HIGH CHANNEL

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9.6. CONDUCTED SPURIOUS EMISSION

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 - 24000	☒ Peak	☒ 100 kHz	☒ 100 kHz

TEST PROCEDURE

Connect the Eut's antenna port to the Spectrum Analyzer's input port.
Investigate the entire frequency of the carrier frequency, up to the tenth harmonic.

RESULT

No non-compliance noted. See below plots for LOW, MID, and HIGH channels.

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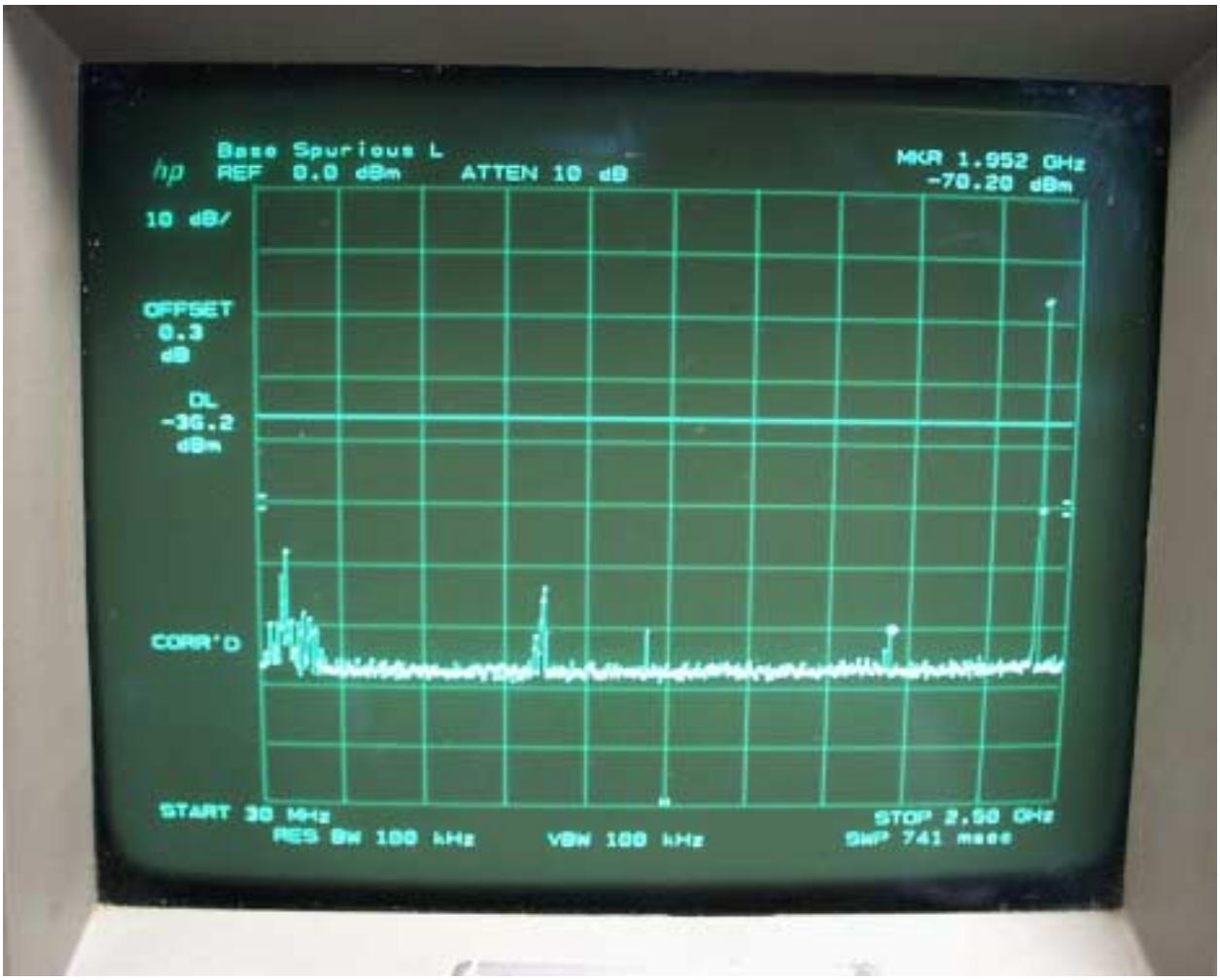
LOW CHANNEL



FREQUENCY RANGE 30 – 2500 MHz

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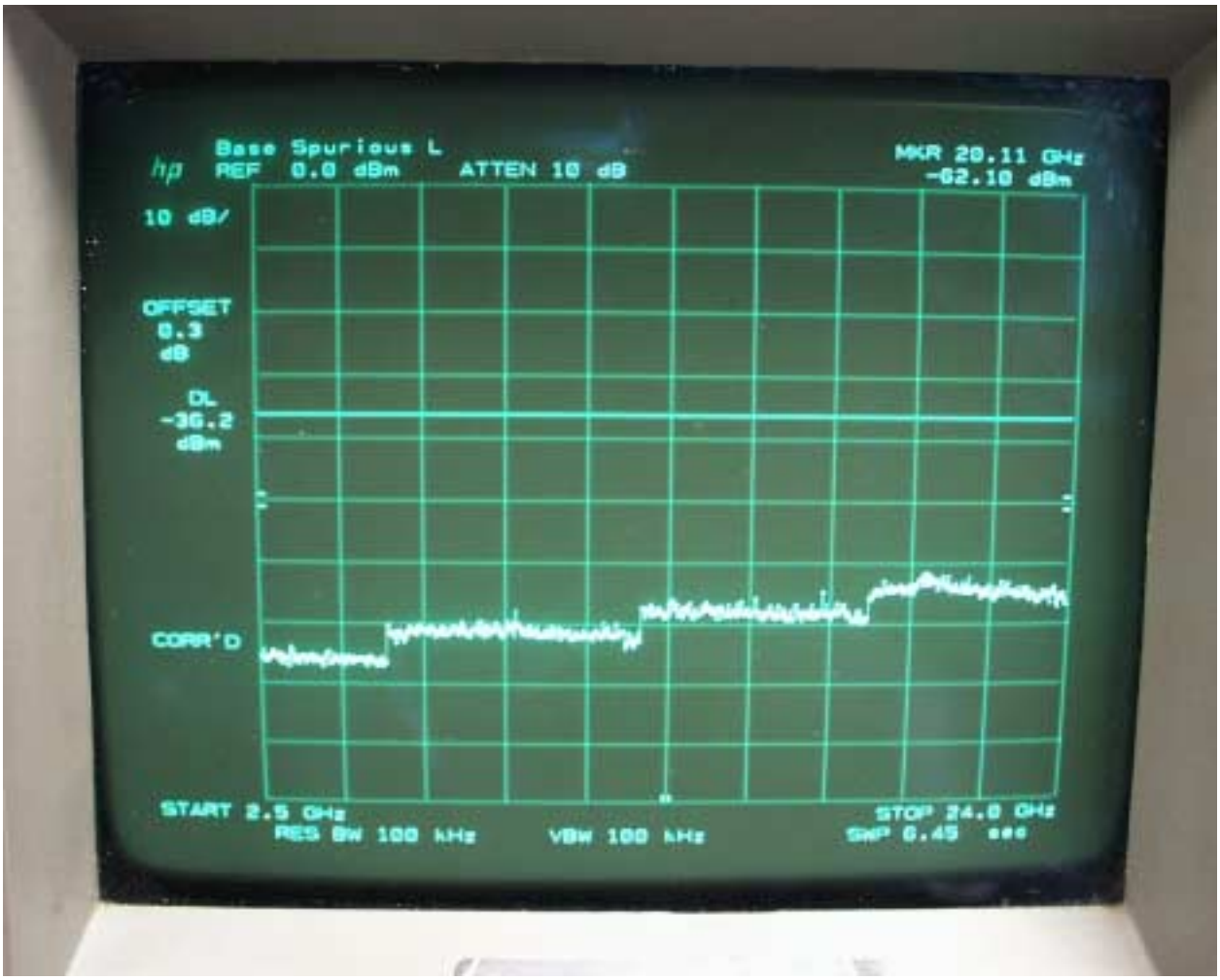
LOW CHANNEL



