



FCC ID: UDV-201710
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FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E

TEST REPORT

For

LTE-FDD/HSPA MODULE

Model No.: SIM7600A-H

Trade Name: SIMCOM

Issued to

**Shanghai Simcom Ltd.
SIM Technology Building, No. 633, Jinzhong Road, Changning District,
Shanghai, P.R. China 200233**

Issued by

**Compliance Certification Services Inc.
Wugu Laboratory**

**No. 11, Wugong 6th Rd., Wugu Dist.,
New Taipei City, Taiwan. (R.O.C.)
Issued Date: September 3, 2020**

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 4, 2020	Initial Issue	ALL	Angel Cheng
01	August 26, 2020	1. Revised section 3.1 2. Revised section 8.1	P.6, P.14 ~ 25	Angel Cheng
02	September 3, 2020	1. Revised application information. 2. Added Class II Permissive Change	P.1, P.4, P.5	Angel Cheng



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1. TEST RESULT CERTIFICATION

Applicant: Shanghai Simcom Ltd.
SIM Technology Building, No. 633, Jinzhong Road, Changning District, Shanghai, P.R. China 200233

Manufacturer: Shanghai Simcom Ltd.
SIM Technology Building, No. 633, Jinzhong Road, Changning District, Shanghai, P.R. China 200233

Equipment Under Test: LTE-FDD/HSPA MODULE

Trade Name: SIMCOM

Model No.: SIM7600A-H

Date of Test: April 14 ~ August 24, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR PART 22 SUBPART H AND PART 24 SUBPART E	No non-compliance noted
Statements of Conformity	
Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.	

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA -603-E and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rule FCC PART 22 Subpart H, PART 24 Subpart E.

Approved by:

Dally Hong

Dally Hong
Engineer
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	LTE-FDD/HSPA MODULE	
Model No.	SIM7600A-H	
Model Discrepancy	N/A	
Trade	SIMCOM	
Received Date	March 11, 2020	
Power Supply	Power from power adapter. CHANNEL WELL TECHNOLOGY Model: KPL-050F-VI I/P:100-240V, 50/60Hz, 1.7A O/P:+12V, 4.17A, 50W	
Frequency Range	LTE Band 2 Channel Bandwidth: 1.4MHz	1850.7MHz ~1909.2MHz
	LTE Band 2 Channel Bandwidth: 3MHz	1851.5 MHz ~ 1908.4 MHz
	LTE Band 2 Channel Bandwidth: 5MHz	1852.5MHz ~1907.5MHz
	LTE Band 2 Channel Bandwidth: 10MHz	1855MHz ~1905MHz
	LTE Band 2 Channel Bandwidth: 15MHz	1857.5 MHz ~ 1902.5 MHz
	LTE Band 2 Channel Bandwidth: 20MHz	1860MHz ~1900MHz
Modulation Technique	LTE Band 2	QPSK, 16QAM
Antenna Specification	Product No.:A8-A006-00577 PIFA Antenna LTE Band 2 Antenna gain: 3.37 dBi Product No.: KO-EM-2700-F-018 PIFA Antenna LTE Band 2 Antenna gain: 3.12 dBi	
Class II Permissive Change	- To allow mobile configuration in the SPX Sandpiper Digital Display (Brand name: Connectpoint; Model No.: CP13; FCC ID: 2AVTJ-CP13) - To add the type of antenna (Brand Name:TSKY; Model No.: A8-A006-00577) (Brand Nam: HSIEN JINN ; Model No. KO-EM-2700-F-018 - To disable WCDMA	

Remark: The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.

3. TEST METHODOLOGY

Both conducted and radiated testing were performed according to TIA -603-E, FCC CFR 47, Part 2 and Part 22 Subpart H & Part 24 Subpart E.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 DESCRIPTION OF TEST MODES

The EUT (Model: SIM7600A-H) had been tested under operating condition. The EUT be set in maximum power transmission via call box during testing.

LTE Band 2: 1850MHz ~ 1910MHz

Three channels had been tested for each channel bandwidth.

Channel	1.4MHz		3MHz		5MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Lowest	18607	1850.7	18615	1851.5	18625	1852.5
Middle	18900	1880.0	18900	1880.0	18900	1880.0
Highest	19192	1909.3	19184	1908.4	19175	1907.5
Channel	10MHz		15MHz		20MHz	
	Channel	Frequency(MHz)	Channel	Frequency(MHz)	Channel	Frequency(MHz)
Lowest	18650	1855.0	18675	1857.5	18700	1860.0
Middle	18900	1880.0	18900	1880.0	18900	1880.0
Highest	19150	1905.0	19125	1902.5	19100	1900.0

3.2.1 The worst mode of measurement

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☐ Placed in fixed position at X-Plane (E2-Plane) ☒ Placed in fixed position at Y-Plane (E1-Plane) ☐ Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report



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4. TEST SUMMERY

FCC Standard Sec.	Report Section	Test Item	Result
-	2	Antenna Requirement	Pass
2.1046	8.1	Output Power measurement	Pass
22.913(a), 24.232(c)	8.1	ERP and EIRP Measurement	Pass
22.917(a), 24.238(a)	8.3	Spurious Radiation Measurement	Pass

5. INSTRUMENT CALIBRATION

5.1 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Test site	Test Engineer	Remark
Radiation	Jerry Chang	-
RF Conducted	Jane Wang	-

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: Each piece of equipment is scheduled for calibration once a year.

RF Conducted Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Coaxial Cable	Woken	WC12	CC001	06/29/2020	06/28/2021
Power Divider	Solvang Technology	STI08-0015	008	08/05/2020	08/04/2021
Signal Analyzer	R&S	FSV 40	101073	09/25/2019	09/24/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/19/2020	07/18/2021
Software	N/A				

3M 966 Chamber Test Site					
Equipment	Manufacturer	Model	S/N	Cal Date	Cal Due
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/25/2020	02/24/2021
Bilog Antenna	Sunol Sciences	JB3	A030105	07/26/2019	07/25/2020
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/25/2020	02/24/2021
Coaxial Cable	EMCI	EMC105	190914+25111	09/20/2019	09/19/2020
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	10/04/2019	10/03/2020
Loop Ant	COM-POWER	AL-130	121051	03/27/2020	03/26/2021
Pre-Amplifier	EMEC	EM330	060609	02/25/2020	02/24/2021
Pre-Amplifier	HP	8449B	3008A00965	02/25/2020	02/24/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	05/29/2019	05/28/2020
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
Software	e3 6.11-20180413				



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5.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

Remark: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.

Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City 24891, Taiwan. (R.O.C.)

Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10: 2013 and CISPR Publication 22.

