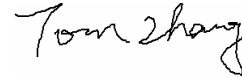


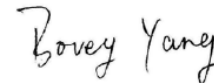
FCC RADIO TEST REPORT

Report Reference No. : NTEK-2011NT0930290F3

Compiled by (+ signature) : Tom Zhang



Approved by (+ signature) : Bovey Yang



Applicant's name : Donghui Great Techonology Co.Ltd.

Address..... : Room 1510B, Huaqiangbei Seg Plaza, Futian Area,
Shenzhen,Guangdong Province, China

Manufacture's Name : Donghui Great Techonology Co.Ltd.

Address..... : Room 1510B, Huaqiangbei Seg Plaza, Futian Area,
Shenzhen,Guangdong Province, China

Test specification:

Standard : FCC Part15.247

Test procedure : ANSI C63.4-2003

Test item description

Product name : Mobile Phone

FCC ID : Z4W1371434380FCC

Trademark : N/A

Model and/or type reference : DH98

Rating(s) : DC 3.7V by battery

Testing Laboratory information:

Testing Laboratory Name : NTEK Testing Technology Co., Ltd

Address : 1/F, Building E, Fenda Science Park, Sanwei Community,
Xixiang Street, Bao ' an District, Shenzhen P.R. China.

This device described above has been tested by NTEK Testing Technology Co., Ltd, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Testing :

Date of receipt of test item : 17 Oct. 2011

Date (s) of performance of tests : 1 Oct. 2011 ~ Oct.17 2011

Date of Issue : 17 Oct. 2011

Test Result..... : **Pass**

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (c)	Antenna conducted Spurious Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC FRN Registration Nombre:238937; IC Registration Nombre:9270A-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	Radiated Emission Test	$\pm 3.17\text{dB}$
3	RF power,conducted	$\pm 0.16\text{dB}$
4	Spurious emissions,conducted	$\pm 0.21\text{dB}$
5	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
6	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Mobile Phone																		
Trade Name	N/A																		
Model Name	DH98																		
OEM Brand/Model Name	N/A																		
Model Difference	N/A																		
Product Description	<p>The EUT is a Mobile Phone</p> <table border="1"> <tr> <td>Operation Frequency:</td><td>2412~2462 MHz</td></tr> <tr> <td>Modulation Type:</td><td>802.11b:CCK, DQPSK, DBPSK 802.11g:OFDM</td></tr> <tr> <td>Bit Rate of Transmitter</td><td>802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps</td></tr> <tr> <td>Number Of Channel</td><td>11 CH, Please see Note 2.</td></tr> <tr> <td>Antenna Designation:</td><td>Please see Note 3.</td></tr> <tr> <td>Antenna Gain(Peak)</td><td>Please see Note 3.</td></tr> <tr> <td>Output Power(Conducted):</td><td>802.11b 10.35 dBm (Max.) 802.11g 9.98 dBm (Max.)</td></tr> <tr> <td>Antenna Gain (dBi)</td><td>0.2</td></tr> <tr> <td>EIRP</td><td>802.11b 10.55 dBm (Max.) 802.11g 10.18 dBm (Max.)</td></tr> </table> <p>Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.</p>	Operation Frequency:	2412~2462 MHz	Modulation Type:	802.11b:CCK, DQPSK, DBPSK 802.11g:OFDM	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps	Number Of Channel	11 CH, Please see Note 2.	Antenna Designation:	Please see Note 3.	Antenna Gain(Peak)	Please see Note 3.	Output Power(Conducted):	802.11b 10.35 dBm (Max.) 802.11g 9.98 dBm (Max.)	Antenna Gain (dBi)	0.2	EIRP	802.11b 10.55 dBm (Max.) 802.11g 10.18 dBm (Max.)
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Antenna Designation:	Please see Note 3.																		
Antenna Gain(Peak)	Please see Note 3.																		
Output Power(Conducted):	802.11b 10.35 dBm (Max.) 802.11g 9.98 dBm (Max.)																		
Antenna Gain (dBi)	0.2																		
EIRP	802.11b 10.55 dBm (Max.) 802.11g 10.18 dBm (Max.)																		
Channel List	Please refer to the Note 2.																		
Power Source	DC Voltage supplied from Adapter																		
Power Rating	DC3.7V by battery																		
Connecting I/O Port(s)	Please refer to the User's Manual																		
Products Covered	N/A																		

Note

:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Built-in Antenna	NA	0.2	N/A

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	NORMAL LINK

For Conducted Emission	
Final Test Mode	Description
Mode 3	NORMAL LINK

For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11

Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. 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 power parameters of WLAN

Test software Version	RF Engineering mode command: *#20110101#		
Frequency	2412 MHz	2437 MHz	2462 MHz
802.11b	CH1	CH6	CH11
802.11g	CH1	CH6	CH11

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

A block diagram showing the configuration of the system tested. It consists of a large outer rectangle containing a smaller inner rectangle. The inner rectangle is centered and contains the text 'E-1' and 'EUT' stacked vertically.

E-1
EUT

2.5 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Mobile Phone	N/A	DH98	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2012
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2012
3	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06. 2012
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2012
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2012
6	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06. 2012
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2012
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2012
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2012
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2012

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2012
2	LISN	R&S	ENV216	101313	Jul. 06. 2012
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2012
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2012
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2012
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2012

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

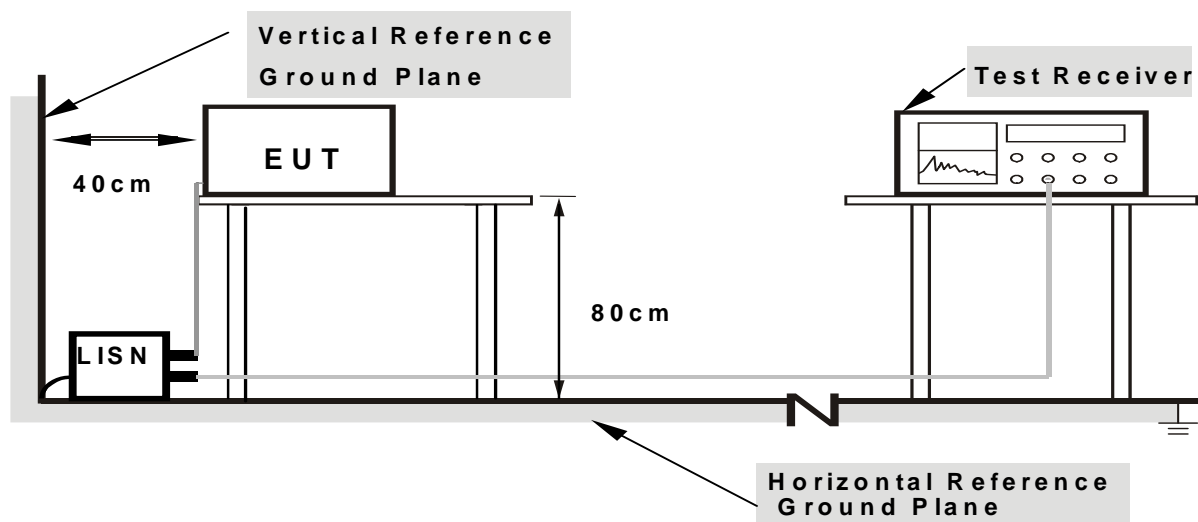
3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

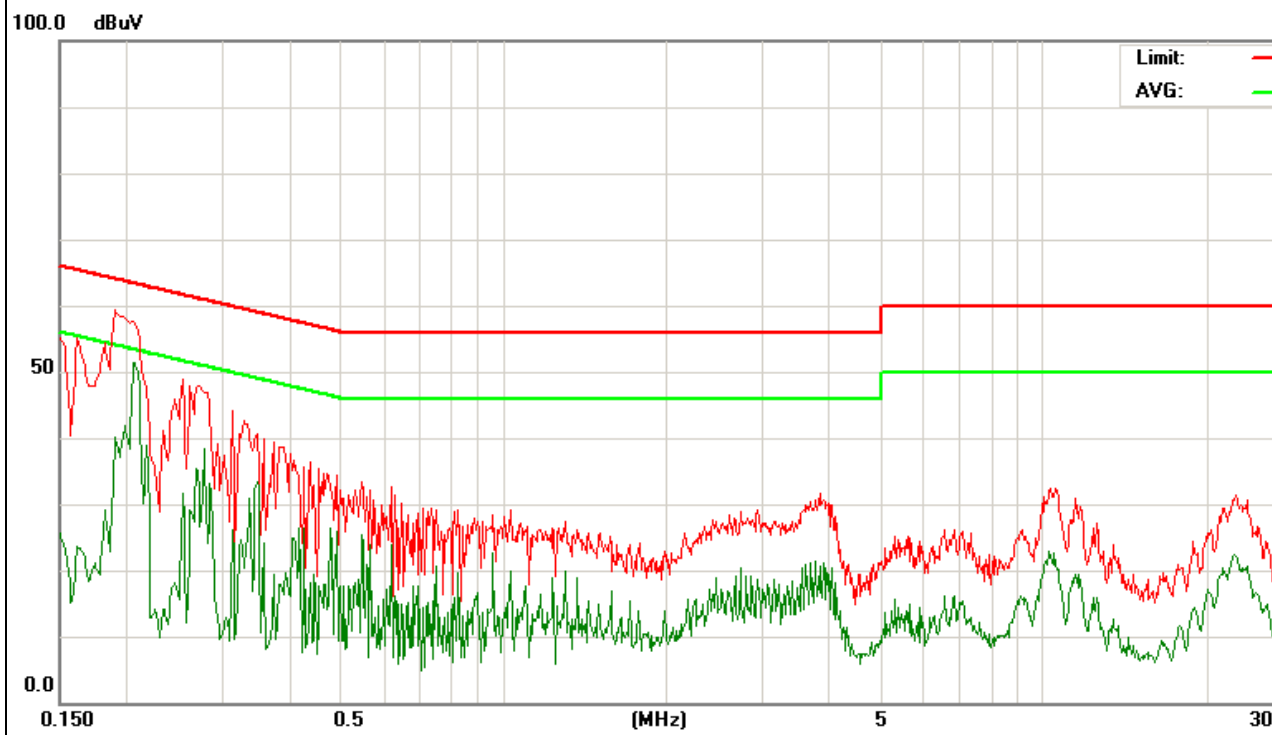
3.1.6 TEST RESULTS

EUT :	Mobile Phone	Model Name. :	DH98
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2011-10-11
Test Mode :	Normal Link	Phase :	L
Test Voltage :	DC3.7V		

Frequency	Factor	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
(MHz)	(dB)	QP	Average	QP	Average	QP	Average	QP	Average
*0.206	11.09	46.54	38	57.63	49	63.36	53.36	-5.73	-4.36
0.2779	10.8	36.03	28.01	46.83	38.78	60.88	50.88	-14.05	-12.1
0.546	10.32	22.96	17.15	33.28	27.5	56	46	-22.72	-18.5
3.778	10.17	19.77	11.52	29.94	21.69	56	46	-26.06	-24.31
10.2459	10.29	21.6	10.27	31.89	20.56	60	50	-28.11	-29.44
22.578	10.52	20.22	10.94	30.74	21.46	60	50	-29.26	-28.54

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case



EUT :	Mobile Phone	Model Name. :	DH98
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2011-10-11
Test Mode :	Normal Link	Phase :	N
Test Voltage :	DC3.7V		

Frequency (MHz)	Factor (dB)	Meter Reading (dBμV)		Emission Level (dBμV)		Limits (dBμV)		Margin (dB)	
		QP	Average	QP	Average	QP	Average	QP	Average
*0.206	11.09	46.54	40.3	57.63	51.39	63.36	51.36	-5.73	-2
0.2779	10.8	36.03	27.51	46.83	38.31	60.88	50.88	-14.05	-12.57
0.546	10.32	22.96	15.01	33.28	25.33	56	46	-22.72	-20.67
3.778	10.17	19.77	11.28	29.94	21.45	56	46	-26.06	-24.55
10.2459	10.29	21.6	12.61	31.89	22.9	60	50	-28.11	-27.1
22.578	10.52	20.22	11.77	30.74	22.29	60	50	-29.26	-27.71

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.
3. '*' means the worst case



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolt/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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. 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 Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

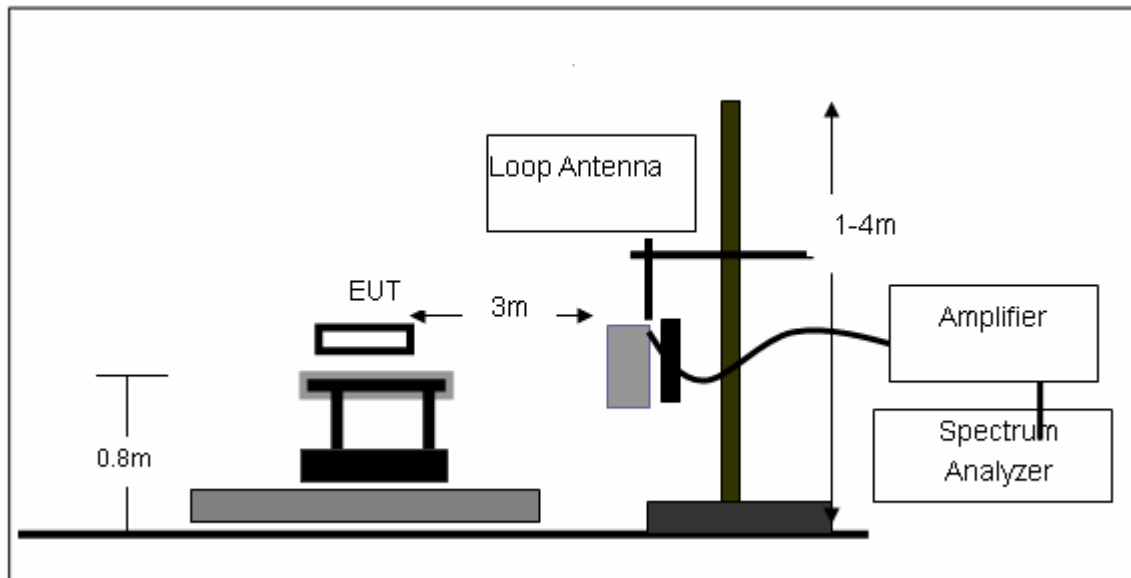
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

