

TEST REPORT

FCC ID: Y44-S4

IC: 9932A-S4

Applicant : Stonex Europe Srl
Address : Via Zucchi 1, 20900 Monza(MB), Italy

Equipment under Test (EUT):

Name : S4 Handheld
Model : S4H, S4C

Standards : FCC PART 15, SUBPART C: 2013 (Section 15.247)
IC RSS-210 ISSUE 8 with amendment June 2010

Report No. : CST-TCB140729047-1
Date of Test : August 09- September 4, 2014
Date of Issue : September 5, 2014

Test Result :	PASS *
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* In the configuration tested, the EUT complied with the standards specified above

Authorized Signature



(Mark Zhu)
General Manager

The manufacture should ensure that all the products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

TABLE OF CONTENT

Description	Page
1 General Information	4
1.1 Description of Device (EUT)	4
1.2 Description of Test Facility	4
2 EMC Equipment List	4
3 Test Procedure	7
4 Summary of Measurement	8
4.1 Summary of test result	8
4.2 Test connection	8
4.3 Assistant equipment used for test	9
4.4 Test mode	9
4.5 Channel list	10
4.6 Test Conditions	10
4.7 Measurement Uncertainty (95% confidence levels, k=2)	10
5 Spurious Emission	11
5.1 Radiation Emission	11
5.1.1 Radiation Emission Limits(15.209)	11
5.1.2 Test Setup	11
5.1.3 Test Procedure	13
5.1.4 Test Equipment Setting For emission test Result	13
5.1.5 Test Condition	13
5.1.6 Test Result	13
6 POWER LINE CONDUCTED EMISSION	22
6.1 Conducted Emission Limits(15.207)	22
6.2 Test Setup	22
6.3 Test Procedure	23
6.4 Test Results	23
7 Conducted Maximum Output Power	26
7.1 Test limit	26
7.2 Test Procedure	26
7.3 Test Setup	26
7.4 Test Results	26
8 PEAK POWER SPECTRAL DENSITY	28
8.1 Test limit	28
8.1.1 Please refer section 15.247.	28
8.2 Method of measurement	28
8.3 Test Setup	28
8.4 Test Results	29
9 Bandwidth	33
9.1 Test limit	33
9.2 Method of measurement	33
9.3 Test Setup	33
9.4 Test Results	33
10 Band Edge Check	38
10.1 Test limit	38

10.2	Test Procedure-----	38
10.3	Test Setup-----	38
10.4	Test Result-----	38
11	Antenna Requirement -----	47
11.1	Standard Requirement-----	47
11.2	Antenna Connected Construction-----	47
11.3	Result-----	47

1 General Information

1.1 Description of Device (EUT)

EUT : S4 Handheld
Model No. : S4H, S4C (S4H and S4C are electrically identical, the only difference is Model Number, S4H was tested for representative)
Trade mark : N/A

Power supply : DC 7.4V Supply by battery
Adapter : Manufacturer: NIL
Model No.:PSA15R-150P
Radio : Bluetooth 2.0,
Technology : IEEE 802.11b,g ,
GSM/GPRS 850/1900
Operation : IEEE 802.11b: 2412MHz-2462MHz
frequency : IEEE 802.11g: 2412MHz-2462MHz
Bluetooth 2.0: 2402-2480MHz
GSM/GPRS 850: 824.2MHz-848.8MHz
GSM/GPRS 1900: 1850.2MHz-1909.8MHz
Modulation : IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK),
IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK),
Bluetooth 2.0: GFSK
GSM/GPRS: GMSK
Antenna Type : PCB Antenna, max gain -3 dBi for WIFI,
PCB Antenna, max gain -3 dBi for BT.
PCB Antenna, max gain -3 dBi for GSM
Applicant : Stonex Europe Srl
Address : Via Zucchi 1, 20900 Monza(MB), Italy
Manufacturer : Stonex Europe Srl
Address : Via Zucchi 1, 20900 Monza(MB), Italy
Note: This report is only test for WIFI, for other radio test see other test report.

1.2 Description of Test Facility

Alpha Product Testing Laboratory
Building B, East Area of Nanchang Second, Industrial Zone, Gushu 2nd Road
Bao'an, Shenzhen, China
FCC Registered No.:197647
IC Registration Number: 12135A

2 EMC Equipment List

Equipment	Manufacture	Model No.	Serial No.	Last cal.	Cal Interval
3m Semi-Anechoic	ETS-LINDGREN	N/A	SEL0017	Nov. 16, 13	1 Year
Spectrum analyzer	Agilent	E4407B	MY49510055	Oct. 30, 13	1 Year
Receiver	R&S	ESCI	101165	Oct. 30, 13	1 Year
Receiver	R&S	ESCI	101202	Oct. 30, 13	1 Year
Bilog Antenna	SCHWARZBECK	VULB 9168	9168-438	Mar.11, 14	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D(1201)	Mar.11, 14	1 Year
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA 9170 D(1432)	Mar.11, 14	1 Year
Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	Mar.12, 13	1 Year
L.I.S.N.	SCHWARZBECK	NSLK8126	8126466	Oct. 30, 13	1 Year
Cable	Resenberger	SUCOFLEX 104	MY6562/4	Oct. 30, 13	1 Year
Cable	Resenberger	SUCOFLEX 104	309972/4	Oct. 30, 13	1 Year
Cable	Resenberger	SUCOFLEX 104	329112/4	Oct. 30, 13	1 Year
Power Meter	Anritsu	ML2487A	6K00001491	Oct. 30, 13	1 Year
Power sensor	Anritsu	ML2491A	32516	Oct. 30, 13	1 Year
Pre-amplifier	SCHWARZBECK	BBV9743	9743-019	Oct. 30, 13	1 Year
Pre-amplifier	Quietek	AP-180C	CHM-0602012	Oct. 30, 13	1 Year
Base station	Agilent	E5515C	GB44300243	Oct. 30, 13	1 Year
Temperature controller	Terchy	MHQ	120	Oct. 30, 13	1 Year

Power divider	Anritsu	K240C	020346	Oct. 30, 13	1 Year
Signal Generator	ROHDE&SCHWARZ	CMU200	116785	Oct. 30, 13	1 Year
Attenuator	Agilent	8491B	MY39262165	Oct. 30, 13	1 Year
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54080020	2014.01.19	1 Year
X-series USB Peak and Average Power Sensor	Agilent	U2021XA	MY54110001	2014.01.19	1 Year
4 Ch.Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	TW54063507	2014.01.19	1 Year

3 Test Procedures

POWER LINE CONDUCTED INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a 50 u H LISN. Both Lines were observed. The bandwidth of the receiver was 10 kHz with an appropriate sweep speed. The ambient temperature of the EUT was 25degree with a humidity of 58%.

RADIATION INTERFERENCE: The test procedure used was ANSI Standard C63.4-2003 using a ANRITSU spectrum analyzer with a pre-selector. The analyzer was calibrated in dB above a micro volt at the output of the antenna. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3MHz above 1 GHz. The ambient temperature of the EUT was 25°C with a humidity of 58%.

FORMULA OF CONVERSION FACTORS: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer and cable loss. The antenna correction factors and cable loss are stated in terms of dB. The gain of the Pre-selector was accounted for in the Spectrum Analyzer Meter Reading.

Example:

Freq (MHz) METER READING + ACF + CABLE = FS

33.20 dBuV + 10.36 dB + 0.9 dB= 44.46 dBuV/m @ 3m

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES: The EUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The EUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation. When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes. The situation was similar for the conducted measurement except that the table did not rotate. The EUT was setup as described in ANSI Standard C63.4-2003 10.1.7 with the EUT 40 cm from the vertical ground wall.

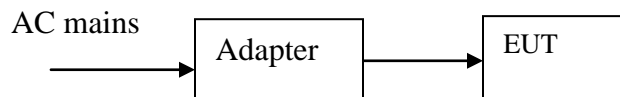
4 Summary of Measurement

4.1 Summary of test result

Test Item	Test Requirement	Standards Paragraph	Result
Spurious Emission	FCC PART 15 : 2013& IC RSS-210	Section 15.247&15.209 & A8	Compliance
Conduction Emission	FCC PART 15: 2013& IC RSS Gen	Section 15.207&7.2.4	Compliance
Bandwidth Test	FCC PART 15:2013& IC RSS-210 IC RSS Gen	Section 15.247& A8 & 4.6.1	Compliance
Peak Power	FCC PART 15:2013 IC RSS-210	Section 15.247	Compliance
Power Density	FCC PART 15:2013& IC RSS-210	Section 15.247& A8	Compliance
Band Edge	FCC PART 15:2013& IC RSS-210	Section 15.247& A8	Compliance
Antenna Requirement	FCC PART 15 : 2013& IC RSS Gen	Section 15.203&7.1.4	Compliance

Note: EUT is configured to transmit continuously (Duty cycle) is 100%.

4.2 Test connection



4.3 Assistant equipment used for test

Description	:	Adapter
Manufacturer	:	NIL
Model No.	:	PSA15R-150P
Input	:	AC 100-240V 50-60Hz
Output	:	DC 15V, 1.0A

4.4 Test mode

Tested mode, channel, and data rate information			
Mode	data rate (Mbps)(see Note)	Channel	Frequency (MHz)
IEEE 802.11b	1	Low :CH1	2412
	1	Middle: CH6	2437
	1	High: CH11	2462
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
Note: According exploratory test, EUT will have maximum output power in those data rate. so those data rate were used for all test.			

4.5 Channel list

For IEEE 802.11b/g					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH1	2412	CH5	2432	CH9	2452
CH2	2417	CH6	2437	CH10	2457
CH3	2422	CH7	2442	CH11	2462
CH4	2427	CH8	2447		

4.6 Test Conditions

Temperature range	21-25°C
Humidity range	40-75%
Pressure range	86-106kPa

4.7 Measurement Uncertainty (95% confidence levels, k=2)

Item	MU	Remark
Uncertainty for Power point Conducted Emissions Test	2.42dB	
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	2.13 dB	Polarize: V
	2.57dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	3.54dB	Polarize: V
	4.1dB	Polarize: H
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 25GHz)	2.08dB	Polarize: H
	2.56dB	Polarize: V
Uncertainty for radio frequency	1×10 ⁻⁹	
Uncertainty for conducted RF Power	0.65dB	
Uncertainty for temperature	0.2°C	
Uncertainty for humidity	1%	
Uncertainty for DC and low frequency voltages	0.06%	

5 Spurious Emission

5.1 Radiation Emission

5.1.1 Radiation Emission Limits(15.209)

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

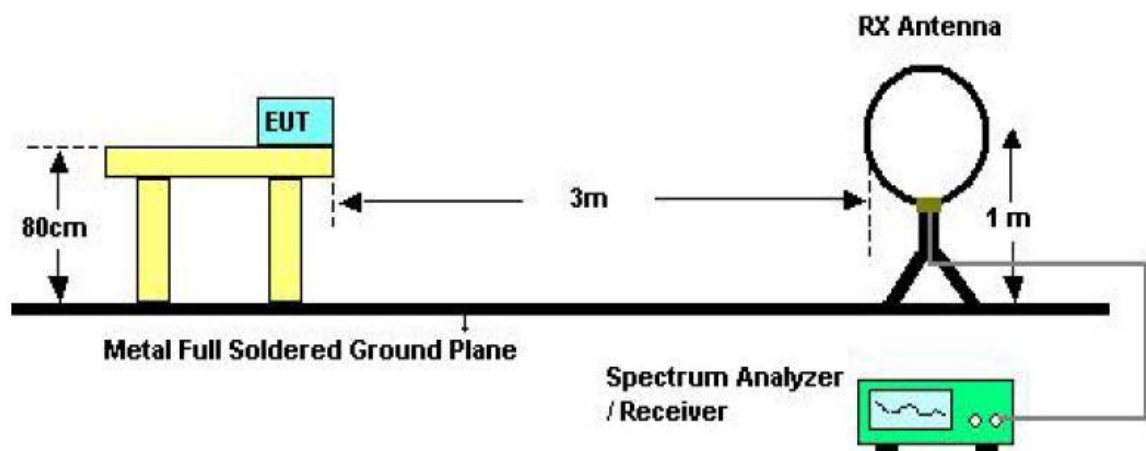
Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

NOTE:

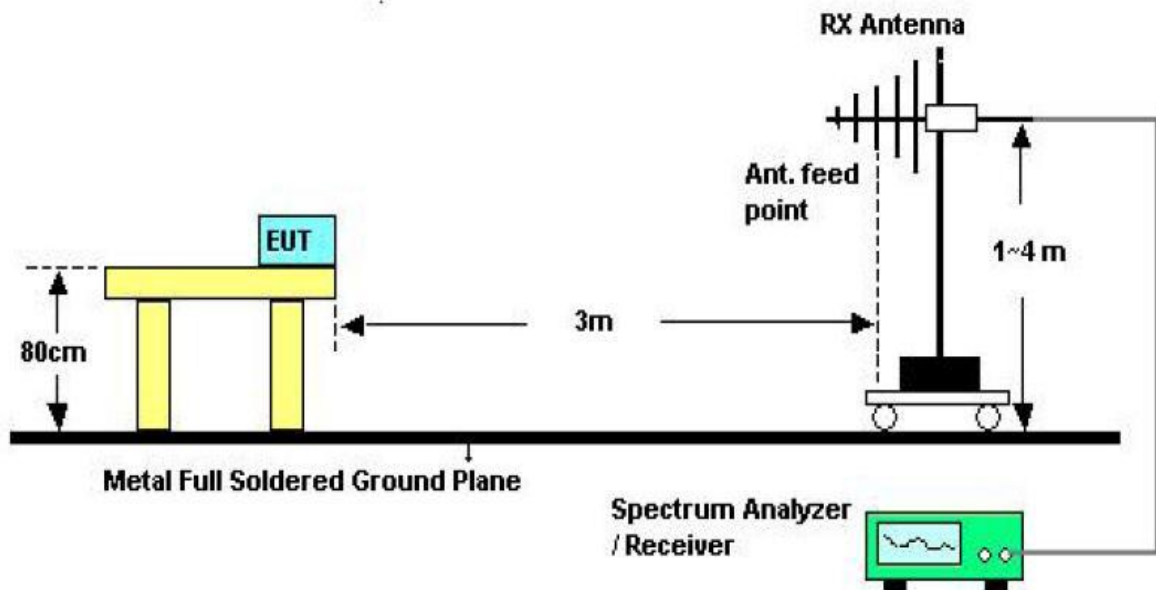
- The tighter limit applies at the band edges.
- Emission Level (dB uV/m)=20log Emission Level (uV/m)

5.1.2 Test Setup

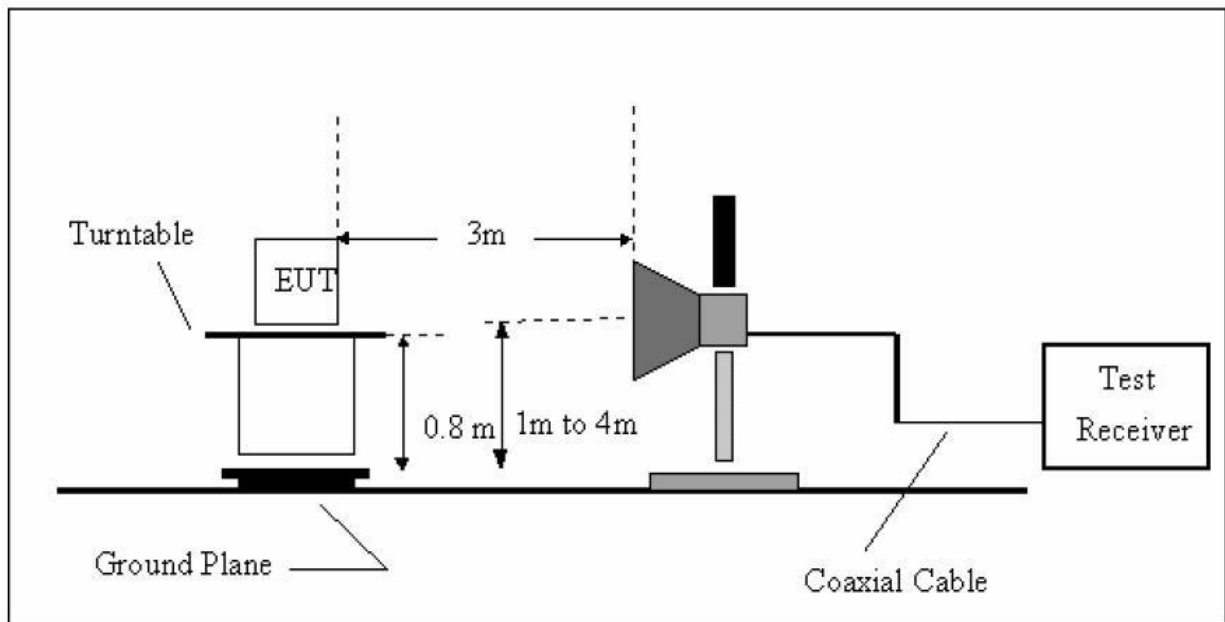
See the next page



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

5.1.3 Test Procedure

- a) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground, The table was rotated 360 degrees to determine the position of the highest radiation
- b) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.
- c) The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured
- d) If Peak value comply with QP limit below 1GHz.The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.
- e) For the actual test configuration, please see the test setup photo.

Note: 3 axes be tested in the radiated emission test, only the Z axes worst case was recorded in the test report

5.1.4 Test Equipment Setting For emission test Result

9KHz~150KHz	RBW 200Hz	VBW1KHz
150KHz~30MHz	RBW 9KHz	VBW 30KHz
30MHz~1GHz	RBW 120KHz	VBW 300KHz
Above 1GHz	RBW 1MHz	VBW 3MHz

5.1.5 Test Condition

Continuously transmitting with maximum power (WiFi mode).

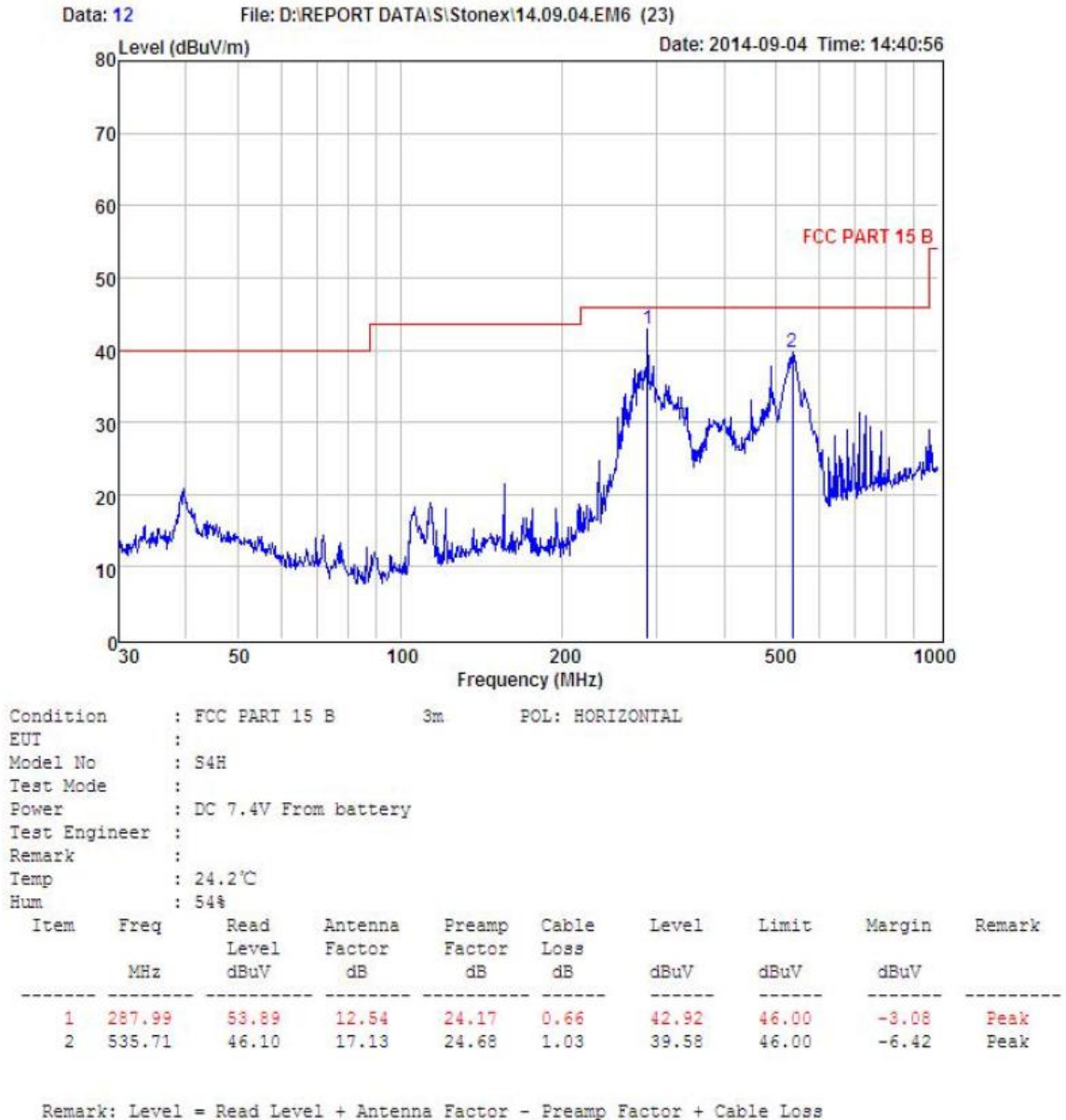
5.1.6 Test Result

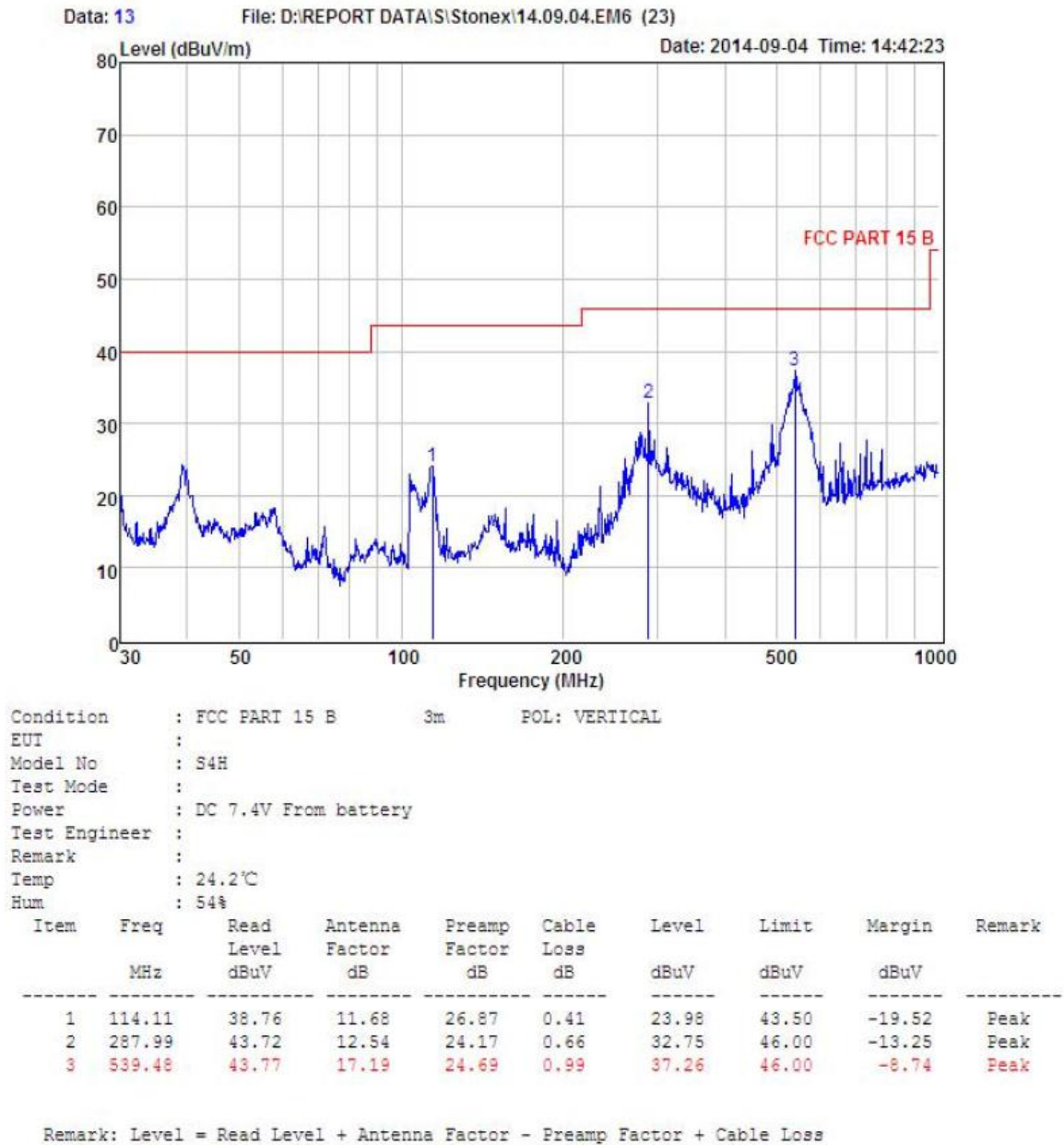
We have scanned the 9KHz from 25GHz to the EUT.

Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

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





From 1G-25GHz

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Low		

IEEE 802.11b

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1158	V	51.41	---	-11.27	40.14	---	74.00	54.00	-33.86	Peak
1727	V	48.96	---	-9.79	39.17	---	74.00	54.00	-34.83	Peak
2258	V	49.68	---	-8.36	41.32	---	74.00	54.00	-32.68	Peak
4824	V	41.88	---	0.64	42.52	---	74.00	54.00	-31.48	Peak
N/A										

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Low		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1259	H	49.94	---	-10.11	39.83	---	74.00	54.00	-34.17	Peak
1910	H	50.36	---	-8.76	41.60	---	74.00	54.00	-32.40	Peak
2936	H	47.21	---	-5.75	41.46	---	74.00	54.00	-32.54	Peak
4824	H	41.36	---	0.64	42.00	---	74.00	54.00	-32.00	Peak
N/A										

Notes: AV Means AV detector test data, Peak Means Peak detector test data.

Emissions attenuated more than 20 dB below the permissible value are not reported.

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Mid		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1276	V	49.9	---	-10.99	38.91	---	74.00	54.00	-35.09	Peak
2017	V	48.79	---	-8.79	40.00	---	74.00	54.00	-34.00	Peak
2938	V	45.39	---	-5.96	39.43	---	74.00	54.00	-34.57	Peak
4874	V	41.24	---	0.76	42.00	---	74.00	54.00	-32.00	Peak

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Mid		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1239	H	51.39	---	-10.69	40.70	---	74.00	54.00	-33.30	Peak
1937	H	48.69	---	-8.58	40.11	---	74.00	54.00	-33.89	Peak
3436	H	45.69	---	-4.96	40.73	---	74.00	54.00	-33.27	Peak
4874	H	41.76	---	0.76	42.52	---	74.00	54.00	-31.48	Peak

Notes: AV Means AV detector test data, Peak Means Peak detector test data.

Emissions attenuated more than 20 dB below the permissible value are not reported.

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX High		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1391	V	50.69	---	-10.46	40.23	---	74.00	54.00	-33.77	Peak
2268	V	47.99	---	-8.11	39.88	---	74.00	54.00	-34.12	Peak
3109	V	48.26	---	-5.69	42.57	---	74.00	54.00	-31.43	Peak
4924	V	42.32	---	0.87	43.19	---	74.00	54.00	-30.81	Peak

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX High		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1324	H	51.25	---	-10.89	40.36	---	74.00	54.00	-33.64	Peak
2358	H	48.65	---	-7.96	40.69	---	74.00	54.00	-33.31	Peak
3689	H	43.69	---	-4.32	39.37	---	74.00	54.00	-34.63	Peak
4924	H	42.04	---	0.87	42.91	---	74.00	54.00	-31.09	Peak

Notes: AV Means AV detector test data, Peak Means Peak detector test data.

Emissions attenuated more than 20 dB below the permissible value are not reported.

IEEE 802.11 g:

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Low		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1140	V	51.32	---	-11.26	40.06	---	74.00	54.00	-33.94	Peak
2578	V	48.63	---	-7.16	41.47	---	74.00	54.00	-32.53	Peak
3.57	V	46.52	---	-5.86	40.66	---	74.00	54.00	-33.34	Peak
4824	V	42.06	---	0.64	42.70	---	74.00	54.00	-31.30	Peak
N/A										

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Low		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1290	H	50.36	---	-10.98	39.38	---	74.00	54.00	-34.62	Peak
2030	H	48.99	---	-8.6	40.39	---	74.00	54.00	-33.61	Peak
3480	H	45.76	---	-4.99	40.77	---	74.00	54.00	-33.23	Peak
4824	H	42.56	---	0.64	43.20	---	74.00	54.00	-30.80	Peak
N/A										

Notes: AV Means AV detector test data, Peak Means Peak detector test data.

Emissions attenuated more than 20 dB below the permissible value are not reported.

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Mid		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1370	V	51.23	---	-10.45	40.78	---	74.00	54.00	-33.22	Peak
2586	V	48.36	---	-7.23	41.13	---	74.00	54.00	-32.87	Peak
3350	V	48.52	---	-5.2	43.32	---	74.00	54.00	-30.68	Peak
4874	V	42.85	---	0.76	43.61	---	74.00	54.00	-30.39	Peak

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX Mid		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1319	H	50.87	---	-10.86	40.01	---	74.00	54.00	-33.99	Peak
2310	H	47.36	---	-7.48	39.88	---	74.00	54.00	-34.12	Peak
3575	H	44.35	---	-4.78	39.57	---	74.00	54.00	-34.43	Peak
4874	H	41.65	---	0.76	42.41	---	74.00	54.00	-31.59	Peak

Notes: AV Means AV detector test data, Peak Means Peak detector test data.

Emissions attenuated more than 20 dB below the permissible value are not reported.

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX High		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1300	V	51.29	---	-10.88	40.41	---	74.00	54.00	-33.59	Peak
2980	V	48.18	---	-5.89	42.29	---	74.00	54.00	-31.71	Peak
3827	V	43.74	---	-3.99	39.75	---	74.00	54.00	-34.25	Peak
4924	V	41.05	---	0.87	41.92	---	74.00	54.00	-32.08	Peak

EUT	S4 Handheld	Model Name	S4H
Temperature	26°C	Relative Humidity	56%
Pressure	960hPa	Test voltage	DC 7.4V From battery
Test Mode	TX High		

Freq. (MHz)	Ant. Pol H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Ant. / CL CF (dB)	Actual Fs		Peak Limit (dBuV/m)	AV Limit (dBuV/m)	Margin (dB)	Remark
					Peak (dBuV/m)	AV (dBuV/m)				
1442	H	50.26	---	-10.31	39.95	---	74.00	54.00	-34.0	Peak
2190	H	47.86	---	-8.28	39.58	---	74.00	54.00	-34.4	Peak
3903	H	43.25	---	-3.7	39.55	---	74.00	54.00	-34.4	Peak
4924	H	42.07	---	0.87	42.94	---	74.00	54.00	-31.0	Peak

Notes: AV Means AV detector test data, Peak Means Peak detector test data.

Emissions attenuated more than 20 dB below the permissible value are not reported.

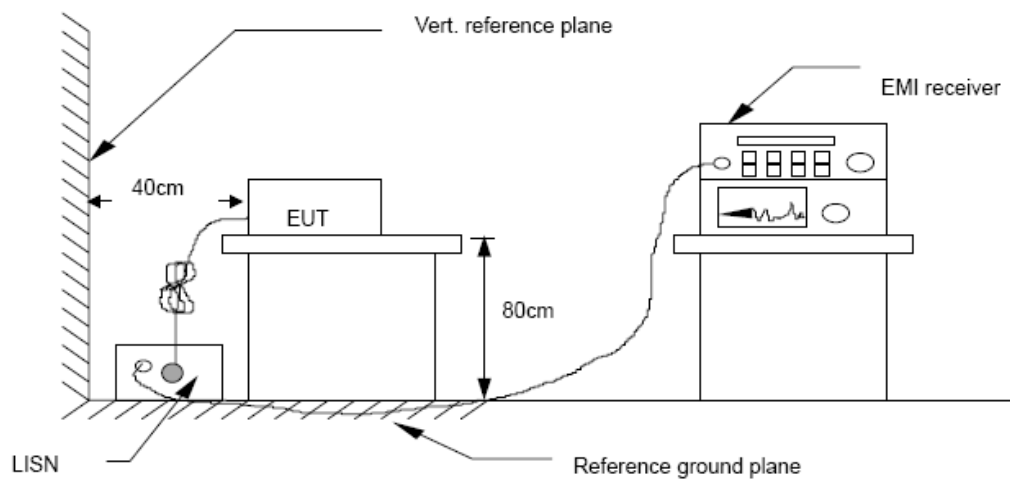
6 POWER LINE CONDUCTED EMISSION

6.1 Conducted Emission Limits(15.207)

Frequency MHz	Limits dB(μ V)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

- Notes:
1. *Decreasing linearly with logarithm of frequency.
 2. The lower limit shall apply at the transition frequencies.
 3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

