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Report No.: T200407W01-RP9

IC: 2420C-N653

Page: 1 / 30
Rev.: 01

**FCC 47 CFR PART 24 SUBPART E
+
INDUSTRY CANADA RSS-133**

TEST REPORT

For

PRO 8475

**Trade Name:
MiTAC, Webfleet Solutions**

Model: N653

Issued to

FCC:	Mitac Digital Technology Corporation No.200, Wen Hwa 2nd Rd.,Kuei Shan Dist. Taoyuan, 33383 Taiwan
IC:	MiTAC Digital Technology Corporation No.200, Wenhua 2nd Rd., Guishan Dist. Taoyuan City 333 Taiwan

Issued by

**Compliance Certification Services Inc.
Wugu Laboratory
No.11, Wugong 6th Rd., Wugu Dist.,
New Taipei City, Taiwan. (R.O.C.)
Issued Date: June 9, 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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Report No.: T200407W01-RP9

Page: 2 / 30

Rev.: 01

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	May 21, 2020	Initial Issue	ALL	Allison Chen
01	June 9, 2020	See the following note Rev.(01)	ALL	Allison Chen

Rev.(01)

- 1. Added test data for power table and radiated emission.*
- 2. Revised product name: PRO 8475, and model name: N653.*



Report No.: T200407W01-RP9

Page: 3 / 30

Rev.: 01

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION.....	4
2. EUT DESCRIPTION	5
3. TEST METHODOLOGY	6
3.1 EUT CONFIGURATION	6
3.2 DESCRIPTION OF TEST MODES.....	6
4. TEST SUMMARY	8
5. INSTRUMENT CALIBRATION.....	9
5.1 MEASURING INSTRUMENT CALIBRATION.....	9
5.2 MEASUREMENT EQUIPMENT USED.....	9
5.3 MEASUREMENT UNCERTAINTY	11
6. FACILITIES AND ACCREDITATIONS.....	12
6.1 FACILITIES.....	12
6.2 EQUIPMENT.....	12
6.3 LABORATORY ACCREDITATIONS AND LISTING	12
7. SETUP OF EQUIPMENT UNDER TEST	13
7.1 SETUP CONFIGURATION OF EUT	13
7.2 SUPPORT EQUIPMENT.....	13
8. FCC PART 24 REQUIREMENTS & INDUSTRY CANADA RSS-133.....	14
8.1 EIRP MEASUREMENT	14
8.2 SPURIOUS RADIATION MEASUREMENT	21
8.3 TEST DATA RE-USE SUMMARY	29
9. APPENDIX A PHOTOGRAPHS OF TEST SETUP	A-1
APPENDIX 1 - PHOTOGRAPHS OF EUT	

1. TEST RESULT CERTIFICATION

FCC Applicant: Mitac Digital Technology Corporation
No.200, Wen Hwa 2nd Rd.,Kuei Shan Dist. Taoyuan, 33383
Taiwan

IC Applicant: MITAC Digital Technology Corporation
No.200, Wenhua 2nd Rd., Guishan Dist. Taoyuan City 333
Taiwan

Manufacturer: MITAC COMPUTER (KUNSHAN) CO., LTD.
No. 269, 2nd Avenue, District A, Comprehensive Free Trade
Zone, Kunshan, Jiangsu, P.R. China

Equipment Under Test: PRO 8475

Trade Name: MiTAC, Webfleet Solutions

Model: N653

Date of Test: June 1 ~ 6, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR PART 24 SUBPART E + RSS-133 Issue 6	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 24 Subpart E and IC RSS-133 Issue 6.

Approved by:



Kevin Tsai
Deputy Manager
Compliance Certification Services Inc.



Report No.: T200407W01-RP9

Page: 5 / 30

Rev.: 01

2. EUT DESCRIPTION

Product	PRO 8475	
Model	N653	
Model Discrepancy	Difference of the those trade names (list on this report) are just for marketing purpose only.	
Trade	MiTAC, Webfleet Solutions	
Received Date	April 7, 2020	
Power Supply	1. Powered from Rechargeable Li-ion Polymer Battery. Rating: 3.7VDC, 4000mAh, 14.8Wh 2. Powered from Cradle Fleet cable 12/24V (Pogo power pin) USB Type-C 5V	
Frequency Range	LTE Band 25 Channel Bandwidth: 1.4MHz	1850.7 MHz ~1914.3 MHz
	LTE Band 25 Channel Bandwidth: 3MHz	1851.5 MHz ~ 1913.5 MHz
	LTE Band 25 Channel Bandwidth: 5MHz	1852.5 MHz ~1912.5 MHz
	LTE Band 25 Channel Bandwidth: 10MHz	1855.0 MHz ~1910.0 MHz
	LTE Band 25 Channel Bandwidth: 15MHz	1857.5 MHz ~ 1907.5 MHz
	LTE Band 25 Channel Bandwidth: 20MHz	1860.0 MHz ~1905.0 MHz
Modulation Technique	LTE Band 25	QPSK, 16QAM
Antenna Specification	Antenna type: Integral Band 25: 2.92 dBi	

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 24 Subpart E.

The tests documented in this report were performed in accordance with IC RSS-133, SPSR510 and ANSI C63.26: 2015.

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: N653) had been tested under operating condition.

The EUT be set in maximum power transmission via call box during testing.

LTE Band 25: 1850 MHz ~ 1915MHz

Three channels had been tested for each channel bandwidth.