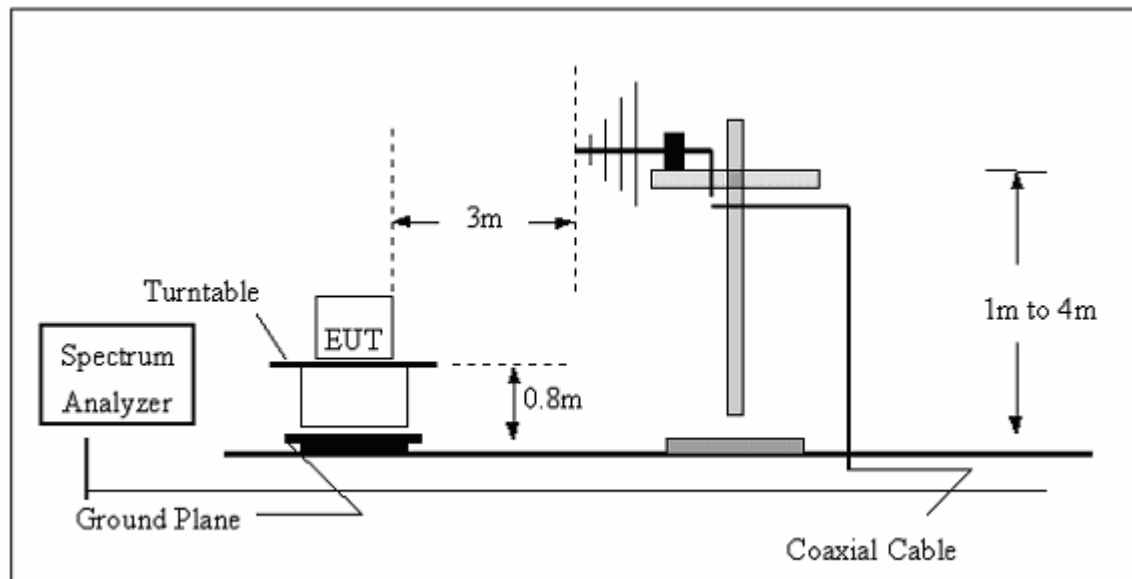
No deviation

3.2.4 TEST SETUP

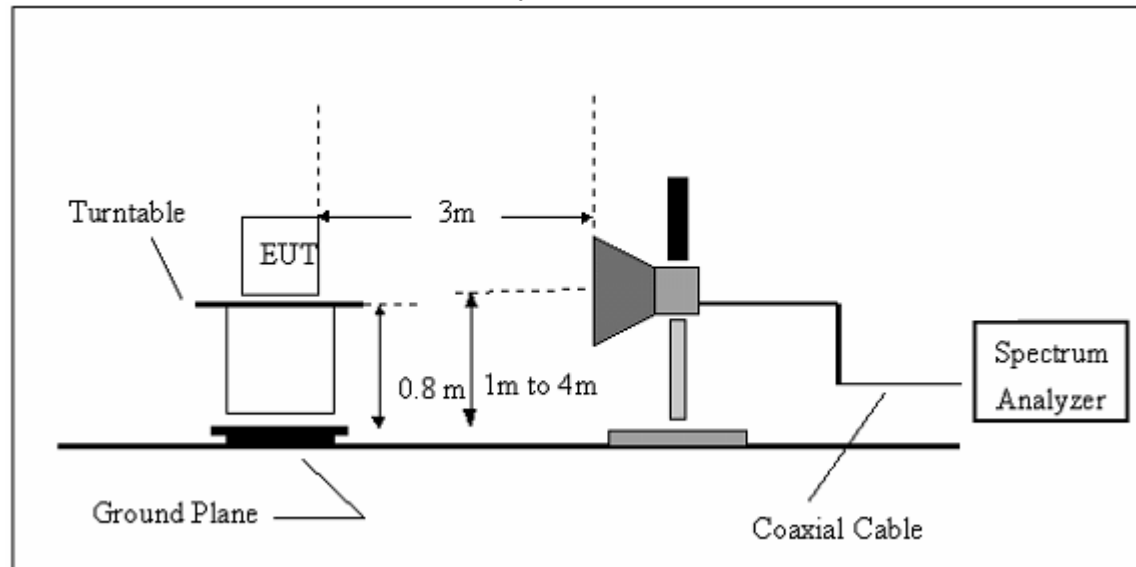
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz

**3.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT :	Mobile Phone	Model Name. :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

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

Distance extrapolation factor = $20 \log (\text{specific distance}/\text{test distance})$ (dB);

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

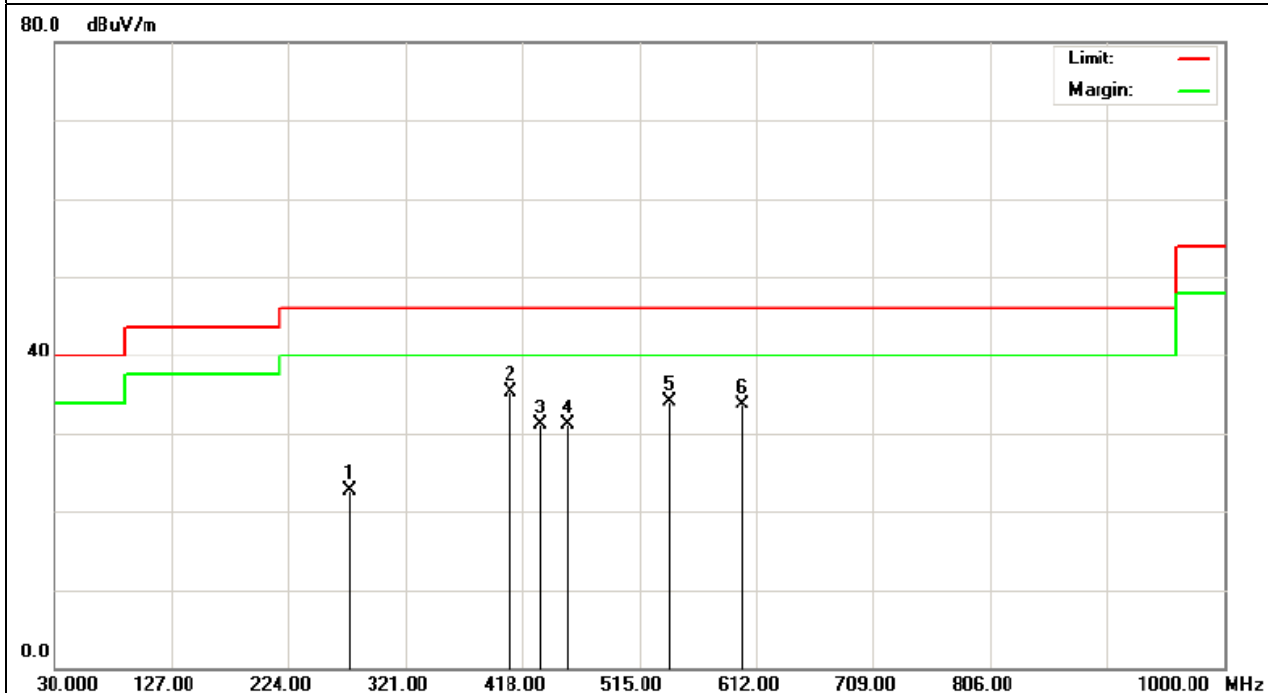
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	TX	Polarization :	Horizontal

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
275.41	V	37.55	-14.84	22.71	46.00	- 23.29	
408.30	V	45.95	-10.60	35.35	46.00	- 10.65	
432.55	V	41.42	-10.41	31.01	46.00	- 14.99	
455.83	V	40.71	-9.70	31.01	46.00	- 14.99	
540.22	V	41.65	-7.48	34.17	46.00	- 11.83	
600.36	V	39.70	-6.04	33.66	46.00	- 12.34	

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

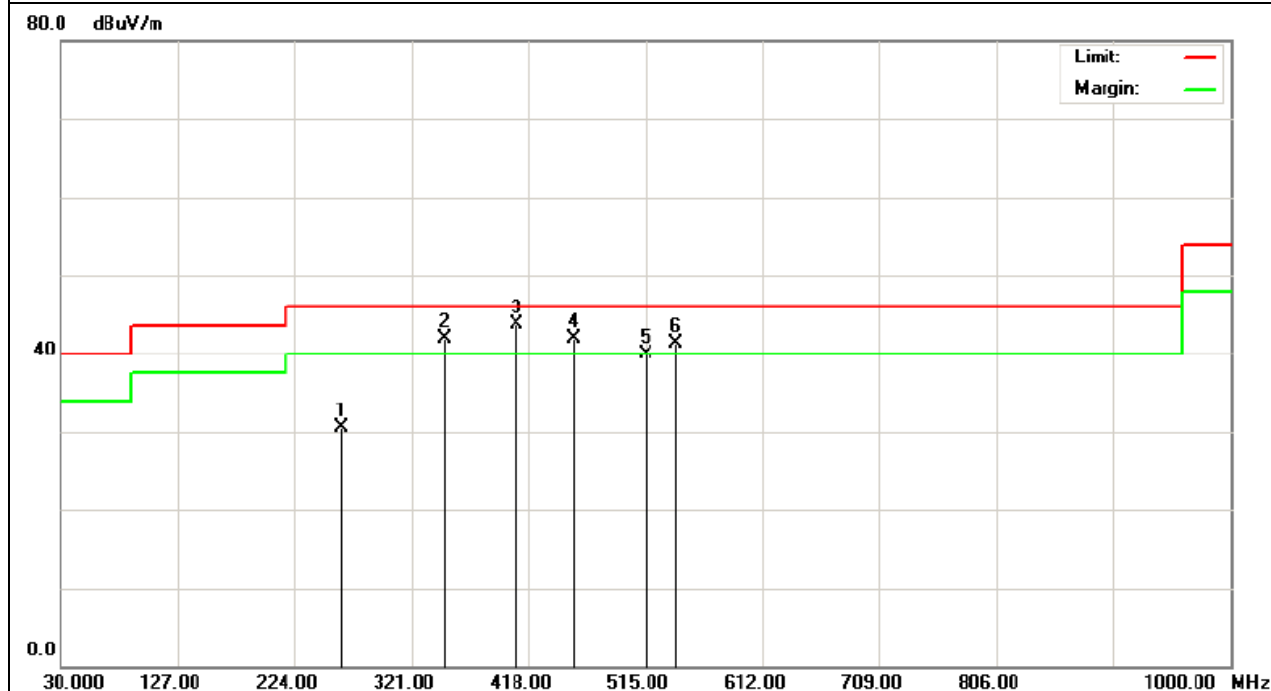


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	TX	Polarization :	Vertical

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Margin (dB)	Note
263.77	H	45.67	-15.14	30.53	46.00	- 15.47	
348.16	H	53.83	-12.00	41.83	46.00	- 4.17	
408.30	H	54.32	-10.60	43.72	46.00	- 2.28	
455.83	H	51.56	-9.70	41.86	46.00	- 4.14	
515.97	H	48.14	-8.28	39.86	46.00	- 6.14	
540.22	H	48.85	-7.48	41.37	46.00	- 4.63	

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



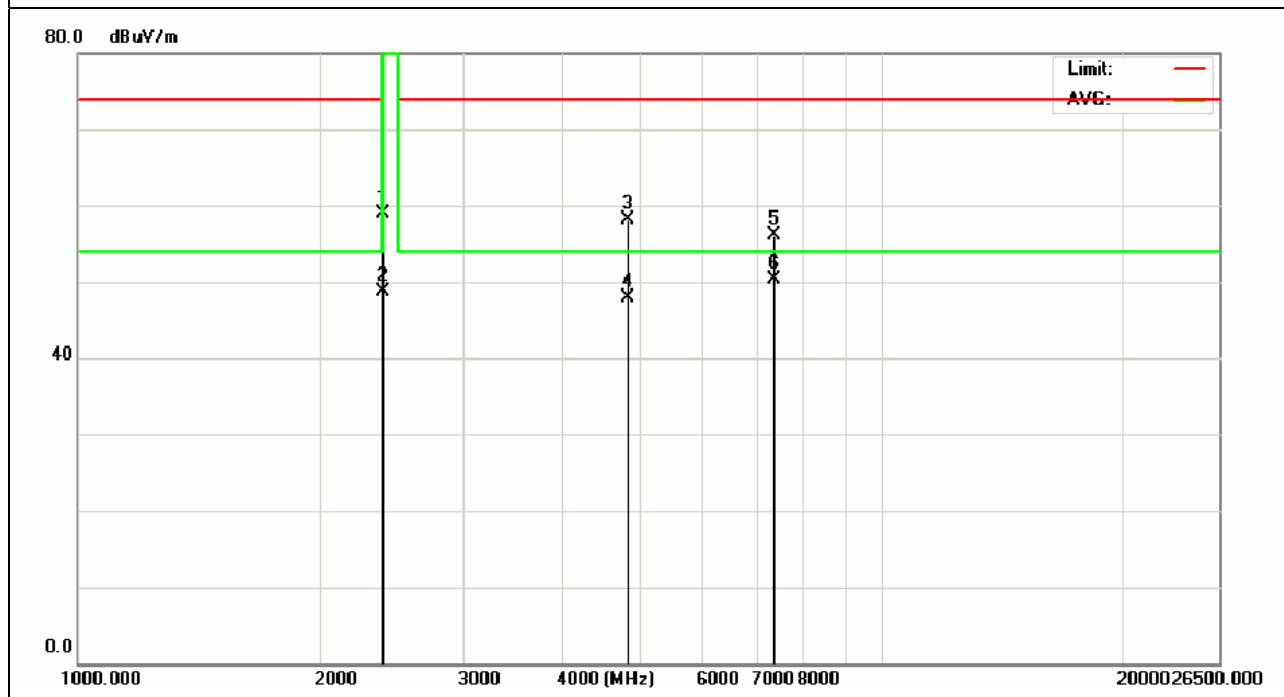
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH1 (802.11b Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	26.31	32.65	58.96	74.00	-15.04	peak
2400.00	16.12	32.65	48.77	54.00	-5.23	AVG
4824.00	14.14	44.04	58.18	74.00	-15.82	peak
4824.00	3.77	44.04	47.81	54.00	-6.19	AVG
7236.00	8.10	48.03	56.13	74.00	-17.87	peak
7236.00	2.31	48.03	50.34	54.00	-3.66	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

