



FCC RADIO TEST REPORT-BLE

FCC ID:2ABFV-PGOB9

Product : Pc smart

Trade Name : N/A

Model Name : PTSGOB09-A

Serial Model : N/A

Report No. : NTEK-2015NT06272141F3

Prepared for

PC Smart S.A.

Carrera 116 no.15-25, Bogota, Colombia

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name PC Smart S.A.

Address..... Carrera 116 no.15-25, Bogota, Colombia

Manufacture's Name.. Locopo Technolgy Co.,Ltd.

Address..... Rm./Flat 1501(056), 15/F,Spa Centre,53-55 Lockhart Road,
Wan Chai,Kong Kong.

Product description

Product name..... Pc smart

Model and/or type PTSGOB09-A
reference

Serial Model N/A

Standards FCC Part15.247: 01 Oct. 2014

Test procedure ANSI C63.10-2013 and KDB 558074: June 5, 2014

This device described above has been tested by NTEK, 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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Date of Test

Date (s) of performance of tests.....: 27 Jun. 2015 ~08 Jul. 2015

Date of Issue: 08 Jul. 2015

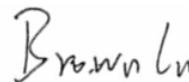
Test Result.....: **Pass**

Testing Engineer :



(Eileen Liu)

Technical Manager :



(Brown Lu)

Authorized Signatory :



(Bill Yao)

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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 (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	
15.205	Band Edge Emission	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 Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

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	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Pc smart	
Trade Name	N/A	
Model Name	PTSGOB09-A	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a Pc smart	
	Operation Frequency:	2402~2480MHz
	Modulation Type:	GFSK
	Number Of Channel	40CH
	Antenna Designation:	Please see Note 3.
	Antenna Gain (dBi)	1.0dBi
Channel List	Please refer to the Note 2.	
Ratings	DC 3.7V	
Adapter	Mode: SJ-0525-U	
	Input: 100-240V~, 50/60Hz, 0.5A Output: 5V---, 2.5A	
Battery	DC 3.7V	
Connecting I/O Port(s)	Please refer to the User's Manual	

Note:

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

2.

Channel	Frequency (MHz)
00	2402
01	2404
.....	
.....	
...	...
.....	
38	2478
39	2480

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	FPCB Antenna	N/A	1.0	BT Antenna

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	CH00
Mode 2	CH19
Mode 3	CH39
Mode 4	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 4	Link Mode

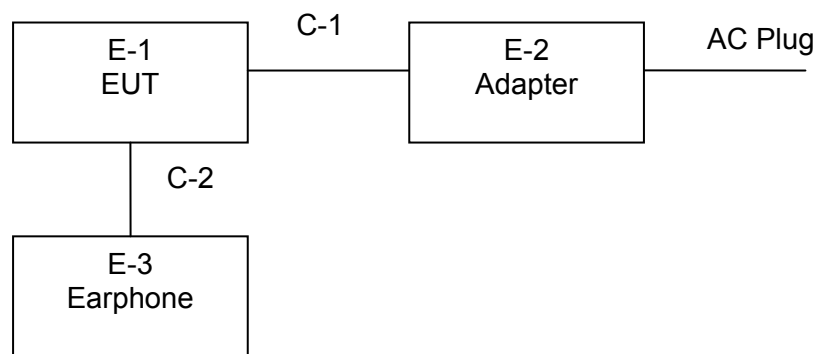
For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH19
Mode 3	CH39
Mode 4	Link Mode

Note:

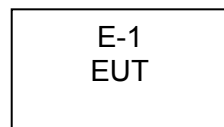
- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



2.4 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	Brand	Model/Type No.	Series No.	Note
E-1	Pc smart	N/A	PTSGOB09-A	N/A	EUT
E-2	Adapter	N/A	SJ-0525-U	N/A	
E-3	Earphone	N/A	2688		

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2m	
C-2	NO	NO	1.0m	

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.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.07.06	2016.07.05	1 year
1*	Spectrum Analyzer	Agilent	E4407B	MY45108040	2014.07.06	2015.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
3*	Bilog Antenna	TESEQ	CBL6111D	31216	2014.07.06	2015.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2015.07.06	2016.07.05	1 year
6*	Horn Antenna	EM	EM-AH-10180	2011071402	2014.07.06	2015.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
7*	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2014.07.06	2015.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2014.12.22	2015.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
10*	Power Meter	R&S	NRVS	100696	2014.07.06	2015.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2015.07.06	2016.07.05	1 year
11*	Power Sensor	R&S	URV5-Z4	0395.1619.05	2014.07.06	2015.07.05	1 year
12	Test Cable	N/A	R-01	N/A	2015.07.06	2016.07.05	1 year
12*	Test Cable	N/A	R-01	N/A	2014.07.06	2015.07.05	1 year
13	Test Cable	N/A	R-02	N/A	2015.07.06	2016.07.05	1 year
13*	Test Cable	N/A	R-02	N/A	2014.07.06	2015.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2015.06.06	2016.06.05	1 year
2	LISN	R&S	ENV216	101313	2014.08.24	2015.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2014.08.24	2015.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2015.06.07	2016.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.07	2016.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.08	2016.06.07	1 year
7	Test Cable	N/A	C01	N/A	2015.06.08	2016.06.07	1 year
8	Test Cable	N/A	C02	N/A	2015.06.08	2016.06.07	1 year
9	Test Cable	N/A	C03	N/A	2015.06.08	2016.06.07	1 year

1	Attenuation	MCE	24-10-34	BN9258	2015.06.08	2016.06.07	1 year
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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

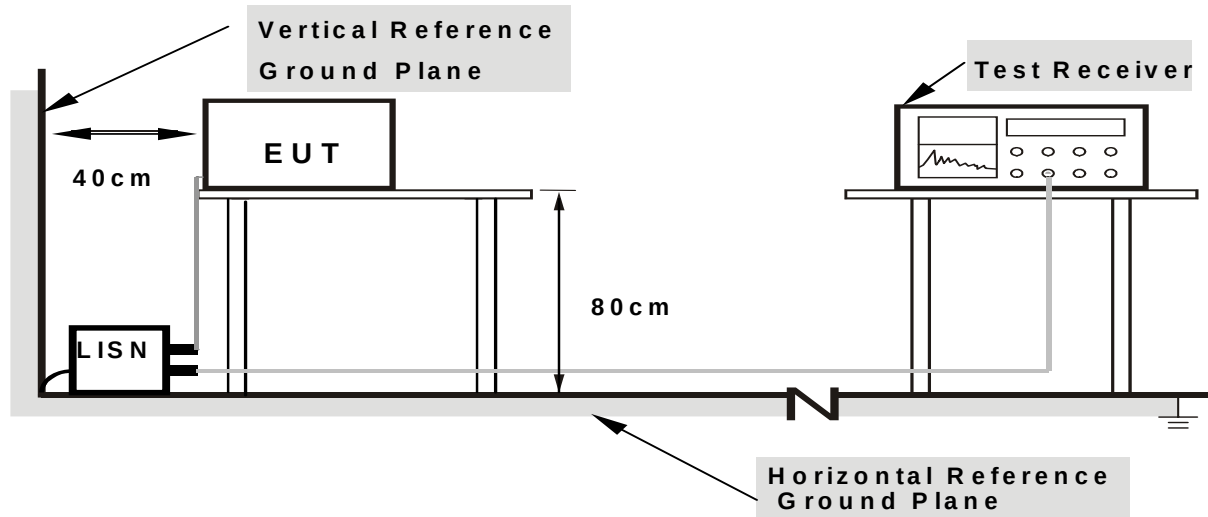
3.1.2 TEST PROCEDURE

- The EUT was placed 0.8 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.

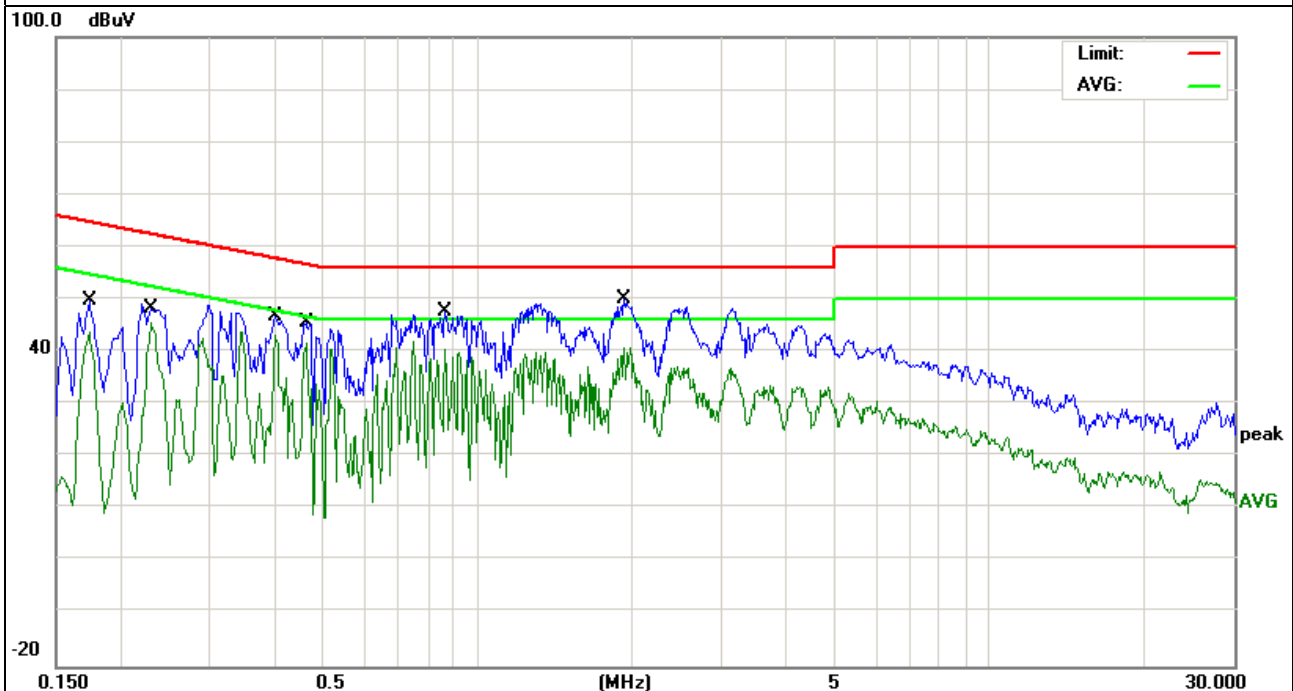
3.1.6 TEST RESULTS

EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1737	39.99	9.62	49.61	64.78	-15.17	QP
0.1737	34.05	9.62	43.67	54.78	-11.11	AVG
0.2300	39.36	9.65	49.01	62.45	-13.44	QP
0.2300	35.84	9.65	45.49	52.45	-6.96	AVG
0.4020	37.50	9.37	46.87	57.81	-10.94	QP
0.4020	33.72	9.37	43.09	47.81	-4.72	AVG
0.4620	36.00	9.61	45.61	56.66	-11.05	QP
0.4620	32.01	9.61	41.62	46.66	-5.04	AVG
0.8659	37.75	9.75	47.50	56.00	-8.50	QP
0.8659	30.62	9.75	40.37	46.00	-5.63	AVG
1.9337	40.28	9.65	49.93	56.00	-6.07	QP
1.9337	31.16	9.65	40.81	46.00	-5.19	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

