

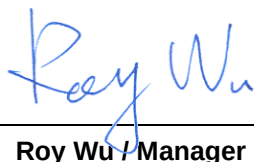
Variant FCC RF Test Report

APPLICANT : Meru Networks Inc.
EQUIPMENT : Multi Radio 802.11a/b/g/n Wireless LAN Access Point
BRAND NAME : Meru Networks Inc.
MODEL NAME : AP302i, AP320i
FCC ID : RE7-AP300
STANDARD : FCC Part 15 Subpart C §15.247
CLASSIFICATION : Digital Transmission System (DTS)

This is a variant report which is only valid combined with the original test report. The product was received on Dec. 04, 2009 and completely tested on Dec. 30, 2009. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by:



Roy Wu / Manager

SPORTON INTERNATIONAL INC.

No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR9D0408A	Rev. 01	This is a variant report which can be referred to appendix C for product equality declaration. All the test cases were performed on original report which can be referred to appendix D. Based on the original report, only AC Conducted Emission and Radiated Emission was verified.	Jan. 14, 2010

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.247(d)	A8.5	Frequency Band Edges	$\leq 20\text{dBc}$	Pass	-
3.2	15.207	Gen 7.2.2	AC Conducted Emission	15.207(a)	Pass	Under limit 4.6 dB at 0.942 MHz
3.3	15.247(d)	A8.5	Transmitter Radiated Emission	15.209(a) & 15.247(d)	Pass	Under limit 1.29 dB at 2483.85 MHz
3.4	15.203 & 15.247(b)	A8.4	Antenna Requirement	N/A	Pass	-

1 General Description

1.1 Applicant

Meru Networks Inc.

894 Ross Drive Sunnyvale, CA 94089 USA

1.2 Manufacturer

Universal Scientific Industrial (Shanghai)

No. 1558, Zhang Dong Road, Zhangjiang Hi-Tech Park, Shanghai, P.R. China 201203

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	Multi Radio 802.11a/b/g/n Wireless LAN Access Point
Brand Name	Meru Networks Inc.
Model Name	AP302i, AP320i
FCC ID	RE7-AP300
Tx/Rx Frequency Range	802.11b/g/n : 2400 MHz ~ 2483.5 MHz 802.11a/n : 5725 MHz ~ 5850 MHz
Channel Spacing	802.11b/g : 5 MHz 802.11a : 20 MHz
Antenna Type	802.11b/g/n : PIFA Antenna with gain 3.0 dBi 802.11a/n : PIFA Antenna with gain 4.0 dBi
HW Version	AP300i
SW Version	3.6.1-41
Type of Modulation	802.11b : DSSS (BPSK / QPSK / CCK) 802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)
EUT Stage	Identical Prototype

Remark:

1. For other wireless features of this EUT, test report will be issued separately.
2. This test report recorded only product characteristics and test results of Digital Transmission System (DTS).
3. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

1.4 Testing Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL: +886-3-3273456 / FAX: +886-3-3284978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	CO05-HY	03CH07HY	TW1022/4086B-1

1.5 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 (Measurement Guidelines of DTS)
- ANSI C63.4-2003
- IC RSS-210 Issue 7

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B (DoC), recorded in a separate test report.

1.6 Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	AC Adapter 1	UMEC	UP0251P-05PA	N/A	N/A	Shielded, 1.8 m
2.	AC Adapter 2 (for POE)	UMEC	UP0151D-48P	N/A	N/A	Shielded, 1.8 m
3.	POE	PLANET	POE-152	N/A	N/A	N/A
4.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
5.	Notebook	ASUS	F9E	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
6.	Notebook	Acer	MS2180	QDS-BRCM1018	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m

2 Test Configuration of Equipment Under Test

2.1 Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conducted emission (150 kHz to 30 MHz), radiated emission (30 MHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following table is showing the total pre-scanned test modes, and the worst modes are recorded in this report only.

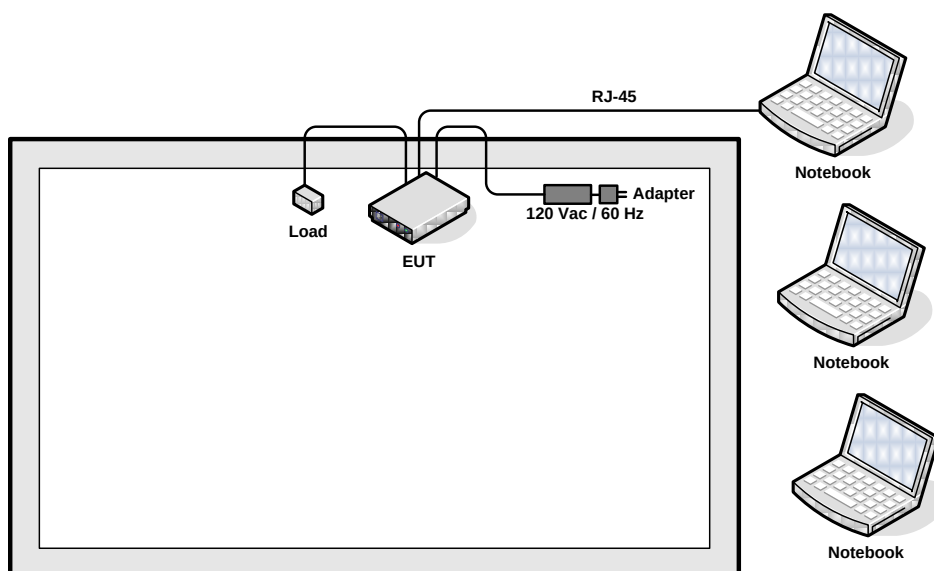
Test Cases	
Test Item	802.11b (Modulation : DSSS) 802.11a/g/n (Modulation : OFDM)
Radiated TCs	Mode 1: 802.11b_CH01_2412 MHz for WLAN 1 Mode 2: 802.11b_CH06_2437 MHz for WLAN 1 Mode 3: 802.11b_CH11_2462 MHz for WLAN 1 Mode 4: 802.11g_CH01_2412 MHz for WLAN 1 Mode 5: 802.11g_CH06_2437 MHz for WLAN 1 Mode 6: 802.11g_CH11_2462 MHz for WLAN 1 Mode 7: 802.11n(g)_CH01_2412 MHz (BW 20MHz) for WLAN 1 Mode 8: 802.11n(g)_CH06_2437 MHz (BW 20MHz) for WLAN 1 Mode 9: 802.11n(g)_CH11_2462 MHz (BW 20MHz) for WLAN 1 Mode 10: 802.11n(g)_CH03_2422 MHz (BW 40MHz) for WLAN 1 Mode 11: 802.11n(g)_CH09_2452 MHz (BW 40MHz) for WLAN 1 Mode 12: 802.11n(g)_CH09_2452 MHz (BW 40MHz) for WLAN 2 Mode 13: 802.11a_CH149_5745 MHz for WLAN 1 Mode 14: 802.11a_CH157_5785 MHz for WLAN 1 Mode 15: 802.11a_CH165_5825 MHz for WLAN 1 Mode 16: 802.11n(a)_CH149_5745 MHz (BW 20MHz) for WLAN 1 Mode 17: 802.11n(a)_CH157_5785 MHz (BW 20MHz) for WLAN 1 Mode 18: 802.11n(a)_CH165_5825 MHz (BW 20MHz) for WLAN 1 Mode 19: 802.11n(a)_CH165_5825 MHz (BW 20MHz) for WLAN 2 Mode 20: 802.11n(a)_CH151_5755 MHz (BW 40MHz) for WLAN 1 Mode 21: 802.11n(a)_CH159_5795 MHz (BW 40MHz) for WLAN 1 Mode 22: 802.11g_CH11_2462 MHz for WLAN 1 + 802.11g_CH11_2462 MHz for WLAN 2 Mode 23: 802.11n(a)_CH165_5825 MHz for WLAN 1 + 802.11n(a)_CH165_5825 MHz for WLAN 2

AC Conducted Emission	Mode 1 : WLAN 1 (2.4G) Link + WLAN 2 (2.4G) Link + LAN Link + Adapter 1
	Mode 2 : WLAN 1 (5G) Link + WLAN 2 (5G) Link + POE + LAN Link + Adapter 2
Remark: 1. The worst case of AC conducted emission is mode 1; only the test data of it was reported. 2. The EUT has two modules which have the same design, and they can transmit simultaneously. 3. The WLAN 1 (module 1) was tested for full test modes, the WLAN 2 (module 2) was tested based on the worst case of WLAN 1, and the worst case for co-location were mode 22 and 23.	

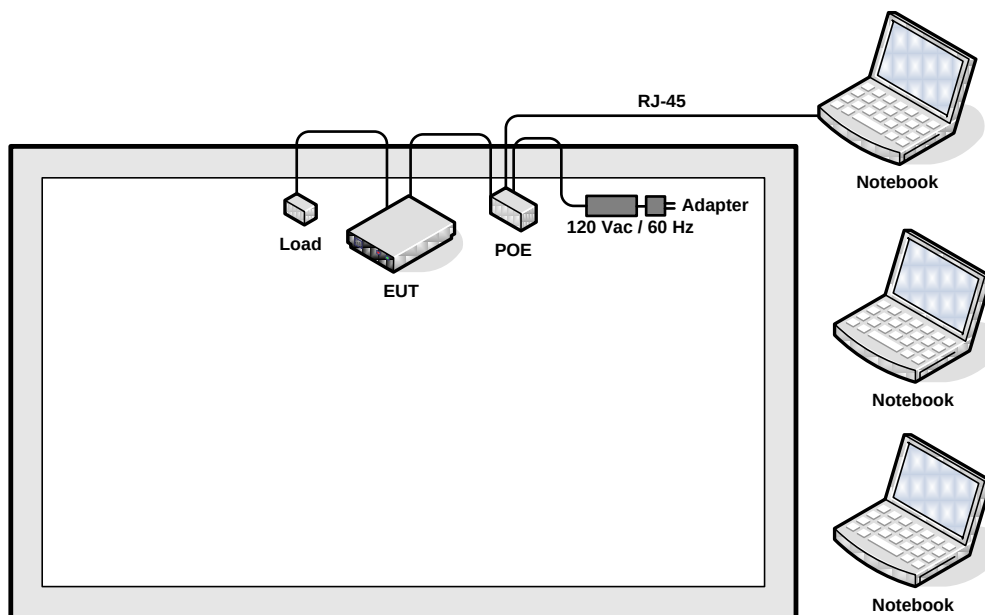
2.2 Connection Diagram of Test System

<Conduction Test>

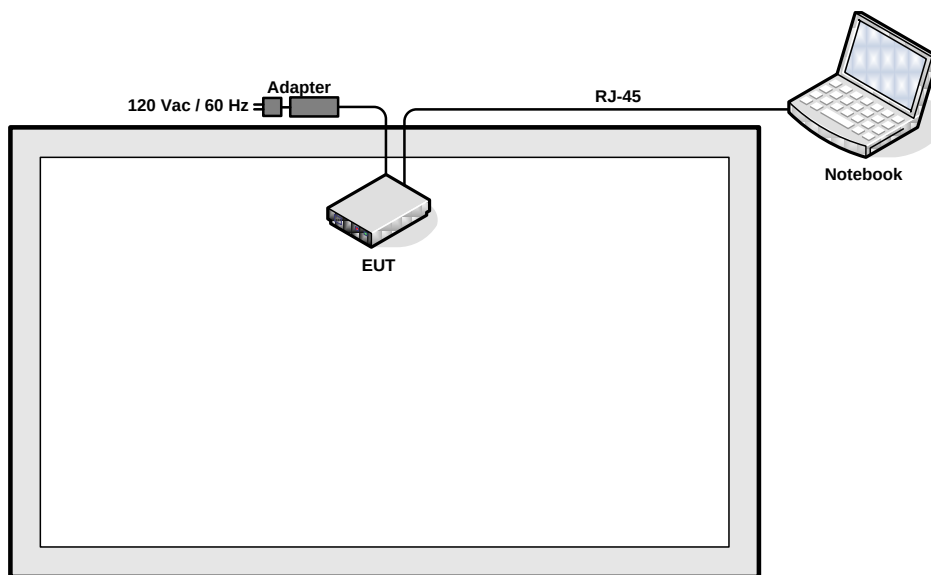
EUT with Adapter Mode



EUT with POE and Adapter Mode



<Radiation Test>



2.3 RF Utility

The programmed RF utility "ART", is installed in notebook to provide channel selection, power level, data rate and the application type. RF utility can send transmitting signal for all testing. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

3 Test Result

3.1 Band Edges Measurement

3.1.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB.

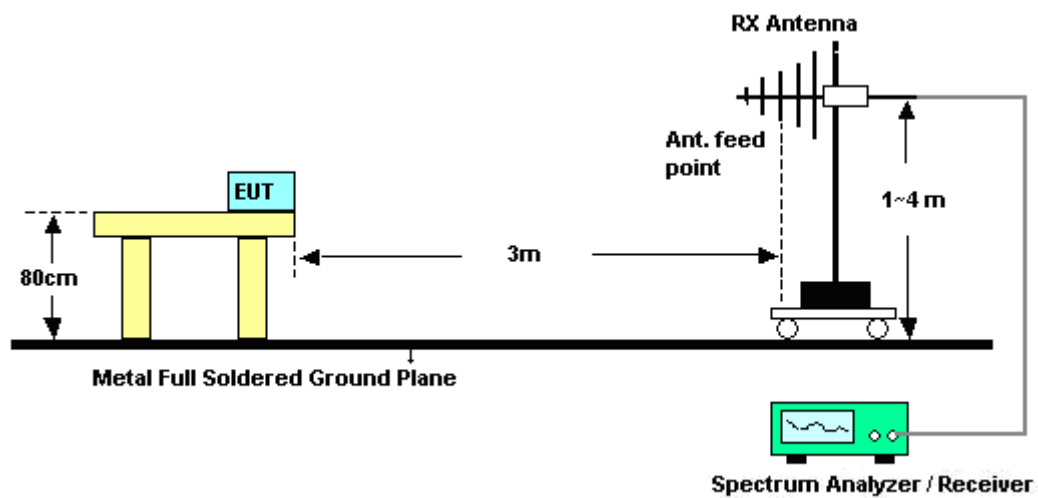
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The testing follows the guidelines in ANSI C63.4-2003 and FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
2. Conducted emission test: Set RBW = 100 kHz, Video bandwidth (VBW) > RBW. Band edge emissions must be at least 20 dB below the highest emission level within the authorized band as measured with a 100 kHz RBW. Note: If the output power of this device was measured by power meter, the attenuation under this paragraph shall be 30 dB instead of 20 dB.
3. Radiated emission test: Apply to band edge emissions that fall in the restricted bands listed in FCC Section 15.205. The maximum permitted average field strength is listed in FCC Section 15.209. A pre-amp is necessary for this measurement. For measurements above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep=Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation as in FCC Section 15.35(b) and (c).

3.1.4 Test Setup



3.1.5 Test Result of Radiated Band Edges

Test Mode :	Mode 1	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2385.62	47.24	-26.76	74.00	43.80	32.13	5.46	34.15	101	74	Peak
2385.62	35.28	-18.72	54.00	31.84	32.13	5.46	34.15	101	74	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	52.12	-21.88	74.00	48.68	32.13	5.46	34.15	100	341	Peak
2389.61	40.78	-13.22	54.00	37.34	32.13	5.46	34.15	100	341	Average

Test Mode :	Mode 3	Temperature :	20~21°C
Test Band :	802.11b	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2489.17	45.95	-28.05	74.00	42.47	32.30	5.37	34.19	191	82	Peak
2489.17	34.53	-19.47	54.00	31.05	32.30	5.37	34.19	191	82	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2487.65	49.94	-24.06	74.00	46.46	32.30	5.37	34.19	100	339	Peak
2487.65	40.89	-13.11	54.00	37.41	32.30	5.37	34.19	100	339	Average



Test Mode :	Mode 4	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.99	61.02	-12.98	74.00	57.59	32.13	5.46	34.16	127	235	Peak
2389.99	42.38	-11.62	54.00	38.95	32.13	5.46	34.16	127	235	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.85	68.40	-5.60	74.00	64.96	32.13	5.46	34.15	100	342	Peak
2388.85	48.33	-5.67	54.00	44.89	32.13	5.46	34.15	100	342	Average

Test Mode :	Mode 6	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2485.15	64.88	-9.12	74.00	61.41	32.27	5.38	34.19	100	227	Peak
2485.15	45.70	-8.30	54.00	42.23	32.27	5.38	34.19	100	227	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	72.71	-1.29	74.00	69.24	32.27	5.38	34.19	100	337	Peak
2483.85	52.51	-1.49	54.00	49.04	32.27	5.38	34.19	100	337	Average



Test Mode :	Mode 7	Temperature :	20~21°C
Test Band :	802.11n(g) (BW 20MHz)	Relative Humidity :	49~50%
Test Channel :	01	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2389.61	58.87	-15.13	74.00	55.43	32.13	5.46	34.15	123	293	Peak
2389.61	40.76	-13.24	54.00	37.32	32.13	5.46	34.15	123	293	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2388.09	61.29	-12.71	74.00	57.85	32.13	5.46	34.15	100	33	Peak
2388.09	45.40	-8.60	54.00	41.96	32.13	5.46	34.15	100	33	Average

Test Mode :	Mode 9	Temperature :	20~21°C
Test Band :	802.11n(g) (BW 20MHz)	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	57.31	-16.69	74.00	53.84	32.27	5.38	34.19	122	278	Peak
2483.50	38.41	-15.59	54.00	34.94	32.27	5.38	34.19	122	278	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.50	67.51	-6.49	74.00	64.04	32.27	5.38	34.19	100	36	Peak
2483.50	46.56	-7.44	54.00	43.09	32.27	5.38	34.19	100	36	Average



Test Mode :	Mode 10	Temperature :	20~21°C
Test Band :	802.11n(g) (BW 40MHz)	Relative Humidity :	49~50%
Test Channel :	03	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2386.38	63.52	-10.48	74.00	60.08	32.13	5.46	34.15	150	294	Peak
2386.38	43.33	-10.67	54.00	39.89	32.13	5.46	34.15	150	294	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2387.33	69.63	-4.37	74.00	66.19	32.13	5.46	34.15	100	26	Peak
2387.33	49.00	-5.00	54.00	45.56	32.13	5.46	34.15	100	26	Average

Test Mode :	Mode 11	Temperature :	20~21°C
Test Band :	802.11n(g) (BW 40MHz)	Relative Humidity :	49~50%
Test Channel :	09	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	62.05	-11.95	74.00	58.55	32.27	5.38	34.19	190	277	Peak
2483.66	44.56	-9.44	54.00	41.09	32.27	5.38	34.19	190	277	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2486.89	69.98	-4.02	74.00	66.51	32.27	5.38	34.19	100	36	Peak
2486.89	52.00	-2.00	54.00	48.53	32.27	5.38	34.19	100	36	Average

Test Mode :	Mode 12	Temperature :	20~21°C
Test Band :	802.11n(g) (BW 40MHz)	Relative Humidity :	49~50%
Test Channel :	09	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	65.41	-8.59	74.00	61.94	32.27	5.38	34.19	100	122	Peak
2483.66	44.89	-9.11	54.00	41.42	32.27	5.38	34.19	100	122	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.66	69.55	-4.45	74.00	66.08	32.27	5.38	34.19	125	197	Peak
2483.66	48.06	-5.94	54.00	44.59	32.27	5.38	34.19	125	197	Average

Test Mode :	Mode 22	Temperature :	20~21°C
Test Band :	802.11g	Relative Humidity :	49~50%
Test Channel :	11	Test Engineer :	Kay Wu

ANTENNA POLARITY : HORIZONTAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2484.61	62.60	-11.40	74.00	59.13	32.27	5.38	34.19	180	290	Peak
2484.61	43.54	-10.46	54.00	40.07	32.27	5.38	34.19	180	290	Average

ANTENNA POLARITY : VERTICAL										
Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
2483.85	64.90	-9.10	74.00	61.43	32.27	5.38	34.19	100	308	Peak
2483.85	46.43	-7.57	54.00	42.96	32.27	5.38	34.19	100	308	Average

3.2 AC Conducted Emission Measurement

3.2.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

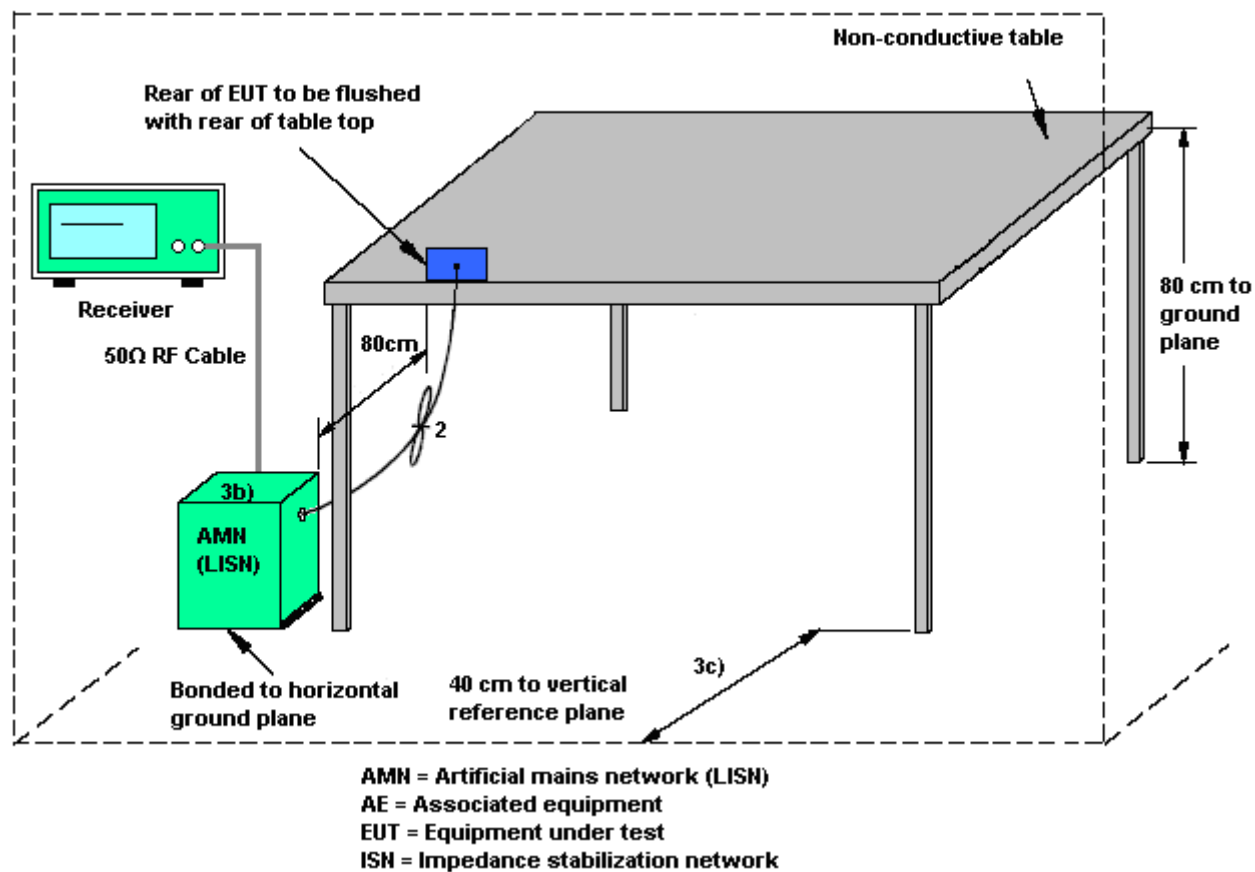
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

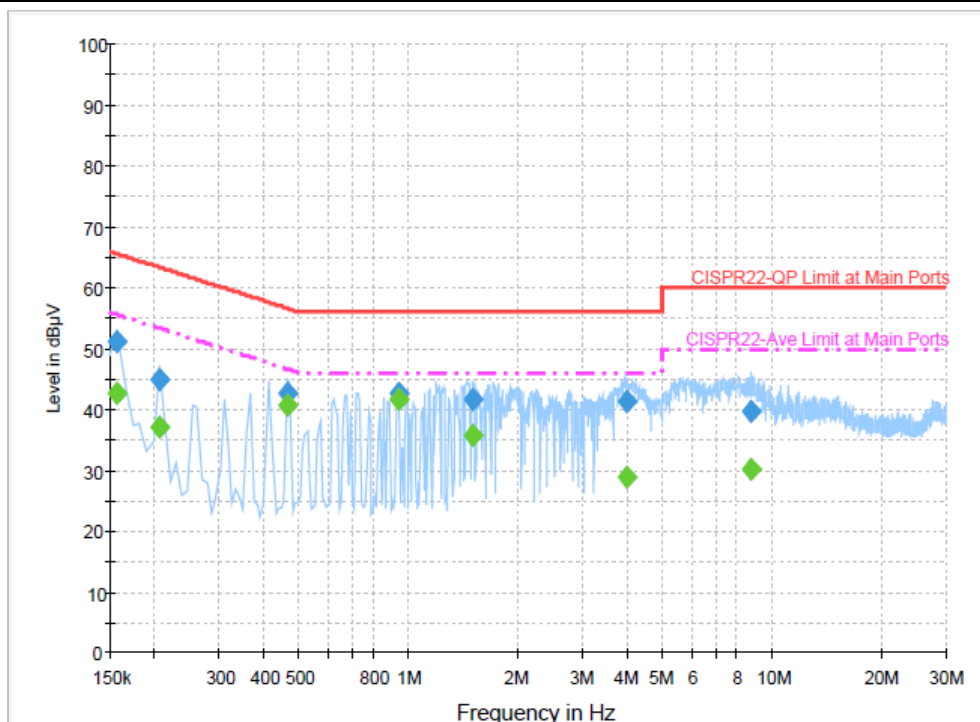
1. The testing follows the guidelines in ANSI C63.4-2003.
2. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN).
4. All the support units are connecting to the other LISN.
5. The LISN provides 50 ohm coupling impedance for the measuring instrument.
6. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
7. Both sides of AC line were checked for maximum conducted interference.
8. The frequency range from 150 kHz to 30 MHz was searched.
9. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.2.4 Test Setup



