DIGITAL EMC CO., LTD.

683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080
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CERTIFICATION OF COMPLIANCE

Diasonic Technology Co., Ltd.
#321-43, Suksu-dong, Manan-ku, Anyang-city,
Kyungki-do, Korea.

Dates of Tests: December 1 ~ 7, 2006
February 5, 2007
Test Report S/N: DR50110612B-rev
Test Site : DIGITAL EMC CO., LTD.

FCC ID **P7KDTX-03**

APPLICANT **Diasonic Technology Co., Ltd.**

FCC Classification	**:**	Low Power Communication Device Transmitter
Device name	**:**	FM Car Transmitter
Manufacturer	**:**	Diasonic Technology Co., Ltd.
Model / Brand name	**:**	DTX-03 / CT BANK
Test Device Serial number	**:**	Identical prototype
FCC Rule Part(s)	**:**	FCC Part 15 Subpart C ANSI C-63.4-2003
Frequency Range	**:**	88.1 ~ 107.9 MHz
Data of issue	**:**	February 7, 2006

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

NVLAP LAB CODE 200559-0

TABLE OF CONTENTS

1. General Information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.
Address : 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080
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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competents of calibration and testing laboratory".
This laboratory is accredited by NVLAP and NVLAP Lab. Code is 200559-0.

Test operator: engineer

Data	Name	Signature
February 7, 2007	Won –Jung, LEE	

Report Reviewed By: manager

Data	Name	Signature
February 7, 2007	Harvey Sung	

Ordering party:

Company name	:	Diasonic Technology Co., Ltd.
Address	:	#321-43, Suksu-dong, Manan-ku
Zip code	:	430-040
City/town	:	Anyang-city, Kyungki-do
Country	:	Korea
Date of order	:	September 4, 2006
Attention	:	Jin-Geun, Moon

2. Information about test item

P7KDTX-03

2.1 Equipment information

Equipment model name	DTX-03
Type of equipment	FM Car Transmitter
Frequency band	88.1 ~ 107.9 MHz
Type of antenna	Internal Wire Antenna
Power	DC 12 V

2.2 Tested environment

Temperature	:	15 ~ 35 (^{o}C)
Relative humidity content	:	20 ~ 75 %
Air pressure	:	86 ~ 103 kPa
Details of power supply	:	DC 12.0 V (powered by power supply)

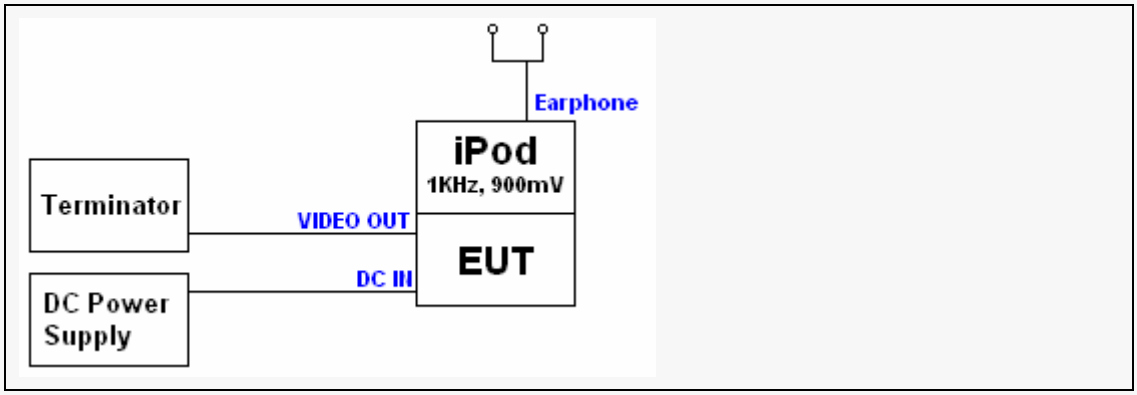
2.3 Tested frequency

Frequency	TX	RX
Low frequency	88.1 MHz	-
Middle frequency	98.0 MHz	
High frequency	107.9 MHz	-

