

# TEST REPORT

of

FCC Part 2 Subpart J, Part 22 Subpart C/H,  
Part 24 Subpart E, Part 27 Subpart C and Part 90 Subpart S/R  
IC RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6,  
RSS-139 Issue 4, RSS-140 Issue 1,  
RSS-199 Issue 3 and RSS-Gen Issue 5

FCC ID: TQ8LI99700020  
IC Certification: 5074A-LI99700020

Equipment Under Test : Remote Vehicle Assistance  
Model Name : LI99700020  
Variant Model Name(s) : -  
Applicant : FCC: HYUNDAI MOBIS CO., LTD.  
: IC: Hyundai MOBIS Co., Ltd  
Manufacturer : FCC: HYUNDAI MOBIS CO., LTD.  
: IC: Hyundai MOBIS Co., Ltd  
Date of Receipt : 2022.07.11  
Date of Test(s) : 2022.07.11 ~ 2023.02.03  
Date of Issue : 2023.02.03

In the configuration tested, the EUT complied with the standards specified above. This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
- 3) This test report cannot be reproduced, except in full, without prior written permission of the Company.
- 4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.

We are responsible for all the information of this test report except for the data(※) provided by the customer.

Tested by:

  
\_\_\_\_\_  
Murphy Kim

Technical  
Manager:

  
\_\_\_\_\_  
Jinhyoung Cho

**SGS Korea Co., Ltd. Gunpo Laboratory**

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## 1. General Information

### 1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)  
 - 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807  
 - 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807  
 - Designation number: KR0150

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### 1.2. Details of Applicant

FCC Applicant : HYUNDAI MOBIS CO., LTD.  
 FCC Address : 203, Teheran-ro, Gangnam-gu, Seoul, South Korea, 135-977  
 IC Applicant : Hyundai MOBIS Co., Ltd  
 IC Address : 203, Teheran-ro, Gangnam-gu, Seoul, 135-977, Korea(Republic Of)  
 Contact Person : Choe, Seung-hoon  
 Phone No. : +82 31 260 0098

### 1.3. Details of Manufacturer

Company : Same as applicant  
 Address : Same as applicant

### 1.4. Description of EUT

<b>Kind of Product</b>	Remote Vehicle Assistance
<b>Model Name</b>	LI99700020
<b>Serial Number</b>	863789050196050
<b>Power Supply</b>	DC 12.7 V
<b>Rated Power</b>	LTE Band 2, 4, 5, 7, 12, 13, 14, 25, 26, 66, 71: 23 dB m
<b>Frequency Range</b>	LTE Band 2: 1 850 MHz ~ 1 910 MHz LTE Band 4: 1 710 MHz ~ 1 755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2 500 MHz ~ 2 570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 14: 788 MHz ~ 798 MHz LTE Band 25: 1 850 MHz ~ 1 915 MHz LTE Band 26(FCC Only): 814 MHz ~ 824 MHz LTE Band 26: 824 MHz ~ 849 MHz LTE Band 66: 1 710 MHz ~ 1 780 MHz LTE Band 71: 663 MHz ~ 698 MHz
<b>Uplink CA Bands</b>	5B, 7C, 66B, 66C
<b>Modulation Technique</b>	QPSK, 16QAM, 64QAM
<b>Antenna Type</b>	Monopole Antenna
<b>Antenna Gain*</b>	Refer to the clause 1.14
<b>H/W Version</b>	1.0
<b>S/W Version</b>	1.0
<b>FVIN</b>	N/A

### 1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMA100B	106887	Oct. 13, 2022	Annual	Oct. 13, 2023
Signal Generator	R&S	SMBV100A	255834	May 25, 2022	Annual	May 25, 2023
Spectrum Analyzer	R&S	FSV30	103210	Dec. 07, 2022	Annual	Dec. 07, 2023
Spectrum Analyzer	Agilent	N9020A	MY53421758	Aug. 26, 2022	Annual	Aug. 26, 2023
Spectrum Analyzer	Agilent	N9030A	US51350132	Nov. 11, 2022	Annual	Nov. 11, 2023
Mobile Test Unit	R&S	CMW 500	144034	Feb. 21, 2022	Annual	Feb. 21, 2023
Communication Analyzer	Anritsu	MT8821C	6262192291	Oct. 11, 2022	Annual	Oct. 11, 2023
Power Meter	Anritsu	ML2495A	1223004	Nov. 29, 2022	Annual	Nov. 29, 2023
Power Sensor	Anritsu	MA2411B	1207272	May 27, 2022	Annual	May 27, 2023
Temperature Chamber	ESPEC CORP.	SH-662	93000533	Jun. 02, 2022	Annual	Jun. 02, 2023
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-2	Feb. 10, 2022	Annual	Feb. 10, 2023
High Pass Filter	Wainwright Instrument GmbH	WHKX10-900-1000-18000-40SS	7	Mar. 04, 2022	Annual	Mar. 04, 2023
High Pass Filter	Wainwright Instrument GmbH	WHKX2.2/12.75G-10SS	8	Mar. 04, 2022	Annual	Mar. 04, 2023
High Pass Filter	Wainwright Instrument GmbH	WHKX3.0/18G-6SS	21	Jun. 09, 2022	Annual	Jun. 09, 2023
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	11	Oct. 24, 2022	Annual	Oct. 24, 2023
BRIDGE COUPLER	MARKI MICROWAVE INC	CBR16-0012	1542	May 06, 2022	Annual	May 06, 2023
Directional Coupler	KRYTAR	152613	122660	Jul. 06, 2022	Annual	Jul. 06, 2023
DC Power Supply	R&S	HMP2020	102130	Apr. 22, 2022	Annual	Apr. 22, 2023
Preamplifier	H.P.	8447F	2944A03909	Aug. 04, 2022	Annual	Aug. 04, 2023
Preamplifier	R&S	SCU 18	10117	Jun. 13, 2022	Annual	Jun. 13, 2023
Preamplifier	MITEQ Inc.	JS44-18004000-35-8P	1546891	Sep. 27, 2022	Annual	Sep. 27, 2023
Test Receiver	R&S	ESCI 7	100911	Feb. 23, 2022	Annual	Feb. 23, 2023
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 23, 2021	Biennial	Aug. 23, 2023
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB9163	01126	Feb. 07, 2022	Annual	Feb. 07, 2023
Horn Antenna	R&S	HF906	100326	Feb. 18, 2022	Annual	Feb. 18, 2023
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	9170-540	Nov. 30, 2022	Annual	Nov. 30, 2023
Antenna Master	Innco systems GmbH	MA4640-XP-ET	MA4640/536/383 30516/L	N.C.R.	N/A	N.C.R.
Turn Table	Innco systems GmbH	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/383 30516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L x W x H (9.6 m x 6.4 m x 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	RFONE	MWX221-NMSNMS (4 m)	J1023142	Oct. 04, 2022	Semi-Annual	Apr. 04, 2023
Coaxial Cable	Qualwave Inc.	QA500-18-NN-10 (10 m)	22200114	Oct. 04, 2022	Semi-Annual	Apr. 04, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182287	Aug. 18, 2022	Semi-Annual	Feb. 18, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182288	Aug. 18, 2022	Semi-Annual	Feb. 18, 2023
Coaxial Cable	RADIALL	TESTPRO 3	182291	Aug. 18, 2022	Semi-Annual	Feb. 18, 2023

**Note;**

- For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

### 1.6. Summary of Test Results

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: FCC Part 2, 22, 24, 27 and 90 / IC RSS-Gen Issue 5, RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 4, RSS-140 Issue 1 and RSS-199 Issue 3</b>			
Section in FCC	Section in IC	Test Item(s)	Result
§2.1046 §22.913(a)(5) §24.232(c) §27.50(b)(9) §27.50(c)(9) §27.50(d)(4) §27.50(h)(2) §90.542(a)(6) §90.635(b)	RSS-130 Issue 2 4.6 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 4 5.5 RSS-140 Issue 1 4.3 RSS-199 Issue 3 4.4	E.R.P. / E.I.R.P.	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h)(1) §90.543(e) §90.543(f) §90.691(a)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-140 Issue 1 4.4 RSS-199 Issue 3 4.5	Spurious Radiated Emission	Complied
§2.1046	RSS-Gen Issue 5 6.12	Conducted Output Power	Complied
§2.1049	RSS-Gen Issue 5 6.7	Occupied Bandwidth	Complied
§22.913(d) §24.232(d) §27.50(d)(5)	RSS-130 Issue 2 4.6 RSS-132 Issue 3 5.4 RSS-133 Issue 6 6.4 RSS-139 Issue 4 5.5 RSS-140 Issue 1 4.3 RSS-199 Issue 3 4.4	Peak-Average Ratio	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(f) §27.53(g) §27.53(h)(1) §90.543(e) §90.543(f) §90.691(a)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-140 Issue 1 4.4 RSS-199 Issue 3 4.5	Spurious Emission at Antenna Terminal	Complied
§22.917(a) §24.238(a) §27.53(c)(2) §27.53(c)(4) §27.53(g) §27.53(h)(1) §90.543(e) §90.691(a)	RSS-130 Issue 2 4.7 RSS-132 Issue 3 5.5 RSS-133 Issue 6 6.5 RSS-139 Issue 4 5.6 RSS-140 Issue 1 4.4 RSS-199 Issue 3 4.5	Band Edge and Emission Mask	Complied
§2.1055 §22.355 §24.235 §27.54 §90.213(a)	RSS-Gen Issue 5 6.11 RSS-130 Issue 2 4.5 RSS-132 Issue 3 5.3 RSS-133 Issue 6 6.3 RSS-139 Issue 4 5.4 RSS-140 Issue 1 4.2 RSS-199 Issue 3 4.3	Frequency Stability	Complied

## 1.7. Sample Calculation for Offset

Where relevant, the following sample calculation is provided:

### 1.7.1. Conducted Test

Offset value (dB) = Directional Coupler (dB) + Cable loss (dB)

### 1.7.2. Radiation Test

- E.I.R.P. (dB m) = Measured level (dB $\mu$ V) + Antenna factor (dB/m) + Cable loss (dB) + 20 Log D - 104.5;  
where D is the measurement distance in meters.
- E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB)

## 1.8. Device Capabilities

This device contains the following capabilities;

LTE Band 2 (1 850 MHz ~ 1 910 MHz) is covered by LTE Band 25 (1 850 MHz ~ 1 915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth. Therefore test data provided in this report covers LTE Band 2 as well as Band 25.

