

5800 RADIATED EMISSIONS CONT.

Device Description:

Harmony Gateway Console

Radio Type:

Honeywell 5800 Short Range Radio Protocol, 344.94MHz Carrier, OOK Modulation

Number And Type Of Antennas:

Dual wire antennas integrated onto PCB.

Date:

09/24/2016

Tested By:

Christopher Locke

Approved By:

Andrew Roussin

Test Specification:

FCC Part 15, Sub-part C and RSS210, Issue 8

Test Methods:

ANSI C63.10-2013

Spectrum Analyzer Settings:***Quasi-Peak***

RBW/VBW = 120K/1M for < 1G.

Average, Peak

RBW/VBW = 100K/300K for < 1G.

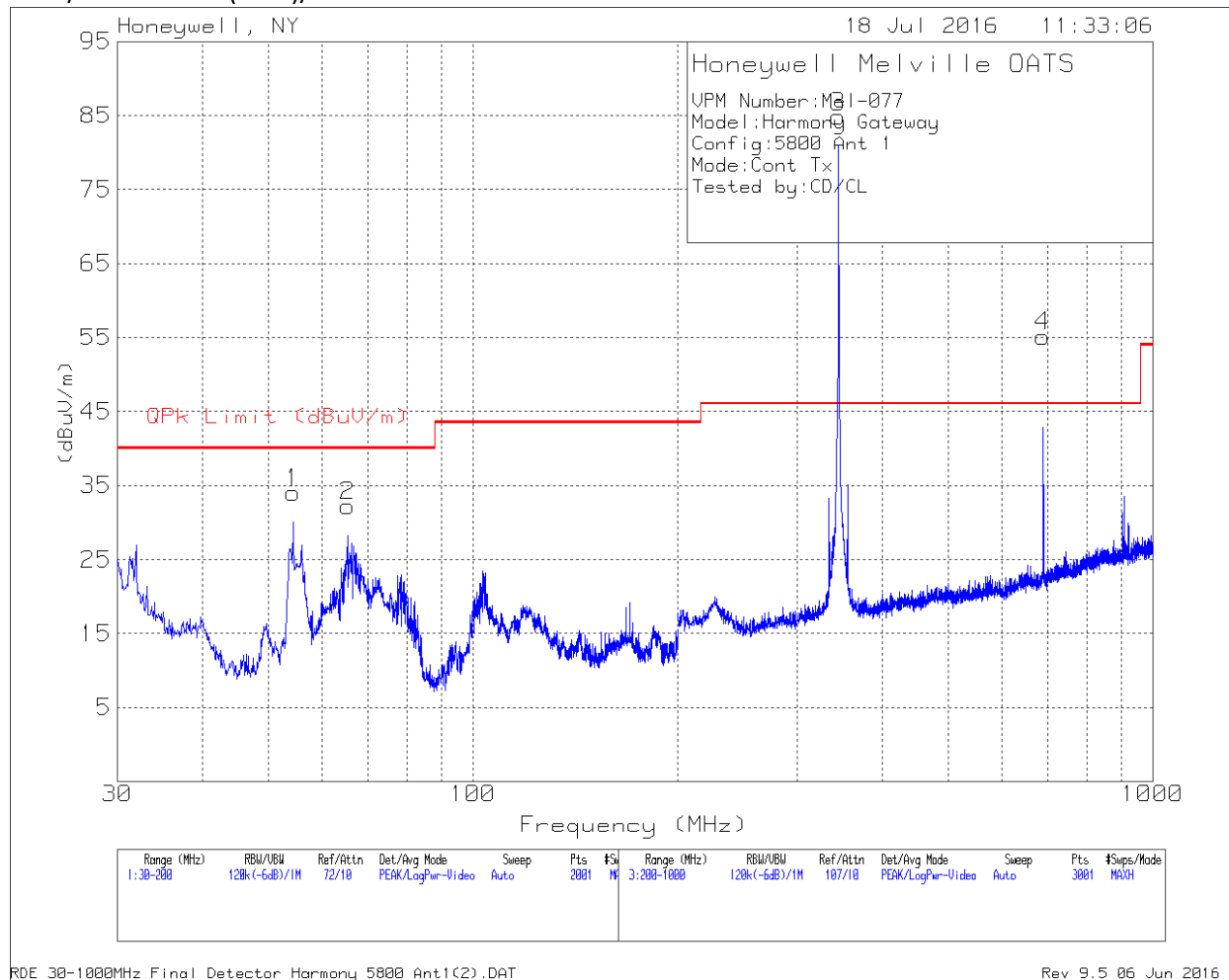
RBW/VBW = 1M/3M for > 1G.

5800 RADIATED EMISSIONS CONT.

ANT1 BELOW 1G

Note: This is a 3m pre-scan to locate peaks.