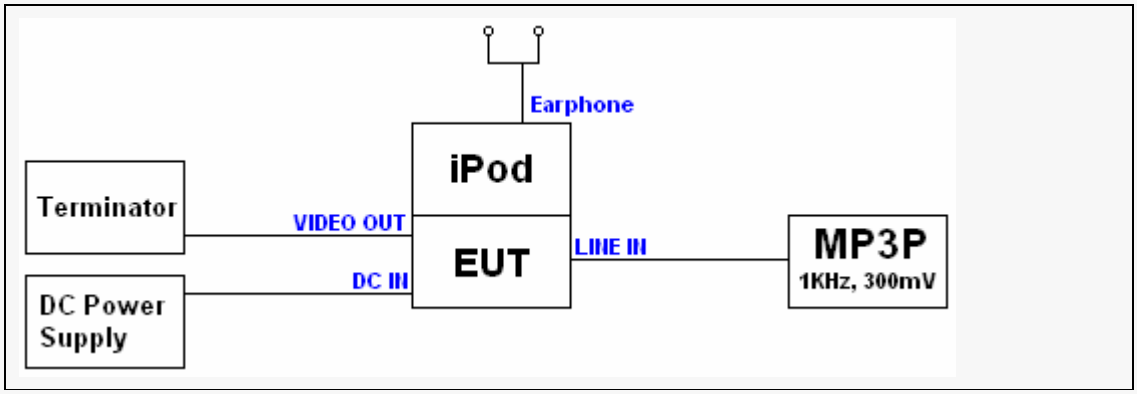
Note 1. The operating frequency range was verified manually using frequency changing button.

2.4 Setup of Configuration of EUT

- Case 1.(With iPOD)



- Case 2.(With iPod and MP3P)



Note. When the EUT connected with iPOD and MP3 simultaneously, the EUT only transmits DATA from MP3P (LINE IN).

- Support Equipment

Equipment	Model name	Serial Number	Manufacturer	DATA Cable	Power Cable
iPod	A1136	4J547WX0SZ9	Apple Computer	N/A	N/A
Sansa(MP3P)	M250	N/A	SanDisk	Stereo cable	N/A
-	-	-	-	-	-

2.5 Cabling Configuration

EUT	Shield	Length (m)	Connection
VIDEO OUT	None	1.2	Termination
DC IN	None	1.0	DC power supply
LINE IN	None	1.0	MP3P

2.6 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing

➔ **None**

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.239	Field Strength of Fundamental and Emissions within permitted band.	< 250 uV/m @ 3m	Radiated	C
15.209	Radiated Emission	< FCC 15.209 limits	Radiated	C
15.207	AC Conducted Emissions	< FCC 15.207 limits	Line Conducted	NA
15.239	Occupied channel bandwidth	< 200kHz	Radiated	C
15.203	Antenna Requirement	FCC 15.203	-	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: Conducted emission test is not applied, because the power of the EUT is supplied from a Car battery.

Note 3: The sample was tested according to the following specification:

FCC Parts 15.239; ANSI C-63.4-2003

3.2 TEST requirements

3.2.1 Field Strength of Fundamental and Emissions within permitted band.

Procedure:

The field strength of emissions from intentional radiators operated within the bands 88 ~108MHz was measured in accordance with FCC Part §15.239. The test set-up was made according to ANSI C 63.4:2003.

The EUT was placed on a 0.8m high wooden table inside a shielded semi-anechoic chamber for pre-scanning test. An antenna was placed at 3m distance from EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed at 3m OATS.

Type of Test	: Low Power Communication Device Transmitter
FCC ID	: **P7KDTX-03**
Operating Condition	: Transmit the 1 kHz audio signal from IPOD and MP3P

Measurement Data:

- When the EUT transmits the 1KHz audio signal from the IPOD (1KHz, 900mV)

Frequency (MHz)	Detector Mode	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
88.1	Peak	H	60.90	8.02	1.68	28.01	42.59	48	-5.41
98.0	Peak	H	59.60	9.59	1.94	28.00	43.13	48	-4.87
107.9	Peak	H	59.45	10.97	2.13	27.96	44.59	48	-3.41

- When the EUT transmits the 1KHz audio signal from the MP3P (1KHz, 300mV)

Frequency (MHz)	Detector Mode	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
88.1	Peak	H	58.50	8.02	1.68	28.01	40.19	48	-7.81
98.0	Peak	H	53.68	9.59	1.94	28.00	37.21	48	-10.79
107.9	Peak	H	52.44	10.97	2.13	27.96	37.58	48	-10.42

Note 1: Field Strength Calculation

Level = Read Level + ANT Factor + Cable Loss – Preamp gain

Margin = Limit - Level

Minimum Standard:

The maximum Field Strength authorized within 200kHz is 250 uV/m@3m

3.2.2 Radiated Emission

Procedure:

The field strength of emissions from intentional radiators operated within the bands 88 ~108MHz was measured in accordance with FCC Part §15.239. The test set-up was made according to ANSI C 63.4:2003.

The EUT was placed on a 0.8m high wooden table inside a shielded semi-anechoic chamber for pre-scanning test. An antenna was placed at 3m distance form the EUT and measurements of frequencies and amplitudes of field strengths were recorded for reference during final measurements. For final radiated testing, measurements were performed at 3m OATS.

The spectrum analyzer is set to:

Frequency Range = 30 MHz ~ 10th harmonic.

RBW = 120 kHz (30MHz ~ 1 GHz) VBW ≥ RBW

= 1 MHz (1 GHz ~ 10th harmonic)

Trace = max hold Detector function = Peak(>1GHz)

Sweep = auto Receiver Detector = Quasi-Peak(≤1GHz)

Operating Condition: Transmit the 1 kHz audio signal from iPod or MP3P.