LTE Band 4 (1 710 MHz ~ 1 755 MHz) is covered by LTE Band 66 (1 710 MHz ~ 1 780 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth. Therefore test data provided in this report covers LTE Band 4 as well as Band 66.

LTE Band 5 (824 MHz ~ 849 MHz) is covered by LTE Band 26 (824 MHz ~ 849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth. Therefore test data provided in this report covers LTE Band 5 as well as Band 26.

## 1.9. Manufacturer Declaration

One telematics unit contains five independent LTE modules that can operate simultaneously. Only one type of LTE module is fitted to the device via internal USB communication. All five independent modules have the electrically equivalent.

EUT has five (SIM1, SIM2, SIM3, SIM4 and SIM5) ports each with a port-specific antenna.

## 1.10. Worst Case Configuration and Mode

Since all five ports are the electrically equivalent module, representatively, all test items were performed on port 1. Radiated spurious emissions were tested separately because the antennas are all different.

The worst-case is based on the conducted output power measurement investigation results. All testing was performed using QPSK, 16QAM and 64QAM modulations. However, the spurious radiated emission and spurious at antenna terminal were only performed on bandwidth and RB offset (with RB size 1) with the highest conducted power in QPSK.

The peak to average ratio were tested only 64QAM modulation as worst case.

The radiation test of the EUT was investigated in three orthogonal orientations X, Y, and Z, and the worst case data is reported.

### 1.11. Measurement Configuration

Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		Low	Mid	High	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Conducted Output Power	7	V	V	V			V	V	V	V	V	V	V	V	V	V
	12	V	V	V	V	V	V	V			V	V	V	V	V	V
	13	V	V	V			V	V			V	V	V	V	V	V
	14	V	V	V			V	V			V	V	V	V	V	V
	25/2	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	*26/5 Part22	V	V	V	V	V	V	V	V		V	V	V	V	V	V
	26 Part90	V	V	V	V	V	V	V	V		V	V	V	V	V	V
	66/4	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V
	71	V	V	V			V	V	V	V	V	V	V	V	V	V
Frequency Stability	7	-	V	-			V	-	-	-	V	-	-	-	-	V
	12	-	V	-	-	-	V	-			V	-	-	-	-	V
	13	-	V	-			V	-			V	-	-	-	-	V
	14	-	V	-			V	-			V	-	-	-	-	V
	25/2	-	V	-	-	-	V	-	-	-	V	-	-	-	-	V
	*26/5 Part22	-	V	-	-	-	V	-	-		V	-	-	-	-	V
	26 Part90	-	V	-	-	-	V	-	-		V	-	-	-	-	V
	66/4	-	V	-	-	-	V	-	-	-	V	-	-	-	-	V
	71	-	V	-			V	-	-	-	V	-	-	-	-	V
Occupied Bandwidth	7	-	V	-			V	V	V	V	V	V	-	-	-	V
	12	-	V	-	V	V	V	V			V	V	-	-	-	V
	13	-	V	-			V	V			V	V	-	-	-	V
	14	-	V	-			V	V			V	V	-	-	-	V
	25/2	-	V	-	V	V	V	V	V	V	V	V	-	-	-	V
	*26/5 Part22	-	V	-	V	V	V	V	V		V	V	-	-	-	V
	26 Part90	-	V	-	V	V	V	V	V		V	V	-	-	-	V
	66/4	-	V	-	V	V	V	V	V	V	V	V	-	-	-	V
	71	-	V	-			V	V	V	V	V	V	-	-	-	V
Peak-to-Average Ratio	7	V	V	V			V	V	V	V	-	-	V	-	-	V
	12	V	V	V	V	V	V	V			-	-	V	-	-	V
	13	V	V	V			V	V			-	-	V	-	-	V
	14	V	V	V			V	V			-	-	V	-	-	V
	25/2	V	V	V	V	V	V	V	V	V	-	-	V	-	-	V
	*26/5 Part22	V	V	V	V	V	V	V	V		-	-	V	-	-	V
	26 Part90	V	V	V	V	V	V	V	V		-	-	V	-	-	V
	66/4	V	V	V	V	V	V	V	V	V	-	-	V	-	-	V
	71	V	V	V			V	V	V	V	-	-	V	-	-	V

Test Items	Band	Test Channel			Bandwidth (MHz)						Modulation			RB #		
		Low	Mid	High	1.4	3	5	10	15	20	QPSK	16QAM	64QAM	1	Half	Full
Band edge	7	V	-	V			V	V	V	V	V	V	-	V	-	V
	12	V	-	V	V	V	V	V			V	V	-	V	-	V
	13	V	-	V			V	V			V	V	-	V	-	V
	14	V	-	V			V	V			V	V	-	V	-	V
	25/2	V	-	V	V	V	V	V	V	V	V	V	-	V	-	V
	*26/5 Part22	V	-	V	V	V	V	V	V		V	V	-	V	-	V
	26 Part90	V	-	V	V	V	V	V	V		V	V	-	V	-	V
	66/4	V	-	V	V	V	V	V	V	V	V	V	-	V	-	V
	71	V	-	V			V	V	V	V	V	V	-	V	-	V
Spurious at antenna terminal & Radiated Spurious Emissions	7	V	V	V	Worst case											
	12	V	V	V	Worst case											
	13	V	V	V	Worst case											
	14	V	V	V	Worst case											
	25/2	V	V	V	Worst case											
	*26/5 Part22	V	V	V	Worst case											
	26 Part90	V	V	V	Worst case											
	66/4	V	V	V	Worst case											
	71	V	V	V	Worst case											

\*B5 is not supported 15M bandwidth.



### 1.12. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty	
RF Output Power	0.32 dB	
Occupied Bandwidth	3.90 kHz	
Conducted Spurious Emissions	0.61 dB	
Peak to Average Ratio	0.60 dB	
Frequency Stability	5.97 kHz	
Radiated Emission, 9 kHz to 30 MHz	H	3.40 dB
	V	3.40 dB
Radiated Emission, below 1 GHz	H	4.50 dB
	V	5.10 dB
Radiated Emission, above 1 GHz	H	3.70 dB
	V	3.90 dB

All measurement uncertainty values are shown with a coverage factor of  $k=2$  to indicate a 95 % level of confidence.

### 1.13. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL003772	2023.02.03	Initial

### 1.14. Antenna Designation

Operating Frequency (MHz)		Antenna Peak Gain (dB i)			
		Ant. No	Ant. Gain	Cable Loss <sup>1)</sup>	Final Gain <sup>2)</sup>
Band 71	663 ~ 698	Ant. 1	3.91	1.23	2.68
		Ant. 2	3.91	1.23	2.68
		Ant. 3	5.36	1.23	4.13
		Ant. 4	5.07	1.23	3.84
		Ant. 5	4.21	1.23	2.98
Band 12	699 ~ 716	Ant. 1	3.91	1.23	2.68
		Ant. 2	3.91	1.23	2.68
		Ant. 3	5.36	1.23	4.13
		Ant. 4	5.07	1.23	3.84
		Ant. 5	4.21	1.23	2.98
Band 13	777 ~ 787	Ant. 1	4.19	1.40	2.79
		Ant. 2	2.99	1.40	1.59
		Ant. 3	4.95	1.40	3.55
		Ant. 4	3.03	1.40	1.63
		Ant. 5	4.13	1.40	2.73
Band 14	788 ~ 798	Ant. 1	4.19	1.40	2.79
		Ant. 2	2.99	1.40	1.59
		Ant. 3	4.95	1.40	3.55
		Ant. 4	3.03	1.40	1.63
		Ant. 5	4.13	1.40	2.73
Band 26 Part 90	814 ~ 824	Ant. 1	4.88	1.40	3.48
		Ant. 2	3.67	1.40	2.27
		Ant. 3	4.69	1.40	3.29
		Ant. 4	4.26	1.40	2.86
		Ant. 5	5.48	1.40	4.08
Band 26/5 Part 22	824 ~ 849	Ant. 1	6.49	1.40	5.09
		Ant. 2	5.31	1.40	3.91
		Ant. 3	6.53	1.40	5.13
		Ant. 4	5.21	1.40	3.81
		Ant. 5	5.83	1.40	4.43
Band 66/4	1 710 ~ 1 780	Ant. 1	-0.26	2.10	-2.36
		Ant. 2	-1.88	2.10	-3.98
		Ant. 3	-0.34	2.10	-2.44
		Ant. 4	-0.97	2.10	-3.07
		Ant. 5	-0.32	2.10	-2.42
Band 25/2	1 850 ~ 1 915	Ant. 1	-0.90	2.10	-3.00
		Ant. 2	-0.31	2.10	-2.41
		Ant. 3	-0.40	2.10	-2.50
		Ant. 4	1.79	2.10	-0.31
		Ant. 5	1.64	2.10	-0.46
Band 7	2 500 ~ 2 570	Ant. 1	5.03	2.35	2.68
		Ant. 2	4.63	2.35	2.28
		Ant. 3	3.34	2.35	0.99
		Ant. 4	4.54	2.35	2.19
		Ant. 5	3.44	2.35	1.09

Note;

- 1) It is a cable that is permanently connected between the antenna and the EUT
- 2) In this report, Final gain reflecting the cable loss was used.

