Radiation test of transmitters operate simultaneously

EUT:
Industrial Tablet PC

Model Number:
Smart Tablet

FCC ID:
RQKSMARTTABLET

Prepared for:
SAMMI INFORMATION SYSTEMS CO., LTD
7-9 Fl., Seo Jo Bldg, 103-15, Galwor-Dong, Yong San-Ku, Seoul, Korea

Report By :Global EMC Standard Tech. Corp.
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Tel : 886-2-2603-5321
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1.1 TEST EQUIPMENT

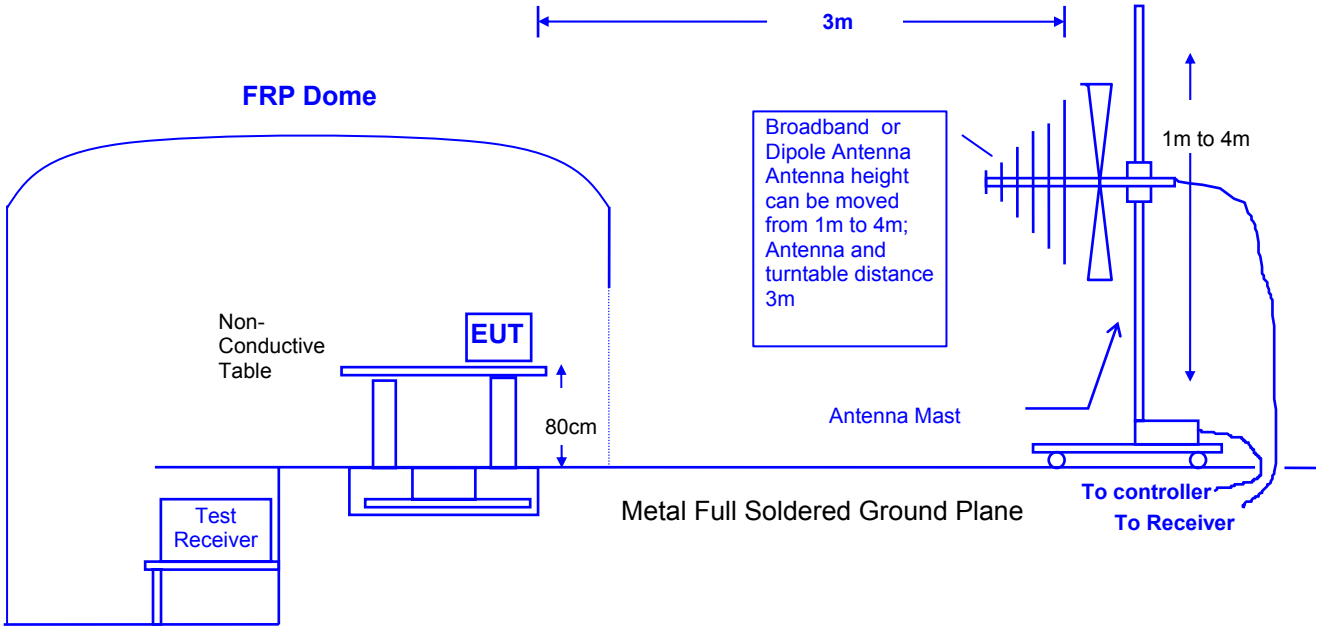
The following test equipments are used during the radiated emission tests:
Radiated test was performed on: ☐Site #1 ☒Site #2 ☐Site #3 ☐Site #4

Item	Instrument	Manufacturer	Model	Serial No.	Last Cal.
1	Test Receiver	Rohde & Schwarz	ESVS30	829007/014	12/13/03
2	Spectrum Analyzer	Rohde & Schwarz	FSP40	100061	03/16/04
3	Spectrum Analyzer	HP	E4407B	39240339	08/16/03
4	Power Meter	Rohde & Schwarz	NRVS	100666	04/29/04
5	Peak Power Sensor	Rohde & Schwarz	NRV-Z32	8360191058	04/29/04
6	Pre-Amplifier	HP	8449B	3008A01263	10/11/03
7	BILOG ANTENNA	SCHAFFNER	CBL6112B	2620	12/01/03
8	Horn Antenna	Electro-Metrics	EM-6961	103318	05/30/03
9	Horn Antenna	Schwarzbeck	BBHA 9120	D243	12/18/03
10	RF Cable	GesTek	N/A	GTK-E-A151-01	02/09/04
11	Open Site	GesTek	N/A	B1	11/25/03
12	Test Program Software	GesTek	N/A	GTK-E-S001-01	N/A

Note: All measurement critical items of test instrumentation were within their calibration period of 1 year.

1.2 OPEN TEST SITE SETUP DIAGRAM

Note: This is a reprehensive setup diagram for Table-top EUT.
For Floor-standing EUT, the table will be removed with all others setup condition remain the same.



1.3 RADIATED EMISSION LIMIT

☒**FCC Class C Limit at 3m**

Frequency	Distance	Field Strength	
MHz	Meter	μV/M	dBμV/M
30 to 88	3	100	40.0
88 to 216	3	150	43.5
216 to 960	3	200	46.0
Above 960	3	500	54.0

Note：The frequencies above 1000MHz, as measured using instrumentation with a peak detector function was corresponding to 20dB above the maximum permitted average limit.

1.4 EUT CONFIGURATION

The equipment, which is listed on 4.1 was, installed on radiated emission test to meet the commission requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

The device under test, installed in a representative system as described in section 4.2, was placed on a non-conductive table whose total height equaled 80 cm. This table can be rotated 360 degree. The measurement antenna was mounted to a non-conductive mast capable of moving the antenna vertically. Antenna height was varied from 1 meter to 4 meters and the system under test was rotated from 0 degree through 360 degrees relative to the antenna position and polarization (Horizontal and Vertical). Also the I/O cable position was investigated to find the maximum emission condition.

1.5 OPERATING CONDITION OF EUT

Set continue transmit of WLAN & Bluetooth in EUT and choose channel.

Start test.

1.6 RADIATED EMISSION DATA

The measurement range of radiated emissions from **1GHZ ~ 10GHz** was investigated. Above 1GHz are peak and avg. values with a resolution bandwidth of 1MHz. The initial step in collecting radiated emission data is a spectrum analyzer peak scans of the measurement range for all the test modes and then use test receiver for final measurement. Then the worst modes were reported the following data pages..