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.3 LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by American Association for Laboratory Accreditation Program for the specific scope accreditation under Lab Code: 0824-01 to perform Electromagnetic Interference tests according to FCC Part 15 and CISPR 22 requirements. In addition, the test facilities are listed with Industry Canada, Certification and Engineering Bureau, ISSED#: 2324G.



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7. SETUP OF EQUIPMENT UNDER TEST

7.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

7.2 SUPPORT EQUIPMENT

No.	Equipment	Brand	Model	Series No.	FCC ID	IC ID
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	PD97260H	1000M-7260H

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



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8. FCC PART 22 & 24 REQUIREMENTS

8.1 ERP & EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 22.913(b):

The Effective Radiated Power (ERP) of mobile transmitters must not exceed 7 Watts.

FCC 24.232(b):

The equivalent Isotropic Radiated Power (EIRP) must not exceed 2 Watts.

TEST PROCEDURES

CONDUCTED POWER MEASUREMENT:

1. The transmitter output power was connected to the call box.
2. Set EUT at maximum output power via call box.
3. Set Call box at lowest, middle and highest channels for each band and modulation.

TEST RESULTS

No non-compliance noted.

LTE Band 2

Temperature: 24°C

Test Date: August 24, 2020

Humidity: 50% RH

Tested by: Jane Wang

Product No.: KO-EM-2700-F-018

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	1.4M	18607	1850.7	QPSK	1	0	0	21.22	24.34
					1	2	0	21.46	24.58
					1	5	0	21.54	24.66
					3	0	1	20.52	23.64
					3	1	1	20.44	23.56
					3	2	1	20.65	23.77
				16QAM	6	0	1	20.36	23.48
					1	0	1	21.22	24.34
					1	2	1	21.26	24.38
					1	5	1	21.09	24.21
					3	0	2	19.50	22.62
					3	1	2	19.76	22.88
					3	2	2	20.31	23.43
					6	0	2	19.27	22.39
		18900	1880.0	QPSK	1	0	0	21.55	24.67
					1	2	0	21.64	24.76
					1	5	0	21.44	24.56
					3	0	1	20.94	24.06
					3	1	1	20.88	24.00
					3	2	1	20.87	23.99
				16QAM	6	0	1	20.70	23.82
					1	0	1	21.06	24.18
					1	2	1	21.11	24.23
					1	5	1	21.07	24.19
					3	0	2	19.58	22.70
					3	1	2	20.32	23.44
					3	2	2	19.83	22.95
					6	0	2	19.51	22.63
		19192	1909.3	QPSK	1	0	0	21.46	24.58
					1	2	0	21.44	24.56
					1	5	0	21.23	24.35
					3	0	1	20.74	23.86
					3	1	1	20.81	23.93
					3	2	1	20.49	23.61
				16QAM	6	0	1	20.64	23.76
					1	0	1	20.96	24.08
					1	2	1	20.78	23.90
					1	5	1	20.98	24.10
					3	0	2	20.34	23.46
					3	1	2	20.33	23.45
					3	2	2	20.38	23.50
					6	0	2	19.89	23.01

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	3M	18615	1851.5	QPSK	1	0	0	21.56	24.68
					1	7	0	21.63	24.75
					1	14	0	21.87	24.99
					8	0	1	20.86	23.98
					8	4	1	20.84	23.96
					8	7	1	20.77	23.89
					15	0	1	20.72	23.84
				16QAM	1	0	1	21.23	24.35
					1	7	1	21.46	24.58
					1	14	1	21.10	24.22
					8	0	2	19.36	22.48
					8	4	2	19.66	22.78
					8	7	2	19.71	22.83
					15	0	2	19.73	22.85
		18900	1880.0	QPSK	1	0	0	21.86	24.98
					1	7	0	21.74	24.86
					1	14	0	21.68	24.80
					8	0	1	20.95	24.07
					8	4	1	20.89	24.01
					8	7	1	20.88	24.00
					15	0	1	20.90	24.02
				16QAM	1	0	1	21.23	24.35
					1	7	1	21.59	24.71
					1	14	1	21.44	24.56
					8	0	2	19.59	22.71
					8	4	2	19.87	22.99
					8	7	2	19.84	22.96
					15	0	2	19.80	22.92
		19184	1908.4	QPSK	1	0	0	21.63	24.75
					1	7	0	21.79	24.91
					1	14	0	21.34	24.46
					8	0	1	20.76	23.88
					8	4	1	20.83	23.95
					8	7	1	20.51	23.63
					15	0	1	20.60	23.72
				16QAM	1	0	1	21.20	24.32
					1	7	1	21.03	24.15
					1	14	1	21.01	24.13
					8	0	2	19.84	22.96
					8	4	2	19.87	22.99
					8	7	2	19.65	22.77
					15	0	2	19.56	22.68

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	5M	18625	1852.5	QPSK	1	0	0	21.68	24.80
					1	12	0	21.84	24.96
					1	24	0	21.90	25.02
					12	0	1	20.73	23.85
					12	6	1	20.88	24.00
					12	11	1	20.76	23.88
					25	0	1	20.74	23.86
				16QAM	1	0	1	21.28	24.40
					1	12	1	21.51	24.63
					1	24	1	21.15	24.27
					12	0	2	19.60	22.72
					12	6	2	19.64	22.76
					12	11	2	19.77	22.89
					25	0	2	19.56	22.68
		18900	1880.0	QPSK	1	0	0	21.84	24.96
					1	12	0	21.76	24.88
					1	24	0	21.72	24.84
					12	0	1	20.41	23.53
					12	6	1	20.69	23.81
					12	11	1	20.73	23.85
					25	0	1	20.70	23.82
				16QAM	1	0	1	21.27	24.39
					1	12	1	21.63	24.75
					1	24	1	21.48	24.60
					12	0	2	19.63	22.75
					12	6	2	19.46	22.58
					12	11	2	19.55	22.67
					25	0	2	19.70	22.82
		19175	1907.5	QPSK	1	0	0	21.86	24.98
					1	12	0	21.14	24.26
					1	24	0	21.19	24.31
					12	0	1	20.76	23.88
					12	6	1	20.42	23.54
					12	11	1	20.38	23.50
					25	0	1	20.39	23.51
				16QAM	1	0	1	21.14	24.26
					1	12	1	21.16	24.28
					1	24	1	21.02	24.14
					12	0	2	19.86	22.98
					12	6	2	19.76	22.88
					12	11	2	19.68	22.80
					25	0	2	19.66	22.78

