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FCC RADIO TEST REPORT

Applicant's company	Proxim Wireless Corporation
Applicant Address	1561 Buckeye Drive, Milpitas, CA 95035, USA
FCC ID	HZB-MB82HP49
Manufacturer's company	Proxim Wireless Corporation
Manufacturer Address	1561 Buckeye Drive, Milpitas, CA 95035, USA

Product Name	Tsunami 8000
Brand Name	PROXIM
Model Name	MP-8100-BSU-WD-HP / MP-8100-SUA-WD-HP
Test Rule Part(s)	47 CFR FCC Part 90 Subpart Y
Test Freq. Range	4940 ~ 4990MHz
Received Date	Feb. 22, 2012
Final Test Date	Mar. 14, 2012
Submission Type	Original Equipment
Multiple Listing	Please refer to section 3.5



Statement

The test result in this report refers exclusively to the presented test model / sample.

Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.

The measurements and test results shown in this test report were made in accordance with the procedures and found in compliance with the limit given in **ANSI/TIA-603-D-2010** and **47 CFR FCC Part 90 Subpart Y**.

The test equipment used to perform the test is calibrated and traceable to NML/ROC.



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History of This Test Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FL222211	Rev. 01	Initial issue of report	Mar. 14, 2012



1. CERTIFICATE OF COMPLIANCE

Product Name : Tsunami 8000
Brand Name : PROXIM
Model Name : MP-8100-BSU-WD-HP / MP-8100-SUA-WD-HP
Applicant : Proxim Wireless Corporation
Test Rule Part(s) : 47 CFR FCC Part 90 Subpart Y

Sporton International as requested by the applicant to evaluate the EMC performance of the product sample received on Feb. 22, 2012 would like to declare that the tested sample has been evaluated and found to be in compliance with the tested rule parts. The data recorded as well as the test configuration specified is true and accurate for showing the sample's EMC nature.

A handwritten signature in blue ink that reads 'Jordan Hsiao' is written over a horizontal line.

Jordan Hsiao

SPORTON INTERNATIONAL INC.

2. SUMMARY OF THE TEST RESULT

Applied Standard: 47 CFR FCC Part 90 Subpart Y				
Part	Rule Section	Description of Test	Result	Under Limit
4.1	2.1046/90.1215(a)	Peak Transmit Power	Complies	0.11 dB
4.1	2.1046/90.1215(a)	Power Spectral Density	Complies	1.43 dB
4.2	2.1049/90.210(m)	Occupied Bandwidth / Emission Mask	Complies	-
4.3	2.1046/90.1215(e)	Peak Excursion	Complies	4.39 dB
4.4	2.1051/90.210(m)	Spurious Emissions at Antenna Terminals	Complies	2.72 dB
4.5	2.1053/90.210(m)	Radiated Spurious Emissions	Complies	11.73 dB
4.6	2.1055/90.213(a)	Frequency Stability	Complies	-

Test Items	Uncertainty	Remark
Peak Transmit Power / Peak Power Spectral Density	±1.6dB	Confidence levels of 95%
Occupied Bandwidth / Frequency Stability	±8.5×10 ⁻⁸	Confidence levels of 95%
Radiated Spurious Emissions (30MHz~1000MHz)	±2.6dB	Confidence levels of 95%
Radiated Spurious Emissions (1GHz~18GHz)	±2.8dB	Confidence levels of 95%
Radiated Spurious Emissions (18GHz~40GHz)	±3.1dB	Confidence levels of 95%
Spurious Emissions at Antenna Terminals	±0.5dB	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. Product Details

Items	Description
Power Type	From POE
Equipment Category	Fixed Point-to-Point / Fixed Point-to-Multipoint
Modulation	OFDM (BPSK / QPSK / 16QAM / 64QAM)
Channel Bandwidth	5MHz / 10MHz
Occupied Bandwidth	5MHz: 5.17MHz / 10MHz: 9.26MHz
Peak Transmit Power	5MHz: 17.48dBm / 10MHz: 20.80dBm
Average Transmit Power	5MHz: 7.44dBm / 10MHz: 10.47dBm
Emission Designator	5MHz: 5M10W7D / 10MHz: 9M20W6D
Carrier Frequencies Range	5MHz: 4945MHz~4985MHz / 10MHz: 4945MHz~4985MHz
Antenna	High Gain Subscriber Antenna: 30 dBi (Model: MA-WA55-30) – cable loss (1dB) = 29 dBi

3.2. Table for Carrier Frequencies

Channel Bandwidth	Carrier Frequency
5 MHz	4945 MHz
	4950 MHz
	:
	4965 MHz
	:
	:
	4980 MHz
	4985 MHz
10 MHz	4945 MHz
	4950 MHz
	:
	4965 MHz
	:
	:
	4980 MHz
	4985 MHz

3.3. Table for Test Modes

Investigation has been done on all the possible configurations for searching the worst cases (All modulation modes and different data rates would be evaluated). The following table is a list of the test modes shown in this test report.

Test Items	Channel Bandwidth	Modulation Mode
Peak Transmit Power	5MHz / 10MHz	OFDM
Peak Power Spectral Density	5MHz / 10MHz	OFDM
Occupied Bandwidth	5MHz / 10MHz	OFDM
Emission Mask	5MHz / 10MHz	OFDM
Spurious Emissions at Antenna Terminals	5MHz / 10MHz	OFDM
Radiated Spurious Emissions	5MHz / 10MHz	OFDM
Frequency Stability	5MHz / 10MHz	OFDM

3.4. Table for Testing Locations

Test Site No.	Site Category	Location	FCC Reg. No.	IC File No.
03CH01-CB	FAC	Hsin Chu	262045	IC 4086D
CO01-CB	Conduction	Hsin Chu	262045	IC 4086D
TH01-CB	OVEN Room	Hsin Chu	-	-

Open Area Test Site (OATS); Semi Anechoic Chamber (SAC); Fully Anechoic Chamber (FAC).

Please refer section 6 for Test Site Address.

3.5. Table for Multiple Listing

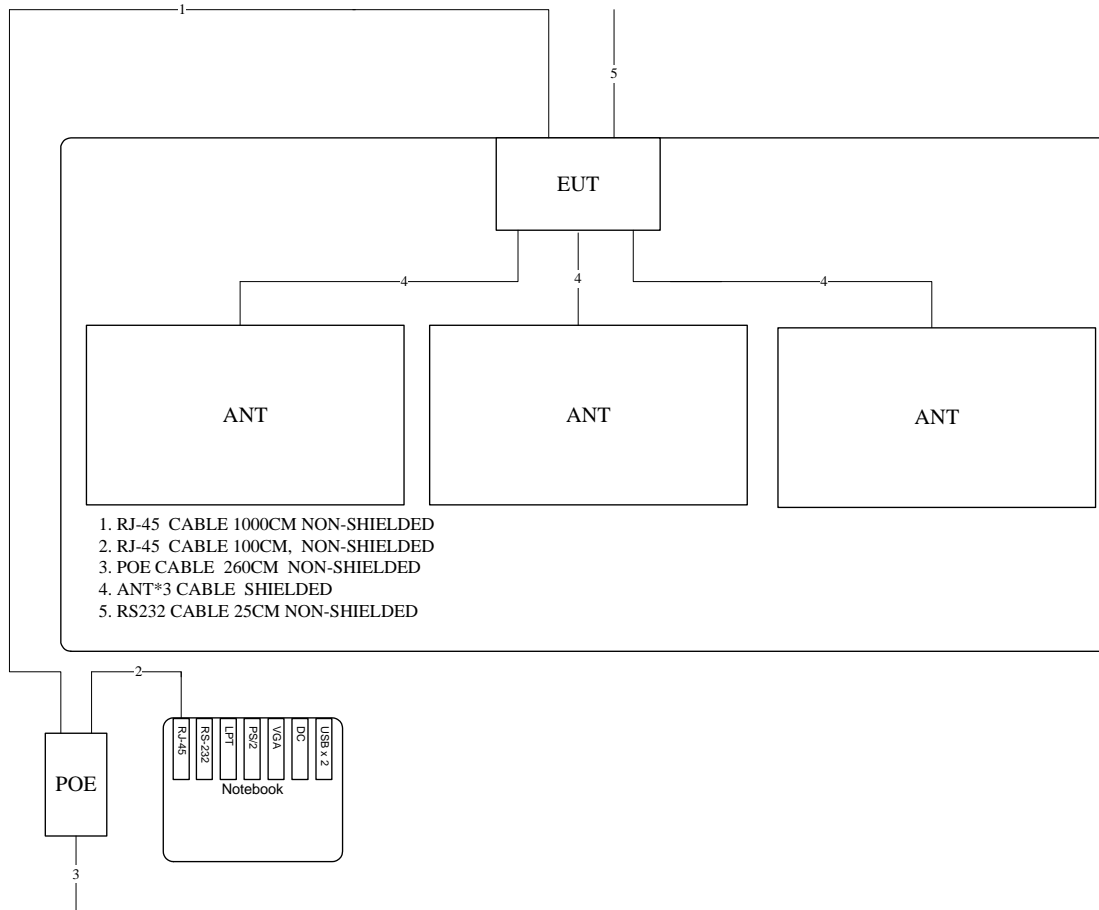
The model names in the following table are all refer to the identical product.

Model Name	Description
MP-8100-BSU-WD-HP	The difference between this two models is software.
MP-8100-SUA-WD-HP	

3.6. Table for Supporting Units

Support Unit	Brand	Model	FCC ID
Notebook	DELL	D400	E2K24GBRL

3.7. Test Configurations



4. TEST RESULT

4.1. Peak Transmit Power and Peak Power Spectral Density Measurement

4.1.1. Limit

Peak Transmit Power:

The transmitting power of stations operating in the 4940-4990 MHz band must not exceed the maximum limits in this table.

Channel Bandwidth (MHz)	Low Power Device Peak Transmitter Power (dBm)	High Power Device Peak Transmitter Power (dBm)
1	7.0	20.0
5	14.0	27.0
10	17.0	30.0
15	18.8	31.8
20	20.0	33.0

Antenna Gain Requirement:

If the transmitting antennas of directional gain greater than 9dBi are used, both the peak transmit power and the peak power spectral density should be reduced by the amount in decibels that the directional gain of the antenna exceeds 9 dBi. However, high power point-to-point or point-to-multipoint operation (both fixed and temporary-fixed rapid deployment) may employ transmitting antennas with a directional gain up to 26 dBi without any corresponding reduction in the transmitter power or the spectral density. Corresponding reduction in the peak transmit power and peak power spectral density should be the amount in decibels that the directional gain of the antenna exceeds 26 dBi.

Peak Transmit Power Definition:

The peak transmit power is measured as a conducted emission over any interval of continuous transmission calibrated in terms of an RMS-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement conforming to the definitions in this paragraph for the emission in question.

4.1.2. Measuring Instruments and Setting

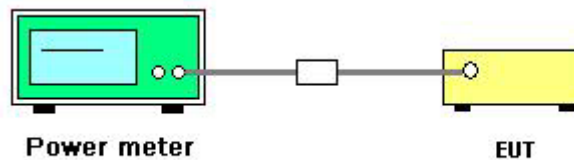
Please refer to section 5 of equipments list in this report. The following table is the setting of the power meter.

Power Meter Parameter	Setting
Bandwidth	50MHz bandwidth is greater than the EUT emission bandwidth
Detector	Peak

4.1.3. Test Procedures

Use Power Meter+ Peak Sensor

4.1.4. Test Setup Layout



4.1.5. Test Deviation

There is no deviation with the original standard.

4.1.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

Note: Average output power is only for Maximum Permissible Exposure use.

4.1.7. Test Result of Peak Transmit Power

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB

5MHz Channel Bandwidth Mode

Frequency	Conducted Peak Power (dBm)			Total Conducted Peak Power (dBm)	Max. Limit (dBm)
	Ant. 1	Ant. 2	Ant. 3		
4945 MHz	13.34	12.42	12.30	17.48	19.23
4965 MHz	13.58	12.24	12.17	17.48	19.23
4985 MHz	13.05	12.54	12.23	17.39	19.23

NOTE: Directional gain = $29\text{dBi} + 10\log(3) = 33.77\text{dBi} > 26\text{dBi}$, so the conducted power limit = $27 - (33.77 - 26) = 19.23\text{dBm}$.

10MHz Channel Bandwidth Mode

Frequency	Conducted Peak Power (dBm)			Total Conducted Peak Power (dBm)	Max. Limit (dBm)
	Ant. 1	Ant. 2	Ant. 3		
4945 MHz	16.84	15.62	15.39	20.77	22.23
4965 MHz	16.90	15.52	15.51	20.80	22.23
4985 MHz	16.72	15.62	15.04	20.62	22.23

NOTE: Directional gain = $29\text{dBi} + 10\log(3) = 33.77\text{dBi} > 26\text{dBi}$, so the conducted power limit = $30 - (33.77 - 26) = 22.23\text{dBm}$.

4.1.8. Test Result of Average Transmit Power

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB

5MHz Channel Bandwidth Mode

Frequency	Conducted Peak Power (dBm)			Total Conducted Power (dBm)
	Ant. 1	Ant. 2	Ant. 3	
4945 MHz	3.17	2.50	2.14	7.40
4965 MHz	3.49	2.29	2.09	7.44
4985 MHz	3.06	2.38	2.04	7.29

10MHz Channel Bandwidth Mode

Frequency	Conducted Peak Power (dBm)			Total Conducted Power (dBm)
	Ant. 1	Ant. 2	Ant. 3	
4945 MHz	6.37	5.46	5.16	20.77
4965 MHz	6.58	5.18	5.02	20.80
4985 MHz	6.48	5.13	5.04	20.62

4.2. Power Spectral Density Measurement

4.2.1. Limit

High power devices are also limited to a peak power spectral density of 21 dBm per 1 MHz. High power devices using channel bandwidths other than those listed above permitted; however, they are limited to a peak power spectral density of 21 dBm/MHz

4.2.2. Measuring Instruments and Setting

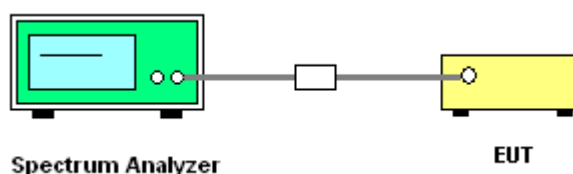
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Detector	Peak
RBW / VBW	1MHz / 3MHz

4.2.3. Test Procedures

1. The EUT transmitter output was connected through an appropriate 50 ohm attenuator to a spectrum analyzer. Resolution bandwidth was set to 1MHz and video bandwidth was set to a value greater than the resolution bandwidth. The peak transmit power was measured as a conducted emission over the interval of continuous transmission in terms of an Peak equivalent voltage RF burst gated time with a sweep slow enough to fill the channel bandwidth.
2. Instrument limited resolution bandwidth less than channel emission bandwidth; so as to obtain a true peak measurement shall be calculated by total channel power within channel bandwidth.
3. Peak search was used to find peak power spectral density within channel bandwidth and the spectrum analyzer integrated measurement plot was taken.

4.2.4. Test Setup Layout



4.2.5. Test Deviation

There is no deviation with the original standard.

4.2.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.2.7. Peak Power Spectral Density (PSD)

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB

5MHz Channel Bandwidth Mode

Frequency	Power Density (dBm/MHz)			Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)
	Ant. 1	Ant. 2	Ant. 3		
4945 MHz	8.99	8.62	7.18	13.10	13.23
4965 MHz	9.30	8.02	7.36	13.07	13.23
4985 MHz	9.17	7.91	7.84	13.12	13.23

Note 1: Manufacturer declared that the maximum antenna gain is 21 dBi. The EUT is used for high power point-to-point or point-to-multipoint operation.

NOTE 2: Directional gain = $30\text{dBi} + 10\log(3) = 34.77\text{dBi} > 26\text{dBi}$, so the Power Spectral Density limit = $21 - (34.77 - 26) = 13.23\text{dBm}$.

10MHz Channel Bandwidth Mode

Frequency	Power Density (dBm/MHz)			Total Power Density (dBm/MHz)	Max. Limit (dBm/MHz)
	Ant. 1	Ant. 2	Ant. 3		
4945 MHz	8.62	8.03	7.34	12.80	13.23
4965 MHz	8.83	8.25	7.46	12.99	13.23
4985 MHz	9.13	7.68	7.88	13.05	13.23

Note 1: Manufacturer declared that the maximum antenna gain is 21 dBi. The EUT is used for high power point-to-point or point-to-multipoint operation.

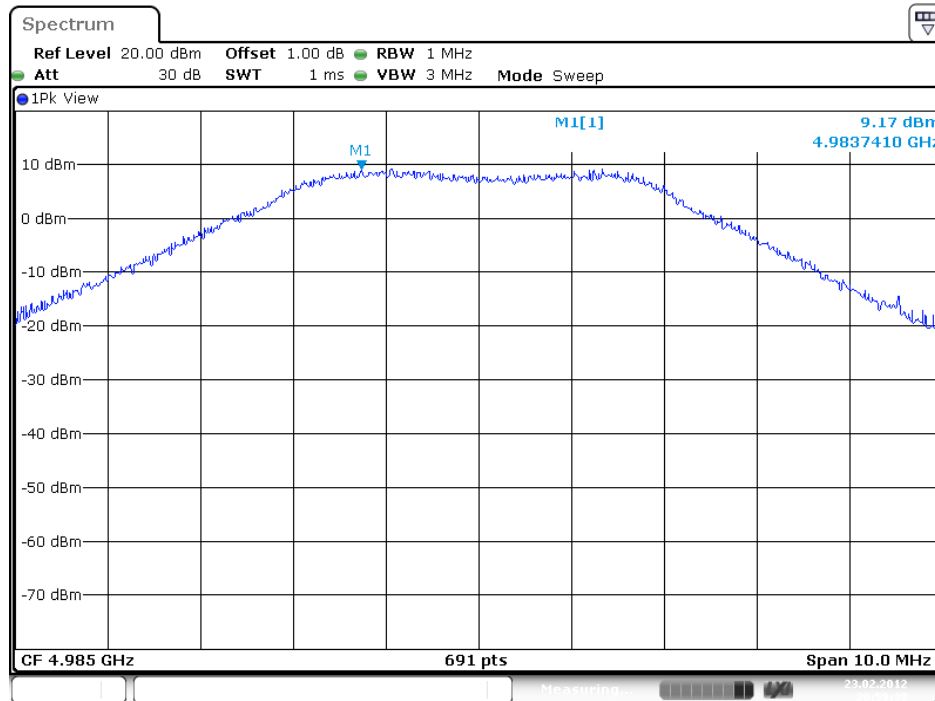
NOTE 2: Directional gain = $30\text{dBi} + 10\log(3) = 34.77\text{dBi} > 26\text{dBi}$, so the Power Spectral Density limit = $21 - (34.77-26) = 13.23\text{dBm}$.

4.2.8. Antenna Gain Limit

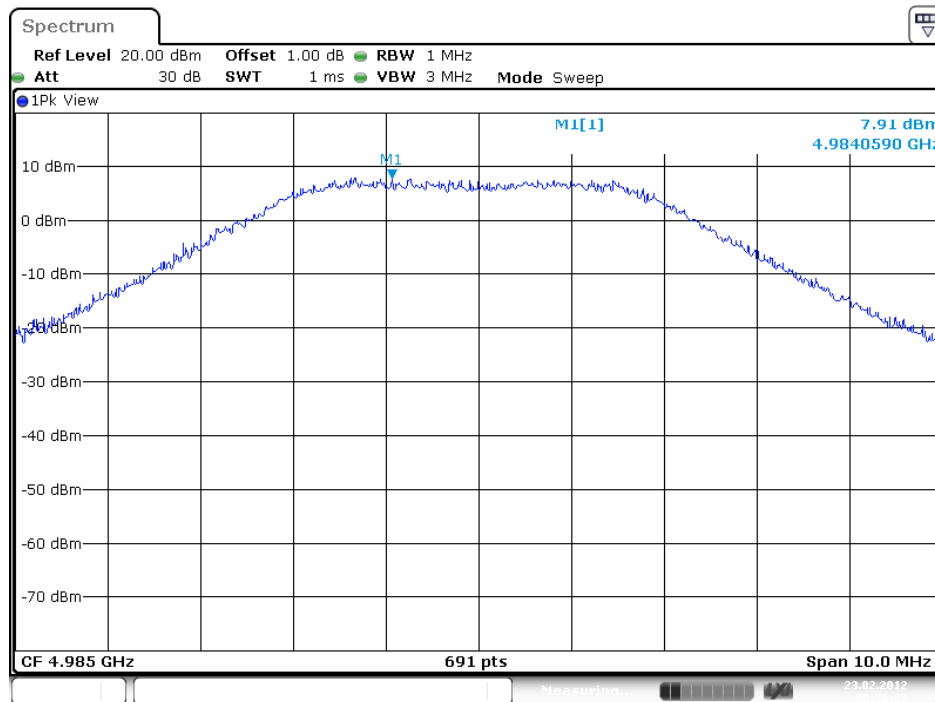
Max. Antenna Gain (dBi)	point-to-point or point-to-multipoint operation	Reduction in the peak power and peak power spectral density should be the amount in dB
29	Yes (P-P / P-M)	26

4.2.9. Test Plots of Peak Transmit Power and Peak Power Spectral Density

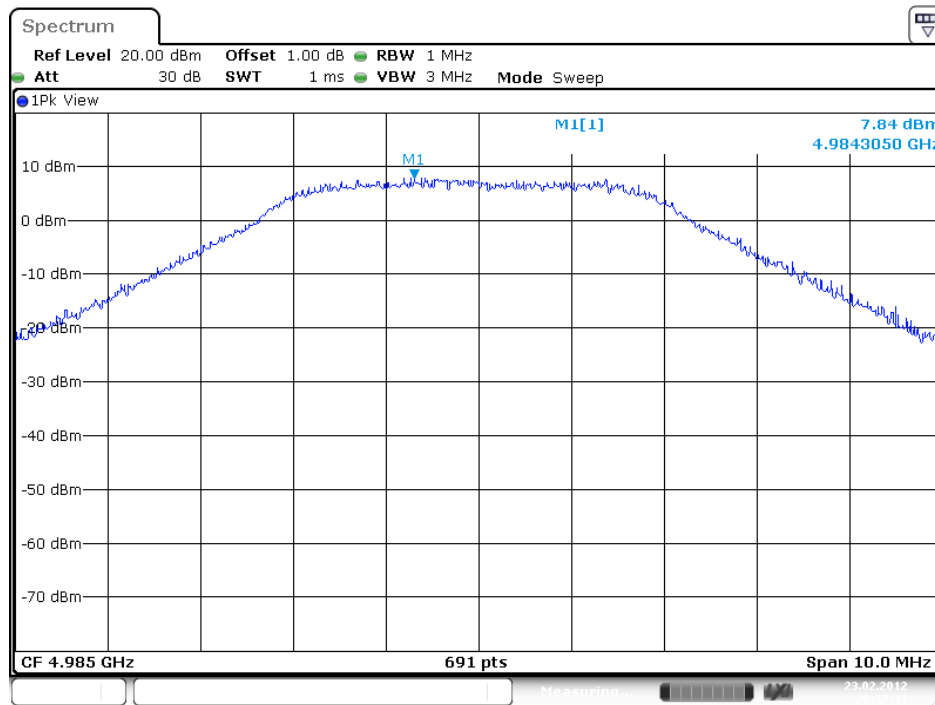
Peak Power Spectral Density (5 MHz BW Mode) - 4985MHz / Ant. 1



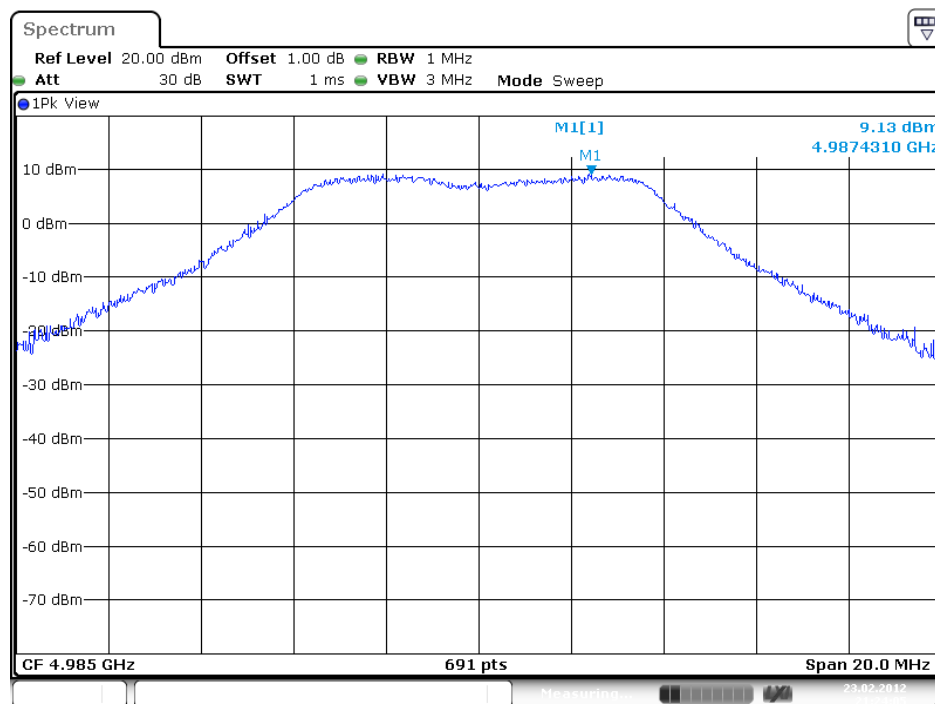
Peak Power Spectral Density (5 MHz BW Mode) - 4985MHz / Ant. 2