Date of Test	July 16, 2004	**Temperature**	25 deg/C
EUT	Industrial Tablet PC	**Humidity**	58 %RH
Working Cond.	WLAN 06CH & BT 78CH	**Data Rate**	11Mbps
Antenna distance	3m at **Horizontal**	**Frequency Range**	Above 1GHz

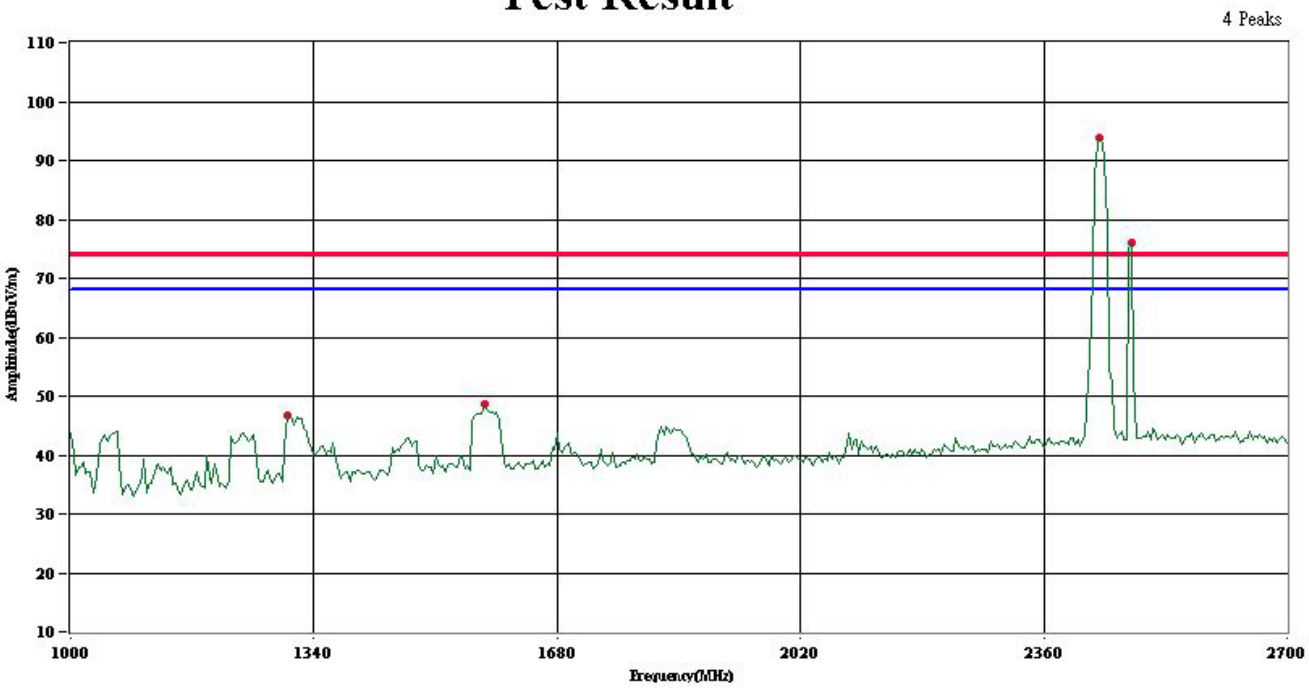
Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin (dB)
1	1302.60	56.99	-10.21	46.68	74.00	-27.32
2	1578.00	56.21	-7.62	48.59	74.00	-25.41
3	2438.20	96.42	-2.59	93.83	N/A	N/A
4	2482.40	78.20	-2.19	76.01	N/A	N/A

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Test Result



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Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin (dB)
1	7518.00	46.88	8.21	55.09	74.00	-18.91
2	9226.20	47.79	8.10	55.89	74.00	-18.11

Remark:

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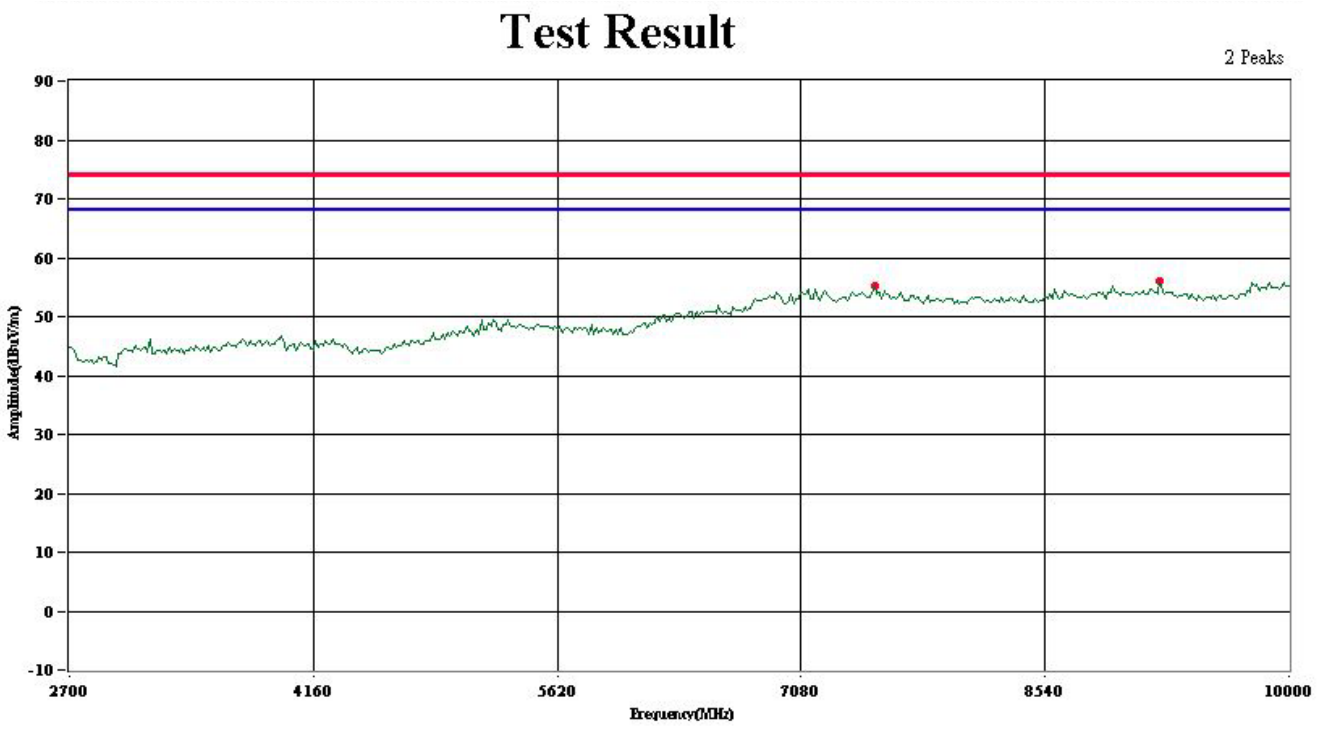

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Average

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	7226.00	34.62	7.30	41.92	54.00	-12.08
2	9985.40	33.49	9.68	43.17	54.00	-10.83

Remark:

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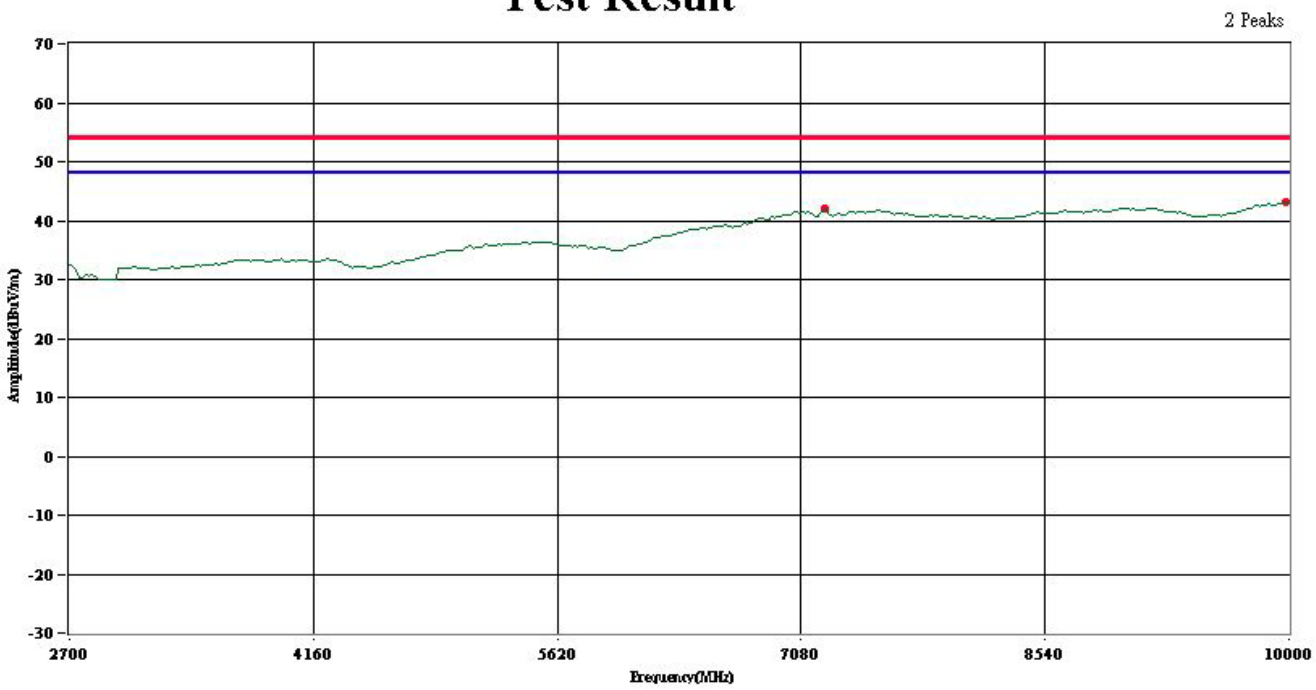

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Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	1316.20	64.30	-6.77	57.53	74.00	-16.47
2	1595.00	64.80	-7.03	57.77	74.00	-16.23
3	2438.20	104.74	-7.19	97.55	N/A	N/A
4	2482.40	84.92	-6.93	77.99	N/A	N/A

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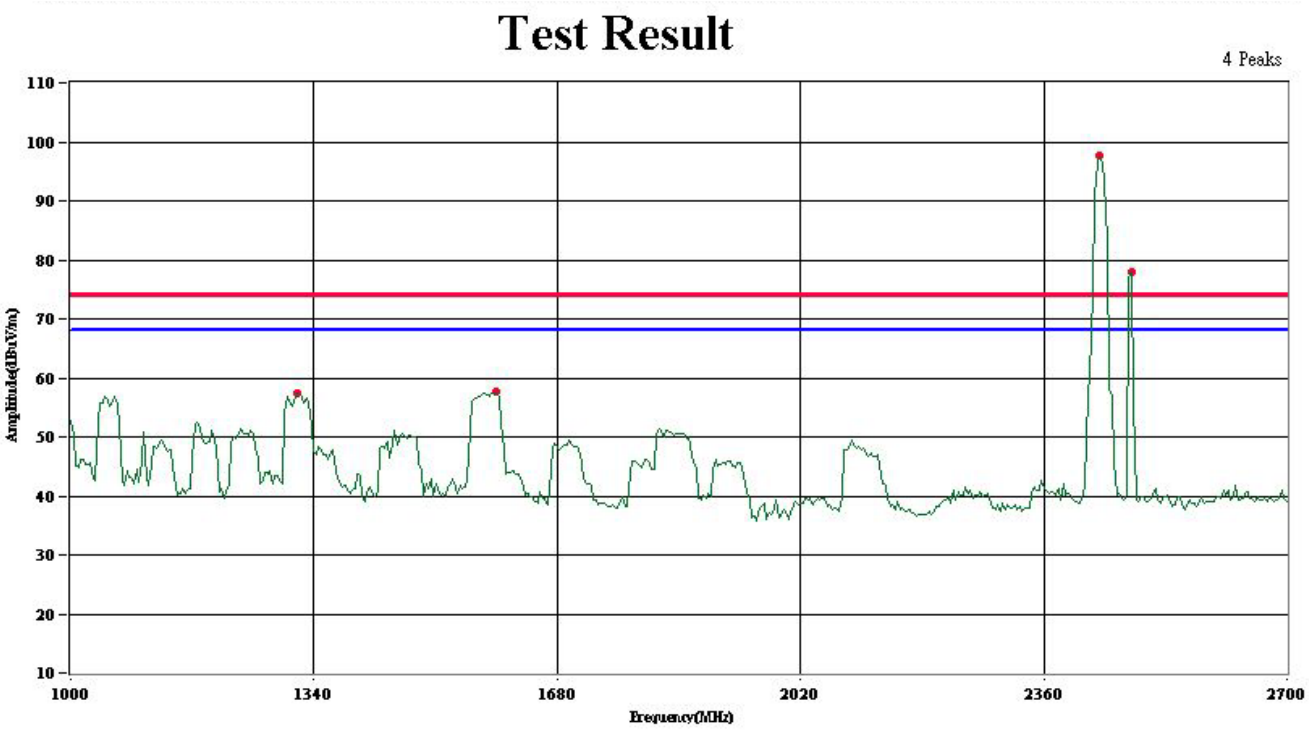

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Average

No.	Frequency [MHz]	Reading Level [dB(μ V)]	Correction Factor [dB/m]	Emission Level [dB(μ V/m)]	Limit [dB(μ V/m)]	Margin
1	1299.20	40.72	-6.80	33.92	54.00	-20.08
2	1455.60	39.70	-6.55	33.15	54.00	-20.85
3	2438.20	97.34	-7.19	90.15	N/A	N/A
4	2482.40	63.15	-6.93	56.22	N/A	N/A

