



FCC RADIO TEST REPORT

FCC ID : PU5-TP00132A
Equipment : Notebook Computer
Brand Name : Lenovo
Model Name : TP00132A
Applicant : Wistron Corporation
21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist,
New Taipei City 221, Taiwan
Manufacturer : Wistron Corporation
21F, No. 88, Sec. 1, Hsin Tai Wu Rd., Hsichih Dist,
New Taipei City 221, Taiwan
Standard : FCC 47 CFR Part 2, 22(H), 24(E), 27

Equipment: Foxconn T99W175 tested inside of Lenovo Notebook Computer

The product was received on May 04, 2021 and testing was started from May 19, 2021 and completed on Jul. 16, 2021. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI / TIA-603-E and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

No. 58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan



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History of this test report

Report No.	Version	Description	Issued Date
FG150417B	01	Initial issue of report	Jun. 30, 2021
FG150417B	02	Add band 7 and band 7C data	Jul. 20, 2021
FG150417B	03	Revise test date	Jul. 21, 2021

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	§2.1046	Conducted Output Power	-	See Note
	§22.913 (a)(5)	Effective Radiated Power (Band 5) (Band 26)	-	
	§27.50 (b)(10) §27.50 (c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 17) (Band 71)		
	§24.232 (c) §27.50 (h)(2)	Equivalent Isotropic Radiated Power (Band 2) (Band 25) (Band 7) (Band 38) (Band 41)		
	§27.50 (d)(4)	Equivalent Isotropic Radiated Power (Band 4) (Band 66)		
-	§24.232 (d) §27.50 (d)(5)	Peak-to-Average Ratio	-	See Note
-	§2.1049	Occupied Bandwidth	-	See Note
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2)(4) §27.53 (g) §27.53 (h)	Conducted Band Edge Measurement (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	-	See Note
	§2.1051 §27.53 (m)(4)	Conducted Band Edge Measurement (Band 7) (Band 38) (Band 41)		
-	§2.1051 §22.917 (a) §24.238 (a) §27.53 (c)(2) §27.53 (g) §27.53 (h)	Conducted Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	-	See Note
	§2.1051 §27.53 (m)(4)	Conducted Spurious Emission (Band 7) (Band 38) (Band 41)		
-	§2.1055 §22.355 §24.235 §27.54	Frequency Stability Temperature & Voltage	-	See Note



Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	\$2.1053 \$22.917 (a) \$24.238 (a) \$27.53 (c)(2) \$27.53 (f) \$27.53 (g) \$27.53 (h)	Radiated Spurious Emission (Band 2) (Band 4) (Band 5) (Band 12) (Band 13) (Band 17) (Band 25) (Band 26) (Band 66) (Band 71)	Pass	Under limit 10.52 dB at 1327.000 MHz
	\$2.1051 \$27.53 (m)(4)	Radiated Spurious Emission (Band 7) (Band 38) (Band 41)		

Note: The module (Model: T99W175) makes no difference after verifying output power, this report reuses test data from the module report.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sheng Kuo

Report Producer: Amy Chen



1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Notebook Computer
Brand Name	Lenovo
Model Name	TP00132A
FCC ID	PU5-TP00132A
Sample 1	EUT with LUXSHARE-ICT Antenna
Sample 2	EUT with AVX/ Ethertronics Antenna
EUT supports Radios application	WCDMA/HSPA/LTE/5G NR/GNSS
EUT Stage	Production Unit

Remark:

1. The above EUT's information was declared by manufacturer.
2. Equipment: Foxconn T99W175 tested inside of Lenovo Notebook Computer.

Antenna Information					
WWAN					3G&LTE (dBi)
Antenna 1	Manufacturer	AVX/ Ethertronics		Peak gain	1.93
	Part number	Main Antenna:	025.901TF.0001	Type	PIFA
		Auxiliary Antenna:	025.901TG.0001 (Rx only)		
		MIMO1 Antenna	025.901TF.0001 (Rx only)		
		MIMO2 Antenna	025.901TG.0001		
Antenna 2	Manufacturer	LUXSHARE-ICT		Peak gain	1.9
	Part number	Main Antenna:	025.901TK.0001	Type	PIFA
		Auxiliary Antenna:	025.901TL.0001 (Rx only)		
		MIMO1 Antenna	025.901TK.0001 (Rx only)		
		MIMO2 Antenna	025.901TL.0001		

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.
2. All test items were performed with Main Antenna (AVX/ Ethertronics).

1.2 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	LTE Band 2 : 1850.7 MHz ~ 1909.3 MHz LTE Band 4 : 1710.7 MHz ~ 1754.3 MHz LTE Band 5 : 824.7 MHz ~ 848.3 MHz LTE Band 7 : 2502.5 MHz ~ 2567.5 MHz LTE Band 12 : 699.7 MHz ~ 715.3 MHz LTE Band 13 : 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 25: 1850.7MHz ~ 1914.3 MHz LTE Band 26 : 824.7MHz ~ 848.3 MHz LTE Band 38 : 2572.5MHz ~ 2617.5MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 1710.7 MHz ~ 1779.3 MHz LTE Band 71: 665.5 MHz ~ 695.5 MHz
Rx Frequency	LTE Band 2 : 1930.7 MHz ~ 1989.3 MHz LTE Band 4 : 2110.7 MHz ~ 2154.3 MHz LTE Band 5 : 869.7 MHz ~ 893.3 MHz LTE Band 7 : 2622.5MHz ~ 2687.5 MHz LTE Band 12 : 729.7 MHz ~ 745.3 MHz LTE Band 13 : 748.5 MHz ~ 753.5 MHz LTE Band 17: 736.5 MHz ~ 743.5 MHz LTE Band 25: 1930.7MHz ~ 1994.3 MHz LTE Band 26 : 869.7MHz ~ 893.3MHz LTE Band 38 : 2572.5MHz ~ 2617.5MHz LTE Band 41 : 2498.5 MHz ~ 2687.5 MHz LTE Band 66 : 2110.7 MHz ~ 2199.3 MHz LTE Band 71: 619.5 MHz ~ 649.5 MHz
Bandwidth	LTE Band 2 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 4 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 5 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 7 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 12 : 1.4MHz / 3MHz / 5MHz / 10MHz LTE Band 13 : 5MHz / 10MHz LTE Band 17: 5MHz / 10MHz LTE Band 25: 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 26 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz LTE Band 38 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 41 : 5MHz / 10MHz / 15MHz / 20MHz LTE Band 66 : 1.4MHz / 3MHz / 5MHz / 10MHz / 15MHz / 20MHz LTE Band 71: 5MHz / 10MHz / 15MHz / 20MHz
Type of Modulation	QPSK / 16QAM / 64QAM / 256QAM

1.3 Modification of EUT

No modifications are made to the EUT during all test items.



1.4 Testing Location

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan
Test Site No.	Sporton Site No.
	03CH12-HY
Test Engineer	Jack Cheng, Lance Chiang, and Chuan Chu
Temperature	22.3~26.4℃
Relative Humidity	58~66%

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW3786

1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ ANSI C63.26-2015
- ♦ ANSI / TIA-603-E
- ♦ FCC 47 CFR Part 2, 22(H), 24(E), 27
- ♦ FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. The TAF code is not including all the FCC KDB listed without accreditation.