RBW/VBW = 120k (-6dB)/1M



RDE 30-1000MHz Final Detector Harmony_5800 Ant1(2).DAT

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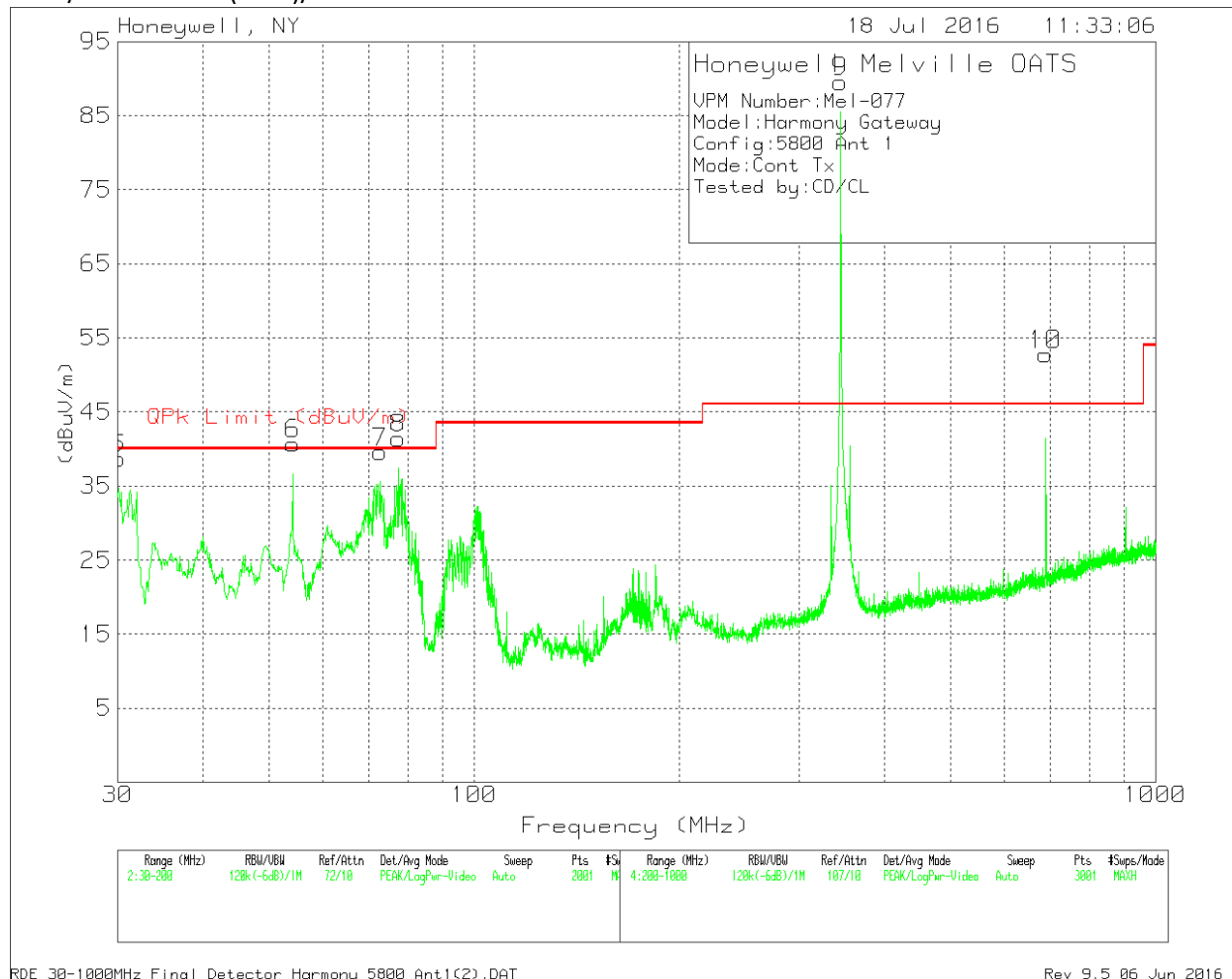
Horizontal Antenna

5800 RADIATED EMISSIONS CONT.

ANT1 BELOW 1G CONT.

Note: This is a 3m pre-scan to locate peaks.

RBW/VBW = 120k (-6dB)/1M



Vertical Antenna

5800 RADIATED EMISSIONS CONT.

ANT1 BELOW 1G CONT.

Radiated Emissions

Peak and Quasi-Peak Values

Frequency (MHz)	Meter Reading (dBuV)	Det	AF (dB/m) JB6 w/4dB pad	RDE #1	Pre Amp #1	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Pk. Limit (uV/m)	Pk. Limit (dBuV/m)	Av. Limit (uV/m)	Av. Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Pol	Rule Part ForLimit
30.1625	26.34	Qp	25.1	0.8	-29.1	23.14			100	40			-16.86	249	338	V	15.109(a)
53.9989	45.47	Qp	12	1.1	-29.0	29.57			100	40			-10.43	278	175	V	15.109(a)
54.3950	37.25	Qp	12	1.1	-29.0	21.35			100	40			-18.65	18	400	H	15.109(a)
65.3600	30.31	Pk	12.1	1.2	-9.5 (1m C.F., not pre-amp)	34.11 *			100	40			-5.89	192	385	H	15.109(a)
72.7550	42.59	Qp	12.1	1.2	-28.9	26.99			100	40			-13.01	259	107	V	15.109(a)
77.4300	39.68	Qp	12.2	1.3	-28.9	24.28			100	40			-15.72	272	216	V	15.109(a)
344.9296	93.71	Pk	19.2	2.9	-27.9	87.91			72890	97.25			-9.34	149	102	H	15.231(b)
344.9312	96.62	Pk	19.2	2.9	-27.9	90.82			72890	97.25			-6.43	242	145	V	15.231(b)
689.8577	52.65	Qp	24.8	4.7	-28.6	53.55						57.25	-3.7	159	124	H	15.231(b)
689.858	52.86	Pk	24.8	4.7	-28.6	53.76			7289	77.25			-23.49	88	134	V	15.231(b)
689.8615	54.09	Pk	24.8	4.7	-28.6	54.99			7289	77.25			-22.26	9	128	H	15.231(b)
689.8673	50.73	Qp	24.8	4.7	-28.6	51.63			7289	77.25	728.9	57.25	-5.62	66	145	V	15.231(b)

* Signifies measurement is from a 1m scan with:

- (a) Pre Amp #1 removed
- (b) a -9.5dB correction factor added
- (c) Pk detector rather than Qp detector.

Therefore the calculated value for this row is: $30.31 + 12.1 + 1.2 - 9.5(\text{C.F.}) = \mathbf{34.11\text{dB}}$.

