FCC TEST REPORT

REPORT NO.:	RF150203E03
MODEL NO.:	RU00-M03, RU00-M03-XXXX (X= 0~9 , A~Z , Configuration Code)
FCC ID:	MAD-RU00-M03
RECEIVED:	Feb. 03, 2015
TESTED:	Mar. 26 to Apr. 16, 2015
TESTEFFD:	Apr. 24, 2015

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

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

This report should not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF150203E03	Original release	Apr. 24, 2015

1 CERTIFICATION

PRODUCT :	RFID HP-SIP Module
BRAND NAME :	MTI
MODEL NO. :	RU00-M03, RU00-M03-XXXX (X= 0~9 , A~Z , Configuration Code)
APPLICANT :	Microelectronics Technology Inc.
TESTED DATE:	Mar. 26 to Apr. 16, 2015
TEST SAMPLE :	ENGINEERING SAMPLE
STANDARDS :	FCC Part 15, Subpart C (Section 15.247) ANSI C63.10-2009

The above equipment (Model: MAD-RU00-M03) 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. 24, 2015
(Elsie Hsu, Specialist)

APPROVED BY : _____ , **DATE:** Apr. 24, 2015
(May Chen, 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 -15.91dB at 0.15000 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	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 -3.0dB at 2781.00MHz & 2744.25MHz
15.247(d)	Conducted Out-Band Emission Measurement	PASS	Meet the requirement of limit
15.203	Antenna Requirement	-	Antenna connector is SMA Female not a 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	2.86 dB
Radiated emissions (30MHz-1GHz)	5.43 dB
Radiated emissions (1GHz ~6GHz)	3.72 dB
Radiated emissions (6GHz ~18GHz)	4.00 dB
Radiated emissions (18GHz ~40GHz)	4.11 dB

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	RFID HP-SIP Module
MODEL NO.	RU00-M03, RU00-M03-XXXX (X= 0~9 , A~Z , Configuration Code)
POWER SUPPLY	DC 5V
MODULATION TYPE	ASK
MODULATION TECHNOLOGY	FHSS
FREQUENCY RANGE	902.75MHz ~ 927.25MHz
NUMBER OF CHANNEL	50
OUTPUT POWER	968.278mW
ANTENNA TYPE	Please see NOTE
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

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

Brand	Model Name	Description
MTI	RU00-M03	X= 0~9 , A~Z , Configuration Code
	RU00-M03-XXXX	

From the above models, model: RU00-M03 was selected as representative model for the test and its data was recorded in this report.

2. The EUT has three different Link Profile designs as following table:

Type No	Link Profile
1	PR_ASK/M4/250KHz
2	DSB_ASK/FM0/40KHz
3	DSB_ASK/FM0/400KHz

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

Antenna Type	Gain(dBi) (Include cable loss)	Antenna Connector	Cable Loss(dB)	Frequency range (MHz to MHz)
Patch	5.25	SMA Female	0.75	902~928

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

3.2 DESCRIPTION OF TEST MODES

50 channels are provided to this EUT.

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

3.3 TEST MODE APPLICABLITY AND TESTED CHANNEL DETAIL:

EUT CONFIGURE MODE	APPLICABLE TO					DESCRIPTION
	PLC	RE < 1G	RE ≥ 1G	APCM	OB	
1	√	√	√	√	√	With Link Profile design: Type 1
2	-	√	√	√	√	With Link Profile design: Type 2
3	-	√	√	√	√	With Link Profile design: Type 3

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

Conducted Out-Band Emission Measurement:

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

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

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

※ **TEST CONDITION:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
PLC	26deg. C, 70%RH	120Vac, 60 Hz	Barry Lee
RE≥1G	24deg. C, 65%RH 21deg. C, 65%RH	120Vac, 60 Hz	Andy Ho
RE<1G	21deg. C, 68%RH 22deg. C, 64%RH	120Vac, 60 Hz	Tim Ho Weiwei Lo
APCM	25deg. C, 60%RH	120Vac, 60 Hz	Andy Ho
OB	25deg. C, 60%RH	120Vac, 60 Hz	Andy Ho

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 C63.10-2009

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.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	AC Adapter	TRG36A12	36120-0047141	NA	NA	Supplied by Client
B	NOTEBOOK COMPUTER	DELL	PP32LA	HSLB32S	FCC DoC	Provided by Lab

NOTE:

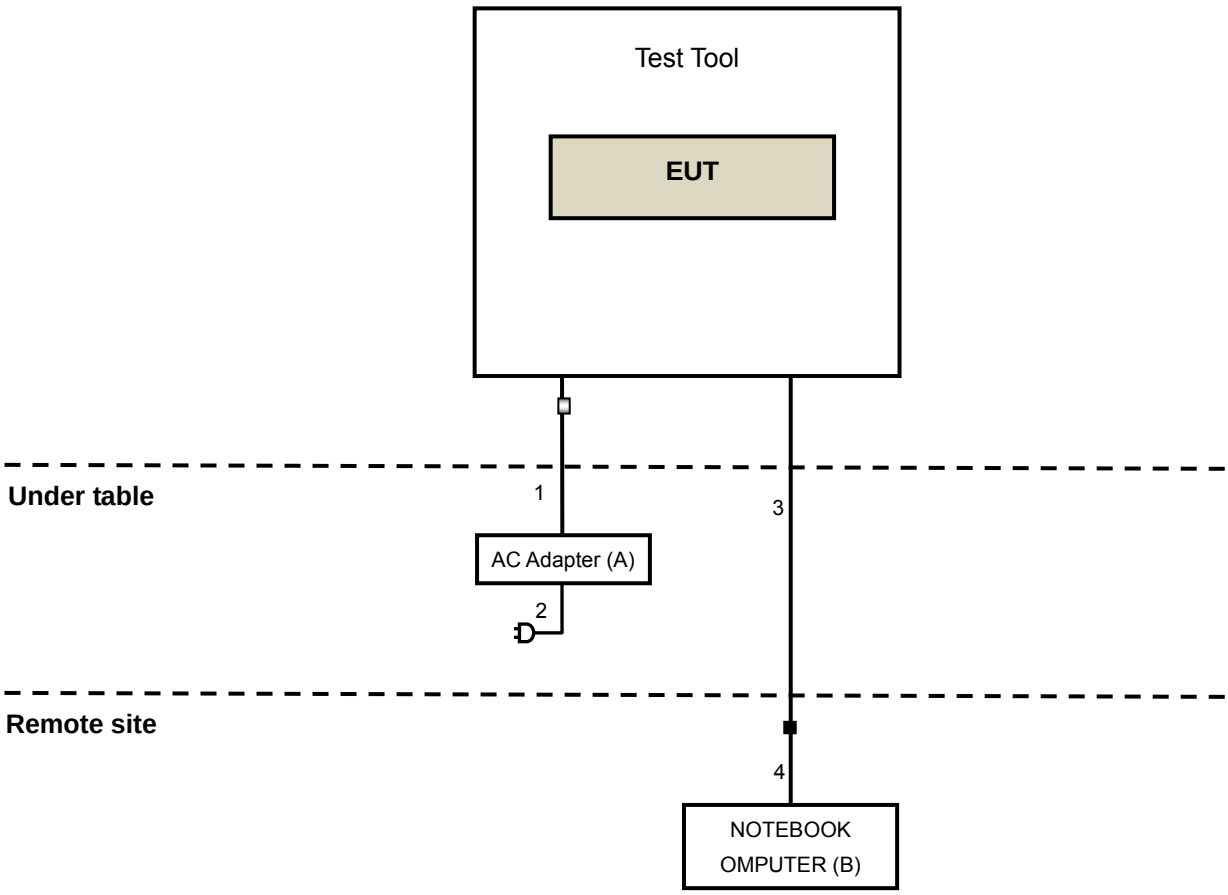
1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	1.8	No	1	Supplied by Client
2	AC	1	1.5	No	0	Supplied by Client
3	RS232	1	10	Yes	0	Supplied by Client
4	USB to RS232	1	1.5	No	0	Provided by Lab

NOTE:

1. The core(s) is(are) originally attached to the cable(s).

3.6 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5	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
Test Receiver ROHDE & SCHWARZ	ESCS 30	100375	Apr. 29, 2014	Apr. 28, 2015
Line-Impedance Stabilization Network (for EUT) SCHWARZBECK	NSLK-8127	8127-522	Sep. 15, 2014	Sep. 14, 2015
Line-Impedance Stabilization Network (for Peripheral) ROHDE & SCHWARZ	ENV216	100071	Nov. 10, 2014	Nov. 09, 2015
RF Cable (JYEBAO)	5D-FB	COCCAB-001	Mar. 09, 2015	Mar. 08, 2016
50 ohms Terminator	N/A	EMC-03	Sep. 22, 2014	Sep. 21, 2015
50 ohms Terminator	N/A	EMC-02	Sep. 30, 2014	Sep. 29, 2015
Software ADT	BV ADT_Cond_V7.3.7.3	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. C.
3 The VCCI Con C Registration No. is C-3611.
4 Tested Date: Apr. 02, 2015

4.1.3 TEST PROCEDURES

a. The EUT 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.

b. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

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

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

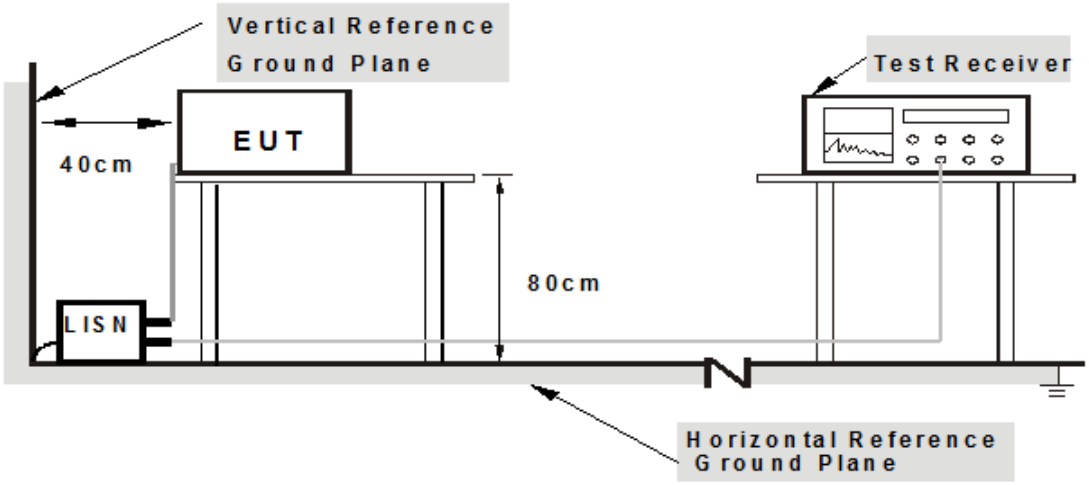
NOTE:

1. The resolution bandwidth of test receiver is 9kHz for Quasi-peak detection (QP) & Average detection (AV).

4.1.4 DEVIATION FROM TEST STANDARD

No deviation

4.1.5 TEST SETUP



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

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

4.1.6 EUT OPERATING CONDITIONS

1. Placed the EUT on the testing table.
2. The support unit B (NB) ran test program “MTI\MTI RFID Explorer v1.2.1” to enable EUT under transmission condition continuously at specific channel frequency.

