

FCC TEST REPORT (RFID)

REPORT NO.: RF111214E06-4

MODEL NO.: MC919ZWR

FCC ID: UZ7MC919ZWR

RECEIVED: Dec. 14, 2011

TESTED: Dec. 19, 2011 to Jan. 03, 2012

ISSUED: Jan. 11, 2012

APPLICANT: Motorola Solution Inc.

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USA

ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF111214E06-4	Original release	Jan. 11, 2012



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1 CERTIFICATION

PRODUCT : Hand Held RFID Reader
BRAND NAME : MOTOROLA
MODEL NO. : MC919ZWR
APPLICANT : Motorola Solution Inc.
TESTED DATE: Dec. 19, 2011 to Jan. 03, 2012
TEST SAMPLE : PROTOTYPE
STANDARDS : 47 CFR Part 15, Subpart C (Section 15.247)
ANSI C63.4-2003
ANSI C63.10-2009

The above equipment (Model: MC919ZWR) 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 : Midoli Peng, **DATE:** Jan. 11, 2012
(Midoli Peng, Specialist)

APPROVED BY : May Chen, **DATE:** Jan. 11, 2012
(May Chen, Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC 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 -10.97dB at 0.212 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	PASS	Meet the requirement of limit
15.247(b)(2)	Maximum Peak Output Power Spec.: max. 30dBm	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 -3.9dB at 2744.25MHz
15.247(d)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit
15.203	Antenna Requirement	PASS	Antenna connector is Hirose 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	Hand Held RFID Reader
MODEL NO.	MC919ZWR
FCC ID	UZ7MC919ZWR
POWER SUPPLY	DC 7.4V from battery, DC 12V from cradle or car charger
MODULATION TYPE	PR-ASK(DRM), PSD-ASK(MRM), PR-ASK(XRM)
MODULATION TECHNOLOGY	FHSS
FREQUENCY RANGE	902.75MHz ~ 927.25MHz
NUMBER OF CHANNEL	50
OUTPUT POWER	891.251mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	Refer User's manual
ASSOCIATED DEVICES	Battery x 1 (Part No.: 21-65587-03)

NOTE:

1. There are Bluetooth, WLAN and RFID technology used for the EUT.

Remark	Report No.
15.247	RF111214E06
15.407	RF111214E06-1
DFS	RF111214E06-2
Bluetooth	RF111214E06-3
RFID	RF111214E06-4

2. Spurious Emission of the simultaneous operation (Bluetooth, WLAN and RFID) have been evaluated and no non-compliance found.

3. The EUT configuration list:

Keypad	53keys
Scan	SE1524
WLAN (a/b/g)	V
BT	V
RFID	V

4. The antennas provided to the EUT, please refer to the following table:

WLAN Antenna Spec.								
No.	Brand	Model No.	Antenna Type	Gain (dBi) < included cable loss>	Connector Type	Frequency range (MHz)	Cable Loss (dB)	Cable Length (mm)
1	Auden	750353-00 (Main, Tx & Rx)	Loop	4.5 (2.4G) 5.5 (5G)	Hirose	2400~2500 5150~5850	0.082 (2.4G) 0.138 (5G)	33
2	Auden	750330-00 (Aux ,Tx & Rx)	PIFA	4.5 (2.4G) 5.5 (5G)	Hirose	2400~2500 5150~5850	0.235 (2.4G) 0.394 (5G)	94
Bluetooth								
No.	Brand	Model	Antenna Type	Gain (dBi) < included cable loss>	Connector Type	Frequency range (MHz)		
1	TY	AH104F2650S1-T	Chip	-3.73	SMT	2400~2500		
RFID Antenna Spec.								
No.	Brand	Model No.	Antenna Type	Gain (dBi) < included cable loss>	Connector Type	Frequency range (MHz)	Cable Loss (dB)	Cable Length (mm)
1_USS	Auden	41-68888-05	YAGI	5	Hirose	902~928	0.304	185
2_USL	Auden	41-68888-07	YAGI	5	Hirose	902~928	0.304	185

5. The EUT could be supplied with a Cradle, Car Charger and battery as below table:

Cradle (not for sale together)	
Brand:	SYMBOL
Model No.:	CRD9000-1000
Part No.:	CRD9000-1001SR
Input power :	+12V ----- 9A
I/O Ports:	USB Port x 1 RS232 Port x 1
Associated Devices:	USB cable (unshielded, 1.8m with one core) USB cable (Part No.: 25-64396-01R) RJ-45 to RS232 cable (shielded, 1.85m with one core) RJ-45 to RS232 cable(Part No.: 25-63852-01R) Adapter (Part No.: 50-14000-148R)
Direct charging (Car Charger) (not for sale together)	
Brand:	SYMBOL
Part No.:	ADP9000-110R and ADP9000-100R
I/O Ports:	RS232 Port x 1
Associated Devices:	USB cable (shielded, 1.85m with one core) USB cable (Part No.: 25-62166-01R)
Adapter (for Cradle & Car Charger only, and not for sale together) Brand: HIPRO Model No.: HP-O2040D43 Part No.: 50-14000-148R Input power : 100-240V, 50-60Hz, 1.5A Output power : +12V ----- 3.33A DC output cable (unshielded, 1.8m with one core)	
Battery	
Brand:	SYMBOL
Part No.:	21-65587-03
Rating:	7.4V, 2200mAh, 16.3Wh

6. The EUT was pre-tested in chamber under following test modes :

Pre-test Mode	Description
Mode A	Direct charging(Part No.: ADP9000-110R) mode : EUT (X-Y plane)
Mode B	Direct charging(Part No.: ADP9000-100R) mode : EUT (X-Y plane)
Mode C	Direct charging(Part No.: ADP9000-100R) mode : EUT (X-Z plane)
Mode D	Direct charging(Part No.: ADP9000-100R) mode : EUT (Y-Z plane)
Mode E	Battery mode : EUT (X-Y plane)
Mode F	Cradle mode : EUT

From the above modes, the radiated emissions test, worse case was found in **Mode C**. Therefore only the test data of the mode was recorded in this report.

7. The above EUT information was declared by the 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 APPLICABILITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
1	√	-	-	-	-	Cradle mode
2	√	√	√	√	√	Direct charging (Part No.: ADP9000-100R) 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	PR-ASK(XRM)

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	PR-ASK(DRM)
0 to 49	0, 24, 49	FHSS	PSD-ASK(MRM)
0 to 49	0, 24, 49	FHSS	PR-ASK(XRM)

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	PR-ASK(DRM)
0 to 49	0, 24, 49	FHSS	PSD-ASK(MRM)
0 to 49	0, 24, 49	FHSS	PR-ASK(XRM)

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	PR-ASK(DRM)
0 to 49	0, 49	FHSS	PSD-ASK(MRM)
0 to 49	0, 49	FHSS	PR-ASK(XRM)

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	PR-ASK(DRM)
0 to 49	0, 24, 49	FHSS	PSD-ASK(MRM)
0 to 49	0, 24, 49	FHSS	PR-ASK(XRM)

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	25deg. C, 58%RH,	120Vac, 60Hz	Kyle Huang
RE<1G	26deg. C, 71%RH	120Vac, 60Hz	Nick Chang
RE ³ 1G	17deg. C, 62%RH	120Vac, 60Hz	Nick Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang
OB	25deg. C, 60%RH	120Vac, 60Hz	Rex Huang



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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:

FCC 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 is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It 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.

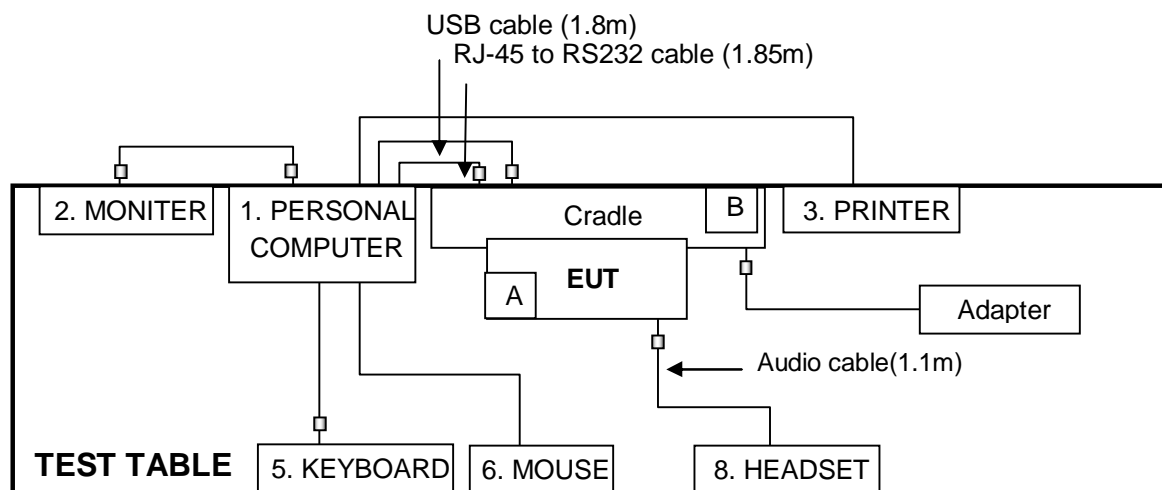
For conducted emission test					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	PERSONAL COMPUTER	DELL	DCSCMF	9KKB32S	FCC DoC
2	MONITOR	DELL	E2210Hc	CN-OG337R-6418 0-97S-OQDS	FCC DoC
3	PRINTER	EPSON	LQ-300+II	G88Y074083	FCC DoC
4	MODEM	ACEEX	1414	0206026778	IFAXDM1414
5	KEYBOARD	DELL	SK-8115	MY-0DJ325-71619- 99B-0476	FCC DoC
6	MOUSE	DELL	MOC5UO	I1401LVG	FCC DoC
7	EARPHONE	Hawk	HKC920	H001	FCC DoC
For other test items					
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP32LA	DSL32S	FCC DoC
2	EARPHONE	MOTOROLA	NA	NA	NA

For conducted test	
No.	Signal cable description
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, with two cores
3	1.8m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
4	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.
5	1.9 m foil shielded wire, USB connector, w/o core.
6	1.8 m foil shielded wire, USB connector, w/o core.
7	1.8 m Audio cable
For other test items	
No.	Signal cable description
1	NA
2	0.9 m Audio cable

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

3.6 CONFIGURATION OF SYSTEM UNDER TEST

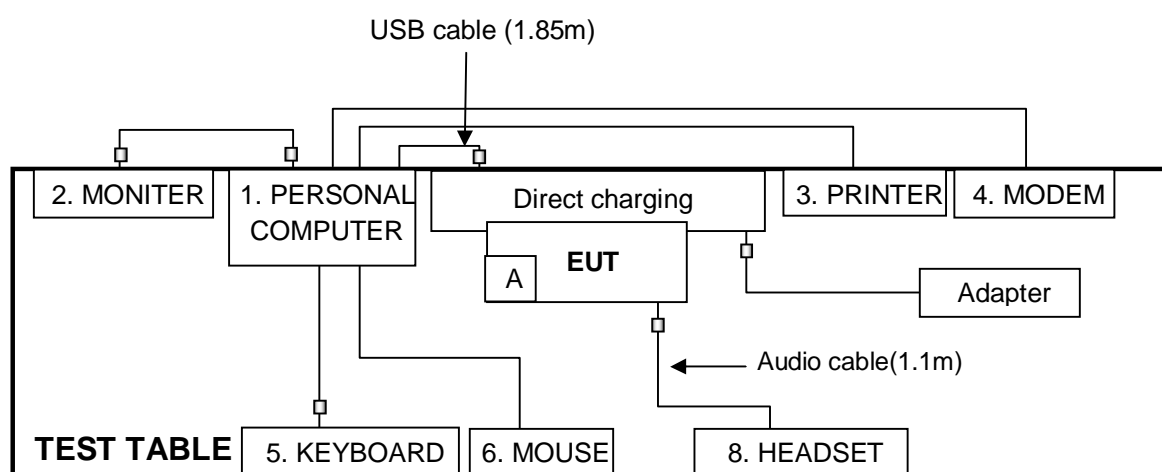
For conducted emission test mode 1:



NOTE: 1. Item A is the SD Card.

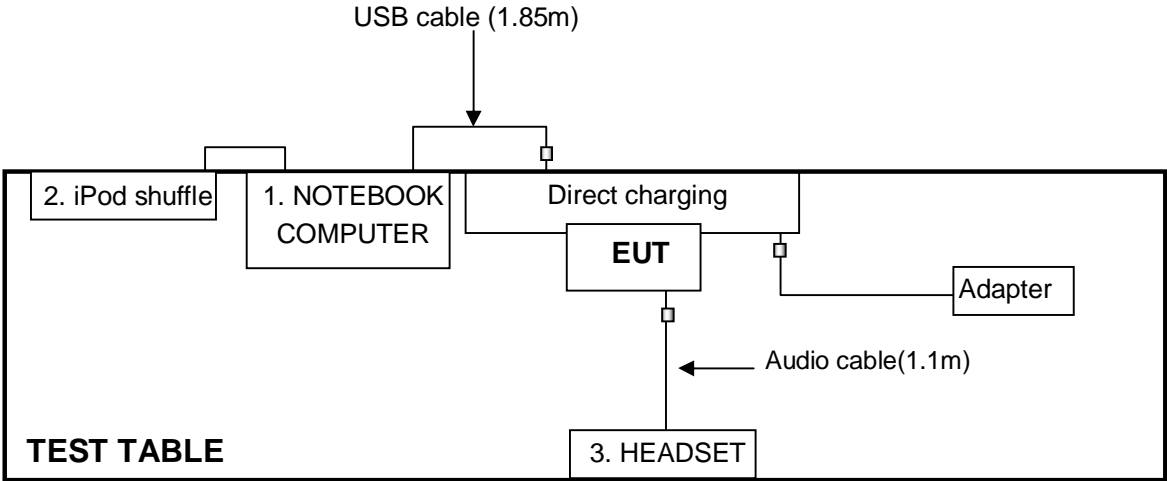
2. Item B is the Battery.

For conducted emission test mode 2:



NOTE: 1. Item A is the SD Card.

For other test items



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

Notes:

1. The lower limit shall apply at the transition frequencies.
2. 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: Jan. 03, 2012

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.

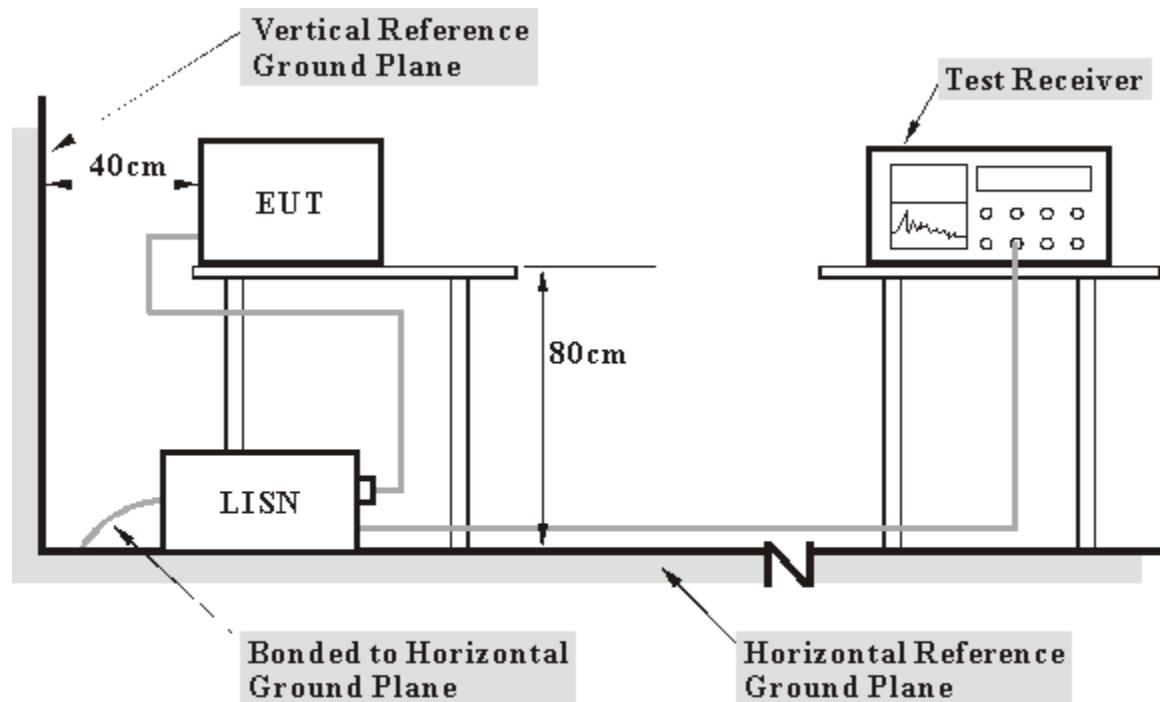
4.1.3 TEST PROCEDURES

- 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 was 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

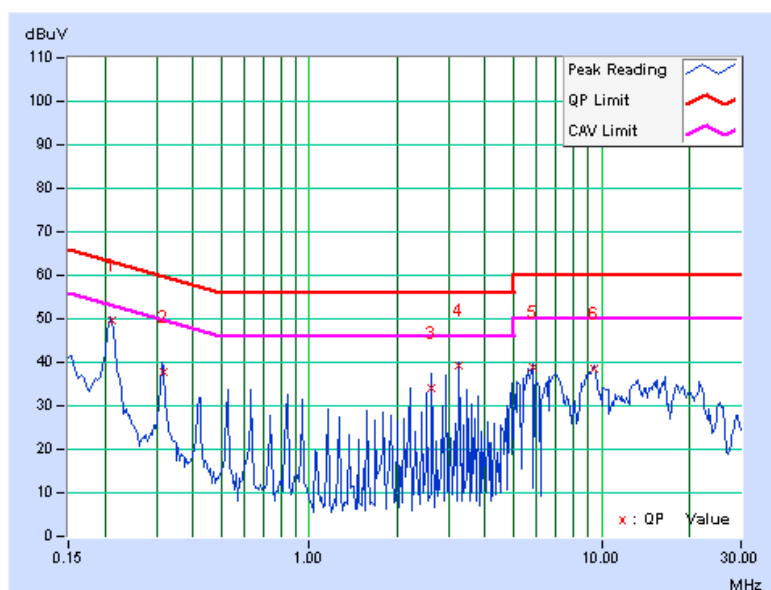
1. Connect the EUT with the support unit 1 (Personal Computer) which is placed on a testing table.
2. The communication partner run test program “RFID Regulatory” to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS(MODE 1)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
-------	----------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.212	0.06	49.52	42.10	49.58	42.16	63.13	53.13	-13.55	-10.97
2	0.317	0.07	37.68	29.24	37.75	29.31	59.77	49.77	-22.03	-20.47
3	2.632	0.19	33.94	25.93	34.13	26.12	56.00	46.00	-21.87	-19.88
4	3.262	0.21	38.97	30.31	39.18	30.52	56.00	46.00	-16.82	-15.48
5	5.789	0.28	38.58	36.70	38.86	36.98	60.00	50.00	-21.14	-13.02
6	9.473	0.38	38.12	35.70	38.50	36.08	60.00	50.00	-21.50	-13.92

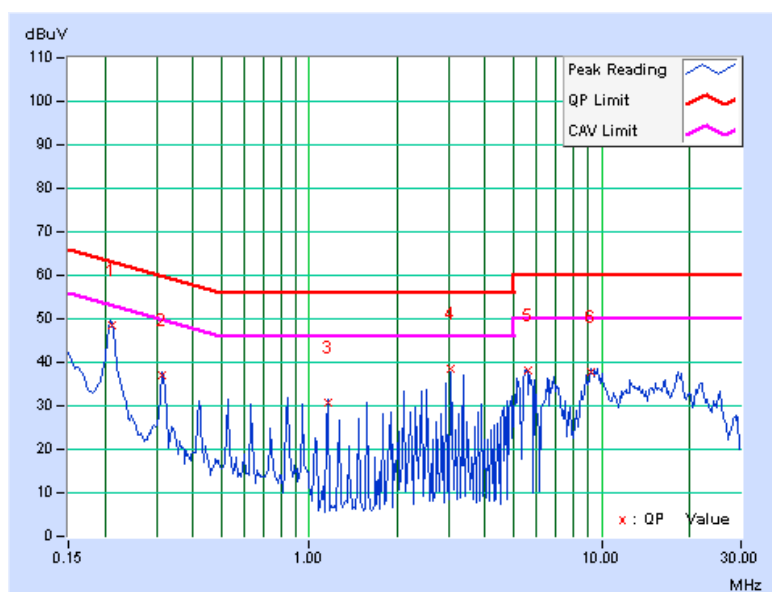
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
-------	-------------	---------------	-------

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.212	0.07	48.36	41.50	48.43	41.57	63.13	53.13	-14.70	-11.56
2	0.315	0.08	36.88	29.66	36.96	29.74	59.84	49.84	-22.88	-20.10
3	1.156	0.10	30.80	28.18	30.90	28.28	56.00	46.00	-25.10	-17.72
4	3.052	0.19	38.44	28.77	38.63	28.96	56.00	46.00	-17.37	-17.04
5	5.578	0.26	37.91	36.34	38.17	36.60	60.00	50.00	-21.83	-13.40
6	9.156	0.35	37.33	34.00	37.68	34.35	60.00	50.00	-22.32	-15.65

- 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.