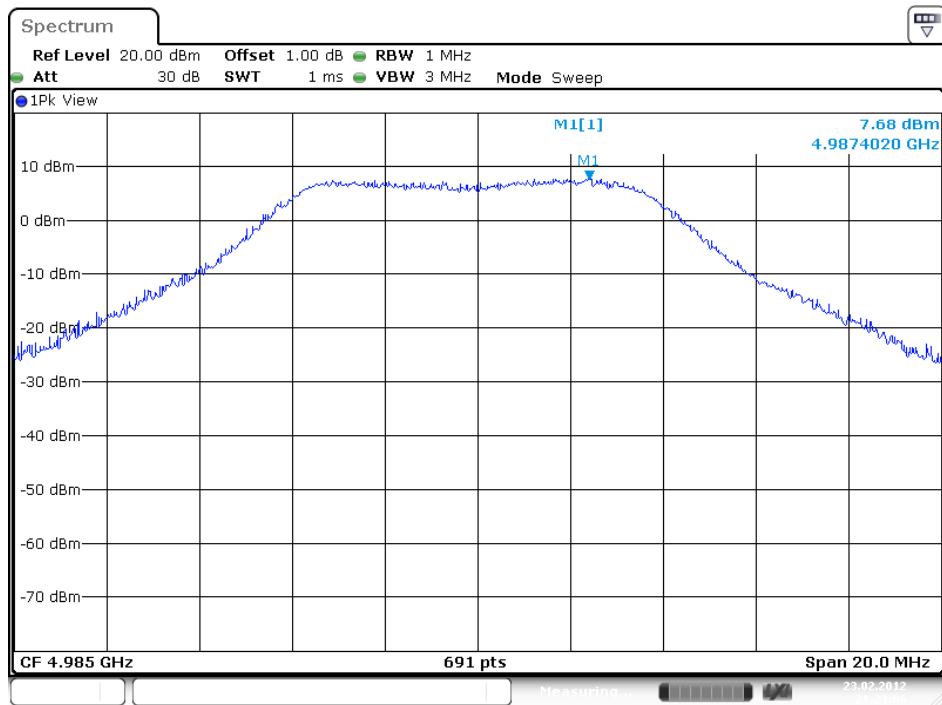
Peak Power Spectral Density (5 MHz BW Mode) - 4985MHz / Ant. 3



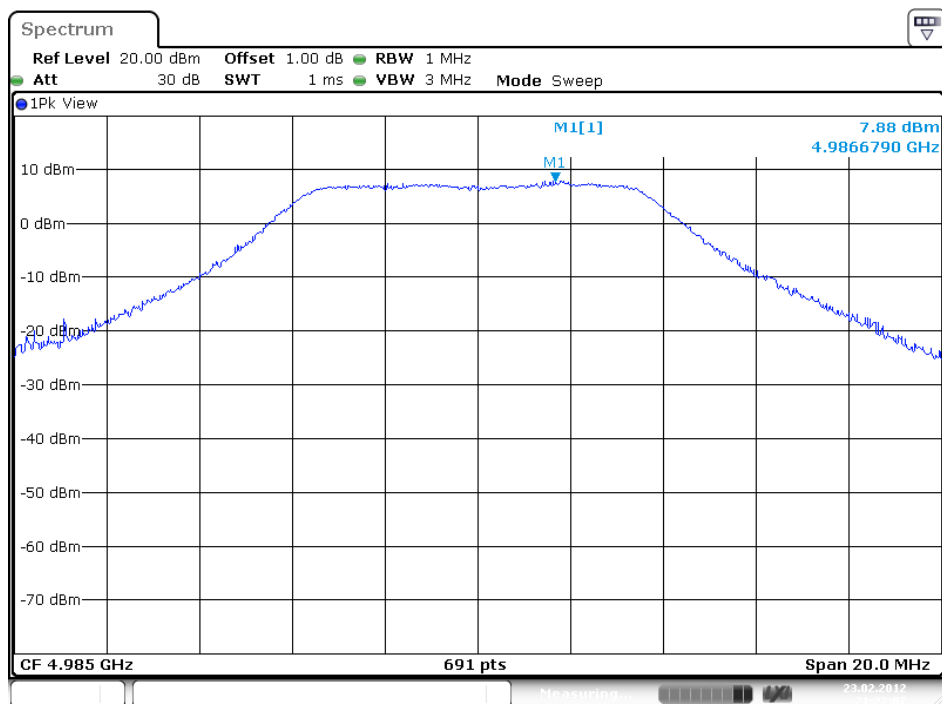
Peak Power Spectral Density (10MHz BW Mode) - 4985MHz / Ant. 1



Peak Power Spectral Density (10MHz BW Mode) - 4985MHz / Ant. 2



Peak Power Spectral Density (10MHz BW Mode) - 4985MHz / Ant. 3



4.3. Occupied Bandwidth and Emission Mask Measurement

4.3.1. Limit

Emission Mask M: For high power transmitters (greater than 20 dBm) operating in the 4940-4990 MHz frequency band, the power spectral density of the emissions must be attenuated below the output power of the transmitter as follows:

(1) On any frequency removed from the assigned frequency between 0–45% of the authorized bandwidth (BW): 0 dB

(2) On any frequency removed from the assigned frequency between 45–50% of the authorized bandwidth: $568 \log (\% \text{ of } (BW)/45)$ dB.

(3) On any frequency removed from the assigned frequency between 50–55% of the authorized bandwidth: $26 + 145 \log (\% \text{ of } (BW)/50)$ dB.

(4) On any frequency removed from the assigned frequency between 55–100% of the authorized bandwidth: $32 + 31 \log (\% \text{ of } (BW)/55)$ dB attenuation.

(5) On any frequency removed from the assigned frequency between 100–150% of the authorized bandwidth: $40 + 57 \log (\% \text{ of } (BW)/100)$ dB attenuation.

(6) On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 or $55 + 10 \log (P)$ dB, whichever is the lesser attenuation. (P in watts)

The zero dB reference is measured relative to the highest average power of the fundamental emission measured across the designated channel bandwidth using a resolution bandwidth of at least 1% of the occupied bandwidth of the fundamental emission and a video bandwidth of 30 kHz. The power spectral density is the power measured within the resolution bandwidth of the measurement device divided by the resolution bandwidth of the measurement device. Emission levels are also based on the use of measurement instrumentation employing a resolution bandwidth of at least one percent of the occupied bandwidth.

4.3.2. Measuring Instruments and Setting

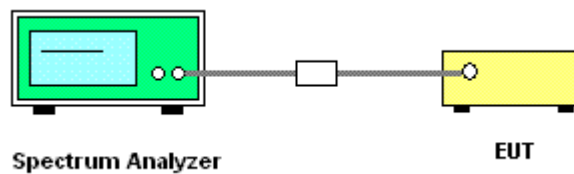
Please refer to section 5 in this report. The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth of the signal
RB	at least 1% of the occupied bandwidth
VB	$BW = 3 \times RB$, Mask=30kHz
Detector	Peak
Trace	Max Hold

4.3.3. Test Procedures

4. The EUT transmitter was connected to a spectrum analyzer through an appropriate 50 ohm attenuator. Used measurement function of spectrum to measure the 99% occupied bandwidth.
5. The reference level for the mask was set using the highest average power of the fundamental emission measured across the channel bandwidth using a RBW of at least 1% of the occupied bandwidth of the fundamental emission and a VBW of 30 kHz.

4.3.4. Test Setup Layout



4.3.5. Test Deviation

There is no deviation with the original standard.

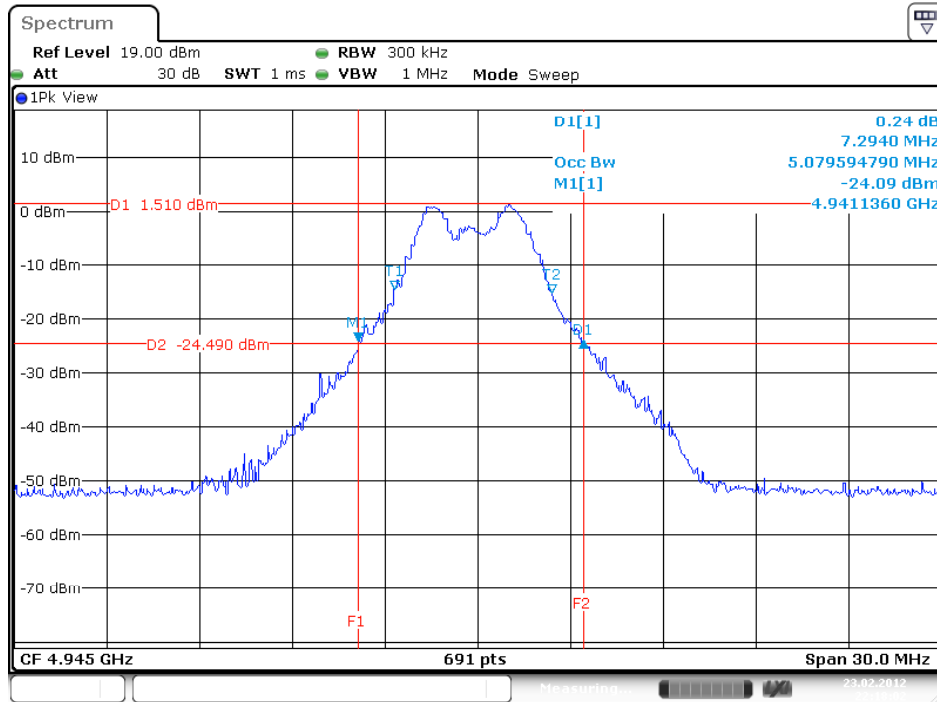
4.3.6. Test Result of 99% Occupied Bandwidth (OBW)

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB

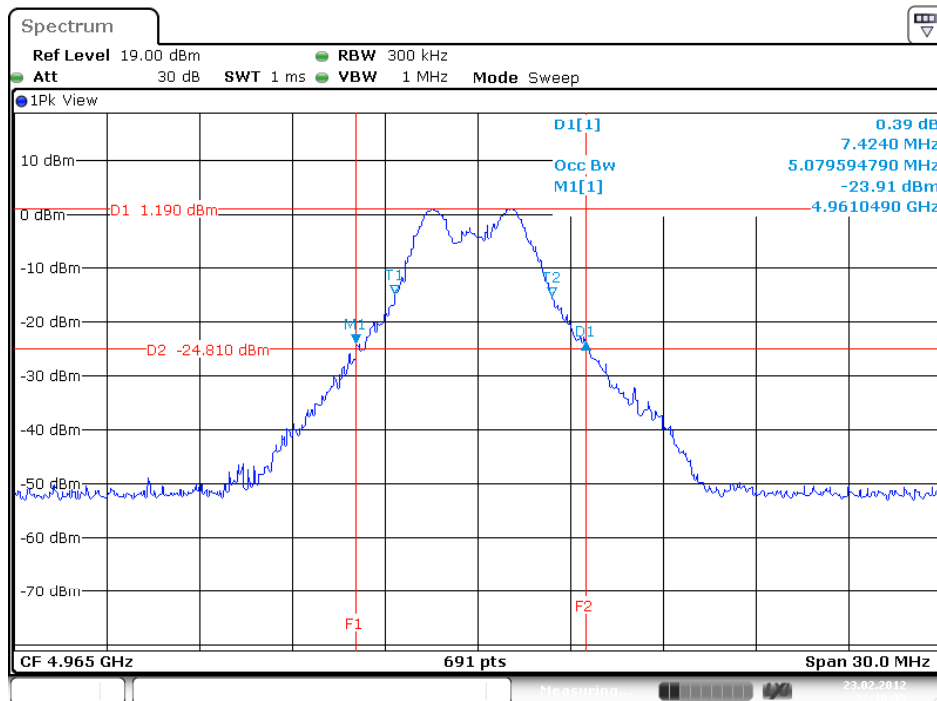
5MHz Channel Bandwidth Mode		
Frequency	26dB Bandwidth (MHz)	99% OBW (MHz)
4945 MHz	7.29	5.08
4965 MHz	7.42	5.08
4985 MHz	7.12	5.17

10MHz Channel Bandwidth Mode		
Frequency	26dB Bandwidth (MHz)	99% OBW (MHz)
4950 MHz	13.53	9.41
4965 MHz	14.15	9.26
4980 MHz	13.53	9.26

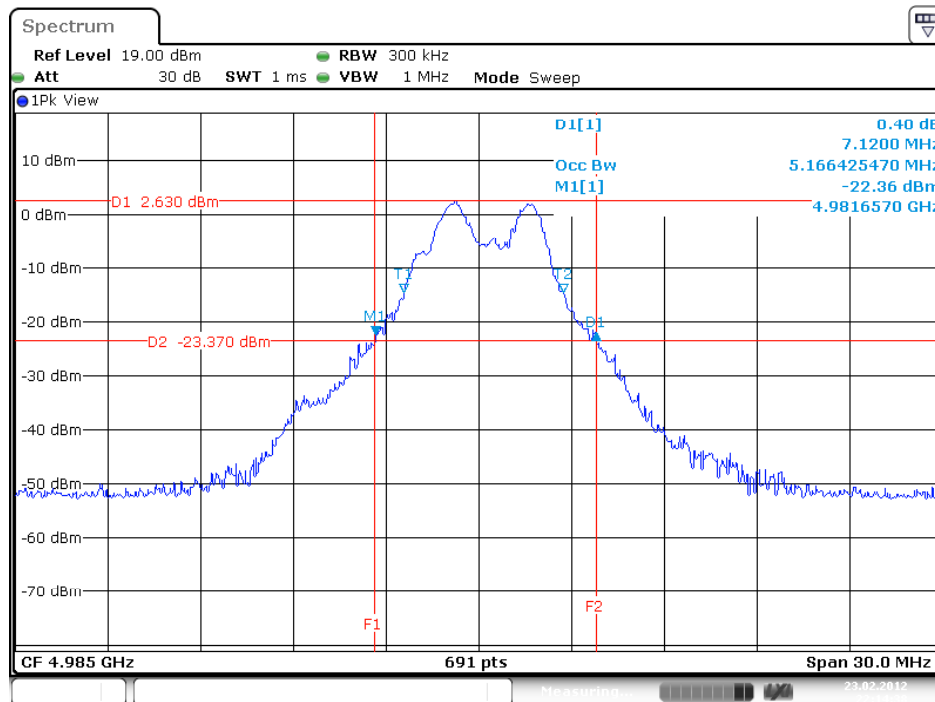
99% Occupied Bandwidth (5MHz BW Mode) - 4945MHz



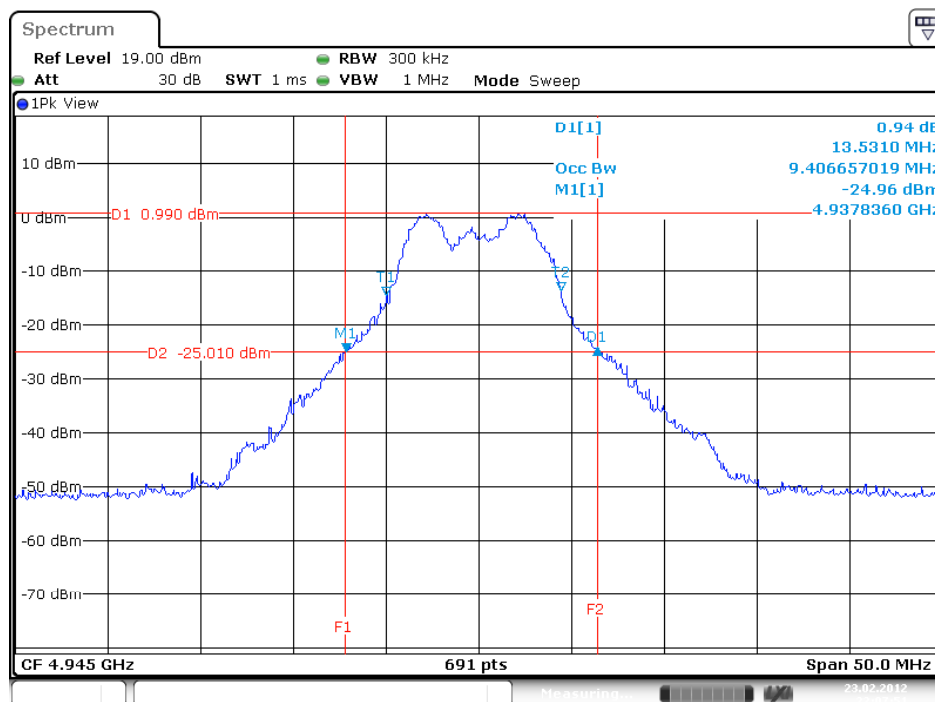
99% Occupied Bandwidth (5MHz BW Mode) - 4965MHz



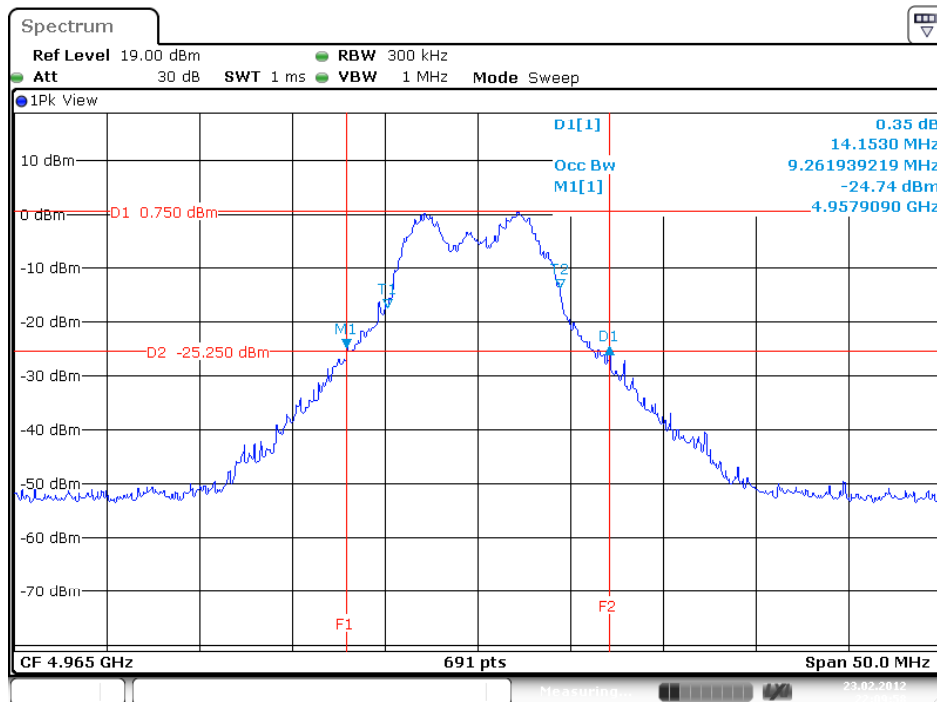
99% Occupied Bandwidth (5MHz BW Mode) - 4985MHz



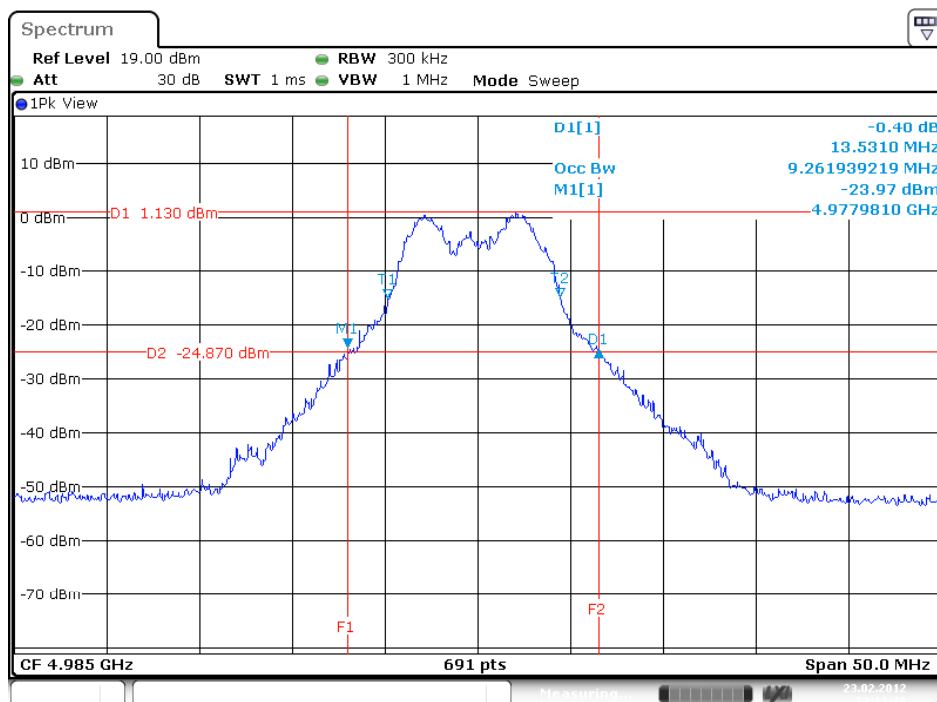
99% Occupied Bandwidth (10MHz BW Mode) - 4945MHz



99% Occupied Bandwidth (10MHz BW Mode) - 4965MHz



99% Occupied Bandwidth (10MHz BW Mode) - 4985MHz



4.3.7. Emission Mask Measurements

Reference Level Measurements

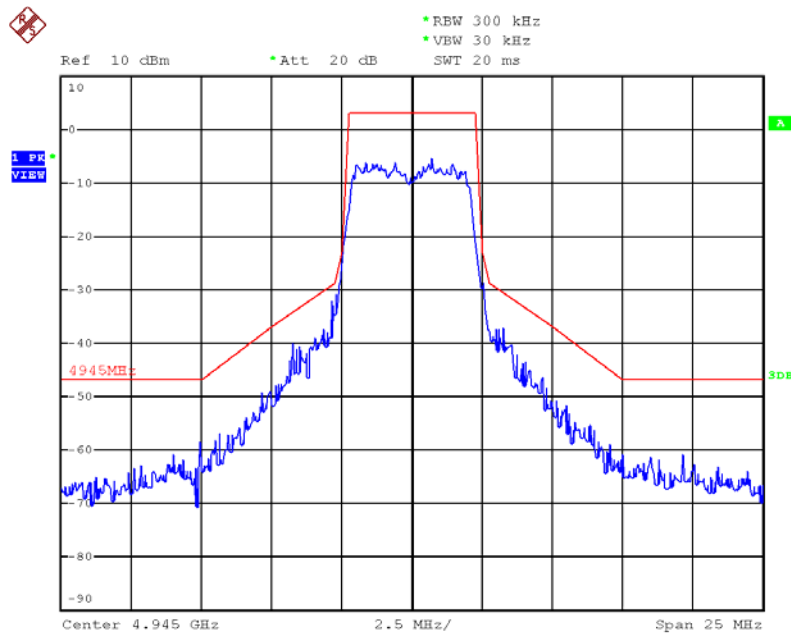
5MHz Channel Bandwidth Mode			
Frequency	Ref. Level (dBm)		
	Ant. 1	Ant. 2	Ant. 3
4945 MHz	13.34	13.58	13.05
4965 MHz	12.42	12.24	12.54
4985 MHz	12.30	12.17	12.23

The zero dB reference is measured relative to the highest average power of the fundamental emission

10MHz Channel Bandwidth Mode			
Frequency	Ref. Level (dBm)		
	Ant. 1	Ant. 2	Ant. 3
4945 MHz	16.84	16.90	16.72
4965 MHz	15.62	15.52	15.62
4985 MHz	15.39	15.51	15.04