### 1.15. Emission Designator and Max Power

#### ANT 1

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator
71	5	QPSK	665.5	695.5	23.01	2.68	25.69	0.371	4M51G7D
		16QAM			22.46		25.14	0.327	4M49D7D
	10	QPSK	668	693	23.19		25.87	0.386	8M95G7D
		16QAM			22.57		25.25	0.335	8M95D7D
	15	QPSK	670.5	690.5	23.25		25.93	0.392	13M5G7D
		16QAM			22.52		25.20	0.331	13M4D7D
	20	QPSK	673	688	23.24		25.92	0.391	18M0G7D
		16QAM			22.53		25.21	0.332	17M8D7D
12	1.4	QPSK	699.7	715.3	23.53	2.68	26.21	0.418	1M09G7D
		16QAM			22.82		25.50	0.355	1M09D7D
	3	QPSK	700.5	714.5	23.43		26.11	0.408	2M69G7D
		16QAM			23.02		25.70	0.372	2M68D7D
	5	QPSK	701.5	713.5	23.61		26.29	0.426	4M49G7D
		16QAM			22.99		25.67	0.369	4M49D7D
	10	QPSK	704	711	23.60		26.28	0.425	8M95G7D
		16QAM			22.96		25.64	0.366	8M92D7D
13	5	QPSK	779.5	784.5	23.65	2.79	26.44	0.441	4M49G7D
		16QAM			23.23		26.02	0.400	4M53D7D
	10	782		23.60	26.39		0.436	8M95G7D	
		782		23.01	25.80		0.380	8M95D7D	
14	5	QPSK	790.5	795.5	22.87	2.79	25.66	0.368	4M50G7D
		16QAM			22.15		24.94	0.312	4M50D7D
	10	793		22.98	25.77		0.378	8M97G7D	
		793		22.15	24.94		0.312	8M94D7D	
26 Part 90	1.4	QPSK	814.4	823.3	23.26	3.48	26.74	0.472	1M10G7D
		16QAM			22.71		26.19	0.416	1M09D7D
	3	QPSK	815.5	822.5	23.40		26.88	0.488	2M68G7D
		16QAM			22.83		26.31	0.428	2M68D7D
	5	QPSK	816.5	821.5	23.55		27.03	0.505	4M51G7D
		16QAM			22.82		26.30	0.427	4M53D7D
	10	QPSK	819		23.56		27.04	0.506	8M92G7D
		16QAM	819		22.80		26.28	0.425	8M92D7D
	15	QPSK	821.5		23.53		27.01	0.502	13M4G7D
		16QAM	821.5		22.91		26.39	0.436	13M5D7D

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
26/5 Part 22	1.4	QPSK	824.7	848.3	23.19	5.09	28.28	0.673	1M09G7D		
		16QAM			22.63		27.72	0.592	1M09D7D		
	3	QPSK	825.5	847.5	23.36		28.45	0.700	2M68G7D		
		16QAM			22.84		27.93	0.621	2M68D7D		
	5	QPSK	826.5	846.5	23.31		28.40	0.692	4M49G7D		
		16QAM			22.76		27.85	0.610	4M49D7D		
	10	QPSK	829	844	23.55		28.64	0.731	8M95G7D		
		16QAM			22.99		28.08	0.643	8M92D7D		
	26 Part 22	15	QPSK	831.5	841.5		23.54	28.63	0.729	13M5G7D	
			16QAM				22.96	28.05	0.638	13M4D7D	
66/4	1.4	QPSK	1 710.7	1 779.3	22.94	-2.36	20.58	0.114	1M09G7D		
		16QAM			22.31		19.95	0.099	1M09D7D		
	3	QPSK	1 711.5	1 778.5	23.05		20.69	0.117	2M68G7D		
		16QAM			22.40		20.04	0.101	2M69D7D		
	5	QPSK	1 712.5	1 777.5	23.10		20.74	0.119	4M49G7D		
		16QAM			22.45		20.09	0.102	4M49D7D		
	10	QPSK	1 715	1 775	22.96		20.60	0.115	8M95G7D		
		16QAM			22.39		20.03	0.101	8M95D7D		
	15	QPSK	1 717.5	1 772.5	23.24		20.88	0.122	13M5G7D		
		16QAM			22.68		20.32	0.108	13M5D7D		
	20	QPSK	1 720	1 770	23.16		20.80	0.120	17M9G7D		
		16QAM			22.50		20.14	0.103	17M9D7D		
	25/2	1.4	QPSK	1 850.7	1 914.3		22.84	-3.00	19.84	0.096	1M09G7D
			16QAM				22.20		19.20	0.083	1M10D7D
3		QPSK	1 851.5	1 913.5	23.02	20.02	0.100		2M68G7D		
		16QAM			22.36	19.36	0.086		2M68D7D		
5		QPSK	1 852.5	1 912.5	22.90	19.90	0.098		4M51G7D		
		16QAM			22.38	19.38	0.087		4M49D7D		
10		QPSK	1 855	1 910	22.98	19.98	0.100		8M95G7D		
		16QAM			22.31	19.31	0.085		8M89D7D		
15		QPSK	1 857.5	1 907.5	23.11	20.11	0.103		13M5G7D		
		16QAM			22.60	19.60	0.091		13M5D7D		
20		QPSK	1 860	1 905	23.06	20.06	0.101		17M9G7D		
		16QAM			22.44	19.44	0.088		17M9D7D		
7	5	QPSK	2 502.5	2 567.5	22.47	2.68	25.15	0.327	4M51G7D		
		16QAM			21.89		24.57	0.286	4M49D7D		
	10	QPSK	2 505	2 565	22.81		25.49	0.354	8M95G7D		
		16QAM			22.01		24.69	0.294	8M95D7D		
	15	QPSK	2 507.5	2 562.5	22.95		25.63	0.366	13M4G7D		
		16QAM			21.87		24.55	0.285	13M5D7D		
	20	QPSK	2 510	2 560	23.14		25.82	0.382	17M9G7D		
		16QAM			22.34		25.02	0.318	17M9D7D		

**ANT 2**

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
71	5	QPSK	665.5	695.5	23.01	2.68	25.69	0.371	4M51G7D		
		16QAM			22.46		25.14	0.327	4M49D7D		
	10	QPSK	668	693	23.19		25.87	0.386	8M95G7D		
		16QAM			22.57		25.25	0.335	8M95D7D		
	15	QPSK	670.5	690.5	23.25		25.93	0.392	13M5G7D		
		16QAM			22.52		25.20	0.331	13M4D7D		
	20	QPSK	673	688	23.24		25.92	0.391	18M0G7D		
		16QAM			22.53		25.21	0.332	17M8D7D		
12	1.4	QPSK	699.7	715.3	23.53	2.68	26.21	0.418	1M09G7D		
		16QAM			22.82		25.50	0.355	1M09D7D		
	3	QPSK	700.5	714.5	23.43		26.11	0.408	2M69G7D		
		16QAM			23.02		25.70	0.372	2M68D7D		
	5	QPSK	701.5	713.5	23.61		26.29	0.426	4M49G7D		
		16QAM			22.99		25.67	0.369	4M49D7D		
	10	QPSK	704	711	23.60		26.28	0.425	8M95G7D		
		16QAM			22.96		25.64	0.366	8M92D7D		
	13	5	QPSK	779.5	784.5		23.65	1.59	25.24	0.334	4M49G7D
			16QAM				23.23		24.82	0.303	4M53D7D
10		QPSK	782	23.60	25.19	0.330	8M95G7D				
		16QAM		23.01	24.60	0.288	8M95D7D				
14	5	QPSK	790.5	795.5	22.87	1.59	24.46	0.279	4M50G7D		
		16QAM			22.15		23.74	0.237	4M50D7D		
	10	QPSK	793	22.98	24.57		0.286	8M97G7D			
		16QAM		22.15	23.74		0.237	8M94D7D			
26 Part 90	1.4	QPSK	814.4	823.3	23.26	2.27	25.53	0.357	1M10G7D		
		16QAM			22.71		24.98	0.315	1M09D7D		
	3	QPSK	815.5	822.5	23.40		25.67	0.369	2M68G7D		
		16QAM			22.83		25.10	0.324	2M68D7D		
	5	QPSK	816.5	821.5	23.55		25.82	0.382	4M51G7D		
		16QAM			22.82		25.09	0.323	4M53D7D		
	10	QPSK	819	23.56	25.83		0.383	8M92G7D			
		16QAM		22.80	25.07		0.321	8M92D7D			
	15	QPSK	821.5	23.53	25.80		0.380	13M4G7D			
		16QAM		22.91	25.18		0.330	13M5D7D			

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
26/5 Part 22	1.4	QPSK	824.7	848.3	23.19	3.91	27.10	0.513	1M09G7D		
		16QAM			22.63		26.54	0.451	1M09D7D		
	3	QPSK	825.5	847.5	23.36		27.27	0.533	2M68G7D		
		16QAM			22.84		26.75	0.473	2M68D7D		
	5	QPSK	826.5	846.5	23.31		27.22	0.527	4M49G7D		
		16QAM			22.76		26.67	0.465	4M49D7D		
	10	QPSK	829	844	23.55		27.46	0.557	8M95G7D		
		16QAM			22.99		26.90	0.490	8M92D7D		
	26 Part 22	15	QPSK	831.5	841.5		23.54	27.45	0.556	13M5G7D	
			16QAM				22.96	26.87	0.486	13M4D7D	
66/4	1.4	QPSK	1 710.7	1 779.3	22.94	-3.98	18.96	0.079	1M09G7D		
		16QAM			22.31		18.33	0.068	1M09D7D		
	3	QPSK	1 711.5	1 778.5	23.05		19.07	0.081	2M68G7D		
		16QAM			22.40		18.42	0.070	2M69D7D		
	5	QPSK	1 712.5	1 777.5	23.10		19.12	0.082	4M49G7D		
		16QAM			22.45		18.47	0.070	4M49D7D		
	10	QPSK	1 715	1 775	22.96		18.98	0.079	8M95G7D		
		16QAM			22.39		18.41	0.069	8M95D7D		
	15	QPSK	1 717.5	1 772.5	23.24		19.26	0.084	13M5G7D		
		16QAM			22.68		18.70	0.074	13M5D7D		
	20	QPSK	1 720	1 770	23.16		19.18	0.083	17M9G7D		
		16QAM			22.50		18.52	0.071	17M9D7D		
	25/2	1.4	QPSK	1 850.7	1 914.3		22.84	-2.41	20.43	0.110	1M09G7D
			16QAM				22.20		19.79	0.095	1M10D7D
3		QPSK	1 851.5	1 913.5	23.02	20.61	0.115		2M68G7D		
		16QAM			22.36	19.95	0.099		2M68D7D		
5		QPSK	1 852.5	1 912.5	22.90	20.49	0.112		4M51G7D		
		16QAM			22.38	19.97	0.099		4M49D7D		
10		QPSK	1 855	1 910	22.98	20.57	0.114		8M95G7D		
		16QAM			22.31	19.90	0.098		8M89D7D		
15		QPSK	1 857.5	1 907.5	23.11	20.70	0.117		13M5G7D		
		16QAM			22.60	20.19	0.104		13M5D7D		
20		QPSK	1 860	1 905	23.06	20.65	0.116		17M9G7D		
		16QAM			22.44	20.03	0.101		17M9D7D		
7	5	QPSK	2 502.5	2 567.5	22.47	2.28	24.75	0.299	4M51G7D		
		16QAM			21.89		24.17	0.261	4M49D7D		
	10	QPSK	2 505	2 565	22.81		25.09	0.323	8M95G7D		
		16QAM			22.01		24.29	0.269	8M95D7D		
	15	QPSK	2 507.5	2 562.5	22.95		25.23	0.333	13M4G7D		
		16QAM			21.87		24.15	0.260	13M5D7D		
	20	QPSK	2 510	2 560	23.14		25.42	0.348	17M9G7D		
		16QAM			22.34		24.62	0.290	17M9D7D		

