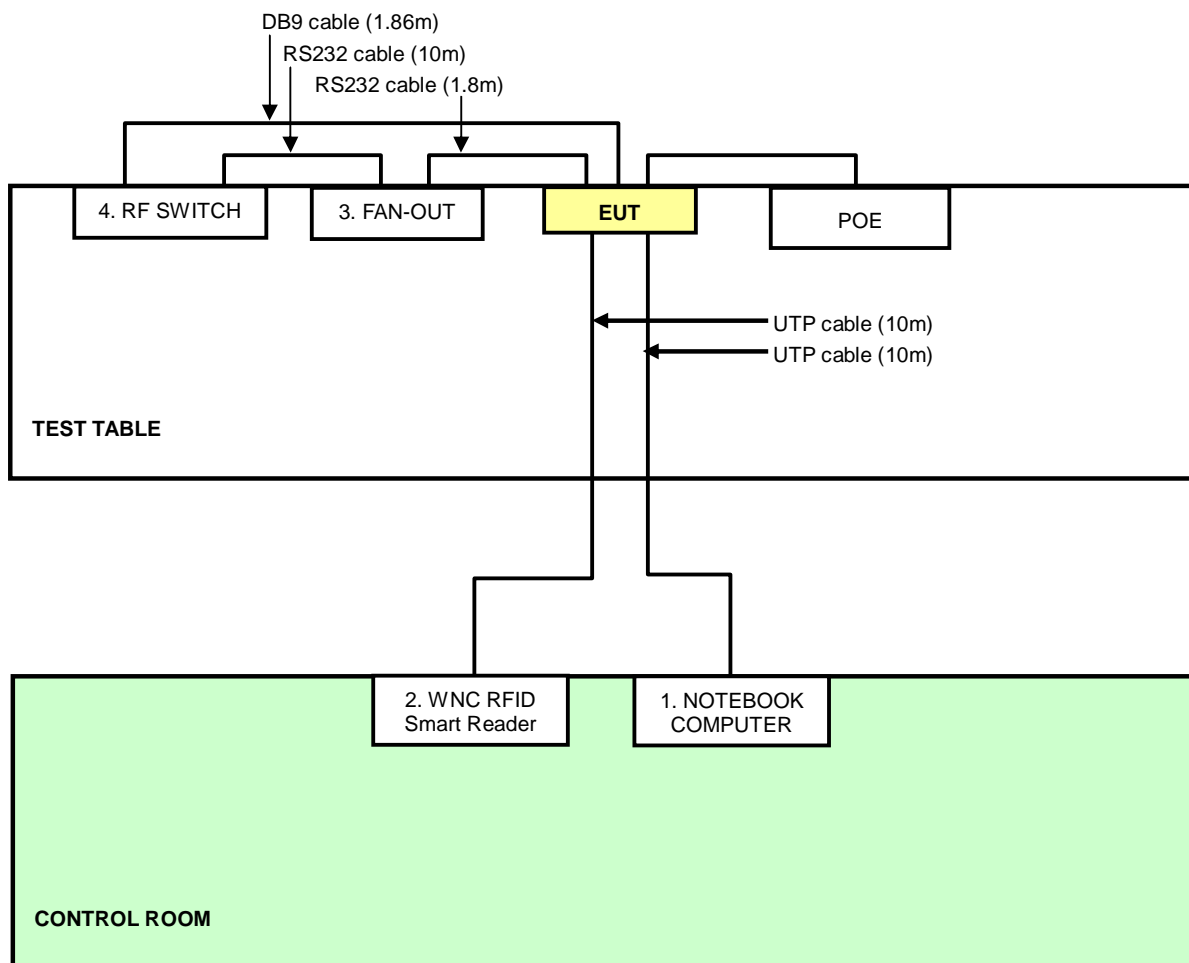
For conducted test					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC
2	WNC RFID Smart Reader	WNC	BLANKA	6YLB32S	FCC DoC
3	FAN-OUT	WNC	NA	NA	NA
4	RF SWITCH	WNC	NA	NA	NA
For other test items					
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	DSL32S	FCC DoC
2	WNC RFID Smart Reader	WNC	BLANKA	6YLB32S	FCC DoC
3	FAN-OUT	WNC	NA	NA	NA
4	RF SWITCH	WNC	NA	NA	NA

For Conducted test	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (3m) / UTP cable (10m)
2	UTP cable (10m)
3	RS232 cable (1.8m)
4	RS232 cable (10m) / DB9 cable (1.86m)
For other test items	
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	UTP cable (1m)
2	UTP cable (10m)
3	RS232 cable (1.8m)
4	RS232 cable (10m) / RF cable (1.5m)

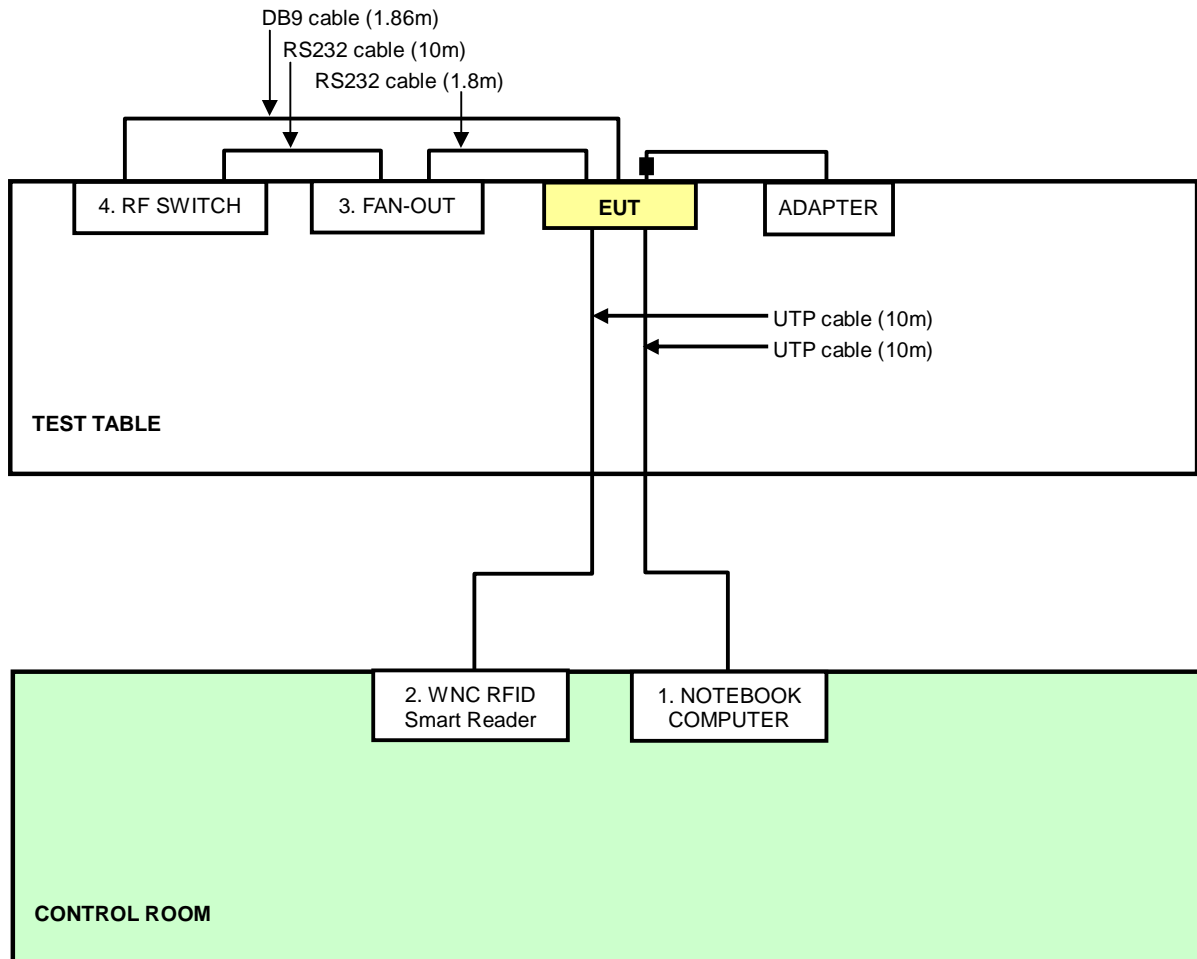
NOTE: All power cords of the above support units are non shielded (1.8m).