3.2.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	22~24℃
Test Engineer :	Hayden Wu	Relative Humidity :	42~45%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	WLAN 1 (2.4G) Link + WLAN 2 (2.4G) Link + LAN Link + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



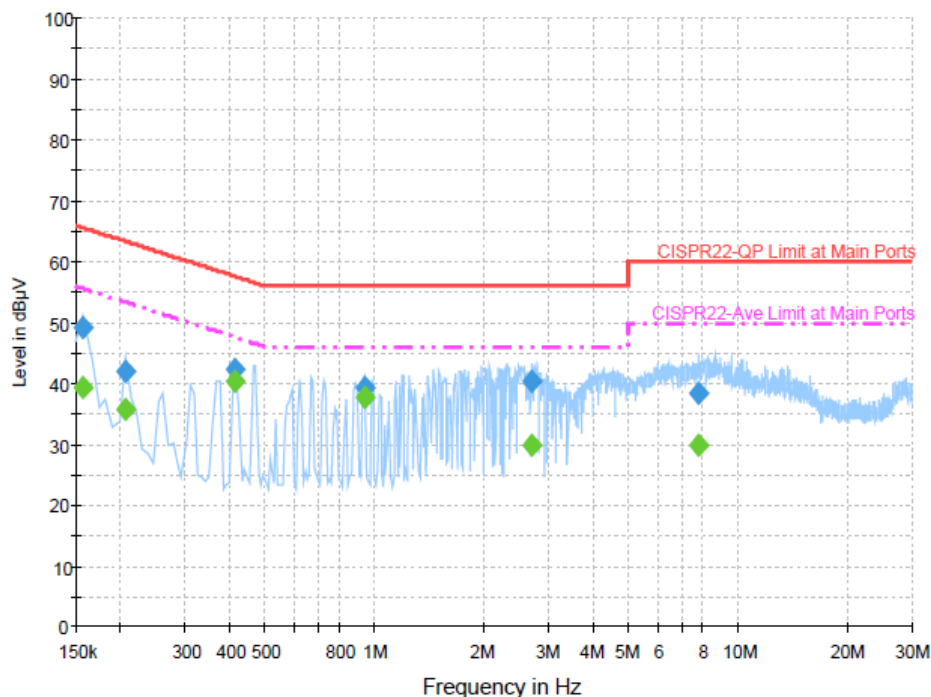
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	51.1	Off	L1	19.5	14.5	65.6
0.206000	44.8	Off	L1	19.6	18.6	63.4
0.462000	42.8	Off	L1	19.4	13.9	56.7
0.942000	42.5	Off	L1	19.4	13.5	56.0
1.494000	41.7	Off	L1	19.5	14.3	56.0
3.966000	41.2	Off	L1	19.5	14.8	56.0
8.718000	39.8	Off	L1	19.6	20.2	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	42.8	Off	L1	19.5	12.8	55.6
0.206000	37.1	Off	L1	19.6	16.3	53.4
0.462000	40.8	Off	L1	19.4	5.9	46.7
0.942000	41.6	Off	L1	19.4	4.6	46.0
1.494000	35.8	Off	L1	19.5	10.2	46.0
3.966000	28.7	Off	L1	19.5	17.3	46.0
8.718000	30.3	Off	L1	19.6	19.7	50.0

Test Mode :	Mode 1	Temperature :	22~24°C
Test Engineer :	Hayden Wu	Relative Humidity :	42~45%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	WLAN 1 (2.4G) Link + WLAN 2 (2.4G) Link + LAN Link + Adapter 1		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	49.1	Off	N	19.5	16.5	65.6
0.206000	41.9	Off	N	19.5	21.5	63.4
0.414000	42.1	Off	N	19.4	15.5	57.6
0.934000	39.4	Off	N	19.4	16.6	56.0
2.702000	40.2	Off	N	19.5	15.8	56.0
7.750000	38.2	Off	N	19.6	21.8	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.158000	39.2	Off	N	19.5	16.4	55.6
0.206000	35.6	Off	N	19.5	17.8	53.4
0.414000	40.5	Off	N	19.4	7.1	47.6
0.934000	37.7	Off	N	19.4	8.3	46.0
2.702000	29.8	Off	N	19.5	16.2	46.0
7.750000	29.9	Off	N	19.6	20.1	50.0

3.3 Radiated Emission Measurement

3.3.1 Limit of Radiated Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the FCC section 15.209 limits as below.

Frequency (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

3.3.2 Measuring Instruments

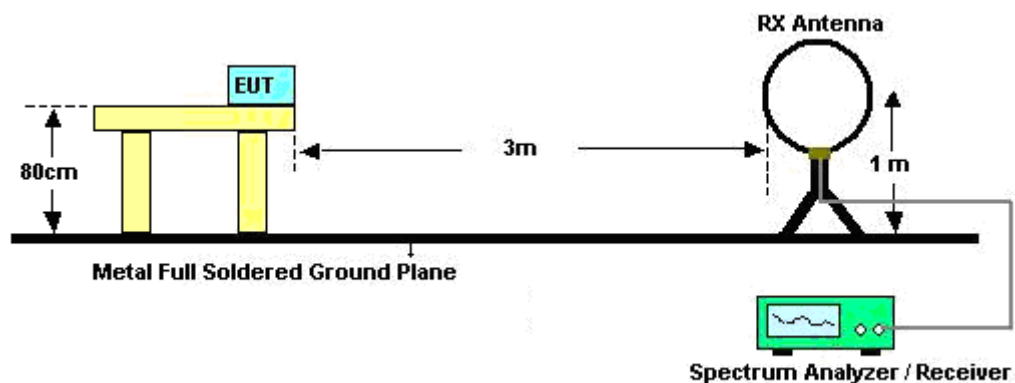
See list of measuring instruments of this test report.

3.3.3 Test Procedures

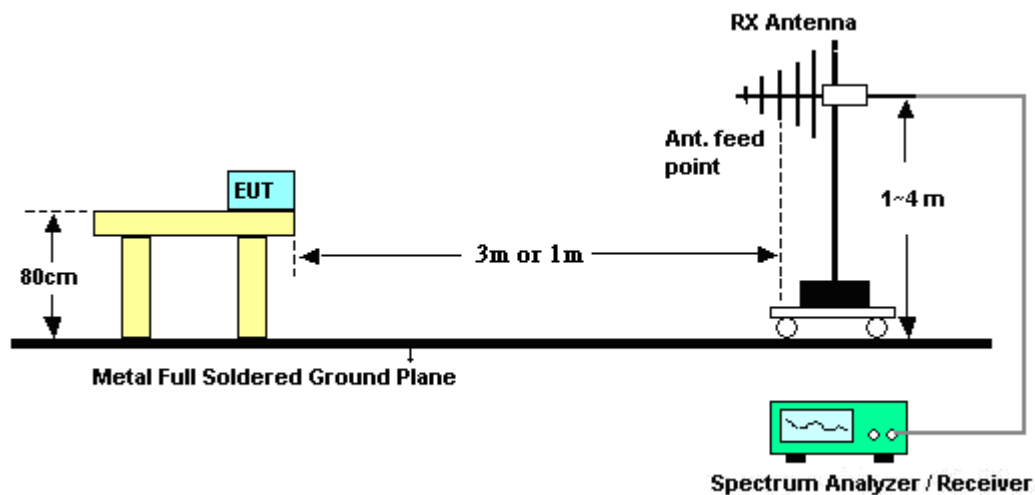
- The testing follows the guidelines in FCC KDB Publication No. 558074 (Measurement Guidelines of DTS).
- Use the following spectrum analyzer settings:
 - Span = wide enough to fully capture the emission being measured; RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
 - Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade from 3m to 1m.
Distance extrapolation factor = $20 \log (\text{specific distance [3m]} / \text{test distance [1m]})$ (dB)
- Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.3.4 Test Setup

For radiated emissions below 30MHz



For radiated emissions above 30MHz



3.3.5 Test Results of Radiated Emissions (9kHz ~ 30MHz)

Test Engineer :	Kay Wu	Temperature :	20~21°C	
		Relative Humidity :	49~50%	

Frequency (MHz)	Level (dBuV)	Over Limit (dB)	Limit Line (dBuV)	Remark
-	-	-	-	See Note

Note:

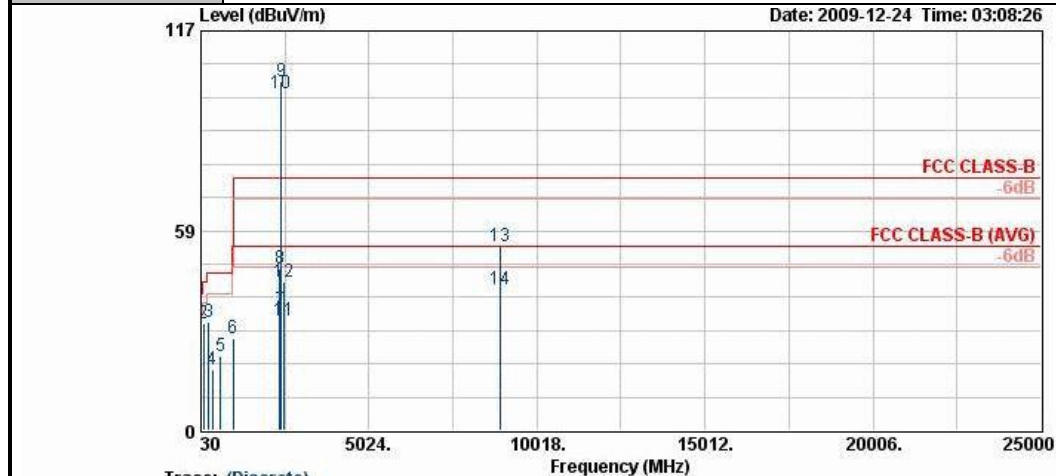
The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

3.3.6 Test Result of Radiated Emission

Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

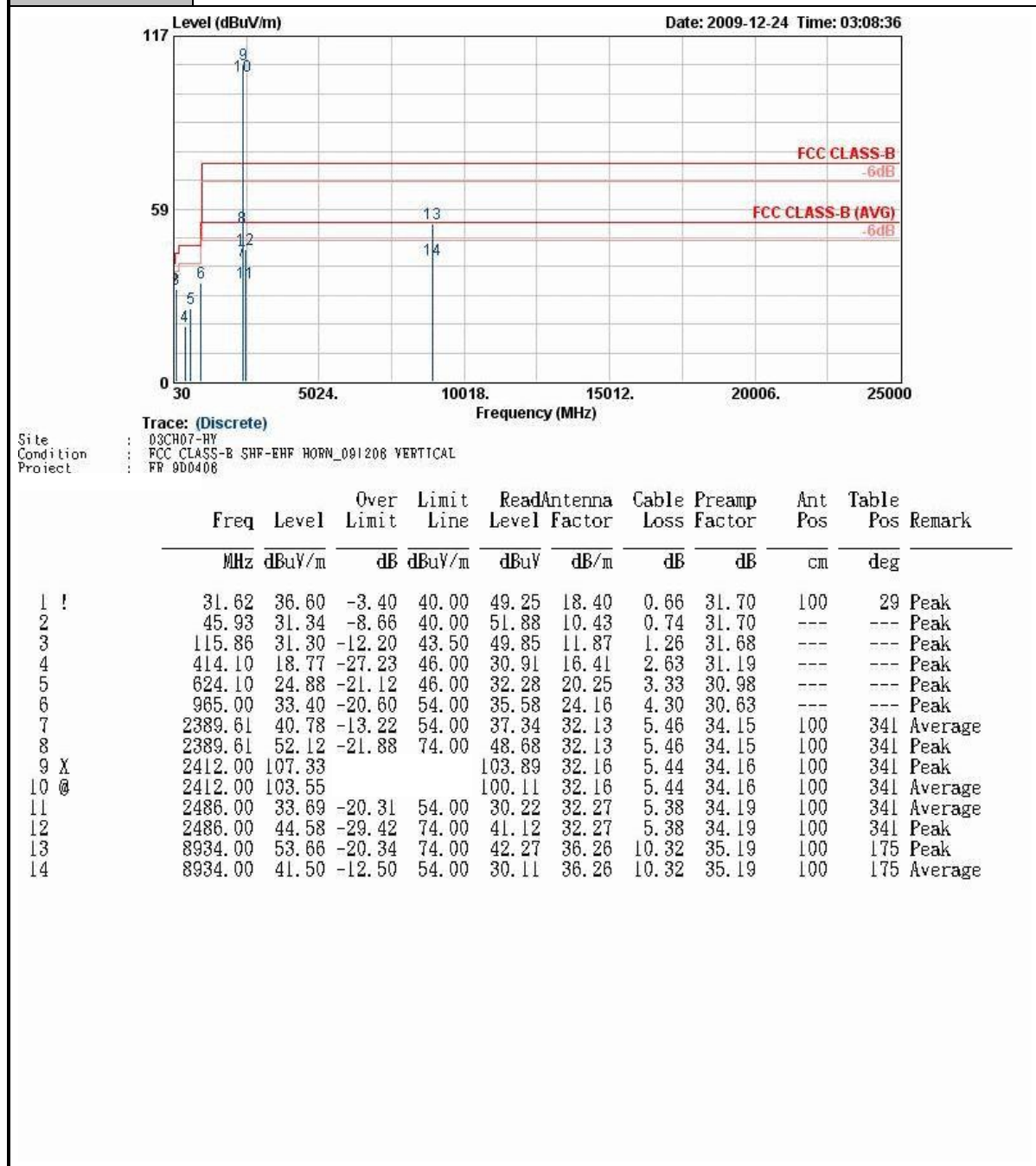


Trace: (Discrete)
 Site : D3CH07-RY
 Condition : FCC CLASS-B SHF-EHF HORN_001208 HORIZONTAL
 Project : FR 9D0408

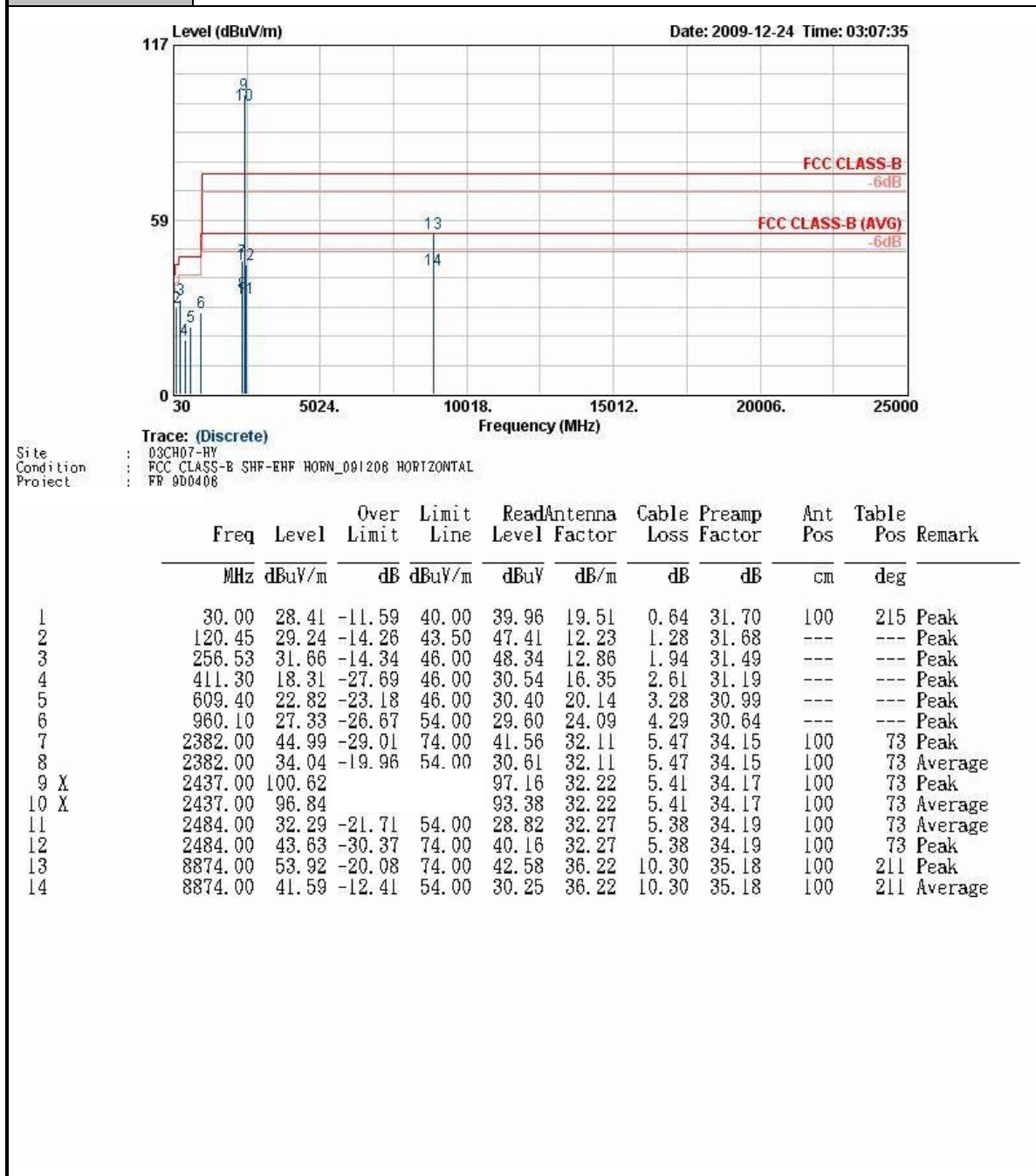
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.54	29.99	-10.01	40.00	42.09	18.95	0.65	31.70	100	321 Peak
2	116.13	31.22	-12.28	43.50	49.78	11.87	1.26	31.68	---	--- Peak
3	256.53	31.94	-14.06	46.00	48.62	12.86	1.94	31.49	---	--- Peak
4	365.80	17.64	-28.36	46.00	31.28	15.21	2.42	31.27	---	--- Peak
5	606.60	21.87	-24.13	46.00	29.48	20.11	3.27	30.99	---	--- Peak
6	984.60	27.13	-26.87	54.00	28.95	24.46	4.34	30.62	---	--- Peak
7	2385.62	35.28	-18.72	54.00	31.84	32.13	5.46	34.15	101	74 Average
8	2385.62	47.24	-26.76	74.00	43.80	32.13	5.46	34.15	101	74 Peak
9 X	2412.00	102.39	---	---	98.94	32.16	5.44	34.16	101	74 Peak
10 X	2412.00	98.56	---	---	95.12	32.16	5.44	34.16	101	74 Average
11	2486.00	32.20	-21.80	54.00	28.73	32.27	5.38	34.19	101	74 Average
12	2486.00	43.51	-30.49	74.00	40.04	32.27	5.38	34.19	101	74 Peak
13	8910.00	53.81	-20.19	74.00	42.44	36.24	10.31	35.18	100	312 Peak
14	8910.00	41.11	-12.89	54.00	29.74	36.24	10.31	35.18	100	312 Average



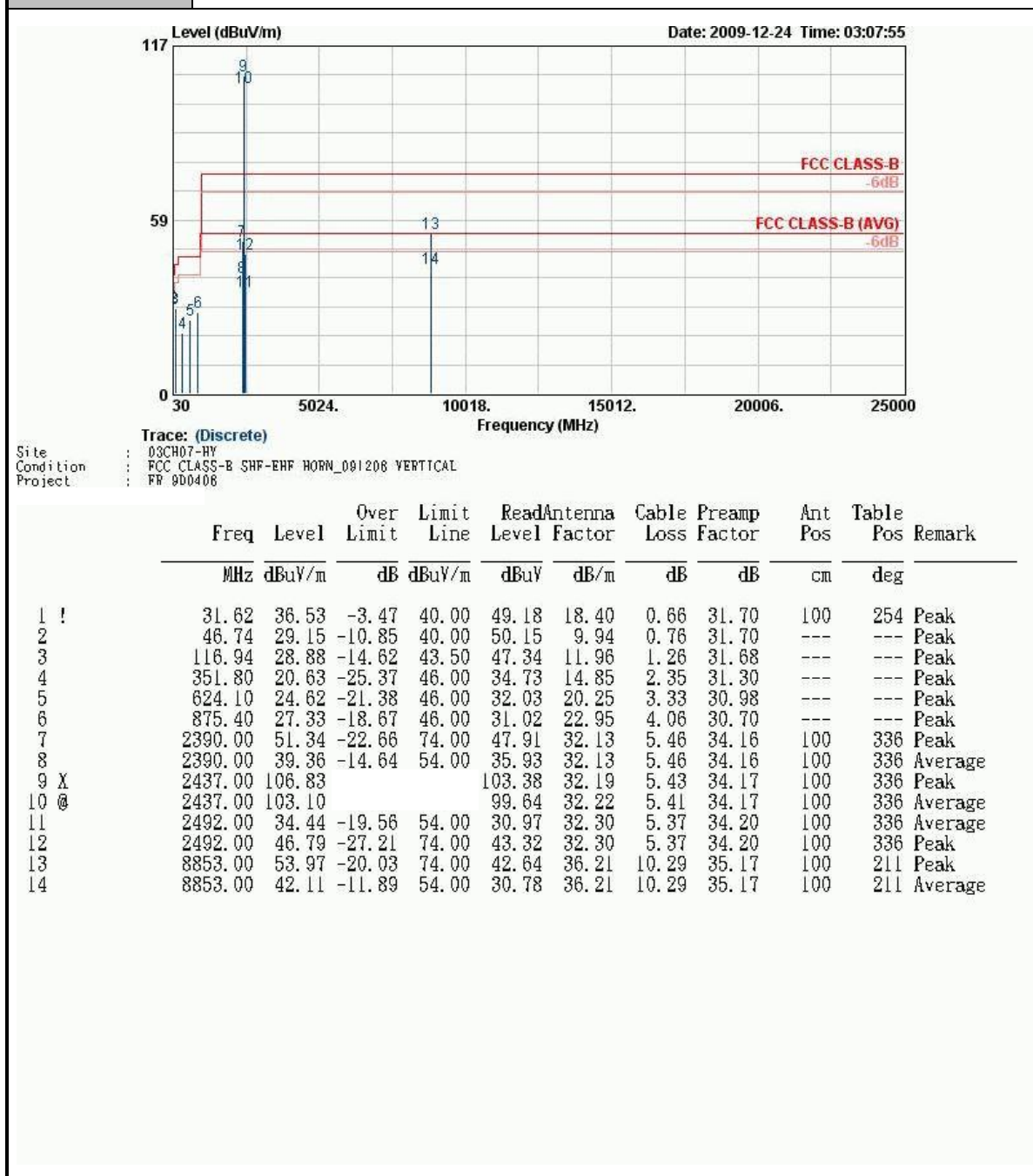
Test Mode :	Mode 1	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 2	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