Measurement Data: **Complies**

- Refer to the next page.

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

- When the EUT transmits the 1KHz audio signal from the IPOD(1KHz, 900mV)

Measurement Data 1: Harmonics of the 88.1 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-
No other harmonics were detected at a level greater than 10 dB below limit.								
-	-	-	-	-	-	-	-	-

Measurement Data 2: Harmonics of the 98.0 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-
No other harmonics were detected at a level greater than 10 dB below limit.								
-	-	-	-	-	-	-	-	-

Measurement Data 3: Harmonics of the 107.9 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-
No other harmonics were detected at a level greater than 10 dB below limit.								
-	-	-	-	-	-	-	-	-

Note 1: Field Strength Calculation

Level = Read Level + ANT Factor + Cable Loss – Preamp Gain

Margin = Limit - Level

Note 2.: Up to the 10th harmonics were investigated according to 15.239 and the worst-case emissions are reported.

Measurement Data 4: other emissions

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
71.23	V	54.50	6.27	1.51	28.03	34.25	40.0	-5.75
83.50	H	53.20	7.21	1.63	28.02	34.02	40.0	-5.98
119.73	H	48.20	12.47	2.30	27.90	35.07	43.5	-8.43
165.80	H	47.70	15.96	2.48	27.71	38.43	43.5	-5.07
170.65	H	45.30	16.26	2.63	27.69	36.50	43.5	-7.00
194.90	H	44.10	16.49	2.82	27.61	35.80	43.5	-7.70
296.75	V	46.50	19.60	3.58	27.41	42.27	46.0	-3.73
301.60	V	51.70	15.10	3.61	27.41	43.00	46.0	-3.00

Note 1: Field Strength Calculation

Level = Read Level + ANT Factor + Cable Loss – Preamp Gain

Margin = Limit - Level

Note 2.: Up to the 10^{th} harmonics were investigated according to 15.239 and the worst-case emissions are reported.

Note 3: No other emission were detected at a level greater than 10 dB below limit.

- When the EUT transmits the 1KHz audio signal from the MP3P (1KHz, 300mV)

Measurement Data 1: Harmonics of the 88.1 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-
No other harmonics were detected at a level greater than 10 dB below limit.								
-	-	-	-	-	-	-	-	-

Measurement Data 2: Harmonics of the 98.0 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-
No other harmonics were detected at a level greater than 10 dB below limit.								
-	-	-	-	-	-	-	-	-

Measurement Data 3: Harmonics of the 107.9 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
-	-	-	-	-	-	-	-	-
No other harmonics were detected at a level greater than 10 dB below limit.								
-	-	-	-	-	-	-	-	-

Note 1: Field Strength Calculation

Level = Read Level + Probe Factor + Cable Loss – Preamp Gain

Margin = Limit - Level

Note 2: Up to the 10^{th} harmonics were investigated according to 15.239 and the worst-case emissions are reported.

Measurement Data 4: other emissions

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
73.65	H	51.30	6.38	1.54	28.03	31.19	40.0	-8.81
83.35	V	50.00	7.21	1.63	28.02	30.82	40.0	-9.18
202.18	H	43.80	16.54	2.82	27.59	35.57	43.5	-7.93
204.60	V	43.70	16.61	2.85	27.59	35.57	43.5	-7.93
209.45	H	43.80	16.75	2.90	27.58	35.87	43.5	-7.63
221.58	H	44.30	17.08	3.03	27.55	36.86	46.0	-9.14
294.33	H	42.00	19.51	3.57	27.41	37.67	46.0	-8.33
321.00	H	47.50	15.42	3.74	27.56	39.10	46.0	-6.90
323.43	H	50.70	15.45	3.76	27.58	42.33	46.0	-3.67
325.85	V	46.60	15.49	3.77	27.60	38.26	46.0	-7.74
442.25	H	45.20	16.98	4.69	28.32	38.55	46.0	-7.45
539.25	V	41.50	18.10	5.26	28.68	36.18	46.0	-9.82

Note 1: Field Strength Calculation

Level = Read Level + ANT Factor + Cable Loss – Preamp Gain

Margin = Limit - Level

Note 2.: Up to the 10^{th} harmonics were investigated according to 15.239 and the worst-case emissions are reported.

Note 3: No other emissions were detected at a level greater than 10 dB below limit.

3.2.3 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its normal operating function. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: **Not Applicable**

Conducted emission test is not applied because the power of the EUT is supplied from a Car battery.