3.6 CONFIGURATION OF SYSTEM UNDER TEST

For conducted test mode 1 and other test items:



For conducted test mode 2:





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4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	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.

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	100287	Feb. 29, 2012	Feb. 28, 2013
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 (JYBAO)	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. Tested date: Mar. 19, 2012



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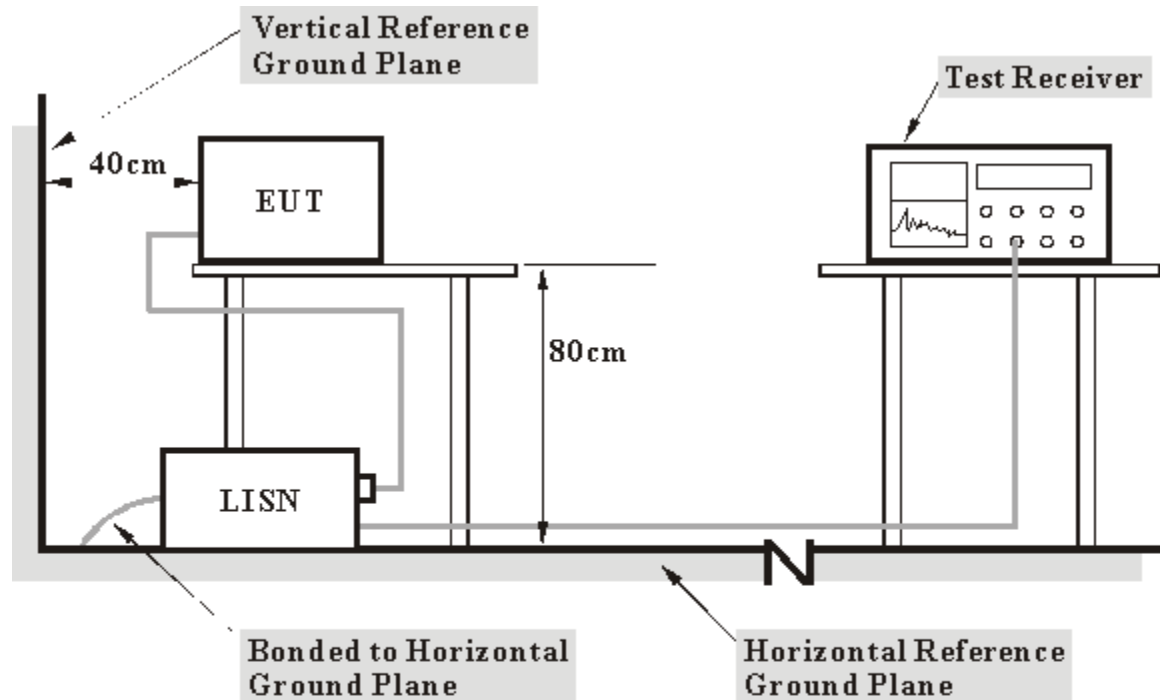
4.1.3 TEST PROCEDURES

- 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

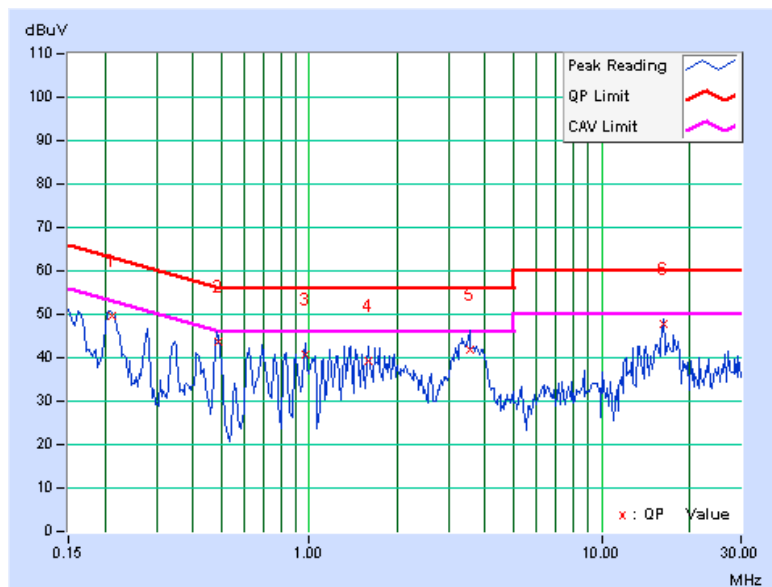
1. Turn on the power of all equipment.
2. Support unit 1 (NOTEBOOK COMPUTER) runs “RFID.exe” program to enable all functions of EUT via UTP cables.

4.1.7 TEST RESULTS(POE MODE)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21034	0.06	49.54	49.00	49.60	49.06	63.19	53.19	-13.59	-4.13
2	0.49066	0.07	43.66	41.31	43.73	41.38	56.16	46.16	-12.42	-4.77
3	0.97469	0.09	40.59	37.03	40.68	37.12	56.00	46.00	-15.32	-8.88
4	1.60156	0.14	39.03	34.00	39.17	34.14	56.00	46.00	-16.83	-11.86
5	3.55078	0.27	41.57	36.13	41.84	36.40	56.00	46.00	-14.16	-9.60
6	16.22869	0.60	47.19	44.87	47.79	45.47	60.00	50.00	-12.21	-4.53

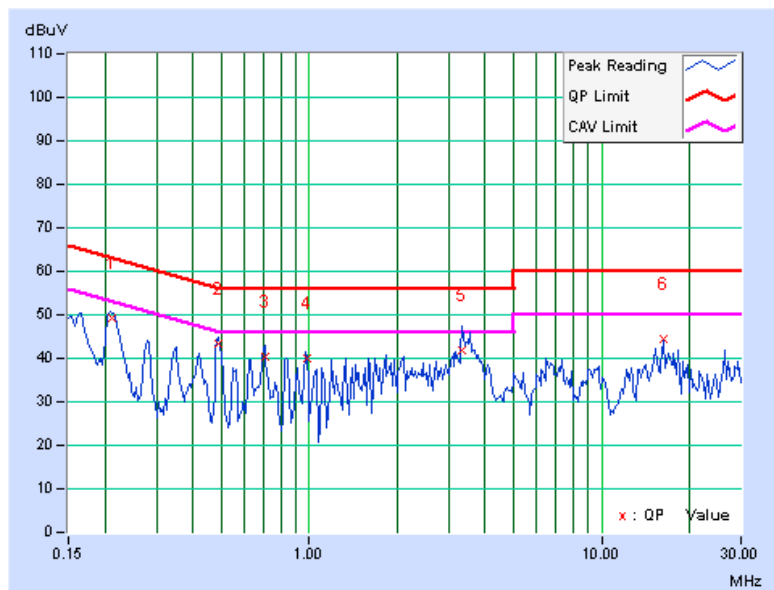
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.21134	0.07	49.09	48.74	49.16	48.81	63.15	53.15	-13.99	-4.34
2	0.48878	0.08	43.31	40.30	43.39	40.38	56.19	46.19	-12.80	-5.81
3	0.70469	0.09	40.41	34.63	40.50	34.72	56.00	46.00	-15.50	-11.28
4	0.97772	0.09	39.94	34.77	40.03	34.86	56.00	46.00	-15.97	-11.14
5	3.34375	0.24	41.60	34.82	41.84	35.06	56.00	46.00	-14.16	-10.94
6	16.22894	0.58	43.86	41.23	44.44	41.81	60.00	50.00	-15.56	-8.19

- 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.