FREQUENCY RANGE 2.5 – 24 GHz

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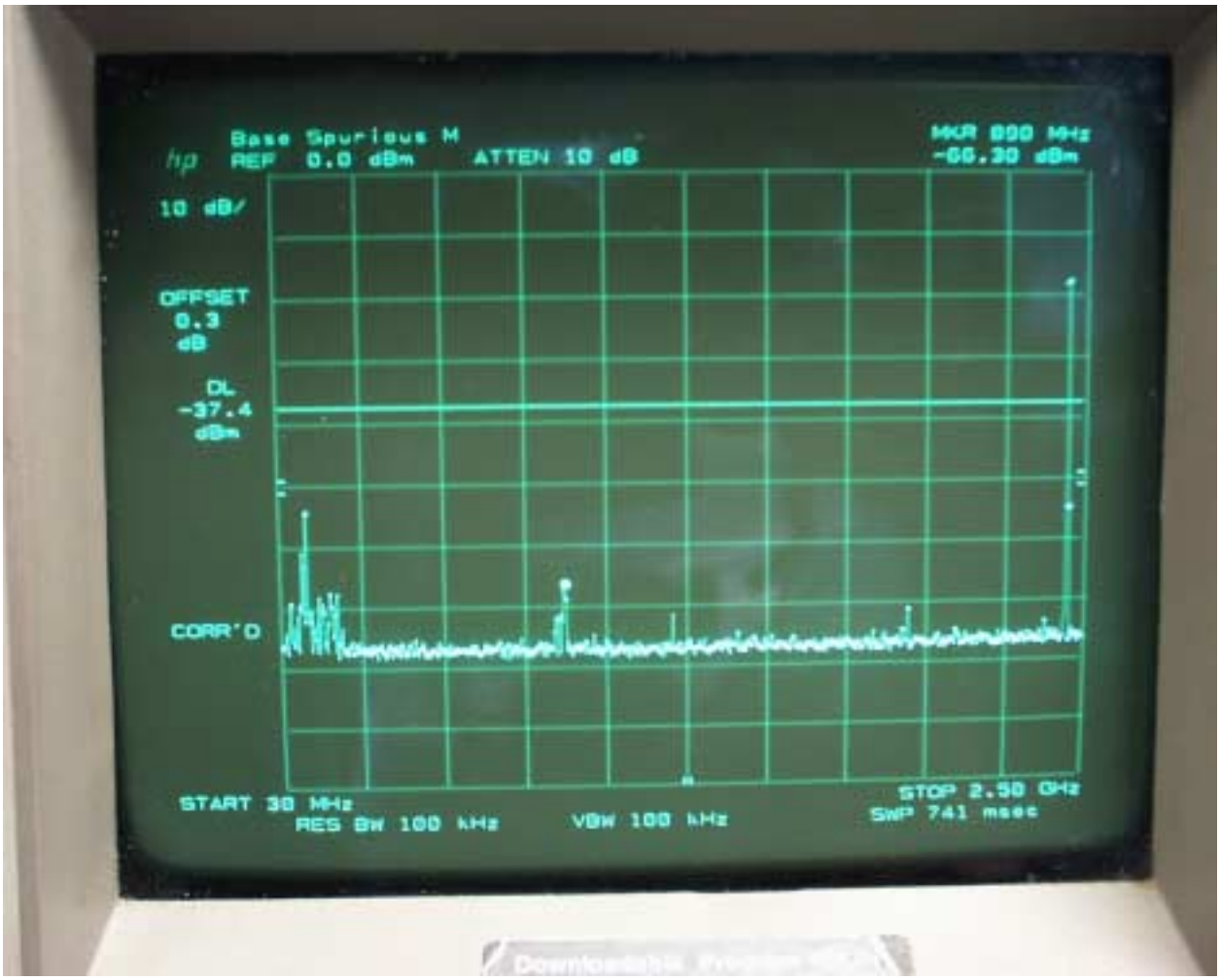
MID CHANNEL



FREQUENCY RANGE 30 – 2500 MHz

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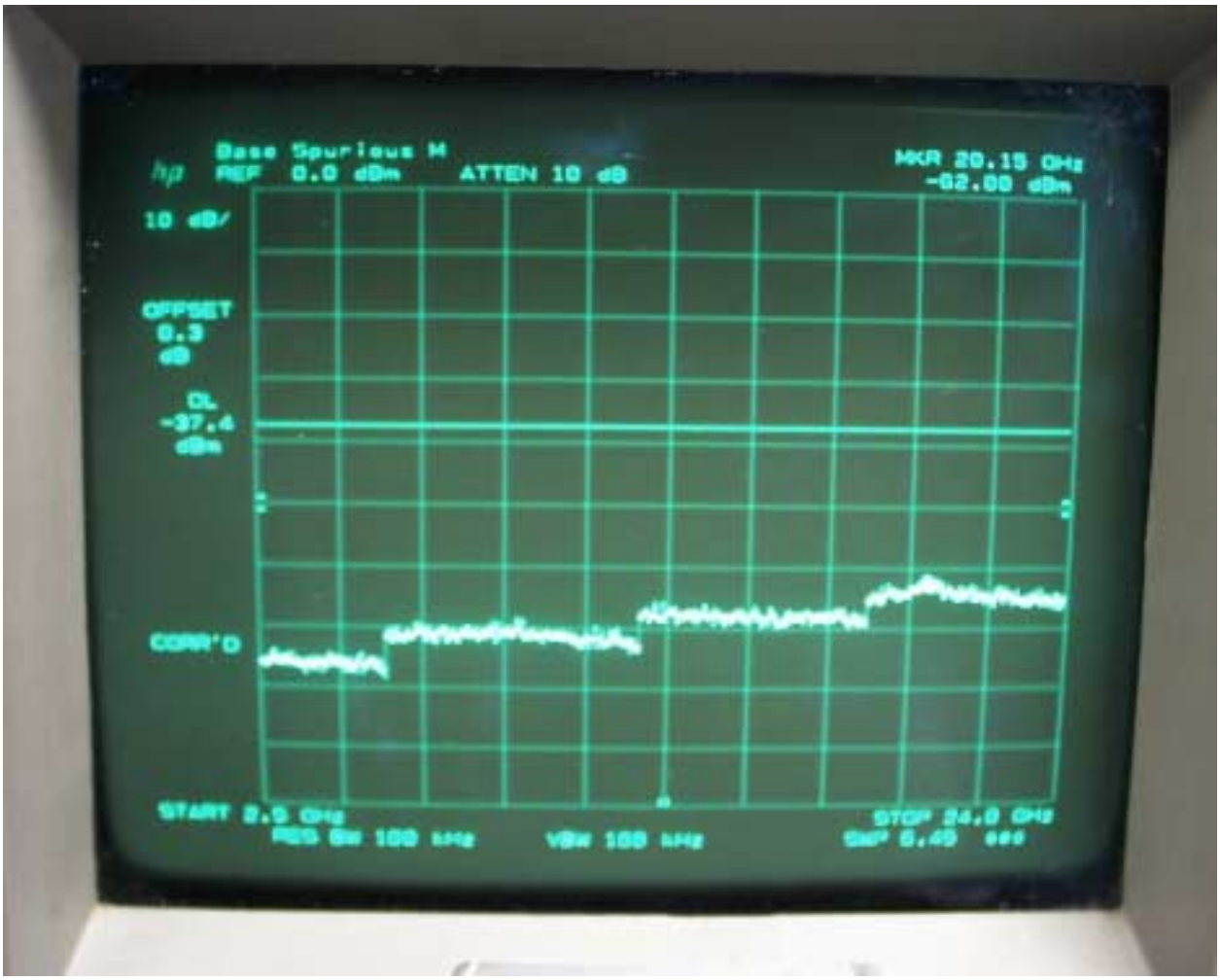
MID CHANNEL