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	10M	18650	1855.0	QPSK	1	0	0	21.74	24.86
					1	24	0	21.44	24.56
					1	49	0	21.04	24.16
					25	0	1	20.50	23.62
					25	12	1	20.48	23.60
					25	24	1	20.73	23.85
					50	0	1	20.32	23.44
				16QAM	1	0	1	21.30	24.42
					1	24	1	21.53	24.65
					1	49	1	21.17	24.29
					25	0	2	19.42	22.54
					25	12	2	19.53	22.65
					25	24	2	19.71	22.83
					50	0	2	19.31	22.43
		18900	1880.0	QPSK	1	0	0	21.19	24.31
					1	24	0	21.25	24.37
					1	49	0	21.48	24.60
					25	0	1	20.76	23.88
					25	12	1	20.38	23.50
					25	24	1	20.55	23.67
					50	0	1	20.36	23.48
				16QAM	1	0	1	21.29	24.41
					1	24	1	21.65	24.77
					1	49	1	21.50	24.62
					25	0	2	19.55	22.67
					25	12	2	19.48	22.60
					25	24	2	19.56	22.68
					50	0	2	19.59	22.71
		19150	1905.0	QPSK	1	0	0	21.71	24.83
					1	24	0	21.89	25.01
					1	49	0	21.46	24.58
					25	0	1	20.36	23.48
					25	12	1	20.45	23.57
					25	24	1	20.41	23.53
					50	0	1	20.42	23.54
				16QAM	1	0	1	21.13	24.25
					1	24	1	21.19	24.31
					1	49	1	21.00	24.12
					25	0	2	19.34	22.46
					25	12	2	19.36	22.48
					25	24	2	19.38	22.50
					50	0	2	19.46	22.58

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	15M	18675	1857.5	QPSK	1	0	0	21.68	24.80
					1	37	0	21.84	24.96
					1	74	0	21.86	24.98
					36	0	1	20.86	23.98
					36	18	1	20.84	23.96
					36	35	1	20.88	24.00
					75	0	1	20.79	23.91
				16QAM	1	0	1	21.31	24.43
					1	37	1	21.54	24.66
					1	74	1	21.18	24.30
					36	0	2	19.72	22.84
					36	18	2	19.84	22.96
					36	35	2	19.73	22.85
					75	0	2	19.81	22.93
		18900	1880.0	QPSK	1	0	0	21.88	25.00
					1	37	0	21.71	24.83
					1	74	0	21.65	24.77
					36	0	1	20.90	24.02
					36	18	1	20.84	23.96
					36	35	1	20.83	23.95
					75	0	1	20.79	23.91
				16QAM	1	0	1	21.30	24.42
					1	37	1	21.66	24.78
					1	74	1	21.51	24.63
					36	0	2	19.73	22.85
					36	18	2	19.79	22.91
					36	35	2	19.83	22.95
					75	0	2	19.82	22.94
		19125	1902.5	QPSK	1	0	0	21.54	24.66
					1	37	0	21.76	24.88
					1	74	0	21.31	24.43
					36	0	1	20.73	23.85
					36	18	1	20.84	23.96
					36	35	1	20.44	23.56
					75	0	1	20.56	23.68
				16QAM	1	0	1	21.10	24.22
					1	37	1	21.22	24.34
					1	74	1	21.04	24.16
					36	0	2	19.70	22.82
					36	18	2	19.87	22.99
					36	35	2	19.65	22.77
					75	0	2	19.66	22.78

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	20M	18700	1860.0	QPSK	1	0	0	21.67	24.79
					1	49	0	21.86	24.98
					1	99	0	21.70	24.82
					50	0	1	20.64	23.76
					50	24	1	20.56	23.68
					50	49	1	20.77	23.89
					100	0	1	20.80	23.92
				16QAM	1	0	1	21.34	24.46
					1	49	1	21.57	24.69
					1	99	1	21.21	24.33
					50	0	2	19.62	22.74
					50	24	2	19.88	23.00
					50	49	2	19.80	22.92
					100	0	2	19.72	22.84
		18900	1880.0	QPSK	1	0	0	21.79	24.91
					1	49	0	21.76	24.88
					1	99	0	21.74	24.86
					50	0	1	20.87	23.99
					50	24	1	20.76	23.88
					50	49	1	20.82	23.94
					100	0	1	20.80	23.92
				16QAM	1	0	1	21.36	24.48
					1	49	1	21.72	24.84
					1	99	1	21.57	24.69
					50	0	2	19.74	22.86
					50	24	2	19.95	23.07
					50	49	2	19.86	22.98
					100	0	2	19.82	22.94
		19100	1900.0	QPSK	1	0	0	21.53	24.65
					1	49	0	21.76	24.88
					1	99	0	21.27	24.39
					50	0	1	20.73	23.85
					50	24	1	20.84	23.96
					50	49	1	20.54	23.66
					100	0	1	20.61	23.73
				16QAM	1	0	1	21.02	24.14
					1	49	1	21.19	24.31
					1	99	1	21.00	24.12
					50	0	2	19.84	22.96
					50	24	2	19.86	22.98
					50	49	2	19.62	22.74
					100	0	2	19.64	22.76

Product No.:A8-A006-00577

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	1.4M	18607	1850.7	QPSK	1	0	0	21.22	24.59
					1	2	0	21.46	24.83
					1	5	0	21.54	24.91
					3	0	1	20.52	23.89
					3	1	1	20.44	23.81
					3	2	1	20.65	24.02
					6	0	1	20.36	23.73
				16QAM	1	0	1	21.22	24.59
					1	2	1	21.26	24.63
					1	5	1	21.09	24.46
					3	0	2	19.50	22.87
					3	1	2	19.76	23.13
					3	2	2	20.31	23.68
					6	0	2	19.27	22.64
		18900	1880.0	QPSK	1	0	0	21.55	24.92
					1	2	0	21.64	25.01
					1	5	0	21.44	24.81
					3	0	1	20.94	24.31
					3	1	1	20.88	24.25
					3	2	1	20.87	24.24
					6	0	1	20.70	24.07
				16QAM	1	0	1	21.06	24.43
					1	2	1	21.11	24.48
					1	5	1	21.07	24.44
					3	0	2	19.58	22.95
					3	1	2	20.32	23.69
					3	2	2	19.83	23.20
					6	0	2	19.51	22.88
		19192	1909.3	QPSK	1	0	0	21.46	24.83
					1	2	0	21.44	24.81
					1	5	0	21.23	24.60
					3	0	1	20.74	24.11
					3	1	1	20.81	24.18
					3	2	1	20.49	23.86
					6	0	1	20.64	24.01
				16QAM	1	0	1	20.96	24.33
					1	2	1	20.78	24.15
					1	5	1	20.98	24.35
					3	0	2	20.34	23.71
					3	1	2	20.33	23.70
					3	2	2	20.38	23.75
					6	0	2	19.89	23.26