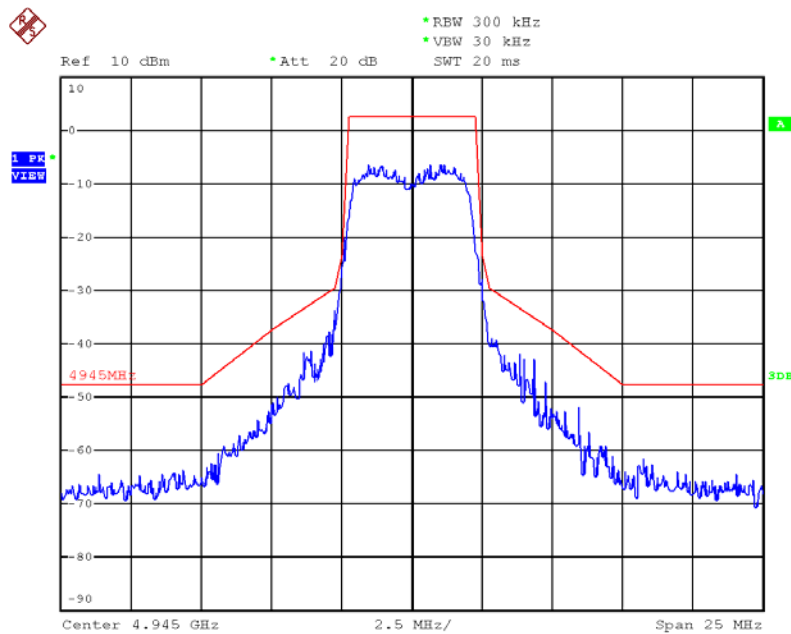
The zero dB reference is measured relative to the highest average power of the fundamental emission