FREQUENCY RANGE 2.5 – 24 GHz

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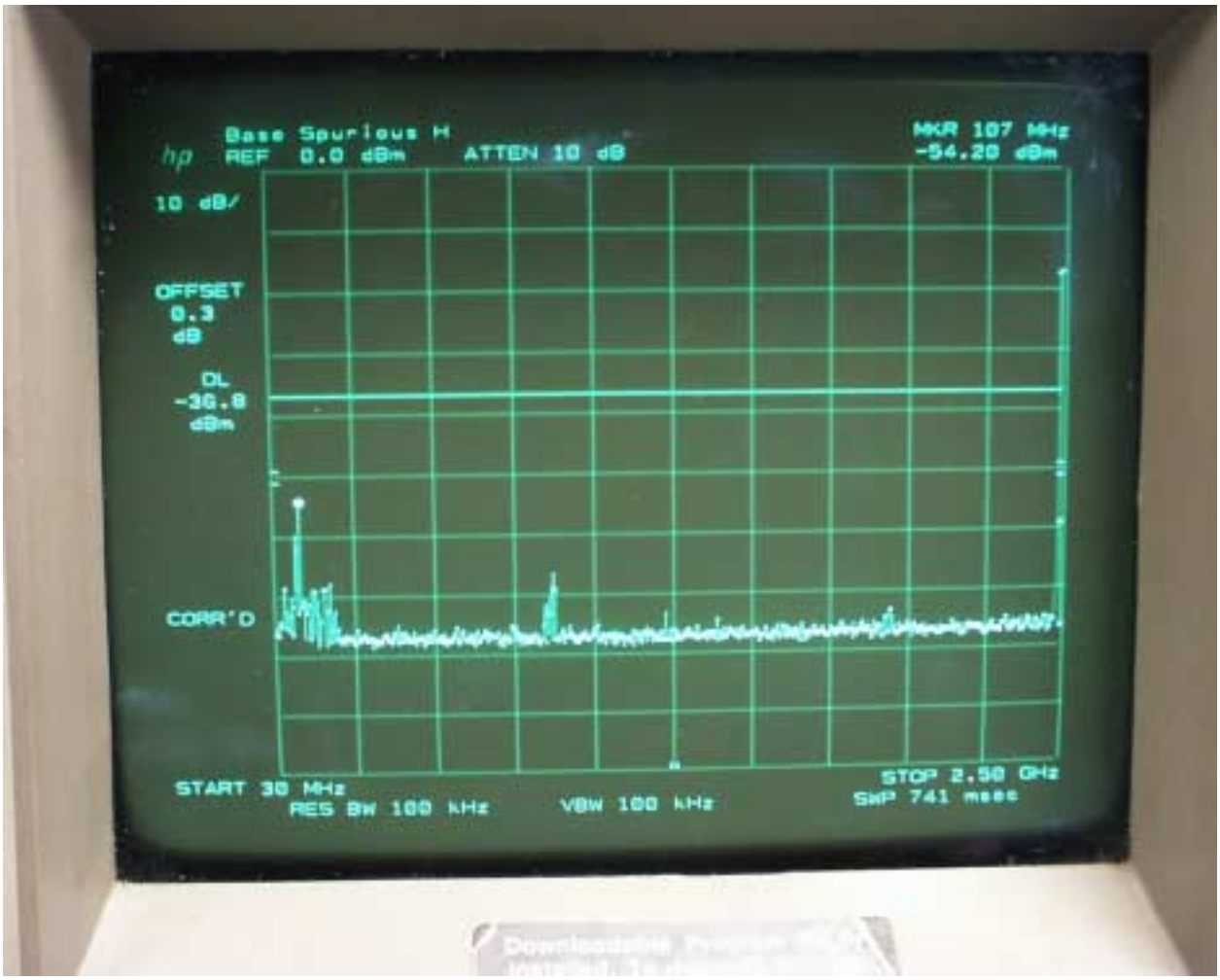
HIGH CHANNEL



FREQUENCY RANGE 30 – 2500 MHz

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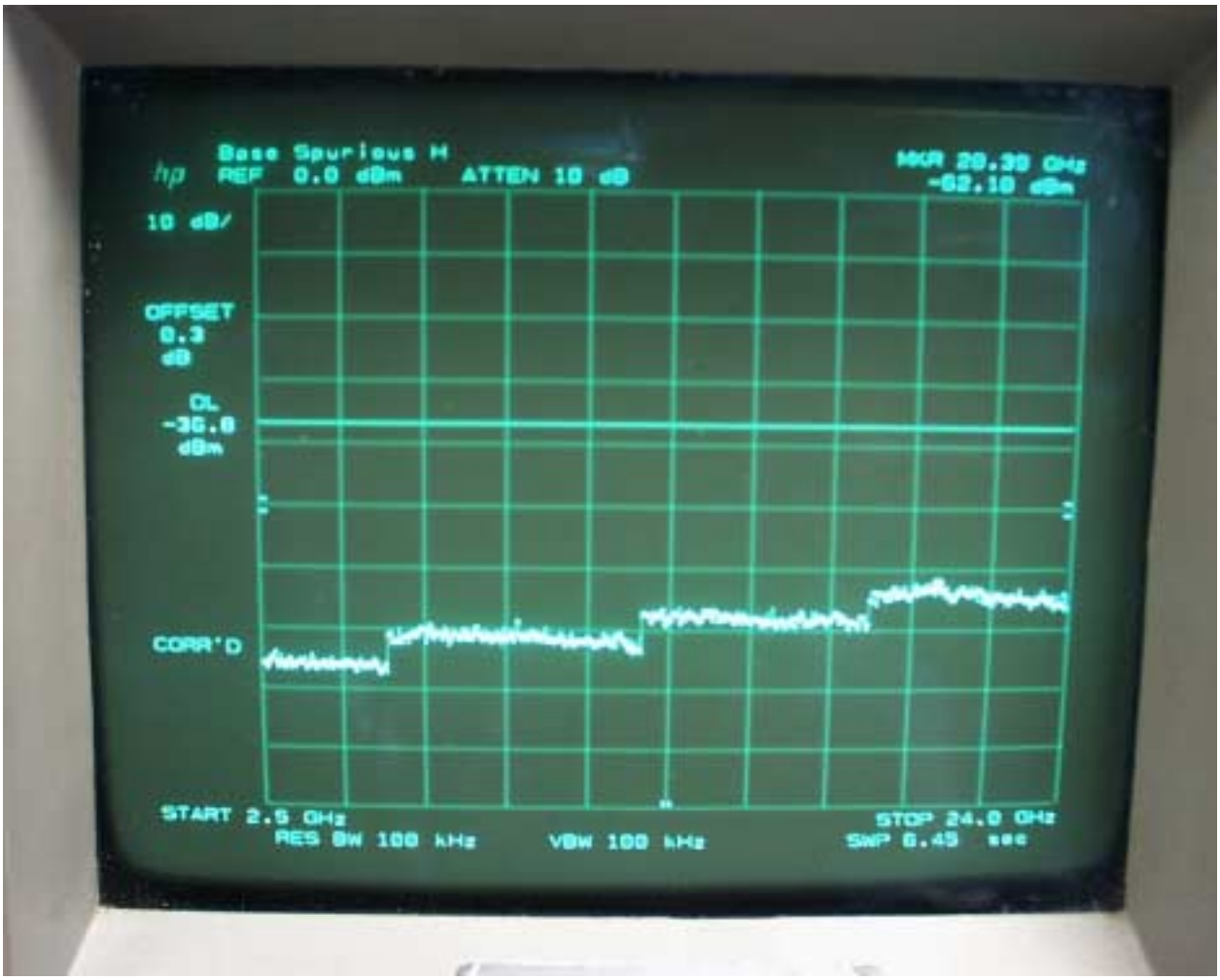
HIGH CHANNEL



FREQUENCY RANGE 2.5 – 24 GHz

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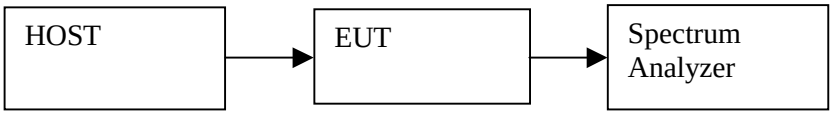
9.7. RESTRICTED BAND EDGE MEASUREMENT

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak	☒ 100 KHz	☒ 100 KHz



TEST PROCEDURE

Connect the Eut's antenna port to the Spectrum Analyzer's input port. The Resolution and Video bandwidth was set to 100 kHz. Set the Display Line 20 dB down from the carrier. Investigated at bottom end, 2390 MHz, and top end, 2483.5 MHz.

RESULT

No non-compliance noted. See plots below.