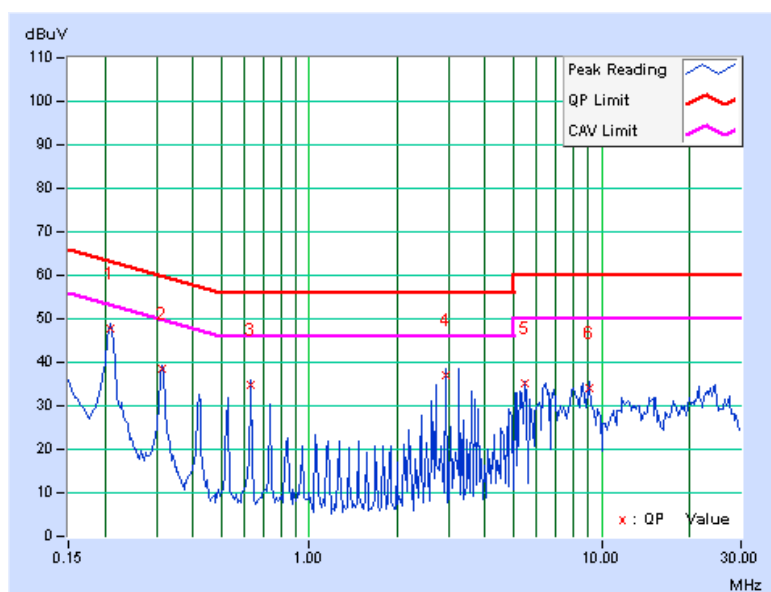


4.1.8 TEST RESULTS(MODE 2)

PHASE	Line (L)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.209	0.06	47.58	39.04	47.64	39.10	63.26	53.26	-15.62	-14.16
2	0.314	0.07	38.38	33.37	38.45	33.44	59.86	49.86	-21.42	-16.43
3	0.630	0.08	34.82	33.81	34.90	33.89	56.00	46.00	-21.10	-12.11
4	2.941	0.20	36.98	26.91	37.18	27.11	56.00	46.00	-18.82	-18.89
5	5.464	0.28	34.74	33.40	35.02	33.68	60.00	50.00	-24.98	-16.32
6	9.037	0.37	33.83	30.97	34.20	31.34	60.00	50.00	-25.80	-18.66

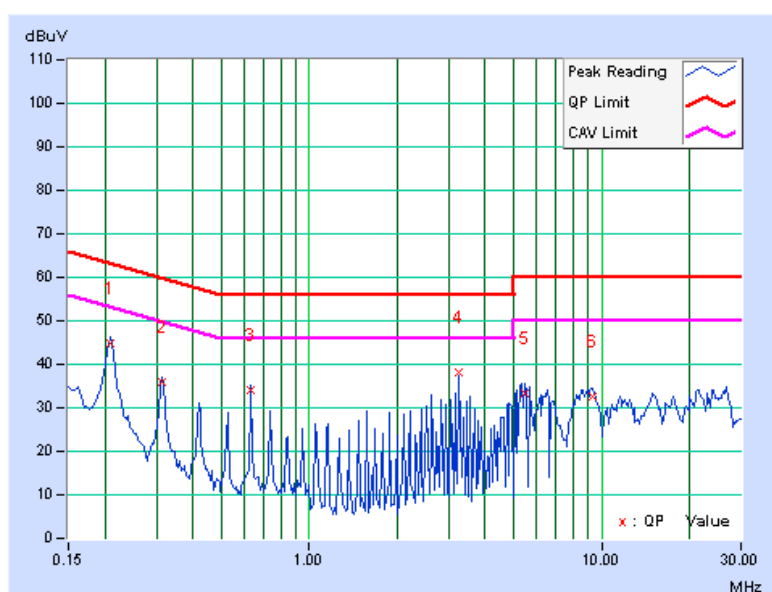
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. The emission levels of other frequencies were very low against the limit.
 3. Margin value = Emission level - Limit value
 4. Correction factor = Insertion loss + Cable loss
 5. Emission Level = Correction Factor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



PHASE	Neutral (N)	6dB BANDWIDTH	9 kHz
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.209	0.07	44.82	38.10	44.89	38.17	63.26	53.26	-18.37	-15.09
2	0.314	0.08	35.96	32.01	36.04	32.09	59.86	49.86	-23.83	-17.78
3	0.630	0.08	33.96	33.29	34.04	33.37	56.00	46.00	-21.96	-12.63
4	3.258	0.20	37.88	28.19	38.08	28.39	56.00	46.00	-17.92	-17.61
5	5.465	0.26	33.08	32.10	33.34	32.36	60.00	50.00	-26.66	-17.64
6	9.352	0.35	32.08	30.55	32.43	30.90	60.00	50.00	-27.57	-19.10

- 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 50 hopping frequencies, and should be equally spaced.

4.2.2 TEST INSTRUMENTS

Test date: Dec. 23, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

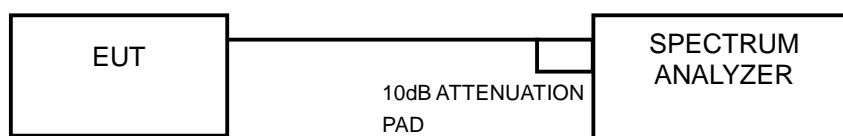
4.2.3 TEST PROCEDURES

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



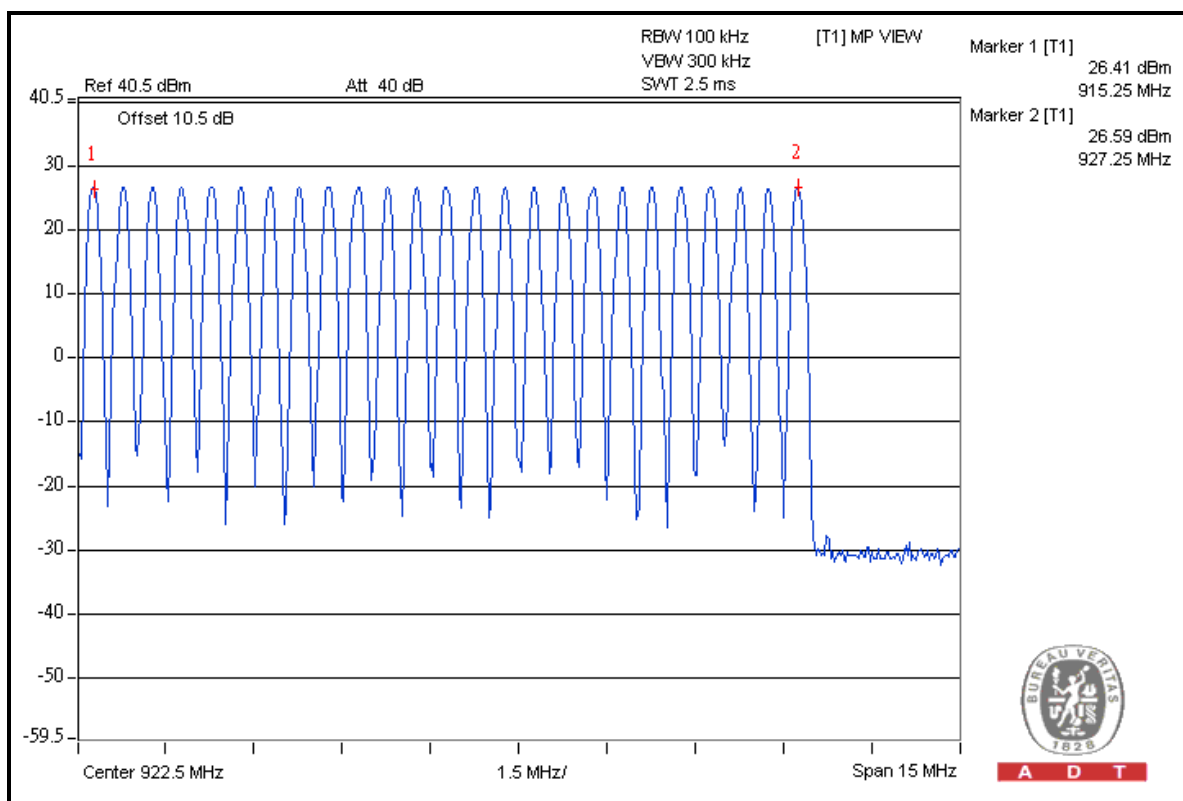
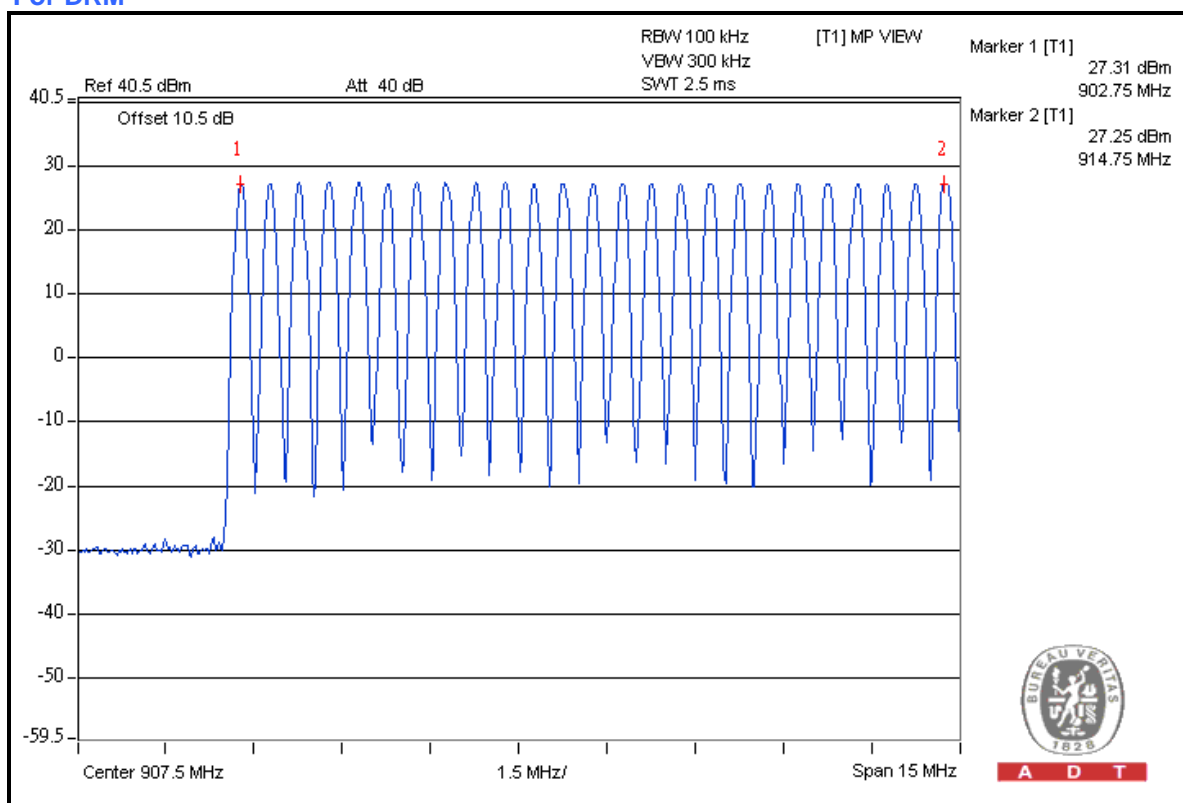
4.2.6 TEST RESULTS

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



A D T

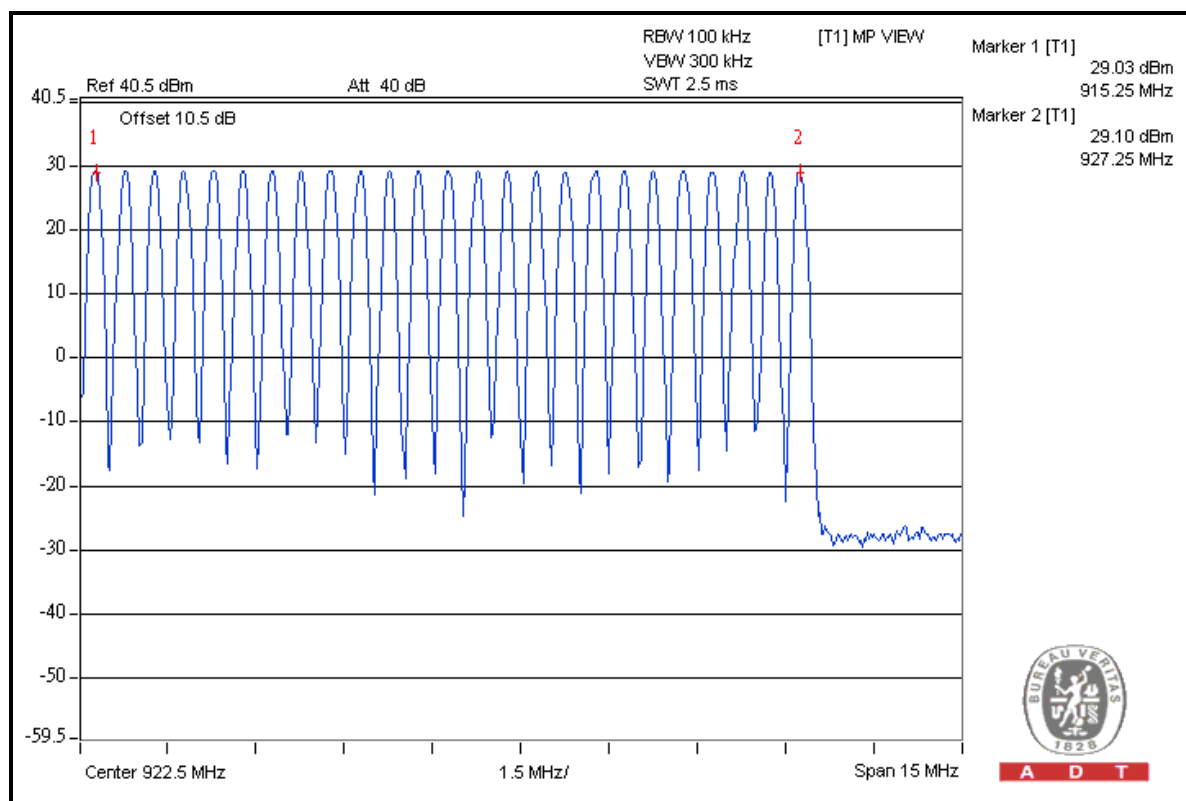
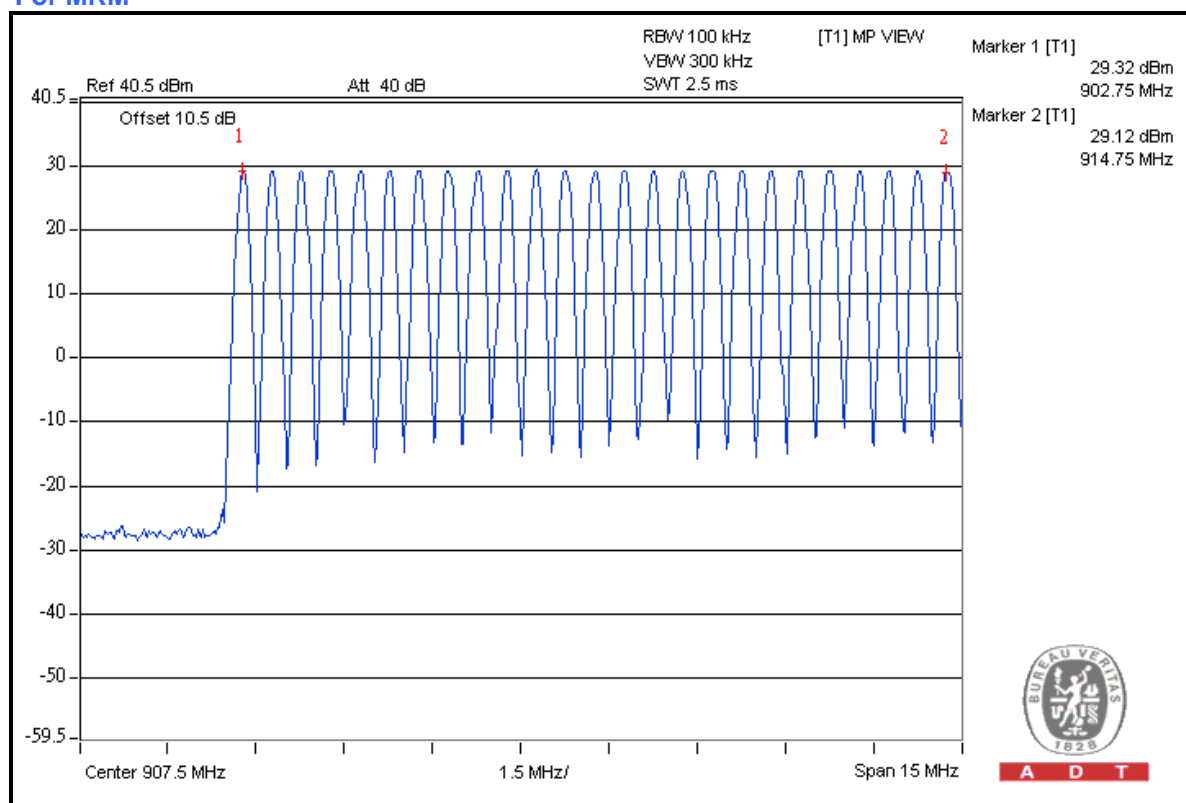
For DRM





