

10. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC PART 15.205, 15.209 & IC RSS-210 (A8.5). The test setup was made according to ANSI C 63.4 (2009) & KDB 558074 D01 Semi-anechoic chamber, which allows a 3 m distance measurement. The EUT was placed in the center of styrofoam turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

10.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESCI7	ROHDE & SCHWARZ	1166.5950.07	25-Jan-14
Logbicon Antenna	VULB 9168	SCHWARZBECK	237	24-Jan-14
Turn Table	DT3000-2t	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
PREAMPLIFIER	8449B	AGILENT	3008A00595	25-Jan-14
Horn Antenna	BBHA9120D	SCHWARZBECK	469	21-Oct-13
Test Receiver	ESPI7	ROHDE & SCHWARZ	100185	25-Jan-14
Spectrum Analyzer	R3273	ADVANTEST	110600592	26-Jan-14
Turn Table	DT1500-S	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
Pyramidal Horn Antenna	3160-09-01	EST-LINDGREN	102642	22-Oct-13
Antenna Master & Turn table controller	C02000-P	Innco System GmbH	CO2000/642 /28051111/L	-
Spectrum Analyzer	FSV40	ROHDE & SCHWARZ	100939	26-Jan-14
Double Ridged Horn Antenna	SAS-574	A.H.SYSTEMS	154	20-Mar-14
PREAMPLIFIER	83051A	AGILENT	3950M00201	5-Jun-14

10.2 Environmental Condition

Below 1 GHz –Test Place : 10 m Semi-anechoic chamber

Wireless LAN 802.11a Mode

Temperature (°C) : 22.0 °C
Humidity (% R.H.) : 47.2 % R.H.

Wireless LAN 802.11b Mode

Temperature (°C) : 22.1 °C
Humidity (% R.H.) : 47.9 % R.H.

Wireless LAN 802.11g Mode

Temperature (°C) : 22.1 °C
Humidity (% R.H.) : 47.9 % R.H.

Wireless LAN 802.11n Mode

Temperature (°C) : 22.0 °C
Humidity (% R.H.) : 47.4 % R.H.

Above 1 GHz–Test Place : 3 m Semi-anechoic chamber

Wireless LAN 802.11a Mode

Temperature (°C) : 22.1 °C
Humidity (% R.H.) : 47.0 % R.H.

Wireless LAN 802.11b Mode

Temperature (°C) : 22.1 °C
Humidity (% R.H.) : 47.1 % R.H.

Wireless LAN 802.11g Mode

Temperature (°C) : 21.8 °C
Humidity (% R.H.) : 47.9 % R.H.

Wireless LAN 802.11n Mode

Temperature (°C) : 21.9 °C
Humidity (% R.H.) : 47.2 % R.H.

10.3 Measurement Instrument setting for Radiated Emission

10.3.1 Frequency range below 1 GHz

RBW: 120 kHz , VBW: 3 x RBW , Detector: Quasi Peak

10.3.2 Frequency range above 1 GHz

Peak Power Measurement Procedure (KDB 558074 section 12.2.4)

- a. RBW: 1 MHz , VBW: 3 MHz
- b. Trace mode = max hold
- c. Detector: Peak
- d. Sweep time = auto

Average Power Measurement Procedures (KDB 558074 section 12.2.5.2)

- a. Set analyzer center frequency to the frequency associated with the emission
- b. RBW: 1 MHz , VBW: 3 MHz
- c. Detector : power average (RMS) detector
- d. Sweep time = auto

Note

Band	Duty cycle(%)	Ton (ms)	Ton + Toff (ms)	DCF=10*log(1/Duty) (dB)
802.11a	60.8	1.485	2.444	2.16
802.11b	89.1	8.420	9.454	0.50
802.11g	57.7	1.390	2.409	2.39
802.11n 2.4 GHz	58.9	1.353	2.298	2.30
802.11n 5 GHz	58.9	1.372	2.331	2.30

*This was applied of duty cycle factor for average value because of measured with the EUT transmitting continuously less than 98% duty cycle at its maximum power control level.

10.4 Test Data for wireless LAN (802.11a)

Test Date : 10-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
72.00	6.03	V	1.0	10.75	1.40	40.00	18.18	-21.82
84.00	8.17	V	1.0	8.75	1.53	40.00	18.45	-21.55
102.20	8.12	H	4.0	8.34	1.67	43.50	18.13	-25.37
120.10	7.88	H	4.0	9.56	1.79	43.50	19.23	-24.27
132.00	5.33	H	4.0	11.09	1.87	43.50	18.29	-25.21
208.00	13.11	H	1.5	9.49	2.29	43.50	24.89	-18.61
238.40	8.52	H	1.3	10.88	2.44	46.00	21.84	-24.16
260.10	8.11	H	1.3	11.78	2.54	46.00	22.43	-23.57
312.00	7.30	H	1.0	13.55	2.77	46.00	23.62	-22.38
364.00	5.98	V	1.0	14.88	2.99	46.00	23.85	-22.15
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11a-CH157 (5785 MHz) *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *CL = Cable Loss(In case of below 1000 MHz) *Result Value = Reading + Ant Factor + Cable loss *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.							

10.4-1 Test Data for wireless LAN

Test Date 11-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
5378.0	45.65	H	1.1	32.06	-22.90	0.00	74.00	54.81	-19.19
5402.2	45.55	V	1.2	32.07	-22.86	0.00	74.00	54.76	-19.24
5460.0	44.00	H	1.1	32.10	-22.79	0.00	74.00	53.31	-20.69
5460.0	43.10	V	1.2	32.10	-22.79	0.00	74.00	52.41	-21.59
11490.0	36.74	H	1.1	39.96	-16.29	0.00	74.00	60.40	-13.60
11490.0	35.85	V	1.2	39.96	-16.29	0.00	74.00	59.51	-14.49
AV(RBW: 1 MHz VBW: 3 MHz)									
5377.9	33.34	H	1.1	32.06	-22.90	2.16	54.00	44.66	-9.34
5401.8	33.13	V	1.2	32.07	-22.86	2.16	54.00	44.50	-9.50
5460.0	32.05	H	1.1	32.10	-22.79	2.16	54.00	43.52	-10.48
5460.0	31.36	V	1.2	32.10	-22.79	2.16	54.00	42.83	-11.17
11490.0	24.00	H	1.1	39.96	-16.29	2.16	54.00	49.82	-4.18
11490.0	23.00	V	1.2	39.96	-16.29	2.16	54.00	48.82	-5.18
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11a-CH149 (5745 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI a. Ton Time : 1.485 ms b. duty cycle : 60.8 % c. DCF : 2.16 dB								

10.4-2 Test Data for wireless LAN

Test Date 12-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
11570.0	37.73	H	1.1	39.85	-16.17	0.00	74.00	61.42	-12.58
11570.0	37.42	V	1.2	39.85	-16.17	0.00	74.00	61.11	-12.89
AV(RBW: 1 MHz VBW: 3 MHz)									
11570.0	24.61	H	1.1	39.85	-16.17	2.16	54.00	50.46	-3.54
11570.0	25.25	V	1.2	39.85	-16.17	2.16	54.00	51.10	-2.90
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11a-CH157(5785 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.485 ms b. duty cycle : 60.8 % c. DCF : 2.16 dB								

10.4-3 Test Data for wireless LAN

Test Date 13-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
11610.0	38.85	H	1.1	39.80	-16.08	0.00	74.00	62.57	-11.43
11610.0	36.26	V	1.2	39.80	-16.08	0.00	74.00	59.98	-14.02
AV(RBW: 1 MHz VBW: 3 MHz)									
11610.0	25.10	H	1.1	39.80	-16.08	2.16	54.00	50.98	-3.02
11610.0	24.93	V	1.2	39.80	-16.08	2.16	54.00	50.81	-3.19
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11a-CH161(5805 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI								

10.4-4 Test Data for wireless LAN

Test Date 13-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
11650.0	36.13	H	1.1	39.75	-16.00	0.00	74.00	59.88	-14.12
11650.0	35.42	V	1.2	39.75	-16.00	0.00	74.00	59.17	-14.83
AV(RBW: 1 MHz VBW: 3 MHz)									
11650.0	24.32	H	1.1	39.75	-16.00	2.16	54.00	50.23	-3.77
11650.0	23.13	V	1.2	39.75	-16.00	2.16	54.00	49.04	-4.96
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11a-CH165 (5825 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.485 ms b. duty cycle : 60.8 % c. DCF : 2.16 dB								

10.5 Test Data for wireless LAN (802.11b)

Test Date : 14-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
72.00	6.70	V	1.0	10.75	1.40	40.00	18.85	-21.15
75.00	7.74	V	1.0	10.26	1.44	40.00	19.43	-20.57
101.70	8.43	H	4.0	8.31	1.67	43.50	18.41	-25.09
120.00	8.53	V	1.0	9.55	1.79	43.50	19.87	-23.63
132.00	6.79	H	3.0	11.09	1.87	43.50	19.75	-23.75
208.10	13.45	H	1.2	9.50	2.29	43.50	25.24	-18.26
260.00	11.04	H	1.0	11.78	2.54	46.00	25.36	-20.64
364.10	5.97	V	1.0	14.88	2.99	46.00	23.84	-22.16
390.00	9.71	H	1.0	15.54	3.10	46.00	28.49	-17.51
416.00	9.59	H	1.0	16.10	3.19	46.00	28.89	-17.11
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b-CH6(2437 MHz)							
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)							
	*CL = Cable Loss(In case of below 1000 MHz)							
	*Result Value = Reading + Ant Factor + Cable loss							
	*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.							