Peak Values With Duty Factor Applied

Frequency (MHz)	Meter Reading (dBuV)	Det	AF (dB/m) JB6 w/4dB pad	RDE #1	Pre Amp #1	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Pk. Limit (uV/m)	Pk. Limit (dBuV/m)	Av. Limit (uV/m)	Av. Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Pol	Rule Part ForLimit
344.9296	93.71	Pk	19.2	2.9	-27.9	87.91	-20	67.91			7289	77.25	-9.34	149	102	H	15.231(b)
344.9312	96.62	Pk	19.2	2.9	-27.9	90.82	-20	70.82			7289	77.25	-6.43	242	145	V	15.231(b)
689.8580	52.86	Pk	24.8	4.7	-28.6	53.76	-20	33.76			728.9	57.25	-23.49	88	134	V	15.231(b)
689.8615	54.09	Pk	24.8	4.7	-28.6	54.99	-20	34.99			728.9	57.25	-22.26	9	128	H	15.231(b)

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

Qp - Quasi-Peak detector

Av - Average detection

RDE 30-1000MHz Final Detector Harmony_5800 Ant1(2).DAT

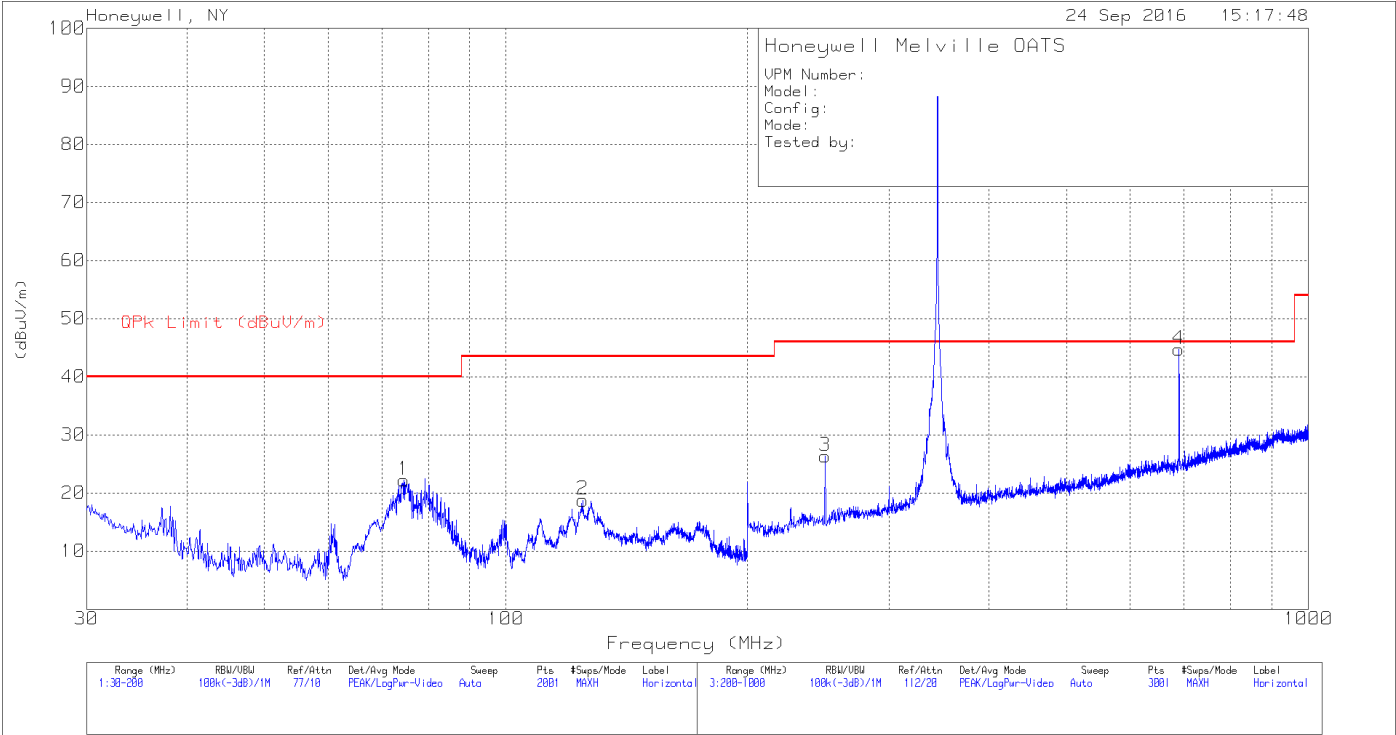
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5800 RADIATED EMISSIONS CONT.

ANT2 BELOW 1G

Note: This is a 3m pre-scan to locate peaks.

RBW/VBW = 100k (-6dB)/1M



Harmony_5800_Ant2(uAuxEqOFF & New Cable).DAT

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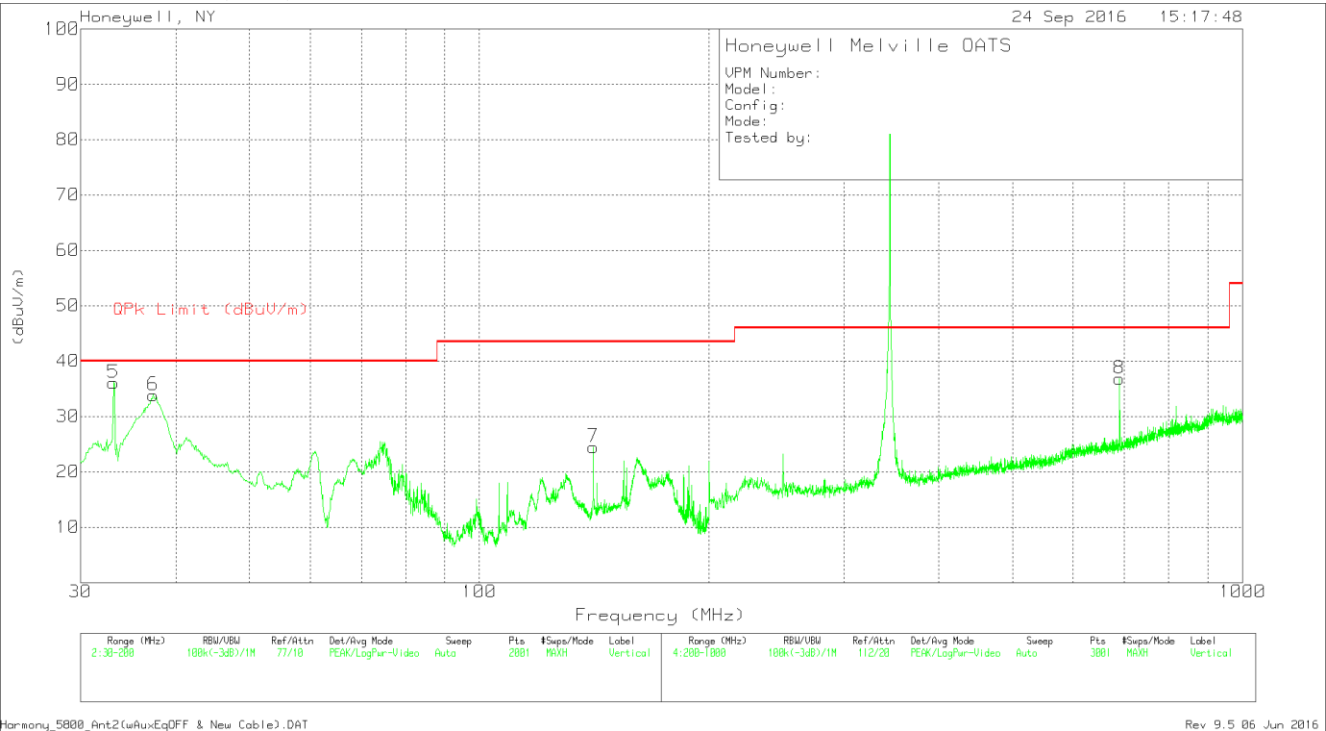
Horizontal Antenna