A D T

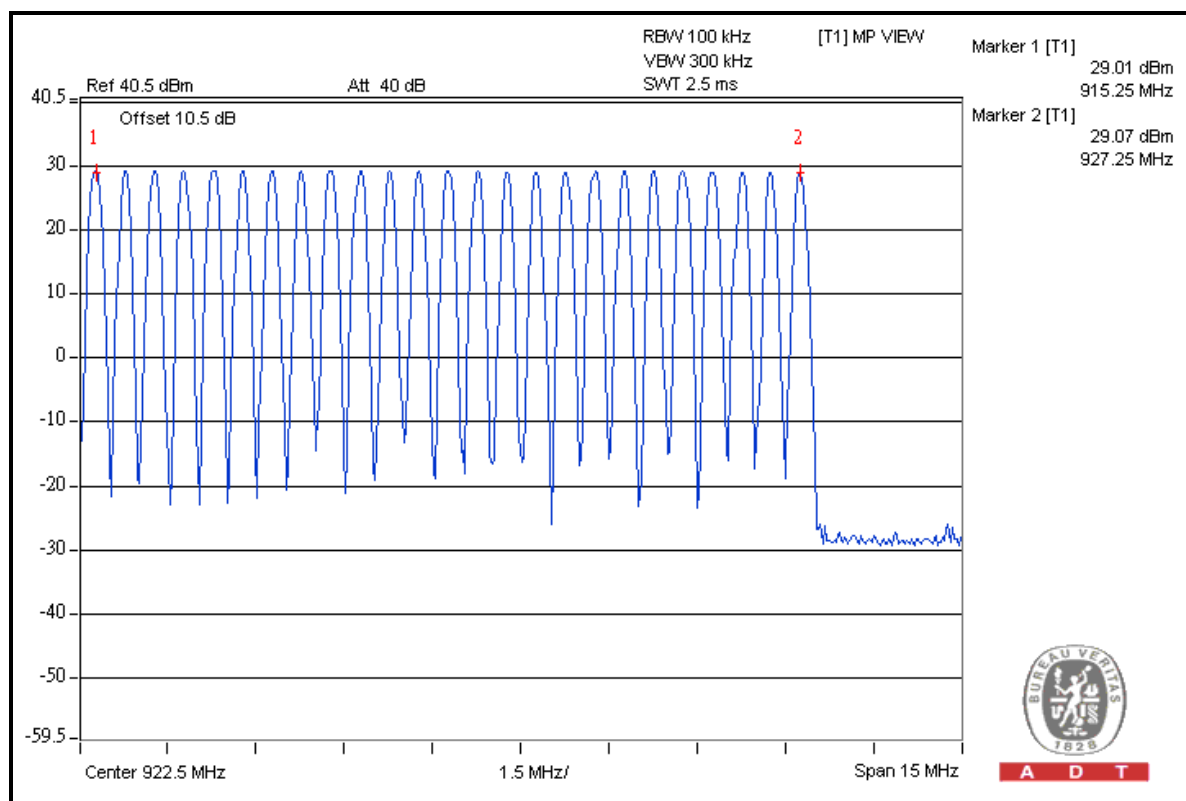
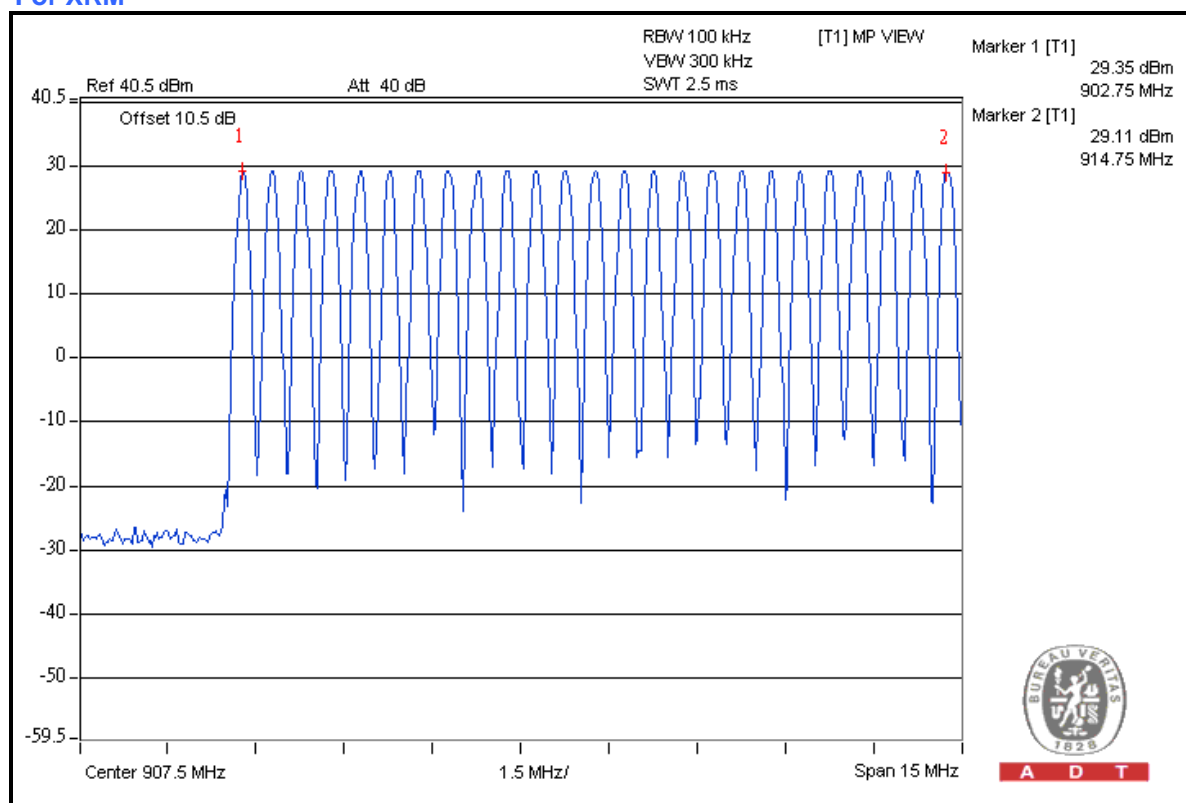
For MRM





A D T

For XRM



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 20 second period.

4.3.2 TEST INSTRUMENTS

Test date: Dec. 23, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

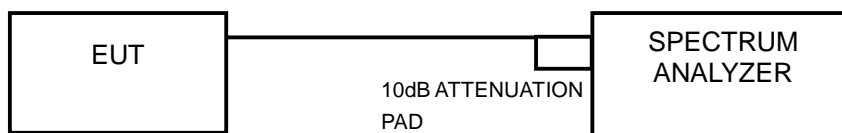
4.3.3 TEST PROCEDURES

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

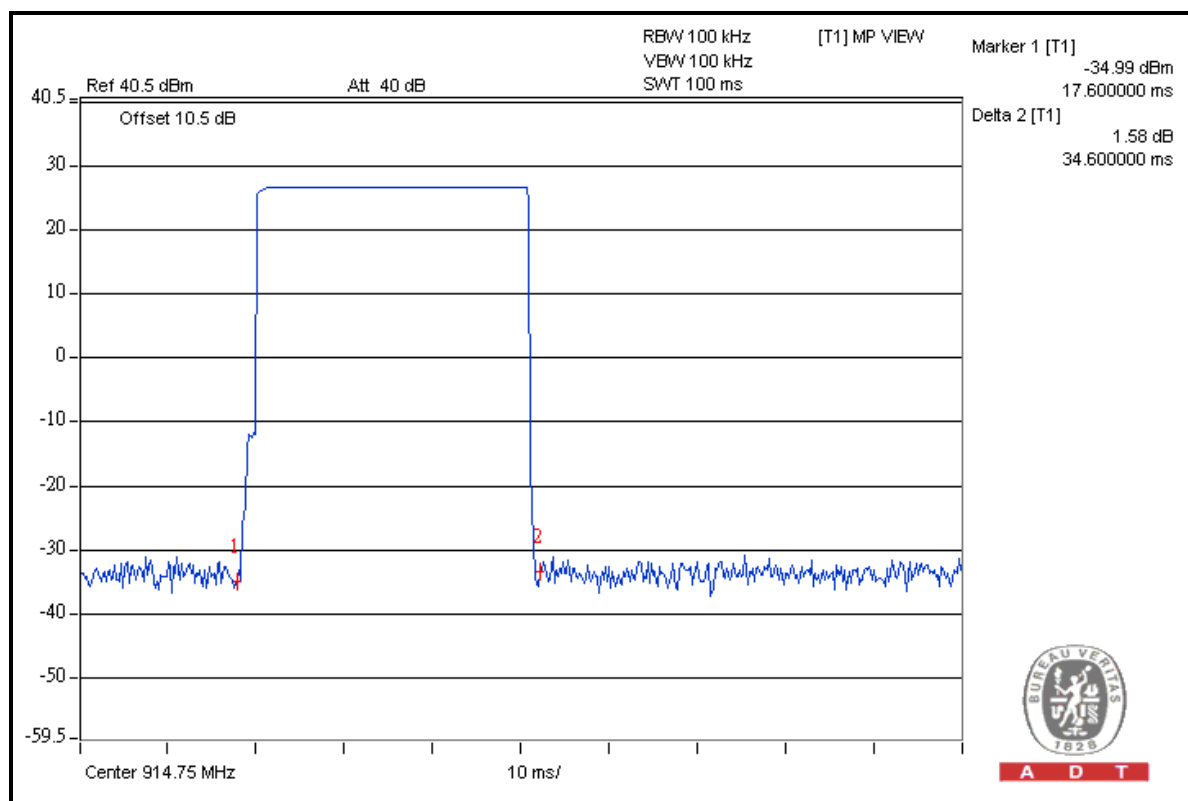
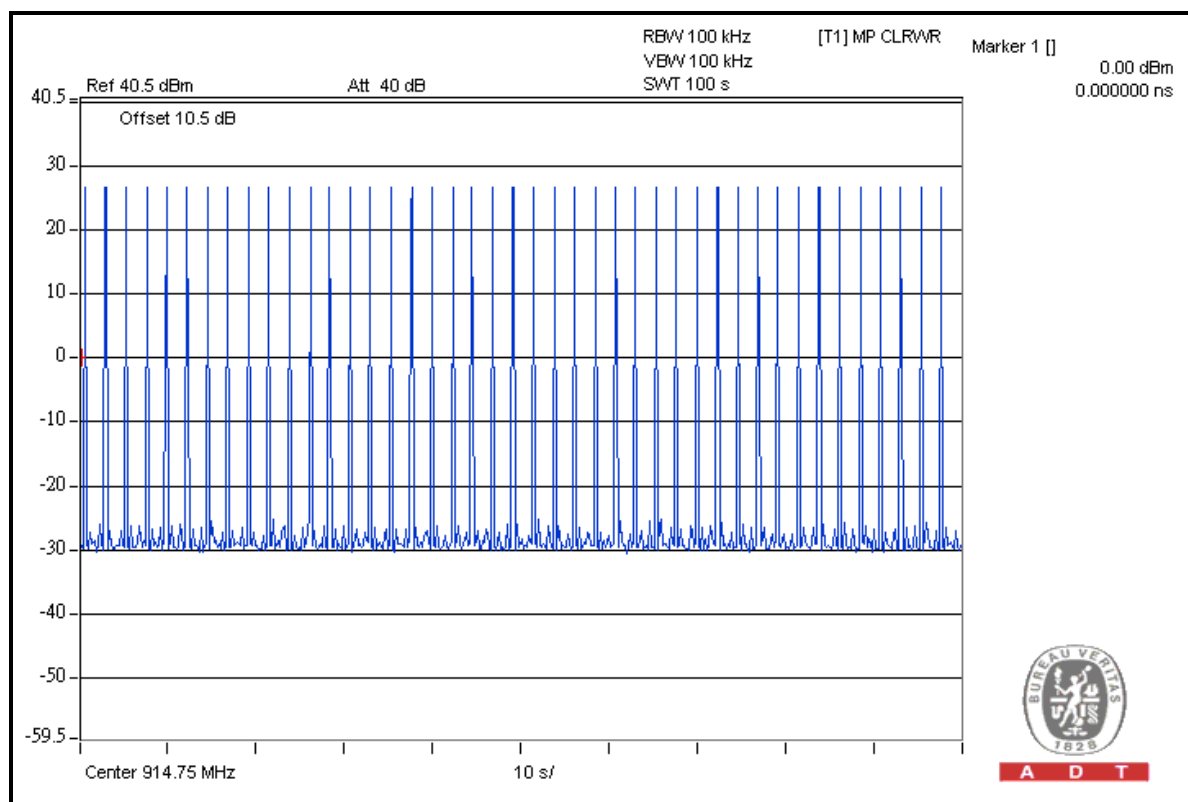
For DRM

Number of transmission in a 20 (50Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
43 (times / 100 sec) *0.2=8.6 times	34.6	297.56	400

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



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A D T

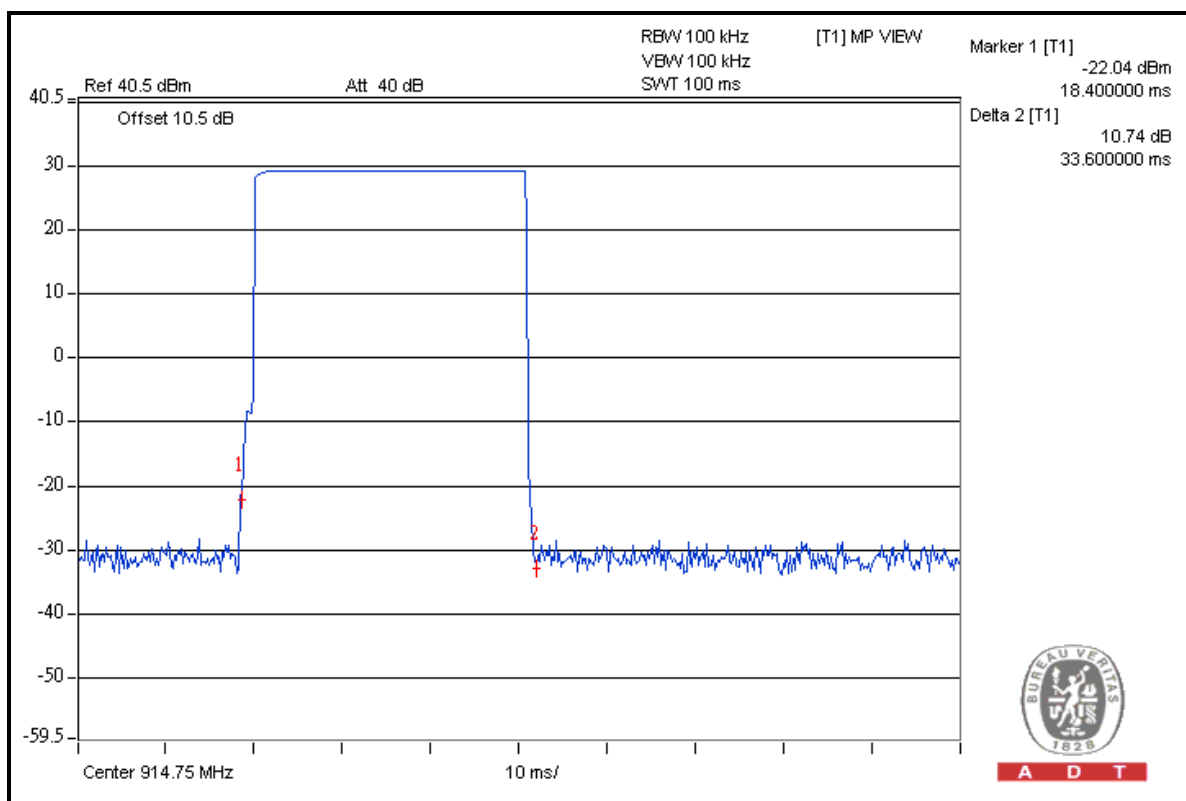
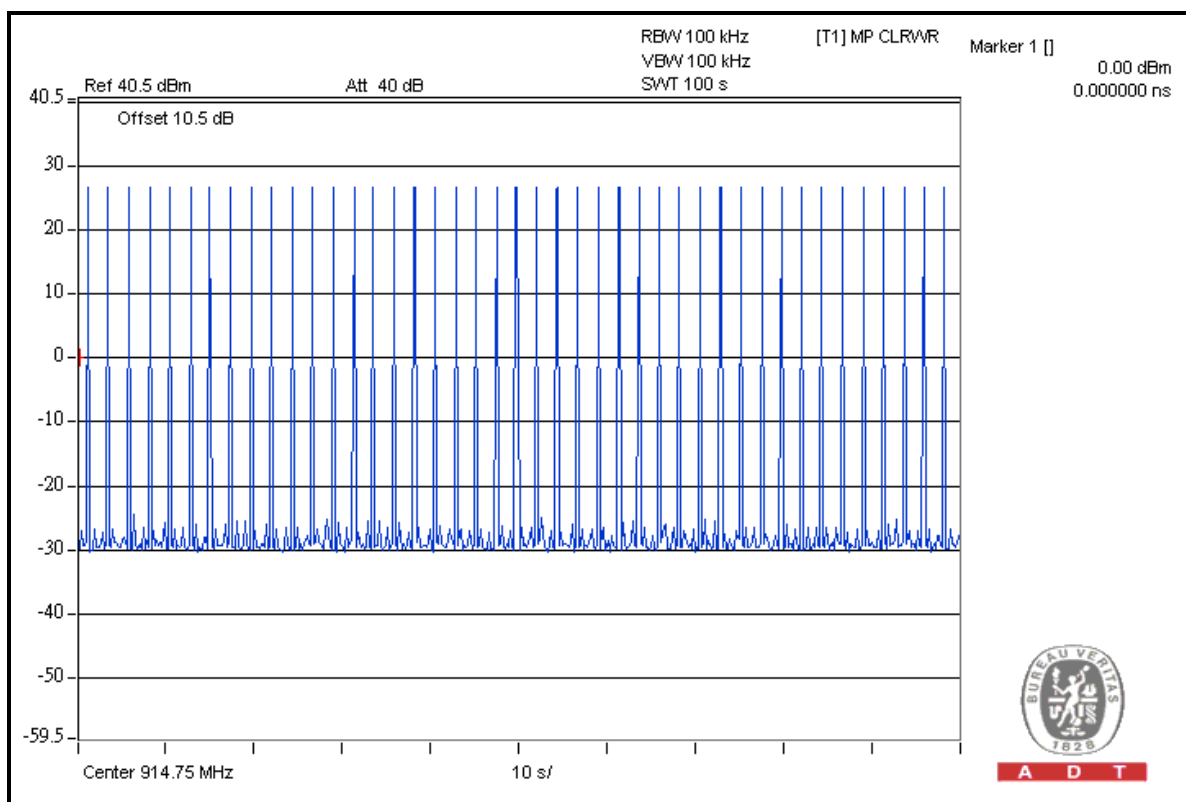
For MRM

Number of transmission in a 20 (50Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
43 (times / 100 sec) *0.2=8.6 times	33.6	288.96	400

