



Prüfbericht - Nr.: 01200140 001		Seite 1 von 24	
<i>Test Report No.:</i>		<i>Page 1 of 24</i>	
Auftraggeber: <i>Client:</i>		Honeywell Inc Automation and Control Solutions Honeywell International 1985 Douglas Drive North Dock 1 Golden Valley, MN 55422 USA	
Gegenstand der Prüfung: <i>Test item:</i>		Low Cost ISA100 Radio Module (51306799-001)	
Bezeichnung: <i>Identification:</i>	Low Cost Radio Module (LCRM)	Serien-Nr.: <i>Serial No.</i>	Engineering Sample
Wareneingangs-Nr.: <i>Receipt No.:</i>	1403011599	Eingangsdatum: <i>Date of receipt:</i>	09-09-2010
Prüfort: <i>Testing location:</i>		Refer Page 4 of 24 for test facilities	
Prüfgrundlage: <i>Test specification:</i>		FCC 15, Subpart C ANSI 63.10:2009	
Prüfergebnis: <i>Test Result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>	
Prüflaboratorium: <i>Testing Laboratory:</i>		TÜV Rheinland (India) Pvt. Ltd. 82/A, 3rd Main, West Wing, Electronic City Phase 1 Hosur Road, Bangalore – 560 100, India FCC Registration No.: 176555	
geprüft / tested by:		kontrolliert / reviewed by:	
05.12.2012	Vinay N Engineer	07.12.2012	Raghavendra Kulkarni
			
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
	Unterschrift <i>Signature</i>		Unterschrift <i>Signature</i>
Sonstiges / Other Aspects: FCC ID: S5751306799			
Abkürzungen:		Abbreviations:	
P(ass) = entspricht Prüfgrundlage		P(ass) = passed	
F(ail) = entspricht nicht Prüfgrundlage		F(ail) = failed	
N/A = nicht anwendbar		N/A = not applicable	
N/T = nicht getestet		N/T = not tested	
<p>Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.</p> <p><i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i></p>			

www.tuv.com

Test Result Summary

Clause	Test Item	Result
15.209	Spurious Radiated Emissions	Pass

Note:

The Module is certified for FCC with FCC ID: S5751306799. With respect to the changes made in the module, Class 2 permissive change is been applied and hence only radiated tests are performed.

Content

List of Test and Measurement Instruments	4
General Product Information	5
Product Function and Intended Use	5
Ratings and System Details.....	5
Operation Descriptions	6
Test Set-up and Operation Mode	7
Principle of Configuration Selection	7
Test Operation and Test Software	7
Special Accessories and Auxiliary Equipment	7
Countermeasures to achieve EMC Compliance	7
Table of carrier frequencies.....	7
Antennas Used	8
Test Methodology	9
Radiated Emission Test	9
Test Results.....	10
Spurious Radiated Emissions Section 15.209	10
Appendix 1: Test Setup Photo	
Appendix 2: EUT External Photo	
Appendix 3: EUT Internal Photo	
Appendix 4: Label and Label Location	
Appendix 5: Block Diagram	
Appendix 6: Specification of EUT	
Appendix 7: Schematic Diagrams	
Appendix 8: Bill of Material	
Appendix 9: User Manual	
Appendix 10: Maximum Permissible Exposure Information	

www.tuv.com

List of Test and Measurement Instruments

TUV Rheinland (India) Pvt. Ltd. , Bangalore

Equipment	Manufacturer	Model	S/N	Calibration Due Date
EMI Test Receiver	Rohde &Schwarz	ESU 40	100288	21.06.2013
Hybrid Log Periodic antenna	ETS Lindgren	3142D	00081354	26.06.2013
Broadband Horn Antenna	Frankonia	HAX-18	HAX18-802	23.03.2013
Emission Horn Antenna	ETS Lindgren	116706	00107323	24-08-2013
Active Loop Antenna	Frankonia	LAX-10	LAX-10-800	11-04-2013
Spectrum Analyzer	Agilent Technologies	E4407B	US41192772	17.03.2013

Testing Facilities:

- 1) TUV Rheinland (India) Private Limited
No. 108, West Wing
Electronic city Phase I
Bangalore – 560100