10.5-1 Test Data for wireless LAN

Test Date 15-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2314.7	49.00	V	1.2	26.77	-28.15	0.00	74.00	47.63	-26.37
2385.6	49.71	H	1.1	26.97	-28.09	0.00	74.00	48.59	-25.41
2390.0	48.84	H	1.1	26.99	-28.09	0.00	74.00	47.74	-26.26
2390.0	48.68	V	1.2	26.99	-28.09	0.00	74.00	47.58	-26.42
4824.1	45.68	H	1.1	31.51	-23.89	0.00	74.00	53.30	-20.70
4824.1	43.85	V	1.2	31.51	-23.89	0.00	74.00	51.47	-22.53
AV(RBW: 1 MHz VBW: 3 MHz)									
2315.0	43.46	V	1.2	26.78	-28.15	0.50	54.00	42.59	-11.41
2384.0	43.95	H	1.1	26.97	-28.09	0.50	54.00	43.33	-10.67
2390.0	42.50	H	1.1	26.99	-28.09	0.50	54.00	41.90	-12.10
2390.0	42.29	V	1.2	26.99	-28.09	0.50	54.00	41.69	-12.31
4824.1	33.46	H	1.1	31.51	-23.89	0.50	54.00	41.58	-12.42
4824.1	33.29	V	1.2	31.51	-23.89	0.50	54.00	41.41	-12.59
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b-CH1(2412 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 8.420 ms b. duty cycle : 89.1 % c. DCF : 0.5 dB								

10.5-2 Test Data for wireless LAN

Test Date 16-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4874.0	45.68	H	1.1	31.61	-23.75	0.00	74.00	53.54	-20.46
4874.0	43.28	V	1.2	31.61	-23.75	0.00	74.00	51.14	-22.86
AV(RBW: 1 MHz VBW: 3 MHz)									
4874.0	34.29	H	1.1	31.61	-23.75	0.50	54.00	42.65	-11.35
4874.0	33.24	V	1.2	31.61	-23.75	0.50	54.00	41.60	-12.40
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b-CH6(2437 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI								

10.5-3 Test Data for wireless LAN

Test Date 17-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.5	50.88	H	1.1	27.25	-27.85	0.00	74.00	50.28	-23.72
2483.5	50.32	V	1.2	27.25	-27.85	0.00	74.00	49.72	-24.28
2486.2	50.42	H	1.1	27.26	-27.84	0.00	74.00	49.84	-24.16
2486.7	49.46	V	1.2	27.26	-27.84	0.00	74.00	48.88	-25.12
4923.8	46.34	H	1.1	31.71	-23.57	0.00	74.00	54.48	-19.52
4923.8	41.67	V	1.2	31.71	-23.57	0.00	74.00	49.81	-24.19
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.5	43.75	H	1.1	27.25	-27.85	0.50	54.00	43.65	-10.35
2483.5	43.45	V	1.2	27.25	-27.85	0.50	54.00	43.35	-10.65
2486.5	42.50	H	1.1	27.26	-27.84	0.50	54.00	42.42	-11.58
2486.9	42.47	V	1.2	27.26	-27.84	0.50	54.00	42.39	-11.61
4923.8	37.85	H	1.1	31.71	-23.57	0.50	54.00	46.49	-7.51
4923.8	36.25	V	1.2	31.71	-23.57	0.50	54.00	44.89	-9.11
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11b-CH11(2462 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 8.420 ms b. duty cycle : 89.1 % c. DCF : 0.5 dB								

10.6 Test Data for wireless LAN (802.11g)

Test Date : 18-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
72.00	6.10	H	4.0	10.75	1.40	40.00	18.25	-21.75
83.70	8.46	V	1.0	8.80	1.53	40.00	18.79	-21.21
132.00	6.89	V	1.0	11.09	1.87	43.50	19.85	-23.65
144.00	5.83	H	4.0	12.27	1.95	43.50	20.05	-23.45
156.10	7.12	H	3.0	12.75	2.00	43.50	21.87	-21.63
188.40	11.34	V	1.0	10.20	2.20	43.50	23.75	-19.75
251.90	10.64	V	1.0	11.48	2.51	46.00	24.63	-21.37
260.10	10.53	H	1.0	11.78	2.54	46.00	24.85	-21.15
338.00	5.35	V	1.0	14.21	2.88	46.00	22.44	-23.56
442.00	7.99	V	1.0	16.60	3.27	46.00	27.86	-18.14
Remark H : Horizontal, V : Vertical TEST MODE : 802.11g-CH6(2437 MHz) *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *CL = Cable Loss(In case of below 1000 MHz) *Result Value = Reading + Ant Factor + Cable loss *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.								

10.6-1 Test Data for wireless LAN

Test Date 19-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2347.6	51.04	V	1.2	26.87	-28.12	0.00	74.00	49.78	-24.22
2380.1	51.37	H	1.1	26.96	-28.10	0.00	74.00	50.23	-23.77
2390.0	51.09	H	1.1	26.99	-28.09	0.00	74.00	49.99	-24.01
2390.0	51.01	V	1.2	26.99	-28.09	0.00	74.00	49.91	-24.09
4824.0	45.73	H	1.1	31.51	-23.89	0.00	74.00	53.35	-20.65
4824.0	45.23	V	1.2	31.51	-23.89	0.00	74.00	52.85	-21.15
AV(RBW: 1 MHz VBW: 3 MHz)									
2348.0	43.77	V	1.2	26.87	-28.12	2.39	54.00	44.91	-9.09
2380.2	43.90	H	1.1	26.96	-28.10	2.39	54.00	45.15	-8.85
2390.0	43.27	H	1.1	26.99	-28.09	2.39	54.00	44.56	-9.44
2390.0	42.76	V	1.2	26.99	-28.09	2.39	54.00	44.05	-9.95
4824.0	34.63	H	1.1	31.51	-23.89	2.39	54.00	44.64	-9.36
4824.0	34.08	V	1.2	31.51	-23.89	2.39	54.00	44.09	-9.91
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g-CH1(2412 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.390 ms b. duty cycle : 57.7 % c. DCF : 2.39 dB								

10.6-2 Test Data for wireless LAN

Test Date 20-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4874.0	45.84	H	1.1	31.61	-23.75	0.00	74.00	53.70	-20.30
4874.0	44.63	V	1.2	31.61	-23.75	0.00	74.00	52.49	-21.51
AV(RBW: 1 MHz VBW: 3 MHz)									
4874.0	34.03	H	1.1	31.61	-23.75	2.39	54.00	44.28	-9.72
4874.0	33.63	V	1.2	31.61	-23.75	2.39	54.00	43.88	-10.12
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g-CH6(2437 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.390 ms b. duty cycle : 57.7 % c. DCF : 2.39 dB								

10.6-3 Test Data for wireless LAN

Test Date 21-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.5	53.40	H	1.1	27.25	-27.85	0.00	74.00	52.80	-21.20
2483.5	52.95	V	1.2	27.25	-27.85	0.00	74.00	52.35	-21.65
2485.1	52.58	H	1.1	27.25	-27.84	0.00	74.00	51.99	-22.01
2484.3	52.32	V	1.2	27.25	-27.84	0.00	74.00	51.73	-22.27
4924.1	44.85	H	1.1	31.71	-23.56	0.00	74.00	52.99	-21.01
4924.1	43.92	V	1.2	31.71	-23.56	0.00	74.00	52.06	-21.94
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.5	44.69	H	1.1	27.25	-27.85	2.39	54.00	46.48	-7.52
2483.5	43.71	V	1.2	27.25	-27.85	2.39	54.00	45.50	-8.50
2484.6	44.34	H	1.1	27.25	-27.84	2.39	54.00	46.14	-7.86
2483.9	43.73	V	1.2	27.25	-27.85	2.39	54.00	45.52	-8.48
4924.1	35.05	H	1.1	31.71	-23.56	2.39	54.00	45.58	-8.42
4924.1	34.72	V	1.2	31.71	-23.56	2.39	54.00	45.25	-8.75
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11g-CH11(2462 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.390 ms b. duty cycle : 57.7 % c. DCF : 2.39 dB								

10.7 Test Data for wireless LAN (802.11n)

Test Date : 22-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
72.00	7.32	H	4.0	10.75	1.40	40.00	19.47	-20.53
83.70	9.14	V	1.0	8.80	1.53	40.00	19.47	-20.53
120.00	9.50	V	1.0	9.55	1.79	43.50	20.84	-22.66
156.00	6.49	H	3.0	12.74	2.00	43.50	21.23	-22.27
188.60	10.73	V	1.0	10.18	2.20	43.50	23.12	-20.38
208.00	13.24	H	1.0	9.49	2.29	43.50	25.02	-18.48
260.00	10.89	H	1.0	11.78	2.54	46.00	25.21	-20.79
312.10	8.89	H	1.0	13.55	2.77	46.00	25.21	-20.79
364.00	7.31	V	1.0	14.88	2.99	46.00	25.18	-20.82
442.10	5.80	V	1.0	16.60	3.27	46.00	25.67	-20.33
Remark		H : Horizontal, V : Vertical TEST MODE : 802.11n-CH6(2437 MHz)						
		*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)						
		*CL = Cable Loss(In case of below 1000 MHz)						
		*Result Value = Reading + Ant Factor + Cable loss						
		*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.						