2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168

D01 Power Meas. License Digital Systems v03r01 with maximum output power.

Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	5				v	-	-	v				v			v	v	v
	7	-	-				v	v				v			v	v	v
	12	v				-	-	v				v			v	v	v
	13	-	-	v	v	-	-	v				v			v	v	v
	17	-	-		v	-	-	v				v			v	v	v
	25						v	v				v			v	v	v
	26			v			-	v				v			v	v	v
	38	-	-				v	v				v			v	v	v
	41	-	-				v	v				v			v	v	v
	66	v						v				v			v	v	v
	71	-	-	v				v				v			v	v	v
Remark	- The mark "v" means that this configuration is chosen for testing - The mark "-" means that this bandwidth is not supported. - The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.																

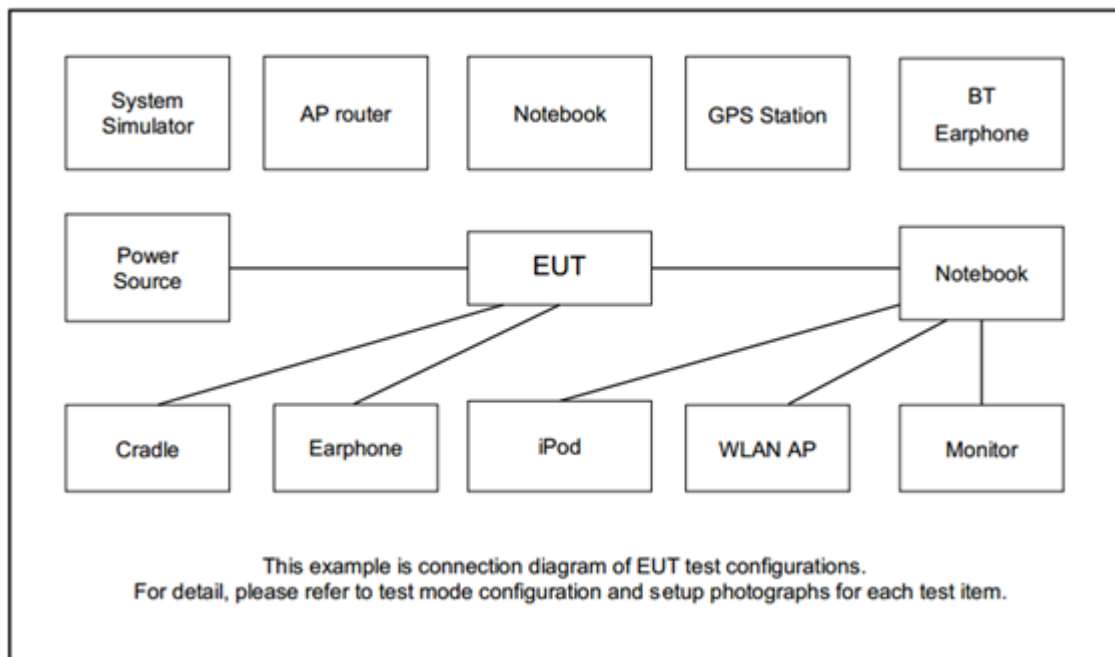
Test Items	Band	Bandwidth (MHz)					Modulation				RB #			Test Channel		
		3+5	5+3	5+10	10+5	10+10	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	5B_CA					v	v				v			v	v	v
Remark	- The mark "v" means that this configuration is chosen for testing - The mark "-" means that this bandwidth is not supported. - The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.															



Test Items	Band	Bandwidth (MHz)						Modulation				RB #			Test Channel		
		5+5	5+10	10+5	5+15	15+5	10+10	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	66B_CA						v	v				v			v	v	v
Remark	1. The mark "v " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.																

Test Items	Band	Bandwidth (MHz)										Modulation				RB #			Test Channel		
		20+20	20+15	15+20	20+10	10+20	20+5	5+20	15+15	15+10	10+15	QPSK	16QAM	64QAM	256QAM	1	Half	Full	L	M	H
Radiated Spurious Emission	7_CA	v					-	-			-	v				v			v	v	v
	38_CA	v	-	-	-	-	-	-		-	-	v				v			v	v	v
	41_CA	v										v				v			v	v	v
	66C_CA	v										v				v			v	v	v
Remark	1. The mark "v " means that this configuration is chosen for testing 2. The mark "-" means that this bandwidth is not supported. 3. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst case emissions are reported.																				

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A



2.4 Frequency List of Low/Middle/High Channels

LTE Band 5 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	20450	20525	20600
	Frequency	829	836.5	844
LTE Band 7 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	20850	21100	21350
	Frequency	2510	2535	2560
LTE Band 12 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
1.4	Channel	23017	23095	23173
	Frequency	699.7	707.5	715.3
LTE Band 13 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	-	23230	-
	Frequency	-	782	-
5	Channel	23205	23230	23255
	Frequency	779.5	782	784.5
LTE Band 17 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
10	Channel	23780	23790	23800
	Frequency	709	710	711
LTE Band 25 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
20	Channel	26140	26340	26590
	Frequency	1860	1880	1905
LTE Band 26 Channel and Frequency List				
BW [MHz]	Channel/Frequency(MHz)	Lowest	Middle	Highest
5	Channel	26815	26915	27015
	Frequency	826.5	836.5	846.5



LTE Band 38 Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20	Channel		37850	38000	38150
	Frequency		2580.0	2595.0	2610.0
LTE Band 41 Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20	Channel		39750	40620	41490
	Frequency		2506.0	2593.0	2680.0
LTE Band 66 Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
1.4	Channel		131979	132322	132665
	Frequency		1710.7	1745	1779.3
LTE Band 71 Channel and Frequency List					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
5	Channel		133147	133297	133447
	Frequency		665.5	680.5	695.5
LTE Band 38 Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	37850	37901	37952
		Frequency	2580.0	2585.1	2590.2
	SCC	Channel	38048	38099	38150
		Frequency	2599.8	2604.9	2610.0
LTE Band 41 Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	39750	40521	41292
		Frequency	2506.0	2583.1	2660.2
	SCC	Channel	39948	40719	41490
		Frequency	2525.8	2602.9	2680.0

LTE Band 5B Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
10 + 10	PCC	Channel	20450	20476	20501
		Frequency	829.0	831.6	834.1
	SCC	Channel	20549	20575	20600
		Frequency	838.9	841.5	844.0

LTE Band 7C Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	20850	21001	21152
		Frequency	2510.0	2525.1	2540.2
	SCC	Channel	21048	21199	21350
		Frequency	2529.8	2544.9	2560.0

LTE Band 66B Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
10 + 10	PCC	Channel	132022	132148	132273
		Frequency	1715.0	1727.6	1740.1
	SCC	Channel	132121	132247	132372
		Frequency	1724.9	1737.5	1750.0

LTE Band 66C Channel and Frequency List_CA					
BW [MHz]	Channel/Frequency(MHz)		Lowest	Middle	Highest
20 + 20	PCC	Channel	132072	132098	132124
		Frequency	1720.0	1722.6	1725.2
	SCC	Channel	132270	132296	132322
		Frequency	1739.8	1742.4	1745.0