5800 RADIATED EMISSIONS CONT.

ANT2 BELOW 1G CONT.

Note: This is a 3m pre-scan to locate peaks.

RBW/VBW = 100k (-6dB)/1M



Vertical Antenna

5800 RADIATED EMISSIONS CONT.

ANT2 BELOW 1G CONT.**Peak and Quasi-Peak Values**

Frequency (MHz)	Meter Reading (dBuV)	Det	AF [dB/m] J86 w/4dB pad	Pre Amp #1	RDE #1	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Pk. Limit (uV/m)	Pk. Limit (dBuV/m)	Av. Limit (uV/m)	Av. Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	Rule Part For Limit
30.68	27.11	Qp	25.3	-29.1	0.8	24.11			100	40			-15.89	24	366	V	15.109(a)
54.3284	42.11	Qp	12	-29	1.1	26.21			100	40			-13.79	260	358	H	15.109(a)
54.3724	47.66	Qp	12	-29	1.1	31.76			100	40			-8.24	306	234	V	15.109(a)
78.365	40.21	Qp	12	-28.9	1.3	24.61			100	40			-15.39	230	167	V	15.109(a)
344.9276	89.90	Pk	19.2	-27.9	2.9	84.10			72890	97.25			-13.15	0	102	H	15.231(b)
344.9276	89.83	Av	19.2	-27.9	2.9	84.03								0	102	H	15.231(b)
344.9276	88.02	Pk	19.2	-27.9	2.9	82.22			72890	97.25			-15.03	255	124	V	15.231(b)
344.9276	87.99	Av	19.2	-27.9	2.9	82.19								255	124	V	15.231(b)
689.8481	30.33	Qp	24.8	-28.6	4.7	31.23					728.9	57.25	-26.02	263	244	V	15.231(b)
689.8583	33.48	Qp	24.8	-28.6	4.7	34.38					728.9	57.25	-22.87	163	149	H	15.231(b)
689.8588	39.94	Pk	24.8	-28.6	4.7	40.84			7289	77.25			-36.41	6	232	H	15.231(b)
689.8588	37.67	Av	24.8	-28.6	4.7	38.57								6	232	H	15.231(b)
689.8596	40.35	Pk	24.8	-28.6	4.7	41.25			7289	77.25			-36.00	98	135	V	15.231(b)
689.8596	37.52	Av	24.8	-28.6	4.7	38.42								98	135	V	15.231(b)
905.6769	38.25	Qp	27	-27.6	5.5	33.65*					200	46.02	-12.37	89	396	V	15.109(a)

* Signifies measurement is from a 1m scan with the 4 dB pad replaced with a 5.5dB RDE factor, and a -9.5 dB distance correction factor added. Therefore corrected value for this row is: $38.25+27-27.6+5.5-9.5 = 33.65\text{dB}$.

Peak Values With Duty Factor Applied

Frequency (MHz)	Meter Reading (dBuV)	Det	AF [dB/m] J86 w/4dB pad	Pre Amp #1	RDE #1	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Pk. Limit (uV/m)	Pk. Limit (dBuV/m)	Av. Limit (uV/m)	Av. Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	Rule Part For Limit
344.9276	89.90	Pk	19.2	-27.9	2.9	84.1	-20	64.1			7289	77.25	-13.15	0	102	H	15.231(b)
344.9276	88.02	Pk	19.2	-27.9	2.9	82.22	-20	62.22			7289	77.25	-15.03	255	124	V	15.231(b)
689.8588	39.94	Pk	24.8	-28.6	4.7	40.84	-20	20.84			728.9	57.25	-36.41	6	232	H	15.231(b)
689.8596	40.35	Pk	24.8	-28.6	4.7	41.25	-20	21.25			728.9	57.25	-36.00	98	135	V	15.231(b)