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



A D T





A D T

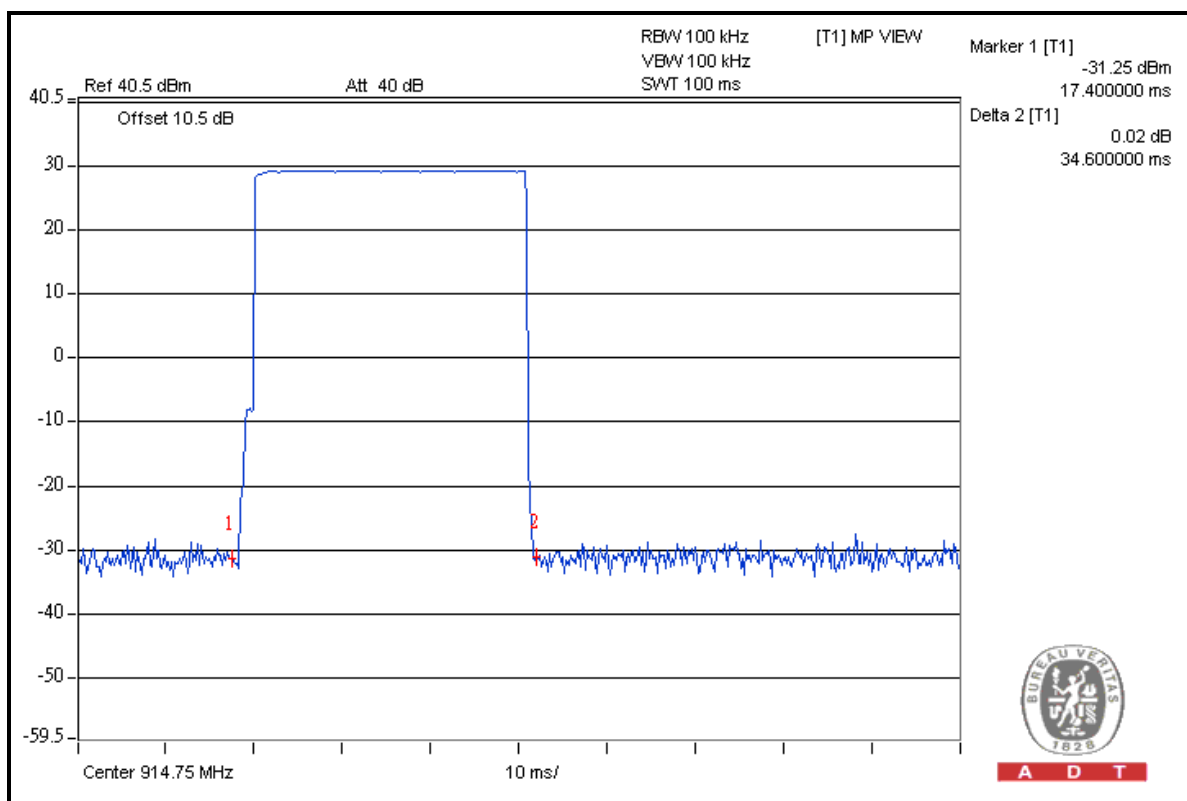
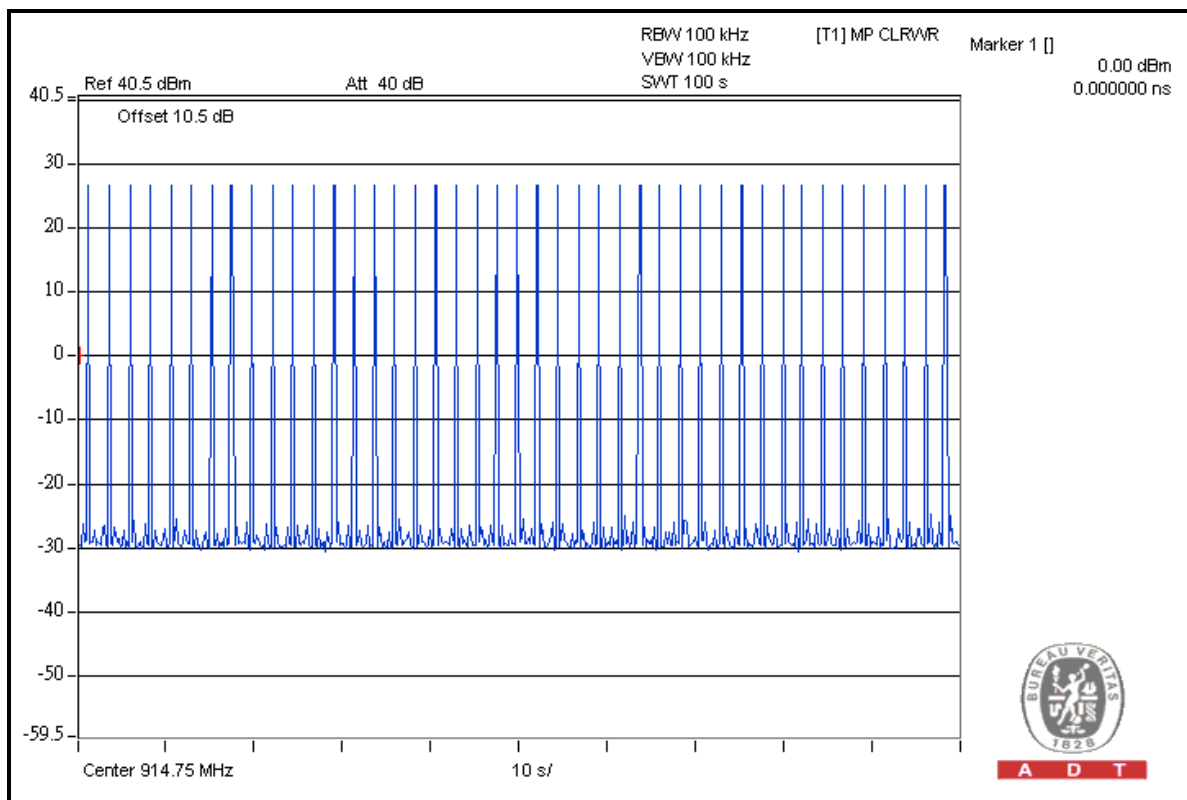
For XRM

Number of transmission in a 20 (50Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
43 (times / 100 sec) *0.2=8.6 times	34.6	297.56	400

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



A D T



4.4 CHANNEL BANDWIDTH

4.4.1 LIMIT OF CHANNEL BANDWIDTH

The -20 dB bandwidth of the hopping channel must less than 250 kHz

4.4.2 TEST INSTRUMENTS

Test date: Dec. 23, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

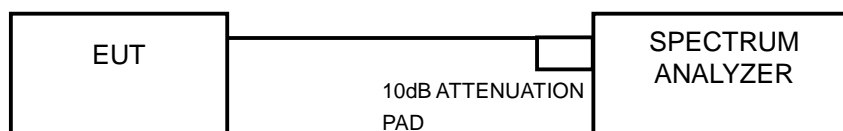
4.4.3 TEST PROCEDURE

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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITION

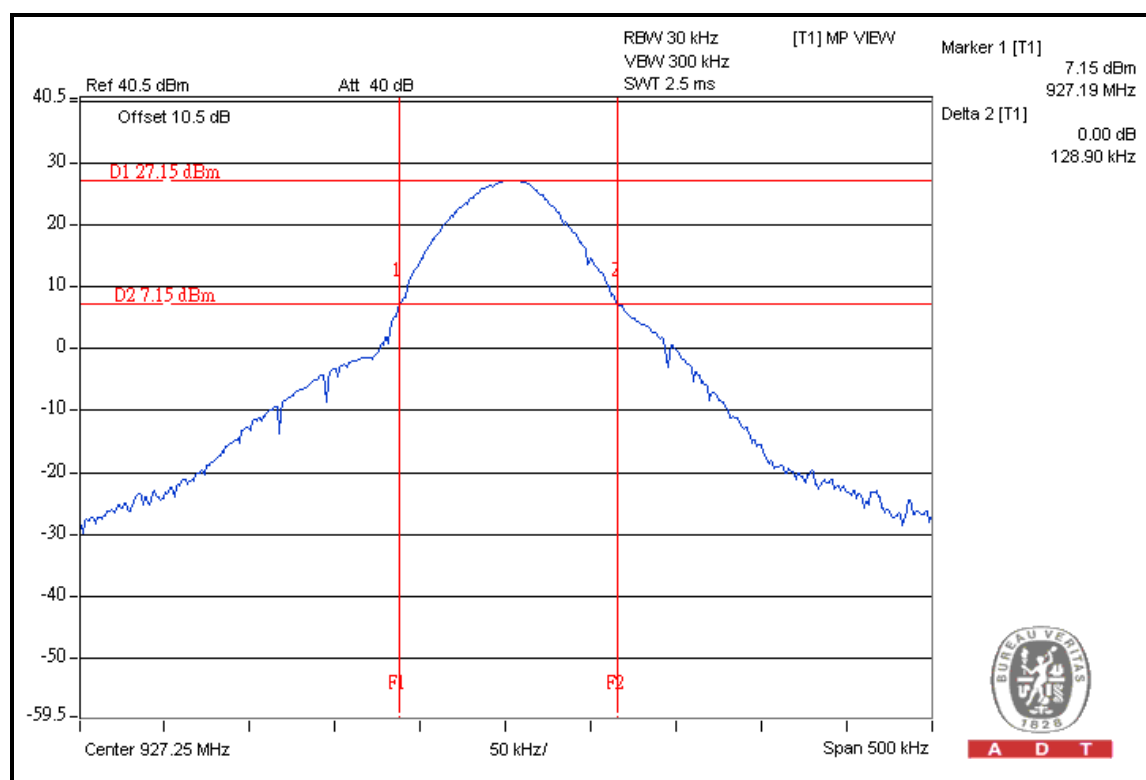
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.4.7 TEST RESULTS

For DRM:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.11
24	914.75	0.12
49	927.25	0.12

CH 49



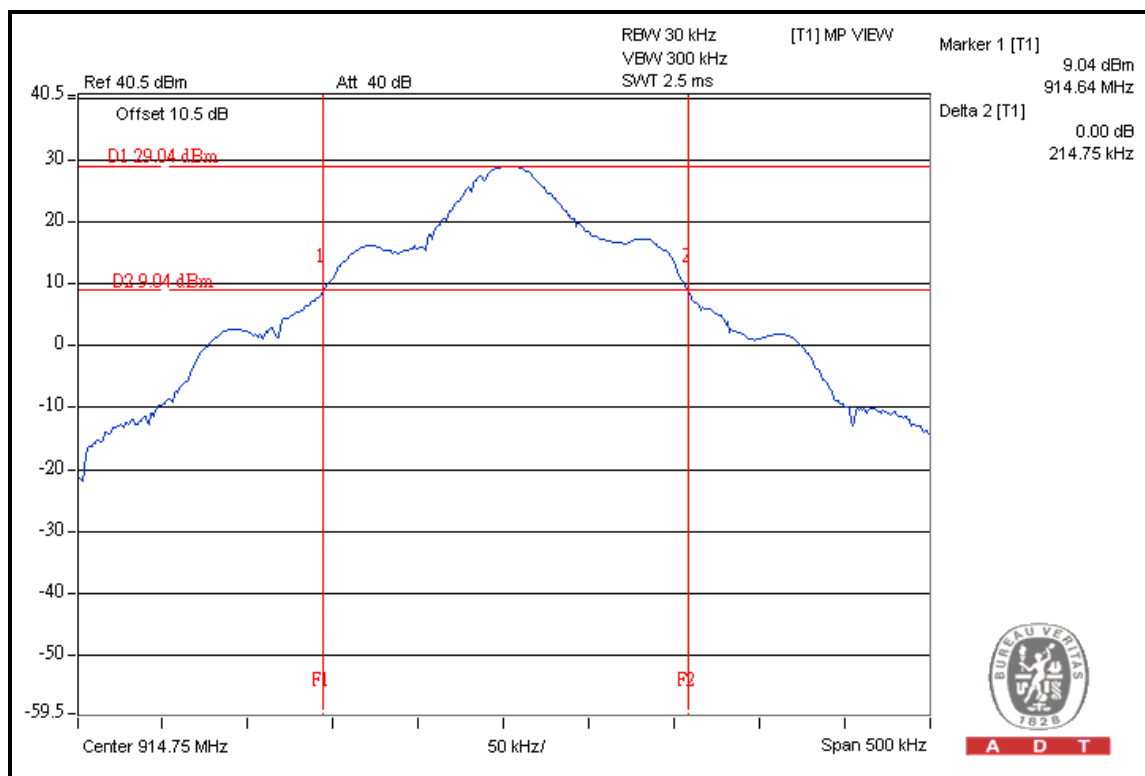


A D T

For MRM:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.21
24	914.75	0.21
49	927.25	0.21

CH 24



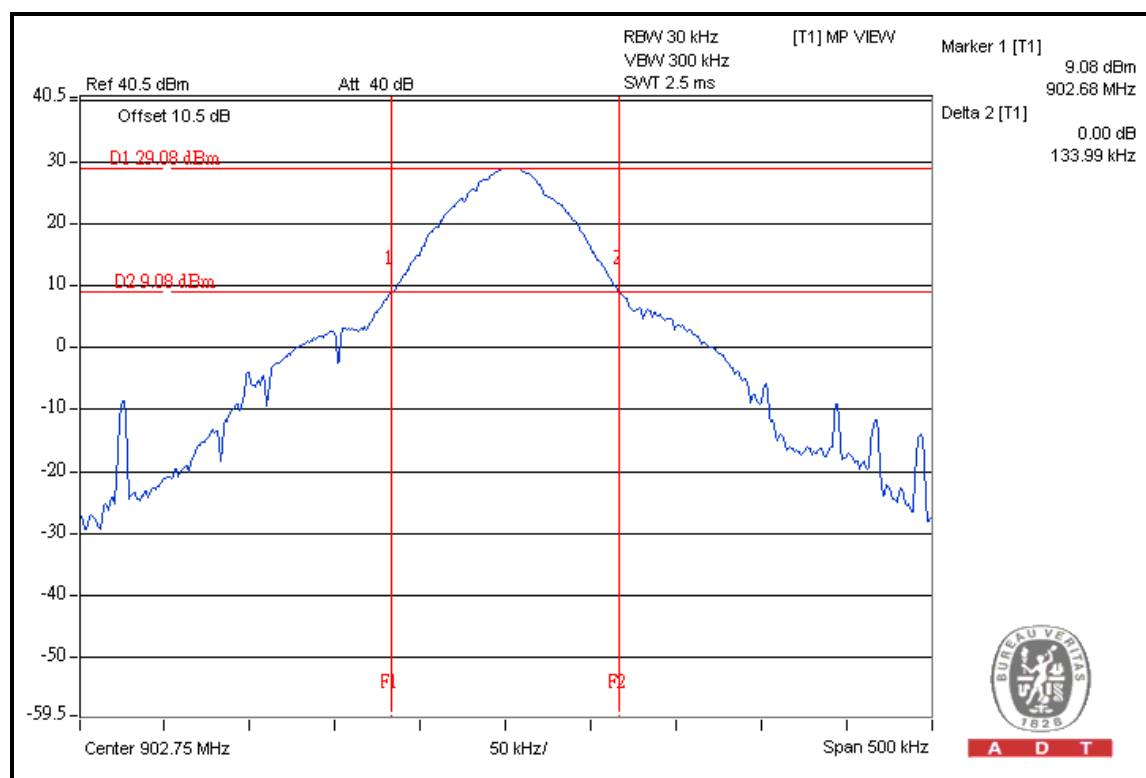


A D T

For XRM:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.13
24	914.75	0.13
49	927.25	0.13

CH 0



A D T

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. 23, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

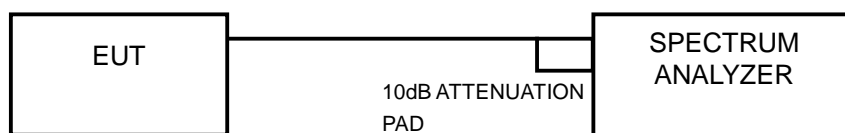
4.5.3 TEST PROCEDURES

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



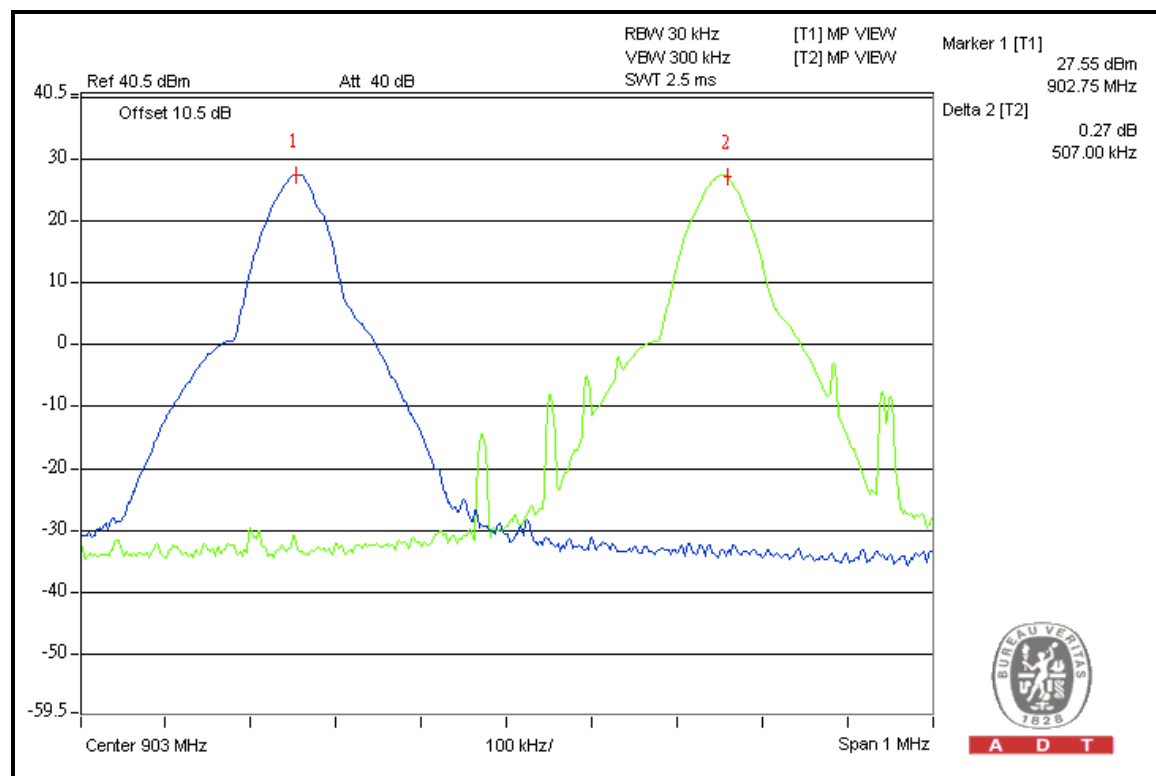
4.5.6 TEST RESULTS

For DRM

Channel	Frequency (MHz)	Adjacent Channel Separation(MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.51	0.11	PASS
24	914.75	0.51	0.12	PASS
49	927.25	0.50	0.12	PASS