General Product Information

Product Function and Intended Use

The Low Cost ISA100 Radio Module is a easy to use wireless platform solution for enabling wireless communication in 2.4GHz band over 802.15.4 physical layer. This is ISA100 compliant radio transceiver capable of enabling current wired units to be integrated into the 802.15.4 networks

Ratings and System Details

Operating Frequency	2405-2475 MHz
No. of channel	15
Channel Spacing	5MHz
Transmitted Power	-7 to +20dBm (Max) Adjusted as per Antenna gain used given in Table 1
Modulation	DSSS
Data Rate	250Kbps
Antenna Type	External
Number of antenna	10
Antenna Gain	As per Table 1
Supply Voltage	3.3 V DC
Dimensions	1.5 mm x 1.17 mm
Environmental	Operating temperature : -40°C to +85.5°C Relative Humidity : -5% to 95% (Non Condensing)

Test Conditions:

Voltage: 3.3 V DC

Environmental conditions:

Temperature: +23 ° C

RH: 62%

www.tuv.com

Operation Descriptions

Low Cost ISA100 Radio Module is 2.4GHz band 802.15.4 Radio. This module includes 16 Bit Microcontroller which is interfaced to a 802.15.4 compliant Radio Transceiver to provide Wireless communication over 15Channels of 2.4GHz band. The module also includes RF Power Amplifier and RF Low Noise Amplifier to enhance the range of Wireless Communications. The Module can communicate with the target boards through its connector over SPI. It can send out or receive, data - sent by or sent to, the target board through this SPI connection. Protocol specific Modulation/De-Modulation is done Microcontroller and the 802.15.4 packet is taken care by Radio Transceiver on the Module.

Test Set-up and Operation Mode

Principle of Configuration Selection

The test was performed under continuous transmission to obtain the maximum emissions.

Test Operation and Test Software

A keypad embedded on PCB was used to enable the continuous transmission and changing channels (low/mid/high) on the EUT for the tests in this report.

Special Accessories and Auxiliary Equipment

-

Countermeasures to achieve EMC Compliance

- None

Table of carrier frequencies

Frequency Band	Channel No.	Frequency (MHz)
2400-2483.5 MHz	01	2405
	02	2410
	03	2415
	04	2420
	05	2425
	06	2430
	07	2435
	08	2440
	09	2445
	10	2450
	11	2455
	12	2460
	13	2465
	14	2470
	15	2475

Antennas Used

Antenna Number	Make	Model	Antenna Gain (dBi)	Power Level Setting (dBm)
Antenna 1	Hyperlink	WHON511 – 0001	4.0	15
Antenna 2	Antenna Factor	ANT2.4OEMHSC002V1	2.1	15
Antenna 3	Antenna Factor	ANT2.4OEMHSC001V1	2.1	15
Antenna 4	Antenna Factor	ANT-DB1-VDP-RPS	3.0	15
Antenna 5	L-COM/Hyperlink	HG2405RD-RSP	5.5	11
Antenna 6	Centurion	MAF94152	-2.0	20
Antenna 7	L-COM/Hyperlink	HG2409RD-RSP	9.0	11
Antenna 8	Hyperlink	HGV-2409U	8.0	15
Antenna 9	L-COM/Hyperlink	HG2475U-RNJ	8.0	15
Antenna 10	Hyperlink	HG2414P-120	14.0	11
Antenna 11	LairdTech	RD2458-5-OTDR-NM	3.0	15
Antenna 12	LairdTech	OD24M-5	5.0	11
Antenna 13	L-Com	HG2402RDR-RSP	2.2	15