10.7-1 Test Data for wireless LAN

Test Date 23-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2388.9	50.22	V	1.2	26.98	-28.09	0.00	74.00	49.11	-24.89
2388.7	50.66	H	1.1	26.98	-28.09	0.00	74.00	49.55	-24.45
2390.0	50.75	H	1.1	26.99	-28.09	0.00	74.00	49.65	-24.35
2390.0	50.68	V	1.2	26.99	-28.09	0.00	74.00	49.58	-24.42
4824.1	45.73	H	1.1	31.51	-23.89	0.00	74.00	53.35	-20.65
4824.1	45.09	V	1.2	31.51	-23.89	0.00	74.00	52.71	-21.29
AV(RBW: 1 MHz VBW: 3 MHz)									
2388.9	42.72	V	1.2	26.98	-28.09	2.30	54.00	43.91	-10.09
2388.8	43.00	H	1.1	26.98	-28.09	2.30	54.00	44.19	-9.81
2390.0	41.98	H	1.1	26.99	-28.09	2.30	54.00	43.18	-10.82
2390.0	41.62	V	1.2	26.99	-28.09	2.30	54.00	42.82	-11.18
4824.1	34.83	H	1.1	31.51	-23.89	2.30	54.00	44.75	-9.25
4824.1	33.83	V	1.2	31.51	-23.89	2.30	54.00	43.75	-10.25
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH1(2412 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.353 ms b. duty cycle : 58.9 % c. DCF : 2.30 dB								

10.7-2 Test Data for wireless LAN

Test Date 24-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4874.0	44.73	H	1.1	31.61	-23.75	0.00	74.00	52.59	-21.41
4874.0	43.63	V	1.2	31.61	-23.75	0.00	74.00	51.49	-22.51
AV(RBW: 1 MHz VBW: 3 MHz)									
4874.0	34.63	H	1.1	31.61	-23.75	2.30	54.00	44.79	-9.21
4874.0	33.62	V	1.2	31.61	-23.75	2.30	54.00	43.78	-10.22
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH6(2437 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI								
	a. Ton Time : 1.353 ms								
	b. duty cycle : 58.9 %								
	c. DCF : 2.30 dB								

10.7-3 Test Data for wireless LAN

Test Date 25-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dBμV)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dBμV/m)	Result (dBμV/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.5	52.49	H	1.1	27.25	-27.85	0.00	74.00	51.89	-22.11
2483.5	51.57	V	1.2	27.25	-27.85	0.00	74.00	50.97	-23.03
2483.9	51.70	H	1.1	27.25	-27.85	0.00	74.00	51.10	-22.90
2484.1	51.58	V	1.2	27.25	-27.84	0.00	74.00	50.99	-23.01
4924.0	47.85	H	1.1	31.71	-23.56	0.00	74.00	55.99	-18.01
4924.0	46.25	V	1.2	31.71	-23.56	0.00	74.00	54.39	-19.61
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.5	44.42	H	1.1	27.25	-27.85	2.30	54.00	46.12	-7.88
2483.5	43.53	V	1.2	27.25	-27.85	2.30	54.00	45.23	-8.77
2483.7	43.02	H	1.1	27.25	-27.85	2.30	54.00	44.72	-9.28
2484.8	42.33	V	1.2	27.25	-27.84	2.30	54.00	44.04	-9.96
4924.0	34.72	H	1.1	31.71	-23.56	2.30	54.00	45.16	-8.84
4924.0	34.59	V	1.2	31.71	-23.56	2.30	54.00	45.03	-8.97
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH11(2462 MHz)								
	*The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.353 ms b. duty cycle : 58.9 % c. DCF : 2.30 dB								

10.8 Test Data for wireless LAN (802.11n)

Test Date : 26-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Result Value		
				Ant Factor (dB)	Cable (dB)	Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
75.00	7.44	V	1.0	10.26	1.44	40.00	19.13	-20.87
84.00	8.37	H	4.0	8.75	1.53	40.00	18.65	-21.35
102.20	9.48	H	4.0	8.34	1.67	43.50	19.49	-24.01
144.00	5.54	H	3.2	12.27	1.95	43.50	19.76	-23.74
156.00	7.58	V	1.0	12.74	2.00	43.50	22.32	-21.18
188.40	11.64	V	1.0	10.20	2.20	43.50	24.05	-19.45
260.00	10.46	H	1.0	11.78	2.54	46.00	24.78	-21.22
364.10	7.00	V	1.0	14.88	2.99	46.00	24.87	-21.13
442.00	6.36	V	1.0	16.60	3.27	46.00	26.23	-19.77
416.00	7.93	H	1.0	16.10	3.19	46.00	27.23	-18.77
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH157 (5785 MHz) *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *CL = Cable Loss(In case of below 1000 MHz) *Result Value = Reading + Ant Factor + Cable loss *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.							

10.8-1 Test Data for wireless LAN

Test Date 27-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
5379.7	43.71	V	1.2	32.06	-22.89	0.00	74.00	52.87	-21.13
5389.9	44.98	H	1.1	32.06	-22.88	0.00	74.00	54.17	-19.83
5460.0	44.21	H	1.1	32.10	-22.79	0.00	74.00	53.52	-20.48
5460.0	43.95	V	1.2	32.10	-22.79	0.00	74.00	53.26	-20.74
11490.0	37.96	H	1.1	39.96	-16.29	0.00	74.00	61.62	-12.38
11490.0	37.82	V	1.2	39.96	-16.29	0.00	74.00	61.48	-12.52
AV(RBW: 1 MHz VBW: 3 MHz)									
5379.6	33.35	V	1.2	32.06	-22.89	2.30	54.00	44.81	-9.19
5380.4	34.25	H	1.1	32.06	-22.89	2.30	54.00	45.72	-8.28
5460.0	34.12	H	1.1	32.10	-22.79	2.30	54.00	45.73	-8.27
5460.0	33.96	V	1.2	32.10	-22.79	2.30	54.00	45.57	-8.43
11490.0	25.71	H	1.1	39.96	-16.29	2.30	54.00	51.67	-2.33
11490.0	25.36	V	1.2	39.96	-16.29	2.30	54.00	51.32	-2.68
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH149 (5745 MHz) *The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position) *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction FYI a. Ton Time : 1.372 ms b. duty cycle : 58.9 % c. DCF : 2.30 dB								

10.8-2 Test Data for wireless LAN

Test Date 28-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
11570.0	36.85	H	1.1	39.85	-16.17	0.00	74.00	60.54	-13.46
11570.0	36.37	V	1.2	39.85	-16.17	0.00	74.00	60.06	-13.94
AV(RBW: 1 MHz VBW: 3 MHz)									
11570.0	25.11	H	1.1	39.85	-16.17	2.30	54.00	51.10	-2.90
11570.0	25.78	V	1.2	39.85	-16.17	2.30	54.00	51.77	-2.23
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH157(5785 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI								
	a. Ton Time : 1.372 ms								
	b. duty cycle : 58.9 %								
	c. DCF : 2.30 dB								

10.8-3 Test Data for wireless LAN

Test Date 29-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
11610.0	34.19	H	1.1	39.80	-16.08	0.00	74.00	57.91	-16.09
11610.0	34.10	V	1.2	39.80	-16.08	0.00	74.00	57.82	-16.18
AV(RBW: 1 MHz VBW: 3 MHz)									
11610.0	24.80	H	1.1	39.80	-16.08	2.30	54.00	50.82	-3.18
11610.0	24.04	V	1.2	39.80	-16.08	2.30	54.00	50.06	-3.94
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH161(5805 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI								

10.8-4 Test Data for wireless LAN

Test Date 29-Jul-13

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	Cable (dB)		Limit (dB μ V/m)	Result (dB μ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
11650.0	34.65	H	1.1	39.75	-16.00	0.00	74.00	58.40	-15.60
11650.0	34.30	V	1.2	39.75	-16.00	0.00	74.00	58.05	-15.95
AV(RBW: 1 MHz VBW: 3 MHz)									
11650.0	25.29	H	1.1	39.75	-16.00	2.30	54.00	51.34	-2.66
11650.0	25.04	V	1.2	39.75	-16.00	2.30	54.00	51.09	-2.91
Remark	H : Horizontal, V : Vertical TEST MODE : 802.11n-CH165 (5825 MHz)								
	*The TX signal wasn't detected from 3th harmonics.								
	*Checked in all 3 axis and the maximum measured data were reported.(Worst data is Z axis of position)								
	*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction								
	FYI								

11. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 MHz to 30 MHz was measured in accordance to FCC PART 15.207 & IC RSS-Gen 7.2.2. The test setup was made according to ANSI C 63.4 (2009) in a shielded room. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0 m. The test receiver with Quasi Peak detector complies with CISPR 16.