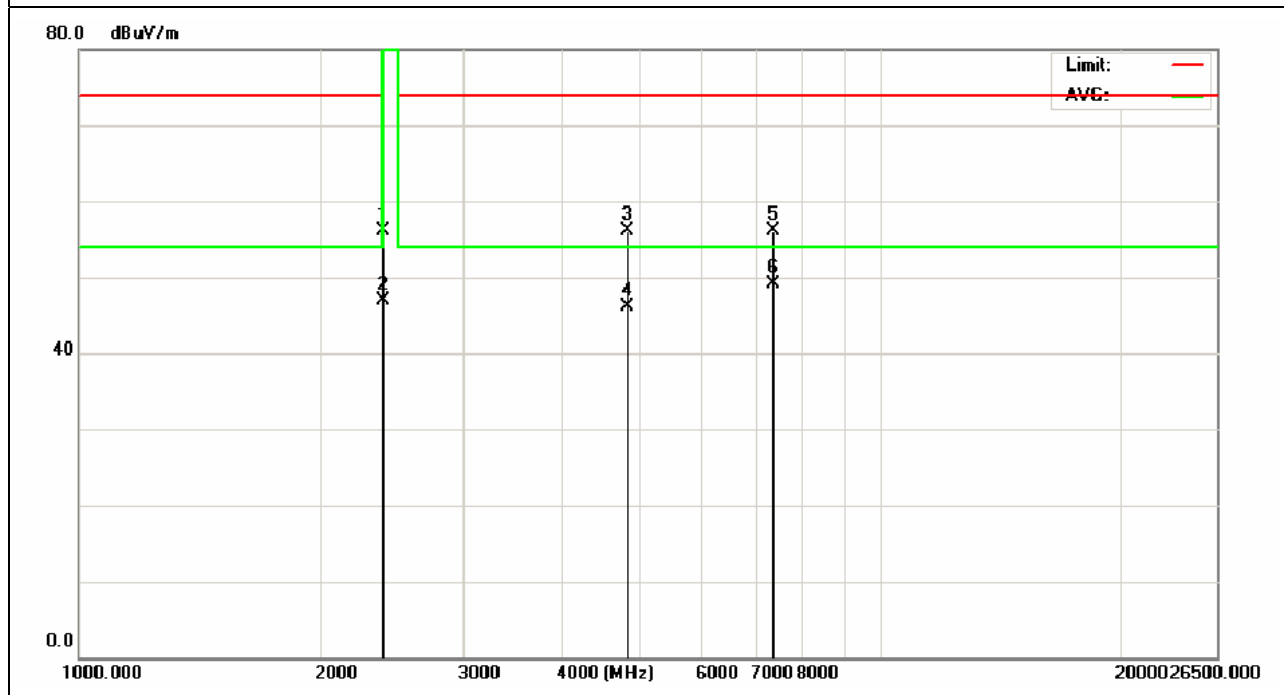


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH1 (802.11b Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	23.45	32.65	56.10	74.00	-17.90	peak
2400.00	14.35	32.65	47.00	54.00	-7.00	AVG
4824.00	12.11	44.04	56.15	74.00	-17.85	peak
4824.00	2.12	44.04	46.16	54.00	-7.84	AVG
7326.00	8.10	48.03	56.13	74.00	-17.87	peak
7326.00	1.11	48.03	49.14	54.00	-4.86	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

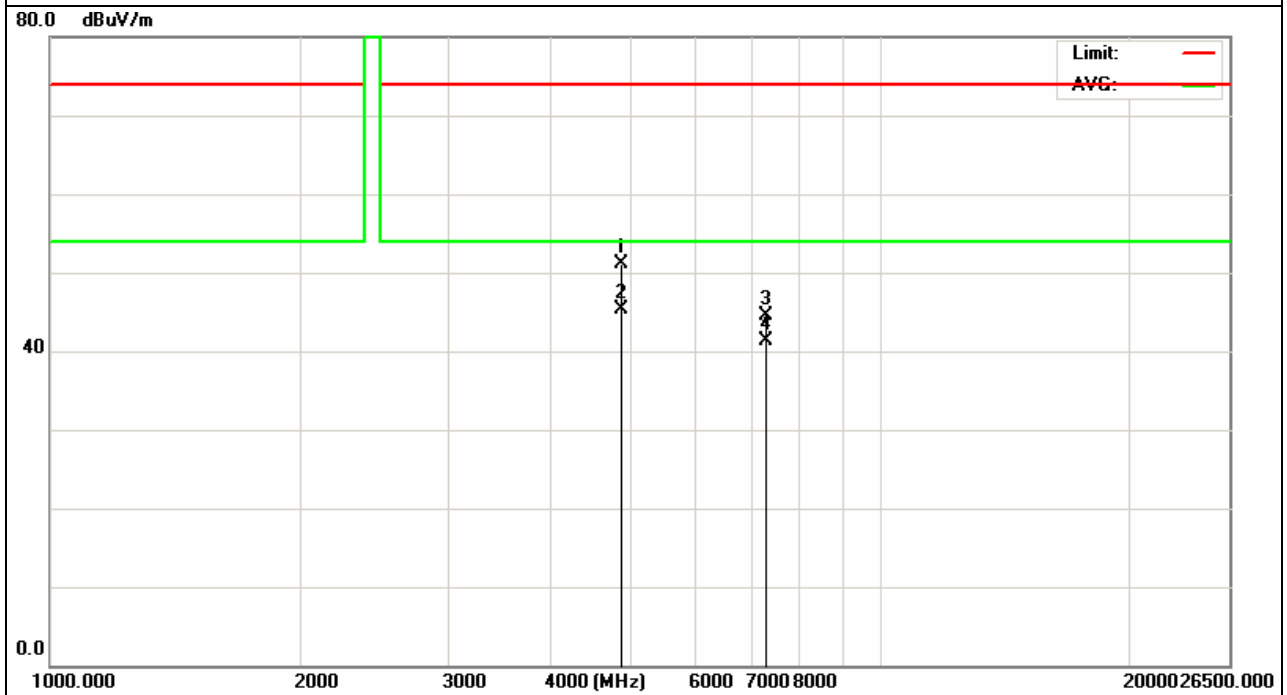


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH6 (802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.00	13.31	44.07	57.38	74.00	-16.62	peak
4874.00	4.41	44.07	48.48	54.00	-5.52	AVG
7311.00	3.30	47.97	51.27	74.00	-22.73	peak
7311.00	1.38	47.97	49.35	54.00	-4.65	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

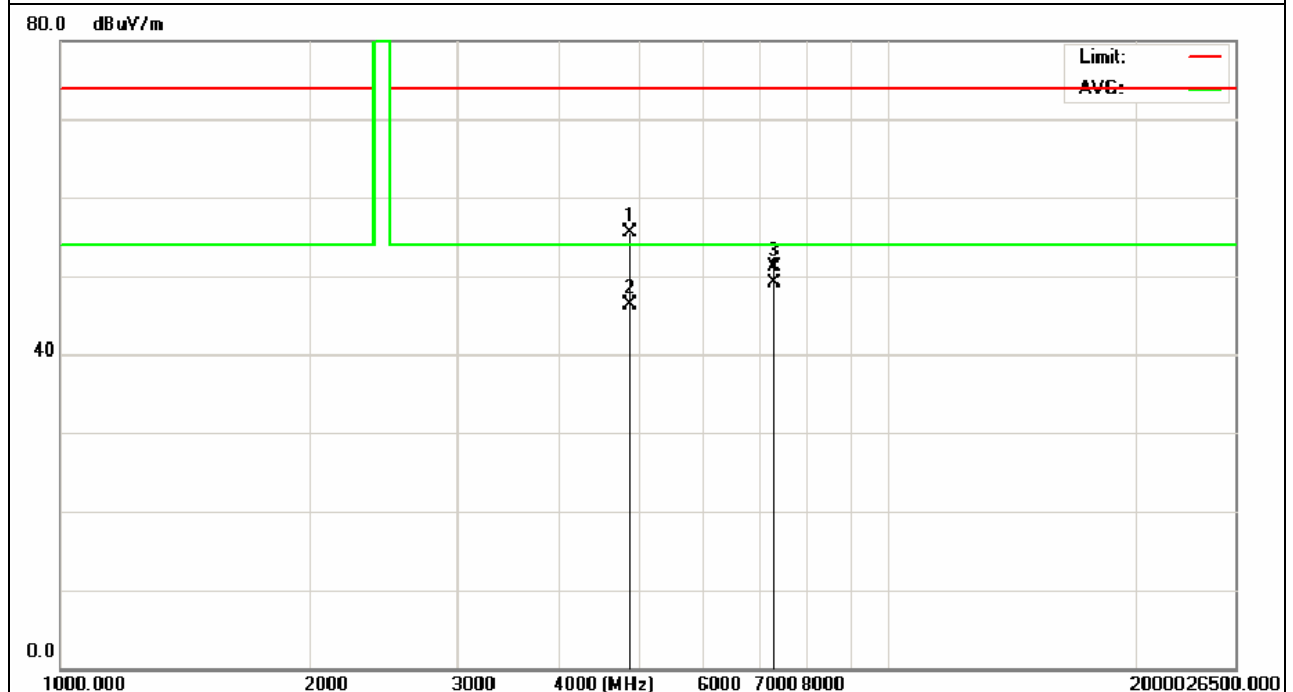


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH6 (802.11b Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.00	11.45	44.07	55.52	74.00	-18.48	peak
4874.00	2.15	44.07	46.22	54.00	-7.78	AVG
7311.00	3.11	47.97	51.08	74.00	-22.92	peak
7311.00	1.09	47.97	49.06	54.00	-4.94	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

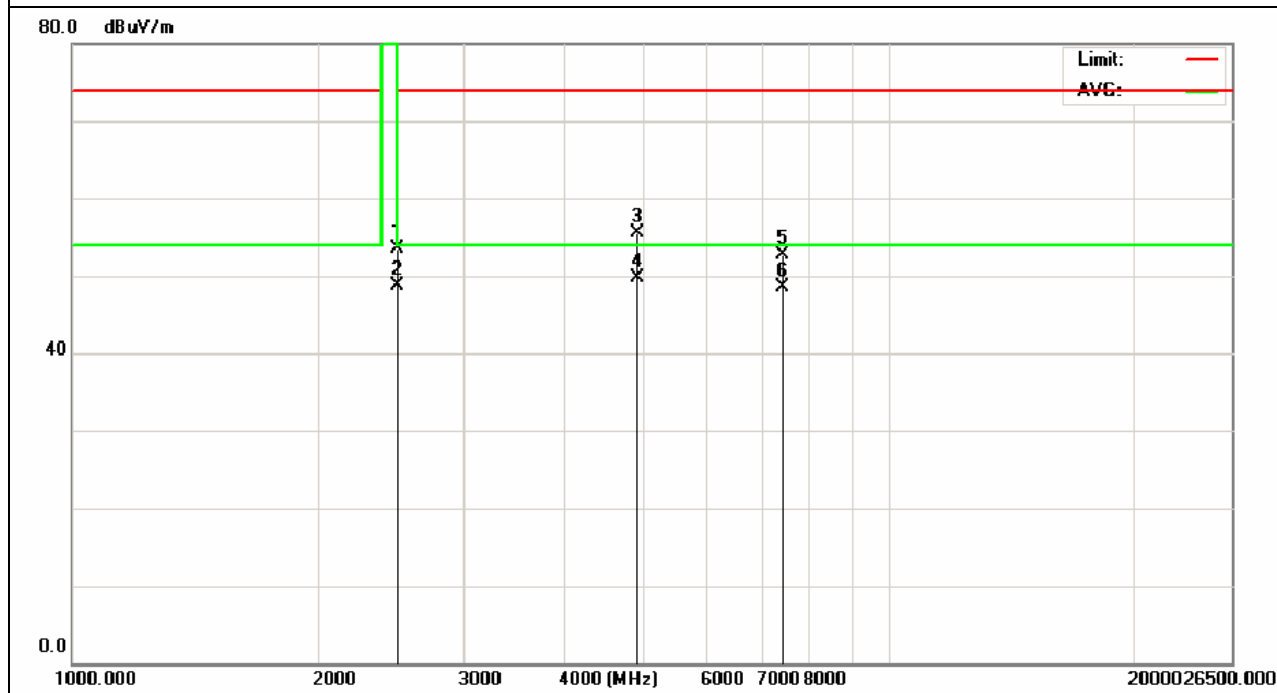


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH11 (802.11b Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	20.15	33.27	53.42	74.00	-20.58	peak
2483.5	15.43	33.27	48.70	54.00	-5.30	AVG
4924.00	11.43	44.10	55.53	74.00	-18.47	peak
4924.00	5.66	44.10	49.76	54.00	-4.24	AVG
7386.00	4.44	48.31	52.75	74.00	-21.25	peak
7386.00	0.23	48.31	48.54	54.00	-5.46	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

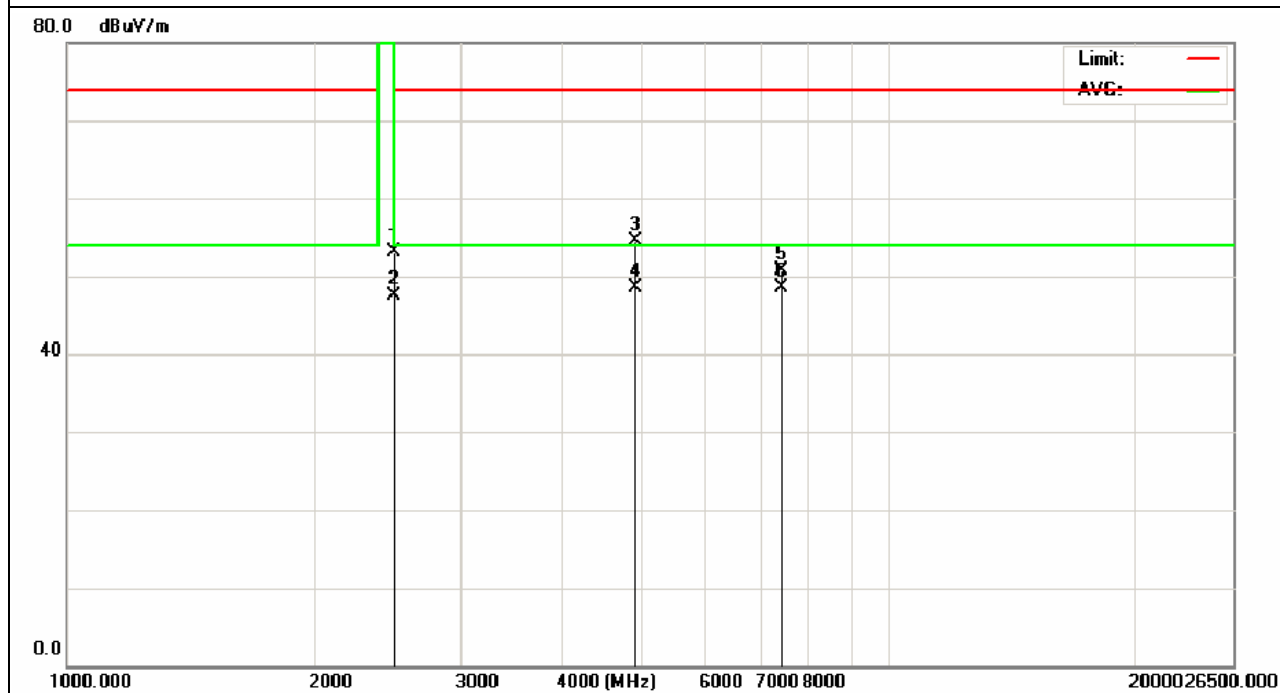


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH11 (802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	19.91	33.27	53.18	74.00	-20.82	peak
2483.5	14.21	33.27	47.48	54.00	-6.52	AVG
4924.00	10.43	44.10	54.53	74.00	-19.47	peak
4924.00	4.34	44.10	48.44	54.00	-5.56	AVG
7386.00	2.44	48.31	50.75	74.00	-23.25	peak
7386.00	0.21	48.31	48.52	54.00	-5.48	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

