



RF EXPOSURE EVALUATION REPORT

APPLICANT : START USA, INC.
PRODUCT NAME : Wireless Home Phone
MODEL NAME : SD3000
BRAND NAME : START, Consumer Cellular, Verve
FCC ID : 2AWF6-SD3000
STANDARD(S) : FCC 47 CFR Part 2(2.1091)
RECEIPT DATE : 2022-06-14
TEST DATE : 2022-06-18
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Change History		
Version	Date	Reason for Change
1.0	2022-08-24	First edition



1. Technical Information

Note: Provide by applicant.

1.1 Applicant and Manufacturer Information

Applicant:	START USA, INC.
Applicant Address:	6860 Dallas Parkway, Suite 200, Plano, TX 75024, USA
Manufacturer:	Shenzhen Thinkstart Electronic Technology Co., Ltd.
Manufacturer Address:	Unit A2-1006, Kexing Science Park, 15 Keyuan Road, Nanshan District, Shenzhen, Guangdong, China

1.2 Equipment under Test (EUT) Description

Product Name:	Wireless Home Phone	
EUT No.:	3#	
Hardware Version:	SD3000HV1.0	
Software Version:	SD3000SV1.0.1	
Frequency Bands:	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 30: 2305 MHz ~ 2315 MHz LTE Band 66: 1710 MHz ~ 1780 MHz	
Modulation Mode:	LTE: QPSK,16QAM	
Antenna Type:	WWAN: Fixed External	
Antenna Gain:	Frequency Bands	Antenna Gain (dBi)
	LTE Band 2	4.32
	LTE Band 4	1.96
	LTE Band 5	1.47
	LTE Band 12	0.07
	LTE Band 30	0.31
	LTE Band 66	2.98

Note: When the test result is a critical value, we will use the measurement uncertainty give the judgment result based on the 95% confidence intervals.



1.3 Applied Reference Documents

Leading reference documents for testing:

Identity	Document Title	Method determination /Remark
FCC 47 CFR Part 2(2.1091)	Radio Frequency Radiation Exposure Assessment: mobile devices	No deviation
KDB 447498 D04v01	General RF Exposure Guidance	No deviation
<p>Note 1: The test item is not applicable.</p> <p>Note 2: Additions to, deviation, or exclusions from the method shall be judged in the "method determination" column of add, deviate or exclude from the specific method shall be explained in the "Remark" of the above table.</p>		



2. Device Category and RF Exposure Limit

Per user manual, Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:

47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

General Population/Uncontrolled Exposure:

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz* = Plane-wave equivalent power density



3. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial No./ SW Version	Calibration	
				Last Cal.	Due Date
Anritsu	Network Emulator	MT8820C	6200985414	2021.10.21	2022.10.20

Note:

The EUT was connected to Base Station Anritsu MT8820C referred to the Setup Configuration. For the maximum power, it was established between EUT and Base Station with following setting:

1. For LTE testing, the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and different configurations which are requested to be reported to FCC.

4. RF Output Power

Remark: The output power of WWAN refers to the annex B of this report.

5. RF Exposure Assessment

➤ Standalone Transmission Assessment

Bands	Frequency (MHz)	Tune-up Power (dBm)	Antenna Gain (dBi)	EIRP (mW)	PD (mW/cm ²)	Limit Value (mW/cm ²)
LTE Band 2	1880	24.0	4.32	679.20	0.135	1.0
LTE Band 4	1732.5	24.5	1.96	442.59	0.088	1.0
LTE Band 5	836.5	24.5	1.47	395.37	0.079	0.558
LTE Band 12	707.5	24.5	0.07	286.42	0.057	0.472
LTE Band 30	2310	24.0	0.31	269.77	0.054	1.0
LTE Band 66	1745	24.0	2.98	498.88	0.099	1.0

Note:

1. According to KDB 447498, MPE assessment is based on source-based time-averaged maximum conducted output power of the RF channel requiring assessment, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.
2. MPE calculate method

$$S = PG/4\pi R^2$$

Where: S= Power density (in appropriate units, e.g. mW/cm²)

P = Time-average maximum tune-up power (in appropriate units, e.g. dBm)

G = numeric gain of the antenna (in appropriate units, e.g. dBi)

R = Separation distance to the centre of radiation of the antenna (20cm)

➤ Simultaneous Transmission Assessment

This device only incorporates a WWAN transmitter, therefore simultaneous assessment is not required.