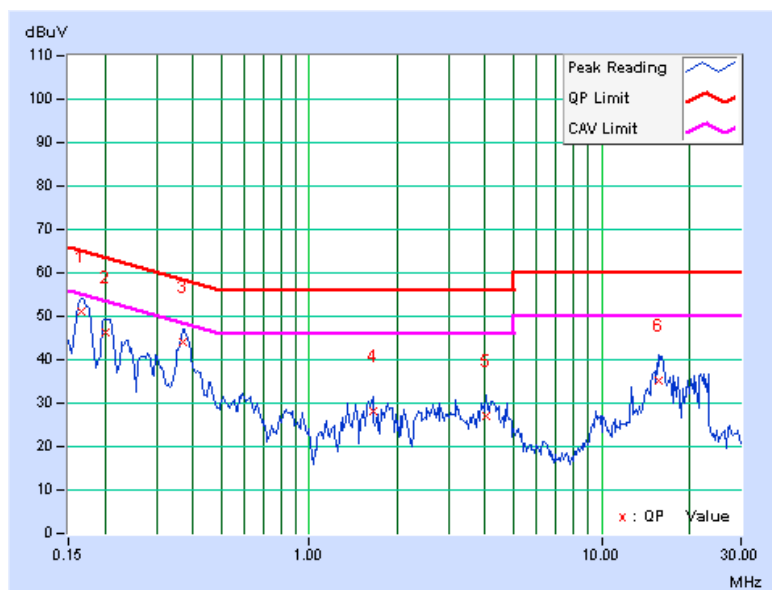


4.1.8 TEST RESULTS(ADAPTER MODE)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	0.06	51.12	43.17	51.18	43.23	65.18	55.18	-14.00	-11.95
2	0.20078	0.06	46.35	36.71	46.41	36.77	63.58	53.58	-17.17	-16.81
3	0.36875	0.07	43.82	35.50	43.89	35.57	58.53	48.53	-14.64	-12.96
4	1.64844	0.15	27.96	20.89	28.11	21.04	56.00	46.00	-27.89	-24.96
5	4.05078	0.29	26.89	19.30	27.18	19.59	56.00	46.00	-28.82	-26.41
6	15.66797	0.59	34.59	27.51	35.18	28.10	60.00	50.00	-24.82	-21.90

- 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.



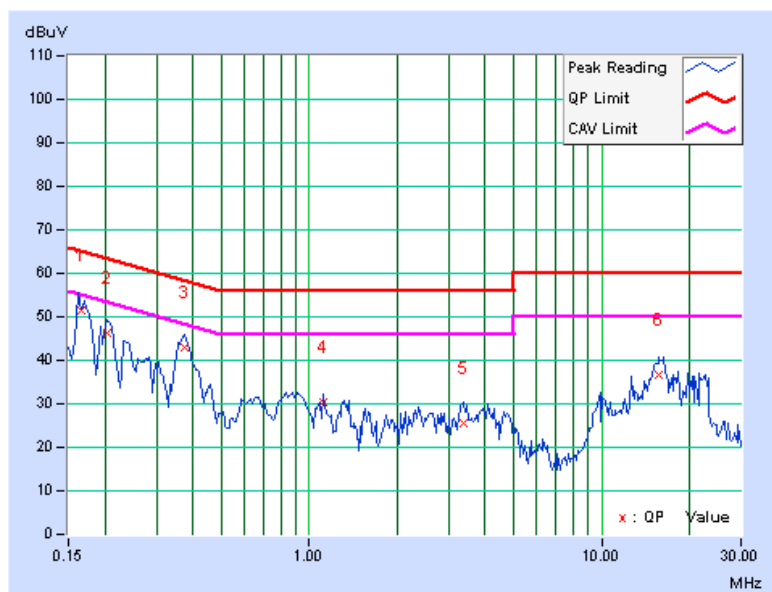


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PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16534	0.07	51.26	43.01	51.33	43.08	65.19	55.19	-13.86	-12.11
2	0.20469	0.07	46.21	37.59	46.28	37.66	63.42	53.42	-17.14	-15.76
3	0.37266	0.08	43.05	35.64	43.13	35.72	58.44	48.44	-15.31	-12.72
4	1.12109	0.10	30.26	22.61	30.36	22.71	56.00	46.00	-25.64	-23.29
5	3.35938	0.24	25.18	18.96	25.42	19.20	56.00	46.00	-30.58	-26.80
6	15.76563	0.57	36.20	29.62	36.77	30.19	60.00	50.00	-23.23	-19.81

- 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.





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4.2 NUMBER OF HOPPING FREQUENCY USED

4.2.1 LIMIT OF HOPPING FREQUENCY USED

CONDITION	HOPPING FREQUENCY USED	APPLICATION
20dB Bandwidth <250kHz	hopping channels >50	v
20dB Bandwidth >250kHz	hopping channels >25	x

4.2.2 TEST INSTRUMENTS

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.
2. Tested date: Apr. 13, 2012.