6.2 Test Setup



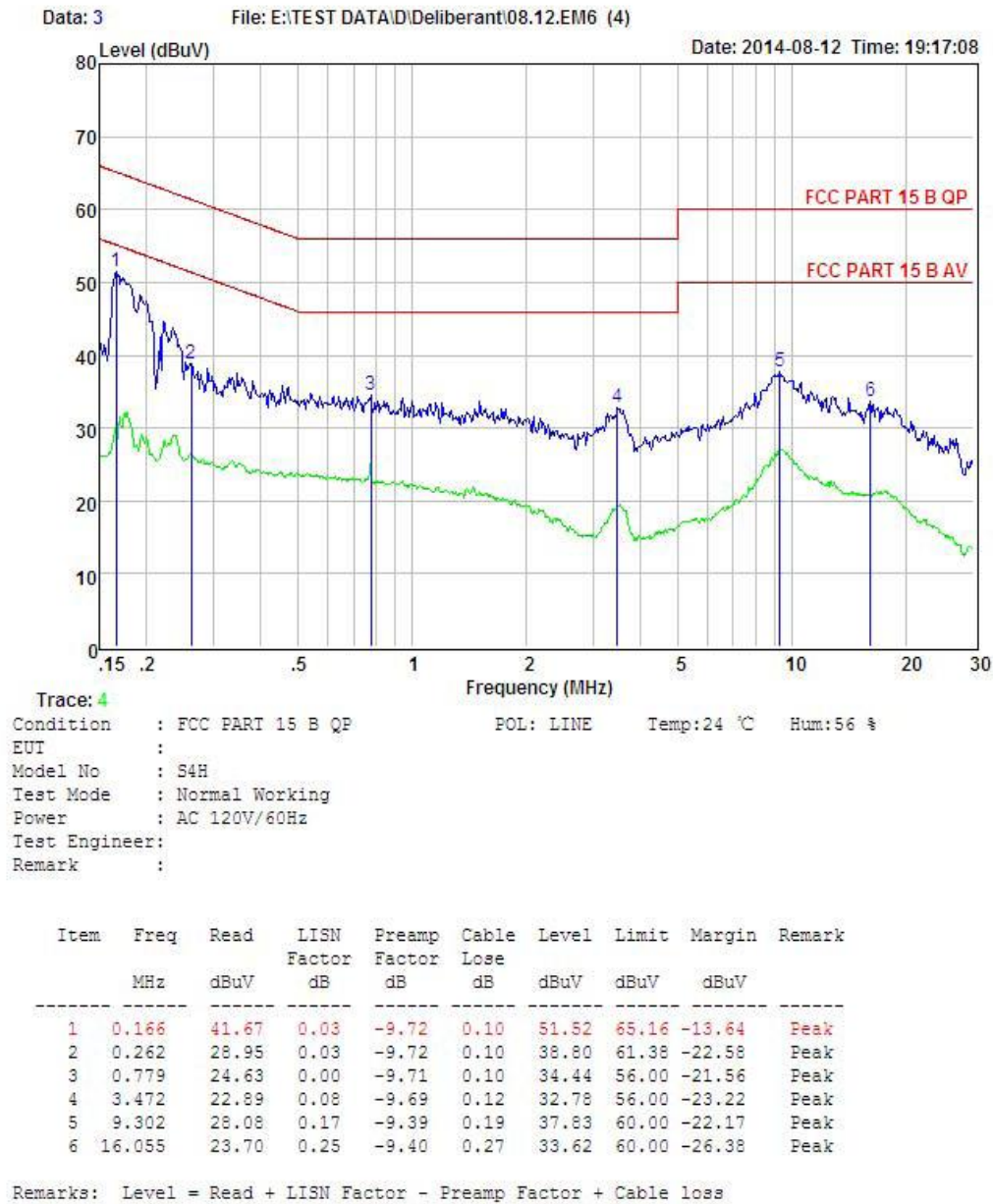
6.3 Test Procedure

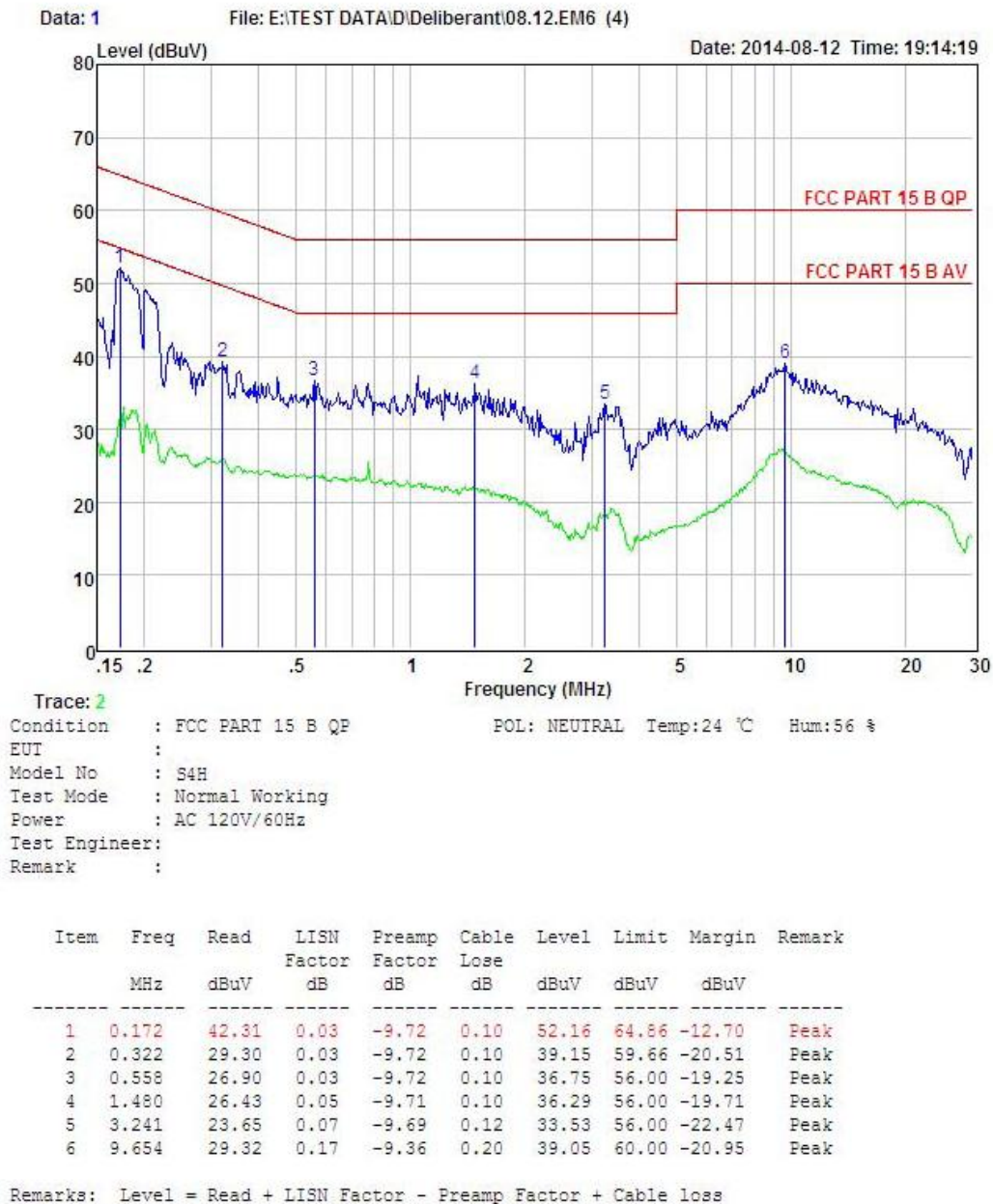
The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-2003 on Conducted Emission Measurement. The bandwidth of test receiver (R & S ESCS4H0) is set at 9 kHz.

6.4 Test Results

PASS

Detailed information please see the following page.





7 Conducted Maximum Output Power

7.1 Test limit

Please refer section 15.247.

Regulation 15.247(b) The limit of Maximum Peak Output Power Measurement is 1W (30dBm)

7.2 Test Procedure

Details see the KDB558074 Meas Guidance V03r02

7.2.1 Place the EUT on the table and set it in transmitting mode.

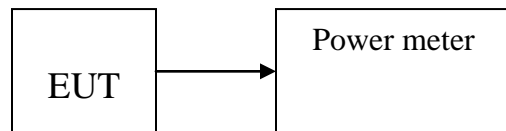
7.2.2 Connected the EUT's antenna port to peak power meter by 20dB attenuator.

7.2.3 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.

Details see the KDB558074 DTS Meas Guidance V03r02

7.3 Test Setup



7.4 Test Results

PASS

Detailed information please see the following page.

EUT: S4 Handheld		M/N: S4H		
Test date: 2014-08-03		Test site: RF site		Tested by: Simple Guan
Mode	Frequency (MHz)	PK Output power (dBm)	Limit (dBm)	Margin (dB)
IEEE 802.11 b	CH1: 2412	17.06	30	12.94
	CH6: 2437	17.19	30	12.81
	CH11: 2462	17.01	30	12.99
IEEE 802.11 g	CH1: 2412	16.28	30	13.72
	CH6: 2437	16.32	30	13.68
	CH11: 2462	16.16	30	13.84
Conclusion: PASS				

8 PEAK POWER SPECTRAL DENSITY

8.1 Test limit

8.1.1 Please refer section 15.247.

8.1.2 For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

8.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

8.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

8.2.1 Place the EUT on the table and set it in transmitting mode.

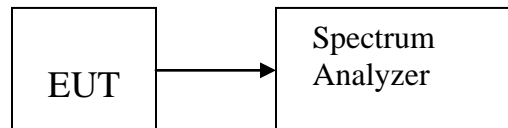
8.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

8.2.3 Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, span=5-30%EBW, detail see the test plot.

8.2.4 Record the max reading.

8.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

8.3 Test Setup



8.4 Test Results

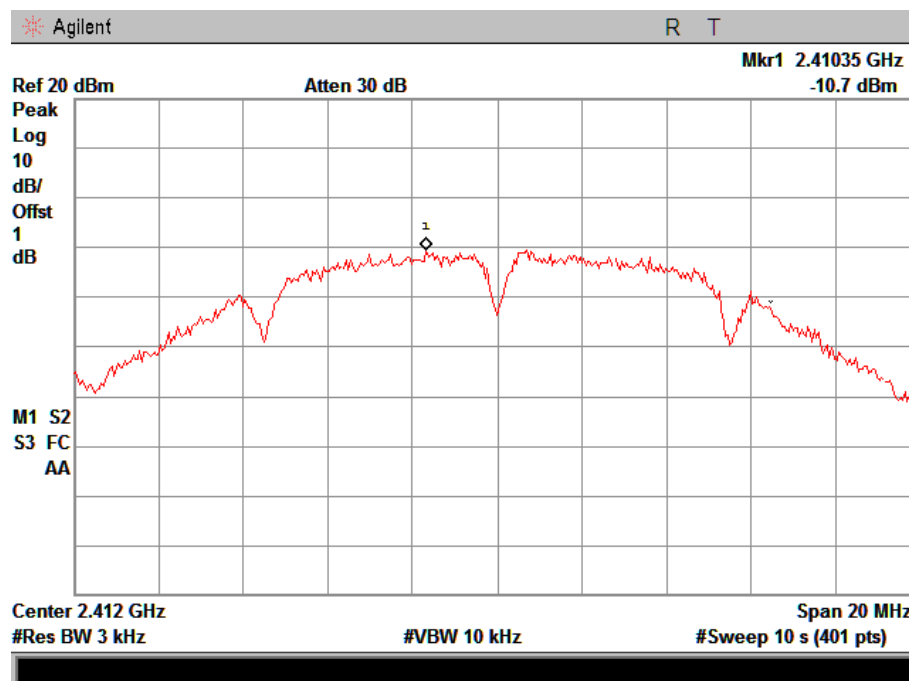
PASS.

Detailed information please see the following page.

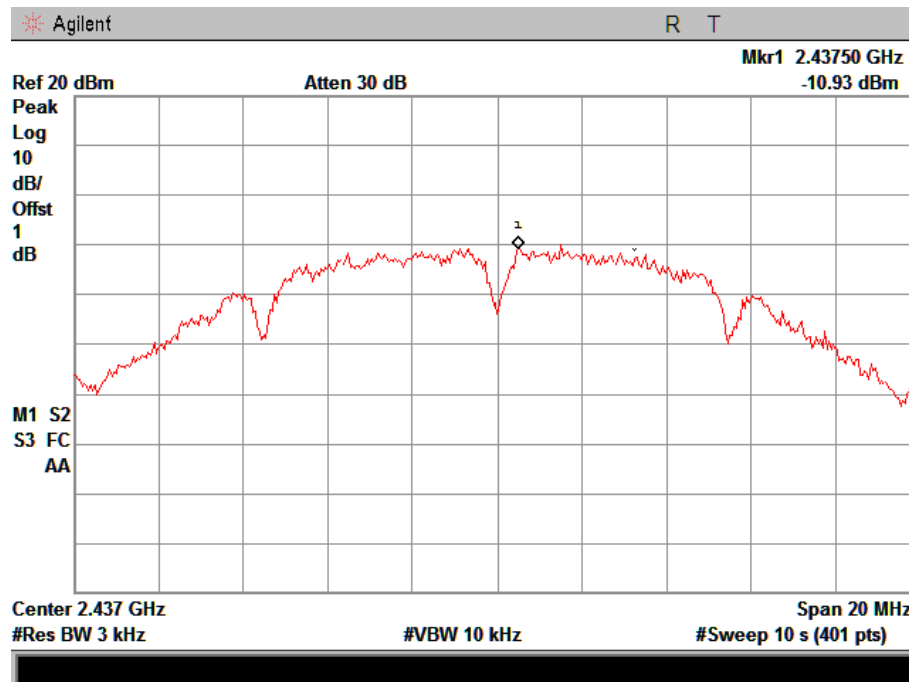
Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit (dBm)	Result
IEEE 802.11b:				
Low	2412	-10.7	8	PASS
Mid	2437	-10.93	8	PASS
High	2462	-10.96	8	PASS
IEEE 802.11g:				
Low	2412	-12.85	8	PASS
Mid	2437	-12.91	8	PASS
High	2462	-13.48	8	PASS

IEEE 802.11b:

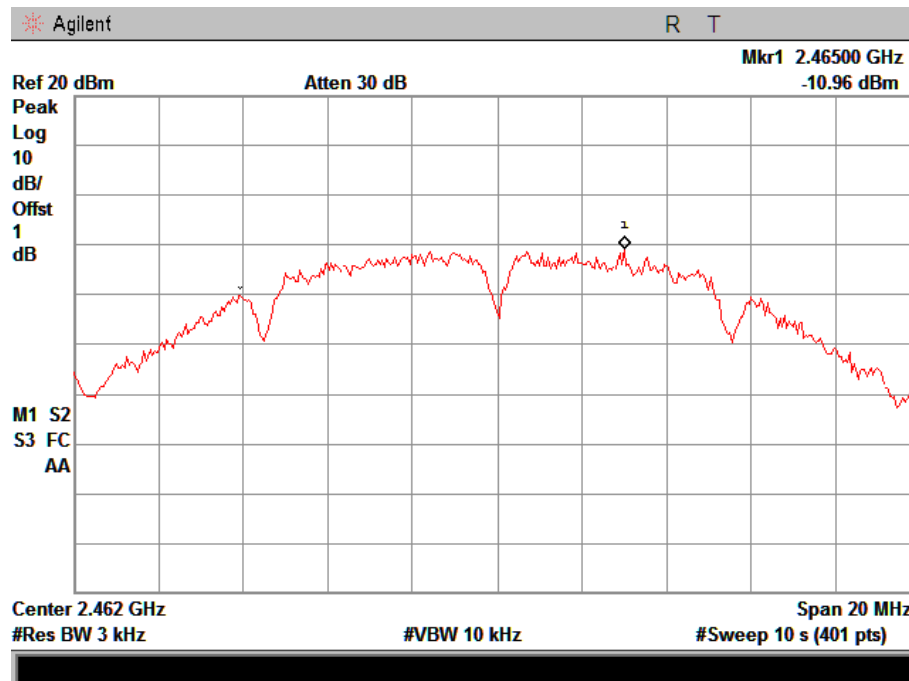
CH Low:



CH Mid:

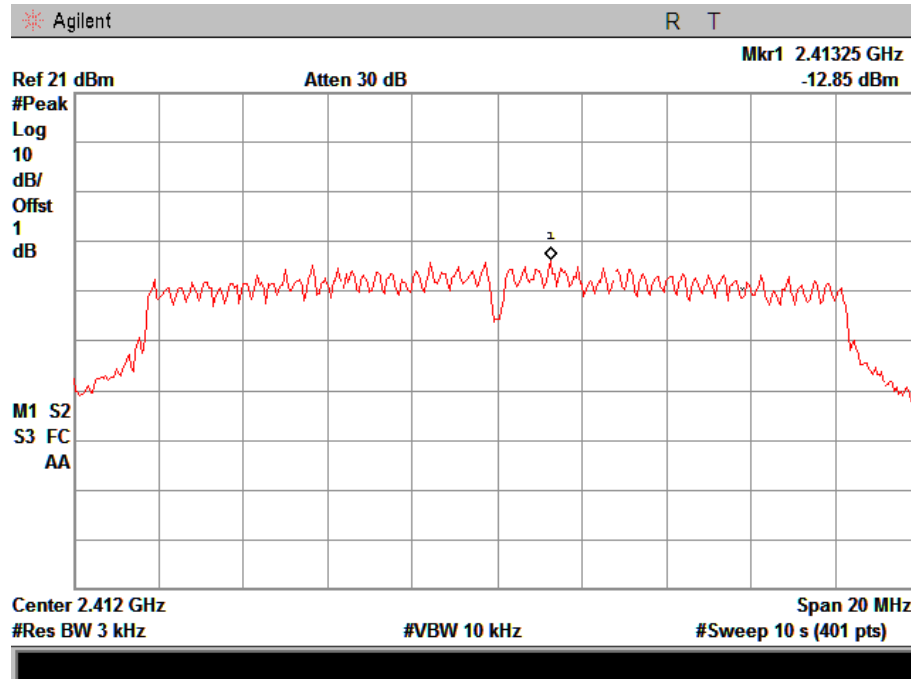


CH High:

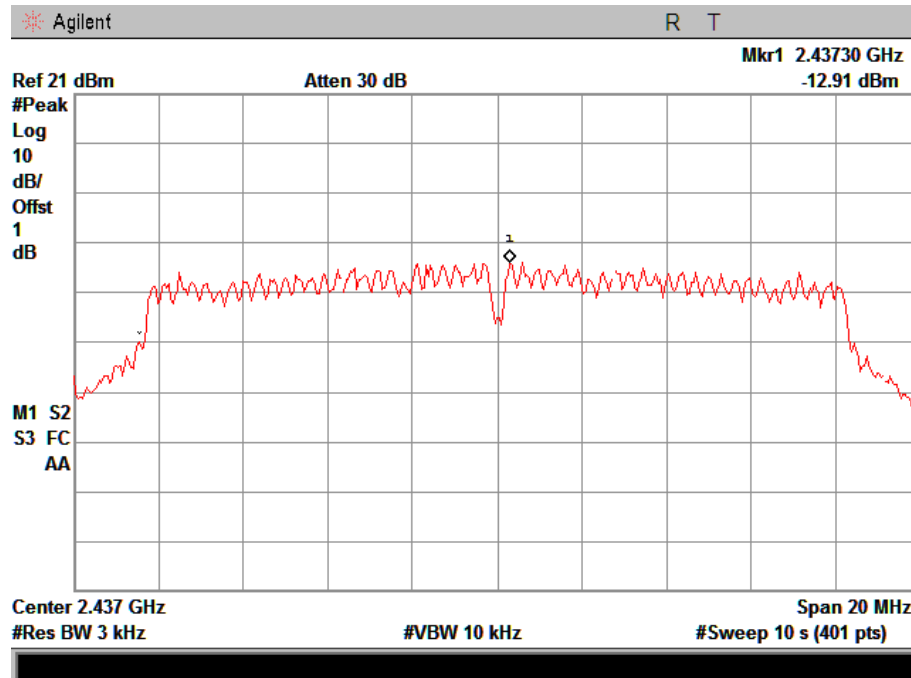


IEEE 802.11g:

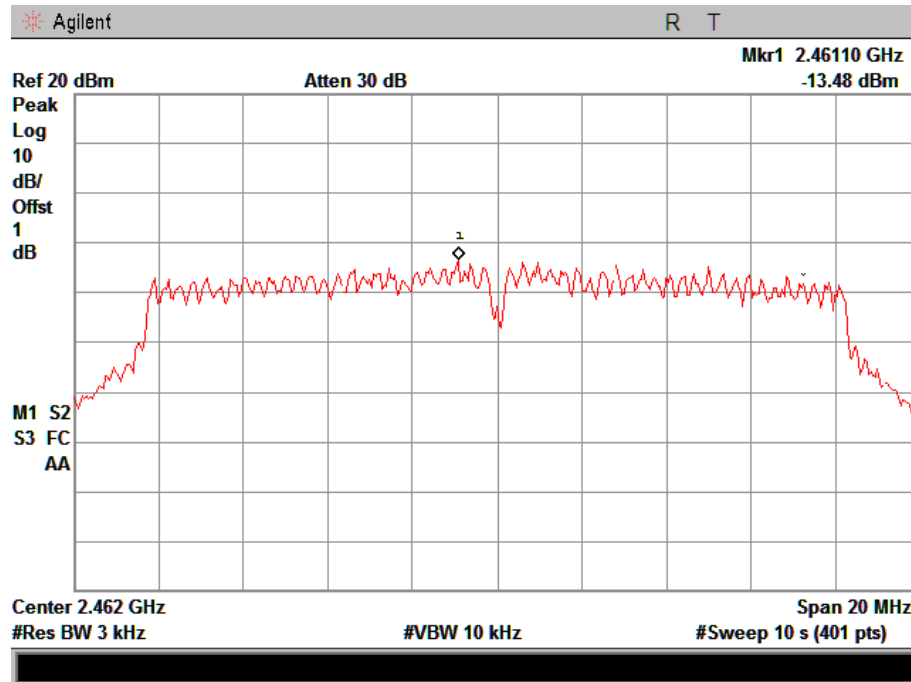
CH Low:



CH Mid:



CH High:



9 Bandwidth

9.1 Test limit

Please refer section 15.247

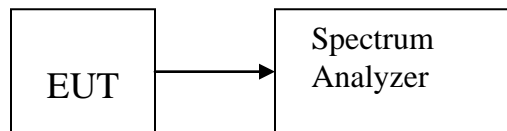
For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz.

9.2 Method of measurement

Details see the KDB558074 D01 DTS Meas Guidance v03r02.

- a) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.
- b) The test receiver set $RBW = 100 \text{ kHz}$, $VBW \geq 3RBW$, Sweep time set auto, detail see the test plot.

9.3 Test Setup



9.4 Test Results

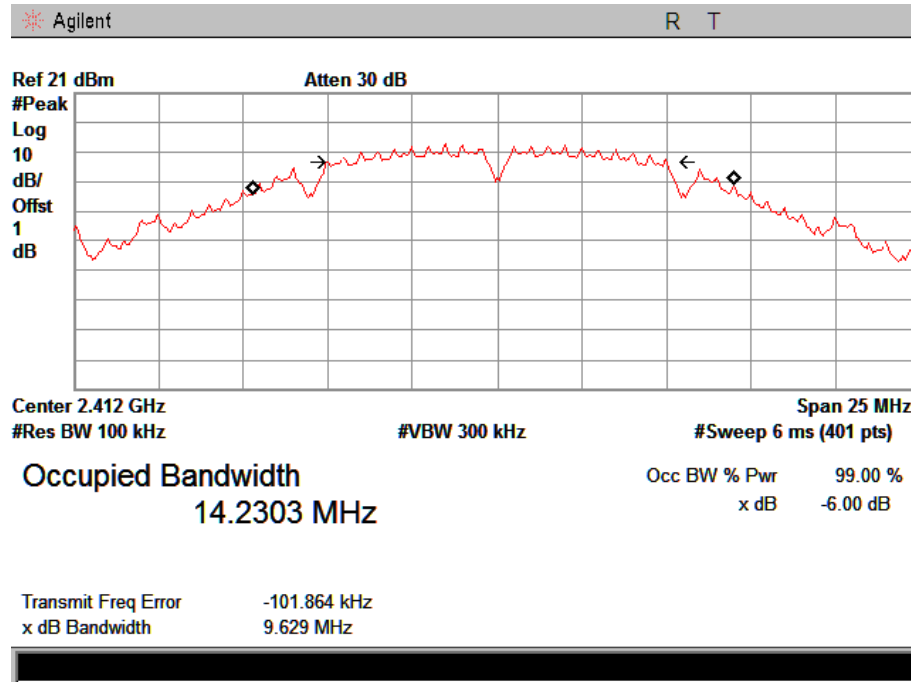
PASS.

Detailed information please see the following page.

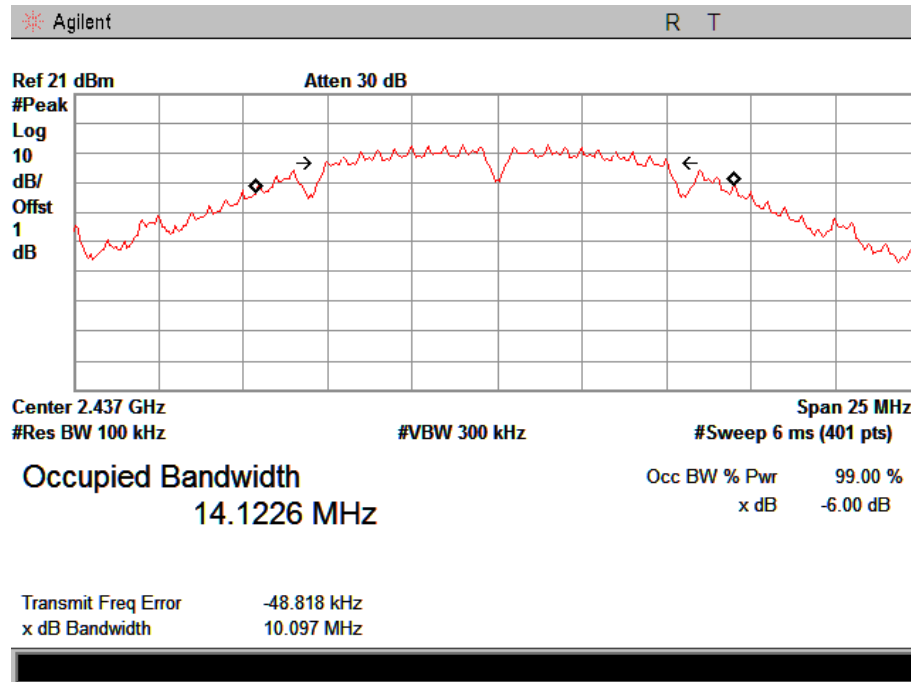
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
IEEE 802.11b:					
Low	2412	9.629	14.2303	0.5	PASS
Mid	2437	10.097	14.0226	0.5	PASS
High	2462	10.067	14.0283	0.5	PASS
Low	2412	15.674	16.052	0.5	PASS
Mid	2437	15.651	16.5314	0.5	PASS
High	2462	15.797	16.4385	0.5	PASS

IEEE 802.11b:

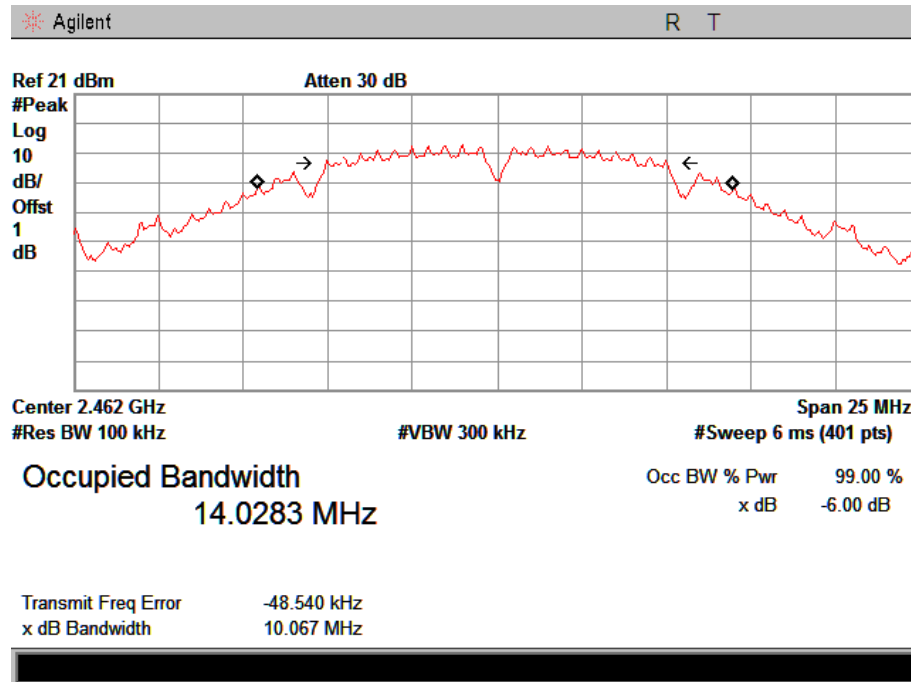
CH Low:



CH Mid:

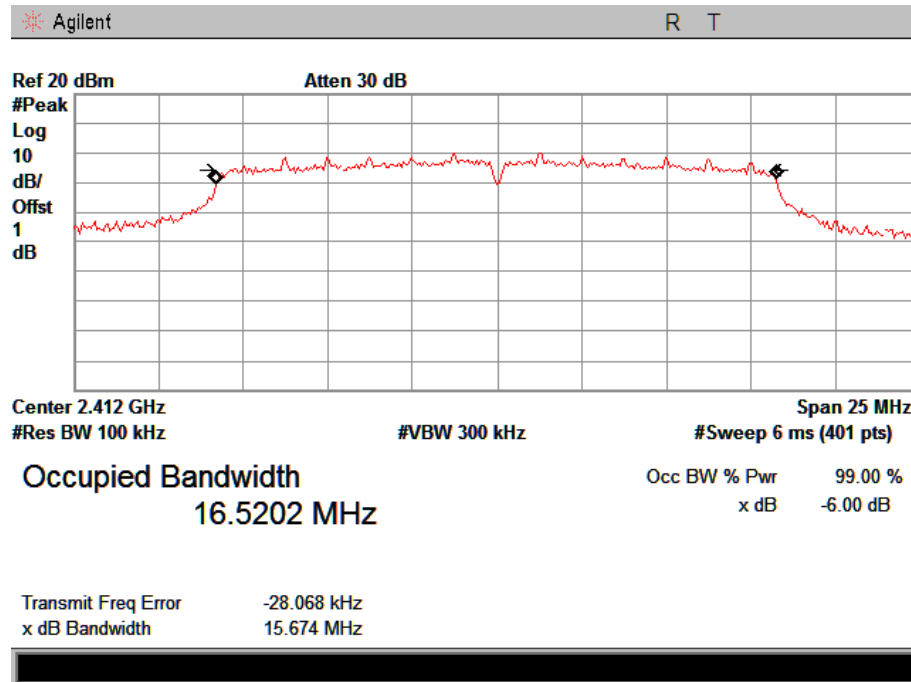


CH High:

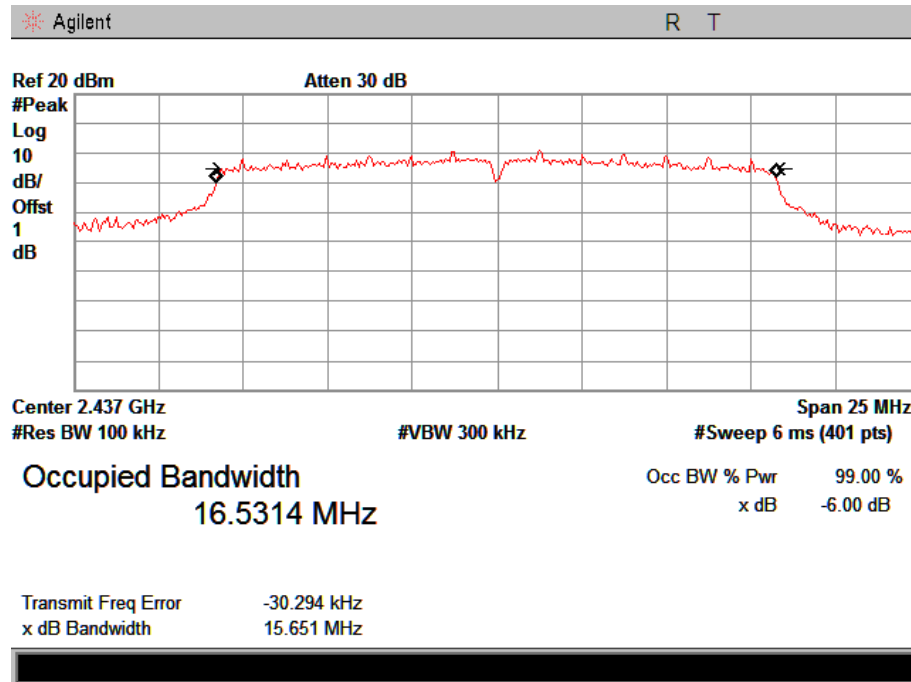


IEEE 802.11g:

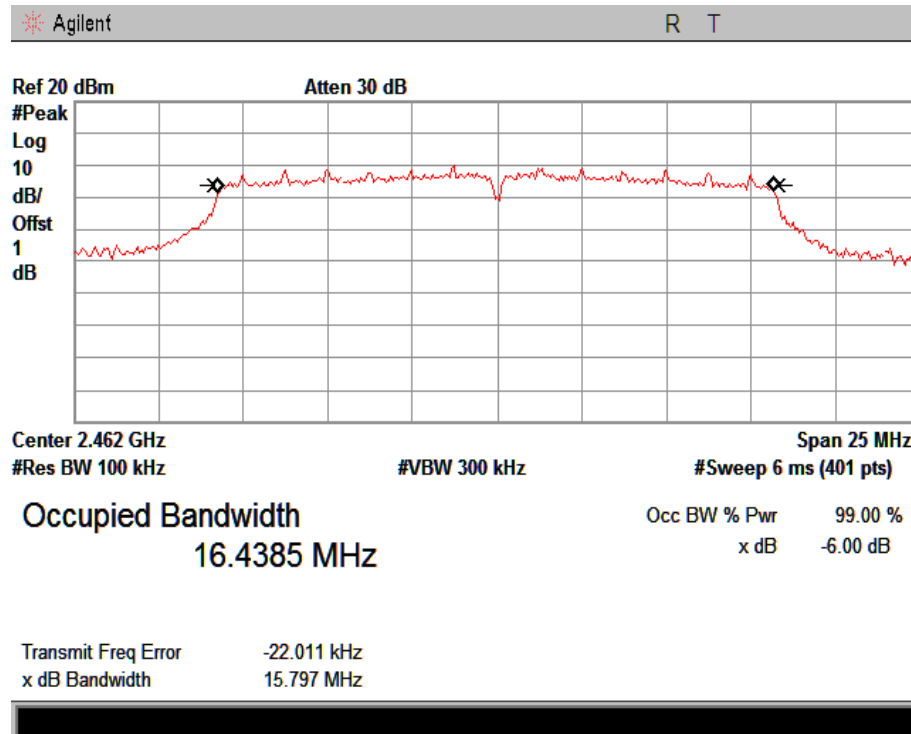
CH Low:



CH Mid:



CH High:



10 Band Edge Check

10.1 Test limit

Please refer section 15.247

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz and 5725MHz to 5850MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

10.2 Test Procedure

12.2.1 Put the EUT on a 0.8m high table, power on the EUT. Emissions were scanned and measured rotating the EUT to 360 degrees, Find the maximum Emission

12.2.2 Check the spurious emissions out of band.

12.2.3 RBW/VBW set to 1 MHz/3MHz

10.3 Test Setup

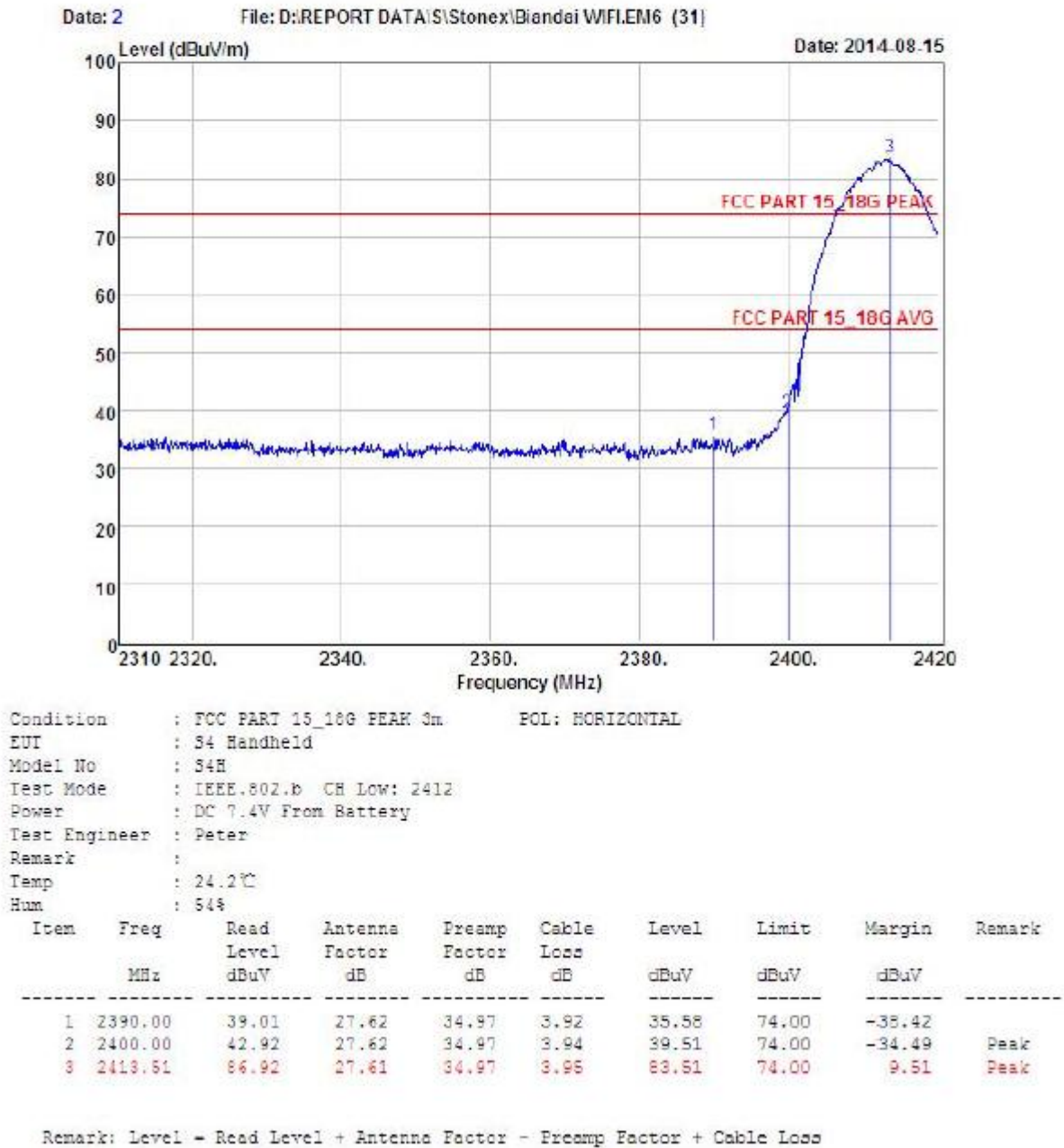
Same as 5.2.2.

