SPOT CHECK EVALUATION

FCC ID	:	**A4RGEC77**
Equipment	:	**Phone**
Model Name	:	**GEC77 / GWVK6**
Applicant	:	**Google LLC** **1600 Amphitheatre Parkway,** **Mountain View, California, 94043 USA**
Standard	:	**47 CFR Part 2, 22(H), 24(E), 27, 90(R), 90(S), 96** **FCC Part 15 Subpart C §15.209** **FCC Part 15 Subpart C §15.225** **FCC Part 15 Subpart C §15.247** **FCC Part 15 Subpart E §15.407** **FCC Part 15 Subpart F §15.519**

We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this 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 (R.O.C.)

TEL : 886-3-327-0868
FAX : 886-3-327-0855

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History of this test report

Version	Description	Issue Date
01	Initial issue of report	May. 10, 2024
02	Add model name and section 15.209 to cover page.	May. 13, 2024
03	Typo correction for n26 and NTN equipment class	May. 21, 2024

1. Introduction Section

FCC ID: A4RGR83Y (Parent Device) and FCC ID: A4RGEC77 (Variant Device) use the same identical internal printed circuit board layouts, while the variant model mmWave radio and antenna module are depopulated, details are available in the operational description. Based on their similarity, the FCC Part 15C (equipment class: DXX, DCD, DSS, DTS), Part 15E (equipment class: NII, 6CD), Part 15F (equipment class: UWB), and FCC Part 22, 24, 25, 27, 90, 96 (equipment class: PCE, CBE, TNB) reuse the original model's result and do spot-check. The spot check data in this report is used to justify the data reuse.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID: A4RGEC77

2. Model Difference Information

A4RGR83Y and A4RGEC77 use the identical internal printed circuit board layout, and the difference in the components population:

- A4RGEC77: 5GNR FR2 mmWave related components are depopulated.
- A4RGEC77: 5GNR FR1 n79 related components are populated but SW is disabled in US.

The supported GSM/WCDMA/LTE bands are all identical between A4RGR83Y and A4RGEC77.

The supported NR FR1 band comparison table is listed as following

NR Band	A4RGR83Y	A4RGEC77
Same	n2, n5, n7, n12, n14, n25, n26, n30, n66, n71 n41 PC1.5, n77 PC1.5, n78 PC1.5	n2, n5, n7, n12, n14, n25, n26, n30, n66, n71 n41 PC1.5, n77 PC1.5, n78 PC1.5
Diff.	n48, n70	-

The detail of similarity and difference is illustrated in the operational description, and based on the information spot check on conducted power and emission was performed for ensure compliance.

3. Spot Check Verification Data Section

Conducted power test and radiated spurious emission test configurations were selected from the worst cases identified in the parent model and tested to demonstrate the test data from original model remains representative for the variant model.

Based on the RF parameter is still identical so the EBW from original model remains representative for the variant model.

Summary for power and RSE spot check for each FCC rule part is listed as below:

Test Item	Mode	A4RGR83Y Parent Worst Result	A4RGEC77 Variant Check Result	Difference (dB)
Conducted Power (dBm)	WWAN GPRS 850 Class 8 CH251	32.41	32.28	0.13
	WWAN GPRS 1900 Class 8 CH810	29.54	29.52	0.02
	WWAN WCDMA Band V RMC 12.2K CH4182	24.51	24.44	0.07
	WWAN WCDMA Band II RMC 12.2K CH9400	24.11	24.02	0.09
	WWAN WCDMA Band IV RMC 12.2K CH1413	24.32	24.28	0.04
	WWAN LTE Band 2 20MHz 1RB0 QPSK Mid	23.91	23.73	0.18
	WWAN LTE Band 5 10MHz 1RB0 QPSK Mid	24.14	24.12	0.02
	WWAN LTE Band 7 20MHz 1RB0 QPSK Mid	23.80	23.75	0.05
	WWAN LTE Band 12 10MHz 1RB0 QPSK Mid	23.98	23.86	0.12
	WWAN LTE Band 13 10MHz 1RB0 QPSK Mid	23.90	23.77	0.13
	WWAN LTE Band 14 10MHz 1RB0 QPSK Mid	23.91	23.78	0.13
	WWAN LTE Band 26 (90S) 1.4MHz 3RB3 QPSK Mid	24.32	24.31	0.01
	WWAN LTE Band 30 10MHz 1RB0 QPSK Mid	23.77	23.73	0.04
	WWAN LTE Band 41 HPUE 20MHz 1RB0 QPSK Mid	25.86	25.83	0.03
	WWAN LTE Band 48 20MHz 1RB0 16-QAM Mid	22.71	22.65	0.06
	WWAN LTE Band 66 20MHz 1RB0 QPSK Mid	23.88	23.74	0.14
	WWAN LTE Band 71 20MHz 1RB0 QPSK Mid	24.00	23.83	0.17
	NTN Band 23 1SC11 QPSK Low	23.52	23.49	0.03
	NTN Band 255 1SC11 QPSK Mid	23.31	23.28	0.03