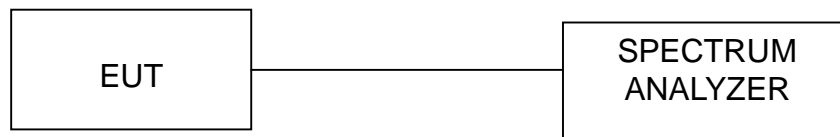
4.2.3 TEST PROCEDURES

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

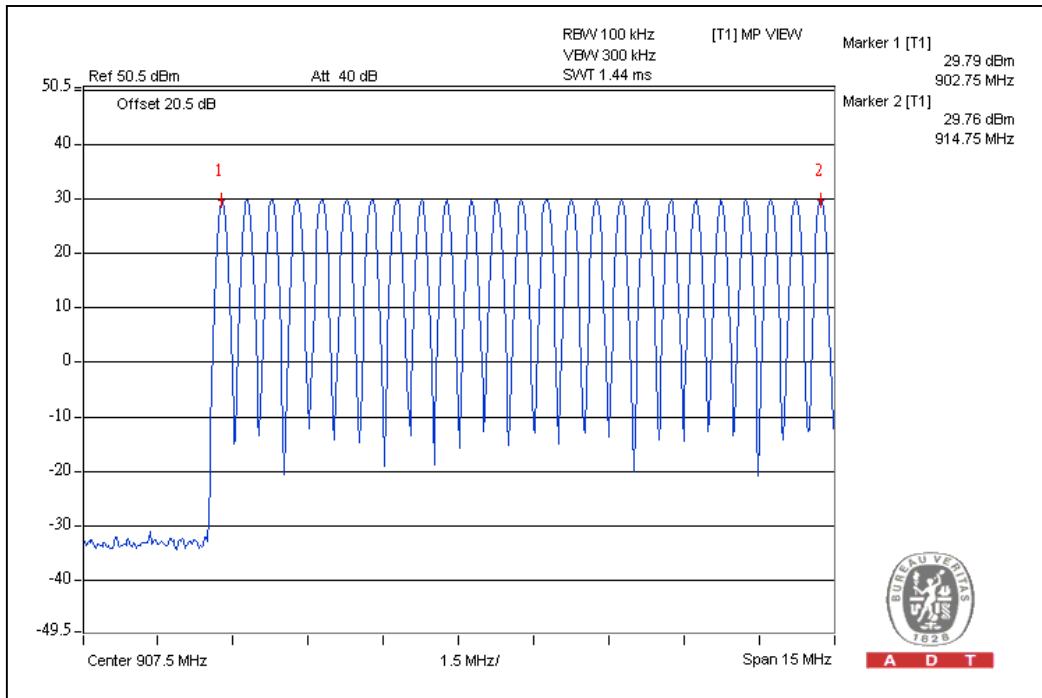


4.2.6 TEST RESULTS

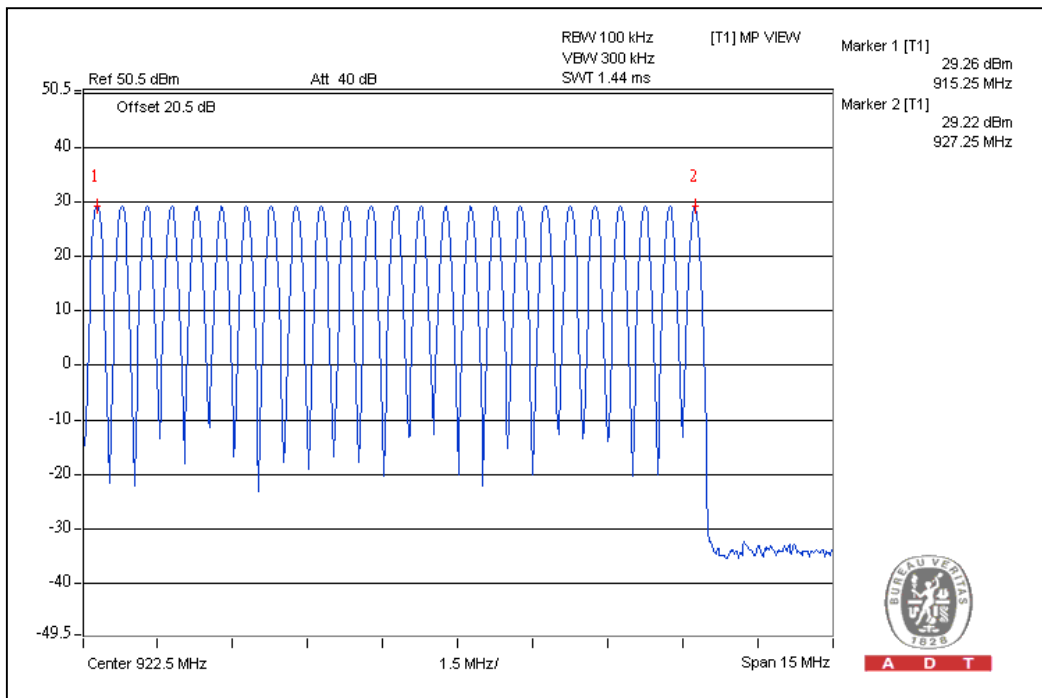
There are 50 hopping frequencies in the hopping mode. Please refer to next page for the test result. On the plots, it shows that the hopping frequencies are equally spaced.



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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 as below:

CONDITION	DWELL TIME	APPLICATION
20dB Bandwidth <250kHz (hopping channels >50)	0.4 seconds within a 20 second period	v
20dB Bandwidth >250kHz (hopping channels >25)	0.4 seconds within a 10 second period	x

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250113	Nov. 30, 2011	Nov. 29, 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.
2. Tested date: Apr. 13, 2012.

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





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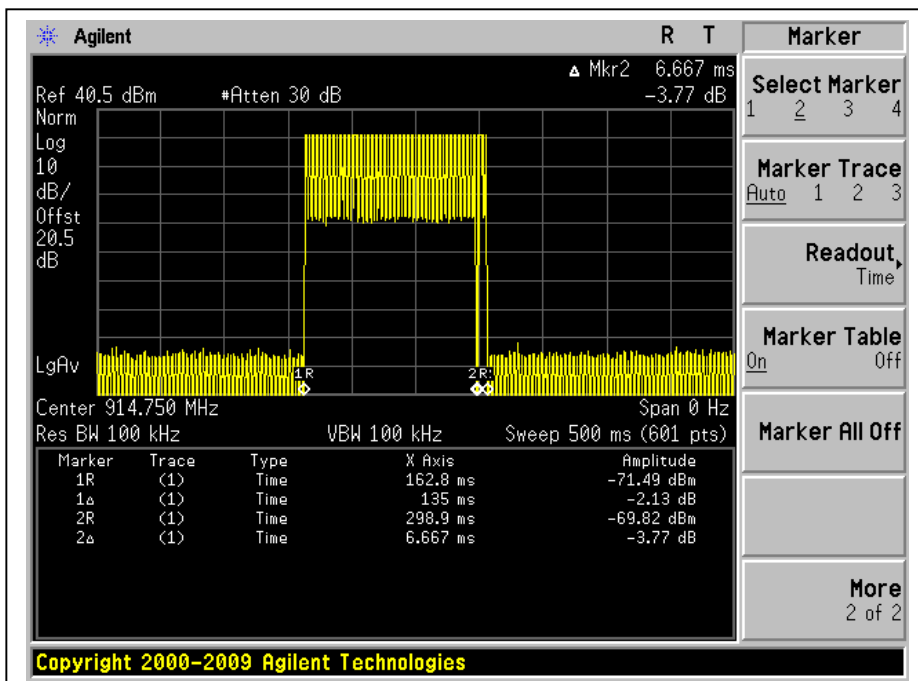
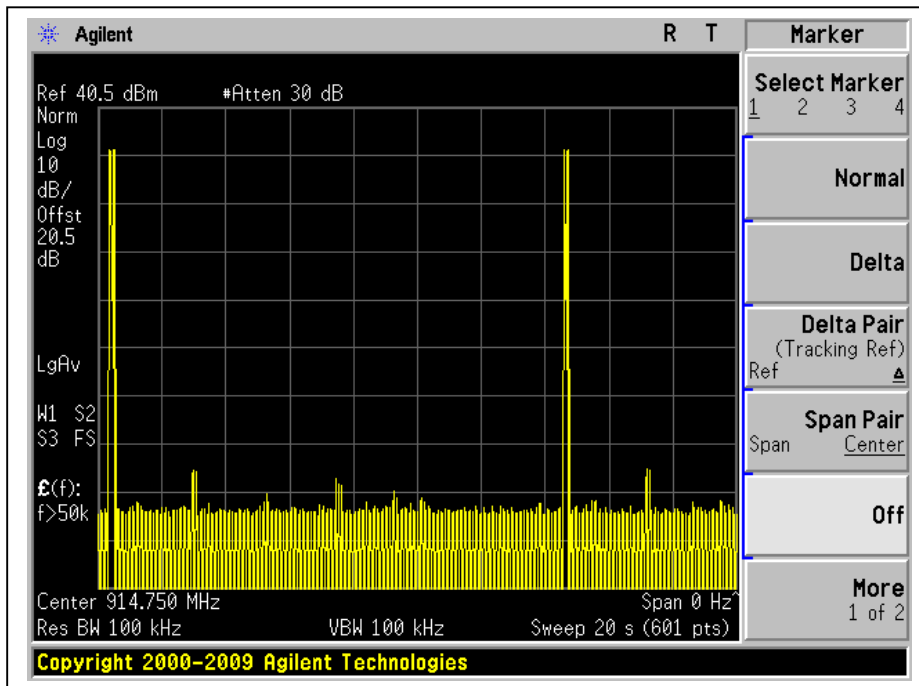
4.3.6 TEST RESULTS

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
2 time	141.67	283.33	400

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



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4.4 CHANNEL BANDWIDTH

For frequency hopping system operating in the 902-928MHz, the maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

4.4.1 TEST INSTRUMENTS

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.
2. Tested date: Apr. 13, 2012.