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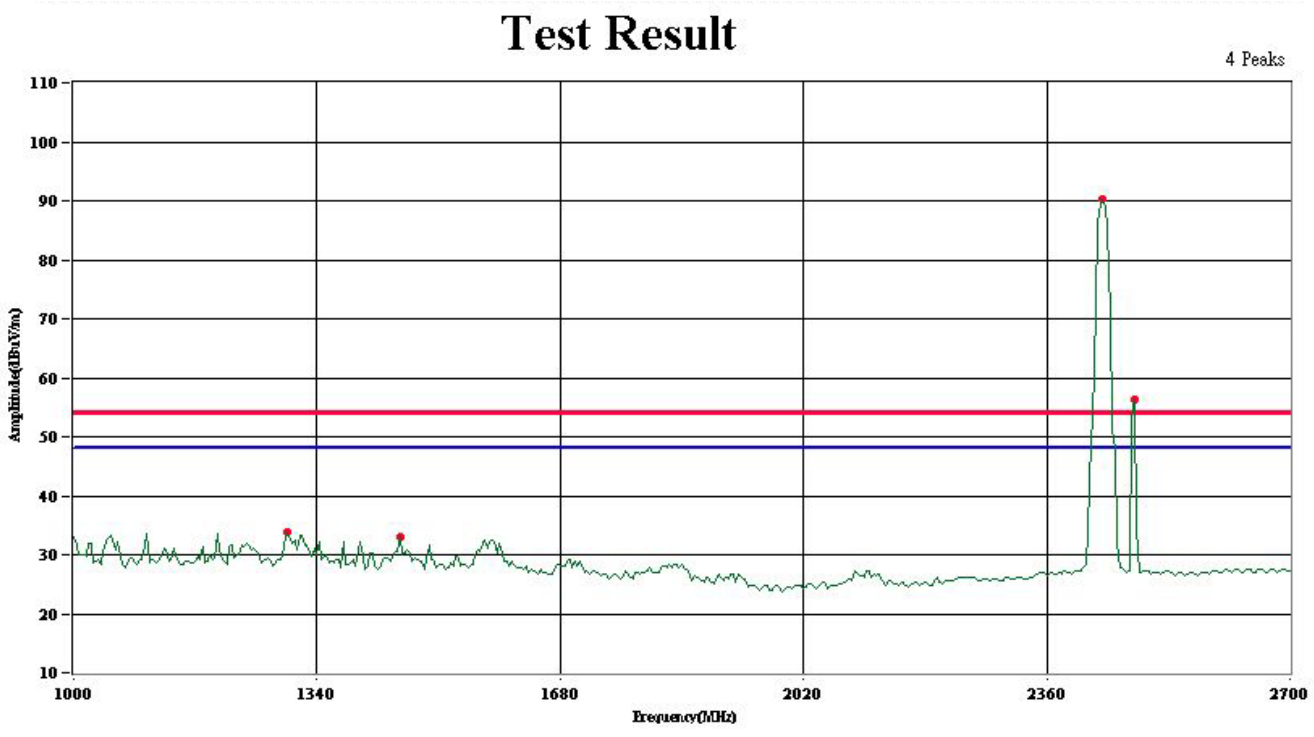

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Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	8686.00	46.91	9.25	56.16	74.00	-17.84
2	9883.20	46.06	10.44	56.50	74.00	-17.50

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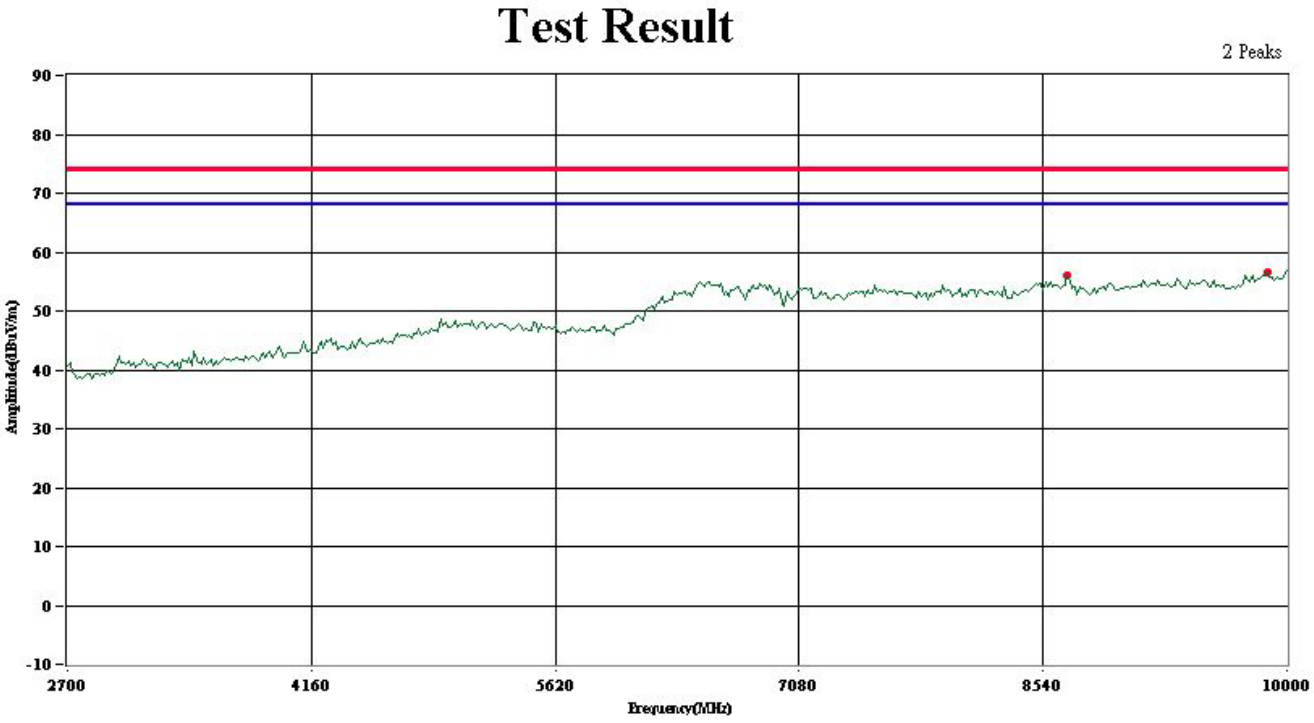

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Average

No.	Frequency [MHz]	Reading Level [dB(μ V)]	Correction Factor [dB/m]	Emission Level [dB(μ V/m)]	Limit [dB(μ V/m)]	Margin
1	9138.60	32.82	9.29	42.11	54.00	-11.89
2	9868.60	32.89	10.37	43.26	54.00	-10.74

Remark:

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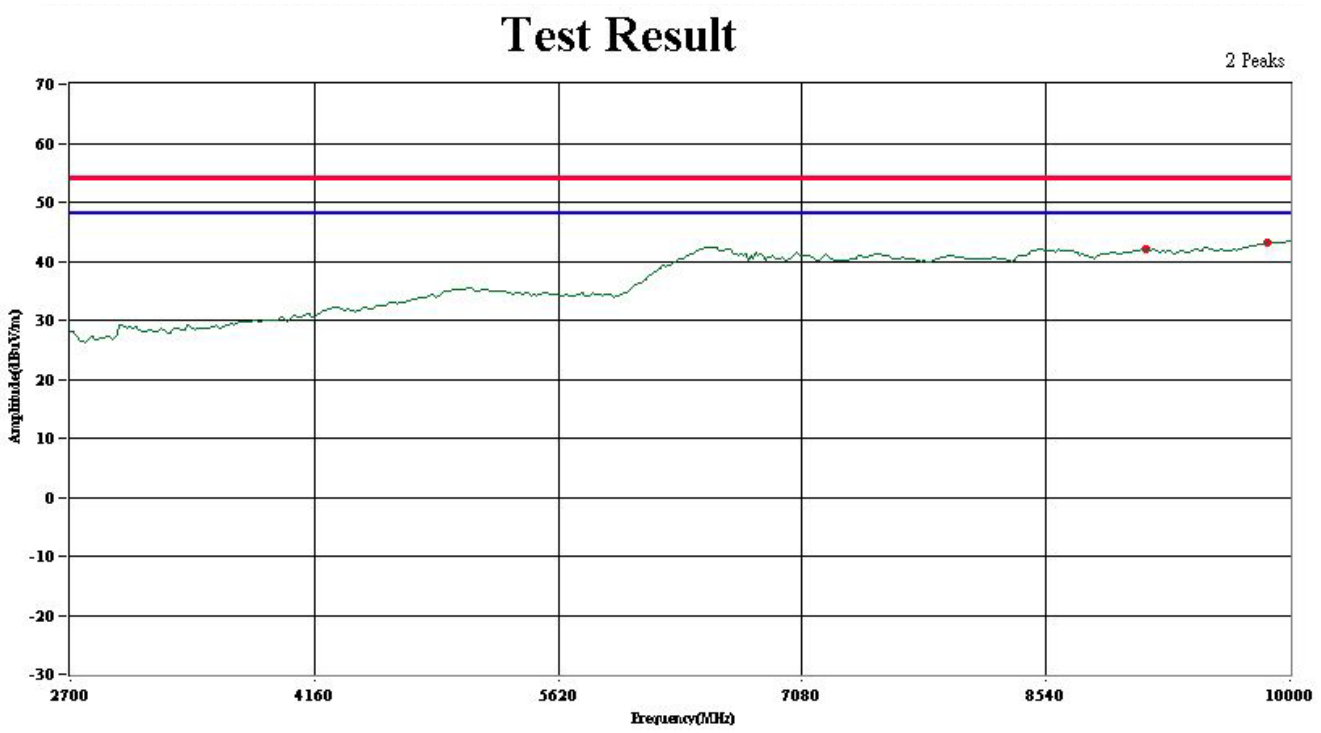

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Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	1316.20	57.11	-10.14	46.97	74.00	-27.03
2	1595.00	56.35	-7.56	48.79	74.00	-25.21
3	2465.40	93.48	-2.34	91.14	N/A	N/A
4	2482.40	78.04	-2.19	75.85	N/A	N/A

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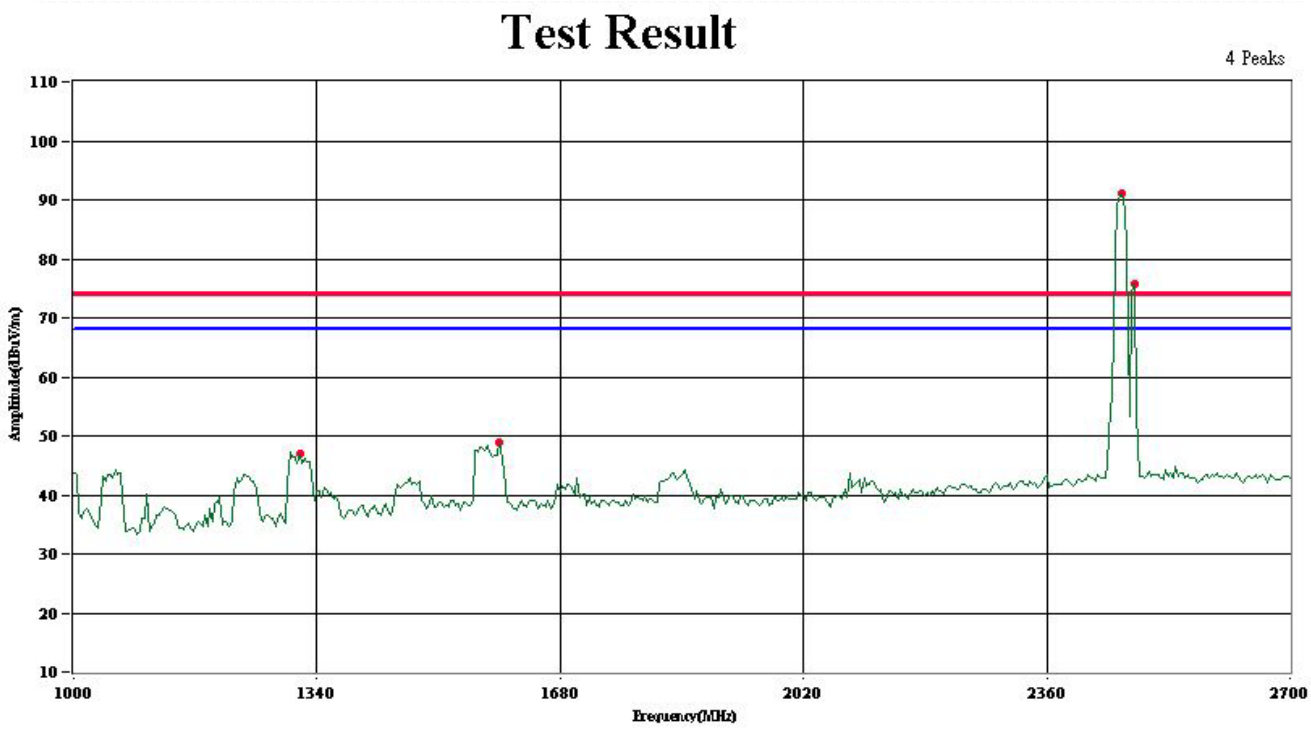

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Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	9109.40	47.02	8.40	55.42	74.00	-18.58
2	9927.00	47.11	9.30	56.41	74.00	-17.59