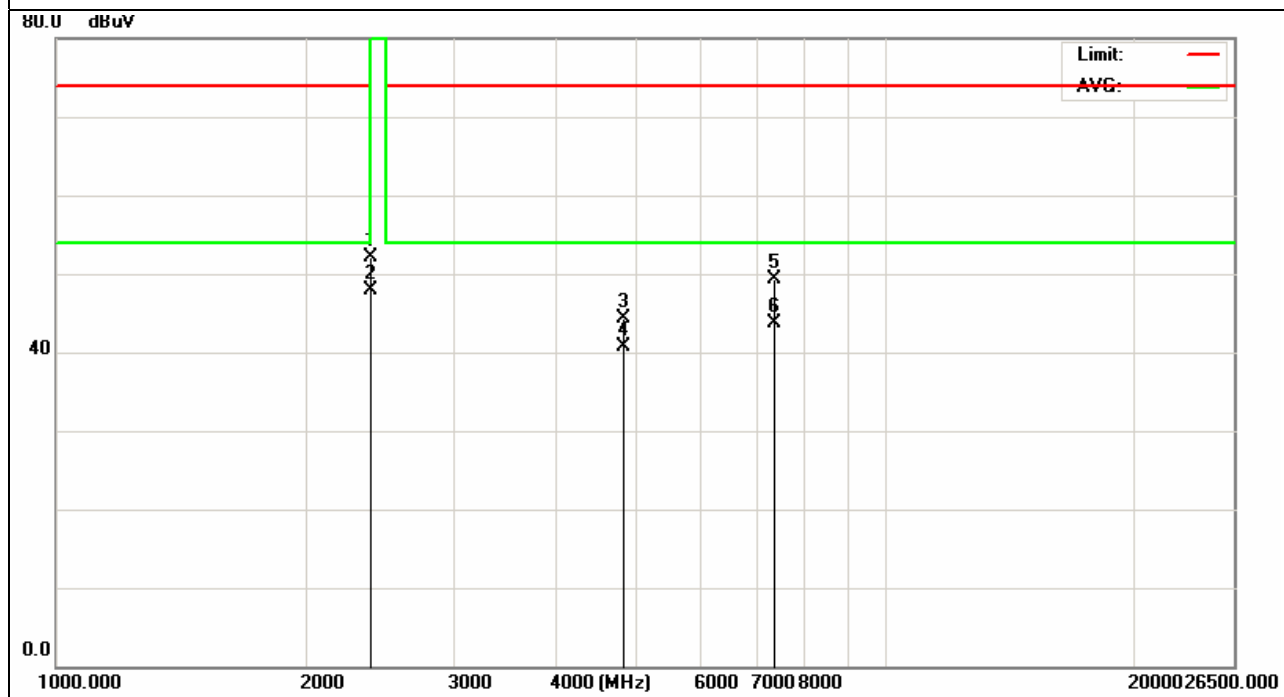


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH1 (802.11g Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	20.09	32.65	52.74	74.00	-21.26	peak
2400.00	15.98	32.65	48.63	54.00	-5.37	AVG
4824.00	1.11	44.04	45.15	74.00	-28.85	peak
4824.00	-7.45	44.04	36.59	54.00	-17.41	AVG
7236.00	-3.33	47.63	44.30	74.00	-29.70	peak
7236.00	-5.43	47.63	42.20	54.00	-11.80	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

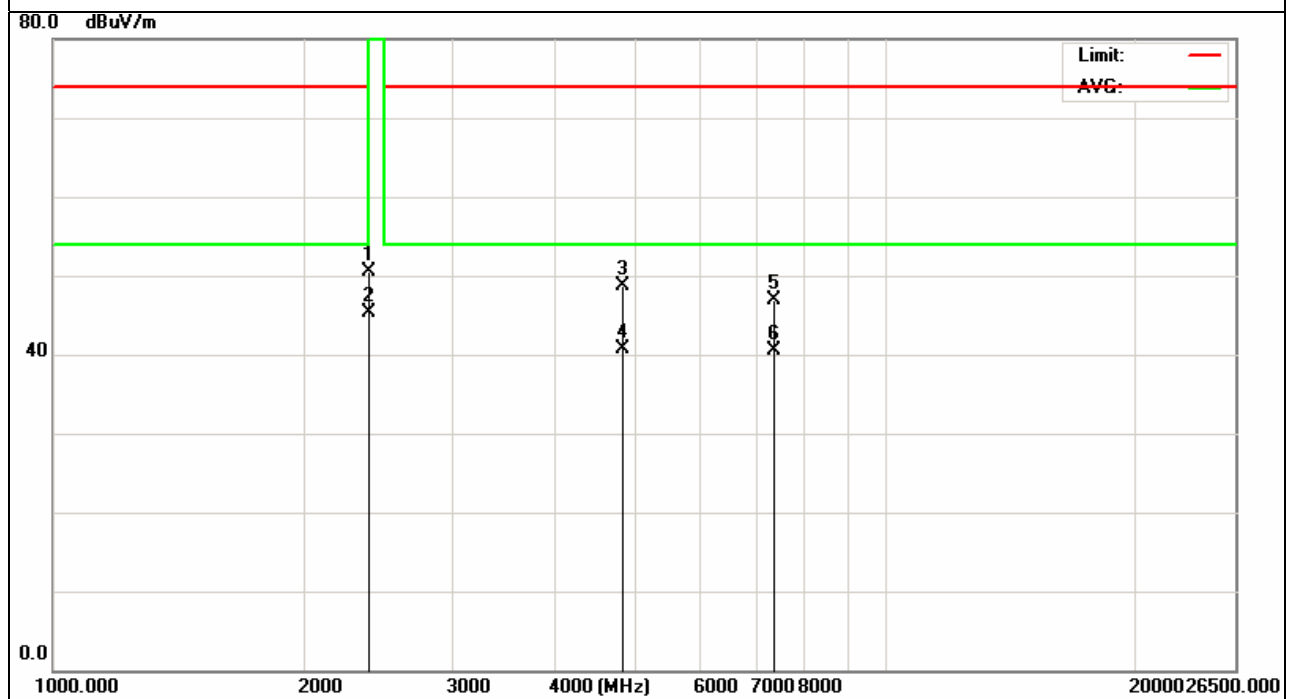


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH1 (802.11g Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.00	19.50	32.65	52.15	74.00	-21.85	peak
2400.00	15.23	32.65	47.88	54.00	-6.12	AVG
4824.00	0.23	44.04	44.27	74.00	-29.73	peak
4824.00	-3.43	44.04	40.61	54.00	-13.39	AVG
7236.00	1.21	48.03	49.24	74.00	-24.76	peak
7236.00	-4.23	48.03	43.80	54.00	-10.20	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

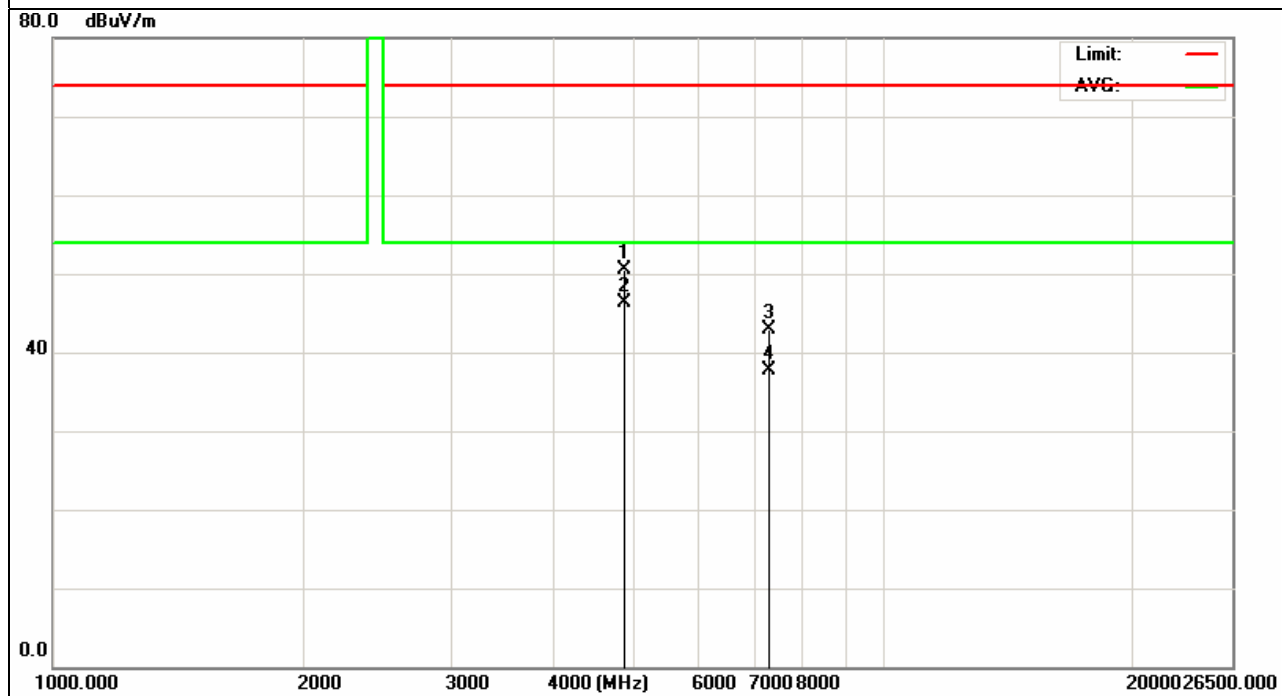


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH6 (802.11g Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874.00	6.37	44.07	50.44	74.00	-23.56	peak
4874.00	2.19	44.07	46.26	54.00	-7.74	AVG
7311.00	-5.14	47.97	42.83	74.00	-31.17	peak
7311.00	-10.24	47.97	37.73	54.00	-16.27	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

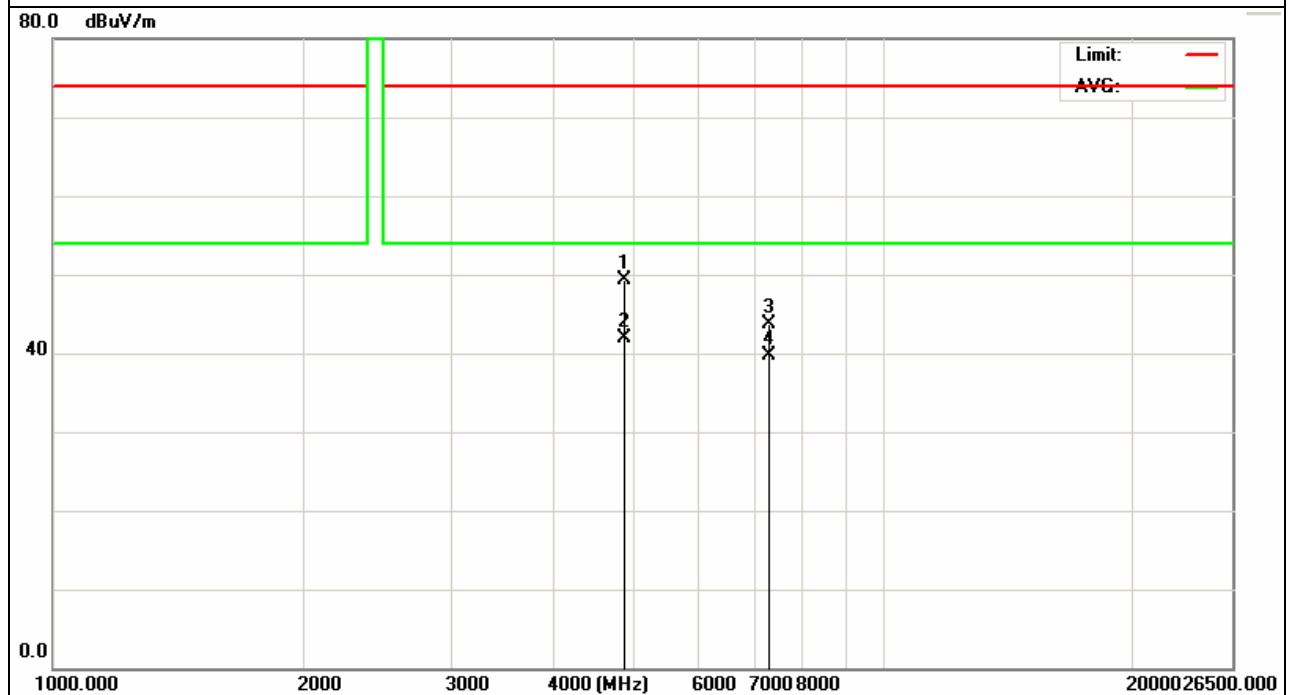


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH6 (802.11g Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.00	5.32	44.07	49.39	74.00	-24.61	peak
4874.00	-2.13	44.07	41.94	54.00	-12.06	AVG
7311.00	-4.26	47.97	43.71	74.00	-30.29	peak
7311.00	-8.26	47.97	39.71	54.00	-14.29	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