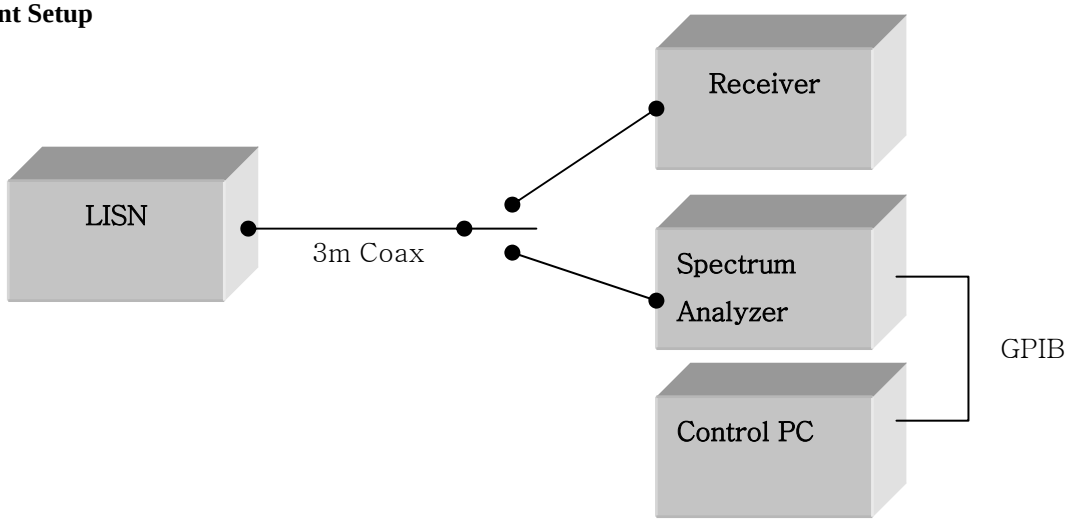
So it is not need to test this requirement,

Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Measurement Setup



Measurement setup for AC Conducted Emission

3.2.4 Occupied Bandwidth

Procedure:

The occupied channel Bandwidth is defined as the minimum declared bandwidth within which the transmitter's necessary bandwidth can be contained. The transmitter was adjusted to work at the selected channels. The occupied channel BW was measured at an amplitude level reduced from the reference level by the 26dB.

The plot is taken at 30kHz/division frequency span, 10kHz resolution bandwidth and 5dB/division amplitude logarithmic display from a spectrum analyzer.

The spectrum analyzer is set to:

Frequency Range =

RBW = 10 kHz VBW ≥ RBW

Trace = max hold Detector function = Peak

Sweep = auto Span = 300 kHz

Operating Condition: Transmit 1kHz audio signal from iPod or MP3P

Measurement Data: **Complies**

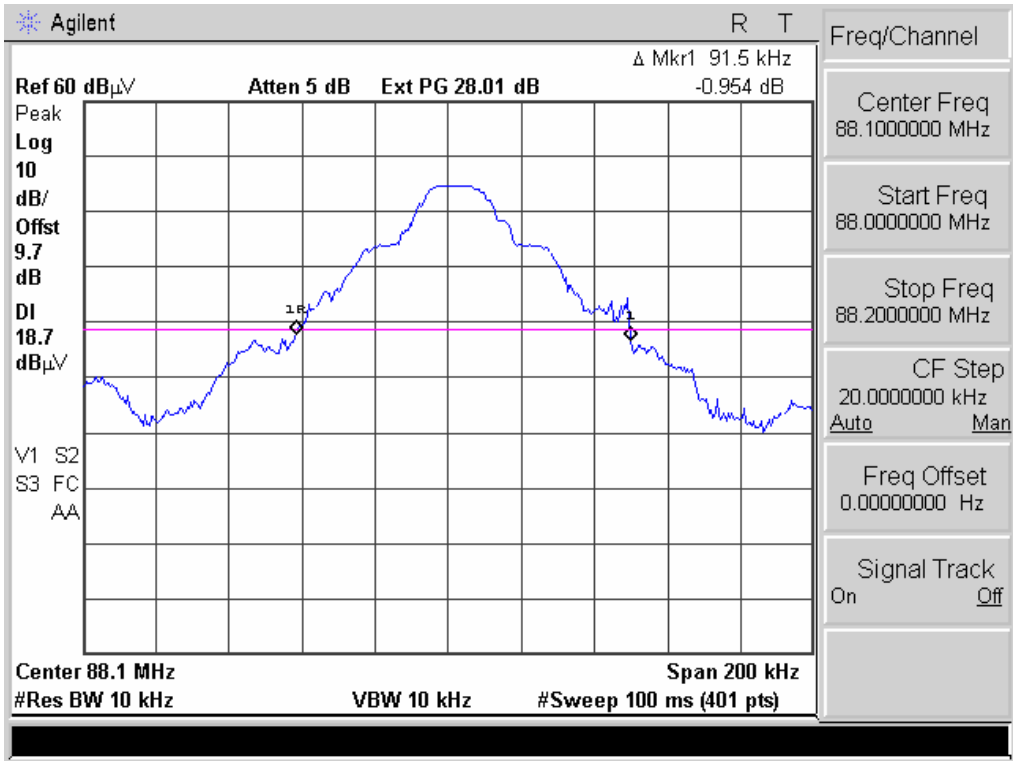
Refer to the next page.

