



A Test Lab Techno Corp.

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MPE Report

Test Report No.	: 1709FS15
Applicant	: MANN HUMMEL FILTER TECHNOLOGY S.E.A. PTE. LTD.
Product Type	: Senzit
Trade Name	: SENZIT
Model Number	: Senzit
Date of Received	: Apr. 26, 2017
Test Period	: Sep. 05 ~ Sep. 06, 2017
Date of Issued	: Sep. 26, 2017
Test Specification	: ANSI / IEEE Std.C95.1-1992 / IEEE Std. 1528-2013 47 CFR § 2.1091 47 CFR § 1.1310
Location of Test Lab.	: Chang-an Lab.
Test Firm MRA designation number	: TW0010

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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1. Description of Equipment under Test (EUT)

Applicant	MANN HUMMEL FILTER TECHNOLOGY S.E.A. PTE. LTD. Fusionopolis Symbiosis, #11-24, 3 Fusionopolis Way, S138633, Singapore		
Manufacturer	DAVISCOMMS (MALAYSIA) SDN.BHD. PLOT 324A, LORONG PERINDUSTRIAN BUKIT MINYAK 20, MK13, PENANG SCIENCE PARK,14100 SIMPANG AMPAT,PULAU PINANG.		
Product Type	Senzit		
Trade Name	SENZIT		
Model Number	Senzit		
FCC ID	2ANLX-SZT-1		
IMEI No.	357042067181280		
Frequency Range	Operate Band	Frequency Range (MHz)	
	GSM/GPRS/EGPRS 850	824.2 ~ 848.8	
	GSM/GPRS/EGPRS 1900	1850.2 ~ 1909.8	
	WCDMA(RMC12.2K)/HSDPA/HSUPA Band II	1852.4 ~ 1907.6	
	WCDMA(RMC12.2K)/HSDPA/HSUPA Band V	826.4 ~ 846.6	
Antenna Information	Type	Max. Gain (dBi)	
	Chip Antenan	GSM/GPRS/EGPRS 850	3.3
		GSM/GPRS/EGPRS 1900	3.64
		WCDMA/ HSDPA/ HSUPA Band II	3.64
		WCDMA/ HSDPA/ HSUPA Band V	3.3
RF Evaluation	0.130 mW/cm ²		
Operate Temp. Range	-25 ~ 80 °C		

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 / 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

Exposure evaluation
$S = \frac{PG}{4\pi R^2}$ Where S: power density P: power input to the antenna G: power gain of the antenna in the direction of interest relative to an isotropic radiator. R: distance to the center of radiation of the antenna.

3. RF Output Power

Bands	Modulation Type	Test Mode	Frequency (MHz)	Average Power (dBm)	
				Time-Avg.	Avg.-Burst
GSM 850	GMSK	1Down1Up Duty factor 1/8	824.2	23.31	32.34
			836.6	23.26	32.29
			848.8	23.28	32.31
GPRS 850 Multi Class :12 Max Up:4 Max Down:4 Sum:5	GMSK	4Down1Up Duty factor 1/8	824.2	23.15	32.18
			836.6	23.07	32.10
			848.8	23.10	32.13
		3Down2Up Duty factor 2/8	824.2	23.84	29.86
			836.6	23.75	29.77
			848.8	23.77	29.79
		2Down3Up Duty factor 3/8	824.2	23.79	28.05
			836.6	23.73	27.99
			848.8	23.71	27.97
		1Down4Up Duty factor 4/8	824.2	23.59	26.60
			836.6	23.54	26.55
			848.8	23.54	26.55
EGPRS 850 Multi Class :12 Max Up:4 Max Down:4 Sum:5	8PSK	4Down1Up Duty factor 1/8	824.2	17.69	26.72
			836.6	17.64	26.67
			848.8	17.59	26.62
		3Down2Up Duty factor 2/8	824.2	17.96	23.98
			836.6	17.92	23.94
			848.8	17.85	23.87
		2Down3Up Duty factor 3/8	824.2	18.00	22.26
			836.6	17.93	22.19
			848.8	17.90	22.16
		1Down4Up Duty factor 4/8	824.2	17.83	20.84
			836.6	17.68	20.69
			848.8	17.70	20.71