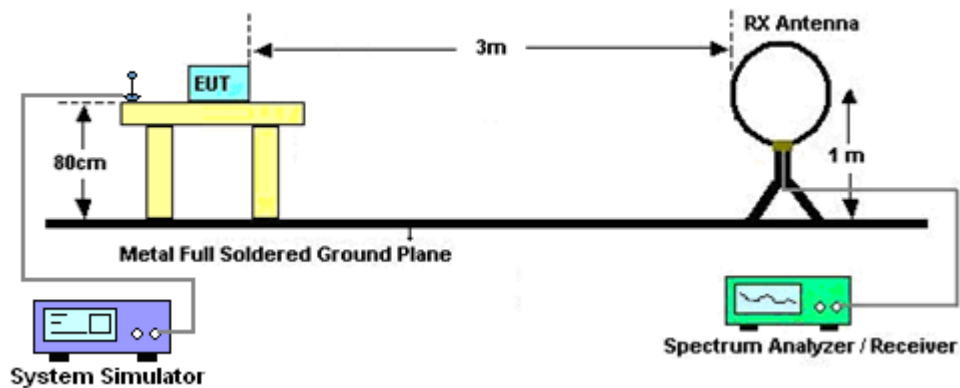
3 Radiated Test Items

3.1 Measuring Instruments

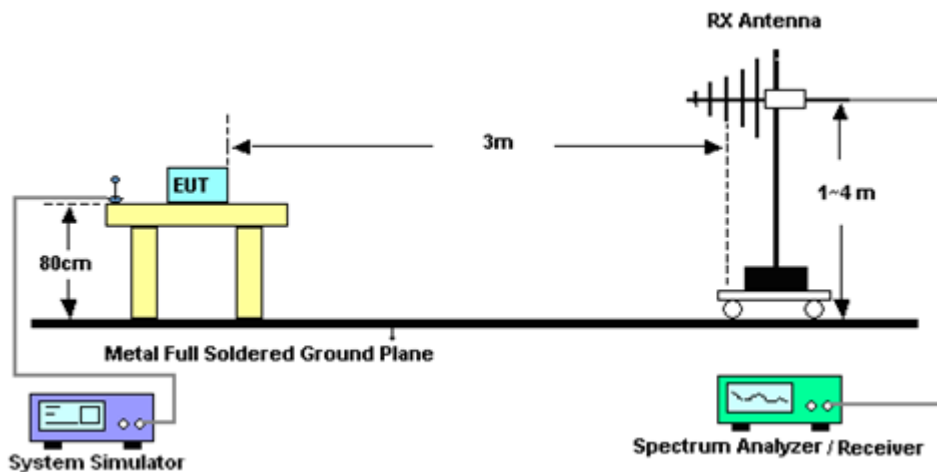
See list of measuring instruments of this test report.

3.1.1 Test Setup

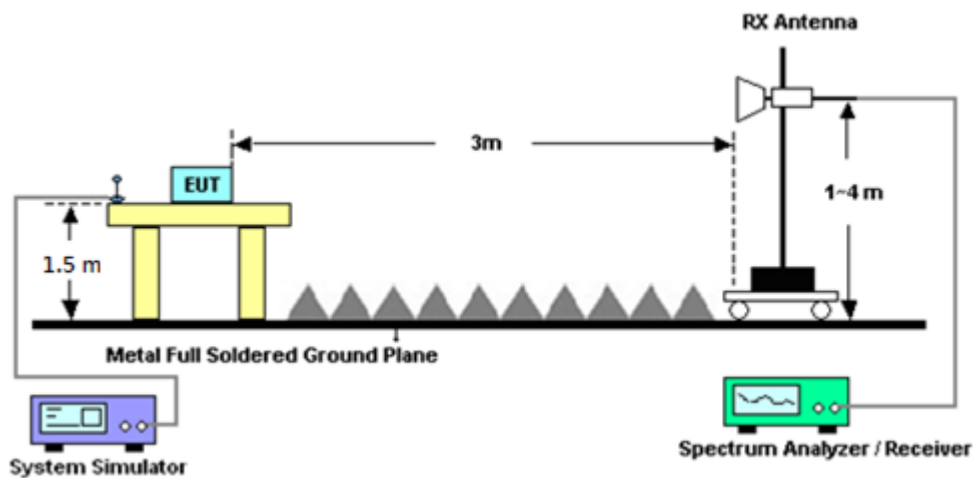
For radiated test below 30MHz



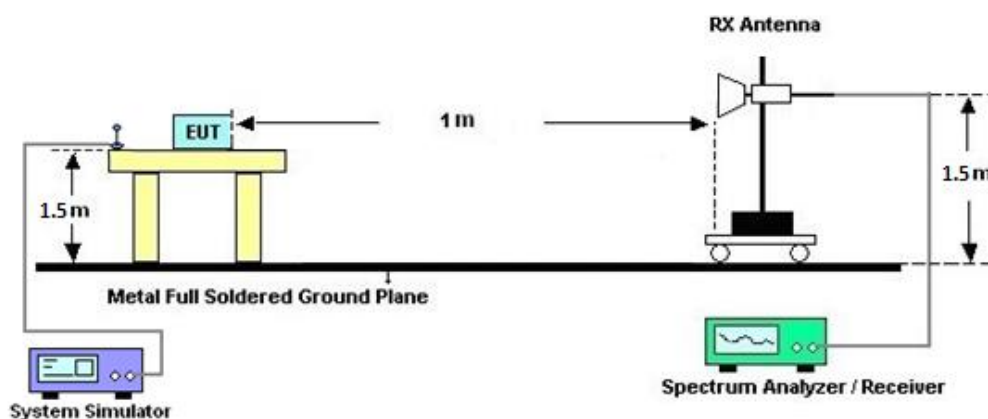
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.1.2 Test Result of Radiated Test

Please refer to Appendix A.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.



3.2 Radiated Spurious Emission Measurement

3.2.1 Description of Radiated Spurious Emission Measurement

The radiated spurious emission was measured by substitution method according to ANSI / TIA-603-E. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB.

For LTE Band 7, 38, 41

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least $55 + 10 \log (P)$ dB.

For LTE Band 13

For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.2.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 7 and ANSI / TIA-603-E Section 2.2.12.