Minimum Standard:

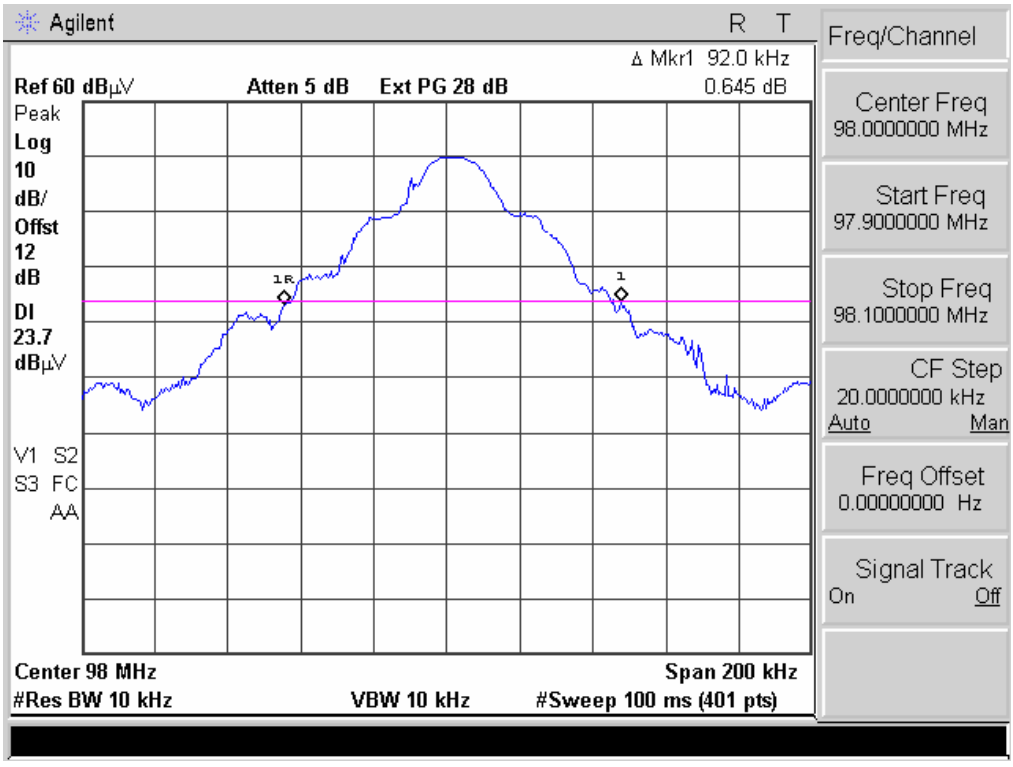
Occupied Bandwidth < 200kHz.

- When the EUT transmits the real MP3 file (Rock Song Play) from the IPOD with max volume level

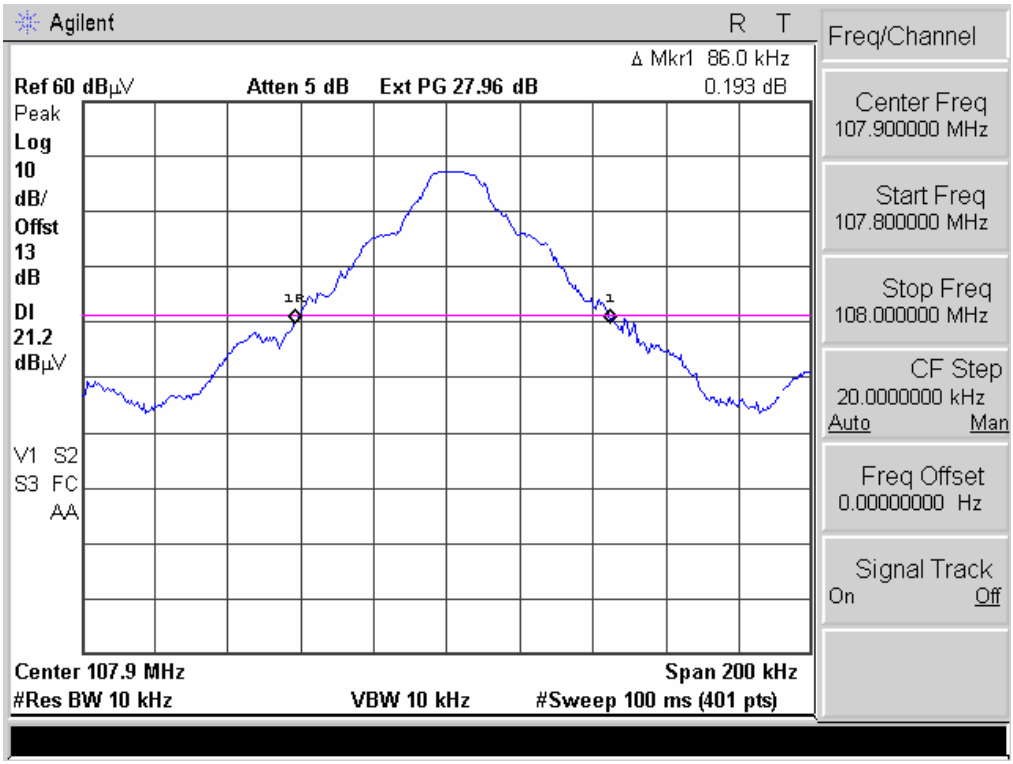
Occupied Channel Bandwidth plot (88.1 MHz)