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	3M	18615	1851.5	QPSK	1	0	0	21.56	24.93
					1	7	0	21.63	25.00
					1	14	0	21.87	25.24
					8	0	1	20.86	24.23
					8	4	1	20.84	24.21
					8	7	1	20.77	24.14
					15	0	1	20.72	24.09
				16QAM	1	0	1	21.23	24.60
					1	7	1	21.46	24.83
					1	14	1	21.10	24.47
					8	0	2	19.36	22.73
					8	4	2	19.66	23.03
					8	7	2	19.71	23.08
					15	0	2	19.73	23.10
		18900	1880.0	QPSK	1	0	0	21.86	25.23
					1	7	0	21.74	25.11
					1	14	0	21.68	25.05
					8	0	1	20.95	24.32
					8	4	1	20.89	24.26
					8	7	1	20.88	24.25
					15	0	1	20.90	24.27
				16QAM	1	0	1	21.23	24.60
					1	7	1	21.59	24.96
					1	14	1	21.44	24.81
					8	0	2	19.59	22.96
					8	4	2	19.87	23.24
					8	7	2	19.84	23.21
					15	0	2	19.80	23.17
		19184	1908.4	QPSK	1	0	0	21.63	25.00
					1	7	0	21.79	25.16
					1	14	0	21.34	24.71
					8	0	1	20.76	24.13
					8	4	1	20.83	24.20
					8	7	1	20.51	23.88
					15	0	1	20.60	23.97
				16QAM	1	0	1	21.20	24.57
					1	7	1	21.03	24.40
					1	14	1	21.01	24.38
					8	0	2	19.84	23.21
					8	4	2	19.87	23.24
					8	7	2	19.65	23.02
					15	0	2	19.56	22.93

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	5M	18625	1852.5	QPSK	1	0	0	21.68	25.05
					1	12	0	21.84	25.21
					1	24	0	21.90	25.27
					12	0	1	20.73	24.10
					12	6	1	20.88	24.25
					12	11	1	20.76	24.13
					25	0	1	20.74	24.11
				16QAM	1	0	1	21.28	24.65
					1	12	1	21.51	24.88
					1	24	1	21.15	24.52
					12	0	2	19.60	22.97
					12	6	2	19.64	23.01
					12	11	2	19.77	23.14
					25	0	2	19.56	22.93
		18900	1880.0	QPSK	1	0	0	21.84	25.21
					1	12	0	21.76	25.13
					1	24	0	21.72	25.09
					12	0	1	20.41	23.78
					12	6	1	20.69	24.06
					12	11	1	20.73	24.10
					25	0	1	20.70	24.07
				16QAM	1	0	1	21.27	24.64
					1	12	1	21.63	25.00
					1	24	1	21.48	24.85
					12	0	2	19.63	23.00
					12	6	2	19.46	22.83
					12	11	2	19.55	22.92
					25	0	2	19.70	23.07
		19175	1907.5	QPSK	1	0	0	21.86	25.23
					1	12	0	21.14	24.51
					1	24	0	21.19	24.56
					12	0	1	20.76	24.13
					12	6	1	20.42	23.79
					12	11	1	20.38	23.75
					25	0	1	20.39	23.76
				16QAM	1	0	1	21.14	24.51
					1	12	1	21.16	24.53
					1	24	1	21.02	24.39
					12	0	2	19.86	23.23
					12	6	2	19.76	23.13
					12	11	2	19.68	23.05
					25	0	2	19.66	23.03

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	10M	18650	1855.0	QPSK	1	0	0	21.74	25.11
					1	24	0	21.44	24.81
					1	49	0	21.04	24.41
					25	0	1	20.50	23.87
					25	12	1	20.48	23.85
					25	24	1	20.73	24.10
					50	0	1	20.32	23.69
				16QAM	1	0	1	21.30	24.67
					1	24	1	21.53	24.90
					1	49	1	21.17	24.54
					25	0	2	19.42	22.79
					25	12	2	19.53	22.90
					25	24	2	19.71	23.08
					50	0	2	19.31	22.68
		18900	1880.0	QPSK	1	0	0	21.19	24.56
					1	24	0	21.25	24.62
					1	49	0	21.48	24.85
					25	0	1	20.76	24.13
					25	12	1	20.38	23.75
					25	24	1	20.55	23.92
					50	0	1	20.36	23.73
				16QAM	1	0	1	21.29	24.66
					1	24	1	21.65	25.02
					1	49	1	21.50	24.87
					25	0	2	19.55	22.92
					25	12	2	19.48	22.85
					25	24	2	19.56	22.93
					50	0	2	19.59	22.96
		19150	1905.0	QPSK	1	0	0	21.71	25.08
					1	24	0	21.89	25.26
					1	49	0	21.46	24.83
					25	0	1	20.36	23.73
					25	12	1	20.45	23.82
					25	24	1	20.41	23.78
					50	0	1	20.42	23.79
				16QAM	1	0	1	21.13	24.50
					1	24	1	21.19	24.56
					1	49	1	21.00	24.37
					25	0	2	19.34	22.71
					25	12	2	19.36	22.73
					25	24	2	19.38	22.75
					50	0	2	19.46	22.83

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	15M	18675	1857.5	QPSK	1	0	0	21.68	25.05
					1	37	0	21.84	25.21
					1	74	0	21.86	25.23
					36	0	1	20.86	24.23
					36	18	1	20.84	24.21
					36	35	1	20.88	24.25
					75	0	1	20.79	24.16
				16QAM	1	0	1	21.31	24.68
					1	37	1	21.54	24.91
					1	74	1	21.18	24.55
					36	0	2	19.72	23.09
					36	18	2	19.84	23.21
					36	35	2	19.73	23.10
					75	0	2	19.81	23.18
		18900	1880.0	QPSK	1	0	0	21.88	25.25
					1	37	0	21.71	25.08
					1	74	0	21.65	25.02
					36	0	1	20.90	24.27
					36	18	1	20.84	24.21
					36	35	1	20.83	24.20
					75	0	1	20.79	24.16
				16QAM	1	0	1	21.30	24.67
					1	37	1	21.66	25.03
					1	74	1	21.51	24.88
					36	0	2	19.73	23.10
					36	18	2	19.79	23.16
					36	35	2	19.83	23.20
					75	0	2	19.82	23.19
		19125	1902.5	QPSK	1	0	0	21.54	24.91
					1	37	0	21.76	25.13
					1	74	0	21.31	24.68
					36	0	1	20.73	24.10
					36	18	1	20.84	24.21
					36	35	1	20.44	23.81
					75	0	1	20.56	23.93
				16QAM	1	0	1	21.10	24.47
					1	37	1	21.22	24.59
					1	74	1	21.04	24.41
					36	0	2	19.70	23.07
					36	18	2	19.87	23.24
					36	35	2	19.65	23.02
					75	0	2	19.66	23.03