11.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
EMI TEST Receiver	ESHS 10	Rohde & Schwarz	844077/018	25-Jan-14
LISN	ENV216	Rohde & Schwarz	101231	25-Jan-14
LISN	ESH3-Z5	Rohde & Schwarz	838979/010	25-Jan-14
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	25-Jan-14

11.2 Environmental Condition

Test Place : Shielded Room

Wireless LAN 802.11a Mode

Temperature (°C) : 22.1 °C

Humidity (% R.H.) : 46.8 % R.H.

Wireless LAN 802.11b Mode

Temperature (°C) : 21.8 °C

Humidity (% R.H.) : 47.7 % R.H.

Wireless LAN 802.11g Mode

Temperature (°C) : 21.7 °C

Humidity (% R.H.) : 47.6 % R.H.

Wireless LAN 802.11n 2.4G Mode

Temperature (°C) : 21.9 °C

Humidity (% R.H.) : 47.0 % R.H.

Wireless LAN 802.11n 5G Mode

Temperature (°C) : 22.3 °C

Humidity (% R.H.) : 48.1 % R.H.

11.3 Test Data for wireless LAN (802.11a)

Test Date : 10-Jul-13

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.16	0.13	0.17	N	65.31	50.22	50.52	55.31	35.28	35.58
0.17	0.13	0.17	H	64.96	51.32	51.62	54.96	34.43	34.73
0.21	0.13	0.16	N	63.37	46.36	46.65	53.37	29.50	29.79
0.21	0.13	0.16	H	63.24	48.15	48.44	53.24	30.28	30.57
0.24	0.13	0.16	N	61.99	43.74	44.03	51.99	25.54	25.83
0.26	0.13	0.16	H	61.59	44.75	45.04	51.59	28.60	28.89
Remark	TEST MODE : 802.11a - CH 157(5785 MHz) H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								

11.4 Test Data for wireless LAN (802.11b)

Test Date : 14-Jul-13

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.16	0.13	0.17	N	65.36	50.31	50.61	55.36	35.14	35.44
0.17	0.13	0.17	H	64.82	50.75	51.05	54.82	33.75	34.05
0.20	0.13	0.16	N	63.49	46.66	46.95	53.49	29.92	30.21
0.22	0.13	0.16	H	62.89	47.08	47.37	52.89	30.56	30.85
0.24	0.13	0.16	N	61.99	43.66	43.95	51.99	25.49	25.78
0.27	0.13	0.16	H	61.24	43.75	44.04	51.24	28.07	28.36
Remark	TEST MODE : 802.11b - CH 6(2437 MHz) H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								

11.5 Test Data for wireless LAN (802.11g)

Test Date : 18-Jul-13

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.17	0.13	0.17	H	64.77	50.91	51.21	54.77	29.63	29.93
0.20	0.13	0.16	H	63.78	49.78	50.07	53.78	30.06	30.35
0.27	0.13	0.16	H	61.24	43.14	43.43	51.24	25.65	25.94
0.28	0.13	0.17	N	60.85	42.10	42.39	50.85	24.91	25.20
0.20	0.13	0.16	N	63.82	48.47	48.76	53.82	30.86	31.15
0.27	0.13	0.16	N	61.18	41.95	42.24	51.18	29.64	29.93
Remark	TEST MODE : 802.11g - CH 6(2437 MHz) H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								

11.6 Test Data for wireless LAN (802.11n-2.4 GHz)

Test Date : 22-Jul-13

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dBμV)	Reading (dBμV)	Result (dBμV)	Limit (dBμV)	Reading (dBμV)	Result (dB)
0.16	0.13	0.17	N	65.36	50.20	50.50	55.36	35.07	35.37
0.16	0.13	0.17	H	65.31	49.66	49.96	55.31	32.33	32.63
0.20	0.13	0.16	N	63.65	46.74	47.03	53.65	28.21	28.50
0.21	0.13	0.16	H	63.37	45.82	46.11	53.37	29.37	29.66
0.24	0.13	0.16	N	62.06	43.76	44.05	52.06	25.08	25.37
0.24	0.13	0.16	H	62.06	43.48	43.77	52.06	26.10	26.39
Remark	TEST MODE : 802.11n - CH 6(2437 MHz) H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								

11.7 Test Data for wireless LAN (802.11n-5 GHz)

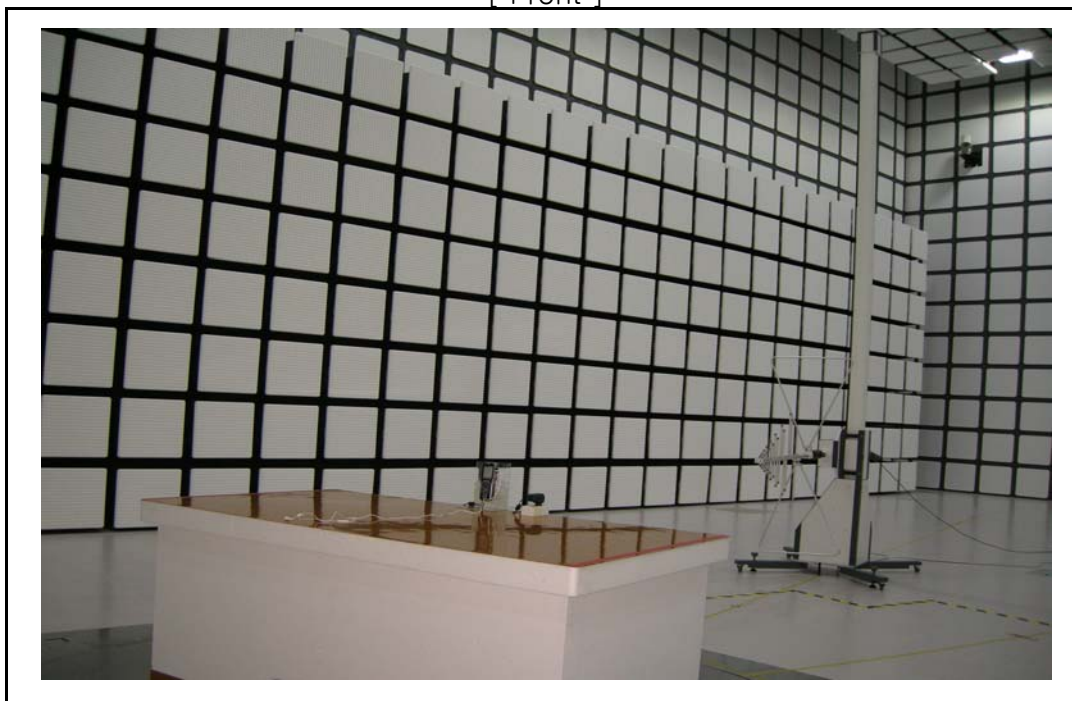
Test Date : 26-Jul-13

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB μ V)	Reading (dB μ V)	Result (dB μ V)	Limit (dB μ V)	Reading (dB μ V)	Result (dB)
0.16	0.13	0.17	N	65.31	49.88	50.18	55.31	35.14	35.44
0.16	0.13	0.17	H	65.31	49.72	50.02	55.31	32.37	32.67
0.20	0.13	0.16	H	63.57	46.36	46.65	53.57	29.04	29.33
0.21	0.13	0.16	N	63.37	45.98	46.27	53.37	29.50	29.79
0.24	0.13	0.16	N	62.06	43.52	43.81	52.06	25.08	25.37
0.24	0.13	0.16	H	61.99	43.28	43.57	51.99	26.58	26.87
Remark	TEST MODE : 802.11N - CH 157(5785 MHz) H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								