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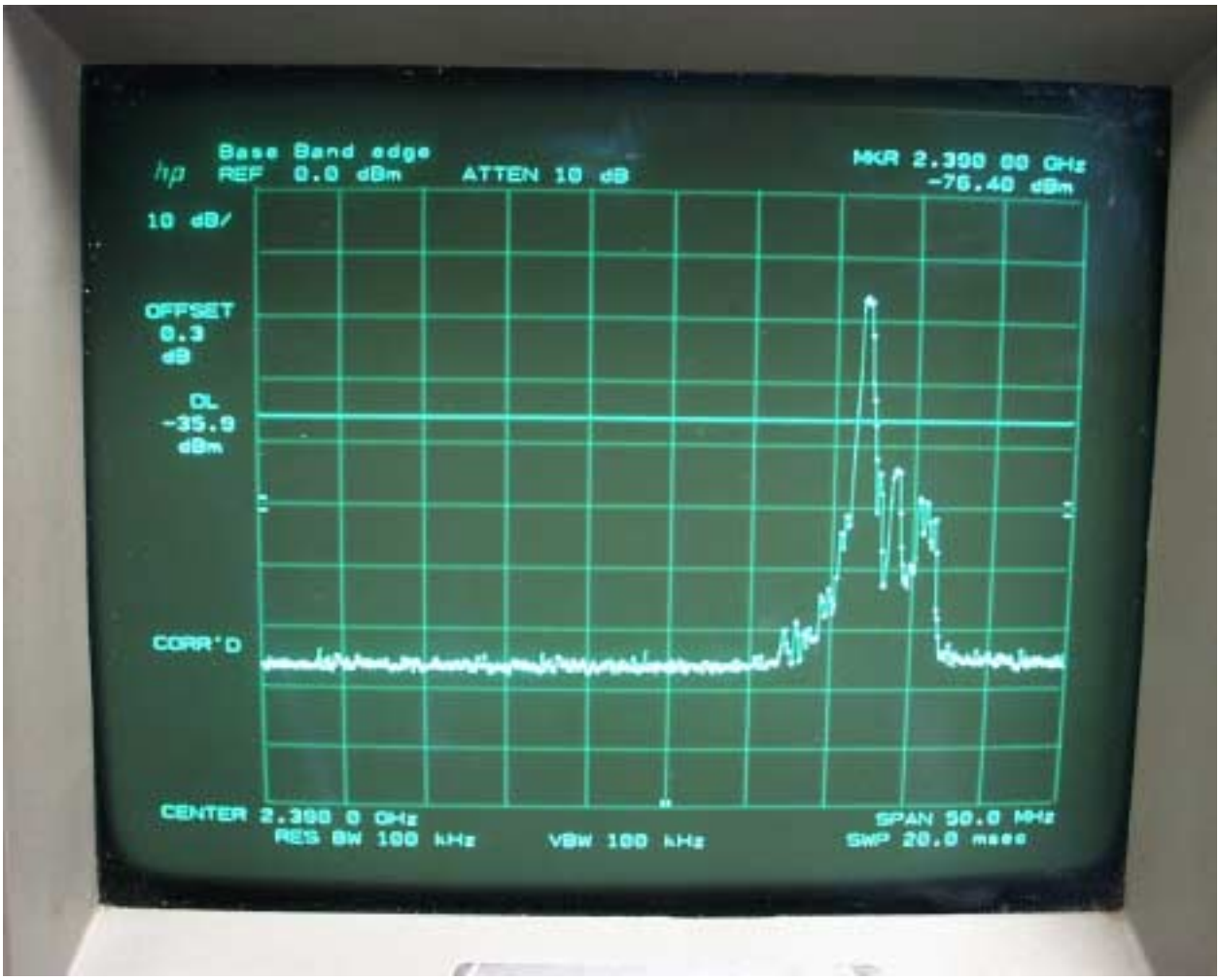
BANDEDGE @ LOW CHANNEL



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BANDEDGE @ HIGH CHANNEL

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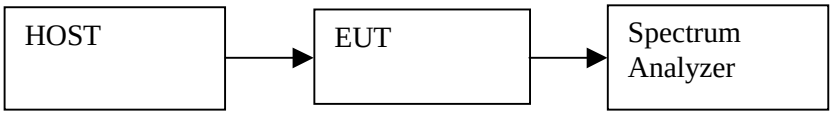
9.8. PEAK POWER SPECTRAL DENSITY

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
Above 1000	☒ Peak	☒ 3 kHz	☒ 3 kHz



TEST PROCEDURE

Connect the Eut's antenna port to the Spectrum Analyzer's input port. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3 kHz RBW and 3 kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

Result:

No non-compliance noted. See plot below.

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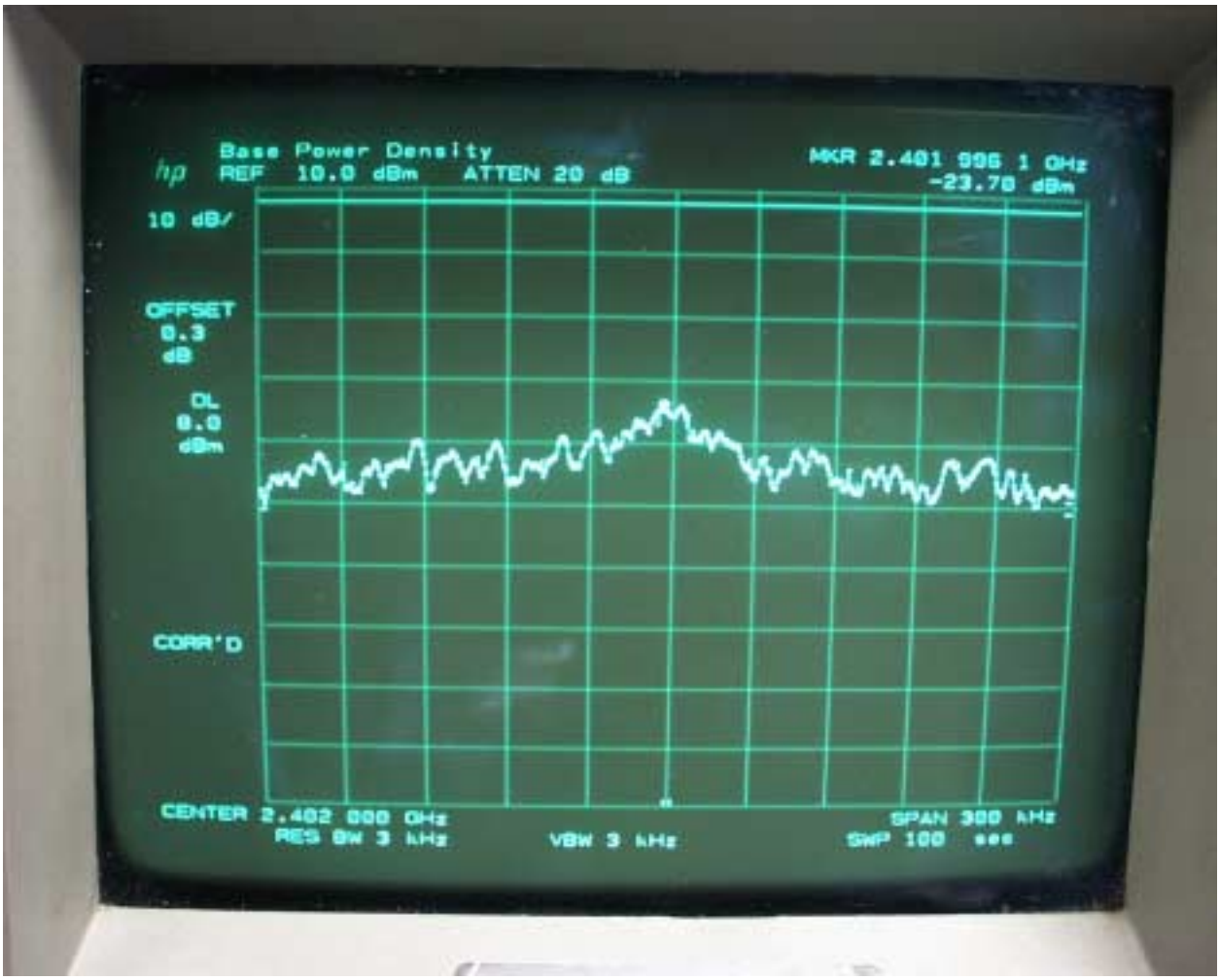
LOW CHANNEL