Channel Bandwidth	1.4MHz		3MHz		5MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	26047	1850.7	26055	1851.5	26065	1852.5
Middle channel (M)	26365	1882.5	26365	1882.5	26365	1882.5
High channel (H)	26683	1914.3	26675	1913.5	26665	1912.5

Channel Bandwidth	10MHz		15MHz		20MHz	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Low channel (L)	26090	1855.0	26115	1857.5	26140	1860.0
Middle channel (M)	26365	1882.5	26365	1882.5	26365	1882.5
High channel (H)	26640	1910.0	26615	1907.5	26590	1905.0

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 Battery Mode 2: EUT+Cradle
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 Battery Mode 2: EUT+Cradle
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(Z-Plane) were recorded in this report



Report No.: T200407W01-RP9

Page: 8 / 30

Rev.: 01

4. TEST SUMMARY

FCC Standard Sec.	IC Standard Sec.	Report Section	Test Item	Result
-	-	2	Antenna Requirement	Pass
24.232(c)	RSS-133, section 6.4	8.1	EIRP Measurement	Pass
24.238(a)	RSS-133 section 6.5	8.2	Spurious Radiation Measurement	Pass



Report No.: T200407W01-RP9

Page: 9 / 30

Rev.: 01

5. INSTRUMENT CALIBRATION

5.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

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	CC003	06/28/2019	06/27/2020
Wideband Radio Communication Tester	R&S	CMW 500	116875	07/29/2019	07/28/2020
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
High Pass Filter	SOLVANG TECHNOLOGY INC.	STI15	9923	02/25/2020	02/24/2021
High Pass Filters	MICRO TRONICS	HPM13195	003	02/25/2020	02/24/2021
Horn Antenna	ETS LINDGREN	3116	00026370	12/18/2019	12/17/2020
Horn Antenna / Harmonic Mixer	A-INFOMW / ROHDE&SCHWA RZ	LB-19-20-A / FS-Z60	J202020872 / 100142	12/09/2019	12/08/2021
Horn Antenna / Harmonic Mixer	ROHDE&SCHWA RZ	FH-PP-110 / FS-Z110	10003 / 100096	12/09/2019	12/08/2021
Horn Antenna / Harmonic Mixer	ROHDE&SCHWA RZ	FH-PP-75 / FS-Z75	10001 / 100162	12/09/2019	12/08/2021
Horn Antenna / Spectrum Analyzer Mixer	Radiometer Physics GmbH	FH-PP-170 / SAM-170	10003 / 20011	12/09/2019	12/08/2021
Horn Antenna / Spectrum Analyzer Mixer	Radiometer Physics GmbH	FH-PP-220 / SAM-220	10003 / 20013	12/09/2019	12/08/2021
Horn Antenna / Spectrum Analyzer Mixer	Radiometer Physics GmbH	FH-PP-325 / SAM-325	10007 / 20048	12/09/2019	12/08/2021
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
Pre-Amplifier	MITEQ	AMF-6F-180040 00-37-8P	985646	06/18/2019	06/17/2020
Signal Analyzer	Agilent	N9010A	MY52220817	03/19/2020	03/18/2021
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
Software	e3 6.11-20180413				



Report No.: T200407W01-RP9

Page: 11 / 30

Rev.: 01

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, 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, IC 2324G-1 for 3M Semi Anechoic Chamber A, 2324G-2 for 3M Semi Anechoic Chamber B.



Report No.: T200407W01-RP9

Page: 13 / 30

Rev.: 01

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

Support Equipment						
No.	Equipment	Brand	Model	Series No.	FCC ID	IC ID
1	NB(L)	Toshiba	PORTEGE R30-A	N/A	PD97260H	N/A
2	DC Power Source	Agilent	E3640A	N/A	N/A	N/A

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.



Report No.: T200407W01-RP9

Page: 14 / 30

Rev.: 01

8. FCC PART 24 REQUIREMENTS & INDUSTRY CANADA RSS-133

8.1 EIRP MEASUREMENT

LIMIT

According to FCC §2.1046

FCC 24.232(b):

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

According to RSS-133, section 6.4

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 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 25

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	EIRP Power
Band 25	1.4M	26047	1850.7	QPSK	1	0	0	21.34	24.26
					1	2	0	21.19	24.11
					1	5	0	21.11	24.03
					3	0	1	20.54	23.46
					3	1	1	20.46	23.38
					3	2	1	20.35	23.27
					6	0	1	20.36	23.28
				16QAM	1	0	1	21.15	24.07
					1	2	1	20.88	23.80
					1	5	1	20.55	23.47
					3	0	2	19.54	22.46
					3	1	2	19.40	22.32
					3	2	2	19.40	22.32
					6	0	2	19.47	22.39
		26365	1882.5	QPSK	1	0	0	21.33	24.25
					1	2	0	21.32	24.24
					1	5	0	21.23	24.15
					3	0	1	20.50	23.42
					3	1	1	20.50	23.42
					3	2	1	20.49	23.41
					6	0	1	20.46	23.38
				16QAM	1	0	1	20.81	23.73
					1	2	1	21.10	24.02
					1	5	1	20.39	23.31
					3	0	2	19.44	22.36
					3	1	2	19.52	22.44
					3	2	2	19.41	22.33
					6	0	2	19.41	22.33
		26683	1914.3	QPSK	1	0	0	21.60	24.52
					1	2	0	21.36	24.28
					1	5	0	21.56	24.48
					3	0	1	20.99	23.91
					3	1	1	20.88	23.80
					3	2	1	20.83	23.75
					6	0	1	21.05	23.97
				16QAM	1	0	1	20.95	23.87
					1	2	1	21.42	24.34
					1	5	1	20.63	23.55
					3	0	2	19.92	22.84
					3	1	2	19.93	22.85
					3	2	2	19.88	22.80
					6	0	2	19.92	22.84