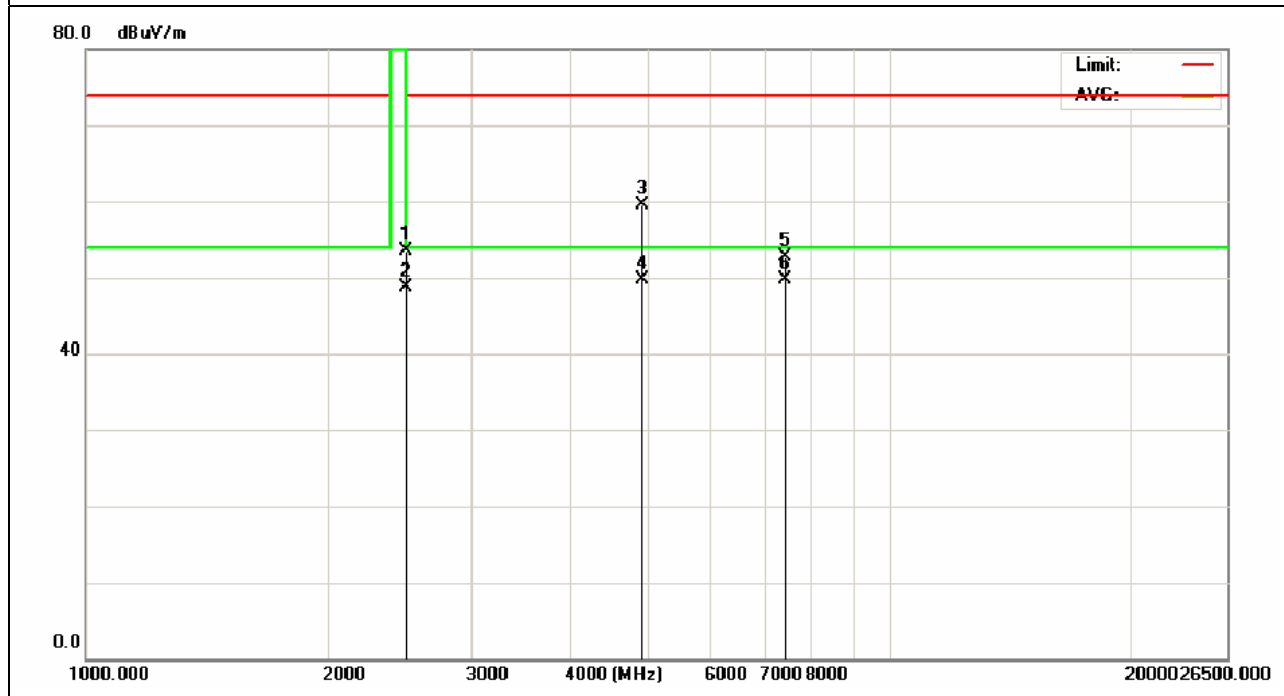


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH11 (802.11g Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	20.15	33.27	53.42	74.00	-20.58	peak
2483.5	15.43	33.27	48.70	54.00	-5.30	AVG
4924.00	15.43	44.10	59.53	74.00	-14.47	peak
4924.00	5.66	44.10	49.76	54.00	-4.24	AVG
7386.00	4.44	48.31	52.75	74.00	-21.25	peak
7386.00	1.44	48.31	49.75	54.00	-4.25	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

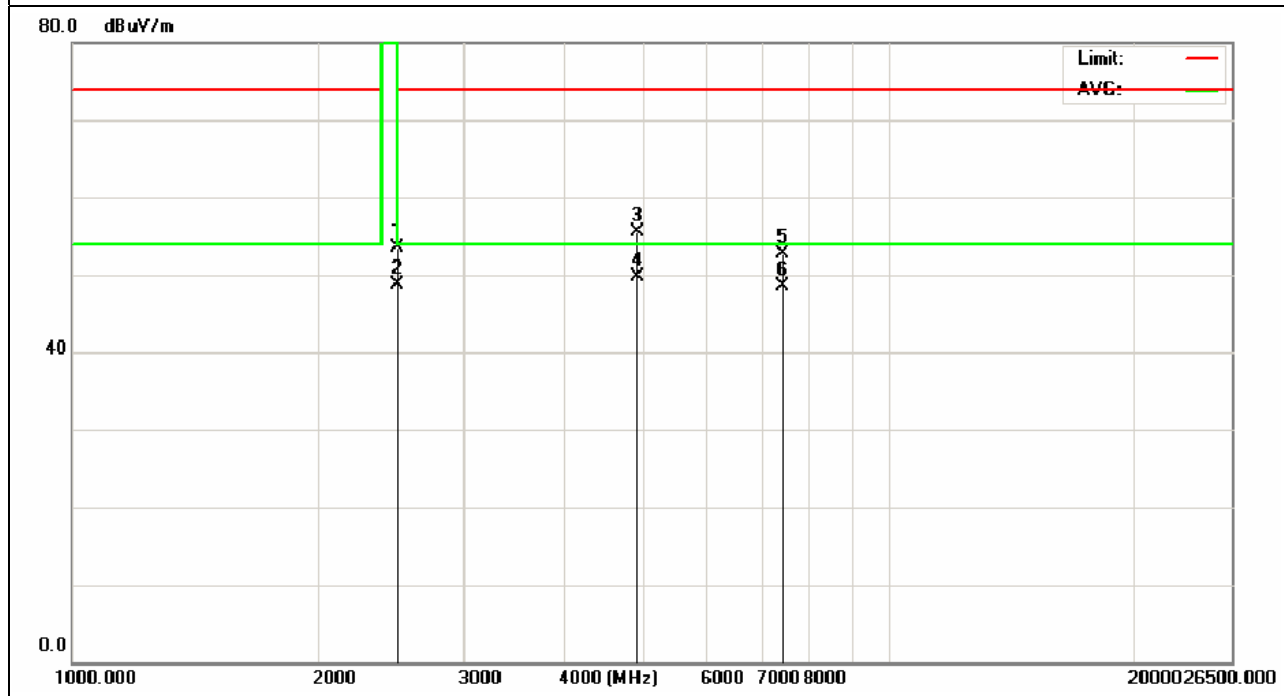


EUT :	Mobile Phone	Model Name :	DH98
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC3.7V
Test Mode :	CH11(802.11g Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	20.15	33.27	53.42	74.00	-20.58	peak
2483.5	15.43	33.27	48.70	54.00	-5.30	AVG
4924.00	11.43	44.10	55.53	74.00	-18.47	peak
4924.00	5.66	44.10	49.76	54.00	-4.24	AVG
7386.00	4.44	48.31	52.75	74.00	-21.25	peak
7386.00	0.23	48.31	48.54	54.00	-5.46	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	3 kHz
VB	30 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	500s

4.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 3KHz, VBW=30KHz, Sweep time = 500s.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



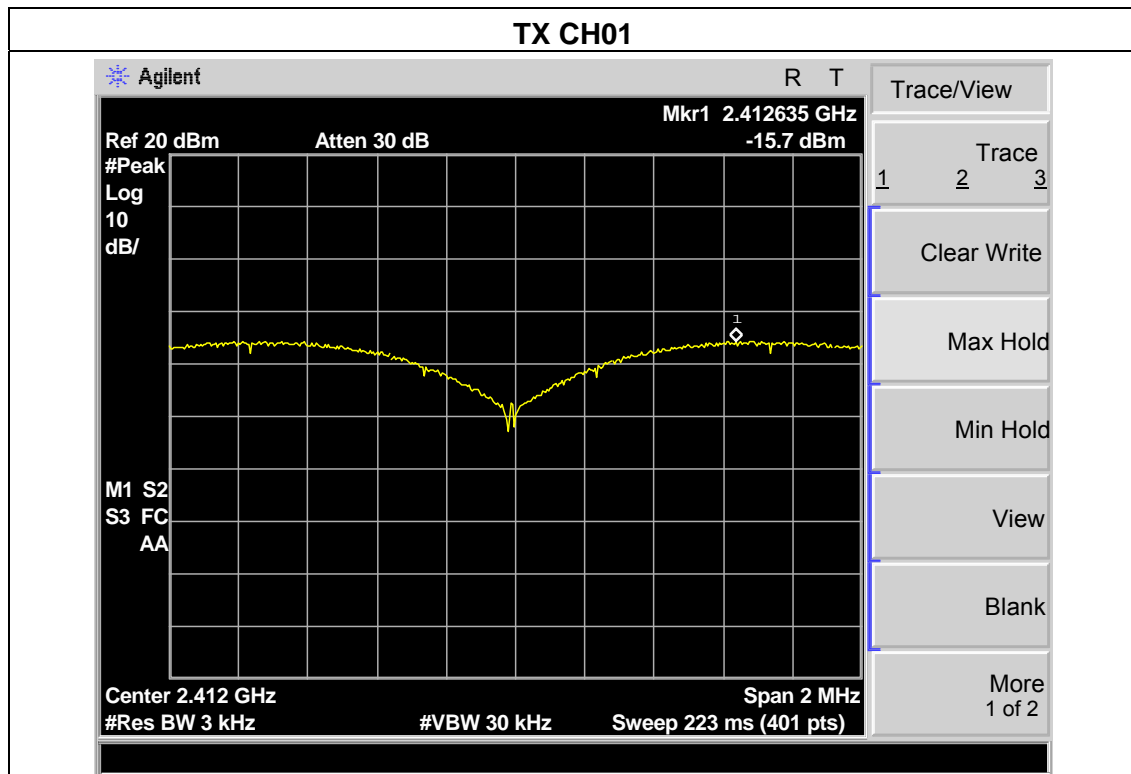
4.1.4 EUT OPERATION CONDITIONS

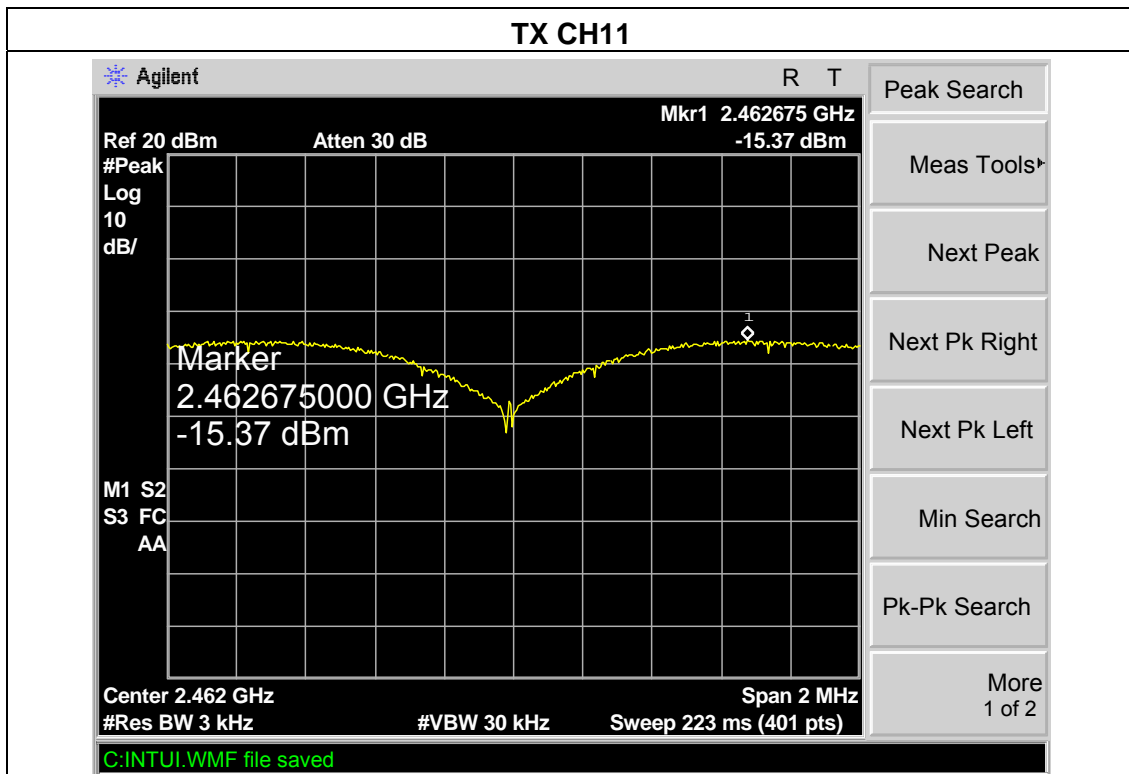
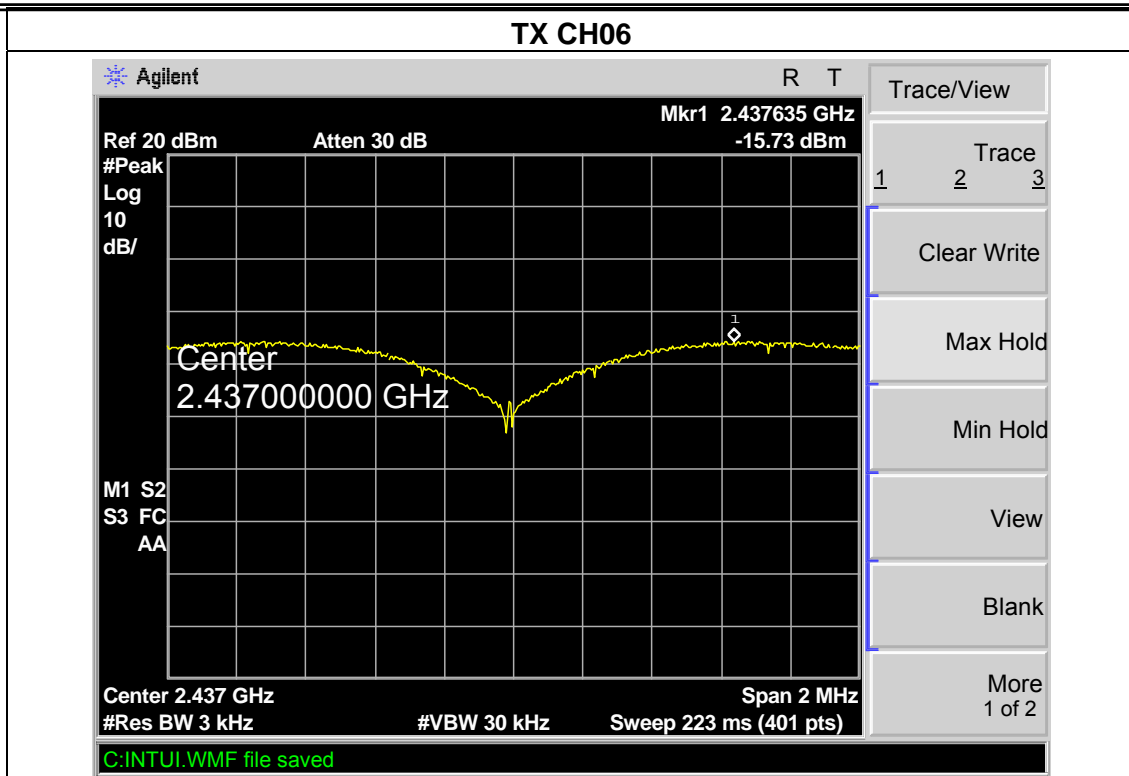
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC3.7V
Test Mode :	TX B MODE /CH01, CH06, CH11		