**ANT 3**

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
71	5	QPSK	665.5	695.5	23.01	4.13	27.14	0.518	4M51G7D		
		16QAM			22.46		26.59	0.456	4M49D7D		
	10	QPSK	668	693	23.19		27.32	0.540	8M95G7D		
		16QAM			22.57		26.70	0.468	8M95D7D		
	15	QPSK	670.5	690.5	23.25		27.38	0.547	13M5G7D		
		16QAM			22.52		26.65	0.462	13M4D7D		
	20	QPSK	673	688	23.24		27.37	0.546	18M0G7D		
		16QAM			22.53		26.66	0.463	17M8D7D		
12	1.4	QPSK	699.7	715.3	23.53	4.13	27.66	0.583	1M09G7D		
		16QAM			22.82		26.95	0.495	1M09D7D		
	3	QPSK	700.5	714.5	23.43		27.56	0.570	2M69G7D		
		16QAM			23.02		27.15	0.519	2M68D7D		
	5	QPSK	701.5	713.5	23.61		27.74	0.594	4M49G7D		
		16QAM			22.99		27.12	0.515	4M49D7D		
	10	QPSK	704	711	23.60		27.73	0.593	8M95G7D		
		16QAM			22.96		27.09	0.512	8M92D7D		
	13	5	QPSK	779.5	784.5		23.65	3.55	27.20	0.525	4M49G7D
			16QAM				23.23		26.78	0.476	4M53D7D
10		QPSK	782		23.60	27.15	0.519		8M95G7D		
		16QAM			23.01	26.56	0.453		8M95D7D		
14	5	QPSK	790.5	795.5	22.87	3.55	26.42	0.439	4M50G7D		
		16QAM			22.15		25.70	0.372	4M50D7D		
	10	QPSK	793		22.98		26.53	0.450	8M97G7D		
		16QAM			22.15		25.70	0.372	8M94D7D		
26 Part 90	1.4	QPSK	814.4	823.3	23.26	3.29	26.55	0.452	1M10G7D		
		16QAM			22.71		26.00	0.398	1M09D7D		
	3	QPSK	815.5	822.5	23.40		26.69	0.467	2M68G7D		
		16QAM			22.83		26.12	0.409	2M68D7D		
	5	QPSK	816.5	821.5	23.55		26.84	0.483	4M51G7D		
		16QAM			22.82		26.11	0.408	4M53D7D		
	10	QPSK	819		23.56		26.85	0.484	8M92G7D		
		16QAM			22.80		26.09	0.406	8M92D7D		
	15	QPSK	821.5		23.53		26.82	0.481	13M4G7D		
		16QAM			22.91		26.20	0.417	13M5D7D		

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
26/5 Part 22	1.4	QPSK	824.7	848.3	23.19	5.13	28.32	0.679	1M09G7D		
		16QAM			22.63		27.76	0.597	1M09D7D		
	3	QPSK	825.5	847.5	23.36		28.49	0.706	2M68G7D		
		16QAM			22.84		27.97	0.627	2M68D7D		
	5	QPSK	826.5	846.5	23.31		28.44	0.698	4M49G7D		
		16QAM			22.76		27.89	0.615	4M49D7D		
	10	QPSK	829	844	23.55		28.68	0.738	8M95G7D		
		16QAM			22.99		28.12	0.649	8M92D7D		
	26 Part 22	15	QPSK	831.5	841.5		23.54	28.67	0.736	13M5G7D	
			16QAM				22.96	28.09	0.644	13M4D7D	
66/4	1.4	QPSK	1 710.7	1 779.3	22.94	-2.44	20.50	0.112	1M09G7D		
		16QAM			22.31		19.87	0.097	1M09D7D		
	3	QPSK	1 711.5	1 778.5	23.05		20.61	0.115	2M68G7D		
		16QAM			22.40		19.96	0.099	2M69D7D		
	5	QPSK	1 712.5	1 777.5	23.10		20.66	0.116	4M49G7D		
		16QAM			22.45		20.01	0.100	4M49D7D		
	10	QPSK	1 715	1 775	22.96		20.52	0.113	8M95G7D		
		16QAM			22.39		19.95	0.099	8M95D7D		
	15	QPSK	1 717.5	1 772.5	23.24		20.80	0.120	13M5G7D		
		16QAM			22.68		20.24	0.106	13M5D7D		
	20	QPSK	1 720	1 770	23.16		20.72	0.118	17M9G7D		
		16QAM			22.50		20.06	0.101	17M9D7D		
	25/2	1.4	QPSK	1 850.7	1 914.3		22.84	-2.50	20.34	0.108	1M09G7D
			16QAM				22.20		19.70	0.093	1M10D7D
3		QPSK	1 851.5	1 913.5	23.02	20.52	0.113		2M68G7D		
		16QAM			22.36	19.86	0.097		2M68D7D		
5		QPSK	1 852.5	1 912.5	22.90	20.40	0.110		4M51G7D		
		16QAM			22.38	19.88	0.097		4M49D7D		
10		QPSK	1 855	1 910	22.98	20.48	0.112		8M95G7D		
		16QAM			22.31	19.81	0.096		8M89D7D		
15		QPSK	1 857.5	1 907.5	23.11	20.61	0.115		13M5G7D		
		16QAM			22.60	20.10	0.102		13M5D7D		
20		QPSK	1 860	1 905	23.06	20.56	0.114		17M9G7D		
		16QAM			22.44	19.94	0.099		17M9D7D		
7	5	QPSK	2 502.5	2 567.5	22.47	0.99	23.46	0.222	4M51G7D		
		16QAM			21.89		22.88	0.194	4M49D7D		
	10	QPSK	2 505	2 565	22.81		23.80	0.240	8M95G7D		
		16QAM			22.01		23.00	0.200	8M95D7D		
	15	QPSK	2 507.5	2 562.5	22.95		23.94	0.248	13M4G7D		
		16QAM			21.87		22.86	0.193	13M5D7D		
	20	QPSK	2 510	2 560	23.14		24.13	0.259	17M9G7D		
		16QAM			22.34		23.33	0.215	17M9D7D		



**ANT 4**

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator
71	5	QPSK	665.5	695.5	23.01	3.84	26.85	0.484	4M51G7D
		16QAM			22.46		26.30	0.427	4M49D7D
	10	QPSK	668	693	23.19		27.03	0.505	8M95G7D
		16QAM			22.57		26.41	0.438	8M95D7D
	15	QPSK	670.5	690.5	23.25		27.09	0.512	13M5G7D
		16QAM			22.52		26.36	0.433	13M4D7D
	20	QPSK	673	688	23.24		27.08	0.511	18M0G7D
		16QAM			22.53		26.37	0.434	17M8D7D
12	1.4	QPSK	699.7	715.3	23.53	3.84	27.37	0.546	1M09G7D
		16QAM			22.82		26.66	0.463	1M09D7D
	3	QPSK	700.5	714.5	23.43		27.27	0.533	2M69G7D
		16QAM			23.02		26.86	0.485	2M68D7D
	5	QPSK	701.5	713.5	23.61		27.45	0.556	4M49G7D
		16QAM			22.99		26.83	0.482	4M49D7D
	10	QPSK	704	711	23.60		27.44	0.555	8M95G7D
		16QAM			22.96		26.80	0.479	8M92D7D
13	5	QPSK	779.5	784.5	23.65	1.63	25.28	0.337	4M49G7D
		16QAM			23.23		24.86	0.306	4M53D7D
	10	QPSK	782	23.60	25.23		0.333	8M95G7D	
		16QAM		23.01	24.64		0.291	8M95D7D	
14	5	QPSK	790.5	795.5	22.87	1.63	24.50	0.282	4M50G7D
		16QAM			22.15		23.78	0.239	4M50D7D
	10	QPSK	793	22.98	24.61		0.289	8M97G7D	
		16QAM		22.15	23.78		0.239	8M94D7D	
26 Part 90	1.4	QPSK	814.4	823.3	23.26	2.86	26.12	0.409	1M10G7D
		16QAM			22.71		25.57	0.361	1M09D7D
	3	QPSK	815.5	822.5	23.40		26.26	0.423	2M68G7D
		16QAM			22.83		25.69	0.371	2M68D7D
	5	QPSK	816.5	821.5	23.55		26.41	0.438	4M51G7D
		16QAM			22.82		25.68	0.370	4M53D7D
	10	QPSK	819	23.56	26.42		0.439	8M92G7D	
		16QAM		22.80	25.66		0.368	8M92D7D	
	15	QPSK	821.5	23.53	26.39		0.436	13M4G7D	
		16QAM		22.91	25.77		0.378	13M5D7D	