Radiated Emissions

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

Pk - Peak detector

Qp - Quasi-Peak detector

Av - Average detection

* not saved *

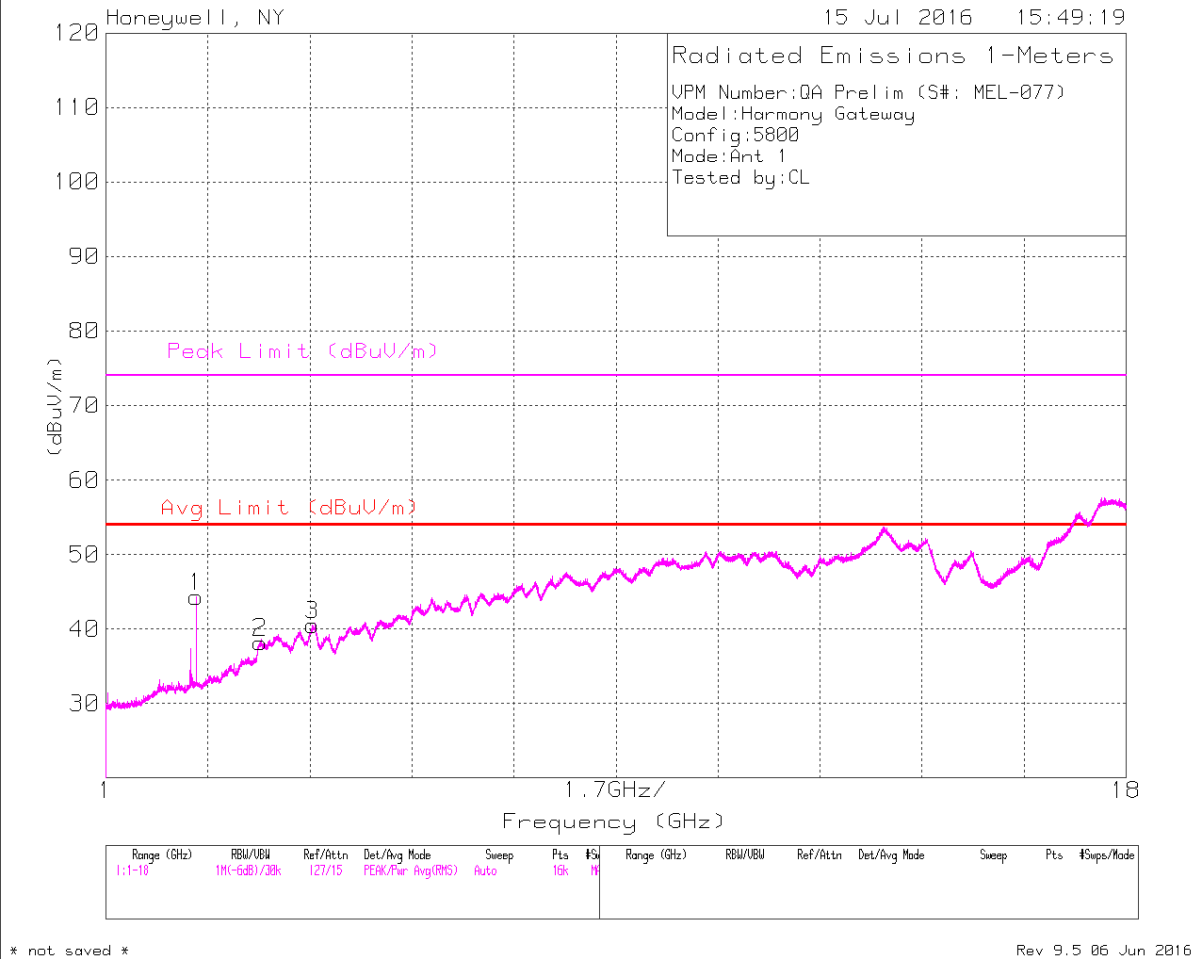
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5800 RADIATED EMISSIONS CONT.

ANT1 ABOVE 1G

Note: This is a 1m pre-scan to locate peaks. It has 3m distance correction factored in to the measured values.