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.

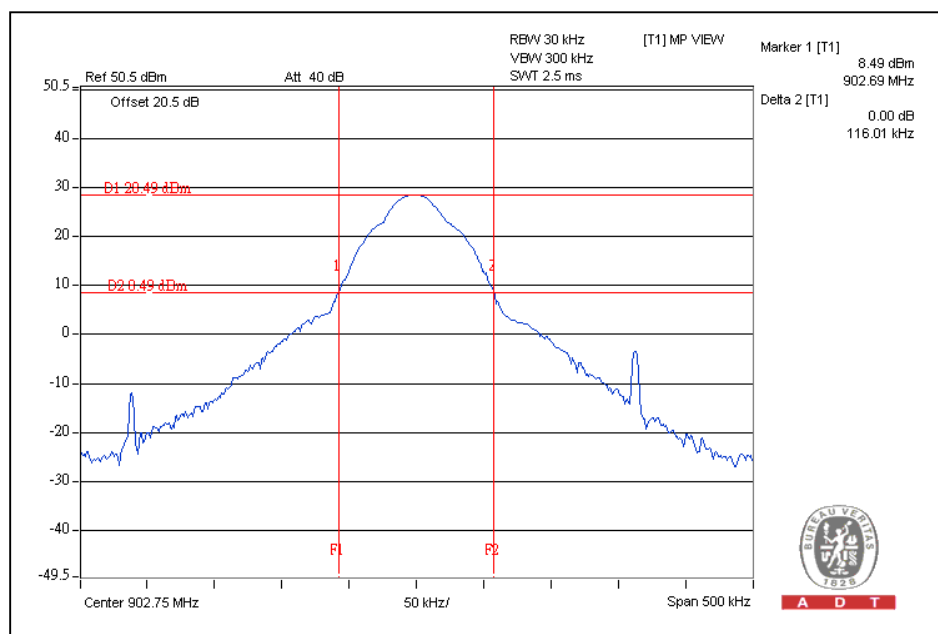


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4.4.6 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.11
24	914.75	0.11
49	927.25	0.11

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

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.
2. Tested date: Apr. 13, 2012.

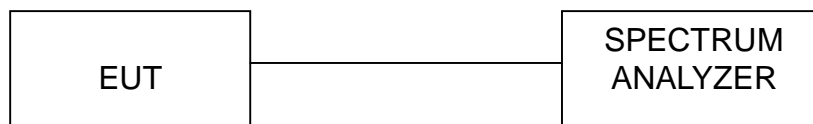
4.5.3 TEST PROCEDURES

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

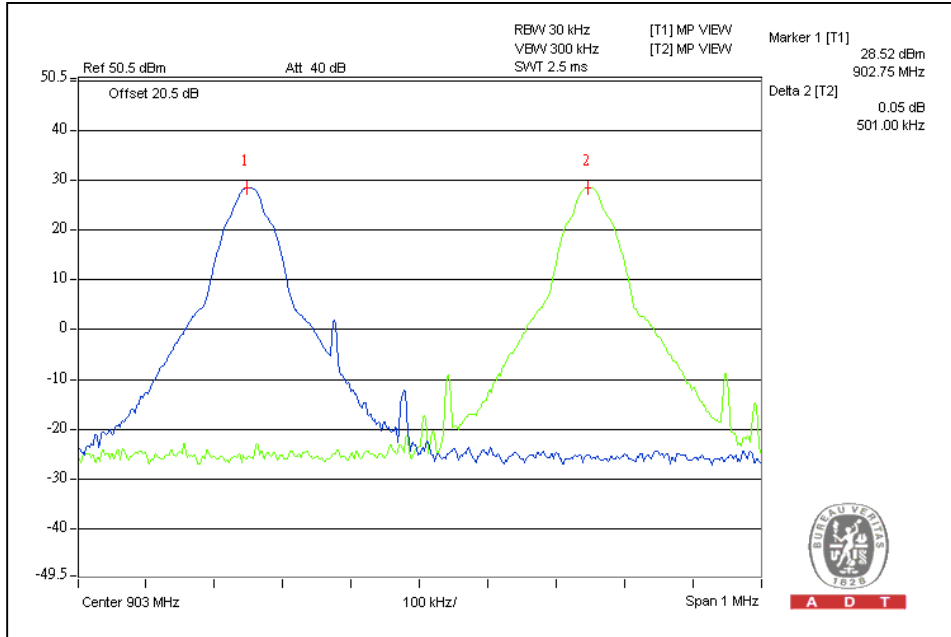
Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.5	0.11	PASS
24	914.75	0.5	0.11	PASS
49	927.25	0.5	0.11	PASS

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

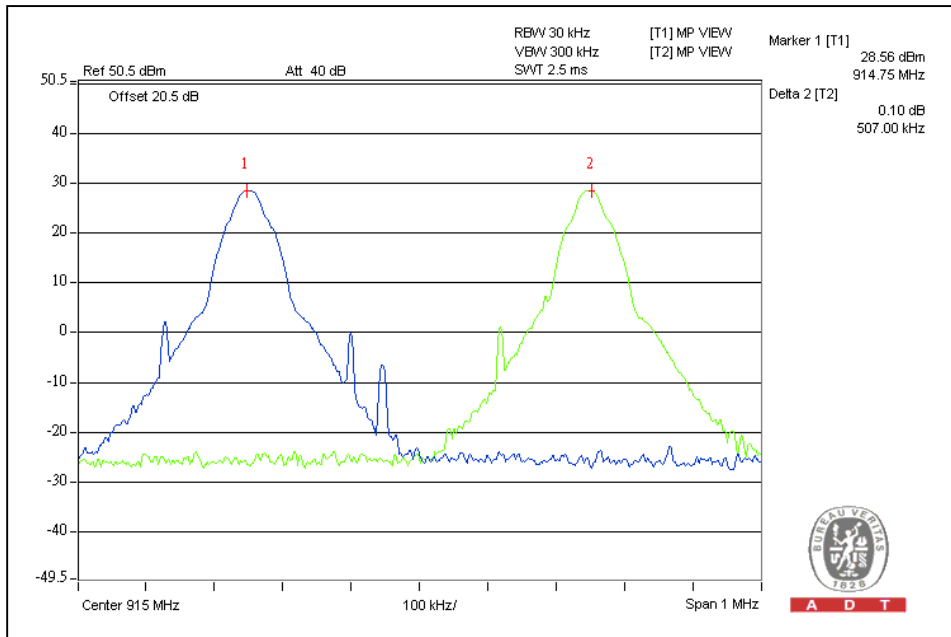


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Channel 0



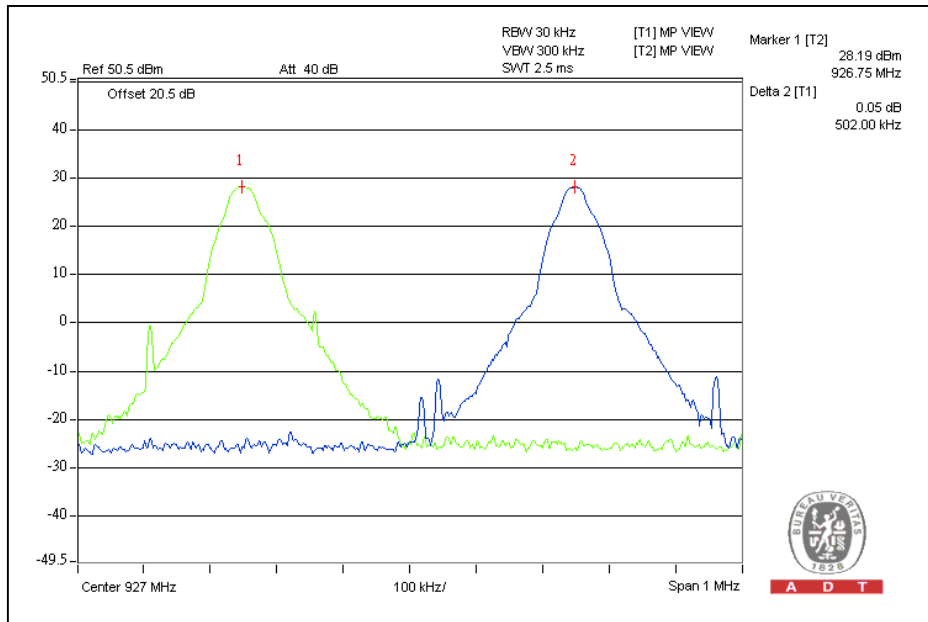
Channel 24





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Channel 49



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4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement as below:

CONDITION	OUTPUT POWER	APPLICATION
hopping channels >50	1 W	v
hopping channels >25 & <50	0.25W	x

4.6.2 INSTRUMENTS

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.
2. Tested date: Apr. 13, 2012.

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.

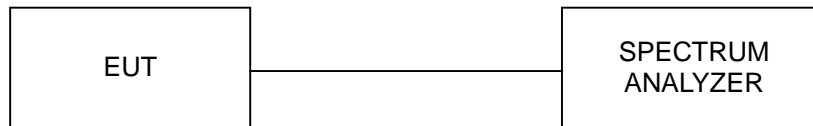


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4.6.4 DEVIATION FROM TEST STANDARD

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 (RFID FCC Utility) 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	28.37	687.068	1000	PASS
24	914.75	28.40	691.831	1000	PASS
49	927.25	27.95	623.735	1000	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.



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4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Agilent Spectrum Analyzer	E4446A	MY48250253	Aug. 29, 2011	Aug. 28, 2012
Agilent Pre-Selector	N9039A	MY46520310	Aug. 29, 2011	Aug. 28, 2012
Agilent Signal Generator	N5181A	MY49060347	July 25, 2011	July 24, 2012
Mini-Circuits Pre-Amplifier	ZFL-1000VH2B	AMP-ZFL-04	Nov. 15, 2011	Nov. 14, 2012
Agilent Pre-Amplifier	8449B	3008A02465	Feb. 27, 2012	Feb. 26, 2013
SPACEK LABS	SLKKa-48-6	9K16	Nov. 15, 2011	Nov. 14, 2012
SCHWARZBECK Trilog Broadband Antenna	VULB 9168	9168-361	Apr. 14, 2011	Apr. 13, 2012
AISI Horn_Antenna	AIH.8018	0000220091110	Nov. 23, 2011	Nov. 22, 2012
SCHWARZBECK Horn_Antenna	BBHA 9170	9170-424	Oct. 07, 2011	Oct. 06, 2012
RF CABLE	NA	RF104-205 RF104-207 RF104-202	Dec. 27, 2011	Dec. 26, 2012
RF Cable	NA	CHHCAB_001	Oct. 08, 2011	Oct. 07, 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. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Mar. 29 to Apr. 04, 2012

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.

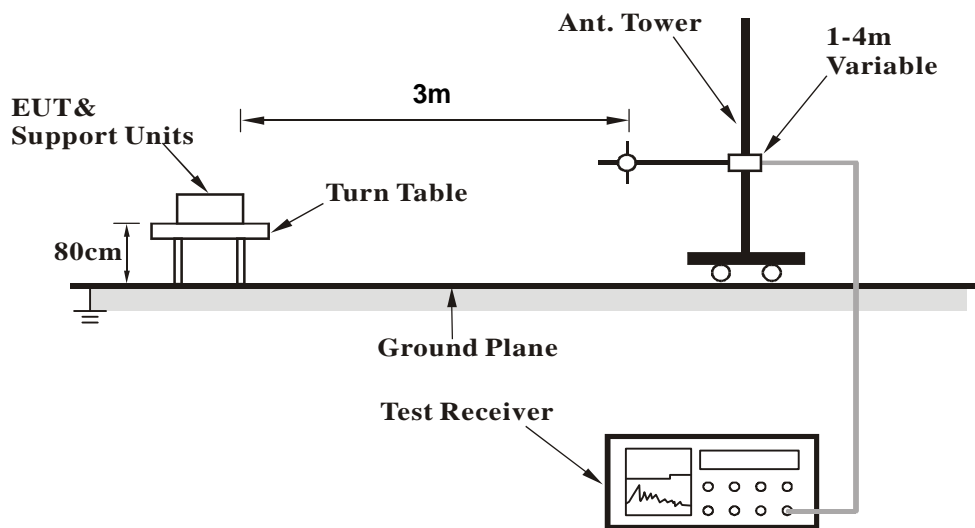
NOTE:

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.



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4.7.7 TEST RESULTS

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak(PK)
FREQUENCY RANGE	Below 1000MHz		Average (AV)

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	69.08	32.8 PK	40.0	-7.2	3.00 H	286	20.48	12.29
2	111.59	32.6 PK	43.5	-11.0	2.00 H	294	21.28	11.27
3	349.98	34.5 PK	46.0	-11.5	1.00 H	306	17.97	16.51
4	374.97	41.5 PK	46.0	-4.5	1.00 H	294	24.41	17.10
5	567.05	39.7 PK	46.0	-6.3	1.50 H	242	18.18	21.53
6	625.07	35.0 PK	46.0	-11.1	1.00 H	279	12.53	22.42
7	902.00	49.9 PK	106.6	-56.7	1.89 H	90	22.89	27.01
8	902.00	40.1 AV	104.6	-64.5	1.89 H	90	13.09	27.01
9	*902.75	126.6 PK	-	-	1.89 H	89	99.59	27.01
10	*902.75	124.6 AV	-	-	1.89 H	89	97.59	27.01

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	70.00	34.1 PK	40.0	-6.0	1.50 V	331	21.90	12.15
2	175.00	34.2 PK	43.5	-9.3	1.50 V	356	20.71	13.46
3	238.21	34.1 PK	46.0	-11.9	1.50 V	355	21.26	12.83
4	400.12	32.7 PK	46.0	-13.3	1.00 V	354	15.02	17.70
5	602.66	34.6 PK	46.0	-11.4	1.00 V	160	12.30	22.27
6	625.12	33.7 PK	46.0	-12.3	1.00 V	325	11.24	22.42
7	902.00	46.4 PK	102.0	-55.6	1.00 V	359	19.39	27.01
8	902.00	36.9 AV	101.4	-64.5	1.00 V	359	9.89	27.01
9	*902.75	122.0 PK	-	-	1.00 V	0	94.99	27.01
10	*902.75	121.4 AV	-	-	1.00 V	0	94.39	27.01

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. " * ": Fundamental frequency.