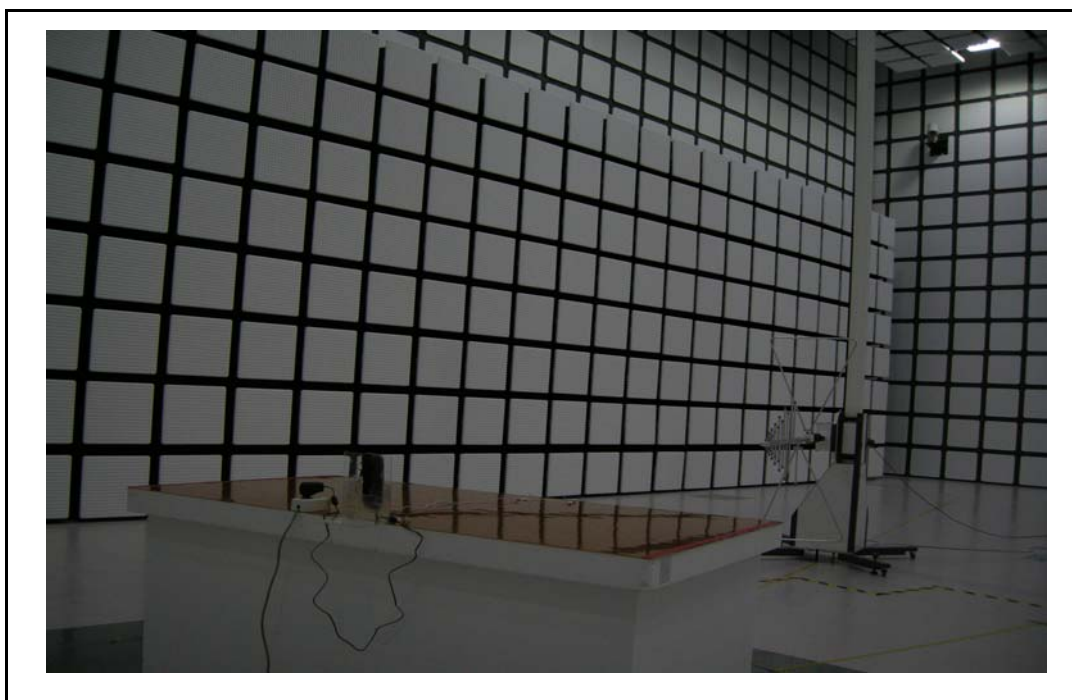
12. Photographs of test setup

12.1. Setup for Radiated Test : (30 ~ 1 000) MHz

[Front]

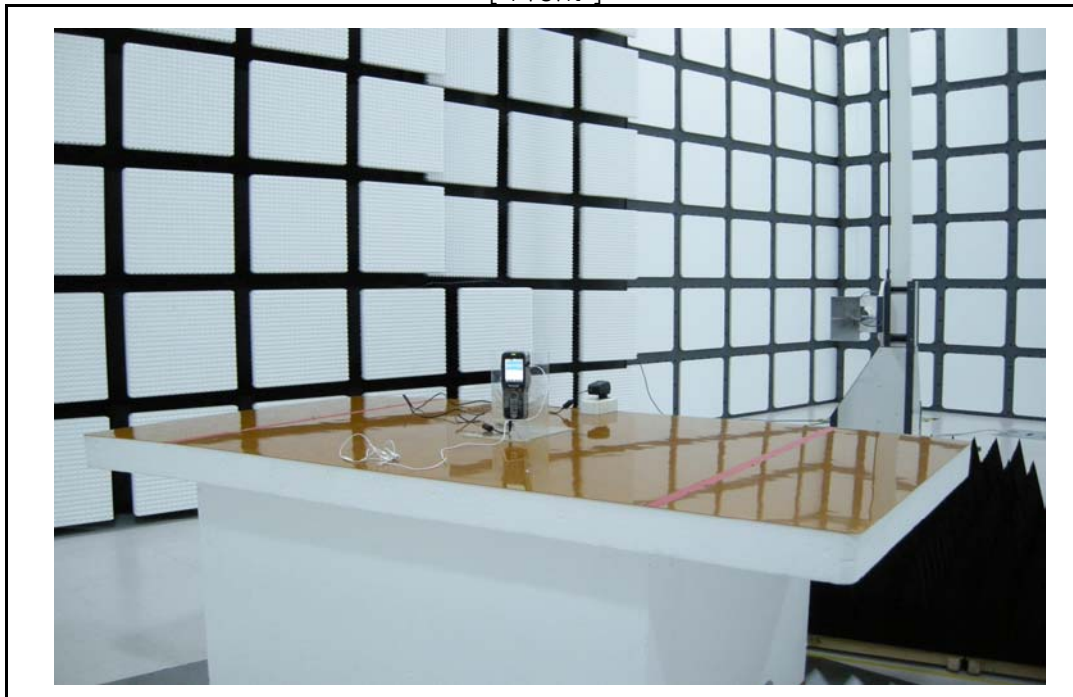


[Rear]

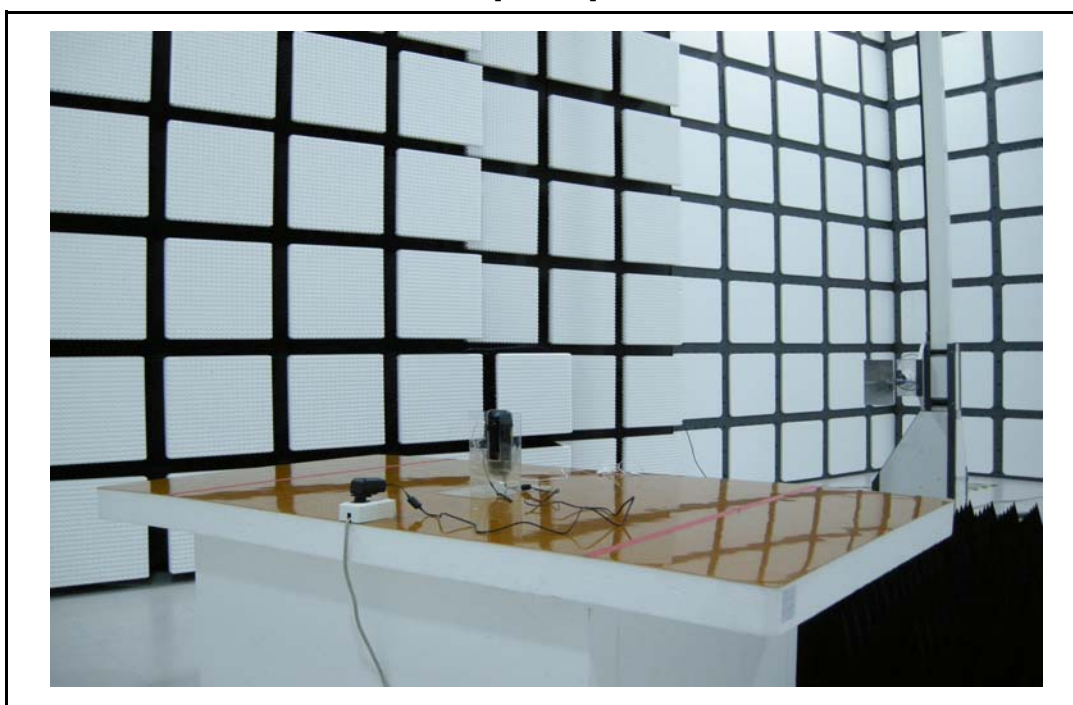


12.2.Setup for Radiated Test : Above 1 GHz

[Front]



[Rear]



12.3. Setup for Conducted Test : (0.15 ~ 30) MHz

[Front]



[Rear]



12.4. Photographs of EUT

[Front]



[Rear]



Appendix 1. Special diagram for Wireless LAN

802.11a – CH 157

*HOT

ES TECH

10 Jul 2013 11:56

HOT

EUT: Dolphin 6110

Manuf:

Op Cond: 120 Va. c.

Operator: Engineer S.D.Hong

Test Spec: CLASS B

Comment: WLAN 802.11a Mode

Result File: 130804_h.dat:

Scan Settings

(1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

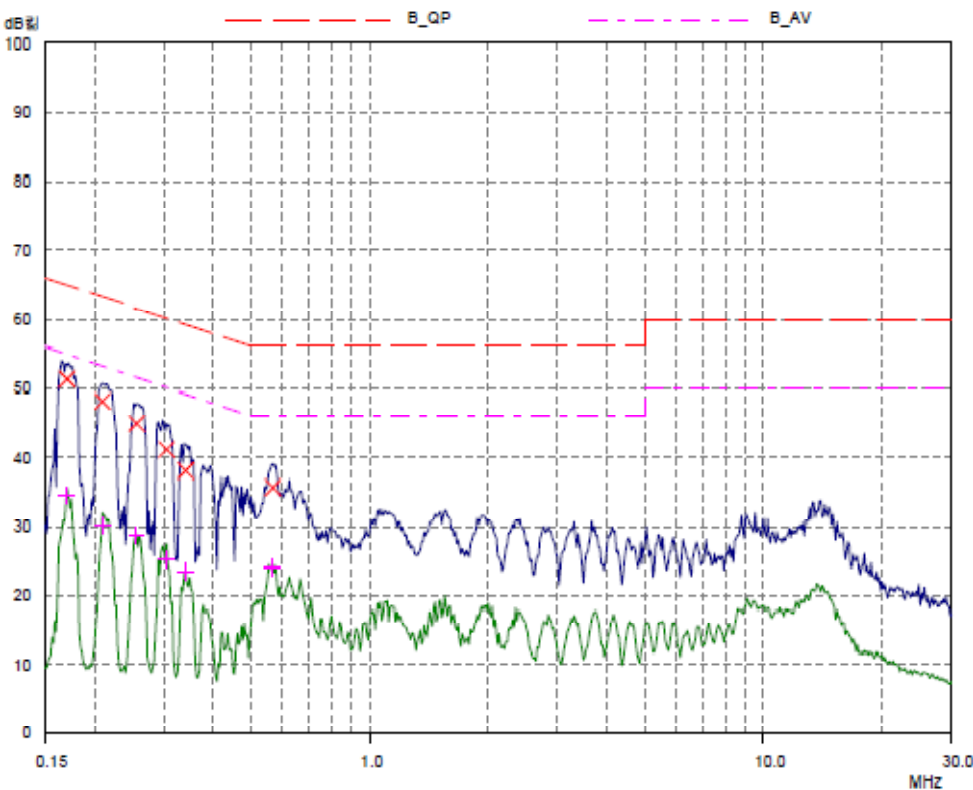
Final Measurement:

Detectors: X QP / + AV

Meas Time: 1sec

Subranges: 25

Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11a – CH 157

*NEUTRAL

ES TECH

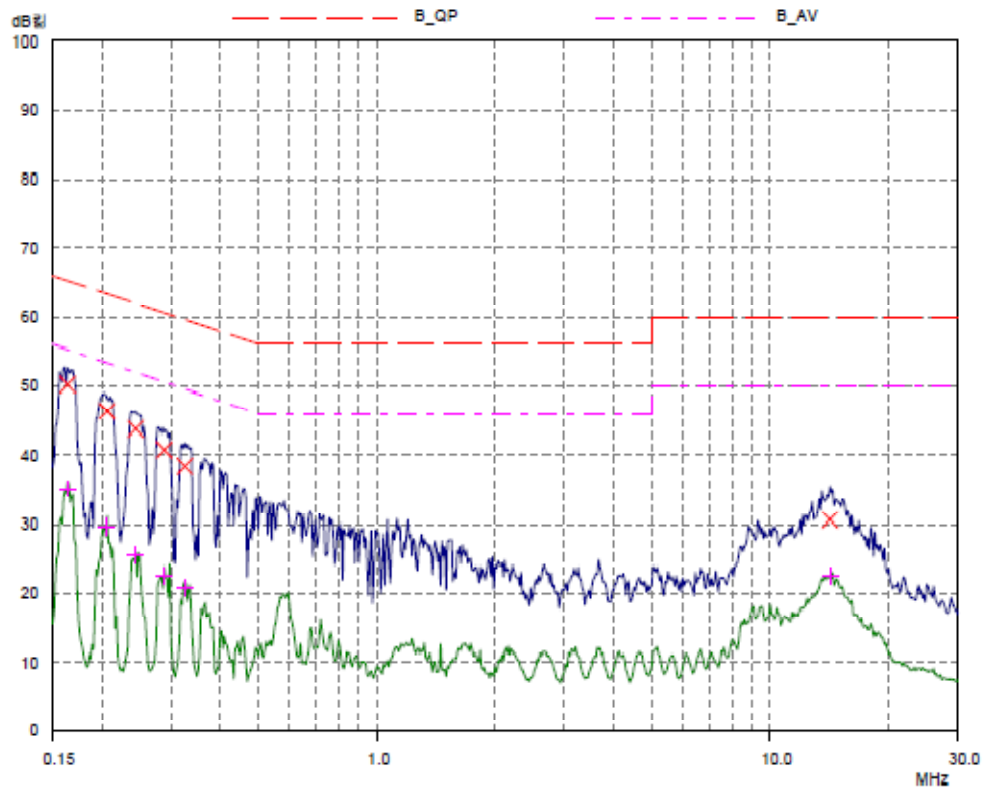
10 Jul 2013 11:50

NEUTRAL

EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11a Mode

Result File: 130804_n.dat :

Scan Settings			Receiver Settings						
(1 Range)									
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB	
Final Measurement:			Detectors:	X QP / + AV					
			Meas Time:	1sec					
			Subranges:	25					
			Acc Margin:	0 dB					



Special diagram for Wireless LAN

802.11b – CH 6

*HOT

ES TECH

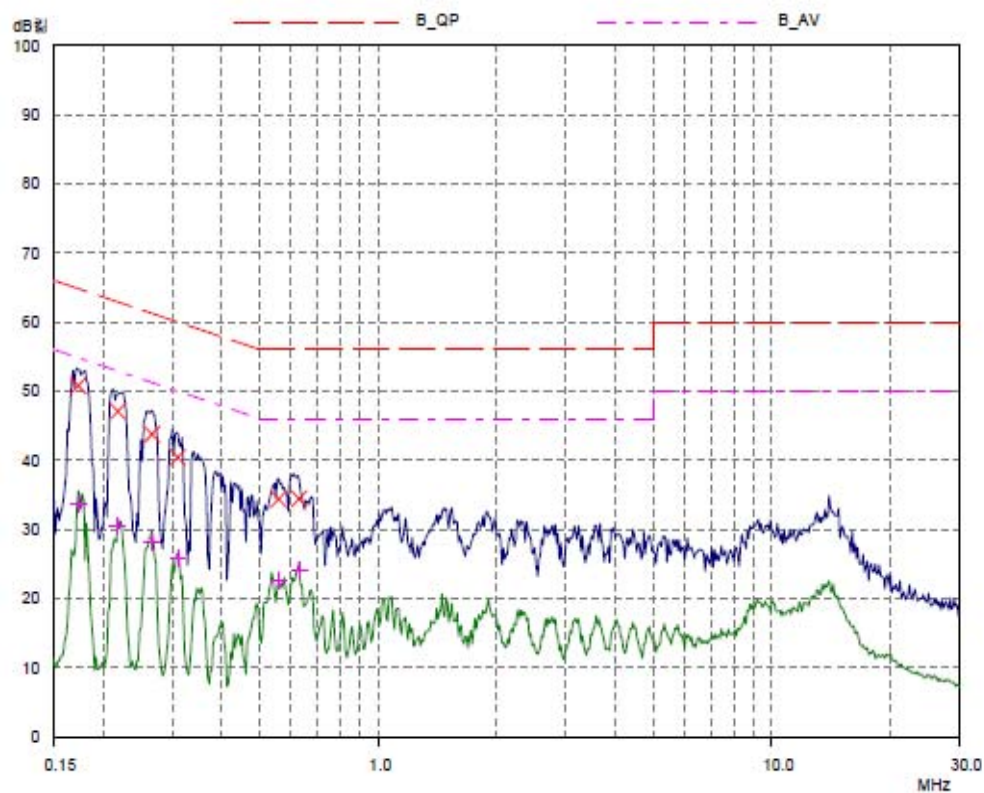
14 Jul 2013 12:36

HOT

EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11b Mode

Result File: 130805_h.dat :

Scan Settings			Receiver Settings						
(1 Range)									
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge	
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB	
Final Measurement:			Detectors: X QP / + AV						
			Meas Time: 1sec						
			Subranges: 25						
			Acc Margin: 0 dB						



Special diagram for Wireless LAN

802.11b – CH 6

*NEUTRAL

ES TECH

14 Jul 2013 12:26

NEUTRAL

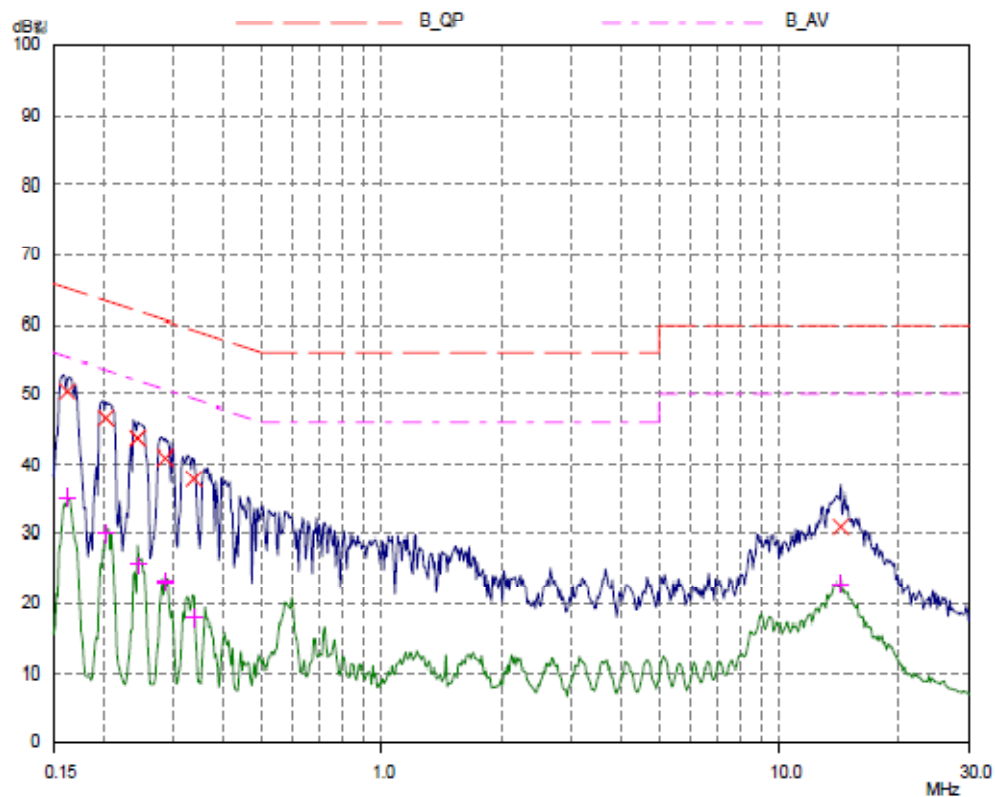
EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11b Mode