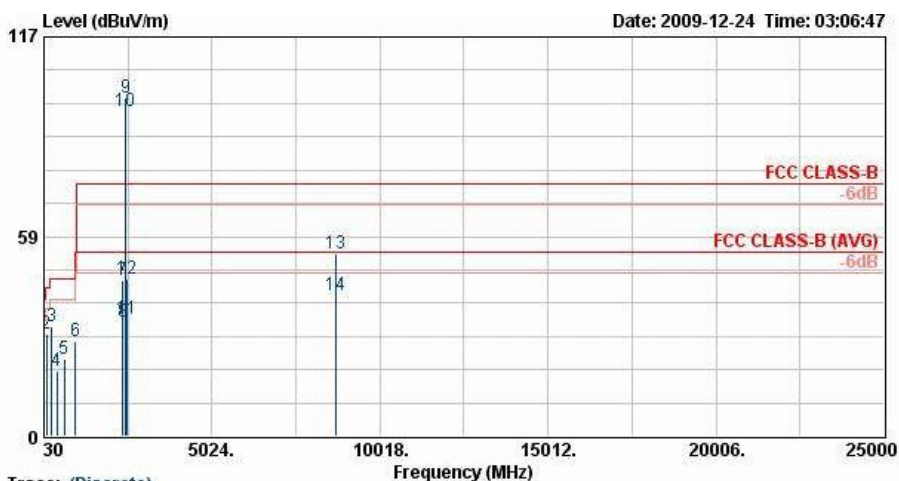


Test Mode :	Mode 2	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



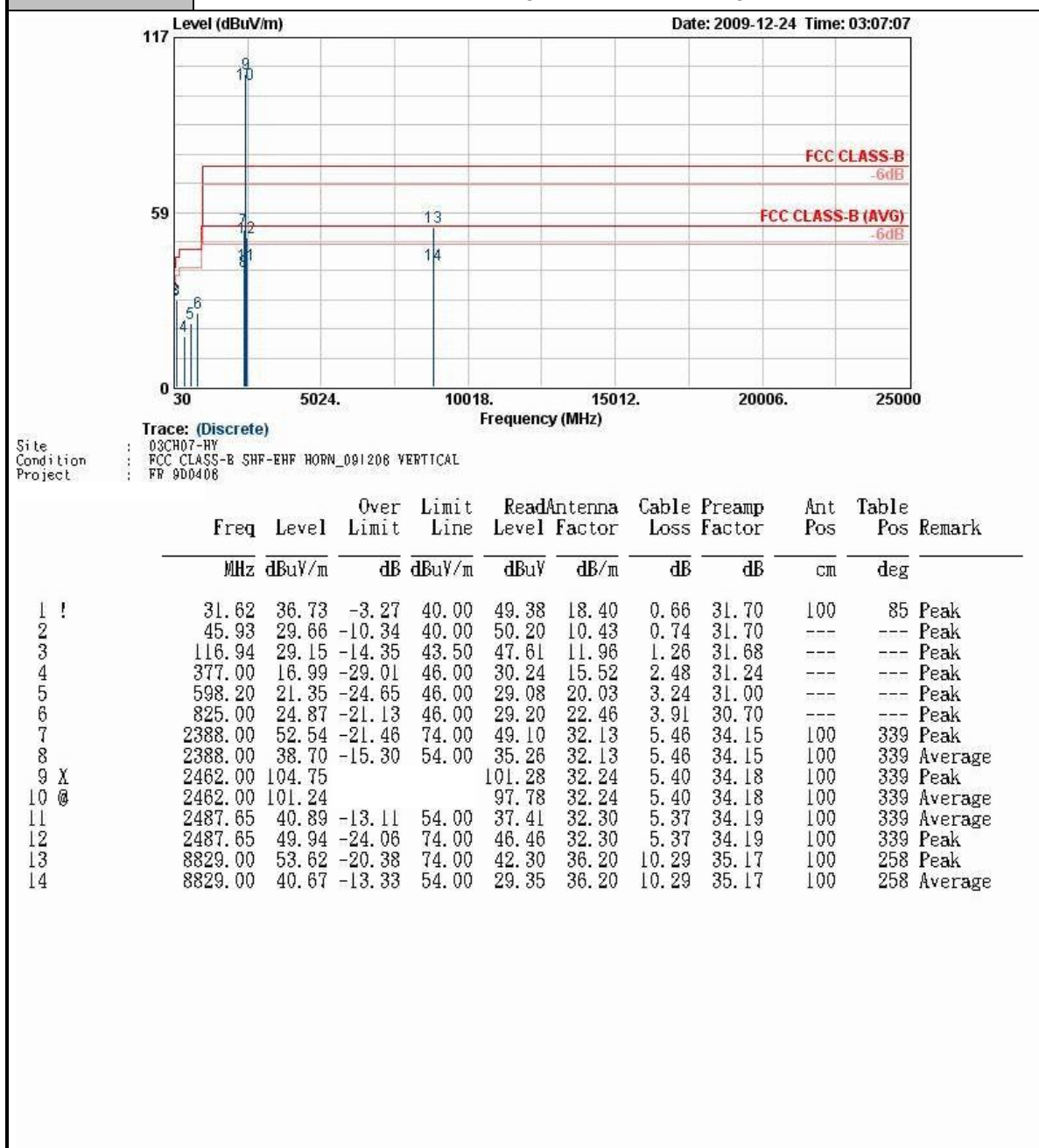
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091206 HORIZONTAL
Project : FR 9D0408

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	31.62	29.27	-10.73	40.00	41.92	18.40	0.66	31.70	125	158 Peak
2	116.94	30.20	-13.30	43.50	48.66	11.96	1.26	31.68	---	---
3	257.34	32.25	-13.75	46.00	48.93	12.86	1.94	31.49	---	---
4	419.00	18.94	-27.06	46.00	30.95	16.51	2.66	31.18	---	---
5	640.20	22.72	-23.28	46.00	29.93	20.38	3.38	30.96	---	---
6	960.10	27.68	-26.32	54.00	29.95	24.09	4.29	30.64	---	---
7	2372.00	45.63	-28.37	74.00	42.20	32.11	5.47	34.15	191	82 Peak
8	2372.00	33.43	-20.57	54.00	30.00	32.11	5.47	34.15	191	82 Average
9 X	2462.00	99.00			95.54	32.24	5.40	34.18	191	82 Peak
10 X	2462.00	95.19			91.73	32.24	5.40	34.18	191	82 Average
11	2489.17	34.53	-19.47	54.00	31.05	32.30	5.37	34.19	191	82 Average
12	2489.17	45.95	-28.05	74.00	42.47	32.30	5.37	34.19	191	82 Peak
13	8685.00	53.64	-20.36	74.00	42.43	36.11	10.24	35.14	100	312 Peak
14	8685.00	41.42	-12.58	54.00	30.21	36.11	10.24	35.14	100	312 Average

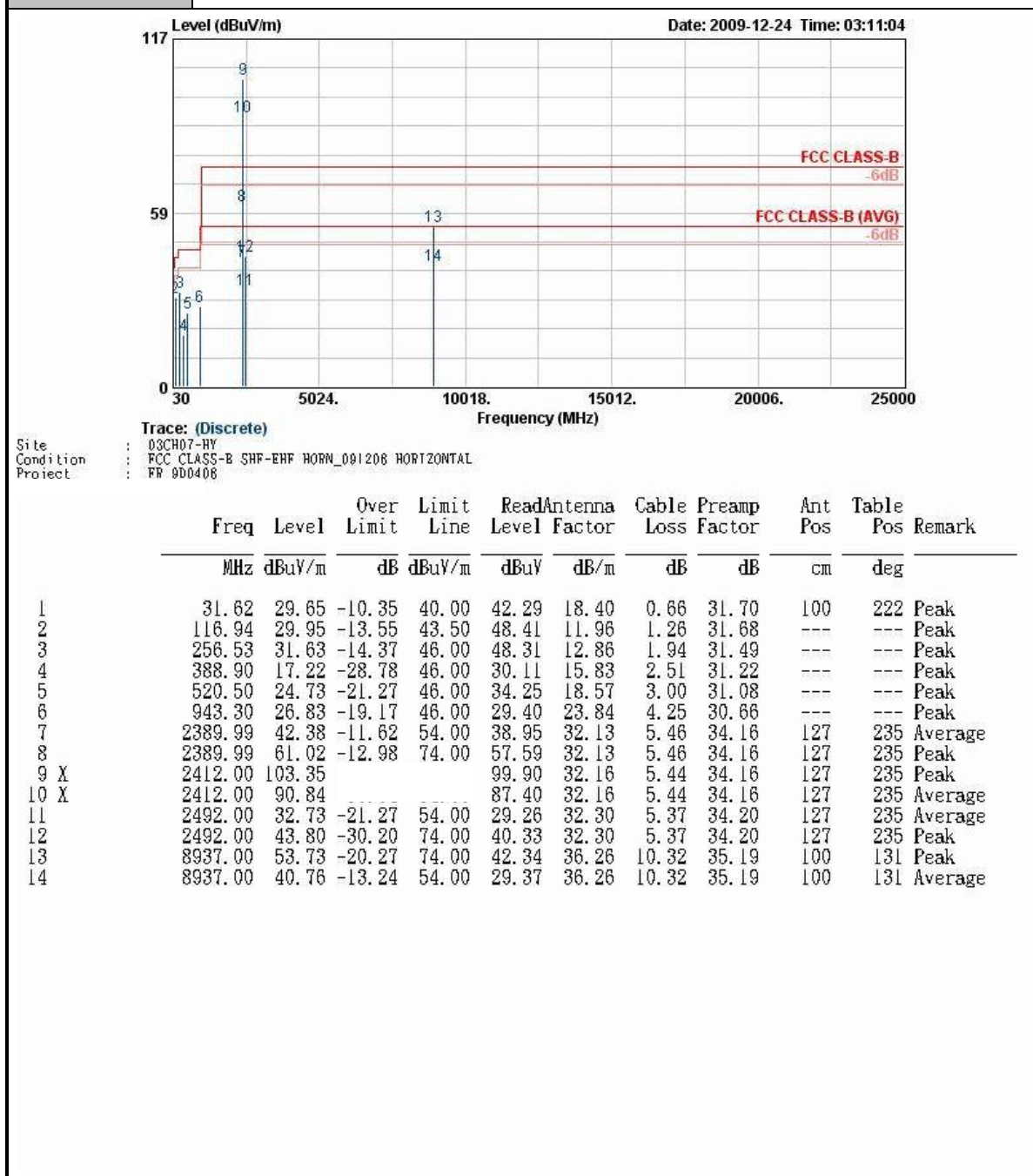


Test Mode :	Mode 3	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



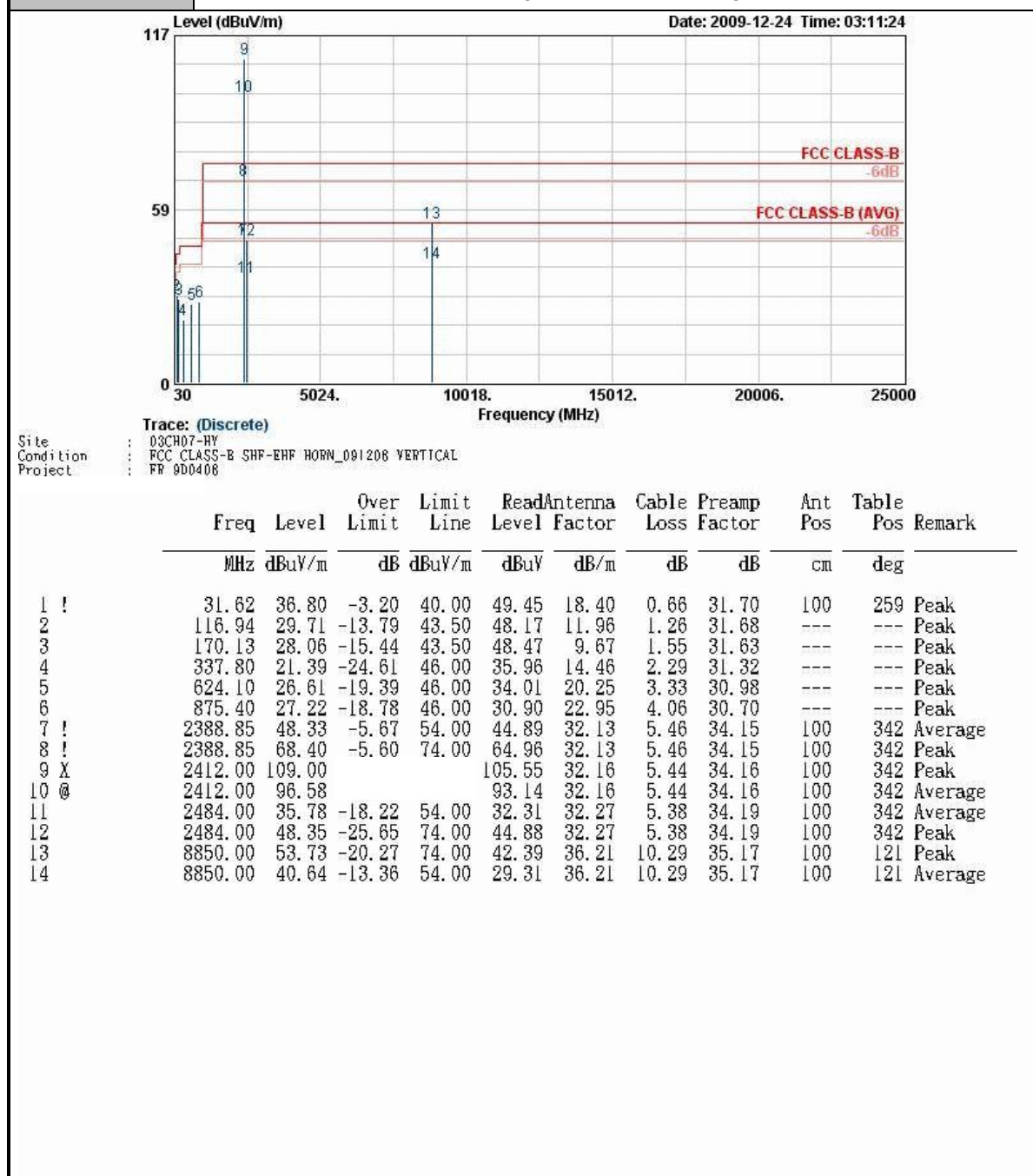


Test Mode :	Mode 4	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



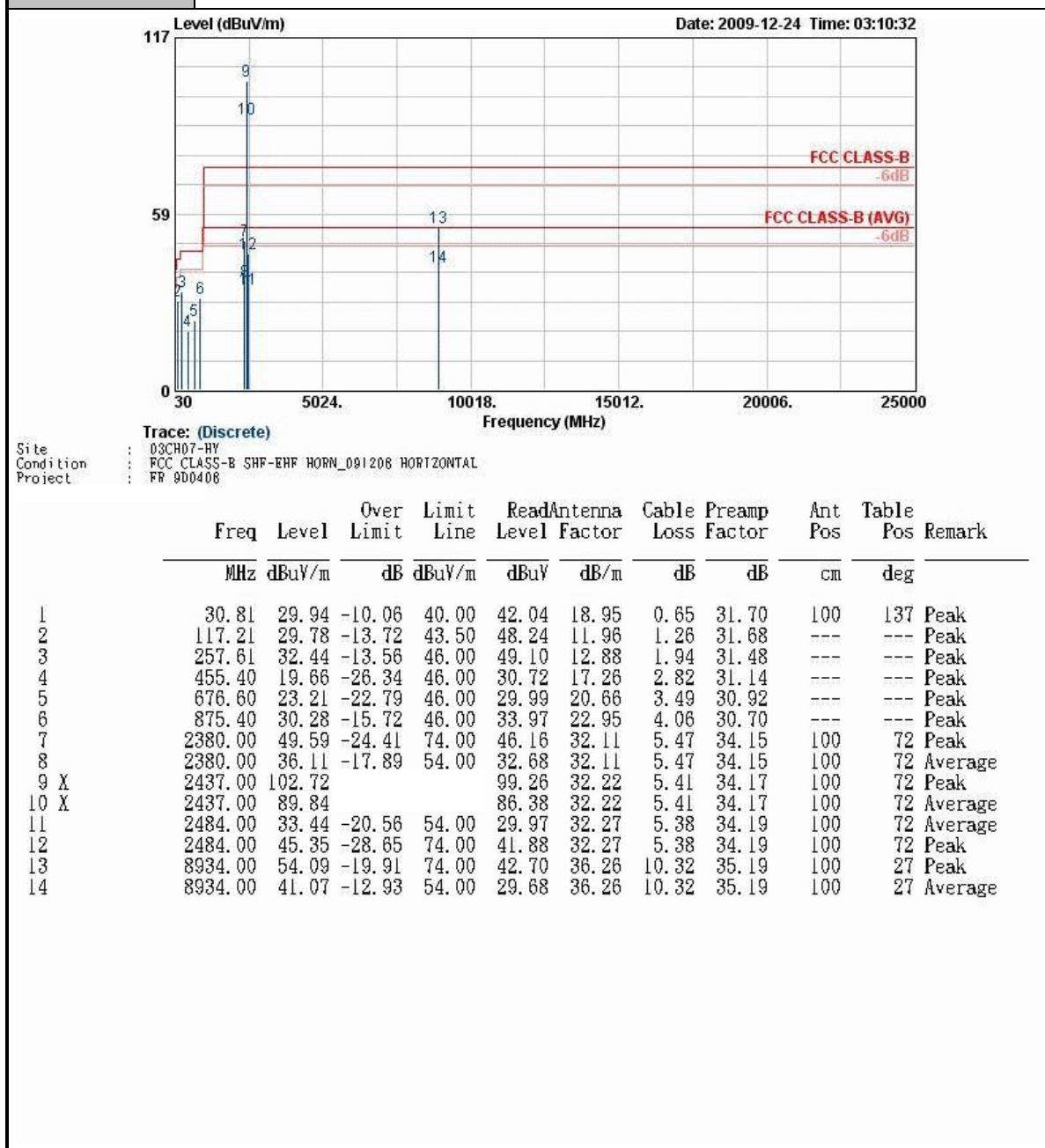


Test Mode :	Mode 4	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 5	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

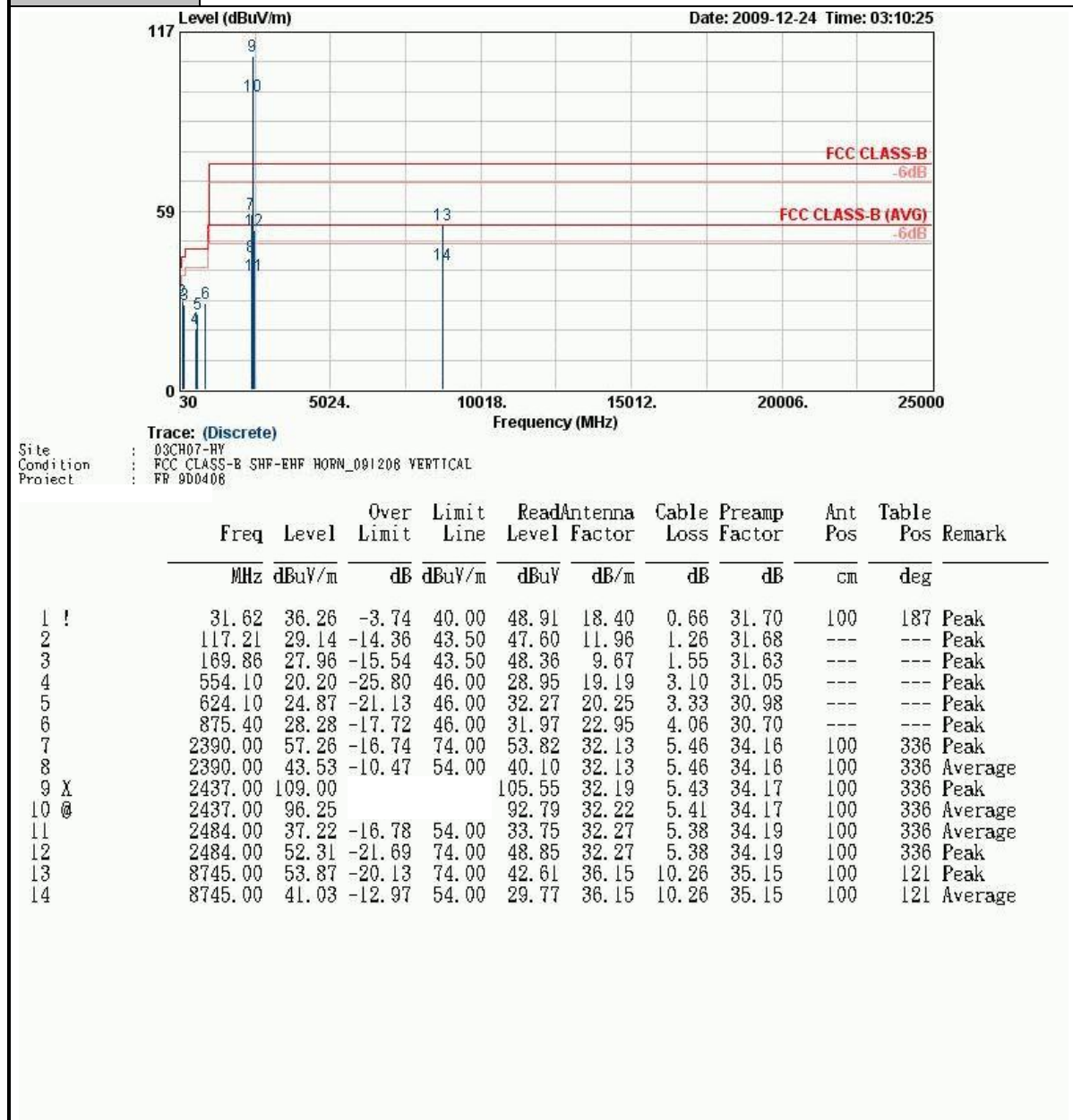




FCC RF Test Report

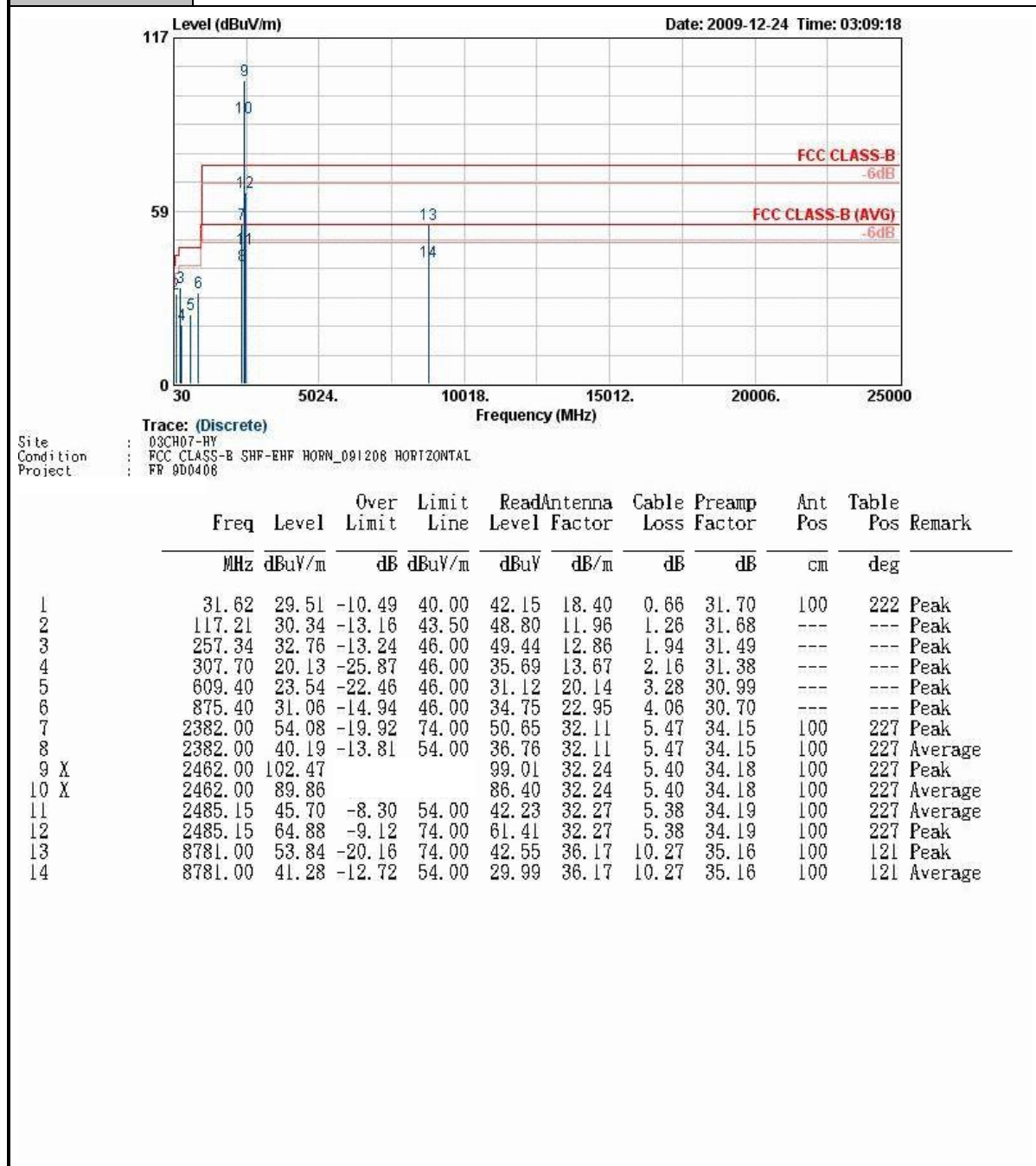
Report No. : FR9D0408A

Test Mode :	Mode 5	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



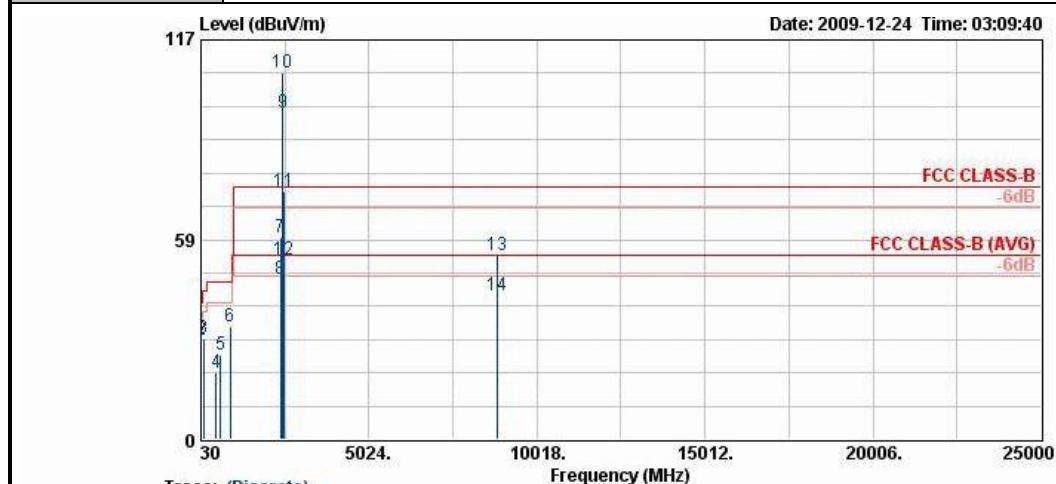


Test Mode :	Mode 6	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 6	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