Emission Mask (5MHz BW Mode) - 4945MHz / Ant. 1



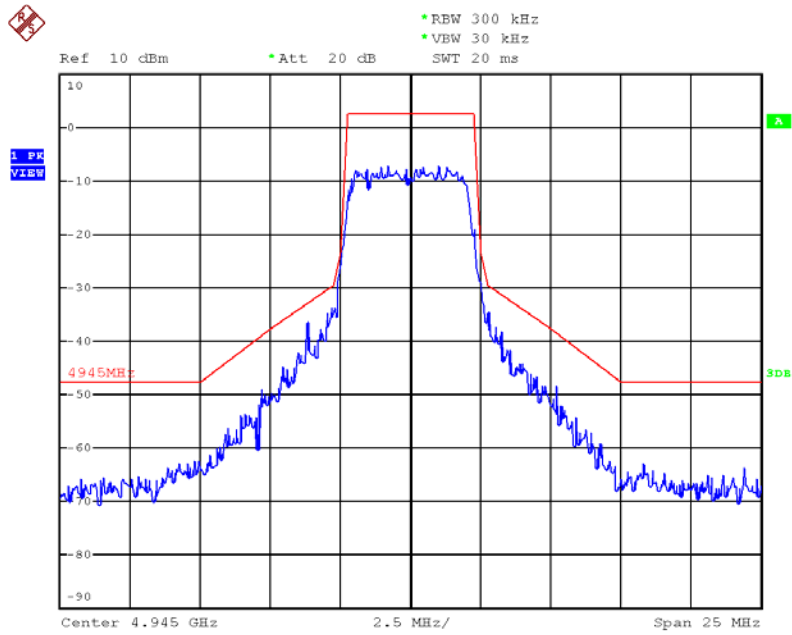
Date: 24.FEB.2012 22:18:23

Emission Mask (5MHz BW Mode) - 4945MHz / Ant. 2



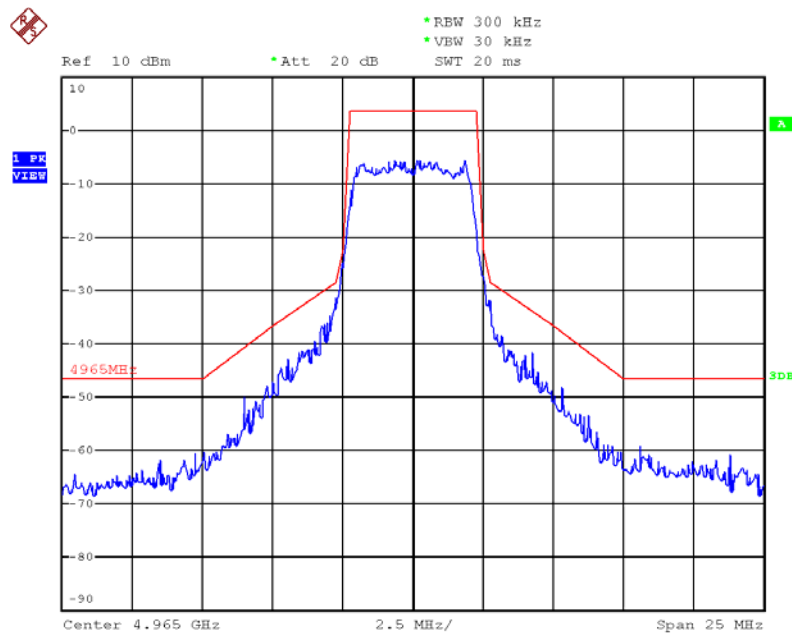
Date: 24.FEB.2012 22:16:04

Emission Mask (5MHz BW Mode) - 4945MHz / Ant. 3



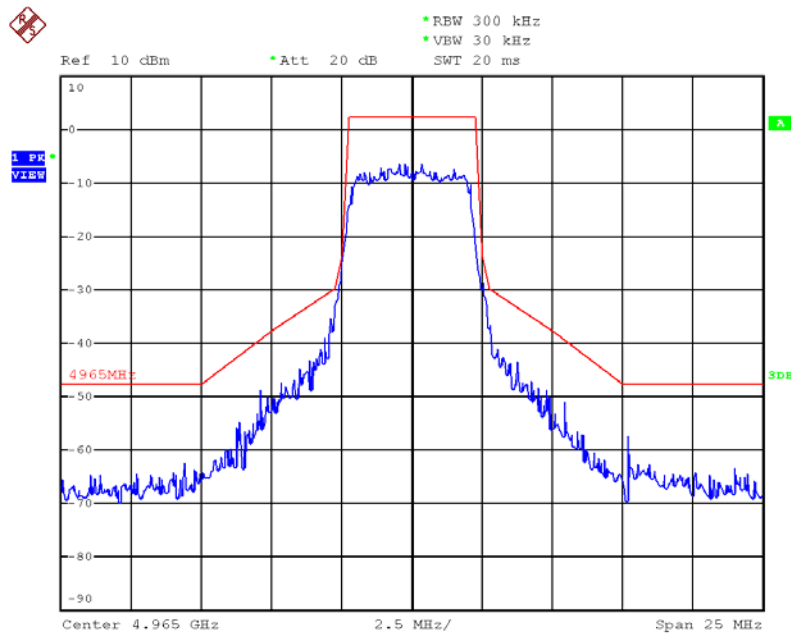
Date: 24.FEB.2012 22:14:36

Emission Mask (5MHz BW Mode) - 4965MHz / Ant. 1



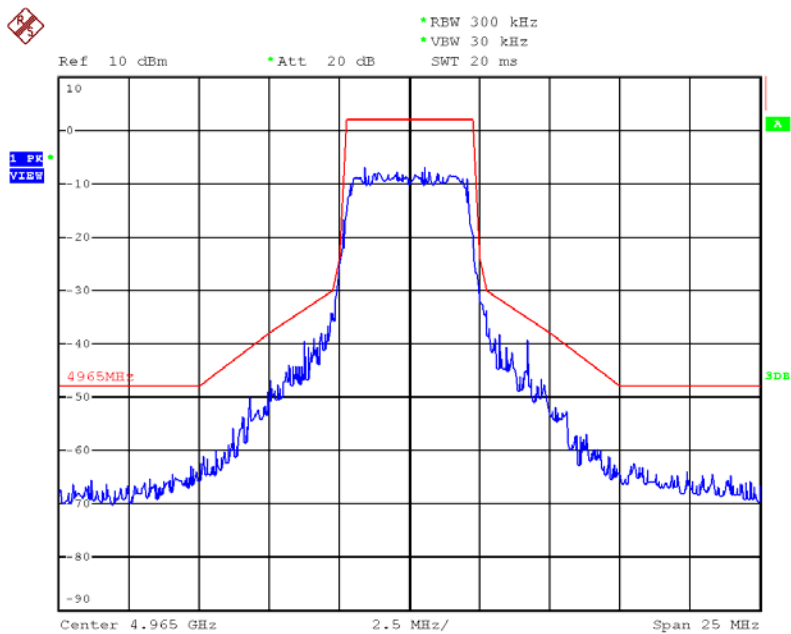
Date: 24.FEB.2012 22:06:24

Emission Mask (5MHz BW Mode) - 4965MHz / Ant. 2



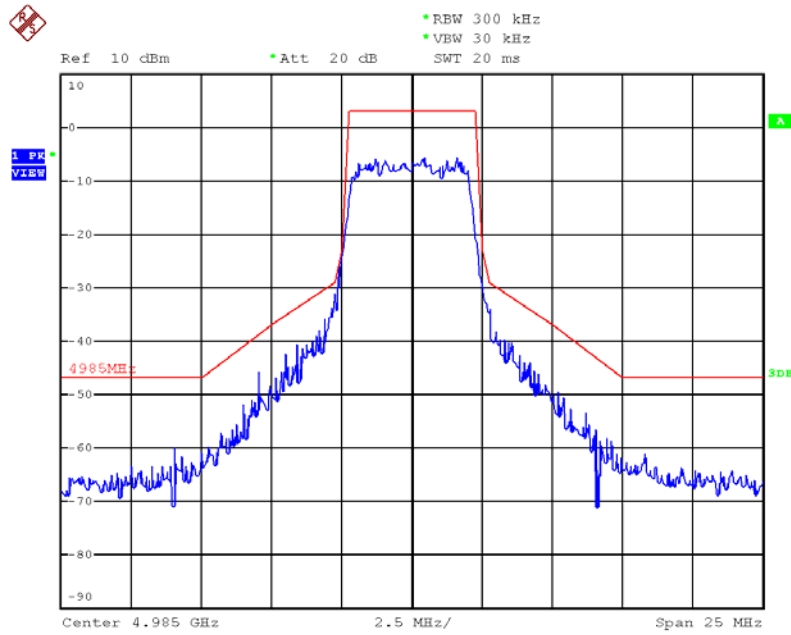
Date: 24.FEB.2012 22:09:41

Emission Mask (5MHz BW Mode) - 4965MHz / Ant. 3



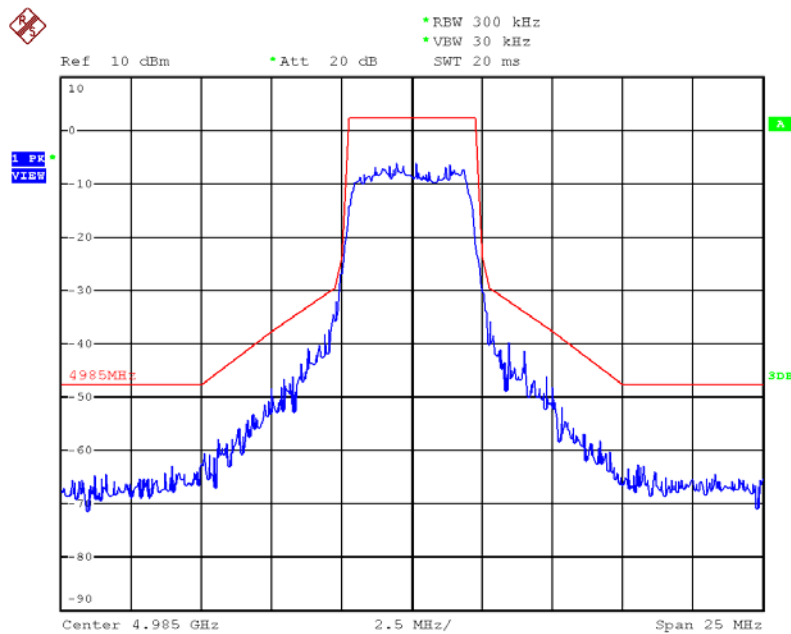
Date: 24.FEB.2012 22:10:54

Emission Mask (5MHz BW Mode) - 4985MHz / Ant. 1



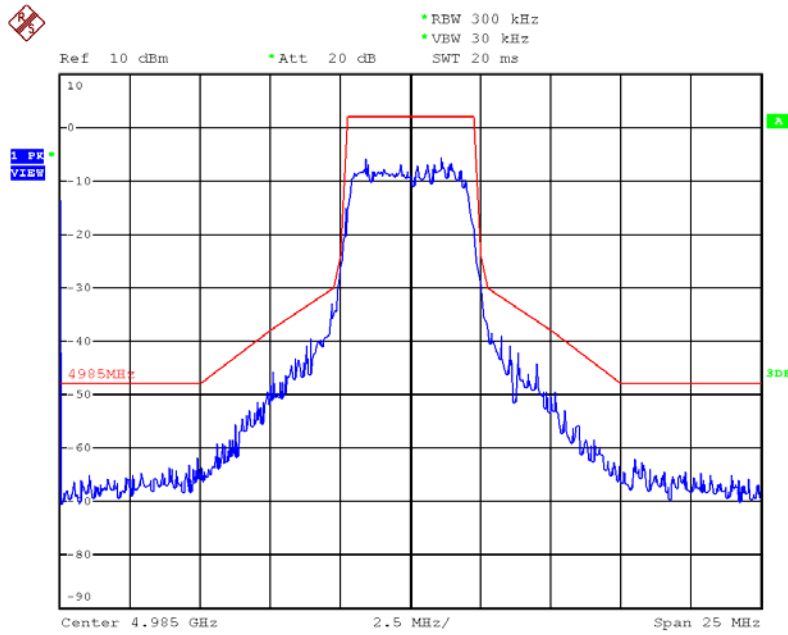
Date: 24.FEB.2012 22:04:46

Emission Mask (5MHz BW Mode) - 4985MHz / Ant. 2



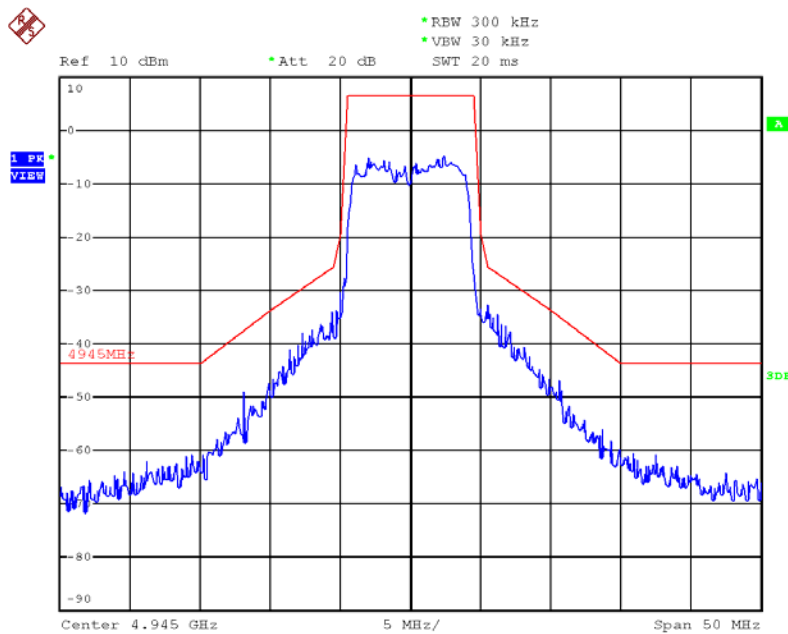
Date: 24.FEB.2012 22:03:45

Emission Mask (5MHz BW Mode) - 4985MHz / Ant. 3



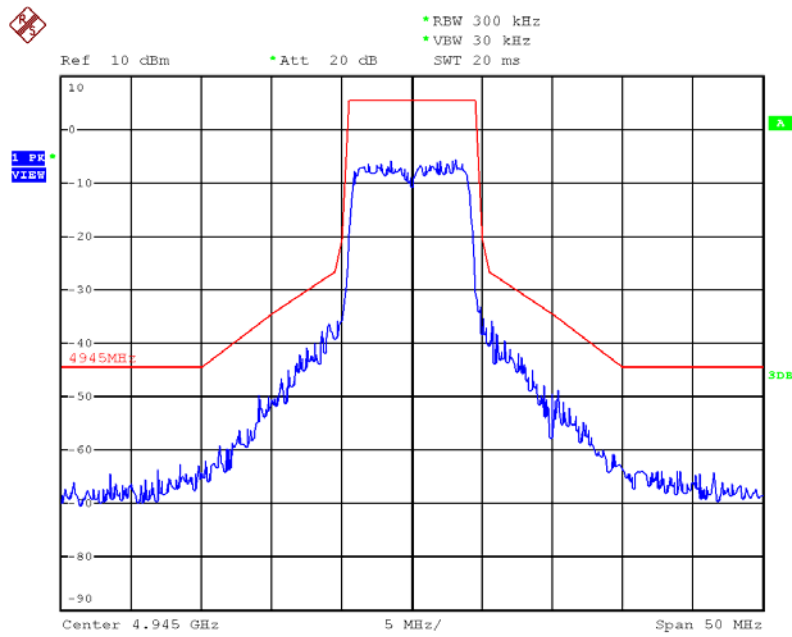
Date: 24.FEB.2012 22:02:16

Emission Mask (10MHz BW Mode) - 4945MHz / Ant. 1



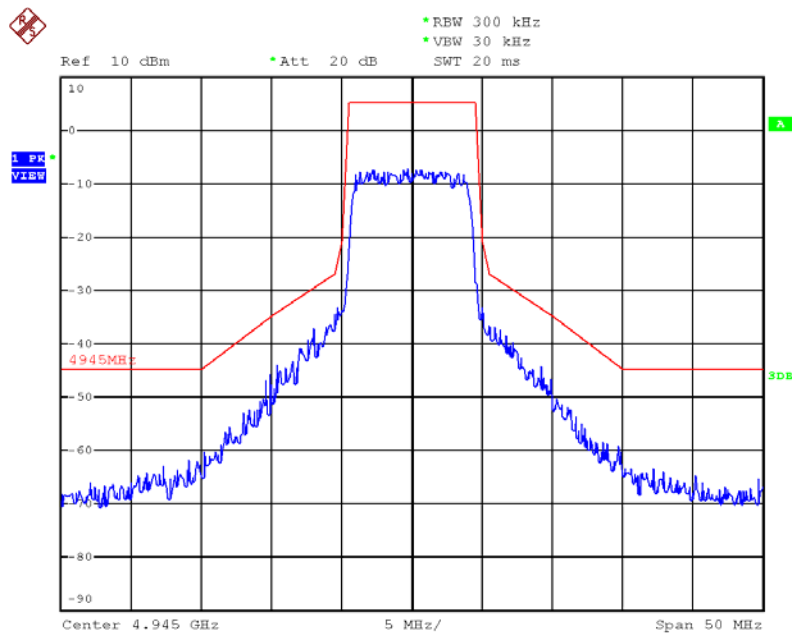
Date: 24.FEB.2012 21:49:16

Emission Mask (10MHz BW Mode) - 4945MHz / Ant. 2



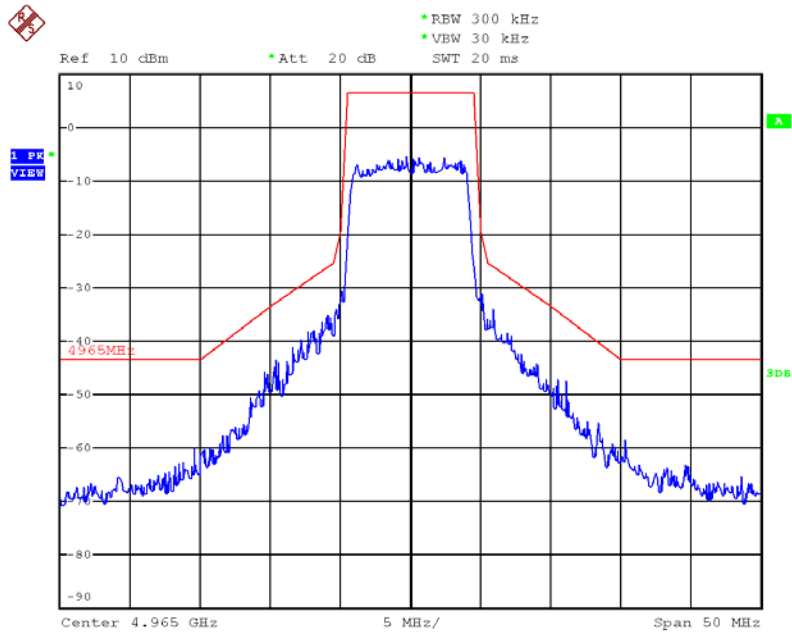
Date: 24.FEB.2012 21:51:06

Emission Mask (10MHz BW Mode) - 4945MHz / Ant. 3



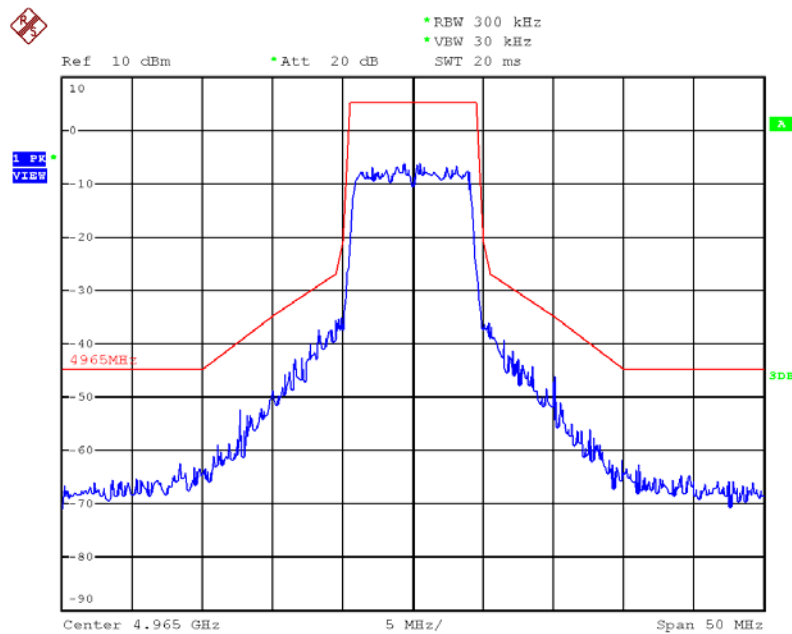
Date: 24.FEB.2012 21:52:22

Emission Mask (10MHz BW Mode) - 4965MHz / Ant. 1



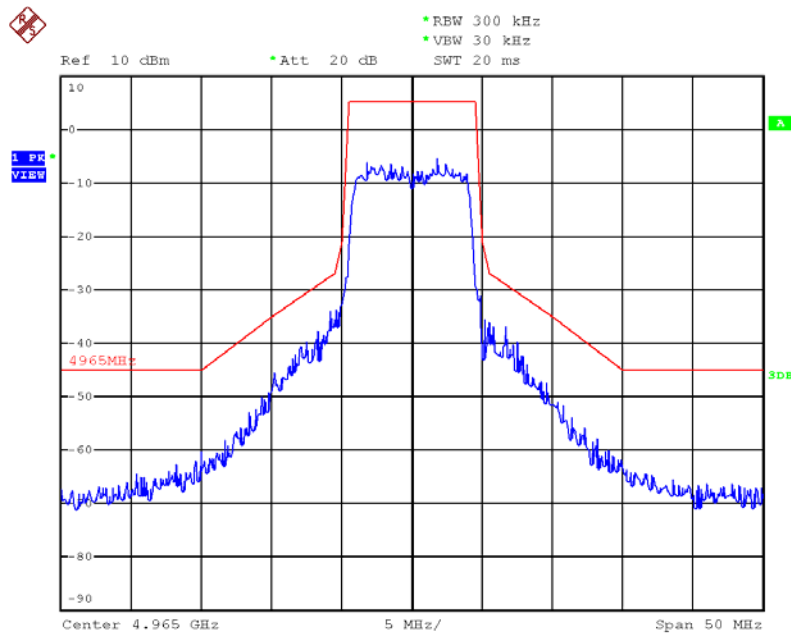
Date: 24.FEB.2012 21:55:47

Emission Mask (10MHz BW Mode) - 4965MHz / Ant. 2



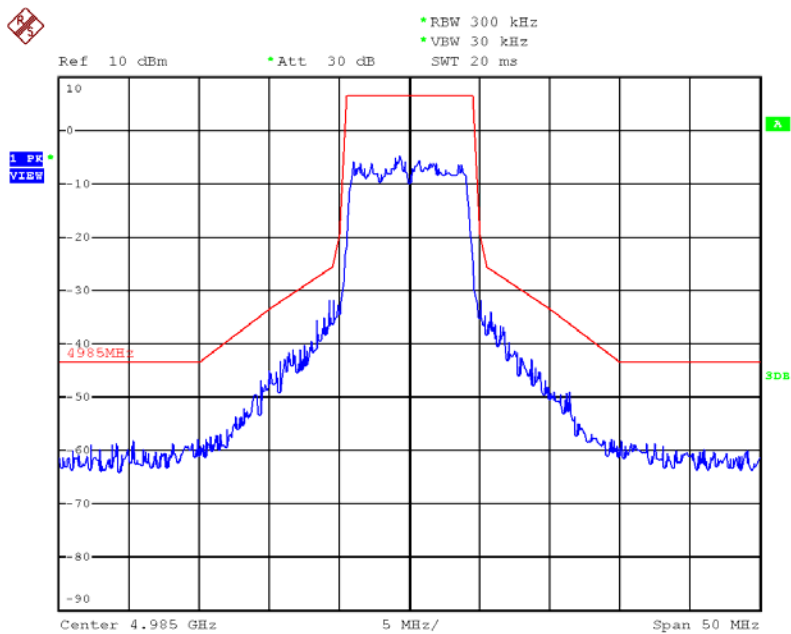
Date: 24.FEB.2012 21:54:41

Emission Mask (10MHz BW Mode) - 4965MHz / Ant. 3



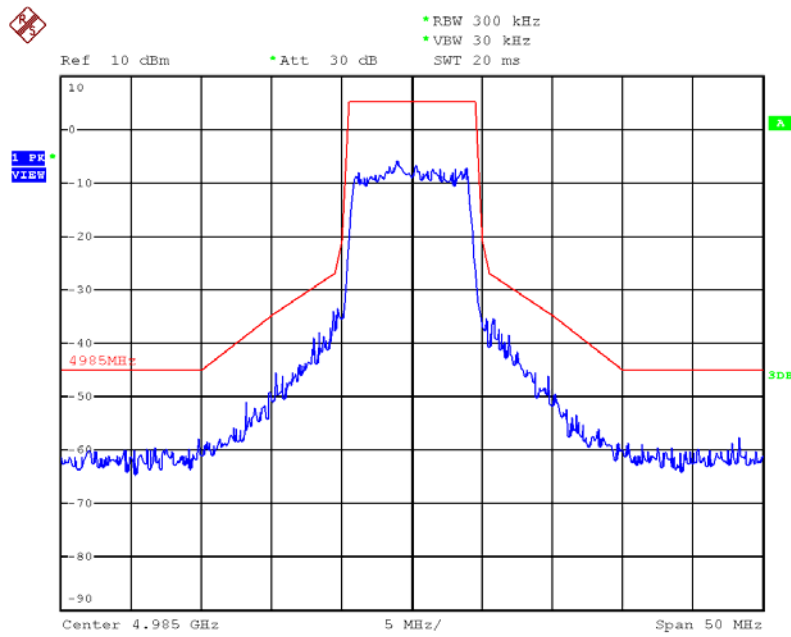
Date: 24.FEB.2012 21:53:41

Emission Mask (10MHz BW Mode) - 4985MHz / Ant. 1



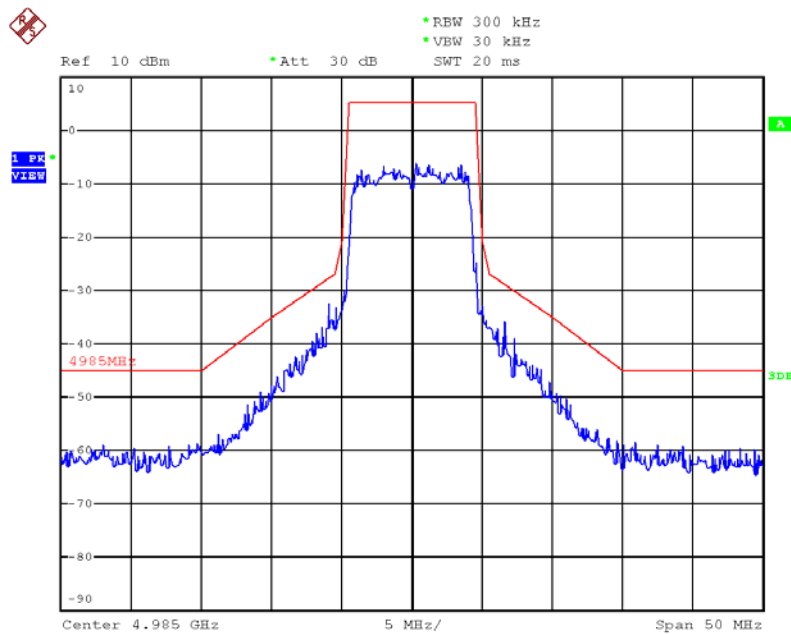
Date: 24.FEB.2012 21:57:33

Emission Mask (10MHz BW Mode) - 4985MHz / Ant. 2



Date: 24.FEB.2012 21:58:35

Emission Mask (10MHz BW Mode) - 4985MHz / Ant. 3



Date: 24.FEB.2012 21:59:42

4.4. Peak Excursion Measurement

4.4.1. Limit

The ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emissions bandwidth whichever is less.

4.4.2. Measuring Instruments and Setting

Please refer to section 5 of equipments list in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	Encompass the entire emissions bandwidth (EBW) of the signal
RB	1000 kHz (Peak Trace) / 1000 kHz (Average Trace)
VB	3000 kHz (Peak Trace) / 300 kHz (Average Trace)
Detector	Peak (Peak Trace) / Sample (Average Trace)
Trace	Max Hold
Sweep Time	60s

4.4.3. Test Procedures

1. The test procedure is the same as section 4.6.3.
2. Trace A, Set RBW = 1MHz, VBW = 3MHz, Span >26dB bandwidth, Max. hold.
3. Delta Mark trace A Maximum frequency and trace B same frequency.
4. Repeat the above procedure until measurements for all frequencies were complete.

4.4.4. Test Setup Layout

This test setup layout is the same as that shown in section 4.6.4.

4.4.5. Test Deviation

There is no deviation with the original standard.

4.4.6. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

4.4.7. Test Result of Peak Excursion

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB

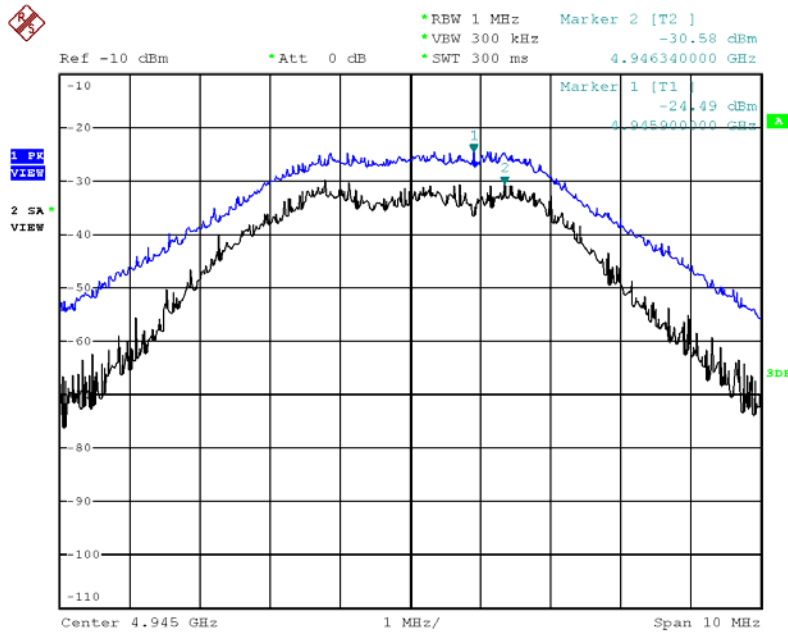
5MHz Channel Bandwidth Mode

Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
4945 MHz	6.09	13	Complies
4965 MHz	6.70	13	Complies
4985 MHz	5.85	13	Complies

10MHz Channel Bandwidth Mode

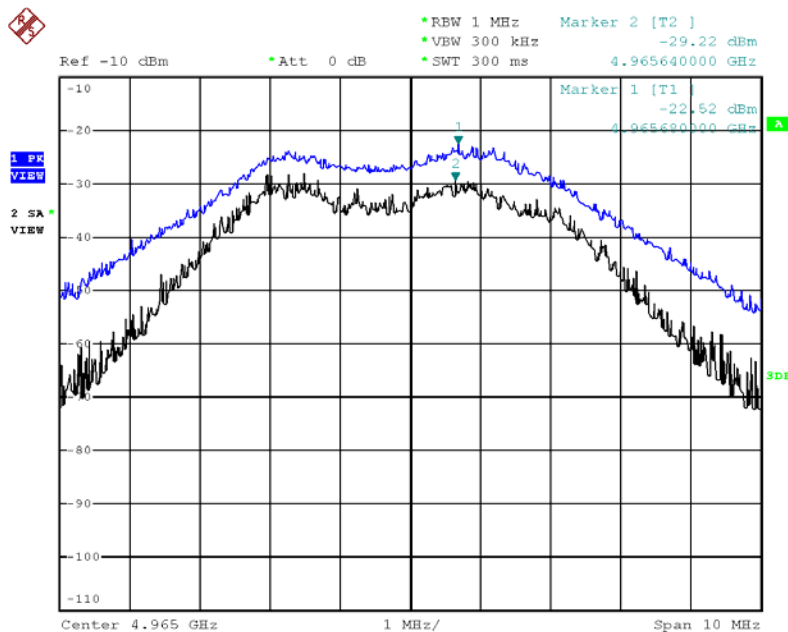
Frequency	Peak Excursion (dB)	Max. Limit (dB)	Result
4945 MHz	6.01	13	Complies
4965 MHz	8.61	13	Complies
4985 MHz	6.00	13	Complies

Peak Excursion (5 MHz BW Mode) - 4945 MHz



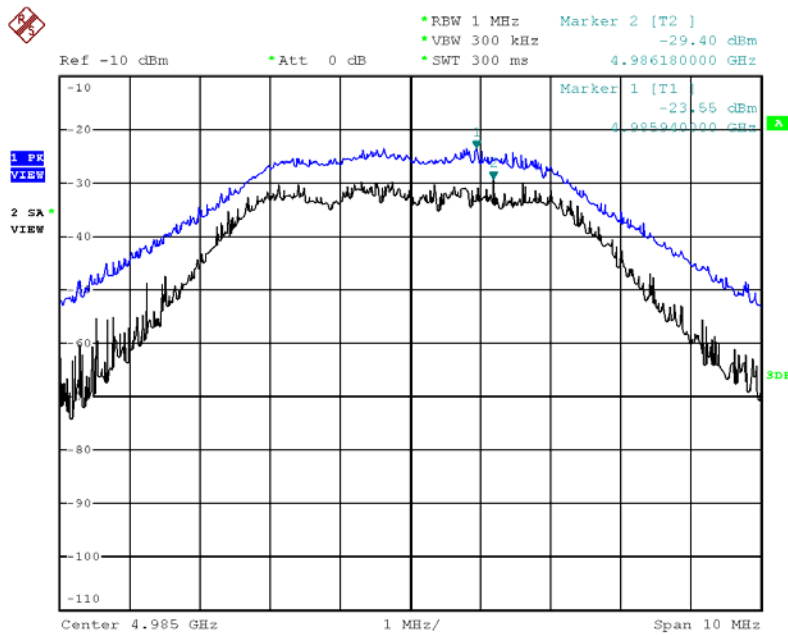
Date: 14.MAR.2012 16:10:33

Peak Excursion (5 MHz BW Mode) - 4965 MHz



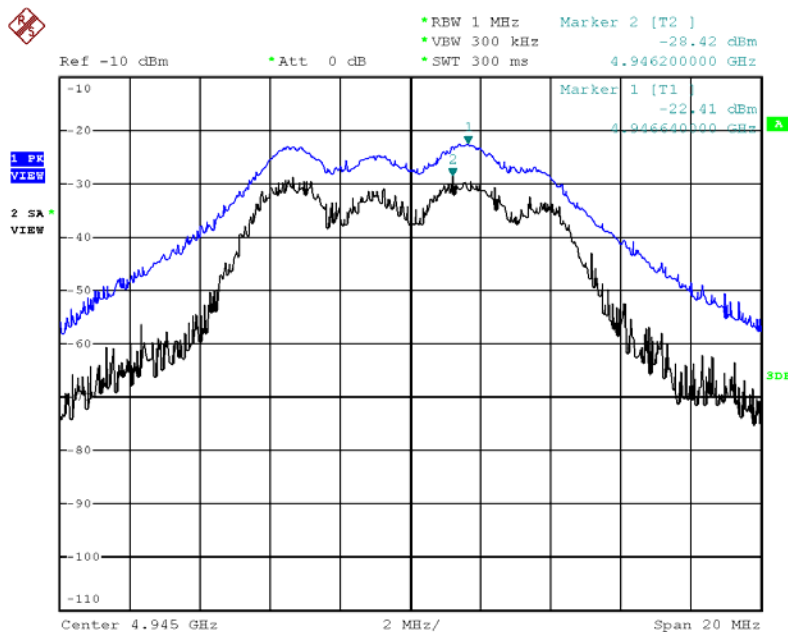
Date: 14.MAR.2012 16:09:24

Peak Excursion (5 MHz BW Mode) - 4985 MHz



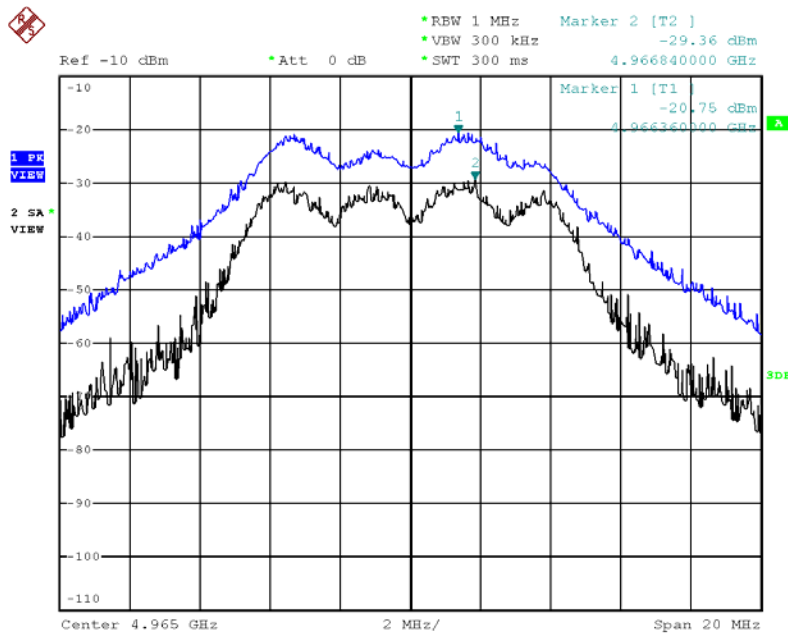
Date: 14.MAR.2012 16:07:59

Peak Excursion (10 MHz BW Mode) - 4945 MHz



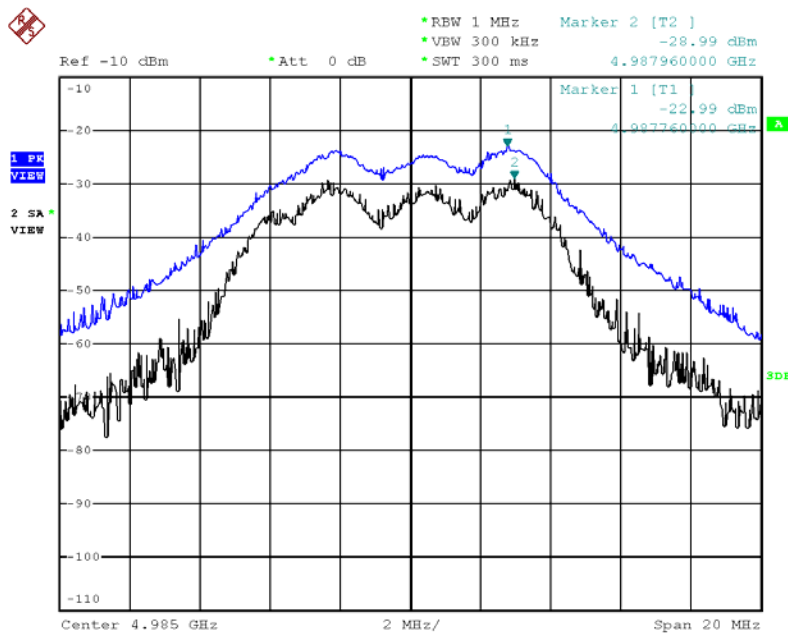
Date: 14.MAR.2012 16:04:54

Peak Excursion (10 MHz BW Mode) - 4965 MHz



Date: 14.MAR.2012 16:03:47

Peak Excursion (10 MHz BW Mode) - 4985 MHz



Date: 14.MAR.2012 16:05:41

4.5. Spurious Emissions at Antenna Terminals Measurement

4.5.1. Limit

On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 or $55 + 10 \log(P)$ dB, whichever is the lesser attenuation. (P=Average transmit power in watt)

5MHz Channel Bandwidth Mode / 30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)
	Ant. 1	ANT. 2	ANT. 3		
4945 MHz	-55.10	-59.62	-60.57	-52.96	-42.60
4965 MHz	-58.74	-58.88	-58.87	-54.06	-42.56
4985 MHz	-55.10	-58.09	-58.72	-52.23	-42.71

5MHz Channel Bandwidth Mode / 1GHz ~ 40GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)
	Ant. 1	ANT. 2	ANT. 3		
4945 MHz	-51.91	-50.82	-49.29	-45.77	-42.60
4965 MHz	-49.36	-50.32	-50.56	-45.28	-42.56
4985 MHz	-51.03	-49.91	-49.79	-45.44	-42.71

10MHz Channel Bandwidth Mode / 30MHz ~ 1GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)
	Ant. 1	ANT. 2	ANT. 3		
4945 MHz	-52.82	-55.21	-54.15	-49.18	-39.53
4965 MHz	-52.56	-54.47	-54.83	-49.06	-39.58
4985 MHz	-52.82	-55.00	-55.53	-49.51	-39.63

10MHz Channel Bandwidth Mode / 1GHz ~ 40GHz					
Frequency	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Conducted Emission (dBm/MHz)	Total Conducted Emission (dBm/MHz)	Max. Limit (dBm/MHz)
	Ant. 1	ANT. 2	ANT. 3		
4945 MHz	-51.52	-51.02	-50.31	-46.15	-39.53
4965 MHz	-50.12	-50.11	-50.45	-45.45	-39.58
4985 MHz	-50.58	-50.80	-50.26	-45.77	-39.63

4.5.2. Measuring Instruments and Setting

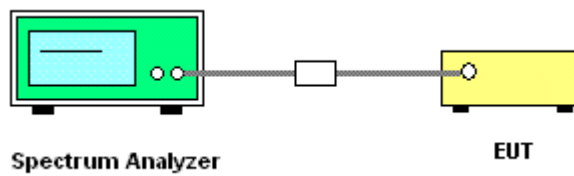
Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

Spectrum Parameter	Setting
Detector	Peak
Frequency Range	30MHz – 40GHz

4.5.3. Test Procedures

1. The EUT transmitter was connected to a spectrum analyzer through an appropriate 50 ohm attenuator. The spectrum analyzer resolution bandwidth was set to 1 MHz, and the video bandwidth was set to 3 MHz.
2. Find spurious emissions under 50 or 55+ 10 log (P) dB limit, whichever is the lesser attenuation and the spectrum analyzer integrated measurement plot was taken.

4.5.4. Test Setup Layout



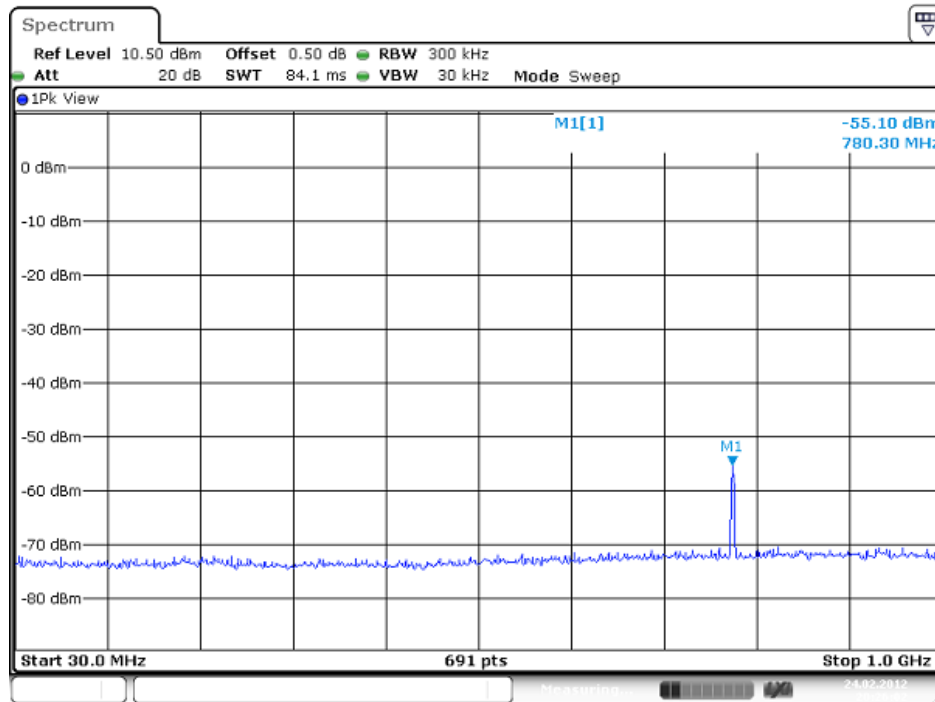
4.5.5. Test Deviation

There is no deviation with the original standard.

4.5.6. Test Result of Spurious Emissions at Antenna Terminals

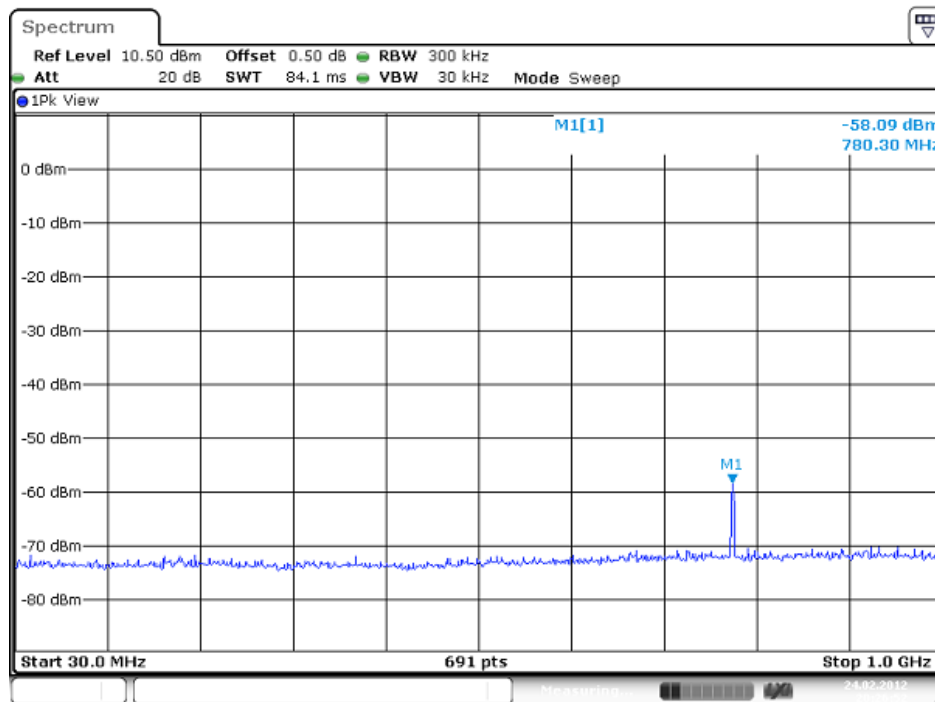
Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB
Test Date	Feb. 23, 2012		

