

EMC TEST REPORT

Report No. : EME-040451

Model No. : 35170

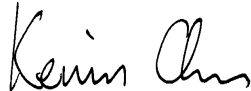
Issued Date : July 15, 2004

Applicant : SENTON Enterprises Limited
Flat 10, 17/F., Fotan Ind. Centre, 26-28 Au Pui Wan St.,
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Test By : Intertek Testing Services Taiwan Ltd.
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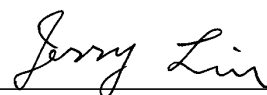
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Project Engineer



Kevin Chen

Reviewed By



Jerry Liu

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Summary of Tests**Cordless Phone -Model: 35170****FCC ID: PEG35170-B**

Test	Reference	Results
Conducted Emission of AC Power	15.207	Complies
Radiated Emission test	15.249(c), 15.209	Complies

1. General information

1.1 Identification of the EUT

Applicant : SENTON Enterprises Limited
Product : Cordless Phone
Model No. : 35170
FCC ID. : PEG35170-B
Frequency Range : 5803.019MHz to 5816.019MHz
Channel Number : 40 channels
Frequency of Each Channel : $5803.019 + 0.3333k$ MHz, $k=0\sim39$
Type of Modulation : FM
Power Supply : 120Vac, 60Hz with adapter (DVR-0920-3512 or U090020D)
Power Cord : N/A
Sample Received : May 4, 2004
Test Date(s) : May 5, 2004 ~ July 9, 2004

1.2 Additional information about the EUT

The EUT is a Cordless Phone, it consists of handset unit and base unit. The test performed based unit and recorded in this report.

We verify the model number for different brand serves as marketing strategy listed below.

Model Number	Trade Name
SENTON	35178
Bell Phone	35178

For more detail features, please refer to User's manual as file name "Installation guide.pdf"

1.3 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain : 0 dBi max

Antenna Type : Copper Wire

Connector Type : N/A

1.4 Peripherals equipment

Peripherals	Manufacturer	Product No.	Serial No.
Handset	Senton	35178	N/A

Dummy Load: 50 Ω

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Paragraph 15.249 for non-spread spectrum devices.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

In the conducted emission test, the EUT was operated in charging mode and tested with adapter 1(DVR-0920-3512) and adapter 2 (U090020D), the final data recorded in this report.

During the other tests, the EUT was operated in continuously transmitting status. Not at normal operation for users.

2.4 Test equipment

Equipment	Brand	Frequency range	Model No.	Intertek ID No.	Last Cal.Date
EMI Test Receiver	Rohde & Schwarz	9kHz~2.75GHz	ESCS 30	EC346	Feb. 18, 2004
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	EC317	June 24, 2004
Spectrum Analyzer	Rohde & Schwarz	9kHz~30GHz	FSP 30	EC353	July 14, 2004
Spectrum Analyzer	Rohde & Schwarz	20Hz~40GHz	FSEK 30	EC365	Oct. 20, 2003
Horn Antenna	EMCO	1GHz~18GHz	3115	EC338	Oct. 15, 2003
Horn Antenna	SCHWARZBECK	14GHz~42GHz	BBHA 9170	EC351	July 09, 2004
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	EC368	Feb. 21, 2003
Turn Table	HDGmbH	N/A	DS 420S	EP311	N/A
Antenna Tower	HDGmbH	N/A	MA 240	EP310	N/A
Pre-Amplifier	MITEQ	100MHz~26.5GHz	919981	EC373	May 13, 2003
LISN	Rohde & Schwarz	9KHz~30MHz	ESH3-Z5	EC344	Jan. 20, 2004

Note: The above equipments are within the valid calibration period.