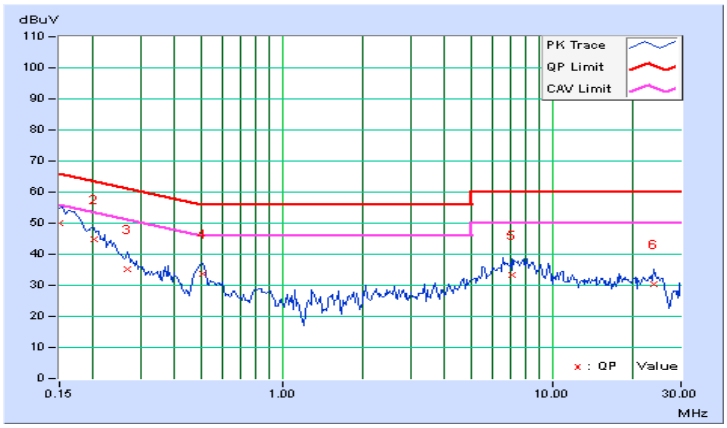
4.1.7 TEST RESULTS

PHASE	Line (L)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**0.08**	**50.01**	**36.66**	**50.09**	**36.74**	**66.00**	**56.00**	**-15.91**	**-19.26**
2	0.20078	0.09	44.82	32.95	44.91	33.04	63.58	53.58	-18.67	-20.54
3	0.26719	0.09	35.18	23.77	35.27	23.86	61.20	51.20	-25.93	-27.34
4	0.50938	0.11	33.62	28.48	33.73	28.59	56.00	46.00	-22.27	-17.41
5	7.07422	0.34	33.03	27.35	33.37	27.69	60.00	50.00	-26.63	-22.31
6	23.84766	0.78	29.65	23.50	30.43	24.28	60.00	50.00	-29.57	-25.72

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

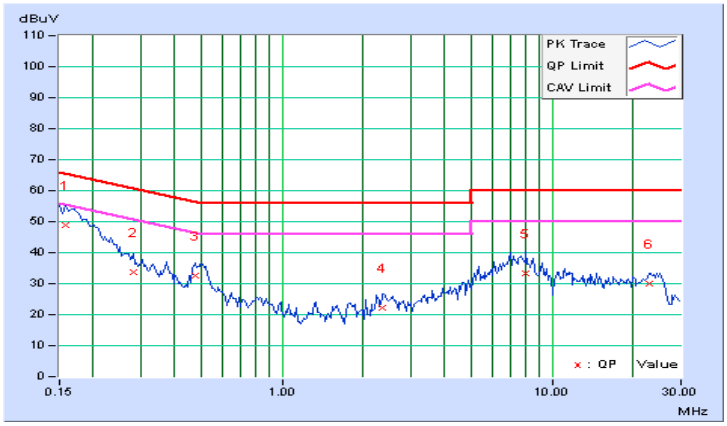


PHASE	Neutral (N)	DETECTOR FUNCTION	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	0.08	48.87	35.32	48.95	35.40	65.58	55.58	-16.63	-20.18
2	0.28281	0.09	33.62	21.33	33.71	21.42	60.73	50.73	-27.02	-29.31
3	0.47422	0.10	32.33	24.95	32.43	25.05	56.44	46.44	-24.01	-21.39
4	2.36328	0.18	22.07	15.80	22.25	15.98	56.00	46.00	-33.75	-30.02
5	7.98047	0.38	33.06	26.49	33.44	26.87	60.00	50.00	-26.56	-23.13
6	22.80859	0.81	29.14	23.07	29.95	23.88	60.00	50.00	-30.05	-26.12

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

CONDITION	HOPPING FREQUENCY USED	APPLICATION	TEST MODE
20dB Bandwidth <250kHz	hopping channels ≧50	v	MODE 1, 2
20dB Bandwidth >250kHz	hopping channels ≧25	v	MODE 3

4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. 14, 2015

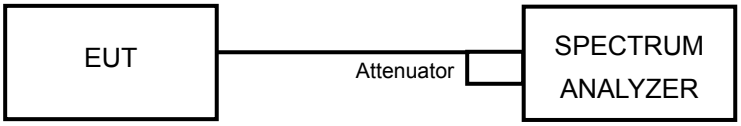
4.2.3 TEST PROCEDURES

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

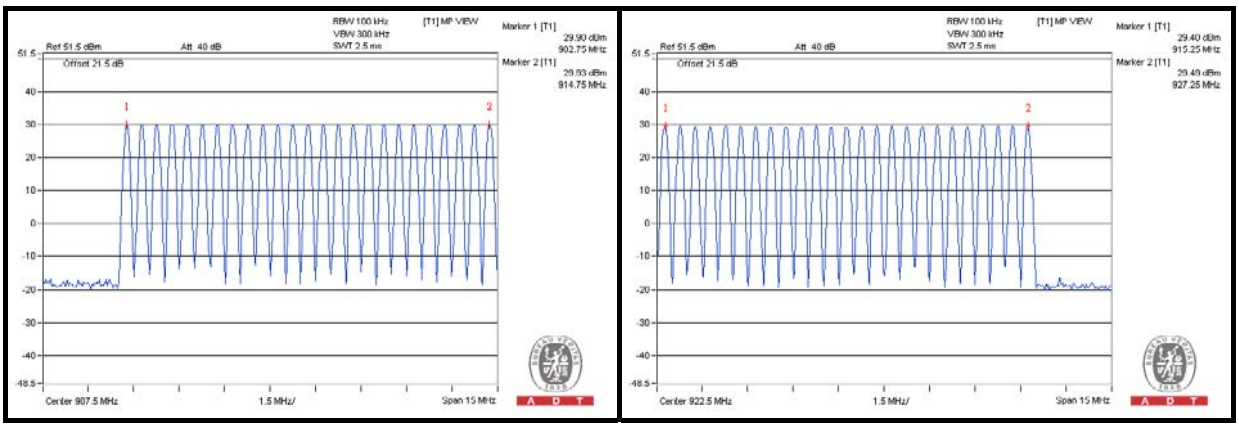
No deviation

4.2.5 TEST SETUP



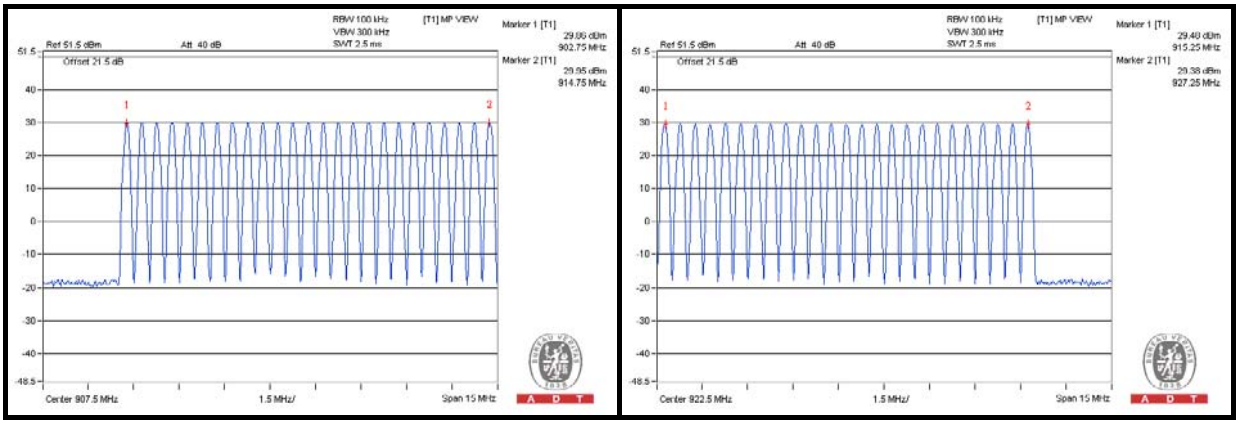
4.2.6 TEST RESULTS (MODE 1)

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.



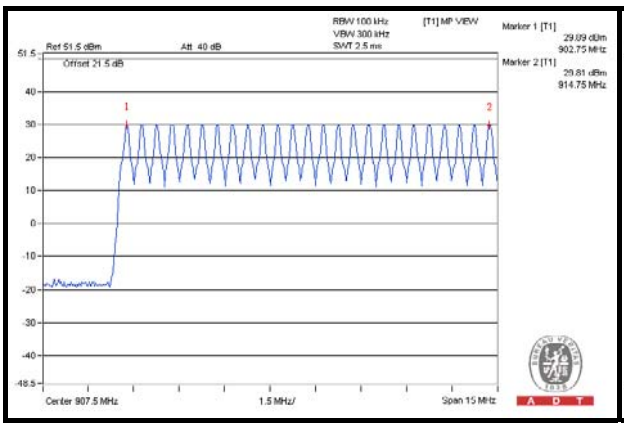
4.2.7 TEST RESULTS (MODE 2)

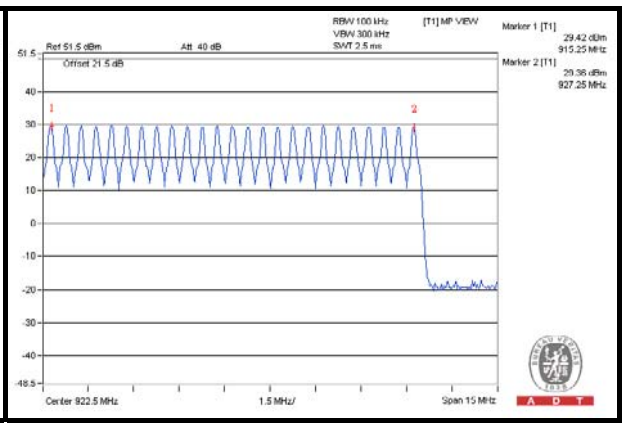
There are 50 hopping frequencies in the hopping mode. Please refer to next page for the test result. On the plots, it shows that the hopping frequencies are equally spaced.



4.2.8 TEST RESULTS (MODE 3)

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.





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	TEST MODE
20dB Bandwidth <250kHz (hopping channels ≧50)	0.4 seconds within a 20 second period	v	MODE 1, 2
20dB Bandwidth >250kHz (hopping channels ≧25)	0.4 seconds within a 10 second period	v	MODE 3