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
6. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from $43 + 10\log(P)$ dB below the transmitter power P(Watts)

For LTE Band 7, 38, 41

The limit line is derived from $55 + 10\log(P)$ dB below the transmitter power P(Watts)

EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain

ERP (dBm) = EIRP - 2.15



4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100488	9 kHz~30 MHz	Jul. 14, 2020	May 19, 2021~ Jun. 15, 2021	Jul. 13, 2021	Radiation (03CH12-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Jan. 04, 2021	Jul. 15, 2021~ Jul. 16, 2021	Jan. 03, 2022	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N-06	37059 & 01	30MHz~1GHz	Oct. 11, 2020	May 19, 2021~ Jul. 16, 2021	Oct. 10, 2021	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 11, 2020	May 19, 2021~ Jul. 16, 2021	Oct. 10, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1328	1GHz~18GHz	Nov. 23, 2020	May 19, 2021~ Jul. 16, 2021	Nov. 22, 2021	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-1212	1GHz~18GHz	May 18, 2021	May 19, 2021~ Jul. 16, 2021	May 17, 2022	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00993	18GHz~40GHz	Nov. 19, 2020	May 19, 2021~ Jul. 16, 2021	Nov. 18, 2021	Radiation (03CH12-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170980	18GHz~40GHz	Jan. 11, 2021	May 19, 2021~ Jul. 16, 2021	Jan. 10, 2022	Radiation (03CH12-HY)
Preamplifier	COM-POWER	PA-103	161075	10MHz~1GHz	Mar. 24, 2021	May 19, 2021~ Jul. 16, 2021	Mar. 23, 2022	Radiation (03CH12-HY)
Preamplifier	Keysight	83017A	MY57280120	1GHz~26.5GHz	Jul. 20, 2020	May 19, 2021~ Jul. 16, 2021	Jul. 19, 2021	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900249	1GHz~18GHz	Dec. 05, 2020	May 19, 2021~ Jul. 16, 2021	Dec. 04, 2021	Radiation (03CH12-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 11, 2020	May 19, 2021~ Jul. 16, 2021	Dec. 10, 2021	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Sep. 14, 2020	May 19, 2021~ Jun. 15, 2021	Sep. 13, 2021	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Sep. 14, 2020	Jul. 15, 2021~ Jul. 16, 2021	Sep. 13, 2021	Radiation (03CH12-HY)
Signal Generator	Rohde & Schwarz	SMB100A	101107	100kHz~40GHz	Dec. 04, 2020	May 19, 2021~ Jul. 16, 2021	Dec. 03, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 11, 2020	May 19, 2021~ Jul. 16, 2021	Dec. 10, 2021	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Feb. 22, 2021	May 19, 2021~ Jul. 16, 2021	Feb. 21, 2022	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	800740/2	30MHz~40GHz	Feb. 22, 2021	May 19, 2021~ Jul. 16, 2021	Feb. 21, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WLKS1200-12SS	SN2	1.2GHz Low Pass Filter	Mar. 17, 2021	May 19, 2021~ Jul. 16, 2021	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-1080-1200-15000-6OSS	SN1	1.2GHz High Pass Filter	Mar. 17, 2021	May 19, 2021~ Jul. 16, 2021	Mar. 16, 2022	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-6OST	SN2	3GHz High Pass Filter	Jul. 14, 2020	May 19, 2021~ Jun. 15, 2021	Jul. 13, 2021	Radiation (03CH12-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-6OST	SN2	3GHz High Pass Filter	Jul. 12, 2021	Jul. 15, 2021~ Jul. 16, 2021	Jul. 11, 2022	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	May 19, 2021~ Jul. 16, 2021	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	May 19, 2021~ Jul. 16, 2021	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	May 19, 2021~ Jul. 16, 2021	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	May 19, 2021~ Jul. 16, 2021	N/A	Radiation (03CH12-HY)



5 Uncertainty of Evaluation

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.10 dB
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Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	3.39 dB
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Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% ($U = 2Uc(y)$)	4.34 dB
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Appendix A. Test Results of Radiated Test

LTE Band 5

LTE Band 5 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1649	-38.99	-13	-25.99	-47.41	-44.59	0.92	8.67	H
	2473	-52.08	-13	-39.08	-65.53	-59.45	1.14	10.66	H
	3298	-57.32	-13	-44.32	-72.64	-65.86	1.32	12.02	H
									H
									H
									H
	1649	-40.71	-13	-27.71	-48.6	-46.31	0.92	8.67	V
	2473	-47.61	-13	-34.61	-61.21	-54.98	1.14	10.66	V
	3298	-57.14	-13	-44.14	-72.93	-65.68	1.32	12.02	V
									V
									V
									V
Middle	1664	-37.31	-13	-24.31	-45.78	-42.96	0.93	8.72	H
	2496	-50.73	-13	-37.73	-64.22	-58.13	1.15	10.69	H
	3328	-57.58	-13	-44.58	-72.84	-66.19	1.33	12.09	H
									H
									H
									H
	1664	-38.64	-13	-25.64	-46.52	-44.29	0.93	8.72	V
	2496	-47.39	-13	-34.39	-61.09	-54.79	1.15	10.69	V
	3328	-57.18	-13	-44.18	-72.9	-65.79	1.33	12.09	V
									V
									V
									V



Highest	1679	-39.17	-13	-26.17	-47.69	-44.87	0.93	8.78	H
	2518	-49.92	-13	-36.92	-63.41	-57.34	1.15	10.72	H
	3358	-57.70	-13	-44.70	-72.89	-66.37	1.33	12.16	H
									H
									H
									H
									H
	1679	-40.09	-13	-27.09	-47.96	-45.79	0.93	8.78	V
	2518	-48.80	-13	-35.80	-62.46	-56.22	1.15	10.72	V
	3358	-57.27	-13	-44.27	-72.91	-65.94	1.33	12.16	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 5B**

LTE Band 5B / 10+10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1664	-38.64	-13	-25.64	-47.11	-44.29	0.93	8.72	H
	2504	-45.66	-13	-32.66	-59.16	-53.06	1.15	10.70	H
	3336	-57.38	-13	-44.38	-72.62	-66.01	1.33	12.11	H
									H
									H
									H
									H
	1664	-42.80	-13	-29.80	-50.68	-48.45	0.93	8.72	V
	2504	-45.26	-13	-32.26	-58.97	-52.66	1.15	10.70	V
	3336	-56.83	-13	-43.83	-72.53	-65.46	1.33	12.11	V
									V
									V
									V
									V
Middle	1672	-44.50	-13	-31.50	-53	-50.18	0.93	8.75	H
	2512	-49.27	-13	-36.27	-62.76	-56.68	1.15	10.71	H
	3344	-57.68	-13	-44.68	-72.9	-66.32	1.33	12.13	H
									H
									H
									H
									H
	1672	-46.42	-13	-33.42	-54.29	-52.10	0.93	8.75	V
	2512	-49.65	-13	-36.65	-63.33	-57.06	1.15	10.71	V
	3344	-56.90	-13	-43.90	-72.57	-65.54	1.33	12.13	V
									V
									V
									V
									V
									V



Highest	1680	-36.51	-13	-23.51	-45.02	-42.21	0.93	8.78	H
	2520	-46.10	-13	-33.10	-59.6	-53.52	1.15	10.72	H
	3352	-57.26	-13	-44.26	-72.46	-65.92	1.33	12.14	H
									H
									H
									H
									H
	1680	-40.93	-13	-27.93	-48.79	-46.63	0.93	8.78	V
	2520	-46.57	-13	-33.57	-60.24	-53.99	1.15	10.72	V
	3352	-57.12	-13	-44.12	-72.77	-65.78	1.33	12.14	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 7**