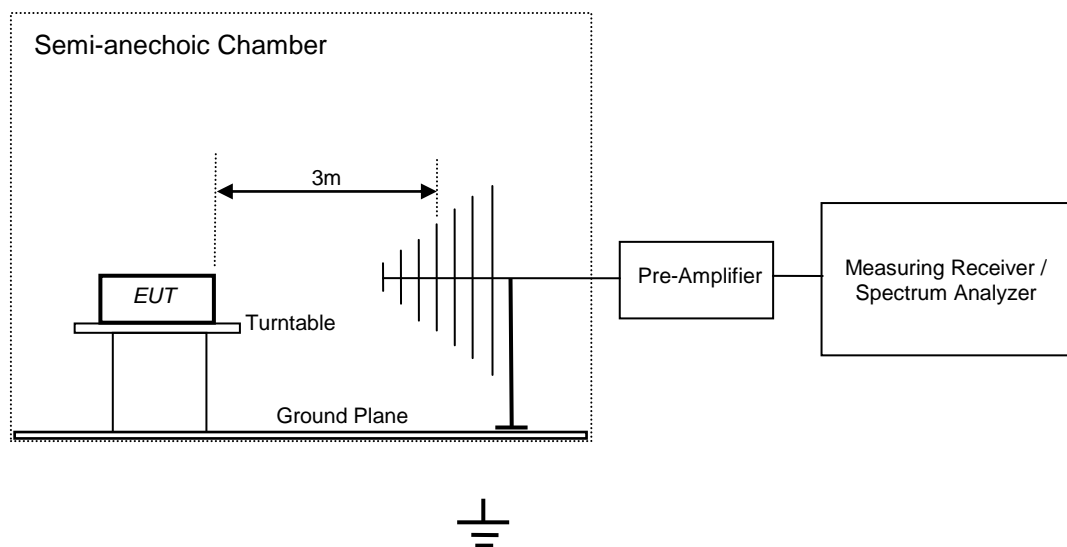
Table 1

Test Methodology

Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2001. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360° for obtaining the maximum emission. The height of the measuring antennas was scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000MHz was performed by horn antenna. The measurement below 30MHz was performed by loop antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded.



Test Results

Spurious Radiated Emissions

Section 15.209

Result

Pass

Test Specification	F CC 15.207
Test Method	ANSI C63.10-2009
Measurement Location	Semi Anechoic Chamber
Supply Voltage	3.3 Volt DC
Measuring Frequency Range	9kHz – 26GHz(Up to 10 th harmonic of the highest fundamental frequency)
Measuring Distance	3m
Detection	QP for frequency below 1GHz, Average for frequency above 1GHz
Requirement	The emission should not exceed the limits as mentioned in the table below

Limit for Radiated Emission of Section 15.209:

Frequency (MHz)	Field strength (μV/m)	Field strength (dBμV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * the limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 88,50 – 53.80, 53.80 – 43.00 and 49.5dBμV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Results**For Frequency below 1GHz**

Polarization	Frequency (MHz)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
H	31.11	21.92	40.00	-18.08
	56.96	23.62	40.00	-16.38
	78.88	25.44	40.00	-14.56
	82.47	26.34	40.00	-13.66
	105.36	23.44	43.50	-20.06
	105.36	24.00	43.50	-19.50
	359.02	34.64	46.00	-11.36
V	31.41	31.95	40.00	-8.05
	58.03	28.82	40.00	-11.18
	78.88	29.03	40.00	-10.97
	82.76	27.58	40.00	-12.42
	106.24	20.99	43.50	-22.51
	358.92	30.49	46.00	-15.51

www.tuv.com

For Frequency above 1GHz
Antenna 1

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	65.12	74.00	-8.88
		2351	48.97	54.00	-5.03
		2405	114.50	-	*
		2405	106.75	-	*
		4810	56.38	74.00	-17.62
		4810	48.63	54.00	-5.37
		7215	61.68	74.00	-12.32
		7215	51.09	54.00	-2.91
	H	2350	50.71	74.00	-23.29
		2350	42.96	54.00	-11.04
		2405	100.40	-	*
		2405	92.65	-	*
		4810	55.37	74.00	-18.63
		4810	47.62	54.00	-6.38
		7215	59.76	74.00	-14.24
		7215	51.23	54.00	-2.77
Mid	V	2440	114.10	-	*
		2440	106.35	-	*
		4880	54.67	74.00	-19.33
		4880	46.92	54.00	-7.08
		7320	60.07	74.00	-13.93
		7320	50.76	54.00	-3.24
	H	2440	96.55	-	*
		2440	88.80	-	*
		4880	53.80	74.00	-20.20
		4880	46.05	54.00	-7.95
		7320	60.66	74.00	-13.34
		7320	50.84	54.00	-3.16
High	V	2475	113.90	-	*
		2475	106.15	-	*
		2540	61.92	74.00	-12.08
		2540	51.19	54.00	-2.81
		4950	54.38	74.00	-19.62
		4950	46.63	54.00	-7.37
		7425	59.26	74.00	-14.74
		7425	51.51	54.00	-2.49
	H	2475	96.55	-	*
		2475	88.80	-	*
		2540	49.80	74.00	-24.20
		2540	42.05	54.00	-11.95
		4950	53.72	74.00	-20.28
		4950	45.97	54.00	-8.03
		7425	59.85	74.00	-14.15
		7425	50.23	54.00	-3.77