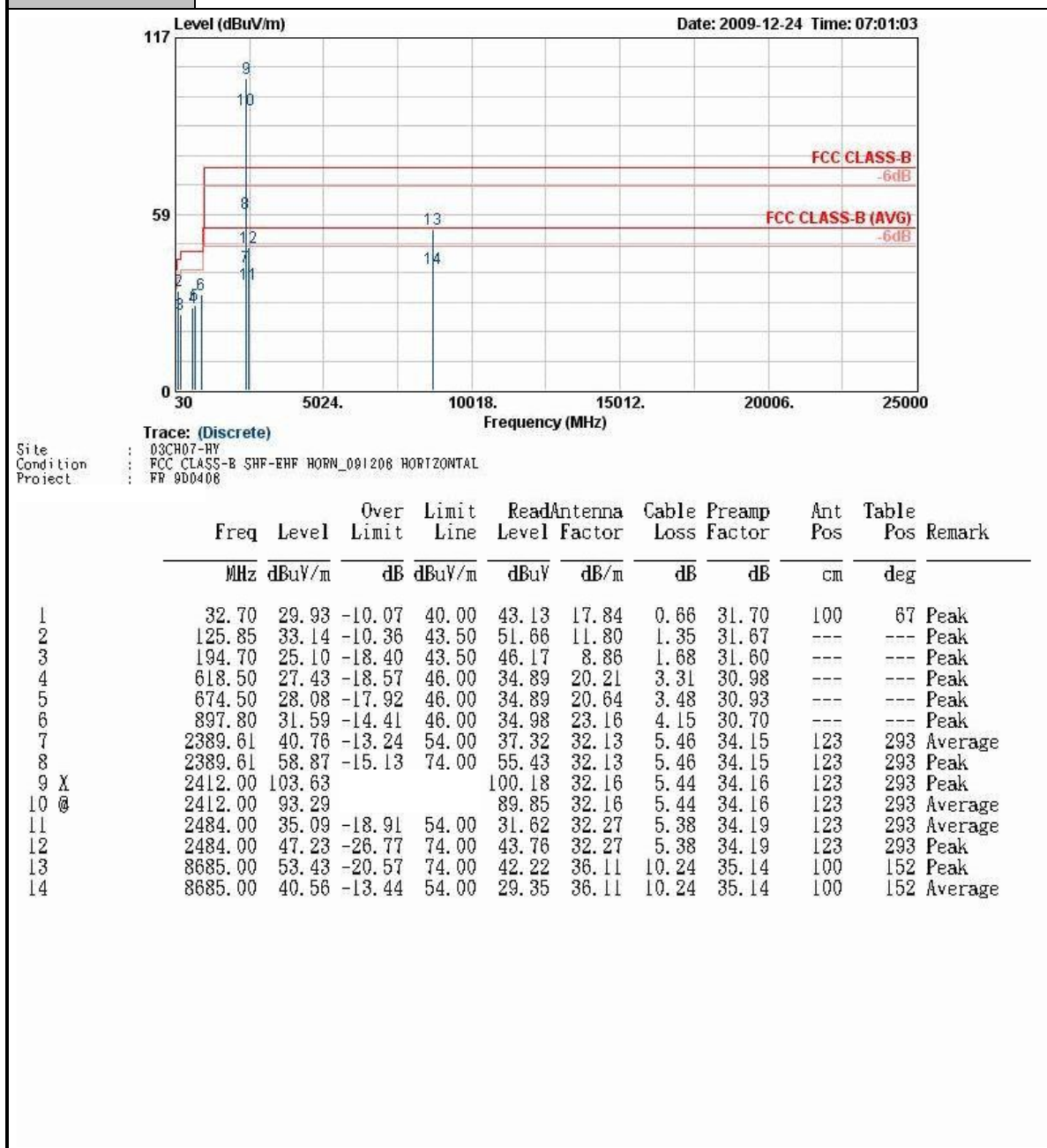


Trace: (Discrete)
Site : D3CH07-RY
Condition : FCC CLASS-B SHF-EHF HORN_001208 VERTICAL
Project : FR 9D0408

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	31.62	36.38	-3.62	40.00	49.03	18.40	0.66	31.70	100	32 Peak
2	44.85	29.21	-10.79	40.00	49.27	10.92	0.72	31.70	---	---
3	117.21	29.53	-13.97	43.50	47.99	11.96	1.26	31.68	---	---
4	481.30	19.54	-26.46	46.00	30.01	17.78	2.87	31.12	---	---
5	624.10	24.94	-21.06	46.00	32.34	20.25	3.33	30.98	---	---
6	903.40	32.90	-13.10	46.00	36.21	23.22	4.17	30.70	---	---
7	2388.00	59.33	-14.67	74.00	55.88	32.13	5.46	34.15	100	337 Peak
8	2388.00	47.12	-6.88	54.00	43.68	32.13	5.46	34.15	100	337 Average
9 @	2462.00	95.75	---	---	92.29	32.24	5.40	34.18	100	337 Average
10 X	2462.00	107.63	---	---	104.16	32.24	5.40	34.18	100	337 Peak
11 !	2483.85	72.71	-1.29	74.00	69.24	32.27	5.38	34.19	100	337 Peak
12 !	2483.85	52.51	-1.49	54.00	49.04	32.27	5.38	34.19	100	337 Average
13	8841.00	54.01	-19.99	74.00	42.69	36.20	10.29	35.17	100	195 Peak
14	8841.00	42.06	-11.94	54.00	30.74	36.20	10.29	35.17	100	195 Average

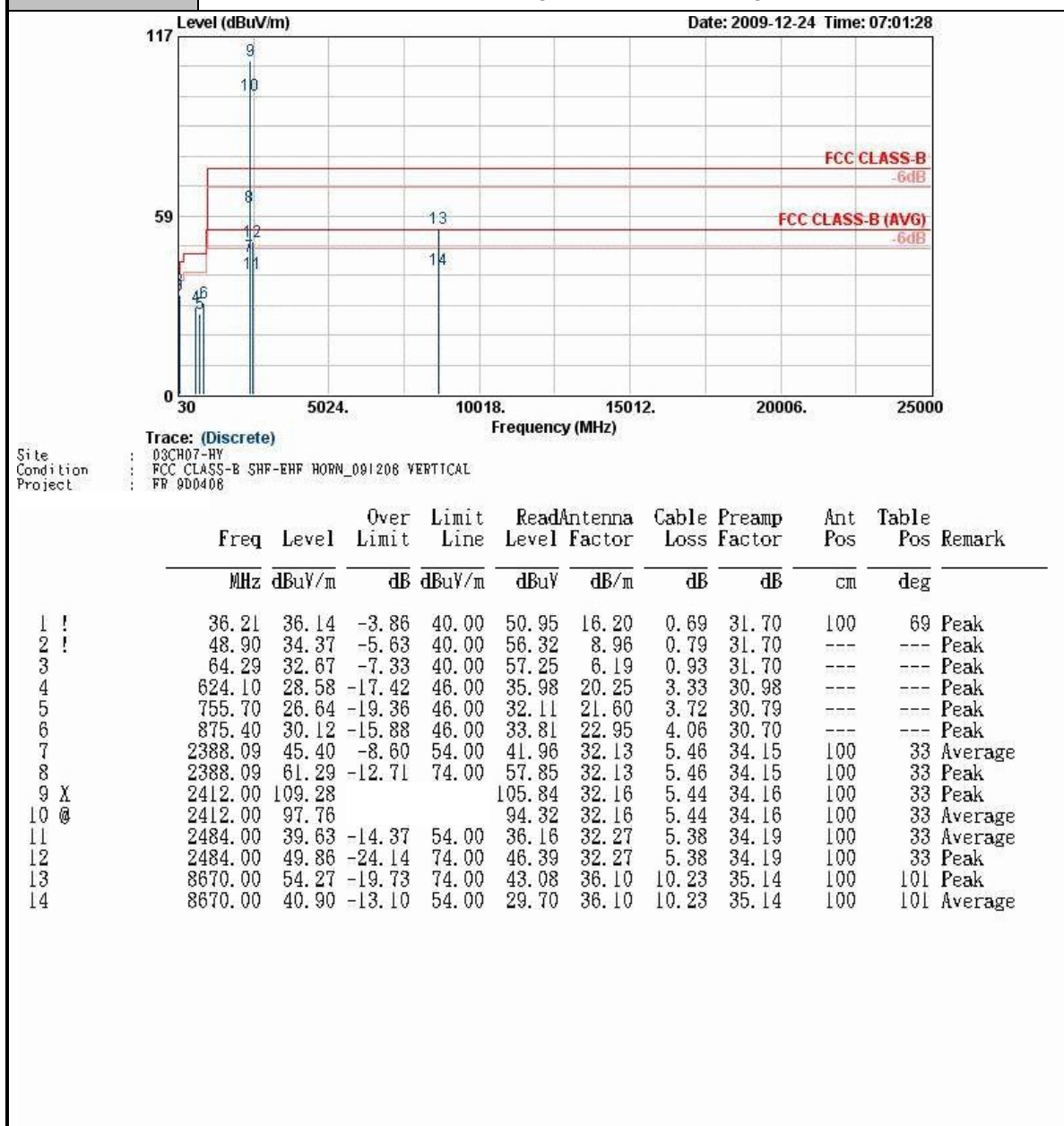


Test Mode :	Mode 7	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



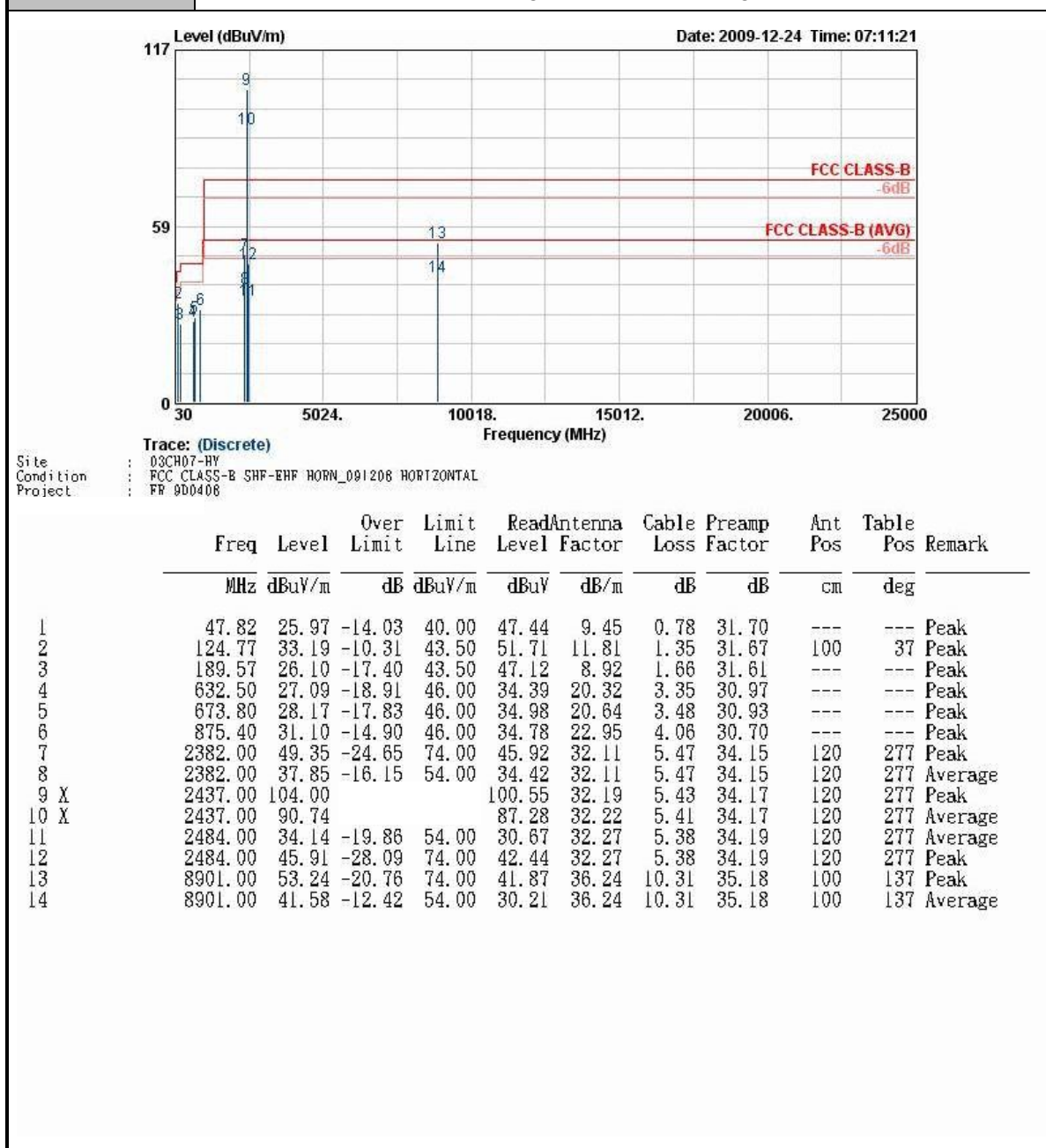


Test Mode :	Mode 7	Temperature :	20~21°C
Test Channel :	01	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



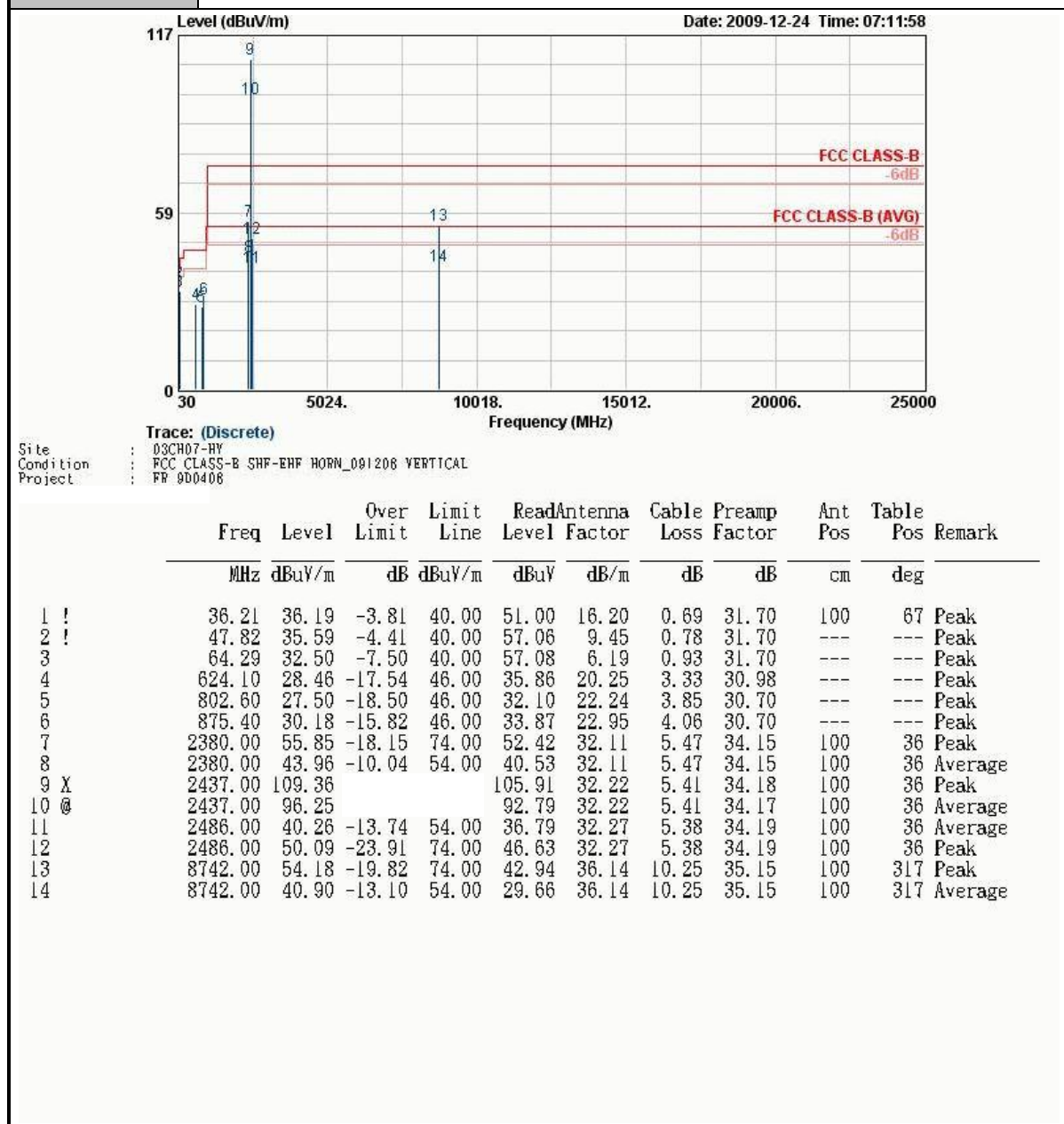


Test Mode :	Mode 8	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

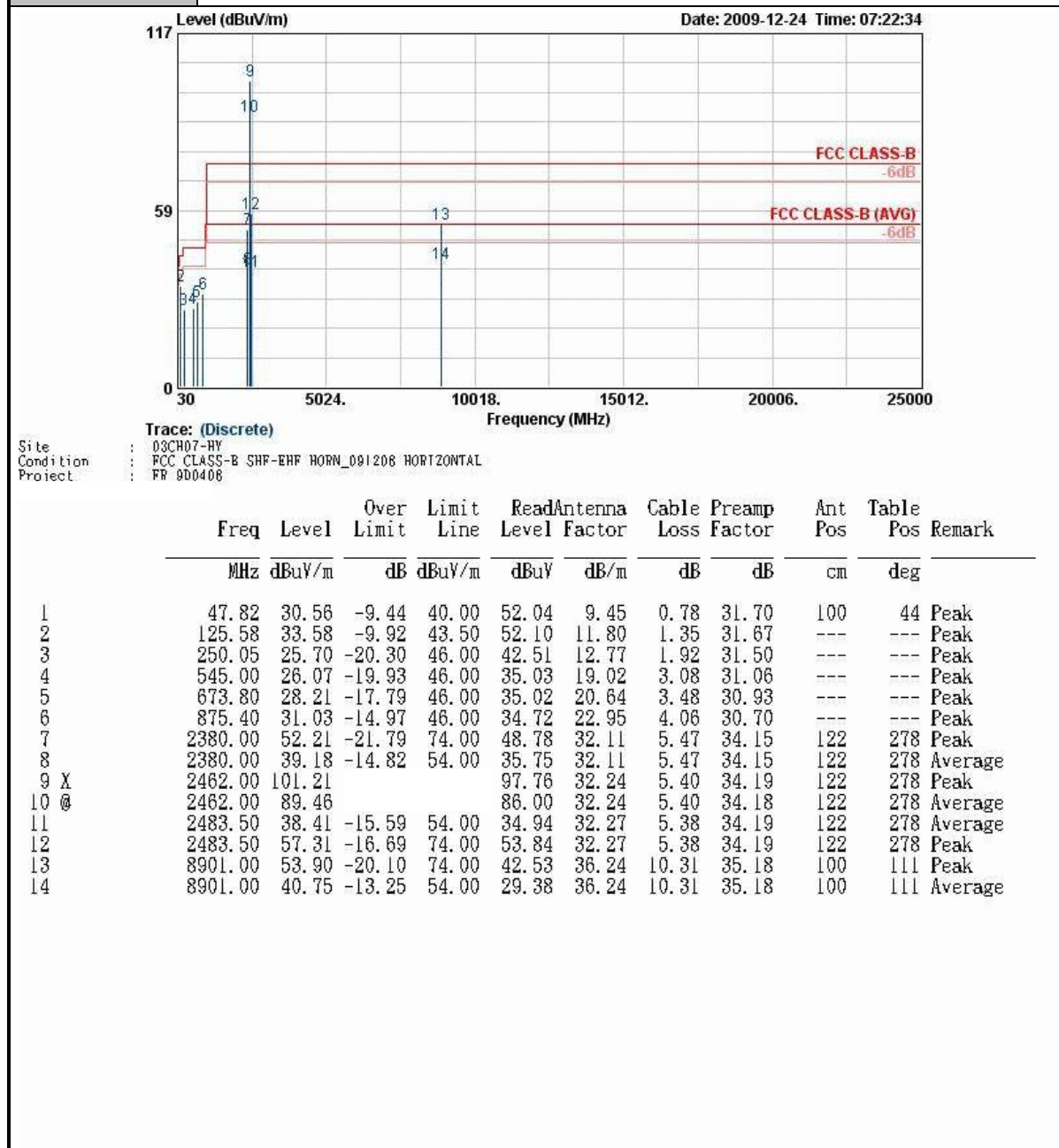




Test Mode :	Mode 8	Temperature :	20~21°C
Test Channel :	06	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