Report No.: T200407W01-RP9

Page: 16 / 30

Rev.: 01

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	EIRP Power
Band 25	3M	26055	1851.5	QPSK	1	0	0	21.35	24.27
					1	7	0	21.20	24.12
					1	14	0	21.12	24.04
					8	0	1	20.55	23.47
					8	4	1	20.47	23.39
					8	7	1	20.36	23.28
					15	0	1	20.37	23.29
				16QAM	1	0	1	21.16	24.08
					1	7	1	20.89	23.81
					1	14	1	20.56	23.48
					8	0	2	19.55	22.47
					8	4	2	19.41	22.33
					8	7	2	19.41	22.33
					15	0	2	19.48	22.40
		26365	1882.5	QPSK	1	0	0	21.34	24.26
					1	7	0	21.33	24.25
					1	14	0	21.24	24.16
					8	0	1	20.51	23.43
					8	4	1	20.51	23.43
					8	7	1	20.50	23.42
					15	0	1	20.47	23.39
				16QAM	1	0	1	20.82	23.74
					1	7	1	21.11	24.03
					1	14	1	20.40	23.32
					8	0	2	19.45	22.37
					8	4	2	19.53	22.45
					8	7	2	19.42	22.34
		26675	1913.5	QPSK	15	0	2	19.42	22.34
					1	0	0	21.62	24.54
					1	7	0	21.38	24.30
					1	14	0	21.58	24.50
					8	0	1	21.01	23.93
					8	4	1	20.90	23.82
					8	7	1	20.85	23.77
					15	0	1	21.07	23.99
				16QAM	1	0	1	20.97	23.89
					1	7	1	21.44	24.36
					1	14	1	20.65	23.57
					8	0	2	19.94	22.86
					8	4	2	19.95	22.87
					8	7	2	19.90	22.82
					15	0	2	19.94	22.86

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	EIRP Power
Band 25	5M	26065	1852.5	QPSK	1	0	0	21.40	24.32
					1	12	0	21.25	24.17
					1	24	0	21.17	24.09
					12	0	1	20.60	23.52
					12	6	1	20.52	23.44
					12	11	1	20.41	23.33
					25	0	1	20.42	23.34
				16QAM	1	0	1	21.21	24.13
					1	12	1	20.94	23.86
					1	24	1	20.61	23.53
					12	0	2	19.60	22.52
					12	6	2	19.46	22.38
					12	11	2	19.46	22.38
					25	0	2	19.53	22.45
		26365	1882.5	QPSK	1	0	0	21.38	24.30
					1	12	0	21.37	24.29
					1	24	0	21.28	24.20
					12	0	1	20.55	23.47
					12	6	1	20.55	23.47
					12	11	1	20.54	23.46
					25	0	1	20.51	23.43
				16QAM	1	0	1	20.86	23.78
					1	12	1	21.15	24.07
					1	24	1	20.44	23.36
					12	0	2	19.49	22.41
					12	6	2	19.57	22.49
					12	11	2	19.46	22.38
					25	0	2	19.46	22.38
		26665	1912.5	QPSK	1	0	0	21.67	24.59
					1	12	0	21.43	24.35
					1	24	0	21.63	24.55
					12	0	1	21.06	23.98
					12	6	1	20.95	23.87
					12	11	1	20.90	23.82
					25	0	1	21.12	24.04
				16QAM	1	0	1	21.02	23.94
					1	12	1	21.49	24.41
					1	24	1	20.70	23.62
					12	0	2	19.99	22.91
					12	6	2	20.00	22.92
					12	11	2	19.95	22.87
					25	0	2	19.99	22.91

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	EIRP Power
Band 25	10M	26090	1885.0	QPSK	1	0	0	21.42	24.34
					1	24	0	21.27	24.19
					1	49	0	21.19	24.11
					25	0	1	20.62	23.54
					25	12	1	20.54	23.46
					25	24	1	20.43	23.35
					50	0	1	20.44	23.36
				16QAM	1	0	1	21.23	24.15
					1	24	1	20.96	23.88
					1	49	1	20.63	23.55
					25	0	2	19.62	22.54
					25	12	2	19.48	22.40
					25	24	2	19.48	22.40
					50	0	2	19.55	22.47
		26365	1882.5	QPSK	1	0	0	21.40	24.32
					1	24	0	21.39	24.31
					1	49	0	21.30	24.22
					25	0	1	20.57	23.49
					25	12	1	20.57	23.49
					25	24	1	20.56	23.48
					50	0	1	20.53	23.45
				16QAM	1	0	1	20.88	23.80
					1	24	1	21.17	24.09
					1	49	1	20.46	23.38
					25	0	2	19.51	22.43
					25	12	2	19.59	22.51
					25	24	2	19.48	22.40
					50	0	2	19.48	22.40
		26640	1910.0	QPSK	1	0	0	21.70	24.62
					1	24	0	21.46	24.38
					1	49	0	21.66	24.58
					25	0	1	21.09	24.01
					25	12	1	20.98	23.90
					25	24	1	20.93	23.85
					50	0	1	21.15	24.07
				16QAM	1	0	1	21.05	23.97
					1	24	1	21.52	24.44
					1	49	1	20.73	23.65
					25	0	2	20.02	22.94
					25	12	2	20.03	22.95
					25	24	2	19.98	22.90
					50	0	2	20.02	22.94

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	EIRP Power
Band 25	15M	26115	1857.5	QPSK	1	0	0	21.43	24.35
					1	37	0	21.28	24.20
					1	74	0	21.20	24.12
					36	0	1	20.63	23.55
					36	18	1	20.55	23.47
					36	35	1	20.44	23.36
					75	0	1	20.45	23.37
				16QAM	1	0	1	21.24	24.16
					1	37	1	20.97	23.89
					1	74	1	20.64	23.56
					36	0	2	19.63	22.55
					36	18	2	19.49	22.41
					36	35	2	19.49	22.41
					75	0	2	19.56	22.48
		26365	1882.5	QPSK	1	0	0	21.41	24.33
					1	37	0	21.40	24.32
					1	74	0	21.31	24.23
					36	0	1	20.58	23.50
					36	18	1	20.58	23.50
					36	35	1	20.57	23.49
					75	0	1	20.54	23.46
				16QAM	1	0	1	20.89	23.81
					1	37	1	21.18	24.10
					1	74	1	20.47	23.39
					36	0	2	19.52	22.44
					36	18	2	19.60	22.52
					36	35	2	19.49	22.41
					75	0	2	19.49	22.41
		26615	1907.5	QPSK	1	0	0	21.71	24.63
					1	37	0	21.47	24.39
					1	74	0	21.67	24.59
					36	0	1	21.10	24.02
					36	18	1	20.99	23.91
					36	35	1	20.94	23.86
					75	0	1	21.16	24.08
				16QAM	1	0	1	21.06	23.98
					1	37	1	21.53	24.45
					1	74	1	20.74	23.66
					36	0	2	20.03	22.95
					36	18	2	20.04	22.96
					36	35	2	19.99	22.91
					75	0	2	20.03	22.95