RBW/VBW = 1M (-6dB)/30k



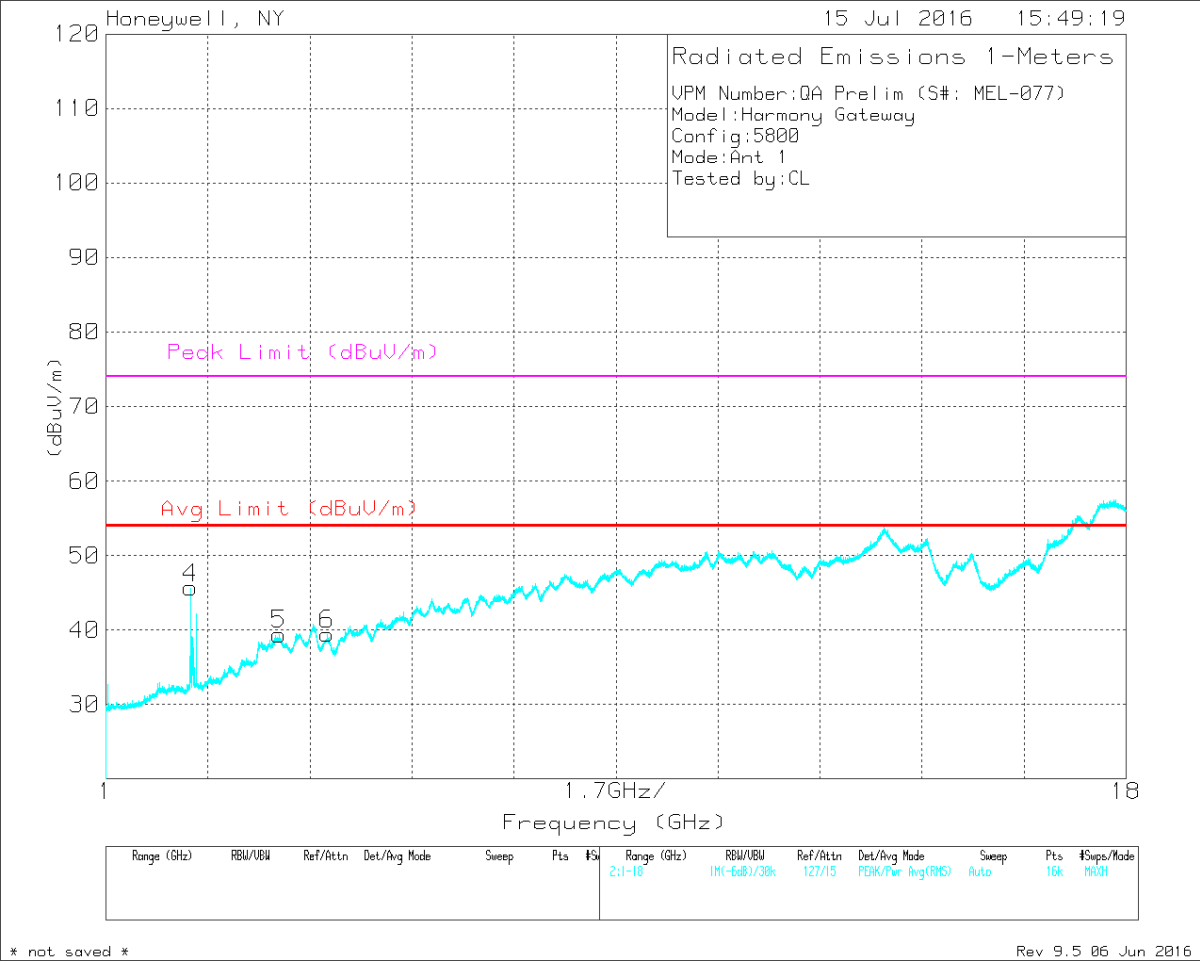
Horizontal Antenna

5800 RADIATED EMISSIONS CONT.

ANT1 ABOVE 1G CONT

Note: This is a 1m pre-scan to locate peaks. It has 3m distance correction factored in to the measured values.

RBW/VBW = 1M (-6dB)/30k



Vertical Antenna

5800 RADIATED EMISSIONS CONT.

ANT1 ABOVE 1G CONT

Radiated Emissions

Peak Values

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m] Horn#1	Above 1GHz Pre Amp On	SMA Cable Factors	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Avg Limit (uV/m)	Avg Limit (dBuV/m)	Peak Limit (dBuV/m)	Peak Limit (dBuV/m)	Avg Margin (dB)	Pk Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	Rule Part For Limit
* 1.035	51.66	PK2	24.1	-40.8	3.4	38.36					5000	73.98		-35.62	350	115	H	15.205
* 1.035	60.5	PK2	24.1	-40.8	3.4	47.2					5000	73.98		-26.78	142	104	V	15.205
* 1.38	52.02	PK2	25.2	-42.2	3.7	38.72					5000	73.98		-35.26	128	147	H	15.205
* 1.38	51.46	PK2	25.2	-42.2	3.7	38.16					5000	73.98		-35.82	300	375	V	15.205
1.724	59.45	PK2	26.5	-42.8	4.1	47.25					7289	77.25		-30.00	147	396	V	15.231
1.725	51.54	PK2	26.5	-42.8	4.1	39.34					7289	77.25		-37.91	43	106	H	15.231
2.07	51.72	PK2	28	-43.6	4.4	40.52					7289	77.25		-36.73	292	223	H	15.231
2.07	51.74	PK2	28	-43.6	4.4	40.54					7289	77.25		-36.71	313	182	V	15.231
2.414	66.71	PK2	28.6	-44.3	4.8	55.81					7289	77.25		-21.44	321	307	H	15.231
2.414	67.64	PK2	28.6	-44.3	4.8	56.74					7289	77.25		-20.51	204	338	V	15.231
2.414	71.07	PK2	28.6	-44.3	4.8	60.17					7289	77.25		-17.08	356	318	V	15.231
2.5	51.98	PK2	28.7	-44.4	5	41.28					7289	77.25		-35.97	250	146	H	15.231
* 2.759	51.64	PK2	29.4	-44.7	4.8	41.14					5000	73.98		-32.84	235	113	H	15.205
* 2.76	51.86	PK2	29.4	-44.7	4.8	41.36					5000	73.98		-32.62	149	144	V	15.205
3.104	52.52	PK2	30.7	-44.7	5	43.52					7289	77.25		-33.73	58	271	H	15.231
3.104	52.2	PK2	30.7	-44.7	5	43.2					7289	77.25		-34.05	186	366	V	15.231
3.45	52.67	PK2	31.2	-44.5	5.3	44.67					7289	77.25		-32.58	241	236	H	15.231
3.45	52.11	PK2	31.2	-44.5	5.3	44.11					7289	77.25		-33.14	163	105	V	15.231
* 3.571	52.37	PK2	31.5	-42.5	5.4	46.77					5000	73.98		-27.21	277	199	H	15.205
* 3.891	51.95	PK2	32.5	-42.5	5.6	47.55					5000	73.98		-26.43	236	171	V	15.205
4.443	51.45	PK2	32.1	-40.5	5.6	48.65					7289	77.25		-28.60	156	275	H	15.231
* 4.691	51.61	PK2	32.5	-43	6.2	47.31					5000	73.98		-26.67	313	266	V	15.205