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CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 10GHz		Average (AV)

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	1805.50	42.7 PK	74.0	-31.3	1.68 H	254	12.54	30.16
2	1805.50	39.5 AV	54.0	-14.5	1.68 H	254	9.34	30.16
3	2708.20	37.0 PK	74.0	-37.0	1.68 H	254	3.82	33.18
4	2708.20	32.0 AV	54.0	-22.0	1.68 H	254	-1.18	33.18
5	3611.00	42.5 PK	74.0	-31.5	1.70 H	67	6.41	36.09
6	3611.00	31.6 AV	54.0	-22.4	1.70 H	67	9	36.09
7	4513.70	33.7 PK	74.0	-40.3	1.25 H	232	-8.02	41.72
8	4513.70	22.1 AV	54.0	-31.9	1.25 H	232	-19.62	41.72

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	1805.50	38.8 PK	74.0	-35.2	1.00 V	225	8.64	30.16
2	1805.50	35.5 AV	54.0	-18.5	1.00 V	225	5.34	30.16
3	2708.20	33.2 PK	74.0	-40.8	1.04 V	350	0.02	33.18
4	2708.20	27.6 AV	54.0	-26.4	1.04 V	350	-5.58	33.18
5	3611.00	30.8 PK	74.0	-43.2	1.00 V	225	-5.29	36.09
6	3611.00	21.8 AV	54.0	-32.2	1.00 V	225	-14.29	36.09
7	4513.70	34.5 PK	74.0	-39.5	1.00 V	152	-7.22	41.72
8	4513.70	22.3 AV	54.0	-31.7	1.00 V	152	-19.42	41.72

- 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.



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CHANNEL	Channel 24	DETECTOR FUNCTION	Peak(PK)
FREQUENCY RANGE	Below 1000MHz		Average (AV)

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	69.50	32.8 PK	40.0	-7.2	3.00 H	287	20.59	12.22
2	113.00	32.8 PK	43.5	-10.7	2.00 H	294	21.28	11.48
3	350.00	34.6 PK	46.0	-11.4	1.00 H	309	18.05	16.51
4	375.00	41.6 PK	46.0	-4.4	1.00 H	295	24.50	17.11
5	567.00	39.6 PK	46.0	-6.4	1.50 H	241	18.04	21.53
6	625.60	34.9 AV	46.0	-11.2	1.00 H	280	12.42	22.43
7	*914.75	126.2 PK	-	-	1.97 H	72	99.19	27.01
8	*914.75	124.5 AV	-	-	1.97 H	72	97.49	27.01

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	69.90	34.0 PK	40.0	-6.0	1.50 V	335	21.85	12.16
2	179.00	34.3 PK	43.5	-9.2	1.50 V	358	21.29	13.00
3	227.00	34.0 PK	46.0	-12.0	1.50 V	360	21.60	12.40
4	400.00	32.8 PK	46.0	-13.2	1.00 V	352	15.14	17.70
5	603.00	34.4 PK	46.0	-11.6	1.00 V	155	12.12	22.27
6	625.00	33.5 AV	46.0	-12.5	1.00 V	327	11.04	22.42
7	*914.75	123.2 PK	-	-	1.43 V	16	96.19	27.01
8	*914.75	121.8 AV	-	-	1.43 V	16	94.79	27.01

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. " * ": Fundamental frequency.



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CHANNEL	TX Channel 24	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 10GHz		Average (AV)

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	1829.50	42.4 PK	74.0	-31.6	1.63 H	265	12.10	30.30
2	1829.50	39.5 AV	54.0	-14.5	1.63 H	265	9.20	30.30
3	2744.25	37.1 PK	74.0	-36.9	1.64 H	83	3.77	33.33
4	2744.25	32.4 AV	54.0	-21.6	1.64 H	83	-0.93	33.33
5	3659.00	41.9 PK	74.0	-32.1	1.68 H	55	5.67	36.23
6	3659.00	30.9 AV	54.0	-23.1	1.68 H	55	-5.33	36.23
7	4573.75	32.6 PK	74.0	-41.4	1.22 H	246	-9.09	41.69
8	4573.75	21.2 AV	54.0	-32.8	1.22 H	246	-20.49	41.69

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	1829.50	37.6 PK	74.0	-36.4	1.00 V	205	7.30	30.30
2	1829.50	34.7 AV	54.0	-19.3	1.00 V	205	4.40	30.30
3	2744.25	32.3 PK	74.0	-41.7	1.00 V	332	-1.03	33.33
4	2744.25	26.8 AV	54.0	-27.2	1.00 V	332	-6.53	33.33
5	3659.00	30.4 PK	74.0	-43.6	1.00 V	206	-5.83	36.23
6	3659.00	21.5 AV	54.0	-32.5	1.00 V	206	-14.73	36.23
7	4573.75	33.8 PK	74.0	-40.2	1.00 V	161	-7.89	41.69
8	4573.75	21.8 AV	54.0	-32.2	1.00 V	161	-19.89	41.69

- 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.



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CHANNEL	Channel 49	DETECTOR FUNCTION	Peak(PK)
FREQUENCY RANGE	Below 1000MHz		Average (AV)

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	69.10	32.7 PK	40.0	-7.3	3.00 H	290	20.42	12.28
2	113.23	32.5 PK	43.5	-11.0	2.00 H	291	21.00	11.52
3	350.00	34.5 PK	46.0	-11.5	1.00 H	306	17.96	16.51
4	375.00	41.4 PK	46.0	-4.6	1.00 H	294	24.33	17.11
5	566.66	39.5 PK	46.0	-6.5	1.50 H	239	17.98	21.52
6	625.00	34.8 PK	46.0	-11.2	1.00 H	276	12.41	22.42
7	928.00	50.6 PK	106.8	-56.2	2.02 H	74	23.59	27.01
8	928.00	41.0 AV	104.8	-63.8	2.02 H	74	13.99	27.01
9	*927.25	126.8 PK	-	-	2.03 H	75	99.79	27.01
10	*927.25	124.8 AV	-	-	2.03 H	75	97.79	27.01

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	69.08	33.9 PK	40.0	-6.1	1.50 V	331	21.62	12.29
2	187.74	34.5 PK	43.5	-9.0	1.50 V	360	22.22	12.30
3	234.16	34.2 PK	46.0	-11.8	1.50 V	360	21.57	12.67
4	399.95	33.1 PK	46.0	-12.9	1.00 V	354	15.37	17.70
5	607.43	34.5 PK	46.0	-11.5	1.00 V	156	12.19	22.30
6	624.96	33.3 PK	46.0	-12.7	1.00 V	326	10.92	22.42
7	928.00	46.5 PK	104.4	-57.9	1.45 V	19	19.49	27.01
8	928.00	38.9 AV	102.9	-64.0	1.45 V	19	11.89	27.01
9	*927.25	124.4 PK	-	-	1.45 V	19	97.39	27.01
10	*927.25	122.9 AV	-	-	1.45 V	19	95.89	27.01

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. " * ": Fundamental frequency.



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CHANNEL	TX Channel 49	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 10GHz		Average (AV)

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	1854.50	42.1 PK	74.0	-31.9	1.70 H	252	11.66	30.44
2	1854.50	38.8 AV	54.0	-15.2	1.70 H	252	8.36	30.44
3	2781.75	36.8 PK	74.0	-37.2	1.66 H	83	3.30	33.50
4	2781.75	31.8 AV	54.0	-22.2	1.66 H	83	-1.70	33.50
5	3709.00	42.2 PK	74.0	-31.8	1.70 H	57	5.79	36.41
6	3709.00	31.2 AV	54.0	-22.8	1.70 H	57	-5.21	36.41
7	4636.25	33.4 PK	74.0	-40.6	1.31 H	216	-8.30	41.70
8	4636.25	21.8 AV	54.0	-32.2	1.31 H	216	-19.90	41.70

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	1854.50	38.3 PK	74.0	-35.7	1.00 V	222	7.86	30.44
2	1854.50	35.1 AV	54.0	-18.9	1.00 V	222	4.66	30.44
3	2781.75	32.9 PK	74.0	-41.1	1.08 V	359	-0.60	33.50
4	2781.75	27.0 AV	54.0	-27.0	1.08 V	359	-6.50	33.50
5	3709.00	30.2 PK	74.0	-43.8	1.04 V	217	-6.21	36.41
6	3709.00	21.1 AV	54.0	-32.9	1.04 V	217	-15.31	36.41
7	4636.25	34.1 PK	74.0	-39.9	1.00 V	138	-7.60	41.70
8	4636.25	22.1 AV	54.0	-31.9	1.00 V	138	-19.60	41.70

- 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.