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	E.I.R.P. Power
Band 2	20M	18700	1860.0	QPSK	1	0	0	21.67	25.04
					1	49	0	21.86	25.23
					1	99	0	21.70	25.07
					50	0	1	20.64	24.01
					50	24	1	20.56	23.93
					50	49	1	20.77	24.14
					100	0	1	20.80	24.17
				16QAM	1	0	1	21.34	24.71
					1	49	1	21.57	24.94
					1	99	1	21.21	24.58
					50	0	2	19.62	22.99
					50	24	2	19.88	23.25
					50	49	2	19.80	23.17
					100	0	2	19.72	23.09
		18900	1880.0	QPSK	1	0	0	21.79	25.16
					1	49	0	21.76	25.13
					1	99	0	21.74	25.11
					50	0	1	20.87	24.24
					50	24	1	20.76	24.13
					50	49	1	20.82	24.19
					100	0	1	20.80	24.17
				16QAM	1	0	1	21.36	24.73
					1	49	1	21.72	25.09
					1	99	1	21.57	24.94
					50	0	2	19.74	23.11
					50	24	2	19.95	23.32
					50	49	2	19.86	23.23
					100	0	2	19.82	23.19
		19100	1900.0	QPSK	1	0	0	21.53	24.90
					1	49	0	21.76	25.13
					1	99	0	21.27	24.64
					50	0	1	20.73	24.10
					50	24	1	20.84	24.21
					50	49	1	20.54	23.91
					100	0	1	20.61	23.98
				16QAM	1	0	1	21.02	24.39
					1	49	1	21.19	24.56
					1	99	1	21.00	24.37
					50	0	2	19.84	23.21
					50	24	2	19.86	23.23
					50	49	2	19.62	22.99
					100	0	2	19.64	23.01

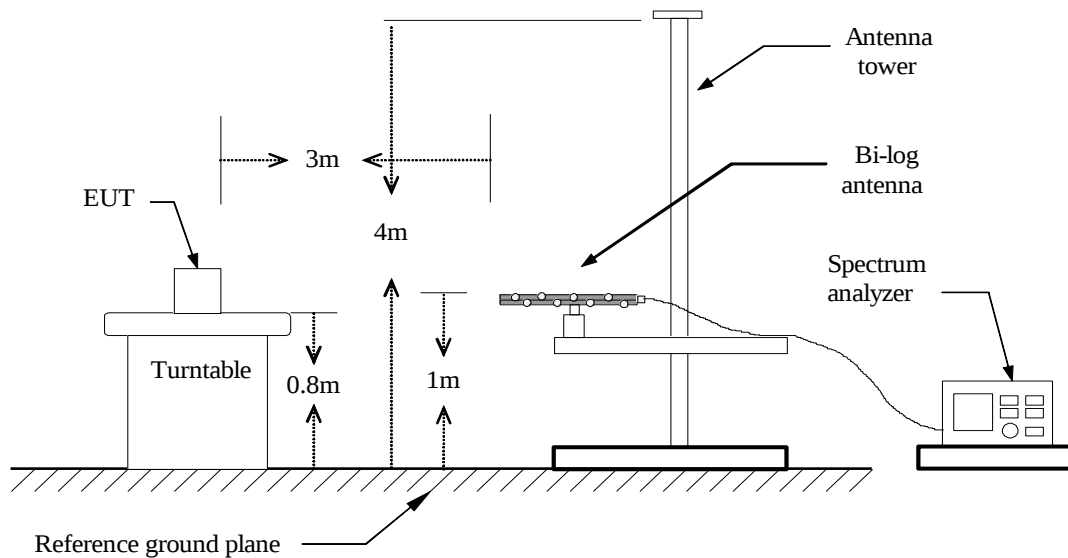
8.2 SPURIOUS RADIATION MEASUREMENT

LIMIT

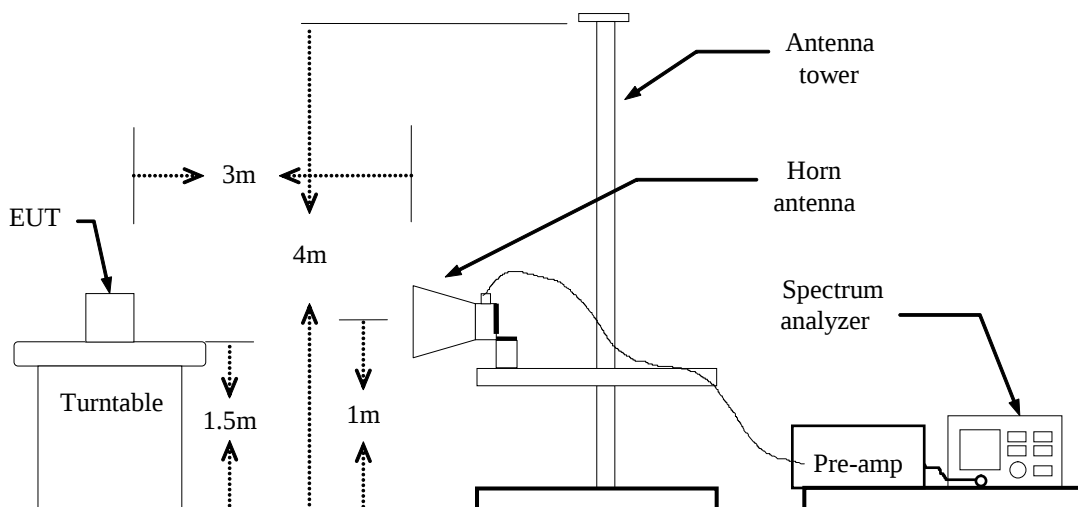
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