Conducted Spurious Emissions (5MHz BW Mode) - 4985MHz (30MHz ~ 1GHz) / Ant. 1



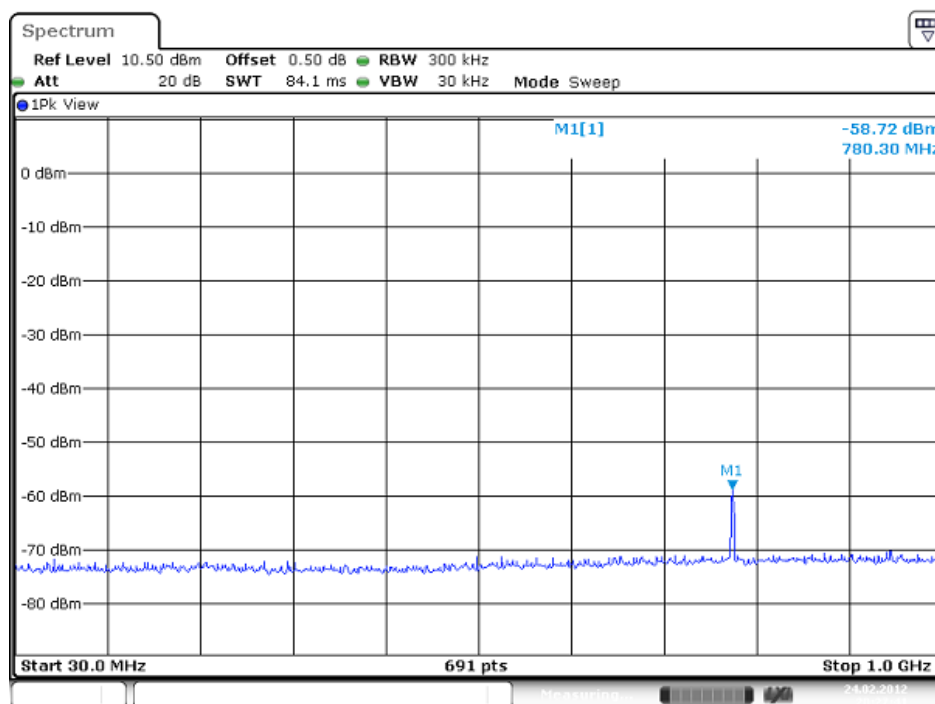
Date: 24.FEB.2012 20:26:02

Conducted Spurious Emissions (5MHz BW Mode) - 4985MHz (30MHz ~ 1GHz) / Ant. 2



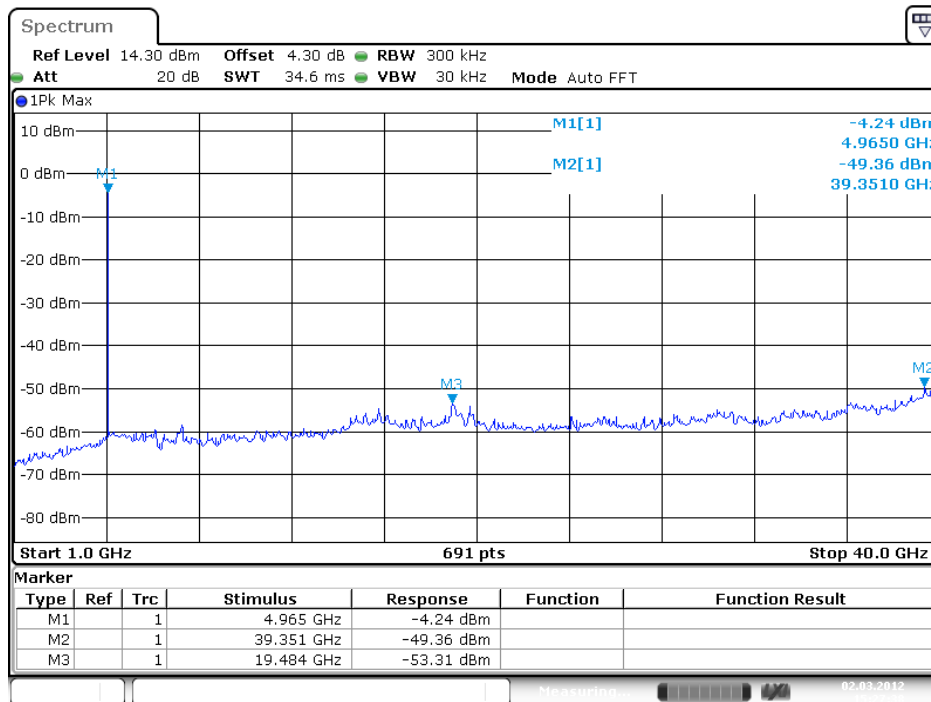
Date: 24.FEB.2012 20:26:52

Conducted Spurious Emissions (5MHz BW Mode) - 4985MHz (30MHz ~ 1GHz) / Ant. 3

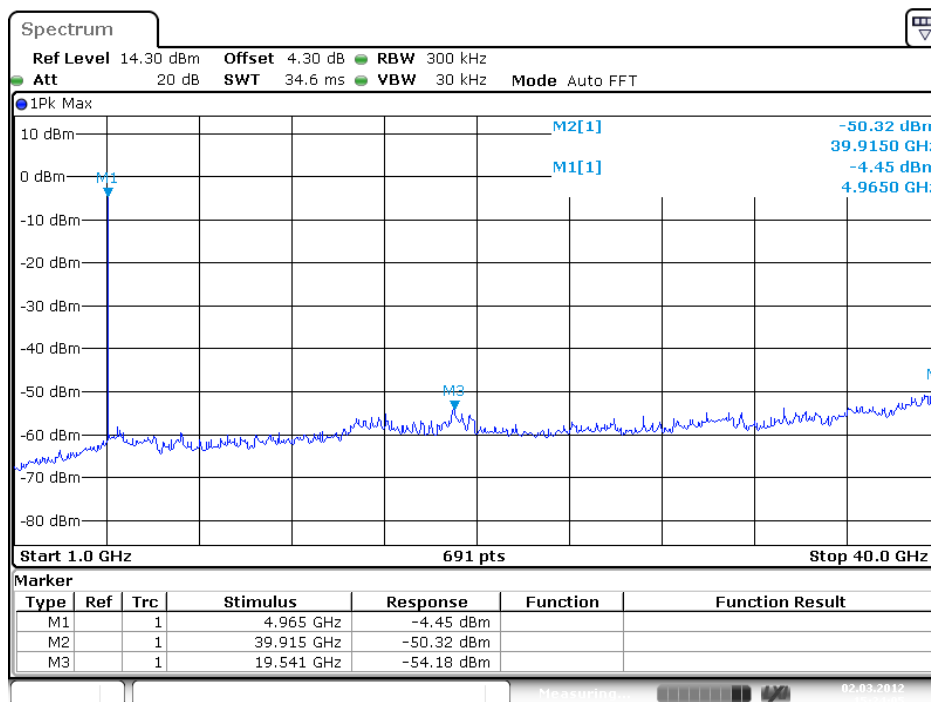


Date: 24.FEB.2012 20:27:41

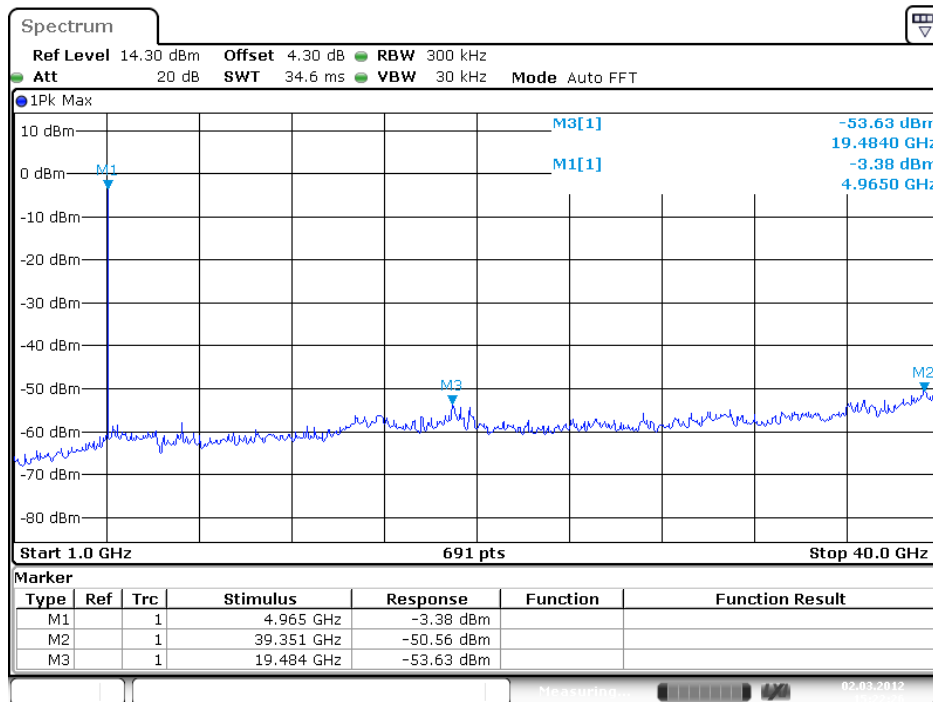
Conducted Spurious Emissions (5MHz BW Mode) - 4965MHz (1GHz ~ 40GHz) / Ant. 1



Conducted Spurious Emissions (5MHz BW Mode) - 4965MHz (1GHz ~ 40GHz) / Ant. 2

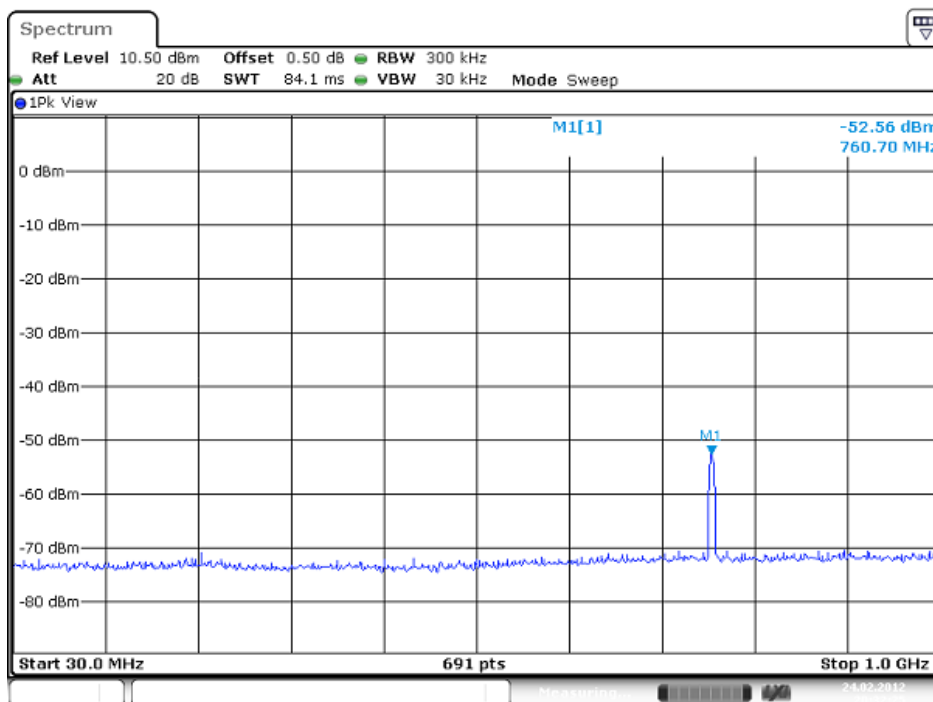


Conducted Spurious Emissions (5MHz BW Mode) - 4965MHz (1GHz ~ 40GHz) / Ant. 3



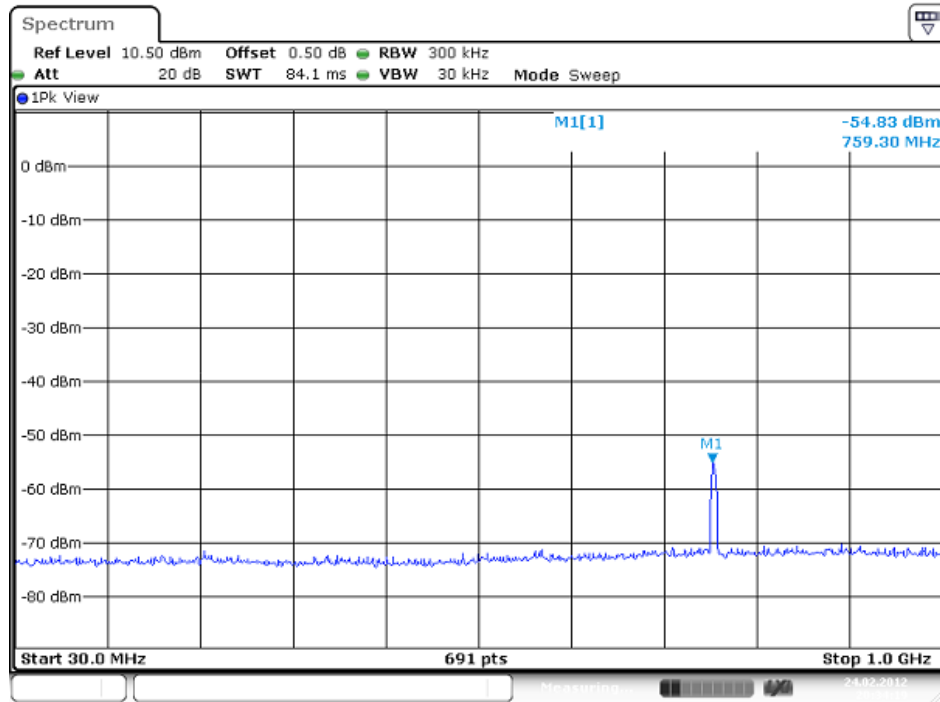
Date: 2.MAR.2012 15:22:26

Conducted Spurious Emissions (10MHz BW Mode) - 4965MHz (30MHz ~ 1GHz) / Ant. 1



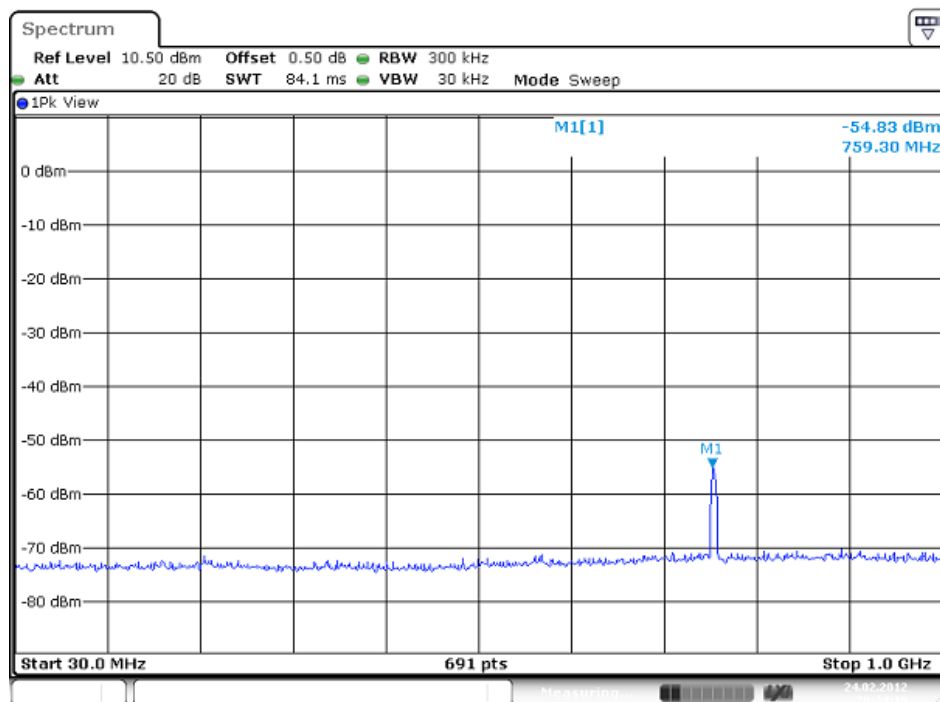
Date: 24.FEB.2012 20:32:25

Conducted Spurious Emissions (10MHz BW Mode) - 4965MHz (30MHz ~ 1GHz) / Ant. 2



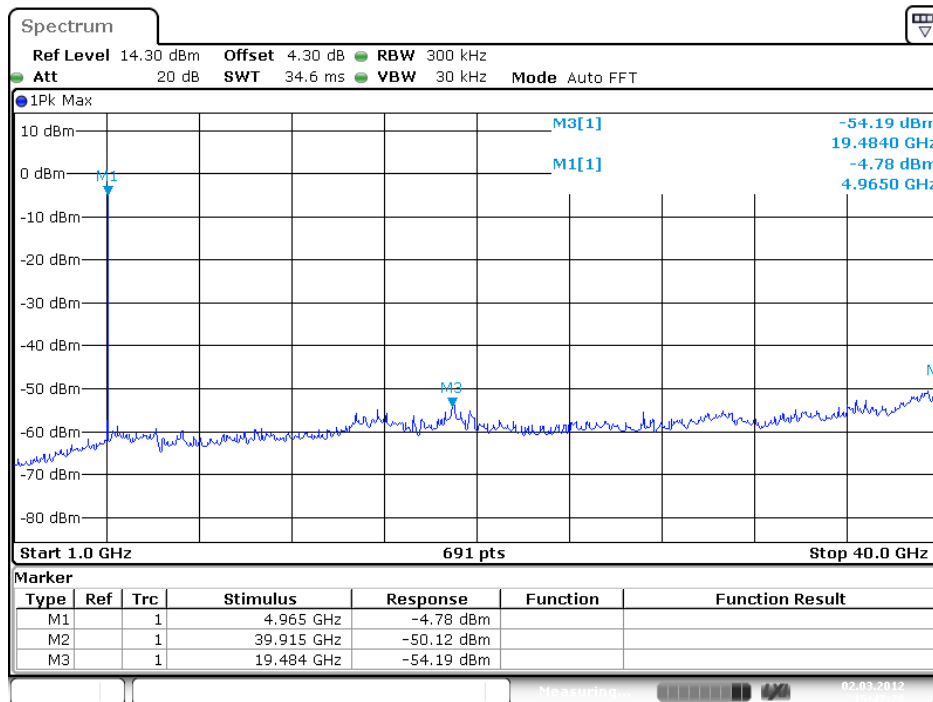
Date: 24.FEB.2012 20:34:19

Conducted Spurious Emissions (10MHz BW Mode) - 4965MHz (30MHz ~ 1GHz) / Ant. 3

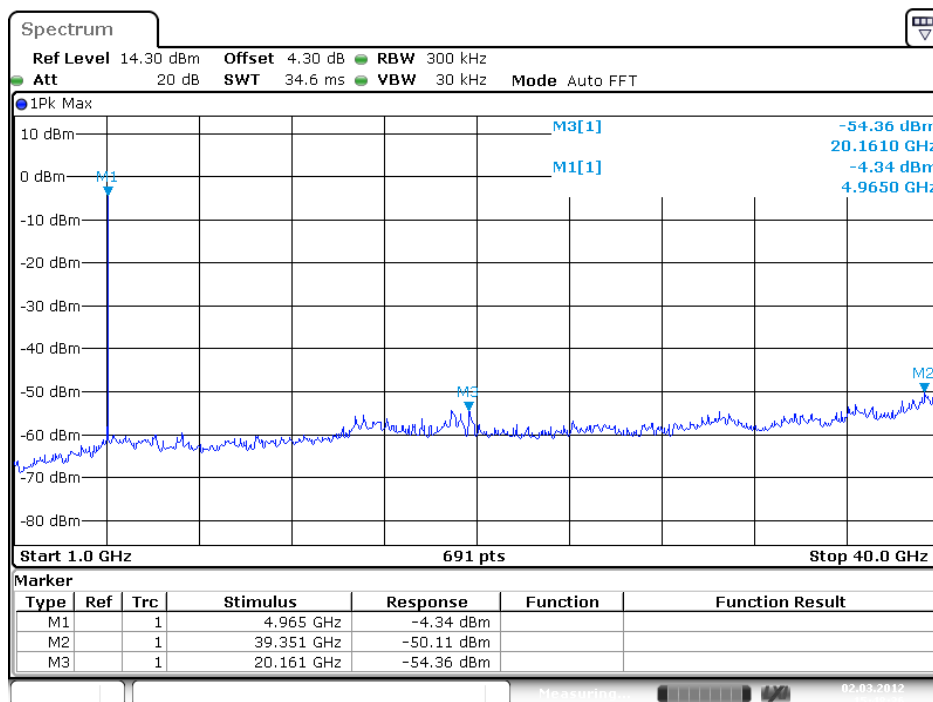


Date: 24.FEB.2012 20:34:19

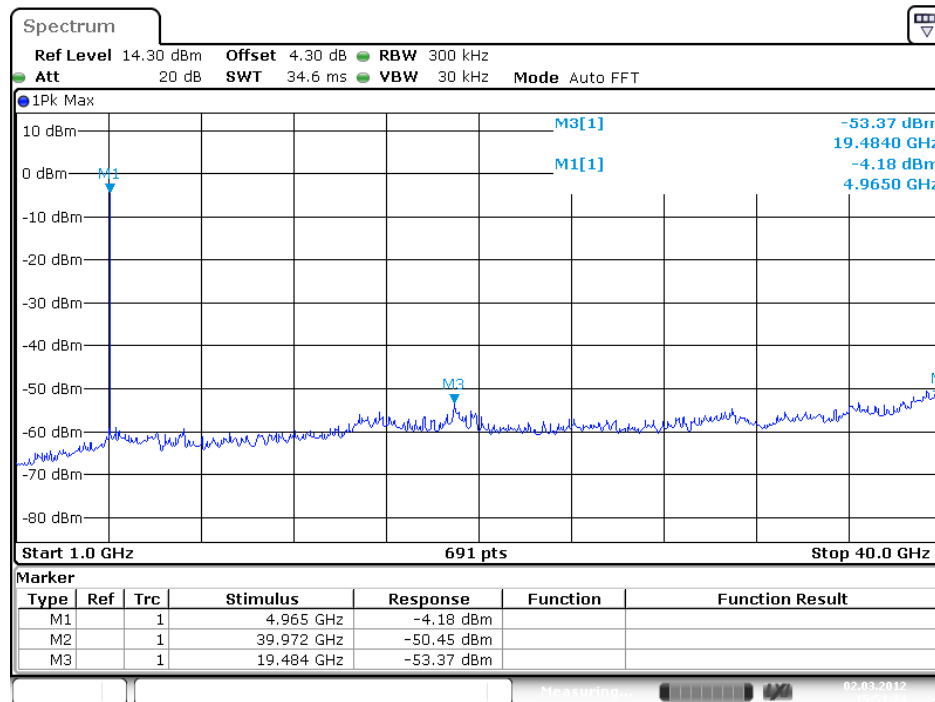
Conducted Spurious Emissions (10MHz BW Mode) - 4965MHz (1GHz ~ 40GHz) / Ant. 1



Conducted Spurious Emissions (10MHz BW Mode) - 4965MHz (1GHz ~ 40GHz) / Ant. 2



Conducted Spurious Emissions (10MHz BW Mode) - 4965MHz (1GHz ~ 40GHz) / Ant. 3



Note: The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

4.6. Radiated Spurious Emissions Measurement

4.6.1. Limit

On any frequency removed from the assigned frequency above 150% of the authorized bandwidth: 50 or $55 + 10 \log (P)$ dB, whichever is the lesser attenuation. (P=Average transmit power in watt)

5MHz Channel Bandwidth Mode					
Frequency	Average Power (dBm)				Radiated Limit (dBm)
	Ant. 1	Ant. 2	Ant. 3	Total	
4945 MHz	3.17	2.50	2.14	7.40	-46.20
4965 MHz	3.49	2.29	2.09	7.44	-42.56
4985 MHz	3.06	2.38	2.04	7.29	-42.71

Attenuation (dB) = 50 or $55 + 10 \log (P)$, Whichever is the lesser; Limit (dBm) = -25dBm

Note 1: This may be converted to a field strength level at 3 meters using $E \text{ (dBuV/m)} = P \text{ (dBm)} + 95.2 \text{ dB}$.

Note 2: Above 10GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade at 3m.

10MHz Channel Bandwidth Mode					
Frequency	Average Power (dBm)				Radiated Limit (dBm)
	Ant. 1	Ant. 2	Ant. 3	Total	
4945 MHz	6.37	5.46	5.16	10.47	-39.53
4965 MHz	6.58	5.18	5.02	10.42	-39.58
4985 MHz	6.48	5.13	5.04	10.37	-39.63

Attenuation (dB) = 50 or $55 + 10 \log (P)$, Whichever is the lesser; Limit (dBm) = -25dBm

Note 1: This may be converted to a field strength level at 3 meters using $E \text{ (dBuV/m)} = P \text{ (dBm)} + 95.2 \text{ dB}$.

Note 2: Above 10GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade at 3m.