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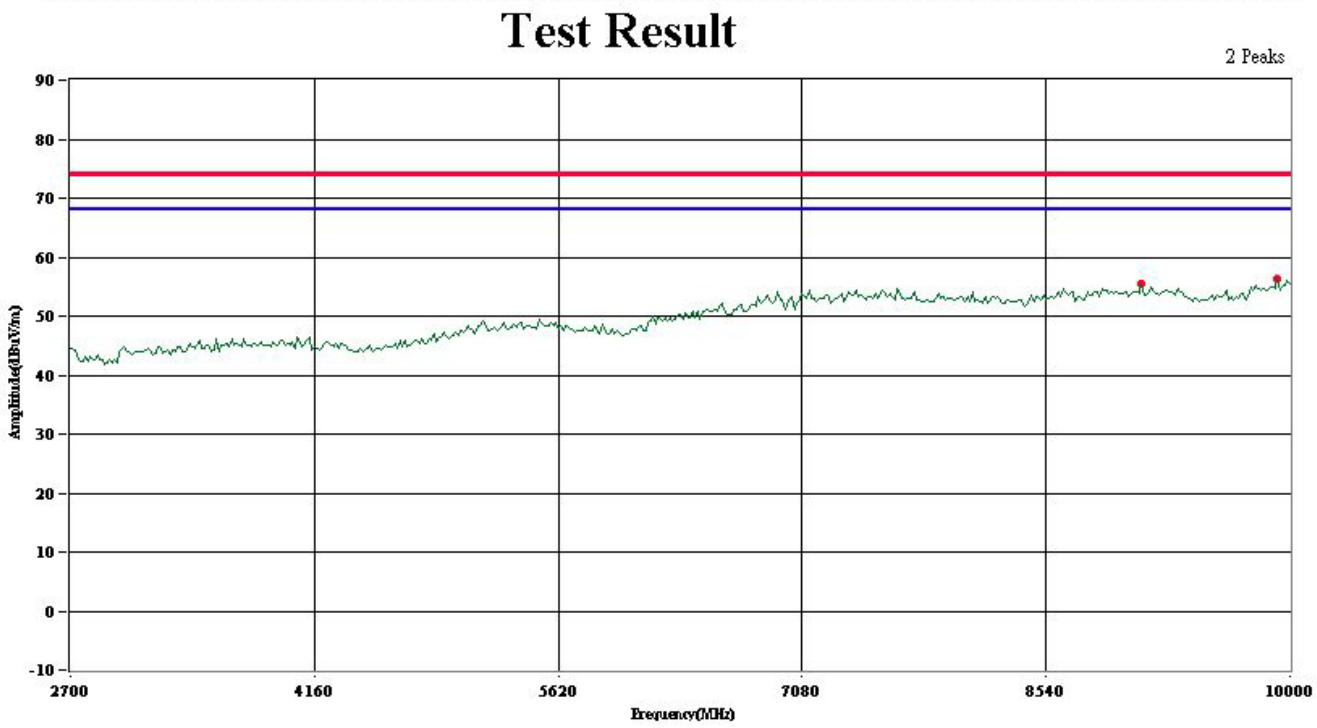

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Average

No.	Frequency [MHz]	Reading Level [dB(μ V)]	Correction Factor [dB/m]	Emission Level [dB(μ V/m)]	Limit [dB(μ V/m)]	Margin
1	7226.00	34.72	7.30	42.02	54.00	-11.98
2	9810.20	33.99	8.53	42.52	54.00	-11.48

Remark:

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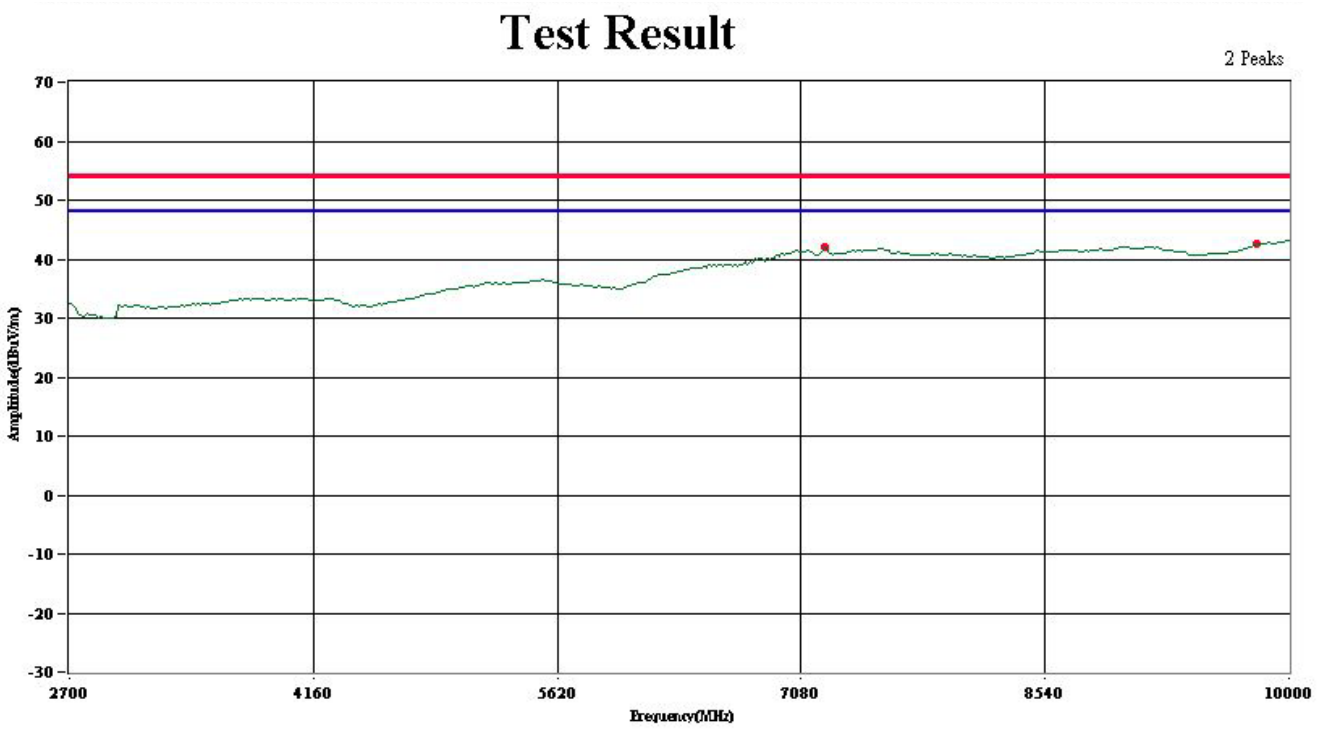

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Peak

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	1302.60	64.45	-6.80	57.65	74.00	-16.35
2	1595.00	64.49	-7.03	57.46	74.00	-16.54
3	2465.40	102.59	-7.03	95.56	N/A	N/A
4	2482.40	84.43	-6.93	77.50	N/A	N/A