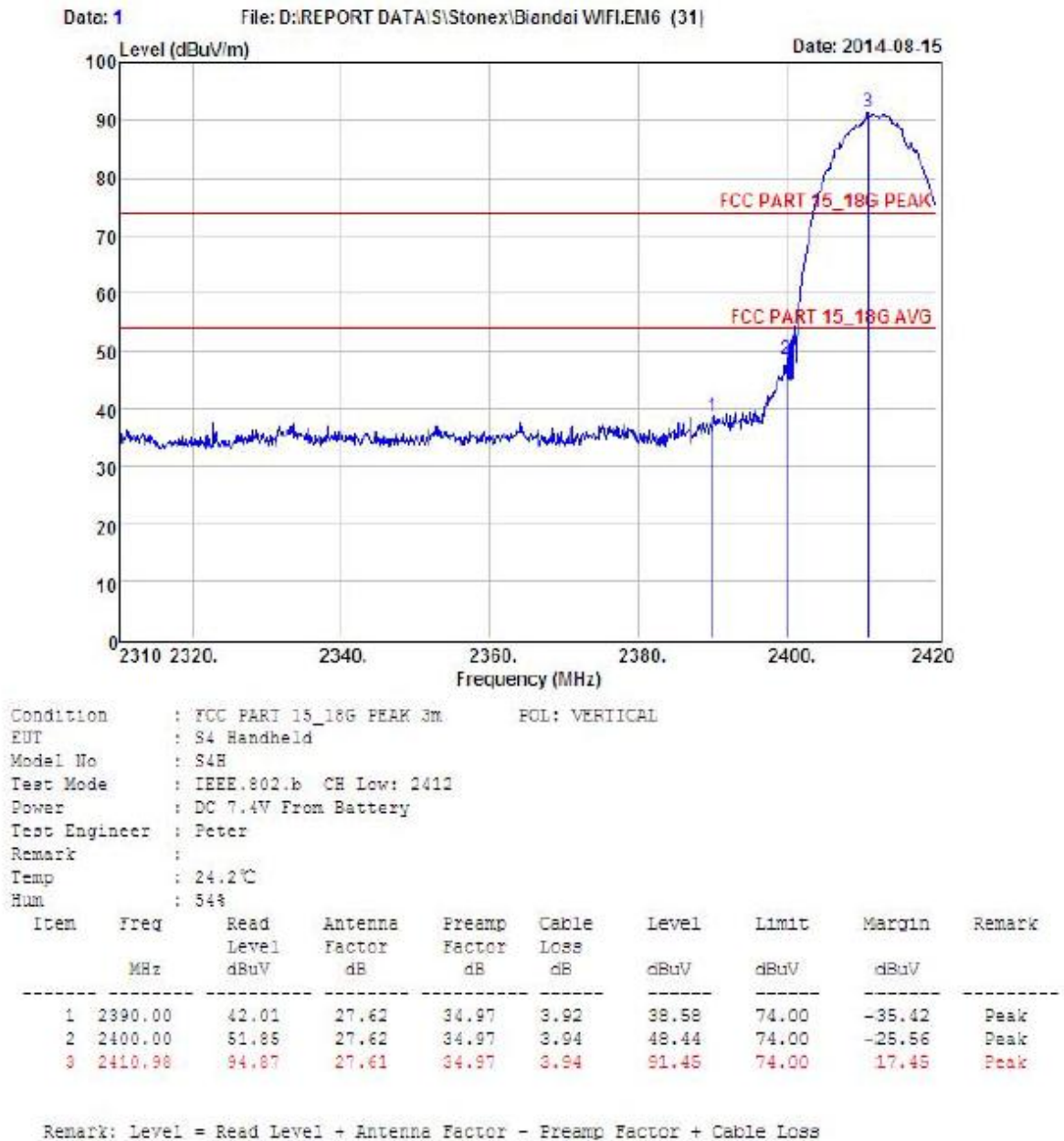
10.4 Test Result

PASS.

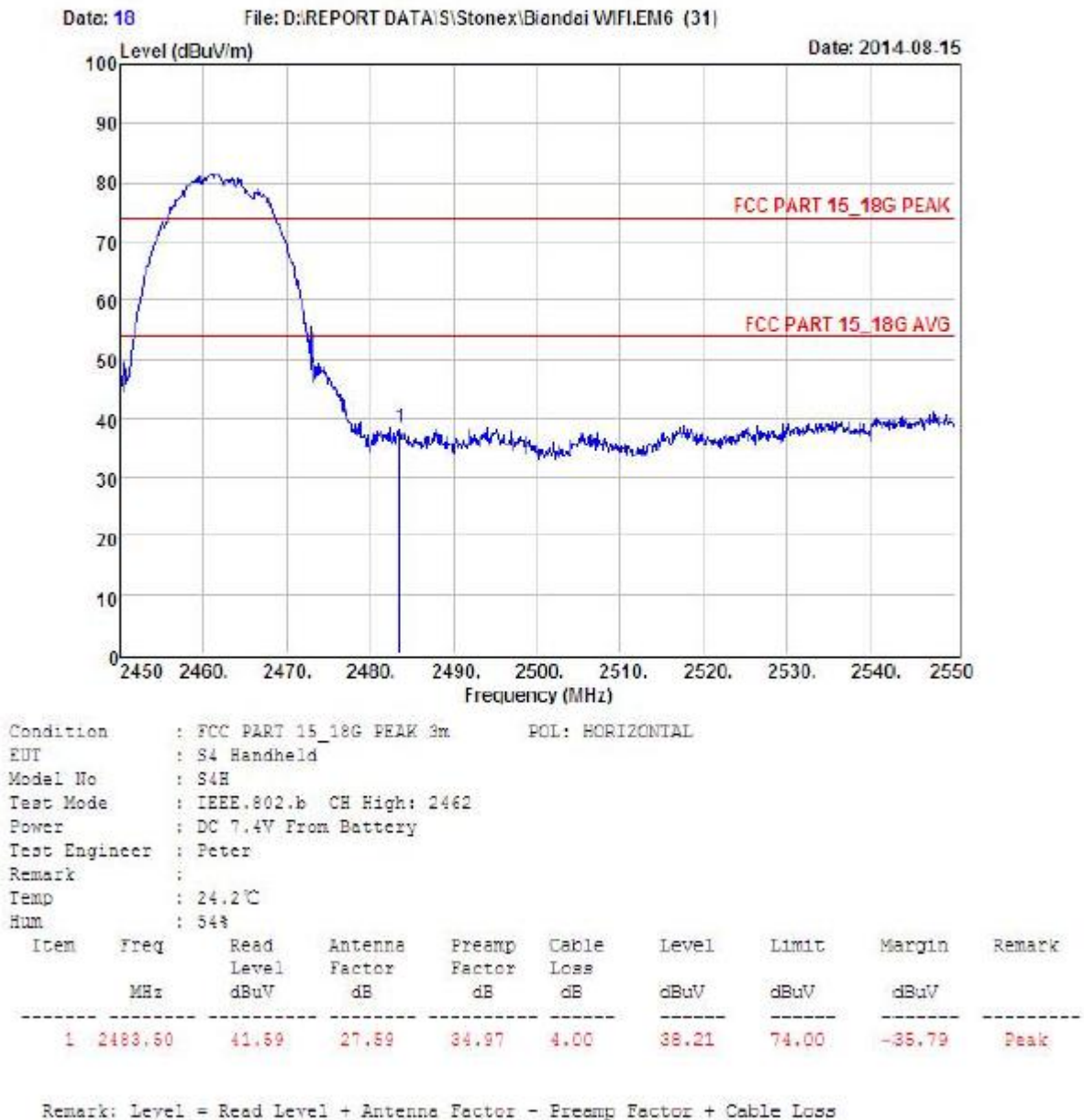
Detailed information please see the following page.

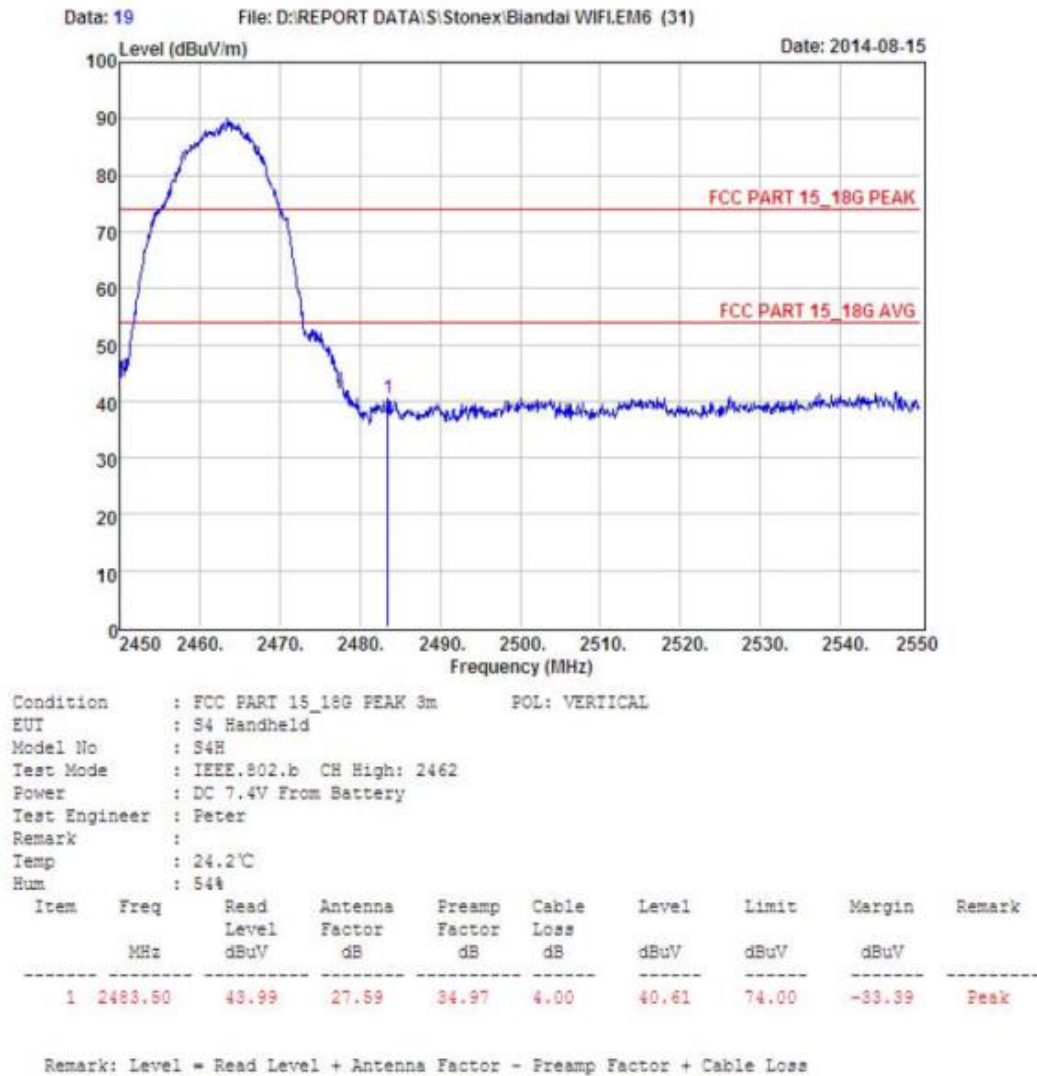
IEEE 802.11b:
CH LOW:



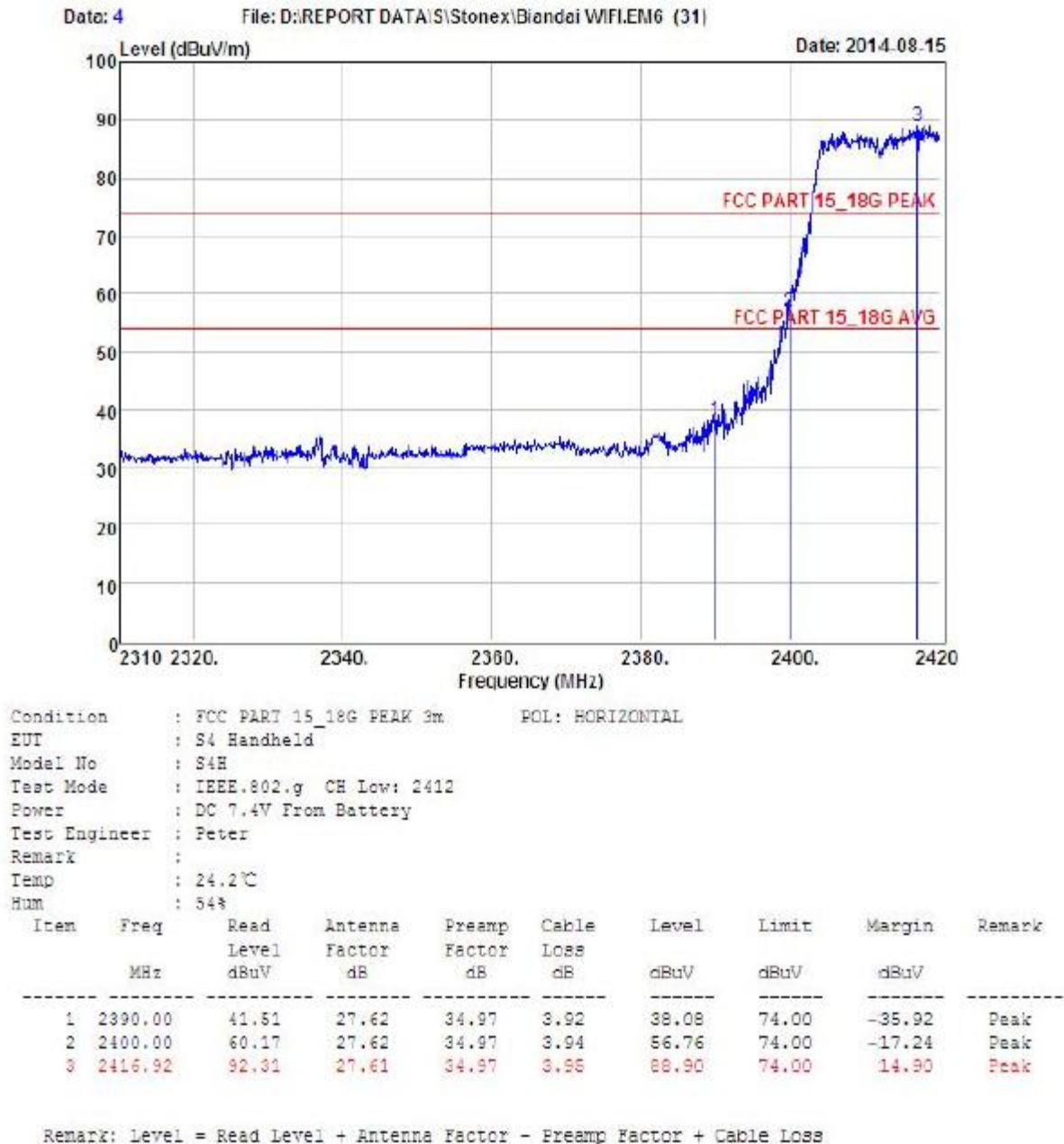


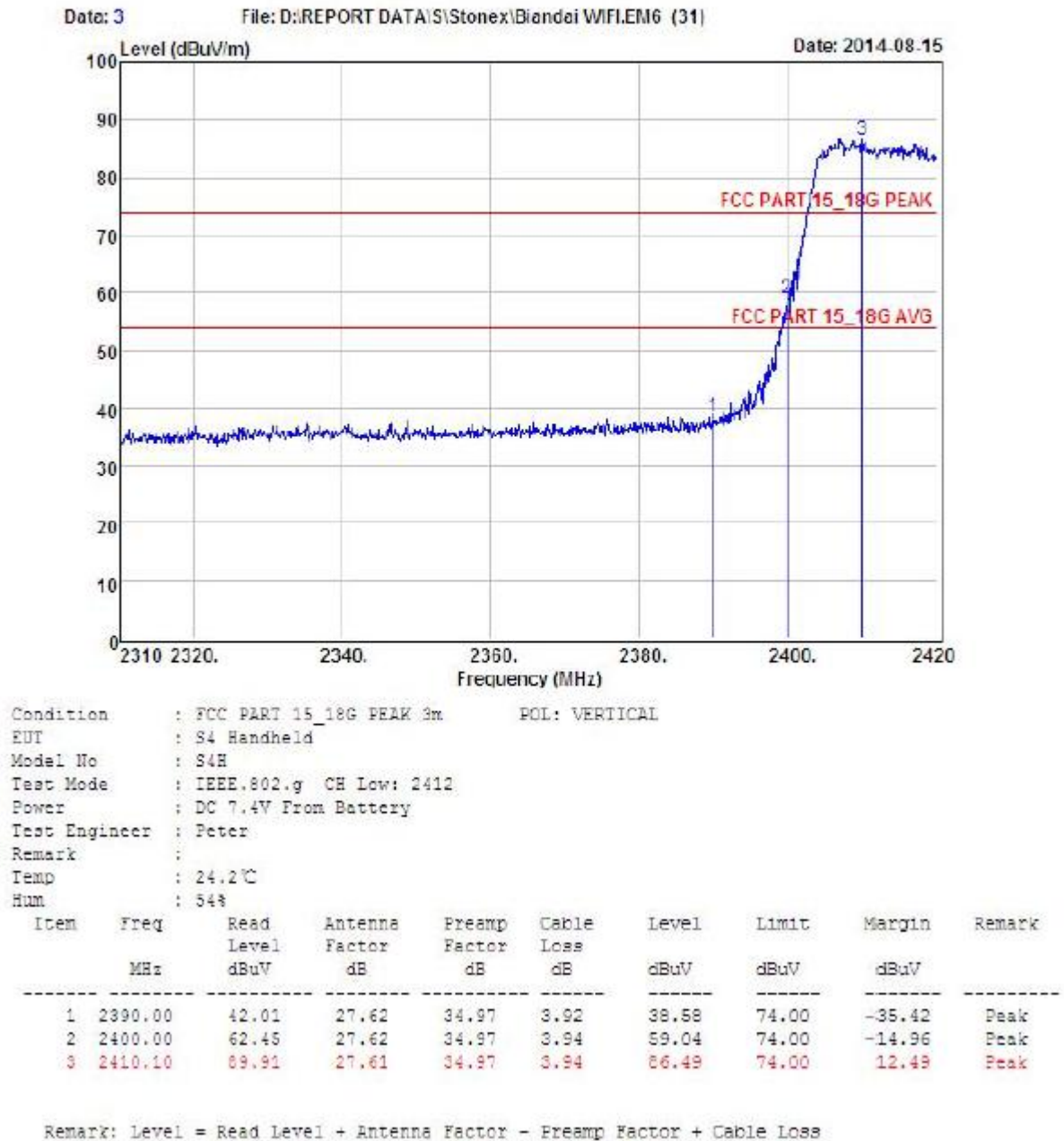
CH High:



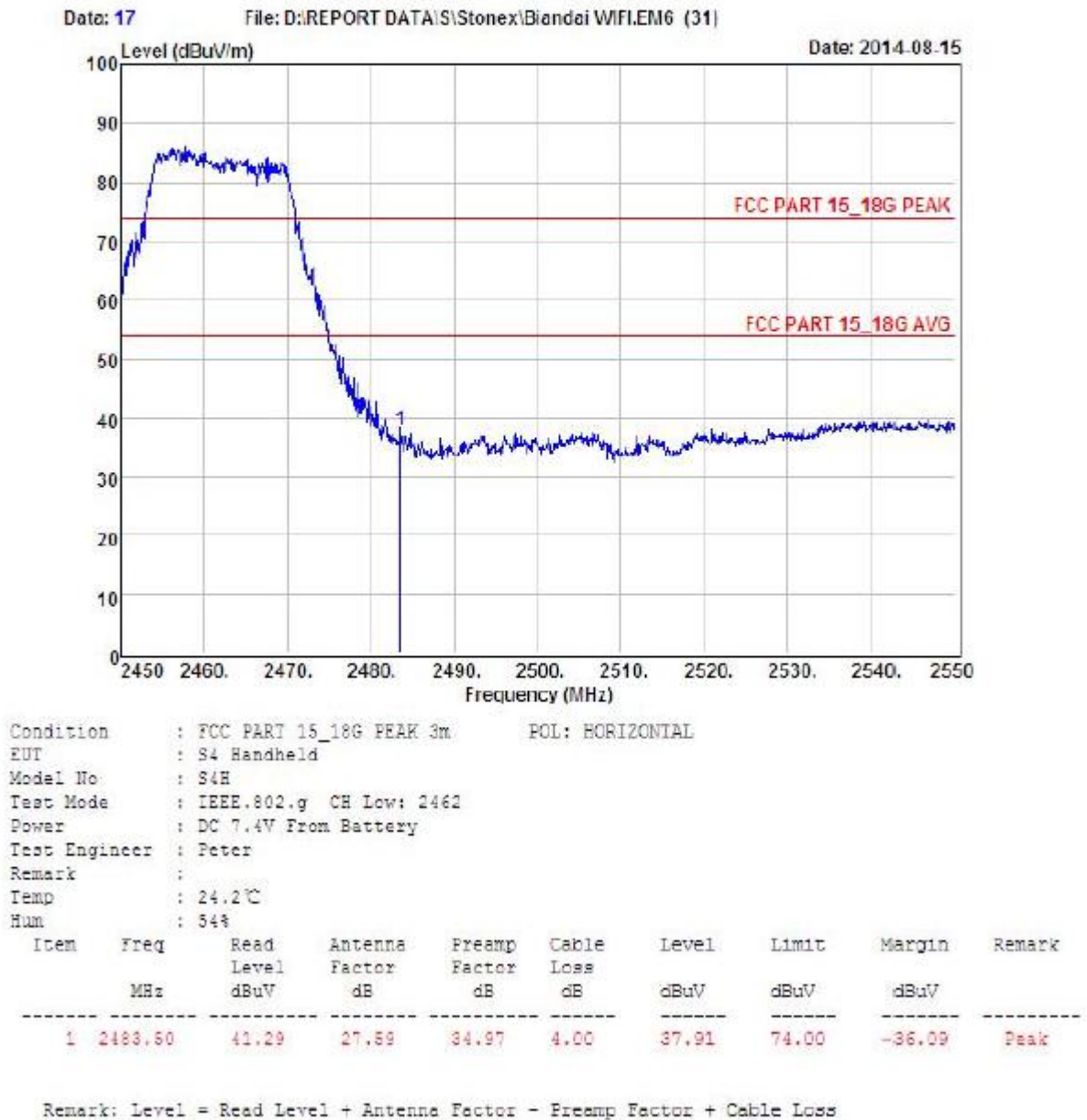


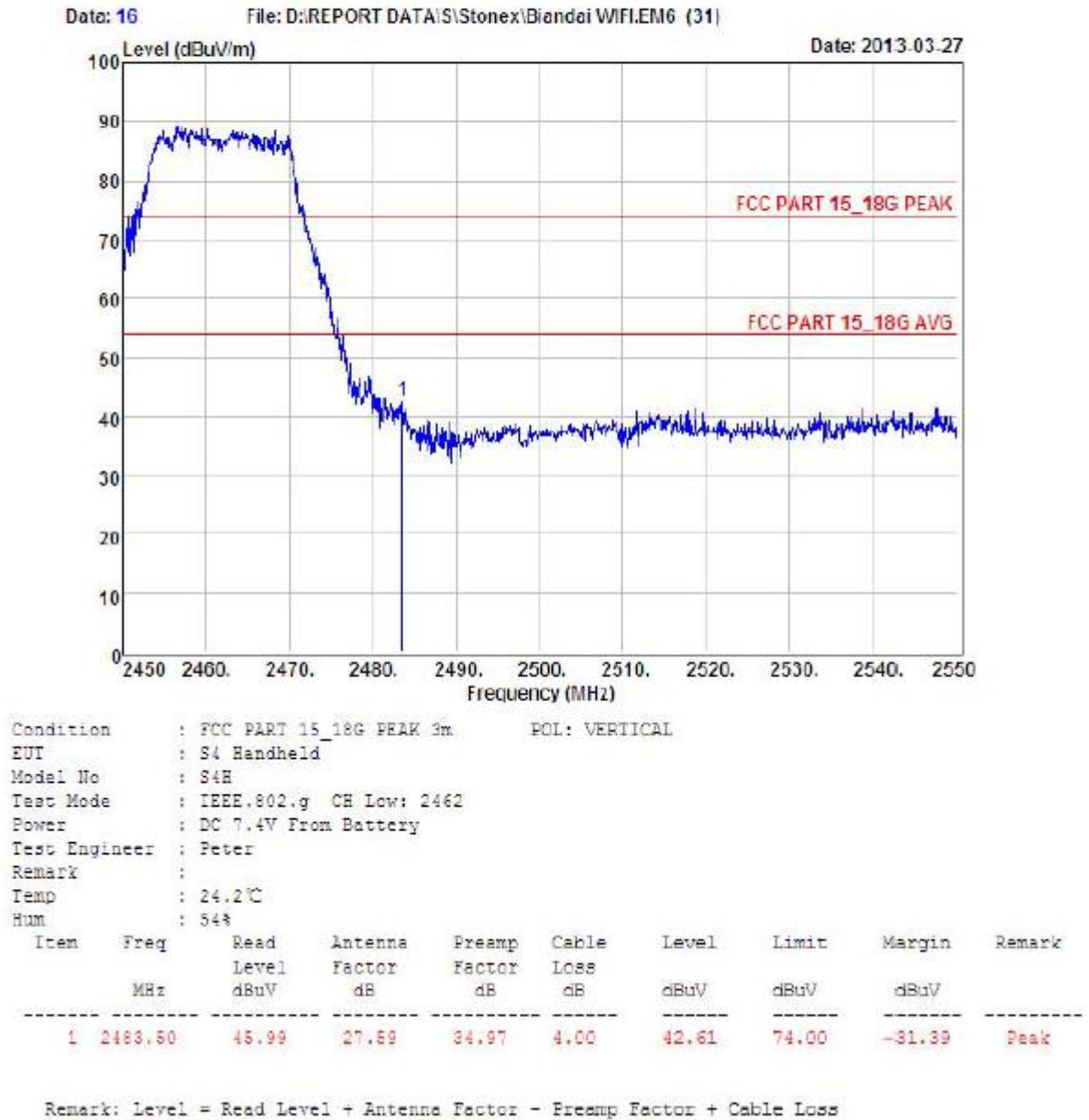
IEEE 802.11g:
CH LOW:





CH High :





11 Antenna Requirement

11.1 Standard Requirement

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. 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 provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Antenna Connected Construction

The antenna is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

11.3 Result

The antennas used for this product are PIFA Antenna for Bluetooth/WIFI, PIFA Antenna For GSM and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only -3dBi for Bluetooth/WIFI and -3dBi for GSM .

-----END OF THE REPORT-----