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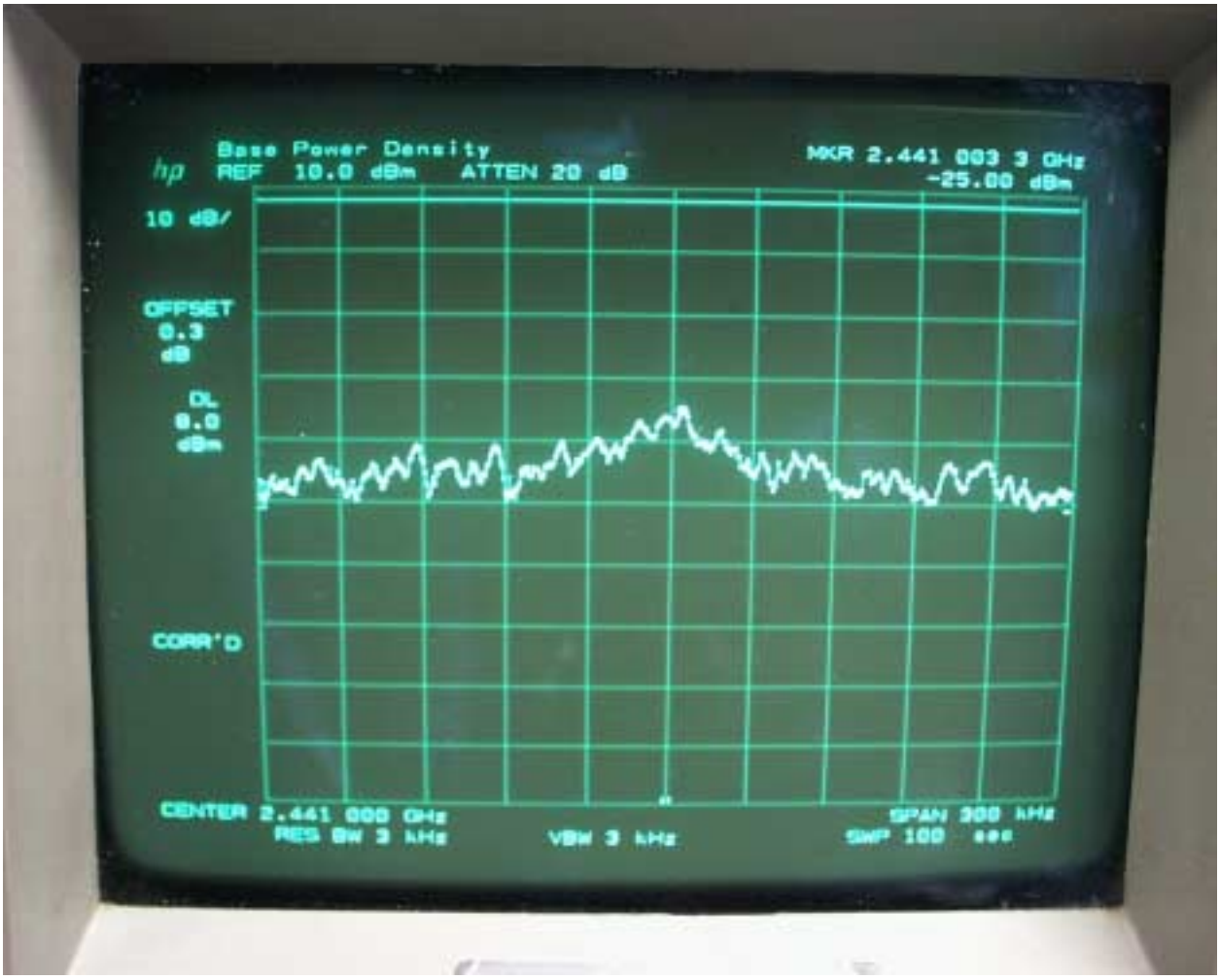
MID CHANNEL



HIGH CHANNEL

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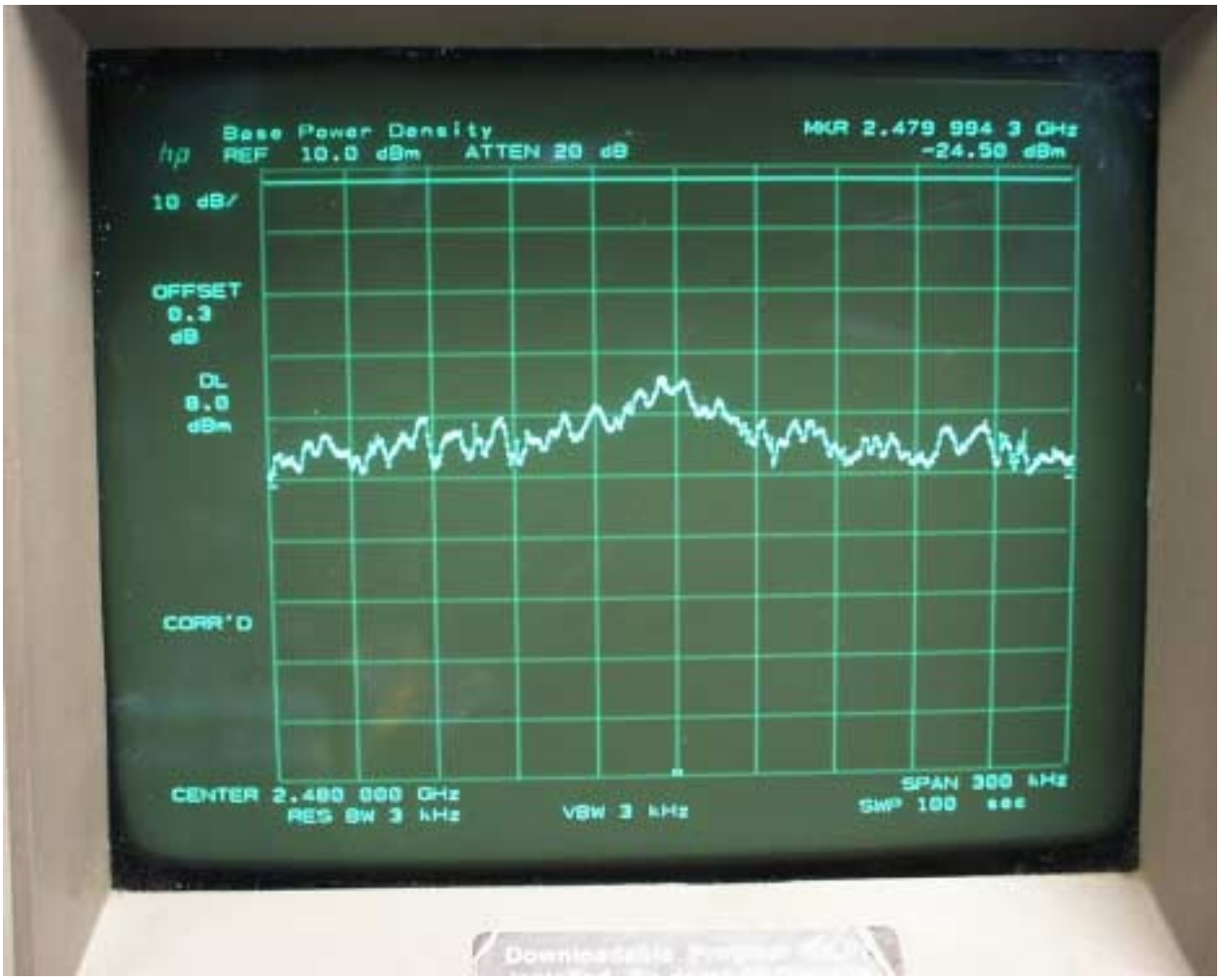

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9.9. RADIATED EMISSION

9.9.1. RADIATED EMISSION AND RESTRICTED BANDS

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	☒ Peak ☒ Quasi Peak	☒ 100 KHz ☒ 1 MHz	☒ 100 KHz ☒ 1 MHz
Above 1000	☒ Peak ☒ Average	☒ 1 MHz ☒ 1 MHz	☒ 1 MHz ☒ 10 Hz

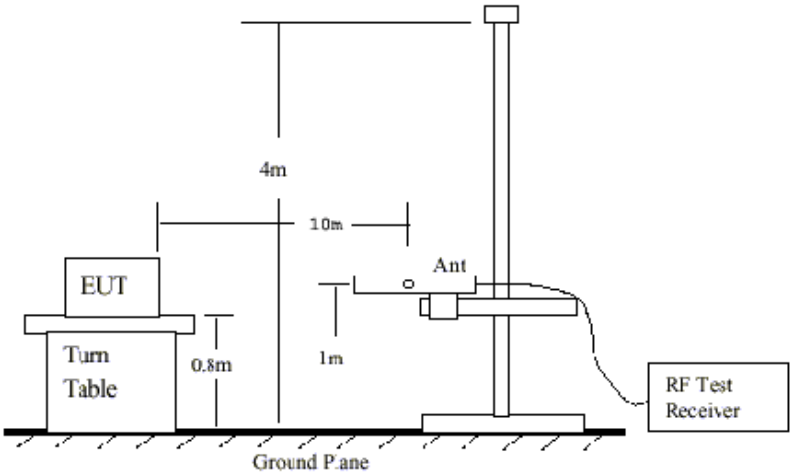

Fig 1: Radiated Emission Measurement 30 to 1000 MHz

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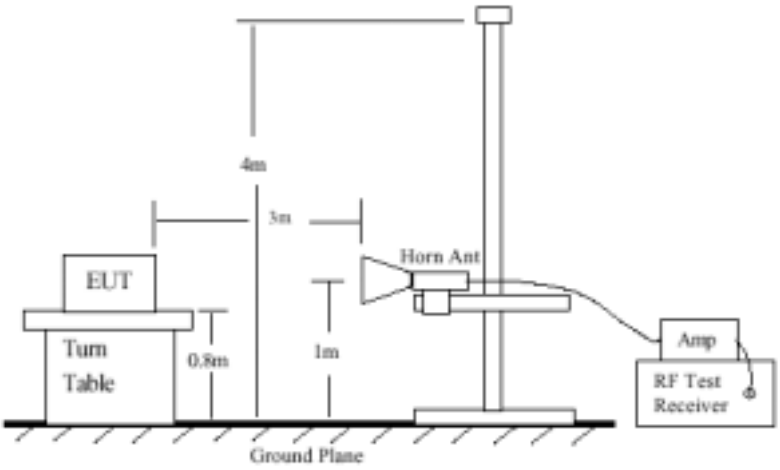