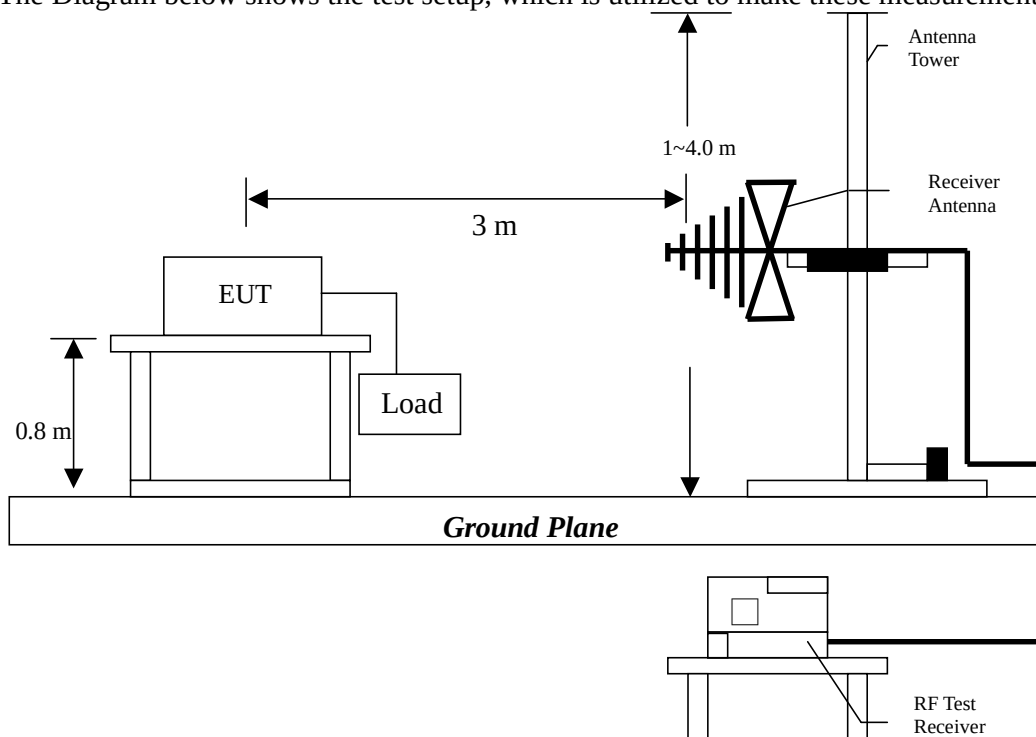
3. Radiated emission test FCC 15.249 (C)

3.1 Operating environment

Temperature:	21	°C	(10-40°C)
Relative Humidity:	60	%	(10-90%)
Atmospheric Pressure	1023	hPa	(860-1060hPa)

3.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emissions were investigated cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz RBW/VBW) recorded also on the report. The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

3.3 Emission limit

3.3.1 Fundamental and harmonics emission limits

Frequency (MHz)	Field Strength of Fundamental		Field Strength of Harmonics	
	(mV/m@3m)	(dBuV/m@3m)	(uV/m@3m)	(dBuV/m@3m)
5725MHz~ 5875MHz	50	94	500	54

3.3.2 General radiated emission limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

Frequency MHz	15.209 Limits (dB μ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.

Expanded uncertainty (k=2) of radiated emission measurement is ± 4.98 dB.

Expanded uncertainty (k=2) of conducted emission measurement is ± 2.02 dB.

3.4 Radiated spurious emission test data

3.4.1 Measurement results: frequencies equal to or less than 1 GHz

EUT : 35170

Worst Case Condition : Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (cm)	Turn Table angle (degree)
43.600	QP	V	12.98	5.41	18.39	40.00	-21.61	122.00	124.00
96.000	QP	V	10.32	9.40	19.72	43.50	-23.78	115.00	195.00
158.000	QP	V	14.92	1.50	16.42	43.50	-27.08	146.00	211.00
375.300	QP	V	15.78	3.40	19.18	46.00	-26.82	103.00	48.00
606.200	QP	V	20.49	3.49	23.98	46.00	-22.02	132.00	46.00
786.600	QP	V	24.11	3.99	28.10	46.00	-17.90	161.00	302.00
171.600	QP	H	14.24	7.80	22.04	43.50	-21.46	201.00	188.00
196.800	QP	H	13.10	5.70	18.80	43.50	-24.70	255.00	243.00
284.100	QP	H	13.51	3.59	17.10	46.00	-28.90	185.00	199.00
355.900	QP	H	15.33	3.70	19.03	46.00	-26.97	178.00	36.00
650.800	QP	H	21.33	3.40	24.73	46.00	-21.27	195.00	221.00
794.400	QP	H	24.26	3.80	28.06	46.00	-17.94	229.00	306.00

Remark:

1. Corrected Level = Reading Level + Correction Factor

2. Correction Factor = Antenna Factor + Cable Loss

3.4.2 Measurement results: frequency above 1GHz

3.4.2.1 Measurement results: Fundamental and harmonics emission

EUT : 35170

Test Unit : Base

Test Condition : Tx at channel 1

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
5803.019	PK	V	39.57	37.66	63.74	61.83	114.00	-52.17	1.29	38.00
5803.019	AV	V	39.57	37.66	62.97	61.06	94.00	-32.94	1.29	38.00
5803.019	PK	H	39.57	37.66	65.36	63.45	114.00	-50.55	1.75	162.00
5803.019	AV	H	39.57	37.66	64.74	62.83	94.00	-31.17	1.75	162.00
11606.038	PK	V	37.22	43.21	-	-	74.00	-	-	-
11606.038	AV	V	37.22	43.21	-	-	54.00	-	-	-
11606.038	PK	H	37.22	43.21	-	-	74.00	-	-	-
11606.038	AV	H	37.22	43.21	-	-	54.00	-	-	-

Remark:

1. Corrected Level = Reading Level + Correction Factor – Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

For PK:

1GHz-3GHz: 20dBuV

3GHz-14GHz: 27dBuV

14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV

3GHz-14GHz: 16dBuV

14GHz-26.5GHz: 28dBuV

EUT : 35170
 Test Unit : Base
 Test Condition : Tx at channel 21

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamplifier (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
5809.686	PK	V	39.57	37.66	63.35	61.44	114.00	-52.56	1.13	43.00
5809.686	AV	V	39.57	37.66	62.65	60.74	94.00	-33.26	1.13	43.00
5809.686	PK	H	39.57	37.66	65.58	63.67	114.00	-50.33	1.79	161.00
5809.686	AV	H	39.57	37.66	64.96	63.05	94.00	-30.95	1.79	161.00
11619.372	PK	V	37.22	43.21	-	-	74.00	-	-	-
11619.372	AV	V	37.22	43.21	-	-	54.00	-	-	-
11619.372	PK	H	37.22	43.21	-	-	74.00	-	-	-
11619.372	AV	H	37.22	43.21	-	-	54.00	-	-	-

Remark:

1. Corrected Level = Reading Level + Correction Factor – Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

For PK:

1GHz-3GHz: 20dBuV
 3GHz-14GHz: 27dBuV
 14GHz-26.5GHz: 39dBuV

For AV:

1GHz-3GHz: 10dBuV
 3GHz-14GHz: 16dBuV
 14GHz-26.5GHz: 28dBuV

EUT : 35170
Test Unit : Base
Test Condition : Tx at channel 40

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (m)	Turn Table angle (degree)
5816.019	PK	V	39.57	37.66	62.55	60.64	114.00	-53.36	1.87	304.00
5816.019	AV	V	39.57	37.66	61.68	59.77	94.00	-34.23	1.87	304.00
5816.019	PK	H	39.57	37.66	66.46	64.55	114.00	-49.45	1.62	69.00
5816.019	AV	H	39.57	37.66	65.86	63.95	94.00	-30.05	1.62	69.00
11632.038	PK	V	37.22	43.21	-	-	74.00	-	-	-
11632.038	AV	V	37.22	43.21	-	-	54.00	-	-	-
11632.038	PK	H	37.22	43.21	-	-	74.00	-	-	-
11632.038	AV	H	37.22	43.21	-	-	54.00	-	-	-

Remark:

1. Corrected Level = Reading Level + Correction Factor – Preamp
2. Correction Factor = Antenna Factor + Cable Loss
3. The frequency measured ranges from 1GHz to 25GHz. The data value listed above which is higher than the noise floor, the others please refer to noise floor level.

For PK:

1GHz-3GHz: 20dBuV
3GHz-14GHz: 27dBuV
14GHz-26.5GHz: 39dBuV

For AV:

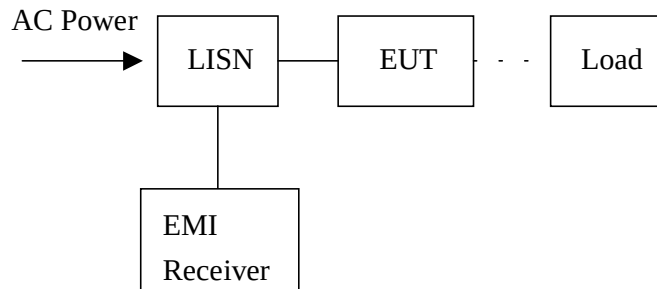
1GHz-3GHz: 10dBuV
3GHz-14GHz: 16dBuV
14GHz-26.5GHz: 28dBuV

4. Conducted emission test FCC 15.207

4.1 Operating environment

Temperature:	22	°C	(10-40°C)
Relative Humidity:	55	%	(10-90%)
Atmospheric Pressure	1023	hPa	(860-1061hPa)

4.2 Test setup & procedure



The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination.

Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/1992 on conducted measurement.