Result File: 130805_n.dat :

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Appendix 1. Special diagram for Wireless LAN

802.11g – CH 6
*HOT

ES TECH

18 Jul 2013 13:50

HOT

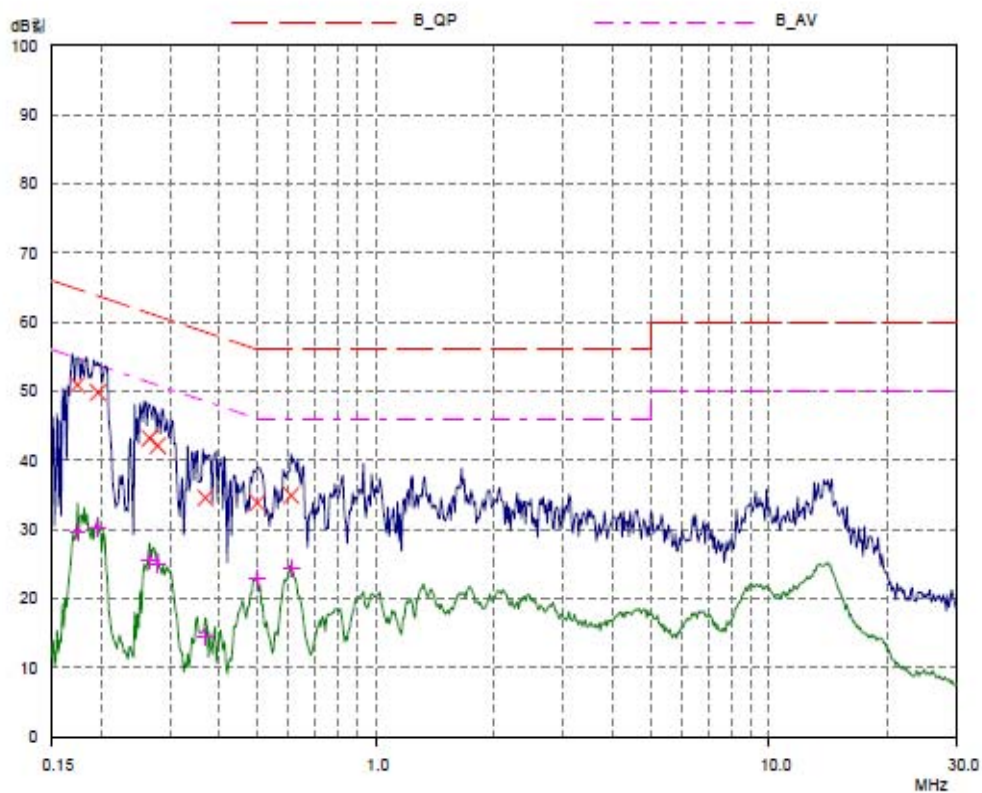
EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11g Mode

Result File: 130806_h.dat :

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11g – CH 6

*NEUTRAL

ES TECH
NEUTRAL

18 Jul 2013 13:58

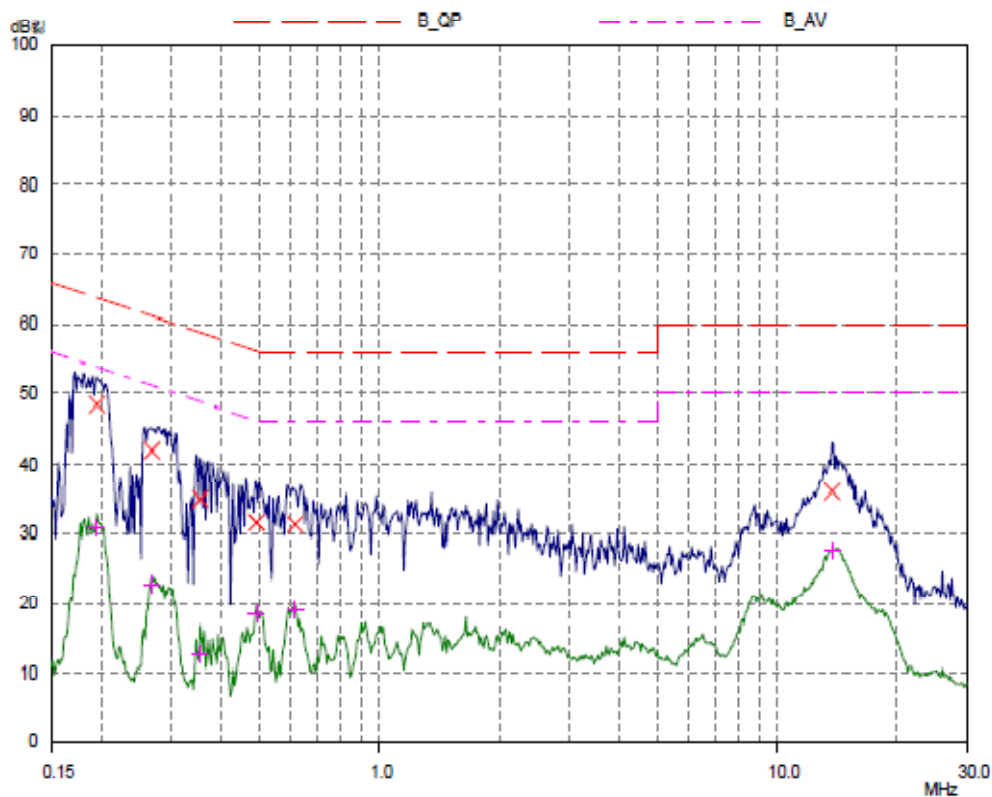
EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11g Mode

Result File: 130806_n.dat :

Scan Settings (1 Range)

Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11n – CH 6
*HOT

ES TECH

22 Jul 2013 14:46

HOT

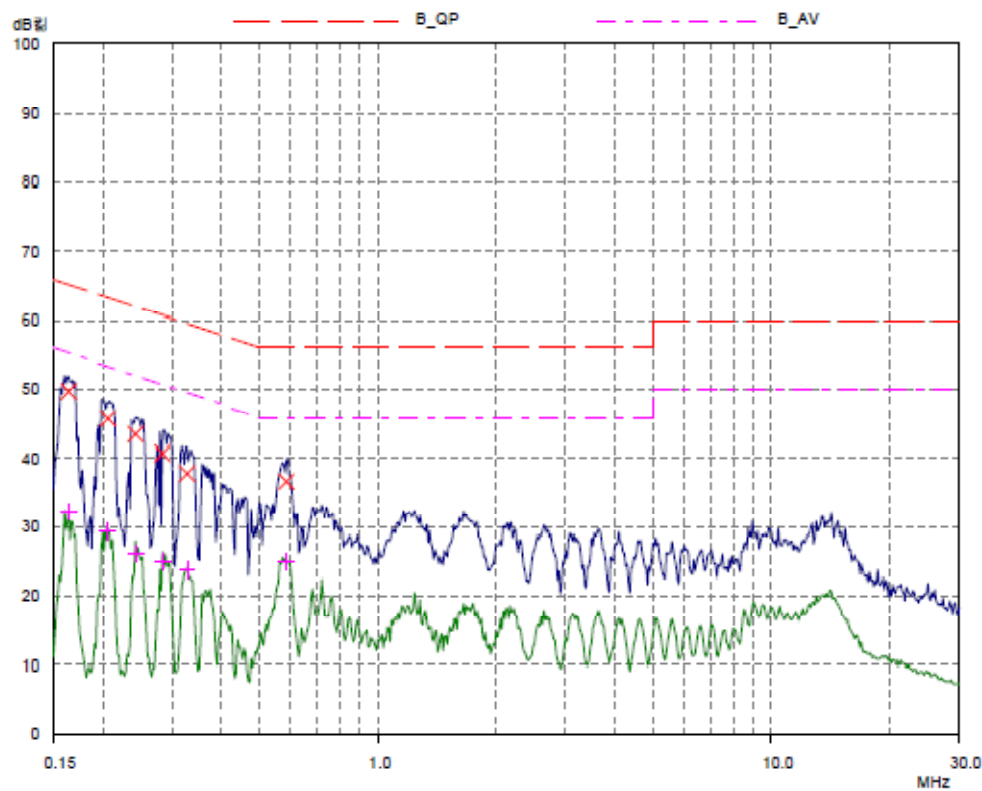
EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11n 2.4G Mode

Result File: 130807_h.dat:

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11n – CH 6

*NEUTRAL

ES TECH

22 Jul 2013 13:45

NEUTRAL

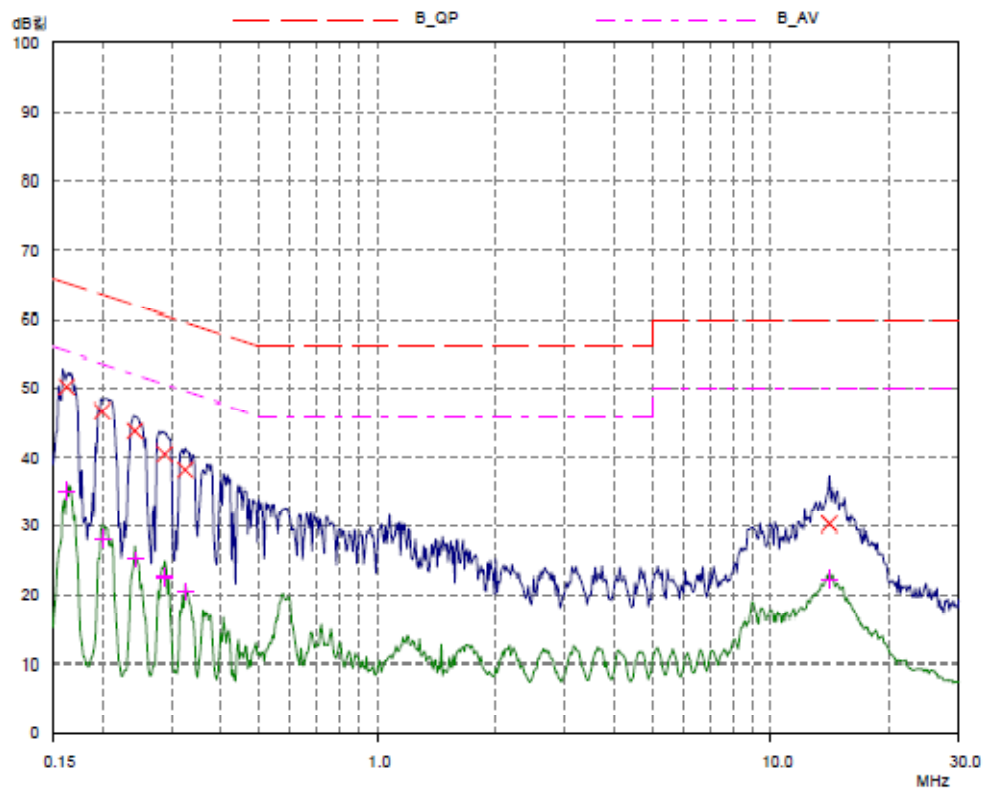
EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11n 2.4G Mode

Result File: 130807_n.dat:

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11n – CH 157

*HOT

ES TECH

26 Jul 2013 13:46

HOT

EUT: Dolphin 6110
Manuf:
Op Cond: 120 V.a. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11n 5G Mode

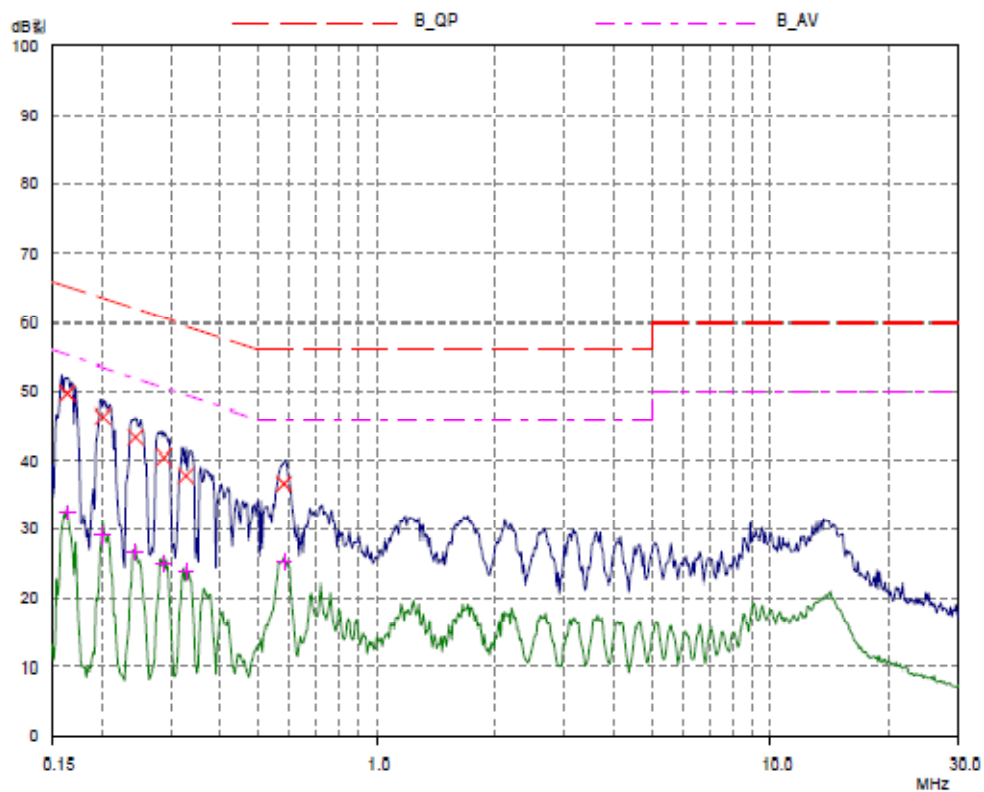
Result File: 130808_h.dat :

Scan Settings

(1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Special diagram for Wireless LAN

802.11n – CH 157

*NEUTRAL

ES TECH
NEUTRAL

26 Jul 2013 13:55

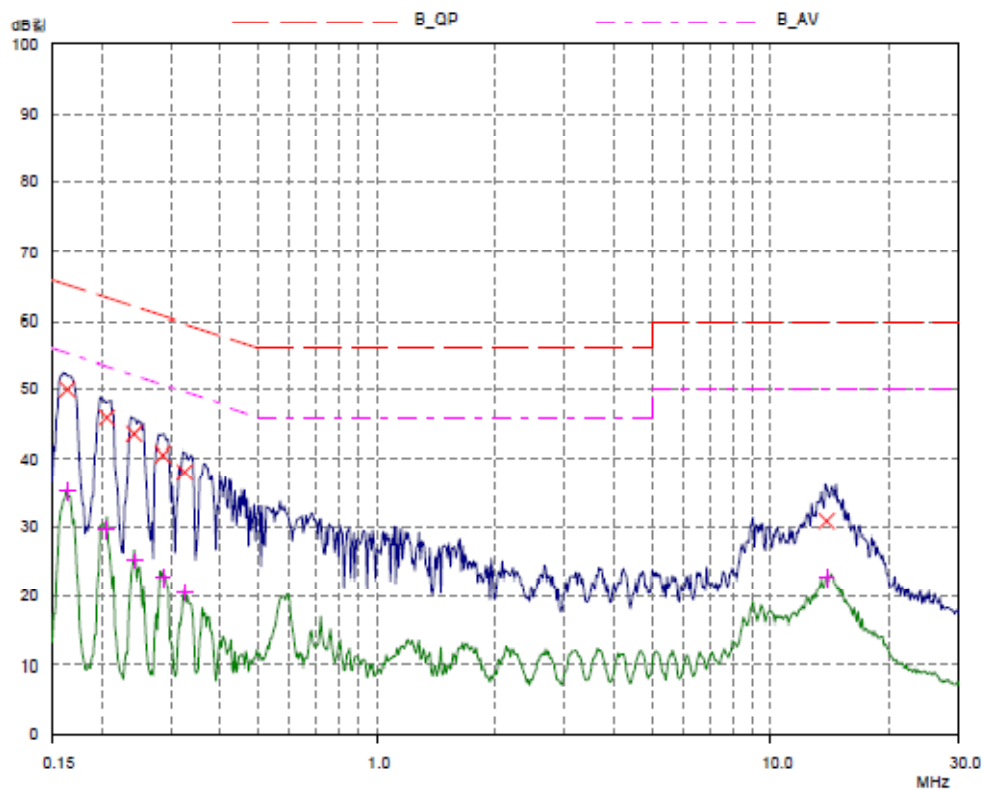
EUT: Dolphin 6110
Manuf:
Op Cond: 120 Va. c.
Operator: Engineer S.D.Hong
Test Spec: CLASS B
Comment: WLAN 802.11n 5G Mode

Result File: 130808_n.dat :

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150kHz	30MHz	0.8%	10kHz	PK+AV	10msec	Auto	OFF	60dB

Final Measurement: Detectors: X QP / + AV
Meas Time: 1sec
Subranges: 25
Acc Margin: 0 dB



Appendix 2. Antenna Requirement

1. Antenna Requirement

1.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.24

1.2 Antenna Connected Construction

The antenna types used in this product are Intergrated Sandwich antenna . The maximum Gain of this antenna of 2.4 GHz is 1.75 dBi and 5 GHz is 2.83 dBi.