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

CH 0





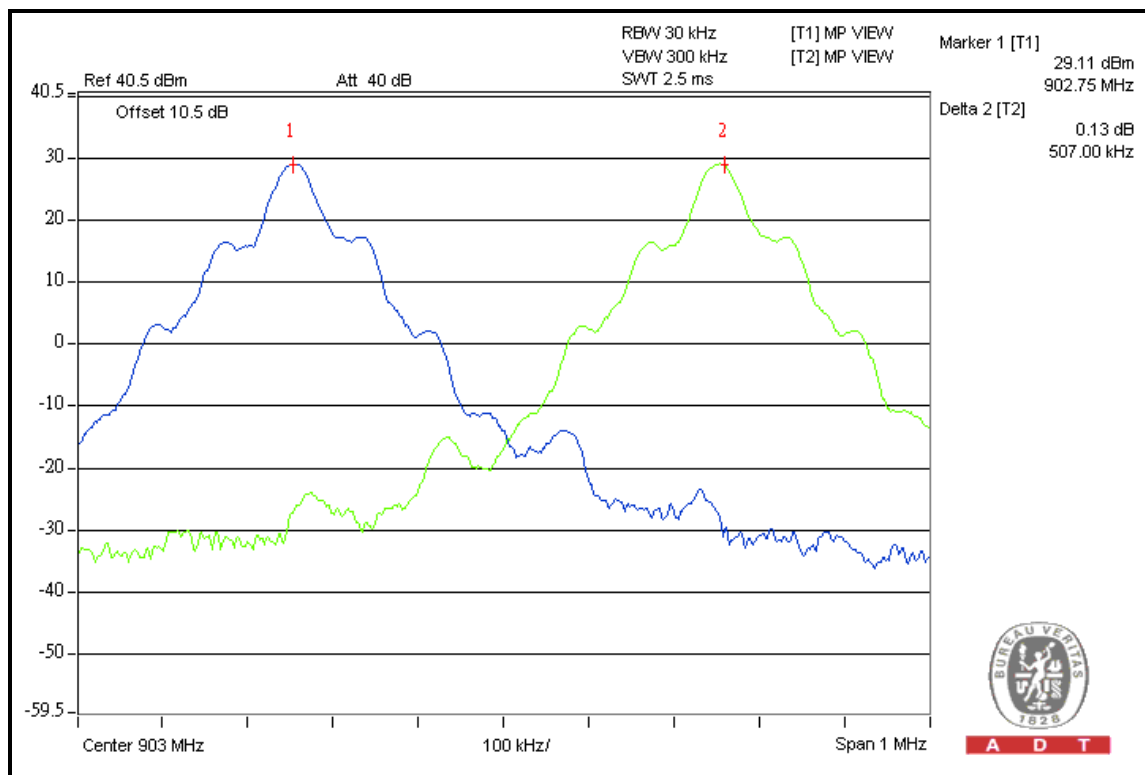
A D T

For MRM

Channel	Frequency (MHz)	Adjacent Channel Separation(MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.51	0.21	PASS
24	914.75	0.50	0.21	PASS
49	927.25	0.50	0.21	PASS

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

CH 0



A D T



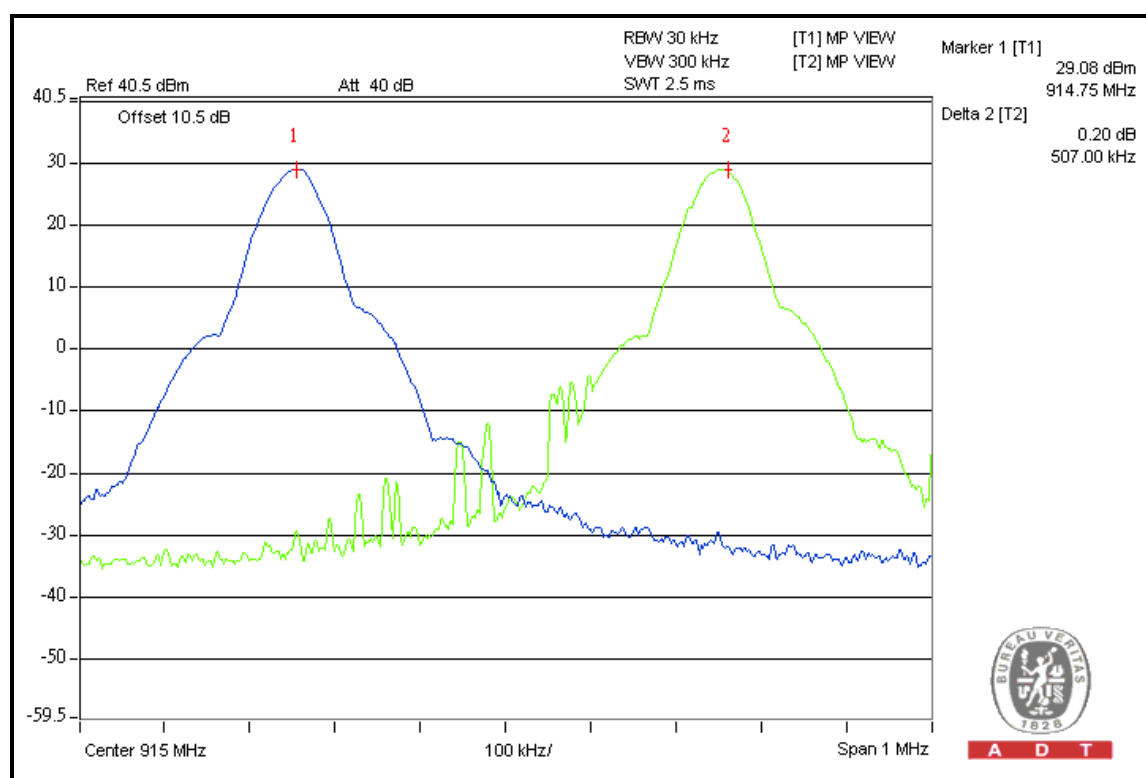
A D T

For XRM

Channel	Frequency (MHz)	Adjacent Channel Separation(MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.50	0.13	PASS
24	914.75	0.51	0.13	PASS
49	927.25	0.51	0.13	PASS

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

CH 24



4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.6.2 INSTRUMENTS

Test date: Dec. 23, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E4446A	MY48250254	July 12, 2011	July 11, 2012

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

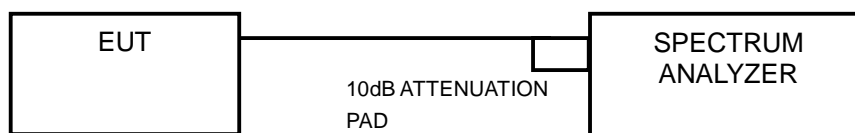
4.6.3 TEST PROCEDURES

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

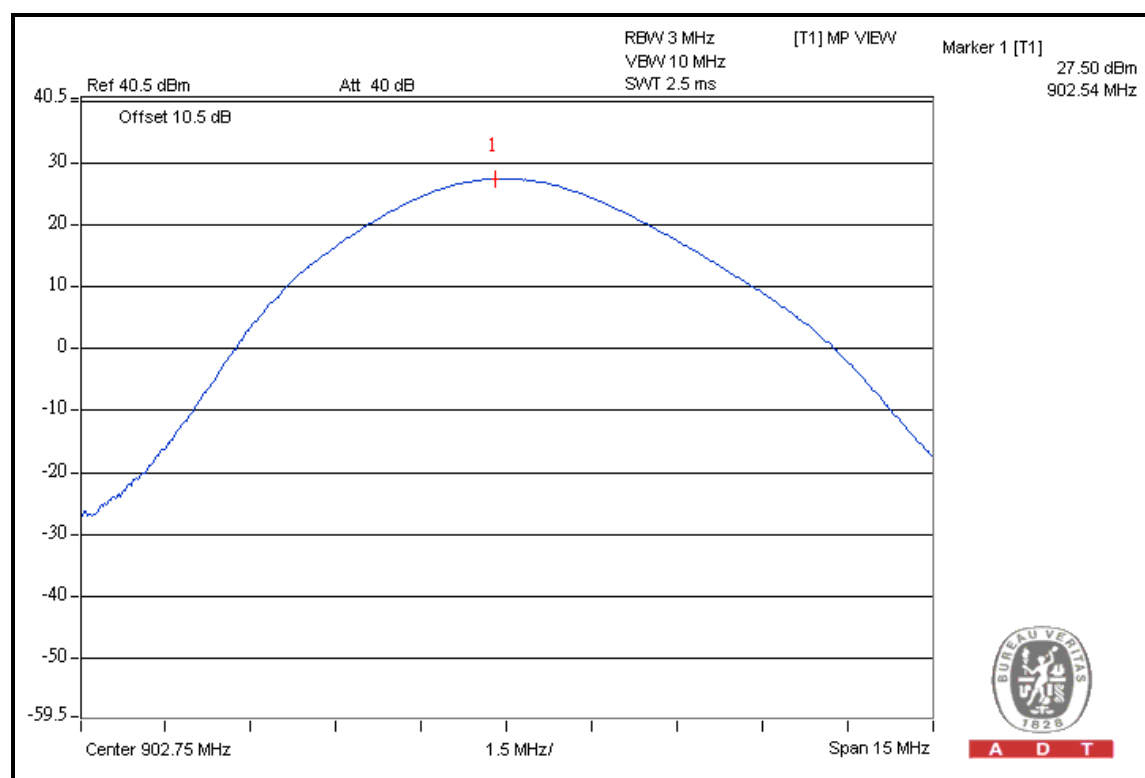
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS

For DRM

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	902.75	562.341	27.50	30	PASS
24	914.75	562.341	27.50	30	PASS
49	927.25	537.032	27.30	30	PASS

CH 0



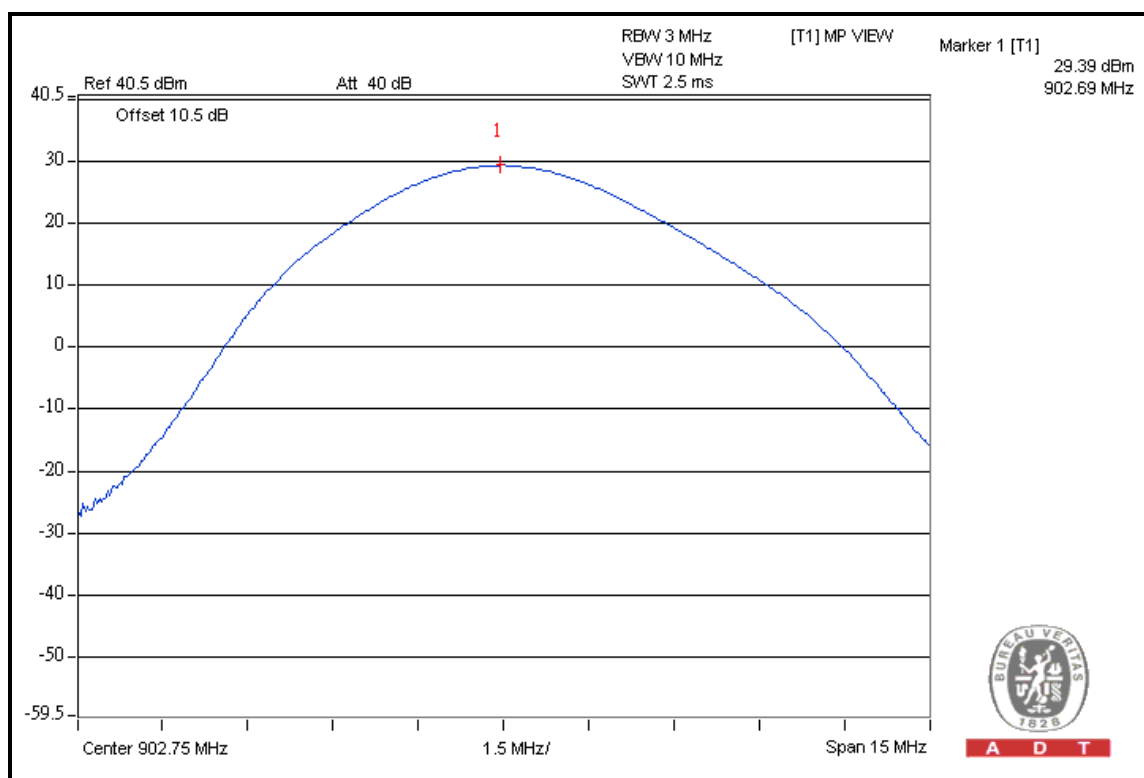


A D T

For MRM

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	902.75	870.964	29.40	30	PASS
24	914.75	851.138	29.30	30	PASS
49	927.25	831.764	29.20	30	PASS

CH 0



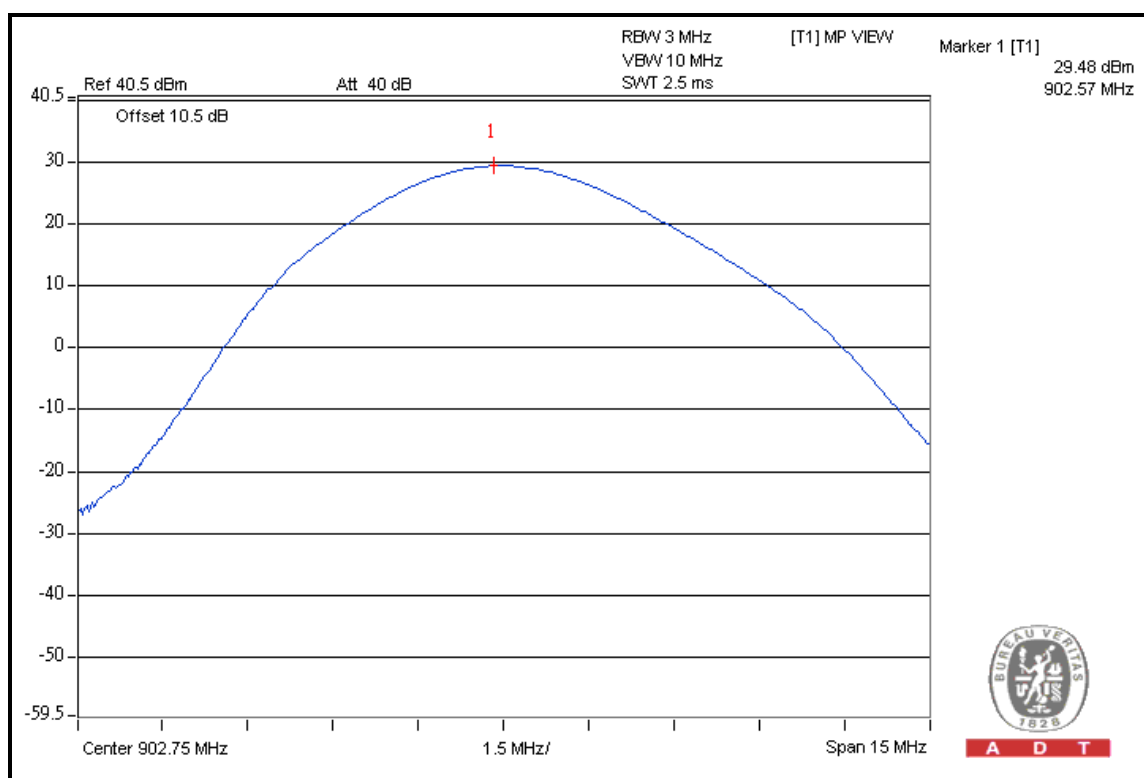


A D T

For XRM

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	902.75	891.251	29.5	30	PASS
24	914.75	851.138	29.3	30	PASS
49	927.25	812.831	29.1	30	PASS

CH 0



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: Dec. 19 to 24, 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.

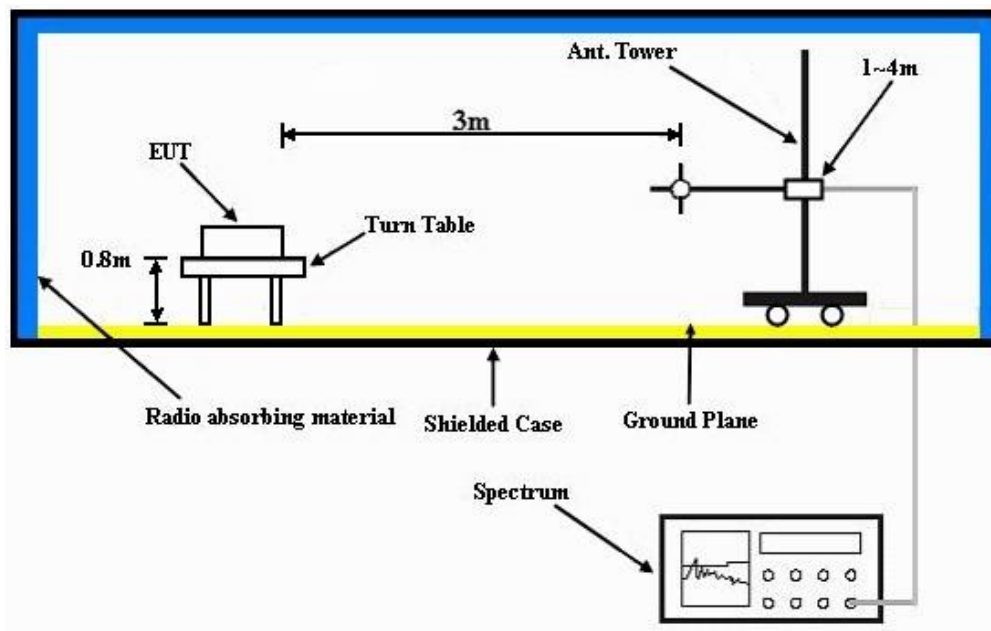
NOTE:

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.