LTE Band 7 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	5004	-51.96	-25	-26.96	-73.98	-62.95	1.61	12.61	H
	7503	-47.52	-25	-22.52	-73.87	-56.63	1.99	11.10	H
	10004	-44.61	-25	-19.61	-74.17	-53.51	2.40	11.30	H
									H
									H
									H
									H
	5004	-52.43	-25	-27.43	-74	-63.42	1.61	12.61	V
	7503	-47.51	-25	-22.51	-73.83	-56.62	1.99	11.10	V
	10004	-44.04	-25	-19.04	-74.39	-52.94	2.40	11.30	V
									V
									V
									V
									V
Middle	5052	-52.00	-25	-27.00	-70	-63.05	1.62	12.67	H
	7578	-48.18	-25	-23.18	-74.14	-57.29	2.00	11.12	H
	10104	-44.33	-25	-19.33	-74.14	-53.15	2.40	11.22	H
									H
									H
									H
									H
	5052	-52.29	-25	-27.29	-73.92	-63.34	1.62	12.67	V
	7578	-48.38	-25	-23.38	-74.3	-57.49	2.00	11.12	V
	10104	-43.96	-25	-18.96	-74.35	-52.78	2.40	11.22	V
									V
									V
									V
									V



Highest	5102	-52.19	-25	-27.19	-74.16	-63.30	1.64	12.74	H
	7653	-47.93	-25	-22.93	-73.8	-57.05	2.01	11.13	H
	10204	-44.13	-25	-19.13	-74.2	-52.87	2.40	11.14	H
									H
									H
									H
									H
	5102	-52.37	-25	-27.37	-74.04	-63.48	1.64	12.74	V
	7653	-47.87	-25	-22.87	-73.62	-56.99	2.01	11.13	V
	10204	-43.74	-25	-18.74	-74.16	-52.48	2.40	11.14	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 7C**

LTE Band 7C / 20+20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	5002	-52.24	-25	-27.24	-74.26	-63.23	1.61	12.60	H
	7503	-47.39	-25	-22.39	-73.74	-56.50	1.99	11.10	H
	10004	-44.40	-25	-19.40	-73.96	-53.30	2.40	11.30	H
									H
									H
									H
									H
	5002	-52.65	-25	-27.65	-74.22	-63.64	1.61	12.60	V
	7503	-46.96	-25	-21.96	-73.28	-56.07	1.99	11.10	V
	10004	-43.49	-25	-18.49	-73.84	-52.39	2.40	11.30	V
									V
									V
									V
									V
Middle	5032	-52.42	-25	-27.42	-74.42	-63.45	1.62	12.64	H
	7549	-47.58	-25	-22.58	-73.7	-56.69	2.00	11.11	H
	10065	-44.33	-25	-19.33	-74.05	-53.18	2.40	11.25	H
									H
									H
									H
									H
	5032	-52.62	-25	-27.62	-74.22	-63.65	1.62	12.64	V
	7549	-47.83	-25	-22.83	-73.91	-56.94	2.00	11.11	V
	10065	-44.20	-25	-19.20	-74.57	-53.05	2.40	11.25	V
									V
									V
									V
									V



Highest	5063	-52.17	-25	-27.17	-74.17	-63.23	1.63	12.69	H
	7594	-47.90	-25	-22.90	-73.77	-57.02	2.00	11.12	H
	10125	-44.42	-25	-19.42	-74.29	-53.22	2.40	11.20	H
									H
									H
									H
									H
	5063	-52.81	-25	-27.81	-74.45	-63.87	1.63	12.69	V
	7594	-47.87	-25	-22.87	-73.69	-56.99	2.00	11.12	V
	10125	-43.36	-25	-18.36	-73.76	-52.16	2.40	11.20	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 12**

LTE Band 12 / 1.4MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1400	-23.84	-13	-10.84	-33.29	-28.49	0.84	7.64	H
	2096	-40.04	-13	-27.04	-52.58	-46.96	1.06	10.13	H
	2800	-58.06	-13	-45.06	-72.34	-65.75	1.22	11.06	H
									H
									H
									H
									H
	1400	-28.44	-13	-15.44	-36.66	-33.09	0.84	7.64	V
	2096	-43.30	-13	-30.30	-54.74	-50.22	1.06	10.13	V
	2800	-57.82	-13	-44.82	-72.04	-65.51	1.22	11.06	V
									V
									V
									V
									V
Middle	1416	-27.50	-13	-14.50	-36.89	-32.22	0.85	7.71	H
	2120	-39.48	-13	-26.48	-52.43	-46.43	1.07	10.17	H
	2832	-57.84	-13	-44.84	-72.25	-65.56	1.23	11.10	H
									H
									H
									H
									H
	1416	-30.60	-13	-17.60	-38.78	-35.32	0.85	7.71	V
	2120	-44.54	-13	-31.54	-56.36	-51.49	1.07	10.17	V
	2832	-57.67	-13	-44.67	-72.05	-65.39	1.23	11.10	V
									V
									V
									V
									V



Highest	1432	-30.63	-13	-17.63	-39.96	-35.41	0.85	7.79	H
	2144	-45.54	-13	-32.54	-58.93	-52.52	1.07	10.20	H
	2856	-58.00	-13	-45.00	-72.52	-65.74	1.24	11.13	H
									H
									H
									H
									H
	1432	-35.68	-13	-22.68	-43.83	-40.46	0.85	7.79	V
	2144	-48.38	-13	-35.38	-60.60	-55.36	1.07	10.20	V
	2856	-57.95	-13	-44.95	-72.48	-65.69	1.24	11.13	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 13**

LTE Band 13 / 5MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1555	-52.91	-13	-39.91	-61.53	-58.18	0.89	8.31	H
	2332	-54.67	-13	-41.67	-68.37	-61.87	1.11	10.46	H
	3109	-57.48	-13	-44.48	-72.84	-65.60	1.29	11.56	H
									H
									H
									H
									H
	1555	-53.68	-13	-40.68	-61.62	-58.95	0.89	8.31	V
	2332	-54.54	-13	-41.54	-67.79	-61.74	1.11	10.46	V
	3109	-57.07	-13	-44.07	-72.77	-65.19	1.29	11.56	V
									V
									V
									V
									V
Middle	1560	-54.38	-42.15	-12.23	-62.97	-59.67	0.89	8.33	H
	2340	-52.54	-13	-39.54	-66.20	-59.75	1.11	10.48	H
	3119	-57.20	-13	-44.20	-72.59	-65.34	1.29	11.59	H
									H
									H
									H
									H
	1560	-56.40	-42.15	-14.25	-64.35	-61.69	0.89	8.33	V
	2340	-53.80	-13	-40.80	-67.05	-61.01	1.11	10.48	V
	3119	-56.91	-13	-43.91	-72.66	-65.05	1.29	11.59	V
									V
									V
									V
									V



Highest	1565	-54.51	-42.15	-12.36	-63.06	-59.81	0.89	8.35	H
	2347	-55.02	-13	-42.02	-68.65	-62.24	1.12	10.49	H
	3129	-57.33	-13	-44.33	-72.74	-65.50	1.29	11.61	H
									H
									H
									H
									H
	1565	-56.27	-42.15	-14.12	-64.21	-61.57	0.89	8.35	V
	2347	-54.61	-13	-41.61	-67.88	-61.83	1.12	10.49	V
	3129	-57.07	-13	-44.07	-72.85	-65.24	1.29	11.61	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.