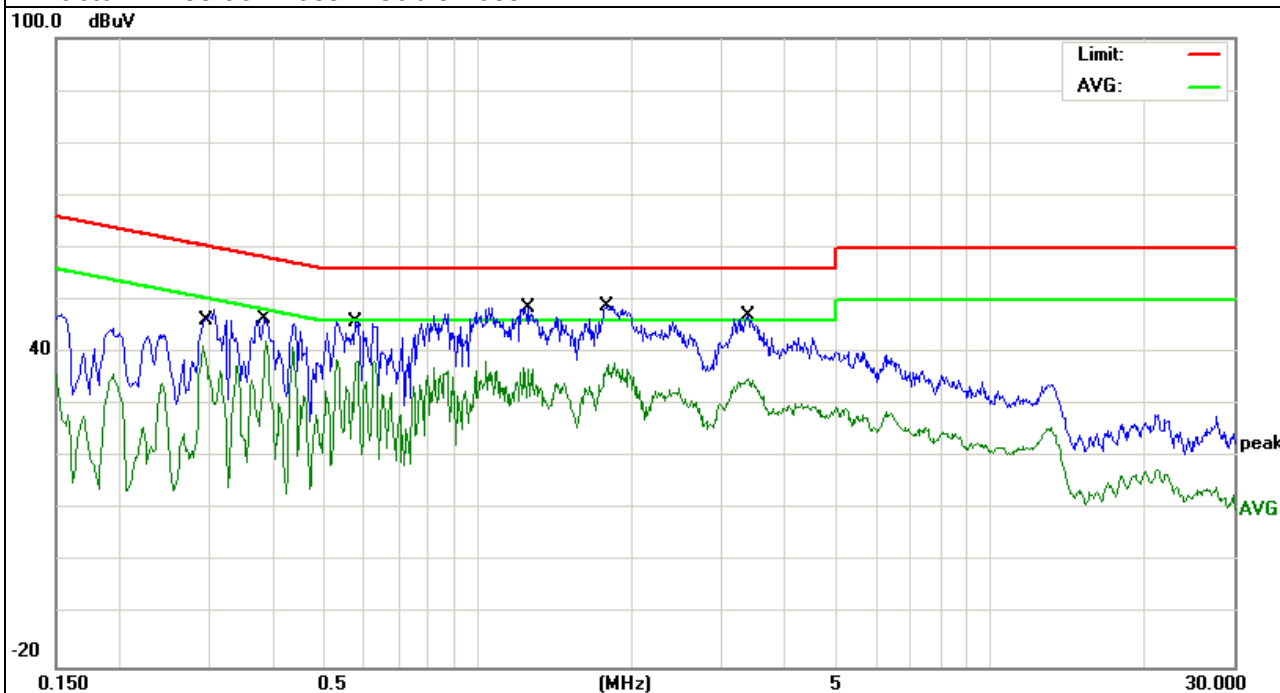


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2898	38.56	9.61	48.17	60.53	-12.36	QP
0.2898	31.71	9.61	41.32	50.53	-9.21	AVG
0.3860	36.93	9.63	46.56	58.15	-11.59	QP
0.3860	32.60	9.63	42.23	48.15	-5.92	AVG
0.5816	36.17	9.66	45.83	56.00	-10.17	QP
0.5816	28.82	9.66	38.48	46.00	-7.52	AVG
1.2579	39.11	9.59	48.70	56.00	-7.30	QP
1.2579	27.44	9.59	37.03	46.00	-8.97	AVG
1.7900	39.45	9.55	49.00	56.00	-7.00	QP
1.7900	28.51	9.55	38.06	46.00	-7.94	AVG
3.3780	37.55	9.51	47.06	56.00	-8.94	QP
3.3780	25.40	9.51	34.91	46.00	-11.09	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

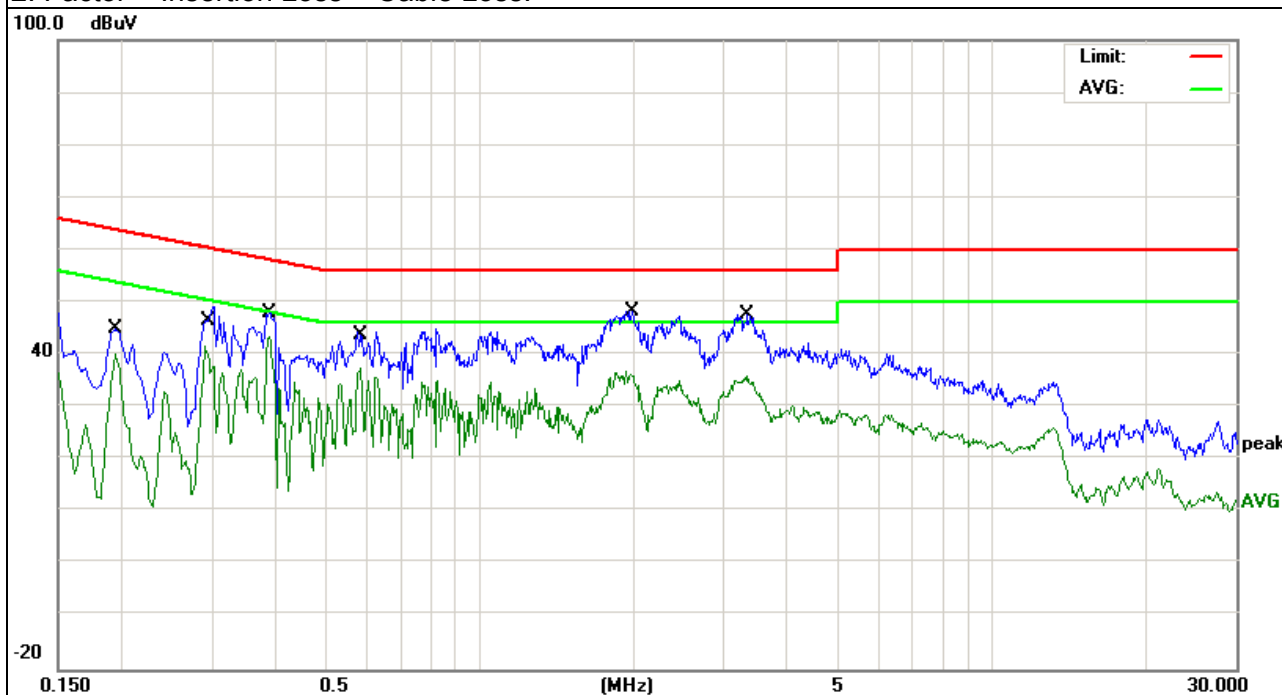


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form Adapter AC 240V/60Hz	Test Mode :	Mode 4

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.1940	35.35	9.60	44.95	63.86	-18.91	QP
0.1940	30.61	9.60	40.21	53.86	-13.65	AVG
0.2898	39.49	9.73	49.22	60.53	-11.31	QP
0.2898	32.04	9.73	41.77	50.53	-8.76	AVG
0.3870	38.52	9.40	47.92	58.13	-10.21	QP
0.3870	33.93	9.40	43.33	48.13	-4.80	AVG
0.5856	34.65	9.77	44.42	56.00	-11.58	QP
0.5856	27.65	9.77	37.42	46.00	-8.58	AVG
1.9858	38.68	9.65	48.33	56.00	-7.67	QP
1.9858	27.13	9.65	36.78	46.00	-9.22	AVG
3.3420	37.90	9.68	47.58	56.00	-8.42	QP
3.3420	26.28	9.68	35.96	46.00	-10.04	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