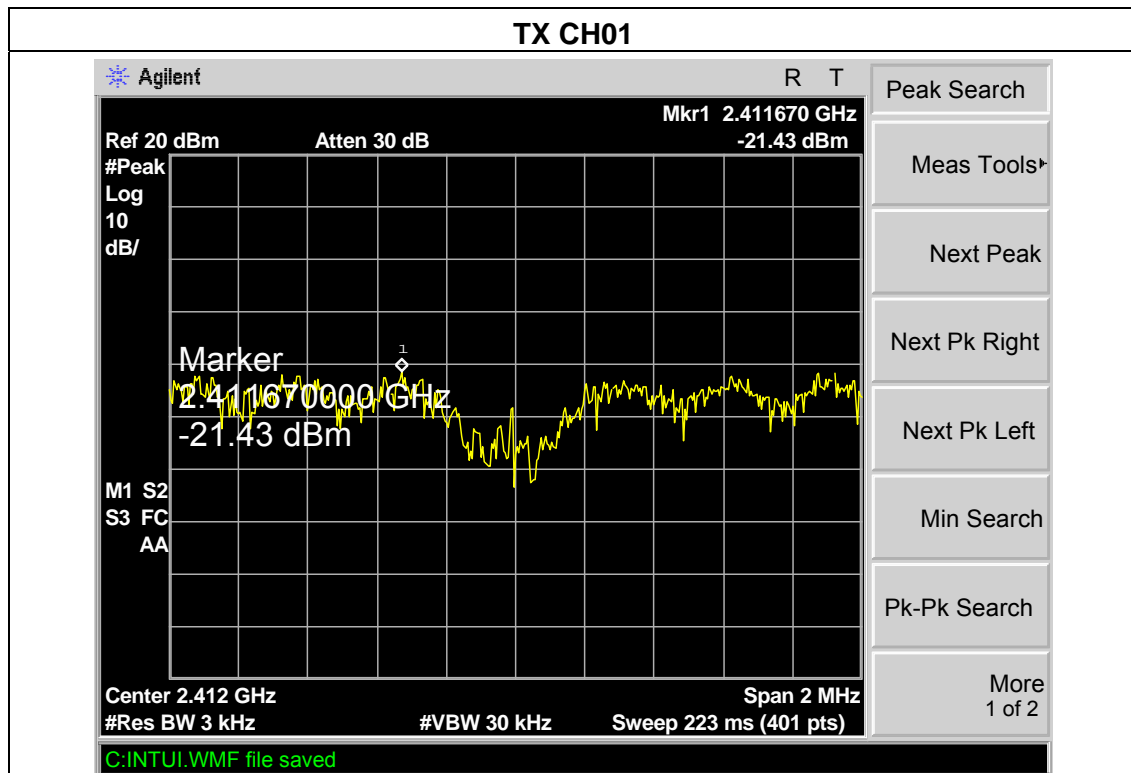
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-15.70	8	PASS
2437 MHz	-15.73	8	PASS
2462 MHz	-15.37	8	PASS

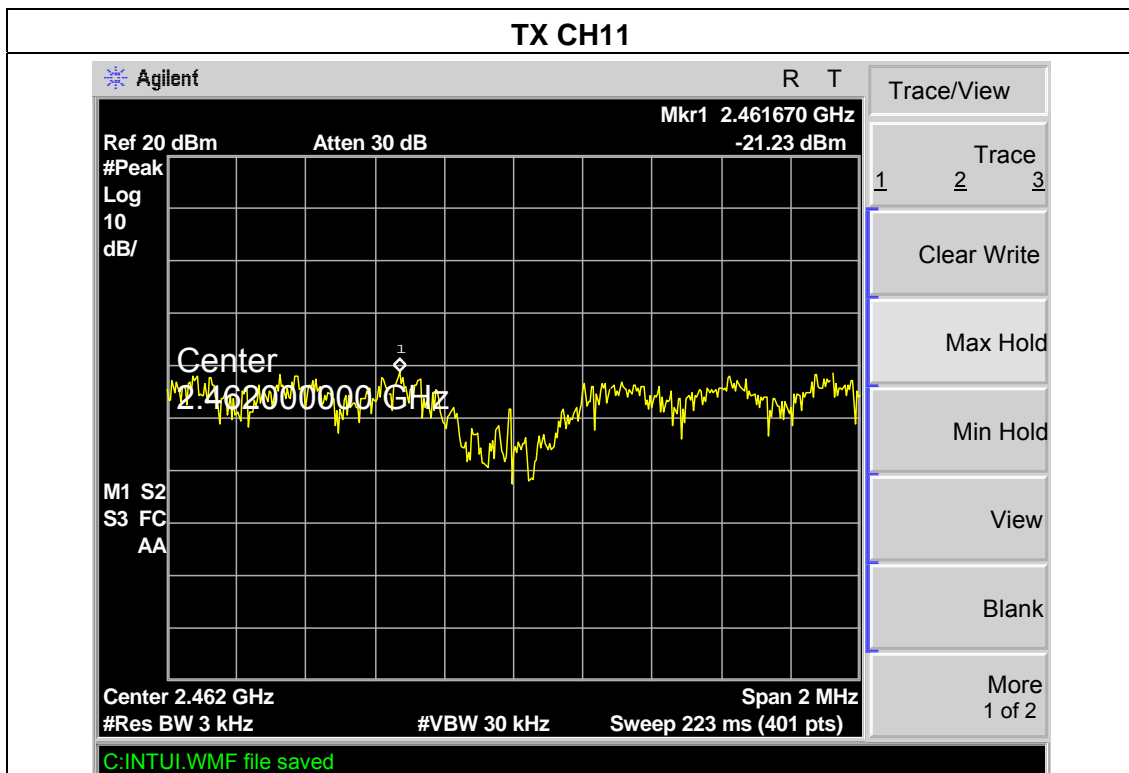
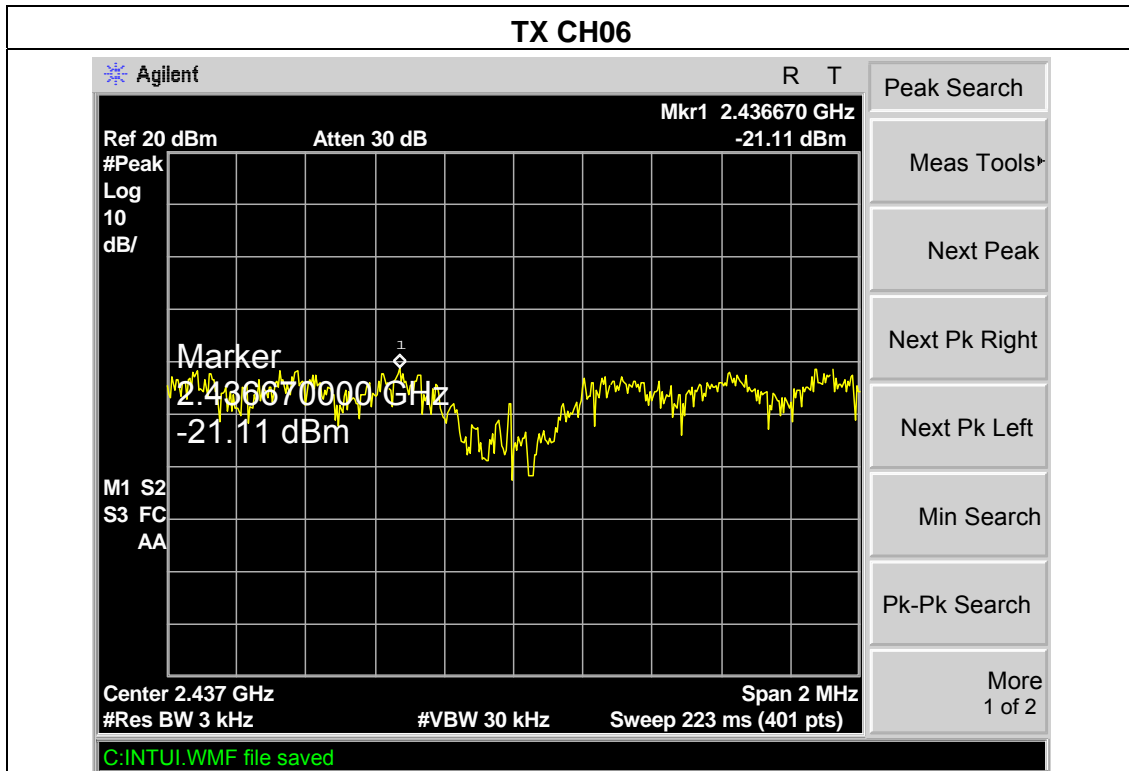




EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC3.7V
Test Mode :	TX G MODE /CH01, CH06, CH11		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-21.43	8	PASS
2437MHz	-21.11	8	PASS
2462 MHz	-21.23	8	PASS





5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

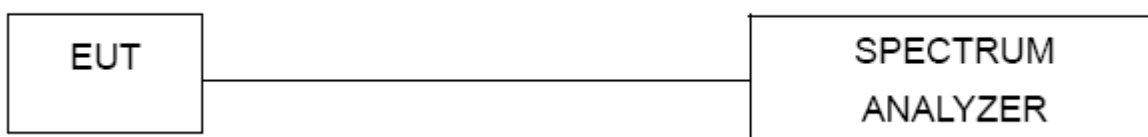
5.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



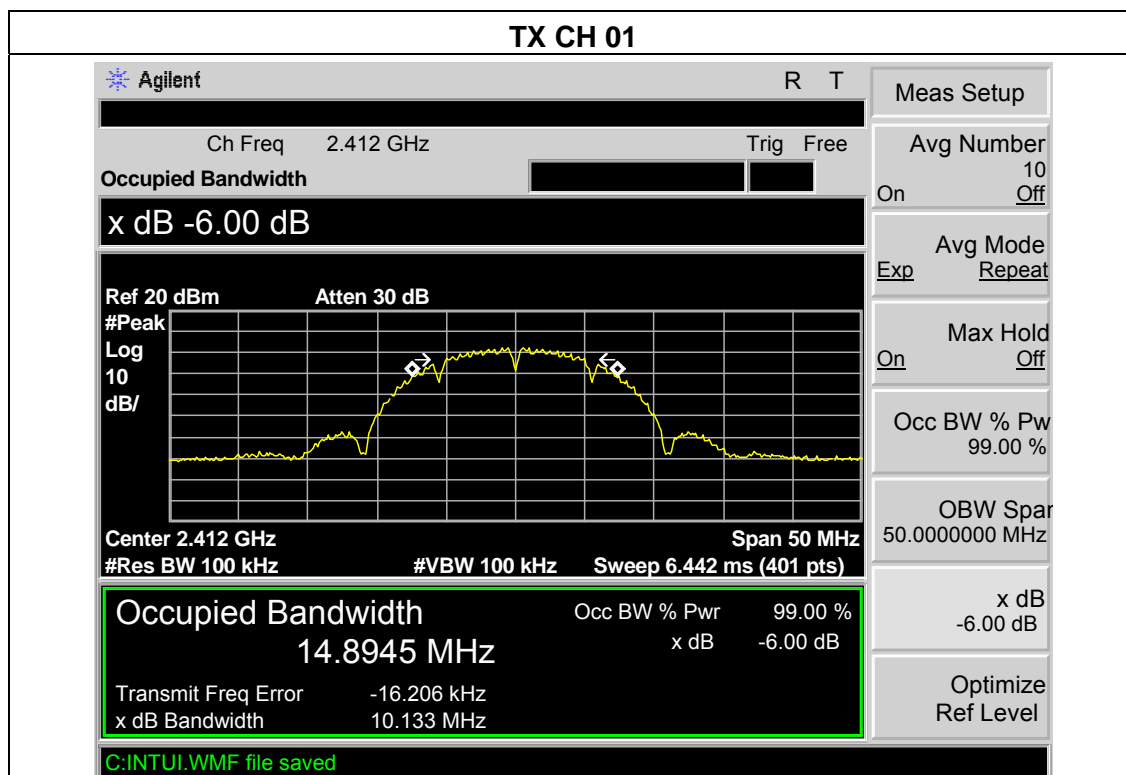
5.1.4 EUT OPERATION CONDITIONS

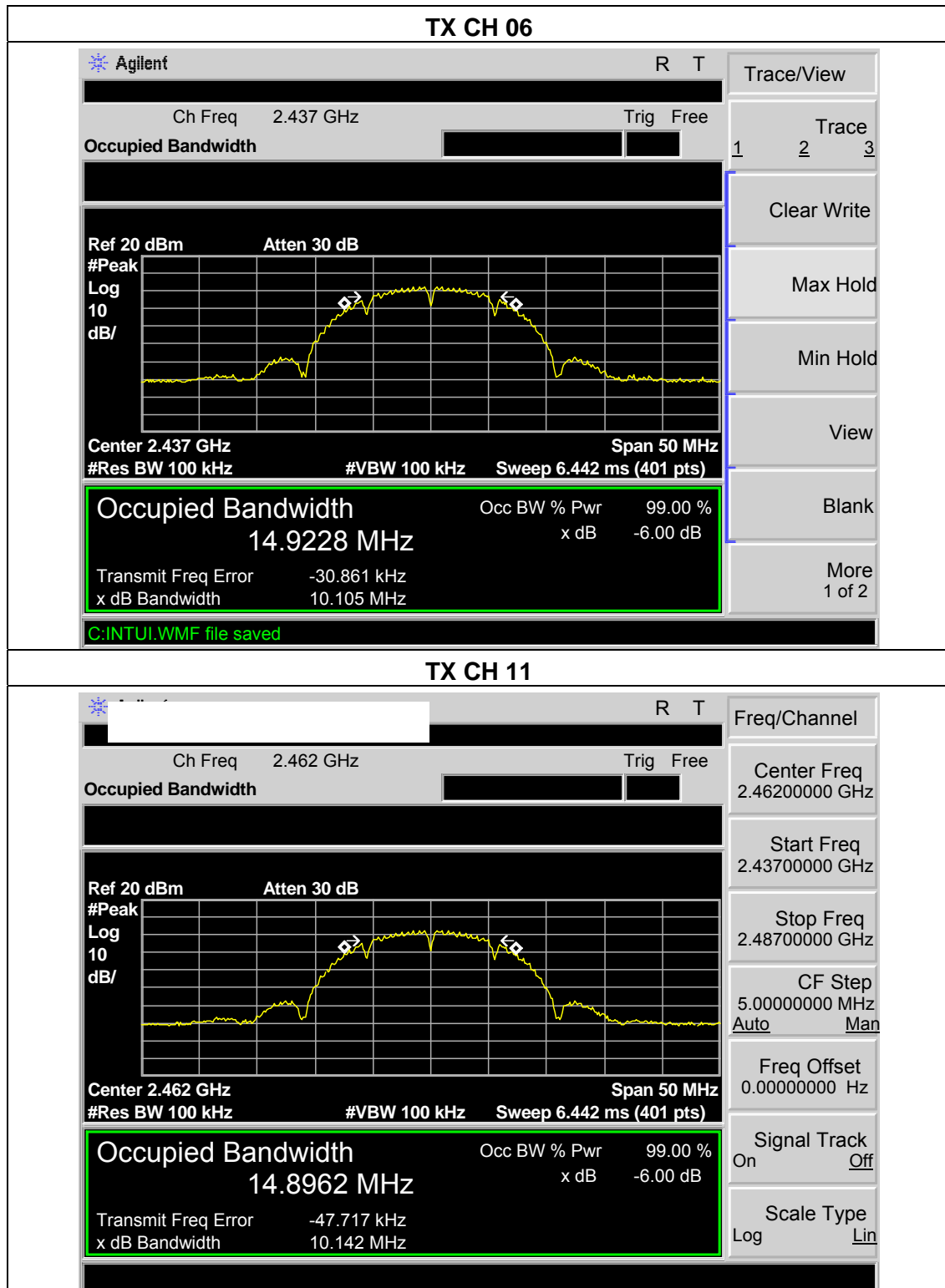
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