Fig 2: Radiated Emission Above 1000 MHz

TEST PROCEDURE

1. The EUT was placed on the turntable 0.8 meter above ground in 3 meter open area test site.
2. Set the resolution bandwidth to 100KHz in the test receiver and select Peak function to scan the frequency below 1 GHz.
3. Shift the interference-receiving antenna located in antenna tower upwards and downward between 1 and 4 meters above ground and find out the local peak emission on frequency domain.
4. Locate the interference-receiving antenna at the position where the local peak reach the maximum emission.
5. Rotate the turntable and stop at the angle where the measurement device has maximum reading.
6. Shift the interference-receiving antenna again to detect the maximum emission of the local peak.
7. If the reading of the local peak under Peak function is lower than limit by 6dB, then Quasi Peak detection is not needed and this reading should be recorded. And if it is higher than Peak limit, then the test is fail. Others, switch the receiver to Quasi Peak

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function, set the resolution bandwidth to 100kHz and repeat the procedures (3)~(6). If the reading is lower than limit, this reading should be recorded, otherwise the test is fail.
8. Set the resolution and video bandwidth of the spectrum analyzer to 1MHz and repeat procedures (3)~(6) for frequency band from 1 GHz to 10 times carrier frequency.
9. If the reading for the local peak is lower than the Average limit, no further testing is needed in this local peak and this reading should be recorded. If it is higher than Average limit but lower than Peak limit, then set the resolution bandwidth to 1MHz and video bandwidth to 10Hz. Repeat procedures (3)~(6). If the maximum reading is lower than Average limit, then this reading should be recorded. If it is higher, then the test is fail.

RESULT

No non-compliance noted. See data below.

COMPLIANCE Certification Services

FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP

561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #:	02U1331-1
Report #:	020716B1
Date& Time:	07/16/02 9:32 AM
Test Engr:	KERWIN CORPUZ

Company:	WICOS CO., LTD.
EUT Description:	WIRELESS BLUETOOTH HEADSET-BASE(M/N: WICOS201AG)
Test Configuration :	EUT ONLY
Type of Test:	FCC CLASS B
Mode of Operation:	STANDBY

<< Main Sheet

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
117.96	42.10	11.70	2.34	29.51	26.64	43.50	-16.86	3mV	0.00	1.00	P
132.70	41.40	11.37	2.45	29.46	25.75	43.50	-17.75	3mV	0.00	1.00	P
44.23	39.20	10.74	1.66	29.68	21.92	40.00	-18.08	3mV	0.00	1.00	P
58.98	41.70	5.77	1.87	29.64	19.69	40.00	-20.31	3mV	0.00	1.00	P
169.56	40.00	9.56	2.74	29.31	22.98	43.50	-20.52	3mV	0.00	1.00	P
73.72	40.50	6.07	2.01	29.62	18.96	40.00	-21.04	3mV	0.00	1.00	P
6 Worst Data											

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COMPLIANCE CERTIFICATION SERVICES, INC.

Radiated Emissions 07/15/02
FCC 15.205 Kerwin Corpuz
A-site (1.0 Meter)

WICOS CO., LTD.
BLUETOOTH BASE SET (M/N: WICOS201AG)

fo = 2402 MHz (low channel) ***TX/RX mode***

FREQ (MHz)	READING (dBuV)		AF (dB)	CL (dB)	AMP (dB)	DIST (dB)	HPF (dB)	TOTAL (dBuV/m)		LIMIT (dBuV/m)		MARGIN (dB)	
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg
4804V	53.2	44.4	33.4	4	36	9.54	1	46.06	37.26	74	54	-27.9	-16.7
4804H	56.2	46.1	33.4	4	36	9.54	1	49.06	38.96	74	54	-24.9	-15
7206*	45.3	36.4	37.3	5	36.2	9.54	1	42.86	33.96	74	54	-31.1	-20
9608*	45.6	36.4	38.1	5.9	35.7	9.54	1	45.36	36.16	74	54	-28.6	-17.8
12010*	47.2	36.6	39.3	6.5	36.5	9.54	1	47.96	37.36	74	54	-26	-16.6
14412*	49.7	39.3	41.2	7.5	38.4	9.54	1	51.46	41.06	74	54	-22.5	-12.9
16814*	51.6	40.6	42	8.5	38.6	9.54	1	54.96	43.96	74	54	-19	-10
19216*	52	40.5	32	9.4	39.5	9.54	1	45.36	33.86	74	54	-28.6	-20.1
21618*	53.8	42.3	32.7	10.2	38.5	9.54	1	49.66	38.16	74	54	-24.3	-15.8
24020*	54.1	42.7	33.4	11.1	39.4	9.54	1	50.66	39.26	74	54	-23.3	-14.7

fo = 2441 MHz (mid channel) ***TX/RX mode***

FREQ (MHz)	READING (dBuV)		AF (dB)	CL (dB)	AMP (dB)	DIST (dB)	HPF (dB)	TOTAL (dBuV/m)		LIMIT (dBuV/m)		MARGIN (dB)	
	Pk	Avg						Pk	Avg	Pk	Avg	Pk	Avg
4882V	52.4	44.9	33.4	4	36	9.54	1	45.26	37.76	74	54	-28.7	-16.2
4882H	53.9	45.2	33.4	4	36	9.54	1	46.76	38.06	74	54	-27.2	-15.9
7323*	45.3	36.4	37.3	5	36.2	9.54	1	42.86	33.96	74	54	-31.1	-20
9764*	45.6	36.4	38.1	5.9	35.7	9.54	1	45.36	36.16	74	54	-28.6	-17.8
12205*	47.2	36.6	39.3	6.5	36.5	9.54	1	47.96	37.36	74	54	-26	-16.6
14646*	49.7	39.3	41.2	7.5	38.4	9.54	1	51.46	41.06	74	54	-22.5	-12.9
17087*	51.6	40.6	42	8.5	38.6	9.54	1	54.96	43.96	74	54	-19	-10
19528*	52	40.5	32	9.4	39.5	9.54	1	45.36	33.86	74	54	-28.6	-20.1
21969*	53.8	42.3	32.7	10.2	38.5	9.54	1	49.66	38.16	74	54	-24.3	-15.8
24410*	54.1	42.7	33.4	11.1	39.4	9.54	1	50.66	39.26	74	54	-23.3	-14.7

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fo = 2480 MHz (high channel) ***TX/RX mode***

FREQ (MHz)	**READING** (dBuV)		**AF** (dB)	**CL** (dB)	**AMP** (dB)	**DIST** (dB)	**HPF** (dB)	**TOTAL** (dBuV/m)		**LIMIT** (dBuV/m)		**MARGIN** (dB)	
	Pk	**Avg**						**Pk**	**Avg**	**Pk**	**Avg**	**Pk**	**Avg**
4960V	49.1	40.2	33.4	4	36	9.54	1	41.96	33.06	74	54	-32	-20.9
4960H	50	40.7	33.4	4	36	9.54	1	42.86	33.56	74	54	-31.1	-20.4
7440*	45.3	36.4	37.3	5	36.2	9.54	1	42.86	33.96	74	54	-31.1	-20
9920*	45.6	36.4	38.1	5.9	35.7	9.54	1	45.36	36.16	74	54	-28.6	-17.8
12400*	47.2	36.6	39.3	6.5	36.5	9.54	1	47.96	37.36	74	54	-26	-16.6
14880*	49.7	39.3	41.2	7.5	38.4	9.54	1	51.46	41.06	74	54	-22.5	-12.9
17360*	51.6	40.6	42	8.5	38.6	9.54	1	54.96	43.96	74	54	-19	-10
19840*	52	40.5	32	9.4	39.5	9.54	1	45.36	33.86	74	54	-28.6	-20.1
22320*	53.8	42.3	32.7	10.2	38.5	9.54	1	49.66	38.16	74	54	-24.3	-15.8
24800*	54.1	42.7	33.4	11.1	39.4	9.54	1	50.66	39.26	74	54	-23.3	-14.7

Spot check X, Y and Z axis; worst position @ Z axis.

