

Power Spectral Density

§15.247(d)

The antenna conducted tests cannot be performed on this device, radiated tests to show compliance with the peak power density limit specified in Section 15.247(b) and the RF conducted emission limit specified in Section 15.247(c) are acceptable.

Minimum Standard – The transmitter power density average over 1-second interval shall not be greater than 8dBm in any 3kHz BW.

The spectrum analyzer is set to:

RBW = 3 kHz (7dB/div)

VBW = 3 kHz Span = 30 MHz Ref. Level = -33 dBm Sweep = >1000 sec

Power Density Calculation Example:

The 3 meter Handset meter reading at 5741.056 MHz = -49.5 dBm or 57.5 dBuV/m AFCL = 43.9 dB. FS in dBuV/m = 101.4 dBuV/m or 117,490 uV/m. The Handset antenna gain = 4 dBi which yields a numerical gain of 2.51.

Using the equation $Pd = (E^*d)^2/(30^*G) = Output Power = (117,490^*3)^2/(30^*2.51) = 0.00165 Watts or 2.17 dBm.$

Frequency	Channel	Test Results (HS)			
(MHz)	No.	Power Density (dBm)	Limit	Margin	
5741	1	2.17	+ 8 dBm	-5.83	
5782	17	2.31	+ 8 dBm	-5.59	
5828	35	-1.00	+ 8 dBm	-9.00	

See next pages for actual measured spectrum plots

Peak Power Density + Attenuation = dBm

Table A-4. Conducted Power Density Measurements (HS)

Frequency	Channel	Test Results (Base)		
(MHz)	No.	Power Density (dBm)	Limit	Margin
5741	1	4.51	+ 8 dBm	-3.48
5782	17	3.62	+ 8 dBm	-4.48
5828	35	1.72	+ 8 dBm	-6.28

See next pages for actual measured spectrum plots

Peak Power Density + Attenuation = dBm

Table A-4. Conducted Power Density Measurements (BASE)

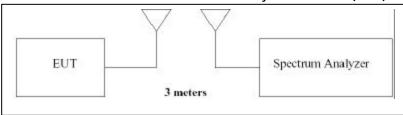
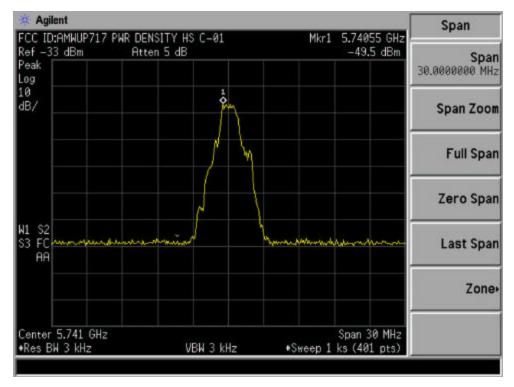


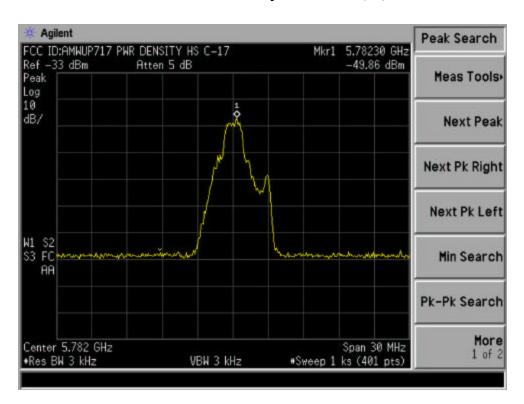
Figure A-3. Test Instrument & Measurement Setup