4.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. 14, 2015

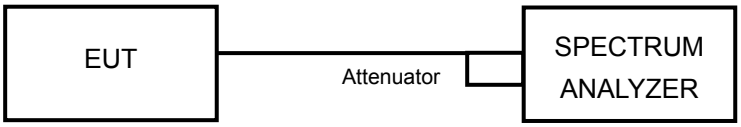
4.3.3 TEST PROCEDURES

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

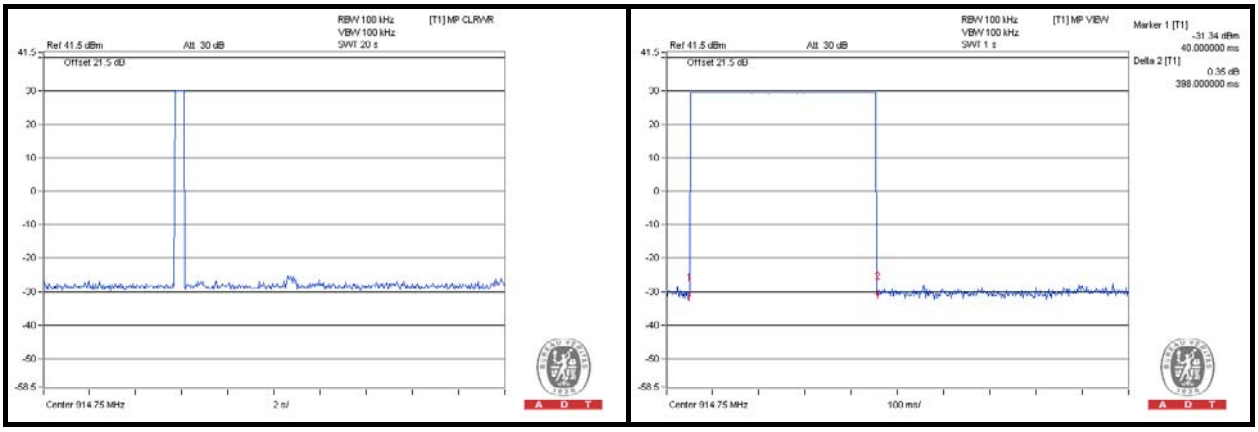
No deviation

4.3.5 TEST SETUP



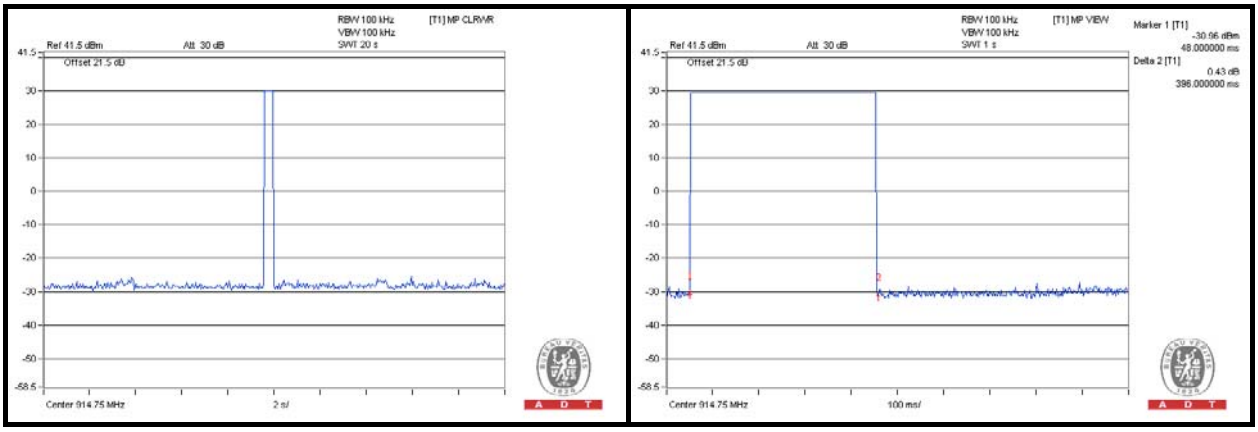
4.3.6 TEST RESULTS (MODE 1)

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 time	398	398	400



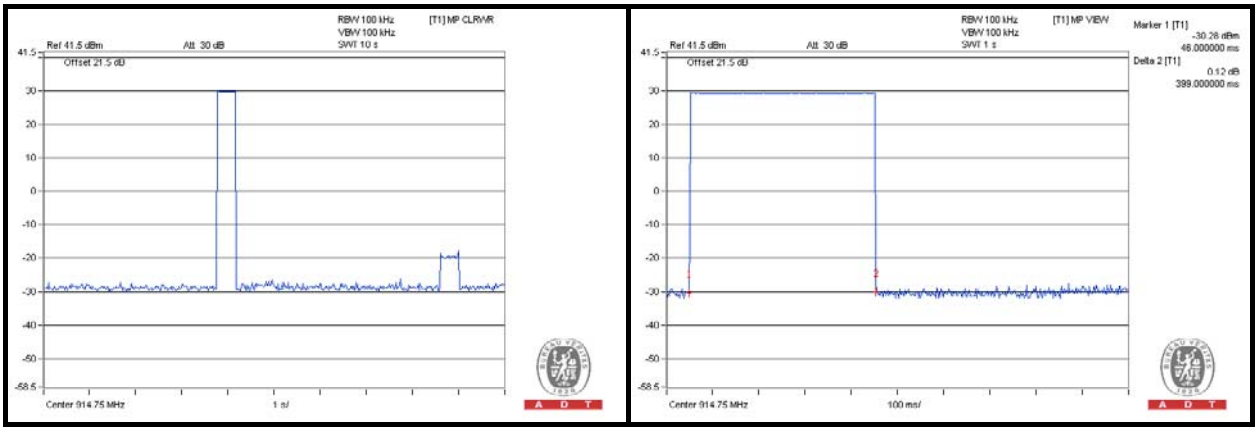
4.3.7 TEST RESULTS (MODE 2)

Number of transmission in a 20 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 time	396	396	400



4.3.8 TEST RESULTS (MODE 3)

Number of transmission in a 10 s	Length of transmission time (msec)	Result (msec)	Limit (msec)
1 time	399	399	400



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.

CONDITION	APPLICATION	TEST MODE
20dB Bandwidth <250kHz (hopping channels ≧50)	v	MODE 1, 2
20dB Bandwidth >250kHz (hopping channels ≧25)	v	MODE 3

4.4.1 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. 14, 2015

4.4.2 TEST PROCEDURE

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

4.4.3 DEVIATION FROM TEST STANDARD

No deviation

4.4.4 TEST SETUP

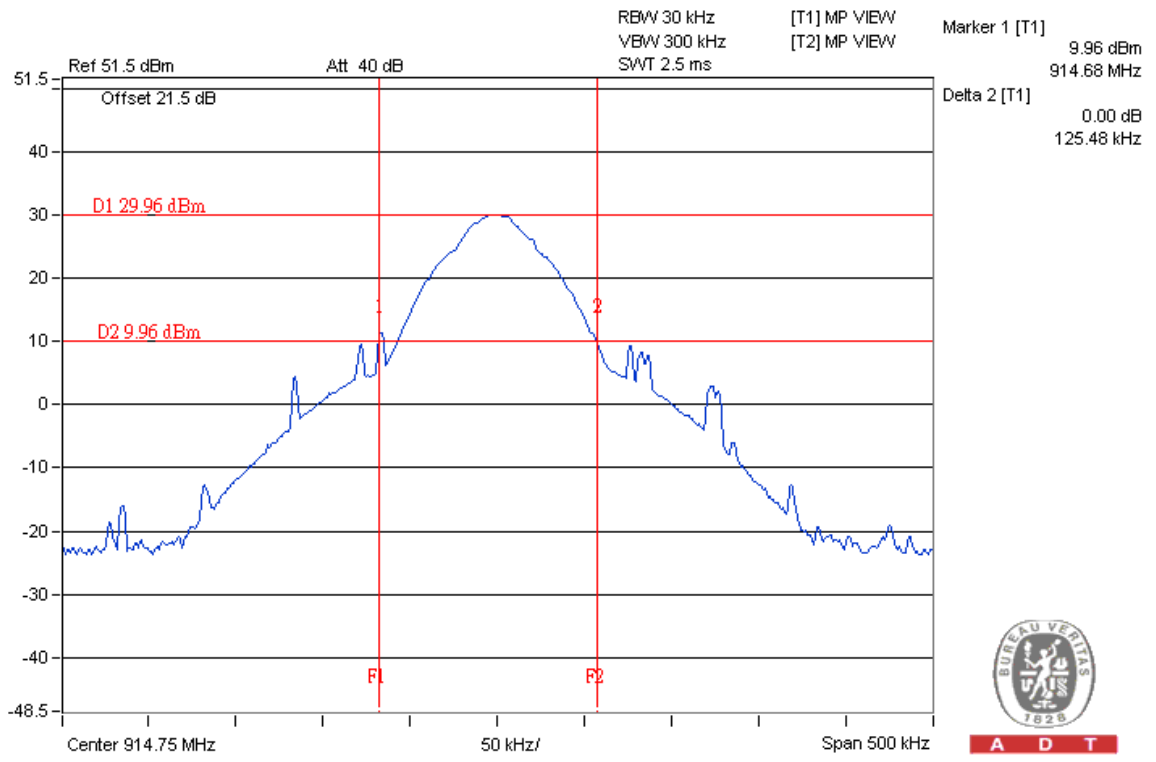
4.4.5 EUT OPERATING CONDITION

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

4.4.6 TEST RESULTS (MODE 1)

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

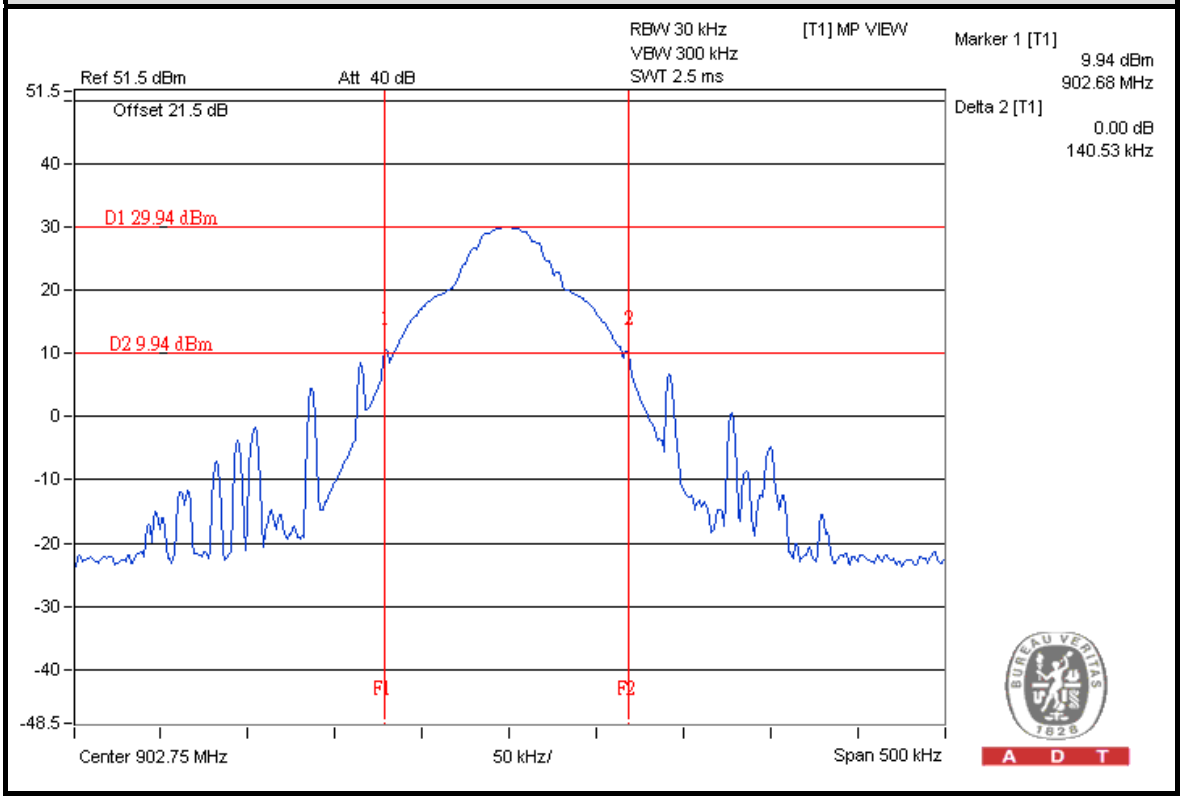
SPECTRUM PLOT OF WORST VALUE



4.4.7 TEST RESULTS (MODE 2)

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.14
24	914.75	0.13
49	927.25	0.13