NOTE: * Measured noise floor (worse case vertical), horizontal (H) and vertical (V)
DIST: extrapolate reading from 3m specification distance to 1m measurement distance = **-9.54dB**
AF: Antenna Factor
AMP: Pre-amp gain
CL: SMA cable loss (12ft)
HPF: FSY High pass filter insertion loss (4.57GHz; S/N:003)

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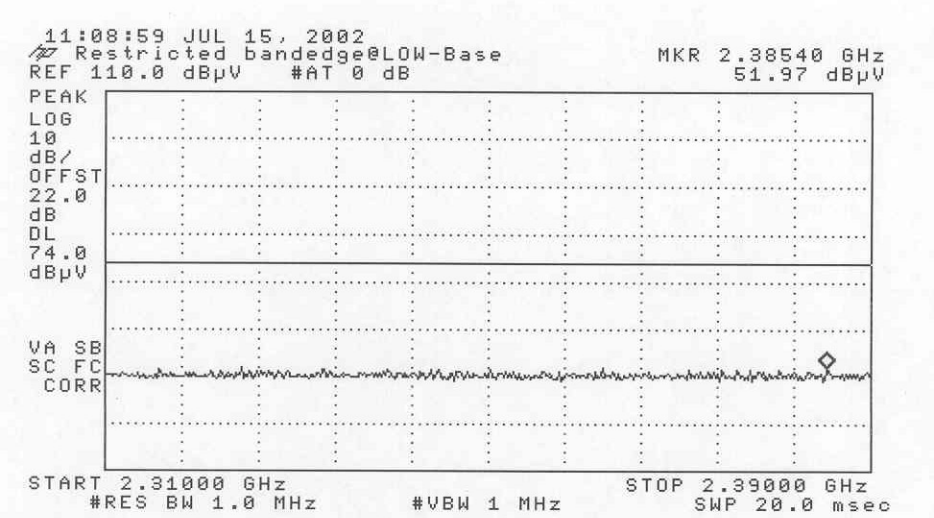
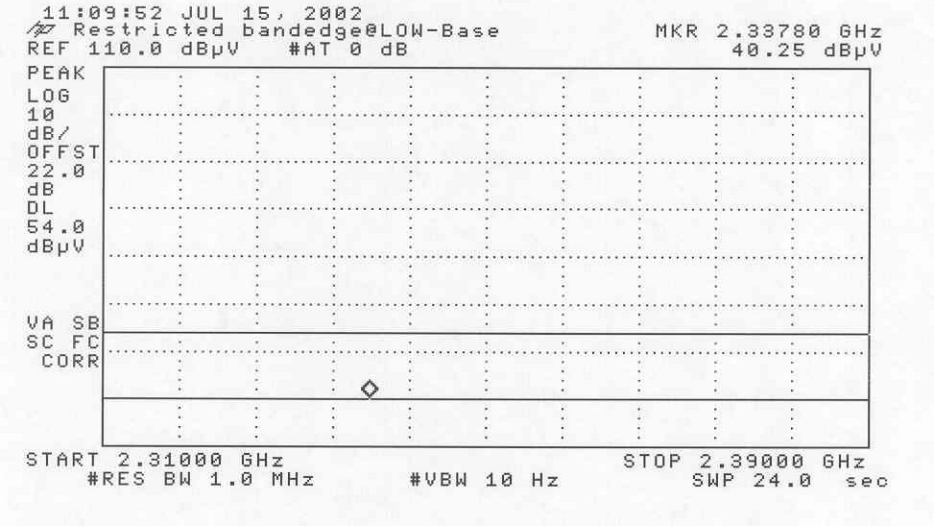
RESTRICTED BANDEDGE: 2310 – 2390 MHz and 2483.5 – 2500 MHz

BOTTOM BANDEDGE @ LOW CHANNEL



Peak measurement



Average measurement

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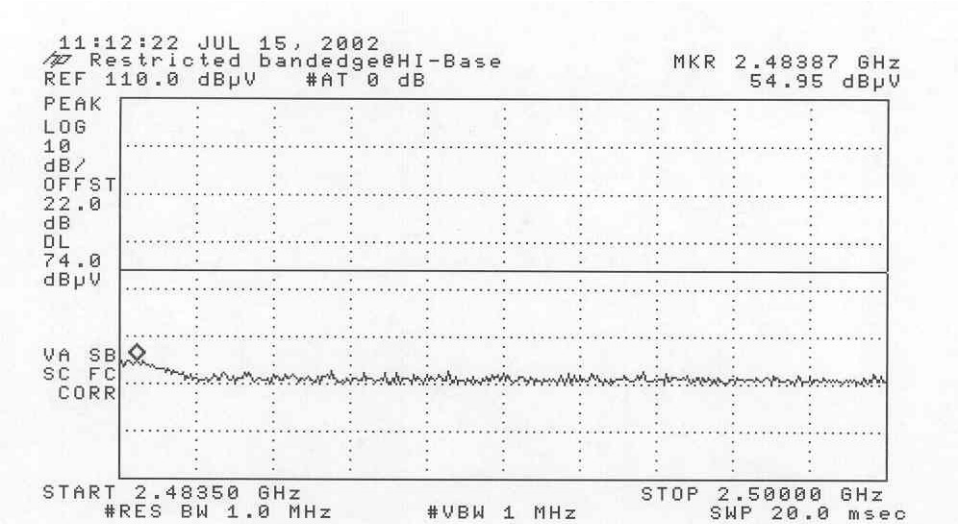
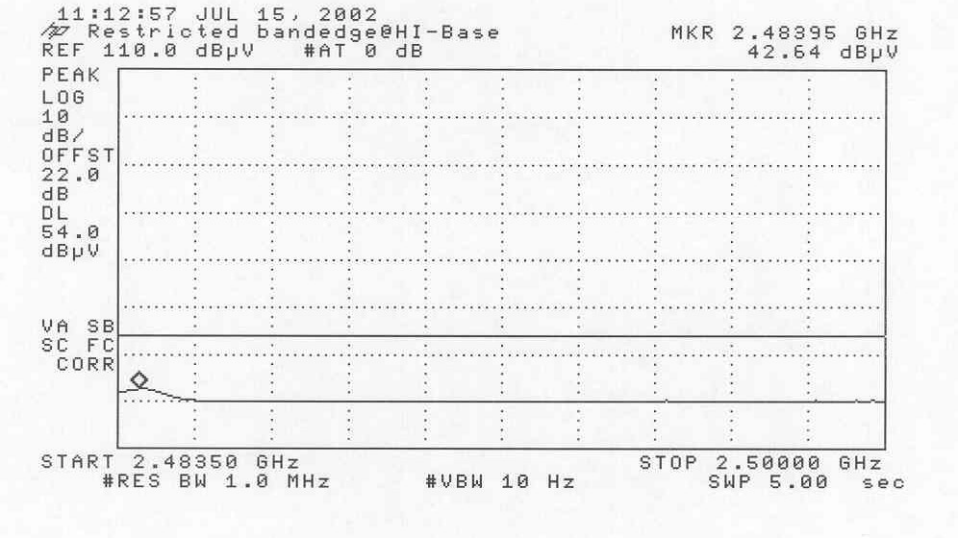
TOP BANDEDGE @ HIGH CHANNEL



Peak measurement



Average measurement

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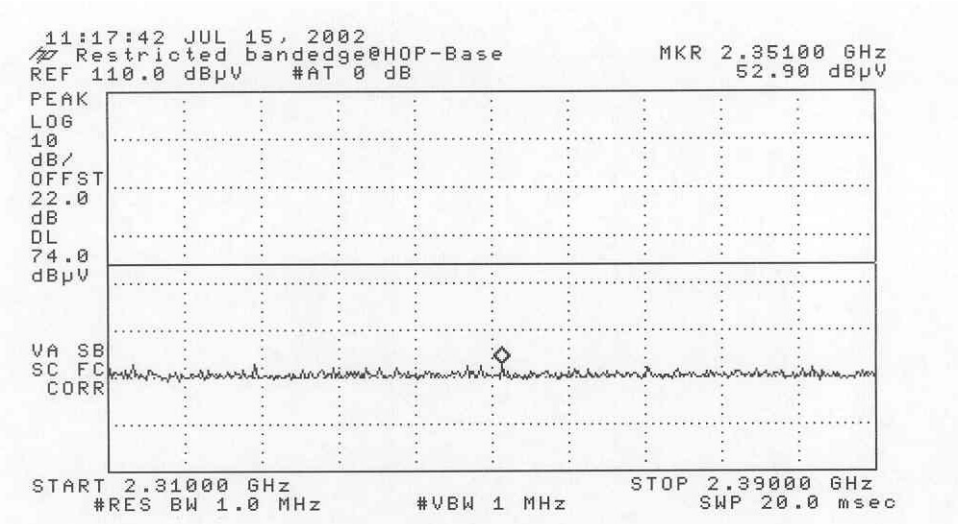
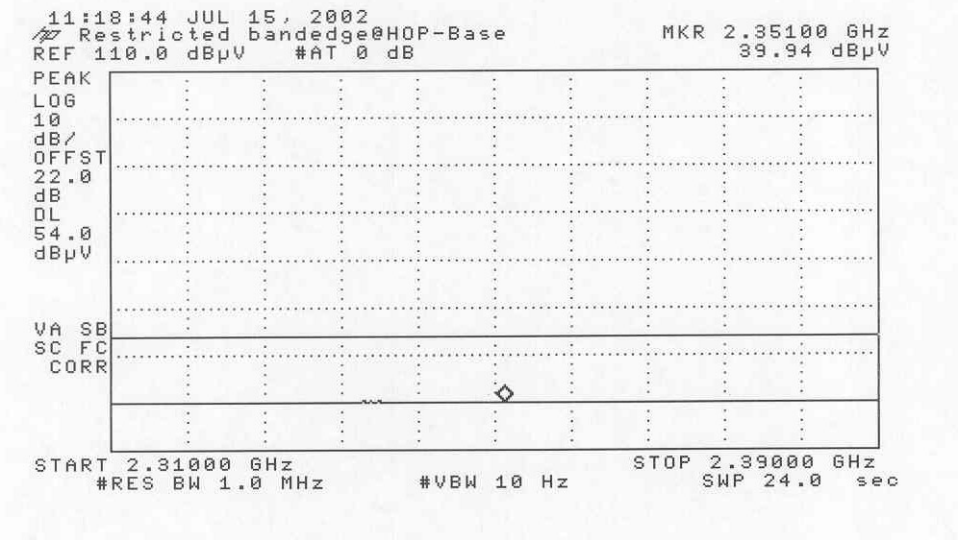
BOTTOM BANDEDGE @ HOPPING CHANNEL