The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

4.3 Emission limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

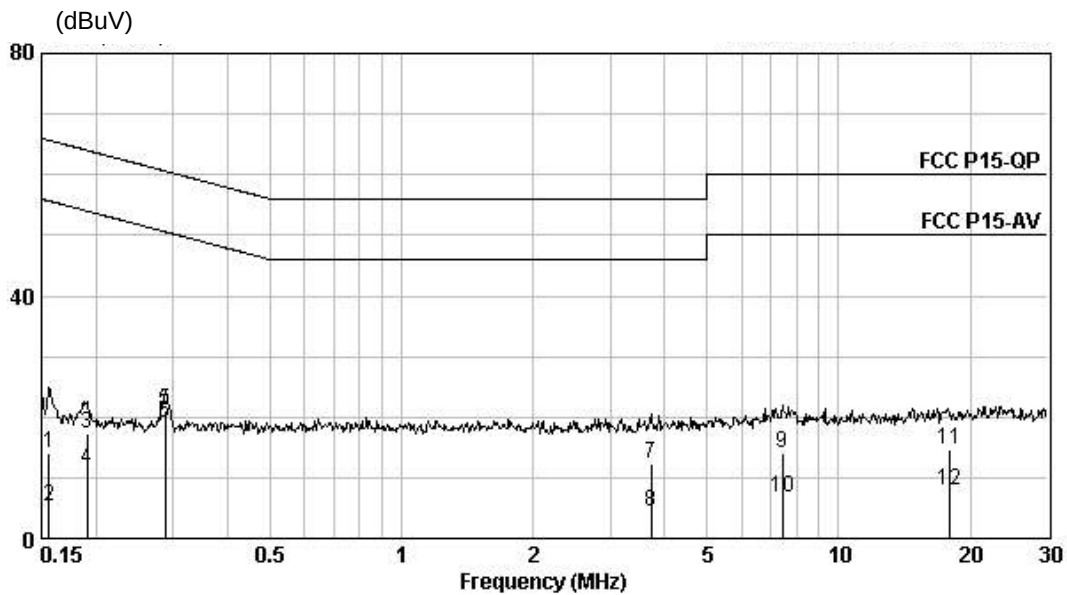
4.4 Conducted emission data FCC 15.207

(1) Line

EUT : 35170

Test Condition : Charging mode with adapter 1 (DVR-0920-3512)

Freq. (MHz)	Correction Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.156	0.10	13.97	65.67	-51.70	QP
0.156	0.10	5.41	55.67	-50.26	AVERAGE
0.191	0.10	17.38	64.01	-46.63	QP
0.191	0.10	11.55	54.01	-42.46	AVERAGE
0.288	0.10	21.02	60.57	-39.55	QP
0.288	0.10	19.18	50.57	-31.39	AVERAGE
3.721	0.19	12.45	56.00	-43.55	QP
3.721	0.19	4.29	46.00	-41.71	AVERAGE
7.443	0.31	14.09	60.00	-45.91	QP
7.443	0.31	6.76	50.00	-43.24	AVERAGE
17.882	0.76	14.63	60.00	-45.37	QP
17.882	0.76	7.78	50.00	-42.22	AVERAGE

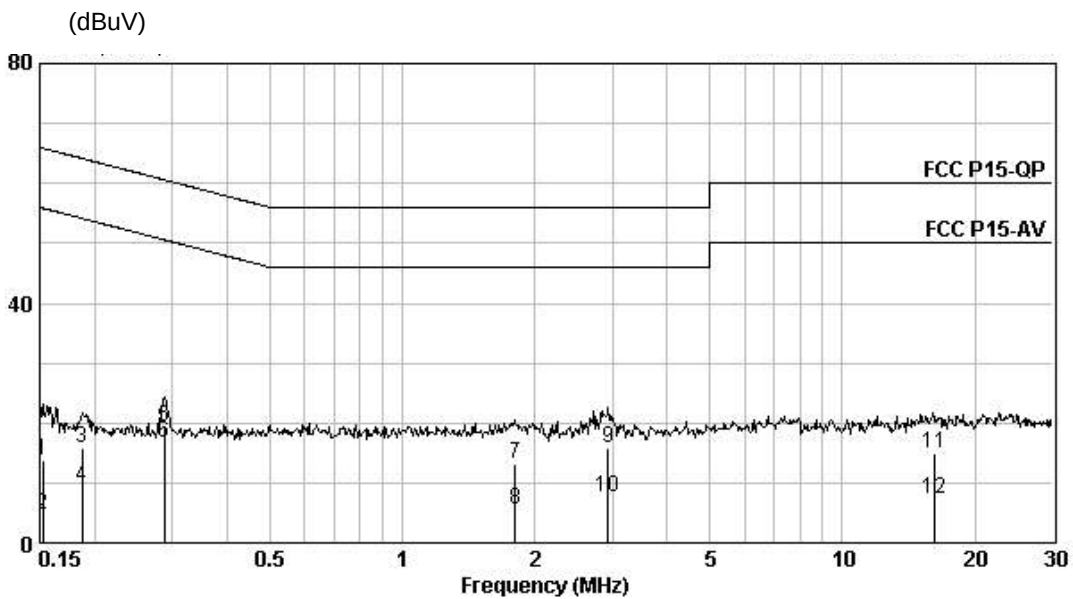


(1) Neutral

EUT : 35170

Test Condition : Charging mode with adapter 1 (DVR-0920-3512)