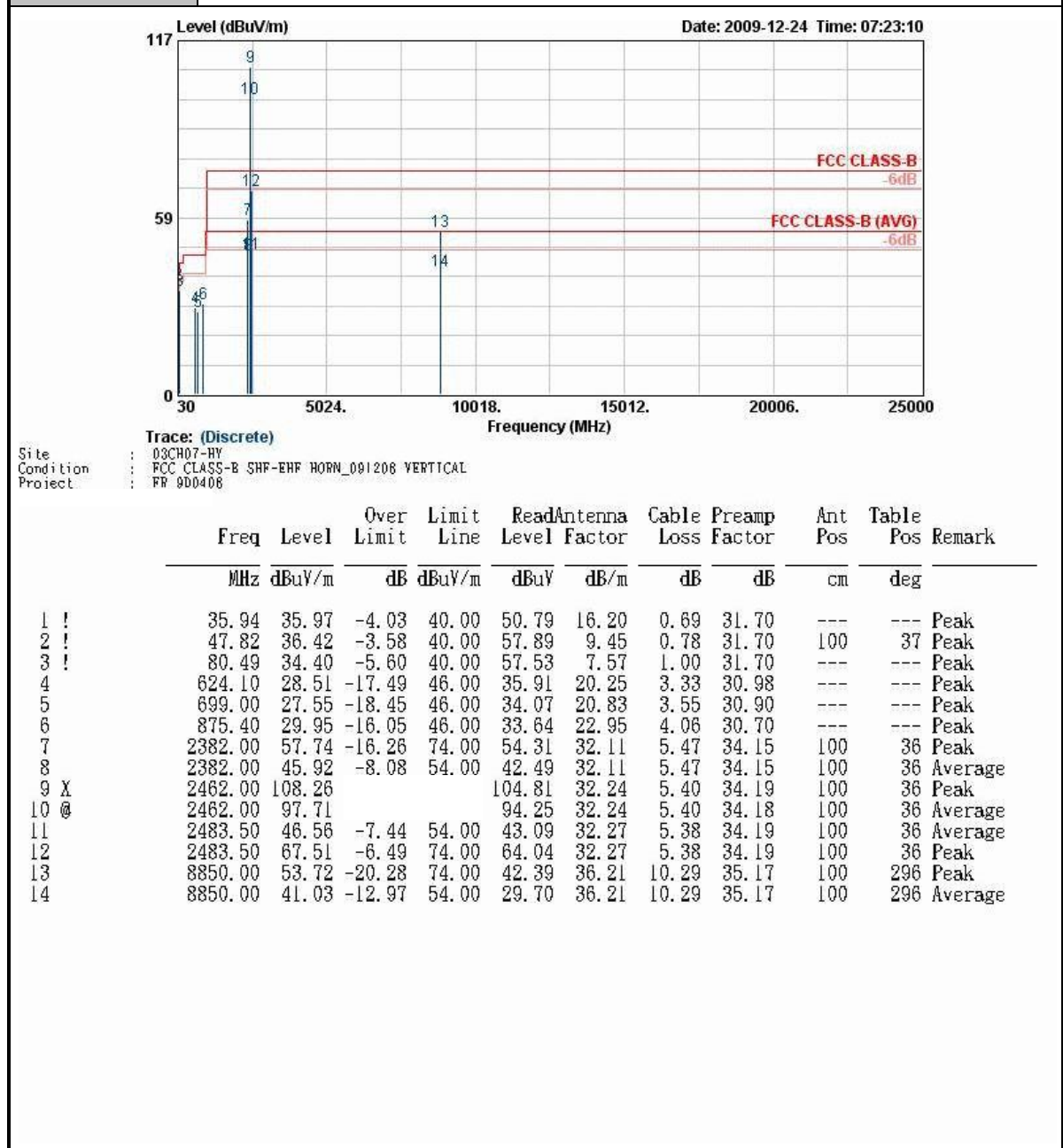


Test Mode :	Mode 9	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

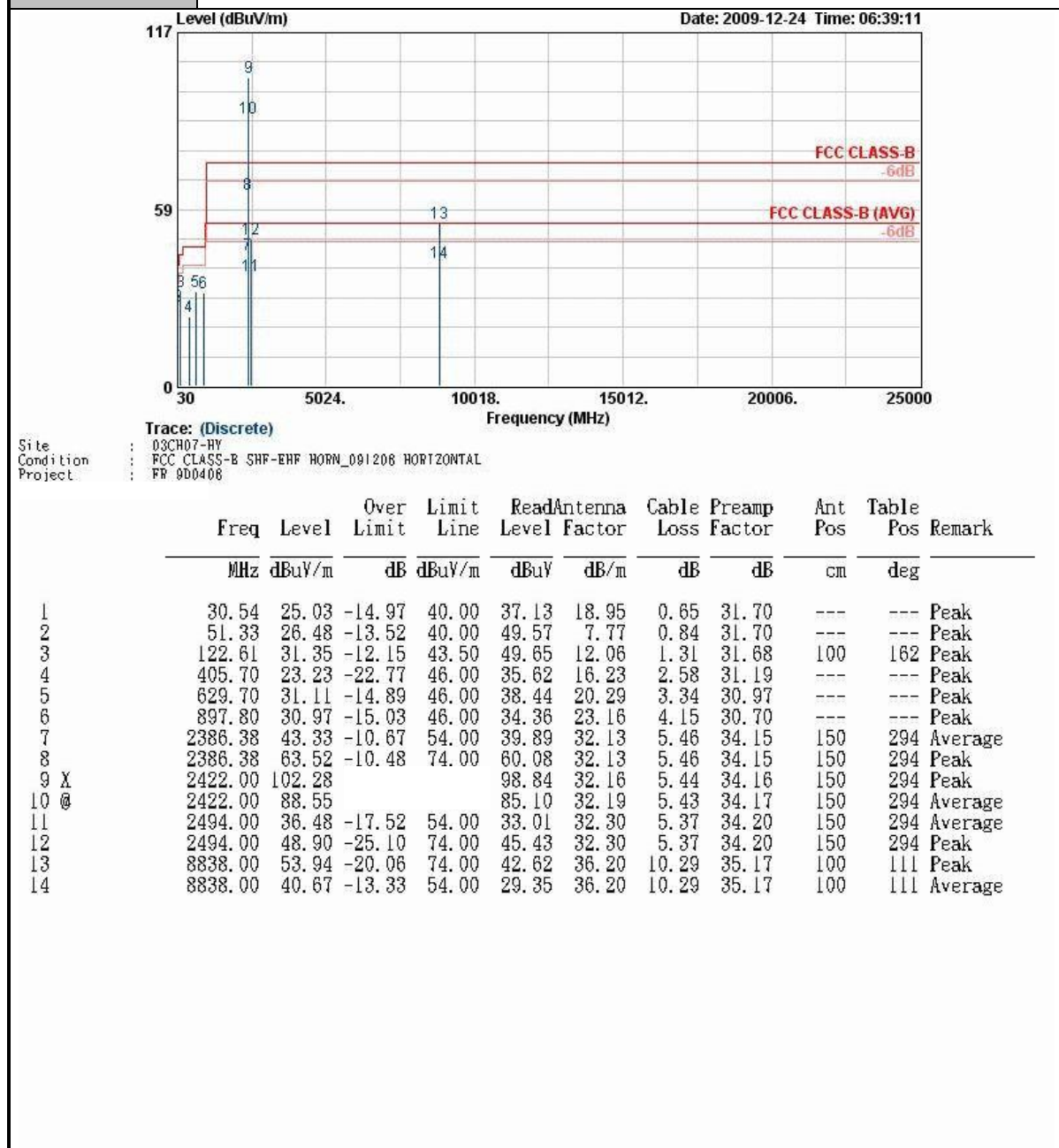




Test Mode :	Mode 9	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

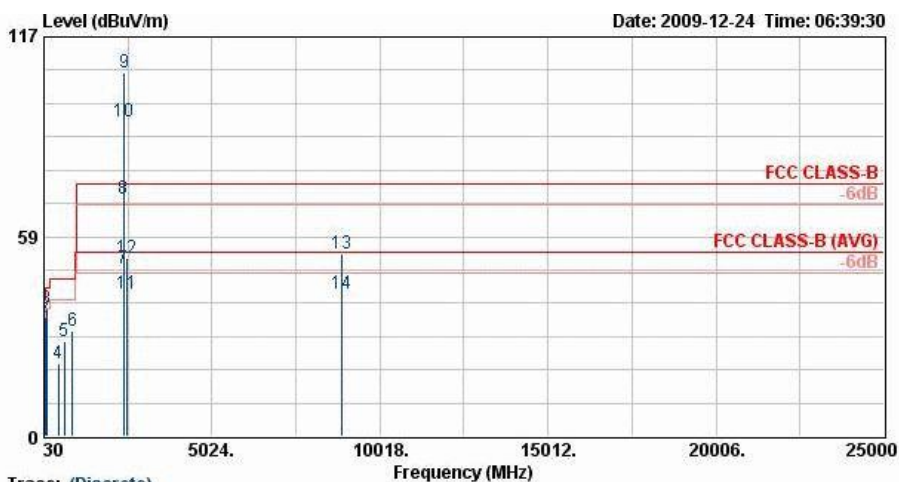


Test Mode :	Mode 10	Temperature :	20~21°C
Test Channel :	03	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





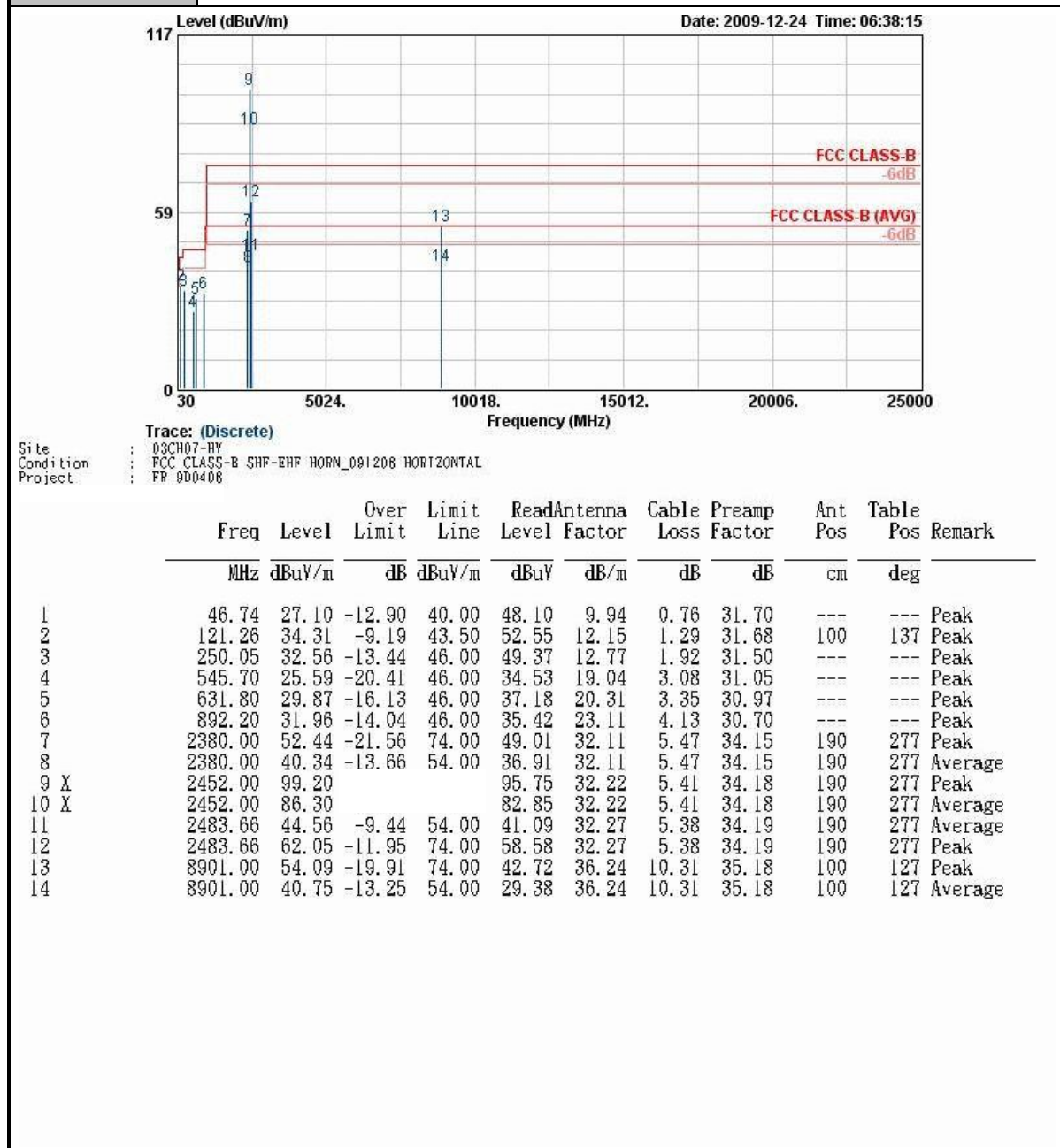
Test Mode :	Mode 10	Temperature :	20~21°C
Test Channel :	03	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	35.94	35.51	-4.49	40.00	50.33	16.20	0.69	31.70	100	67 Peak
2 !	64.29	34.94	-5.06	40.00	59.53	6.19	0.93	31.70	---	---
3	109.65	37.39	-6.11	43.50	56.62	11.24	1.22	31.69	---	---
4	464.50	21.17	-24.83	46.00	32.02	17.44	2.83	31.14	---	---
5	626.90	28.00	-18.00	46.00	35.37	20.27	3.33	30.97	---	---
6	875.40	30.81	-15.19	46.00	34.50	22.95	4.06	30.70	---	---
7 !	2387.33	49.00	-5.00	54.00	45.56	32.13	5.46	34.15	100	26 Average
8 !	2387.33	69.63	-4.37	74.00	66.19	32.13	5.46	34.15	100	26 Peak
9 X	2422.00	106.63			103.18	32.16	5.44	34.16	100	26 Peak
10 @	2422.00	92.42			88.97	32.19	5.43	34.17	100	26 Average
11	2484.00	41.71	-12.29	54.00	38.24	32.27	5.38	34.19	100	26 Average
12	2484.00	52.04	-21.96	74.00	48.57	32.27	5.38	34.19	100	26 Peak
13	8901.00	53.41	-20.59	74.00	42.04	36.24	10.31	35.18	100	223 Peak
14	8901.00	41.91	-12.09	54.00	30.54	36.24	10.31	35.18	100	223 Average

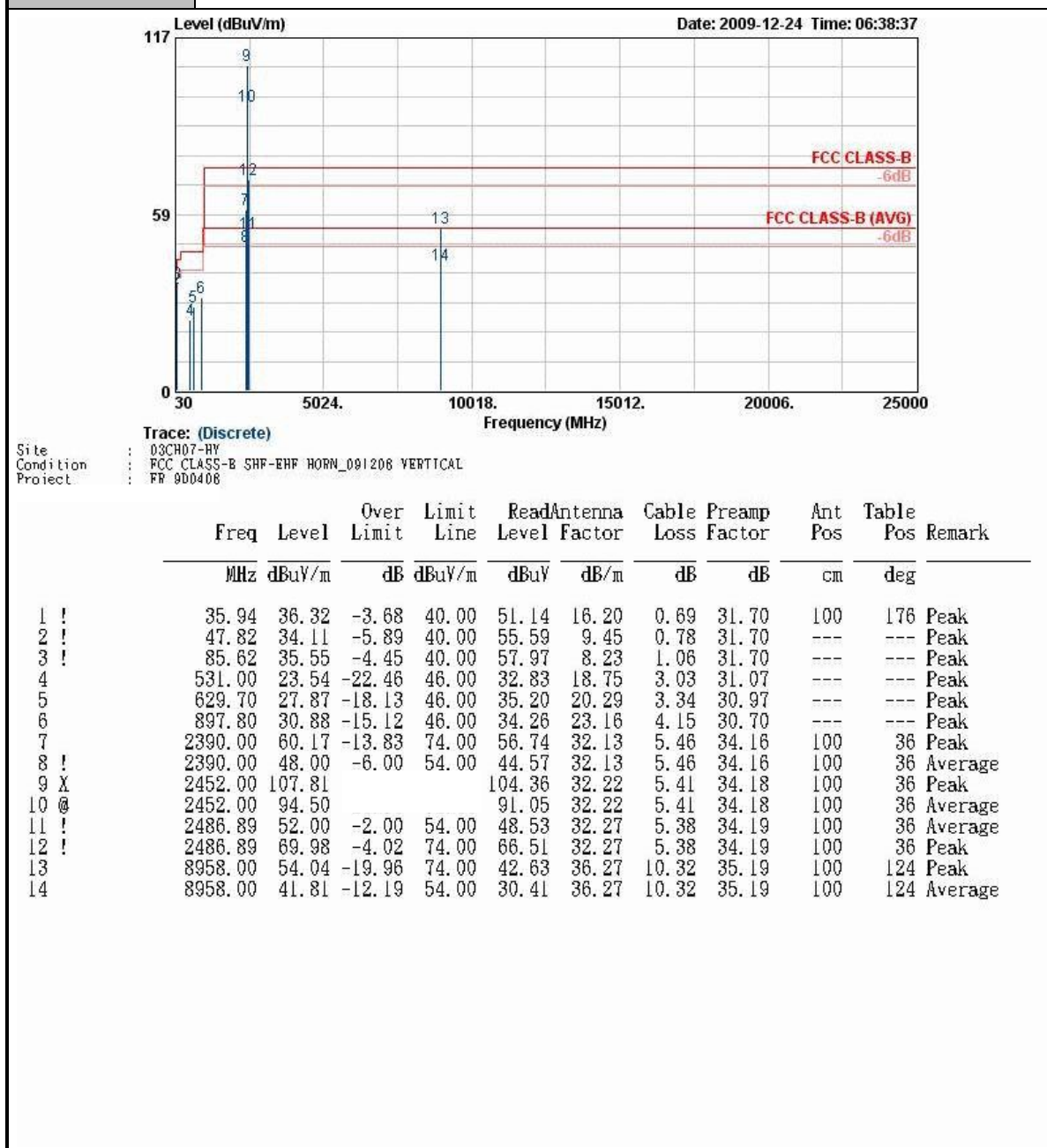


Test Mode :	Mode 11	Temperature :	20~21°C
Test Channel :	09	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



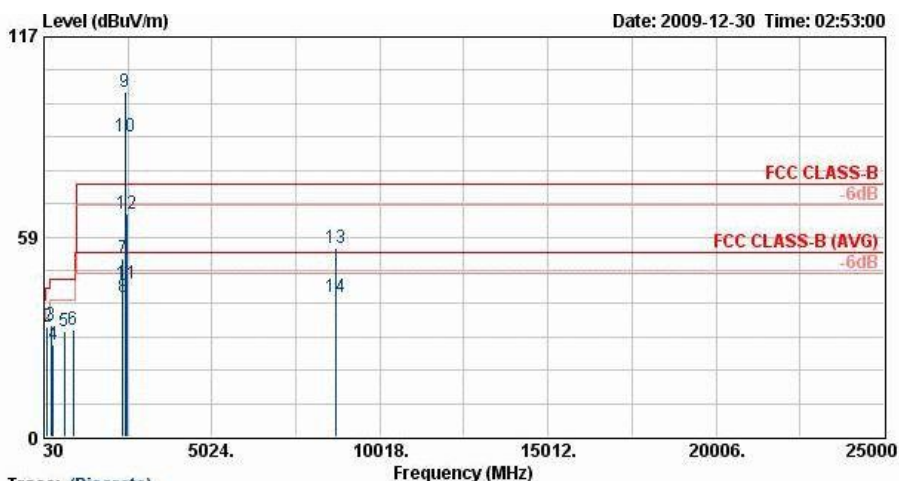


Test Mode :	Mode 11	Temperature :	20~21°C
Test Channel :	09	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		





Test Mode :	Mode 12	Temperature :	20~21°C
Test Channel :	09	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

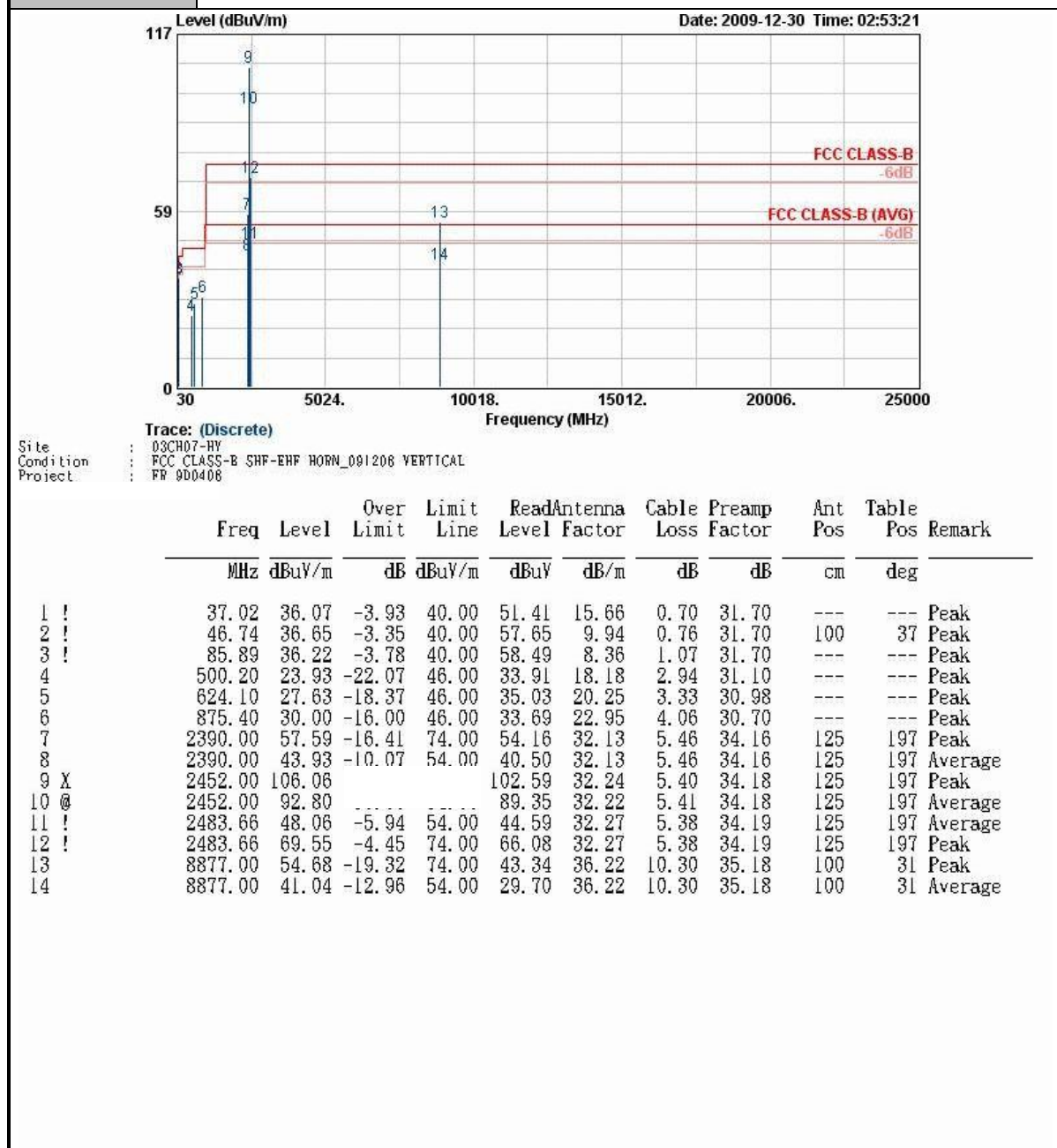


Trace: (Discrete)
Site : 03CH07-RY
Condition : FCC CLASS-B SHF-EHF HORN_091206 HORIZONTAL
Project : FR 9D0408

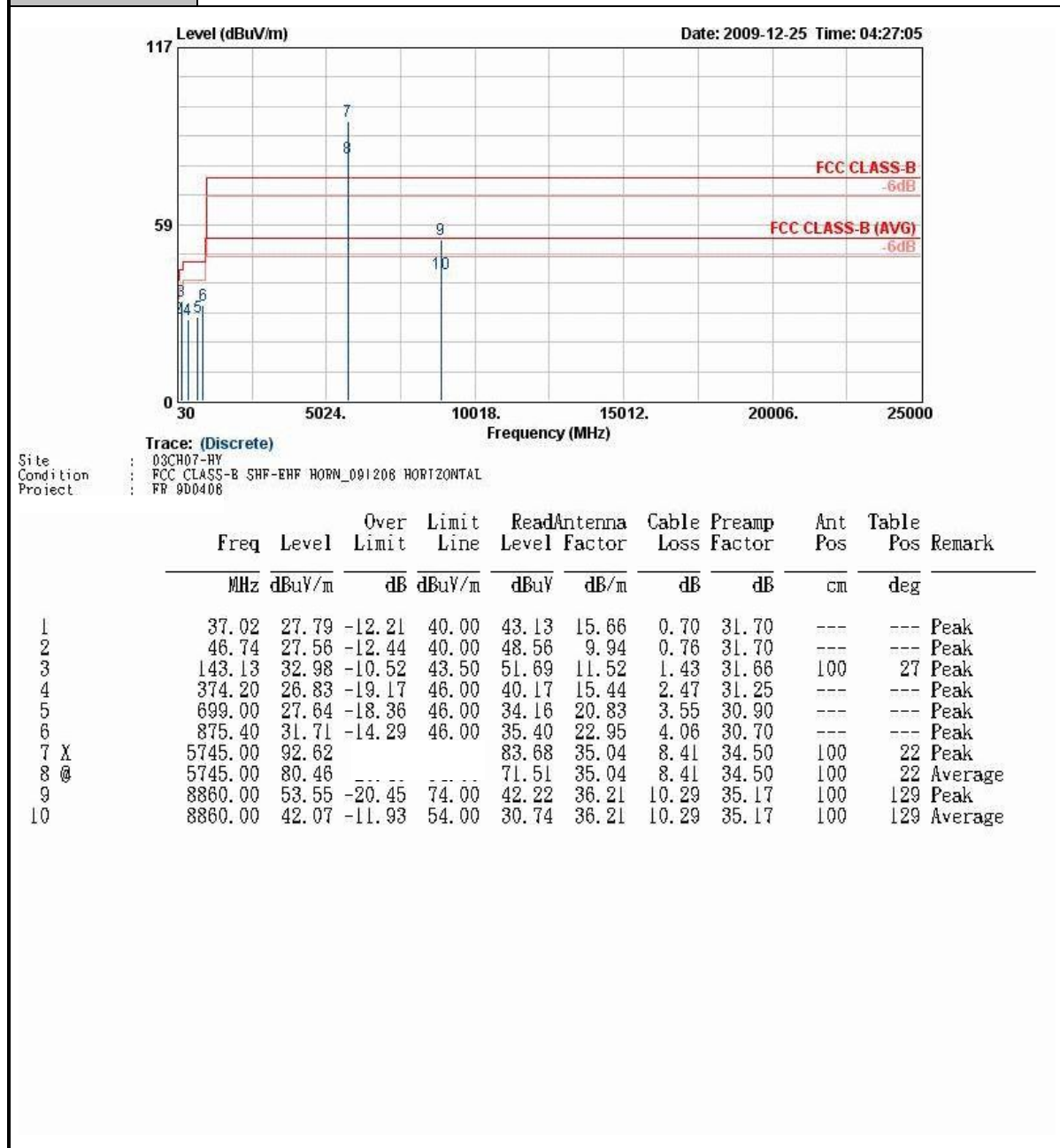
	Freq	Level	Over Limit	Limit Line	ReadAntenna Level Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	51.06	27.22	-12.78	40.00	50.31	7.77	0.84	31.70	---	---	Peak
2	124.77	32.00	-11.50	43.50	50.52	11.81	1.35	31.67	100	137	Peak
3	250.05	32.79	-13.21	46.00	49.60	12.77	1.92	31.50	---	---	Peak
4	300.00	26.96	-19.04	46.00	42.77	13.46	2.13	31.40	---	---	Peak
5	629.70	30.81	-15.19	46.00	38.14	20.29	3.34	30.97	---	---	Peak
6	897.80	31.35	-14.65	46.00	34.74	23.16	4.15	30.70	---	---	Peak
7	2382.00	52.34	-21.66	74.00	48.91	32.11	5.47	34.15	100	122	Peak
8	2382.00	40.68	-13.32	54.00	37.25	32.11	5.47	34.15	100	122	Average
9 X	2452.00	100.84			97.38	32.24	5.40	34.18	100	122	Peak
10 X	2452.00	87.78			84.33	32.22	5.41	34.18	100	122	Average
11	2483.66	44.89	-9.11	54.00	41.42	32.27	5.38	34.19	100	122	Average
12	2483.66	65.41	-8.59	74.00	61.94	32.27	5.38	34.19	100	122	Peak
13	8694.00	55.22	-18.78	74.00	43.99	36.12	10.24	35.14	100	127	Peak
14	8694.00	40.72	-13.28	54.00	29.50	36.12	10.24	35.14	100	127	Average