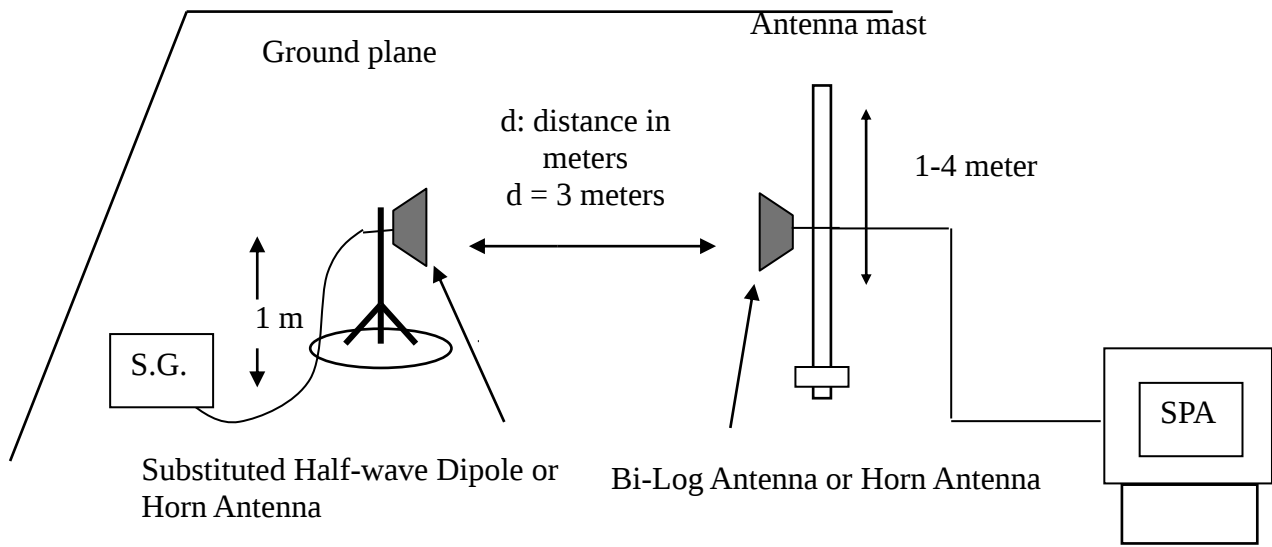
Test Configuration

Below 1 GHz



Above 1 GHz



Substituted Method Test Set-up**TEST PROCEDURE**

1. According to KDB 971168 D01 Power Meas License Digital Systems and TIA-603-E Section 2.2.12.
2. The EUT was placed on a turntable
 - (1) Below 1G : 0.8m
 - (2) Above 1G : 1.5m
 - (3) EUT set 3m from the receiving antenna
 - (4) The table was rotated 360 degrees of the highest spurious emission to determine the position.
3. Set the spectrum analyzer , RBW=1MHz, VBW=3MHz.
4. A horn antenna was driven by a signal generator.
5. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)} - 2.15$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable (dB)}$$

TEST RESULTS

Refer to the attached tabular data sheets.

Remark: Above 1GHz

Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.



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Test Results

LTE Band 2 / BW: 20MHz / QPSK / RB =1, RB Offset = 0

Operation Mode: Tx / Low CH

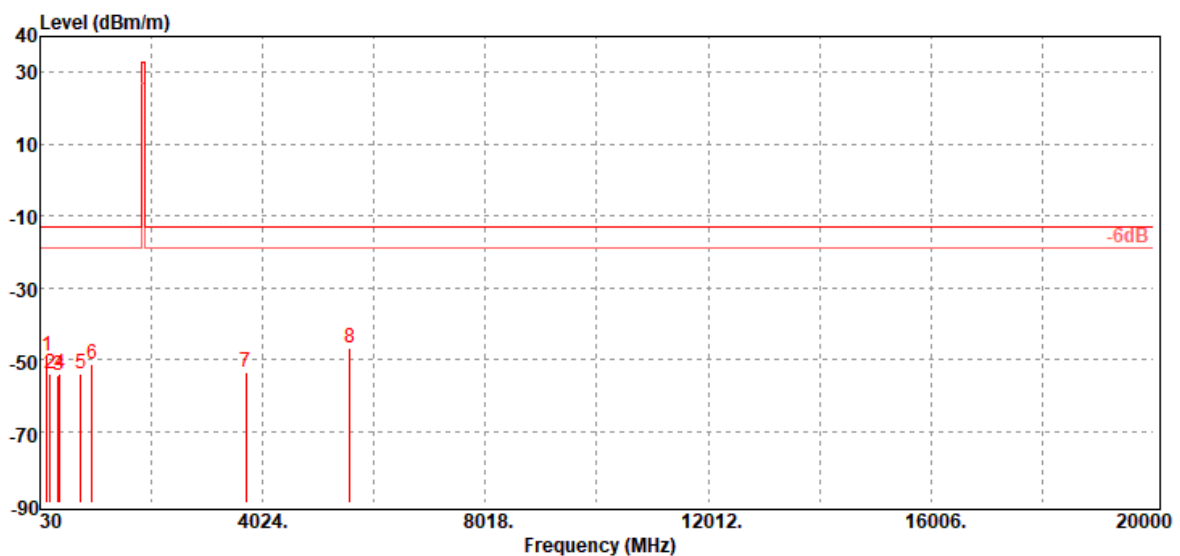
Test Date: April 14, 2020

Temperature: 20.9°C

Tested by: Jerry Chang

Humidity: 41% RH

Polarity: Ver.



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Antenna Polarization (V/H)
148.34	-48.94	-40.67	-7.27	-1.00	-13.00	-35.94	V
205.57	-54.03	-50.13	-2.72	-1.18	-13.00	-41.03	V
350.10	-54.54	-51.49	-1.50	-1.55	-13.00	-41.54	V
388.90	-54.22	-51.19	-1.40	-1.63	-13.00	-41.22	V
765.26	-54.07	-50.34	-1.40	-2.33	-13.00	-41.07	V
956.35	-51.40	-47.55	-1.23	-2.62	-13.00	-38.40	V
3720.00	-53.69	-60.42	12.46	-5.73	-13.00	-40.69	V
5580.00	-47.02	-53.05	13.14	-7.11	-13.00	-34.02	V



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Operation Mode: Tx / Low CH

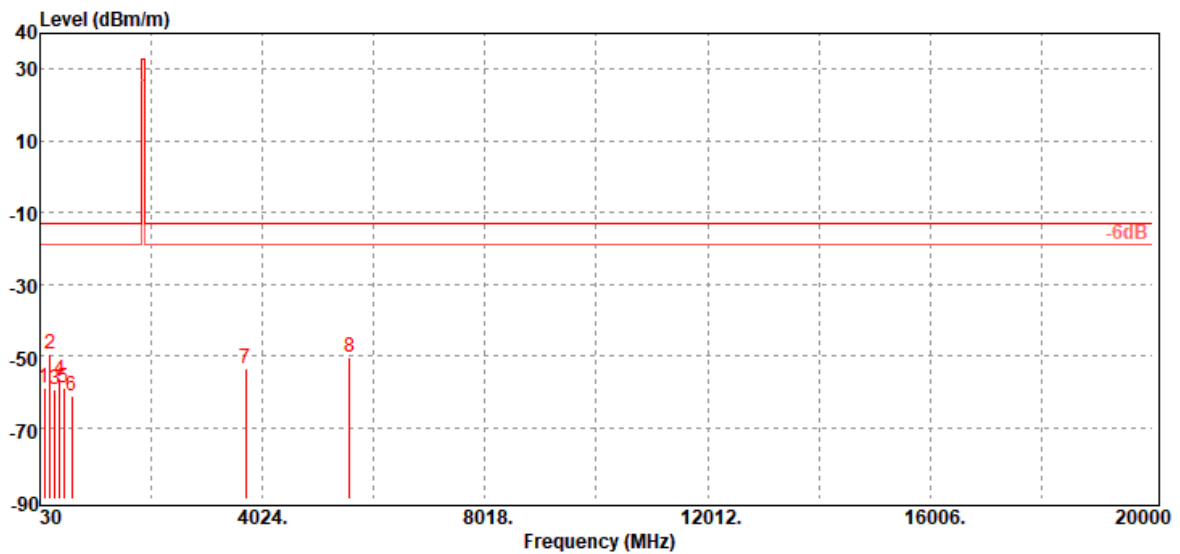
Test Date: April 14, 2020

Temperature: 20.9°C

Tested by: Jerry Chang

Humidity: 41% RH

Polarity: Hor.