Occupied Channel Bandwidth plot (98.0 MHz)

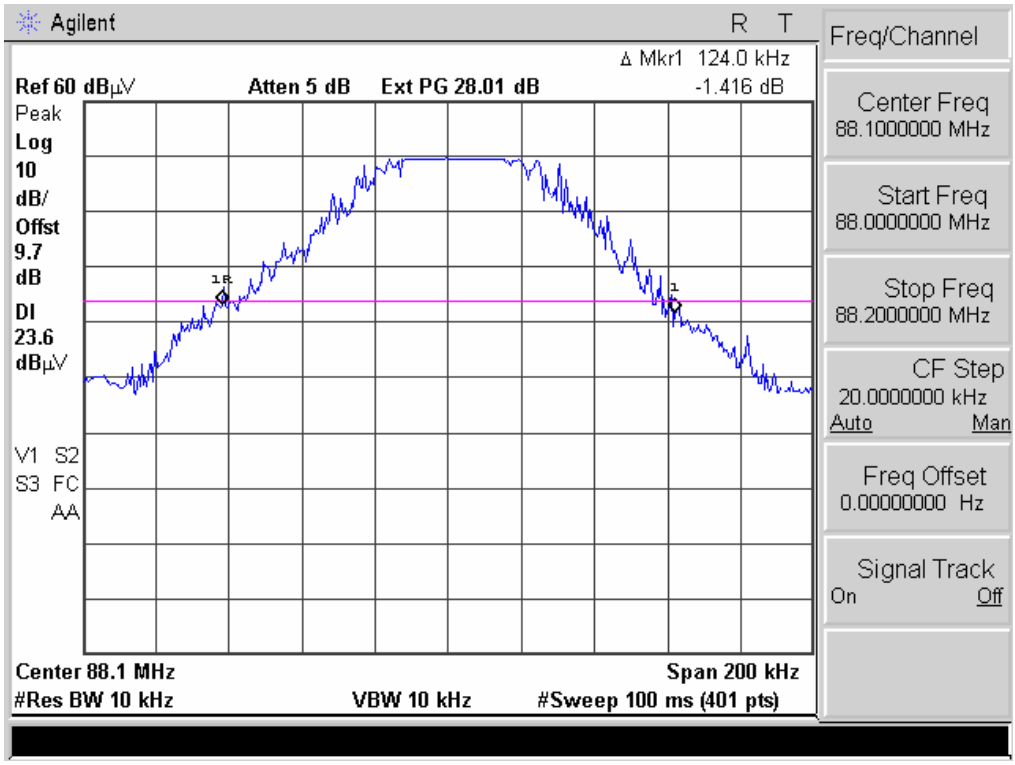


Occupied Channel Bandwidth plot (107.9 MHz)