Band	BW (MHz)	Channel	Frequency (MHz)	Mode	UL RB Allocation	UL RB Start	MPR	Average power (dBm)	EIRP Power
Band 25	20M	26140	1860.0	QPSK	1	0	0	21.46	24.38
					1	49	0	21.31	24.23
					1	99	0	21.23	24.15
					50	0	1	20.66	23.58
					50	24	1	20.58	23.50
					50	49	1	20.47	23.39
					100	0	1	20.48	23.40
				16QAM	1	0	1	21.27	24.19
					1	49	1	21.00	23.92
					1	99	1	20.67	23.59
					50	0	2	19.66	22.58
					50	24	2	19.52	22.44
					50	49	2	19.52	22.44
					100	0	2	19.59	22.51
		26365	1882.5	QPSK	1	0	0	21.47	24.39
					1	49	0	21.46	24.38
					1	99	0	21.37	24.29
					50	0	1	20.64	23.56
					50	24	1	20.64	23.56
					50	49	1	20.63	23.55
					100	0	1	20.60	23.52
				16QAM	1	0	1	20.95	23.87
					1	49	1	21.24	24.16
					1	99	1	20.53	23.45
					50	0	2	19.58	22.50
					50	24	2	19.66	22.58
					50	49	2	19.55	22.47
					100	0	2	19.55	22.47
		26590	1905.0	QPSK	1	0	0	21.78	24.70
					1	49	0	21.54	24.46
					1	99	0	21.74	24.66
					50	0	1	21.17	24.09
					50	24	1	21.06	23.98
					50	49	1	21.01	23.93
					100	0	1	21.23	24.15
				16QAM	1	0	1	21.13	24.05
					1	49	1	21.60	24.52
					1	99	1	20.81	23.73
					50	0	2	20.10	23.02
					50	24	2	20.11	23.03
					50	49	2	20.06	22.98
					100	0	2	20.10	23.02

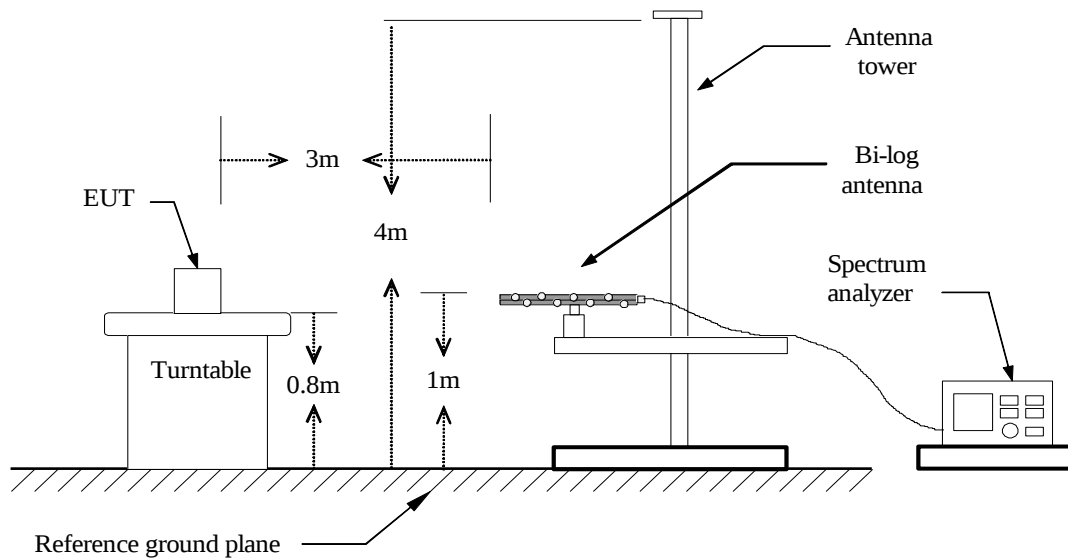
8.2 SPURIOUS RADIATION MEASUREMENT

LIMIT

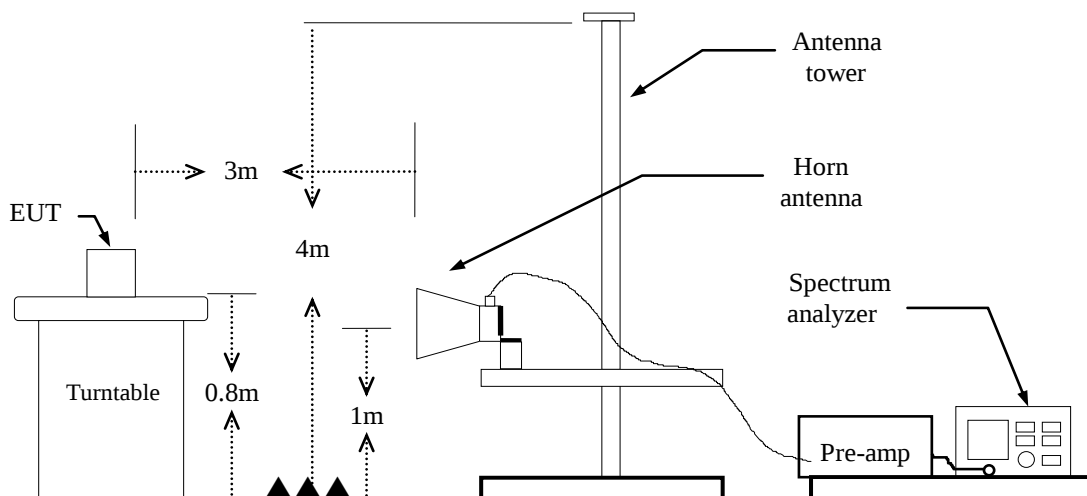
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