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4.7.6 TEST RESULTS

For DRM

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0(DRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.36	32.2 QP	40.0	-7.8	1.00 H	235	17.85	14.35
2	152.37	31.7 QP	43.5	-11.8	1.46 H	144	16.98	14.72
3	246.84	31.4 QP	46.0	-14.6	1.01 H	30	18.26	13.14
4	428.41	36.3 QP	46.0	-9.7	1.70 H	21	17.99	18.31
5	574.79	38.2 QP	46.0	-7.8	1.47 H	263	16.61	21.59
6	667.31	39.0 QP	46.0	-7.0	1.00 H	15	16.54	22.46
7	#901.94	46.0 PK	86.1	-40.1	1.56 H	60	18.65	27.38
8	#901.94	30.8 AV	83.1	-52.3	1.56 H	60	3.46	27.38
9	*902.75	106.1 PK			1.56 H	60	78.76	27.38
10	*902.75	103.1 AV			1.56 H	60	75.74	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	41.69	32.2 QP	40.0	-7.8	1.00 V	155	17.99	14.21
2	187.60	34.3 QP	43.5	-9.2	1.13 V	162	21.89	12.41
3	338.26	34.2 QP	46.0	-11.8	1.26 V	14	18.08	16.12
4	481.64	37.5 QP	46.0	-8.5	1.30 V	272	18.00	19.50
5	532.65	38.3 QP	46.0	-7.7	1.00 V	13	17.66	20.64
6	696.34	39.0 QP	46.0	-7.0	1.42 V	226	16.43	22.57
7	#901.93	51.7 PK	93.8	-42.1	1.14 V	108	24.29	27.38
8	#901.93	33.5 AV	91.0	-57.5	1.14 V	108	6.14	27.38
9	*902.75	113.8 PK	-	-	1.14 V	108	86.37	27.38
10	*902.75	111.0 AV	-	-	1.14 V	108	83.61	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. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24(DRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.59	32.3 QP	40.0	-7.7	1.00 H	232	17.94	14.36
2	152.01	32.6 QP	43.5	-10.9	1.56 H	150	17.88	14.72
3	246.86	31.2 QP	46.0	-14.8	1.00 H	52	18.06	13.14
4	428.38	36.3 QP	46.0	-9.7	1.66 H	17	17.99	18.31
5	574.77	37.8 QP	46.0	-8.2	1.52 H	240	16.22	21.58
6	667.10	39.2 QP	46.0	-6.8	1.02 H	0	16.75	22.45
7	*914.76	126.5 PK	-	-	1.57 H	244	99.00	27.48
8	*914.76	123.4 AV	-	-	1.57 H	244	95.95	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	41.44	31.9 QP	40.0	-8.1	1.03 V	167	17.70	14.20
2	187.58	34.5 QP	43.5	-9.0	1.11 V	166	22.09	12.41
3	338.19	34.0 QP	46.0	-12.0	1.30 V	30	17.88	16.12
4	481.67	37.6 QP	46.0	-8.4	1.44 V	244	18.10	19.50
5	532.90	38.3 QP	46.0	-7.7	1.06 V	47	17.65	20.65
6	696.07	39.0 QP	46.0	-7.0	1.49 V	226	16.43	22.57
7	*914.75	133.5 PK	-	-	1.00 V	256	106.01	27.48
8	*914.75	130.8 AV	-	-	1.00 V	256	103.29	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.
 5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49(DRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.32	32.3 QP	40.0	-7.7	1.04 H	227	17.95	14.35
2	152.22	32.5 QP	43.5	-11.0	1.53 H	129	17.78	14.72
3	246.94	31.5 QP	46.0	-14.5	1.00 H	17	18.36	13.14
4	428.50	36.4 QP	46.0	-9.6	1.75 H	18	18.09	18.31
5	574.77	38.3 QP	46.0	-7.7	1.51 H	278	16.72	21.58
6	667.14	38.8 QP	46.0	-7.2	1.00 H	15	16.34	22.46
7	*927.25	125.2 PK	-	-	1.55 H	242	97.64	27.58
8	*927.25	122.4 AV	-	-	1.55 H	242	94.83	27.58
9	#928.00	67.6 PK	105.2	-37.6	1.55 H	242	40.05	27.59
10	#928.00	31.4AV	102.4	-71.0	1.55 H	242	3.82	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	41.36	32.2 QP	40.0	-7.8	1.02 V	176	18.00	14.20
2	187.68	33.9 QP	43.5	-9.6	1.14 V	130	21.50	12.40
3	338.48	33.8 QP	46.0	-12.2	1.14 V	12	17.67	16.13
4	481.82	37.5 QP	46.0	-8.5	1.40 V	275	17.99	19.51
5	532.71	38.4 QP	46.0	-7.6	1.00 V	48	17.75	20.65
6	696.12	39.0 QP	46.0	-7.0	1.44 V	216	16.43	22.57
7	*927.25	133.8 PK	-	-	1.07 V	254	106.25	27.58
8	*927.25	133.8 AV	-	-	1.07 V	254	106.20	27.58
9	#928.00	76.6 PK	113.8	-37.2	1.07 V	254	49.01	27.59
10	#928.00	56.6 AV	113.8	-57.2	1.07 V	254	29.03	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. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0(DRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2708.25	57.0 PK	74.0	-17.0	1.06 H	125	24.31	32.69
2	2708.25	46.6 AV	54.0	-7.4	1.06 H	125	13.91	32.69
3	3611.00	51.4 PK	74.0	-22.6	1.17 H	258	16.51	34.89
4	3611.00	44.6 AV	54.0	-9.4	1.17 H	258	9.71	34.89
5	4513.75	48.2 PK	74.0	-25.8	1.20 H	360	9.95	38.25
6	4513.75	38.1 AV	54.0	-15.9	1.20 H	360	-0.15	38.25
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	2708.25	60.3 PK	74.0	-13.7	1.04 V	82	27.61	32.69
2	2708.25	49.3 AV	54.0	-4.7	1.04 V	82	16.61	32.69
3	3611.00	49.4 PK	74.0	-24.6	1.03 V	322	14.51	34.89
4	3611.00	46.6 AV	54.0	-7.4	1.03 V	322	11.71	34.89
5	4513.75	48.5 PK	74.0	-25.5	1.49 V	34	10.25	38.25
6	4513.75	35.4 AV	54.0	-18.6	1.49 V	34	-2.85	38.25

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24(DRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2744.25	56.9 PK	74.0	-17.1	1.03 H	126	24.12	32.78
2	2744.25	46.5 AV	54.0	-7.5	1.03 H	126	13.72	32.78
3	3659.00	51.5 PK	74.0	-22.5	1.17 H	252	16.42	35.08
4	3659.00	44.8 AV	54.0	-9.2	1.17 H	252	9.72	35.08
5	4573.75	48.4 PK	74.0	-25.6	1.15 H	360	9.86	38.54
6	4573.75	38.5 AV	54.0	-15.5	1.15 H	360	-0.04	38.54
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	2744.25	60.5 PK	74.0	-13.5	1.00 V	89	27.72	32.78
2	2744.25	49.7 AV	54.0	-4.3	1.00 V	89	16.92	32.78
3	3659.00	49.6 PK	74.0	-24.4	1.00 V	334	14.52	35.08
4	3659.00	46.9 AV	54.0	-7.1	1.00 V	334	11.82	35.08
5	4573.75	48.4 PK	74.0	-25.6	1.44 V	36	9.86	38.54
6	4573.75	35.1 AV	54.0	-18.9	1.44 V	36	-3.44	38.54

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49(DRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2781.75	57.3 PK	74.0	-16.7	1.03 H	114	24.43	32.87
2	2781.75	46.8 AV	54.0	-7.2	1.03 H	114	13.93	32.87
3	3709.00	50.8 PK	74.0	-23.2	1.23 H	250	15.54	35.26
4	3709.00	44.3 AV	54.0	-9.7	1.23 H	250	9.04	35.26
5	4636.00	48.4 PK	74.0	-25.6	1.11 H	360	9.63	38.77
6	4636.00	38.5 AV	54.0	-15.5	1.11 H	360	-0.27	38.77
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	2781.75	60.2 PK	74.0	-13.8	1.00 V	79	27.33	32.87
2	2781.75	49.5 AV	54.0	-4.5	1.00 V	79	16.63	32.87
3	3709.00	49.2 PK	74.0	-24.8	1.04 V	319	13.94	35.26
4	3709.00	46.7 AV	54.0	-7.3	1.04 V	319	11.44	35.26
5	4636.00	47.9 PK	74.0	-26.1	1.46 V	32	9.13	38.77
6	4636.00	34.7 AV	54.0	-19.3	1.46 V	32	-4.07	38.77

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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For MRM

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0(MRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.42	32.3 QP	40.0	-7.8	1.00 H	241	17.89	14.36
2	152.21	32.1 QP	43.5	-11.4	1.50 H	125	17.40	14.72
3	246.83	31.7 QP	46.0	-14.4	1.00 H	32	18.51	13.14
4	428.49	36.4 QP	46.0	-9.7	1.65 H	21	18.04	18.31
5	574.74	38.2 QP	46.0	-7.8	1.50 H	252	16.66	21.58
6	667.11	39.2 QP	46.0	-6.8	1.00 H	15	16.77	22.46
7	#902.00	70.0 PK	107.2	-37.3	1.61 H	244	42.54	27.38
8	#902.00	50.3 AV	104.4	-54.1	1.61 H	244	22.89	27.38
9	*902.75	127.2 PK	-	-	1.61 H	244	99.83	27.38
10	*902.75	124.4 AV	-	-	1.61 H	244	96.98	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	41.49	32.2 QP	40.0	-7.9	1.00 V	182	17.95	14.20
2	187.62	34.3 QP	43.5	-9.3	1.12 V	152	21.85	12.40
3	338.25	34.1 QP	46.0	-11.9	1.25 V	13	17.99	16.12
4	481.78	37.7 QP	46.0	-8.3	1.36 V	265	18.17	19.51
5	532.70	38.5 QP	46.0	-7.5	1.00 V	32	17.89	20.65
6	696.13	39.0 QP	46.0	-7.0	1.50 V	222	16.46	22.57
7	#901.99	76.6 PK	113.1	-36.5	1.13 V	294	49.18	27.38
8	#901.99	55.9 AV	113.0	-57.1	1.13 V	294	28.54	27.38
9	*902.75	133.1 PK	-	-	1.13 V	294	105.67	27.38
10	*902.75	133.0 AV	-	-	1.13 V	294	105.63	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. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24(MRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.34	32.0 QP	40.0	-8.0	1.04 H	236	17.65	14.35
2	152.20	31.9 QP	43.5	-11.6	1.48 H	120	17.18	14.72
3	246.84	31.8 QP	46.0	-14.2	1.00 H	27	18.66	13.14
4	428.51	36.2 QP	46.0	-9.8	1.62 H	28	17.89	18.31
5	574.75	38.0 QP	46.0	-8.0	1.55 H	241	16.42	21.58
6	667.08	39.3 QP	46.0	-6.7	1.00 H	20	16.85	22.45
7	*914.76	102.0 AV	-	-	1.57 H	60	74.54	27.48
8	*914.76	133.8 PK	-	-	1.07 V	254	106.25	27.58
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	41.49	31.9 QP	40.0	-8.1	1.05 V	174	17.70	14.20
2	187.67	34.3 QP	43.5	-9.2	1.18 V	166	21.90	12.40
3	338.30	33.9 QP	46.0	-12.1	1.27 V	11	17.78	16.12
4	481.90	37.8 QP	46.0	-8.2	1.34 V	271	18.29	19.51
5	532.77	38.5 QP	46.0	-7.5	1.05 V	35	17.85	20.65
6	696.10	39.0 QP	46.0	-7.0	1.55 V	236	16.43	22.57
7	*914.75	114.7 PK	-	-	1.12 V	108	87.18	27.48
8	*914.75	111.8 AV	-	-	1.12 V	108	84.34	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.
 5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49(MRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.40	32.2 QP	40.0	-7.8	1.06 H	230	17.84	14.36
2	152.03	32.4 QP	43.5	-11.1	1.44 H	115	17.68	14.72
3	246.85	32.2 QP	46.0	-13.8	1.00 H	26	19.06	13.14
4	428.48	36.3 QP	46.0	-9.7	1.63 H	16	17.99	18.31
5	574.85	38.3 QP	46.0	-7.7	1.67 H	221	16.71	21.59
6	667.10	39.6 QP	46.0	-6.4	1.01 H	1	17.15	22.45
7	*927.26	106.7 PK			1.51 H	59	79.09	27.58
8	*927.26	104.0 AV			1.51 H	59	76.42	27.58
9	#928.04	46.8 PK	86.7	-39.9	1.51 H	59	19.16	27.59
10	#928.04	31.3 AV	84.0	-52.7	1.51 H	59	3.68	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	41.47	31.7 QP	40.0	-8.3	1.07 V	181	17.50	14.20
2	187.70	34.5 QP	43.5	-9.0	1.09 V	165	22.10	12.40
3	338.23	33.9 QP	46.0	-12.1	1.21 V	20	17.78	16.12
4	481.79	37.4 QP	46.0	-8.6	1.25 V	279	17.89	19.51
5	532.89	38.2 QP	46.0	-7.8	1.00 V	41	17.55	20.65
6	696.08	39.2 QP	46.0	-6.8	1.63 V	244	16.63	22.57
7	*927.25	115.0 PK	-	-	1.12 V	108	87.39	27.58
8	*927.25	111.8 AV	-	-	1.12 V	108	84.17	27.58
9	#928.00	52.7 PK	95.0	-42.3	1.12 V	108	25.15	27.59
10	#928.00	34.7 AV	91.8	-57.1	1.12 V	108	7.13	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. “ * “: Fundamental frequency.
 6. “ # “: The radiated frequency is out the restricted band.



A D T

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0(MRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2708.25	57.4 PK	74.0	-16.6	1.09 H	104	24.71	32.69
2	2708.25	46.6 AV	54.0	-7.4	1.09 H	104	13.91	32.69
3	3611.00	51.2 PK	74.0	-22.8	1.18 H	251	16.31	34.89
4	3611.00	44.7 AV	54.0	-9.3	1.18 H	251	9.81	34.89
5	4513.75	48.5 PK	74.0	-25.5	1.08 H	360	10.25	38.25
6	4513.75	38.3 AV	54.0	-15.7	1.08 H	360	0.05	38.25
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	2708.25	60.4 PK	74.0	-13.6	1.00 V	66	27.71	32.69
2	2708.25	50.0 AV	54.0	-4.0	1.00 V	66	17.31	32.69
3	3611.00	49.7 PK	74.0	-24.3	1.09 V	329	14.81	34.89
4	3611.00	47.0 AV	54.0	-7.0	1.09 V	329	12.11	34.89
5	4513.75	48.3 PK	74.0	-25.7	1.42 V	18	10.05	38.25
6	4513.75	35.0 AV	54.0	-19.0	1.42 V	18	-3.25	38.25

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24(MRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2744.25	57.4 PK	74.0	-16.6	1.12 H	117	24.62	32.78
2	2744.25	46.4 AV	54.0	-7.6	1.12 H	117	13.62	32.78
3	3659.00	51.4 PK	74.0	-22.6	1.16 H	237	16.32	35.08
4	3659.00	44.7 AV	54.0	-9.3	1.16 H	237	9.62	35.08
5	4573.75	48.4 PK	74.0	-25.6	1.11 H	360	9.86	38.54
6	4573.75	38.2 AV	54.0	-15.8	1.11 H	360	-0.34	38.54
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	2744.25	60.7 PK	74.0	-13.3	1.00 V	75	27.92	32.78
2	2744.25	50.1 AV	54.0	-3.9	1.00 V	75	17.32	32.78
3	3659.00	50.2 PK	74.0	-23.8	1.14 V	329	15.12	35.08
4	3659.00	47.4 AV	54.0	-6.6	1.14 V	329	12.32	35.08
5	4573.75	48.4 PK	74.0	-25.6	1.36 V	14	9.86	38.54
6	4573.75	34.9 AV	54.0	-19.1	1.36 V	14	-3.64	38.54

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49(MRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2781.75	57.5 PK	74.0	-16.5	1.08 H	105	24.63	32.87
2	2781.75	46.9 AV	54.0	-7.1	1.08 H	105	14.03	32.87
3	3709.00	51.9 PK	74.0	-22.1	1.21 H	228	16.64	35.26
4	3709.00	45.0 AV	54.0	-9.0	1.21 H	228	9.74	35.26
5	4636.00	48.1 PK	74.0	-25.9	1.10 H	360	9.33	38.77
6	4636.00	38.0 AV	54.0	-16.0	1.10 H	360	-0.77	38.77
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	2781.75	60.5 PK	74.0	-13.5	1.00 V	85	27.63	32.87
2	2781.75	49.9 AV	54.0	-4.1	1.00 V	85	17.03	32.87
3	3709.00	50.6 PK	74.0	-23.4	1.19 V	338	15.34	35.26
4	3709.00	47.8 AV	54.0	-6.2	1.19 V	338	12.54	35.26
5	4636.00	47.7 PK	74.0	-26.3	1.40 V	7	8.93	38.77
6	4636.00	34.5 AV	54.0	-19.5	1.40 V	7	-4.27	38.77

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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For XRM

EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0(XRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.57	32.5 QP	40.0	-7.5	1.00 H	234	18.14	14.36
2	152.12	31.6 QP	43.5	-11.9	1.54 H	112	16.88	14.72
3	246.86	31.2 QP	46.0	-14.8	1.00 H	15	18.06	13.14
4	428.50	36.6 QP	46.0	-9.4	1.60 H	30	18.29	18.31
5	574.68	38.1 QP	46.0	-7.9	1.53 H	234	16.52	21.58
6	666.96	38.9 QP	46.0	-7.1	1.11 H	33	16.45	22.45
7	#901.99	49.2 PK	106.9	-57.7	1.00 H	40	21.84	27.38
8	#901.99	32.5 AV	100.2	-67.7	1.00 H	40	5.15	27.38
9	*902.75	126.9 PK	-	-	1.00 H	40	99.52	27.38
10	*902.75	120.2 AV	-	-	1.00 H	40	92.82	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	41.31	32.3 QP	40.0	-7.7	1.00 V	185	18.11	14.19
2	187.71	34.1 QP	43.5	-9.4	1.13 V	156	21.70	12.40
3	338.30	33.9 QP	46.0	-12.1	1.20 V	4	17.78	16.12
4	481.96	37.3 QP	46.0	-8.7	1.44 V	283	17.79	19.51
5	532.80	38.7 QP	46.0	-7.3	1.02 V	37	18.05	20.65
6	696.09	39.0 QP	46.0	-7.0	1.59 V	241	16.43	22.57
7	#902.00	55.3 PK	111.2	-55.9	1.12 V	109	27.91	27.38
8	#902.00	38.2 AV	108.3	-70.1	1.12 V	109	10.77	27.38
9	*902.75	131.2 PK	-	-	1.12 V	109	103.82	27.38
10	*902.75	128.3 AV	-	-	1.12 V	109	100.92	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. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24(XRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.45	32.1 QP	40.0	-7.9	1.00 H	251	17.74	14.36
2	152.23	31.9 QP	43.5	-11.6	1.50 H	121	17.18	14.72
3	246.69	32.0 QP	46.0	-14.0	1.00 H	59	18.87	13.13
4	428.41	36.1 QP	46.0	-9.9	1.72 H	26	17.79	18.31
5	574.87	37.8 QP	46.0	-8.2	1.49 H	248	16.21	21.59
6	667.16	39.6 QP	46.0	-6.4	1.00 H	20	17.14	22.46
7	*914.75	125.8 PK	-	-	1.00 H	35	98.32	27.48
8	*914.75	122.8 AV	-	-	1.00 H	35	95.32	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	41.45	32.3 QP	40.0	-7.7	1.01 V	182	18.10	14.20
2	187.63	34.1 QP	43.5	-9.4	1.16 V	136	21.70	12.40
3	338.37	33.7 QP	46.0	-12.3	1.24 V	8	17.58	16.12
4	481.83	37.5 QP	46.0	-8.5	1.42 V	256	17.99	19.51
5	532.87	38.4 QP	46.0	-7.6	1.02 V	30	17.75	20.65
6	696.16	39.5 QP	46.0	-6.5	1.51 V	206	16.93	22.57
7	*914.75	132.5 PK	-	-	1.09 V	109	105.02	27.48
8	*914.75	129.9 AV	-	-	1.09 V	109	102.42	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.
 5. “ * “: Fundamental frequency.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49(XRM)	FREQUENCY RANGE	Below 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23deg. C, 68%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	49.52	32.0 QP	40.0	-8.0	1.01 H	244	17.64	14.36
2	152.21	32.2 QP	43.5	-11.3	1.52 H	135	17.48	14.72
3	246.81	31.8 QP	46.0	-14.2	1.00 H	67	18.66	13.14
4	428.34	36.1 QP	46.0	-9.9	1.73 H	13	17.79	18.31
5	574.78	37.7 QP	46.0	-8.3	1.44 H	252	16.11	21.59
6	667.26	39.7 QP	46.0	-6.3	1.02 H	8	17.24	22.46
7	*927.26	124.3 PK	-	-	1.00 H	49	96.72	27.58
8	*927.26	121.8 AV	-	-	1.00 H	49	94.22	27.58
9	928.01	50.8 PK	104.3	-53.5	1.00 H	49	23.18	27.59
10	928.01	33.2 AV	101.8	-68.6	1.00 H	49	5.59	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	41.43	32.0 QP	40.0	-8.0	1.00 V	195	17.80	14.20
2	187.70	34.0 QP	43.5	-9.5	1.18 V	147	21.60	12.40
3	338.37	33.4 QP	46.0	-12.6	1.20 V	21	17.28	16.12
4	481.90	37.8 QP	46.0	-8.2	1.40 V	248	18.29	19.51
5	532.96	38.5 QP	46.0	-7.5	1.02 V	45	17.85	20.65
6	696.24	39.7 QP	46.0	-6.3	1.52 V	212	17.13	22.57
7	*927.25	133.1 PK	-	-	1.09 V	109	105.52	27.58
8	*927.25	131.5 AV	-	-	1.09 V	109	103.92	27.58
9	928.08	60.8 PK	113.1	-52.3	1.09 V	109	33.17	27.59
10	928.08	41.4 AV	111.5	-70.1	1.09 V	109	13.77	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. “ * “: Fundamental frequency.
 6. “#”:The radiated frequency is out the restricted band.