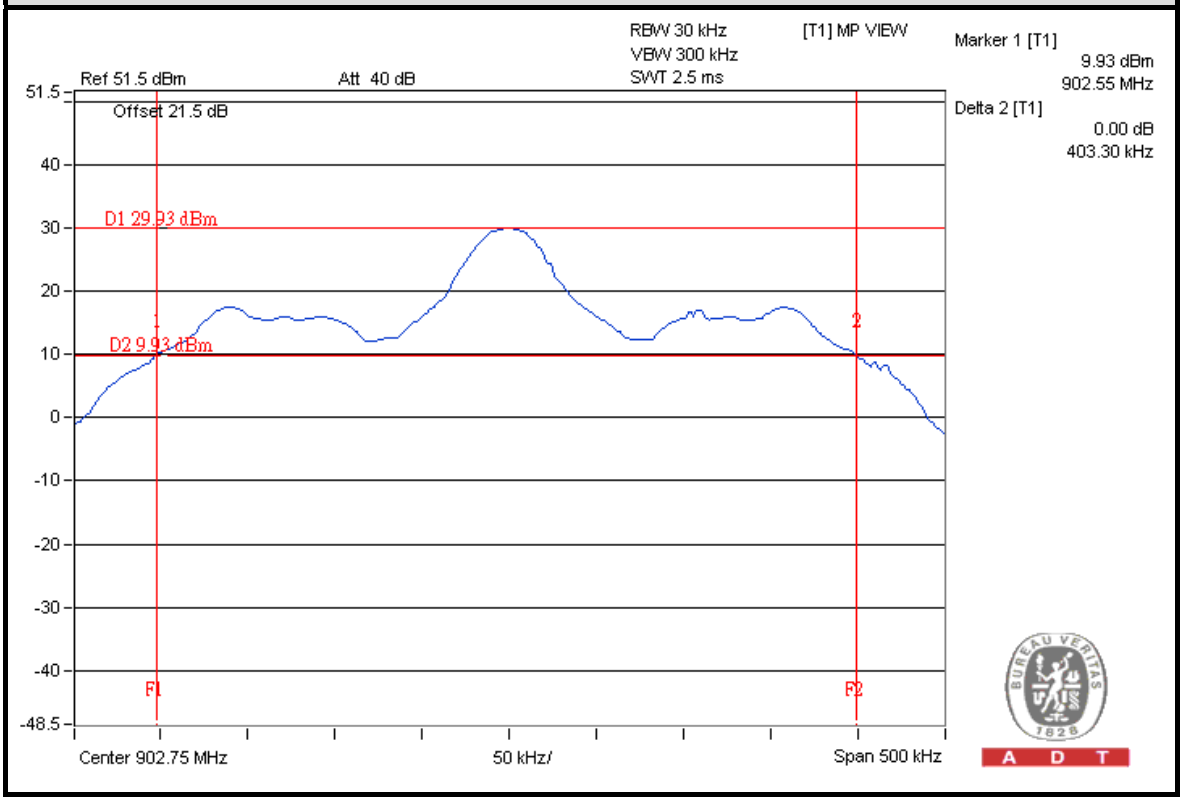
SPECTRUM PLOT OF WORST VALUE



4.4.8 TEST RESULTS (MODE 3)

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
0	902.75	0.40
24	914.75	0.40
49	927.25	0.40

SPECTRUM PLOT OF WORST VALUE



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
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. 14, 2015

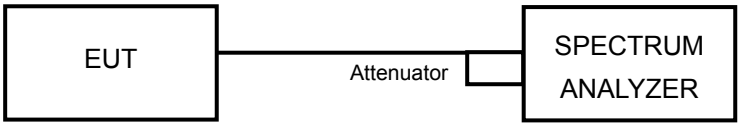
4.5.3 TEST PROCEDURES

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

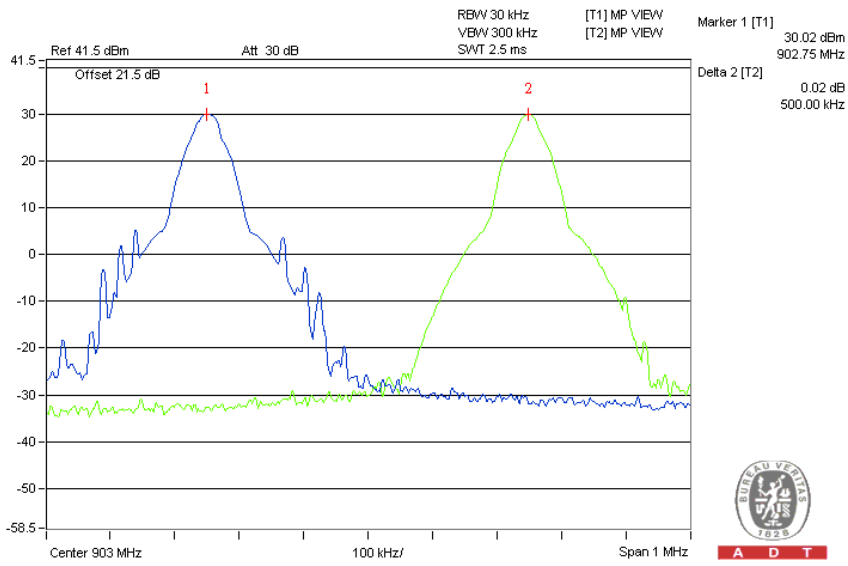


4.5.6 TEST RESULTS (MODE 1)

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

The minimum limit is 20dB bandwidth.

SPECTRUM PLOT OF WORST VALUE

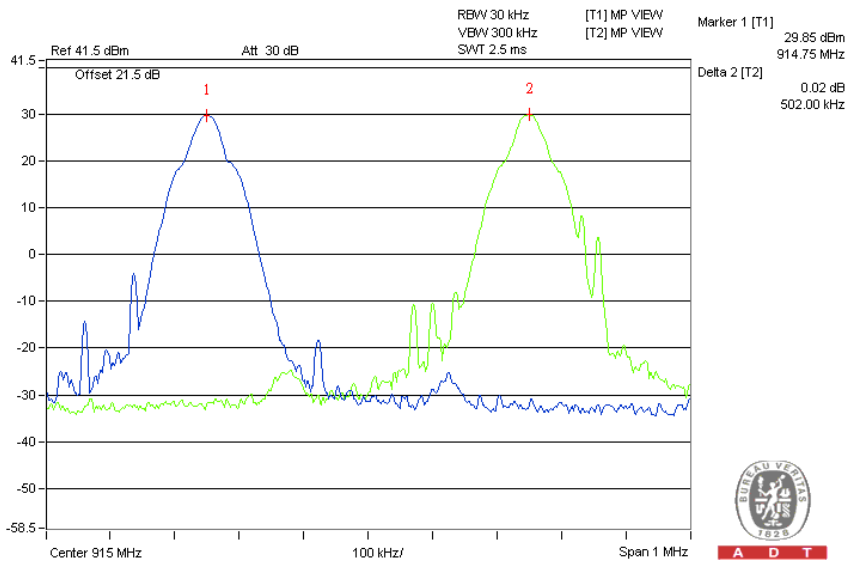


4.5.7 TEST RESULTS (MODE 2)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.50	0.14	PASS
24	914.75	0.50	0.13	PASS
49	927.25	0.51	0.13	PASS

The minimum limit is 20dB bandwidth.

SPECTRUM PLOT OF WORST VALUE

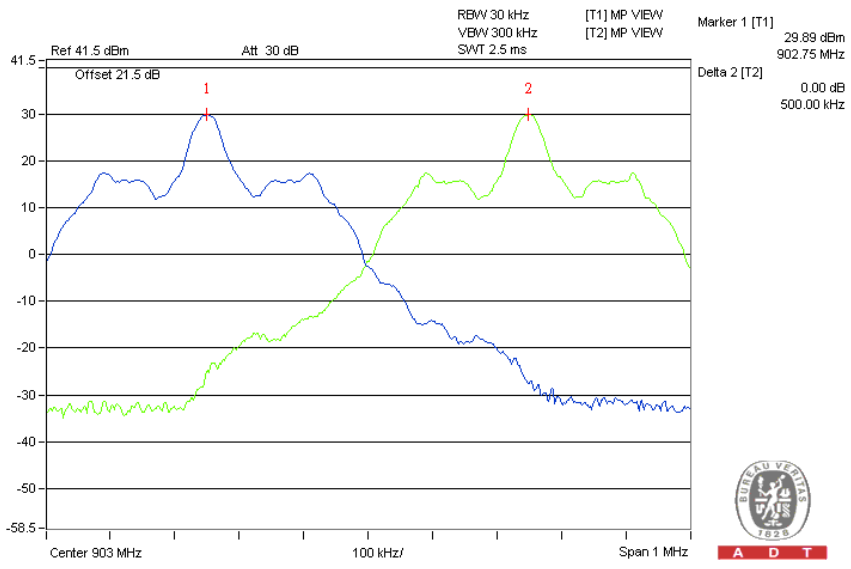


4.5.8 TEST RESULTS (MODE 3)

Channel	Frequency (MHz)	Adjacent Channel Separation (MHz)	Minimum Limit (MHz)	Pass / Fail
0	902.75	0.50	0.4	PASS
24	914.75	0.50	0.4	PASS
49	927.25	0.50	0.4	PASS

The minimum limit is 20dB bandwidth.

SPECTRUM PLOT OF WORST VALUE



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
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. 14, 2015

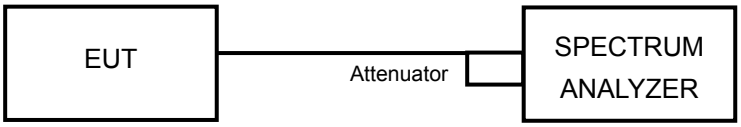
4.6.3 TEST PROCEDURES

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



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

4.6.6 EUT OPERATING CONDITION

The software (MTI\MTI RFID Explorer v1.2.1) provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS (MODE 1)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	902.75	968.278	29.86	1000	PASS
24	914.75	941.890	29.74	1000	PASS
49	927.25	948.418	29.77	1000	PASS

4.6.8 TEST RESULTS (MODE 2)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	902.75	941.890	29.74	1000	PASS
24	914.75	916.220	29.62	1000	PASS
49	927.25	922.571	29.65	1000	PASS

4.6.9 TEST RESULTS (MODE 3)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (mW)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (mW)	PASS/FAIL
0	902.75	935.406	29.71	1000	PASS
24	914.75	928.966	29.68	1000	PASS
49	927.25	903.649	29.56	1000	PASS

4.7 RADIATED EMISSION AND BANDEDGE MEASUREMENT

4.7.1 LIMITS OF RADIATED EMISSION AND BANDEDGE MEASUREMENT

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

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

NOTE:

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

For below 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21,2014	July 20,2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 16, 2015	Jan. 15, 2016
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	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.
7 Tested Date: Apr. 02, 2015

For above 1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 06, 2015	Feb. 05, 2016
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131213 131215 SNMY23685/4	Jan. 16, 2015	Jan. 15, 2016
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Dec. 12, 2014	Dec. 11, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	329751/4 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	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: Apr. 16, 2015

4.7.3 TEST PROCEDURES

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

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

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak 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. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