Test Item	Mode	A4RGR83Y Parent Worst Result	A4RGEC77 Variant Check Result	Difference (dB)
Conducted Power (dBm)	WWAN NR n2 40MHz 108RB54 BPSK Mid	24.42	24.34	0.08
	WWAN NR n5 15MHz 1RB77 QPSK Mid	24.42	24.24	0.18
	WWAN NR n7 25MHz 1RB1 BPSK Low	24.37	24.19	0.18
	WWAN NR n12 10MHz 1RB50 BPSK High	24.68	24.55	0.13
	WWAN NR n14 10MHz 1RB1 QPSK Mid	24.37	24.35	0.02
	WWAN NR n26 15MHz 1RB77 QPSK Mid	24.61	24.47	0.14
	WWAN NR n30 10MHz 1RB50 BPSK Mid	24.63	24.60	0.03
	WWAN NR n41 HPUE 100MHz 1RB1 QPSK Low	26.73	26.59	0.14
	WWAN NR n66 40MHz 1RB1 QPSK Mid	24.41	24.39	0.02
	WWAN NR n71 10MHz 1RB1 QPSK Mid	24.85	24.73	0.12
	WWAN NR n77 HPUE 100MHz 1RB271 BPSK Mid	26.63	26.61	0.02

Test Item	Mode	ANT	A4RGR83Y Parent Worst Result	A4RGEC77 Variant Check Result	Difference (dB)
Conducted Power (dBm)	BT (BR 1Mbps CH00)	3+4	22.66	22.66	0.00
	BLE / BT EDR (BLE 2Mbps CH01)	3+4	22.38	22.19	0.19
	BLE CS GFSK_DTS (2Mbps CH76)	3	19.98	19.84	0.14
	BLE CS ASK_FHSS (2Mbps CH02)	4	20.50	20.36	0.14
	Thread (250kbps CH25)	3	18.75	18.73	0.02
	WiFi 2.4GHz (11g CH06)	3+4	24.51	24.40	0.11
	WiFi 5GHz (11a CH165)	3+4	23.78	23.64	0.14
	WiFi 6GHz (EHT20 CH117 Full RU)	3+4	24.00	23.96	0.04