Freq. (MHz)	Correction Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.152	0.10	13.79	65.87	-52.08	QP
0.152	0.10	4.65	55.87	-51.22	AVERAGE
0.187	0.10	15.74	64.15	-48.41	QP
0.187	0.10	9.43	54.15	-44.72	AVERAGE
0.288	0.10	19.35	60.57	-41.22	QP
0.288	0.10	16.56	50.57	-34.01	AVERAGE
1.802	0.10	13.32	56.00	-42.68	QP
1.802	0.10	5.51	46.00	-40.49	AVERAGE
2.930	0.15	15.76	56.00	-40.24	QP
2.930	0.15	7.67	46.00	-38.33	AVERAGE
16.122	0.44	14.95	60.00	-45.05	QP
16.122	0.44	7.37	50.00	-42.63	AVERAGE

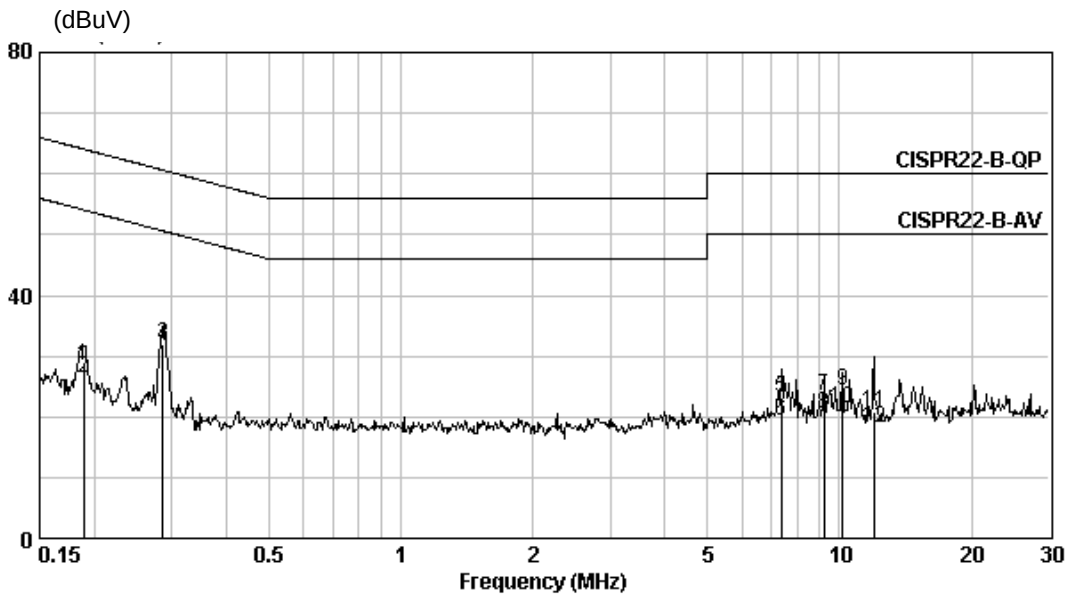


(1) Line

EUT : 35170

Test Condition : Charging mode with adapter 2 (U090020D)

Freq. (MHz)	Correction Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.189	0.10	28.28	64.08	-35.80	QP
0.189	0.10	26.23	54.08	-27.85	AVERAGE
0.286	0.10	31.96	60.64	-28.68	QP
0.286	0.10	31.70	50.64	-18.94	AVERAGE
7.384	0.31	23.14	60.00	-36.86	QP
7.384	0.31	19.40	50.00	-30.60	AVERAGE
9.230	0.37	23.42	60.00	-36.58	QP
9.230	0.37	20.50	50.00	-29.50	AVERAGE
10.156	0.41	24.24	60.00	-35.76	QP
10.156	0.41	21.42	50.00	-28.58	AVERAGE
12.006	0.52	20.81	60.00	-39.19	QP
12.006	0.52	18.12	50.00	-31.88	AVERAGE