Antenna 2

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.49	74.00	-13.51
		2351	52.74	54.00	-1.26
		2405	109.74	-	*
		2405	101.99	-	*
		4810	55.69	74.00	-18.31
		4810	47.94	54.00	-6.06
		7215	62.23	74.00	-11.77
		7215	52.26	54.00	-1.74
	H	2351	57.54	74.00	-16.46
		2351	49.79	54.00	-4.21
		2405	103.45	-	*
		2405	95.70	-	*
		4810	57.14	74.00	-16.86
		4810	49.39	54.00	-4.61
		7215	61.00	74.00	-13.00
		7215	51.57	54.00	-2.43
Mid	V	2440	109.31	-	*
		2440	101.56	-	*
		4880	55.59	74.00	-18.41
		4880	47.84	54.00	-6.16
		7320	60.64	74.00	-13.36
		7320	52.20	54.00	-1.80
	H	2440	104.44	-	*
		2440	96.69	-	*
		4880	55.69	74.00	-18.31
		4880	47.94	54.00	-6.06
		7320	60.98	74.00	-13.02
		7320	50.97	54.00	-3.03
High	V	2475	107.93	-	*
		2475	100.18	-	*
		2540	56.40	74.00	-17.60
		2540	48.65	54.00	-5.35
		4950	55.74	74.00	-18.26
		4950	47.99	54.00	-6.01
		7425	59.47	74.00	-14.53
		7425	51.72	54.00	-2.28
	H	2475	103.28	-	*
		2475	95.53	-	*
		2540	52.97	74.00	-21.03
		2540	45.22	54.00	-8.78
		4950	54.15	74.00	-19.85
		4950	46.40	54.00	-7.60
		7425	58.88	74.00	-15.12
		7425	51.13	54.00	-2.87

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.49	74.00	-13.51
		2351	52.74	54.00	-1.26
		2405	109.74	-	*
		2405	101.99	-	*
		4810	55.69	74.00	-18.31
		4810	47.94	54.00	-6.06
		7215	62.23	74.00	-11.77
		7215	52.26	54.00	-1.74
	H	2351	57.54	74.00	-16.46
		2351	49.79	54.00	-4.21
		2405	103.45	-	*
		2405	95.70	-	*
		4810	57.14	74.00	-16.86
		4810	49.39	54.00	-4.61
		7215	61.00	74.00	-13.00
		7215	51.57	54.00	-2.43
Mid	V	2440	109.31	-	*
		2440	101.56	-	*
		4880	55.59	74.00	-18.41
		4880	47.84	54.00	-6.16
		7320	60.64	74.00	-13.36
		7320	52.20	54.00	-1.80
	H	2440	104.44	-	*
		2440	96.69	-	*
		4880	55.69	74.00	-18.31
		4880	47.94	54.00	-6.06
High	V	2475	107.93	-	*
		2475	100.18	-	*
		2540	56.40	74.00	-17.60
		2540	48.65	54.00	-5.35
		4950	55.74	74.00	-18.26
		4950	47.99	54.00	-6.01
		7425	59.47	74.00	-14.53
		7425	51.72	54.00	-2.28
	H	2475	103.28	-	*
		2475	95.53	-	*
		2540	52.97	74.00	-21.03
		2540	45.22	54.00	-8.78
		4950	54.15	74.00	-19.85
		4950	46.40	54.00	-7.60
		7425	58.88	74.00	-15.12
		7425	51.13	54.00	-2.87