Test Item	Mode	ANT	A4RGR83Y Parent Worst Result	A4RGEC77 Variant Check Result	Difference (dB)
Field Strength (dBuV/m)	NFC 13.56MHz	-	24.87	23.09	1.78
	WPT	-	-13.87	-14.32	0.45
	UWB CH5 BPRF Config 0	Ranging	93.78	90.98	2.80
	UWB CH9 HPRF Config 5	AoA	95.12	93.45	1.67
Radiated Spurious Emission (dBuV/m)	NFC 13.56MHz	-	32.49	30.54	1.95
	WPT	-	29.32	27.30	2.02
	UWB CH9 HPRF Config 3	Ranging	53.81	53.34	0.47
	UWB CH5 HPRF Config 3	AoA	53.82	53.31	0.51
Radiated Spurious Emission (dBm)	WWAN GSM 850 CH189	0	-40.38	-43.01	2.63
	WWAN GSM 1900 CH512	2	-51.03	-51.51	0.48
	WWAN WCDMA Band V CH4233	0	-57.66	-59.98	2.32
	WWAN WCDMA Band II CH9538	2	-53.77	-56.24	2.47
	WWAN WCDMA Band IV CH1312	2	-54.60	-56.65	2.05
	WWAN LTE Band 2 10MHz 1RB0 QPSK High	2	-53.68	-55.19	1.51
	WWAN LTE Band 5 10MHz 1RB0 QPSK Mid	0	-49.72	-49.83	0.11
	WWAN LTE Band 7 10MHz 1RB0 QPSK High	0	-49.77	-50.56	0.79
	WWAN LTE Band 12 10MHz 1RB0 QPSK Mid	0	-47.67	-48.40	0.73
	WWAN LTE Band 13 10MHz 1RB0 QPSK Mid	0	-62.73	-62.85	0.12
	WWAN LTE Band 14 5MHz 1RB0 QPSK Mid	0	-64.64	-67.63	2.99
	WWAN LTE Band 26 (90S) 15MHz 1RB0 QPSK Mid	2	57.99	55.23	2.76
	WWAN LTE Band 30 10MHz 1RB0 QPSK Mid	2	-52.12	-53.97	1.85
	WWAN LTE Band 41 HPUE 10MHz 1RB0 QPSK High	2	-49.49	-51.15	1.66
	WWAN LTE Band 48 20MHz 1RB0 QPSK Mid	6	-45.11	-47.33	2.22
	WWAN LTE Band 66 10MHz 1RB0 QPSK Low	2	-54.27	-56.36	2.09
	WWAN LTE Band 71 10MHz 1RB0 QPSK Mid	0	-46.72	-48.68	1.96
	NTN Band 23 1SC0 QPSK High	1	-56.46	-57.21	0.75
	NTN Band 255 1SC0 QPSK Mid	5	-57.76	-58.29	0.53

Test Item	Mode	ANT	A4RGR83Y Parent Worst Result	A4RGEC77 Variant Check Result	Difference (dB)
Radiated Spurious Emission (dBm)	WWAN NR n2 20MHz 1RB1 BPSK Mid	2	-52.83	-53.84	1.01
	WWAN NR n5 20MHz 1RB1 BPSK Mid	0	-44.95	-44.98	0.03
	WWAN NR n7 20MHz 1RB1 BPSK High	2	-54.48	-56.28	1.80
	WWAN NR n48 20MHz 1RB1 BPSK High	7	-43.03	-44.31	1.28
	WWAN NR n66 20MHz 1RB1 BPSK High	2	-55.86	-57.19	1.33
	WWAN NR n71 20MHz 1RB1 BPSK High	0	-46.39	-47.58	1.19
	WWAN NR n77 HPUE (27O) 20MHz 1RB1 BPSK Mid	6	-39.57	-42.55	2.98
		7	-49.72	-52.18	2.46

Test Item	Mode	ANT	A4RGR83Y Parent Worst Result	A4RGEC77 Variant Check Result	Difference (dB)
Radiated Spurious Emission (dBuV/m)	BT (BR 1Mbps CH78)	3+4	55.89	53.67	2.22
	BLE / BT EDR (BLE 2Mbps CH38)	3+4	44.36	42.83	1.53
	BLE CS GFSK_DTS (2Mbps CH76)	3	46.19	46.06	0.13
	BLE CS ASK_FHSS (1Mbps CH76)	3	56.34	54.79	1.55
	Thread (250kbps CH26)	3	46.11	44.33	1.78
	WiFi 2.4GHz (EHT20 CH01 Full RU)	3+4	52.31	51.70	0.61
	WiFi 5GHz (EHT20 CH36 Full RU)	3+4	52.24	51.44	0.80
	WiFi 6GHz (EHT160 CH207 Full RU)	3+4	65.93	63.94	1.99

Note: BLE CS means BLE Channel Sounding

Conclusion:

Radiated spurious emission test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

The spot check emission level is not degraded more than 3dB, and the margin to the limit is greater than 1.5dB, data referencing is justified according to the guidance in the KDB inquiry

4. Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Rule Part & Frequency Band	Reference FCC ID (Parent)	Type Grant/ Permissive Change	Reference Exhibit	Full report referenced	FCC ID Filling (Variant)
15C	DXX	NFC	§15.255 13.56MHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C NFC	Y	A4RGEC77
15C	DCD	WPT	§15.209 110-148kHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C WPT	Y	A4RGEC77
15C	DSS	BT BR	§15.247 2.4GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C BT	Y	A4RGEC77
	DTS	BT EDR BLE	§15.247 2.4GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C BT_EDR GR83Y_FCC Part 15C BLE	Y	A4RGEC77
	DSS	BLE CS ASK	§15.247 2.4GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C BLE CS ASK	Y	A4RGEC77
	DTS	BLE CS GFSK	§15.247 2.4GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C BLE CS GFSK	Y	A4RGEC77
	DTS	Thread	§15.247 2.4GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C Thread	Y	A4RGEC77
	DTS	WiFi	§15.247 2.4GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15C WLAN2.4G	Y	A4RGEC77
15E	NII	WiFi	§15.407 5GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15E WLAN UNII-1-3 GR83Y_FCC Part 15E General DFS GR83Y_FCC Part 15E P2P DFS GR83Y_FCC Part 15E WLAN B4 GR83Y_FCC Part 15E UNII-4	Y	A4RGEC77
	6CD	WiFi	§15.407 6GHz	A4RGR83Y	Original Grant	GR83Y_FCC Part 15E_WLAN B5-8 Indoor Client GR83Y_FCC Part 15E_WLAN B5_B7 Standard Client GR83Y_FCC Part 15E Co-location	Y	A4RGEC77
15F	UWB	UWB	§15.519 CH5/CH9	A4RGR83Y	Original Grant	GR83Y_FCC Part 15F_UWB	Y	A4RGEC77
22, 24, 25, 27, 90, 96	PCE CBE TNB	GSM	Part 22/24 850/1900	A4RGR83Y	Original Grant	GR83Y_FCC Part 22.24.27 GSM, WCDMA	Y	A4RGEC77
		WCDMA	Part 22/24/27 Band II, IV, V	A4RGR83Y	Original Grant	GR83Y_FCC Part 22.24.27 GSM, WCDMA	Y	A4RGEC77
		LTE	Part 22/24/27 Part 90/96 2/4/5/7/12/13 /14/17/25/26 /30/38/41 /48/66/71	A4RGR83Y	Original Grant	GR83Y_FCC Part 22.24.27.90 LTE GR83Y_FCC Part96 LTE GR83Y_FCC Part96.47 LTE	Y	A4RGEC77
		NTN	Part 25 B23/B255	A4RGR83Y	Original Grant	GR83Y_FCC Part25 NTN	Y	A4RGEC77
		NR	Part 22/24/27 Part 96 n2/n5/n7/ n12/n14/n25/ n26/n30/n38 /n41/n66/n71/ n77/n78	A4RGR83Y	Original Grant	GR83Y_FCC Part 22.24.27 5G NR GR83Y_FCC Part 27O 5G NR GR83Y_FCC Part 27Q 5G NR	Y	A4RGEC77