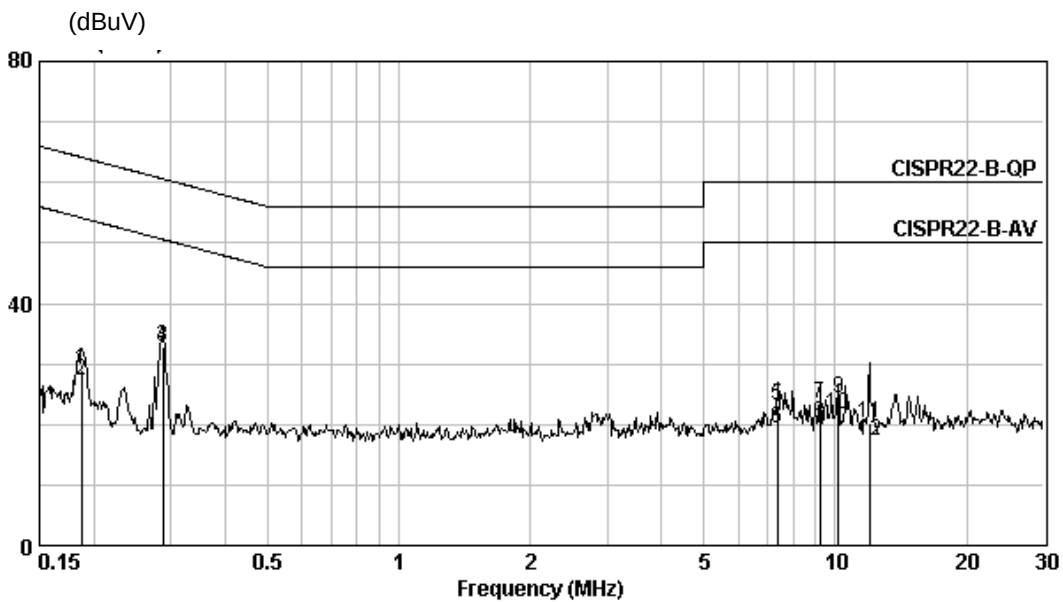


(1) Neutral

EUT : 35170

Test Condition : Charging mode with adapter 2 (U090020D)

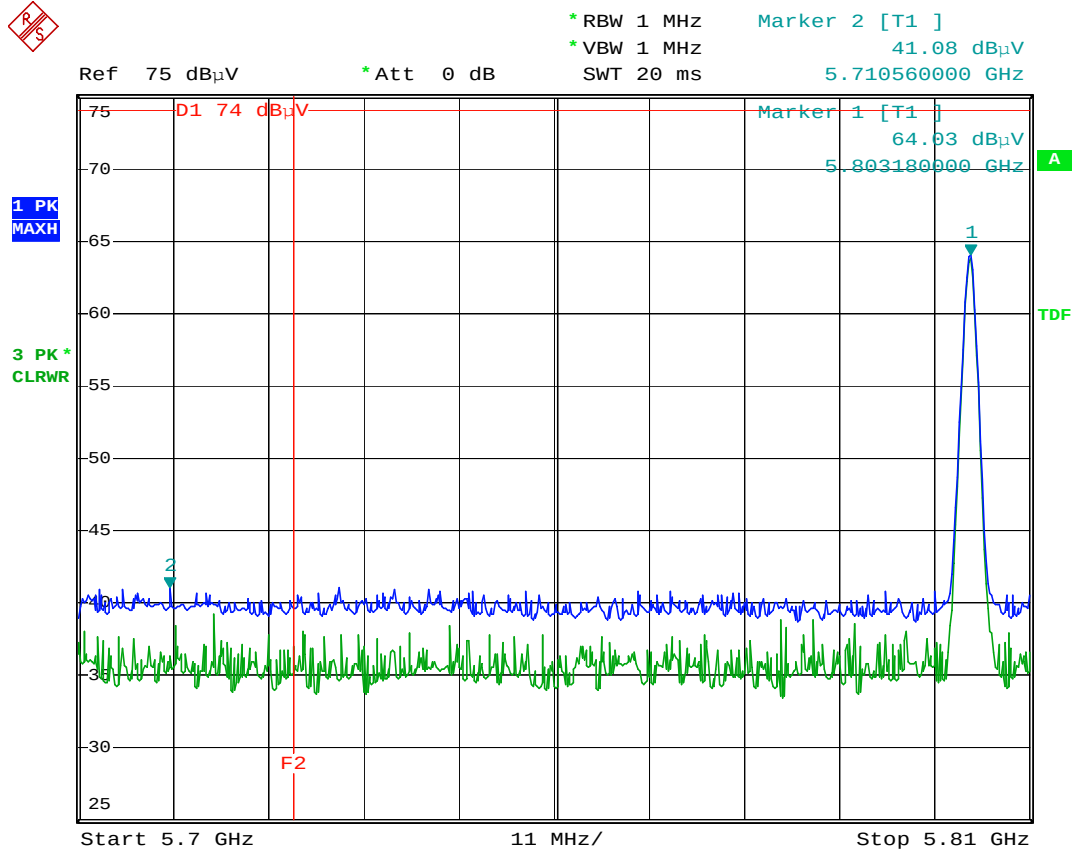
Freq. (MHz)	Correction Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
0.187	0.10	28.93	64.15	-35.22	QP
0.187	0.10	27.19	54.15	-26.96	AVERAGE
0.288	0.10	32.87	60.57	-27.70	QP
0.288	0.10	32.85	50.57	-17.72	AVERAGE
7.384	0.20	23.27	60.00	-36.73	QP
7.384	0.20	19.42	50.00	-30.58	AVERAGE
9.230	0.20	23.31	60.00	-36.69	QP
9.230	0.20	20.11	50.00	-29.89	AVERAGE
10.156	0.21	24.22	60.00	-35.78	QP
10.156	0.21	21.61	50.00	-28.39	AVERAGE
12.006	0.28	20.22	60.00	-39.78	QP
12.006	0.28	17.40	50.00	-32.60	AVERAGE



5. Radiated emission on the band edge FCC 15.249(C)

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 (5803.019MHz to 5816.019MHz) or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Please see the plot below.