Peak Values With Duty Factor Applied

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m] Horn#1	Above 1GHz Pre Amp On	SMA Cable Factors	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Avg Limit (uV/m)	Avg Limit (dBuV/m)	Peak Limit (dBuV/m)	Peak Limit (dBuV/m)	Avg Margin (dB)	Pk Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	Rule Part For Limit
* 1.035	51.66	PK2	24.1	-40.8	3.4	38.36	-20	18.36	500	53.98			-35.62		350	115	H	15.205
* 1.035	60.5	PK2	24.1	-40.8	3.4	47.2	-20	27.2	500	53.98			-26.78		142	104	V	15.205
* 1.38	52.02	PK2	25.2	-42.2	3.7	38.72	-20	18.72	500	53.98			-35.26		128	147	H	15.205
* 1.38	51.46	PK2	25.2	-42.2	3.7	38.16	-20	18.16	500	53.98			-35.82		300	375	V	15.205
1.724	59.45	PK2	26.5	-42.8	4.1	47.25	-20	27.25	728.9	57.25			-30.00		147	396	V	15.231
1.725	51.54	PK2	26.5	-42.8	4.1	39.34	-20	19.34	728.9	57.25			-37.91		43	106	H	15.231
2.07	51.72	PK2	28	-43.6	4.4	40.52	-20	20.52	728.9	57.25			-36.73		292	223	H	15.231
2.07	51.74	PK2	28	-43.6	4.4	40.54	-20	20.54	728.9	57.25			-36.71		313	182	V	15.231
2.414	66.71	PK2	28.6	-44.3	4.8	55.81	-20	35.81	728.9	57.25			-21.44		321	307	H	15.231
2.414	67.64	PK2	28.6	-44.3	4.8	56.74	-20	36.74	728.9	57.25			-20.51		204	338	V	15.231
2.414	71.07	PK2	28.6	-44.3	4.8	60.17	-20	40.17	728.9	57.25			-17.08		356	318	V	15.231
2.5	51.98	PK2	28.7	-44.4	5	41.28	-20	21.28	728.9	57.25			-35.97		250	146	H	15.231
* 2.759	51.64	PK2	29.4	-44.7	4.8	41.14	-20	21.14	500	53.98			-32.84		235	113	H	15.205
* 2.76	51.86	PK2	29.4	-44.7	4.8	41.36	-20	21.36	500	53.98			-32.62		149	144	V	15.205
3.104	52.52	PK2	30.7	-44.7	5	43.52	-20	23.52	728.9	57.25			-33.73		58	271	H	15.231
3.104	52.2	PK2	30.7	-44.7	5	43.2	-20	23.2	728.9	57.25			-34.05		186	366	V	15.231
3.45	52.67	PK2	31.2	-44.5	5.3	44.67	-20	24.67	728.9	57.25			-32.58		241	236	H	15.231
3.45	52.11	PK2	31.2	-44.5	5.3	44.11	-20	24.11	728.9	57.25			-33.14		163	105	V	15.231
* 3.571	52.37	PK2	31.5	-42.5	5.4	46.77	-20	26.77	500	53.98			-27.21		277	199	H	15.205
* 3.891	51.95	PK2	32.5	-42.5	5.6	47.55	-20	27.55	500	53.98			-26.43		236	171	V	15.205
4.443	51.45	PK2	32.1	-40.5	5.6	48.65	-20	28.65	728.9	57.25			-28.60		156	275	H	15.231
* 4.691	51.61	PK2	32.5	-43	6.2	47.31	-20	27.31	500	53.98			-26.67		313	266	V	15.205

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

* not saved *

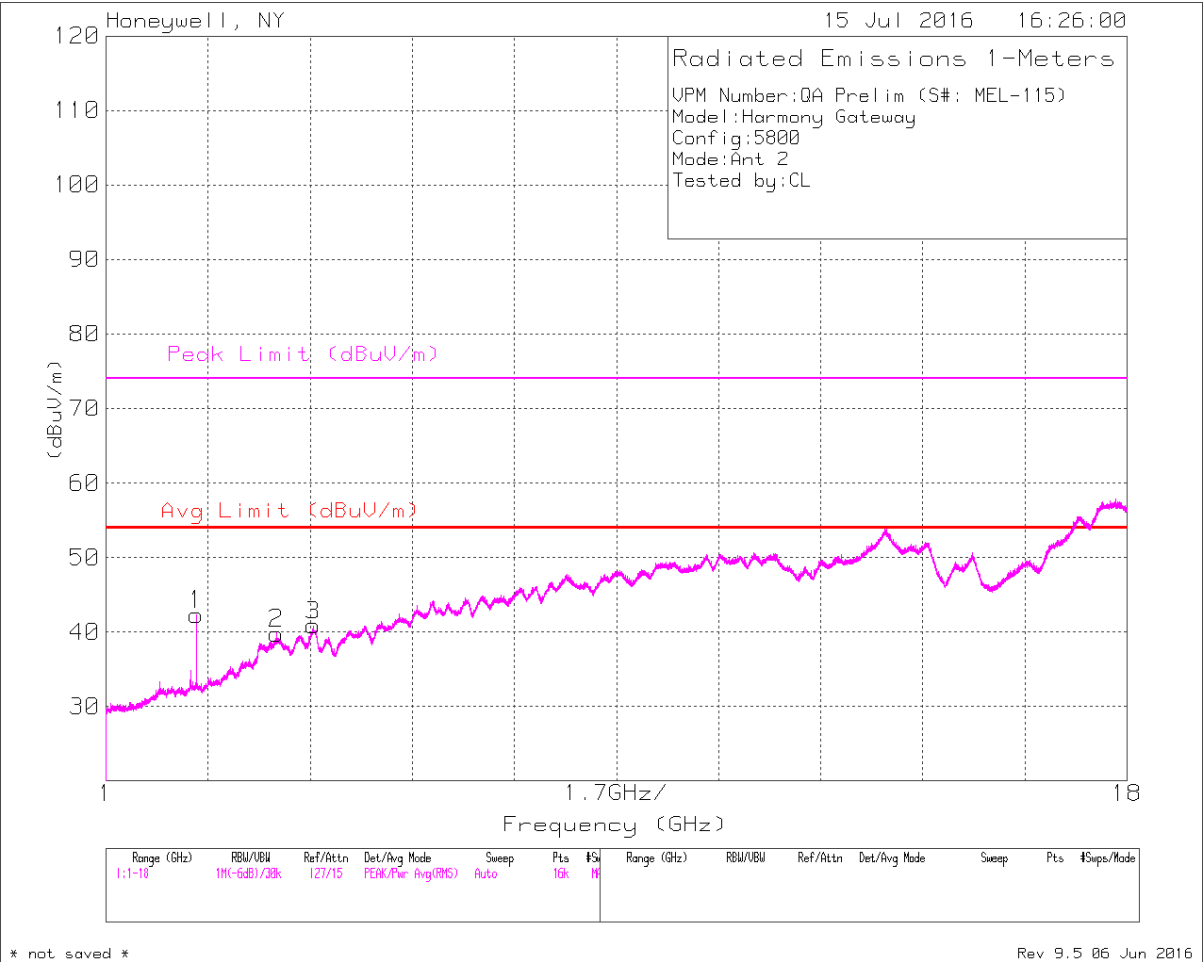
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5800 RADIATED EMISSIONS CONT.