Note: BLE CS means BLE Channel Sounding

5. 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	Sep. 12, 2023	Jan. 19, 2024~ Mar. 28, 2024	Sep. 11, 2024	Radiation (03CH16-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA9170	1224	18GHz-40GHz	Jul. 10, 2023	Jan. 19, 2024~ Mar. 28, 2024	Jul. 09, 2024	Radiation (03CH16-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY57290111	3Hz~26.5GHz	Dec. 04, 2023	Jan. 19, 2024~ Mar. 28, 2024	Dec. 03, 2024	Radiation (03CH16-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00802N1D01N -06	47020 & 06	30MHz to 1GHz	Oct. 07, 2023	Jan. 19, 2024~ Mar. 28, 2024	Oct. 06, 2024	Radiation (03CH16-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-02038	1G~18GHz	Jul. 31, 2023	Mar. 21, 2024~ Mar. 28, 2024	Jul. 30, 2024	Radiation (03CH16-HY)
Amplifier	SONOMA	310N	371607	9kHz~1GHz	Jul. 03, 2023	Jan. 19, 2024~ Mar. 28, 2024	Jul. 02, 2024	Radiation (03CH16-HY)
Preamplifier	EMEC	EM1G18G	060812	1GHz~18GHz	Dec. 25, 2023	Jan. 19, 2024~ Mar. 28, 2024	Dec. 24, 2024	Radiation (03CH16-HY)
Preamplifier	EMEC	EM18G40G	060801	18GHz~40GHz	Jun. 27, 2023	Jan. 19, 2024~ Mar. 28, 2024	Jun. 26, 2024	Radiation (03CH16-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN17	1.53GHz Low Pass Filter	Jan. 15, 2024	Jan. 19, 2024~ Mar. 28, 2024	Jan. 14, 2025	Radiation (03CH16-HY)
Filter	Wainwright	WHKX8-5872.5-6750-18000-40ST	SN27	6.75GHz High Pass Filter	Nov. 13, 2023	Jan. 19, 2024~ Mar. 28, 2024	Nov. 12, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 07, 2023	Jan. 19, 2024~ Mar. 05, 2024	Mar. 06, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 06, 2024	Mar. 06, 2024~ Mar. 28, 2024	Mar. 05, 2025	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102/SUCOFLEX 104	EC-A5-300-5757,805935/4,802434/4	30MHz~18GHz	Aug. 08, 2023	Jan. 19, 2024~ Mar. 28, 2024	Aug. 07, 2024	Radiation (03CH16-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804011/2,804012/2	18-40GHz	Jan. 02, 2024	Jan. 19, 2024~ Mar. 28, 2024	Jan. 01, 2025	Radiation (03CH16-HY)
Software	Audix	E3 6.2009-8-24	RK-001136	N/A	N/A	Jan. 19, 2024~ Mar. 28, 2024	N/A	Radiation (03CH16-HY)
Controller	ChainTek	3000-1	N/A	Control Turn table & Ant Mast	N/A	Jan. 19, 2024~ Mar. 28, 2024	N/A	Radiation (03CH16-HY)
Antenna Mast	ChainTek	MBS-520-1	N/A	1m~4m	N/A	Jan. 19, 2024~ Mar. 28, 2024	N/A	Radiation (03CH16-HY)
Turn Table	ChainTek	T-200-S-1	N/A	0~360 Degree	N/A	Jan. 19, 2024~ Mar. 28, 2024	N/A	Radiation (03CH16-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Jan. 19, 2024~ Mar. 28, 2024	Nov. 06, 2024	Conducted (TH05-HY)
USB Power Sensor	DARE	RPR3008W	RPR8W-23010013 (NO:100)	10MHz~8GHz	Jul. 26, 2023	Jan. 19, 2024~ Mar. 28, 2024	Jul. 25, 2024	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101468	10HZ~44GHZ	Mar. 13, 2023	Jan. 19, 2024~ Mar. 11, 2024	Mar. 12, 2024	Conducted (TH05-HY)
DC Power Supply	GW Instek	GPE2323	GET910884	0V~64V ;0A~6A	Nov. 16, 2023	Jan. 19, 2024~ Mar. 28, 2024	Nov. 15, 2024	Conducted (TH03-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101048	10Hz~44GHz	May 03, 2023	Jan. 19, 2024~ Mar. 28, 2024	May 02, 2024	Conducted (TH03-HY)
Temperature Chamber	ESPEC	SH-241	92003713	-30℃ ~90℃	May 17, 2023	Jan. 19, 2024~ Mar. 28, 2024	May 16, 2024	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8821C	6262116730	LTE	Jul. 10, 2023	Jan. 19, 2024~ Mar. 28, 2024	Jul. 09, 2024	Conducted (TH03-HY)
Base Station (Measure)	Anritsu	MT8000A	6262134933	FR1	Jul. 10, 2023	Jan. 19, 2024~ Mar. 28, 2024	Jul. 09, 2024	Conducted (TH03-HY)

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