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
26/5 Part 22	1.4	QPSK	824.7	848.3	23.19	3.81	27.00	0.501	1M09G7D		
		16QAM			22.63		26.44	0.441	1M09D7D		
	3	QPSK	825.5	847.5	23.36		27.17	0.521	2M68G7D		
		16QAM			22.84		26.65	0.462	2M68D7D		
	5	QPSK	826.5	846.5	23.31		27.12	0.515	4M49G7D		
		16QAM			22.76		26.57	0.454	4M49D7D		
	10	QPSK	829	844	23.55		27.36	0.545	8M95G7D		
		16QAM			22.99		26.80	0.479	8M92D7D		
	26 Part 22	15	QPSK	831.5	841.5		23.54	27.35	0.543	13M5G7D	
			16QAM				22.96	26.77	0.475	13M4D7D	
66/4	1.4	QPSK	1 710.7	1 779.3	22.94	-3.07	19.87	0.097	1M09G7D		
		16QAM			22.31		19.24	0.084	1M09D7D		
	3	QPSK	1 711.5	1 778.5	23.05		19.98	0.100	2M68G7D		
		16QAM			22.40		19.33	0.086	2M69D7D		
	5	QPSK	1 712.5	1 777.5	23.10		20.03	0.101	4M49G7D		
		16QAM			22.45		19.38	0.087	4M49D7D		
	10	QPSK	1 715	1 775	22.96		19.89	0.097	8M95G7D		
		16QAM			22.39		19.32	0.086	8M95D7D		
	15	QPSK	1 717.5	1 772.5	23.24		20.17	0.104	13M5G7D		
		16QAM			22.68		19.61	0.091	13M5D7D		
	20	QPSK	1 720	1 770	23.16		20.09	0.102	17M9G7D		
		16QAM			22.50		19.43	0.088	17M9D7D		
	25/2	1.4	QPSK	1 850.7	1 914.3		22.84	-0.31	22.53	0.179	1M09G7D
			16QAM				22.20		21.89	0.155	1M10D7D
3		QPSK	1 851.5	1 913.5	23.02	22.71	0.187		2M68G7D		
		16QAM			22.36	22.05	0.160		2M68D7D		
5		QPSK	1 852.5	1 912.5	22.90	22.59	0.182		4M51G7D		
		16QAM			22.38	22.07	0.161		4M49D7D		
10		QPSK	1 855	1 910	22.98	22.67	0.185		8M95G7D		
		16QAM			22.31	22.00	0.158		8M89D7D		
15		QPSK	1 857.5	1 907.5	23.11	22.80	0.191		13M5G7D		
		16QAM			22.60	22.29	0.169		13M5D7D		
20		QPSK	1 860	1 905	23.06	22.75	0.188		17M9G7D		
		16QAM			22.44	22.13	0.163		17M9D7D		
7	5	QPSK	2 502.5	2 567.5	22.47	2.19	24.66	0.292	4M51G7D		
		16QAM			21.89		24.08	0.256	4M49D7D		
	10	QPSK	2 505	2 565	22.81		25.00	0.316	8M95G7D		
		16QAM			22.01		24.20	0.263	8M95D7D		
	15	QPSK	2 507.5	2 562.5	22.95		25.14	0.327	13M4G7D		
		16QAM			21.87		24.06	0.255	13M5D7D		
	20	QPSK	2 510	2 560	23.14		25.33	0.341	17M9G7D		
		16QAM			22.34		24.53	0.284	17M9D7D		

**ANT 5**

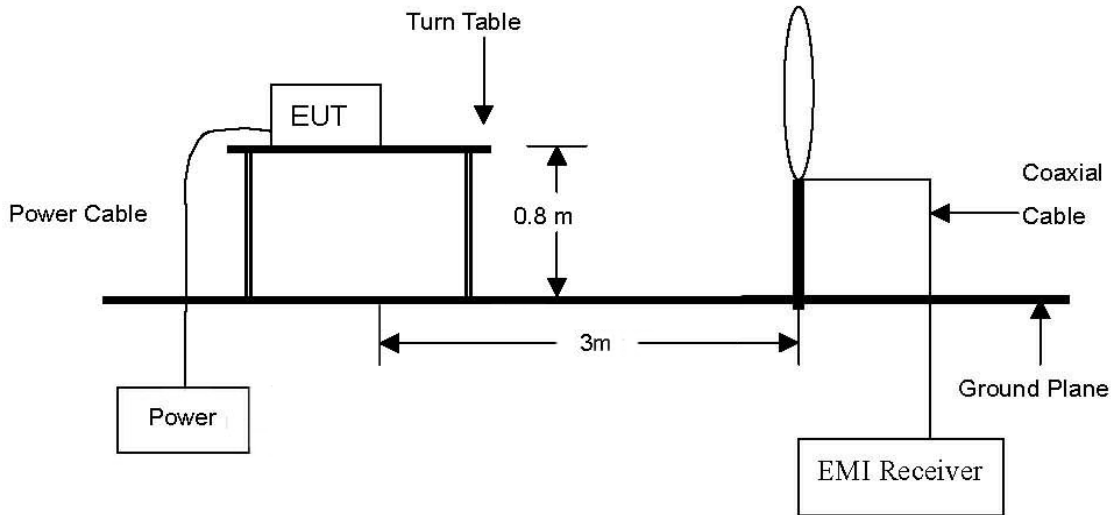
Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
71	5	QPSK	665.5	695.5	23.01	2.98	25.99	0.397	4M51G7D		
		16QAM			22.46		25.44	0.350	4M49D7D		
	10	QPSK	668	693	23.19		26.17	0.414	8M95G7D		
		16QAM			22.57		25.55	0.359	8M95D7D		
	15	QPSK	670.5	690.5	23.25		26.23	0.420	13M5G7D		
		16QAM			22.52		25.50	0.355	13M4D7D		
	20	QPSK	673	688	23.24		26.22	0.419	18M0G7D		
		16QAM			22.53		25.51	0.356	17M8D7D		
12	1.4	QPSK	699.7	715.3	23.53	2.98	26.51	0.448	1M09G7D		
		16QAM			22.82		25.80	0.380	1M09D7D		
	3	QPSK	700.5	714.5	23.43		26.41	0.438	2M69G7D		
		16QAM			23.02		26.00	0.398	2M68D7D		
	5	QPSK	701.5	713.5	23.61		26.59	0.456	4M49G7D		
		16QAM			22.99		25.97	0.395	4M49D7D		
	10	QPSK	704	711	23.60		26.58	0.455	8M95G7D		
		16QAM			22.96		25.94	0.393	8M92D7D		
	13	5	QPSK	779.5	784.5		23.65	2.73	26.38	0.435	4M49G7D
			16QAM				23.23		25.96	0.394	4M53D7D
10		QPSK	782		23.60	26.33	0.430		8M95G7D		
		16QAM	782		23.01	25.74	0.375		8M95D7D		
14	5	QPSK	790.5	795.5	22.87	2.73	25.60	0.363	4M50G7D		
		16QAM			22.15		24.88	0.308	4M50D7D		
	10	QPSK	793		22.98		25.71	0.372	8M97G7D		
		16QAM	793		22.15		24.88	0.308	8M94D7D		
26 Part 90	1.4	QPSK	814.4	823.3	23.26	4.08	27.34	0.542	1M10G7D		
		16QAM			22.71		26.79	0.478	1M09D7D		
	3	QPSK	815.5	822.5	23.40		27.48	0.560	2M68G7D		
		16QAM			22.83		26.91	0.491	2M68D7D		
	5	QPSK	816.5	821.5	23.55		27.63	0.579	4M51G7D		
		16QAM			22.82		26.90	0.490	4M53D7D		
	10	QPSK	819		23.56		27.64	0.581	8M92G7D		
		16QAM	819		22.80		26.88	0.488	8M92D7D		
	15	QPSK	821.5		23.53		27.61	0.577	13M4G7D		
		16QAM	821.5		22.91		26.99	0.500	13M5D7D		

Band	Band width (MHz)	Modulation	Low Freq. (MHz)	Upper Freq. (MHz)	Maximum conducted power (dB m)	Ant. Gain (dB i)	E.R.P. / E.I.R.P. (dB m)	E.R.P. / E.I.R.P. (W)	Emission Designator		
26/5 Part 22	1.4	QPSK	824.7	848.3	23.19	4.43	27.62	0.578	1M09G7D		
		16QAM			22.63		27.06	0.508	1M09D7D		
	3	QPSK	825.5	847.5	23.36		27.79	0.601	2M68G7D		
		16QAM			22.84		27.27	0.533	2M68D7D		
	5	QPSK	826.5	846.5	23.31		27.74	0.594	4M49G7D		
		16QAM			22.76		27.19	0.524	4M49D7D		
	10	QPSK	829	844	23.55		27.98	0.628	8M95G7D		
		16QAM			22.99		27.42	0.552	8M92D7D		
	26 Part 22	15	QPSK	831.5	841.5		23.54	27.97	0.627	13M5G7D	
			16QAM				22.96	27.39	0.548	13M4D7D	
66/4	1.4	QPSK	1 710.7	1 779.3	22.94	-2.42	20.52	0.113	1M09G7D		
		16QAM			22.31		19.89	0.097	1M09D7D		
	3	QPSK	1 711.5	1 778.5	23.05		20.63	0.116	2M68G7D		
		16QAM			22.40		19.98	0.100	2M69D7D		
	5	QPSK	1 712.5	1 777.5	23.10		20.68	0.117	4M49G7D		
		16QAM			22.45		20.03	0.101	4M49D7D		
	10	QPSK	1 715	1 775	22.96		20.54	0.113	8M95G7D		
		16QAM			22.39		19.97	0.099	8M95D7D		
	15	QPSK	1 717.5	1 772.5	23.24		20.82	0.121	13M5G7D		
		16QAM			22.68		20.26	0.106	13M5D7D		
	20	QPSK	1 720	1 770	23.16		20.74	0.119	17M9G7D		
		16QAM			22.50		20.08	0.102	17M9D7D		
	25/2	1.4	QPSK	1 850.7	1 914.3		22.84	-0.46	22.38	0.173	1M09G7D
			16QAM				22.20		21.74	0.149	1M10D7D
3		QPSK	1 851.5	1 913.5	23.02	22.56	0.180		2M68G7D		
		16QAM			22.36	21.90	0.155		2M68D7D		
5		QPSK	1 852.5	1 912.5	22.90	22.44	0.175		4M51G7D		
		16QAM			22.38	21.92	0.156		4M49D7D		
10		QPSK	1 855	1 910	22.98	22.52	0.179		8M95G7D		
		16QAM			22.31	21.85	0.153		8M89D7D		
15		QPSK	1 857.5	1 907.5	23.11	22.65	0.184		13M5G7D		
		16QAM			22.60	22.14	0.164		13M5D7D		
20		QPSK	1 860	1 905	23.06	22.60	0.182		17M9G7D		
		16QAM			22.44	21.98	0.158		17M9D7D		
7	5	QPSK	2 502.5	2 567.5	22.47	1.09	23.56	0.227	4M51G7D		
		16QAM			21.89		22.98	0.199	4M49D7D		
	10	QPSK	2 505	2 565	22.81		23.90	0.245	8M95G7D		
		16QAM			22.01		23.10	0.204	8M95D7D		
	15	QPSK	2 507.5	2 562.5	22.95		24.04	0.254	13M4G7D		
		16QAM			21.87		22.96	0.198	13M5D7D		
	20	QPSK	2 510	2 560	23.14		24.23	0.265	17M9G7D		
		16QAM			22.34		23.43	0.220	17M9D7D		