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Antenna Polarization (V/H)
105.66	-58.78	-48.57	-9.37	-0.84	-13.00	-45.78	H
206.54	-49.64	-45.88	-2.58	-1.18	-13.00	-36.64	H
299.66	-59.47	-56.03	-2.01	-1.43	-13.00	-46.47	H
388.90	-56.60	-53.57	-1.40	-1.63	-13.00	-43.60	H
450.01	-58.95	-55.09	-2.10	-1.76	-13.00	-45.95	H
594.54	-60.99	-58.11	-0.82	-2.06	-13.00	-47.99	H
3720.00	-53.54	-60.27	12.46	-5.73	-13.00	-40.54	H
5580.00	-50.51	-56.54	13.14	-7.11	-13.00	-37.51	H

Operation Mode: Tx / Mid CH

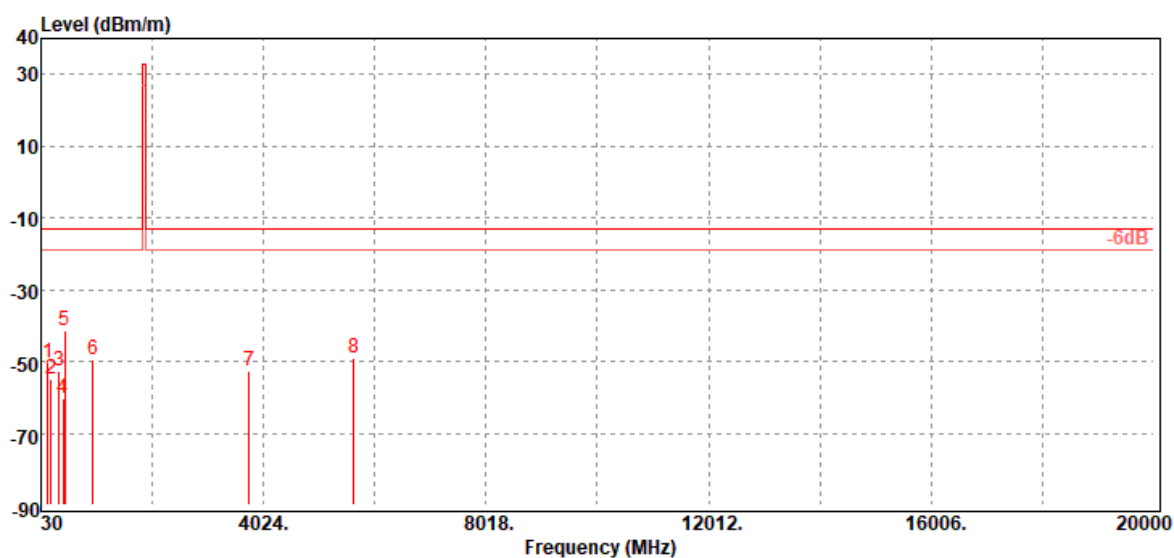
Test Date: April 14, 2020

Temperature: 20.9°C

Tested by: Jerry Chang

Humidity: 41% RH

Polarity: Ver.



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Antenna Polarization (V/H)
153.19	-50.64	-42.9	-6.72	-1.02	-13.00	-37.64	V
207.51	-55.03	-51.4	-2.45	-1.18	-13.00	-42.03	V
350.10	-52.54	-49.49	-1.50	-1.55	-13.00	-39.54	V
432.55	-60.36	-56.69	-1.95	-1.72	-13.00	-47.36	V
459.71	-41.45	-37.57	-2.10	-1.78	-13.00	-28.45	V
956.35	-49.29	-45.44	-1.23	-2.62	-13.00	-36.29	V
3760.00	-52.77	-59.43	12.42	-5.76	-13.00	-39.77	V
5640.00	-48.93	-55.05	13.26	-7.14	-13.00	-35.93	V

Operation Mode: Tx / Mid CH

Test Date:

April 14, 2020

Temperature: 20.9°C

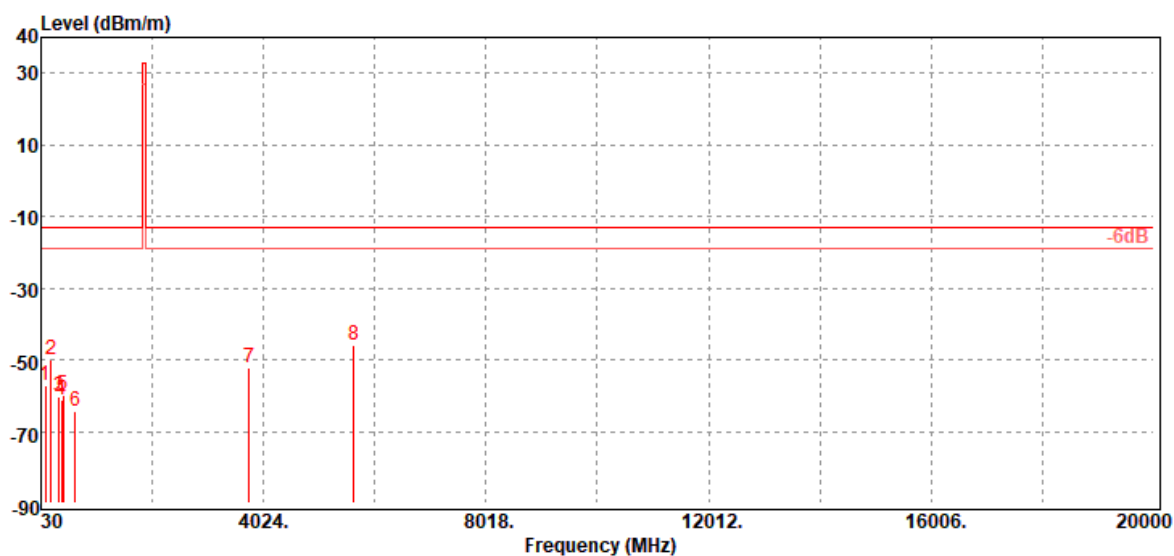
Tested by:

Jerry Chang

Humidity: 41% RH

Polarity:

Hor.