Antenna 4

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2390	45.00	74.00	-29.00
		2390	37.25	54.00	-16.75
		2405	88.38	-	*
		2405	80.63	-	*
		4810	53.95	74.00	-20.05
		4810	46.20	54.00	-7.80
		7215	59.27	74.00	-14.73
		7215	51.52	54.00	-2.48
	H	2390	45.00	74.00	-29.00
		2390	37.25	54.00	-16.75
		2405	96.59	-	*
		2405	88.84	-	*
		4810	54.00	74.00	-20.00
		4810	46.25	54.00	-7.75
		7215	58.37	74.00	-15.63
		7215	50.62	54.00	-3.38
Mid	V	2440	94.21	-	*
		2440	86.46	-	*
		4880	57.63	74.00	-16.37
		4880	49.88	54.00	-4.12
		7320	62.18	74.00	-11.82
		7320	51.62	54.00	-2.38
	H	2440	95.82	-	*
		2440	88.07	-	*
		4880	55.05	74.00	-18.95
		4880	47.30	54.00	-6.70
		7320	61.57	74.00	-12.43
		7320	49.58	54.00	-4.42
High	V	2475	95.08	-	*
		2475	87.33	-	*
		2540	49.36	74.00	-24.64
		2540	41.61	54.00	-12.39
		4950	56.91	74.00	-17.09
		4950	49.16	54.00	-4.84
		7425	61.40	74.00	-12.60
		7425	49.67	54.00	-4.33
	H	2475	99.05	-	*
		2475	91.30	-	*
		2540	49.69	74.00	-24.31
		2540	41.94	54.00	-12.06
		4950	54.41	74.00	-19.59
		4950	46.66	54.00	-7.34
		7425	60.67	74.00	-13.33
		7425	51.22	54.00	-2.78

www.tuv.com
Antenna 5

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.25	74.00	-13.75
		2351	51.23	54.00	-2.77
		2405	110.97	-	*
		2405	103.22	-	*
		4810	53.62	74.00	-20.38
		4810	45.87	54.00	-8.13
		7215	57.84	74.00	-16.16
		7215	50.09	54.00	-3.91
	H	2350	52.31	74.00	-21.69
		2350	44.56	54.00	-9.44
		2405	99.26	-	*
		2405	91.51	-	*
		4810	54.25	74.00	-19.75
		4810	46.50	54.00	-7.50
		7215	58.40	74.00	-15.60
		7215	50.65	54.00	-3.35
Mid	V	2440	110.37	-	*
		2440	102.62	-	*
		4880	53.62	74.00	-20.38
		4880	45.87	54.00	-8.13
		7320	57.84	74.00	-16.16
		7320	50.09	54.00	-3.91
	H	2440	98.37	-	*
		2440	90.62	-	*
		4880	54.25	74.00	-19.75
		4880	46.50	54.00	-7.50
		7320	58.80	74.00	-15.20
		7320	51.05	54.00	-2.95
High	V	2475	109.98	-	*
		2475	102.23	-	*
		2540	57.99	74.00	-16.01
		2540	50.24	54.00	-3.76
		4950	52.29	74.00	-21.71
		4950	44.54	54.00	-9.46
		7425	58.61	74.00	-15.39
		7425	50.86	54.00	-3.14
	H	2475	98.29	-	*
		2475	90.54	-	*
		2540	49.53	74.00	-24.47
		2540	41.78	54.00	-12.22
		4950	52.27	74.00	-21.73
		4950	44.52	54.00	-9.48
		7425	58.61	74.00	-15.39
		7425	50.86	54.00	-3.14

www.tuv.com
Antenna 6

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.24	74.00	-13.76
		2351	50.34	54.00	-3.66
		2405	111.95	-	*
		2405	104.20	-	*
		4810	59.76	74.00	-14.24
		4810	51.05	54.00	-2.95
		7215	68.83	74.00	-5.17
		7215	52.01	54.00	-1.99
	H	2350	59.03	74.00	-14.97
		2350	51.28	54.00	-2.72
		2405	109.99	-	*
		2405	102.24	-	*
		4810	60.12	74.00	-13.88
		4810	52.37	54.00	-1.63
		7215	65.44	74.00	-8.56
		7215	50.37	54.00	-3.63
Mid	V	2440	112.66	-	*
		2440	104.91	-	*
		4880	55.62	74.00	-18.38
		4880	47.87	54.00	-6.13
		7320	67.67	74.00	-6.33
		7320	50.54	54.00	-3.46
	H	2440	110.86	-	*
		2440	103.11	-	*
		4880	54.28	74.00	-19.72
		4880	46.53	54.00	-7.47
		7320	65.79	74.00	-8.21
		7320	48.95	54.00	-5.05
High	V	2475	111.69	-	*
		2475	103.94	-	*
		2540	58.95	74.00	-15.05
		2540	51.20	54.00	-2.80
		4950	57.75	74.00	-16.25
		4950	50.00	54.00	-4.00
		7425	67.00	74.00	-7.00
		7425	51.24	54.00	-2.76
	H	2475	110.18	-	*
		2475	102.43	-	*
		2540	60.30	74.00	-13.70
		2540	51.35	54.00	-2.65
		4950	54.32	74.00	-19.68
		4950	46.57	54.00	-7.43
		7425	66.87	74.00	-7.13
		7425	51.37	54.00	-2.63