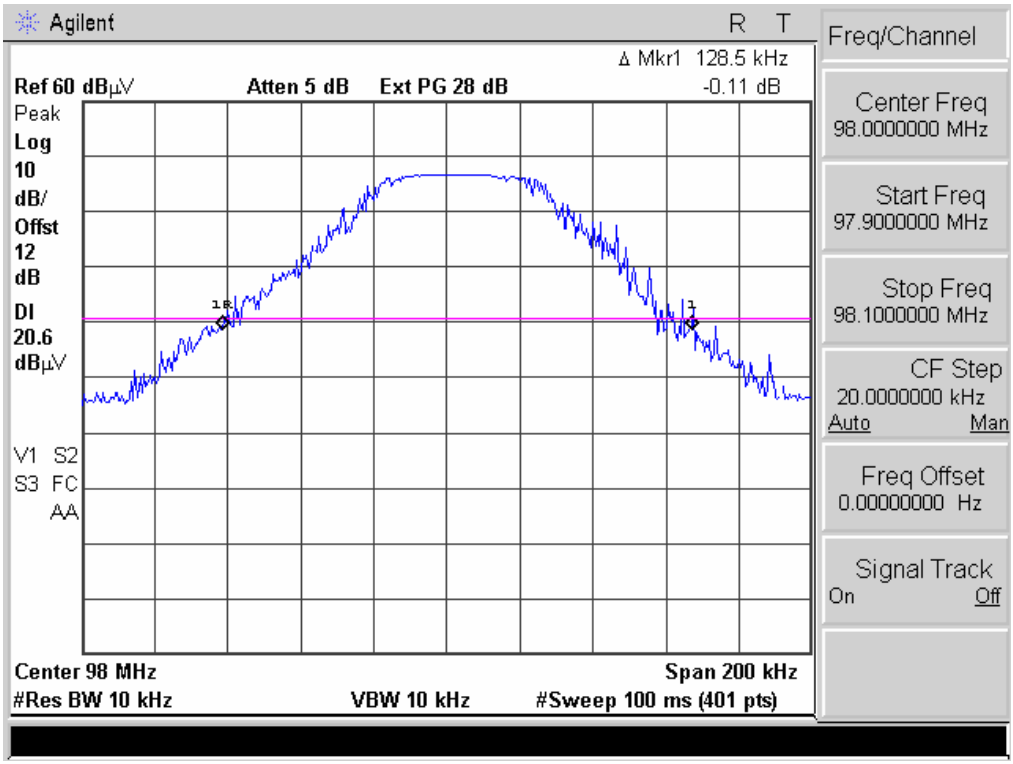


- When the EUT transmits the real MP3 file (Rock Song Play) from the MP3P with max volume level

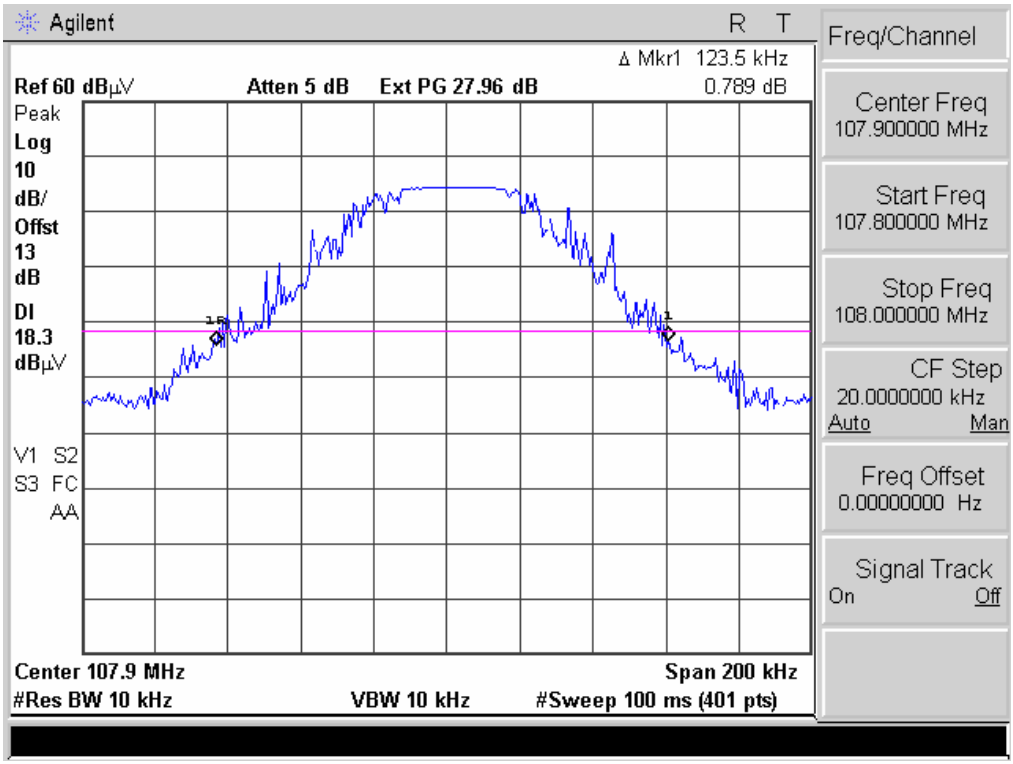
Occupied Channel Bandwidth plot (88.1 MHz)



Occupied Channel Bandwidth plot (98.0 MHz)



Occupied Channel Bandwidth plot (107.9 MHz)



3.2.5 Antenna Requirement

Define:

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the applicant can be used with the device. The use of permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with this requirement.

--- The antenna Type: Internal Wire Antenna is soldered permanently to the PCB.
Any external antenna can not be attached to this device.

APPENDIX I

MEASUREMETN UNCERTAINTY

Measurement Uncertainty(CE/RE)

- Conducted Emission

Item	Probability Distrubution	Probability Distrubution (dB)	Standard
		9kHz~30MHz	
Expended measurement uncertainty (95%,Confidence level,k=2)dB	Normal(k=2)	+ 2.20 - 2.21	

- Radiated Emission

Item	Probability Distrubution	Measurement Uncertainty(dB)		Standard
		3m	10m	
		Bi-Log	Bi-Log	
Expended measurement uncertainty (95%,Confidence level,k=2)dB	K=2	30M~1GHz +3.47 -4.14	30M~1GHz +3.47 -4.27	

APPENDIX II

TEST EQUIPMENT USED FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
01	Spectrum Analyzer	Agilent	E4404B	21/03/07	US41061134
02	Spectrum Analyzer	Agilent	E4440A	14/11/07	MY45304199
03	Spectrum Analyzer	H.P	8563E	06/10/07	3551A04634
04	Power Meter	H.P	EPM-442A	06/07/07	GB37170413
05	Power Sensor	H.P	8481A	23/03/07	3318A96332
06	Frequency Counter	H.P	5342A	15/09/07	2119A04450
07	Multifunction Synthesizer	H.P	8904A	12/10/07	3633A08404
08	Signal Generator	Rohde Schwarz	SMR20	22/03/07	101251
09	Signal Generator	H.P	E4421A	06/07/07	US37230529
10	Audio Analyzer	H.P	8903B	06/07/07	3011A0944B
11	Modulation Analyzer	H.P	8901B	10/07/07	3028A03029
12	Oscilloscope	Tektronix	TDS3052	01/10/07	B016821
13	8960 Series 10 Wireless Comms Test Set	Agilent	Z5515C	13/06/08	GB43461134
14	Universal Radio Communication Test	Rohde Schwarz	CMU200	21/03/07	107631
15	CDMA Mobile Station Test Set	H.P	8924C	15/09/07	US35360688
16	PCS Interface	HP	83236B	15/09/07	3711J03014
17	Multi system UE Tester	Japan Radid Co., Ltd	NJZ-2000	20/11/07	ET00095
18	Power Splitter	WEINSCHEL	1593	14/10/07	332
19	BAND Reject Filter	Microwave Circuits	N0308372	19/10/07	3125-01DC0312
20	BAND Reject Filter	Wainwright	WRCG1750	19/10/07	SN2
21	AC Power supply	DAEKWANG	5KVA	21/03/07	N/A
22	DC Power Supply	H.P	6622A	20/03/07	465487
23	HORN ANT	EMCO	3115	04/04/07	6419
24	HORN ANT	EMCO	3115	04/25/07	21097
25	HORN ANT	A.H.Systems	SAS-574	16/08/07	154
26	HORN ANT	A.H.Systems	SAS-574	16/08/07	155
27	Dipole Antenna	Schwarzbeck	VHA9103	18/11/07	2116
28	Dipole Antenna	Schwarzbeck	VHA9103	18/11/07	2117
29	Dipole Antenna	Schwarzbeck	UHA9105	18/11/07	2261
30	Dipole Antenna	Schwarzbeck	UHA9105	18/11/07	2262

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	S/N
31	TEMP & HUMIDITY Chamber	JISCO	J-RHC2	13/09/07	021031
32	RFI/FIELD Intensity Meter	Kyorits	KNM-504D	21/07/07	4N-161-4
33	Frequency Converter	Kyorits	KCV-604C	21/07/07	4-230-3
34	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	26/09/07	1098
35	Biconical Antenna	Schwarzbeck	VHA9103	12/09/07	2233
36	Digital Multimeter	H.P	34401A	18/04/07	3146A13475
37	Attenuator (10dB)	WEINSCHEL	23-10-34	26/01/07	BP4386
38	High-Pass Filter	ANRITSU	MP526	13/10/07	M27756
39	Attenuator (3dB)	Agilent	8491B	10/07/07	58177
40	Attenuator (10dB)	WEINSCHEL	23-10-34	26/01/07	BP4387
41	Attenuator (30dB)	H.P	8498A	17/10/07	50101
42	Amplifier (25dB)	Agilent	8447D	12/04/07	2944A10144
43	Amplifier (30dB)	Agilent	8449B	13/10/07	3008A01590
44	Position Controller	TOKIN	5901T	N/A	14173
45	Driver	TOKIN	5902T2	N/A	14174
46	Spectrum Analyzer	H.P	8591E	21/03/07	3649A05889
47	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	11/07/07	4N-170-3
48	LISN	Kyorits	KNW-407	19/08/07	8-317-8
49	LISN	Kyorits	KNW-242	09/10/07	8-654-15
50	CVCF	NF Electronic	4400	N/A	344536 4420064
51	Software	ToYo EMI	EP5/RE	N/A	Ver 2.0.800
52	Software	ToYo EMI	EP5/CE	N/A	Ver 2.0.801
53	Software	AUDIX	e3	N/A	Ver 3.0
54	Software	Agilent	Benchlink	N/A	A.01.09 021211