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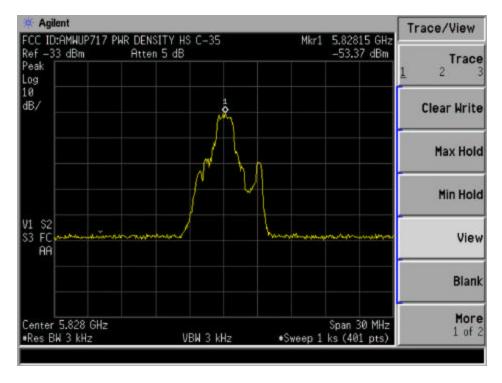
Plot A-10. Max. Power Density Plot - Ch. 01 (HS)



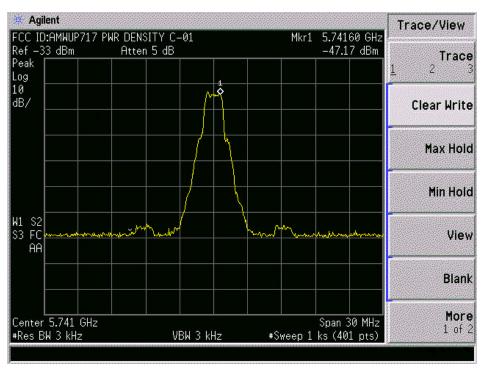
Plot A-11. Max. Power Density Plot - Ch. 17(HS)

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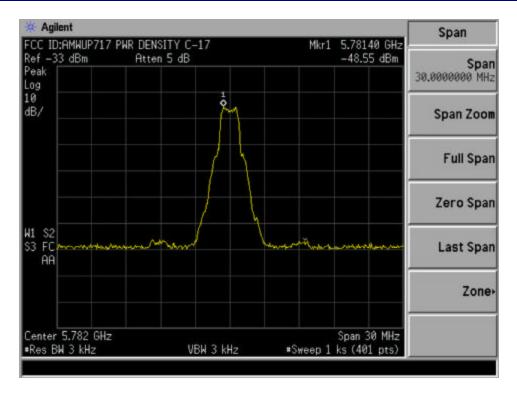
Plot A-12. Max. Power Density Plot - Ch. 35 (HS)



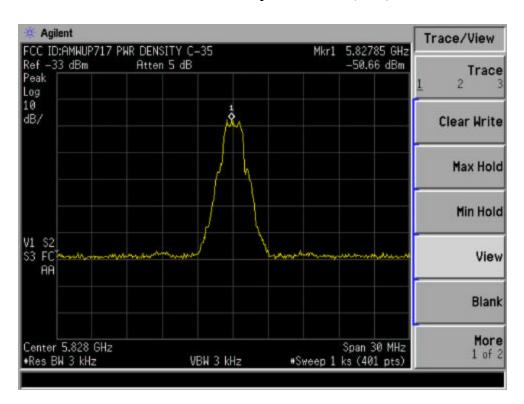
Plot A-13. Max. Power Density Plot - Ch. 01 (BASE)

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Plot A-14. Max. Power Density Plot - Ch. 17 (BASE)

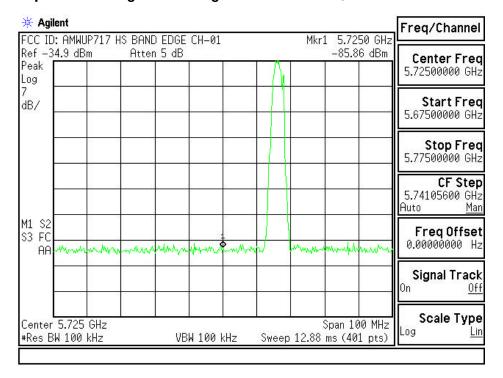


Plot A-15. Max. Power Density Plot - Ch. 35 (BASE)