LTE Band 13 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Middle	1555	-53.31	-13	-40.31	-61.93	-58.58	0.89	8.31	H
	2333	-53.95	-13	-40.95	-67.64	-61.15	1.11	10.47	H
	3110	-57.20	-13	-44.20	-72.56	-65.32	1.29	11.56	H
									H
									H
									H
									H
	1555	-54.60	-13	-41.60	-62.54	-59.87	0.89	8.31	V
	2333	-56.08	-13	-43.08	-69.33	-63.28	1.11	10.47	V
	3110	-56.64	-13	-43.64	-72.35	-64.76	1.29	11.56	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 17**

LTE Band 17 / 10MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1411	-42.28	-13	-29.28	-51.69	-46.97	0.85	7.69	H
	2117	-45.92	-13	-32.92	-58.77	-52.87	1.07	10.16	H
	2822	-57.60	-13	-44.60	-71.95	-65.31	1.23	11.09	H
									H
									H
									H
									H
	1411	-44.88	-13	-31.88	-53.07	-49.57	0.85	7.69	V
	2117	-40.97	-13	-27.97	-52.70	-47.92	1.07	10.16	V
	2822	-58.04	-13	-45.04	-72.35	-65.75	1.23	11.09	V
									V
									V
									V
									V
Middle	1411	-42.34	-13	-29.34	-51.75	-47.03	0.85	7.69	H
	2117	-45.61	-13	-32.61	-58.51	-52.56	1.07	10.16	H
	2822	-58.09	-13	-45.09	-72.46	-65.80	1.23	11.09	H
									H
									H
									H
									H
	1411	-44.96	-13	-31.96	-53.15	-49.65	0.85	7.69	V
	2117	-44.37	-13	-31.37	-56.14	-51.32	1.07	10.16	V
	2822	-57.96	-13	-44.96	-72.29	-65.67	1.23	11.09	V
									V
									V
									V
									V



Highest	1413	-42.46	-13	-29.46	-51.87	-47.16	0.85	7.70	H
	2120	-46.32	-13	-33.32	-59.27	-53.27	1.07	10.17	H
	2826	-57.70	-13	-44.70	-72.08	-65.41	1.23	11.09	H
									H
									H
									H
									H
	1413	-45.36	-13	-32.36	-53.55	-50.06	0.85	7.70	V
	2120	-42.13	-13	-29.13	-53.95	-49.08	1.07	10.17	V
	2826	-57.93	-13	-44.93	-72.28	-65.64	1.23	11.09	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 25**

LTE Band 25 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3702	-53.42	-13	-40.42	-71.35	-64.63	1.41	12.62	H
	5556	-50.72	-13	-37.72	-73.87	-62.28	1.74	13.30	H
	7404	-47.10	-13	-34.10	-73.91	-56.42	1.94	11.25	H
									H
									H
									H
									H
	3702	-52.67	-13	-39.67	-70.75	-63.88	1.41	12.62	V
	5556	-50.47	-13	-37.47	-73.16	-62.03	1.74	13.30	V
	7404	-47.08	-13	-34.08	-73.74	-56.40	1.94	11.25	V
									V
									V
									V
									V
Middle	3744	-54.54	-13	-41.54	-72.66	-65.76	1.42	12.65	H
	5616	-50.44	-13	-37.44	-73.53	-62.00	1.74	13.30	H
	7482	-46.98	-13	-33.98	-73.43	-56.13	1.98	11.13	H
									H
									H
									H
									H
	3744	-53.68	-13	-40.68	-72	-64.90	1.42	12.65	V
	5616	-49.87	-13	-36.87	-72.62	-61.43	1.74	13.30	V
	7482	-47.12	-13	-34.12	-73.51	-56.27	1.98	11.13	V
									V
									V
									V
									V



Highest	3792	-52.38	-13	-39.38	-70.71	-63.62	1.44	12.68	H
	5688	-49.24	-13	-36.24	-72.71	-60.81	1.73	13.30	H
	7584	-48.08	-13	-35.08	-74	-57.20	2.00	11.12	H
									H
									H
									H
									H
	3792	-50.85	-13	-37.85	-69.44	-62.09	1.44	12.68	V
	5688	-48.21	-13	-35.21	-71.15	-59.78	1.73	13.30	V
	7584	-48.23	-13	-35.23	-74.11	-57.35	2.00	11.12	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 26**

LTE Band 26 / 5MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1648	-39.45	-13	-26.45	-47.87	-45.04	0.92	8.66	H
	2473	-51.13	-13	-38.13	-64.58	-58.50	1.14	10.66	H
	3297	-57.32	-13	-44.32	-72.64	-65.86	1.32	12.01	H
									H
									H
									H
									H
	1648	-40.82	-13	-27.82	-48.71	-46.41	0.92	8.66	V
	2473	-47.54	-13	-34.54	-61.14	-54.91	1.14	10.66	V
	3297	-56.89	-13	-43.89	-72.69	-65.43	1.32	12.01	V
									V
									V
									V
									V
Middle	1668	-39.43	-13	-26.43	-47.91	-45.09	0.93	8.74	H
	2503	-48.05	-13	-35.05	-61.55	-55.45	1.15	10.70	H
	3337	-57.40	-13	-44.40	-72.64	-66.03	1.33	12.11	H
									H
									H
									H
									H
	1668	-40.77	-13	-27.77	-48.65	-46.43	0.93	8.74	V
	2503	-48.20	-13	-35.20	-61.91	-55.60	1.15	10.70	V
	3337	-56.74	-13	-43.74	-72.43	-65.37	1.33	12.11	V
									V
									V
									V
									V



Highest	1688	-39.11	-13	-26.11	-47.65	-44.84	0.93	8.81	H
	2533	-51.02	-13	-38.02	-64.52	-58.45	1.16	10.74	H
	3377	-57.82	-13	-44.82	-72.96	-66.54	1.34	12.20	H
									H
									H
									H
									H
	1688	-39.13	-13	-26.13	-46.98	-44.86	0.93	8.81	V
	2533	-50.92	-13	-37.92	-64.55	-58.35	1.16	10.74	V
	3377	-57.51	-13	-44.51	-73.09	-66.23	1.34	12.20	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 38**

LTE Band 38 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	5142	-52.07	-25	-27.07	-74.03	-63.22	1.65	12.80	H
	7713	-47.70	-25	-22.70	-73.6	-56.82	2.02	11.14	H
	10284	-43.43	-25	-18.43	-73.7	-52.11	2.39	11.07	H
									H
									H
									H
									H
	5142	-52.64	-25	-27.64	-74.35	-63.79	1.65	12.80	V
	7713	-47.77	-25	-22.77	-73.48	-56.89	2.02	11.14	V
	10284	-43.64	-25	-18.64	-74.09	-52.32	2.39	11.07	V
									V
									V
									V
									V
Middle	5172	-52.34	-25	-27.34	-74.29	-63.53	1.65	12.84	H
	7758	-47.68	-25	-22.68	-73.59	-56.81	2.03	11.15	H
	10344	-43.50	-25	-18.50	-73.92	-52.13	2.39	11.02	H
									H
									H
									H
									H
	5172	-51.48	-25	-26.48	-73.23	-62.67	1.65	12.84	V
	7758	-48.02	-25	-23.02	-73.68	-57.15	2.03	11.15	V
	10344	-43.46	-25	-18.46	-73.93	-52.09	2.39	11.02	V
									V
									V
									V
									V