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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 0(XRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C,62%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	2708.25	57.6 PK	74.0	-16.4	1.12 H	100	24.91	32.69
2	2708.25	47.0 AV	54.0	-7.0	1.12 H	100	14.29	32.69
3	3611.00	50.8 PK	74.0	-23.2	1.23 H	276	15.91	34.89
4	3611.00	44.1 AV	54.0	-9.9	1.23 H	276	9.21	34.89
5	4513.75	48.7 PK	74.0	-25.3	1.14 H	360	10.45	38.25
6	4513.75	38.2 AV	54.0	-15.8	1.14 H	360	-0.03	38.25
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	2708.25	59.4 PK	74.0	-14.7	1.02 V	68	26.66	32.69
2	2708.25	48.7 AV	54.0	-5.4	1.02 V	68	15.96	32.69
3	3611.00	49.9 PK	74.0	-24.1	1.00 V	357	15.01	34.89
4	3611.00	46.8 AV	54.0	-7.2	1.00 V	357	11.91	34.89
5	4513.75	49.3 PK	74.0	-24.7	1.37 V	0	11.05	38.25
6	4513.75	35.6 AV	54.0	-18.4	1.37 V	0	-2.65	38.25

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 24(XRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2744.00	57.1 PK	74.0	-16.9	1.09 H	112	24.32	32.78
2	2744.00	46.6 AV	54.0	-7.4	1.09 H	112	13.82	32.78
3	3659.00	50.3 PK	74.0	-23.7	1.25 H	270	15.22	35.08
4	3659.00	43.9 AV	54.0	-10.1	1.25 H	270	8.82	35.08
5	4573.00	48.6 PK	74.0	-25.4	1.13 H	360	10.06	38.54
6	4573.00	38.0 AV	54.0	-16.0	1.13 H	360	-0.54	38.54
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	2744.00	59.9 PK	74.0	-14.1	1.05 V	63	27.12	32.78
2	2744.00	49.1 AV	54.0	-4.9	1.05 V	63	16.32	32.78
3	3659.00	49.9 PK	74.0	-24.1	1.03 V	341	14.82	35.08
4	3659.00	46.6 AV	54.0	-7.4	1.03 V	341	11.52	35.08
5	4573.00	49.1 PK	74.0	-24.9	1.40 V	14	10.56	38.54
6	4573.00	35.7 AV	54.0	-18.3	1.40 V	14	-2.84	38.54

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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EUT TEST CONDITION		MEASUREMENT DETAIL	
CHANNEL	Channel 49(XRM)	FREQUENCY RANGE	Above 1000MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	DETECTOR FUNCTION	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	17deg. C, 62%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	2781.75	57.1 PK	74.0	-16.9	1.04 H	121	24.23	32.87
2	2781.75	46.5 AV	54.0	-7.5	1.04 H	121	13.63	32.87
3	3709.00	50.8 PK	74.0	-23.2	1.21 H	257	15.54	35.26
4	3709.00	44.3 AV	54.0	-9.7	1.21 H	257	9.04	35.26
5	4636.00	48.2 PK	74.0	-25.8	1.16 H	360	9.43	38.77
6	4636.00	37.8 AV	54.0	-16.2	1.16 H	360	-0.97	38.77
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	2781.75	60.4 PK	74.0	-13.6	1.02 V	74	27.53	32.87
2	2781.75	49.4 AV	54.0	-4.6	1.02 V	74	16.53	32.87
3	3709.00	49.3 PK	74.0	-24.7	1.00 V	327	14.04	35.26
4	3709.00	46.2 AV	54.0	-7.8	1.00 V	327	10.94	35.26
5	4636.00	48.7 PK	74.0	-25.3	1.44 V	19	9.93	38.77
6	4636.00	35.3 AV	54.0	-18.7	1.44 V	19	-3.47	38.77

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. 23, 2011

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
R&S Spectrum Analyzer	FSP 40	100060	May 11, 2011	May 10, 2012

NOTE: 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 loss cable. Set both RBW and VBW of spectrum analyzer to 100 kHz with suitable frequency span including 20 MHz bandwidth from band edge. The band edges were measured and recorded.

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.

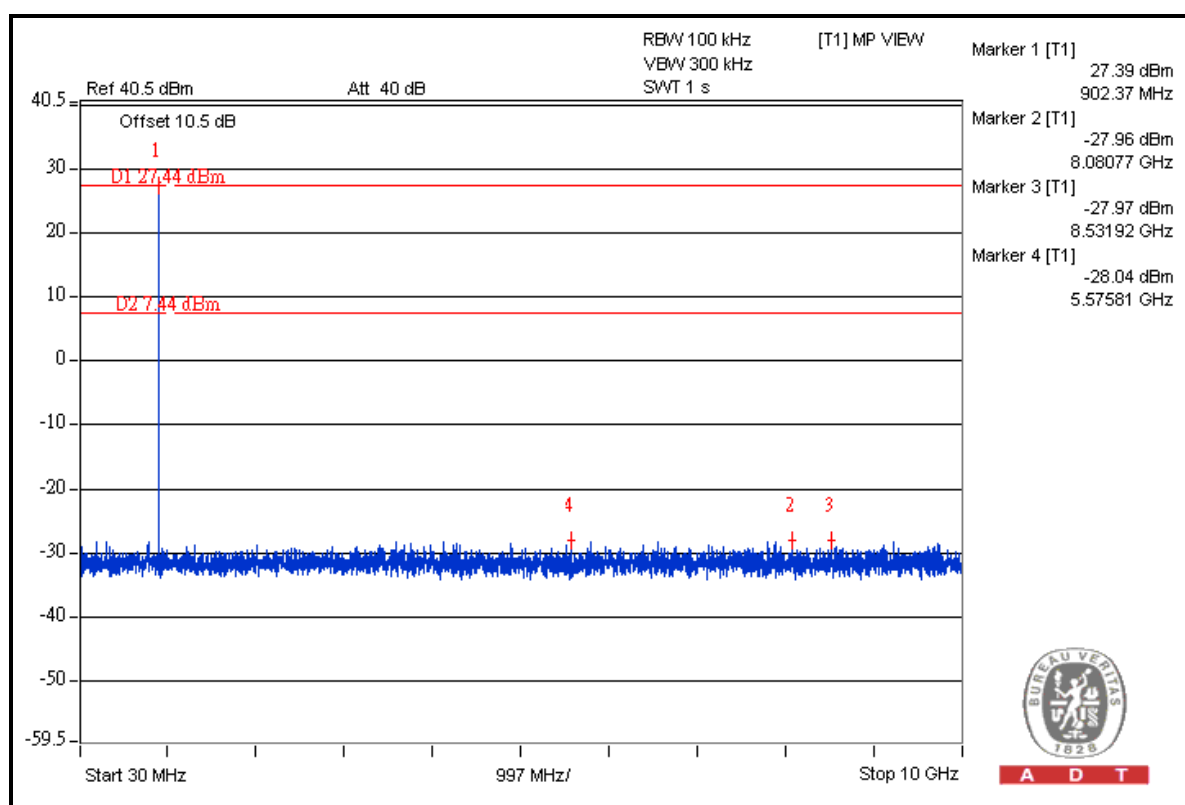
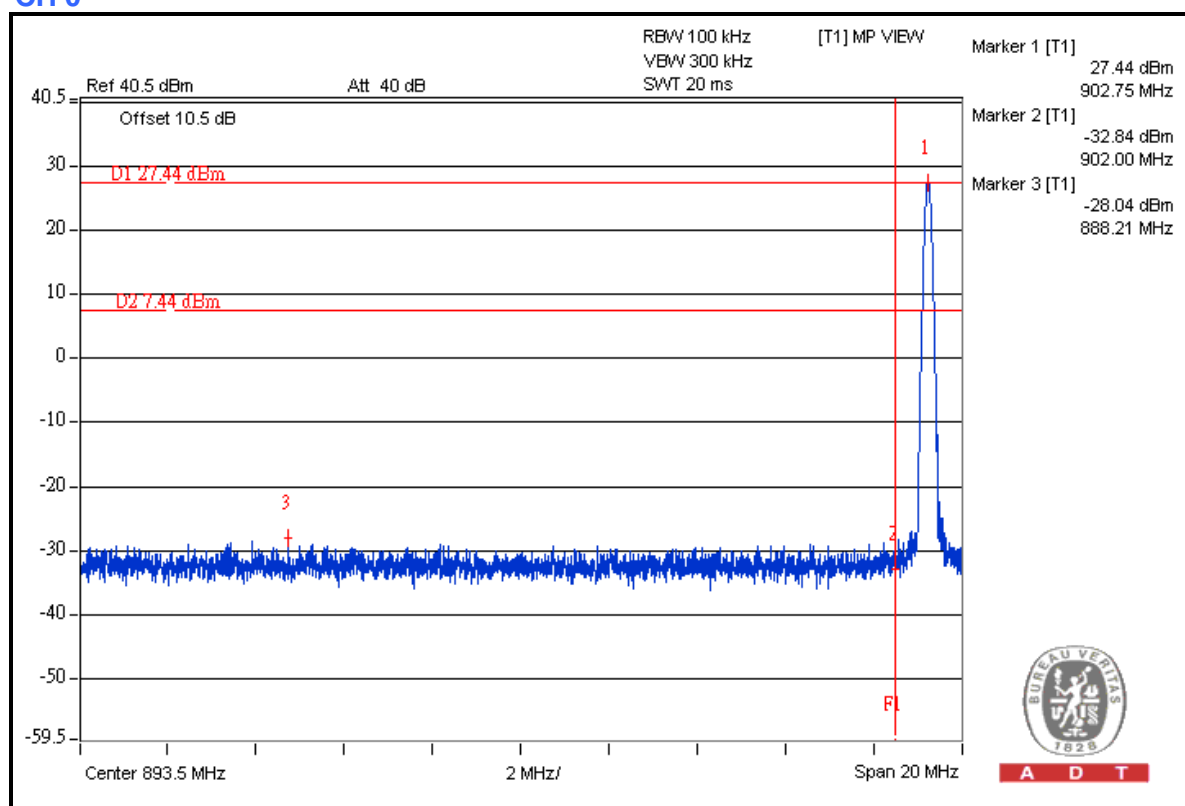
4.8.6 TEST RESULTS

The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).



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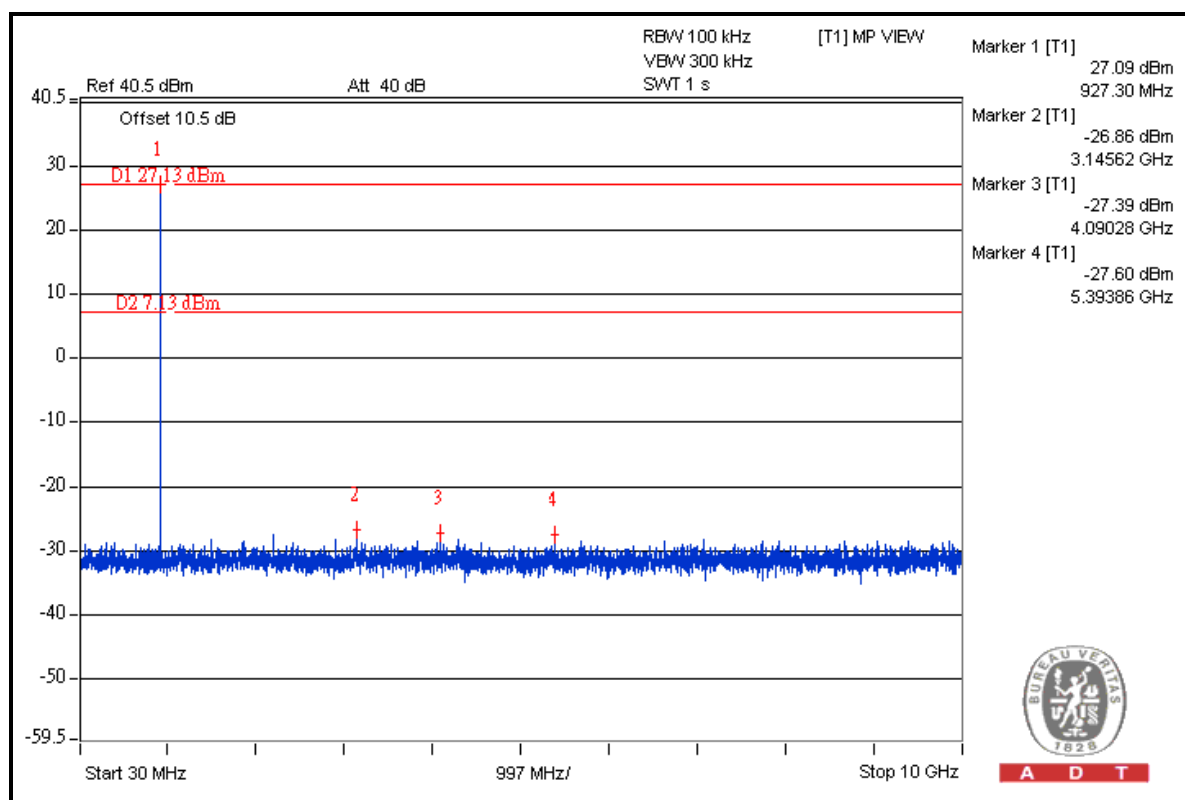
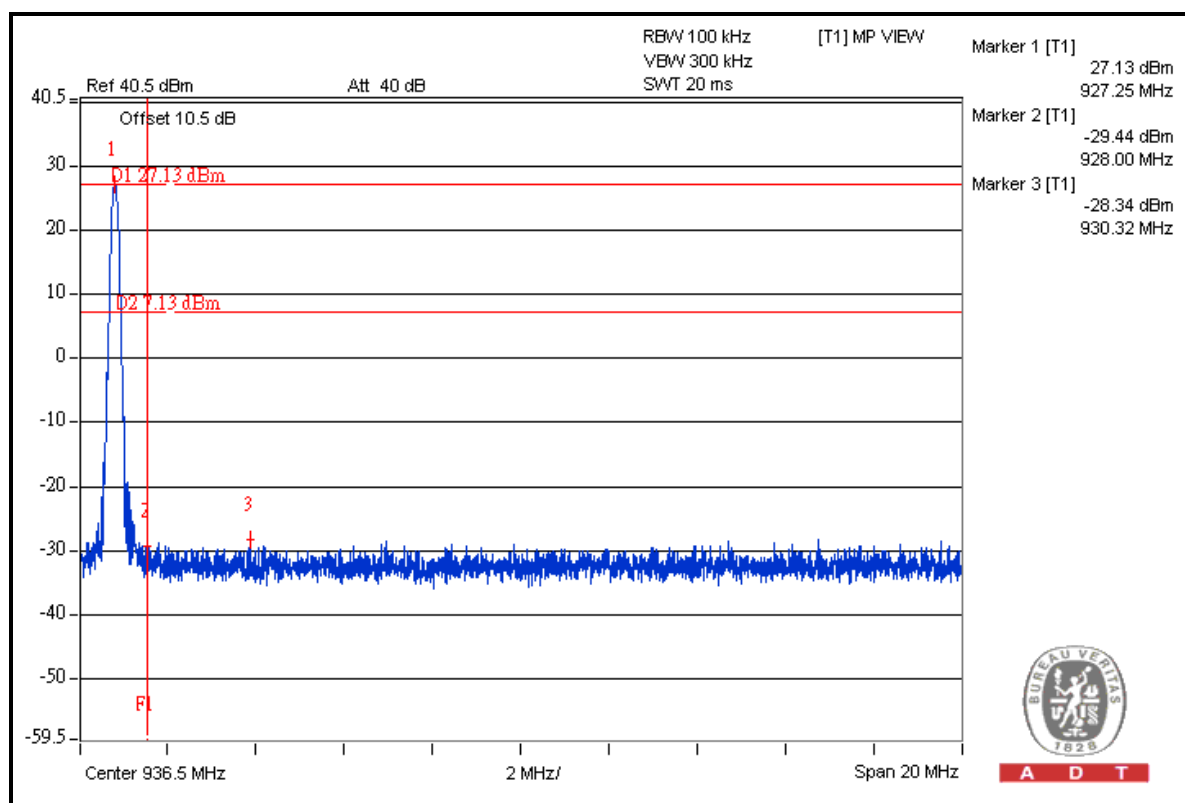
For DRM: CH 0