4.6.2. Measuring Instruments and Setting

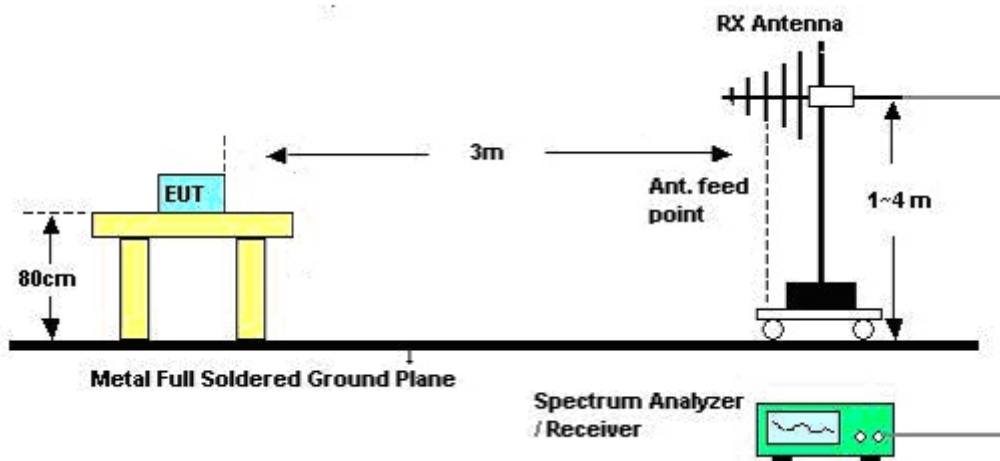
Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Detector	Peak
Frequency Range	30MHz – 40GHz
RBW / VBW	1 MHz / 3MHz

4.6.3. Test Procedures

1. The EUT was placed on the top of the turntable in anechoic chamber.
2. A spectrum analyzer was used with RBW of 1 MHz and VBW of 3 MHz for the final measurements utilizing an RMS detector at the frequencies with spurious emissions amplitudes.
3. For each suspected emission, the antenna tower was scanned (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find *spurious emissions reading*.
4. *Spurious emissions field strength level* equal to *spurious emissions reading on spectrum analyzer + Corrected Reading (Antenna Factor + Cable Loss - Preamp Factor)*.
5. Final *radiated spurious emissions* may be converted from *spurious emissions field strength level - 95.2 dB*

4.6.4. Test Setup Layout



4.6.5. Test Deviation

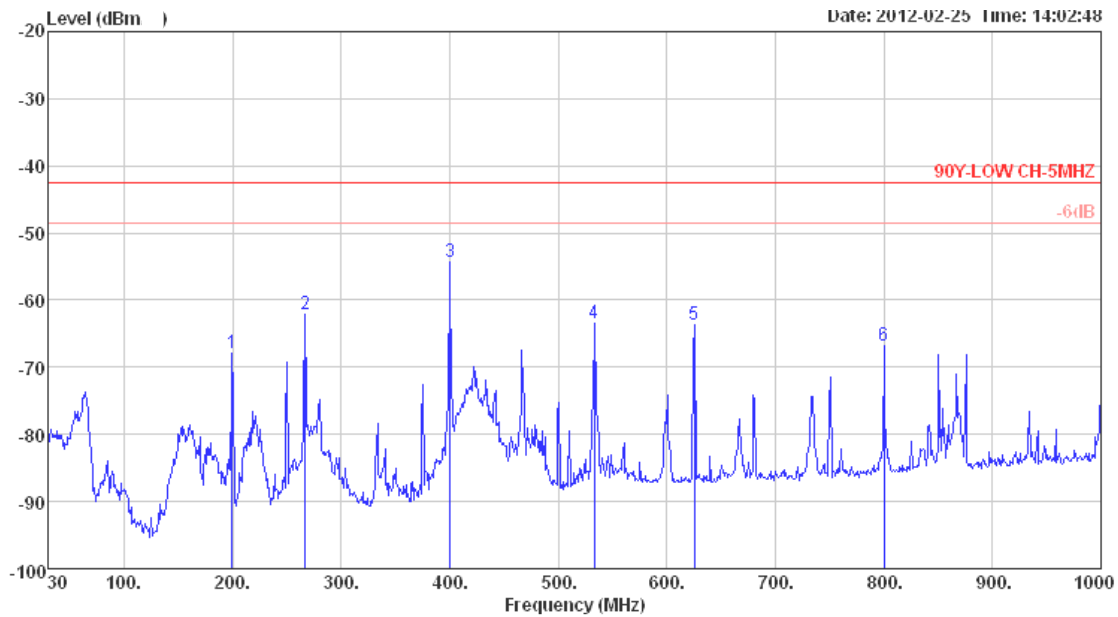
There is no deviation with the original standard.

4.6.6. Results of Radiated Spurious Emissions

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

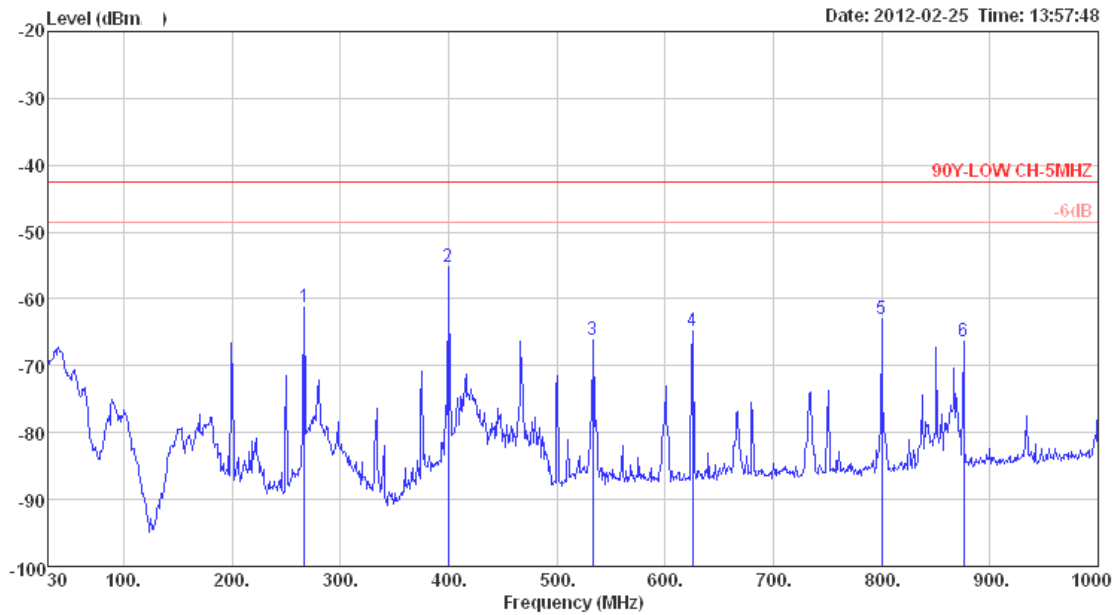
Radiated Spurious Emissions (5MHz BW Mode) - 4945MHz (30MHz ~ 1GHz)

Horizontal



	Freq	Level	Limit	Over	Read	CableAntenna	Preamp		A/Pos	T/Pos	
	MHz	dBuV/m	Line	Limit	Level	Loss	Factor	Factor	Remark	cm	deg
			dBuV/m	dB	dBuV	dB	dB/m	dB			
1	199.75	-67.97	-42.59	-25.38	-51.62	1.70	9.05	27.10	Peak	100	0 HORIZONTAL
2	266.68	-62.15	-42.59	-19.56	-50.12	1.97	12.97	26.97	Peak	100	0 HORIZONTAL
3	400.54	-54.32	-42.59	-11.73	-45.10	2.31	16.08	27.61	Peak	100	0 HORIZONTAL
4	533.43	-63.53	-42.59	-20.94	-56.21	2.77	18.01	28.10	Peak	100	0 HORIZONTAL
5	625.58	-63.67	-42.59	-21.08	-57.50	3.05	18.85	28.07	Peak	100	0 HORIZONTAL
6	800.18	-66.90	-42.59	-24.31	-62.37	3.30	19.77	27.60	Peak	100	0 HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	266.68	-61.32	-42.59	-18.73	-49.29	1.97	12.97	26.97	Peak	400	0	VERTICAL
2	399.57	-55.14	-42.59	-12.55	-45.90	2.30	16.06	27.60	Peak	400	0	VERTICAL
3	533.43	-66.21	-42.59	-23.62	-58.89	2.77	18.01	28.10	Peak	400	0	VERTICAL
4	625.58	-64.86	-42.59	-22.27	-58.69	3.05	18.85	28.07	Peak	400	0	VERTICAL
5	800.18	-63.09	-42.59	-20.50	-58.56	3.30	19.77	27.60	Peak	400	0	VERTICAL
6	875.84	-66.42	-42.59	-23.83	-62.82	3.50	20.35	27.45	Peak	400	0	VERTICAL

Note:

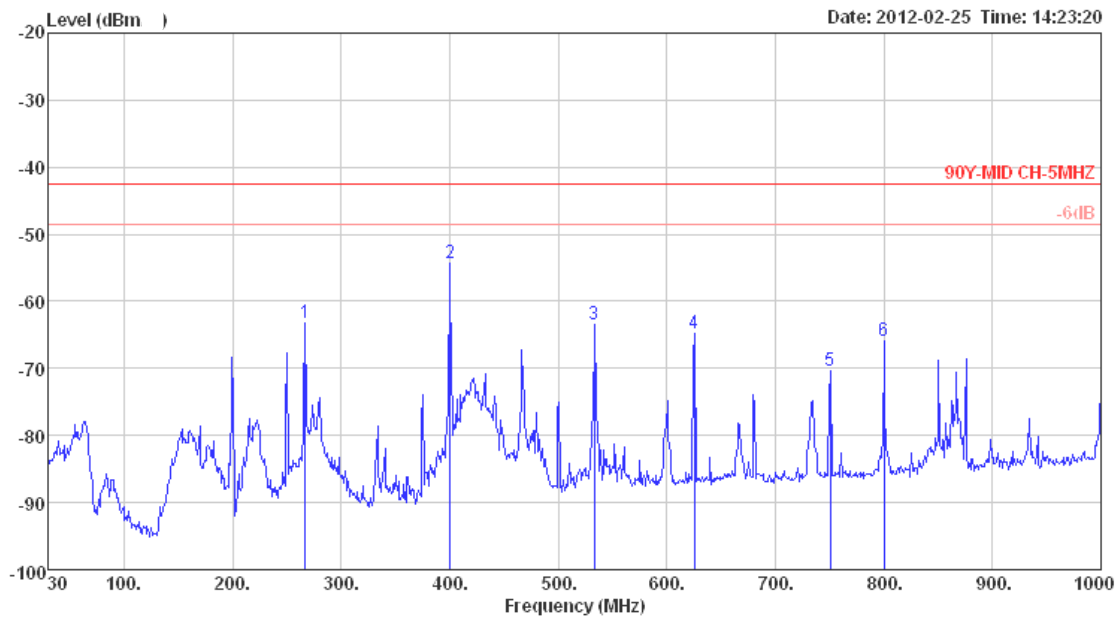
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

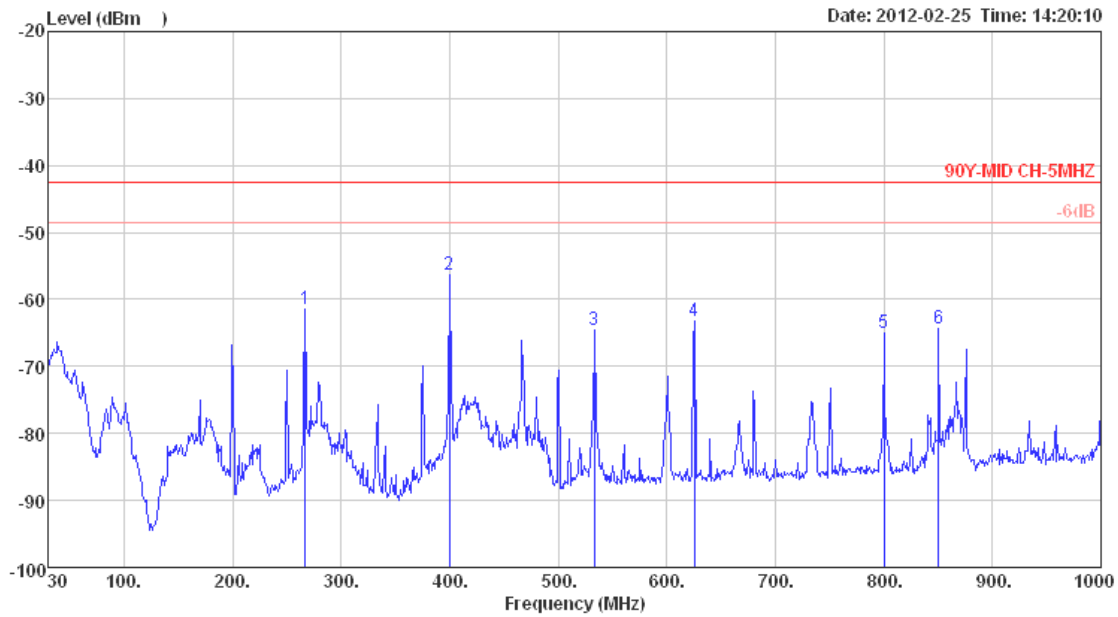
Radiated Spurious Emissions (5MHz BW Mode) - 4965MHz (30MHz ~ 1GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	266.68	-63.16	-42.55	-20.61	-51.13	1.97	12.97	26.97	Peak	100	0	HORIZONTAL
2	400.54	-54.30	-42.55	-11.75	-45.08	2.31	16.08	27.61	Peak	100	0	HORIZONTAL
3	533.43	-63.47	-42.55	-20.92	-56.15	2.77	18.01	28.10	Peak	100	0	HORIZONTAL
4	625.58	-64.81	-42.55	-22.26	-58.64	3.05	18.85	28.07	Peak	100	0	HORIZONTAL
5	750.71	-70.36	-42.55	-27.81	-65.49	3.50	19.43	27.80	Peak	100	0	HORIZONTAL
6	800.18	-65.97	-42.55	-23.42	-61.44	3.30	19.77	27.60	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	266.68	-61.43	-42.55	-18.88	-49.40	1.97	12.97	26.97	Peak	400	0	VERTICAL
2	399.57	-56.23	-42.55	-13.68	-46.99	2.30	16.06	27.60	Peak	400	0	VERTICAL
3	533.43	-64.56	-42.55	-22.01	-57.24	2.77	18.01	28.10	Peak	400	0	VERTICAL
4	625.58	-63.15	-42.55	-20.60	-56.98	3.05	18.85	28.07	Peak	400	0	VERTICAL
5	800.18	-65.12	-42.55	-22.57	-60.59	3.30	19.77	27.60	Peak	400	0	VERTICAL
6	850.62	-64.28	-42.55	-21.73	-60.33	3.40	20.15	27.50	Peak	400	0	VERTICAL

Note:

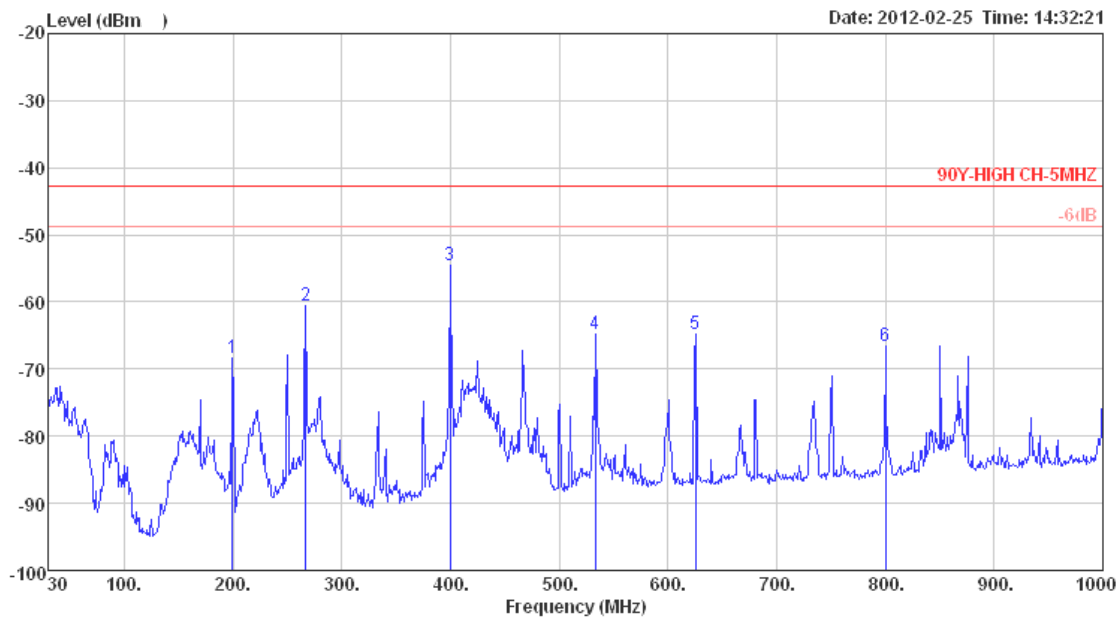
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

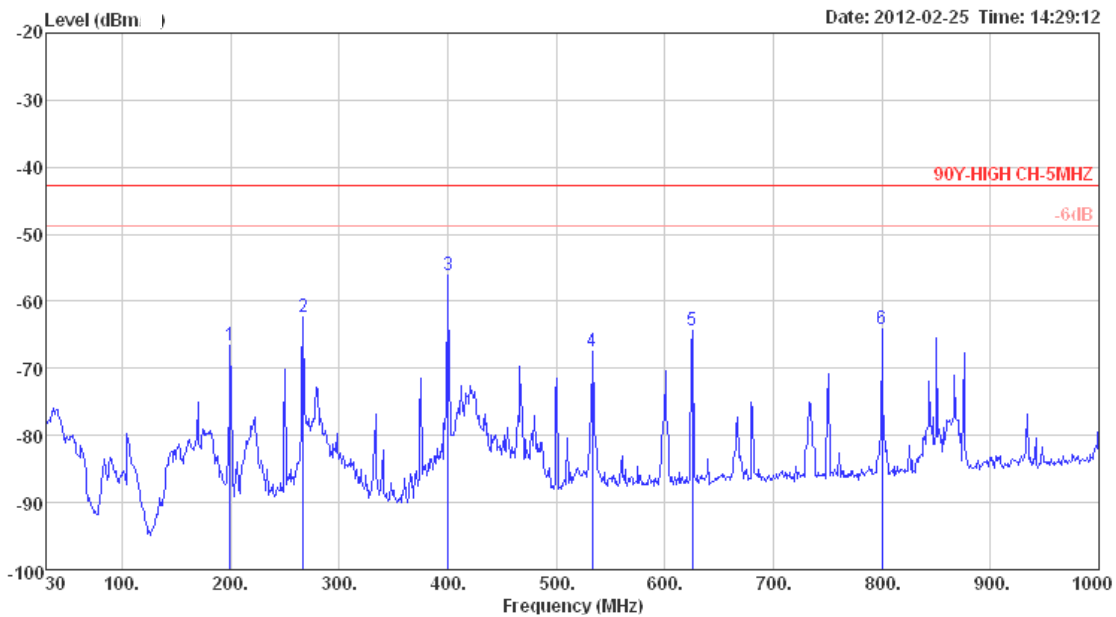
Radiated Spurious Emissions (5MHz BW Mode) - 4985MHz (30MHz ~ 1GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	199.75	-68.38	-42.70	-25.68	-52.03	1.70	9.05	27.10	Peak	100	0	HORIZONTAL
2	266.68	-60.49	-42.70	-17.79	-48.46	1.97	12.97	26.97	Peak	100	0	HORIZONTAL
3	399.57	-54.45	-42.70	-11.75	-45.21	2.30	16.06	27.60	Peak	100	0	HORIZONTAL
4	533.43	-64.83	-42.70	-22.13	-57.51	2.77	18.01	28.10	Peak	100	0	HORIZONTAL
5	625.58	-64.82	-42.70	-22.12	-58.65	3.05	18.85	28.07	Peak	100	0	HORIZONTAL
6	800.18	-66.52	-42.70	-23.82	-61.99	3.30	19.77	27.60	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	199.75	-66.58	-42.70	-23.88	-50.23	1.70	9.05	27.10	Peak	400	0	VERTICAL
2	266.68	-62.25	-42.70	-19.55	-50.22	1.97	12.97	26.97	Peak	400	0	VERTICAL
3	400.54	-56.08	-42.70	-13.38	-46.86	2.31	16.08	27.61	Peak	400	0	VERTICAL
4	533.43	-67.48	-42.70	-24.78	-60.16	2.77	18.01	28.10	Peak	400	0	VERTICAL
5	625.58	-64.27	-42.70	-21.57	-58.10	3.05	18.85	28.07	Peak	400	0	VERTICAL
6	800.18	-64.04	-42.70	-21.34	-59.51	3.30	19.77	27.60	Peak	400	0	VERTICAL

Note:

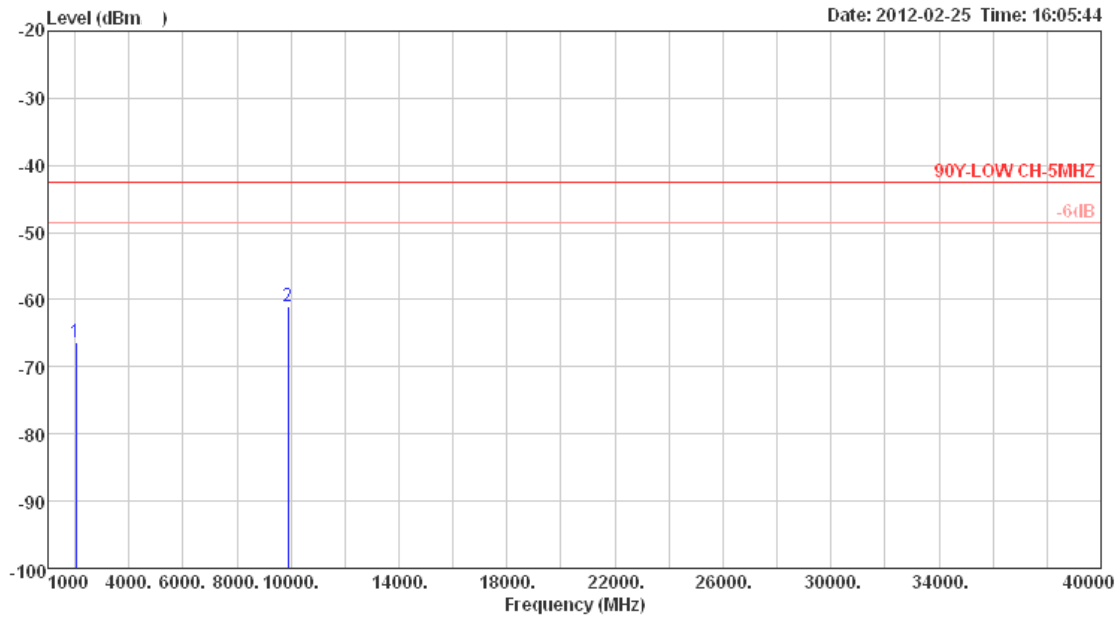
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

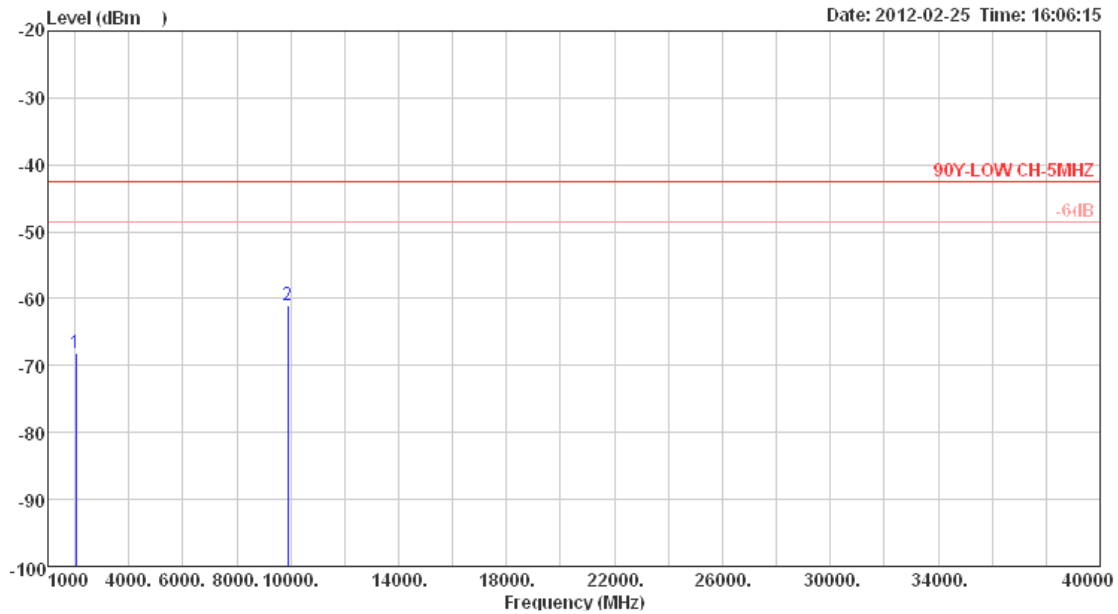
Radiated Spurious Emissions (5MHz BW Mode) - 4945MHz (1GHz ~ 40GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2039.98	-66.41	-42.59	-23.82	-62.50	3.82	27.18	34.91	Peak	100	211	HORIZONTAL
2	9890.09	-61.06	-42.59	-18.47	-73.28	8.88	38.96	35.62	Peak	100	185	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2039.93	-68.23	-42.59	-25.64	-64.32	3.82	27.18	34.91	Peak	100	110	VERTICAL
2	9890.09	-61.06	-42.59	-18.47	-73.28	8.88	38.96	35.62	Peak	100	256	VERTICAL

Note:

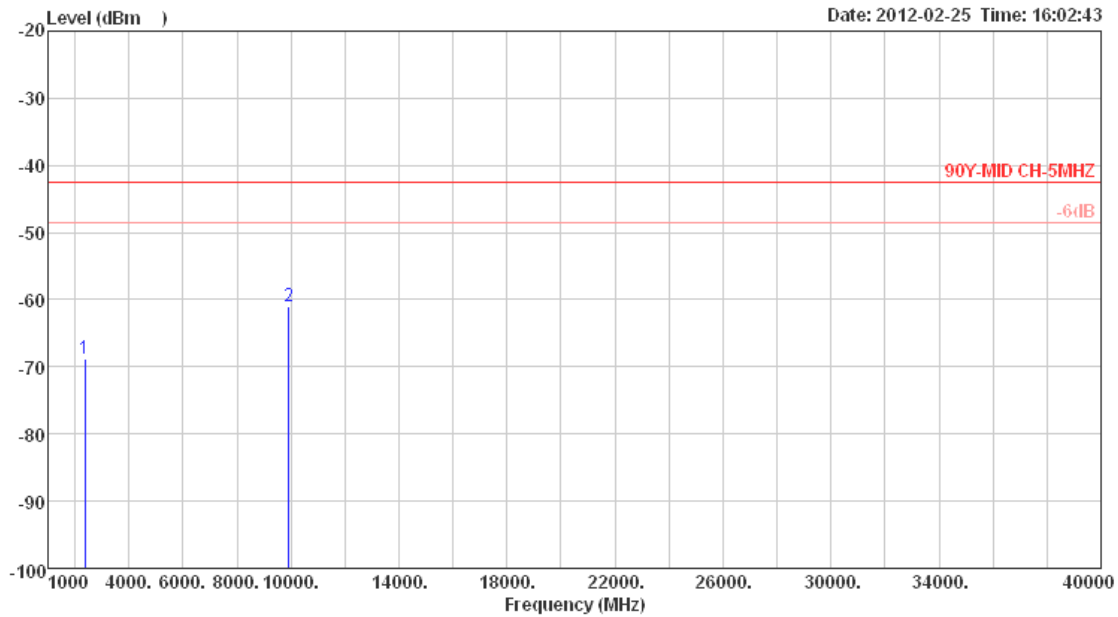
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

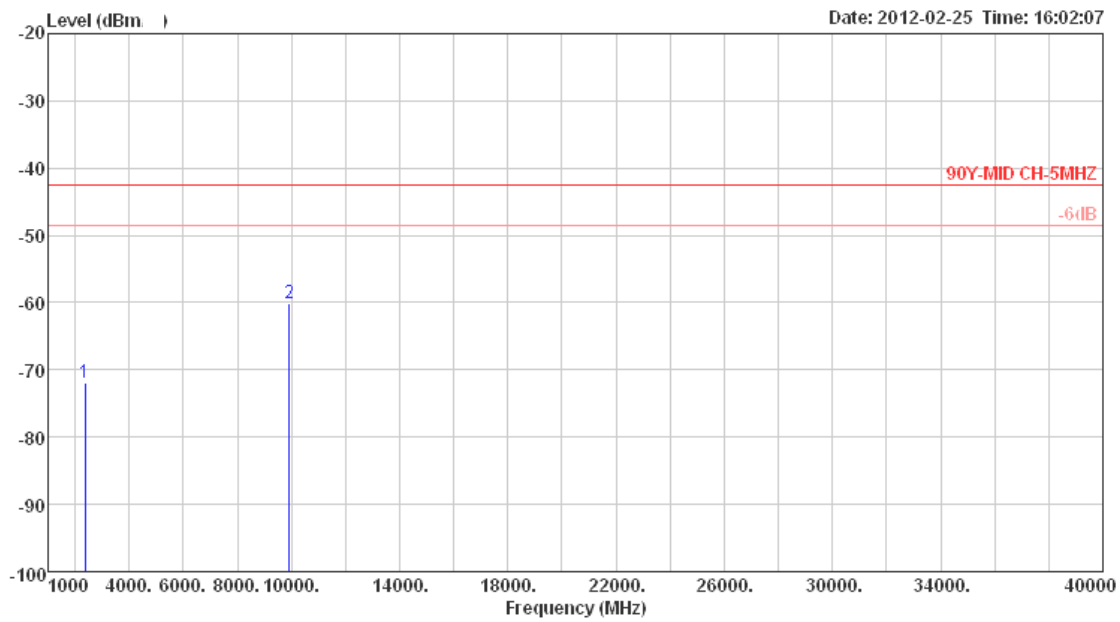
Radiated Spurious Emissions (5MHz BW Mode) - 4965MHz (1GHz ~ 40GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2379.98	-68.91	-42.55	-26.36	-66.05	4.11	28.01	34.98	Peak	100	258	HORIZONTAL
2	9930.43	-60.90	-42.55	-18.35	-73.18	8.89	39.00	35.61	Peak	100	65	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2380.06	-71.94	-42.55	-29.39	-69.08	4.11	28.01	34.98	Peak	100	176	VERTICAL
2	9929.78	-60.11	-42.55	-17.56	-72.39	8.89	39.00	35.61	Peak	100	205	VERTICAL

Note:

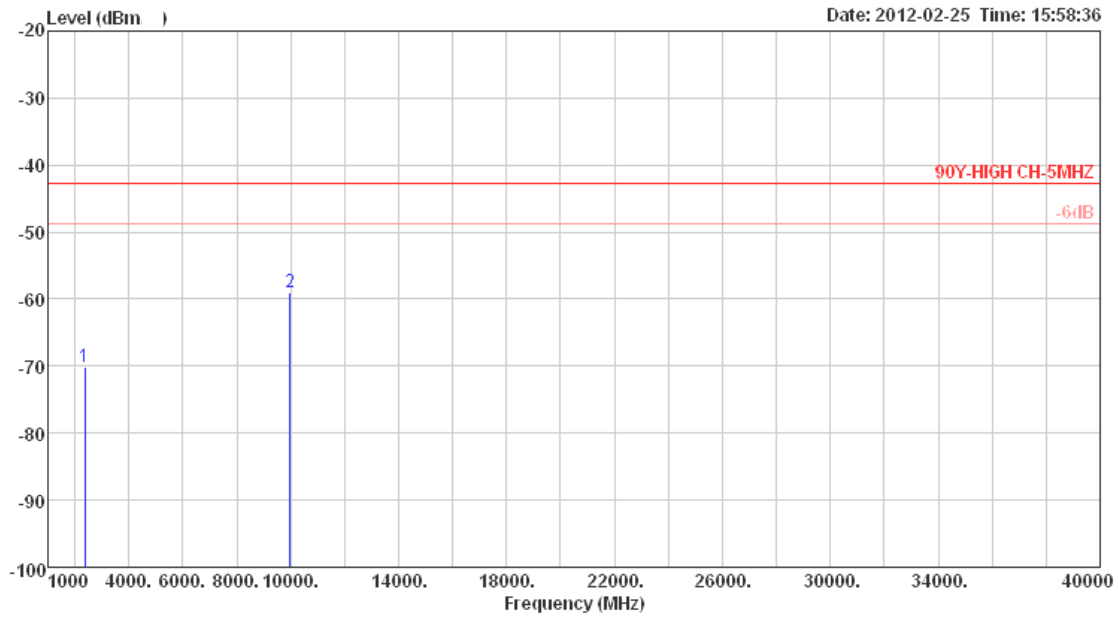
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

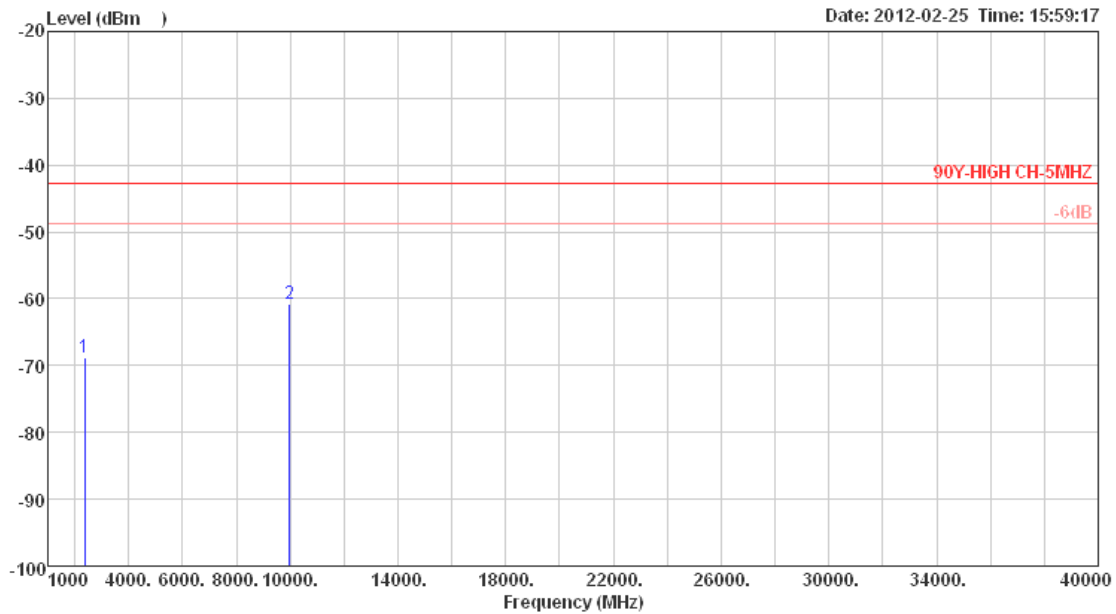
Radiated Spurious Emissions (5MHz BW Mode) - 4985MHz (1GHz ~ 40GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2379.98	-70.06	-42.70	-27.36	-67.20	4.11	28.01	34.98	Peak	100	77	HORIZONTAL
2	9970.27	-59.08	-42.70	-16.38	-71.46	8.92	39.06	35.60	Peak	100	298	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2380.01	-68.89	-42.70	-26.19	-66.03	4.11	28.01	34.98	Peak	100	179	VERTICAL
2	9970.14	-60.78	-42.70	-18.08	-73.16	8.92	39.06	35.60	Peak	100	230	VERTICAL

Note:

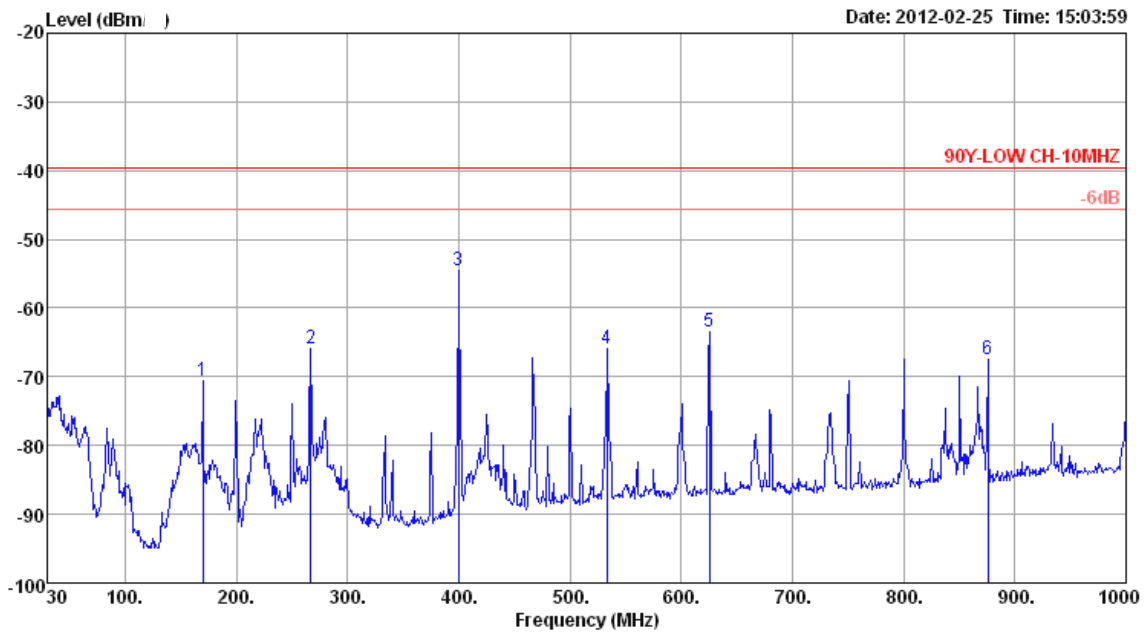
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

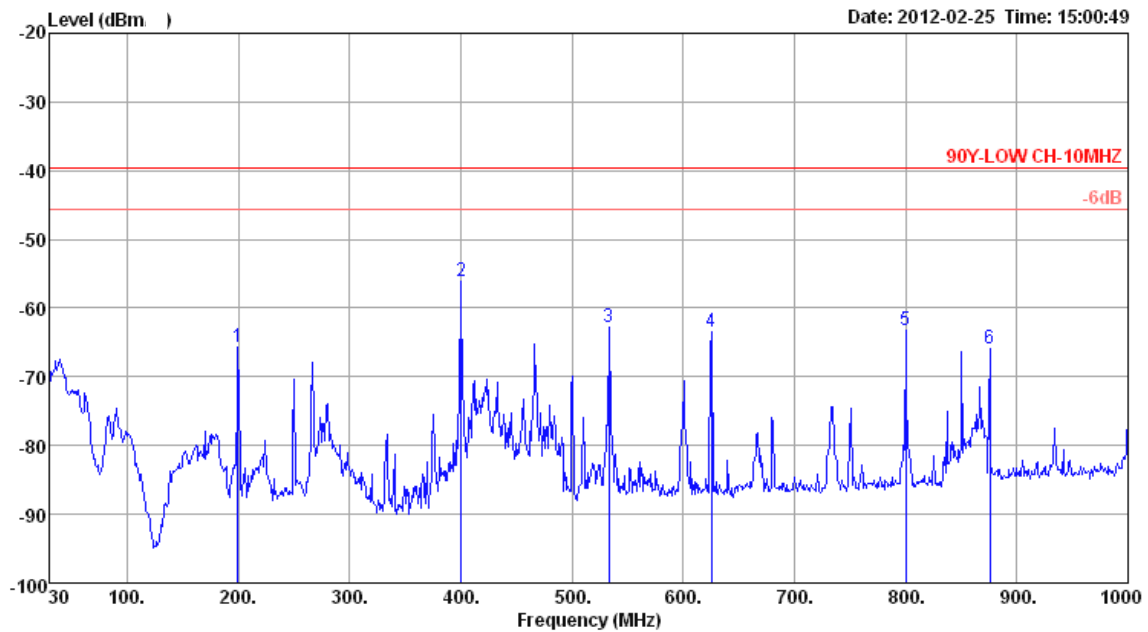
Radiated Spurious Emissions (10 MHz BW Mode) - 4945MHz (30MHz ~ 1GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	169.68	-70.60	-39.52	-31.08	-57.66	1.55	12.76	27.25	Peak	100	0	HORIZONTAL
2	266.68	-65.97	-39.52	-26.45	-53.94	1.97	12.97	26.97	Peak	100	0	HORIZONTAL
3	399.57	-54.47	-39.52	-14.95	-45.23	2.30	16.06	27.60	Peak	100	0	HORIZONTAL
4	533.43	-65.94	-39.52	-26.42	-58.62	2.77	18.01	28.10	Peak	100	0	HORIZONTAL
5	625.58	-63.35	-39.52	-23.83	-57.18	3.05	18.85	28.07	Peak	100	0	HORIZONTAL
6	875.84	-67.54	-39.52	-28.02	-63.94	3.50	20.35	27.45	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	199.75	-65.69	-39.52	-26.17	-49.34	1.70	9.05	27.10	Peak	400	0	VERTICAL
2	400.54	-56.08	-39.52	-16.56	-46.86	2.31	16.08	27.61	Peak	400	0	VERTICAL
3	533.43	-62.68	-39.52	-23.16	-55.36	2.77	18.01	28.10	Peak	400	0	VERTICAL
4	625.58	-63.46	-39.52	-23.94	-57.29	3.05	18.85	28.07	Peak	400	0	VERTICAL
5	800.18	-63.24	-39.52	-23.72	-58.71	3.30	19.77	27.60	Peak	400	0	VERTICAL
6	875.84	-65.89	-39.52	-26.37	-62.29	3.50	20.35	27.45	Peak	400	0	VERTICAL

Note:

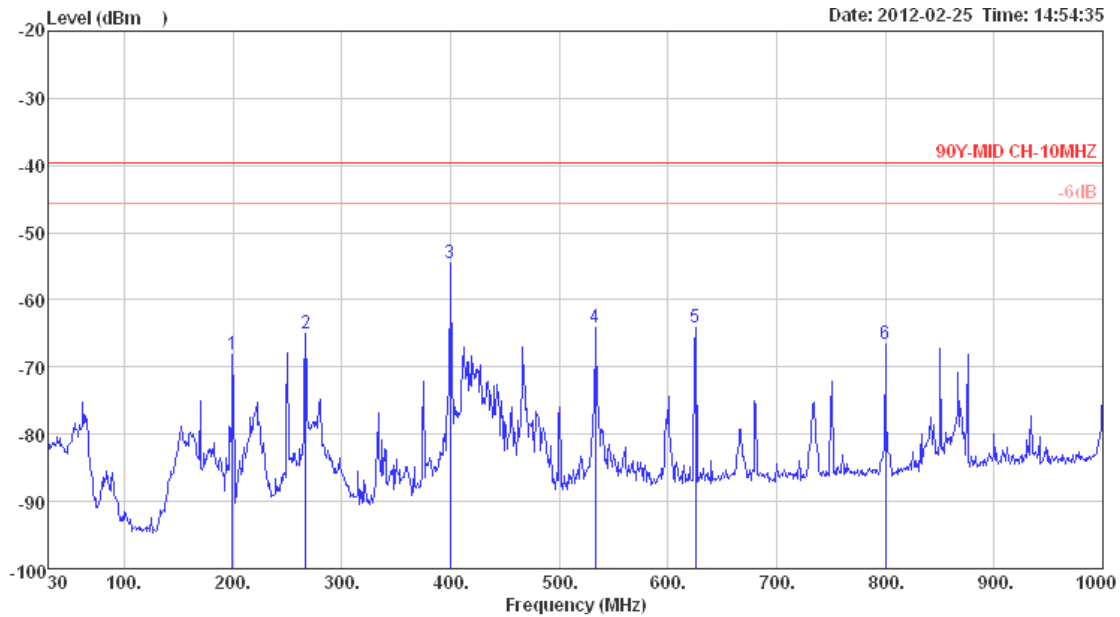
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

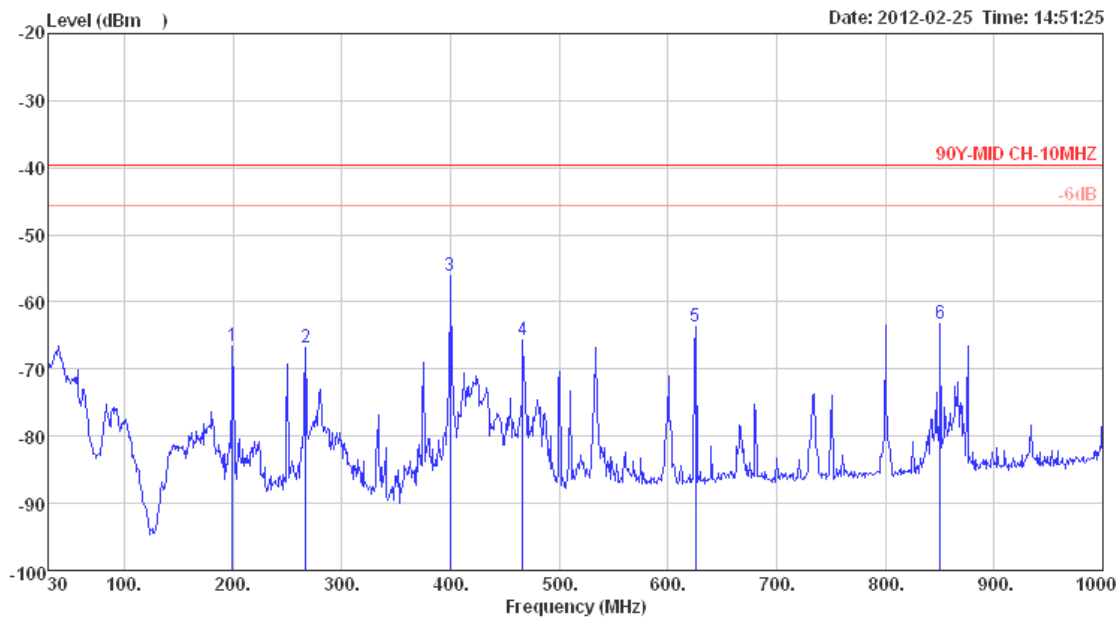
Radiated Spurious Emissions (10 MHz BW Mode) - 4965MHz (30MHz ~ 1GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	199.75	-68.10	-39.57	-28.53	-51.75	1.70	9.05	27.10	Peak	100	0	HORIZONTAL
2	266.68	-65.01	-39.57	-25.44	-52.98	1.97	12.97	26.97	Peak	100	0	HORIZONTAL
3	399.57	-54.53	-39.57	-14.96	-45.29	2.30	16.06	27.60	Peak	100	0	HORIZONTAL
4	533.43	-64.06	-39.57	-24.49	-56.74	2.77	18.01	28.10	Peak	100	0	HORIZONTAL
5	625.58	-64.22	-39.57	-24.65	-58.05	3.05	18.85	28.07	Peak	100	0	HORIZONTAL
6	800.18	-66.64	-39.57	-27.07	-62.11	3.30	19.77	27.60	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	199.75	-66.63	-39.57	-27.06	-50.28	1.70	9.05	27.10	Peak	400	0	VERTICAL
2	266.68	-66.77	-39.57	-27.20	-54.74	1.97	12.97	26.97	Peak	400	0	VERTICAL
3	399.57	-56.20	-39.57	-16.63	-46.96	2.30	16.06	27.60	Peak	400	0	VERTICAL
4	466.50	-65.62	-39.57	-26.05	-57.42	2.63	17.10	27.93	Peak	400	0	VERTICAL
5	625.58	-63.61	-39.57	-24.04	-57.44	3.05	18.85	28.07	Peak	400	0	VERTICAL
6	850.62	-63.20	-39.57	-23.63	-59.25	3.40	20.15	27.50	Peak	400	0	VERTICAL

Note:

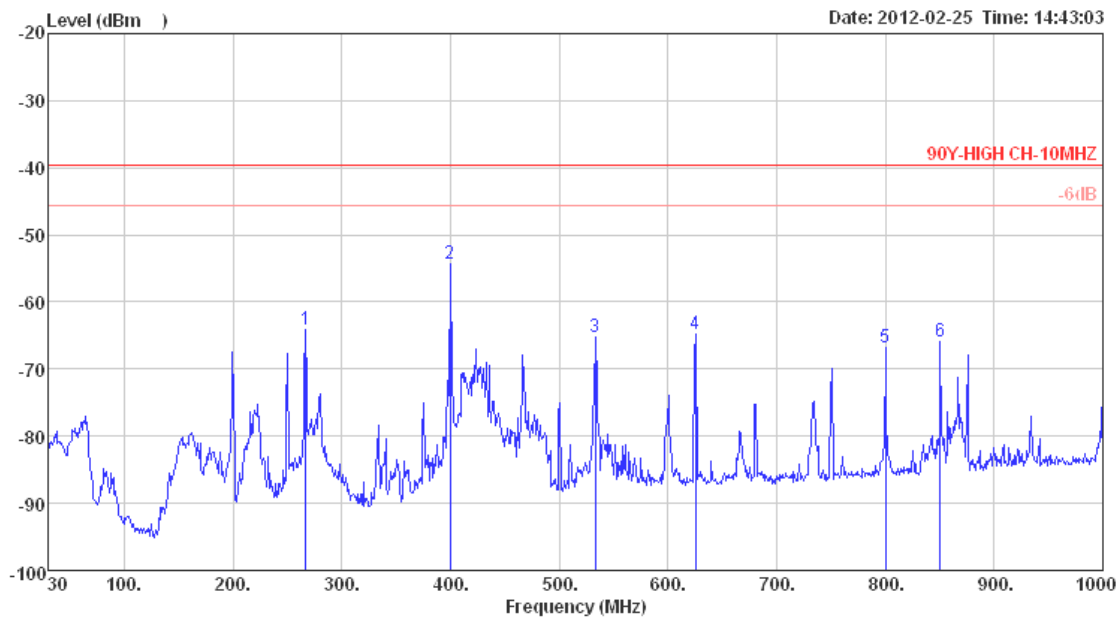
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