www.tuv.com
Antenna 7

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.25	74.00	-13.75
		2351	51.23	54.00	-2.77
		2405	110.97	-	*
		2405	103.22	-	*
		4810	53.62	74.00	-20.38
		4810	45.87	54.00	-8.13
		7215	57.84	74.00	-16.16
		7215	50.09	54.00	-3.91
	H	2350	52.31	74.00	-21.69
		2350	44.56	54.00	-9.44
		2405	99.26	-	*
		2405	91.51	-	*
		4810	54.25	74.00	-19.75
		4810	46.50	54.00	-7.50
		7215	58.40	74.00	-15.60
		7215	50.65	54.00	-3.35
Mid	V	2440	110.37	-	*
		2440	102.62	-	*
		4880	53.62	74.00	-20.38
		4880	45.87	54.00	-8.13
		7320	57.84	74.00	-16.16
		7320	50.09	54.00	-3.91
	H	2440	98.37	-	*
		2440	90.62	-	*
		4880	54.25	74.00	-19.75
		4880	46.50	54.00	-7.50
		7320	58.80	74.00	-15.20
		7320	51.05	54.00	-2.95
High	V	2475	109.98	-	*
		2475	102.23	-	*
		2540	57.99	74.00	-16.01
		2540	50.24	54.00	-3.76
		4950	52.29	74.00	-21.71
		4950	44.54	54.00	-9.46
		7425	58.61	74.00	-15.39
		7425	50.86	54.00	-3.14
	H	2475	98.29	-	*
		2475	90.54	-	*
		2540	49.53	74.00	-24.47
		2540	41.78	54.00	-12.22
		4950	52.27	74.00	-21.73
		4950	44.52	54.00	-9.48
		7425	58.61	74.00	-15.39
		7425	50.86	54.00	-3.14

www.tuv.com
Antenna 8

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	65.12	74.00	-8.88
		2351	48.97	54.00	-5.03
		2405	114.50	-	*
		2405	106.75	-	*
		4810	56.38	74.00	-17.62
		4810	48.63	54.00	-5.37
		7215	61.68	74.00	-12.32
		7215	51.09	54.00	-2.91
	H	2350	50.71	74.00	-23.29
		2350	42.96	54.00	-11.04
		2405	100.40	-	*
		2405	92.65	-	*
		4810	55.37	74.00	-18.63
		4810	47.62	54.00	-6.38
		7215	59.76	74.00	-14.24
		7215	51.23	54.00	-2.77
Mid	V	2440	114.10	-	*
		2440	106.35	-	*
		4880	54.67	74.00	-19.33
		4880	46.92	54.00	-7.08
		7320	60.07	74.00	-13.93
		7320	50.76	54.00	-3.24
	H	2440	96.55	-	*
		2440	88.80	-	*
		4880	53.80	74.00	-20.20
		4880	46.05	54.00	-7.95
High	V	2475	113.90	-	*
		2475	106.15	-	*
		2540	61.92	74.00	-12.08
		2540	51.19	54.00	-2.81
		4950	54.38	74.00	-19.62
		4950	46.63	54.00	-7.37
		7425	59.26	74.00	-14.74
		7425	51.51	54.00	-2.49
	H	2475	96.55	-	*
		2475	88.80	-	*
		2540	49.80	74.00	-24.20
		2540	42.05	54.00	-11.95
		4950	53.72	74.00	-20.28
		4950	45.97	54.00	-8.03
		7425	59.85	74.00	-14.15
		7425	50.23	54.00	-3.77