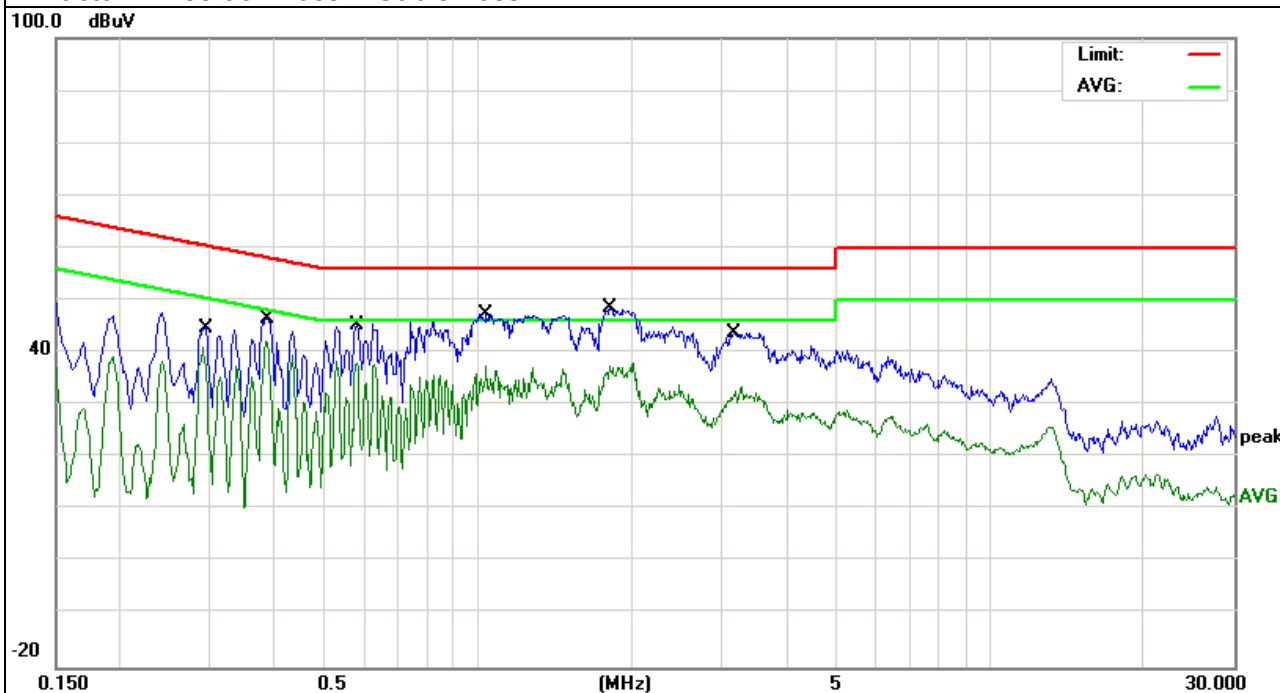


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form Adapter AC 240V/60Hz	Test Mode :	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2898	35.20	9.61	44.81	60.53	-15.72	QP
0.2898	31.37	9.61	40.98	50.53	-9.55	AVG
0.3860	36.96	9.63	46.59	58.15	-11.56	QP
0.3860	32.67	9.63	42.30	48.15	-5.85	AVG
0.5816	35.89	9.66	45.55	56.00	-10.45	QP
0.5816	28.31	9.66	37.97	46.00	-8.03	AVG
1.0380	37.78	9.61	47.39	56.00	-8.61	QP
1.0380	27.93	9.61	37.54	46.00	-8.46	AVG
1.8180	38.98	9.55	48.53	56.00	-7.47	QP
1.8180	28.47	9.55	38.02	46.00	-7.98	AVG
3.1579	34.33	9.52	43.85	56.00	-12.15	QP
3.1579	23.92	9.52	33.44	46.00	-12.56	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

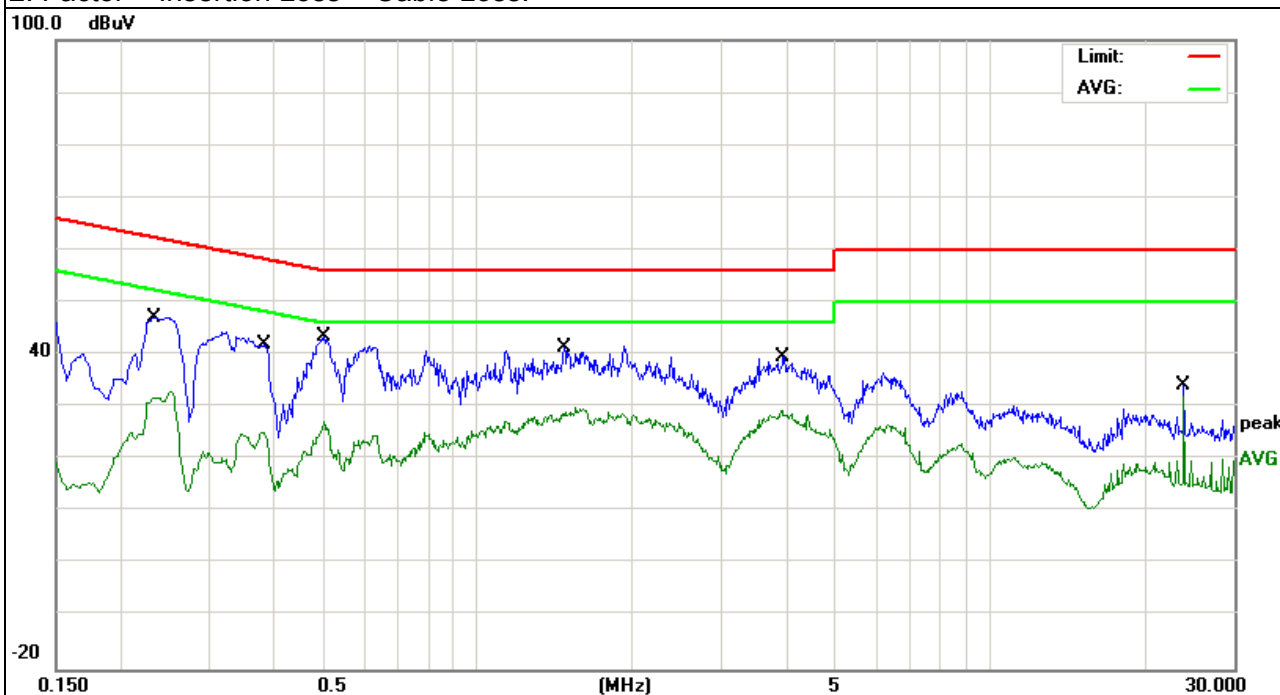


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form PC AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2340	37.44	9.65	47.09	62.30	-15.21	QP
0.2340	23.32	9.65	32.97	52.30	-19.33	AVG
0.3820	32.59	9.42	42.01	58.23	-16.22	QP
0.3820	15.75	9.42	25.17	48.23	-23.06	AVG
0.5020	33.76	9.77	43.53	56.00	-12.47	QP
0.5020	17.48	9.77	27.25	46.00	-18.75	AVG
1.4737	31.78	9.70	41.48	56.00	-14.52	QP
1.4737	20.11	9.70	29.81	46.00	-16.19	AVG
3.9540	29.83	9.70	39.53	56.00	-16.47	QP
3.9540	19.80	9.70	29.50	46.00	-16.50	AVG
24.0015	24.22	9.93	34.15	60.00	-25.85	QP
24.0015	22.14	9.93	32.07	50.00	-17.93	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

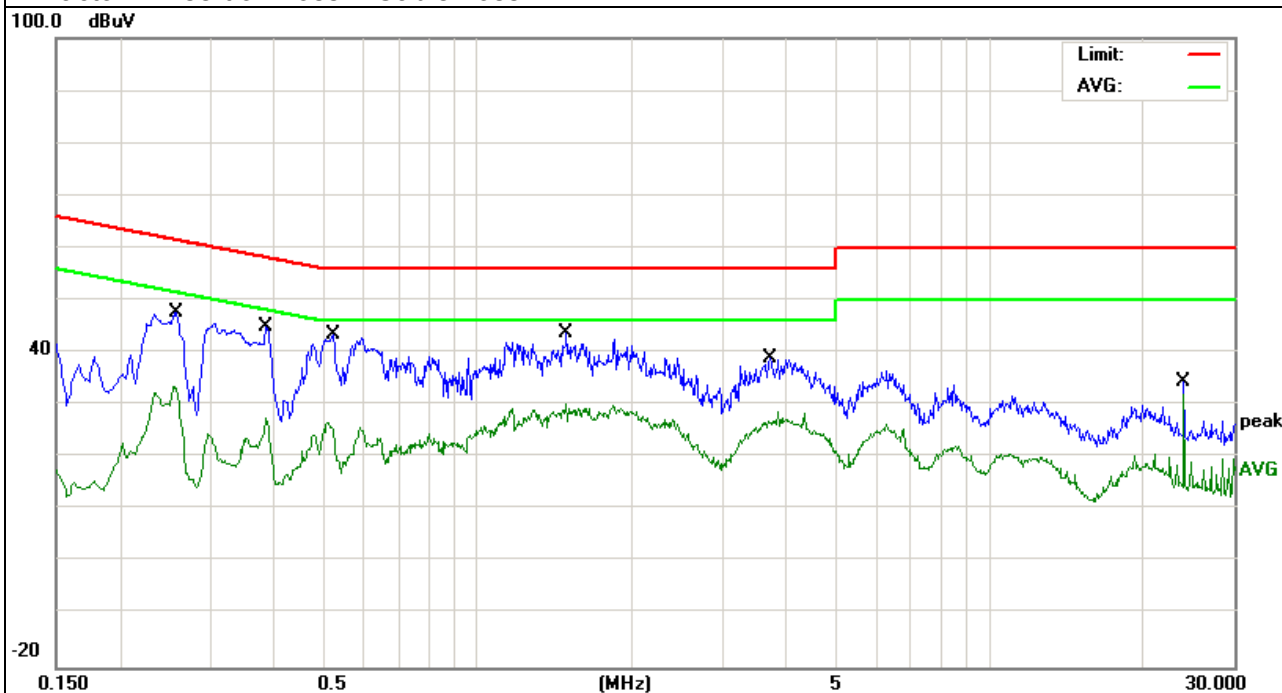


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form PC AC 120V/60Hz	Test Mode :	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2580	38.11	9.62	47.73	61.49	-13.76	QP
0.2580	23.93	9.62	33.55	51.49	-17.94	AVG
0.3860	35.30	9.63	44.93	58.15	-13.22	QP
0.3860	18.03	9.63	27.66	48.15	-20.49	AVG
0.5220	33.67	9.68	43.35	56.00	-12.65	QP
0.5220	17.03	9.68	26.71	46.00	-19.29	AVG
1.4899	34.16	9.58	43.74	56.00	-12.26	QP
1.4899	20.58	9.58	30.16	46.00	-15.84	AVG
3.7339	29.56	9.52	39.08	56.00	-16.92	QP
3.7339	19.37	9.52	28.89	46.00	-17.11	AVG
24.0015	24.67	9.92	34.59	60.00	-25.41	QP
24.0015	22.11	9.92	32.03	50.00	-17.97	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