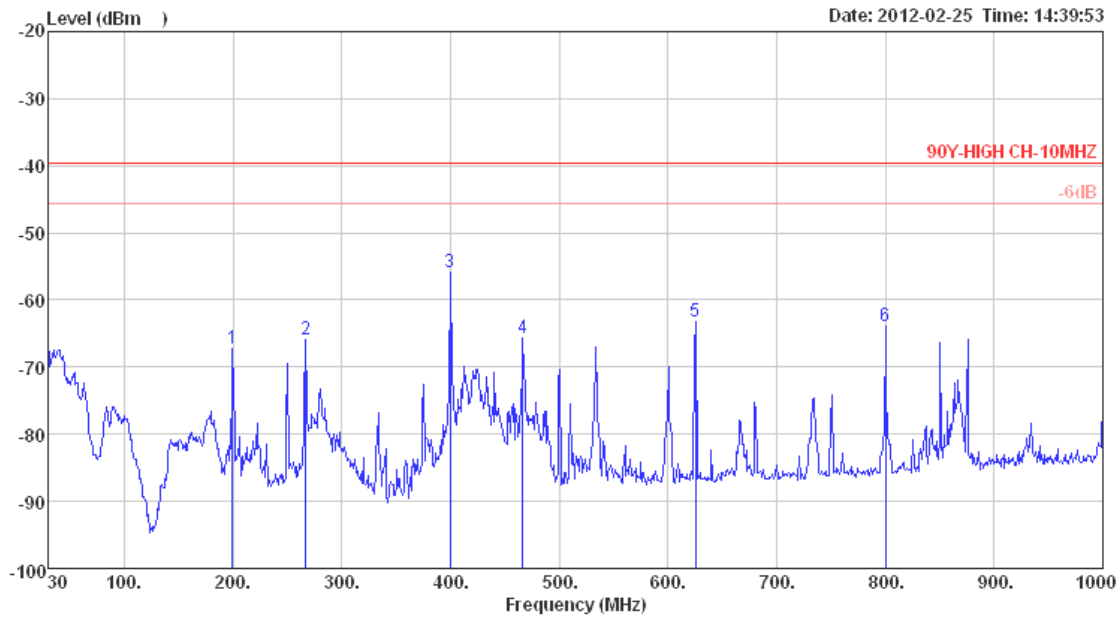
Radiated Spurious Emissions (10 MHz BW Mode) - 4985MHz (30MHz ~ 1GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	266.68	-64.07	-39.62	-24.45	-52.04	1.97	12.97	26.97	Peak	100	0	HORIZONTAL
2	399.57	-54.25	-39.62	-14.63	-45.01	2.30	16.06	27.60	Peak	100	0	HORIZONTAL
3	533.43	-65.13	-39.62	-25.51	-57.81	2.77	18.01	28.10	Peak	100	0	HORIZONTAL
4	625.58	-64.88	-39.62	-25.26	-58.71	3.05	18.85	28.07	Peak	100	0	HORIZONTAL
5	800.18	-66.84	-39.62	-27.22	-62.31	3.30	19.77	27.60	Peak	100	0	HORIZONTAL
6	850.62	-65.87	-39.62	-26.25	-61.92	3.40	20.15	27.50	Peak	100	0	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	199.75	-67.21	-39.62	-27.59	-50.86	1.70	9.05	27.10	Peak	400	0	VERTICAL
2	266.68	-65.89	-39.62	-26.27	-53.86	1.97	12.97	26.97	Peak	400	0	VERTICAL
3	399.57	-55.90	-39.62	-16.28	-46.66	2.30	16.06	27.60	Peak	400	0	VERTICAL
4	466.50	-65.60	-39.62	-25.98	-57.40	2.63	17.10	27.93	Peak	400	0	VERTICAL
5	625.58	-63.26	-39.62	-23.64	-57.09	3.05	18.85	28.07	Peak	400	0	VERTICAL
6	800.18	-63.81	-39.62	-24.19	-59.28	3.30	19.77	27.60	Peak	400	0	VERTICAL

Note:

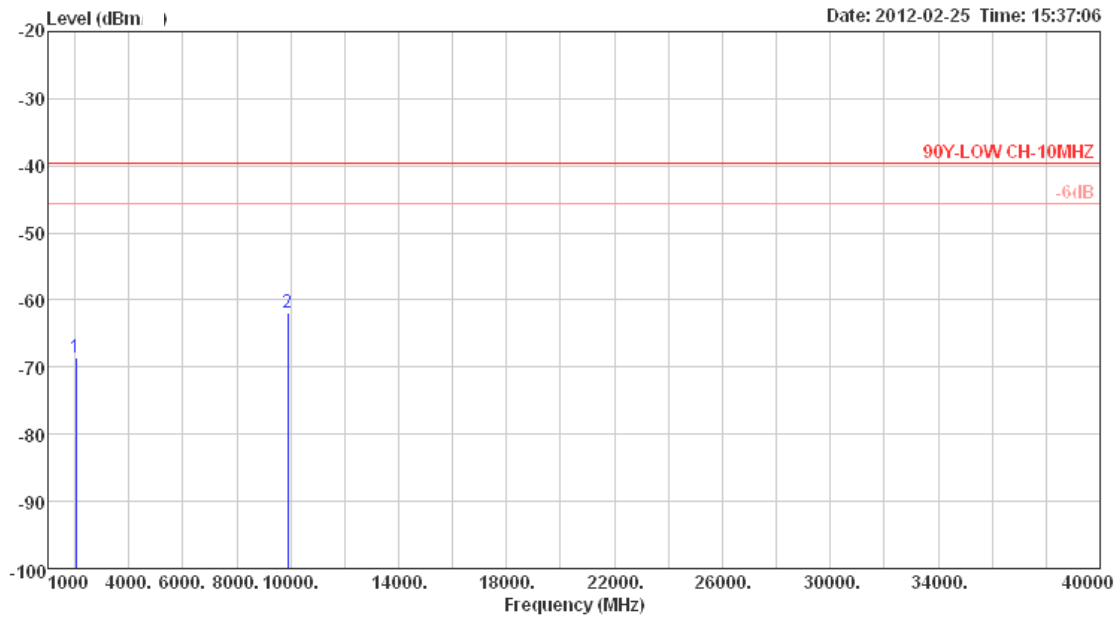
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

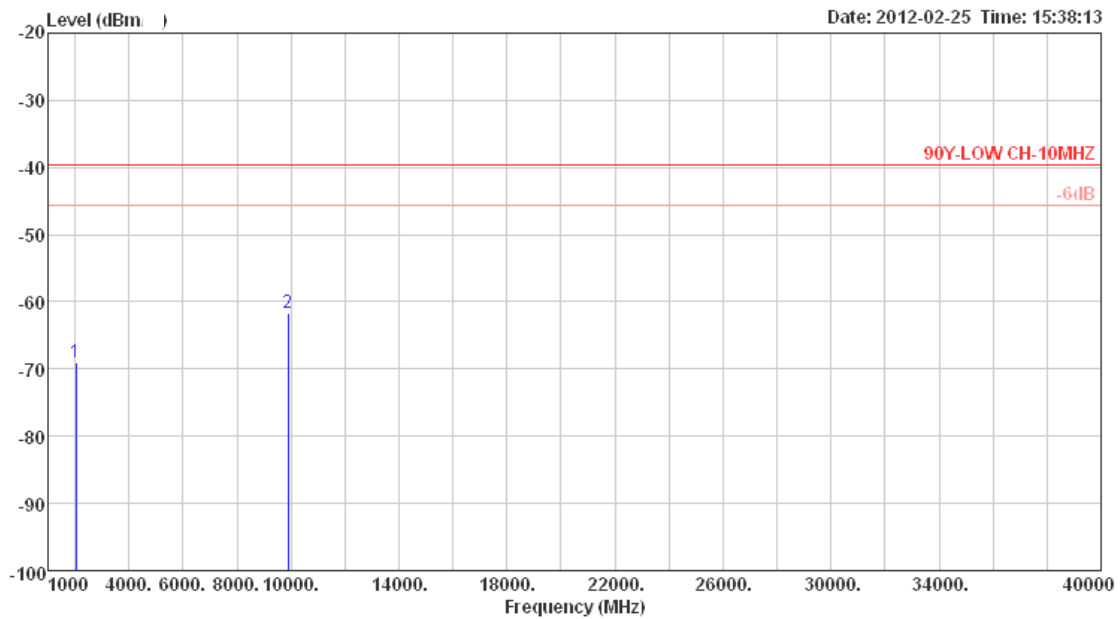
Radiated Spurious Emissions (10 MHz BW Mode) - 4945MHz (1GHz ~ 40GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2040.00	-68.53	-39.52	-29.01	-64.62	3.82	27.18	34.91	Peak	100	360	HORIZONTAL
2	9889.50	-61.99	-39.52	-22.47	-74.21	8.88	38.96	35.62	Peak	100	225	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	CableAntenna Loss	Preamp Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2040.02	-69.01	-39.52	-29.49	-65.10	3.82	27.18	34.91	Peak	100	265	VERTICAL
2	9889.50	-61.58	-39.52	-22.06	-73.80	8.88	38.96	35.62	Peak	100	258	VERTICAL

Note:

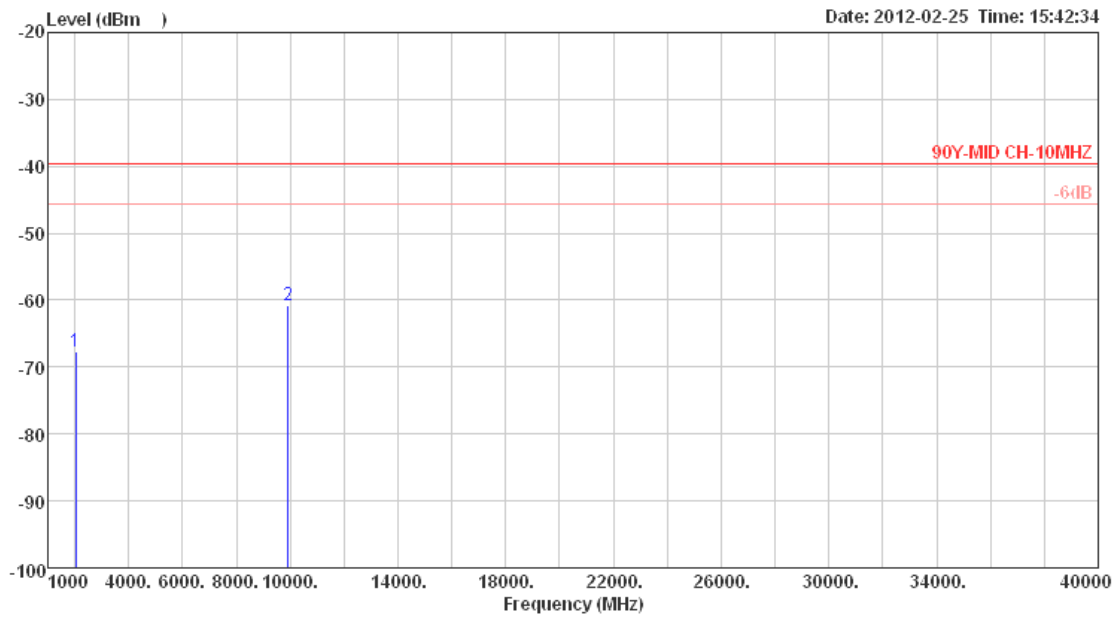
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

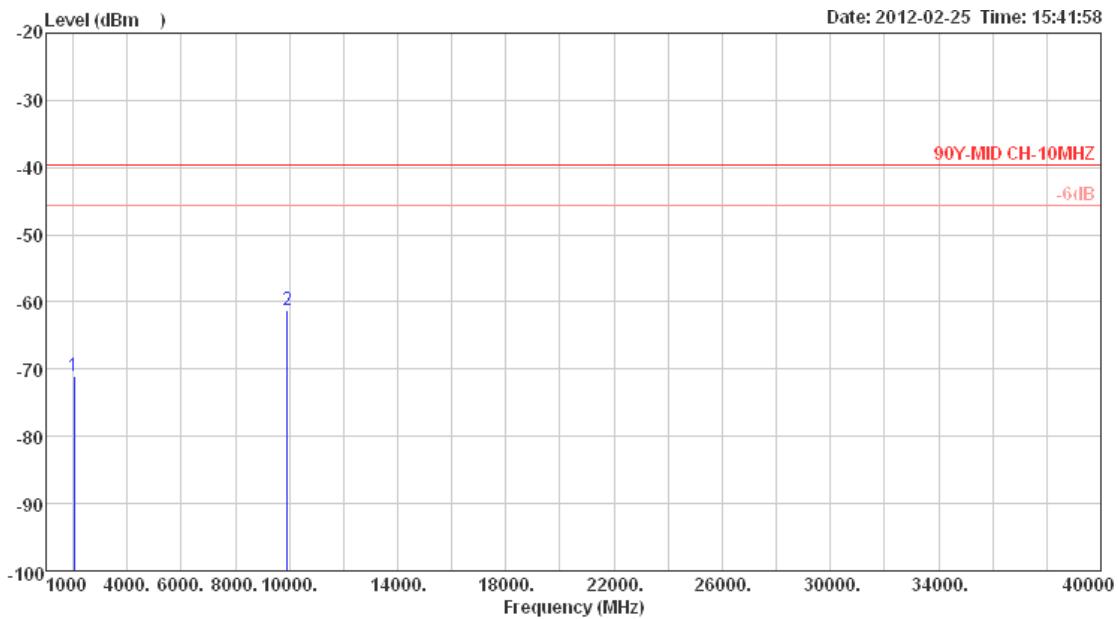
Radiated Spurious Emissions (10 MHz BW Mode) - 4965MHz (1GHz ~ 40GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2040.01	-67.76	-39.57	-28.19	-63.85	3.82	27.18	34.91	Peak	100	265	HORIZONTAL
2	9930.00	-60.89	-39.57	-21.32	-73.17	8.89	39.00	35.61	Peak	100	195	HORIZONTAL

Vertical



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2039.97	-71.08	-39.57	-31.51	-67.17	3.82	27.18	34.91	Peak	100	358	VERTICAL
2	9930.00	-61.30	-39.57	-21.73	-73.58	8.89	39.00	35.61	Peak	100	165	VERTICAL

Note:

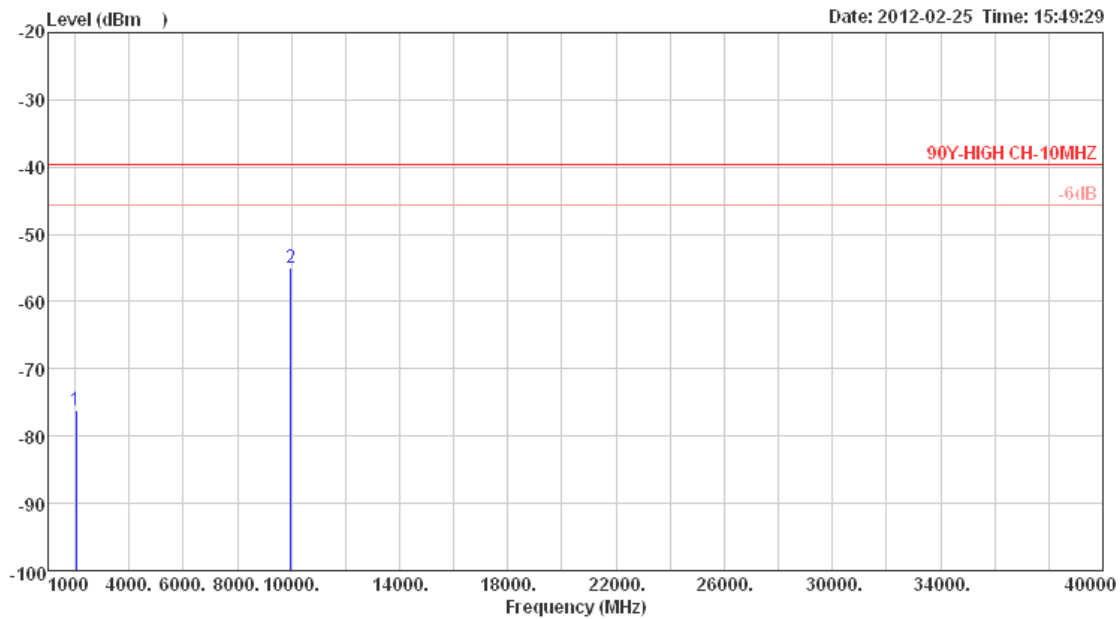
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

Temperature	23°C	Humidity	63%
Test Engineer	Satoshi Yang	Test Site	03CH01-CB

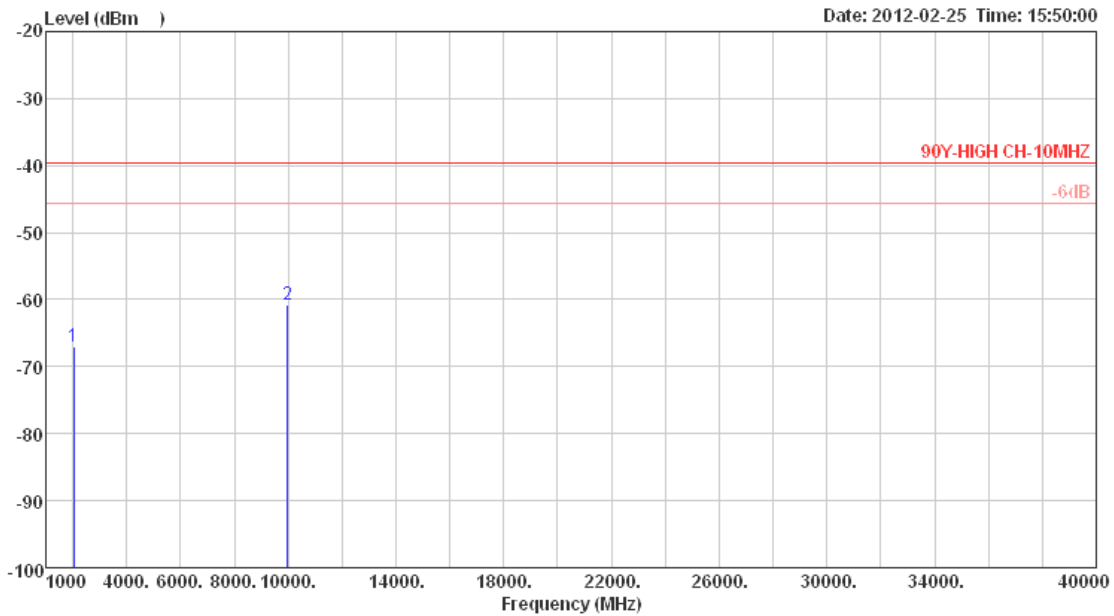
Radiated Spurious Emissions (10 MHz BW Mode) - 4985MHz (1GHz ~ 40GHz)

Horizontal



	Freq	Level	Limit Line	Over Limit	Read Level	Cable Loss	Antenna Factor	Preamp Factor	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2036.98	-76.12	-39.62	-36.50	-72.18	3.79	27.18	34.91	Peak	100	290	HORIZONTAL
2	9971.94	-55.03	-39.62	-15.41	-67.41	8.92	39.06	35.60	Peak	100	185	HORIZONTAL

Vertical



	Freq	Level	Limit	Over	Read	Cable	Antenna	Preamp	Remark	A/Pos	T/Pos	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB	dB/m	dB		cm	deg	
1	2037.40	-67.10	-39.62	-27.48	-63.16	3.79	27.18	34.91	Peak	100	211	VERTICAL
2	9971.54	-60.72	-39.62	-21.10	-73.10	8.92	39.06	35.60	Peak	100	250	VERTICAL

Note:

The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

4.7. Frequency Stability Measurement

4.7.1. Limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized frequency band. For equipment authorization purposes, this is a reporting requirement only.

4.7.2. Measuring Instruments and Setting

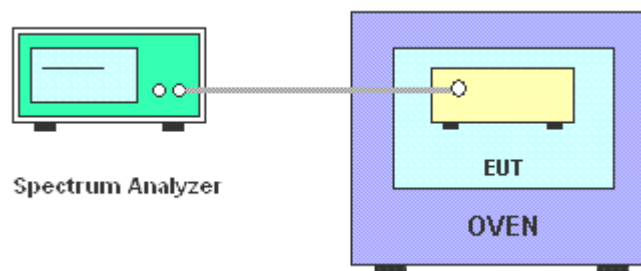
Please refer to section 5 in this report. The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Detector	Peak
RBW / VBW	10 kHz / 30kHz

4.7.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channel.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with frequency counter function.
5. f_c is declaring of carrier channel frequency. Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm.
6. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value and extreme temperature rule is $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$.

4.7.4. Test Setup Layout



4.7.5. Test Deviation

There is no deviation with the original standard.

4.7.6. Test Result of Frequency Stability

Temperature	25°C	Humidity	56%
Test Engineer	Satoshi Yang	Test Site	TH01-CB
Test Date	Feb. 23, 2012		

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
(V)	4965
126.50	4964.9976
110.00	4964.9975
93.50	4965.0030
Max. Deviation (MHz)	0.003000
Max. Deviation (ppm)	0.60

Temperature vs. Frequency Stability

Temperature	Measurement Frequency (MHz)
(°C)	4965
-40	4964.9812
-30	4964.9706
-20	4964.9586
-10	4964.9382
0	4964.9310
10	4964.9304
20	4964.9460
30	4964.9484
40	4964.9490
50	4964.9292
60	4964.9316
Max. Deviation (MHz)	0.070800
Max. Deviation (ppm)	14.26

5. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
BILOG ANTENNA	Schaffner	CBL6112D	22021	20MHz ~ 2GHz	Jan. 11, 2012	Radiation (03CH01-CB)
Horn Antenna	EMCO	3115	00075790	750MHz~18GHz	Nov. 25, 2011	Radiation (03CH01-CB)
Horn Antenna	SCHWARZBEAK	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Nov. 22, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8447D	2944A10991	0.1MHz ~ 1.3GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Pre-Amplifier	Agilent	8449B	3008A02310	1GHz ~ 26.5GHz	Nov. 29, 2011	Radiation (03CH01-CB)
Pre-Amplifier	WM	TF-130N-R1	923365	26.5GHz ~ 40GHz	Jul. 29, 2011	Radiation (03CH01-CB)
Spectrum analyzer	R&S	FSP40	100056	9KHz~40GHz	Nov. 03, 2011	Radiation (05CH01-CB)
EMI Test Receiver	R&S	ESCS 30	100355	9KHz ~ 2.75GHz	Mar. 22, 2011	Radiation (03CH01-CB)
Loop Antenna	Teseq	HLA 6120	24155	9 kHz - 30 MHz	Sep. 09, 2010*	Radiation (03CH01-CB)
Turn Table	INN CO	CO 2000	N/A	0 ~ 360 degree	N/A	Radiation (03CH01-CB)
Antenna Mast	INN CO	CO2000	N/A	1 m - 4 m	N/A	Radiation (03CH01-CB)
RF Cable-low	Woken	Low Cable-1	N/A	30 MHz - 1 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-1	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-2	N/A	1 GHz – 26.5 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-3	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
RF Cable-high	Woken	High Cable-4	N/A	1 GHz - 40 GHz	Nov. 17, 2011	Radiation (03CH01-CB)
Signal analyzer	R&S	FSV40	100979	9KHz~40GHz	Sep. 26, 2011	Conducted (TH01-CB)
Temp. and Humidity Chamber	Ten Billion	TTH-D3SP	TBN-931011	-30~100 degree	May 20, 2011	Conducted (TH01-CB)
Thermo-Hygro Meter	N/A	HC 520	#1	15~70 degree	Nov. 02, 2011	Conducted (TH01-CB)
RF Power Divider	HP	11636A	00306	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	44100	1839	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Power Splitter	Anaren	42100	17930	2GHz ~ 18GHz	N/A	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-7	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-8	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-9	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-10	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
RF Cable-high	Woken	High Cable-11	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-12	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
RF Cable-high	Woken	High Cable-13	-	1 GHz – 26.5 GHz	Nov. 17, 2011	Conducted (TH01-CB)
Power Sensor	Anritsu	MA2411B	0917223	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)
Power Meter	Anritsu	ML2495A	1035008	300MHz~40GHz	Nov. 01, 2011	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

Note: "*" Calibration Interval of instruments listed above is two years.

6. SPORTON COMPANY PROFILE

SPORTON Lab. was established in 1986 with one shielded room: the first private EMI test facility, offering local manufacturers an alternative EMI test facility apart from ERSO. In 1988, one 3M and 10M/3M open area test site were setup and also obtained official accreditation from FCC, VCCI and NEMKO. In 1993, a Safety laboratory was founded and obtained accreditation from UL of USA, CSA of Canada and TUV (Rhineland & PS) of Germany. In 1995, one EMC lab, including EMI and EMS test facilities was setup. In 1997, SPORTON Group has provided financial expense to relocate the headquarter to Orient Scientific Park in Taipei Hsien to offer more comprehensive, more qualified and better service to local suppliers and manufactures. In 1999, Safety Group and Component Group were setup. In 2001, SPORTON has established 3M/10M chamber in Hwa Ya Technology Park.

6.1. Test Location

SHIJR	ADD : 6Fl., No. 106, Sec. 1, Shintai 5th Rd., Shijr City, Taipei, Taiwan 221, R.O.C. TEL : 02-2696-2468 FAX : 02-2696-2255
HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 03-327-3456 FAX : 03-318-0055
LINKOU	ADD : No. 30-2, Dingfu Tsuen, Linkou Shiang, Taipei, Taiwan 244, R.O.C TEL : 02-2601-1640 FAX : 02-2601-1695
DUNGHU	ADD : No. 3, Lane 238, Kangle St., Neihu Chiu, Taipei, Taiwan 114, R.O.C. TEL : 02-2631-4739 FAX : 02-2631-9740
JUNGHE	ADD : 7Fl., No. 758, Jungjeng Rd., Junghe City, Taipei, Taiwan 235, R.O.C. TEL : 02-8227-2020 FAX : 02-8227-2626
NEIHU	ADD : 4Fl., No. 339, Hsin Hu 2 nd Rd., Taipei 114, Taiwan, R.O.C. TEL : 02-2794-8886 FAX : 02-2794-9777
JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 03-656-9065 FAX : 03-656-9085