Highest	5202	-52.49	-25	-27.49	-74.43	-63.71	1.66	12.88	H
	7803	-47.97	-25	-22.97	-73.92	-57.10	2.03	11.16	H
	10404	-42.83	-25	-17.83	-73.42	-51.41	2.39	10.98	H
									H
									H
									H
									H
	5202	-53.01	-25	-28.01	-74.78	-64.23	1.66	12.88	V
	7803	-47.90	-25	-22.90	-73.55	-57.03	2.03	11.16	V
	10404	-42.47	-25	-17.47	-72.98	-51.05	2.39	10.98	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 38C**

LTE Band 38C / 20+20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	5142	-52.48	-25	-27.48	-74.44	-63.63	1.65	12.80	H
	7713	-48.15	-25	-23.15	-74.05	-57.27	2.02	11.14	H
	10284	-43.99	-25	-18.99	-74.26	-52.67	2.39	11.07	H
									H
									H
									H
									H
	5142	-52.92	-25	-27.92	-74.63	-64.07	1.65	12.80	V
	7713	-47.99	-25	-22.99	-73.7	-57.11	2.02	11.14	V
	10284	-43.73	-25	-18.73	-74.18	-52.41	2.39	11.07	V
									V
									V
									V
									V
Middle	5152	-52.18	-25	-27.18	-74.14	-63.34	1.65	12.81	H
	7729	-47.76	-25	-22.76	-73.66	-56.88	2.02	11.15	H
	10305	-43.82	-25	-18.82	-74.14	-52.48	2.39	11.06	H
									H
									H
									H
									H
	5152	-52.54	-25	-27.54	-74.27	-63.70	1.65	12.81	V
	7729	-48.14	-25	-23.14	-73.83	-57.26	2.02	11.15	V
	10305	-43.77	-25	-18.77	-74.23	-52.43	2.39	11.06	V
									V
									V
									V
									V

Highest	5163	-52.39	-25	-27.39	-74.35	-63.57	1.65	12.83	H
	7744	-47.92	-25	-22.92	-73.83	-57.04	2.02	11.15	H
	10325	-44.00	-25	-19.00	-74.38	-52.65	2.39	11.04	H
									H
									H
									H
									H
	5163	-52.40	-25	-27.40	-74.14	-63.58	1.65	12.83	V
	7744	-48.25	-25	-23.25	-73.93	-57.37	2.02	11.15	V
	10325	-43.74	-25	-18.74	-74.21	-52.39	2.39	11.04	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

LTE Band 41 (HPUE)

LTE Band 41 / 20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	4992	-51.71	-25	-26.71	-73.71	-62.70	1.61	12.60	H
	7488	-47.68	-25	-22.68	-74.09	-56.82	1.98	11.12	H
	9990	-44.23	-25	-19.23	-73.81	-53.14	2.40	11.30	H
									H
									H
									H
									H
	4992	-50.17	-25	-25.17	-71.71	-61.16	1.61	12.60	V
	7488	-47.10	-25	-22.10	-73.47	-56.24	1.98	11.12	V
	9990	-43.68	-25	-18.68	-74.03	-52.59	2.40	11.30	V
									V
									V
									V
									V
Middle	5166	-51.68	-25	-26.68	-73.63	-62.86	1.65	12.83	H
	7752	-48.07	-25	-23.07	-73.98	-57.20	2.03	11.15	H
	10332	-43.87	-25	-18.87	-74.26	-52.51	2.39	11.03	H
									H
									H
									H
									H
	5166	-50.66	-25	-25.66	-72.4	-61.84	1.65	12.83	V
	7752	-48.32	-25	-23.32	-73.99	-57.45	2.03	11.15	V
	10332	-43.58	-25	-18.58	-74.05	-52.22	2.39	11.03	V
									V
									V
									V
									V



Highest	5340	-51.75	-25	-26.75	-74.17	-63.13	1.70	13.08	H
	8016	-46.52	-25	-21.52	-73.68	-55.69	2.06	11.23	H
	10683	-42.70	-25	-17.70	-73.56	-51.11	2.49	10.90	H
									H
									H
									H
									H
	5340	-52.55	-25	-27.55	-74.63	-63.93	1.70	13.08	V
	8016	-46.98	-25	-21.98	-74.03	-56.15	2.06	11.23	V
	10683	-42.93	-25	-17.93	-73.55	-51.34	2.49	10.90	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 41C**

LTE Band 41C / 20+20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	4992	-51.83	-25	-26.83	-73.83	-62.82	1.61	12.60	H
	7494	-47.09	-25	-22.09	-73.48	-56.21	1.99	11.11	H
	9990	-44.52	-25	-19.52	-74.1	-53.43	2.40	11.30	H
									H
									H
									H
									H
	4992	-51.95	-25	-26.95	-73.49	-62.94	1.61	12.60	V
	7494	-47.20	-25	-22.20	-73.55	-56.32	1.99	11.11	V
	9990	-43.72	-25	-18.72	-74.07	-52.63	2.40	11.30	V
									V
									V
									V
									V
Middle	5148	-52.23	-25	-27.23	-74.18	-63.39	1.65	12.81	H
	7722	-47.76	-25	-22.76	-73.66	-56.88	2.02	11.14	H
	10296	-43.48	-25	-18.48	-73.78	-52.15	2.39	11.06	H
									H
									H
									H
									H
	5148	-52.49	-25	-27.49	-74.2	-63.65	1.65	12.81	V
	7722	-47.57	-25	-22.57	-73.27	-56.69	2.02	11.14	V
	10296	-43.25	-25	-18.25	-73.71	-51.92	2.39	11.06	V
									V
									V
									V
									V



Highest	5304	-52.47	-25	-27.47	-74.77	-63.81	1.69	13.03	H
	7956	-46.86	-25	-21.86	-73.79	-56.00	2.05	11.19	H
	10602	-43.28	-25	-18.28	-74.13	-51.74	2.44	10.90	H
									H
									H
									H
									H
	5304	-53.06	-25	-28.06	-75.06	-64.40	1.69	13.03	V
	7956	-47.23	-25	-22.23	-73.98	-56.37	2.05	11.19	V
	10602	-43.35	-25	-18.35	-73.93	-51.81	2.44	10.90	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 66**