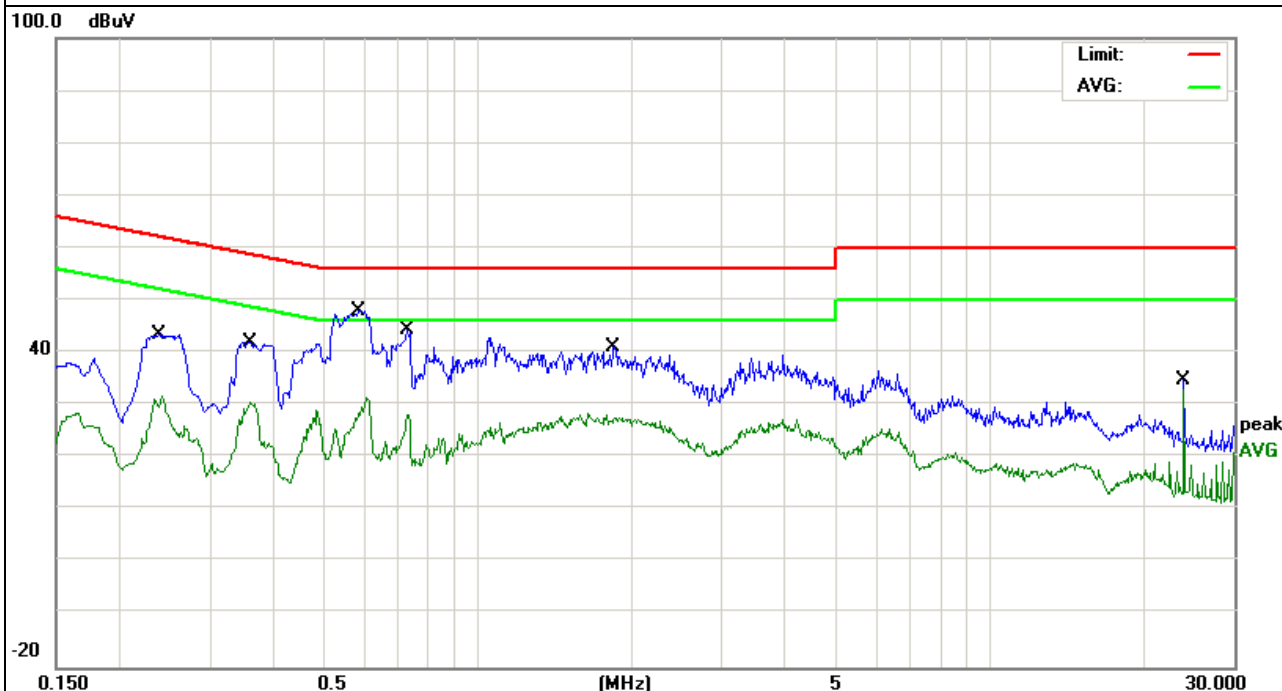


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V form PC AC 240V/60Hz	Test Mode :	Mode 4

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.2379	33.68	9.66	43.34	62.17	-18.83	QP
0.2379	22.02	9.66	31.68	52.17	-20.49	AVG
0.3578	32.55	9.52	42.07	58.78	-16.71	QP
0.3578	21.00	9.52	30.52	48.78	-18.26	AVG
0.5856	38.29	9.77	48.06	56.00	-7.94	QP
0.5856	21.77	9.77	31.54	46.00	-14.46	AVG
0.7298	34.71	9.77	44.48	56.00	-11.52	QP
0.7298	18.51	9.77	28.28	46.00	-17.72	AVG
1.8420	31.37	9.66	41.03	56.00	-14.97	QP
1.8420	18.89	9.66	28.55	46.00	-17.45	AVG
24.0015	24.82	9.93	34.75	60.00	-25.25	QP
24.0015	22.93	9.93	32.86	50.00	-17.14	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

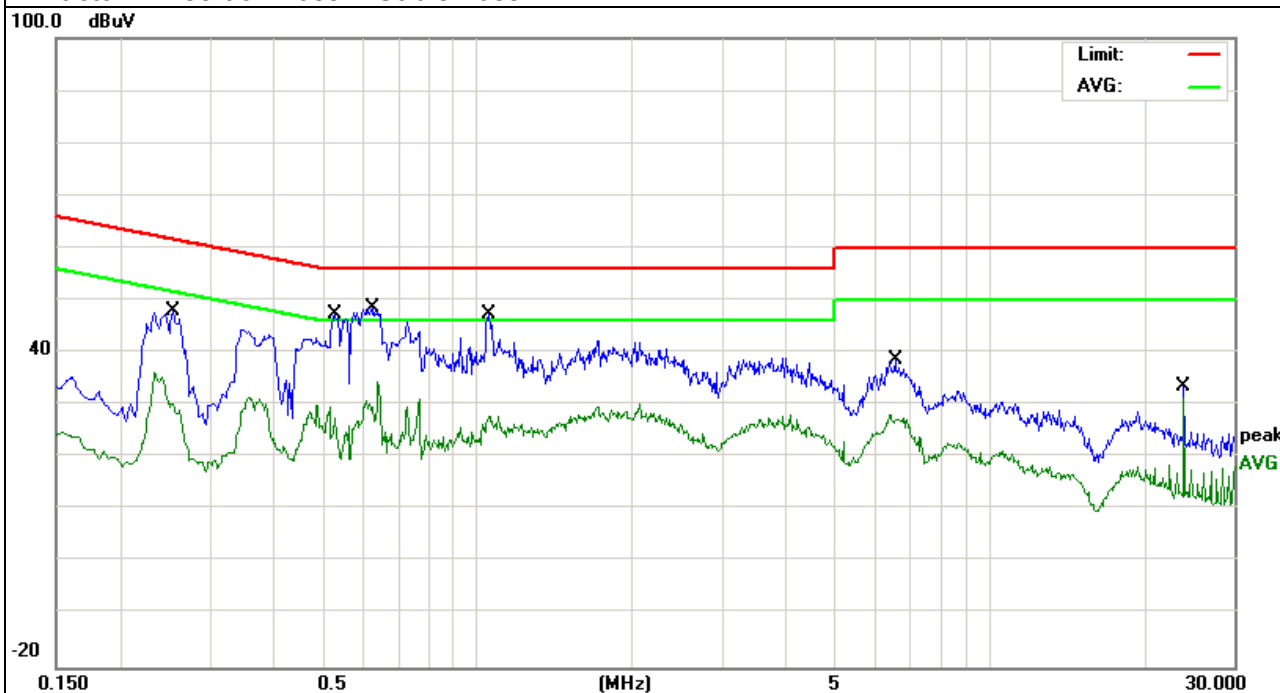


EUT :	Pc smart	Model Name. :	PTSGOB09-A
Temperature :	26 °C	Relative Humidity :	56%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V form PC AC 240V/60Hz	Test Mode :	Mode 4

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.2540	38.21	9.61	47.82	61.62	-13.80	QP
0.2540	26.51	9.61	36.12	51.62	-15.50	AVG
0.5260	37.70	9.68	47.38	56.00	-8.62	QP
0.5260	20.40	9.68	30.08	46.00	-15.92	AVG
0.6260	38.93	9.65	48.58	56.00	-7.42	QP
0.6260	24.72	9.65	34.37	46.00	-11.63	AVG
1.0540	37.85	9.61	47.46	56.00	-8.54	QP
1.0540	18.23	9.61	27.84	46.00	-18.16	AVG
6.5297	29.21	9.51	38.72	60.00	-21.28	QP
6.5297	18.74	9.51	28.25	50.00	-21.75	AVG
24.0015	23.76	9.92	33.68	60.00	-26.32	QP
24.0015	21.66	9.92	31.58	50.00	-18.42	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



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 (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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	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 m for below 1GHz and 1.5m for above 1GHz 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 for below 1GHz and 1.5m for above 1GHz; 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

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

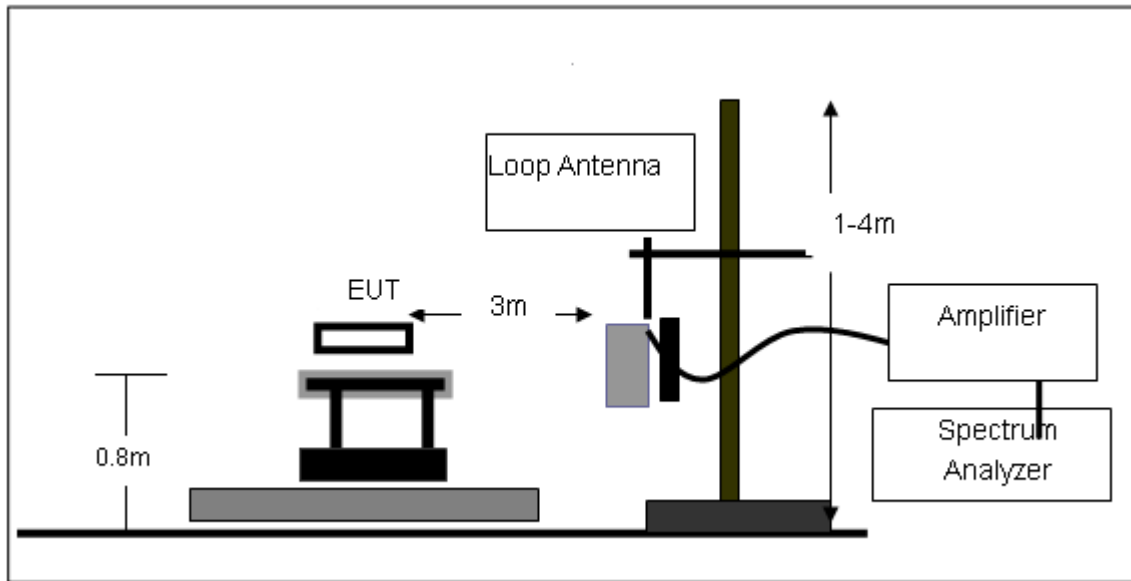
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Peak	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