Comment: Baseunit band-edge low

Comment: PK F2=5725MHz(EC338/EC353)

Date: 25.JUN.2004 20:29:17



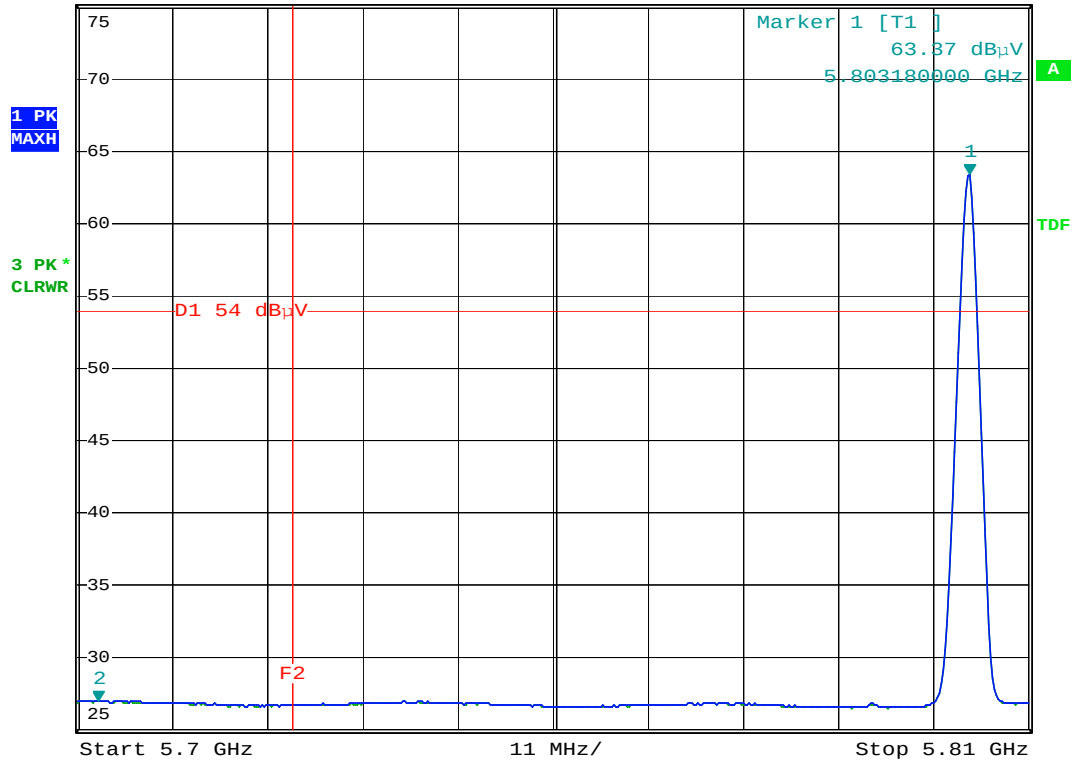
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* RBW 1 MHz      Marker 2 [T1 ]
* VBW 10 Hz      27.05 dBμV
SWT 28 s         5.702420000 GHz
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Ref 75 dB μ V