LTE Band 66 / 1.4MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3420	-57.01	-13	-44.01	-72.93	-67.97	1.35	12.31	H
	5130	-51.79	-13	-38.79	-73.75	-62.93	1.64	12.78	H
	6843	-48.34	-13	-35.34	-73.71	-58.72	1.74	12.12	H
									H
									H
									H
									H
	3420	-56.52	-13	-43.52	-72.86	-67.48	1.35	12.31	V
	5130	-52.11	-13	-39.11	-73.81	-63.25	1.64	12.78	V
	6843	-48.83	-13	-35.83	-73.8	-59.21	1.74	12.12	V
									V
									V
									V
									V
Middle	3490	-56.40	-13	-43.40	-72.99	-67.52	1.36	12.48	H
	5233	-52.33	-13	-39.33	-74.37	-63.59	1.67	12.93	H
	6976	-47.57	-13	-34.57	-73.62	-57.78	1.72	11.93	H
									H
									H
									H
									H
	3490	-55.91	-13	-42.91	-72.87	-67.03	1.36	12.48	V
	5233	-52.44	-13	-39.44	-74.28	-63.70	1.67	12.93	V
	6976	-48.21	-13	-35.21	-73.77	-58.42	1.72	11.93	V
									V
									V
									V
									V



Highest	3560	-55.31	-13	-42.31	-72.49	-66.47	1.38	12.54	H
	5338	-51.90	-13	-38.90	-74.31	-63.28	1.70	13.07	H
	7116	-47.26	-13	-34.26	-73.79	-57.19	1.78	11.71	H
									H
									H
									H
									H
	3560	-55.16	-13	-42.16	-72.49	-66.32	1.38	12.54	V
	5338	-51.76	-13	-38.76	-73.83	-63.14	1.70	13.07	V
	7116	-47.59	-13	-34.59	-73.74	-57.52	1.78	11.71	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 66B**

LTE Band 66B / 10+10MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3441	-56.70	-13	-43.70	-72.83	-67.71	1.35	12.36	H
	5156	-51.87	-13	-38.87	-73.82	-63.04	1.65	12.82	H
	6878	-48.38	-13	-35.38	-73.93	-58.71	1.74	12.07	H
									H
									H
									H
									H
	3441	-56.49	-13	-43.49	-73.02	-67.50	1.35	12.36	V
	5156	-52.42	-13	-39.42	-74.15	-63.59	1.65	12.82	V
	6878	-48.81	-13	-35.81	-73.94	-59.14	1.74	12.07	V
									V
									V
									V
									V
Middle	3511	-56.14	-13	-43.14	-72.91	-67.28	1.36	12.51	H
	5261	-52.32	-13	-39.32	-74.47	-63.61	1.68	12.97	H
	7018	-47.54	-13	-34.54	-73.76	-57.68	1.73	11.87	H
									H
									H
									H
									H
	3511	-55.67	-13	-42.67	-72.76	-66.81	1.36	12.51	V
	5261	-52.83	-13	-39.83	-74.75	-64.12	1.68	12.97	V
	7018	-48.42	-13	-35.42	-74.16	-58.56	1.73	11.87	V
									V
									V
									V
									V



Highest	3539	-55.84	-13	-42.84	-72.85	-66.99	1.37	12.52	H
	5310	-52.47	-13	-39.47	-74.79	-63.81	1.69	13.03	H
	7081	-47.75	-13	-34.75	-74.17	-57.76	1.76	11.77	H
									H
									H
									H
									H
	3539	-55.10	-13	-42.10	-72.33	-66.25	1.37	12.52	V
	5310	-52.54	-13	-39.54	-74.56	-63.88	1.69	13.03	V
	7081	-48.01	-13	-35.01	-74.02	-58.02	1.76	11.77	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 66C**

LTE Band 66C / 20+20MHz / QPSK									
Channel	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	3420	-57.01	-13	-44.01	-72.93	-67.37	1.80	12.16	H
	5135	-52.07	-13	-39.07	-74.02	-61.89	2.30	12.13	H
	6843	-48.66	-13	-35.66	-74.03	-57.35	2.37	11.06	H
									H
									H
									H
									H
	3420	-56.70	-13	-43.70	-73.04	-67.06	1.80	12.16	V
	5135	-52.49	-13	-39.49	-74.19	-62.31	2.30	12.13	V
	6843	-49.15	-13	-36.15	-74.12	-57.84	2.37	11.06	V
									V
									V
									V
									V
Middle	3469	-56.26	-13	-43.26	-72.66	-66.72	1.84	12.31	H
	5212	-52.17	-13	-39.17	-74.14	-62.04	2.27	12.14	H
	6948	-48.02	-13	-35.02	-73.92	-56.57	2.40	10.95	H
									H
									H
									H
									H
	3469	-55.98	-13	-42.98	-72.76	-66.44	1.84	12.31	V
	5212	-52.46	-13	-39.46	-74.25	-62.33	2.27	12.14	V
	6948	-48.20	-13	-35.20	-73.64	-56.75	2.40	10.95	V
									V
									V
									V
									V



Highest	3483	-55.99	-13	-42.99	-72.52	-66.48	1.86	12.35	H
	5226	-52.04	-13	-39.04	-74.06	-61.92	2.27	12.15	H
	6962	-47.85	-13	-34.85	-73.83	-56.38	2.41	10.94	H
									H
									H
									H
									H
	3483	-55.88	-13	-42.88	-72.78	-66.37	1.86	12.35	V
	5226	-52.13	-13	-39.13	-73.95	-62.01	2.27	12.15	V
	6962	-48.23	-13	-35.23	-73.73	-56.76	2.41	10.94	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.

**LTE Band 71**

LTE Band 71 / 5MHz / QPSK									
Channel	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)
Lowest	1327	-23.52	-13	-10.52	-32.53	-30.00	0.83	7.30	H
	1990	-41.05	-13	-28.05	-51.8	-49.98	1.04	9.96	H
	2653	-58.75	-13	-45.75	-72.45	-68.45	1.19	10.88	H
									H
									H
									H
									H
	1327	-25.70	-13	-12.70	-33.88	-32.18	0.83	7.30	V
	1990	-42.26	-13	-29.26	-52.03	-51.19	1.04	9.96	V
	2653	-58.97	-13	-45.97	-72.63	-68.67	1.19	10.88	V
									V
									V
									V
									V
Middle	1347	-24.93	-13	-11.93	-34.06	-31.50	0.83	7.40	H
	2020	-43.02	-13	-30.02	-54.21	-52.00	1.04	10.03	H
	2693	-58.46	-13	-45.46	-72.31	-68.20	1.20	10.93	H
									H
									H
									H
									H
	1347	-29.77	-13	-16.77	-37.95	-36.34	0.83	7.40	V
	2020	-42.38	-13	-29.38	-52.58	-51.36	1.04	10.03	V
	2693	-58.88	-13	-45.88	-72.69	-68.62	1.20	10.93	V
									V
									V
									V
									V



Highest	1387	-32.59	-13	-19.59	-41.97	-39.33	0.84	7.58	H
	2080	-44.70	-13	-31.70	-56.96	-53.75	1.06	10.11	H
	2773	-57.95	-13	-44.95	-72.12	-67.76	1.22	11.03	H
									H
									H
									H
									H
	1387	-36.17	-13	-23.17	-44.39	-42.91	0.84	7.58	V
	2080	-42.20	-13	-29.20	-53.38	-51.25	1.06	10.11	V
	2773	-58.19	-13	-45.19	-72.31	-68.00	1.22	11.03	V
									V
									V
									V
									V

Remark: Spurious emissions within 30-1000MHz were found more than 20dB below limit line.