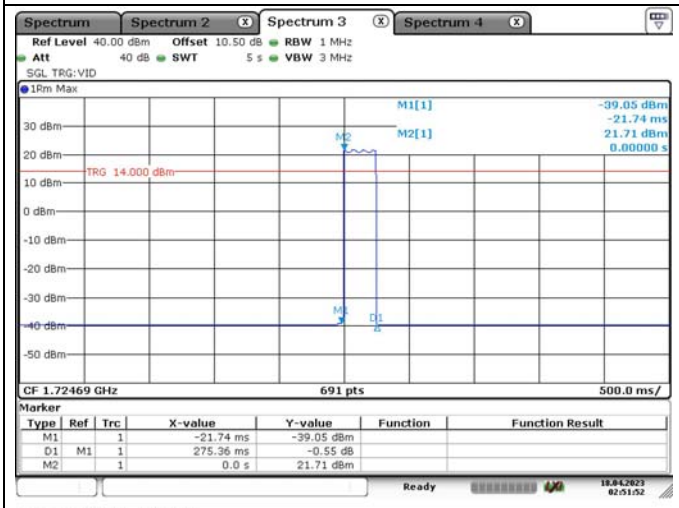
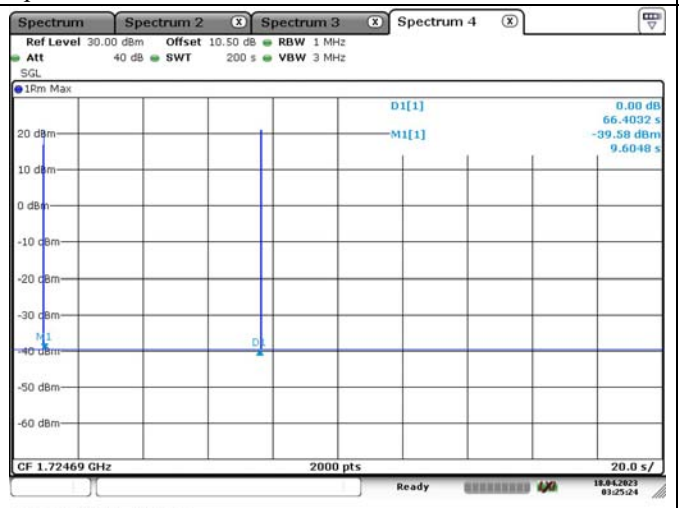
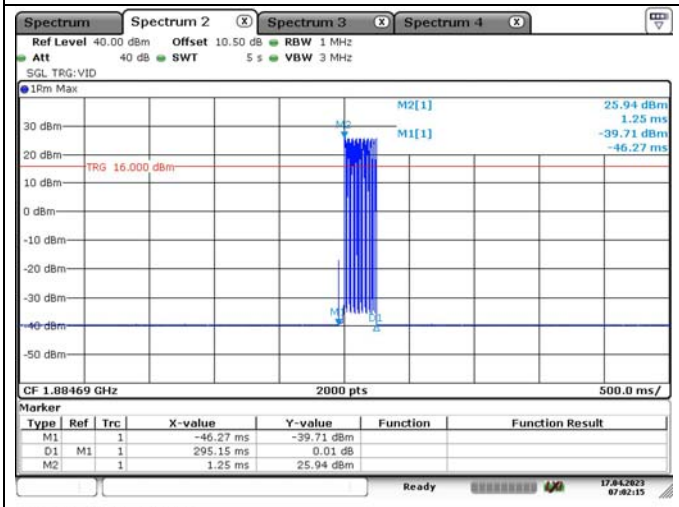
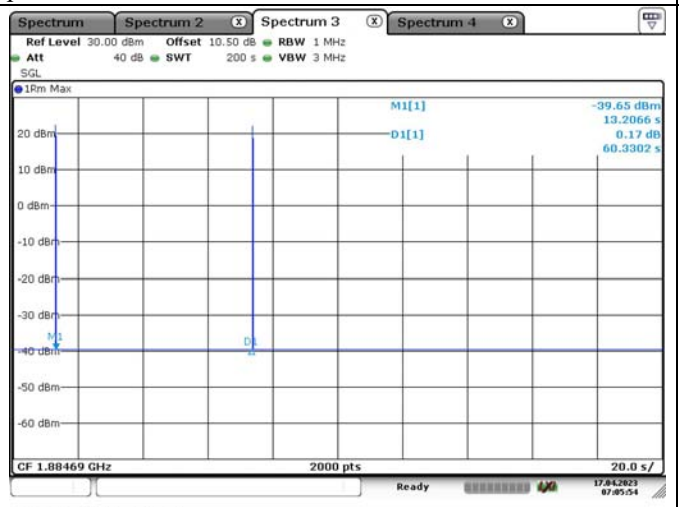
AWS-1-Uplink