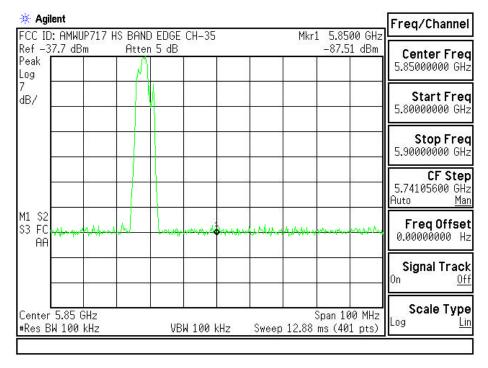
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Occupied BandEdge /BandEdge at 20dB below. & Out of Band Emissions



Plot A-16. Occupied Band Edge Plot - Ch. 01 (HS)

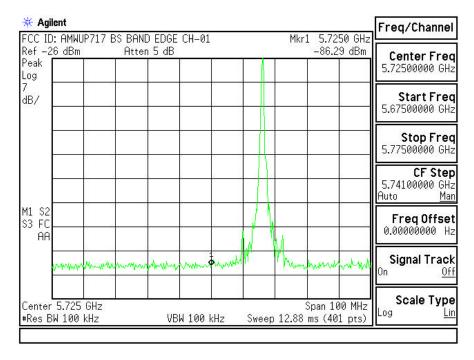


Plot A-17. Occupied Band Edge Plot - Ch. 35 (HS)

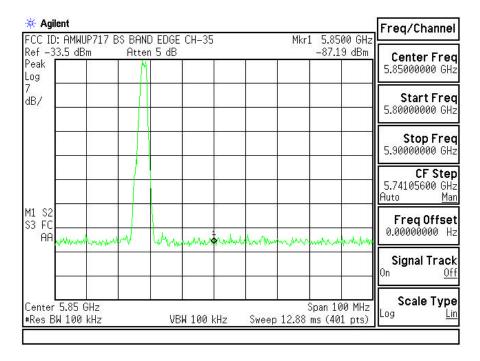
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Occupied BandEdge /BandEdge at 20dB below. & Out of Band Emissions



Plot A-18. Occupied Band Edge Plot - Ch. 01 (BASE)



Plot A-19. Occupied Band Edge Plot - Ch. 35 (BASE)

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Radiated Fundamental & Harmonic Measurements (Cont.)

§15.247(b) / §15.205 & §15.209

Hanset/ Base:	Handset
Distance of Measurements:	3 Meters
Channel:	01

Frequency (MHz)	Level (dBm)	AFCL (dB)	POL (H/V)	F/S (dB ml/ /m)	F/S (ml/ /m)	Margin (dB)
11482.11	-116.5	52.8	V	43.3	146.2189	-10.7
17223.17	-128.5	62.3	V	40.8	109.648	-13.2
22964.22	-135.0	66.0	V	38.0	79.4328	-16.0
28705.28	-135.0	69.0	V	41.0	112.202	-13.0

Table A-5. Radiated Measurements @ 3 meters

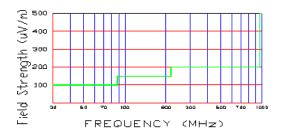


Figure A-4. Radiated limits at 3 meters.

- 1. All harmonics in the restricted bands specified in §15.205 are below the limit shown in Table G-1. (Note: * = Restricted Band measured frequency)
- 2. All harmonics/spurs are at least 20 dB below the highest emission in the authorized band using RBW = 100kHz
- 3. Average Measurements > 1GHz using RBW = 1 MHz VBW = 10 Hz
- 5. The 15 dBi Panel antenna is manipulated through typical positions, polarity and length during the tests.
- 6. The EUT is supplied with nominal AC voltage or/and a new/fully-recharged battery.
- 7. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
- 8. < 135 dBm are below the analyzer floor level.
- 9. Above 1 GHz, the limit is 500 $\mu\text{V/m}$ (54dB $\!\mu\text{/m})$ at 3 meters radiated.

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Radiated Fundamental & Harmonic Measurements (Cont.)