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Antenna Polarization (V/H)
107.60	-57.16	-46.81	-9.50	-0.85	-13.00	-44.16	H
206.54	-50.04	-46.28	-2.58	-1.18	-13.00	-37.04	H
350.10	-60.23	-57.18	-1.50	-1.55	-13.00	-47.23	H
391.81	-61.09	-57.98	-1.47	-1.64	-13.00	-48.09	H
430.61	-59.74	-56.11	-1.91	-1.72	-13.00	-46.74	H
650.80	-64.31	-60.48	-1.68	-2.15	-13.00	-51.31	H
3760.00	-52.15	-58.81	12.42	-5.76	-13.00	-39.15	H
5640.00	-45.82	-51.94	13.26	-7.14	-13.00	-32.82	H

Operation Mode: Tx / High CH

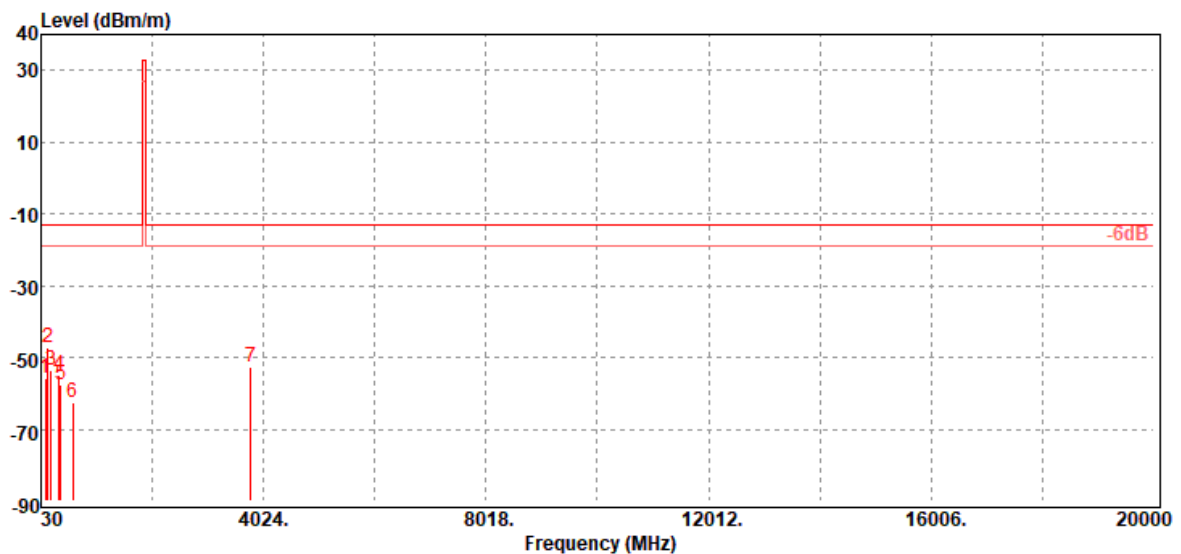
Test Date: April 14, 2020

Temperature: 20.9°C

Tested by: Jerry Chang

Humidity: 41% RH

Polarity: Ver.



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Antenna Polarization (V/H)
105.66	-55.68	-45.47	-9.37	-0.84	-13.00	-42.68	V
148.34	-47.08	-38.81	-7.27	-1.00	-13.00	-34.08	V
212.36	-53.48	-50.18	-2.10	-1.20	-13.00	-40.48	V
350.10	-54.83	-51.78	-1.50	-1.55	-13.00	-41.83	V
381.14	-57.81	-54.71	-1.48	-1.62	-13.00	-44.81	V
600.36	-62.74	-59.76	-0.91	-2.07	-13.00	-49.74	V
3800.00	-52.57	-59.28	12.50	-5.79	-13.00	-39.57	V

Operation Mode: Tx / High CH

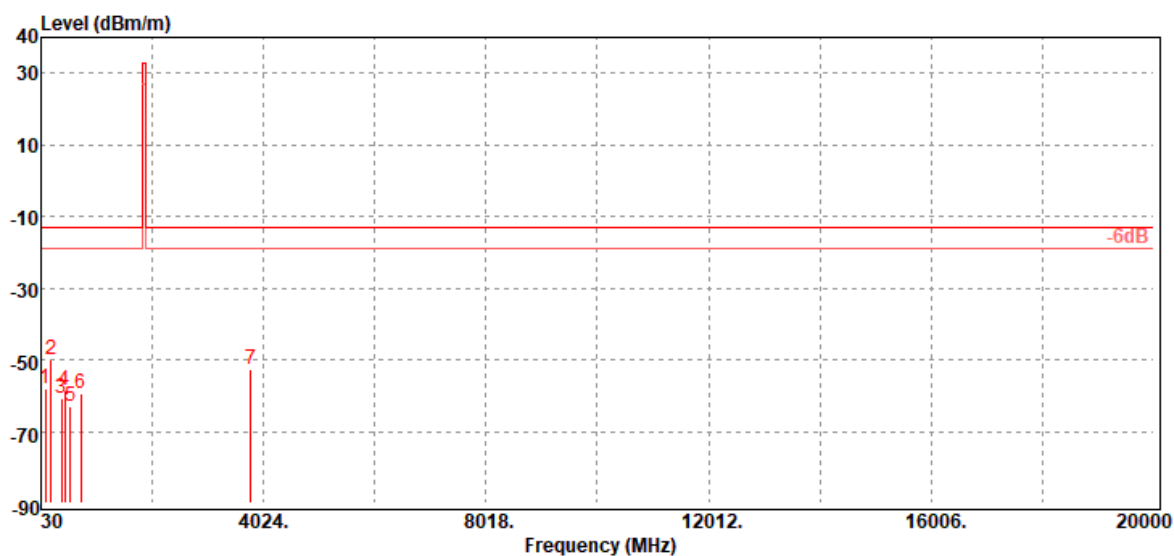
Test Date: April 14, 2020

Temperature: 20.9°C

Tested by: Jerry Chang

Humidity: 41% RH

Polarity: Hor.



Freq. (MHz)	Detector Mode (PK/QP/AV)	Spectrum Reading Level (dBμV)	Factor (dB)	Actual FS (dBμV/m)	Limit @3m (dBμV/m)	Margin (dB)	Antenna Polarization (V/H)
105.66	-57.93	-47.72	-9.37	-0.84	-13.00	-44.93	H
205.57	-49.92	-46.02	-2.72	-1.18	-13.00	-36.92	H
394.72	-60.73	-57.49	-1.59	-1.65	-13.00	-47.73	H
450.01	-58.48	-54.62	-2.10	-1.76	-13.00	-45.48	H
550.89	-62.91	-59.74	-1.22	-1.95	-13.00	-49.91	H
749.74	-59.22	-55.51	-1.40	-2.31	-13.00	-46.22	H
3800.00	-52.60	-59.31	12.50	-5.79	-13.00	-39.60	H

- End of Test Report -