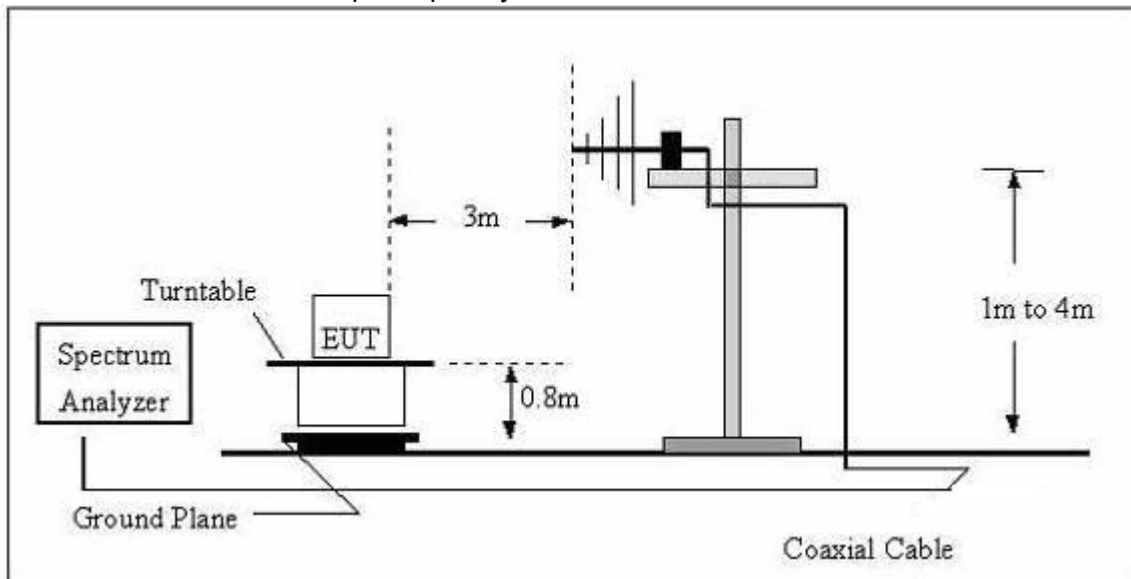
No deviation

3.2.4 TEST SETUP

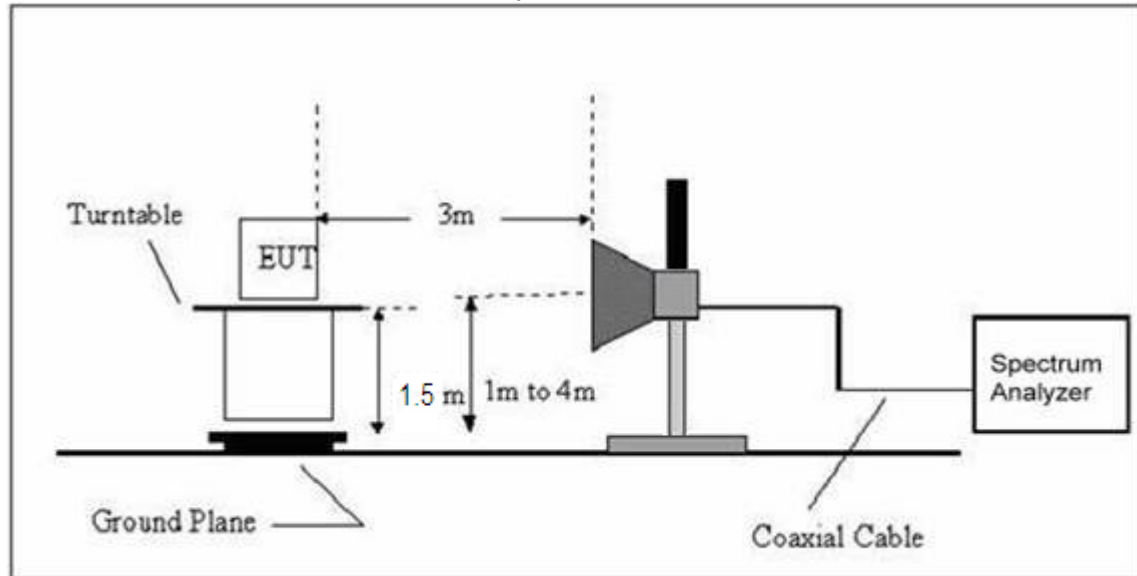
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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:	Pc smart	Model Name. :	PTSGOB09-A
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX	Polarization :	--

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

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

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

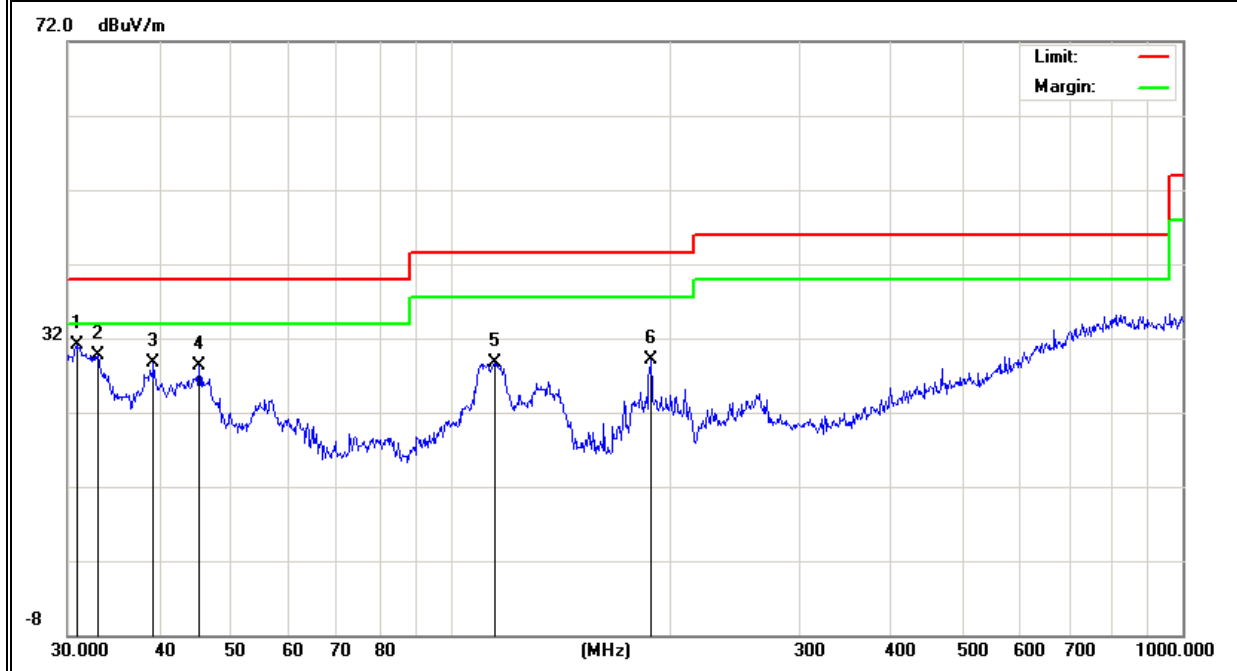
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	Pc smart	Model Name :	PTSGOB09-A
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	30.8535	12.06	18.97	31.03	40.00	-8.97	QP
V	32.9791	11.89	17.79	29.68	40.00	-10.32	QP
V	39.2991	14.66	13.98	28.64	40.00	-11.36	QP
V	45.3755	16.53	11.84	28.37	40.00	-11.63	QP
V	114.9167	17.60	11.01	28.61	43.50	-14.89	QP
V	187.7529	18.35	10.68	29.03	43.50	-14.47	QP

Remark:

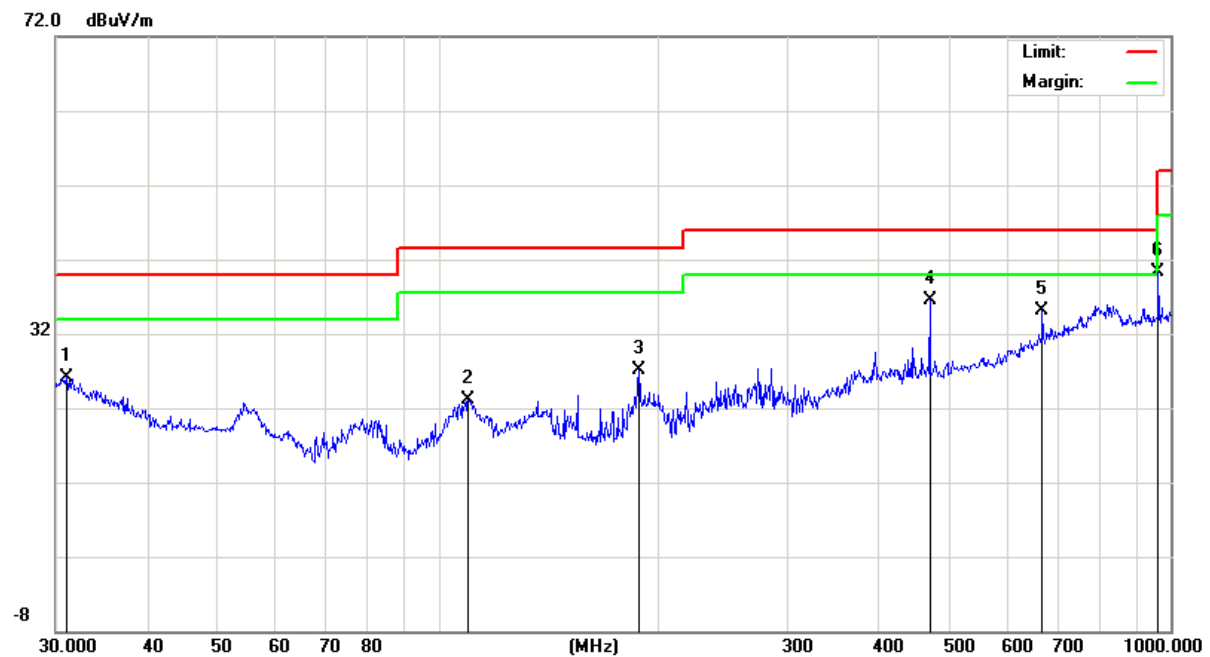
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	31.0701	7.36	18.84	26.20	40.00	-13.80	QP
H	109.7960	13.08	9.93	23.01	43.50	-20.49	QP
H	187.7529	16.37	10.68	27.05	43.50	-16.45	QP
H	468.8761	16.75	19.68	36.43	46.00	-9.57	QP
H	668.1422	11.13	23.91	35.04	46.00	-10.96	QP
H	962.1621	12.91	27.38	40.29	54.00	-13.71	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	Pc smart	Model Name :	PTSGOB09-A
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Frequency (MHz)	Reading (dBμV)	Factor (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark	Polar (H/V)
Low Channel (2402 MHz)-Above 1G							
4804.173	62.35	-3.64	58.71	74.00	-15.29	Pk	Vertical
4804.173	43.11	-3.64	39.47	54.00	-14.53	AV	Vertical
7206.281	60.43	-0.95	59.48	74.00	-14.52	Pk	Vertical
7206.281	39.68	-0.95	38.73	54.00	-15.27	AV	Vertical
4804.125	63.39	-3.64	59.75	74.00	-14.25	Pk	Horizontal
4804.125	42.85	-3.64	39.21	54.00	-14.79	AV	Horizontal
7206.336	61.53	-0.95	60.58	74.00	-13.42	Pk	Horizontal
7206.336	39.76	-0.95	38.81	54.00	-15.19	AV	Horizontal
Mid Channel (2440 MHz)-Above 1G							
4880.248	62.02	-3.68	58.34	74.00	-15.66	Pk	Vertical
4880.248	41.89	-3.68	38.21	54.00	-15.79	AV	Vertical
7320.209	60.28	-0.82	59.46	74.00	-14.54	Pk	Vertical
7320.209	41.77	-0.82	40.95	54.00	-13.05	AV	Vertical
4880.126	59.36	-3.68	55.68	74.00	-18.32	Pk	Horizontal
4880.126	37.84	-3.68	34.16	54.00	-19.84	AV	Horizontal
7320.238	60.18	-0.82	59.36	74.00	-14.64	Pk	Horizontal
7320.238	41.27	-0.82	40.45	54.00	-13.55	AV	Horizontal
High Channel (2480MHz)- Above 1G							
4960.234	61.22	-3.59	57.63	74.00	-16.37	Pk	Vertical
4960.234	40.01	-3.59	36.42	54.00	-17.58	AV	Vertical
7440.107	58.68	-0.68	58.00	74.00	-16.00	Pk	Vertical
7440.107	42.59	-0.68	41.91	54.00	-12.09	AV	Vertical
4960.144	60.93	-3.59	57.34	74.00	-16.66	Pk	Horizontal
4960.144	40.31	-3.59	36.72	54.00	-17.28	AV	Horizontal
7440.293	60.47	-0.68	59.79	74.00	-14.21	Pk	Horizontal
7440.293	38.66	-0.68	37.98	54.00	-16.02	AV	Horizontal

Remark: Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

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

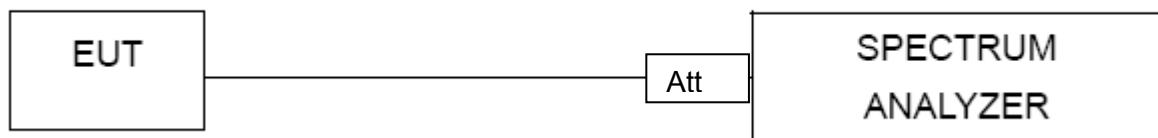
4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. 3 kHz $\leq$ Set the RBW $\leq$ 100 kHz.
4. Set the VBW $\geq$ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



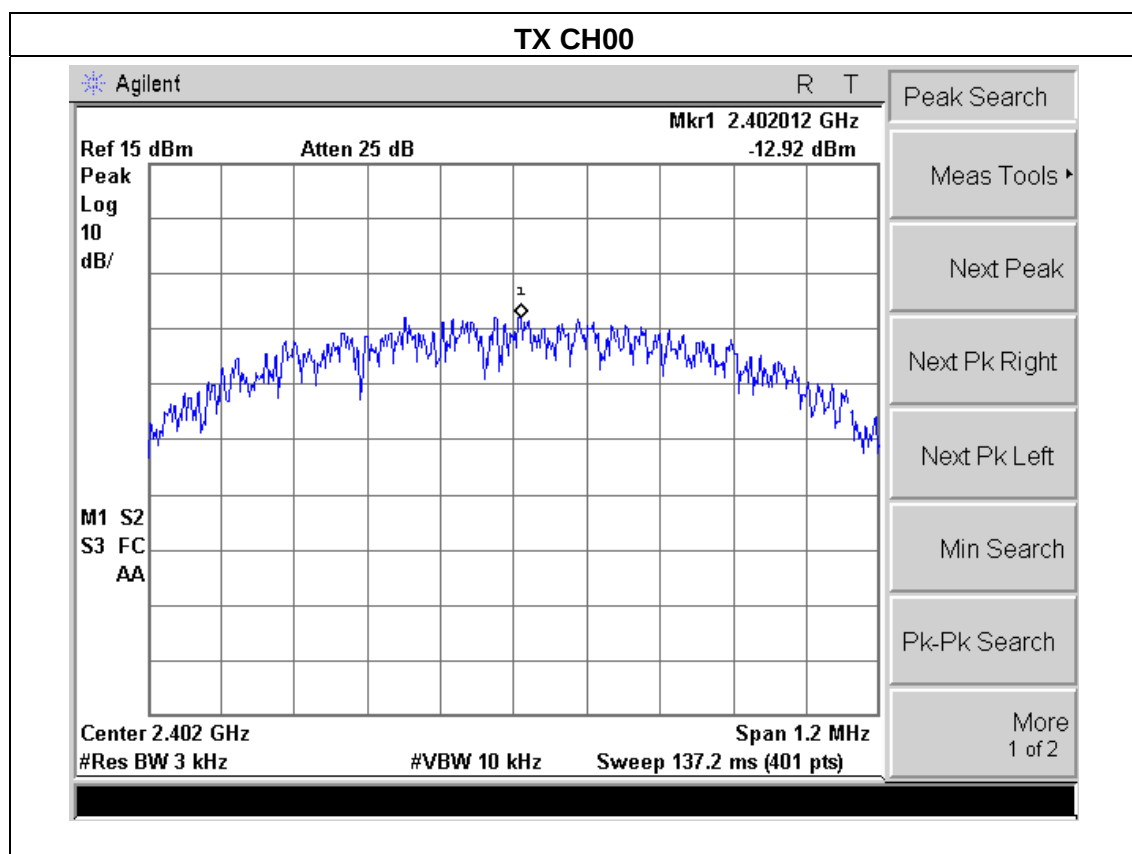
4.1.4 EUT OPERATION CONDITIONS

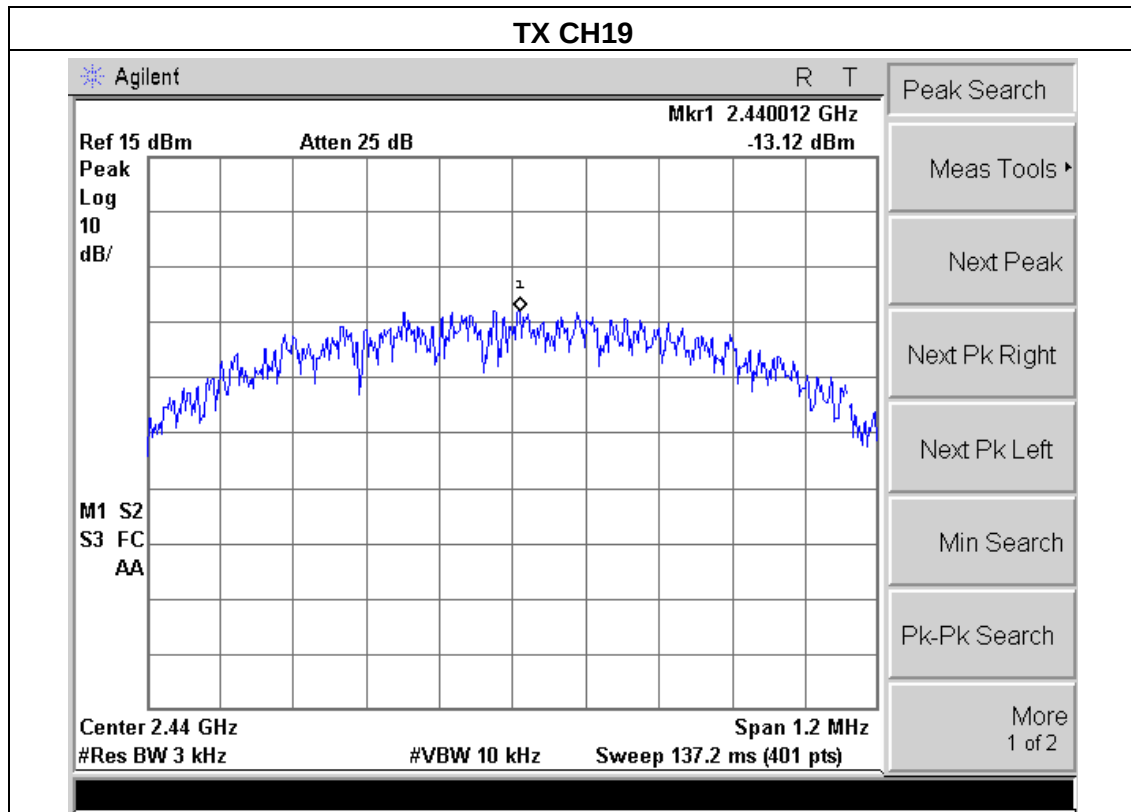
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

EUT :	Pc smart	Model Name :	PTSGOB09-A
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode /CH00, CH19, CH39		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2402 MHz	-12.92	8	PASS
2440 MHz	-13.12	8	PASS
2480 MHz	-13.96	8	PASS