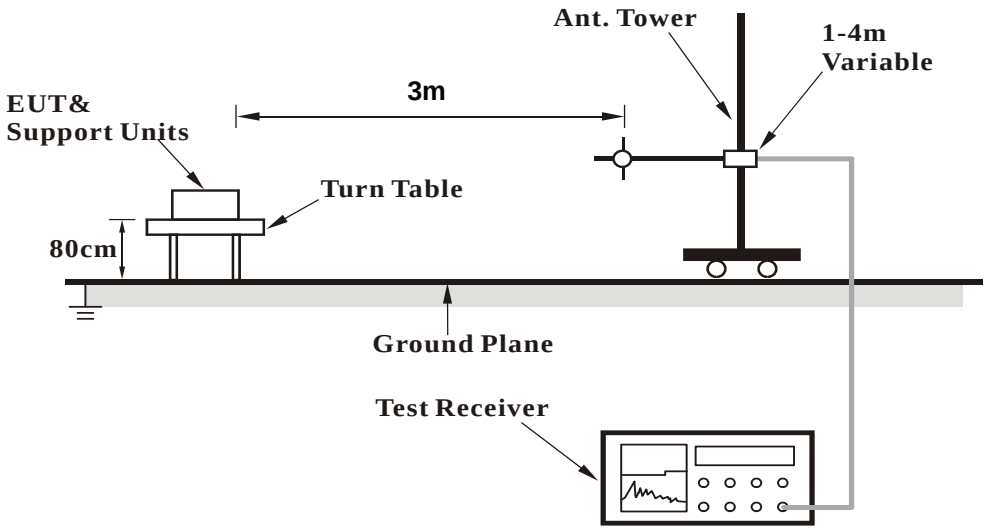
NOTE:

1. For emission measurements above 1 GHz, the EUT shall be placed at a height of 1.5 m above the ground at 3 meter chamber room for test
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz Quasi-peak detection (QP) at frequency below 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



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

4.7.6 EUT OPERATING CONDITION

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

4.7.7 TEST RESULTS (MODE 1)

BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	26.9 QP	40.0	-13.1	2.00 H	298	41.98	-15.08
2	152.90	29.1 QP	43.5	-14.4	1.50 H	67	41.88	-12.81
3	166.38	30.1 QP	43.5	-13.4	1.50 H	122	43.34	-13.23
4	179.91	30.2 QP	43.5	-13.3	2.00 H	117	44.65	-14.46
5	192.86	32.2 QP	43.5	-11.3	2.00 H	360	47.98	-15.81
6	494.68	29.9 QP	46.0	-16.1	2.00 H	360	37.26	-7.35
7	902.31	58.32 QP	101.12	-42.8	1.50 H	0	30.74	27.58
8	*902.75	121.12 QP	-	-	1.50 H	0	93.53	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	69.04	33.3 QP	40.0	-6.7	1.00 V	10	48.39	-15.13
2	139.32	28.2 QP	43.5	-15.3	1.00 V	18	41.63	-13.42
3	152.27	30.2 QP	43.5	-13.3	1.00 V	2	42.97	-12.79
4	166.38	29.0 QP	43.5	-14.5	1.00 V	1	42.21	-13.23
5	181.66	30.6 QP	43.5	-12.9	1.00 V	215	45.31	-14.72
6	192.86	31.4 QP	43.5	-12.1	1.00 V	62	47.20	-15.81
7	902.00	59.81 QP	102.71	-42.9	1.50 V	351	32.24	27.57
8	*902.75	122.71 QP	-	-	1.00 V	354	95.12	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) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	27.0 QP	40.0	-13.1	1.68 H	145	42.03	-15.08
2	152.90	29.2 QP	43.5	-14.3	1.22 H	249	41.97	-12.81
3	166.38	30.1 QP	43.5	-13.4	1.47 H	255	43.31	-13.23
4	179.91	30.2 QP	43.5	-13.3	1.84 H	297	44.69	-14.46
5	192.86	32.3 QP	43.5	-11.2	1.57 H	288	48.07	-15.81
6	494.68	29.9 QP	46.0	-16.1	1.56 H	227	37.22	-7.35
7	*914.75	121.27 QP	-	-	2.00 H	360	93.36	27.91
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	69.05	33.3 QP	40.0	-6.7	1.00 V	223	48.44	-15.13
2	139.32	28.3 QP	43.5	-15.3	1.54 V	223	41.67	-13.42
3	152.27	30.2 QP	43.5	-13.3	1.27 V	248	43.02	-12.79
4	166.38	28.9 QP	43.5	-14.6	1.53 V	224	42.09	-13.23
5	181.66	30.6 QP	43.5	-12.9	1.18 V	263	45.34	-14.72
6	192.86	31.4 QP	43.5	-12.1	1.15 V	172	47.22	-15.81
7	*914.75	121.3 QP	-	-	1.00 V	355	93.39	27.91

REMARKS:

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

CHANNEL	TX Channel 49	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	26.9 QP	40.0	-13.1	1.42 H	207	41.96	-15.08
2	152.90	29.1 QP	43.5	-14.4	1.05 H	189	41.93	-12.81
3	166.38	30.2 QP	43.5	-13.3	1.53 H	97	43.39	-13.23
4	179.91	30.2 QP	43.5	-13.3	1.76 H	64	44.65	-14.46
5	192.86	32.3 QP	43.5	-11.2	1.66 H	247	48.13	-15.81
6	494.68	29.7 QP	46.0	-16.3	1.05 H	307	37.09	-7.35
7	*927.25	121.43 QP	-	-	1.15 H	0	93.23	28.20
8	928.00	55.64 QP	101.43	-45.79	1.15 H	0	27.44	28.20
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	69.05	33.3 QP	40.0	-6.7	1.21 V	203	48.47	-15.13
2	139.32	28.3 QP	43.5	-15.2	1.32 V	224	41.72	-13.42
3	152.27	30.3 QP	43.5	-13.2	1.08 V	274	43.05	-12.79
4	166.38	28.9 QP	43.5	-14.6	1.50 V	223	42.10	-13.23
5	181.66	30.6 QP	43.5	-12.9	1.06 V	207	45.35	-14.72
6	192.86	31.5 QP	43.5	-12.0	1.64 V	23	47.30	-15.81
7	*927.25	121.43 QP	-	-	1.00 V	359	93.23	28.20
8	928.00	59.00 QP	101.43	-42.43	1.00 V	344	30.80	28.20

REMARKS:

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

ABOVE 1GHz DATA

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	2708.25	49.0 PK	74.0	-25.0	1.00 H	64	16.30	32.70
2	2708.25	41.5 AV	54.0	-12.5	1.00 H	64	8.80	32.70
3	3611.00	49.6 PK	74.0	-24.4	1.37 H	20	14.37	35.23
4	3611.00	42.6 AV	54.0	-11.4	1.37 H	20	7.37	35.23
5	4513.75	49.3 PK	74.0	-24.7	1.56 H	334	8.44	40.86
6	4513.75	37.0 AV	54.0	-17.0	1.56 H	334	-3.86	40.86
7	5416.50	50.5 PK	74.0	-23.5	1.50 H	37	9.00	41.50
8	5416.50	38.5 AV	54.0	-15.5	1.50 H	37	-3.00	41.50
9	8124.75	56.5 PK	74.0	-17.5	1.00 H	0	9.24	47.26
10	8124.75	43.8 AV	54.0	-10.2	1.00 H	0	-3.46	47.26
11	9027.50	56.5 PK	74.0	-17.5	1.00 H	68	9.44	47.06
12	9027.50	44.8 AV	54.0	-9.2	1.00 H	68	-2.26	47.06
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	53.1 PK	74.0	-20.9	2.12 V	19	20.40	32.70
2	2708.25	48.2 AV	54.0	-5.8	2.12 V	19	15.50	32.70
3	3611.00	51.3 PK	74.0	-22.7	1.83 V	261	16.07	35.23
4	3611.00	45.6 AV	54.0	-8.4	1.83 V	261	10.37	35.23
5	4513.75	50.8 PK	74.0	-23.2	1.48 V	135	9.94	40.86
6	4513.75	40.8 AV	54.0	-13.2	1.48 V	135	-0.06	40.86
7	5416.50	52.5 PK	74.0	-21.5	1.50 V	337	10.96	41.50
8	5416.50	43.0 AV	54.0	-11.0	1.50 V	337	1.50	41.50
9	8124.75	54.8 PK	74.0	-19.2	1.28 V	188	7.54	47.26
10	8124.75	46.2 AV	54.0	-7.8	1.28 V	188	-1.06	47.26
11	9027.50	57.4 PK	74.0	-16.6	1.95 V	138	10.34	47.06
12	9027.50	44.6 AV	54.0	-9.4	1.95 V	138	-2.46	47.06

REMARKS:

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

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	2744.25	51.8 PK	74.0	-22.2	1.30 H	66	18.99	32.81
2	2744.25	46.8 AV	54.0	-7.2	1.30 H	66	13.99	32.81
3	3659.00	47.7 PK	74.0	-26.3	1.23 H	38	12.28	35.42
4	3659.00	39.7 AV	54.0	-14.3	1.23 H	38	4.28	35.42
5	4573.75	51.7 PK	74.0	-22.3	1.40 H	24	10.83	40.87
6	4573.75	40.6 AV	54.0	-13.4	1.40 H	24	-0.27	40.87
7	7318.00	55.9 PK	74.0	-18.1	2.15 H	182	10.43	45.47
8	7318.00	44.0 AV	54.0	-10.0	2.15 H	182	-1.47	45.47
9	8232.75	55.1 PK	74.0	-18.9	2.34 H	208	7.87	47.23
10	8232.75	43.0 AV	54.0	-11.0	2.34 H	208	-4.23	47.23
11	9147.50	56.5 PK	74.0	-17.5	1.00 H	79	9.56	46.94
12	9147.50	44.6 AV	54.0	-9.4	1.00 H	79	-2.34	46.94
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	55.4 PK	74.0	-18.6	1.19 V	360	22.59	32.81
2	**2744.25**	**51.0 AV**	**54.0**	**-3.0**	**1.19 V**	**360**	**18.17**	**32.81**
3	3659.00	51.3 PK	74.0	-22.7	1.81 V	327	15.88	35.42
4	3659.00	45.5 AV	54.0	-8.5	1.81 V	327	10.08	35.42
5	4573.75	53.0 PK	74.0	-21.0	1.81 V	327	12.13	40.87
6	4573.75	43.5 AV	54.0	-10.5	1.81 V	327	2.63	40.87
7	7318.00	56.7 PK	74.0	-17.3	1.04 V	195	11.23	45.47
8	7318.00	46.9 AV	54.0	-7.1	1.04 V	195	1.43	45.47
9	8232.75	57.1 PK	74.0	-16.9	2.34 V	187	9.87	47.23
10	8232.75	47.0 AV	54.0	-7.0	2.34 V	187	-0.23	47.23
11	9147.50	57.2 PK	74.0	-16.8	1.98 V	126	10.26	46.94
12	9147.50	44.5 AV	54.0	-9.5	1.98 V	126	-2.44	46.94

REMARKS:

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

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	2781.75	54.0 PK	74.0	-20.0	1.66 H	80	21.08	32.92
2	2781.75	49.7 AV	54.0	-4.3	1.66 H	80	16.78	32.92
3	3709.00	47.9 PK	74.0	-26.1	1.00 H	31	12.29	35.61
4	3709.00	37.9 AV	54.0	-16.1	1.00 H	31	2.29	35.61
5	4636.25	48.9 PK	74.0	-25.1	1.08 H	38	8.08	40.82
6	4636.25	38.1 AV	54.0	-15.9	1.08 H	38	-2.72	40.82
7	7418.00	56.2 PK	74.0	-17.8	1.00 H	270	10.40	45.80
8	7418.00	42.8 AV	54.0	-11.2	1.00 H	270	-3.00	45.80
9	8345.25	55.9 PK	74.0	-18.1	1.00 H	328	8.81	47.09
10	8345.25	42.8 AV	54.0	-11.2	1.00 H	328	-4.29	47.09
11	#9272.50	55.9 PK	74.0	-18.1	1.18 H	139	8.92	46.98
12	#9272.50	43.2 AV	54.0	-10.8	1.18 H	139	-3.78	46.98
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	2781.00	56.3 PK	74.0	-17.7	1.18 V	28	23.38	32.92
2	**2781.00**	**51.0 AV**	**54.0**	**-3.0**	**1.18 V**	**28**	**18.06**	**32.92**
3	3709.00	51.0 PK	74.0	-23.0	1.75 V	334	15.39	35.61
4	3709.00	44.2 AV	54.0	-9.8	1.75 V	334	8.59	35.61
5	4636.25	51.9 PK	74.0	-22.1	1.30 V	123	11.08	40.82
6	4636.25	42.1 AV	54.0	-11.9	1.30 V	123	1.28	40.82
7	7418.00	55.7 PK	74.0	-18.3	1.33 V	160	9.90	45.80
8	7418.00	42.9 AV	54.0	-11.1	1.33 V	160	-2.90	45.80
9	8345.25	57.1 PK	74.0	-16.9	2.17 V	57	10.01	47.09
10	8345.25	45.9 AV	54.0	-8.1	2.17 V	57	-1.19	47.09
11	#9272.50	56.1 PK	74.0	-17.9	1.92 V	310	9.12	46.98
12	#9272.50	43.4 AV	54.0	-10.6	1.92 V	310	-3.58	46.98