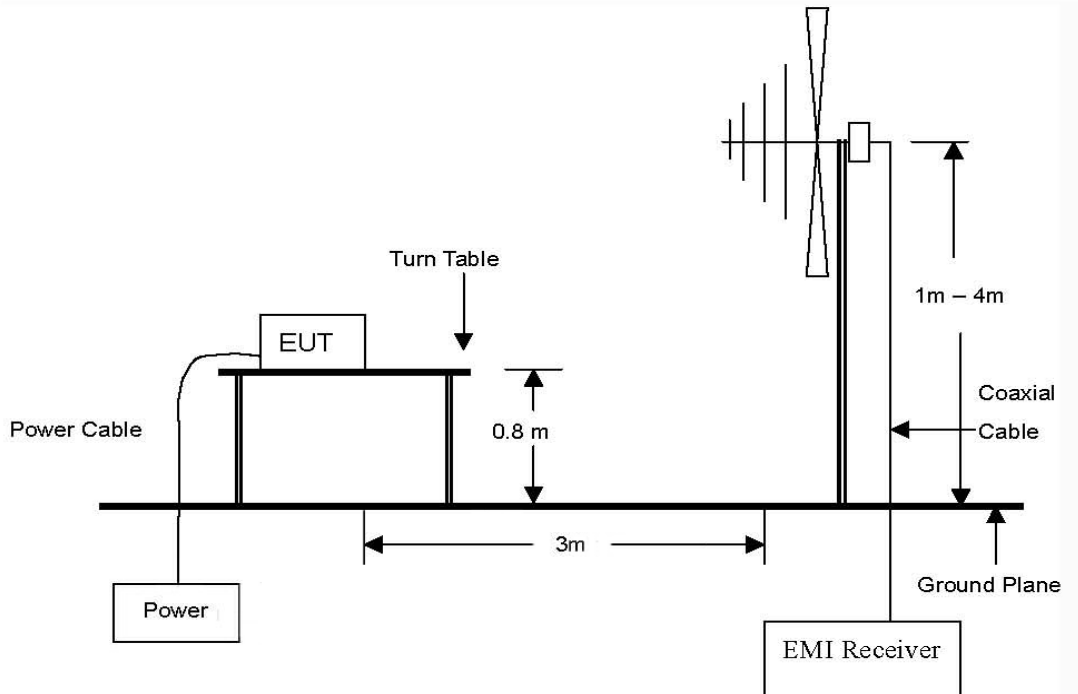
## 2. E.R.P. / E.I.R.P. & Spurious Radiated Emission

### 2.1. Test setup

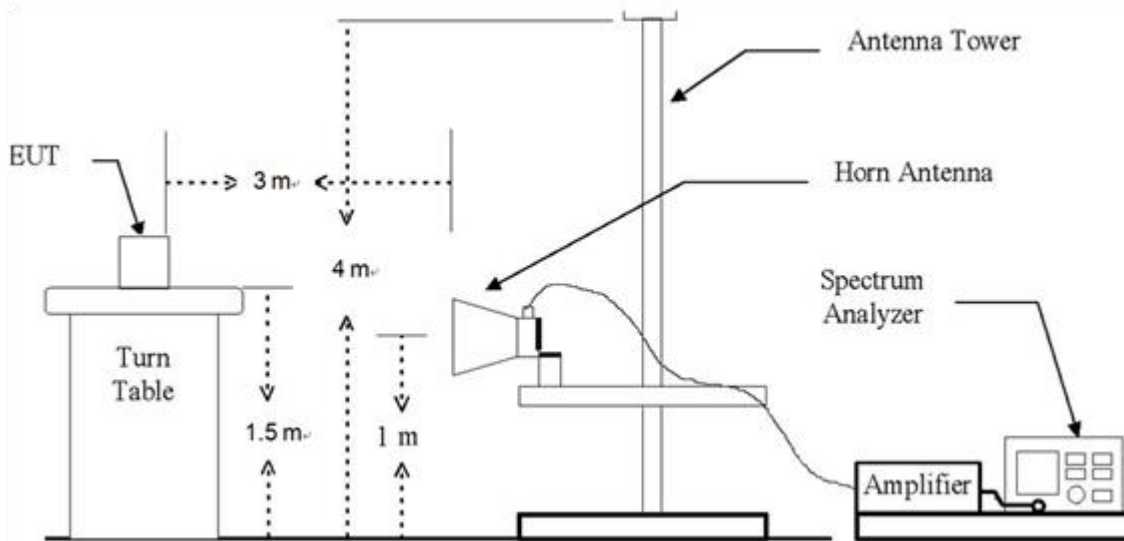
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 GHz to 26 GHz Emissions.



## 2.2. Limit

### 2.2.1. Limit of E.R.P. / E.I.R.P.

#### FCC

- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
- §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.
- §27.50(b)(9), Control stations and mobile stations transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz band and fixed stations transmitting in the 787-788 MHz and 805-806 MHz band are limited to 30 watts ERP.
- §27.50(c)(9), Control and mobile stations in the 698-746 MHz band are limited to 30 watts ERP.
- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 MHz band and mobile and portable stations operating in the 1 695-1 710 MHz and 1 755-1 780 MHz bands are limited to 1 watt EIRP.
- §27.50(h)(2), Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.
- §90.542(a)(6), Control stations and mobile stations transmitting in the 758-768 MHz band and the 788-798 MHz band are limited to 30 watts ERP.
- §90.635(b), the maximum output power of the transmitter for mobile stations is 100 watts (20 dBW).

**IC**

- RSS-130 Issue 2

4.6.3, the e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.

- RSS-132 Issue 3

5.4, the transmitter output power shall be measured in terms of average power.

The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts.

Refer to SRSP-503 for base station e.i.r.p. limits.

- RSS-133 Issue 6

6.4, the equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Mobile stations and hand-held portables are limited to 2 watts maximum e.i.r.p. The equipment shall employ means to limit the power to the minimum necessary for successful communication.

- RSS-139 Issue 4

5.5, The maximum output power of the equipment shall comply with the limits specified below. In the tables, maximum power refers to the equivalent isotropically radiated power (e.i.r.p.) or total radiated power (TRP), measured in terms of average values.

**Table 3: Maximum power of equipment in the band 1 710-1 780 MHz**

Equipment type	Maximum power
Fixed station and base station	30 dB m e.i.r.p./ channel bandwidth
Subscriber equipment	30 dB m e.i.r.p./ channel bandwidth

- RSS-140 Issue 1

4.3, The equivalent radiated power (e.r.p.) for control and mobile equipment shall not exceed 30 W. The e.r.p. for portable equipment including handheld devices shall not exceed 3 W.

- RSS-199 Issue 3

4.4, the transmitter output power shall be measured in terms of average value.

For base station equipment, refer to SRSP-517 for the maximum permissible e.i.r.p.

For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.



## 2.2.2. Limit of Spurious Radiated Emission

### FCC

- §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10\log(P)$  dB.
- §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.
- §27.53(c)(2), on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log (P)$  dB.
- §27.53(f), For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1 559-1 610 MHz shall be limited to -70 dB W/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dB W EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.
- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB.
- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  dB.
- §90.543(e), For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:
  - (1) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $76 + 10 \log (P)$  dB in a 6.25 kHz band segment, for base and fixed stations.
  - (2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than  $65 + 10 \log (P)$  dB in a 6.25 kHz band segment, for mobile and portable stations.
  - (3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least  $43 + 10 \log (P)$  dB.
  - (4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.
  - (5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.
- §90.543(f), For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1 559-1 610 MHz shall be limited to -70 dB W/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dB W EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.
- §90.691(a), out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are

as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $116 \log_{10}(f / 6.1)$  decibels or  $50 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

## IC

### - RSS-130 Issue 2

4.7.1, the unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dB W), by at least  $43 + 10 \log_{10} p$  (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

a) The power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dB W), by at least:

(i)  $76 + 10 \log_{10} p$  (watts), dB, for base and fixed equipment, and

(ii)  $65 + 10 \log_{10} p$  (watts), dB, for mobile and portable equipment.

b) The e.i.r.p. in the band 1 559-1 610 MHz shall not exceed -70 dB W/MHz for wideband signal and -80 dB W for discrete emission with bandwidth less than 700 Hz.

### - RSS-132 Issue 3

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p$  (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p$  (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

- RSS-139 Issue 4

5.6, Unwanted emissions shall be measured in terms of average values.

For all equipment, the TRP or total conducted power (sum of conducted power across all antenna connectors) of the unwanted emissions outside the frequency block or frequency block group shall not exceed the limits shown in table 6.

**Table 3: Unwanted emission limits**

Offset from the edge of the frequency block or frequency block group	Unwanted emission limit
1 MHz	-13 dB m/(1% of OB)*
>1 MHz	-13 dB m

\* OB is the occupied bandwidth

- RSS-140 Issue 1

4.4, The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dB W as follows, where p is the transmitter output power in watts:

a) For any frequency between 769-775 MHz and 799-806 MHz:

i)  $76 + 10 \log(p)$ , dB in a 6.25 kHz band for fixed and base station equipment

ii)  $65 + 10 \log(p)$ , dB in a 6.25 kHz band for mobile and portable/hand-held equipment

b) For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz:  $43 + 10 \log(p)$ , dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1 559-1 610 MHz, shall not exceed -70 dB W /MHz for wideband emissions, and -80 dB W /kHz for discrete emissions of less than 700 Hz bandwidth.