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	65.12	74.00	-8.88
		2351	48.97	54.00	-5.03
		2405	114.50	-	*
		2405	106.75	-	*
		4810	56.38	74.00	-17.62
		4810	48.63	54.00	-5.37
		7215	61.68	74.00	-12.32
		7215	51.09	54.00	-2.91
	H	2350	50.71	74.00	-23.29
		2350	42.96	54.00	-11.04
		2405	100.40	-	*
		2405	92.65	-	*
		4810	55.37	74.00	-18.63
		4810	47.62	54.00	-6.38
		7215	59.76	74.00	-14.24
		7215	51.23	54.00	-2.77
Mid	V	2440	114.10	-	*
		2440	106.35	-	*
		4880	54.67	74.00	-19.33
		4880	46.92	54.00	-7.08
		7320	60.07	74.00	-13.93
		7320	50.76	54.00	-3.24
	H	2440	96.55	-	*
		2440	88.80	-	*
		4880	53.80	74.00	-20.20
		4880	46.05	54.00	-7.95
		7320	60.66	74.00	-13.34
		7320	50.84	54.00	-3.16
High	V	2475	113.90	-	*
		2475	106.15	-	*
		2540	61.92	74.00	-12.08
		2540	51.19	54.00	-2.81
		4950	54.38	74.00	-19.62
		4950	46.63	54.00	-7.37
		7425	59.26	74.00	-14.74
		7425	51.51	54.00	-2.49
	H	2475	96.55	-	*
		2475	88.80	-	*
		2540	49.80	74.00	-24.20
		2540	42.05	54.00	-11.95
		4950	53.72	74.00	-20.28
		4950	45.97	54.00	-8.03
		7425	59.85	74.00	-14.15
		7425	50.23	54.00	-3.77

www.tuv.com
Antenna 10

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	68.18	74.00	-5.82
		2351	50.24	54.00	-3.76
		2405	116.05	-	*
		2405	108.30	-	*
		4810	57.20	74.00	-16.80
		4810	49.45	54.00	-4.55
		7215	58.67	74.00	-15.33
		7215	50.92	54.00	-3.08
	H	2350	50.47	74.00	-23.53
		2350	42.72	54.00	-11.28
		2405	96.92	-	*
		2405	89.17	-	*
		4810	53.54	74.00	-20.46
		4810	45.79	54.00	-8.21
		7215	58.94	74.00	-15.06
		7215	51.19	54.00	-2.81
Mid	V	2440	116.14	-	*
		2440	108.39	-	*
		4880	53.70	74.00	-20.30
		4880	45.95	54.00	-8.05
		7320	58.85	74.00	-15.15
		7320	51.10	54.00	-2.90
	H	2440	97.29	-	*
		2440	89.54	-	*
		4880	52.58	74.00	-21.42
		4880	44.83	54.00	-9.17
7320	58.17	74.00	-15.83		
7320	50.42	54.00	-3.58		
High	V	2475	116.19	-	*
		2475	108.44	-	*
		2540	62.05	74.00	-11.95
		2540	51.38	54.00	-2.62
		4950	54.56	74.00	-19.44
		4950	46.81	54.00	-7.19
		7425	59.23	74.00	-14.77
		7425	51.48	54.00	-2.52
	H	2475	98.22	-	*
		2475	90.47	-	*
		2540	47.51	74.00	-26.49
		2540	39.76	54.00	-14.24
		4950	53.59	74.00	-20.41
		4950	45.84	54.00	-8.16
		7425	58.87	74.00	-15.13
		7425	51.12	54.00	-2.88

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.25	74.00	-13.75
		2351	51.23	54.00	-2.77
		2405	110.97	-	*
		2405	103.22	-	*
		4810	53.62	74.00	-20.38
		4810	45.87	54.00	-8.13
		7215	57.84	74.00	-16.16
		7215	50.09	54.00	-3.91
	H	2350	52.31	74.00	-21.69
		2350	44.56	54.00	-9.44
		2405	99.26	-	*
		2405	91.51	-	*
		4810	54.25	74.00	-19.75
		4810	46.50	54.00	-7.50
		7215	58.40	74.00	-15.60
		7215	50.65	54.00	-3.35
Mid	V	2440	110.37	-	*
		2440	102.62	-	*
		4880	53.62	74.00	-20.38
		4880	45.87	54.00	-8.13
		7320	57.84	74.00	-16.16
		7320	50.09	54.00	-3.91
	H	2440	98.37	-	*
		2440	90.62	-	*
		4880	54.25	74.00	-19.75
		4880	46.50	54.00	-7.50
		7320	58.80	74.00	-15.20
		7320	51.05	54.00	-2.95
High	V	2475	109.98	-	*
		2475	102.23	-	*
		2540	57.99	74.00	-16.01
		2540	50.24	54.00	-3.76
		4950	52.29	74.00	-21.71
		4950	44.54	54.00	-9.46
		7425	58.61	74.00	-15.39
		7425	50.86	54.00	-3.14
	H	2475	98.29	-	*
		2475	90.54	-	*
		2540	49.53	74.00	-24.47
		2540	41.78	54.00	-12.22
		4950	52.27	74.00	-21.73
		4950	44.52	54.00	-9.48
		7425	58.61	74.00	-15.39
		7425	50.86	54.00	-3.14