§15.247(b) / §15.205 & §15.209

Handset/ Base: Handset

Distance of Measurements: 3 Meters

Channel: 17

Frequency (MHz)	Level (dBm)	AFCL (dB)	POL (H/V)	F/S (dB ml/ /m)	F/S (ml/ /m)	Margin (dB)
11564.03	-119.3	52.9	V	40.6	107.152	-13.4
17346.05	-128.9	62.5	V	40.6	107.152	-13.4
23128.06	-135.0	66.4	V	38.4	83.1764	-15.6
28910.08	-135.0	69.4	V	41.4	117.49	-12.6

Table A-6. Radiated Measurements @ 3 meters

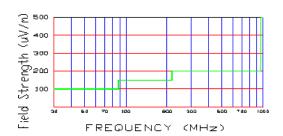


Figure A-5. Radiated limits at 3 meters.

- 1. All harmonics in the restricted bands specified in §15.205 are below the limit shown in Table G-1. (Note: * = Restricted Band measured frequency)
- 2. All harmonics/spurs are at least 20 dB below the highest emission in the authorized band using RBW = 100kHz
- 3. Average Measurements > 1GHz using RBW = 1 MHz VBW = 10 Hz
- 4. The peak emissions above 1 GHz are not more than 20 dB above the average limit.
- 5. The 15 dBi Panel antenna is manipulated through typical positions, polarity and length during the tests.
- 6. The EUT is supplied with nominal AC voltage or/and a new/fully-recharged battery.
- 7. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
- 8. < - 135 dBm are below the analyzer floor level.
- 9. Above 1 GHz, the limit is 500 $\mu\text{V/m}$ (54dB $\!\mu\text{/m})$ at 3 meters radiated.

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Radiated Fundamental & Harmonic Measurements (Cont.)

§15.247(b) / §15.205 & §15.209

Handset/ Base: Handset

Distance of Measurements: 3 Meters

Channel: 35

Frequency (MHz)	Level (dBm)	AFCL (dB)	POL (H/V)	F/S (dB ml/ /m)	F/S (ml/ /m)	Margin (dB)
11656.19	-121.6	53.0	V	38.4	83.1764	-15.6
17484.29	-132.0	63.7	V	38.7	86.0994	-15.3
23312.38	-135.0	66.9	V	38.9	88.1049	-15.1
29140.48	-135.0	69.9	V	41.9	124.451	-12.1

Table A-7. Radiated Measurements @ 3 meters

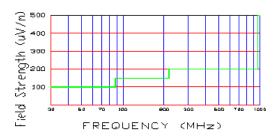


Figure A-6. Radiated limits at 3 meters.

- 1. All harmonics in the restricted bands specified in §15.205 are below the limit shown in Table G-1. (Note: * = Restricted Band measured frequency)
- 2. All harmonics/spurs are at least 20 dB below the highest emission in the authorized band using RBW = 100kHz
- 3. Average Measurements > 1GHz using RBW = 1 MHz VBW = 10 Hz
- 4. The peak emissions above 1 GHz are not more than 20 dB above the average limit.
- 5. The 15 dBi Panel antenna is manipulated through typical positions, polarity and length during the tests.
- 6. The EUT is supplied with nominal AC voltage or/and a new/fully-recharged battery.
- 7. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
- 8. < - 135 dBm are below the analyzer floor level.
- 9. Above 1 GHz, the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated.

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Radiated Fundamental & Harmonic Measurements (Cont.)

§15.247(b) / §15.205 & §15.209

Handset/ Base: BASE

Distance of Measurements: 3 Meters

Channel: 01

Frequency (MHz)	Level (dBm)	AFCL (dB)	POL (H/V)	F/S (dB ml/ /m)	F/S (ml //m)	Margin (dB)
11482.11	-118.4	52.8	V	41.4	117.49	-12.6
17223.17	-128.5	62.3	V	40.8	109.648	-13.2
22964.22	-135.0	66.0	V	38.0	79.4328	-16.0
28705.28	-135.0	69.0	V	41.0	112.202	-13.0

Table A-8. Radiated Measurements @ 3 meters

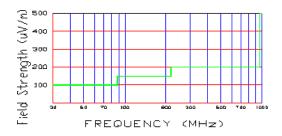


Figure A-7. Radiated limits at 3 meters.