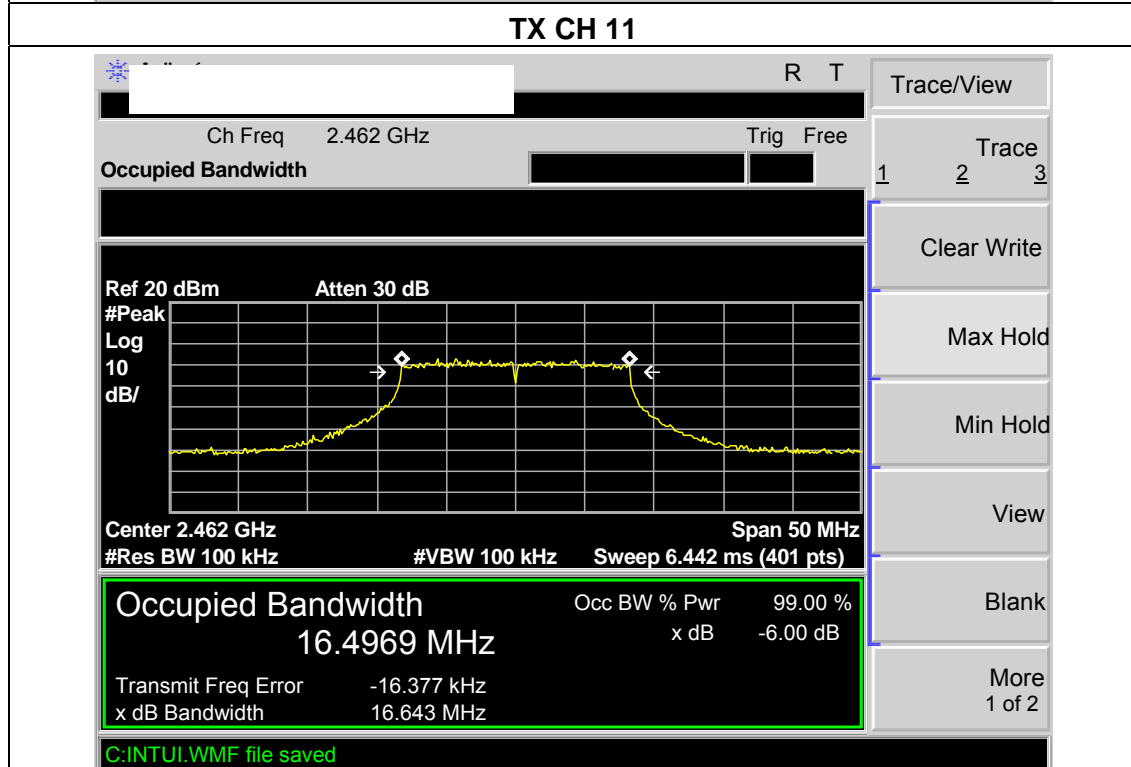
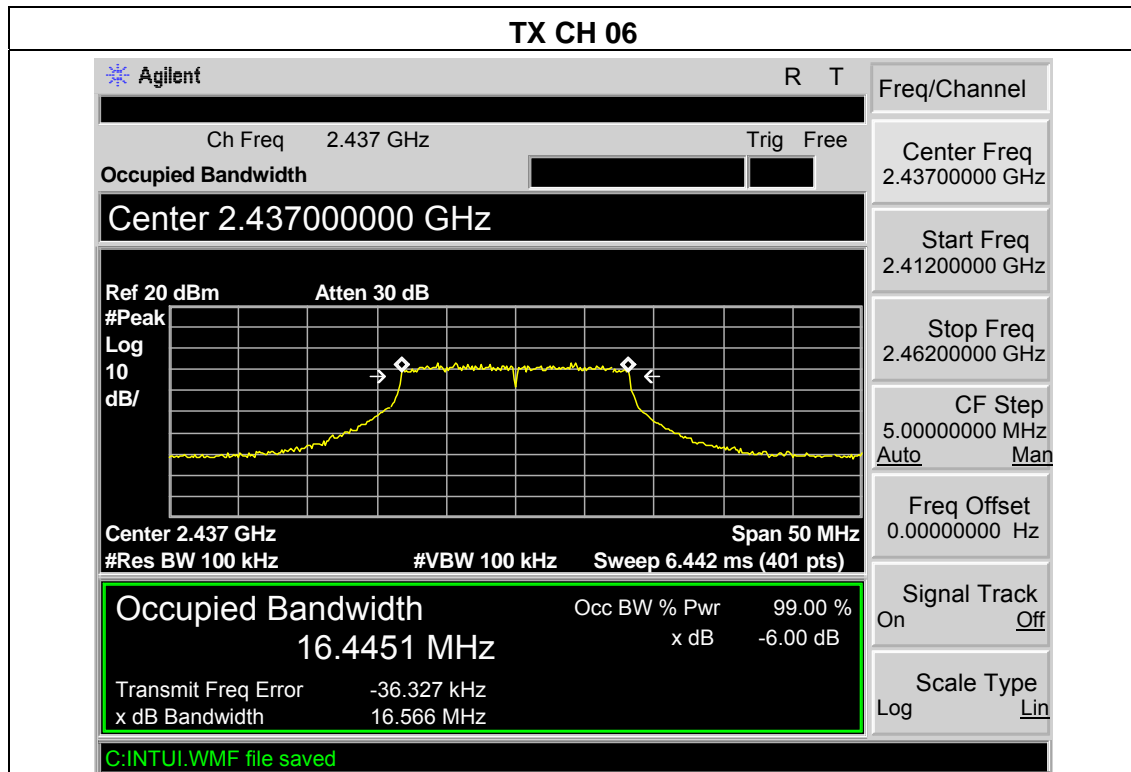
5.1.5 TEST RESULTS

EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V
Test Mode :	TX B MODE /CH01, CH06, CH11		

Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	10.13	14.89	>=500KHz	PASS
2437 MHz	10.10	14.92	>=500KHz	PASS
2462 MHz	10.14	14.89	>=500KHz	PASS







6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(1)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V
Test Mode :	TX B MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak output power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	10.12	30	1
CH06	2437	10.23	30	1
CH11	2462	10.35	30	1

EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V
Test Mode :	TX G MODE /CH01, CH06, CH11		

Test Channel	Frequency (MHz)	Peak output power (dBm)	LIMIT (dBm)	LIMIT (W)
CH01	2412	9.11	30	1
CH06	2437	9.98	30	1
CH11	2462	9.21	30	1

7. OUT OF BAND EMISSION

7.1 APPLIED PROCEDURES / LIMIT

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /100 KHz for Peak

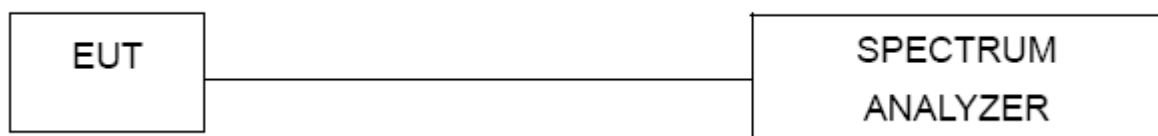
7.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP

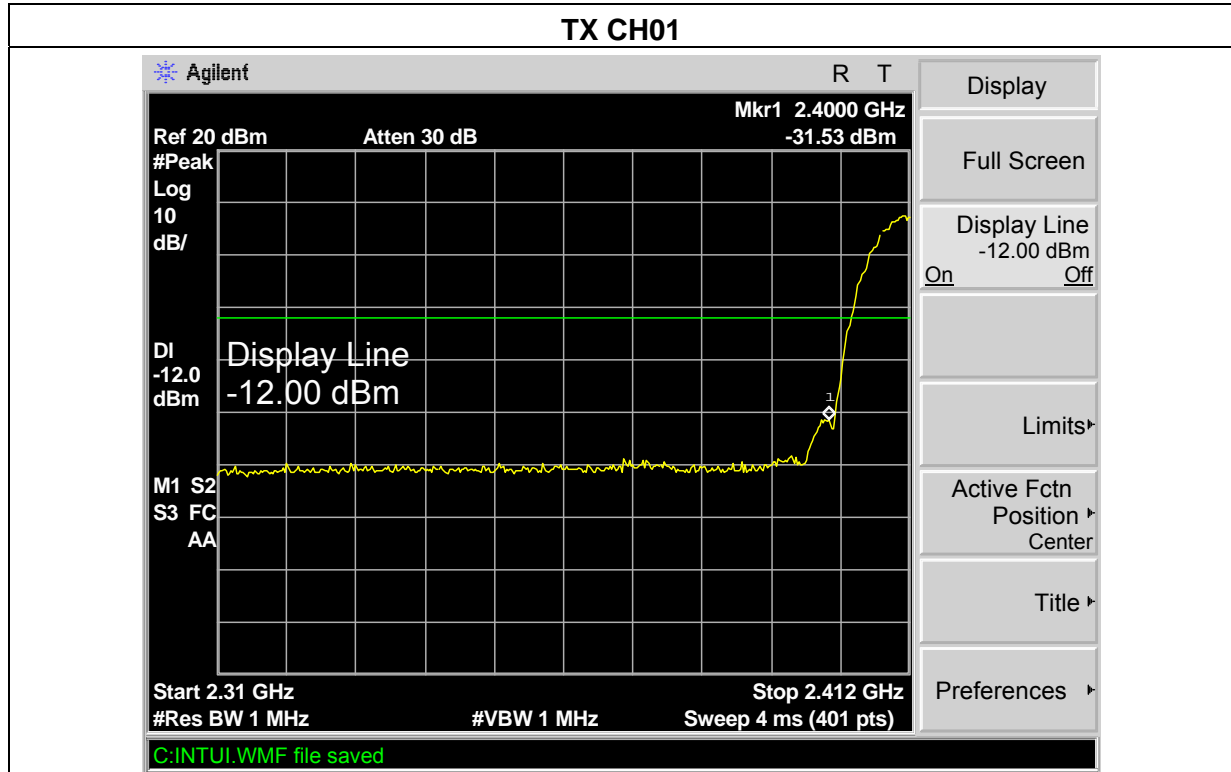


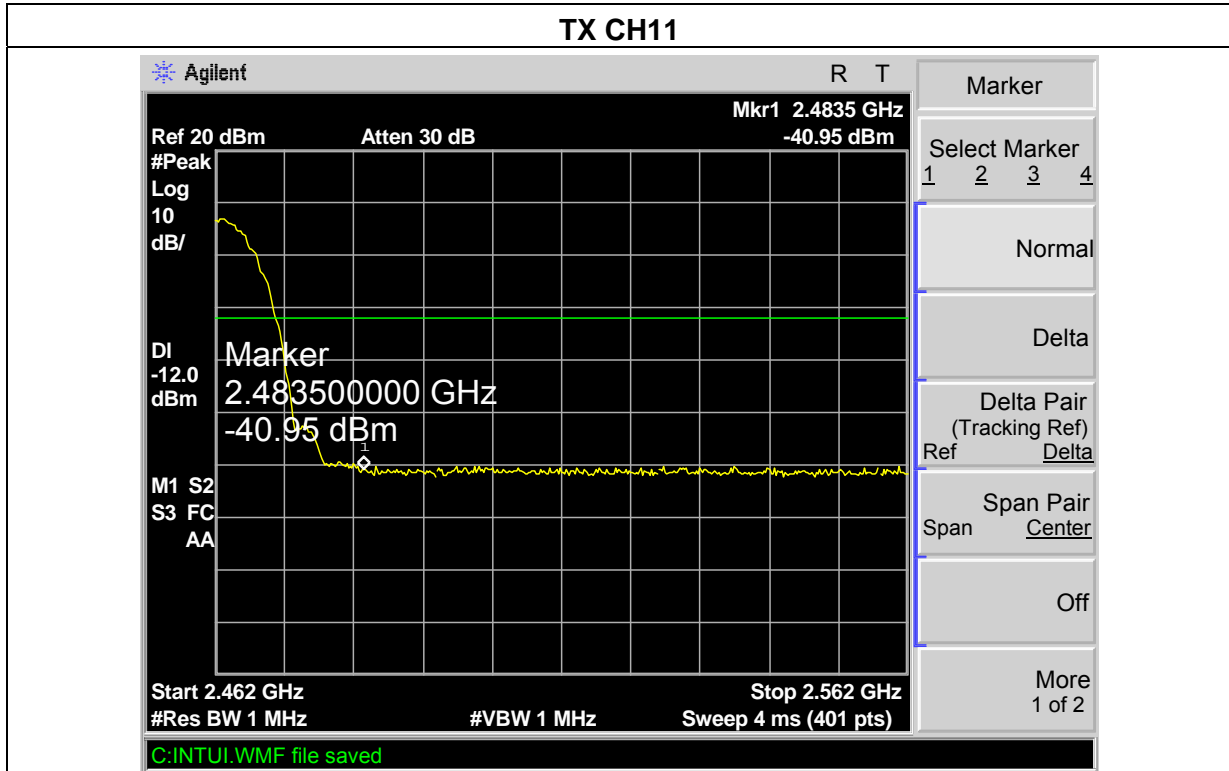
7.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