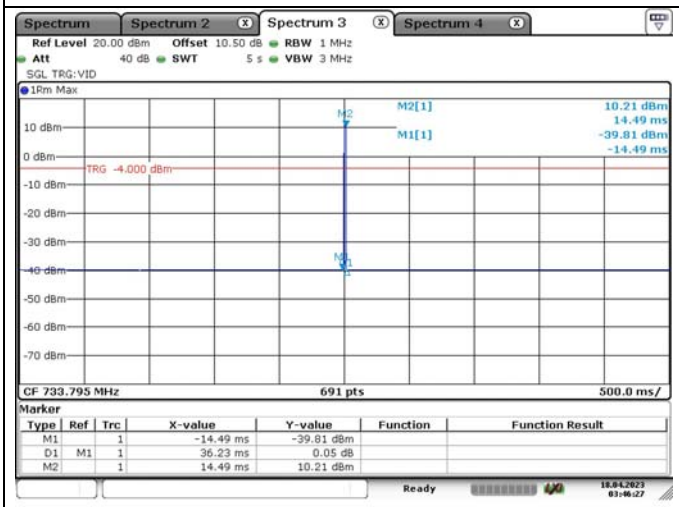


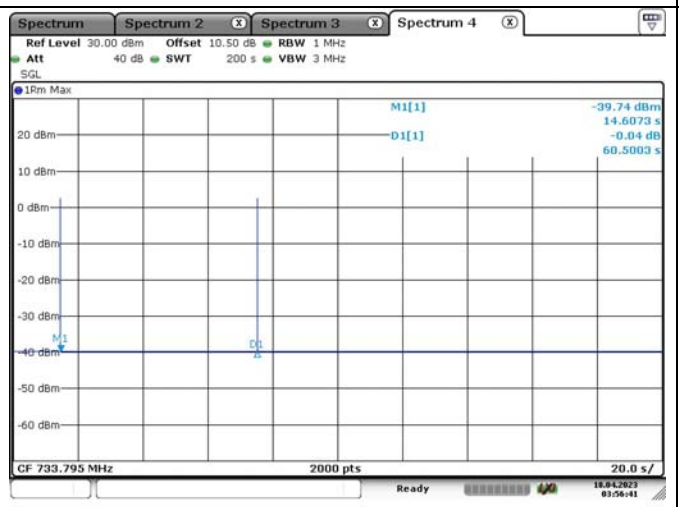
PCS-Uplink



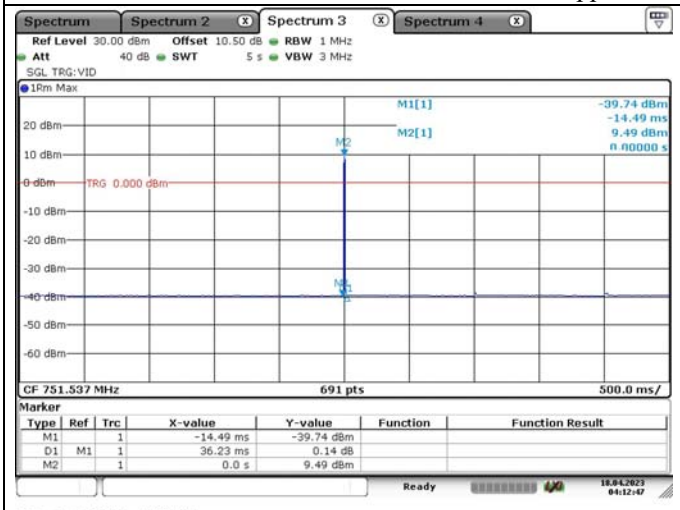


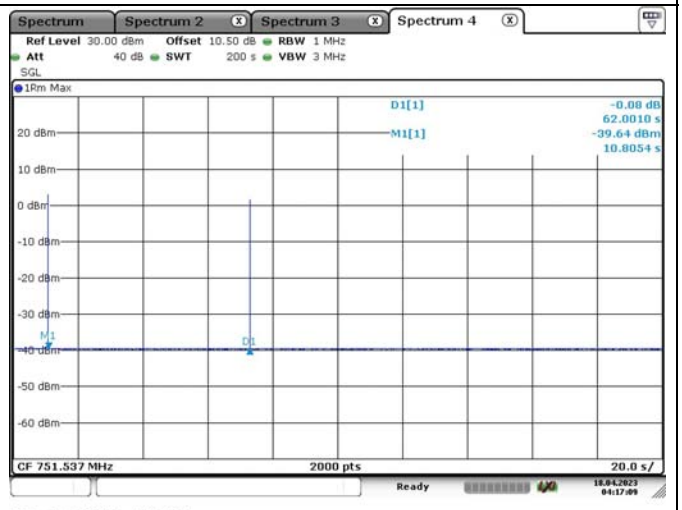
Lower 700M-Downlink



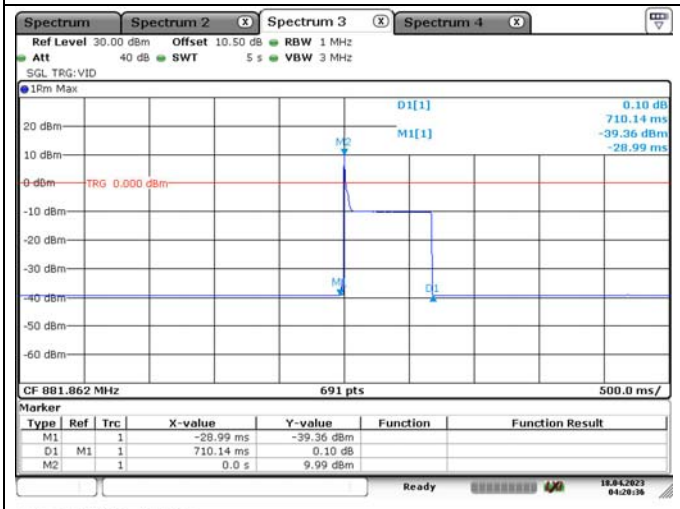


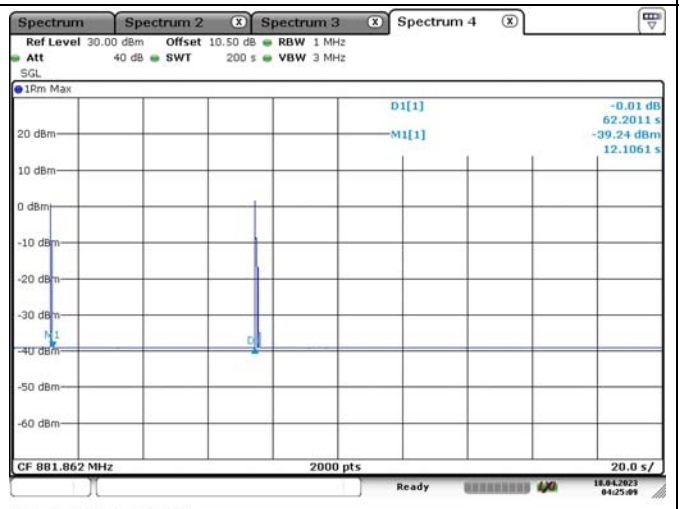
Upper 700M-Downlink



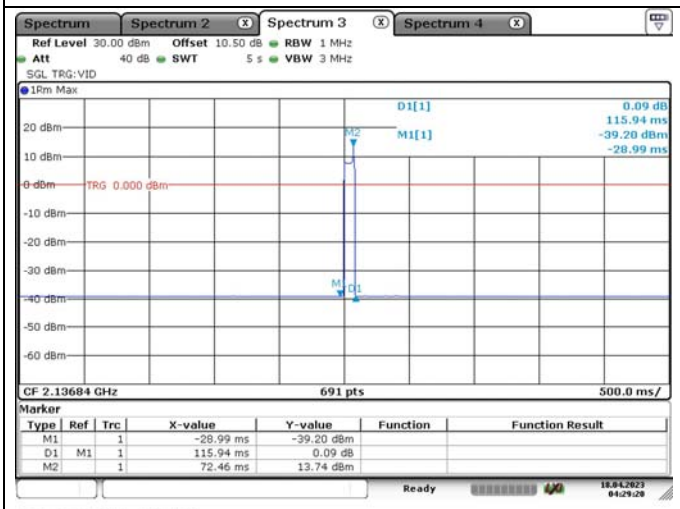


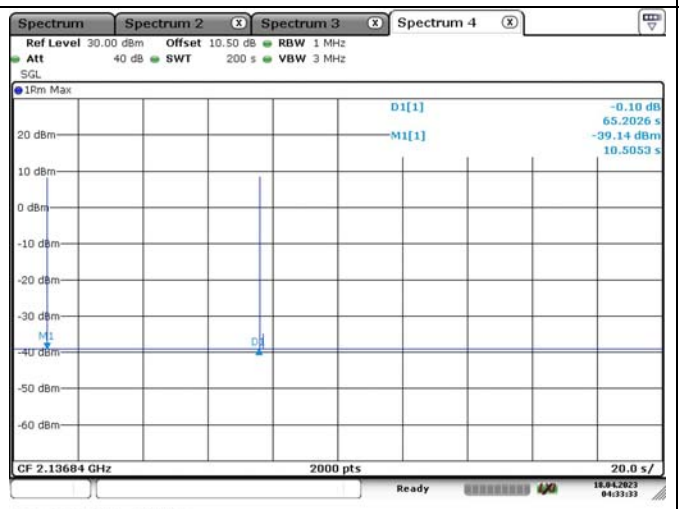
Cellular-Downlink



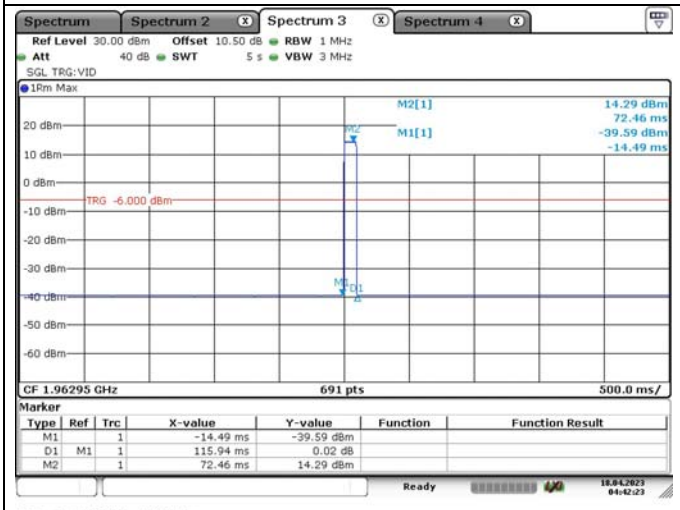


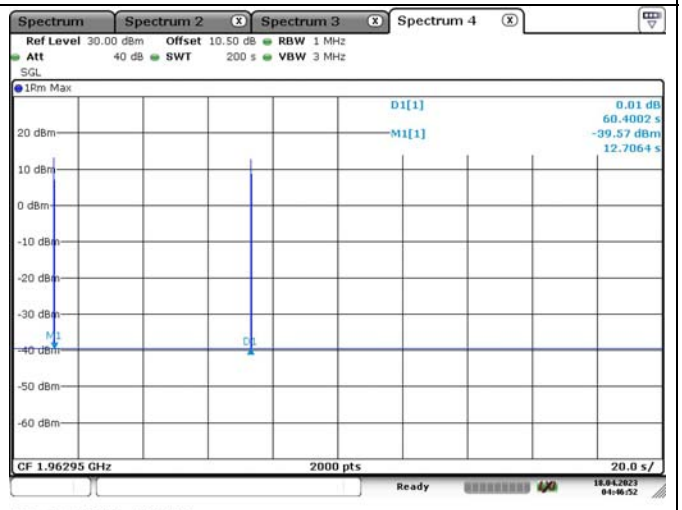
AWS-1-Downlink





PCS-Downlink





4.12 Radiated Spurious Emissions:

Serial Number:	1VLZ-4	Test Date:	2023/4/15-2023/4/17
Test Site:	RF	Test Mode:	Transmitting
Tester:	Carl Xue, Tao	Test Result:	Pass

Environmental Conditions:

Temperature: (℃)	25.626.7	Relative Humidity: (%)	61-65	ATM Pressure: (kPa)	100.5

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2020/10/19	2023/10/18
R&S	EMI Test Receiver	ESR3	102724	2022/07/15	2023/07/14
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0470-02	2022/07/17	2023/07/16
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0780-01	2022/07/17	2023/07/16
Sonoma	Amplifier	310N	186165	2022/07/17	2023/07/16
EMCO	Adjustable Dipole Antenna	3121C	9109-756	N/A	N/A
Agilent	Signal Generator	E8247C	MY43321352	2022/11/18	2023/11/17
ETS-Lindgren	Horn Antenna	3115	9912-5985	2020/10/13	2023/10/12
R&S	Spectrum Analyzer	FSV40	101591	2022/07/15	2023/07/14
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2022/08/07	2023/08/06
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2022/08/07	2023/08/06
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2022/11/09	2023/11/08
AH	Double Ridge Guide Horn Antenna	SAS-571	1396	2021/10/18	2024/10/17
MICRO-COAX	Coaxial Cable	UFA210B-0-0720-300300	99G1448	2022/07/17	2023/07/16
PASTERNACK	Horn Antenna	PE9852/2F-20	112002	2021/02/05	2024/02/04
PASTERNACK	Horn Antenna	PE9852/2F-20	112001	2021/02/05	2024/02/04
AH	Preamplifier	PAM-1840VH	190	2022/11/09	2023/11/08
PASTERNACK	Horn Antenna	PE9850/2F-20	072001	2021/02/05	2024/02/04
PASTERNACK	Horn Antenna	PE9850/2F-20	072002	2021/02/05	2024/02/04
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2022/08/07	2023/08/06

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Uplink:

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lower 700MHz, Test Frequency: 707MHz								
88.34	H	53.78	-58.71	0.00	0.17	-58.88	-19.00	39.88
87.72	V	54.83	-54.33	0.00	0.17	-54.50	-19.00	35.50
1414.000	H	36.57	-67.10	8.26	0.72	-59.56	-19.00	40.56
1414.000	V	36.59	-67.13	8.26	0.72	-59.59	-19.00	40.59
2121.000	H	36.81	-65.18	9.17	0.92	-56.93	-19.00	37.93
2121.000	V	36.74	-65.23	9.17	0.92	-56.98	-19.00	37.98
2828.000	H	36.57	-63.23	9.93	1.06	-54.36	-19.00	35.36
2828.000	V	36.62	-63.11	9.93	1.06	-54.24	-19.00	35.24
Upper 700MHz, Test Frequency: 781.5MHz								
87.11	H	53.30	-58.79	0.00	0.17	-58.96	-19.00	39.96
88.03	V	52.17	-57.01	0.00	0.17	-57.18	-19.00	38.18
1563.000	H	36.85	-67.18	8.58	0.80	-59.40	-46.00	13.40
1563.000	V	36.74	-67.34	8.58	0.80	-59.56	-46.00	13.56
2344.500	H	36.85	-64.68	9.31	0.97	-56.34	-19.00	37.34
2344.500	V	36.47	-64.83	9.31	0.97	-56.49	-19.00	37.49
3126.000	H	36.52	-60.93	10.25	1.13	-51.81	-19.00	32.81
3126.000	V	36.16	-61.14	10.25	1.13	-52.02	-19.00	33.02
Cellular Band, Test Frequency: 836.5MHz								
88.03	H	53.20	-59.19	0.00	0.17	-59.36	-19.00	40.36
87.41	V	52.95	-56.19	0.00	0.17	-56.36	-19.00	37.36
1673.000	H	36.87	-67.44	8.71	0.85	-59.58	-19.00	40.58
1673.000	V	36.82	-67.59	8.71	0.85	-59.73	-19.00	40.73
2509.500	H	36.55	-64.06	9.42	1.01	-55.65	-19.00	36.65
2509.500	V	36.57	-64.05	9.42	1.01	-55.64	-19.00	36.64
3346.000	H	36.83	-60.33	10.34	1.16	-51.15	-19.00	32.15
3346.000	V	36.86	-60.16	10.34	1.16	-50.98	-19.00	31.98
AWS-1 Band, Test Frequency: 1732.5MHz								
147.40	H	53.39	-58.65	0.00	0.23	-58.88	-19.00	39.88
85.59	V	53.51	-55.49	0.00	0.17	-55.66	-19.00	36.66
3465.000	H	36.87	-60.94	10.39	1.15	-51.70	-19.00	32.70
3465.000	V	36.58	-61.19	10.39	1.15	-51.95	-19.00	32.95
5197.500	H	36.75	-57.38	11.32	1.44	-47.50	-19.00	28.50
5197.500	V	36.68	-57.30	11.32	1.44	-47.42	-19.00	28.42
PCS Band, Test Frequency: 1882.5MHz								
87.41	H	53.40	-58.79	0.00	0.17	-58.96	-19.00	39.96
87.11	V	52.91	-56.20	0.00	0.17	-56.37	-19.00	37.37
3765.000	H	36.74	-59.59	10.67	1.25	-50.17	-19.00	31.17
3765.000	V	36.71	-59.50	10.67	1.25	-50.08	-19.00	31.08
5647.500	H	36.78	-56.67	11.32	1.55	-46.90	-19.00	27.90
5647.500	V	36.76	-56.57	11.32	1.55	-46.80	-19.00	27.80

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

Downlink:

Frequency (MHz)	Polar (H / V)	Receiver Reading (dBμV)	Substituted Method			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Substituted Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)			
Lower 700MHz, Test Frequency: 737MHz								
146.88	H	53.08	-58.98	0.00	0.23	-59.21	-19.00	40.21
91.81	V	51.92	-56.99	0.00	0.18	-57.17	-19.00	38.17
1474.000	H	36.58	-66.93	8.43	0.75	-59.25	-19.00	40.25
1474.000	V	36.85	-66.74	8.43	0.75	-59.06	-19.00	40.06
2211.000	H	36.48	-65.82	9.23	0.94	-57.53	-19.00	38.53
2211.000	V	36.78	-65.58	9.23	0.94	-57.29	-19.00	38.29
2948.000	H	36.69	-62.41	10.12	1.12	-53.41	-19.00	34.41
2948.000	V	36.82	-62.38	10.12	1.12	-53.38	-19.00	34.38
Upper 700MHz , Test Frequency:751.5MHz								
148.44	H	53.48	-58.52	0.00	0.22	-58.74	-19.00	39.74
60.49	V	51.61	-54.23	-10.04	0.14	-64.41	-19.00	45.41
1503.000	H	36.58	-66.89	8.50	0.76	-59.15	-46.00	13.15
1503.000	V	36.56	-67.01	8.50	0.76	-59.27	-46.00	13.27
2254.500	H	36.85	-65.27	9.25	0.93	-56.95	-19.00	37.95
2254.500	V	36.84	-65.20	9.25	0.93	-56.88	-19.00	37.88
3006.000	H	36.58	-62.03	10.20	1.10	-52.93	-19.00	33.93
3006.000	V	36.56	-62.15	10.20	1.10	-53.05	-19.00	34.05
Cellular Band, Test Frequency:881.5MHz								
146.37	H	52.98	-59.10	0.00	0.22	-59.32	-19.00	40.32
89.27	V	50.75	-58.53	0.00	0.18	-58.71	-19.00	39.71
1763.000	H	37.58	-66.21	8.82	0.86	-58.25	-19.00	39.25
1763.000	V	37.51	-66.45	8.82	0.86	-58.49	-19.00	39.49
2644.500	H	37.85	-62.10	9.63	1.06	-53.53	-19.00	34.53
2644.500	V	37.45	-62.41	9.63	1.06	-53.84	-19.00	34.84
3526.000	H	37.69	-60.08	10.43	1.20	-50.85	-19.00	31.85
3526.000	V	37.82	-59.87	10.43	1.20	-50.64	-19.00	31.64
AWS-1 Band, Test Frequency:2132.5MHz								
148.44	H	52.89	-59.11	0.00	0.22	-59.33	-19.00	40.33
60.70	V	52.22	-53.55	-9.93	0.14	-63.62	-19.00	44.62
4265.000	H	36.48	-59.69	10.74	1.31	-50.26	-19.00	31.26
4265.000	V	36.56	-59.51	10.74	1.31	-50.08	-19.00	31.08
6397.500	H	36.48	-55.56	11.22	1.89	-46.23	-19.00	27.23
6397.500	V	36.56	-55.52	11.22	1.89	-46.19	-19.00	27.19
PCS Band, Test Frequency:1962.5MHz								
147.40	H	53.30	-58.74	0.00	0.23	-58.97	-19.00	39.97
91.17	V	51.02	-58.04	0.00	0.18	-58.22	-19.00	39.22
3925.000	H	36.74	-59.33	10.83	1.28	-49.78	-19.00	30.78
3925.000	V	36.72	-59.29	10.83	1.28	-49.74	-19.00	30.74
5887.500	H	36.88	-56.72	11.04	1.66	-47.34	-19.00	28.34
5887.500	V	36.78	-56.87	11.04	1.66	-47.49	-19.00	28.49

Note 1:The unit of antenna gain is dBd for frequency below 1GHz and is dBi for frequency above 1GHz.
Note 2:
Absolute Level = Substituted Level - Cable loss + Antenna Gain
Margin = Limit- Absolute Level

5. RF EXPOSURE EVALUATION

5.1 FCC Maximum Permissible Exposure (MPE)

5.1.1 Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

5.1.2 Limits

Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
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;

According to §1.1310 and §2.1091 RF exposure is calculated.

5.1.3 Calculated Formulary:

Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

5.1.4 Calculated Data

Mode	Frequency Band (MHz)	Maximum Tune-up Conducted Power (dBm)	Combined Loss (Antenna Gain-Cable Loss) (dB)	Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
Uplink	698-716	21	5.7	20	0.093	0.47
	776-787	20	5.7	20	0.074	0.52
	824-849	21	5.7	20	0.093	0.55
	1710-1755	21	5.8	20	0.095	1.00
	1850-1915	23	5.7	20	0.148	1.00
Downlink	728-746	7	6.2	20	0.004	0.49
	746-757	7	6.2	20	0.004	0.50
	869-894	6	6.2	20	0.003	0.58
	2110-2155	7	7.8	20	0.006	1.00
	1930-1995	7	8.7	20	0.007	1.00

Result: Compliant, The device meet MPE requirement at 20 cm distance.

=====END OF REPORT=====