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

4.7.8 TEST RESULTS (MODE 2)

BELOW 1GHz DATA

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	27.0 QP	40.0	-13.1	1.50 H	157	42.03	-15.08
2	152.90	29.1 QP	43.5	-14.4	1.00 H	116	41.94	-12.81
3	166.38	31.2 QP	43.5	-12.3	1.48 H	206	44.47	-13.23
4	179.91	30.2 QP	43.5	-13.3	1.50 H	279	44.69	-14.46
5	192.87	32.3 QP	43.5	-11.2	1.55 H	198	48.13	-15.81
6	494.68	29.8 QP	46.0	-16.3	1.50 H	114	37.10	-7.35
7	902.17	74.53 QP	101.32	-26.79	1.80 H	170	46.66	27.87
8	*902.75	121.32 QP	-	-	1.80 H	170	93.43	27.89
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	69.04	33.2 QP	40.0	-6.8	1.12 V	253	48.37	-15.13
2	139.32	28.4 QP	43.5	-15.2	1.50 V	282	41.77	-13.42
3	152.27	30.2 QP	43.5	-13.3	1.15 V	243	43.02	-12.79
4	166.38	29.1 QP	43.5	-14.4	1.00 V	165	42.35	-13.23
5	181.66	30.7 QP	43.5	-12.9	1.24 V	223	45.37	-14.72
6	192.86	31.4 QP	43.5	-12.1	1.53 V	255	47.25	-15.81
7	902.46	74.32 QP	101.62	-27.3	1.67 V	170	46.44	27.88
8	*902.75	121.62 QP	-	-	1.67 V	170	93.73	27.89

REMARKS:

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

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	26.9 QP	40.0	-13.2	1.43 H	163	41.93	-15.08
2	152.90	29.3 QP	43.5	-14.3	1.24 H	123	42.06	-12.81
3	166.38	31.3 QP	43.5	-12.2	1.35 H	211	44.54	-13.23
4	179.91	30.2 QP	43.5	-13.3	1.42 H	189	44.62	-14.46
5	192.86	32.3 QP	43.5	-11.2	1.38 H	206	48.11	-15.81
6	494.68	29.7 QP	46.0	-16.3	1.49 H	205	37.03	-7.35
7	*914.75	121.63 QP	-	-	1.80 H	180	93.42	28.21
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	69.04	33.2 QP	40.0	-6.8	1.24 V	237	48.32	-15.13
2	139.32	28.3 QP	43.5	-15.2	1.49 V	192	41.71	-13.42
3	152.27	30.2 QP	43.5	-13.3	1.62 V	227	42.97	-12.79
4	166.38	29.2 QP	43.5	-14.3	1.43 V	264	42.45	-13.23
5	181.66	30.6 QP	43.5	-12.9	1.06 V	317	45.33	-14.72
6	192.87	31.6 QP	43.5	-11.9	1.43 V	279	47.40	-15.81
7	*914.75	116.59 QP	-	-	1.09 V	182	93.58	28.21

REMARKS:

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

CHANNEL	TX Channel 49	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	26.8 QP	40.0	-13.2	1.00 H	223	41.92	-15.08
2	152.89	29.3 QP	43.5	-14.2	1.06 H	274	42.07	-12.81
3	166.38	31.3 QP	43.5	-12.2	1.63 H	109	44.56	-13.23
4	179.91	30.4 QP	43.5	-13.2	1.00 H	274	44.81	-14.46
5	192.86	32.4 QP	43.5	-11.1	1.00 H	204	48.19	-15.81
6	494.68	29.8 QP	46.0	-16.2	1.00 H	255	37.19	-7.35
7	*927.26	121.67 QP	-	-	1.60 H	180	93.29	28.38
8	928.54	55.37 QP	101.67	-46.3	1.60 H	180	26.97	28.40
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	69.05	33.3 QP	40.0	-6.8	1.06 V	148	48.38	-15.13
2	139.32	28.4 QP	43.5	-15.1	1.00 V	223	41.78	-13.42
3	152.27	30.3 QP	43.5	-13.2	1.16 V	306	43.07	-12.79
4	166.38	29.3 QP	43.5	-14.3	1.72 V	68	42.48	-13.23
5	181.66	30.6 QP	43.5	-12.9	1.24 V	139	45.30	-14.72
6	192.87	31.6 QP	43.5	-11.9	1.09 V	247	47.44	-15.81
7	*927.26	121.74 QP	-	-	1.80 V	200	93.36	28.38
8	928.67	55.37 QP	101.74	-46.37	1.80 V	200	26.97	28.40

REMARKS:

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

ABOVE 1GHz DATA

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	2708.25	50.1 PK	74.0	-23.9	1.19 H	125	52.01	-1.91
2	2708.25	43.5 AV	54.0	-10.5	1.19 H	125	45.41	-1.91
3	3611.00	48.1 PK	74.0	-25.9	2.03 H	54	47.70	0.40
4	3611.00	38.9 AV	54.0	-15.1	2.03 H	54	38.50	0.40
5	4513.75	48.7 PK	74.0	-25.3	2.03 H	217	44.14	4.56
6	4513.75	37.0 AV	54.0	-17.0	2.03 H	217	32.44	4.56
7	5416.50	52.4 PK	74.0	-21.6	2.11 H	9	44.62	7.78
8	5416.50	40.3 AV	54.0	-13.7	2.11 H	9	32.52	7.78
9	8124.75	55.1 PK	74.0	-18.9	1.52 H	88	42.43	12.67
10	8124.75	43.8 AV	54.0	-10.2	1.52 H	88	31.13	12.67
11	9027.50	56.5 PK	74.0	-17.5	1.50 H	122	43.85	12.65
12	9027.50	44.7 AV	54.0	-9.3	1.50 H	122	32.05	12.65
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	53.2 PK	74.0	-20.8	1.36 V	179	55.11	-1.91
2	2708.25	48.5 AV	54.0	-5.5	1.36 V	179	50.41	-1.91
3	3611.00	50.6 PK	74.0	-23.4	2.13 V	255	50.20	0.40
4	3611.00	43.2 AV	54.0	-10.8	2.13 V	255	42.80	0.40
5	4513.75	51.8 PK	74.0	-22.2	1.85 V	301	47.24	4.56
6	4513.75	41.6 AV	54.0	-12.4	1.85 V	301	37.04	4.56
7	5416.50	52.9 PK	74.0	-21.1	2.44 V	360	45.12	7.78
8	5416.50	42.5 AV	54.0	-11.5	2.44 V	360	34.72	7.78
9	8124.75	56.3 PK	74.0	-17.7	2.26 V	88	43.63	12.67
10	8124.75	45.9 AV	54.0	-8.1	2.26 V	88	33.23	12.67
11	9027.50	57.3 PK	74.0	-16.7	1.93 V	360	44.65	12.65
12	9027.50	44.8 AV	54.0	-9.2	1.93 V	360	32.15	12.65

REMARKS:

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

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	2744.25	53.4 PK	74.0	-20.6	2.48 H	91	55.28	-1.88
2	2744.25	48.6 AV	54.0	-5.4	2.48 H	91	50.48	-1.88
3	3659.00	48.7 PK	74.0	-25.3	1.97 H	54	48.15	0.55
4	3659.00	40.4 AV	54.0	-13.6	1.97 H	54	39.85	0.55
5	4573.75	49.8 PK	74.0	-24.2	2.00 H	21	45.14	4.66
6	4573.75	38.0 AV	54.0	-16.0	2.00 H	21	33.34	4.66
7	7318.00	57.1 PK	74.0	-16.9	2.40 H	97	43.80	13.30
8	7318.00	45.5 AV	54.0	-8.5	2.40 H	97	32.20	13.30
9	8232.75	56.5 PK	74.0	-17.5	2.40 H	177	44.10	12.40
10	8232.75	43.9 AV	54.0	-10.1	2.40 H	177	31.50	12.40
11	9147.50	57.3 PK	74.0	-16.7	2.11 H	120	44.94	12.36
12	9147.50	44.8 AV	54.0	-9.2	2.11 H	120	32.44	12.36
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	56.5 PK	74.0	-17.5	1.87 V	182	58.38	-1.88
2	2744.25	51.0 AV	54.0	-3.1	1.87 V	182	52.83	-1.88
3	3659.00	52.2 PK	74.0	-21.8	1.91 V	30	51.65	0.55
4	3659.00	46.1 AV	54.0	-7.9	1.91 V	30	45.55	0.55
5	4573.75	52.1 PK	74.0	-21.9	1.98 V	300	47.44	4.66
6	4573.75	43.5 AV	54.0	-10.5	1.98 V	300	38.84	4.66
7	7318.00	57.7 PK	74.0	-16.3	2.32 V	276	44.40	13.30
8	7318.00	46.6 AV	54.0	-7.4	2.32 V	276	33.30	13.30
9	8232.75	56.3 PK	74.0	-17.7	2.55 V	80	43.90	12.40
10	8232.75	45.5 AV	54.0	-8.5	2.55 V	80	33.10	12.40
11	9147.50	57.8 PK	74.0	-16.2	2.46 V	127	45.44	12.36
12	9147.50	44.9 AV	54.0	-9.1	2.46 V	127	32.54	12.36

REMARKS:

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

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	2781.75	52.4 PK	74.0	-21.6	1.64 H	124	54.26	-1.86
2	2781.75	47.1 AV	54.0	-6.9	1.64 H	124	48.96	-1.86
3	3709.00	47.2 PK	74.0	-26.8	1.51 H	48	46.48	0.72
4	3709.00	36.9 AV	54.0	-17.1	1.51 H	48	36.18	0.72
5	4636.25	50.4 PK	74.0	-23.6	2.19 H	65	45.54	4.86
6	4636.25	39.4 AV	54.0	-14.6	2.19 H	65	34.54	4.86
7	7418.00	58.2 PK	74.0	-15.8	2.10 H	96	44.63	13.57
8	7418.00	44.2 AV	54.0	-9.8	2.10 H	96	30.63	13.57
9	8345.25	56.6 PK	74.0	-17.4	1.86 H	37	44.25	12.35
10	8345.25	43.6 AV	54.0	-10.4	1.86 H	37	31.25	12.35
11	#9272.50	57.1 PK	74.0	-16.9	1.86 H	254	44.82	12.28
12	#9272.50	44.4 AV	54.0	-9.6	1.86 H	254	32.12	12.28
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	54.2 PK	74.0	-19.8	1.80 V	180	56.06	-1.86
2	2781.75	49.2 AV	54.0	-4.8	1.80 V	180	51.06	-1.86
3	3709.00	51.0 PK	74.0	-23.0	1.62 V	13	50.28	0.72
4	3709.00	43.9 AV	54.0	-10.1	1.62 V	13	43.18	0.72
5	4636.25	53.2 PK	74.0	-20.8	2.08 V	204	48.34	4.86
6	4636.25	43.6 AV	54.0	-10.4	2.08 V	204	38.74	4.86
7	7418.00	56.8 PK	74.0	-17.2	2.23 V	259	43.23	13.57
8	7418.00	44.8 AV	54.0	-9.2	2.23 V	259	31.23	13.57
9	8345.25	56.8 PK	74.0	-17.2	2.22 V	227	44.45	12.35
10	8345.25	44.7 AV	54.0	-9.3	2.22 V	227	32.35	12.35
11	#9272.50	56.9 PK	74.0	-17.1	2.03 V	155	44.62	12.28
12	#9272.50	44.2 AV	54.0	-9.8	2.03 V	155	31.92	12.28