5. BANDWIDTH TEST

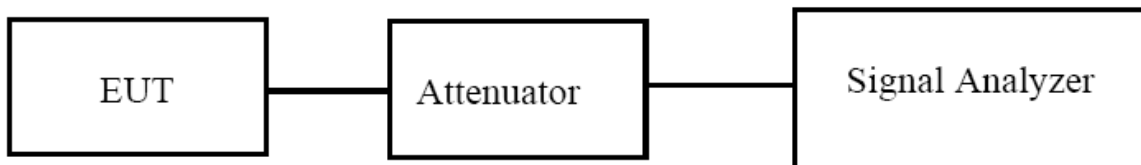
5.1 APPLIED PROCEDURES / LIMIT

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

5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



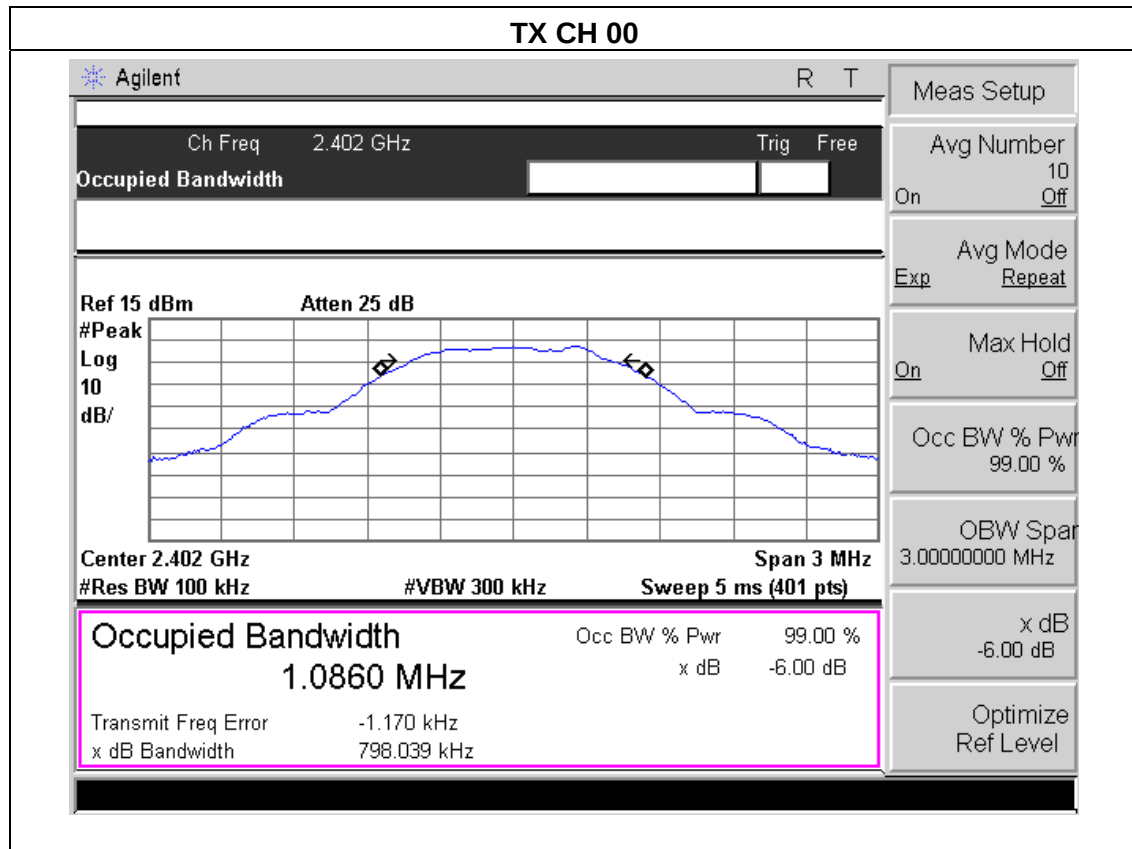
5.1.2 EUT OPERATION CONDITIONS

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.

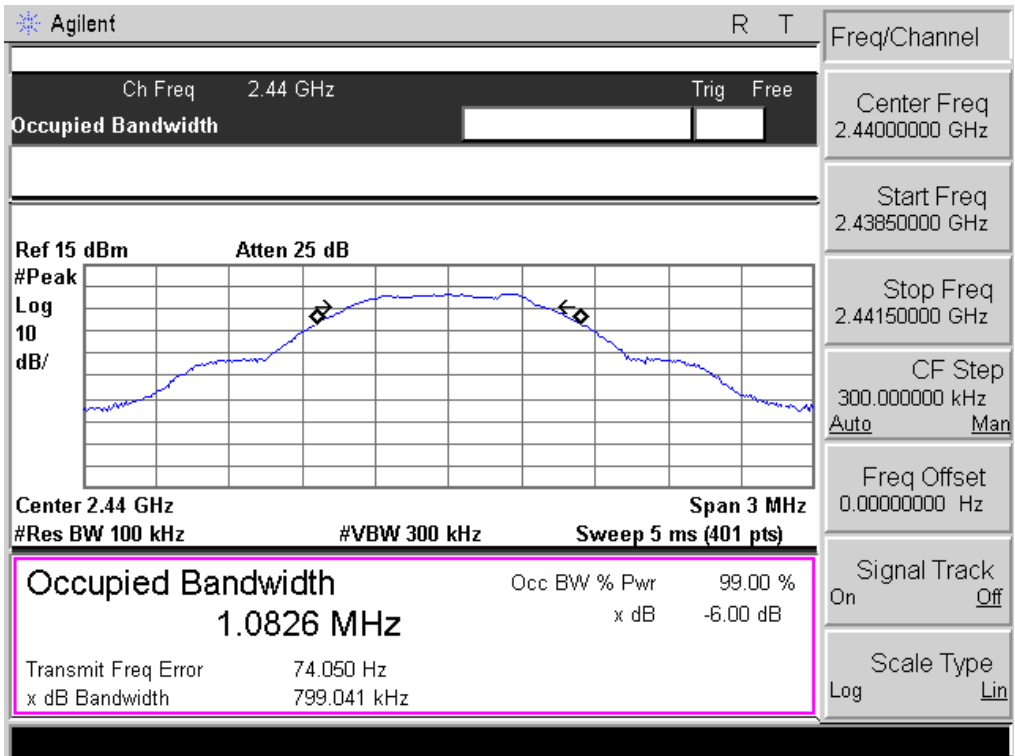
5.1.3 TEST RESULTS

EUT :	Pc smart	Model Name :	PTSGOB09-A
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode /CH00, CH19, CH39		

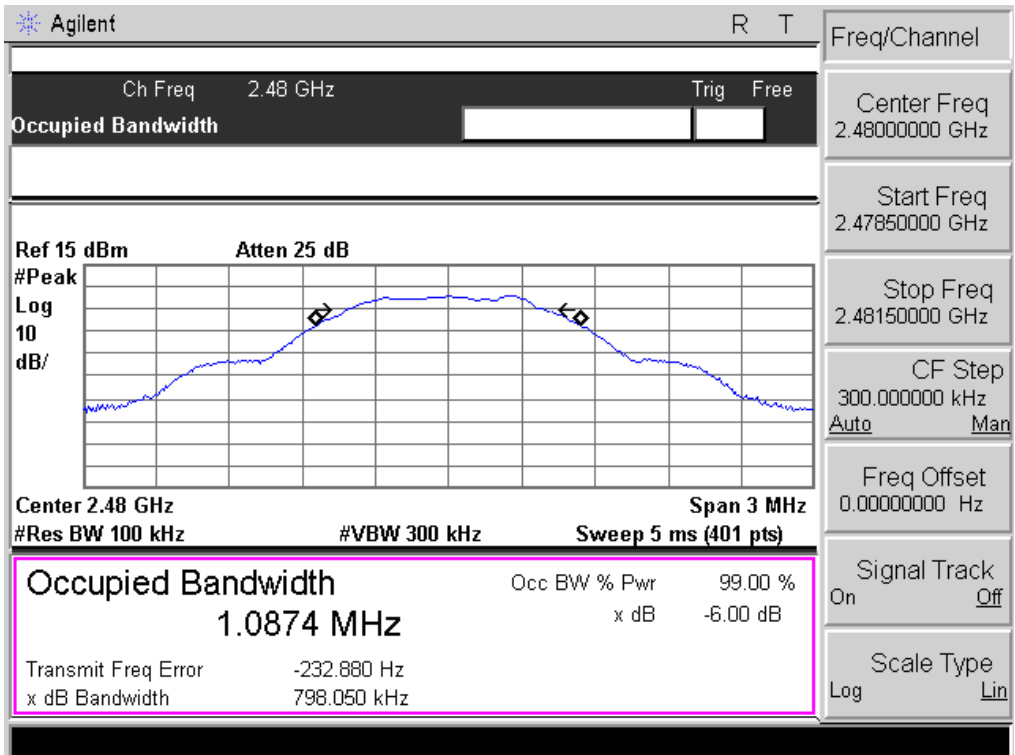
Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	798.039	500	Pass
Middle	2440	799.041	500	Pass
High	2480	798.050	500	Pass



TX CH 19



TX CH 39



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)(3)	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 :	Pc smart	Model Name :	PTSGOB09-A
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX Mode		

Test Channel	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	(dBm)
CH01	2402	4.59	30
CH20	2440	4.87	30
CH39	2480	4.63	30

7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

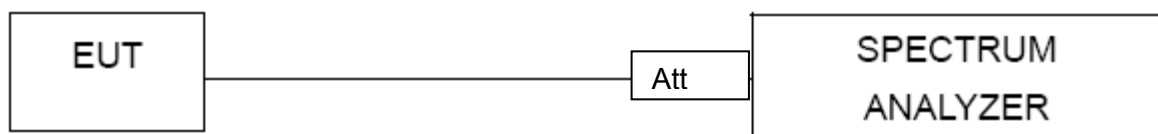
TEST PROCEDURE

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 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.