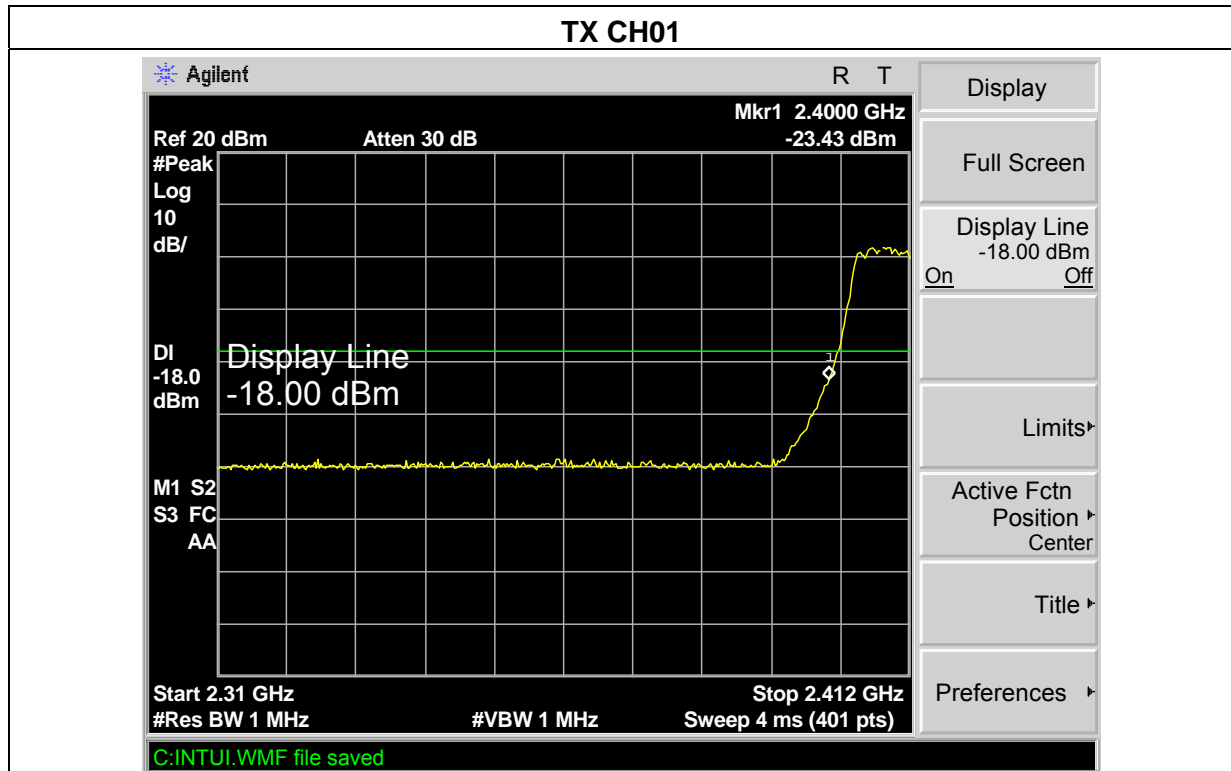
7.1.5 TEST RESULTS

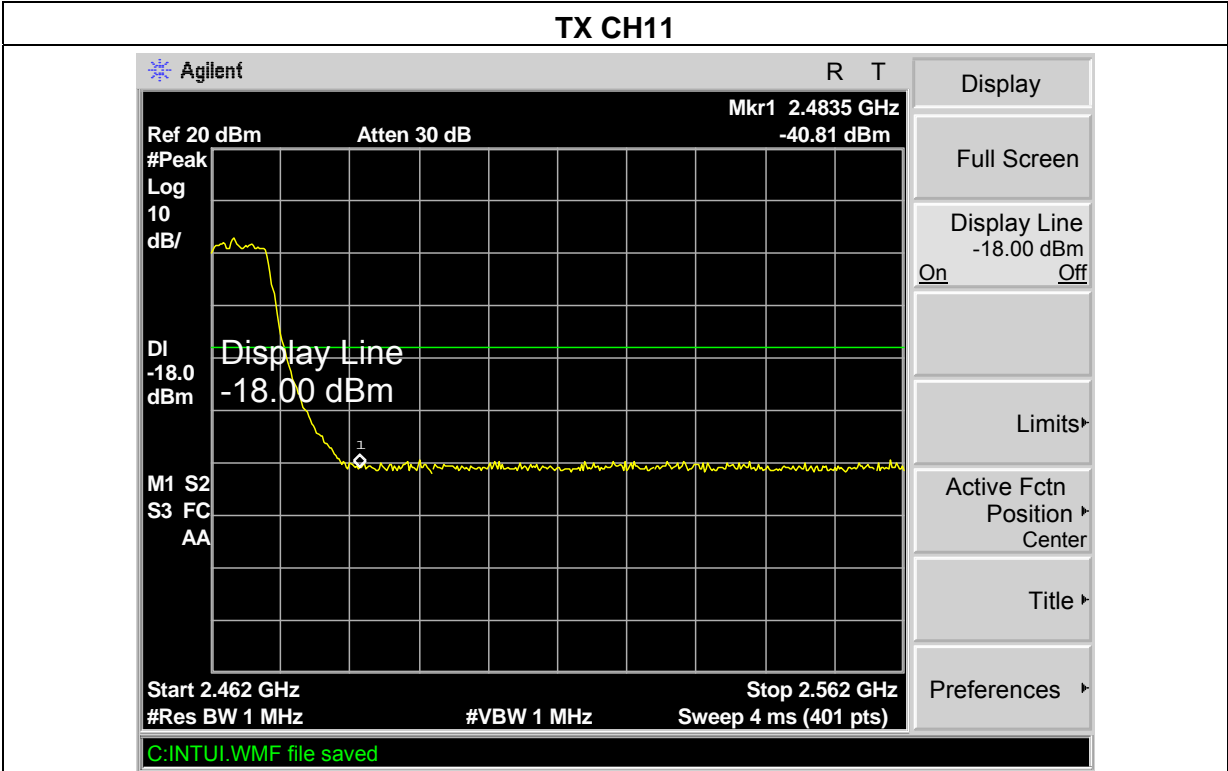
EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V
Test Mode :	TX B MODE /CH01, CH11		





EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7V
Test Mode :	TX G MODE /CH01, CH11		





7.1.6 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

EUT :	MOBILE PHONE	Model Name :	TX1
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7v
Test Mode :	CH1/ CH18 B MODE		
Note :	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.		

H:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	19.50	32.65	52.15	74.00	-21.85	peak
2400.00	15.23	32.65	47.88	54.00	-6.12	AVG

V:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	23.45	32.65	56.10	74.00	-17.90	peak
2400.00	14.35	32.65	47.00	54.00	-7.00	AVG

H:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	20.15	33.27	53.42	74.00	-20.58	peak
2483.5	15.43	33.27	48.70	54.00	-5.30	AVG

V:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	19.91	33.27	53.18	74.00	-20.82	peak
2483.5	14.21	33.27	47.48	54.00	-6.52	AVG

Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (4) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

EUT :	MOBILE PHONE	Model Name :	TX1
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC3.7v
Test Mode :	CH1/ CH18 G MODE		
Note :	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz.		

H:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	19.50	32.65	52.15	74.00	-21.85	peak
2400.00	15.23	32.65	47.88	54.00	-6.12	AVG

V:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400.00	19.50	32.65	52.15	74.00	-21.85	peak
2400.00	15.23	32.65	47.88	54.00	-6.12	AVG

H:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	20.15	33.27	53.42	74.00	-20.58	peak
2483.5	15.43	33.27	48.70	54.00	-5.30	AVG

V:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	20.15	33.27	53.42	74.00	-20.58	peak
2483.5	15.43	33.27	48.70	54.00	-5.30	AVG

Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) EUT Orthogonal Axis :
 "X" - denotes Laid on Table ; "Y" - denotes Vertical Stand ; "Z" - denotes Side Stand
- (3) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna
- (4) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

8. RF EXPOSURE TEST

8.1 APPLIED PROCEDURES / LIMIT

These devices are not exempted from compliance does not exceed the Commission's RF exposure guidelines. Unless a device operates at substantially low power levels, with a low gain antenna(s), supporting information is generally needed to establish the various potential operating configurations and exposure conditions of a transmitter and its antenna(s) in order to determine compliance with the RF exposure guidelines.

In order to demonstrate compliance with MPE requirement (see Section 2.1091), the following information is typically needed:

Calculation that estimates the minimum separation distance (20 cm or more) between an antenna and persons required to satisfy power density limits defined for free space.

Antenna installation and device operating instructions for installers (professional/unskilled users), and the parties responsible for ensuring compliance with the RF exposure requirement. Any caution statements and/or warning labels that are necessary in order to comply with the exposure limits. Any other RF exposure related issues that may affect MPE compliance.

FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b).

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

8.1.1 MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi \cdot^2} = \frac{EIRP}{4\pi \cdot^2}$$

P :power input to the antenna in Mw

EIRP :Equivalent(effective) isotropic radiated power.

S :power density mW/ cm²

G ;numeric gain of antenna relative to isotropic radiator

R :distance to centre of radiation in cm

FCC radio frequency exposure limits may be exceeded at distances closer than r cm from the antenna of this device

$$r = \sqrt{\frac{PG}{4\pi S}} = \sqrt{\frac{EIRP}{4\pi S}}$$

$$EIRP = 10^{(\text{Antenna Gain} + \text{Peak Output Power}/10)}$$

Note:

1. s=1.0 mW /cm² for limits for General Population/Uncontrolled Exposures.
2. The time averaged power over 30 minutes will be equaled Output Power.
3. Minimum calculated separation distance between antenna and persons required:0.53 cm
4. The Power Density at a distance of 20cm calculated from the formula is far below the limit of 1MW/ cm²
5. For portable device,the power limit is 60/f(in GHz) mW
For limit 60/f is equal:
60/2.412=24.87mW
60/2.437=24.62 mW
60/2.462=24.37mW
The max.output power E.I.R.P is 17,25mW

8.1.2 TEST RESULTS

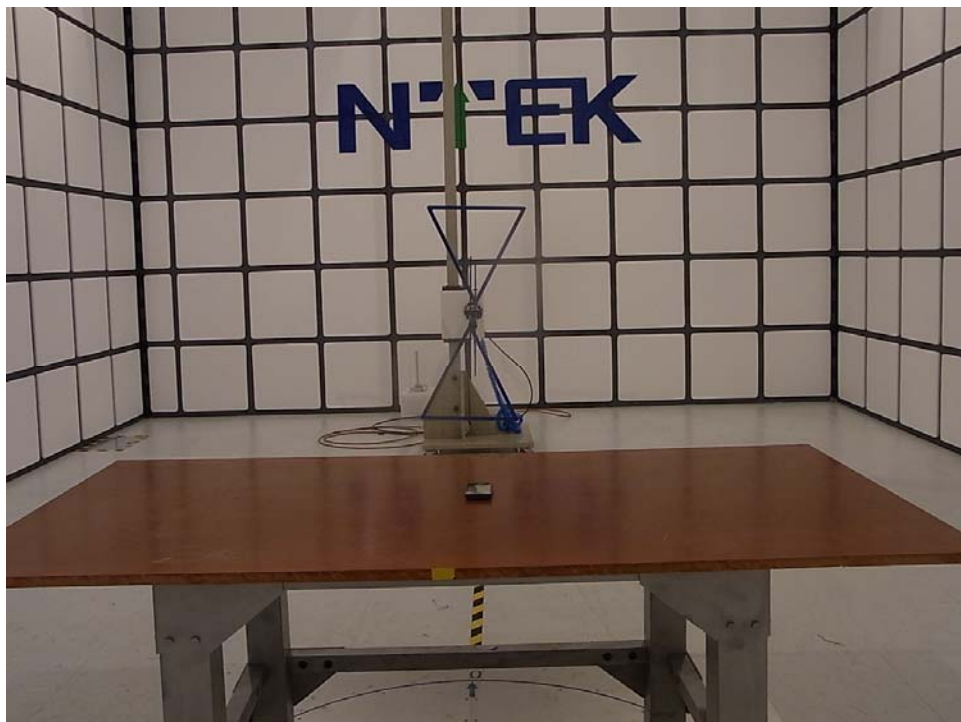
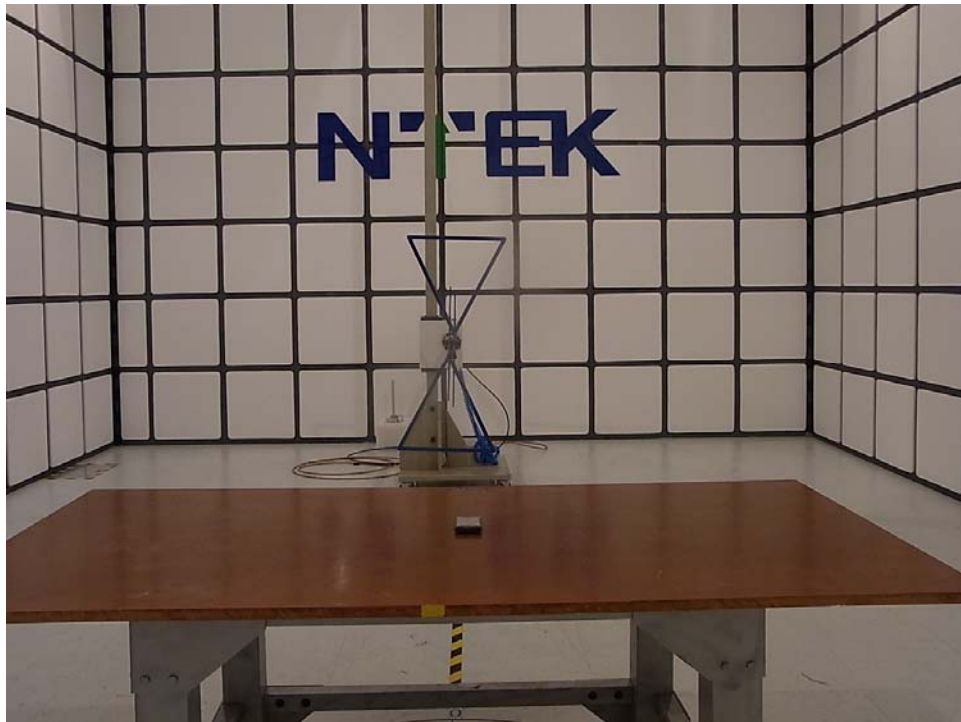
EUT :	Mobile Phone	Model Name :	DH98
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode		

Maximum measured transmitter power

MAX Conducted Power (dBm)	Max Antenna Gain (dBm)	EIRP (dBm)	EIRP (mW)
12.35	0.2	12.37	17.25

9. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos