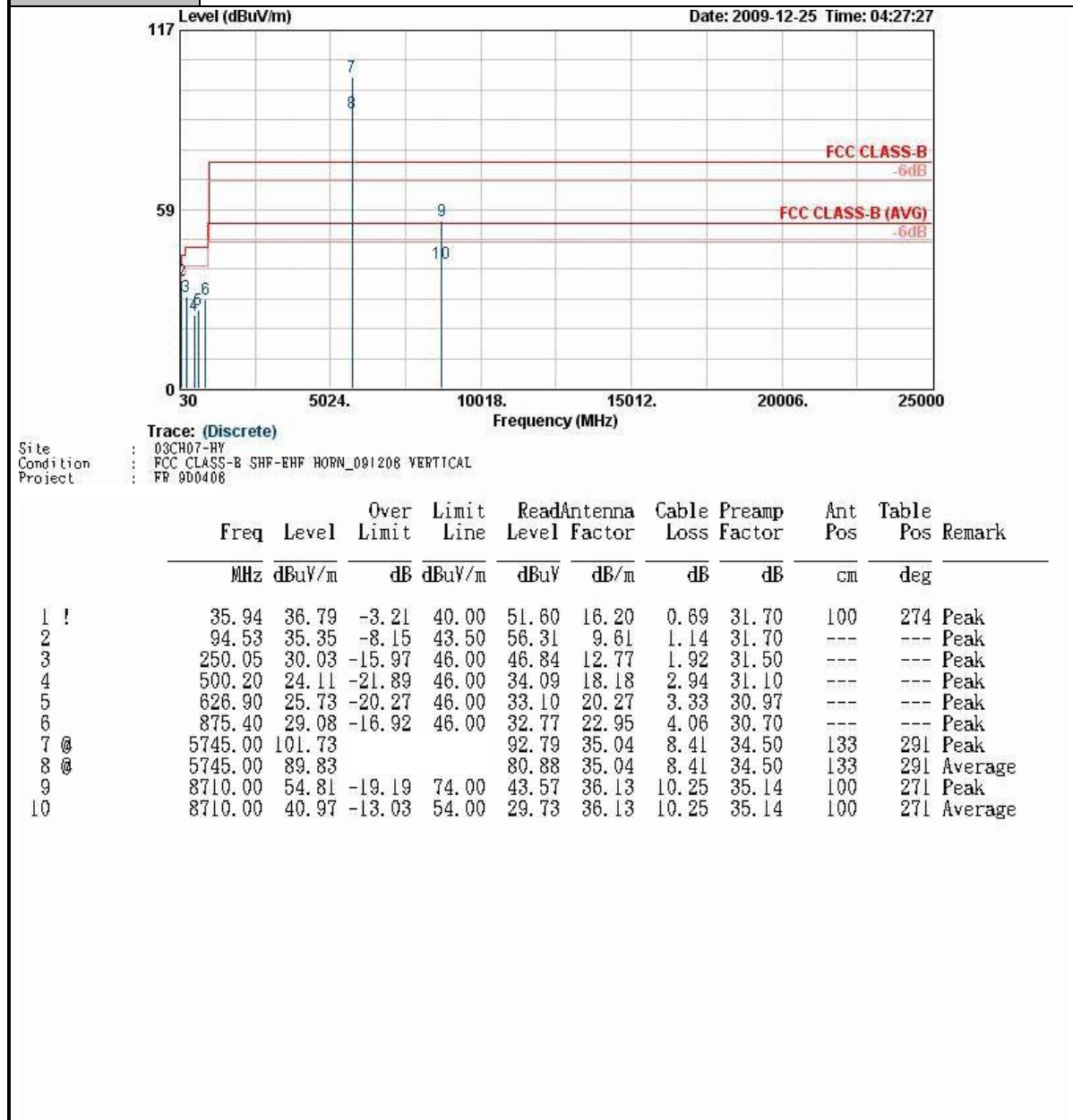
Test Mode :	Mode 12	Temperature :	20~21°C
Test Channel :	09	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 13	Temperature :	20~21°C
Test Channel :	149	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 13	Temperature :	20~21°C
Test Channel :	149	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

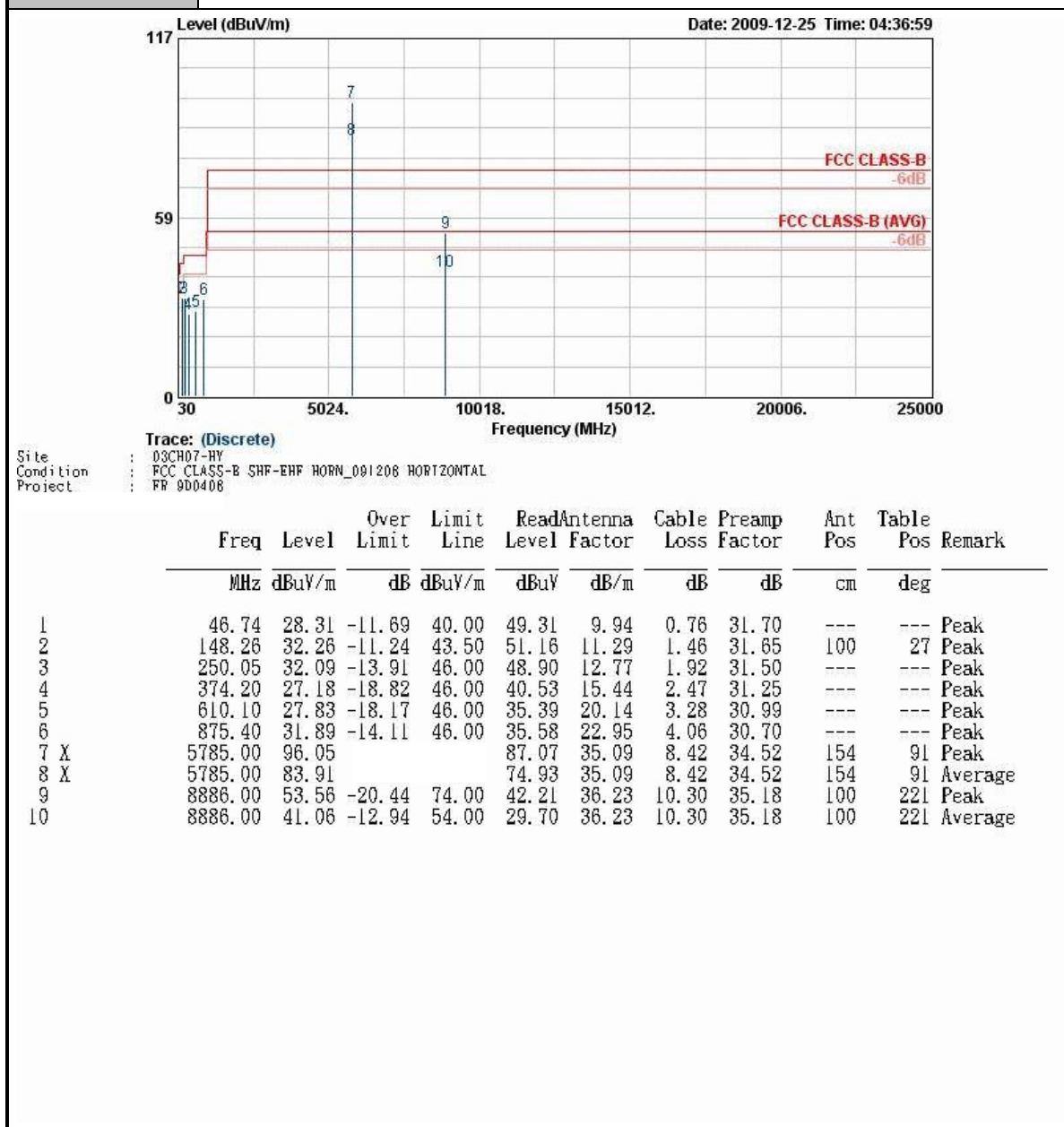




FCC RF Test Report

Report No. : FR9D0408A

Test Mode :	Mode 14	Temperature :	20~21°C
Test Channel :	157	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

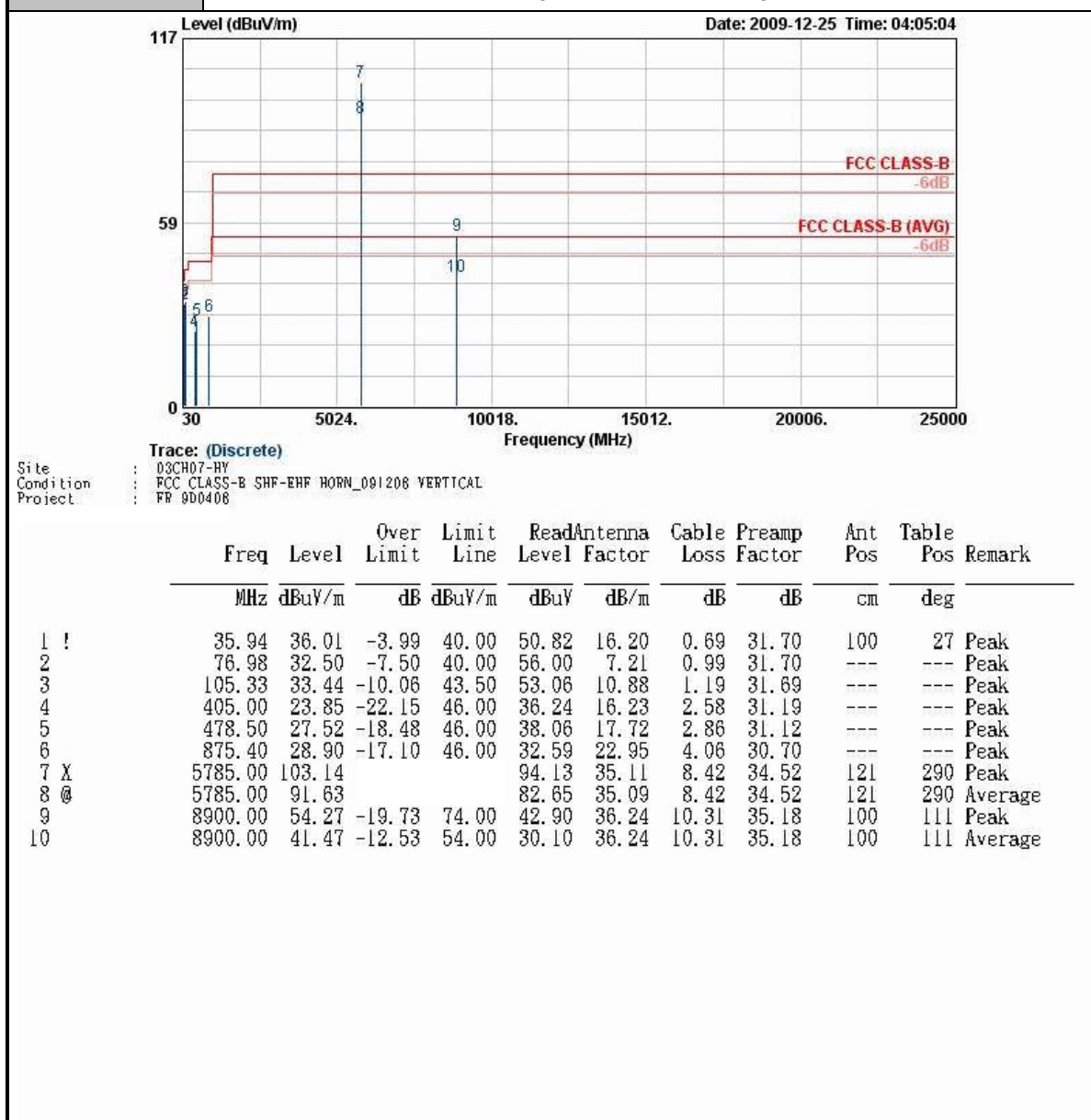




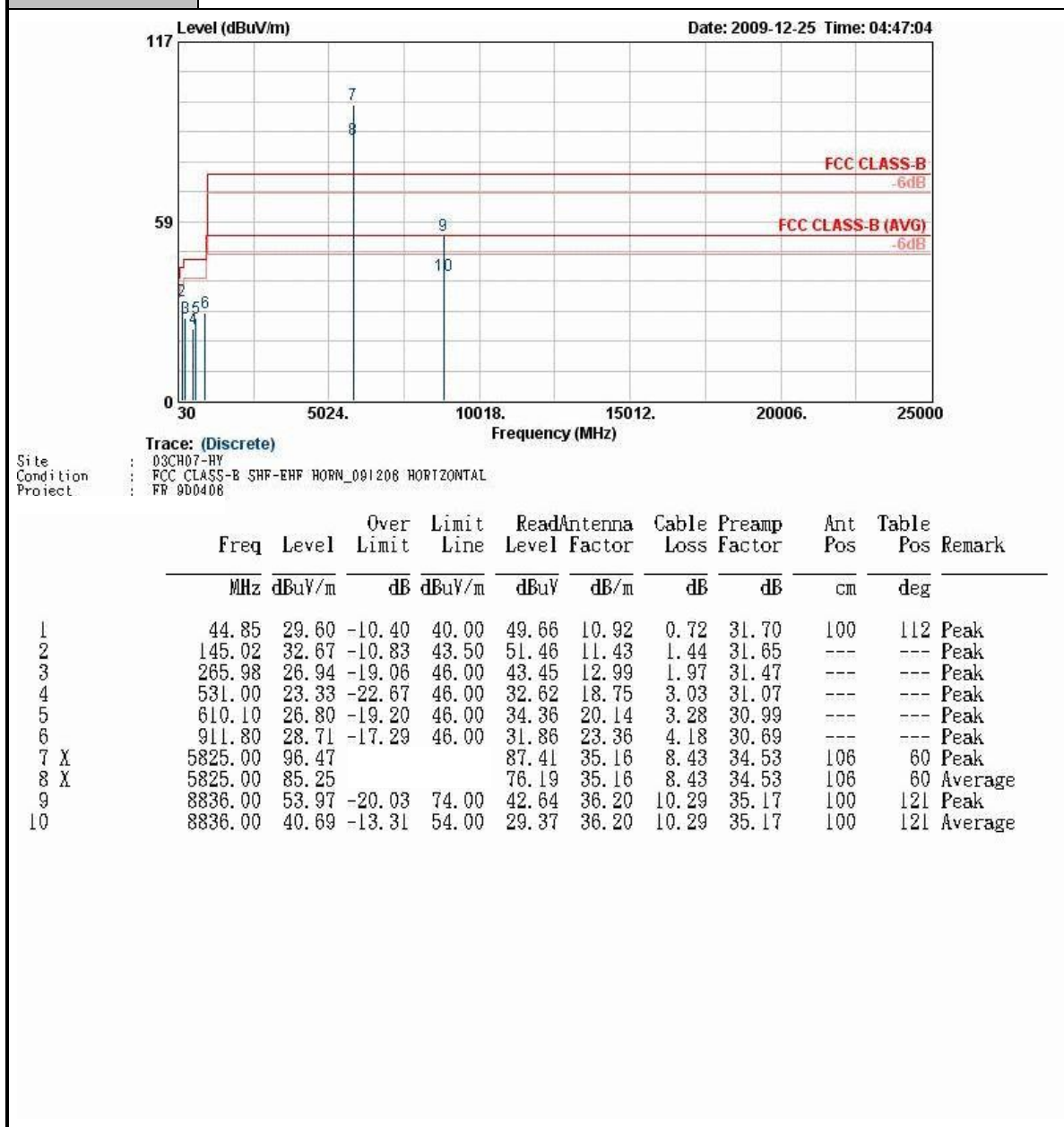
FCC RF Test Report

Report No. : FR9D0408A

Test Mode :	Mode 14	Temperature :	20~21°C
Test Channel :	157	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 15	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

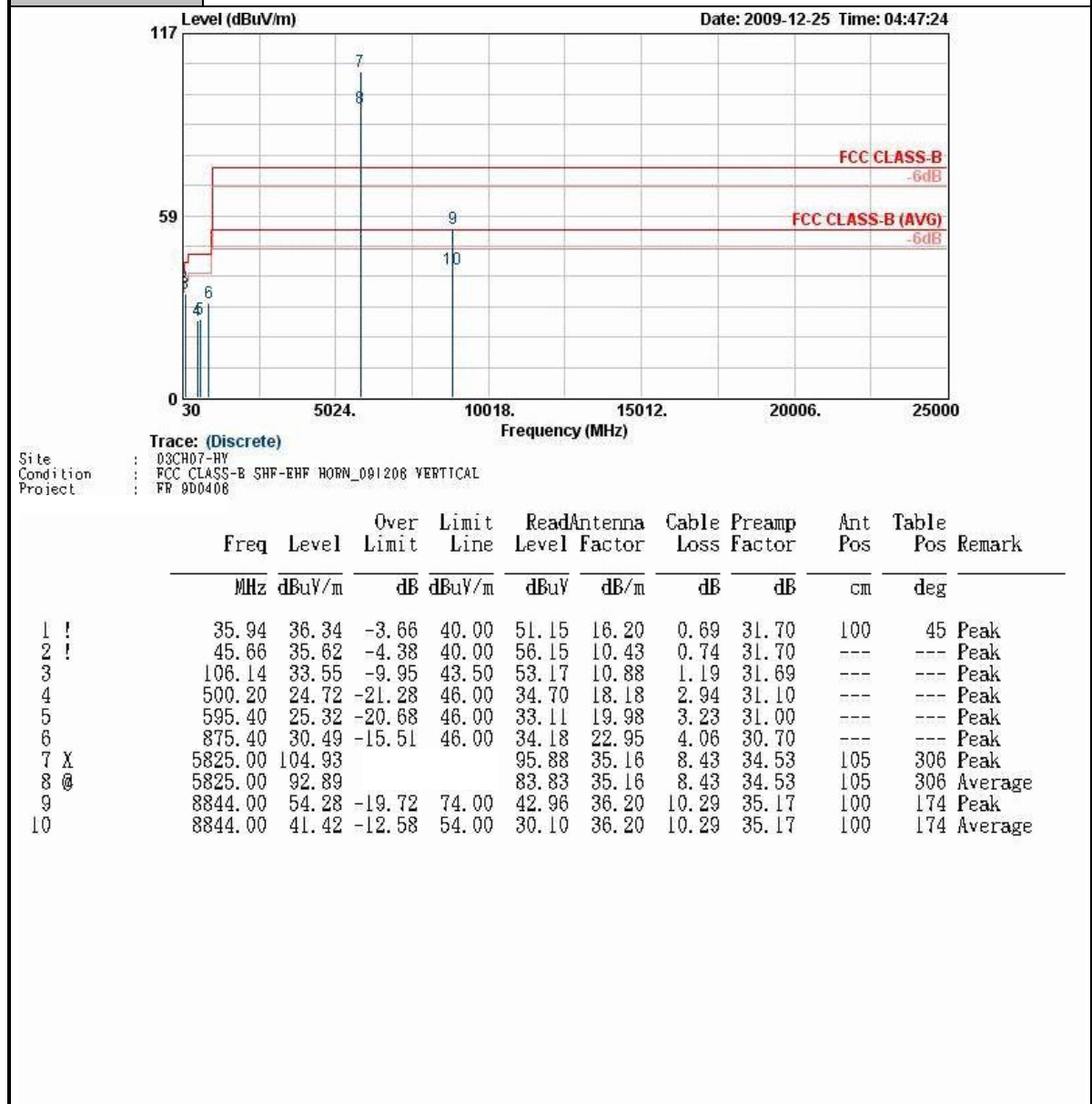




FCC RF Test Report

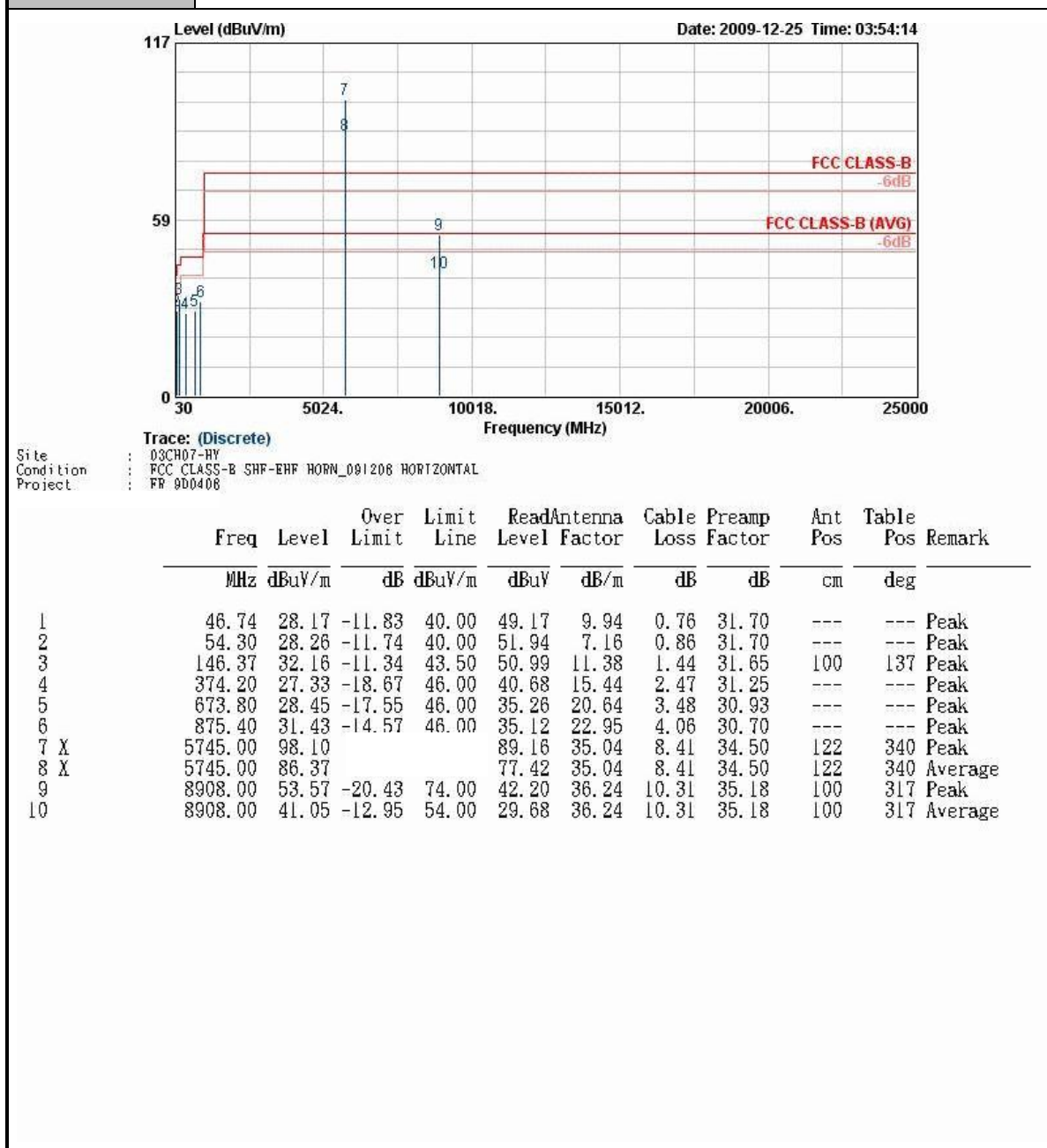
Report No. : FR9D0408A

Test Mode :	Mode 15	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

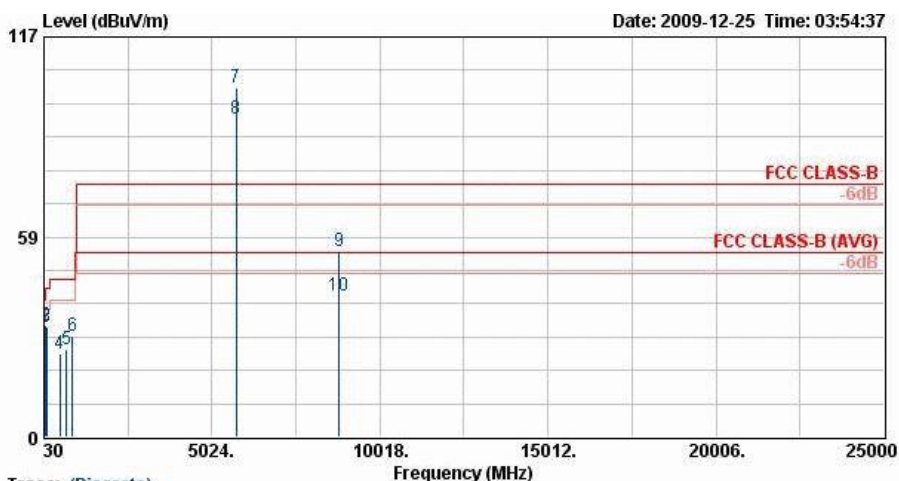




Test Mode :	Mode 16	Temperature :	20~21°C
Test Channel :	149	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 16	Temperature :	20~21°C
Test Channel :	149	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

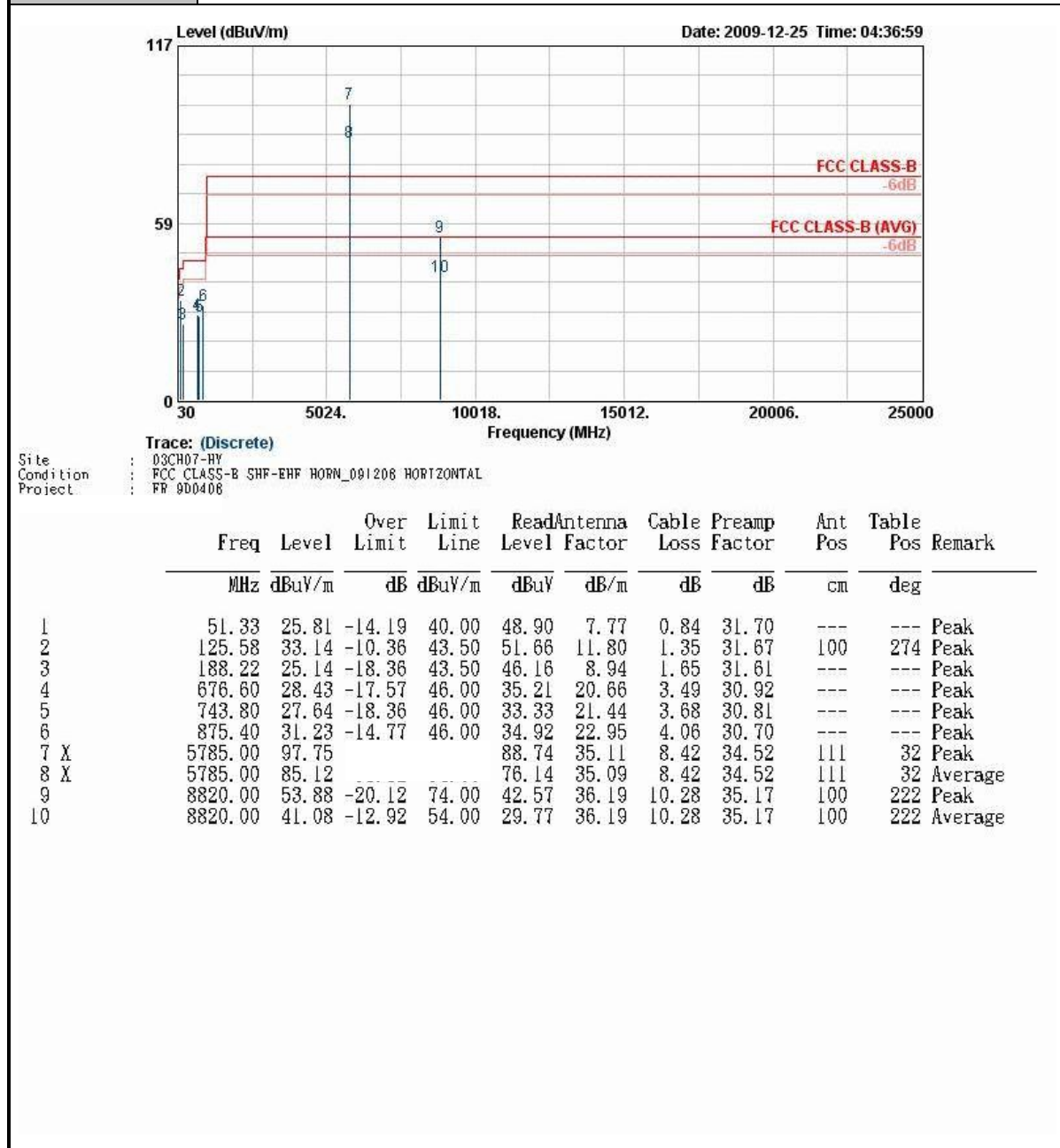


Trace: (Discrete)

Site : D3CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_001206 VERTICAL
Project : FR 9D0408

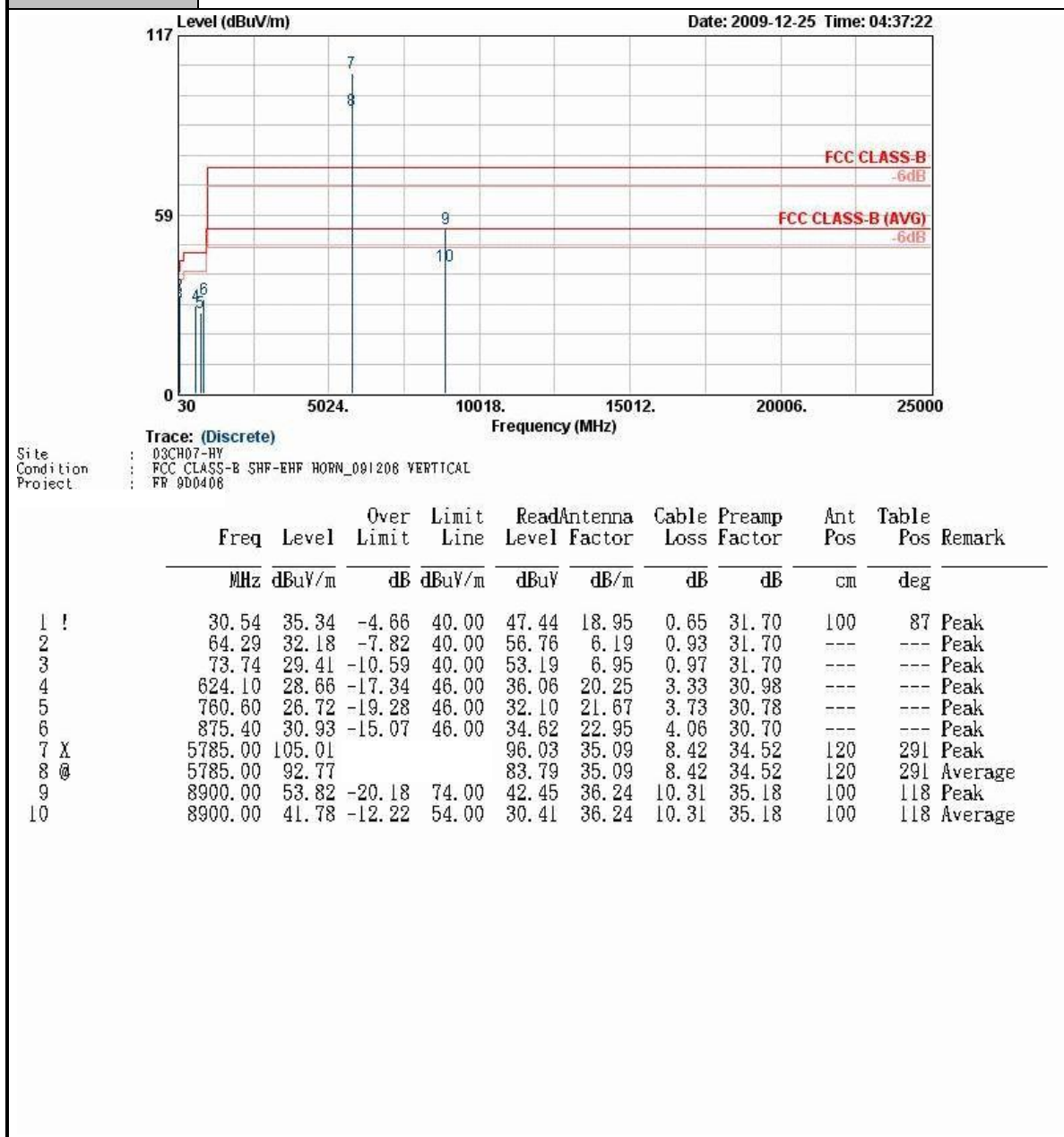
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	35.94	36.69	-3.31	40.00	51.51	16.20	0.69	31.70	100	197 Peak
2	76.98	32.63	-7.37	40.00	56.13	7.21	0.99	31.70	---	---
3	101.01	32.07	-11.43	43.50	52.17	10.43	1.17	31.70	---	---
4	500.20	24.47	-21.53	46.00	34.45	18.18	2.94	31.10	---	---
5	699.00	25.83	-20.17	46.00	32.36	20.83	3.55	30.90	---	---
6	875.40	29.36	-16.64	46.00	33.05	22.95	4.06	30.70	---	---
7 X	5745.00	102.32			93.37	35.04	8.41	34.50	107	292 Peak
8 @	5745.00	93.06			84.11	35.04	8.41	34.50	107	292 Average
9	8804.00	54.19	-19.81	74.00	42.90	36.18	10.28	35.16	100	107 Peak
10	8804.00	41.44	-12.56	54.00	30.14	36.18	10.28	35.16	100	107 Average

Test Mode :	Mode 17	Temperature :	20~21°C
Test Channel :	157	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

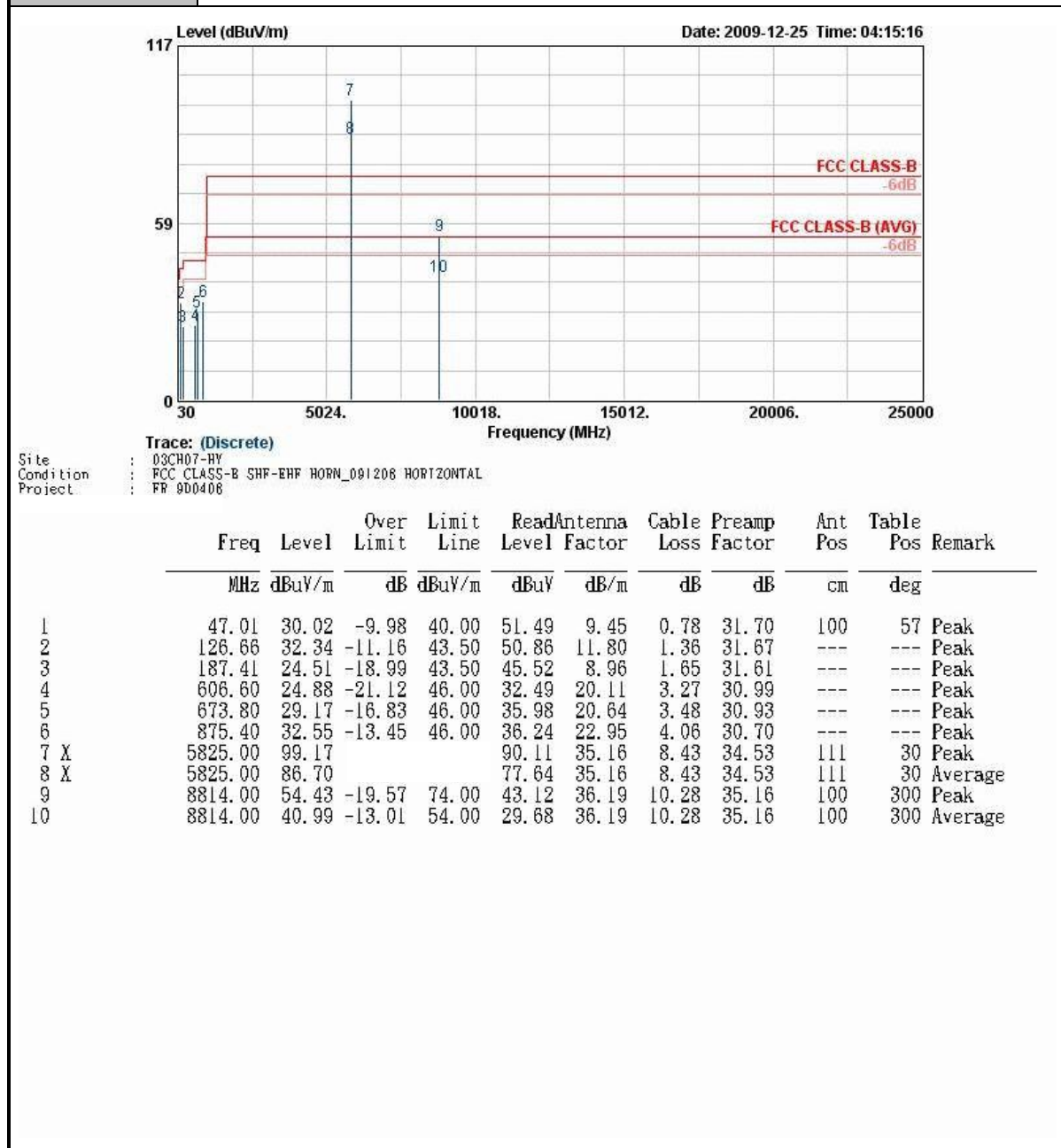




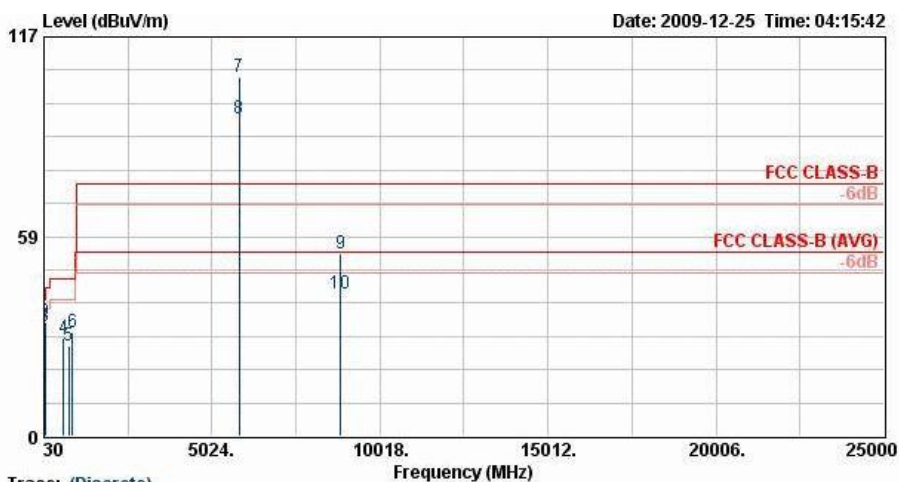
Test Mode :	Mode 17	Temperature :	20~21°C
Test Channel :	157	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 18	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 18	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

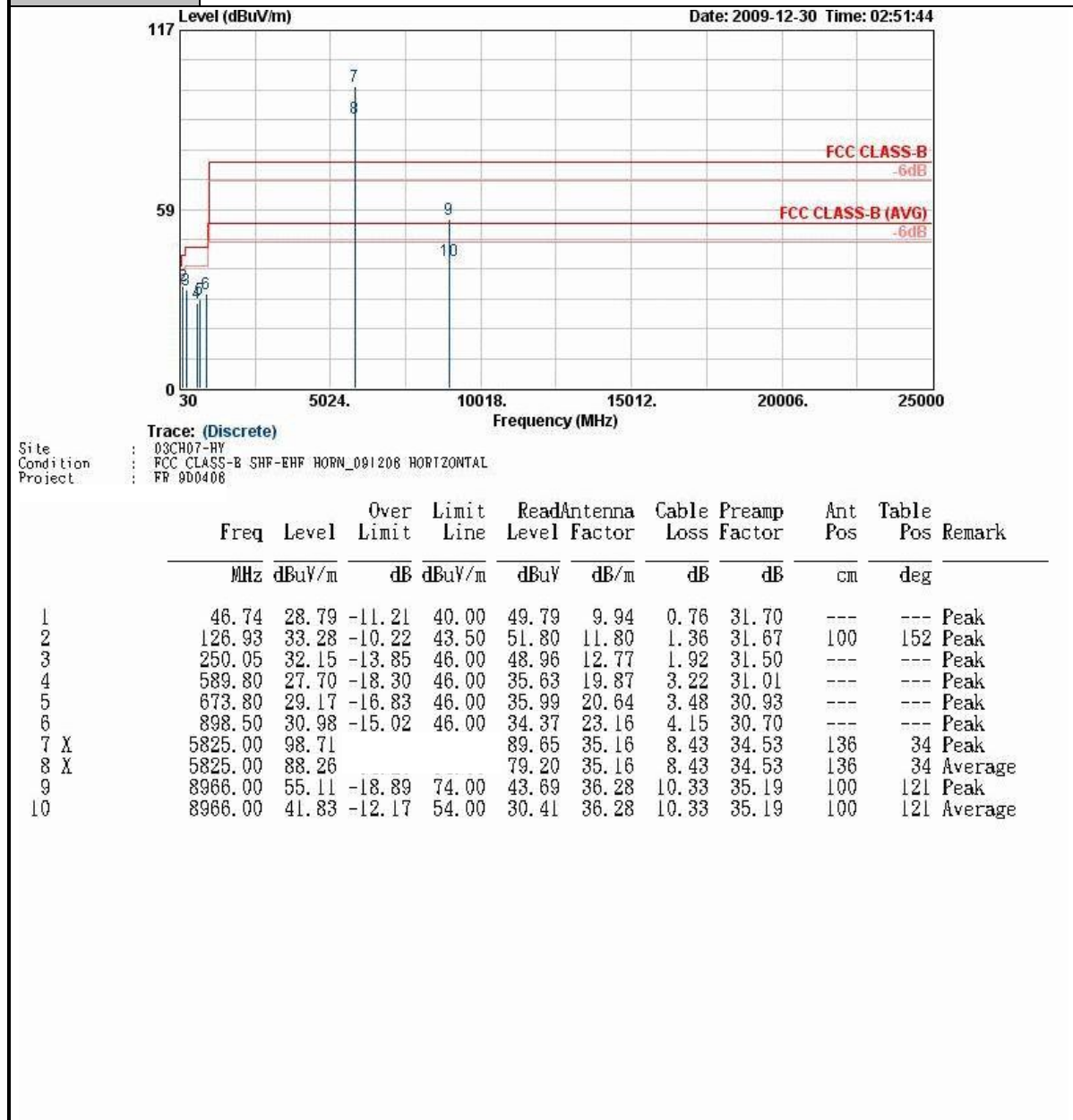


Trace: (Discrete)

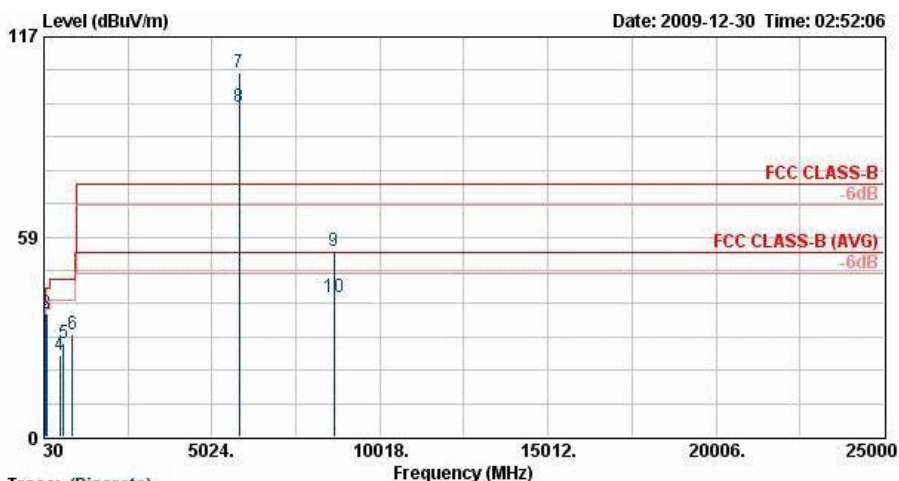
Site : D3CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_081208 VERTICAL
Project : FR 9D0408

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1 !	36.21	35.73	-4.27	40.00	50.54	16.20	0.69	31.70	100	276 Peak
2	53.49	33.39	-6.61	40.00	56.88	7.36	0.85	31.70	---	---
3	64.29	32.39	-7.61	40.00	56.97	6.19	0.93	31.70	---	---
4	624.10	28.56	-17.44	46.00	35.97	20.25	3.33	30.98	---	---
5	761.30	26.52	-19.48	46.00	31.87	21.68	3.73	30.78	---	---
6	875.40	30.35	-15.65	46.00	34.04	22.95	4.06	30.70	---	---
7 X	5825.00	105.12			96.06	35.16	8.43	34.53	118	299 Peak
8 @	5825.00	93.07			84.01	35.16	8.43	34.53	118	299 Average
9	8852.00	53.56	-20.44	74.00	42.23	36.21	10.29	35.17	100	247 Peak
10	8852.00	41.80	-12.20	54.00	30.47	36.21	10.29	35.17	100	247 Average

Test Mode :	Mode 19	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 19	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

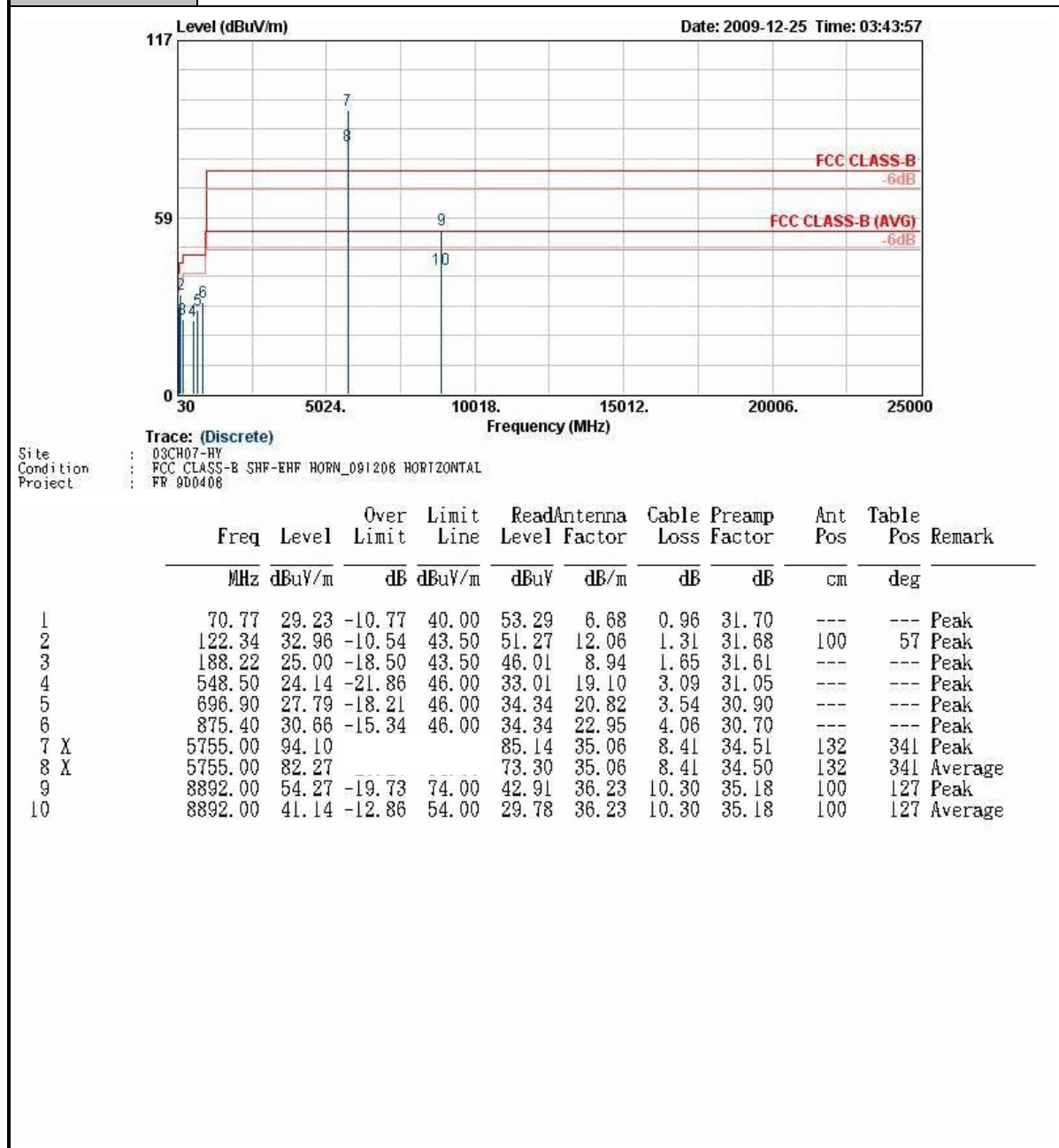


Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091206 VERTICAL
Project : FR 9D0408

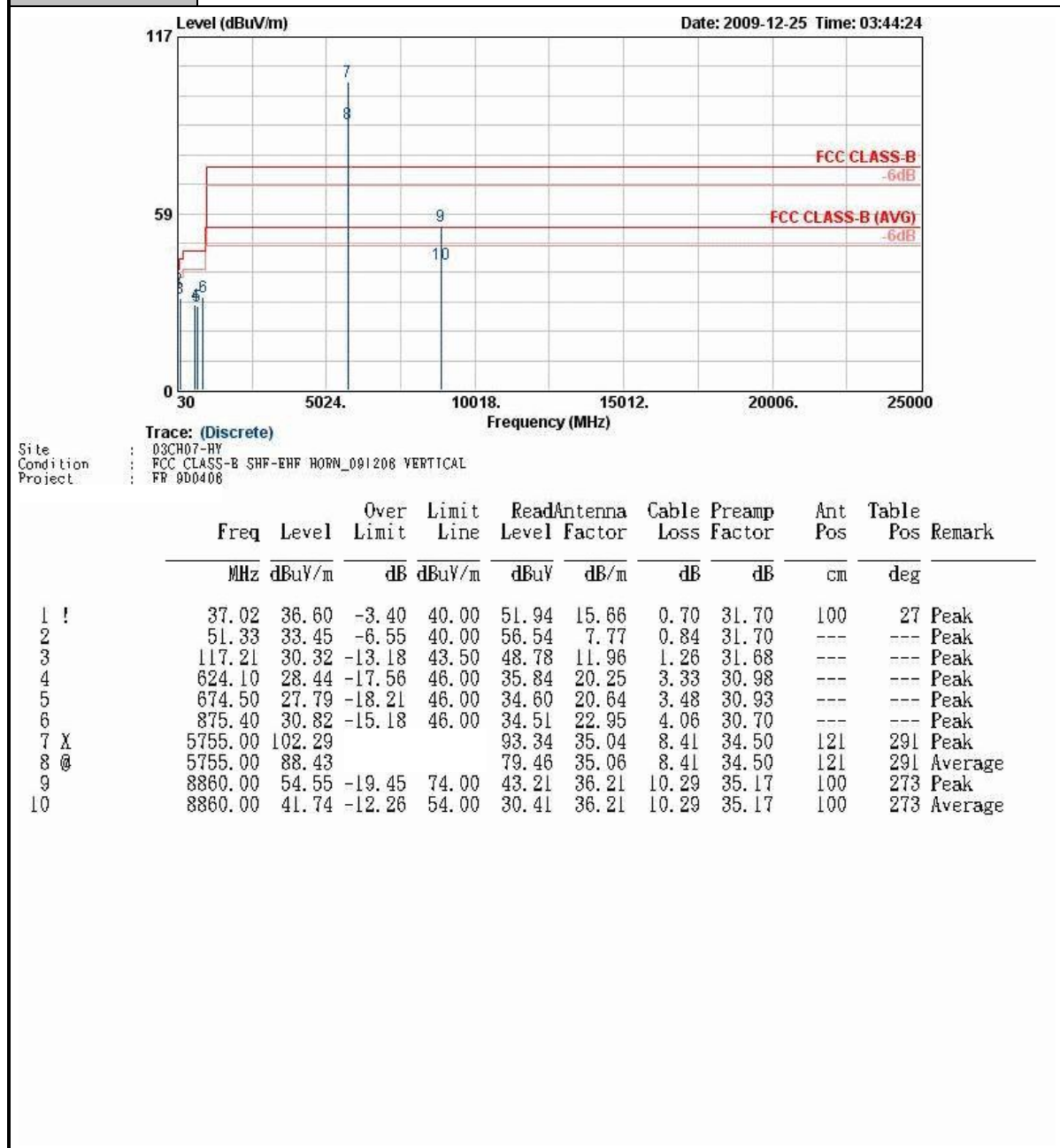
	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 !	47.82	36.88	-3.12	40.00	58.36	9.45	0.78	31.70	100	27	Peak
2 !	85.62	36.21	-3.79	40.00	58.63	8.23	1.06	31.70	---	---	Peak
3	102.09	36.17	-7.33	43.50	56.17	10.52	1.17	31.70	---	---	Peak
4	512.10	23.95	-22.05	46.00	33.66	18.40	2.98	31.09	---	---	Peak
5	624.10	27.38	-18.62	46.00	34.78	20.25	3.33	30.98	---	---	Peak
6	878.90	30.22	-15.78	46.00	33.87	22.97	4.08	30.70	---	---	Peak
7 X	5825.00	106.40			97.34	35.16	8.43	34.53	114	328	Peak
8 @	5825.00	96.68			87.62	35.16	8.43	34.53	114	328	Average
9	8652.00	54.35	-19.65	74.00	43.17	36.09	10.23	35.13	100	27	Peak
10	8652.00	40.89	-13.11	54.00	29.70	36.09	10.23	35.13	100	27	Average