- 1. All harmonics in the restricted bands specified in §15.205 are below the limit shown in Table G-1. (Note: * = Restricted Band measured frequency)
- 2. All harmonics/spurs are at least 20 dB below the highest emission in the authorized band using RBW = 100kHz
- 3. Average Measurements > 1GHz using RBW = 1 MHz VBW = 10 Hz
- 5. The 15 dBi Panel antenna is manipulated through typical positions, polarity and length during the tests.
- 6. The EUT is supplied with nominal AC voltage or/and a new/fully-recharged battery.
- 7. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
- 8. < - 135 dBm are below the analyzer floor level.
- 9. Above 1 GHz, the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated.

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Radiated Fundamental & Harmonic Measurements (Cont.)

§15.247(b) / §15.205 & §15.209

Handset/ Base: BASE

Distance of Measurements: 3 Meters

Channel: 17

Frequency (MHz)	Level (dBm)	AFCL (dB)	POL (H/V)	F/S (dB ml/ /m)	F/S (ml //m)	Margin (dB)
11564.03	-119.4	52.9	V	40.5	105.925	-13.5
17346.05	-128.9	62.5	V	40.6	107.152	-13.4
23128.06	-135.0	66.4	V	38.4	83.1764	-15.6
28910.08	-135.0	69.4	V	41.4	117.49	-12.6

Table A-9. Radiated Measurements @ 3 meters

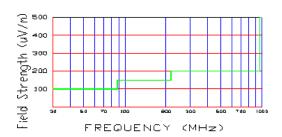


Figure A-8. Radiated limits at 3 meters.

- 1. All harmonics in the restricted bands specified in §15.205 are below the limit shown in Table G-1. (Note: * = Restricted Band measured frequency)
- 2. All harmonics/spurs are at least 20 dB below the highest emission in the authorized band using RBW = 100kHz
- 3. Average Measurements > 1GHz using RBW = 1 MHz VBW = 10 Hz
- 4. The peak emissions above 1 GHz are not more than 20 dB above the average limit.
- 5. The 15 dBi Panel antenna is manipulated through typical positions, polarity and length during the tests.
- 6. The EUT is supplied with nominal AC voltage or/and a new/fully-recharged battery.
- 7. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
- $8. < \mbox{-} \cdot 135$ dBm are below the analyzer floor level.
- 9. Above 1 GHz, the limit is 500 $\mu\text{V/m}$ (54dB $\!\mu\text{/m})$ at 3 meters radiated.

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Radiated Fundamental & Harmonic Measurements (Cont.)

§15.247(b) / §15.205 & §15.209

Handset/ Base: BASE

Distance of Measurements: 3 Meters

Channel: 35

Frequency (MHz)	Level (dBm)	AFCL (dB)	POL (H/V)	F/S (dB ml/ /m)	F/S (ml //m)	Margin (dB)
11656.19	-117.2	53.0	V	42.8	138.038	-11.2
17484.29	-128.0	63.7	V	42.7	136.458	-11.3
23312.38	-135.0	66.9	V	38.9	88.1049	-15.1
29140.48	-135.0	69.9	V	41.9	124.451	-12.1

Table A-10. Radiated Measurements @ 3 meters

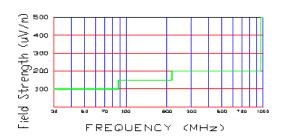


Figure A-9. Radiated limits at 3 meters.