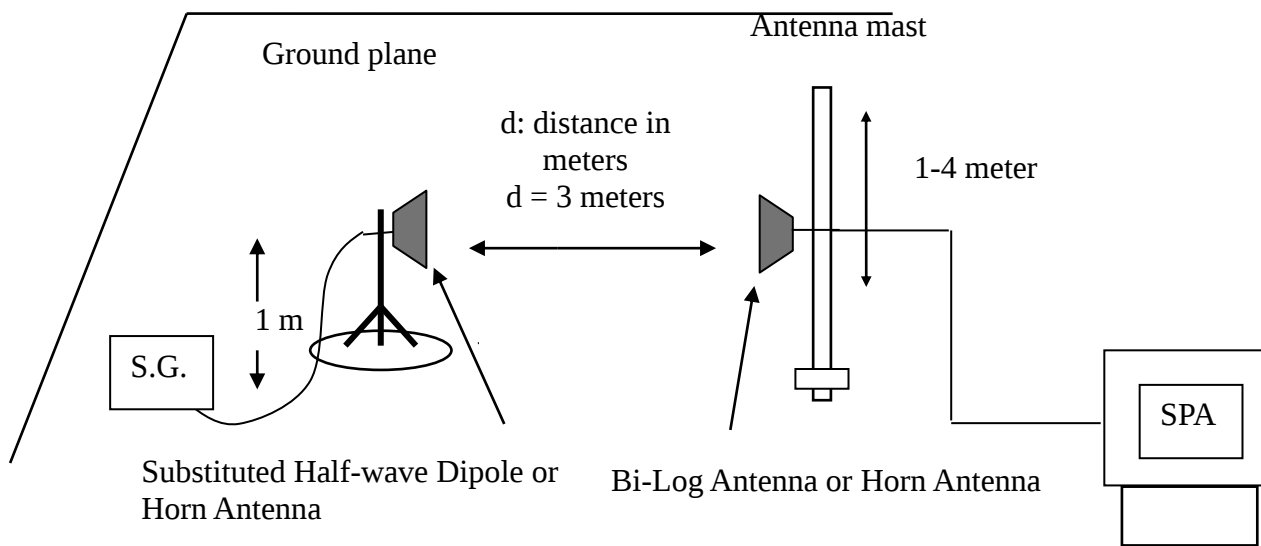
Test Configuration

Below 1 GHz



Above 1 GHz



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

1. According to KDB 971168 D01 and TIA-603-E,
2. The EUT was placed on a turntable
 - (1) Below 1G : 0.8m
 - (2) Above 1G : 0.8m
 - (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.

Test Results**LTE Band 25 / BW: 20MHz / QPSK / RB =1, RB Offset = 0****Operation Mode:** Tx / Low CH**Test Date:**

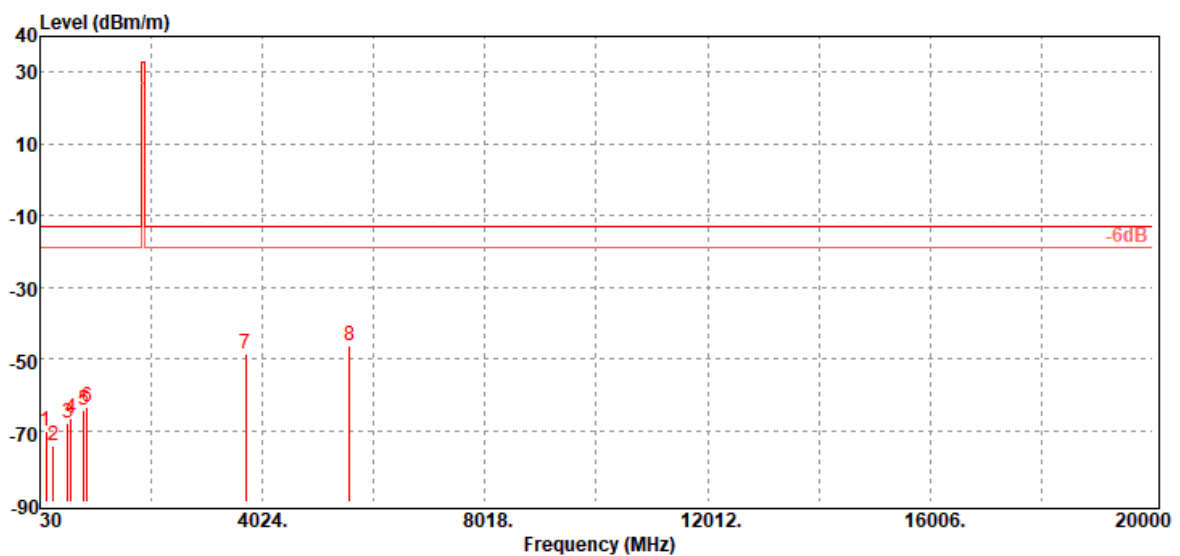
June 6, 2020

Temperature: 24.9°C**Tested by:**

Jerry Chang

Humidity: 51 %RH**Polarity:**

Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
143.49	-70.02	-61.04	-8.00	-0.98	-13.00	-57.02	V
265.71	-74.38	-70.61	-2.43	-1.34	-13.00	-61.38	V
521.79	-68.04	-64.77	-1.36	-1.91	-13.00	-55.04	V
584.84	-66.50	-63.25	-1.21	-2.04	-13.00	-53.50	V
821.52	-64.50	-60.52	-1.57	-2.41	-13.00	-51.50	V
876.81	-63.54	-59.78	-1.26	-2.50	-13.00	-50.54	V
3720.00	-48.45	-55.18	12.46	-5.73	-13.00	-35.45	V
5580.00	-46.54	-52.57	13.14	-7.11	-13.00	-33.54	V

Operation Mode: Tx / Low CH

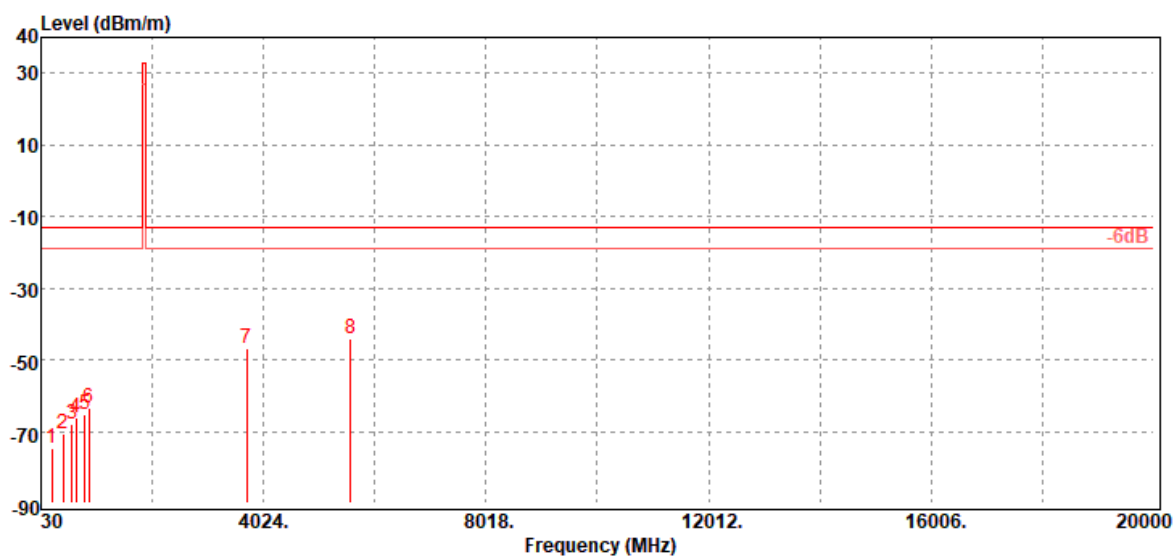
Test Date: June 6, 2020

Temperature: 24.9°C

Tested by: Jerry Chang

Humidity: 51 %RH

Polarity: Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
224.00	-74.84	-71.69	-1.92	-1.23	-13.00	-61.84	H
420.91	-70.77	-67.17	-1.90	-1.70	-13.00	-57.77	H
584.84	-68.04	-64.79	-1.21	-2.04	-13.00	-55.04	H
665.35	-66.34	-62.67	-1.49	-2.18	-13.00	-53.34	H
813.76	-65.17	-61.36	-1.42	-2.39	-13.00	-52.17	H
893.30	-63.67	-59.87	-1.27	-2.53	-13.00	-50.67	H
3720.00	-46.63	-53.36	12.46	-5.73	-13.00	-33.63	H
5580.00	-44.11	-50.14	13.14	-7.11	-13.00	-31.11	H

Operation Mode: Tx / Mid CH

Test Date:

June 6, 2020

Temperature: 24.9°C

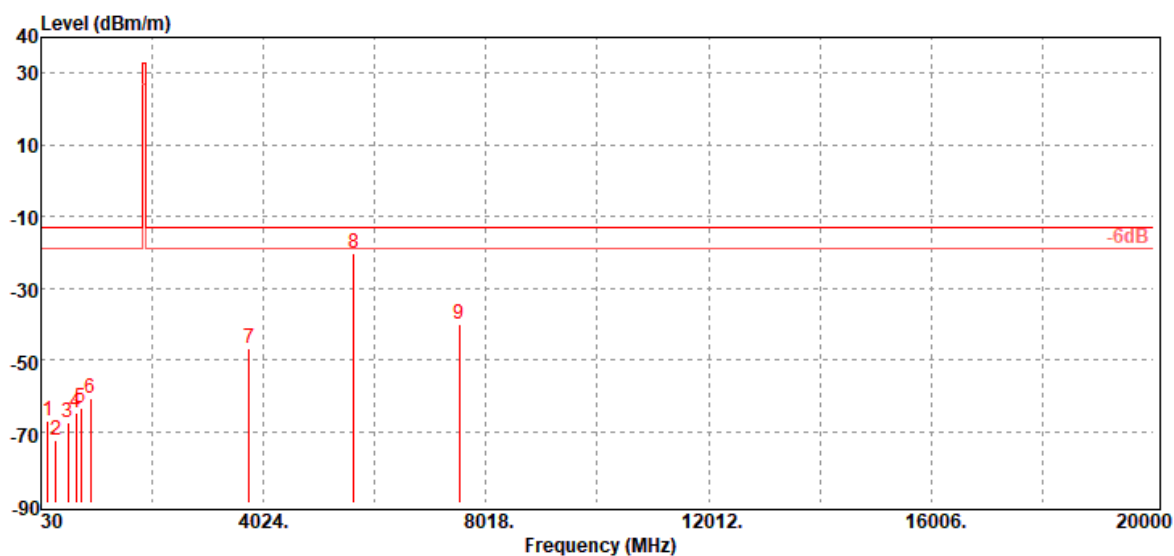
Tested by:

Jerry Chang

Humidity: 51 %RH

Polarity:

Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
180.35	-69.10	-63.64	-4.36	-1.10	-13.00	-56.10	V
439.34	-70.91	-67.08	-2.09	-1.74	-13.00	-57.91	V
566.41	-66.30	-62.91	-1.40	-1.99	-13.00	-53.30	V
715.79	-64.68	-61.03	-1.40	-2.25	-13.00	-51.68	V
833.16	-62.15	-58.22	-1.50	-2.43	-13.00	-49.15	V
944.71	-61.21	-57.39	-1.21	-2.61	-13.00	-48.21	V
3765.00	-46.21	-52.88	12.43	-5.76	-13.00	-33.21	V
5647.50	-21.63	-27.78	13.29	-7.14	-13.00	-8.63	V
7530.00	-40.50	-43.25	10.86	-8.11	-13.00	-27.50	V