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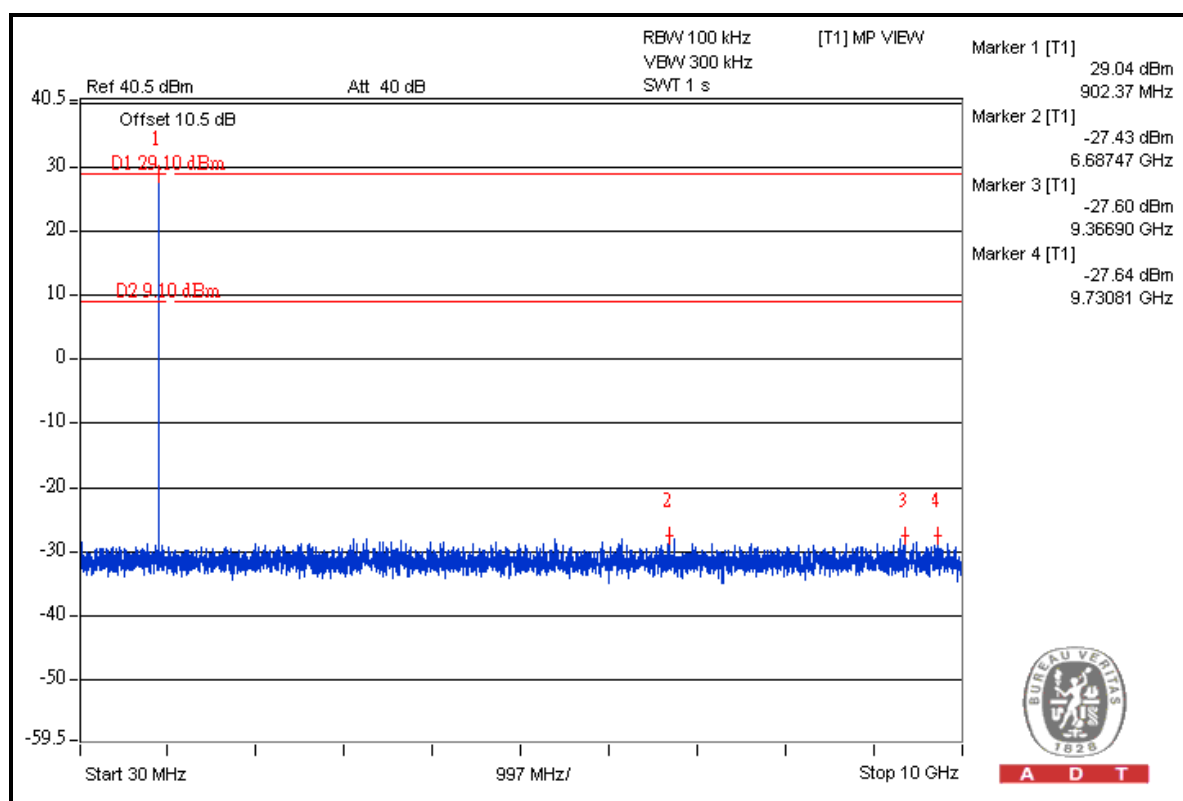
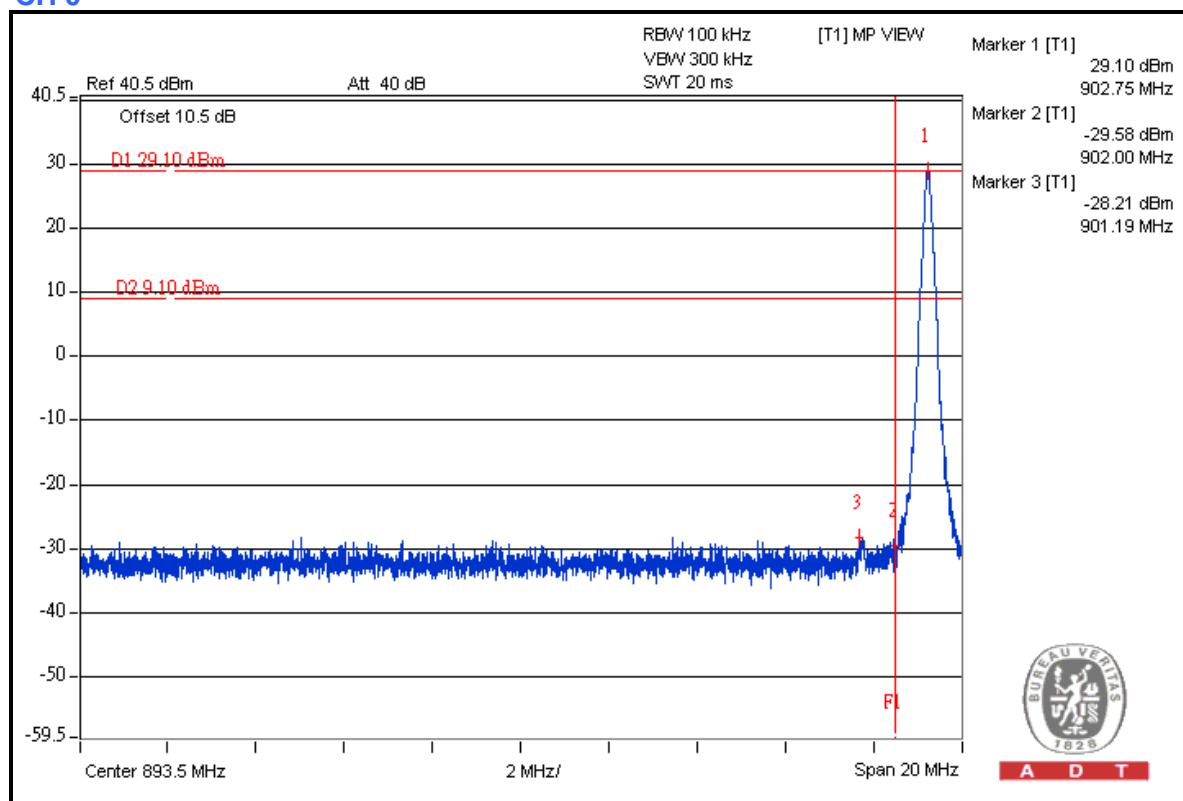
CH 49





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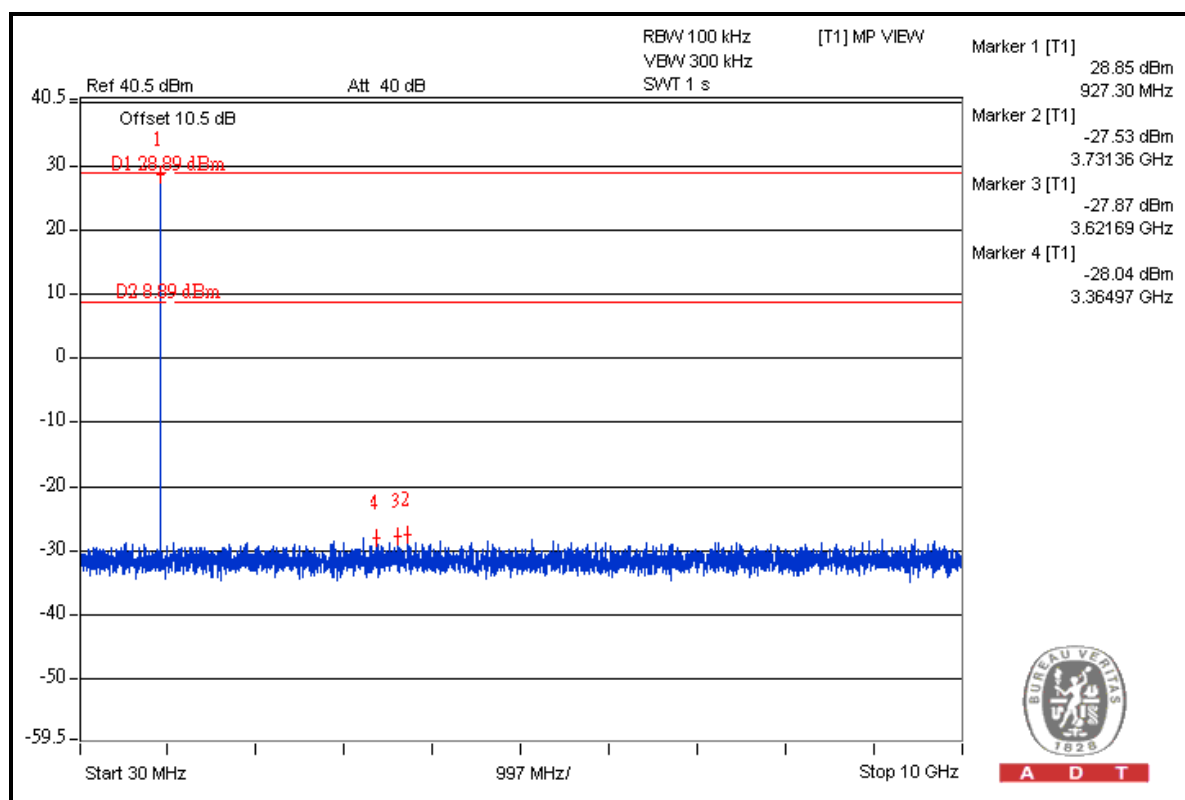
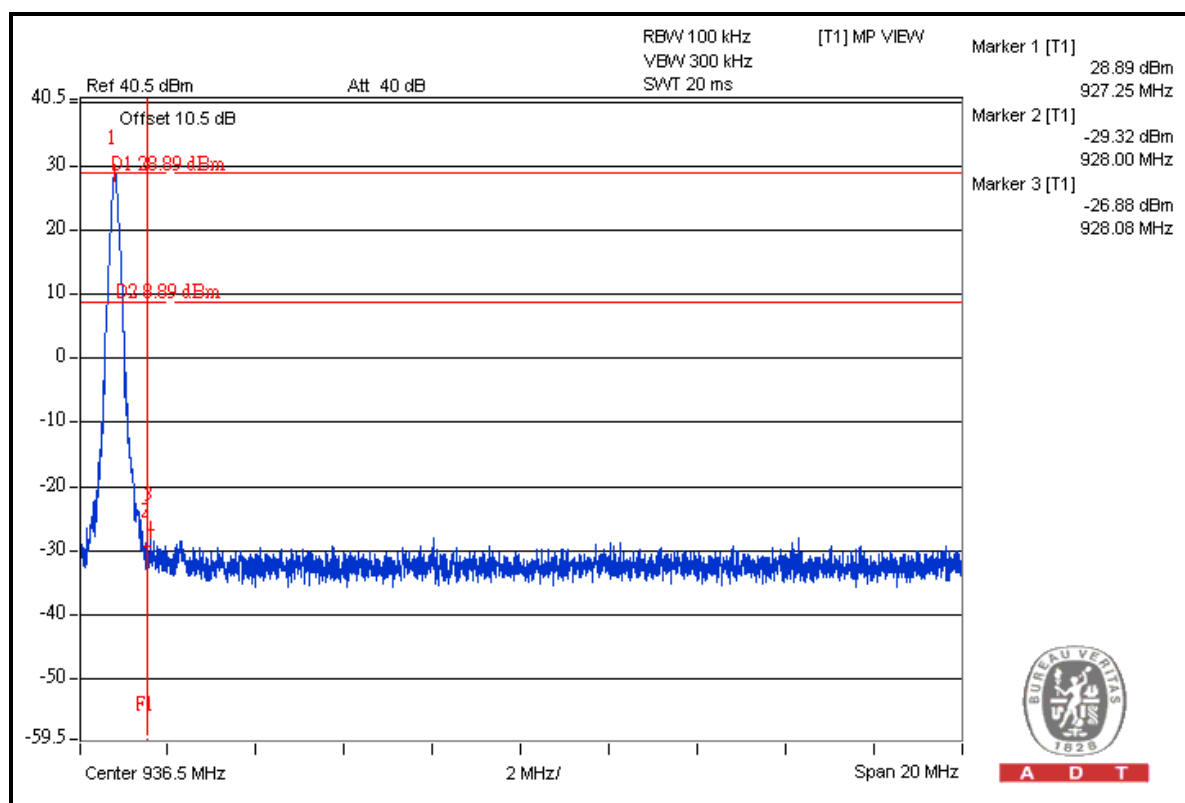
For MRM:
CH 0





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Ref 40.5 dBm Att 40 dB RBW 100 kHz VBW 300 kHz SWT 20 ms [T1] MP VIEW

Offset 10.5 dB

D1 29.10 dBm

D2 9.10 dBm

Marker 1 [T1] 29.10 dBm 902.75 MHz

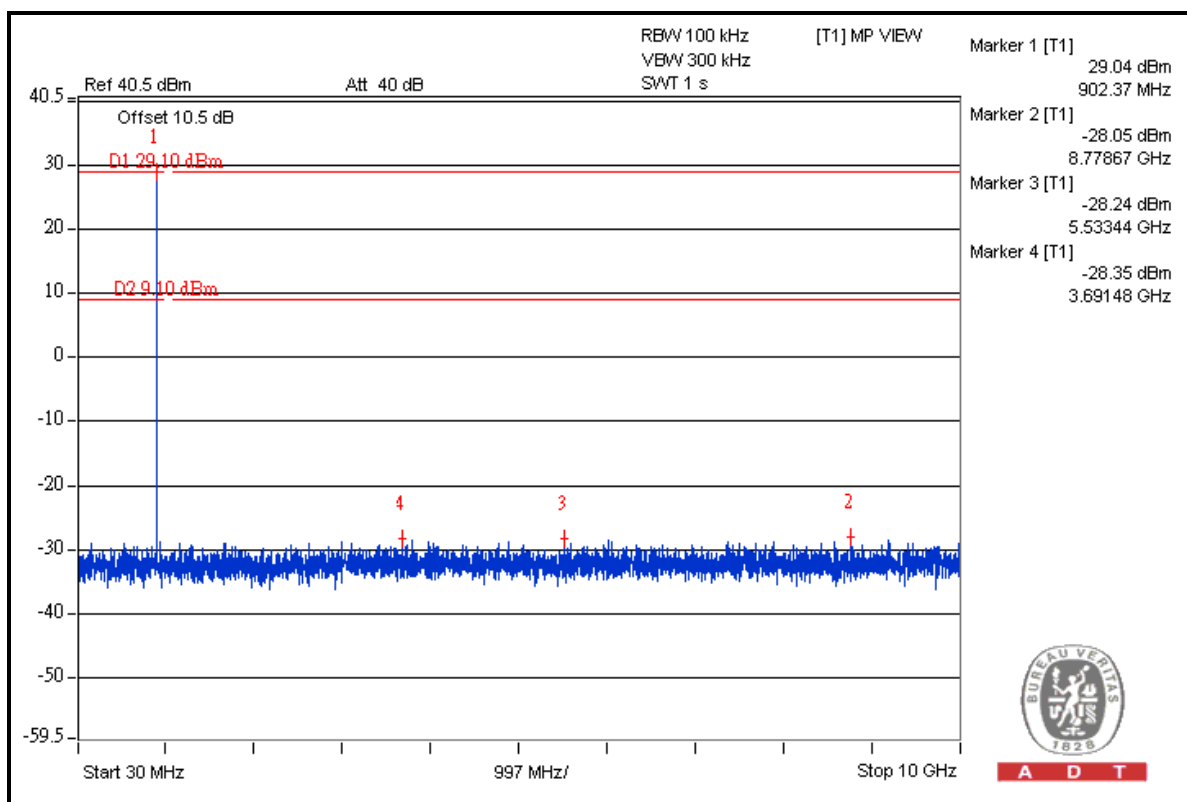
Marker 2 [T1] -30.46 dBm 902.00 MHz

Marker 3 [T1] -27.89 dBm 892.58 MHz

Center 893.5 MHz 2 MHz/ Span 20 MHz

BUREAU VERITAS 1828

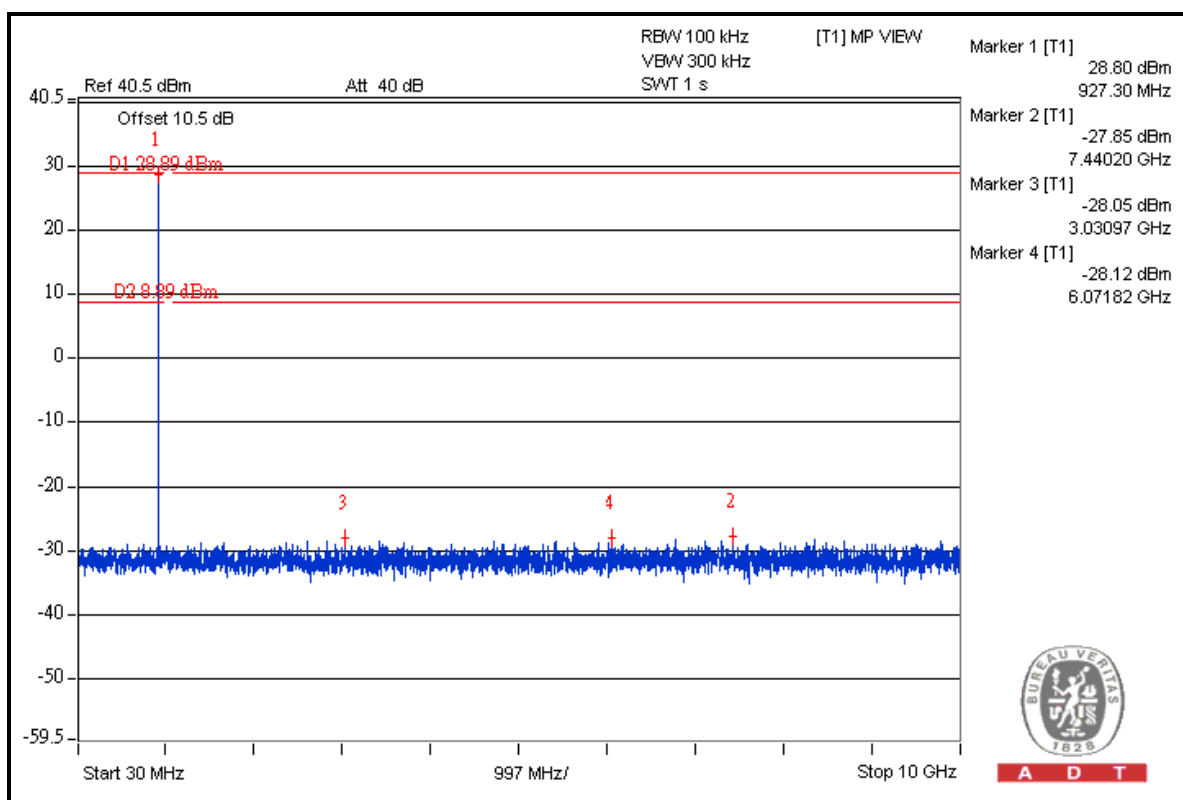
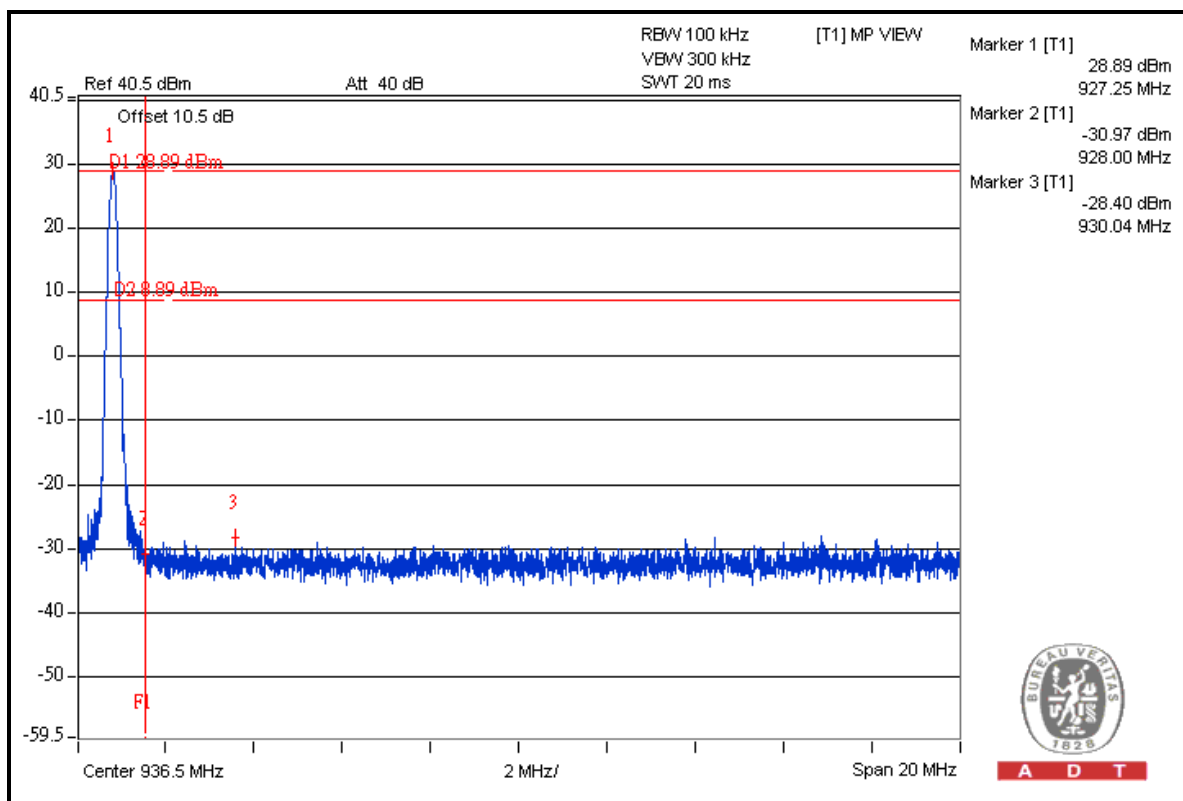
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CH 49





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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: 886-2-26052943

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.

--- END ---