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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

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.
2. Tested date: Apr. 13, 2012.

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.



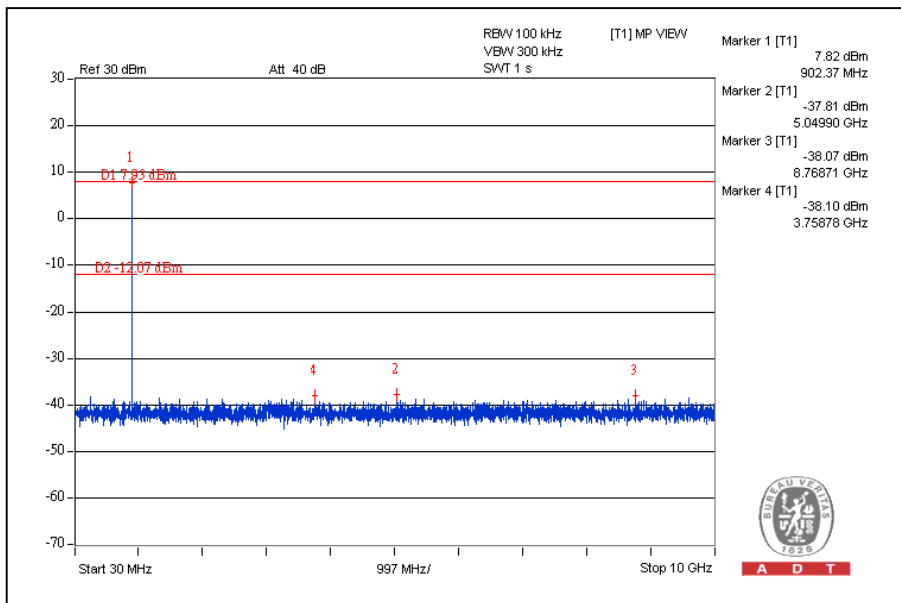
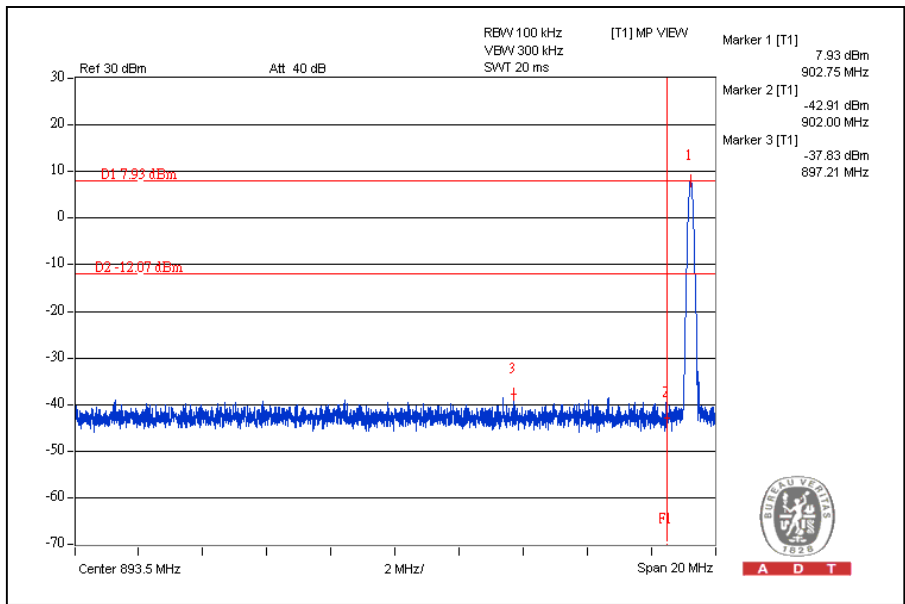
4.8.6 TEST RESULTS

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).



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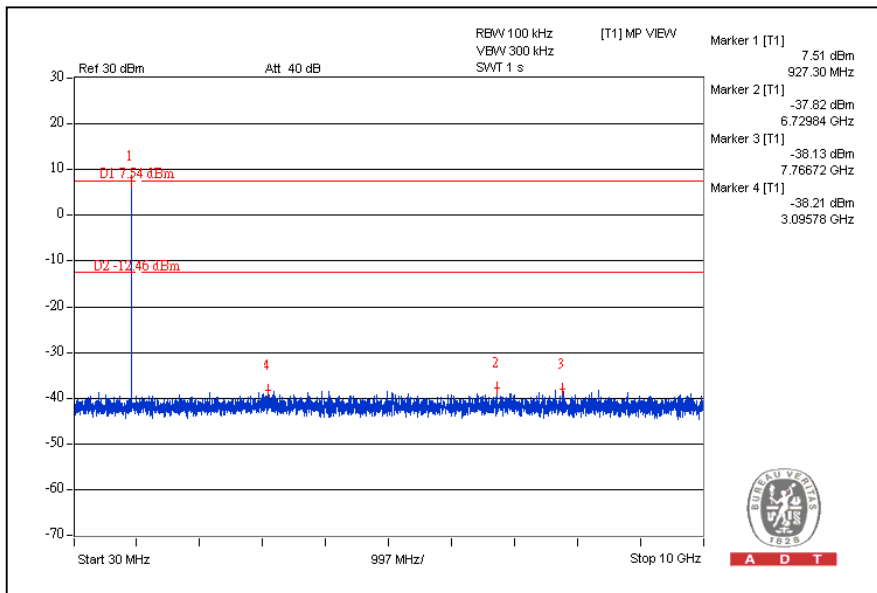
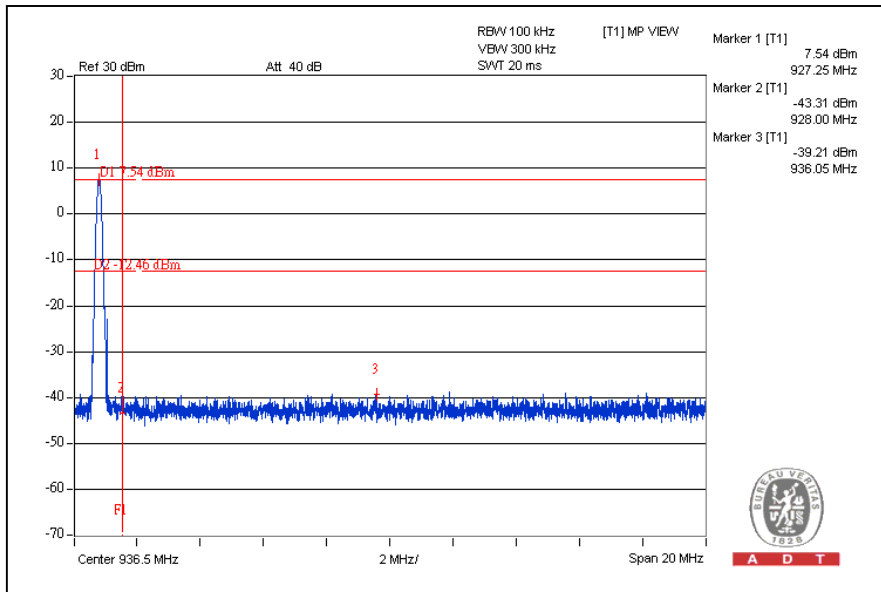
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5 INFORMATION ON THE TESTING LABORATORIES

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- 3270892

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.



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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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