Bands	Modulation Type	Test Mode	Frequency (MHz)	Average Power (dBm)	
				Time-Avg.	Avg.-Burst
PCS 1900	GMSK	1Down1Up Duty factor 1/8	1850.2	20.28	29.31
			1880.0	20.33	29.36
			1909.8	20.31	29.34
GPRS 1900 Multi Class :12 Max Up:4 Max Down:4 Sum:5	GMSK	4Down1Up Duty factor 1/8	1850.2	20.12	29.15
			1880.0	20.19	29.22
			1909.8	20.14	29.17
		3Down2Up Duty factor 2/8	1850.2	20.58	26.60
			1880.0	20.60	26.62
			1909.8	20.54	26.56
		2Down3Up Duty factor 3/8	1850.2	20.53	24.79
			1880.0	20.56	24.82
			1909.8	20.49	24.75
		1Down4Up Duty factor 4/8	1850.2	20.37	23.38
			1880.0	20.42	23.43
			1909.8	20.45	23.46
EGPRS 1900 Multi Class :12 Max Up:4 Max Down:4 Sum:5	8PSK	4Down1Up Duty factor 1/8	1850.2	16.43	25.46
			1880.0	16.36	25.39
			1909.8	16.40	25.43
		3Down2Up Duty factor 2/8	1850.2	16.55	22.57
			1880.0	16.44	22.46
			1909.8	16.49	22.51
		2Down3Up Duty factor 3/8	1850.2	16.61	20.87
			1880.0	16.46	20.72
			1909.8	16.57	20.83
		1Down4Up Duty factor 4/8	1850.2	16.88	19.89
			1880.0	16.83	19.84
			1909.8	16.87	19.88

Bands	Modulation Type	Sub-Test	Frequency (MHz)	Average Power
				(dBm)
WCDMA Band II	QPSK	-----	1852.4	22.86
			1880.0	22.56
			1907.6	22.63
HSDPA Band II	QPSK	1	1852.4	22.11
			1880.0	21.82
			1907.6	21.59
		2	1852.4	21.61
			1880.0	21.32
			1907.6	21.09
		3	1852.4	21.57
			1880.0	21.26
			1907.6	21.06
		4	1852.4	21.99
			1880.0	21.71
			1907.6	21.52
HSUPA Band II	QPSK	1	1852.4	21.57
			1880.0	21.31
			1907.6	21.08
		2	1852.4	19.57
			1880.0	19.29
			1907.6	19.06
		3	1852.4	20.56
			1880.0	20.28
			1907.6	20.07
		4	1852.4	19.55
			1880.0	19.26
			1907.6	19.02
		5	1852.4	21.41
			1880.0	21.14
			1907.6	20.96

Bands	Modulation Type	Sub-Test	Frequency (MHz)	Average Power
				(dBm)
WCDMA Band V	QPSK	-----	826.4	23.65
			836.6	23.48
			846.6	23.49
HSDPA Band V	QPSK	1	826.4	22.82
			836.6	22.61
			846.6	22.63
		2	826.4	22.33
			836.6	22.09
			846.6	22.13
		3	826.4	22.26
			836.6	22.05
			846.6	22.09
		4	826.4	22.71
			836.6	22.49
			846.6	22.52
HSUPA Band V	QPSK	1	826.4	22.14
			836.6	21.94
			846.6	21.98
		2	826.4	20.14
			836.6	19.96
			846.6	19.99
		3	826.4	21.11
			836.6	20.92
			846.6	20.95
		4	826.4	20.11
			836.6	19.89
			846.6	19.95
		5	826.4	21.99
			836.6	21.77
			846.6	21.85