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

4.7.9 TEST RESULTS (MODE 3)

BELOW 1GHz DATA

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	27.0 QP	40.0	-13.1	1.03 H	184	42.03	-15.08
2	152.90	29.2 QP	43.5	-14.3	1.43 H	225	42.04	-12.81
3	166.39	30.3 QP	43.5	-13.2	1.21 H	89	43.55	-13.23
4	179.92	30.2 QP	43.5	-13.3	1.00 H	142	44.69	-14.46
5	192.86	32.2 QP	43.5	-11.3	1.00 H	278	48.04	-15.81
6	494.68	29.8 QP	46.0	-16.2	1.50 H	119	37.18	-7.35
7	902.17	70.56 QP	101.61	-31.05	1.85 H	168	42.69	27.87
8	*902.75	121.61 QP	-	-	1.85 H	168	93.72	27.89
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	69.05	33.3 QP	40.0	-6.7	1.50 V	142	48.44	-15.13
2	139.32	28.3 QP	43.5	-15.2	1.00 V	154	41.70	-13.42
3	152.27	30.3 QP	43.5	-13.2	1.28 V	302	43.13	-12.79
4	166.38	29.0 QP	43.5	-14.5	1.50 V	227	42.26	-13.23
5	181.66	30.6 QP	43.5	-12.9	1.00 V	301	45.29	-14.72
6	192.86	31.4 QP	43.5	-12.1	1.25 V	174	47.17	-15.81
7	902.22	79.04 QP	101.62	-22.58	20.4 V	164	51.17	27.88
8	*902.75	121.62 QP	-	-	20.4 V	164	93.73	27.89

REMARKS:

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

CHANNEL	TX Channel 24	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	26.9 QP	40.0	-13.2	1.00 H	223	41.93	-15.08
2	152.90	29.1 QP	43.5	-14.4	1.00 H	147	41.90	-12.81
3	166.38	30.3 QP	43.5	-13.2	1.00 H	212	43.51	-13.23
4	179.91	30.3 QP	43.5	-13.2	1.32 H	109	44.76	-14.46
5	192.86	32.1 QP	43.5	-11.4	1.23 H	174	47.90	-15.81
6	494.68	29.9 QP	46.0	-16.1	1.32 H	257	37.27	-7.35
7	*914.75	121.69 QP	-	-	1.74 H	167	93.48	28.21
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	69.05	33.3 QP	40.0	-6.7	1.00 V	225	48.39	-15.13
2	139.32	29.2 QP	43.5	-14.3	1.28 V	307	42.61	-13.42
3	152.27	30.4 QP	43.5	-13.2	1.06 V	287	43.14	-12.79
4	166.38	29.3 QP	43.5	-14.2	1.16 V	206	42.49	-13.23
5	181.67	30.7 QP	43.5	-12.9	1.00 V	98	45.37	-14.72
6	192.86	31.5 QP	43.5	-12.0	1.00 V	209	47.29	-15.81
7	*914.75	121.81 QP	-	-	1.75 V	166	93.60	28.21

REMARKS:

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

CHANNEL	TX Channel 49	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	69.43	26.7 QP	40.0	-13.3	1.65 H	271	41.82	-15.08
2	152.90	29.2 QP	43.5	-14.3	1.58 H	174	41.99	-12.81
3	166.39	30.5 QP	43.5	-13.0	1.00 H	236	43.72	-13.23
4	179.92	31.5 QP	43.5	-12.0	1.58 H	224	45.94	-14.46
5	192.86	32.4 QP	43.5	-11.1	1.06 H	197	48.19	-15.81
6	494.68	29.8 QP	46.0	-16.2	1.00 H	236	37.14	-7.35
7	*927.26	121.69 QP	-	-	1.55 H	167	93.31	28.38
8	928.64	55.39 QP	101.69	-46.3	1.55 H	167	26.99	28.40
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	69.04	33.4 QP	40.0	-6.6	1.26 V	108	48.56	-15.13
2	139.32	29.3 QP	43.5	-14.3	1.00 V	118	42.67	-13.42
3	152.27	30.5 QP	43.5	-13.0	1.06 V	196	43.28	-12.79
4	166.38	29.9 QP	43.5	-13.6	1.08 V	277	43.12	-13.23
5	181.67	30.6 QP	43.5	-12.9	1.55 V	147	45.30	-14.72
6	192.87	31.6 QP	43.5	-11.9	1.68 V	208	47.40	-15.81
7	*927.26	121.7 QP	-	-	1.75 V	167	93.32	28.38
8	928.34	55.39 QP	101.7	-46.31	1.75 V	167	26.99	28.40

REMARKS:

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

ABOVE 1GHz DATA

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	2708.25	48.6 PK	74.0	-25.4	1.68 H	300	50.51	-1.91
2	2708.25	42.5 AV	54.0	-11.5	1.68 H	300	44.41	-1.91
3	3611.00	47.2 PK	74.0	-26.8	1.96 H	52	46.80	0.40
4	3611.00	35.7 AV	54.0	-18.3	1.96 H	52	35.30	0.40
5	4513.75	49.8 PK	74.0	-24.2	2.09 H	208	45.24	4.56
6	4513.75	35.9 AV	54.0	-18.1	2.09 H	208	31.34	4.56
7	5416.50	51.1 PK	74.0	-22.9	2.32 H	360	43.32	7.78
8	5416.50	39.5 AV	54.0	-14.5	2.32 H	360	31.72	7.78
9	8124.75	56.2 PK	74.0	-17.8	2.16 H	94	43.53	12.67
10	8124.75	43.8 AV	54.0	-10.2	2.16 H	94	31.13	12.67
11	9027.50	56.9 PK	74.0	-17.1	2.00 H	211	44.25	12.65
12	9027.50	44.4 AV	54.0	-9.6	2.00 H	211	31.75	12.65
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	51.9 PK	74.0	-22.1	1.39 V	186	53.81	-1.91
2	2708.25	47.2 AV	54.0	-6.8	1.39 V	186	49.11	-1.91
3	3611.00	50.2 PK	74.0	-23.8	1.89 V	29	49.80	0.40
4	3611.00	41.7 AV	54.0	-12.3	1.89 V	29	41.30	0.40
5	4513.75	48.7 PK	74.0	-25.3	2.29 V	197	44.14	4.56
6	4513.75	37.1 AV	54.0	-16.9	2.29 V	197	32.54	4.56
7	5416.50	51.6 PK	74.0	-22.4	2.36 V	53	43.82	7.78
8	5416.50	40.5 AV	54.0	-13.5	2.36 V	53	32.72	7.78
9	8124.75	56.1 PK	74.0	-17.9	2.04 V	360	43.43	12.67
10	8124.75	45.2 AV	54.0	-8.8	2.04 V	360	32.53	12.67
11	9027.50	57.1 PK	74.0	-16.9	2.04 V	321	44.45	12.65
12	9027.50	44.3 AV	54.0	-9.7	2.04 V	321	31.65	12.65

REMARKS:

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

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	2744.25	48.5 PK	74.0	-25.5	1.77 H	273	50.38	-1.88
2	2744.25	45.5 AV	54.0	-8.5	1.77 H	273	47.38	-1.88
3	3659.00	48.1 PK	74.0	-25.9	1.87 H	55	47.55	0.55
4	3659.00	36.3 AV	54.0	-17.7	1.87 H	55	35.75	0.55
5	4573.75	49.3 PK	74.0	-24.7	2.27 H	61	44.64	4.66
6	4573.75	37.6 AV	54.0	-16.4	2.27 H	61	32.94	4.66
7	7318.00	57.6 PK	74.0	-16.4	2.25 H	98	44.30	13.30
8	7318.00	46.2 AV	54.0	-7.8	2.25 H	98	32.90	13.30
9	8232.75	55.7 PK	74.0	-18.3	2.12 H	143	43.30	12.40
10	8232.75	43.8 AV	54.0	-10.2	2.12 H	143	31.40	12.40
11	9147.50	57.5 PK	74.0	-16.5	2.12 H	146	45.14	12.36
12	9147.50	44.6 AV	54.0	-9.4	2.12 H	146	32.24	12.36
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	54.1 PK	74.0	-19.9	1.70 V	211	55.98	-1.88
2	2744.25	47.1 AV	54.0	-6.9	1.70 V	211	48.98	-1.88
3	3659.00	49.7 PK	74.0	-24.3	2.20 V	355	49.15	0.55
4	3659.00	40.9 AV	54.0	-13.1	2.20 V	355	40.35	0.55
5	4573.75	49.5 PK	74.0	-24.5	2.10 V	310	44.84	4.66
6	4573.75	40.2 AV	54.0	-13.8	2.10 V	310	35.54	4.66
7	7318.00	58.1 PK	74.0	-15.9	2.25 V	94	44.80	13.30
8	7318.00	48.4 AV	54.0	-5.6	2.25 V	94	35.10	13.30
9	8232.75	56.0 PK	74.0	-18.0	2.12 V	143	43.60	12.40
10	8232.75	43.7 AV	54.0	-10.3	2.12 V	143	31.30	12.40
11	9147.50	56.8 PK	74.0	-17.2	2.15 V	184	44.44	12.36
12	9147.50	44.5 AV	54.0	-9.5	2.15 V	184	32.14	12.36

REMARKS:

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

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	2781.75	48.3 PK	74.0	-25.7	2.10 H	307	50.16	-1.86
2	2781.75	44.9 AV	54.0	-9.1	2.10 H	307	46.76	-1.86
3	3709.00	46.5 PK	74.0	-27.5	1.91 H	54	45.78	0.72
4	3709.00	35.9 AV	54.0	-18.1	1.91 H	54	35.18	0.72
5	4636.25	49.4 PK	74.0	-24.6	1.91 H	215	44.54	4.86
6	4636.25	36.9 AV	54.0	-17.1	1.91 H	215	32.04	4.86
7	7418.00	58.2 PK	74.0	-15.8	2.01 H	85	44.63	13.57
8	7418.00	44.3 AV	54.0	-9.7	2.01 H	85	30.73	13.57
9	8345.25	56.9 PK	74.0	-17.1	2.00 H	111	44.55	12.35
10	8345.25	43.6 AV	54.0	-10.4	2.00 H	111	31.25	12.35
11	#9272.50	57.7 PK	74.0	-16.3	2.15 H	321	45.42	12.28
12	#9272.50	44.1 AV	54.0	-9.9	2.15 H	321	31.82	12.28
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	52.3 PK	74.0	-21.7	2.10 V	211	54.16	-1.86
2	2781.75	46.9 AV	54.0	-7.1	2.10 V	211	48.76	-1.86
3	3709.00	49.6 PK	74.0	-24.4	2.01 V	360	48.88	0.72
4	3709.00	40.9 AV	54.0	-13.1	2.01 V	360	40.18	0.72
5	4636.25	50.7 PK	74.0	-23.3	2.21 V	316	45.84	4.86
6	4636.25	39.4 AV	54.0	-14.6	2.21 V	316	34.54	4.86
7	7418.00	58.8 PK	74.0	-15.2	2.21 V	280	45.23	13.57
8	7418.00	45.9 AV	54.0	-8.1	2.21 V	280	32.33	13.57
9	8345.25	57.1 PK	74.0	-16.9	2.01 V	11	44.75	12.35
10	8345.25	43.6 AV	54.0	-10.4	2.01 V	11	31.25	12.35
11	#9272.50	57.5 PK	74.0	-16.5	2.00 V	112	45.22	12.28
12	#9272.50	44.0 AV	54.0	-10.0	2.00 V	112	31.72	12.28

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " # ": The radiated frequency is out of the restricted band.