- RSS-199 Issue 3

4.5, In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits:

for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dB W), by at least  $43 + 10 \log_{10} p$  for mobile

subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power,  $P$  (dB W), by at least:

- i.  $40 + 10 \log_{10} p$  from the channel edges to 5 MHz away
- ii.  $43 + 10 \log_{10} p$  between 5 MHz and  $X$  MHz from the channel edges, and
- iii.  $55 + 10 \log_{10} p$  at  $X$  MHz and beyond from the channel edges

In addition, the attenuation shall not be less than  $43 + 10 \log_{10} p$  on all frequencies between 2 490.5 MHz and 2 496 MHz, and  $55 + 10 \log_{10} p$  at or below 2 490.5 MHz.

In (a) and (b),  $p$  is the transmitter power measured in watts and  $X$  is 6 MHz or the equipment occupied bandwidth, whichever is greater.

**2.3. Test Procedure: Based on ANSI/TIA 603E: 2016 and ANSI C63.26-2015 and KDB 971168 D01 Power Meas License Digital Systems v03r01.**

1. On a test site, the EUT shall be placed at 0.8 m or 1.5 m height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The output of the test antenna shall be connected to the measuring receiver and the peak detector is used for the measurement.
4. Radiated spurious emissions measurement method was set as follows:  
RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz, VBW  $\geq$  3 x RBW,  
Detector = RMS, trace mode = max hold, per the guidelines of KDB 971168 D01 Power Meas License Digital Systems v03r01.
5. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
11. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
12. The measurement shall be repeated with the test antenna orientated for horizontal polarization.

## 2.4. Test results

Ambient temperature : (23 ± 1) °C  
 Relative humidity : 47 % R.H.

### 2.4.1. E.R.P. / E.I.R.P.

#### ANT 1

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
71	663 ~ 698	23.25	0.211	2.68	25.93	0.392	23.78	0.239	3 W E.R.P.
12	699 ~ 716	23.61	0.230	2.68	26.29	0.426	24.14	0.259	30 W E.R.P.
13	777 ~ 787	23.65	0.232	2.79	26.44	0.441	24.29	0.269	30 W E.R.P.
14	788 ~ 798	22.98	0.199	2.79	25.77	0.378	23.62	0.230	30 W E.R.P.
26 part 90	814 ~ 824	23.56	0.227	3.48	27.04	0.506	24.89	0.308	100 W
26/5 part 22	824 ~ 849	23.55	0.226	5.09	28.64	0.731	26.49	0.446	7 W E.R.P.
66/4	1 710 ~ 1 780	23.24	0.211	-2.36	20.88	0.122			1 W E.I.R.P.
25/2	1 850 ~ 1 915	23.11	0.205	-3.00	20.11	0.103			2 W E.I.R.P.
7	2 500 ~ 2 570	23.14	0.206	2.68	25.82	0.382			2 W E.I.R.P.

#### ANT 2

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
71	663 ~ 698	23.25	0.211	2.68	25.93	0.392	23.78	0.239	3 W E.R.P.
12	699 ~ 716	23.61	0.230	2.68	26.29	0.426	24.14	0.259	30 W E.R.P.
13	777 ~ 787	23.65	0.232	1.59	25.24	0.334	23.09	0.204	30 W E.R.P.
14	788 ~ 798	22.98	0.199	1.59	24.57	0.286	22.42	0.175	30 W E.R.P.
26 part 90	814 ~ 824	23.56	0.227	2.27	25.83	0.383	23.68	0.233	100 W
26/5 part 22	824 ~ 849	23.55	0.226	3.91	27.46	0.557	25.31	0.340	7 W E.R.P.
66/4	1 710 ~ 1 780	23.24	0.211	-3.98	19.26	0.084			1 W E.I.R.P.
25/2	1 850 ~ 1 915	23.11	0.205	-2.41	20.70	0.117			2 W E.I.R.P.
7	2 500 ~ 2 570	23.14	0.206	2.28	25.42	0.348			2 W E.I.R.P.

**ANT 3**

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
71	663 ~ 698	23.25	0.211	4.13	27.38	0.547	25.23	0.333	3 W E.I.R.P.
12	699 ~ 716	23.61	0.230	4.13	27.74	0.594	25.59	0.362	30 W E.I.R.P.
13	777 ~ 787	23.65	0.232	3.55	27.20	0.525	25.05	0.320	30 W E.I.R.P.
14	788 ~ 798	22.98	0.199	3.55	26.53	0.450	24.38	0.274	30 W E.I.R.P.
26 part 90	814 ~ 824	23.56	0.227	3.29	26.85	0.484	24.70	0.295	100 W
26/5 part 22	824 ~ 849	23.55	0.226	5.13	28.68	0.738	26.53	0.450	7 W E.I.R.P.
66/4	1 710 ~ 1 780	23.24	0.211	-2.44	20.80	0.120			1 W E.I.R.P.
25/2	1 850 ~ 1 915	23.11	0.205	-2.50	20.61	0.115			2 W E.I.R.P.
7	2 500 ~ 2 570	23.14	0.206	0.99	24.13	0.259			2 W E.I.R.P.

**ANT 4**

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
71	663 ~ 698	23.25	0.211	3.84	27.09	0.512	24.94	0.312	3 W E.I.R.P.
12	699 ~ 716	23.61	0.230	3.84	27.45	0.556	25.30	0.339	30 W E.I.R.P.
13	777 ~ 787	23.65	0.232	1.63	25.28	0.337	23.13	0.206	30 W E.I.R.P.
14	788 ~ 798	22.98	0.199	1.63	24.61	0.289	22.46	0.176	30 W E.I.R.P.
26 part 90	814 ~ 824	23.56	0.227	2.86	26.42	0.439	24.27	0.267	100 W
26/5 part 22	824 ~ 849	23.55	0.226	3.81	27.36	0.545	25.21	0.332	7 W E.I.R.P.
66/4	1 710 ~ 1 780	23.24	0.211	-3.07	20.17	0.104			1 W E.I.R.P.
25/2	1 850 ~ 1 915	23.11	0.205	-0.31	22.80	0.191			2 W E.I.R.P.
7	2 500 ~ 2 570	23.14	0.206	2.19	25.33	0.341			2 W E.I.R.P.

**ANT 5**

Band	Frequency (MHz)	Maximum Conducted Power (dB m)	Maximum Conducted Power (W)	Antenna Gain (dB i)	Maximum E.I.R.P. (dB m)	Maximum E.I.R.P. (W)	Maximum E.R.P. (dB m)	Maximum E.R.P. (W)	Limit
71	663 ~ 698	23.25	0.211	2.98	26.23	0.420	24.08	0.256	3 W E.R.P.
12	699 ~ 716	23.61	0.230	2.98	26.59	0.456	24.44	0.278	30 W E.R.P.
13	777 ~ 787	23.65	0.232	2.73	26.38	0.435	24.23	0.265	30 W E.R.P.
14	788 ~ 798	22.98	0.199	2.73	25.71	0.372	23.56	0.227	30 W E.R.P.
26 part 90	814 ~ 824	23.56	0.227	4.08	27.64	0.581	25.49	0.354	100 W
26/5 part 22	824 ~ 849	23.55	0.226	4.43	27.98	0.628	25.83	0.383	7 W E.R.P.
66/4	1 710 ~ 1 780	23.24	0.211	-2.42	20.82	0.121			1 W E.I.R.P.
25/2	1 850 ~ 1 915	23.11	0.205	-0.46	22.65	0.184			2 W E.I.R.P.
7	2 500 ~ 2 570	23.14	0.206	1.09	24.23	0.265			2 W E.I.R.P.

**Remark;**

1. E.I.R.P. (dB m) = Maximum Conducted Power (dB m) + Antenna Gain (dB i)
2. E.R.P. (dB m) = E.I.R.P. (dB m) - 2.15 (dB); where E.R.P. and E.I.R.P. are expressed in consistent units.
3. Antenna gain reflecting cable loss was applied.