➤ Conclusion

According to FCC 47 CFR Part 2(2.1091), this device complies with human exposure basic restrictions.



Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Facilities and Accreditations

The FCC designation number is CN1192, the test firm registration number is 226174.

Note:

The main report is end here and the other Annex B will be submitted separately.

————— END OF REPORT —————



REPORT No.: SZ22060166S01

Annex B Conducted Power

Note:

Conducted power unit: dBm

The target power was recorded in the manufacture document.

Band 2 (1900MHz Band) (dBm) Part 24E							
BW [MHz]	Modulation	RB Size	RB Offset	Low Channel	Middle Channel	High Channel	Tune-up limit (dBm)
Channel				18700	18900	19100	
Frequency (MHz)				1880	1880	1900	
20	QPSK	1	0	23.36	23.62	23.23	24
20	QPSK	1	49	23.25	23.45	23.50	
20	QPSK	1	99	23.20	23.34	23.30	23
20	QPSK	50	0	22.63	22.89	22.60	
20	QPSK	50	24	22.50	22.50	22.51	23
20	QPSK	50	50	22.46	22.40	22.41	
20	QPSK	100	0	22.30	22.25	22.25	23
20	16QAM	1	0	22.31	22.40	22.29	
20	16QAM	1	49	22.05	22.25	22.30	22.5
20	16QAM	1	99	22.00	22.14	22.10	
20	16QAM	50	0	22.32	22.39	22.27	22.5
20	16QAM	50	24	22.21	22.24	22.20	
20	16QAM	50	50	22.05	22.07	22.10	22.5
20	16QAM	100	0	22.00	22.02	22.00	
Channel				18675	18900	19125	
Frequency (MHz)				1857.5	1880	1902.5	
15	QPSK	1	0	23.31	23.57	23.18	24
15	QPSK	1	37	23.20	23.40	23.45	
15	QPSK	1	74	23.15	23.29	23.25	23
15	QPSK	36	0	22.58	22.84	22.55	
15	QPSK	36	20	22.45	22.45	22.46	23
15	QPSK	36	39	22.41	22.35	22.36	
15	QPSK	75	0	22.25	22.20	22.20	23
15	16QAM	1	0	22.26	22.35	22.24	
15	16QAM	1	37	22.00	22.20	22.25	23
15	16QAM	1	74	22.00	22.09	22.05	
15	16QAM	36	0	22.27	22.34	22.22	22
15	16QAM	36	20	22.16	22.19	22.15	
15	16QAM	36	39	22.00	22.02	22.05	22
15	16QAM	75	0	21.95	21.97	21.95	
Channel				18650	18900	19150	
Frequency (MHz)				1855	1880	1905	
10	QPSK	1	0	23.26	23.52	23.13	24
10	QPSK	1	25	23.15	23.35	23.40	
10	QPSK	1	49	23.10	23.24	23.20	23
10	QPSK	25	0	22.53	22.79	22.50	
10	QPSK	25	12	22.40	22.40	22.41	23
10	QPSK	25	25	22.36	22.30	22.31	
10	QPSK	50	0	22.20	22.15	22.15	23
10	16QAM	1	0	22.21	22.30	22.19	
10	16QAM	1	25	21.95	22.15	22.20	23
10	16QAM	1	49	21.95	22.04	22.00	
10	16QAM	25	0	22.22	22.29	22.17	22
10	16QAM	25	12	22.11	22.14	22.10	
10	16QAM	25	25	21.95	21.97	22.00	22
10	16QAM	50	0	21.90	21.92	21.90	
Channel				18625	18900	19175	
Frequency (MHz)				1852.5	1880	1907.5	
5	QPSK	1	0	23.21	23.47	23.08	24
5	QPSK	1	12	23.10	23.30	23.35	
5	QPSK	1	24	23.05	23.19	23.15	23
5	QPSK	12	0	22.48	22.74	22.45	
5	QPSK	12	7	22.35	22.35	22.36	23
5	QPSK	12	13	22.31	22.25	22.26	
5	QPSK	25	0	22.15	22.10	22.10	23
5	16QAM	1	0	22.16	22.25	22.14	
5	16QAM	1	12	21.90	22.10	22.15	23
5	16QAM	1	24	21.90	21.99	21.95	
5	16QAM	12	0	22.17	22.24	22.12	22
5	16QAM	12	7	22.06	22.09	22.05	
5	16QAM	12	13	21.90	21.92	21.95	22
5	16QAM	25	0	21.85	21.87	21.85	
Channel				18615	18900	19185	
Frequency (MHz)				1851.5	1880	1908.5	
3	QPSK	1	0	23.16	23.42	23.03	24
3	QPSK	1	8	23.05	23.25	23.30	
3	QPSK	1	14	23.00	23.14	23.10	23
3	QPSK	8	0	22.43	22.69	22.40	
3	QPSK	8	4	22.30	22.30	22.31	23
3	QPSK	8	7	22.26	22.20	22.21	
3	QPSK	15	0	22.10	22.05	22.05	23
3	16QAM	1	0	22.11	22.20	22.09	
3	16QAM	1	8	21.85	22.05	22.10	23
3	16QAM	1	14	21.85	21.94	21.90	
3	16QAM	8	0	22.12	22.19	22.07	22
3	16QAM	8	4	22.01	22.04	22.00	
3	16QAM	8	7	21.85	21.87	21.90	22
3	16QAM	15	0	21.80	21.82	21.80	
Channel				18607	18900	19193	
Frequency (MHz)				1850.7	1880	1909.3	
1.4	QPSK	1	0	23.11	23.37	22.98	24
1.4	QPSK	1	3	23.00	23.20	23.25	
1.4	QPSK	1	5	22.95	23.09	23.05	23
1.4	QPSK	3	0	22.38	22.64	22.35	
1.4	QPSK	3	1	22.25	22.25	22.26	23
1.4	QPSK	3	3	22.21	22.15	22.16	
1.4	QPSK	6	0	22.05	22.00	22.00	23
1.4	16QAM	1	0	22.06	22.15	22.04	
1.4	16QAM	1	3	21.80	22.00	22.05	23
1.4	16QAM	1	5	21.80	21.89	21.85	
1.4	16QAM	3	0	22.07	22.14	22.02	23
1.4	16QAM	3	1	21.96	21.99	21.95	
1.4	16QAM	3	3	21.80	21.82	21.85	22
1.4	16QAM	6	0	21.75	21.77	21.75	

Band 4 (AWS Band) (dBm) Part 27L (only on channel required)							
BW [MHz]	Modulation	RB Size	RB Offset	Low Channel	Middle Channel	High Channel	Tune-up limit (dBm)
Channel				20950	20175	20300	
Frequency (MHz)				1720	1732.5	1745	
20	QPSK	1	0	23.98	24.04	24.02	24.5
20	QPSK	1	49	23.75	23.95	23.80	
20	QPSK	1	99	23.70	23.84	23.80	23.5
20	QPSK	50	0	22.82	22.89	22.71	
20	QPSK	50	24	22.79	22.80	22.70	23
20	QPSK	50	50	22.70	22.72	22.69	
20	QPSK	100	0	22.50	22.60	22.49	23
20	16QAM	1	0	22.60	22.66	22.57	
20	16QAM	1	49	22.45	22.50	22.46	22.5
20	16QAM	1	99	22.30	22.41	22.32	
20	16QAM	50	0	22.20	22.24	22.11	22.5
20	16QAM	50	24	22.10	22.13	22.02	
20	16QAM	50	50	21.96	22.00	21.90	22.5
20	16QAM	100	0	21.85	21.90	21.82	
Channel				20025	20175	20325	
Frequency (MHz)				1717.5	1732.5	1747.5	
15	QPSK	1	0	23.93	23.99	23.97	24
15	QPSK	1	37	23.70	23.90	23.75	
15	QPSK	1	74	23.65	23.79	23.75	23
15	QPSK	36	0	22.77	22.84	22.66	
15	QPSK	36	20	22.74	22.75	22.65	23
15	QPSK	36	39	22.65	22.67	22.64	
15	QPSK	75	0	22.45	22.55	22.44	23
15	16QAM	1	0	22.55	22.61	22.52	
15	16QAM	1	37	22.40	22.45	22.41	23
15	16QAM	1	74	22.25	22.36	22.27	
15	16QAM	36	0	22.15	22.19	22.06	22
15	16QAM	36	20	22.05	22.08	21.97	
15	16QAM	36	39	21.91	21.95	21.85	22
15	16QAM	75	0	21.80	21.85	21.77	
Channel				20000	20175	20350	
Frequency (MHz)				1715	1732.5	1750	
10	QPSK	1	0	23.88	23.94	23.92	24
10	QPSK	1	25	23.65	23.85	23.70	
10	QPSK	1	49	23.60	23.74	23.70	23
10	QPSK	25	0	22.72	22.79	22.61	
10	QPSK	25	12	22.69	22.70	22.60	23
10	QPSK	25	25	22.60	22.62	22.59	
10	QPSK	50	0	22.40	22.50	22.39	23
10	16QAM	1	0	22.50	22.56	22.47	
10	16QAM	1	25	22.35	22.40	22.36	23
10	16QAM	1	49	22.20	22.31	22.22	
10	16QAM	25	0	22.10	22.14	22.01	22
10	16QAM	25	12	22.00	22.03	21.92	
10	16QAM	25	25	21.86	21.90	21.80	22
10	16QAM	50	0	21.75	21.80	21.72	
Channel				19975	20175	20375	
Frequency (MHz)				1712.5	1732.5	1752.5	
5	QPSK	1	0	23.83	23.89	23.87	24
5	QPSK	1	12	23.60	23.80	23.65	
5	QPSK	1	24	23.55	23.69	23.65	23
5	QPSK	12	0	22.67	22.74	22.56	
5	QPSK	12	7	22.64	22.65	22.55	23
5	QPSK	12	13	22.55	22.57	22.54	
5	QPSK	25	0	22.35	22.45	22.34	23
5	16QAM	1	0	22.45	22.51	22.42	
5	16QAM	1	12	22.30	22.35	22.31	23
5	16QAM	1	24	22.15	22.26	22.17	
5	16QAM	12	0	22.05	22.09	21.96	22
5	16QAM	12	7	21.95	21.98	21.87	
5	16QAM	12	13	21.81	21.85	21.75	22
5	16QAM	25	0	21.70	21.75	21.67	
Channel				19965	20175	20385	

Band 5 (Cellular Band) (dBm) Part 22H(only on channel required)							
BW [MHz]	Modulation	RB Size	RB Offset	Low Channel	Middle Channel	High Channel	Tune-up limit (dBm)
Channel				20450	20525	20600	
Frequency (MHz)				829	836.5	844	
10	QPSK	1	0	24.03	24.10	23.89	24.5
10	QPSK	1	25	23.89	24.00	23.80	
10	QPSK	1	49	23.76	23.91	23.89	
10	QPSK	25	0	22.76	22.85	22.70	23.5
10	QPSK	25	12	22.56	22.60	22.50	
10	QPSK	25	25	22.35	22.40	22.36	
10	QPSK	50	0	22.11	22.30	22.10	23.5
10	16QAM	1	0	22.57	22.78	22.51	
10	16QAM	1	25	22.50	22.56	22.57	
10	16QAM	1	49	22.35	22.34	22.30	22.5
10	16QAM	25	0	22.01	22.10	22.05	
10	16QAM	25	12	21.77	21.80	21.61	
10	16QAM	25	25	21.60	21.65	21.60	22.5
10	16QAM	50	0	21.33	21.46	21.39	
Channel				20425	20525	20625	
Frequency (MHz)				826.5	836.5	846.5	
5	QPSK	1	0	23.98	24.05	23.84	24
5	QPSK	1	12	23.84	23.95	23.75	
5	QPSK	1	24	23.71	23.86	23.94	
5	QPSK	12	0	22.71	22.80	22.65	23
5	QPSK	12	7	22.51	22.55	22.45	
5	QPSK	12	13	22.30	22.35	22.31	
5	QPSK	25	0	22.06	22.25	22.05	23
5	16QAM	1	0	22.52	22.73	22.46	
5	16QAM	1	12	22.45	22.51	22.52	
5	16QAM	1	24	22.30	22.29	22.25	22
5	16QAM	12	0	21.96	22.05	22.00	
5	16QAM	12	7	21.72	21.75	21.56	
5	16QAM	12	13	21.55	21.60	21.55	22
5	16QAM	25	0	21.28	21.41	21.34	
Channel				20415	20525	20635	
Frequency (MHz)				825.5	836.5	847.5	
3	QPSK	1	0	23.93	24.00	23.79	24
3	QPSK	1	8	23.79	23.90	23.70	
3	QPSK	1	14	23.66	23.81	23.79	
3	QPSK	8	0	22.66	22.75	22.60	23
3	QPSK	8	4	22.46	22.50	22.40	
3	QPSK	8	7	22.25	22.30	22.26	
3	QPSK	15	0	22.01	22.20	22.00	23
3	16QAM	1	0	22.47	22.68	22.41	
3	16QAM	1	8	22.40	22.46	22.47	
3	16QAM	1	14	22.25	22.24	22.20	22
3	16QAM	8	0	21.91	22.00	21.95	
3	16QAM	8	4	21.67	21.70	21.51	
3	16QAM	8	7	21.50	21.55	21.50	22
3	16QAM	15	0	21.23	21.36	21.29	
Channel				20407	20525	20643	
Frequency (MHz)				824.7	836.5	848.3	
1.4	QPSK	1	0	23.88	23.95	23.74	24
1.4	QPSK	1	3	23.74	23.85	23.65	
1.4	QPSK	1	5	23.61	23.76	23.74	
1.4	QPSK	3	0	22.61	22.70	22.55	23
1.4	QPSK	3	1	22.41	22.45	22.35	
1.4	QPSK	3	3	22.20	22.25	22.21	
1.4	QPSK	6	0	21.96	22.15	21.95	23
1.4	16QAM	1	0	22.42	22.63	22.36	
1.4	16QAM	1	3	22.35	22.41	22.42	
1.4	16QAM	1	5	22.20	22.19	22.15	23
1.4	16QAM	3	0	21.86	21.95	21.90	
1.4	16QAM	3	1	21.62	21.65	21.46	
1.4	16QAM	3	3	21.45	21.50	21.45	22
1.4	16QAM	6	0	21.18	21.31	21.24	

Band 12 (700MHz Low Band) (dBm) Part 27F(only on channel required)							
BW [MHz]	Modulation	RB Size	RB Offset	Low Channel	Middle Channel	High Channel	Tune-up limit (dBm)
Channel				23060	23095	23130	
Frequency (MHz)				704	707.5	711	
10	QPSK	1	0	23.70	23.76	23.66	24.5
10	QPSK	1	25	23.45	23.54	23.50	
10	QPSK	1	49	23.28	23.26	23.30	
10	QPSK	25	0	22.71	22.76	22.70	23.5
10	QPSK	25	12	22.56	22.60	22.50	
10	QPSK	25	25	22.35	22.40	22.36	
10	QPSK	50	0	22.11	22.30	22.10	23.5
10	16QAM	1	0	22.60	22.64	22.56	
10	16QAM	1	25	22.40	22.44	22.39	
10	16QAM	1	49	22.19	22.20	22.18	22.5
10	16QAM	25	0	21.68	21.70	21.60	
10	16QAM	25	12	21.45	21.54	21.49	
10	16QAM	25	25	21.25	21.32	21.30	22.5
10	16QAM	50	0	21.15	21.10	21.00	
Channel				23035	23095	23155	
Frequency (MHz)				701.5	707.5	713.5	
5	QPSK	1	0	23.65	23.71	23.61	24.5
5	QPSK	1	12	23.40	23.49	23.45	
5	QPSK	1	24	23.23	23.21	23.25	
5	QPSK	12	0	22.66	22.71	22.65	23.5
5	QPSK	12	7	22.51	22.55	22.45	
5	QPSK	12	13	22.30	22.35	22.31	
5	QPSK	25	0	22.06	22.25	22.05	23.5
5	16QAM	1	0	22.55	22.59	22.51	
5	16QAM	1	12	22.35	22.39	22.34	
5	16QAM	1	24	22.14	22.15	22.13	22.5
5	16QAM	12	0	21.63	21.65	21.55	
5	16QAM	12	7	21.40	21.49	21.44	
5	16QAM	12	13	21.20	21.27	21.25	22.5
5	16QAM	25	0	21.10	21.05	20.95	
Channel				23025	23095	23165	
Frequency (MHz)				700.5	707.5	714.5	
3	QPSK	1	0	23.60	23.66	23.56	24.5
3	QPSK	1	8	23.35	23.44	23.40	
3	QPSK	1	14	23.18	23.16	23.20	
3	QPSK	8	0	22.61	22.66	22.60	23.5
3	QPSK	8	4	22.46	22.50	22.40	
3	QPSK	8	7	22.25	22.30	22.26	
3	QPSK	15	0	22.01	22.20	22.00	23.5
3	16QAM	1	0	22.50	22.54	22.46	
3	16QAM	1	8	22.30	22.34	22.29	
3	16QAM	1	14	22.09	22.10	22.08	22.5
3	16QAM	8	0	21.58	21.60	21.50	
3	16QAM	8	4	21.35	21.44	21.39	
3	16QAM	8	7	21.15	21.22	21.20	22.5
3	16QAM	15	0	21.05	21.00	20.90	
Channel				23017	23095	23173	
Frequency (MHz)				699.7	707.5	715.3	
1.4	QPSK	1	0	23.55	23.61	23.51	24.5
1.4	QPSK	1	3	23.30	23.39	23.35	
1.4	QPSK	1	5	23.13	23.11	23.15	
1.4	QPSK	3	0	22.56	22.61	22.55	23.5
1.4	QPSK	3	1	22.41	22.45	22.35	
1.4	QPSK	3	3	22.20	22.25	22.21	
1.4	QPSK	6	0	21.96	22.15	21.95	23.5
1.4	16QAM	1	0	22.45	22.49	22.41	
1.4	16QAM	1	3	22.25	22.29	22.24	
1.4	16QAM	1	5	22.04	22.05	22.03	23.5
1.4	16QAM	3	0	21.53	21.55	21.45	
1.4	16QAM	3	1	21.30	21.39	21.34	
1.4	16QAM	3	3	21.10	21.17	21.15	22.5
1.4	16QAM	6	0	21.00	20.95	20.85	

Band 30 (dBm)							
BW [MHz]	Modulation	RB Size	RB Offset	Low Channel	Middle Channel	High Channel	Tune-up limit (dBm)
Channel				27710			24
Frequency (MHz)				2310			
10	QPSK	1	0		23.40		24
10	QPSK	1	25		23.20		
10	QPSK	1	49		23.00		
10	QPSK	25	0		22.30		23
10	QPSK	25	12		22.15		
10	QPSK	25	25		22.09		
10	QPSK	50	0		21.89		23
10	16QAM	1	0		22.10		
10	16QAM	1	25		21.89		
10	16QAM	1	49		21.71		22
10	16QAM	25	0		21.30		
10	16QAM	25	12		21.10		
10	16QAM	25	25		20.80		22
10	16QAM	50	0		20.56		
Channel				27685	27710	27735	
Frequency (MHz)				2307.5	2310	2312.5	
5	QPSK	1	0	23.28	23.35	23.29	24
5	QPSK	1	12	23.08	23.15	23.09	
5	QPSK	1	24	22.88	22.95	22.89	
5	QPSK	12	0	22.18	22.25	22.19	23
5	QPSK	12	7	22.03	22.10	22.04	
5	QPSK	12	13	21.97	22.04	21.98	
5	QPSK	25	0	21.77	21.84	21.78	23
5	16QAM	1	0	21.98	22.05	21.99	
5	16QAM	1	12	21.77	21.84	21.78	
5	16QAM	1	24	21.59	21.66	21.60	22
5	16QAM	12	0	21.18	21.25	21.19	
5	16QAM	12	7	20.98	21.05	20.99	
5	16QAM	12	13	20.68	20.75	20.69	22
5	16QAM	25	0	20.44	20.51	20.45	

Band 66 (dBm)							
BW [MHz]	Modulation	RB Size	RB Offset	Low Channel	Middle Channel	High Channel	Tune-up limit (dBm)
Channel				132072	132322	132572	24
Frequency (MHz)				1720	1745	1770	
20	QPSK	1	0	23.48	23.54	23.52	24
20	QPSK	1	49	23.25	23.45	23.30	
20	QPSK	1	99	23.20	23.34	23.30	
20	QPSK	50	0	22.32	22.39	22.21	23
20	QPSK	50	24	22.29	22.30	22.20	
20	QPSK	50	50	22.20	22.22	22.19	
20	QPSK	100	0	22.00	22.10	21.99	23
20	16QAM	1	0	22.10	22.16	22.07	
20	16QAM	1	49	21.95	22.00	21.96	
20	16QAM	1	99	21.80	21.91	21.82	22
20	16QAM	50	0	21.70	21.74	21.61	
20	16QAM	50	24	21.60	21.63	21.52	
20	16QAM	50	50	21.46	21.50	21.40	22
20	16QAM	100	0	21.35	21.40	21.32	
Channel				132047	132322	132597	
Frequency (MHz)				1717.5	1745	1772.5	
15	QPSK	1	0	23.43	23.49	23.47	24
15	QPSK	1	37	23.20	23.40	23.25	
15	QPSK	1	74	23.15	23.29	23.25	
15	QPSK	36	0	22.27	22.34	22.16	23
15	QPSK	36	20	22.24	22.25	22.15	
15	QPSK	36	39	22.15	22.17	22.14	
15	QPSK	75	0	21.95	22.05	21.94	23
15	16QAM	1	0	22.05	22.11	22.02	
15	16QAM	1	37	21.90	21.95	21.91	
15	16QAM	1	74	21.75	21.86	21.77	22
15	16QAM	36	0	21.65	21.69	21.56	
15	16QAM	36	20	21.55	21.58	21.47	
15	16QAM	36	39	21.41	21.45	21.35	22
15	16QAM	75	0	21.30	21.35	21.27	
Channel				132022	132322	132627	
Frequency (MHz)				1715	1745	1775	
10	QPSK	1	0	23.38	23.44	23.42	24
10	QPSK	1	25	23.15	23.35	23.20	
10	QPSK	1	49	23.10	23.24	23.20	
10	QPSK	25	0	22.22	22.29	22.11	23
10	QPSK	25	12	22.19	22.20	22.10	
10	QPSK	25	25	22.10	22.12	22.09	
10	QPSK	50	0	21.90	22.00	21.89	23
10	16QAM	1	0	22.00	22.06	21.97	
10	16QAM	1	25	21.85	21.90	21.86	
10	16QAM	1	49	21.70	21.81	21.72	22
10	16QAM	25	0	21.60	21.64	21.51	
10	16QAM	25	12	21.50	21.53	21.42	
10	16QAM	25	25	21.36	21.40	21.30	22
10	16QAM	50	0	21.25	21.30	21.22	
Channel				131997	132322	132647	
Frequency (MHz)				1712.5	1745	1777.5	
5	QPSK	1	0	23.33	23.39	23.37	24
5	QPSK	1	12	23.10	23.30	23.15	
5	QPSK	1	24	23.05	23.19	23.15	
5	QPSK	12	0	22.17	22.24	22.06	23
5	QPSK	12	7	22.14	22.15	22.05	
5	QPSK	12	13	22.05	22.07	22.04	
5	QPSK	25	0	21.85	21.95	21.84	23
5	16QAM	1	0	21.95	22.01	21.92	
5	16QAM	1	12	21.80	21.85	21.81	
5	16QAM	1	24	21.65	21.76	21.67	22
5	16QAM	12	0	21.55	21.59	21.46	
5	16QAM	12	7	21.45	21.48	21.37	
5	16QAM	12	13	21.31	21.35	21.25	22
5	16QAM	25	0	21.20	21.25	21.17	
Channel				131987	132322	132657	
Frequency (MHz)				1711.5	1745	1778.5	
3	QPSK	1	0	23.28	23.34	23.32	24
3	QPSK	1	8	23.05	23.25	23.10	
3	QPSK	1	14	23.00	23.14	23.10	
3	QPSK	8	0	22.12	22.19	22.01	23
3	QPSK	8	4	22.09	22.10	22.00	
3	QPSK	8	7	22.00	22.02	21.99	
3	QPSK	15	0	21.80	21.90	21.79	23
3	16QAM	1	0	21.90	21.96	21.87	
3	16QAM	1	8	21.75	21.80	21.76	
3	16QAM	1	14	21.60	21.71	21.62	22
3	16QAM	8	0	21.50	21.54	21.41	
3	16QAM	8	4	21.40	21.43	21.32	
3	16QAM	8	7	21.26	21.30	21.20	22
3	16QAM	15	0	21.15	21.20	21.12	
Channel				131979	132322	132665	
Frequency (MHz)				1710.7	1745	1779.3	
1.4	QPSK	1	0	23.26	23.32	23.30	24
1.4	QPSK	1	3	23.03	23.23	23.08	
1.4	QPSK	1	5	22.98	23.12	23.08	
1.4	QPSK	3	0	22.10	22.17	22.00	23
1.4	QPSK	3	1	22.07	22.08	22.10	
1.4	QPSK	3	3	22.03	22.00	22.01	
1.4	QPSK	6	0	21.78	21.88	21.77	23
1.4	16QAM	1	0	21.88	21.94	21.85	
1.4	16QAM	1	3	21.73	21.78	21.74	
1.4	16QAM	1	5	21.58	21.69	21.60	23
1.4	16QAM	3	0	21.48	21.52	21.39	
1.4	16QAM	3	1	21.38	21.41	21.30	
1.4	16QAM	3	3	21.24	21.28	21.18	22
1.4	16QAM	6	0	21.13	21.18	21.10	