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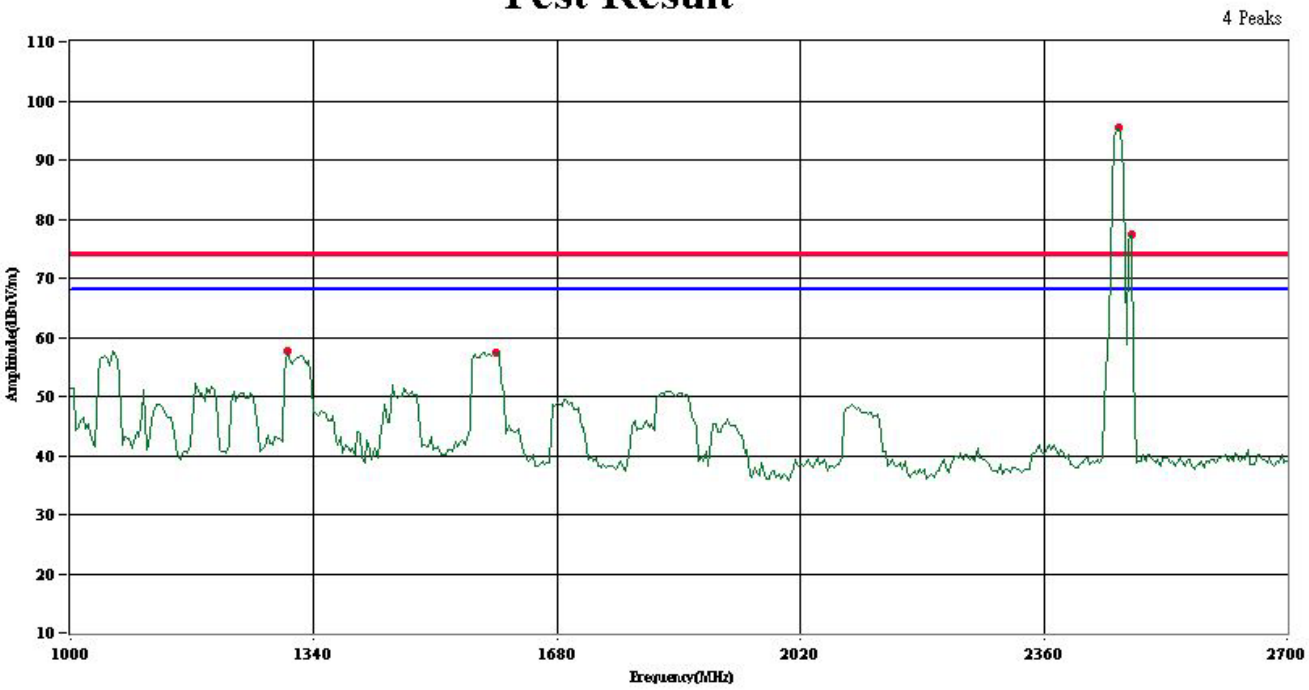

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Average

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	1295.80	40.01	-6.81	33.20	54.00	-20.80
2	1578.00	39.58	-6.93	32.65	54.00	-21.35
3	2462.00	94.98	-7.05	87.93	N/A	N/A
4	2482.40	64.63	-6.93	57.70	N/A	N/A

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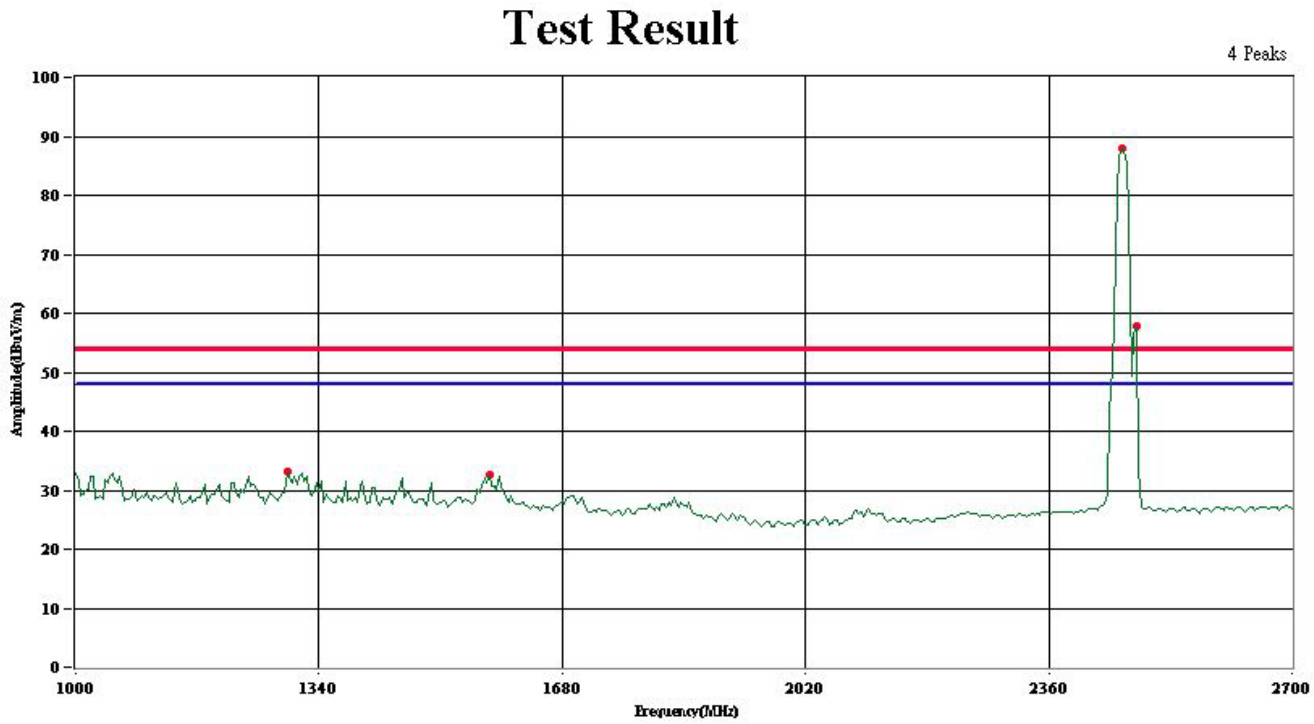

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No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	6569.00	46.29	10.44	56.73	74.00	-17.27
2	6802.60	47.05	8.80	55.85	74.00	-18.15