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	65.12	74.00	-8.88
		2351	48.97	54.00	-5.03
		2405	114.50	-	*
		2405	106.75	-	*
		4810	56.38	74.00	-17.62
		4810	48.63	54.00	-5.37
		7215	61.68	74.00	-12.32
		7215	51.09	54.00	-2.91
	H	2350	50.71	74.00	-23.29
		2350	42.96	54.00	-11.04
		2405	100.40	-	*
		2405	92.65	-	*
		4810	55.37	74.00	-18.63
		4810	47.62	54.00	-6.38
		7215	59.76	74.00	-14.24
		7215	51.23	54.00	-2.77
Mid	V	2440	114.10	-	*
		2440	106.35	-	*
		4880	54.67	74.00	-19.33
		4880	46.92	54.00	-7.08
		7320	60.07	74.00	-13.93
		7320	50.76	54.00	-3.24
	H	2440	96.55	-	*
		2440	88.80	-	*
		4880	53.80	74.00	-20.20
		4880	46.05	54.00	-7.95
High	V	2475	113.90	-	*
		2475	106.15	-	*
		2540	61.92	74.00	-12.08
		2540	51.19	54.00	-2.81
		4950	54.38	74.00	-19.62
		4950	46.63	54.00	-7.37
		7425	59.26	74.00	-14.74
		7425	51.51	54.00	-2.49
	H	2475	96.55	-	*
		2475	88.80	-	*
		2540	49.80	74.00	-24.20
		2540	42.05	54.00	-11.95
		4950	53.72	74.00	-20.28
		4950	45.97	54.00	-8.03
		7425	59.85	74.00	-14.15
		7425	50.23	54.00	-3.77

Channel	Polarization	Frequency (MHz)	Emission (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Low	V	2351	60.49	74.00	-13.51
		2351	52.74	54.00	-1.26
		2405	109.74	-	*
		2405	101.99	-	*
		4810	55.69	74.00	-18.31
		4810	47.94	54.00	-6.06
		7215	62.23	74.00	-11.77
		7215	52.26	54.00	-1.74
	H	2351	57.54	74.00	-16.46
		2351	49.79	54.00	-4.21
		2405	103.45	-	*
		2405	95.70	-	*
		4810	57.14	74.00	-16.86
		4810	49.39	54.00	-4.61
		7215	61.00	74.00	-13.00
		7215	51.57	54.00	-2.43
Mid	V	2440	109.31	-	*
		2440	101.56	-	*
		4880	55.59	74.00	-18.41
		4880	47.84	54.00	-6.16
		7320	60.64	74.00	-13.36
		7320	52.20	54.00	-1.80
	H	2440	104.44	-	*
		2440	96.69	-	*
		4880	55.69	74.00	-18.31
		4880	47.94	54.00	-6.06
		7320	60.98	74.00	-13.02
		7320	50.97	54.00	-3.03
High	V	2475	107.93	-	*
		2475	100.18	-	*
		2540	56.40	74.00	-17.60
		2540	48.65	54.00	-5.35
		4950	55.74	74.00	-18.26
		4950	47.99	54.00	-6.01
		7425	59.47	74.00	-14.53
		7425	51.72	54.00	-2.28
	H	2475	103.28	-	*
		2475	95.53	-	*
		2540	52.97	74.00	-21.03
		2540	45.22	54.00	-8.78
		4950	54.15	74.00	-19.85
		4950	46.40	54.00	-7.60
	H	7425	58.88	74.00	-15.12
		7425	51.13	54.00	-2.87

*→Fundamental Frequency