4. Test Result

Band	Test mode/ RB/ Data rate	Frequency (MHz)	Limit (mw/cm ²)	Distance [R] (cm)	max tune-up Power [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	with Duty cycle [TP] (mW)	Power Density [S] (mw/cm ²)
GSM 850	1UP	824.2	0.549	20	33.50	3.30	2.14	0.125	598.86	0.119
		836.6	0.558	20	33.50	3.30	2.14	0.125	598.86	0.119
		848.8	0.566	20	33.50	3.30	2.14	0.125	598.86	0.119
GSM 1900	1UP	1850.2	1	20	30.50	3.64	2.31	0.125	323.98	0.064
		1880.0	1	20	30.50	3.64	2.31	0.125	323.98	0.064
		1909.8	1	20	30.50	3.64	2.31	0.125	323.98	0.064
GPRS 850	1UP	824.2	0.549	20	32.30	3.30	2.14	0.125	454.28	0.090
		836.6	0.558	20	32.30	3.30	2.14	0.125	454.28	0.090
		848.8	0.566	20	32.30	3.30	2.14	0.125	454.28	0.090
	2UP	824.2	0.549	20	29.90	3.30	2.14	0.25	522.82	0.104
		836.6	0.558	20	29.90	3.30	2.14	0.25	522.82	0.104
		848.8	0.566	20	29.90	3.30	2.14	0.25	522.82	0.104
	3UP	824.2	0.549	20	28.10	3.30	2.14	0.375	518.14	0.103
		836.6	0.558	20	28.10	3.30	2.14	0.375	518.14	0.103
		848.8	0.566	20	28.10	3.30	2.14	0.375	518.14	0.103
	4UP	824.2	0.549	20	26.70	3.30	2.14	0.5	500.48	0.100
		836.6	0.558	20	26.70	3.30	2.14	0.5	500.48	0.100
		848.8	0.566	20	26.70	3.30	2.14	0.5	500.48	0.100
GPRS 1900	1UP	1850.2	1	20	29.30	3.64	2.31	0.125	245.77	0.049
		1880.0	1	20	29.30	3.64	2.31	0.125	245.77	0.049
		1909.8	1	20	29.30	3.64	2.31	0.125	245.77	0.049
	2UP	1850.2	1	20	26.70	3.64	2.31	0.25	270.12	0.054
		1880.0	1	20	26.70	3.64	2.31	0.25	270.12	0.054
		1909.8	1	20	26.70	3.64	2.31	0.25	270.12	0.054
	3UP	1850.2	1	20	24.90	3.64	2.31	0.375	267.7	0.053
		1880.0	1	20	24.90	3.64	2.31	0.375	267.7	0.053
		1909.8	1	20	24.90	3.64	2.31	0.375	267.7	0.053
	4UP	1850.2	1	20	23.50	3.64	2.31	0.5	258.57	0.051
		1880.0	1	20	23.50	3.64	2.31	0.5	258.57	0.051
		1909.8	1	20	23.50	3.64	2.31	0.5	258.57	0.051

Band	Test mode/ RB/ Data rate	Frequency (MHz)	Limit (mw/cm ²)	Distance [R] (cm)	max tune-up Power [P] (dBm)	ANT Gain (dBi)	Numeric Gain [G]	Duty Cycle	with Duty cycle [TP] (mW)	Power Density [S] (mw/cm ²)
WCDMA Band II	RMC-12.2K	1852.4	1	20	24.50	3.64	2.31	1	651.05	0.130
		1880.0	1	20	24.50	3.64	2.31	1	651.05	0.130
		1907.6	1	20	24.50	3.64	2.31	1	651.05	0.130
WCDMA Band V	RMC-12.2K	826.4	0.551	20	24.50	3.30	2.14	1	603.13	0.120
		836.6	0.558	20	24.50	3.30	2.14	1	603.13	0.120
		846.6	0.564	20	24.50	3.30	2.14	1	603.13	0.120

Note:

- 1.Mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.
2. The Numeric Gain calculated by $10^{(\text{ant. Gain(dBi)} / 10)}$.
3. Each band max power which perform MPE of any configurations.
4. The device not support simultaneous transmission.