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
SPECTRUM ANALYZER R&S	FSP 40	100060	May 08, 2014	May 07, 2015

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. 14, 2015

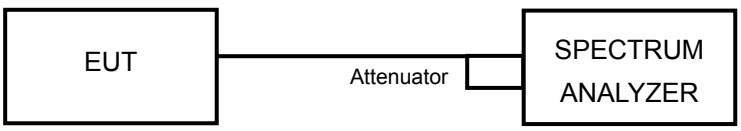
4.8.3 TEST PROCEDURE

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.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 TEST SETUP



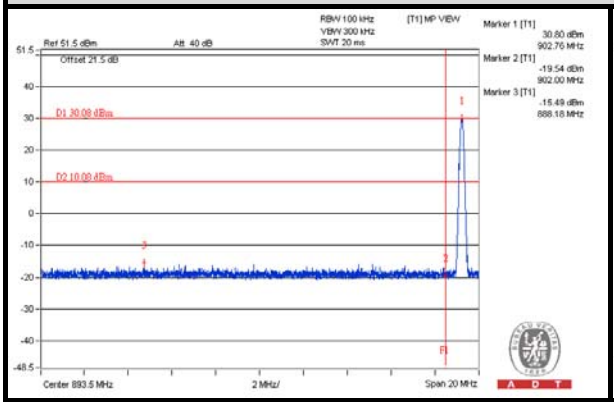
4.8.6 EUT OPERATING CONDITION

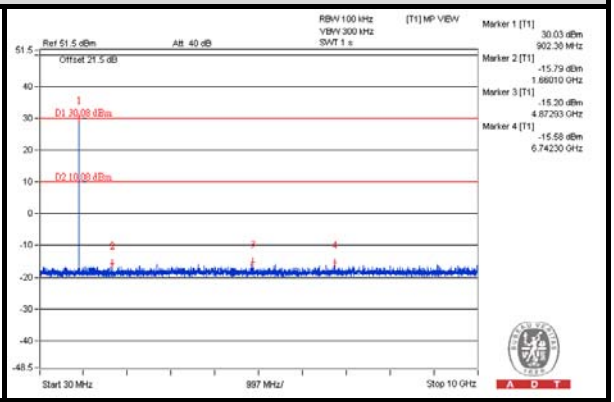
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.8.7 TEST RESULTS (MODE 1)

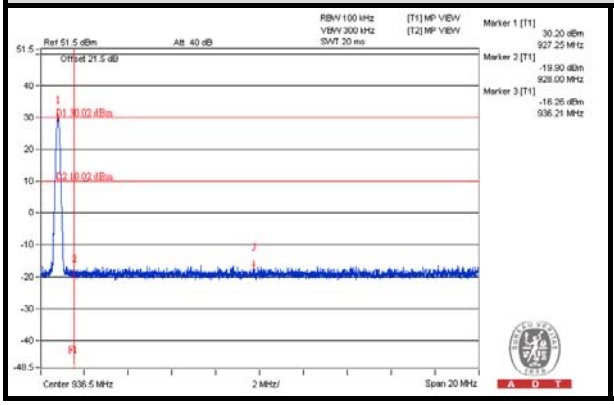
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

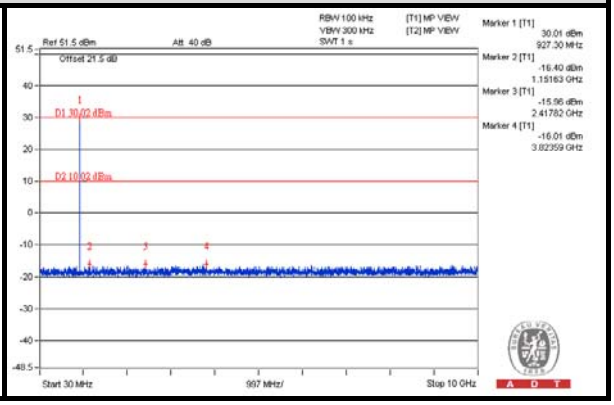
CH0





CH49

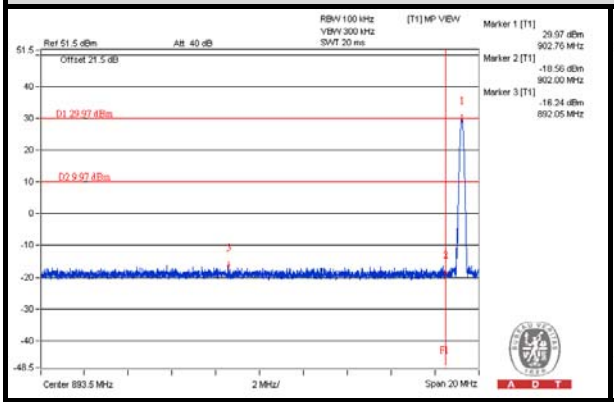


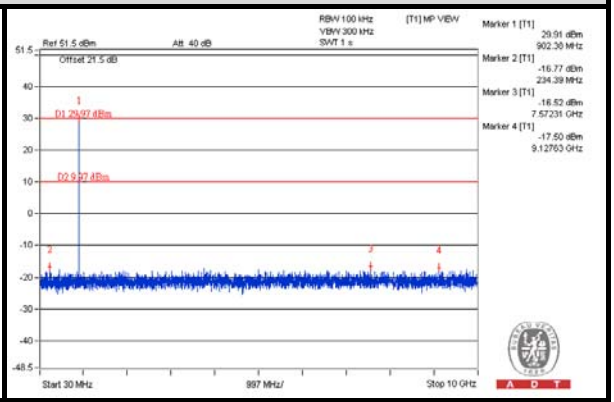


4.8.8 TEST RESULTS (MODE 2)

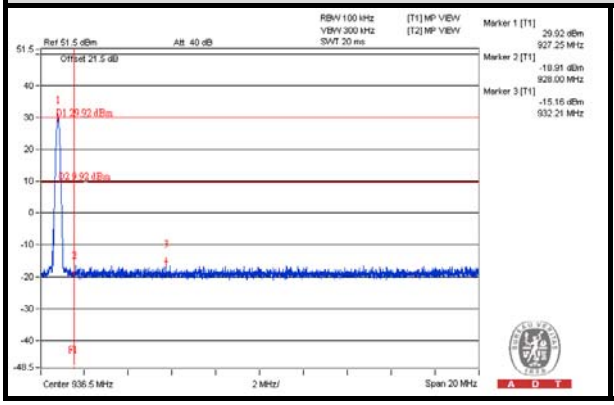
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

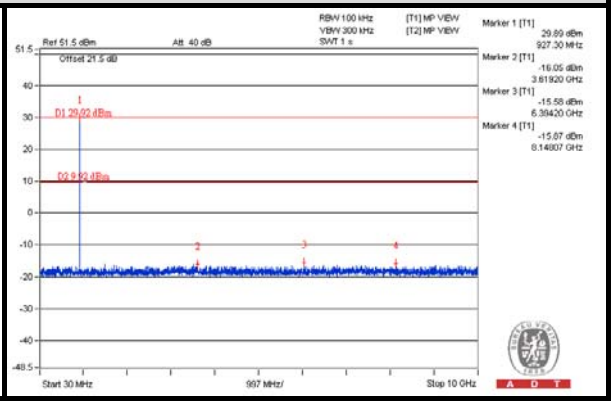
CH0





CH49

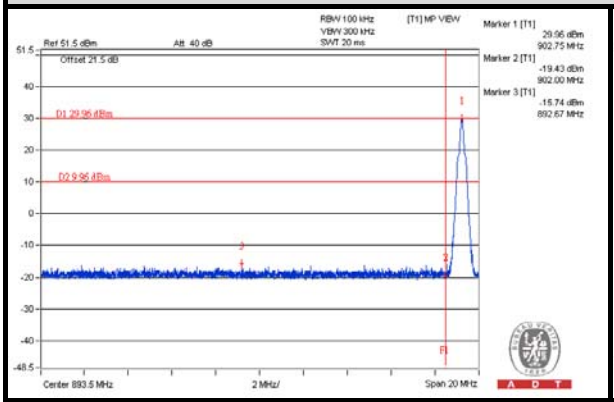


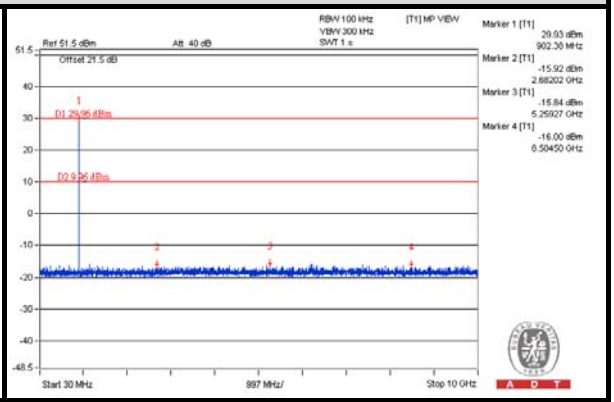


4.8.9 TEST RESULTS (MODE 3)

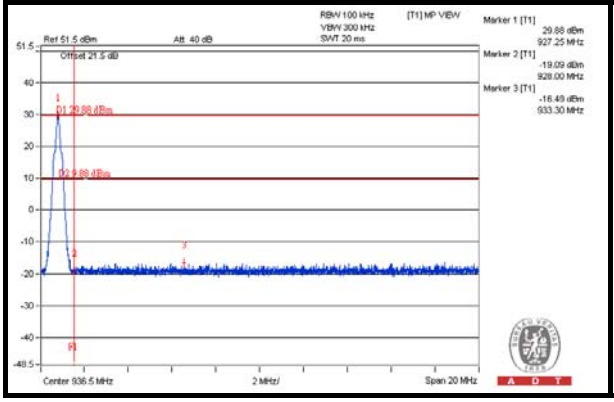
The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

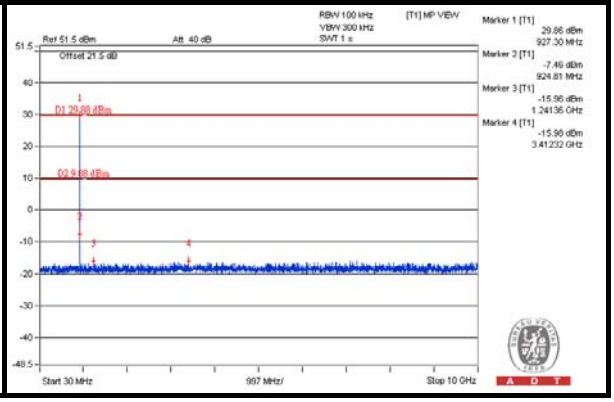
CH0





CH49





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.

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

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Web Site: www.bureauveritas-adt.com

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

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

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

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