7.4 TEST RESULTS

EUT :	Pc smart	Model Name :	PTSGOB09-A
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V

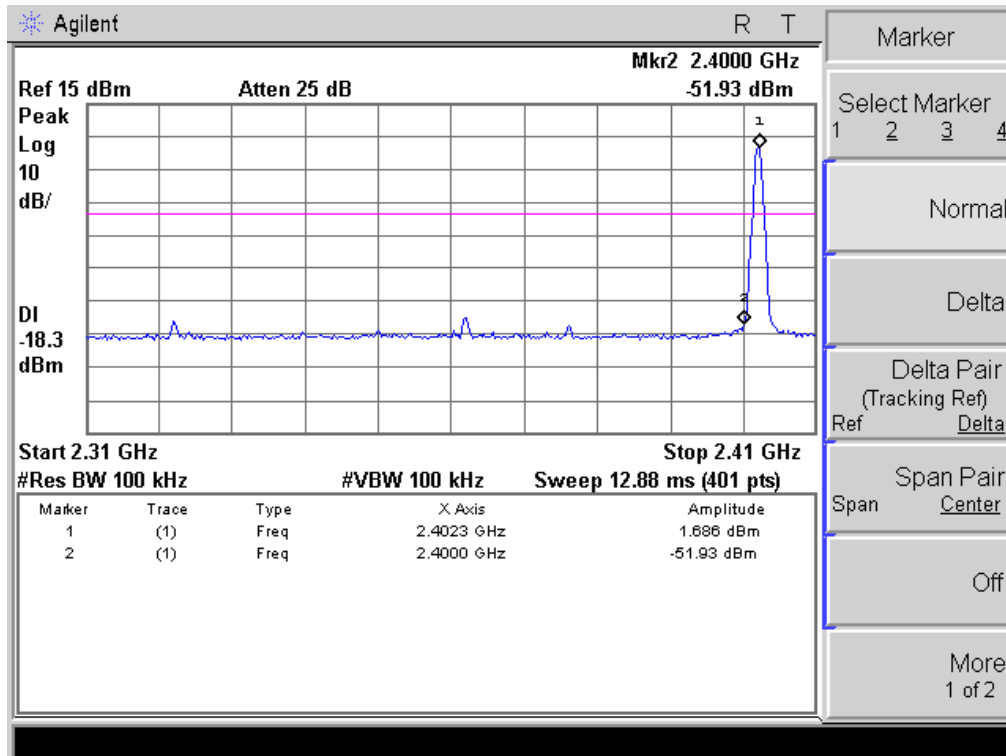
Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
Left-band	53.62	20	Pass
Right-band	55.56	20	Pass

Radiated band edge:

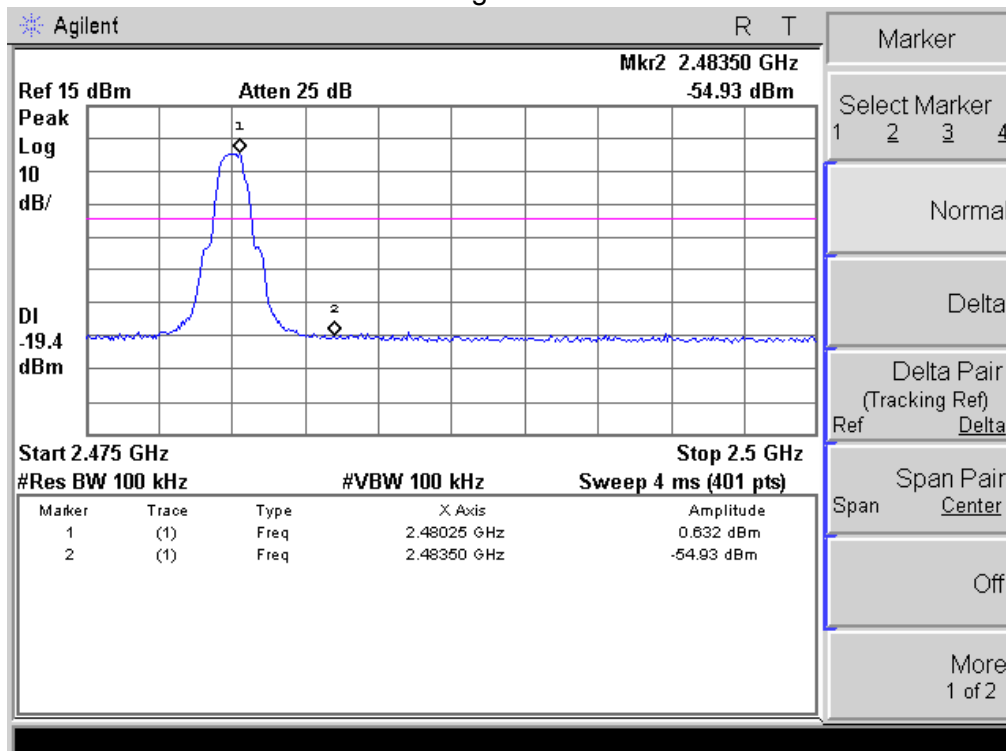
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
2390	57.54	-13.06	44.48	74	-29.52	peak	Vertical
2390	57.34	-13.06	44.28	74	-29.72	peak	Horizontal
2483.5	58.49	-12.78	45.71	74	-28.29	peak	Vertical
2483.5	58.52	-12.78	45.74	74	-28.26	peak	Horizontal

Note: Test method to see chapter 3.2 . When PK value is lower than the Average value limit, average not record.

Left Side



Right Side



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

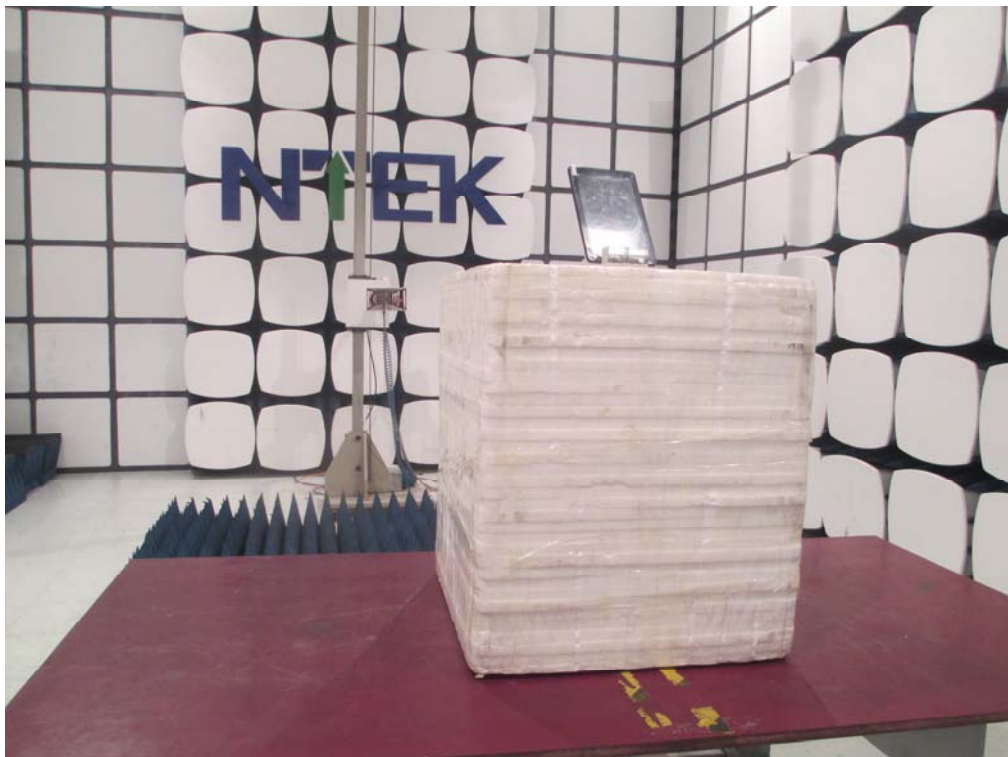
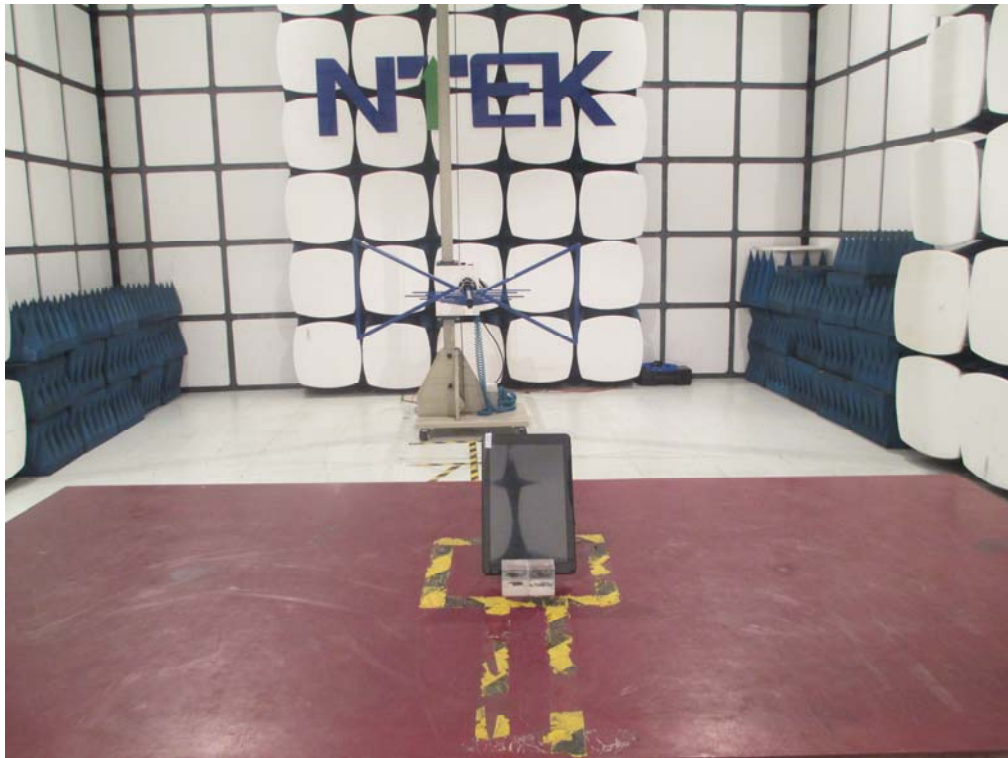
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

9. EUT TEST PHOTO

Radiated Measurement Photos



CONDUCTED EMISSION Photos