Test Mode :	Mode 20	Temperature :	20~21°C
Test Channel :	151	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		

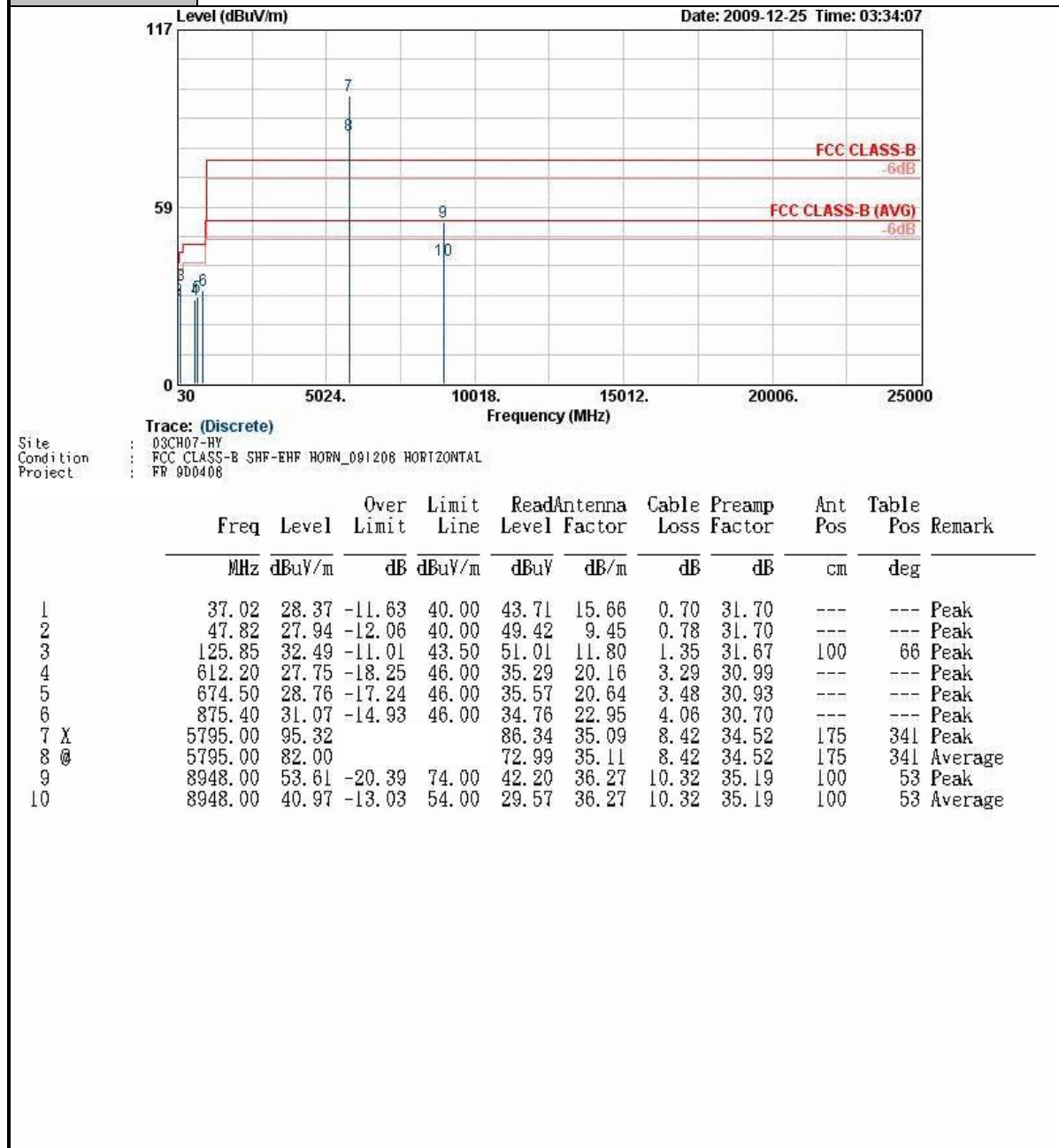




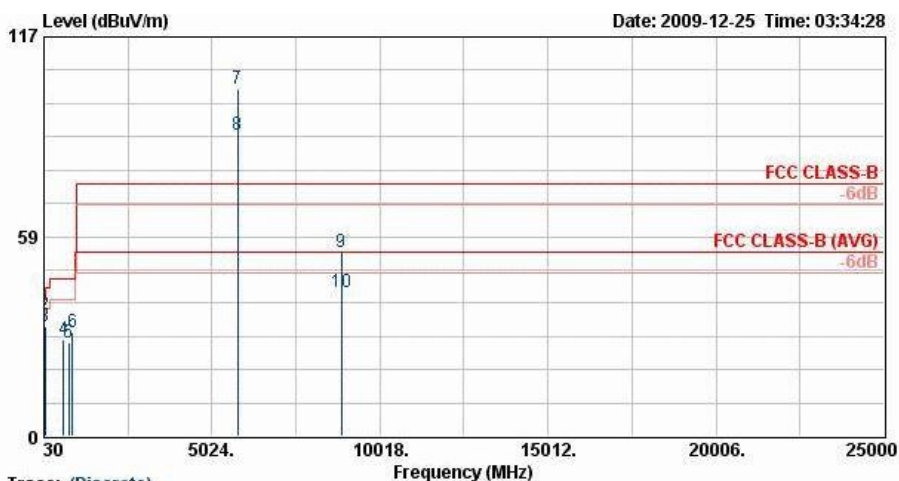
Test Mode :	Mode 20	Temperature :	20~21°C
Test Channel :	151	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 21	Temperature :	20~21°C
Test Channel :	159	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 21	Temperature :	20~21°C
Test Channel :	159	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



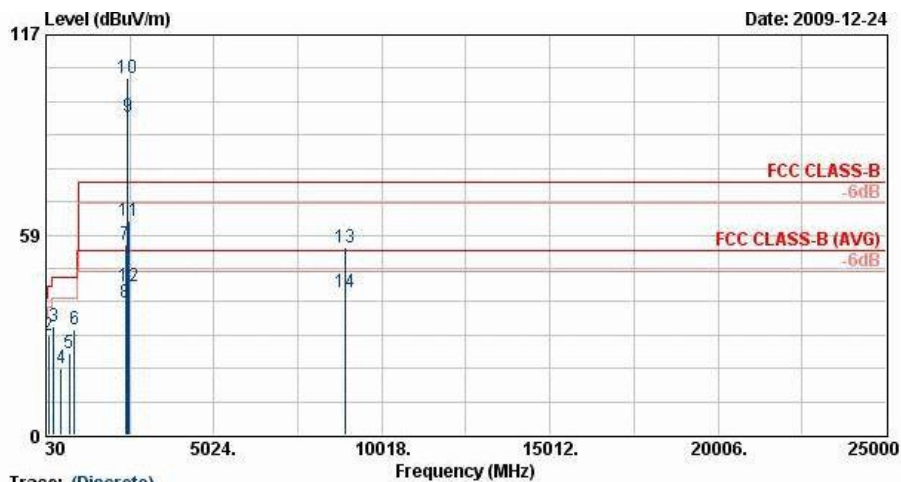
Trace: (Discrete)

Site : 03CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_001206 VERTICAL
Project : FR 9D0408

	Freq	Level	Over	Limit	Read	Antenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 !	36.48	35.06	-4.94	40.00	50.40	15.66	0.70	31.70	---	---	Peak
2 !	48.09	35.58	-4.42	40.00	57.53	8.96	0.79	31.70	100	75	Peak
3	64.29	32.04	-7.96	40.00	56.62	6.19	0.93	31.70	---	---	Peak
4	624.10	28.20	-17.80	46.00	35.60	20.25	3.33	30.98	---	---	Peak
5	758.50	27.59	-18.41	46.00	33.01	21.64	3.73	30.78	---	---	Peak
6	875.40	30.54	-15.46	46.00	34.23	22.95	4.06	30.70	---	---	Peak
7 X	5795.00	101.79			92.80	35.09	8.42	34.52	118	292	Peak
8 @	5795.00	88.39			79.38	35.11	8.42	34.52	118	292	Average
9	8878.00	53.79	-20.21	74.00	42.45	36.22	10.30	35.18	100	121	Peak
10	8878.00	42.08	-11.92	54.00	30.74	36.22	10.30	35.18	100	121	Average



Test Mode :	Mode 22	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		

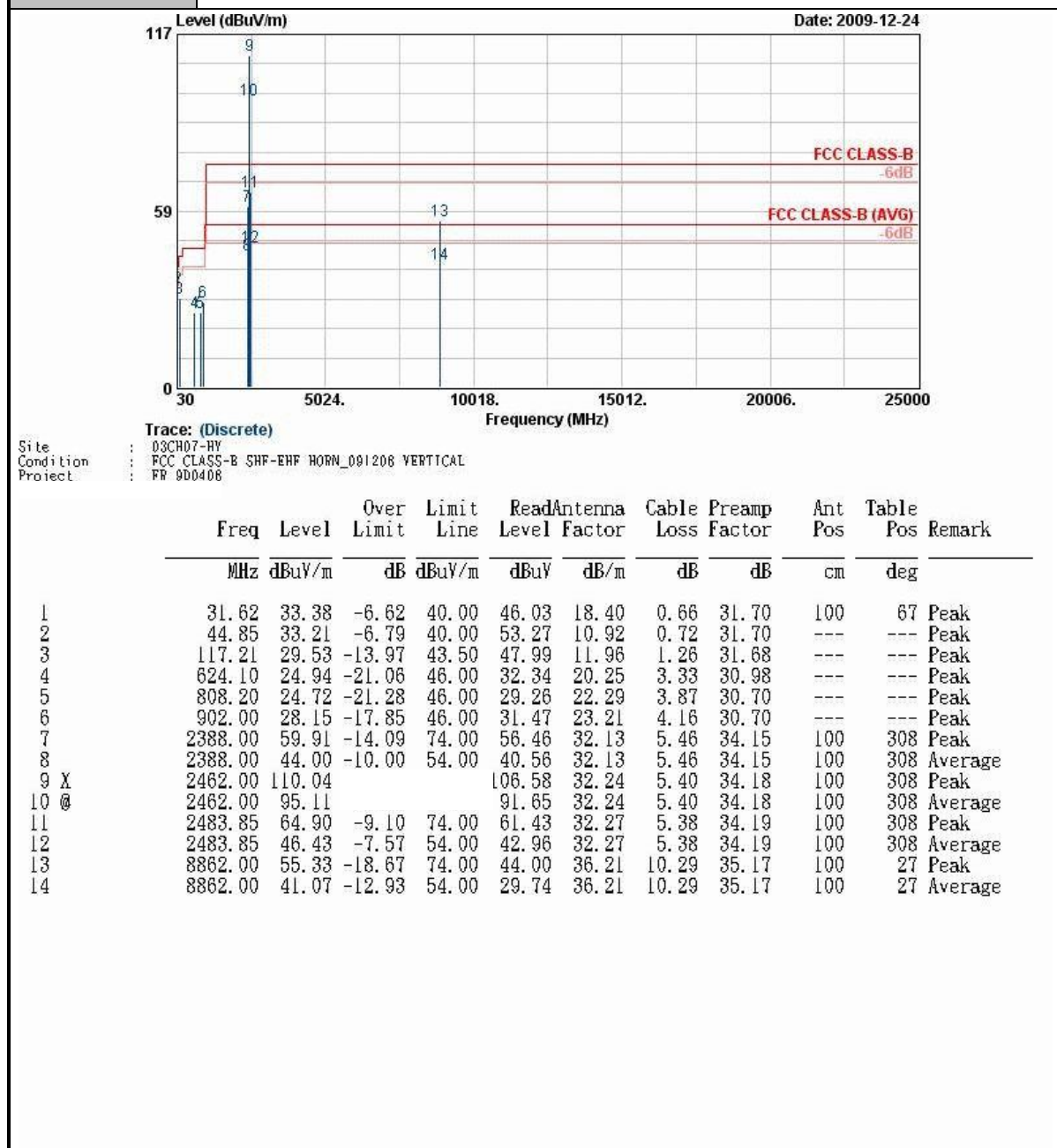


Trace: (Discrete)
Site : D3CH07-HY
Condition : FCC CLASS-B SHF-EHF HORN_091208 HORIZONTAL
Project : FR 9D0408

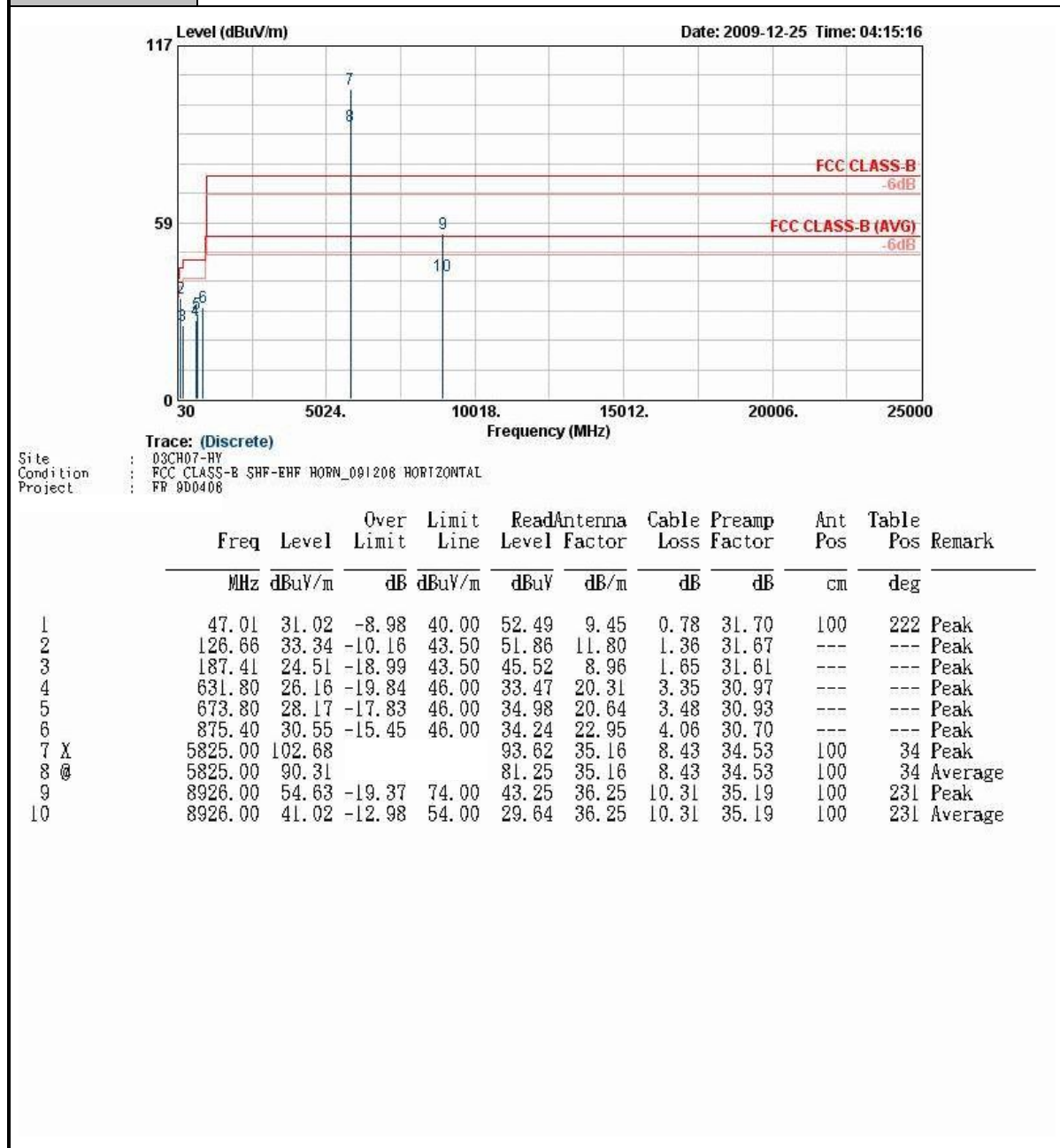
	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	Remark
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	30.81	28.95	-11.05	40.00	41.05	18.95	0.65	31.70	100	222 Peak
2	117.21	29.34	-14.16	43.50	47.80	11.96	1.26	31.68	---	--- Peak
3	257.34	31.76	-14.24	46.00	48.44	12.86	1.94	31.49	---	--- Peak
4	486.20	19.65	-26.35	46.00	30.00	17.88	2.89	31.11	---	--- Peak
5	713.00	24.04	-21.96	46.00	30.31	21.01	3.59	30.87	---	--- Peak
6	875.40	31.06	-14.94	46.00	34.75	22.95	4.06	30.70	---	--- Peak
7	2390.00	55.84	-18.16	74.00	52.40	32.13	5.46	34.16	180	290 Peak
8	2390.00	38.81	-15.19	54.00	35.38	32.13	5.46	34.16	180	290 Average
9 X	2462.00	93.24			89.78	32.24	5.40	34.18	180	290 Average
10 X	2462.00	104.27			100.81	32.24	5.40	34.18	180	290 Peak
11	2484.61	62.60	-11.40	74.00	59.13	32.27	5.38	34.19	180	290 Peak
12	2484.61	43.54	-10.46	54.00	40.07	32.27	5.38	34.19	180	290 Average
13	8910.00	54.60	-19.40	74.00	43.23	36.24	10.31	35.18	100	74 Peak
14	8910.00	41.92	-12.08	54.00	30.55	36.24	10.31	35.18	100	74 Average



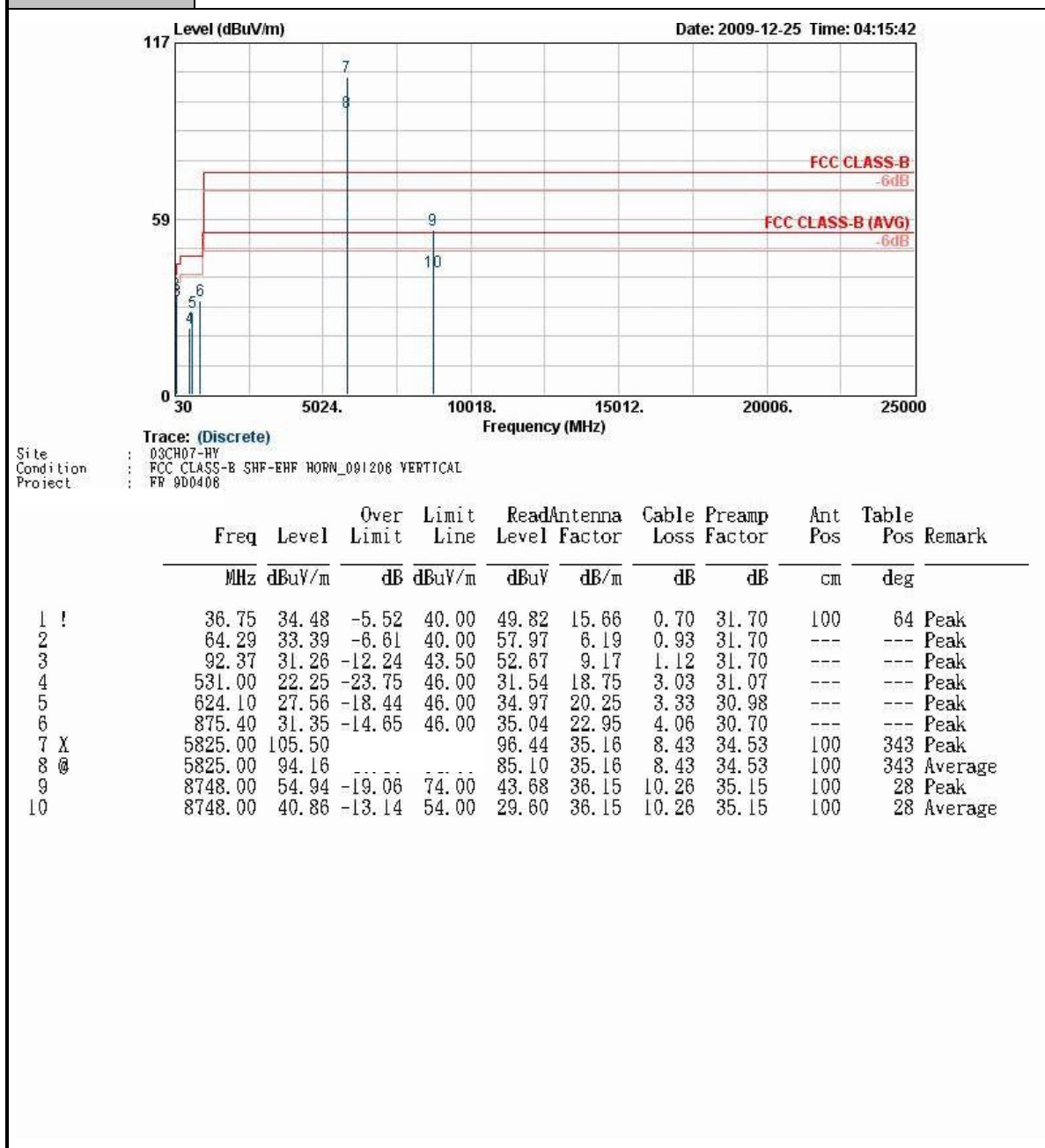
Test Mode :	Mode 22	Temperature :	20~21°C
Test Channel :	11	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#9 and #10 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 23	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Horizontal
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



Test Mode :	Mode 23	Temperature :	20~21°C
Test Channel :	165	Relative Humidity :	49~50%
Test Engineer :	Kay Wu	Polarization :	Vertical
Remark :	#7 and #8 are Fundamental Signals which can be ignored.		



3.4 Antenna Requirements

3.4.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the FCC rule.

3.4.2 Antenna Connected Construction

The antennas type used in this product is PIFA Antenna without connector and it is considered to meet antenna requirement.

3.4.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9KHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9KHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Bilog Antenna	SCHAFFNER	CBL6111C	2726	30MHz ~ 1GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH07-HY)
Spectrum Analyzer	R&S	FSP	101067	9KHz ~ 30GHz	Dec. 04, 2009	Dec. 03, 2010	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH07-HY)
Pre Amplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec.09,2009	Dec. 08, 2010	Radiation (03CH07-HY)
Pre Amplifier	COM-POWER	PA-103A	161241	10-1000MHz.32dB.GAIN	Mar. 27, 2009	Mar. 26, 2010	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9 KHz~30 MHz	May 22, 2008	May 21, 2010	Radiation (03CH07-HY)

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.10	Normal (k=2)	0.05
Cable Loss	0.10	Normal (k=2)	0.05
AMN Insertion Loss	2.50	Rectangular	0.63
Receiver Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1*\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				

6 Certification of TAF Accreditation



Certificate No. : L1190-100107

財團法人全國認證基金會
Taiwan Accreditation Foundation

Certificate of Accreditation

This is to certify that

Sporton International Inc.
EMC & Wireless Communications Laboratory
No.52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien,
Taiwan, R.O.C.

is accredited in respect of laboratory

Accreditation Criteria	: ISO/IEC 17025:2005
Accreditation Number	: 1190
Originally Accredited	: December 15, 2003
Effective Period	: January 10, 2010 to January 09, 2013
Accredited Scope	: Testing Field, see described in the Appendix
Specific Accreditation Program	: Accreditation Program for Designated Testing Laboratory for Commodities Inspection Accreditation Program for Telecommunication Equipment Testing Laboratory Accreditation Program for BSMI Mutual Recognition Arrangement with Foreign Authorities



Jay-San Chen
President, Taiwan Accreditation Foundation
Date : January 07, 2010

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The Appendix forms an integral part of this Certificate, which shall be invalid when use without the Appendix



Appendix A. Photographs of EUT

Please refer to Sporton report number EP9D0408 as below.



Appendix C. Product Equality Declaration

Meru Networks Inc.

894 Ross Drive Sunnyvale, CA 94089 USA

Tel: 408 431 6032 ; Fax: 408 215 5301

Federal Communications Commission
Authorization and Evaluation Division
1435 Oakland Mills Road
Columbia, MD 21046

SUBJECT: Class II Permissive Change for FCC ID: RE7-AP300

The product, Multi Radio 802.11a/b/g/n Wireless LAN Access Point, has been granted by FCC dated 10/15/2007, FCC ID: RE7-AP300. The intension of this application is to apply for Class II Permissive Change for the modification of antenna type. Except the modification above, the other portions are remained the same as previous version.

Contact Person: Srinivas Sivaprakasam

Company: Meru Networks Inc.

TEL: 408 431 6032

FAX: 408 215 5301

E-mail: ssrinivas@merunetworks.com



Appendix D. Original Report

Please refer to Sporton Report Number FR791302A as below.