Operation Mode: Tx / Mid CH

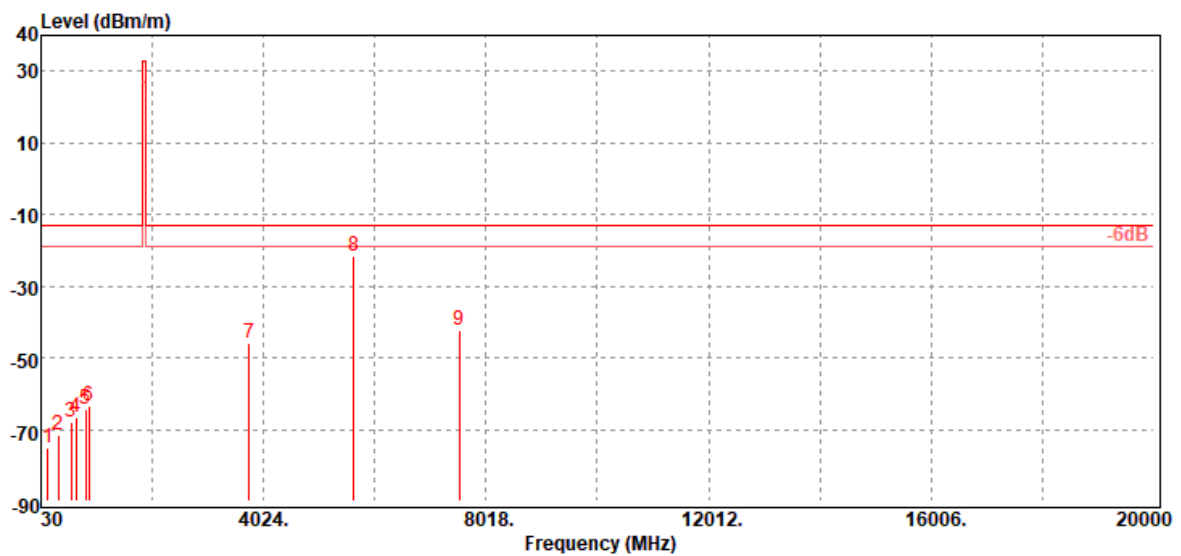
Test Date: June 6, 2020

Temperature: 24.9°C

Tested by: Jerry Chang

Humidity: 51 %RH

Polarity: Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
158.04	-75.31	-67.88	-6.40	-1.03	-13.00	-62.31	H
343.31	-71.43	-68.40	-1.50	-1.53	-13.00	-58.43	H
571.26	-67.85	-64.45	-1.40	-2.00	-13.00	-54.85	H
657.59	-66.53	-62.87	-1.50	-2.16	-13.00	-53.53	H
828.31	-64.54	-60.62	-1.50	-2.42	-13.00	-51.54	H
885.54	-63.63	-59.82	-1.29	-2.52	-13.00	-50.63	H
3765.00	-46.13	-52.80	12.43	-5.76	-13.00	-33.13	H
5647.50	-21.68	-27.83	13.29	-7.14	-13.00	-8.68	H
7530.00	-42.32	-45.07	10.86	-8.11	-13.00	-29.32	H

Operation Mode: Tx / High CH

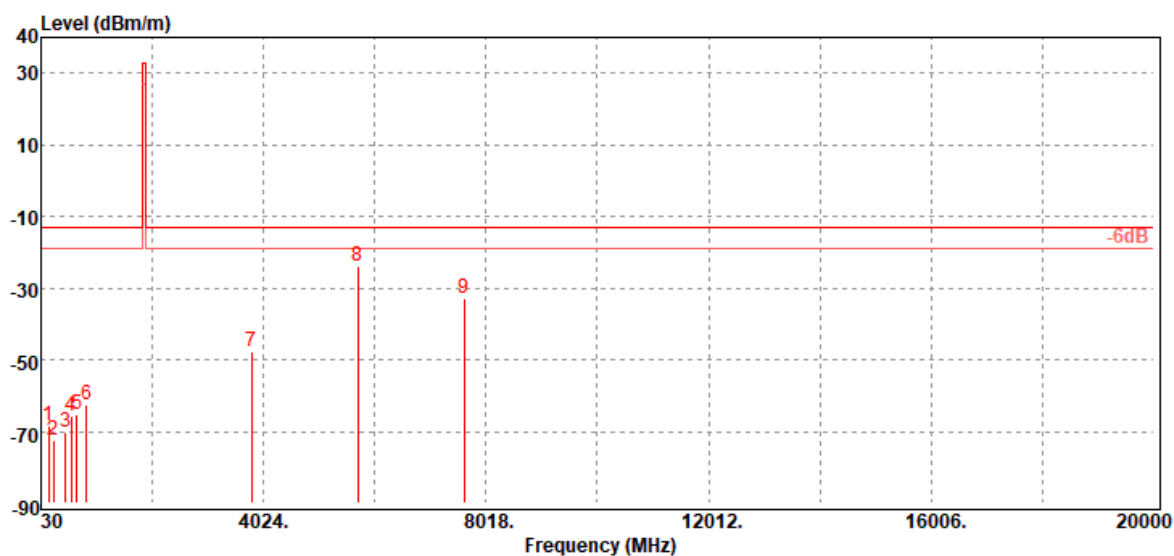
Test Date: June 6, 2020

Temperature: 24.9°C

Tested by: Jerry Chang

Humidity: 51 %RH

Polarity: Ver.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
173.56	-68.41	-62.34	-4.99	-1.08	-13.00	-55.41	V
256.01	-72.49	-69.53	-1.64	-1.32	-13.00	-59.49	V
463.59	-70.04	-66.01	-2.24	-1.79	-13.00	-57.04	V
575.14	-65.52	-62.11	-1.40	-2.01	-13.00	-52.52	V
675.05	-65.12	-61.63	-1.30	-2.19	-13.00	-52.12	V
844.80	-62.38	-58.53	-1.40	-2.45	-13.00	-49.38	V
3810.00	-47.74	-54.42	12.48	-5.80	-13.00	-34.74	V
5715.00	-23.95	-29.87	13.10	-7.18	-13.00	-10.95	V
7620.00	-32.87	-35.90	11.20	-8.17	-13.00	-19.87	V