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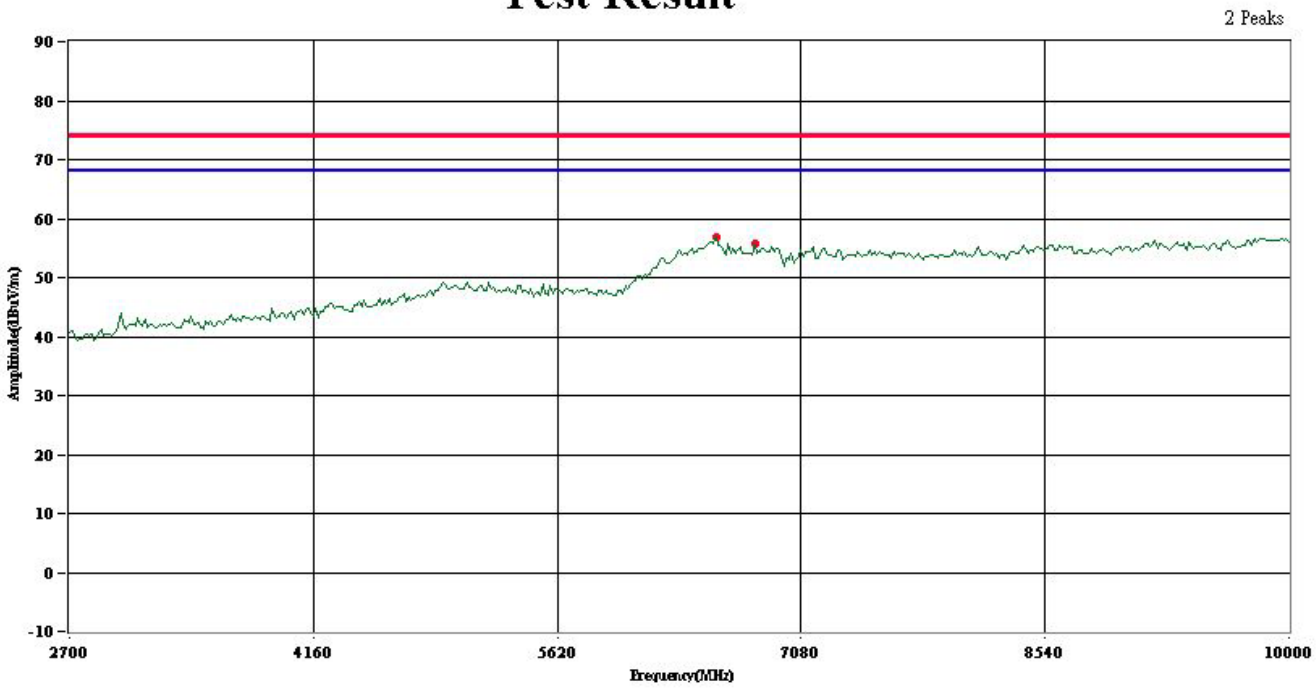
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.

Test Result



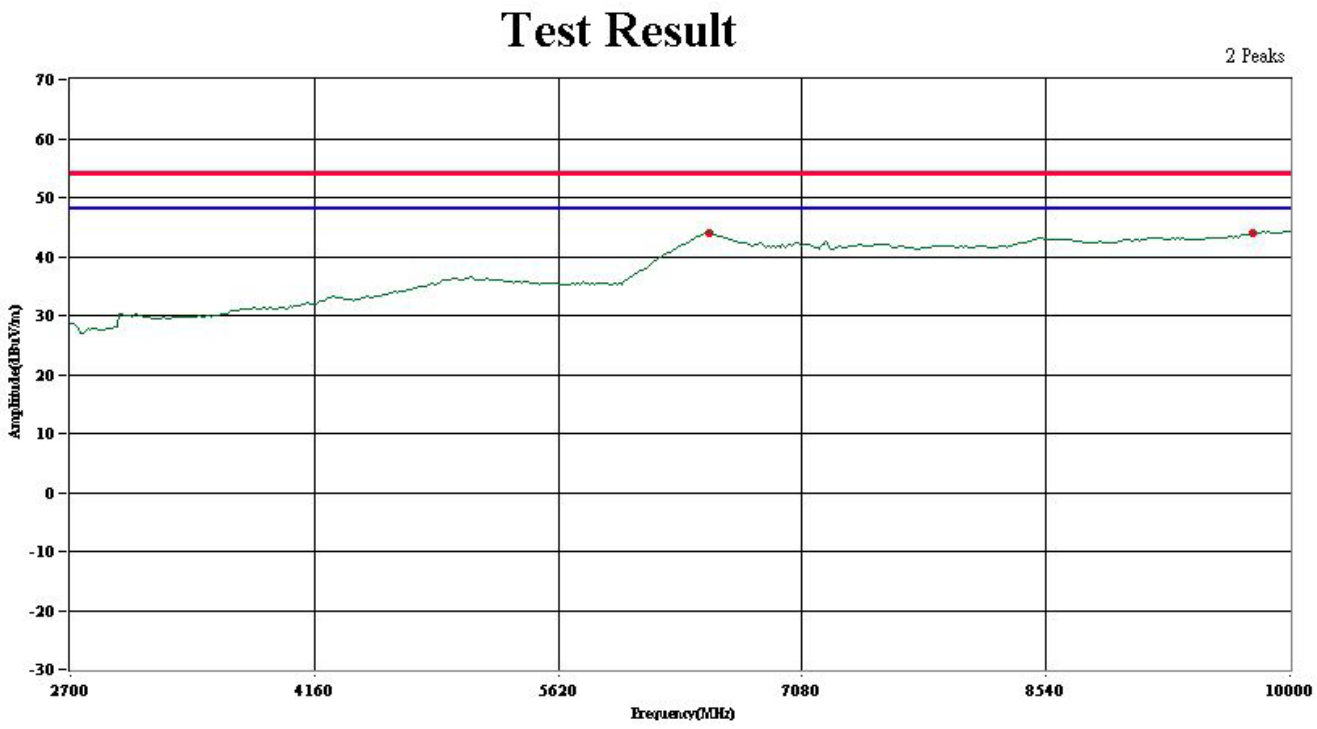
Date of Test	July 16, 2004	**Temperature**	25 deg/C
EUT	Industrial Tablet PC	**Humidity**	58 %RH
Working Cond.	WLAN 11CH & BT 78CH	**Data Rate**	11Mbps
Antenna distance	3m at **Vertical**	**Frequency Range**	Above 1GHz

Average

No.	Frequency [MHz]	Reading Level [dB(μV)]	Correction Factor [dB/m]	Emission Level [dB(μV/m)]	Limit [dB(μV/m)]	Margin
1	6525.20	33.26	10.74	44.00	54.00	-10.00
2	9781.00	33.96	10.00	43.96	54.00	-10.04

Remark:

1. All Readings below 1GHz are Quasi-Peak and above 1GHz are peak or average.
2. Spectrum Analizyer Setting(Peak Detector): RBW=1MHz, VBW=1MHZ.
3. Spectrum Analizyer Setting(AVG Detector): RBW=1MHz, VBW=30HZ.
4. Emission Level= Reading + Correction Factor (Could have ±0.01 tolerance due to computer automatically round off calculation).
5. Correction Factor= Antenna Factor + Cable Loss – Amplifier Factor
6. Margin Value=Emission level-Limit value.
7. The average measurement was not performed when the peak measured data under the limit of average detection. If the average value is measured, peak measurement should also be supplied.



Test Result:

No detect any intermodulation.