* Att 0 dB

SWT 28 s

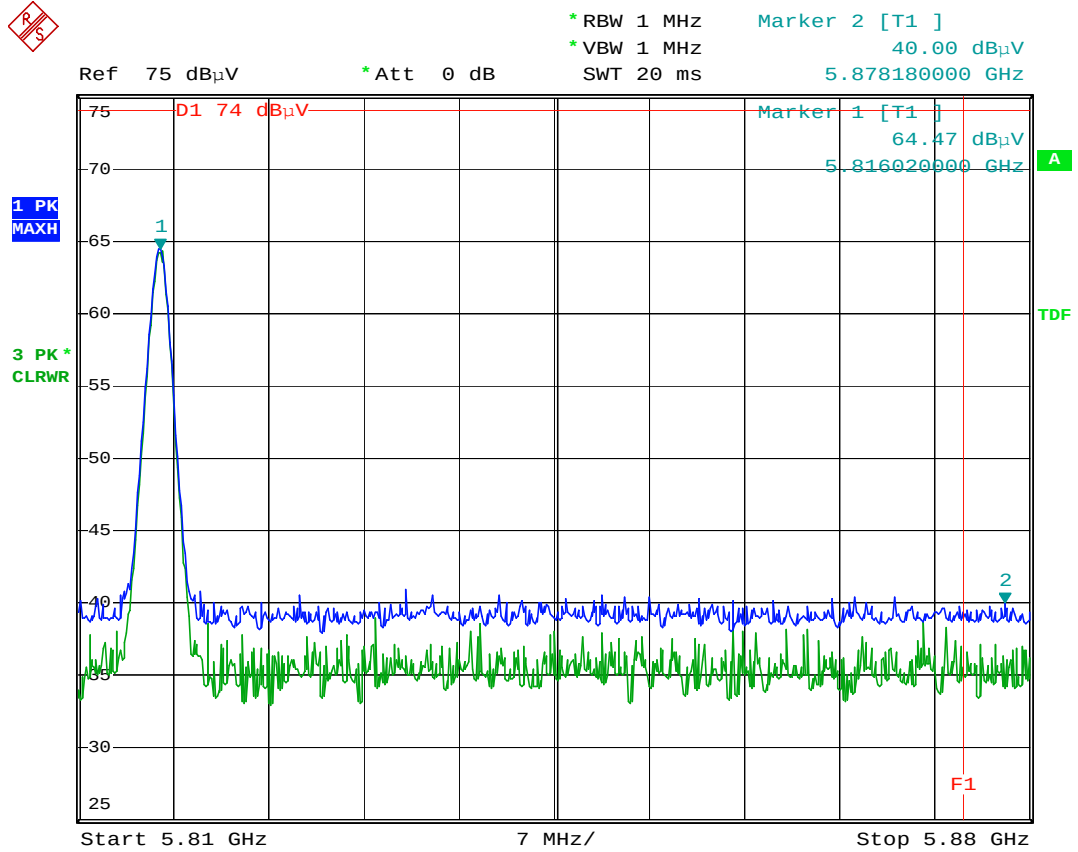
5.702420000 GHz



Comment: Baseunit band-edge low

Comment: AV F2=5725MHz(EC338/EC353)

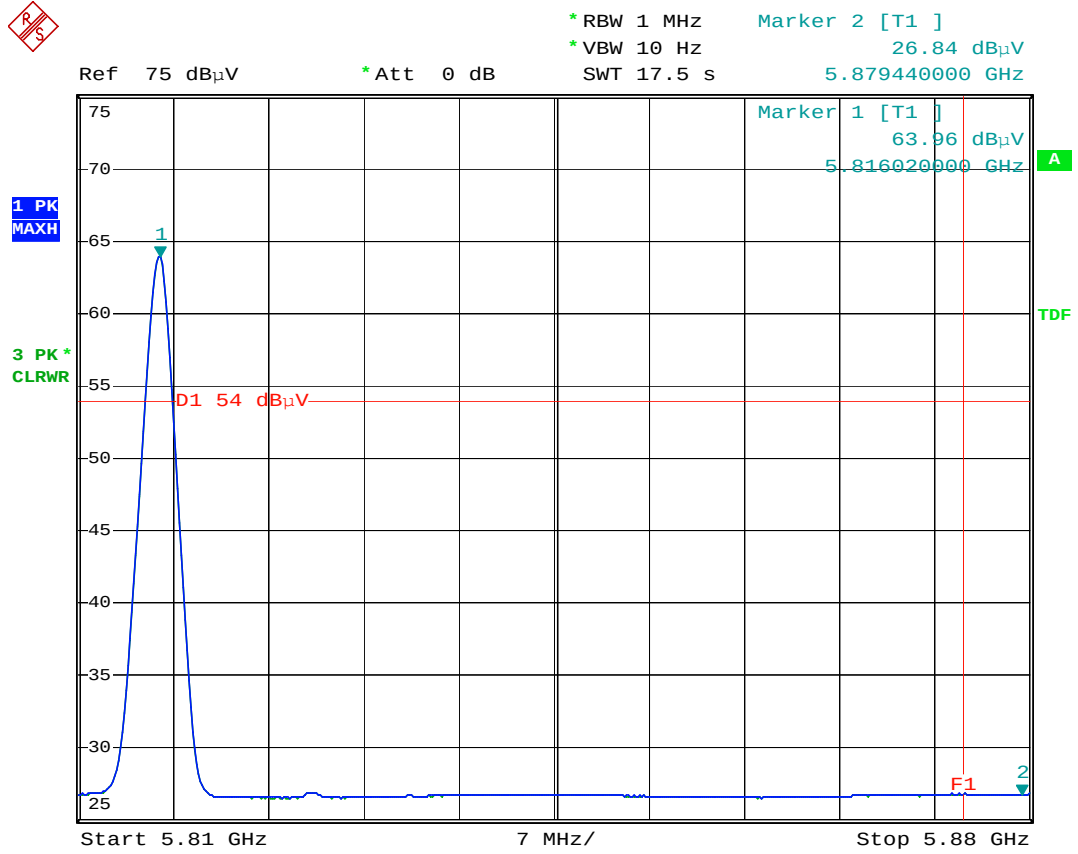
Date: 25.JUN.2004 20:31:17



Comment: Baseunit band-edge high

Comment: PK F1=5875MHz(EC338/EC353)

Date: 25.JUN.2004 20:49:55



Comment: Baseunit band-edge high
 Comment: AV F1=5875MHz(EC338/EC353)
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