Operation Mode: Tx / High CH

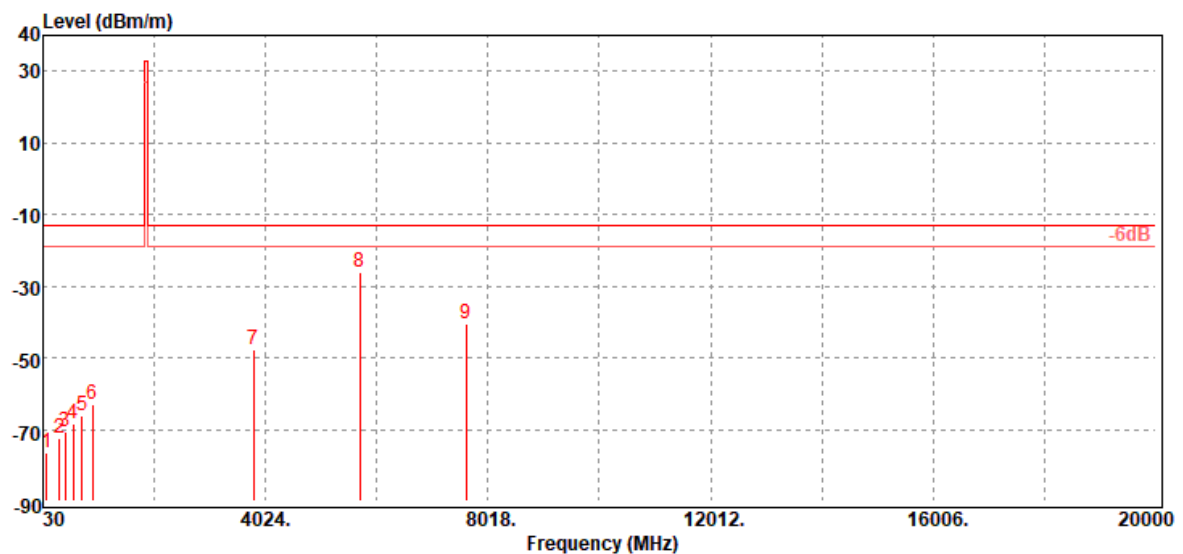
Test Date: June 6, 2020

Temperature: 24.9°C

Tested by: Jerry Chang

Humidity: 51 %RH

Polarity: Hor.



Freq. (MHz)	ERP/EIRP (dBm)	SG Output Level (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	Limit (dBm)	Margin (dB)	Antenna Polarization (V/H)
99.84	-76.50	-67.43	-8.25	-0.82	-13.00	-63.50	H
328.76	-72.38	-69.16	-1.72	-1.50	-13.00	-59.38	H
425.76	-70.48	-66.87	-1.90	-1.71	-13.00	-57.48	H
576.11	-68.54	-65.13	-1.40	-2.01	-13.00	-55.54	H
726.46	-65.96	-62.29	-1.40	-2.27	-13.00	-52.96	H
925.31	-62.97	-59.09	-1.30	-2.58	-13.00	-49.97	H
3810.00	-47.92	-54.60	12.48	-5.80	-13.00	-34.92	H
5715.00	-26.19	-32.11	13.10	-7.18	-13.00	-13.19	H
7620.00	-40.57	-43.60	11.20	-8.17	-13.00	-27.57	H



Report No.: T200407W01-RP9

Page: 29 / 30

Rev.: 01

8.3 TEST DATA RE-USE SUMMARY

Introduction Section:

The application re-uses data collected on a similar device. The subject device of this application (Model: N653, FCC ID: P4Q-N653, IC: 2420C-N653) is electrically identical to the reference device (Model: N635, FCC ID: P4Q-N635A, IC: 2420C-N635A) for the portions of the circuitry corresponding to the data being re-used, as treated by KDB Publication 484596 D01.

Differences Brief Description:

The WLAN, WWAN, BT and RFID hardware of this device are identical to the implementation in

FCC ID: P4Q-N653.

IC: 2420C-N653

The Product Equality Declaration document includes detailed information about the changes between the devices. The data from that application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary table below.



Report No.: T200407W01-RP9

Page: 30 / 30

Rev.: 01

Spot Check Verification Result Summary

Equipment Class	Reference FCC ID / IC No.	Folder Test	Report Title/ Section
Part 24E / RSS-133	P4Q-N635A / 2420C-N635A	T191105W01-RP9	All Section (Except for EIRP Measurement, Spurious Radiation Measurement)

Summary of the spot check for Unlicensed bands and Licensed bands

In order to confirm hardware similarity of the subject device with the reference device, we used same setting power to radiated emission measurement were performed on the subject device for the Band edge and Harmonic, the test result were similar with FCC ID: P4Q-N635A / IC: 2420C-N635A.

WWAN: LTE

Report	Test Item	Frequency (MHz)	Channel	P4Q-N635A / 2420C-N635A		P4Q-N653 / 2420C-N653		Gap (dB)
				Measured Frequency (MHz)	EIRP/ERP	Measured Frequency (MHz)	EIRP/ERP	
Band 25	RSE	1882.5	26365	5647.5	-20.8	5647.5	-21.63	0.83

- End of Test Report -