Peak measurement



Average measurement

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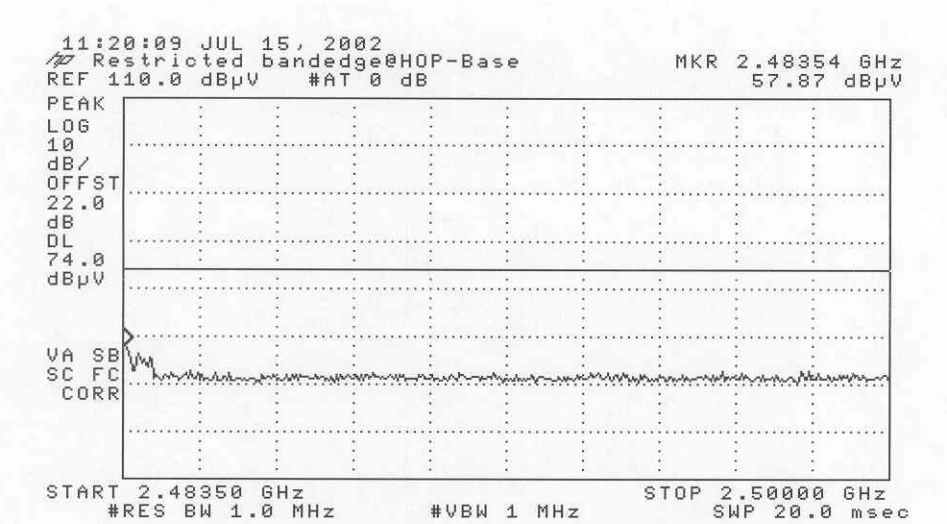
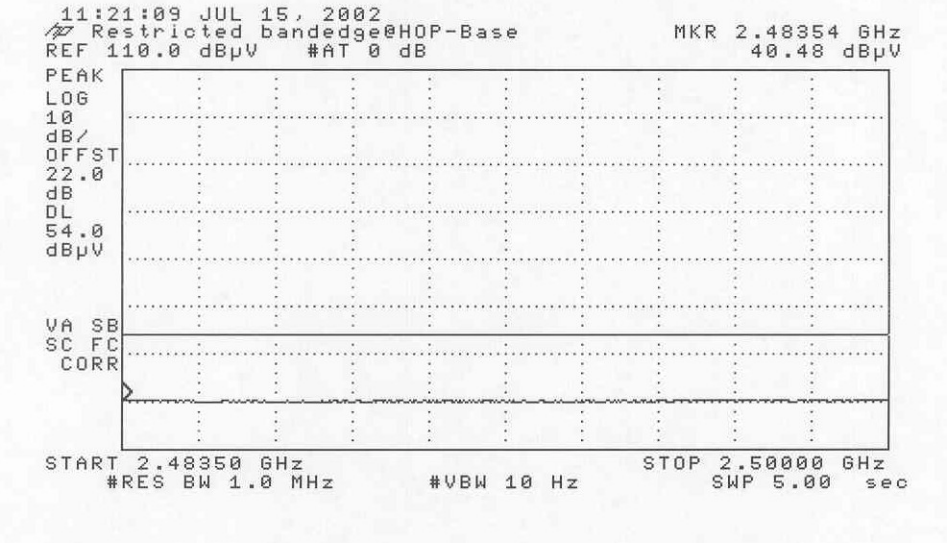
TOP BANDEDGE @ HOPPING CHANNEL



Peak measurement



Average measurement

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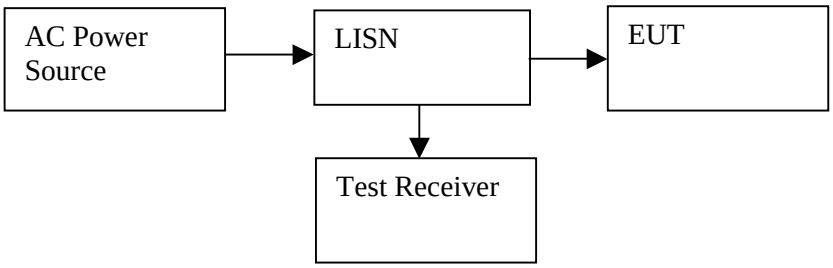
9.10. POWER LINE CONDUCTED EMISSION

TEST SETUP

Detector Function Setting of Test Receiver

Frequency Range (MHz)	Detector Function	Resolution Bandwidth	Video Bandwidth
450 KHz to 30 MHz	☐ Peak ☒ Quasi Peak	☒ 10 KHz	☒ 10 KHz



TEST PROCEDURE

1. The EUT was placed on a wooden table 80 cm above the horizontal ground plane and 40 cm away from the vertical ground plane. The EUT was set to transmit / receive in a continuous mode.

2. Conducted disturbance was measured between the phase lead and the ground, and between the neutral lead and the ground. The frequency 0.450 - 30 MHz was investigated.

RESULT

EUT does not required 15.207 test. EUT is a battery powered unit.

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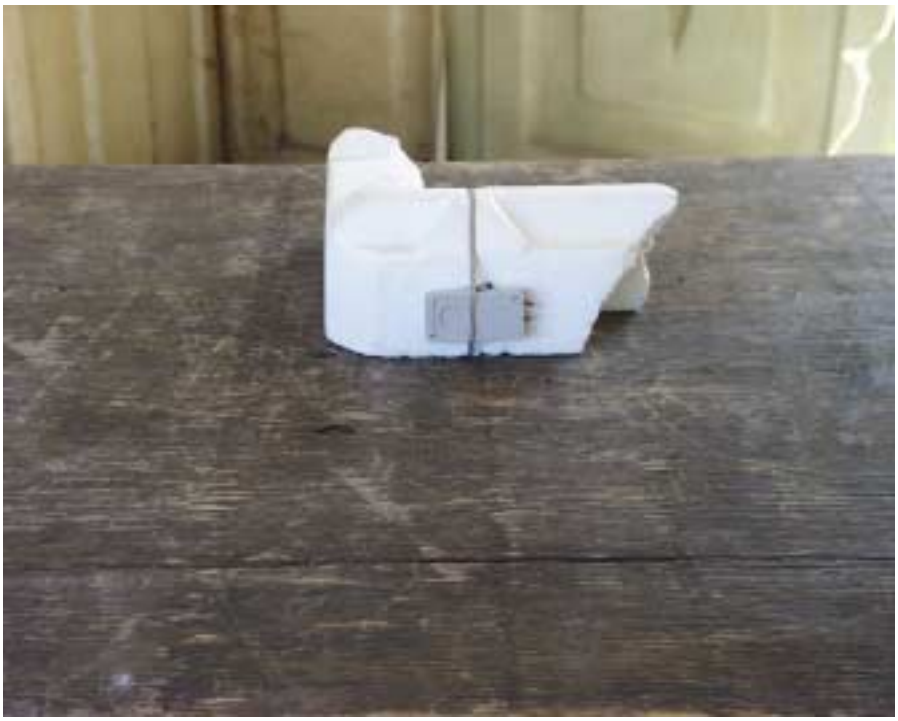
9.11. SETUP PHOTOS

Radiated Emission below 1 GHz measurement



Z axis (worst position)

Y axis

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X axis

Radiated Emission above 1 GHz measurement

Z axis (worst position)

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Y axis

X axis

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Radiated Emission above 18 GHz measurement @ Z axis (worst position)

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END OF REPORT

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