### 2.4.2. Spurious radiated emission

#### - Antenna 1

#### LTE band 7 (20 MHz - QPSK)

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (2 510.0 MHz)									
7 503.35	45.31	H	35.90	-32.96	48.25	-95.26	-47.01	-25	22.01
7 503.35	49.13	V	35.90	-32.96	52.07	-95.26	-43.19	-25	18.19
10 004.05	44.80	H	37.80	-31.91	50.69	-95.26	-44.57	-25	19.57
10 004.90	47.69	V	37.80	-31.89	53.60	-95.26	<b>-41.66</b>	-25	16.66
Above 10 100.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (2 535.0 MHz)									
7 578.15	44.92	H	35.90	-32.64	48.18	-95.26	-47.08	-25	22.08
7 578.15	48.22	V	35.90	-32.64	51.48	-95.26	-43.78	-25	18.78
10 104.35	45.00	H	37.81	-31.56	51.25	-95.26	-44.01	-25	19.01
10 104.35	44.97	V	37.81	-31.56	51.22	-95.26	-44.04	-25	19.04
Above 10 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (2 560.0 MHz)									
7 652.95	44.96	H	35.91	-32.40	48.47	-95.26	-46.79	-25	21.79
7 652.95	45.18	V	35.91	-32.40	48.69	-95.26	-46.57	-25	21.57
Above 7 700.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 12 (5 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (701.5 MHz)									
1 398.70	57.28	H	25.10	-39.15	43.23	-97.41	-54.18	-13	41.18
1 398.70	55.94	V	25.10	-39.15	41.89	-97.41	-55.52	-13	42.52
2 797.30	50.23	H	28.89	-36.77	42.35	-97.41	-55.06	-13	42.06
2 797.30	56.90	V	28.89	-36.77	49.02	-97.41	<b>-48.39</b>	-13	35.39
Above 2 800.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (707.5 MHz)									
1 410.04	51.77	H	25.08	-39.15	37.70	-97.41	-59.71	-13	46.71
1 375.30	53.94	V	25.10	-39.17	39.87	-97.41	-57.54	-13	44.54
2 821.60	55.10	V	29.07	-36.76	47.41	-97.41	-50.00	-13	37.00
Above 2 900.00	Not detected	-	-	-	-	-	-	-	-
High Channel (713.5 MHz)									
1 374.40	52.96	V	25.10	-39.17	38.89	-97.41	-58.52	-13	45.52
2 845.00	50.76	H	29.26	-36.74	43.28	-97.41	-54.13	-13	41.13
Above 2 900.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 13 (5 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (779.5 MHz)									
1 554.40	56.91	H	25.32	-38.80	43.43	-95.26	<b>-51.83</b>	-40	11.83
1 554.40	55.12	V	25.32	-38.80	41.64	-95.26	-53.62	-40	13.62
3 109.15	49.77	H	30.02	-36.65	43.14	-97.41	-54.27	-13	41.27
Above 3 200.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (782.0 MHz)									
1 559.35	56.66	H	25.34	-38.78	43.22	-95.26	-52.04	-40	12.04
1 559.80	55.76	V	25.34	-38.78	42.32	-95.26	-52.94	-40	12.94
3 119.50	52.76	H	30.04	-36.65	46.15	-97.41	-51.26	-13	38.26
3 119.50	50.57	V	30.04	-36.65	43.96	-97.41	-53.45	-13	40.45
Above 3 200.00	Not detected	-	-	-	-	-	-	-	-
High Channel (784.5 MHz)									
1 564.30	53.61	H	25.36	-38.76	40.21	-95.26	-55.05	-40	15.05
1 564.30	55.43	V	25.36	-38.76	42.03	-95.26	-53.23	-40	13.23
3 128.95	50.07	H	30.06	-36.65	43.48	-97.41	-53.93	-13	40.93
Above 3 200.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 14 (10 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.R.P. / E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Middle Channel (793.0 MHz)									
1 576.90	57.46	H	25.41	-38.70	44.17	-95.26	<b>-51.09</b>	-40	11.09
1 576.90	53.93	V	25.41	-38.70	40.64	-95.26	-54.62	-40	14.62
3 154.15	51.01	H	30.11	-36.65	44.47	-97.41	-52.94	-13	39.94
3 154.15	49.05	V	30.11	-36.65	42.51	-97.41	-54.90	-13	41.90
Above 3 200.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 25/2 (15 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 857.5 MHz)									
3 701.30	61.67	H	32.10	-36.60	57.17	-95.26	-38.09	-13	25.09
3 701.30	52.20	V	32.10	-36.60	47.70	-95.26	-47.56	-13	34.56
5 551.75	60.12	H	33.90	-34.21	59.81	-95.26	-35.45	-13	22.45
5 552.60	55.75	V	33.90	-34.20	55.45	-95.26	-39.81	-13	26.81
7 403.05	52.36	H	36.00	-32.16	56.20	-95.26	-39.06	-13	26.06
7 403.05	50.26	V	36.00	-32.16	54.10	-95.26	-41.16	-13	28.16
9 254.35	56.81	H	37.21	-32.68	61.34	-95.26	-33.92	-13	20.92
9 254.35	59.53	V	37.21	-32.68	64.06	-95.26	-31.20	-13	18.20
Above 9 300.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 882.5 MHz)									
3 751.45	66.09	H	32.19	-36.86	61.42	-95.26	-33.84	-13	20.84
3 751.45	57.16	V	32.19	-36.86	52.49	-95.26	-42.77	-13	29.77
5 627.40	56.02	H	33.90	-33.52	56.40	-95.26	-38.86	-13	25.86
5 627.40	55.45	V	33.90	-33.52	55.83	-95.26	-39.43	-13	26.43
7 503.35	51.70	H	35.90	-32.96	54.64	-95.26	-40.62	-13	27.62
7 503.35	50.94	V	35.90	-32.96	53.88	-95.26	-41.38	-13	28.38
9 379.30	59.96	H	37.52	-32.41	65.07	-95.26	<b>-30.19</b>	-13	17.19
9 379.30	57.35	V	37.52	-32.41	62.46	-95.26	-32.80	-13	19.80
11 255.25	43.62	V	38.21	-29.88	51.95	-95.26	-43.31	-13	30.31
Above 11 300.00	Not detected	-	-	-	-	-	-	-	-

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (1 907.5 MHz)									
3 801.60	63.06	H	32.00	-36.63	58.43	-95.26	-36.83	-13	23.83
3 801.60	55.20	V	32.00	-36.63	50.57	-95.26	-44.69	-13	31.69
5 702.20	55.24	H	33.90	-33.56	55.58	-95.26	-39.68	-13	26.68
5 702.20	57.43	V	33.90	-33.56	57.77	-95.26	-37.49	-13	24.49
7 603.65	51.35	H	35.90	-32.62	54.63	-95.26	-40.63	-13	27.63
7 603.65	50.99	V	35.90	-32.62	54.27	-95.26	-40.99	-13	27.99
9 504.25	55.67	H	37.70	-32.44	60.93	-95.26	-34.33	-13	21.33
9 504.25	54.43	V	37.70	-32.44	59.69	-95.26	-35.57	-13	22.57
11 405.70	45.08	V	38.41	-29.95	53.54	-95.26	-41.72	-13	28.72
Above 11 500.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 26/5\_Part 22 (10 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (829.0 MHz)									
1 649.35	57.73	H	25.60	-38.68	44.65	-97.41	-52.76	-13	39.76
1 678.90	59.25	V	25.95	-38.68	46.52	-97.41	-50.89	-13	37.89
2 473.75	51.97	H	28.15	-36.82	43.30	-97.41	-54.11	-13	41.11
2 473.75	52.95	V	28.15	-36.82	44.28	-97.41	-53.13	-13	40.13
Above 2 500.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (836.5 MHz)									
1 664.20	59.57	H	25.77	-38.67	46.67	-97.41	-50.74	-13	37.74
1 663.75	59.06	V	25.77	-38.67	46.16	-97.41	-51.25	-13	38.25
2 496.25	56.03	H	28.11	-37.16	46.98	-97.41	-50.43	-13	37.43
2 496.25	57.54	V	28.11	-37.16	48.49	-97.41	<b>-48.92</b>	-13	35.92
Above 2 500.00	Not detected	-	-	-	-	-	-	-	-
High Channel (844.0 MHz)									
1 679.05	57.51	H	25.95	-38.68	44.78	-97.41	-52.63	-13	39.63
1 679.05	56.97	V	25.95	-38.68	44.24	-97.41	-53.17	-13	40.17
2 518.75	56.25	H	28.21	-36.94	47.52	-97.41	-49.89	-13	36.89
2 518.75	57.03	V	28.21	-36.94	48.30	-97.41	-49.11	-13	36.11
Above 2 600.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 26\_Part 90 (10 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.R.P. (dB m)	Limit (dB m)	Margin (dB)
Middle Channel (819.0 MHz)									
1 629.10	57.39	H	25.56	-38.62	44.33	-97.41	-53.08	-13	40.08
1 629.10	58.91	V	25.56	-38.62	45.85	-97.41	<b>-51.56</b>	-13	38.56
Above 1 700.00	Not detected	-	-	-	-	-	-	-	-

**LTE band 66/4 (15 MHz - QPSK)**

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
Low Channel (1 717.5 MHz)									
3 421.65	52.30	H	30.87	-36.93	46.24	-95.26	-49.02	-13	36.02
3 421.65	49.60	V	30.87	-36.93	43.54	-95.26	-51.72	-13	38.72
5 131.85	57.48	H	33.26	-35.45	55.29	-95.26	-39.97	-13	26.97
5 132.70	56.17	V	33.27	-35.46	53.98	-95.26	-41.28	-13	28.28
6 842.90	53.49	H	35.29	-33.86	54.92	-95.26	-40.34	-13	27.34
6 842.90	52.12	V	35.29	-33.86	53.55	-95.26	-41.71	-13	28.71
8 554.80	53.91	H	36.51	-33.54	56.88	-95.26	-38.38	-13	25.38
8 553.95	58.09	V	36.51	-33.54	61.06	-95.26	-34.20	-13	21.20
10 265.00	46.16	H	37.80	-31.27	52.69	-95.26	-42.57	-13	29.57
10 265.00	44.71	V	37.80	-31.27	51.24	-95.26	-44.02	-13	31.02
Above 10 300.00	Not detected	-	-	-	-	-	-	-	-
Middle Channel (1 745.0 MHz)									
3 467.05	55.37	H	31.10	-36.77	49.70	-95.26	-45.56	-13	32.56
3 476.05	51.93	V	31.10	-36.78	46.25	-95.26	-49.01	-13	36.01
5 215.15	58.46	H	33.53	-35.13	56.86	-95.26	-38.40	-13	25.40
5 215.15	58.49	V	33.53	-35.13	56.89	-95.26	-38.37	-13	25.37
6 953.40	50.00	H	35.41	-33.18	52.23	-95.26	-43.03	-13	30.03
6 953.40	49.96	V	35.41	-33.18	52.19	-95.26	-43.07	-13	30.07
8 691.65	56.55	H	36.87	-34.29	59.13	-95.26	-36.13	-13	23.13
8 691.65	57.82	V	36.87	-34.29	60.40	-95.26	-34.86	-13	21.86
10 429.90	44.60	V	37.80	-31.14	51.26	-95.26	-44.00	-13	31.00
Above 10 500.00	Not detected	-	-	-	-	-	-	-	-

Frequency (MHz)	Measured Level (dB $\mu$ V)	Ant. Pol.	AF (dB/m)	AMP+CL (dB)	E (dB $\mu$ V/m)	CF (dB)	E.I.R.P. (dB m)	Limit (dB m)	Margin (dB)
High Channel (1 772.5 MHz)									
3 531.30	55.71	H	31.04	-36.88	49.87	-95.26	-45.39	-13	32.39
3 531.30	50.06	V	31.04	-36.88	44.22	-95.26	-51.04	-13	38.04
5 297.60	58.63	H	33.79	-34.80	57.62	-95.26	-37.64	-13	24.64
5 297.60	60.75	V	33.79	-34.80	59.74	-95.26	-35.52	-13	22.52
7 063.05	50.95	H	35.53	-33.09	53.39	-95.26	-41.87	-13	28.87
7 063.05	49.98	V	35.53	-33.09	52.42	-95.26	-42.84	-13	29.84
8 829.35	59.84	H	37.16	-32.94	64.06	-95.26	-31.20	-13	18.20
8 829.35	61.67	V	37.16	-32.94	65.89	-95.26	<b>-29.37</b>	-13	16.37
10 594.80	44.21	H	37.79	-30.78	51.22	-95.26	-44.04	-13	31.04
10 595.65	45.13	V	37.79	-30.78	52.14	-95.26	-43.12	-13	30.12
Above 10 600.00	Not detected	-	-	-	-	-	-	-	-