ANT2 ABOVE 1G

Note: This is a 1m pre-scan to locate peaks. It has 3m distance correction factored in to the measured values.

RBW/VBW = 1M (-6dB)/30k



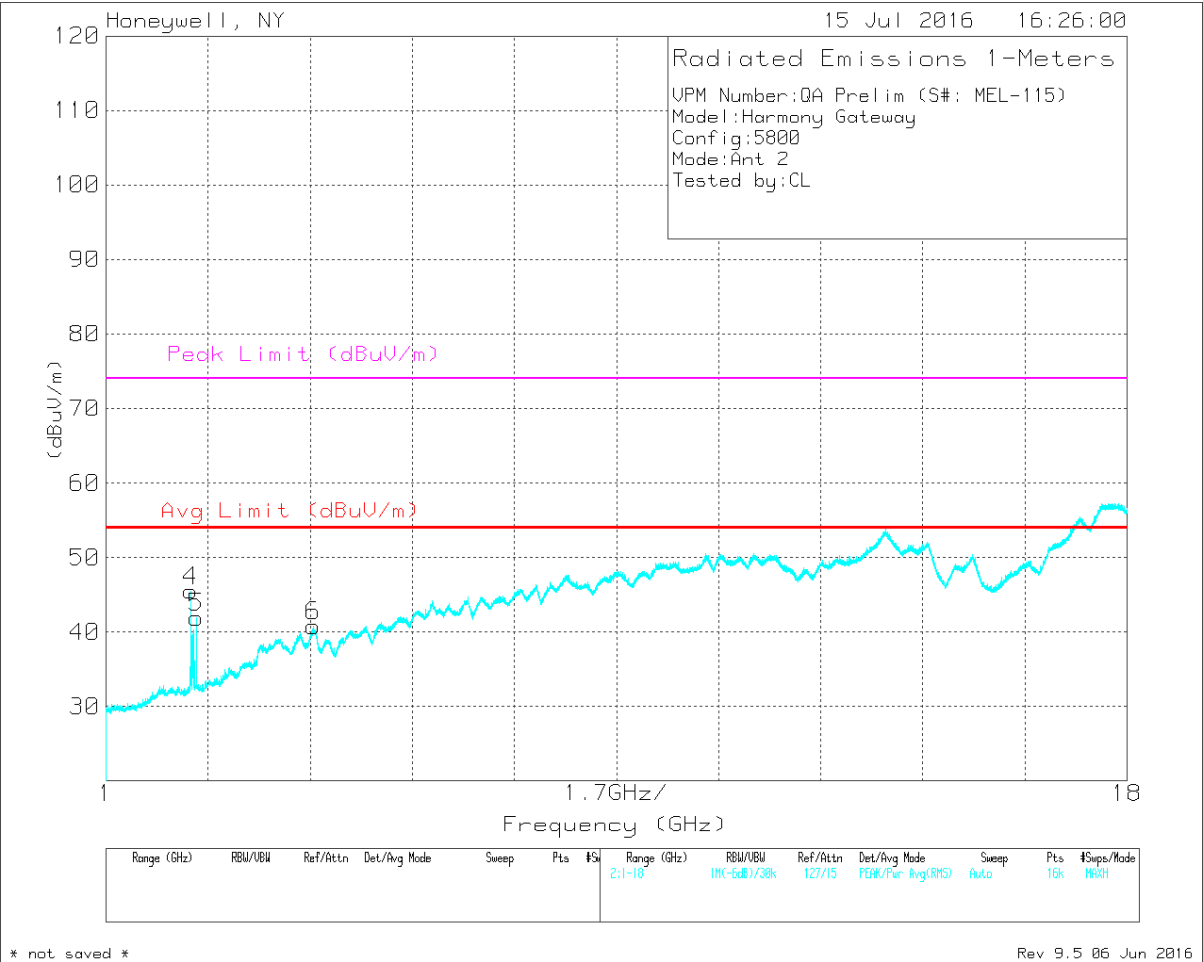
Horizontal Antenna

5800 RADIATED EMISSIONS CONT.

ANT2 ABOVE 1G CONT

Note: This is a 1m pre-scan to locate peaks. It has 3m distance correction factored in to the measured values.

RBW/VBW = 1M (-6dB)/30k



Vertical Antenna

5800 RADIATED EMISSIONS CONT.

ANT2 ABOVE 1G CONT

Radiated Emissions

Peak and Quasi-Peak Values

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m] Horn#1	Above 1GHz Pre Amp On	SMA Cable Factors	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Avg Limit (uV/m)	Avg Limit (dBuV/m)	Pk Limit (uV/m)	Pk Limit (dBuV/m)	Avg Margin (dB)	Pk Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	Rule Part For Limit
2.5	52.19	PK2	28.7	-44.4	4.9	41.39					7289	77.2534		-35.86	281	230	H	15.231
* 3.838	52.08	PK2	32.4	-42.3	5.4	47.58					5000	73.9794		-26.40	230	382	H	15.205
4.457	51.78	PK2	32.1	-40.5	5.7	49.08					7289	77.2534		-35.86	151	136	H	15.231

Peak Values With Duty Factor Applied

Frequency (GHz)	Meter Reading (dBuV)	Det	AF [dB/m] Horn#1	Above 1GHz Pre Amp On	SMA Cable Factors	Corrected Reading (dBuV/m)	DC Corr (dB)	Pulsed Avg (dB)	Avg Limit (uV/m)	Avg Limit (dBuV/m)	Pk Limit (uV/m)	Pk Limit (dBuV/m)	Avg Margin (dB)	Pk Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity	Rule Part For Limit
2.5	52.19	PK2	28.7	-44.4	4.9	41.39	-20	21.39	728.9	57.2534			-35.86		281	230	H	15.231
* 3.838	52.08	PK2	32.4	-42.3	5.4	47.58	-20	27.58	500	53.9794			-26.40		230	382	H	15.205
4.457	51.78	PK2	32.1	-40.5	5.7	49.08	-20	29.08	728.9	57.2534			-28.17		151	136	H	15.231

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

* not saved *

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