- 1. All harmonics in the restricted bands specified in §15.205 are below the limit shown in Table G-1. (Note: * = Restricted Band measured frequency)
- 2. All harmonics/spurs are at least 20 dB below the highest emission in the authorized band using RBW = 100kHz
- 3. Average Measurements > 1GHz using RBW = 1 MHz VBW = 10 Hz
- 4. The peak emissions above 1 GHz are not more than 20 dB above the average limit.
- 5. The 15 dBi Panel antenna is manipulated through typical positions, polarity and length during the tests.
- 6. The EUT is supplied with nominal AC voltage or/and a new/fully-recharged battery.
- 7. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported.
- 8. < 135 dBm are below the analyzer floor level.
- 9. Above 1 GHz, the limit is 500 $\mu\text{V/m}$ (54dB $\mu\text{/m})$ at 3 meters radiated.

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Radiated Spurious Measurements Handset & Base

§15.205 / §15.209

Distance of Measurements: 3 Meters

FREQ (MHz)	Level (dBm)	AFCL (dB/m)	POL (H/V)	Height (m)	Azimuth (° angle)	F/S (uV/M)	Margin (dB)
61.8	-83.05	5.15	V	2.7	180	28.56	-10.9
123.1	-84.51	11.72	Н	2.5	160	51.34	-9.3
178.4	-87.61	13.62	V	2.2	135	44.72	-10.5
197.1	-90.25	16.36	Н	1.9	180	45.24	-10.4
283.3	-90.79	20.00	Н	1.7	135	64.62	-9.8
308.8	-90.81	20.92	V	2.3	225	71.66	-8.0

Table A-11. Radiated Measurements at 3-meters

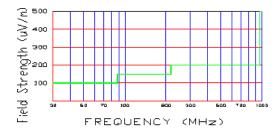


Figure A-11. Radiated limits at 3 meters

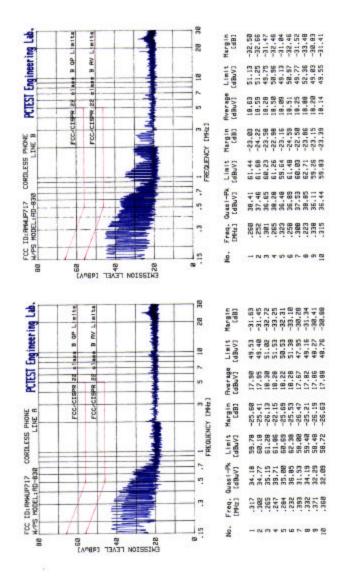
- 1. All emissions were investigated and the worst-case emissions are reported.
- 2. For hand-held devices, the EUT is rotated through three orthogonal axes to determine which configuration produces the maximum emissions.
- 3. The EUT is supplied with the minimal AC voltage or/and a new/fully re-charged battery.
- 4. The EUT was tested up to the 10th harmonic (25GHz) and no significant emission was found.
- 5. Above 1 GHz the limit is $500\mu V/m$ at 3 meters radiated.

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Line-Conducted Test Data

§15.207



Notes:

- 1. All Modes of operation were investigated and the worst-case emissions are reported.
- 2. The limit for Class B device(s) from 150kHz to 30MHz are Specified in EN55022.
- 3. Line A = Phase; Line B = Neutral
- 4. Deviations to the Specifications: None.

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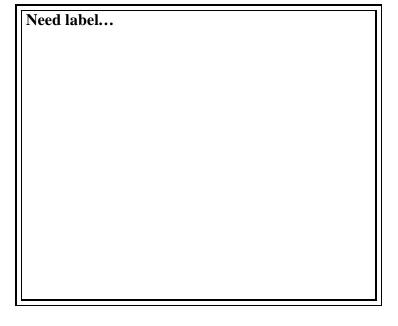


EXHIBIT B - Labeling Requirements Sample Label & Location

New Labeling Requirements

Per 2.1074 & 15.19; Docket 95-19

The sample label shown below shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name, FCC ID, and the FCC logo must be displayed on the device per Section 15.19 (b)(2).



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EXHIBIT B - Labeling Requirements (Cont.) Sample Label & Location



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